LONG SPACED DENSITY
GAMMA RAY
CALIPER

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #24
WELL:
T93R-35
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-35
FIELD SITE #24
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#89

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
DIPMETER

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	28-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	110.0M			
DEPTH-LOGGER	110.0M			
FIRST READING	109.5M			
LAST READING	00M			
CASING-DRILLER	42.7M			
CASING-LOGGER	42.7M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	42.7M	TD	178MM	N/A	SURFACE	42.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	101			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 28-SEP-1993 AT 11:54
FILENAME: DD3AR35X.CIB RUN ID: MAIN LOG PLOTTED ON 28-SEP-1993 AT 12:22

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 28-SEP-1993 AT 11:54
FILENAME: DD3AR35X.CIB RUN ID: MAIN LOG PLOTTED ON 28-SEP-1993 AT 12:22

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 28-SEP-1993 AT 11:54

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	42.70
BIT SIZE 3	.00	BIT DEPTH 3	110.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	325.20
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2890.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1297.10
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	469.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	530.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	588.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	648.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	762.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	882.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-35
FIELD	SITE #24
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12M.CIB RUN ID: MAIN LOG PLOTTED ON 08-SEP-1993 AT 17:27

#879

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12M.CIB RUN ID: MAIN LOG PLOTTED ON 08-SEP-1993 AT 17:27

↑ MAIN LOG ↑

↓ MAIN LOG ↓

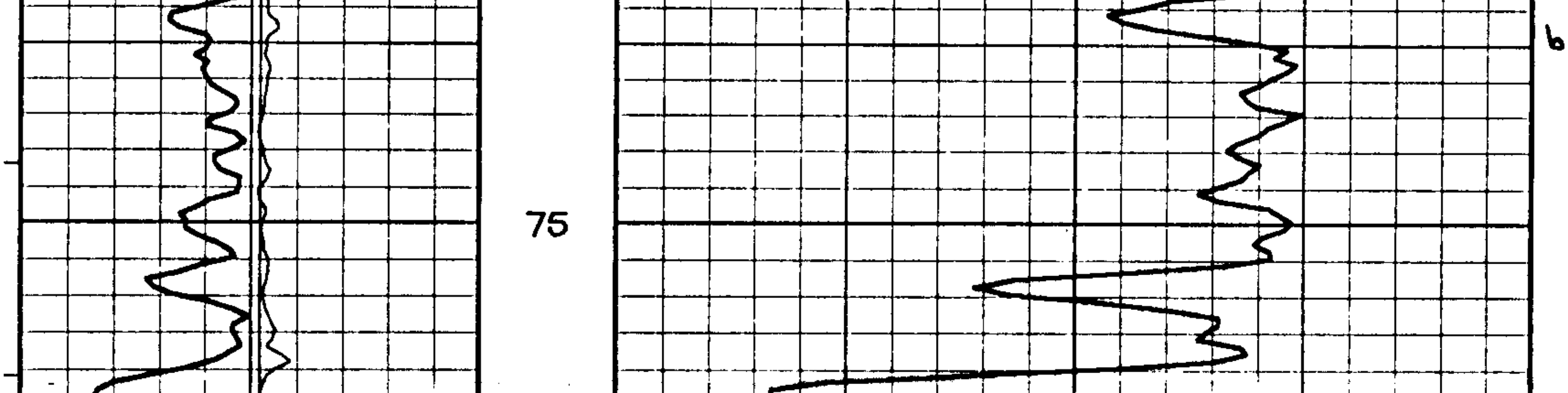
DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 5-SEP-1993 AT 11:11
FILENAME: DD3AR03M.CIB RUN ID: MAIN LOG PLOTTED ON 05-SEP-1993 AT 11:33

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 5-SEP-1993 AT 11:11
FILENAME: DD3AR03M.CIB RUN ID: MAIN LOG PLOTTED ON 05-SEP-1993 AT 11:11

↑ MAIN LOG ↑

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 5-SEP-1993 AT 10:49
FILENAME: DIP3R03M.CIB RUN ID: MAIN LOG PLOTTED ON 05-SEP-1993 AT 11:01



#879

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-SEP-1993 AT 13:56

FILENAME: DD3AR05M.CIB RUN ID: MAIN LOG PLOTTED ON 04-SEP-1993 AT 14:13

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-SEP-1993 AT 13:56

FILENAME: DD3AR05M.CIB RUN ID: MAIN LOG PLOTTED ON 04-SEP-1993 AT 13:56

↑ MAIN LOG ↑

#879

T93R-04 Tenas

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 3-SEP-1993 AT 15:20

FILENAME: DD3AR04M.CIB RUN ID: MAIN LOG PLOTTED ON 03-SEP-1993 AT 15:20

↑ MAIN LOG ↑

BIT SIZE
MILLIMETRES
0
150
300
CALIPER FROM DENSITY
MILLIMETRES
0
150
300
GAMMA FROM DENSITY TOOL
API
0
75
150
150
225
300
DEPTH
IN
METRES
TIMING
MARKS
EVERY
60 SEC
REPLAY
SCALE
100:1
#879
DENSITY LONG SPACED
GM/CC
1
1.50
2
2.50
3
0
5
6
7
8
9
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
DEPTH
IN
METRES
BIT SIZE
MILLIMETRES

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM.
RECORDED ON 6-SEP-1993 AT 20:05

FILENAME: D03AR10M.CIB RUN ID: MAIN LOG
PLOTTED ON 06-SEP-1993 AT 20:19

#879

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

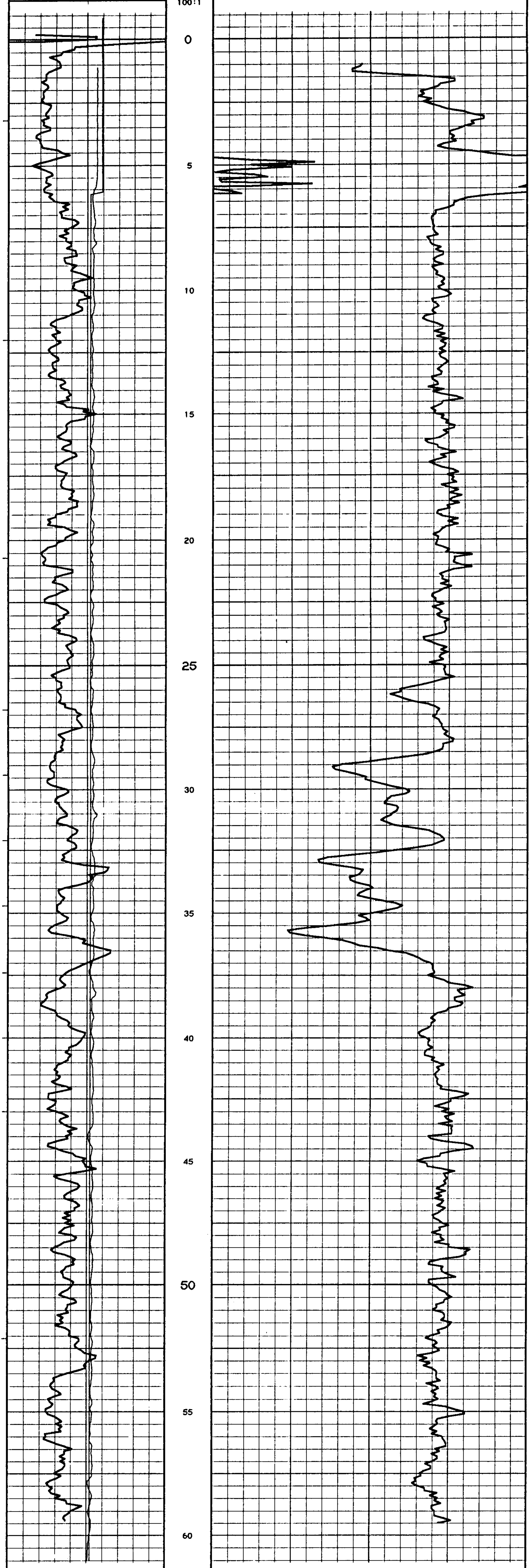
CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM.
RECORDED ON 6-SEP-1993 AT 20:05

FILENAME: D03AR10M.CIB RUN ID: MAIN LOG
PLOTTED ON 06-SEP-1993 AT 20:06

↑ MAIN LOG ↑

#879

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 7-SEP-1993 AT 18:55

FILENAME: DD3AR11M.CIB RUN ID: MAIN LOG PLOTTED ON 07-SEP-1993 AT 19:18

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 7-SEP-1993 AT 18:55

FILENAME: DD3AR11M.CIB RUN ID: MAIN LOG PLOTTED ON 07-SEP-1993 AT 18:55

↑ MAIN LOG ↑

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 7-SEP-1993 AT 14:49

FILENAME: DD3AR09M.CIB RUN ID: MAIN LOG PLOTTED ON 07-SEP-1993 AT 15:09

#879

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 7-SEP-1993 AT 14:49

FILENAME: DD3AR09M.CIB RUN ID: MAIN LOG PLOTTED ON 07-SEP-1993 AT 14:49

↑ MAIN LOG ↑

LONG SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T92R-40C
COMPANY:
MANALTA

COMPANY MANALTA
WELL T92R-40C
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	14-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	35.4M	
DEPTH-LOGGER	35.0M	
FIRST READING	35M	
LAST READING	00M	
CASING-DRILLER	18.3M	
CASING-LOGGER	18.3M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	
PH/FLUID LOSS		N/A
SAMPLE SOURCE	N/A	
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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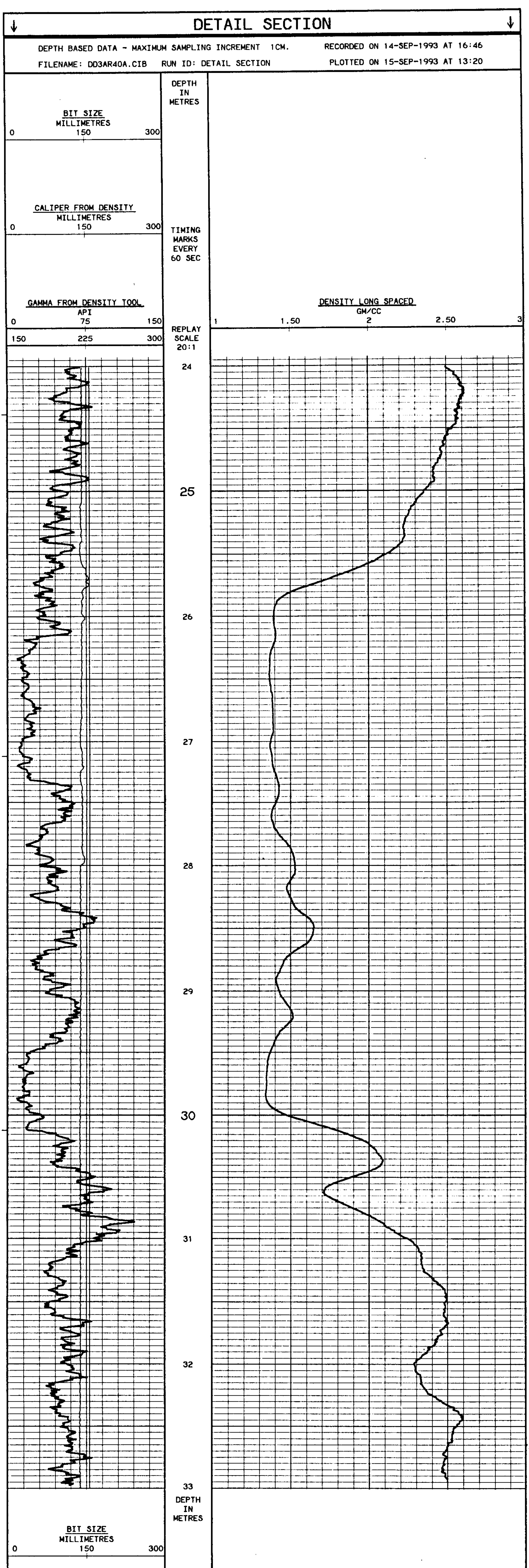
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 14-SEP-1993 AT 16:46
FILENAME: DD3AR40A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-SEP-1993 AT 13:20



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 14-SEP-1993 AT 16:46
FILENAME: DD3AR40A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-SEP-1993 AT 13:19

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 14-SEP-1993 AT 16:15 DATA LAST REPROCESSED: 15-SEP-1993 AT 13:17

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	35.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T92R-40C
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL: T92R-40C
COMPANY: MANALTA

COMPANY MANALTA
WELL T92R-40C
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE	OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	14-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	35.4M			
DEPTH-LOGGER	35.0M			
FIRST READING	35M			
LAST READING	00M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01			
PH/FLUID LOSS	N/A			
SAMPLE SOURCE	N/A			
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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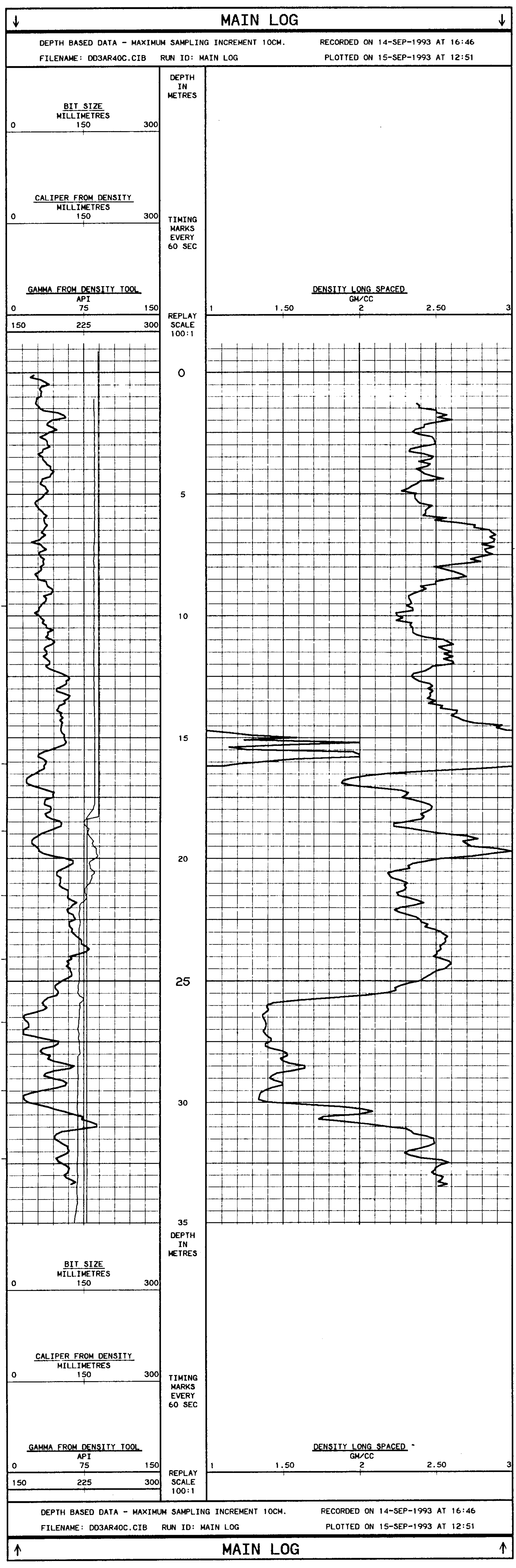
↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 14-SEP-1993 AT 16:46
FILENAME: DD3AR40C.CIB RUN ID: MAIN LOG PLOTTED ON 15-SEP-1993 AT 12:51



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 14-SEP-1993 AT 16:46
FILENAME: DD3AR40C.CIB RUN ID: MAIN LOG PLOTTED ON 15-SEP-1993 AT 12:51

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 14-SEP-1993 AT 16:15

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	35.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T92R-40C
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

COMPANY	MANALTA
WELL	T92R-40C
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T92R-40C
COMPANY:
MANALTA

LOCATION	LSD	SEC	TWP	RGE	OTHER SERVICES
TELKWA					

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	14-SEP-93
RUN NUMBER	THREE
DEPTH-DRILLER	35.4M
DEPTH-LOGGER	35.0M
FIRST READING	35M
LAST READING	00M
CASING-DRILLER	18.3M
CASING-LOGGER	18.3M
BIT SIZE	156MM
HOLE FLUID TYPE	AIR/WATER
DENS./VISC.	1.01
PH/FLUID LOSS	N/A
SAMPLE SOURCE	N/A
RM @ MEAS TEMP	
RMF @ MEAS TEMP	
RMC @ MEAS TEMP	
SOURCE: RMF/RMC	
RM @ BHT	
TIME SINCE CIRC	
MAX REC TEMP	
EQUIPMENT/BASE	V222 RDR
RECORDED BY	B. STEVENSON
WITNESSED BY	T. BRAZZONI
WATER LEVEL	00M

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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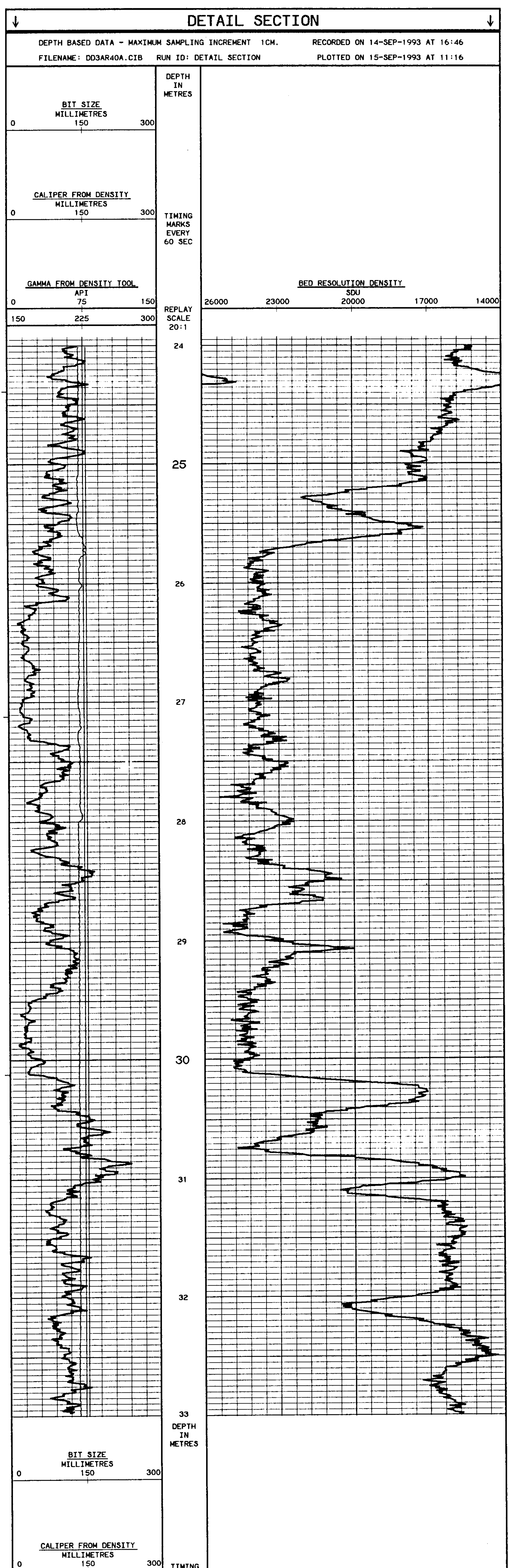
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 14-SEP-1993 AT 16:46
FILENAME: DD3AR40A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-SEP-1993 AT 11:16



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 14-SEP-1993 AT 16:46
FILENAME: DD3AR40A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-SEP-1993 AT 11:16

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 14-SEP-1993 AT 16:15 DATA LAST REPROCESSED: 15-SEP-1993 AT 10:48

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	35.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T92R-40C
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
(LOGGED IN RODS)

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #29
WELL:
T93D-38
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93D-38
FIELD	SITE #29
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION	OTHER SERVICES
TELKWA	

LSD	SEC	TWP	RGE

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	29-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	137.2M			
DEPTH-LOGGER	130M			
FIRST READING	130M			
LAST READING	0M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	95MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN NUMBER	BOREHOLE RECORD BIT	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
ONE	95MM	18.3M	TD	105MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY (LOGGED IN RODS)

NOTE LOGGED THROUGH RODS

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG (RODS) ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 29-SEP-1993 AT 19:09
FILENAME: DD3AD38X.CIB RUN ID: MAIN LOG (RODS) PLOTTED ON 29-SEP-1993 AT 23:13

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 29-SEP-1993 AT 19:09
FILENAME: DD3AD38X.CIB RUN ID: MAIN LOG (RODS) PLOTTED ON 29-SEP-1993 AT 23:13

↑ MAIN LOG (RODS) ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 29-SEP-1993 AT 19:05

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	137.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-38
FIELD	SITE #29
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY DETAIL LOG
(LOGGED IN RODS)

COMPANY	MANALTA
WELL	T93D-38
FIELD	SITE # 29
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

48970

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 29
WELL:
T93D-38
COMPANY:
MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	29-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	137.2M			
DEPTH-LOGGER	130M			
FIRST READING	130M			
LAST READING	0M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	95MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	95MM	18.3M	TD	105MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY DETAIL LOG (LOGGED IN RODS)

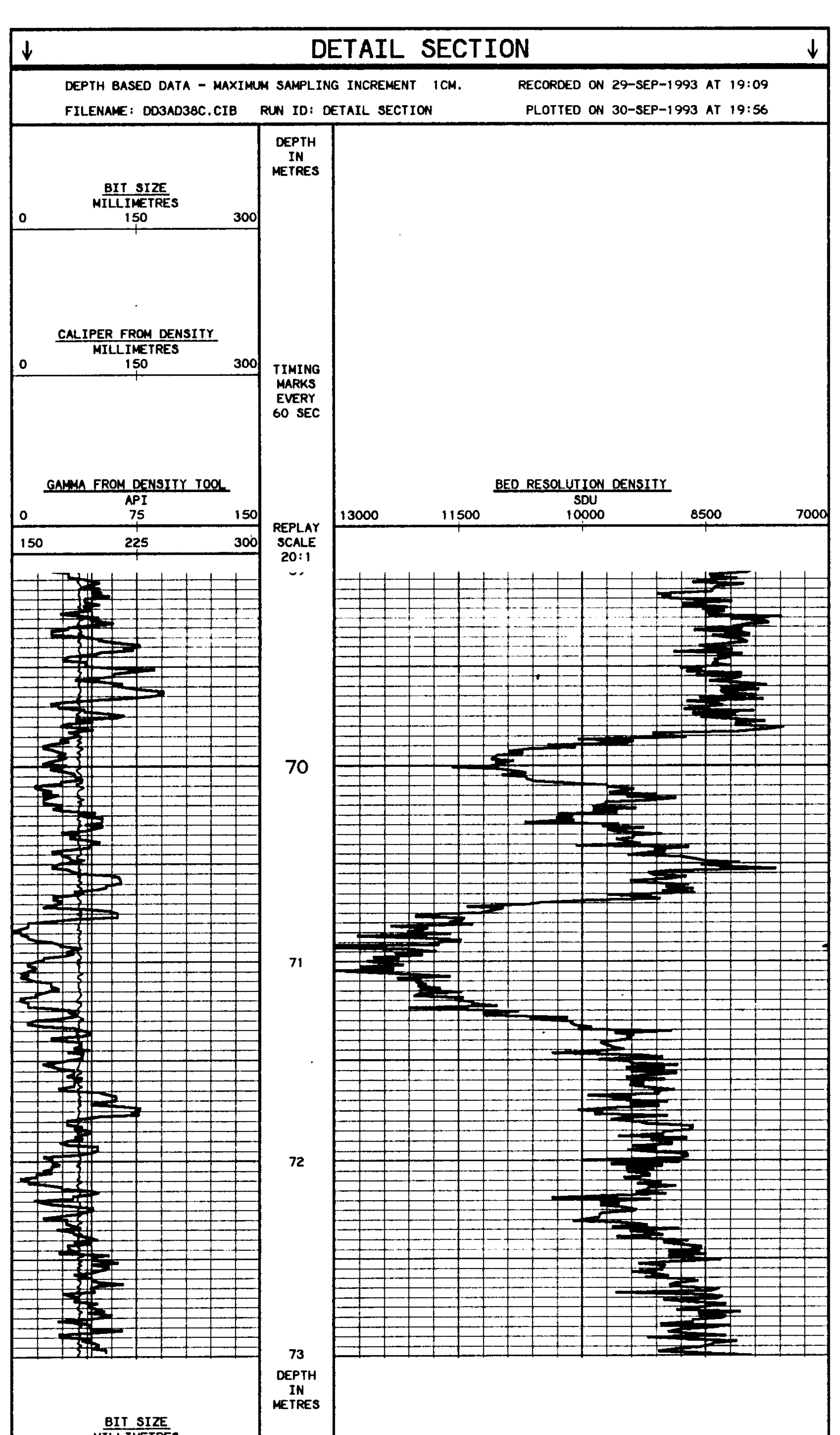
NOTE LOGGED THROUGH RODS

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 29-SEP-1993 AT 19:09
FILENAME: DD3AD38C.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 19:56

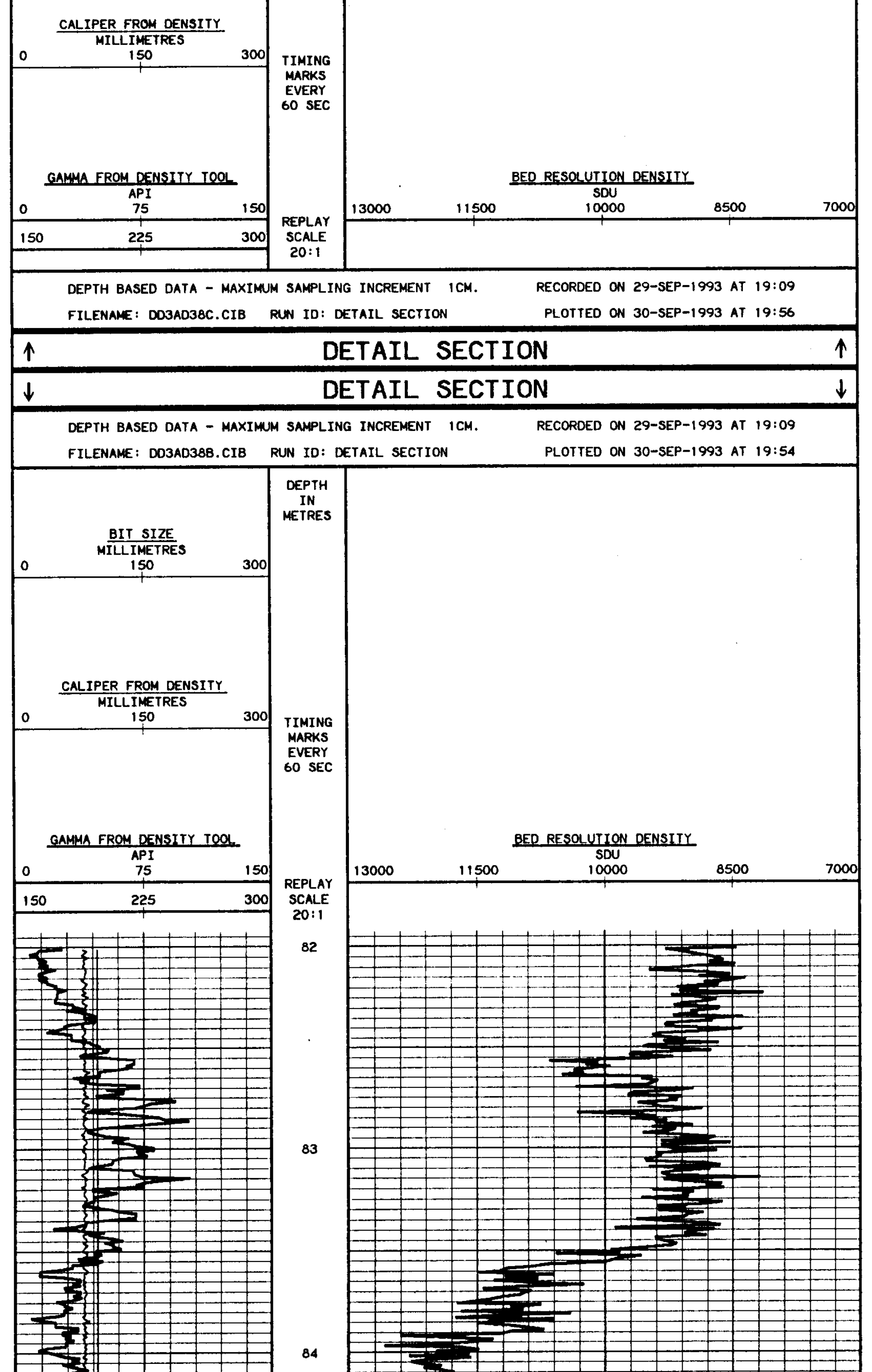


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 29-SEP-1993 AT 19:09
FILENAME: DD3AD38C.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 19:56

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 29-SEP-1993 AT 19:09
FILENAME: DD3AD38B.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 19:54



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 29-SEP-1993 AT 19:09
FILENAME: DD3AD38B.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 19:54

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 29-SEP-1993 AT 19:09
FILENAME: DD3AD38A.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 19:51

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 29-SEP-1993 AT 19:09
FILENAME: DD3AD38A.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 19:51

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 29-SEP-1993 AT 19:05 DATA LAST REPROCESSED: 30-SEP-1993 AT 19:40

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	137.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-38
FIELD	SITE # 29
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #
WELL:
T930-44
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93D-44
FIELD SITE #
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	1-OCT-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	121.9M	
DEPTH-LOGGER	121.3M	
FIRST READING	121.0M	
LAST READING	0M	
CASING-DRILLER	5.5M	
CASING-LOGGER	5.5M	
BIT SIZE	95MM	
HOLE FLUID TYPE	BENTONITE	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	A. LE BRETON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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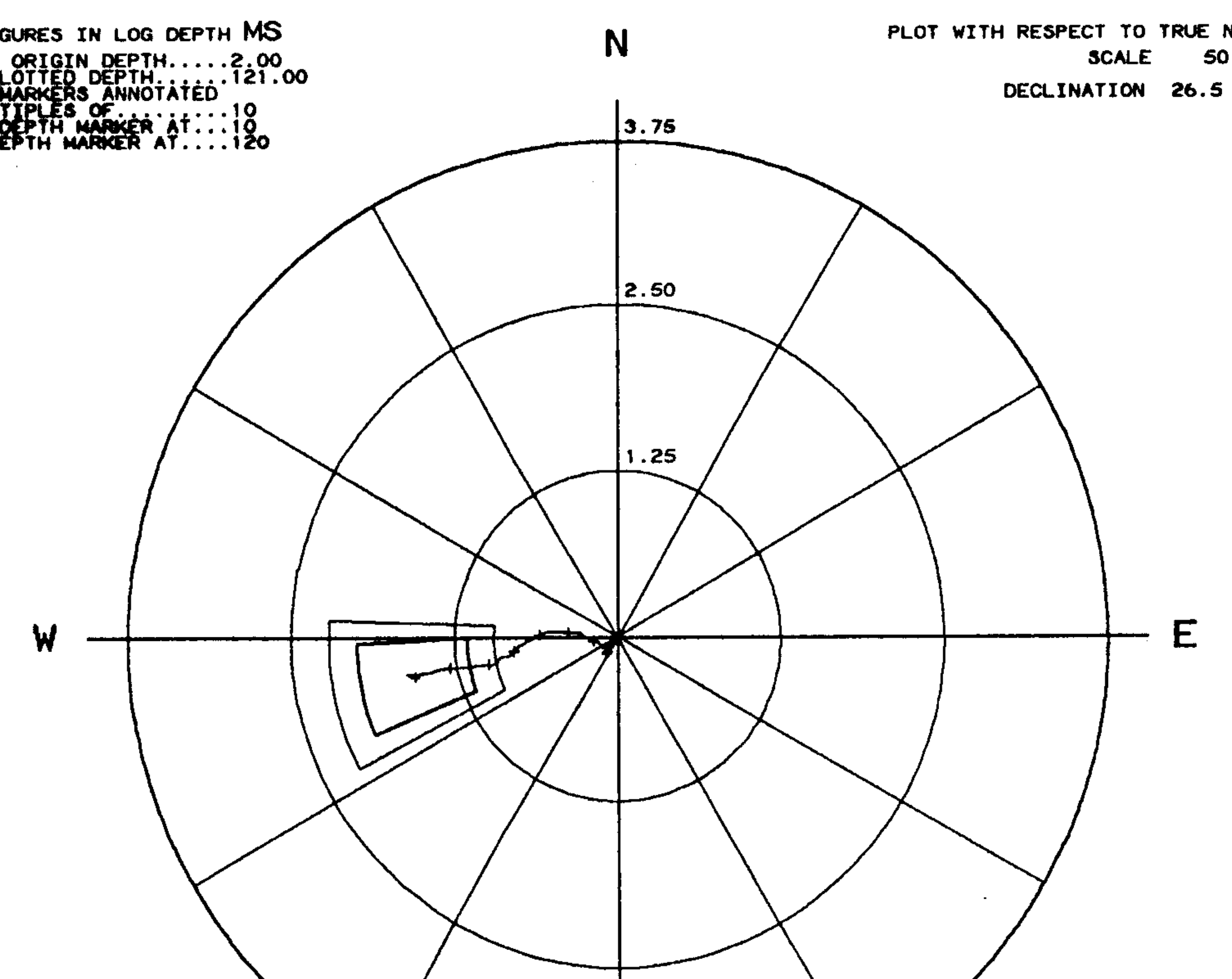
T93D-44                     VERTICALITY DATA LISTING                  DATE PROCESSED:  1-OCT-1993
                   ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH         DATE LOGGED:     1-OCT-1993
     DEPTHS          BOREHOLE   AXIAL CO-ORDS   POLAR     POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
   LOG      TRUE     TILT AZI   NORTH     EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

   3.00     3.00     0.6 207    -0.01     0.00 213    0.01 213    0.01 213    0.00 213    0.01 213    0.01
   4.00     4.00     0.3 253    -0.01    -0.01 228    0.01 229    0.02 227    0.01 229    0.02 228    0.01
   5.00     5.00     0.6 207    -0.01    -0.02 232    0.02 232    0.03 231    0.01 232    0.02 231    0.02
   6.00     6.00     0.4 217    -0.02    -0.02 225    0.03 226    0.04 224    0.02 226    0.03 225    0.02
   7.00     7.00     0.6 174    -0.03    -0.02 218    0.03 218    0.05 217    0.02 218    0.04 217    0.03
   8.00     8.00     0.5 147    -0.03    -0.02 208    0.04 209    0.05 208    0.02 209    0.05 208    0.03
   9.00     9.00     0.5 108    -0.04    -0.01 198    0.04 198    0.06 199    0.02 198    0.05 198    0.03
  10.00    10.00     0.4 130    -0.04    -0.01 189    0.04 189    0.06 190    0.03 189    0.05 189    0.04
  11.00    11.00     0.5 111    -0.05     0.00 182    0.05 181    0.07 183    0.03 181    0.06 182    0.04
  12.00    12.00     0.3 105    -0.05     0.01 174    0.05 173    0.07 176    0.03 173    0.06 175    0.04
  13.00    13.00     0.5   8    -0.05     0.01 167    0.05 166    0.07 171    0.03 166    0.06 169    0.04
  14.00    14.00     0.3 351    -0.04     0.01 165    0.04 163    0.06 169    0.03 164    0.05 167    0.03
  15.00    15.00     0.3 341    -0.04     0.01 166    0.04 164    0.05 171    0.02 165    0.04 168    0.03
  16.00    16.00     0.4 344    -0.03     0.01 166    0.03 164    0.04 172    0.02 165    0.04 169    0.03
  17.00    17.00     0.3 319    -0.02     0.00 168    0.02 165    0.03 174    0.02 166    0.03 171    0.02
  18.00    18.00     0.3 344    -0.02     0.00 177    0.02 174    0.02 181    0.01 175    0.02 178    0.02
  19.00    19.00     0.4 281    -0.02    -0.01 201    0.02 203    0.02 197    0.01 202    0.02 199    0.02
  20.00    20.00     0.5 261    -0.02    -0.01 217    0.02 221    0.03 210    0.02 219    0.03 214    0.02
  21.00    21.00     0.5 244    -0.02    -0.02 225    0.03 229    0.04 217    0.02 227    0.03 222    0.02
  22.00    22.00     0.5 245    -0.02    -0.03 229    0.04 233    0.05 222    0.02 231    0.04 227    0.03
  23.00    23.00     0.4 261    -0.03    -0.04 232    0.04 235    0.06 226    0.03 234    0.05 230    0.04
  24.00    24.00     0.5 252    -0.03    -0.04 236    0.05 238    0.07 230    0.03 237    0.06 233    0.04
  25.00    25.00     0.4 231    -0.03    -0.05 236    0.06 239    0.08 231    0.04 238    0.07 234    0.05
  26.00    26.00     0.4 191    -0.04    -0.05 234    0.07 236    0.09 229    0.04 235    0.08 232    0.05
  27.00    27.00     0.3 200    -0.05    -0.06 230    0.07 232    0.10 226    0.04 231    0.09 229    0.06
  28.00    28.00     0.3 195    -0.05    -0.06 227    0.08 228    0.11 224    0.05 228    0.09 226    0.06
  29.00    29.00     0.4 190    -0.06    -0.06 224    0.08 225    0.12 221    0.05 224    0.10 223    0.07
  30.00    30.00     0.4 199    -0.07    -0.06 222    0.09 223    0.13 220    0.05 223    0.11 222    0.07
  31.00    31.00     0.3 234    -0.07    -0.07 222    0.10 223    0.14 220    0.06 223    0.12 222    0.08
  32.00    32.00     0.4 223    -0.08    -0.07 223    0.11 224    0.15 221    0.06 223    0.13 222    0.08
  33.00    33.00     0.5 214    -0.08    -0.08 222    0.11 223    0.16 221    0.07 223    0.14 222    0.09
  34.00    34.00     0.4 196    -0.09    -0.08 221    0.12 221    0.17 219    0.07 221    0.14 220    0.09
  35.00    35.00     0.3 183    -0.09    -0.08 219    0.12 219    0.17 218    0.07 219    0.15 219    0.10
  36.00    36.00     0.3 175    -0.10    -0.07 217    0.12 217    0.18 217    0.07 217    0.15 217    0.10
  37.00    37.00     0.4 149    -0.11    -0.07 215    0.13 215    0.19 215    0.07 215    0.16 215    0.10
  38.00    38.00     0.5 193    -0.11    -0.07 214    0.13 214    0.19 215    0.07 214    0.16 214    0.10
  39.00    39.00     0.4 245    -0.12    -0.08 214    0.14 214    0.20 214    0.08 214    0.17 214    0.11
  40.00    40.00     0.4 212    -0.12    -0.08 214    0.15 214    0.22 215    0.08 214    0.18 214    0.12
  41.00    41.00     0.5 218    -0.13    -0.09 214    0.16 214    0.23 215    0.09 214    0.19 215    0.12
  42.00    42.00     0.2 188    -0.13    -0.09 214    0.16 214    0.23 215    0.09 214    0.20 214    0.13
  43.00    43.00     0.2 130    -0.14    -0.09 213    0.16 213    0.24 214    0.09 213    0.20 214    0.13
  44.00    44.00     0.3   4    -0.14    -0.09 213    0.16 212    0.24 215    0.09 212    0.20 213    0.13
  45.00    45.00     0.3  26    -0.13    -0.09 213    0.16 212    0.23 215    0.09 213    0.20 214    0.12
  46.00    46.00     0.3   0    -0.13    -0.09 214    0.16 213    0.22 215    0.09 214    0.19 214    0.12
  47.00    47.00     0.1 359    -0.12    -0.09 215    0.15 214    0.22 216    0.09 214    0.18 215    0.12
  48.00    48.00     0.1   6    -0.12    -0.08 215    0.15 215    0.21 216    0.09 215    0.18 215    0.12
  49.00    49.00     0.2  81    -0.12    -0.08 215    0.14 214    0.20 215    0.08 214    0.17 215    0.11
  50.00    50.00     0.2 115    -0.12    -0.08 214    0.14 213    0.20 216    0.09 213    0.17 214    0.11
  51.00    51.00     0.3 347    -0.12    -0.08 214    0.14 213    0.19 216    0.09 213    0.17 214    0.11
  52.00    52.00     0.8 309    -0.11    -0.08 218    0.14 217    0.19 221    0.08 217    0.16 219    0.11
  53.00    53.00     0.6 296    -0.10    -0.09 224    0.14 222    0.19 228    0.09 223    0.16 225    0.11
  54.00    54.00     0.7 308    -0.09    -0.11 229    0.14 227    0.19 234    0.09 228    0.17 231    0.11
  55.00    55.00     0.6 308    -0.08    -0.12 235    0.14 232    0.20 240    0.09 233    0.17 237    0.12
  56.00    56.00     0.7 310    -0.07    -0.13 240    0.15 237    0.20 246    0.10 238    0.17 242    0.12
  57.00    57.00     0.7 327    -0.07    -0.14 244    0.15 241    0.20 251    0.10 243    0.18 247    0.12
  58.00    58.00     0.8 315    -0.05    -0.14 249    0.15 246    0.21 256    0.10 247    0.18 252    0.13
  59.00    59.00     1.1 299    -0.05    -0.16 254    0.16 250    0.22 261    0.11 252    0.19 257    0.14
  60.00    60.00     1.0 289    -0.04    -0.17 257    0.18 254    0.23 264    0.12 255    0.20 260    0.15
  61.00    61.00     1.0 284    -0.03    -0.19 260    0.19 256    0.25 267    0.14 258    0.22 263    0.17
  62.00    62.00     1.1 294    -0.03    -0.21 263    0.21 259    0.27 270    0.15 261    0.24 266    0.18
  63.00    63.00     1.0 312    -0.02    -0.23 266    0.23 262    0.29 272    0.17 264    0.26 269    0.20
  64.00    64.00     1.1 306    -0.01    -0.24 269    0.24 265    0.31 275    0.18 267    0.27 271    0.21
  65.00    65.00     1.3 309     0.01    -0.26 271    0.26 268    0.32 277    0.19 269    0.29 274    0.23
  66.00    66.00     1.0 300     0.02    -0.27 274    0.27 270    0.34 279    0.21 272    0.31 276    0.24
  67.00    67.00     1.1 304     0.03    -0.29 276    0.29 272    0.36 281    0.22 274    0.32 278    0.25
  68.00    68.00     1.3 277     0.04    -0.31 277    0.31 273    0.38 282    0.24 275    0.35 279    0.27
  69.00    69.00     1.2 266     0.04    -0.33 276    0.33 273    0.41 281    0.26 275    0.37 278    0.30
  70.00    70.00     1.3 262     0.04    -0.35 276    0.36 273    0.44 280    0.28 274    0.40 278    0.32
  71.00    71.00     1.3 268     0.04    -0.38 275    0.38 273    0.46 280    0.30 274    0.42 277    0.34
  72.00    72.00     1.5 274     0.04    -0.40 275    0.40 273    0.49 279    0.32 274    0.45 277    0.36
  73.00    72.99     1.3 271     0.04    -0.42 276    0.43 273    0.52 279    0.34 274    0.47 277    0.38
  74.00    73.99     1.1 277     0.04    -0.45 275    0.45 273    0.54 279    0.35 274    0.49 277    0.40
  75.00    74.99     1.4 270     0.04    -0.47 275    0.47 273    0.57 279    0.37 274    0.52 277    0.42
  76.00    75.99     1.4 270     0.04    -0.49 275    0.49 273    0.59 278    0.39 274    0.54 276    0.44
  77.00    76.99     1.1 263     0.04    -0.51 275    0.51 273    0.62 278    0.41 274    0.57 276    0.46
  78.00    77.99     1.3 254     0.04    -0.53 274    0.53 272    0.64 277    0.43 273    0.59 275    0.48
  79.00    78.99     1.4 260     0.03    -0.56 273    0.56 272    0.67 276    0.45 272    0.61 274    0.50
  80.00    79.99     1.9 265     0.03    -0.58 273    0.58 271    0.70 275    0.47 272    0.64 274    0.53
  81.00    80.99     1.1 236     0.02    -0.61 272    0.61 270    0.72 274    0.49 271    0.67 273    0.55
  82.00    81.99     0.9 227     0.01    -0.62 271    0.62 269    0.74 273    0.50 270    0.68 272    0.56
  83.00    82.99     1.4 228     0.00    -0.64 270    0.64 268    0.76 272    0.51 269    0.70 271    0.57
  84.00    83.99     2.1 249    -0.02    -0.66 268    0.66 267    0.79 270    0.53 268    0.73 269    0.60
  85.00    84.99     2.0 244    -0.03    -0.70 267    0.70 266    0.83 269    0.57 267    0.76 268    0.63
  86.00    85.99     1.4 226    -0.05    -0.72 266    0.72 265    0.86 267    0.59 265    0.79 267    0.66
  87.00    86.99     0.8 260    -0.06    -0.74 265    0.74 264    0.88 267    0.60 265    0.81 266    0.67
  88.00    87.99     0.9 248    -0.07    -0.75 265    0.75 264    0.89 266    0.61 264    0.82 266    0.68
  89.00    88.99     1.1 229    -0.07    -0.76 264    0.77 263    0.91 266    0.62 264    0.84 265    0.69
  90.00    89.99     1.5 221    -0.09    -0.78 263    0.78 262    0.93 265    0.64 263    0.86 264    0.71
  91.00    90.99     1.8 218    -0.11    -0.80 262    0.80 261    0.96 263    0.65 262    0.88 263    0.73
  92.00    91.99     1.7 218    -0.13    -0.82 261    0.83 260    0.98 262    0.67 260    0.90 261    0.75
  93.00    92.99     1.0 255    -0.15    -0.83 260    0.84 259    1.00 261    0.69 260    0.92 261    0.77
  94.00    93.99     1.2 262    -0.15    -0.85 260    0.86 259    1.02 261    0.70 260    0.94 261    0.78
  95.00    94.99     1.2 263    -0.15    -0.87 260    0.89 259    1.05 261    0.72 260    0.97 261    0.80
  96.00    95.99     1.2 255    -0.16    -0.89 260    0.91 259    1.07 261    0.74 260    0.99 261    0.82
  97.00    96.99     1.1 221    -0.17    -0.91 260    0.93 259    1.10 261    0.76 259    1.01 260    0.84
  98.00    97.99     1.5 218    -0.19    -0.93 259    0.95 258    1.12 260    0.77 258    1.03 259    0.86
  99.00    98.99     1.3 239    -0.20    -0.94 258    0.96 257    1.14 259    0.79 258    1.05 258    0.88
 100.00    99.99     1.7 264    -0.21    -0.96 258    0.99 257    1.17 259    0.81 257    1.08 258    0.90
 101.00   100.99     1.5 262    -0.21    -0.99 258    1.01 257    1.20 259    0.83 258    1.11 258    0.92
 102.00   101.99     1.7 267    -0.21    -1.02 258    1.04 258    1.23 259    0.86 258    1.14 259    0.95
 103.00   102.99     1.5 266    -0.22    -1.05 258    1.07 258    1.26 259    0.88 258    1.17 259    0.98
 104.00   103.99     1.5 265    -0.22    -1.08 259    1.10 258    1.29 259    0.91 258    1.20 259    1.00
 105.00   104.99     1.1 266    -0.22    -1.10 259    1.12 258    1.32 259    0.92 258    1.22 259    1.02
 106.00   105.99     1.4 270    -0.23    -1.12 259    1.15 258    1.35 259    0.94 258    1.25 259    1.05
 107.00   106.98     1.7 267    -0.23    -1.15 259    1.17 258    1.38 260    0.97 259    1.28 259    1.07
 108.00   107.98     2.2 262    -0.23    -1.19 259    1.21 259    1.42 260    1.00 259    1.31 259    1.10
 109.00   108.98     1.9 263    -0.23    -1.22 259    1.24 259    1.45 260    1.03 259    1.35 260    1.14
 110.00   109.98     1.9 262    -0.23    -1.25 259    1.28 259    1.49 260    1.06 259    1.38 260    1.17
 111.00   110.98     2.0 267    -0.24    -1.29 260    1.31 259    1.53 260    1.09 259    1.42 260    1.20
 112.00   111.98     2.4 263    -0.24    -1.32 260    1.34 259    1.57 260    1.12 259    1.46 260    1.23
 113.00   112.98     2.6 255    -0.25    -1.36 260    1.39 259    1.61 260    1.16 259    1.50 260    1.27
 114.00   113.98     2.5 254    -0.26    -1.41 259    1.43 259    1.66 260    1.20 259    1.54 260    1.32
 115.00   114.98     2.4 260    -0.27    -1.45 259    1.47 259    1.71 260    1.24 259    1.59 260    1.36
 116.00   115.98     2.1 261    -0.28    -1.49 259    1.51 259    1.75 260    1.28 259    1.63 260    1.40
 117.00   116.98     2.1 269    -0.28    -1.53 260    1.55 259    1.79 260    1.31 259    1.67 260    1.43
 118.00   117.98     1.9 267    -0.28    -1.56 260    1.58 259    1.83 260    1.34 259    1.71 260    1.46
 119.00   118.98     1.5 268    -0.29    -1.59 260    1.61 259    1.86 260    1.37 260    1.74 260    1.49
 120.00   119.98     1.7 262    -0.29    -1.62 260    1.64 260    1.89 261    1.39 260    1.77 260    1.52
 121.00   120.86 ****** ***    -0.31    -1.55 259    1.58 259    1.83 259    1.33 259    1.71 259    1.46
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....2.00
LAST PLOTTED DEPTH......121.00
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....120

PLOT WITH RESPECT TO TRUE NORTH
SCALE 50:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

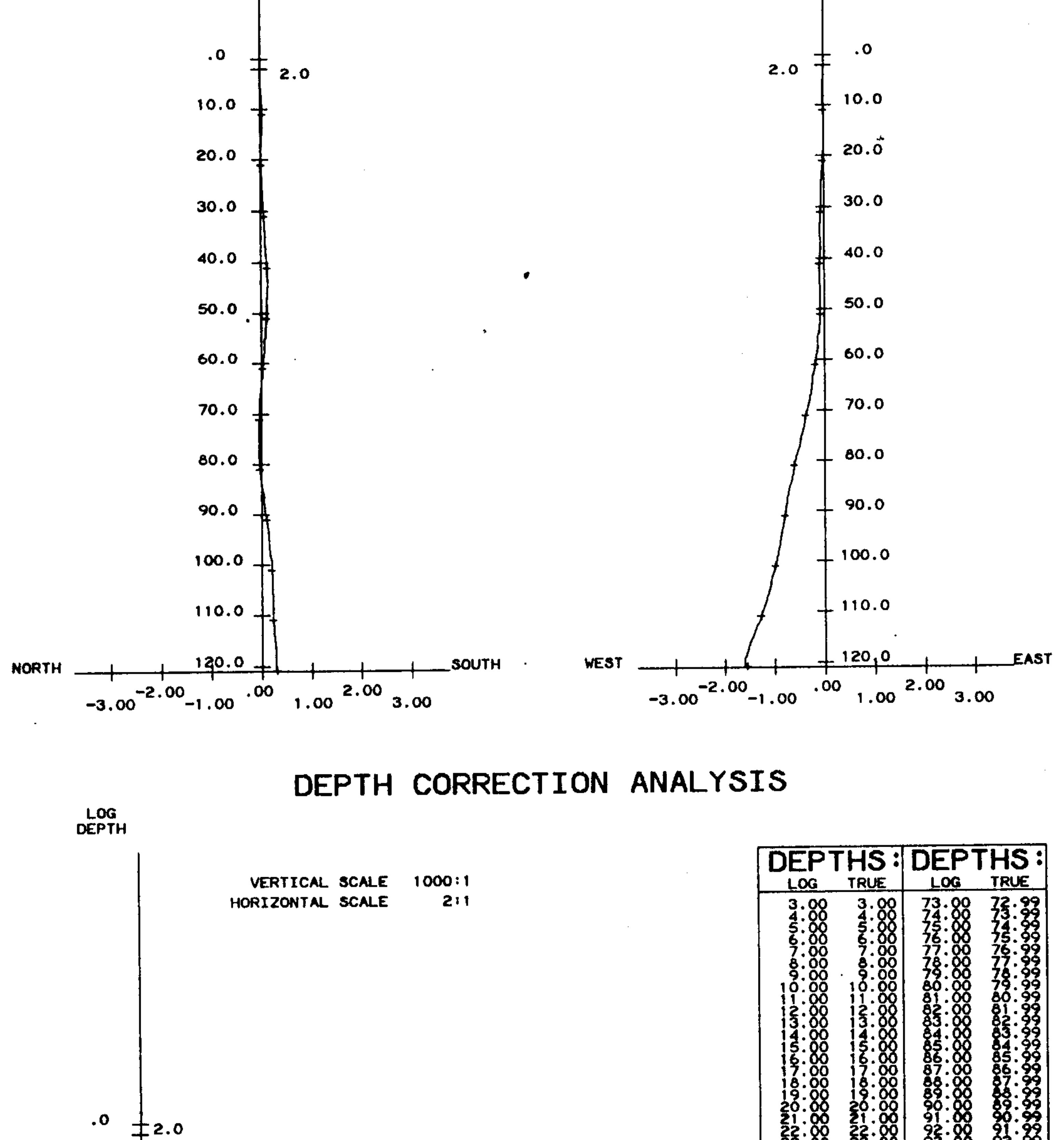
THE LAST PLOTTED DEPTH IS AT .31 MS SOUTH, 1.55 MS WEST IE, 1.58 MS FROM THE ORIGIN, 259 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

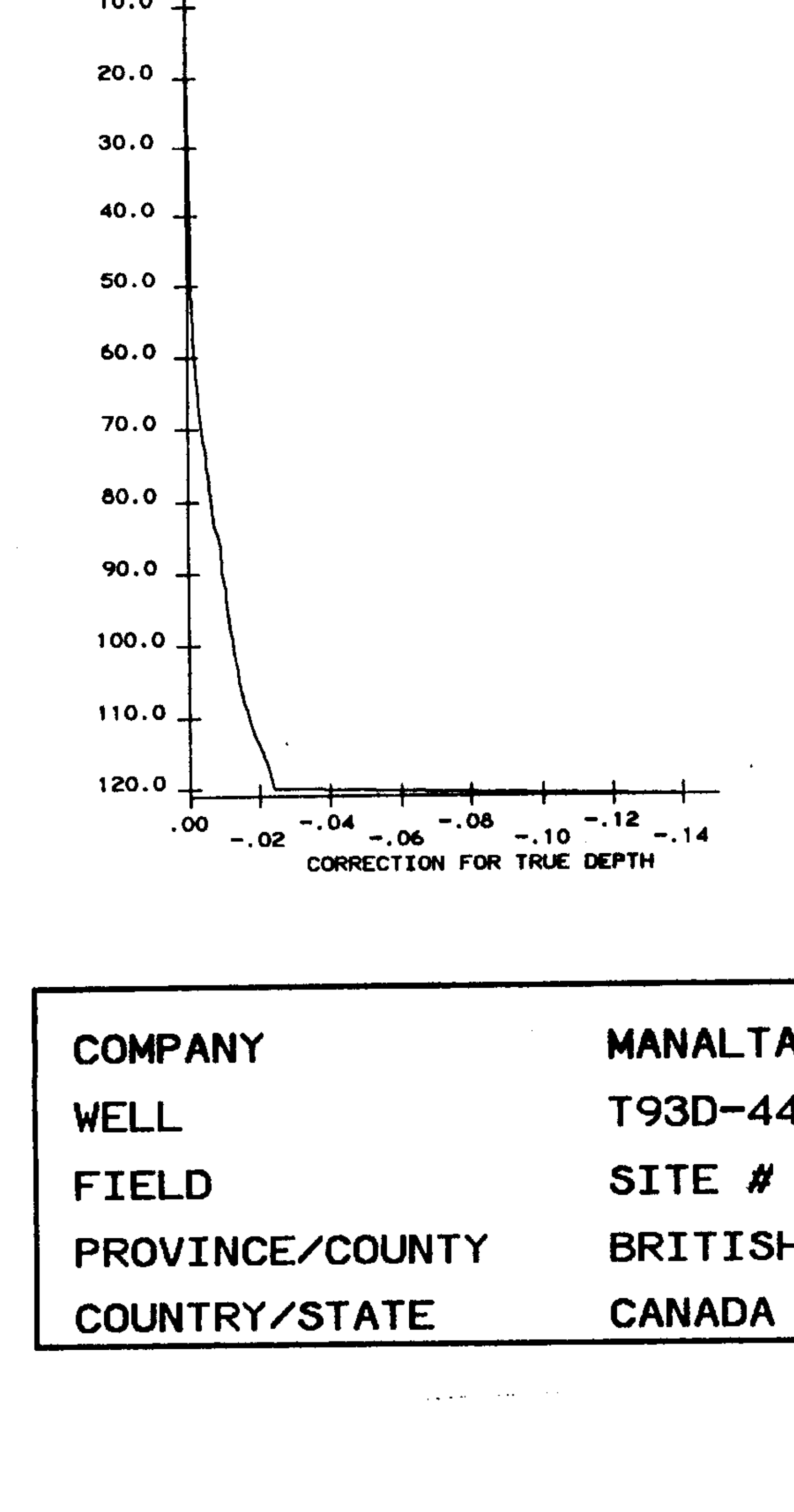
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 100:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 2:1



DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE
3.00	3.00	73.00	72.99
4.00	4.00	74.00	73.99
5.00	5.00	75.00	74.99
6.00	6.00	76.00	75.99
7.00	7.00	77.00	76.99
8.00	8.00	78.00	77.99
9.00	9.00	79.00	78.99
10.00	10.00	80.00	79.99
11.00	11.00	81.00	80.99
12.00	12.00	82.00	81.99
13.00	13.00	83.00	82.99
14.00	14.00	84.00	83.99
15.00	15.00	85.00	84.99
16.00	16.00	86.00	85.99
17.00	17.00	87.00	86.99
18.00	18.00	88.00	87.99
19.00	19.00	89.00	88.99
20.00	20.00	90.00	89.99
21.00	21.00	91.00	90.99
22.00	22.00	92.00	91.99
23.00	23.00	93.00	92.99
24.00	24.00	94.00	93.99
25.00	25.00	95.00	94.99
26.00	26.00	96.00	95.99
27.00	27.00	97.00	96.99
28.00	28.00	98.00	97.99
29.00	29.00	99.00	98.99
30.00	30.00	100.00	99.99
31.00	31.00	101.00	100.99
32.00	32.00	102.00	101.99
33.00	33.00	103.00	102.99
34.00	34.00	104.00	103.99
35.00	35.00	105.00	104.99
36.00	36.00	106.00	105.99
37.00	37.00	107.00	106.98
38.00	38.00	108.00	107.98
39.00	39.00	109.00	108.98
40.00	40.00	110.00	109.98
41.00	41.00	111.00	110.98
42.00	42.00	112.00	111.98
43.00	43.00	113.00	112.98
44.00	44.00	114.00	113.98
45.00	45.00	115.00	114.98
46.00	46.00	116.00	115.98
47.00	47.00	117.00	116.98
48.00	48.00	118.00	117.98
49.00	49.00	119.00	118.98
50.00	50.00	120.00	119.98
51.00	51.00	121.00	120.86
52.00	52.00		
53.00	53.00		
54.00	54.00		
55.00	55.00		
56.00	56.00		
57.00	57.00		
58.00	58.00		
59.00	59.00		
60.00	60.00		
61.00	61.00		
62.00	62.00		
63.00	63.00		
64.00	64.00		
65.00	65.00		
66.00	66.00		
67.00	67.00		
68.00	68.00		
69.00	69.00		
70.00	70.00		
71.00	71.00		
72.00	72.00		

COMPANY	MANALTA
WELL	T93D-44
FIELD	SITE #
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY MANALTA
WELL T93D-44
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93D-44
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	1-OCT-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	121.9M			
DEPTH-LOGGER	121.3M			
FIRST READING	121.0M			
LAST READING	0M			
CASING-DRILLER	5.5M			
CASING-LOGGER	5.5M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	95MM	5.5M	TD	105MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 1-OCT-1993 AT 4:49
FILENAME: DD3AD44M.CIB RUN ID: MAIN LOG PLOTTED ON 01-OCT-1993 AT 18:20

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 1-OCT-1993 AT 4:49
FILENAME: DD3AD44M.CIB RUN ID: MAIN LOG PLOTTED ON 01-OCT-1993 AT 18:20

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 01-OCT-1993 AT 02:57

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	121.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-44
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

COMPANY MANALTA
WELL T93D-44
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93D-44
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL, ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	1-OCT-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	121.9M			
DEPTH-LOGGER	121.3M			
FIRST READING	121.0M			
LAST READING	0M			
CASING-DRILLER	5.5M			
CASING-LOGGER	5.5M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.01 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	95MM	5.5M	TD	105MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

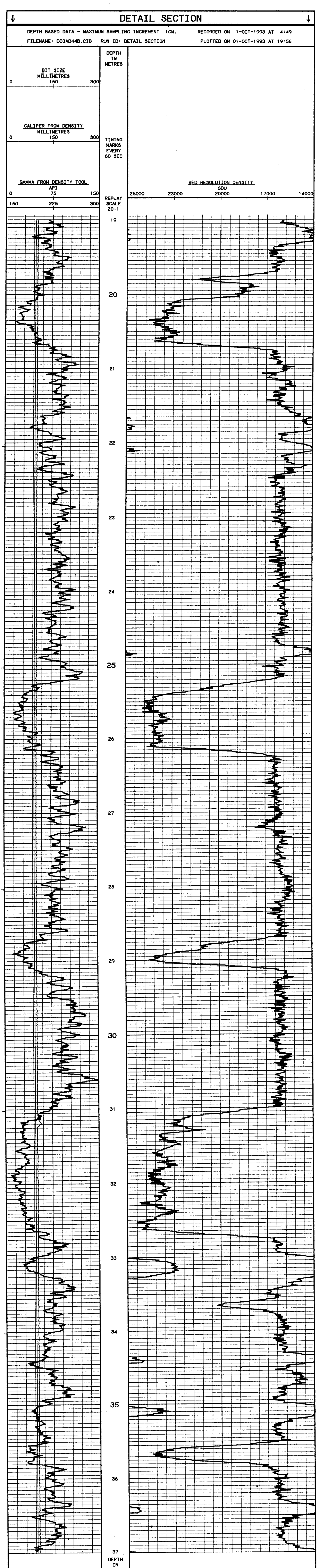
SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-OCT-1993 AT 4:49
FILENAME: DD3AD44B.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-OCT-1993 AT 19:56

BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300
DEPTH IN METRES
TIMING MARKS EVERY 60 SEC
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000



DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-OCT-1993 AT 4:49
FILENAME: DD3AD44B.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-OCT-1993 AT 19:56

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-OCT-1993 AT 4:49
FILENAME: DD3AD44A.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-OCT-1993 AT 19:52

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-OCT-1993 AT 4:49
FILENAME: DD3AD44A.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-OCT-1993 AT 19:52

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 01-OCT-1993 AT 02:57 DATA LAST REPROCESSED: 1-OCT-1993 AT 18:29

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	121.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-44
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93D-44
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA
LOCATION	TELKWA
OTHER SERVICES	VERT

LSD	SEC	TWP	RGE

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL: T93D-44
COMPANY: MANALTA

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	1-OCT-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	121.9M			
DEPTH-LOGGER	121.3M			
FIRST READING	121.0M			
LAST READING	0M			
CASING-DRILLER	5.5M			
CASING-LOGGER	5.5M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	95MM	5.5M	TD	105MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-OCT-1993 AT 4:49
FILENAME: DD3AD44B.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-OCT-1993 AT 18:39

DEPTH IN METRES

BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300
REPLAY SCALE 20:1
DENSITY LONG SPACED GM/CC 1 1.50 2 2.50 3

BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300
REPLAY SCALE 20:1
DENSITY LONG SPACED GM/CC 1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-OCT-1993 AT 4:49
FILENAME: DD3AD44B.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-OCT-1993 AT 18:36

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-OCT-1993 AT 4:49
FILENAME: DD3AD44A.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-OCT-1993 AT 18:36

DEPTH IN METRES

BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300
REPLAY SCALE 20:1
DENSITY LONG SPACED GM/CC 1 1.50 2 2.50 3

BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300
REPLAY SCALE 20:1
DENSITY LONG SPACED GM/CC 1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-OCT-1993 AT 4:49
FILENAME: DD3AD44A.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-OCT-1993 AT 18:31

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 01-OCT-1993 AT 02:57 DATA LAST REPROCESSED: 1-OCT-1993 AT 18:29

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	121.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-44
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION	TELKWA
PRVNC/CO.	BRITISH COLUMBIA
FIELD	SITE # 123
WELL:	
T93D-45	
COMPANY:	
MANALTA	

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

#879

COMPANY	MANALTA
WELL	T93D-45
FIELD	SITE # 123
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	3-OCT-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	143.2M			
DEPTH-LOGGER	142.8M			
FIRST READING	142.5M			
LAST READING	0M			
CASING-DRILLER	42.7M			
CASING-LOGGER	42.5M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.02 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	95MM	42.7M	TD	105MM	N/A	SURFACE	42.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 3-OCT-1993 AT 0:54
FILENAME: DD3AD45A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:08

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 3-OCT-1993 AT 0:54
FILENAME: DD3AD45A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:05

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 03-OCT-1993 AT 00:40 DATA LAST REPROCESSED: 3-OCT-1993 AT 8:04

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.02	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	42.70
BIT SIZE 3	.00	BIT DEPTH 3	143.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-45
FIELD	SITE # 123
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

#829

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

#829

LOCATION	TELKWA
PRVNC/CO.	BRITISH COLUMBIA
FIELD	SITE # 123
WELL:	T93D-45
COMPANY:	MANALTA

COMPANY	MANALTA
WELL	T93D-45
FIELD	SITE # 123
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE
.			

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	3-OCT-93				
RUN NUMBER	FOUR				
DEPTH-DRILLER	143.2M				
DEPTH-LOGGER	142.8M				
FIRST READING	142.5M				
LAST READING	0M				
CASING-DRILLER	42.7M				
CASING-LOGGER	42.5M				
BIT SIZE	95MM				
HOLE FLUID TYPE	BENTONITE				
DENS./VISC.	1.02	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE					
RM @ MEAS TEMP					
RMF @ MEAS TEMP					
RMC @ MEAS TEMP					
SOURCE: RMF/RMC					
RM @ BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	A. LE BRETON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	00M				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	95MM	42.7M	TD	105MM	N/A	SURFACE	42.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 3-OCT-1993 AT 0:54
FILENAME: DD3AD45A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:11

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 3-OCT-1993 AT 0:54
FILENAME: DD3AD45A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:11

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 03-OCT-1993 AT 00:40 DATA LAST REPROCESSED: 3-OCT-1993 AT 8:04

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.02	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	42.70
BIT SIZE 3	.00	BIT DEPTH 3	143.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-45
FIELD	SITE # 123
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY	MANALTA
WELL	T93D-45
FIELD	SITE # 123
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 123
WELL:
T93D-45
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	3-OCT-93				
RUN NUMBER	TWO				
DEPTH-DRILLER	143.2M				
DEPTH-LOGGER	142.8M				
FIRST READING	142.5M				
LAST READING	0M				
CASING-DRILLER	42.7M				
CASING-LOGGER	42.5M				
BIT SIZE	95MM				
HOLE FLUID TYPE	BENTONITE				
DENS./VISC.	1.02	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE					
RM @ MEAS TEMP					
RMF @ MEAS TEMP					
RMC @ MEAS TEMP					
SOURCE: RMF/RMC					
RM @ BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	A. LE BRETON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	0OM				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	95MM	42.7M	TD	105MM	N/A	SURFACE	42.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 3-OCT-1993 AT 0:54
FILENAME: DD3AD45M.CIB RUN ID: MAIN LOG PLOTTED ON 03-OCT-1993 AT 07:57

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 3-OCT-1993 AT 0:54
FILENAME: DD3AD45M.CIB RUN ID: MAIN LOG PLOTTED ON 03-OCT-1993 AT 07:57

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 03-OCT-1993 AT 00:40

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.02	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	42.70
BIT SIZE 3	.00	BIT DEPTH 3	143.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-45
FIELD	SITE # 123
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93D-45
FIELD	SITE # 123
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 123
WELL:
T93D-45
COMPANY:
MANALTA

LOCATION	OTHER SERVICES
TELKWA	CCS

LSD	SEC	TWP	RGE

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	3-OCT-93
RUN NUMBER	ONE
DEPTH-DRILLER	143.2M
DEPTH-LOGGER	142.8M
FIRST READING	142.5M
LAST READING	OM
CASING-DRILLER	42.7M
CASING-LOGGER	42.5M
BIT SIZE	95MM
HOLE FLUID TYPE	BENTONITE
DENS./VISC.	1.02 N/A
PH/FLUID LOSS	N/A N/A
SAMPLE SOURCE	
RM @ MEAS TEMP	
RMF @ MEAS TEMP	
RMC @ MEAS TEMP	
SOURCE: RMF/RMC	
RM @ BHT	
TIME SINCE CIRC	
MAX REC TEMP	
EQUIPMENT/BASE	V222 RDR
RECORDED BY	A. LE BRETON
WITNESSED BY	T. BRAZZONI
WATER LEVEL	OOM

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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T93D-45                         VERTICALITY DATA LISTING                      DATE PROCESSED:  3-OCT-1993
                      ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH             DATE LOGGED:     3-OCT-1993
     DEPTHS        BOREHOLE  AXIAL CO-ORDS    POLAR      POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
    LOG     TRUE  TILT AZI   NORTH     EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

   3.00     3.00   1.7   2    0.00     0.00 238    0.00 237    0.00 240    0.00 238    0.00 239    0.00
   4.00     4.00   2.0   6    0.01     0.00   4    0.01   3    0.01   4    0.01   3    0.01   4    0.01
   5.00     5.00   2.1 282   -0.01    -0.01 241    0.01 240    0.01 241    0.01 241    0.01 241    0.01
   6.00     6.00   1.7 273    0.00    -0.04 265    0.04 265    0.04 265    0.04 265    0.04 265    0.04
   7.00     7.00   1.7 195    0.00    -0.06 268    0.06 268    0.06 268    0.05 268    0.06 268    0.05
   8.00     8.00   1.0 124   -0.01    -0.05 256    0.05 255    0.06 256    0.05 256    0.06 256    0.05
   9.00     9.00   1.3 232   -0.01    -0.06 261    0.06 261    0.07 261    0.05 261    0.06 261    0.06
  10.00    10.00   1.3 172    0.00    -0.05 266    0.06 266    0.06 266    0.05 266    0.06 266    0.05
  11.00    11.00   0.7 198   -0.01    -0.06 258    0.06 258    0.07 259    0.06 258    0.07 258    0.06
  12.00    12.00   0.6  25   -0.02    -0.06 255    0.06 255    0.07 257    0.05 255    0.07 256    0.06
  13.00    13.00   0.6 296   -0.01    -0.06 260    0.06 260    0.07 260    0.05 260    0.06 260    0.06
  14.00    14.00   0.6 288   -0.01    -0.06 261    0.06 261    0.07 261    0.06 261    0.07 261    0.06
  15.00    15.00   0.7 310    0.00    -0.06 266    0.06 266    0.07 264    0.06 266    0.07 265    0.06
  16.00    16.00   0.9  21    0.00    -0.06 273    0.06 275    0.07 270    0.05 274    0.07 272    0.06
  17.00    17.00   0.9  23    0.02    -0.06 287    0.06 289    0.07 283    0.06 288    0.07 285    0.06
  18.00    18.00   1.1 333    0.03    -0.06 294    0.07 297    0.07 290    0.06 296    0.07 292    0.06
  19.00    19.00   0.9 282    0.03    -0.06 297    0.07 300    0.08 293    0.06 298    0.08 295    0.07
  20.00    20.00   0.4  35    0.04    -0.06 301    0.07 304    0.08 296    0.06 303    0.08 298    0.07
  21.00    21.00   0.8 133    0.04    -0.06 304    0.07 308    0.08 298    0.06 306    0.07 301    0.06
  22.00    22.00   1.3  91    0.03    -0.06 300    0.07 304    0.08 294    0.06 302    0.07 297    0.06
  23.00    23.00   1.7  56    0.04    -0.06 304    0.07 308    0.08 298    0.06 306    0.08 301    0.07
  24.00    23.99   1.8 306    0.05    -0.07 308    0.09 311    0.10 303    0.08 309    0.10 306    0.08
  25.00    24.99   1.4 202    0.05    -0.10 296    0.11 299    0.12 292    0.09 297    0.11 294    0.10
  26.00    25.99   1.5 343    0.04    -0.10 293    0.11 296    0.13 290    0.10 295    0.12 291    0.10
  27.00    26.99   1.7 179    0.04    -0.11 289    0.11 292    0.13 285    0.10 291    0.12 287    0.10
  28.00    27.99   2.0 105    0.03    -0.10 288    0.11 291    0.12 284    0.09 290    0.11 286    0.10
  29.00    28.99   1.9  38    0.04    -0.10 292    0.10 295    0.12 288    0.09 294    0.11 290    0.10
  30.00    29.99   1.9 290    0.04    -0.09 295    0.10 298    0.11 291    0.08 297    0.10 293    0.09
  31.00    30.99   2.1 154    0.03    -0.10 289    0.10 292    0.12 285    0.09 291    0.11 287    0.10
  32.00    31.99   1.9 138    0.02    -0.11 279    0.11 282    0.12 275    0.09 281    0.11 277    0.10
  33.00    32.99   1.7 330    0.00    -0.10 270    0.10 274    0.12 266    0.09 272    0.11 268    0.10
  34.00    33.99   1.6 307    0.02    -0.12 281    0.12 284    0.13 277    0.10 282    0.13 279    0.11
  35.00    34.99   1.9  71    0.03    -0.12 283    0.13 286    0.14 280    0.11 285    0.13 282    0.12
  36.00    35.99   2.2  93    0.02    -0.13 279    0.13 282    0.15 276    0.12 280    0.14 277    0.12
  37.00    36.99   2.2 218    0.01    -0.13 272    0.13 275    0.15 269    0.12 274    0.14 271    0.13
  38.00    37.99   2.3 326    0.02    -0.15 279    0.15 281    0.17 276    0.13 280    0.16 277    0.14
  39.00    38.99   2.1  67    0.05    -0.14 291    0.15 293    0.17 288    0.13 292    0.16 289    0.14
  40.00    39.99   1.9 224    0.06    -0.16 291    0.17 293    0.19 289    0.15 292    0.18 290    0.16
  41.00    40.98   1.5 333    0.07    -0.17 291    0.18 293    0.20 289    0.16 292    0.19 290    0.17
  42.00    41.98   1.4 325    0.08    -0.18 294    0.20 296    0.23 292    0.18 295    0.21 293    0.19
  43.00    42.98   1.1   6    0.10    -0.18 299    0.21 300    0.24 297    0.18 300    0.22 298    0.20
  44.00    43.98   1.1   7    0.12    -0.18 304    0.22 306    0.25 302    0.19 305    0.23 303    0.20
  45.00    44.98   1.0 331    0.14    -0.18 307    0.23 309    0.26 305    0.20 308    0.24 306    0.21
  46.00    45.98   2.2 336    0.16    -0.20 309    0.26 311    0.29 307    0.22 310    0.27 308    0.24
  47.00    46.98   1.9 347    0.20    -0.21 313    0.29 315    0.33 312    0.25 314    0.31 313    0.27
  48.00    47.98   1.4 340    0.23    -0.22 317    0.32 318    0.36 315    0.27 317    0.34 316    0.29
  49.00    48.98   1.6 339    0.25    -0.23 318    0.34 319    0.38 317    0.29 319    0.36 318    0.32
  50.00    49.98   2.0 338    0.28    -0.24 320    0.37 321    0.42 319    0.32 320    0.39 319    0.35
  51.00    50.98   2.1 339    0.32    -0.25 321    0.40 322    0.46 320    0.35 322    0.43 321    0.38
  52.00    51.98   2.2 349    0.35    -0.26 323    0.44 324    0.49 323    0.38 324    0.47 323    0.41
  53.00    52.98   2.1 356    0.39    -0.27 326    0.47 326    0.53 325    0.42 326    0.50 325    0.44
  54.00    53.98   2.1  10    0.43    -0.26 328    0.50 329    0.57 328    0.44 329    0.54 328    0.47
  55.00    54.98   1.8  14    0.46    -0.26 331    0.53 331    0.59 330    0.46 331    0.56 331    0.50
  56.00    55.98   1.1  20    0.49    -0.25 333    0.55 333    0.61 333    0.48 333    0.58 333    0.51
  57.00    56.98   2.4 337    0.51    -0.25 334    0.57 334    0.64 333    0.50 334    0.60 333    0.53
  58.00    57.98   1.6 345    0.54    -0.26 334    0.60 335    0.68 334    0.53 335    0.64 334    0.56
  59.00    58.98   1.6 339    0.57    -0.27 335    0.63 335    0.71 334    0.55 335    0.67 335    0.59
  60.00    59.98   2.0 336    0.60    -0.28 335    0.66 335    0.74 334    0.58 335    0.70 335    0.62
  61.00    60.97   1.9 341    0.63    -0.29 335    0.69 335    0.78 335    0.61 335    0.74 335    0.65
  62.00    61.97   2.3 345    0.66    -0.31 335    0.73 336    0.82 335    0.64 335    0.78 335    0.69
  63.00    62.97   2.5   3    0.70    -0.31 336    0.77 336    0.86 336    0.68 336    0.81 336    0.72
  64.00    63.97   2.4   9    0.74    -0.31 338    0.81 338    0.90 337    0.71 338    0.85 337    0.76
  65.00    64.97   2.5   2    0.79    -0.30 339    0.84 339    0.94 339    0.75 339    0.89 339    0.79
  66.00    65.97   2.6 358    0.83    -0.31 340    0.88 340    0.98 340    0.78 340    0.93 340    0.83
  67.00    66.97   2.5   1    0.87    -0.31 341    0.92 341    1.03 341    0.82 341    0.98 341    0.87
  68.00    67.97   2.4   5    0.91    -0.30 342    0.96 342    1.07 342    0.86 342    1.02 342    0.91
  69.00    68.97   2.7   2    0.96    -0.30 343    1.00 343    1.11 342    0.89 343    1.06 343    0.95
  70.00    69.97   2.5   6    1.00    -0.30 343    1.04 343    1.16 343    0.93 343    1.10 343    0.99
  71.00    70.97   2.4   4    1.04    -0.29 344    1.08 344    1.20 344    0.96 344    1.14 344    1.02
  72.00    71.97   2.4  14    1.08    -0.29 345    1.12 345    1.24 345    1.00 345    1.18 345    1.06
  73.00    72.96   1.9  14    1.12    -0.28 346    1.15 346    1.28 346    1.03 346    1.21 346    1.09
  74.00    73.96   1.1  10    1.14    -0.27 347    1.18 347    1.30 347    1.05 347    1.24 347    1.11
  75.00    74.96   2.6 344    1.17    -0.28 346    1.21 346    1.34 346    1.08 346    1.27 346    1.14
  76.00    75.96   1.7 349    1.21    -0.29 347    1.24 347    1.38 347    1.11 347    1.31 347    1.18
  77.00    76.96   2.4 337    1.24    -0.30 346    1.28 346    1.41 346    1.14 346    1.34 346    1.21
  78.00    77.96   2.6 347    1.28    -0.31 346    1.32 346    1.46 346    1.18 346    1.39 346    1.25
  79.00    78.96   2.6 358    1.33    -0.32 347    1.37 346    1.51 347    1.22 346    1.44 347    1.29
  80.00    79.96   2.6   2    1.38    -0.32 347    1.41 347    1.56 347    1.26 347    1.48 347    1.34
  81.00    80.96   2.5   9    1.42    -0.31 348    1.45 348    1.60 348    1.30 348    1.53 348    1.38
  82.00    81.96   2.5  12    1.46    -0.30 348    1.49 348    1.65 348    1.34 348    1.57 348    1.42
  83.00    82.96   2.6 359    1.51    -0.30 349    1.54 349    1.69 349    1.38 349    1.62 349    1.46
  84.00    83.96   2.7 355    1.56    -0.30 349    1.59 349    1.74 349    1.43 349    1.67 349    1.51
  85.00    84.95   2.5   8    1.60    -0.30 349    1.63 349    1.79 349    1.47 349    1.71 349    1.55
  86.00    85.95   2.4  17    1.64    -0.29 350    1.67 350    1.84 350    1.50 350    1.75 350    1.59
  87.00    86.95   1.9  21    1.68    -0.28 351    1.70 350    1.87 351    1.53 350    1.79 351    1.62
  88.00    87.95   1.8 330    1.70    -0.28 351    1.72 351    1.90 351    1.55 351    1.81 351    1.64
  89.00    88.95   1.8 359    1.74    -0.28 351    1.77 351    1.94 351    1.59 351    1.85 351    1.68
  90.00    89.95   2.0 336    1.77    -0.29 351    1.80 351    1.97 351    1.62 351    1.89 351    1.71
  91.00    90.95   2.2 343    1.81    -0.30 350    1.83 350    2.01 351    1.65 350    1.92 351    1.74
  92.00    91.95   2.5 343    1.85    -0.32 350    1.87 350    2.06 350    1.69 350    1.97 350    1.78
  93.00    92.95   2.3 344    1.89    -0.33 350    1.91 350    2.10 350    1.72 350    2.01 350    1.82
  94.00    93.95   1.7 347    1.92    -0.34 350    1.95 350    2.14 350    1.75 350    2.04 350    1.85
  95.00    94.95   1.8 340    1.95    -0.35 350    1.98 350    2.18 350    1.78 350    2.08 350    1.88
  96.00    95.95   2.2 343    1.98    -0.36 350    2.01 350    2.21 350    1.81 350    2.11 350    1.91
  97.00    96.95   2.6 344    2.02    -0.37 350    2.06 350    2.26 350    1.85 350    2.16 350    1.95
  98.00    97.94   2.6 346    2.07    -0.38 349    2.10 349    2.31 350    1.89 349    2.20 350    2.00
  99.00    98.94   2.7 357    2.11    -0.39 350    2.15 350    2.36 350    1.94 350    2.25 350    2.04
 100.00    99.94   2.8   2    2.16    -0.39 350    2.19 350    2.41 350    1.98 350    2.30 350    2.09
 101.00   100.94   2.6  10    2.21    -0.38 350    2.24 350    2.46 350    2.02 350    2.35 350    2.13
 102.00   101.94   2.3  15    2.25    -0.37 351    2.28 351    2.50 351    2.06 351    2.39 351    2.17
 103.00   102.94   2.0  19    2.29    -0.36 351    2.31 351    2.54 351    2.09 351    2.43 351    2.20
 104.00   103.94   1.7  25    2.32    -0.35 351    2.34 351    2.57 352    2.12 351    2.46 351    2.23
 105.00   104.94   1.4  26    2.34    -0.34 352    2.37 352    2.60 352    2.14 352    2.48 352    2.25
 106.00   105.94   1.4  13    2.36    -0.33 352    2.39 352    2.62 352    2.15 352    2.50 352    2.27
 107.00   106.94   1.8  26    2.39    -0.32 352    2.41 352    2.65 353    2.18 352    2.53 352    2.29
 108.00   107.94   2.1  22    2.42    -0.30 353    2.44 353    2.68 353    2.20 353    2.56 353    2.32
 109.00   108.94   1.6  26    2.46    -0.29 353    2.47 353    2.71 353    2.23 353    2.59 353    2.35
 110.00   109.94   1.9   1    2.49    -0.30 353    2.51 353    2.75 353    2.26 353    2.63 353    2.39
 111.00   110.94   2.0 342    2.52    -0.30 353    2.54 353    2.79 353    2.29 353    2.66 353    2.42
 112.00   111.93   2.4 342    2.56    -0.32 353    2.58 353    2.83 353    2.33 353    2.70 353    2.45
 113.00   112.93   2.8 349    2.60    -0.33 353    2.62 353    2.88 353    2.37 353    2.75 353    2.49
 114.00   113.93   2.5 360    2.65    -0.33 353    2.67 353    2.93 353    2.41 353    2.80 353    2.54
 115.00   114.93   2.7   8    2.70    -0.33 353    2.72 353    2.98 353    2.45 353    2.85 353    2.58
 116.00   115.93   2.6  15    2.74    -0.32 353    2.76 353    3.03 353    2.49 353    2.89 353    2.63
 117.00   116.93   1.6 330    2.78    -0.31 354    2.80 354    3.07 354    2.53 354    2.93 354    2.66
 118.00   117.93   1.9 349    2.81    -0.32 354    2.83 354    3.10 354    2.56 354    2.97 354    2.70
 119.00   118.93   2.0 344    2.85    -0.33 353    2.87 353    3.14 353    2.59 353    3.00 353    2.73
 120.00   119.93   2.8 350    2.89    -0.34 353    2.91 353    3.19 353    2.63 353    3.05 353    2.77
 121.00   120.93   2.5 354    2.93    -0.35 353    2.95 353    3.24 353    2.67 353    3.09 353    2.81
 122.00   121.93   2.6 355    2.98    -0.35 353    3.00 353    3.29 353    2.71 353    3.14 353    2.86
 123.00   122.92   2.8   3    3.03    -0.35 353    3.05 353    3.34 353    2.76 353    3.19 353    2.90
 124.00   123.92   2.7  13    3.07    -0.35 354    3.09 354    3.38 354    2.80 354    3.24 354    2.94
 125.00   124.92   2.5  10    3.12    -0.34 354    3.13 354    3.43 354    2.84 354    3.28 354    2.99
 126.00   125.92   3.0   2    3.16    -0.33 354    3.18 354    3.48 354    2.88 354    3.33 354    3.03
 127.00   126.92   2.5 358    3.21    -0.33 354    3.23 354    3.53 354    2.92 354    3.38 354    3.08
 128.00   127.92   2.6   1    3.26    -0.33 354    3.28 354    3.58 354    2.97 354    3.43 354    3.12
 129.00   128.92   2.6   1    3.31    -0.33 354    3.32 354    3.63 354    3.01 354    3.48 354    3.17
 130.00   129.92   2.7   8    3.36    -0.32 354    3.37 354    3.68 355    3.06 354    3.53 355    3.21
 131.00   130.92   2.7  14    3.40    -0.31 355    3.42 355    3.73 355    3.10 355    3.58 355    3.26
 132.00   131.91   2.3  17    3.44    -0.30 355    3.46 355    3.78 355    3.14 355    3.62 355    3.30
 133.00   132.91   2.3  23    3.48    -0.29 355    3.49 355    3.81 355    3.17 355    3.65 355    3.33
 134.00   133.91   2.2  23    3.51    -0.27 356    3.52 355    3.85 356    3.20 355    3.69 356    3.36
 135.00   134.91   2.1  18    3.55    -0.26 356    3.56 356    3.89 356    3.23 356    3.72 356    3.40
 136.00   135.91   2.4  13    3.59    -0.25 356    3.60 356    3.93 356    3.27 356    3.77 356    3.44
 137.00   136.91   2.6  16    3.64    -0.24 356    3.65 356    3.98 356    3.31 356    3.81 356    3.48
 138.00   137.91   2.5  17    3.68    -0.23 356    3.69 356    4.03 357    3.35 356    3.86 357    3.52
 139.00   138.91   2.1  22    3.72    -0.21 357    3.72 357    4.07 357    3.38 357    3.90 357    3.55
 140.00   139.91   1.8  25    3.75    -0.20 357    3.76 357    4.10 357    3.41 357    3.93 357    3.59
 141.00   140.91   1.9  24    3.78    -0.19 357    3.79 357    4.14 357    3.44 357    3.96 357    3.61
 142.00   141.91   1.9  20    3.82    -0.17 357    3.82 357    4.17 357    3.47 357    4.00 357    3.64
 142.40   142.31   2.0  21    3.83    -0.17 358    3.83 357    4.18 358    3.48 357    4.01 358    3.66
```
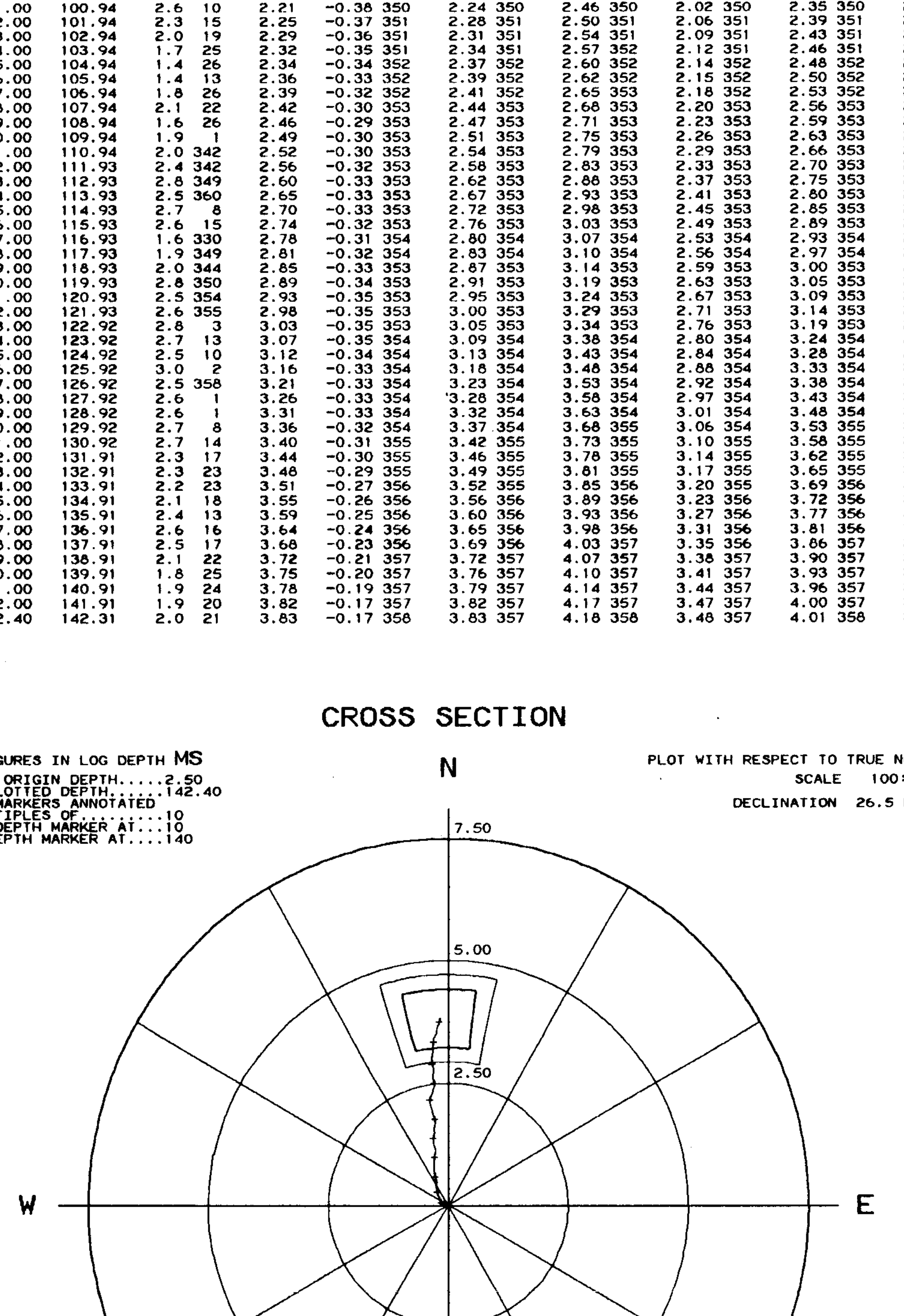

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....2.50
LAST PLOTTED DEPTH......142.40
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....140

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

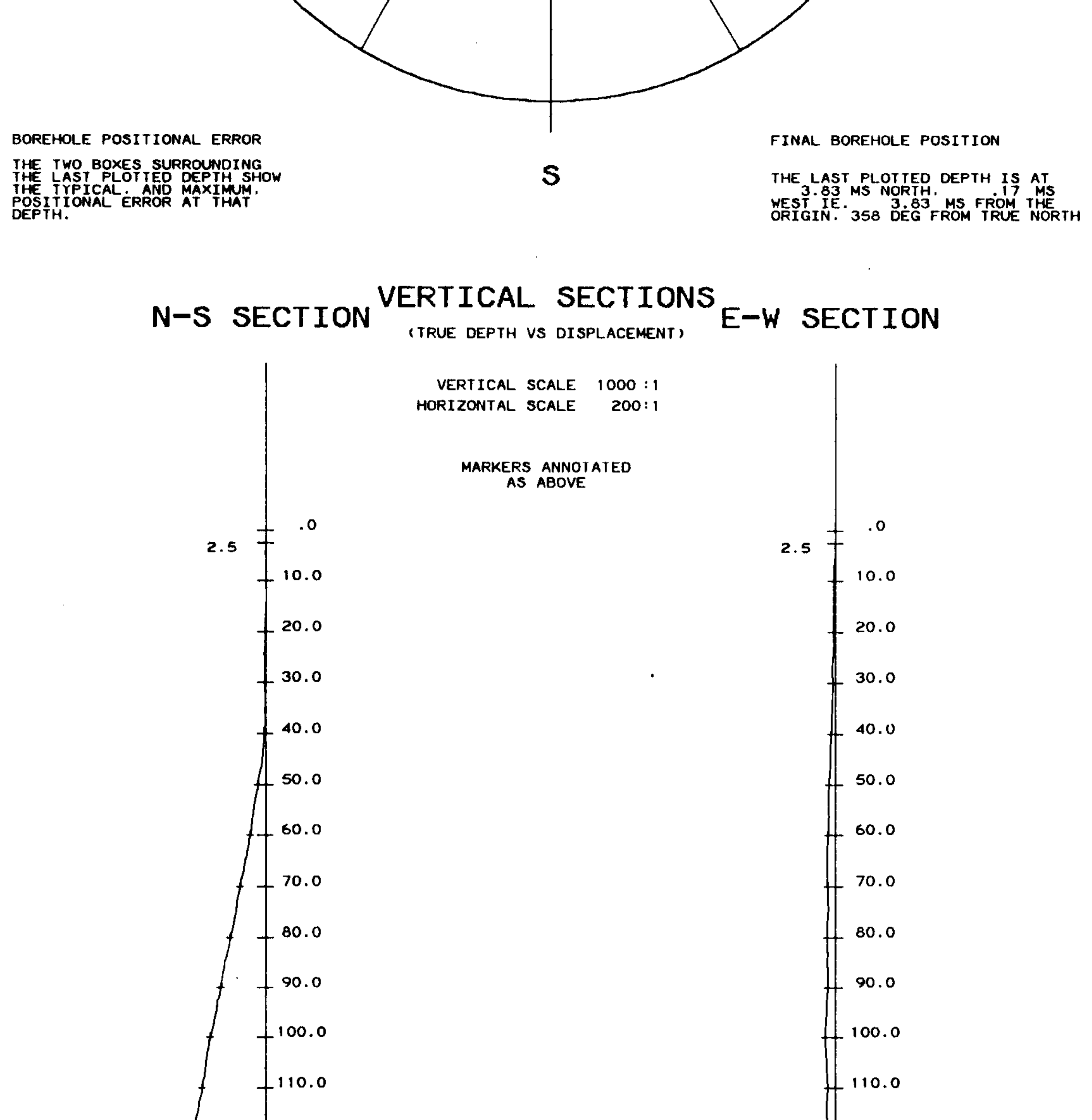
THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

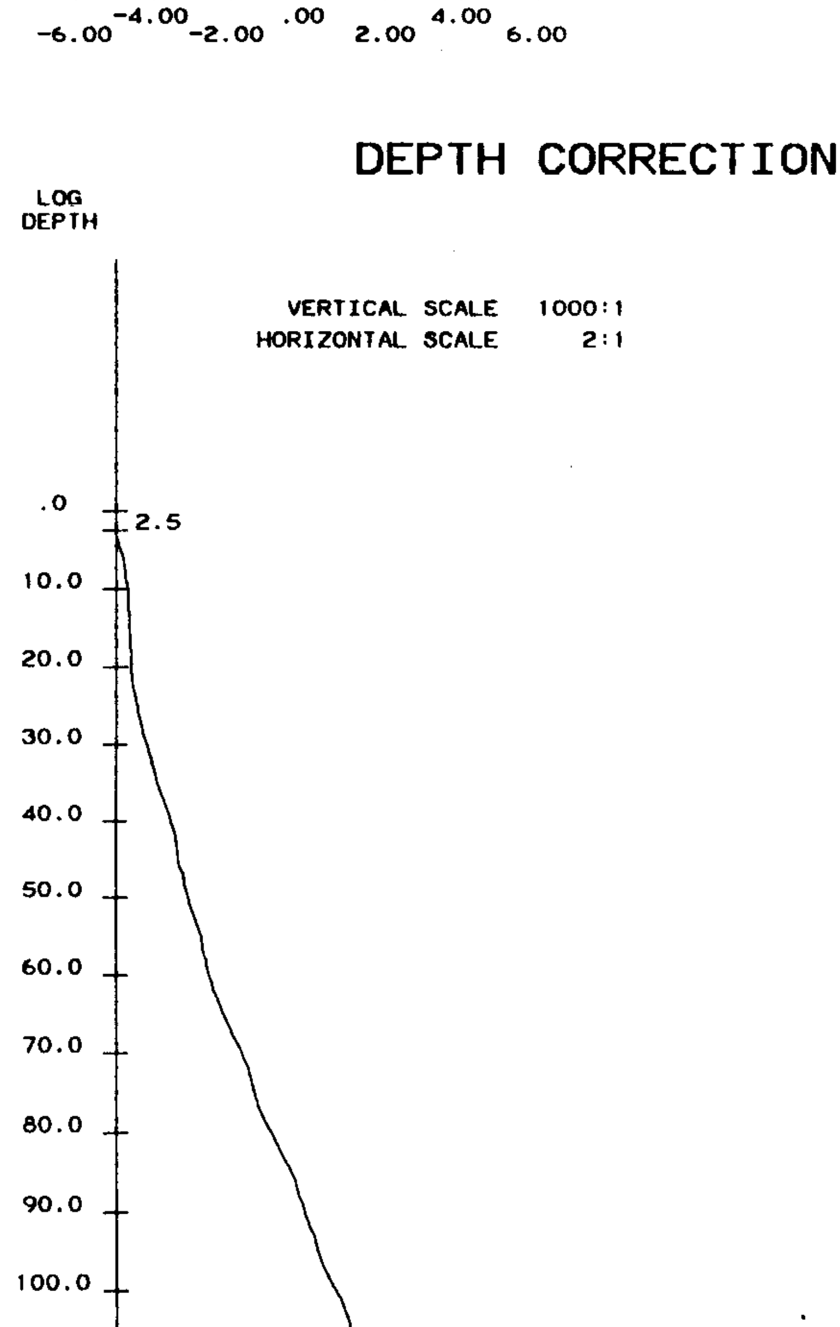
THE LAST PLOTTED DEPTH IS AT 3.83 MS NORTH, .17 MS WEST IE. 3.83 MS FROM THE ORIGIN. 358 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)



DEPTH CORRECTION ANALYSIS



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
3.00	3.00	73.00	72.96	142.40	142.31
4.00	4.00	74.00	73.96		
5.00	5.00	75.00	74.96		
6.00	6.00	76.00	75.96		
7.00	7.00	77.00	76.96		
8.00	8.00	78.00	77.96		
9.00	9.00	79.00	78.96		
10.00	10.00	80.00	79.96		
11.00	11.00	81.00	80.96		
12.00	12.00	82.00	81.96		
13.00	13.00	83.00	82.96		
14.00	14.00	84.00	83.96		
15.00	15.00	85.00	84.95		
16.00	16.00	86.00	85.95		
17.00	17.00	87.00	86.95		
18.00	18.00	88.00	87.95		
19.00	19.00	89.00	88.95		
20.00	20.00	90.00	89.95		
21.00	21.00	91.00	90.95		
22.00	22.00	92.00	91.95		
23.00	23.00	93.00	92.95		
24.00	23.99	94.00	93.95		
25.00	24.99	95.00	94.95		
26.00	25.99	96.00	95.95		
27.00	26.99	97.00	96.95		
28.00	27.99	98.00	97.94		
29.00	28.99	99.00	98.94		
30.00	29.99	100.00	99.94		
31.00	30.99	101.00	100.94		
32.00	31.99	102.00	101.94		
33.00	32.99	103.00	102.94		
34.00	33.99	104.00	103.94		
35.00	34.99	105.00	104.94		
36.00	35.99	106.00	105.94		
37.00	36.99	107.00	106.94		
38.00	37.99	108.00	107.94		
39.00	38.99	109.00	108.94		
40.00	39.99	110.00	109.94		
41.00	40.98	111.00	110.94		
42.00	41.98	112.00	111.93		
43.00	42.98	113.00	112.93		
44.00	43.98	114.00	113.93		
45.00	44.98	115.00	114.93		
46.00	45.98	116.00	115.93		
47.00	46.98	117.00	116.93		
48.00	47.98	118.00	117.93		
49.00	48.98	119.00	118.93		
50.00	49.98	120.00	119.93		
51.00	50.98	121.00	120.93		
52.00	51.98	122.00	121.93		
53.00	52.98	123.00	122.92		
54.00	53.98	124.00	123.92		
55.00	54.98	125.00	124.92		
56.00	55.98	126.00	125.92		
57.00	56.98	127.00	126.92		
58.00	57.98	128.00	127.92		
59.00	58.98	129.00	128.92		
60.00	59.98	130.00	129.92		
61.00	60.97	131.00	130.92		
62.00	61.97	132.00	131.91		
63.00	62.97	133.00	132.91		
64.00	63.97	134.00	133.91		
65.00	64.97	135.00	134.91		
66.00	65.97	136.00	135.91		
67.00	66.97	137.00	136.91		
68.00	67.97	138.00	137.91		
69.00	68.97	139.00	138.91		
70.00	69.97	140.00	139.91		
71.00	70.97	141.00	140.91		
72.00	71.97	142.00	141.91		

COMPANY	MANALTA
WELL	T93D-45
FIELD	SITE # 123
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93D-47
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93D-47
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA
LOCATION	TELKWA
OTHER SERVICES	CCS

LSD	SEC	TWP	RGE

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-OCT-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	178.9M			
DEPTH-LOGGER	178.9M			
FIRST READING	80.0M			
LAST READING	0M			
CASING-DRILLER	12.2M			
CASING-LOGGER	12.0M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.03 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	OOM			

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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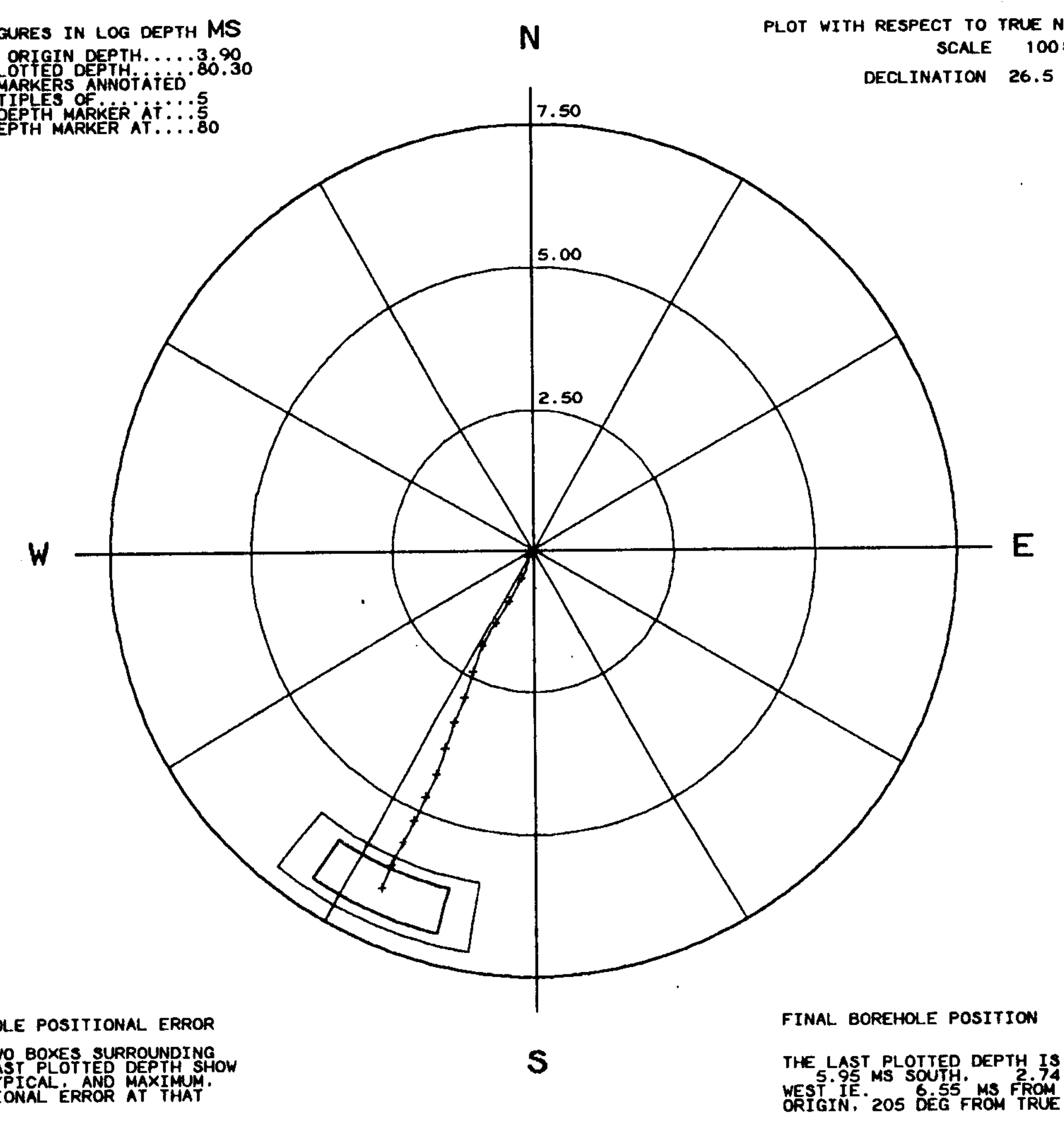
T93D-47                          VERTICALITY DATA LISTING                  DATE PROCESSED:  6-OCT-1993
                       ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH         DATE LOGGED:     6-OCT-1993
   DEPTHS          BOREHOLE   AXIAL CO-ORDS    POLAR      POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG     TRUE     TILT AZI   NORTH      EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

  4.00    4.00     3.4 185    -0.01      0.00 185   0.01 185    0.01 185    0.01 185    0.01 185    0.01
  5.00    5.00     3.6 149    -0.06      0.01 173   0.06 173    0.07 173    0.06 173    0.06 173    0.06
  6.00    6.00     3.9 324    -0.03      0.01 163   0.03 163    0.03 163    0.02 163    0.03 163    0.03
  7.00    6.99     4.4 343    -0.01      0.00 176   0.01 176    0.02 176    0.01 176    0.02 176    0.01
  8.00    7.99     4.7 230    -0.01     -0.03 255   0.03 254    0.03 257    0.03 255    0.03 256    0.03
  9.00    8.99     4.9 217    -0.06     -0.08 232   0.10 232    0.10 232    0.10 232    0.10 232    0.10
 10.00    9.98     5.2 202    -0.12     -0.10 221   0.15 221    0.16 221    0.15 221    0.16 221    0.15
 11.00   10.98     5.3 177    -0.19     -0.10 207   0.21 207    0.22 207    0.20 207    0.21 207    0.21
 12.00   11.97     4.9 203    -0.26     -0.13 207   0.30 206    0.31 207    0.28 206    0.30 207    0.29
 13.00   12.97     5.3 197    -0.35     -0.15 203   0.38 203    0.40 203    0.37 203    0.39 203    0.37
 14.00   13.97     5.5 328    -0.42     -0.18 203   0.46 203    0.47 203    0.44 203    0.46 203    0.45
 15.00   14.96     5.4 210    -0.50     -0.22 204   0.55 204    0.57 204    0.53 204    0.56 204    0.54
 16.00   15.96     5.4 210    -0.58     -0.27 205   0.64 205    0.67 205    0.62 205    0.66 205    0.63
 17.00   16.95     5.4 210    -0.67     -0.31 205   0.74 205    0.76 205    0.71 205    0.75 205    0.72
 18.00   17.95     5.3 209    -0.75     -0.36 206   0.83 206    0.86 206    0.80 206    0.84 206    0.81
 19.00   18.94     5.3 210    -0.83     -0.40 206   0.92 206    0.96 206    0.89 206    0.94 206    0.90
 20.00   19.94     5.2 212    -0.91     -0.45 206   1.01 206    1.05 206    0.97 206    1.03 206    0.99
 21.00   20.94     5.1 212    -0.98     -0.50 207   1.10 207    1.14 207    1.06 207    1.12 207    1.08
 22.00   21.93     5.1 212    -1.06     -0.54 207   1.19 207    1.24 207    1.15 207    1.21 207    1.17
 23.00   22.93     5.0 212    -1.13     -0.59 208   1.28 208    1.33 208    1.23 208    1.30 208    1.25
 24.00   23.92     5.1 212    -1.21     -0.64 208   1.37 208    1.42 208    1.31 208    1.39 208    1.34
 25.00   24.92     5.0 213    -1.28     -0.69 208   1.45 208    1.51 208    1.40 208    1.48 208    1.43
 26.00   25.92     5.1 211    -1.36     -0.73 208   1.54 208    1.60 208    1.48 208    1.57 208    1.51
 27.00   26.91     5.2 210    -1.43     -0.78 209   1.63 209    1.70 209    1.57 209    1.66 209    1.60
 28.00   27.91     5.3 210    -1.51     -0.83 209   1.72 209    1.79 209    1.66 209    1.76 209    1.69
 29.00   28.90     5.4 209    -1.60     -0.87 209   1.82 209    1.89 209    1.75 209    1.85 209    1.78
 30.00   29.90     5.4 205    -1.68     -0.91 209   1.91 209    1.99 209    1.84 209    1.95 209    1.87
 31.00   30.89     5.5 204    -1.77     -0.95 208   2.01 208    2.08 208    1.93 208    2.05 208    1.97
 32.00   31.89     5.5 201    -1.85     -0.99 208   2.10 208    2.18 208    2.02 208    2.14 208    2.06
 33.00   32.89     5.5 200    -1.94     -1.02 208   2.20 208    2.28 208    2.11 208    2.24 208    2.15
 34.00   33.88     5.5 198    -2.03     -1.05 207   2.29 207    2.38 207    2.20 207    2.33 207    2.25
 35.00   34.88     5.5 199    -2.13     -1.08 207   2.39 207    2.48 207    2.29 207    2.43 207    2.34
 36.00   35.87     5.5 198    -2.22     -1.11 207   2.48 207    2.57 207    2.39 207    2.53 207    2.43
 37.00   36.87     5.5 199    -2.31     -1.14 206   2.57 206    2.67 206    2.48 206    2.62 206    2.53
 38.00   37.86     5.5 200    -2.40     -1.18 206   2.67 206    2.77 206    2.57 206    2.72 206    2.62
 39.00   38.86     5.5 201    -2.49     -1.21 206   2.77 206    2.87 206    2.66 206    2.82 206    2.71
 40.00   39.85     5.5 202    -2.58     -1.24 206   2.86 206    2.97 206    2.75 206    2.92 206    2.81
 41.00   40.85     5.5 203    -2.66     -1.28 206   2.96 206    3.07 206    2.84 206    3.01 206    2.90
 42.00   41.84     5.4 204    -2.75     -1.32 206   3.05 206    3.17 206    2.93 206    3.11 206    2.99
 43.00   42.84     5.4 203    -2.84     -1.36 206   3.14 206    3.26 206    3.03 206    3.20 206    3.08
 44.00   43.84     5.4 202    -2.92     -1.39 205   3.24 205    3.36 205    3.12 205    3.30 205    3.18
 45.00   44.83     5.5 202    -3.01     -1.43 205   3.33 205    3.46 205    3.21 205    3.40 205    3.27
 46.00   45.83     5.5 201    -3.10     -1.46 205   3.43 205    3.56 205    3.30 205    3.49 205    3.36
 47.00   46.82     5.5 200    -3.19     -1.50 205   3.52 205    3.66 205    3.39 205    3.59 205    3.46
 48.00   47.82     5.5 200    -3.28     -1.53 205   3.62 205    3.75 205    3.48 205    3.69 205    3.55
 49.00   48.81     5.5 198    -3.37     -1.56 205   3.71 205    3.85 205    3.57 205    3.78 205    3.64
 50.00   49.81     5.5 197    -3.46     -1.59 205   3.81 205    3.95 205    3.67 205    3.88 205    3.74
 51.00   50.80     5.4 197    -3.55     -1.62 205   3.90 205    4.05 205    3.76 205    3.98 205    3.83
 52.00   51.80     5.4 198    -3.64     -1.65 204   4.00 204    4.15 204    3.85 204    4.07 204    3.92
 53.00   52.79     5.4 199    -3.73     -1.68 204   4.09 204    4.24 204    3.94 204    4.17 204    4.01
 54.00   53.79     5.5 200    -3.82     -1.71 204   4.19 204    4.34 204    4.03 204    4.26 204    4.11
 55.00   54.79     5.4 203    -3.91     -1.74 204   4.28 204    4.44 204    4.12 204    4.36 204    4.20
 56.00   55.78     5.3 205    -3.99     -1.78 204   4.37 204    4.54 204    4.21 204    4.45 204    4.29
 57.00   56.78     5.2 209    -4.07     -1.82 204   4.46 204    4.63 204    4.30 204    4.55 204    4.38
 58.00   57.77     5.1 208    -4.15     -1.87 204   4.55 204    4.72 204    4.38 204    4.64 204    4.47
 59.00   58.77     5.3 205    -4.23     -1.91 204   4.64 204    4.81 204    4.47 204    4.73 204    4.55
 60.00   59.77     5.2 207    -4.31     -1.95 204   4.73 204    4.91 204    4.55 204    4.82 204    4.64
 61.00   60.76     5.3 206    -4.39     -1.99 204   4.82 204    5.00 204    4.64 204    4.91 204    4.73
 62.00   61.76     5.2 207    -4.48     -2.03 204   4.91 204    5.10 204    4.73 204    5.01 204    4.82
 63.00   62.75     5.2 206    -4.56     -2.07 204   5.00 204    5.19 204    4.82 204    5.10 204    4.91
 64.00   63.75     5.2 208    -4.64     -2.11 204   5.09 204    5.29 204    4.90 204    5.19 204    5.00
 65.00   64.74     5.1 208    -4.72     -2.15 205   5.18 205    5.38 205    4.99 205    5.28 205    5.09
 66.00   65.74     5.1 208    -4.80     -2.19 205   5.27 205    5.47 205    5.07 205    5.37 205    5.17
 67.00   66.74     5.1 207    -4.87     -2.23 205   5.36 205    5.56 205    5.16 205    5.46 205    5.26
 68.00   67.73     5.1 209    -4.95     -2.27 205   5.45 205    5.66 205    5.24 205    5.55 205    5.35
 69.00   68.73     5.1 208    -5.03     -2.32 205   5.54 205    5.75 205    5.33 205    5.64 205    5.43
 70.00   69.72     5.1 208    -5.11     -2.36 205   5.63 205    5.84 205    5.41 205    5.73 205    5.52
 71.00   70.72     5.1 207    -5.19     -2.40 205   5.72 205    5.93 205    5.50 205    5.82 205    5.61
 72.00   71.72     5.1 208    -5.27     -2.44 205   5.80 205    6.02 205    5.58 205    5.91 205    5.69
 73.00   72.71     5.1 206    -5.35     -2.48 205   5.89 205    6.11 205    5.67 205    6.00 205    5.78
 74.00   73.71     5.1 206    -5.42     -2.52 205   5.98 205    6.21 205    5.75 205    6.09 205    5.87
 75.00   74.71     5.2 206    -5.51     -2.56 205   6.07 205    6.30 205    5.84 205    6.18 205    5.95
 76.00   75.70     5.2 205    -5.59     -2.59 205   6.16 205    6.39 205    5.93 205    6.28 205    6.04
 77.00   76.70     5.3 204    -5.67     -2.63 205   6.25 205    6.49 205    6.01 205    6.37 205    6.13
 78.00   77.69     5.3 203    -5.75     -2.67 205   6.34 205    6.58 205    6.10 205    6.46 205    6.22
 79.00   78.69     5.3 201    -5.84     -2.70 205   6.43 205    6.68 205    6.19 205    6.55 205    6.31
 80.00   79.68     5.3 200    -5.92     -2.73 205   6.52 205    6.77 205    6.28 205    6.65 205    6.40
 80.30   79.98     5.2 200    -5.95     -2.74 205   6.55 205    6.80 205    6.30 205    6.68 205    6.43
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....3.90
LAST PLOTTED DEPTH......80.30
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........5
FIRST DEPTH MARKER AT...5
LAST DEPTH MARKER AT....80

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 5.95 MS SOUTH, 2.74 MS WEST IE. 6.55 MS FROM THE ORIGIN, 205 DEG FROM TRUE NORTH

VERTICAL SECTIONS

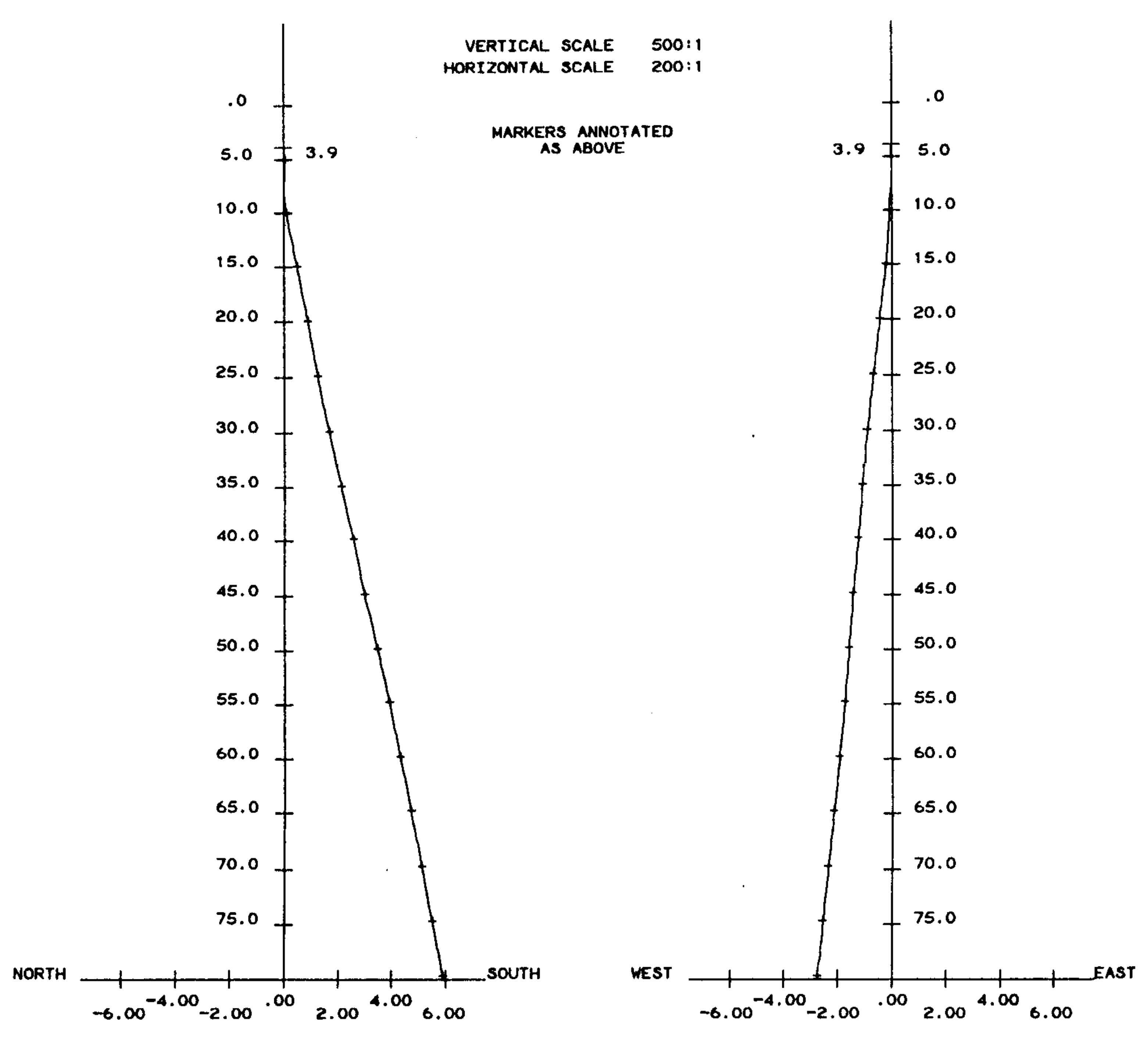
(TRUE DEPTH VS DISPLACEMENT)

N-S SECTION

E-W SECTION

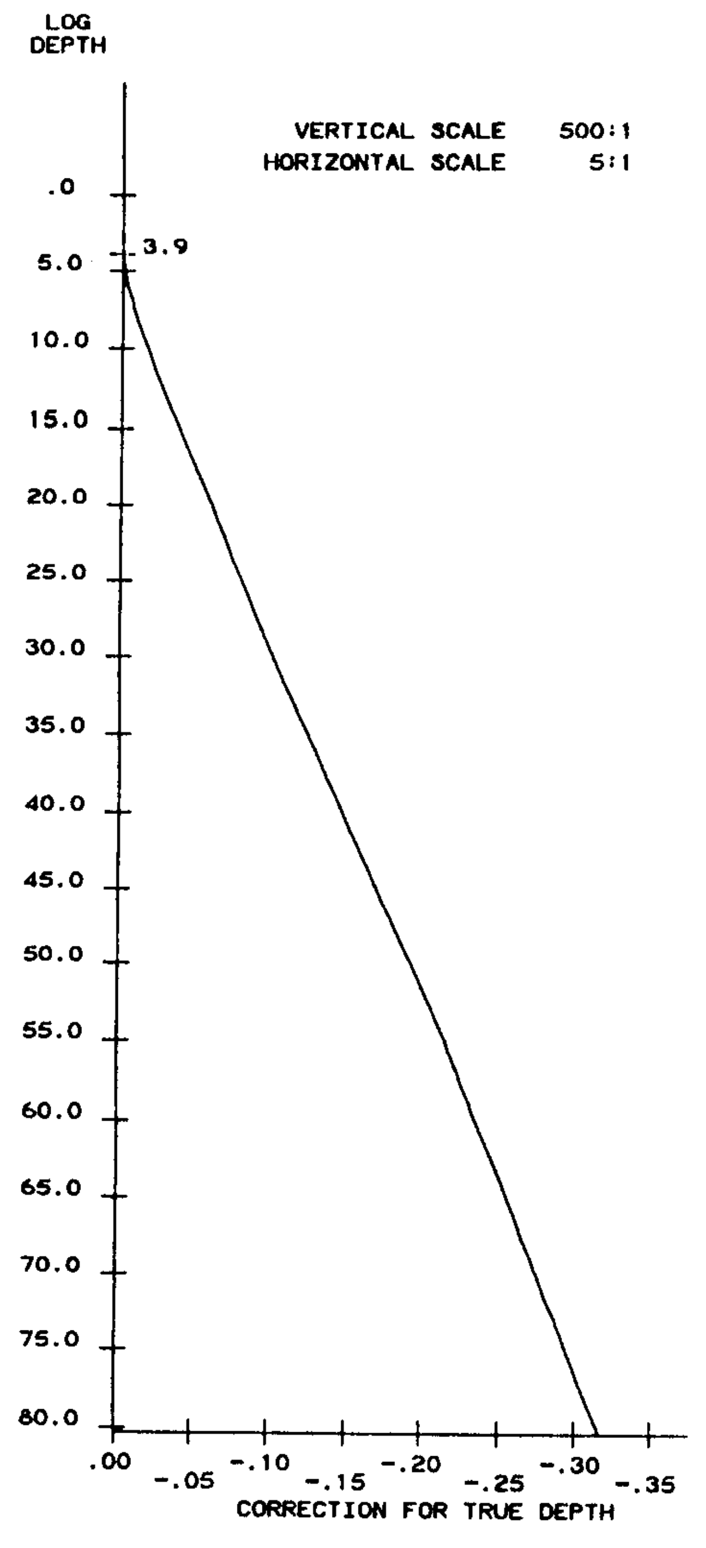
VERTICAL SCALE 500:1
HORIZONTAL SCALE 200:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 500:1
HORIZONTAL SCALE 5:1



DEPTHS: LOG	TRUE	DEPTHS: LOG	TRUE
4.00	4.00	74.00	73.71
5.00	5.00	75.00	74.71
6.00	6.00	76.00	75.70
7.00	6.99	77.00	76.70
8.00	7.99	78.00	77.69
9.00	8.99	79.00	78.69
10.00	9.98	80.00	79.68
11.00	10.98	80.30	79.98
12.00	11.97		
13.00	12.97		
14.00	13.97		
15.00	14.96		
16.00	15.96		
17.00	16.95		
18.00	17.95		
19.00	18.94		
20.00	19.94		
21.00	20.94		
22.00	21.93		
23.00	22.93		
24.00	23.92		
25.00	24.92		
26.00	25.92		
27.00	26.91		
28.00	27.91		
29.00	28.90		
30.00	29.90		
31.00	30.89		
32.00	31.89		
33.00	32.89		
34.00	33.88		
35.00	34.88		
36.00	35.87		
37.00	36.87		
38.00	37.86		
39.00	38.86		
40.00	39.85		
41.00	40.85		
42.00	41.84		
43.00	42.84		
44.00	43.84		
45.00	44.83		
46.00	45.83		
47.00	46.82		
48.00	47.82		
49.00	48.81		
50.00	49.81		
51.00	50.80		
52.00	51.80		
53.00	52.79		
54.00	53.79		
55.00	54.79		
56.00	55.78		
57.00	56.78		
58.00	57.77		
59.00	58.77		
60.00	59.77		
61.00	60.76		
62.00	61.76		
63.00	62.75		
64.00	63.75		
65.00	64.74		
66.00	65.74		
67.00	66.74		
68.00	67.73		
69.00	68.73		
70.00	69.72		
71.00	70.72		
72.00	71.72		
73.00	72.71		

COMPANY	MANALTA
WELL	T93D-47
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER
(DETAIL SECTION)

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93D-47
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93D-47
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
DIPMETER

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-OCT-93			
RUN NUMBER	FIVE			
DEPTH-DRILLER	178.9M			
DEPTH-LOGGER	178.9M			
FIRST READING	175.0M			
LAST READING	0M			
CASING-DRILLER	12.2M			
CASING-LOGGER	12.0M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.03 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V. 12 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FIVE	95MM	12.2M	TD	105MM	N/A	SURFACE	12.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER (DETAIL SECTION)

DENSITY SONDE LOGGED IN RODS ONLY.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL LOG (RODS) ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-OCT-1993 AT 0:05
FILENAME: DD3AD47A.CIB RUN ID: DETAIL LOG (RODS) PLOTTED ON 06-OCT-1993 AT 09:34

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

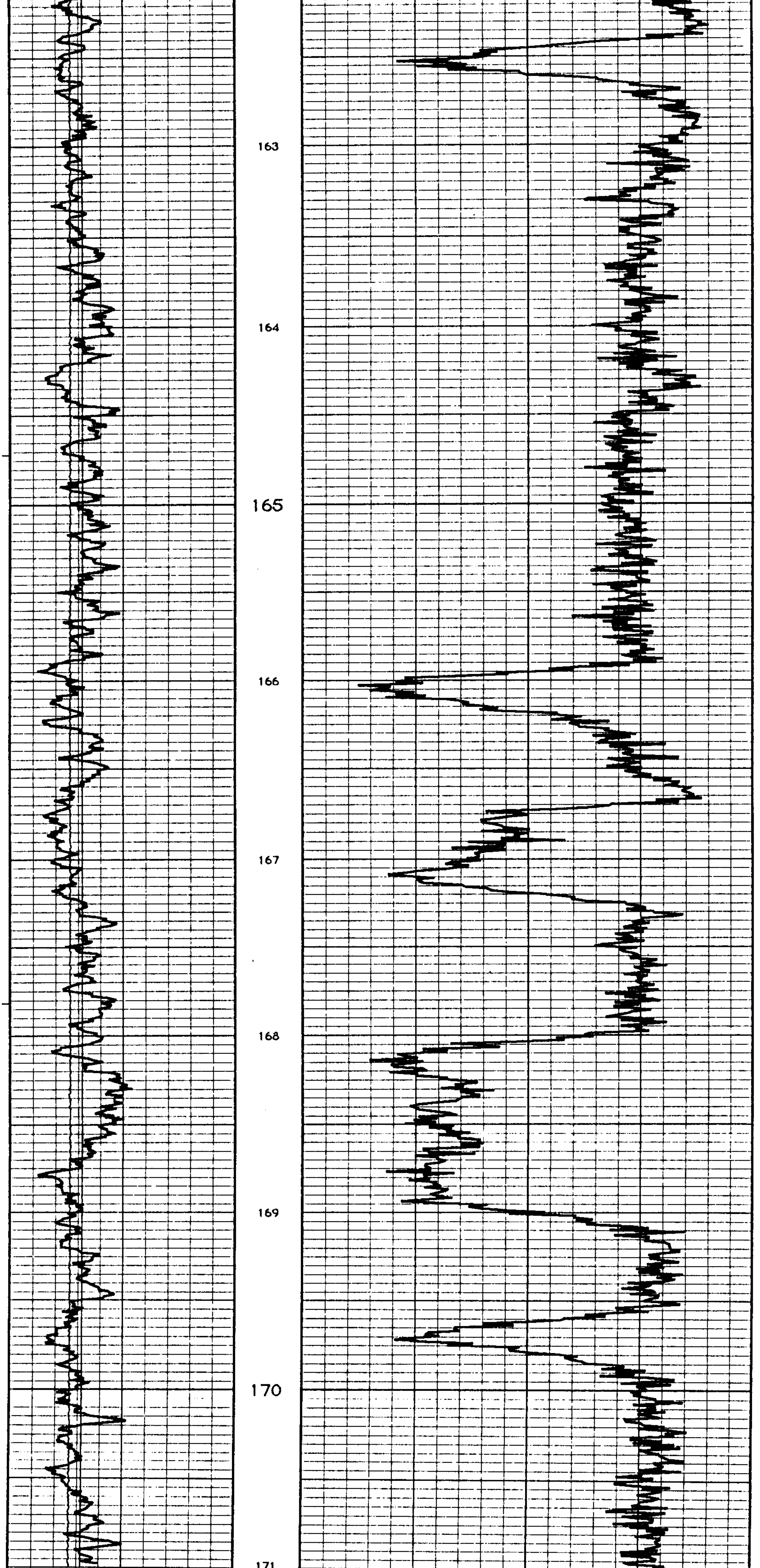
CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
12000 10750 9500 8250 7000



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
12000 10750 9500 8250 7000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-OCT-1993 AT 0:05
FILENAME: DD3AD47A.CIB RUN ID: DETAIL LOG (RODS) PLOTTED ON 06-OCT-1993 AT 09:34

↑ DETAIL LOG (RODS) ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 05-OCT-1993 AT 23:48 DATA LAST REPROCESSED: 6-OCT-1993 AT 9:29

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.03	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	12.20
BIT SIZE 3	.00	BIT DEPTH 3	178.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-47
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY CALIPER
(LOGGED IN RODS)

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93D-47
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93D-47 #879
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
DIPMETER

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-OCT-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	178.9M			
DEPTH-LOGGER	178.9M			
FIRST READING	175.0M			
LAST READING	OM			
CASING-DRILLER	12.2M			
CASING-LOGGER	12.0M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.03 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	OOM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	95MM	12.2M	TD	105MM	N/A	SURFACE	12.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER (LOGGED IN RODS)

DENSITY SONDE LOGGED IN RODS ONLY.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG (RODS) ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-OCT-1993 AT 0:05
FILENAME: DD3AD47M.CIB RUN ID: MAIN LOG (RODS) PLOTTED ON 06-OCT-1993 AT 00:45

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-OCT-1993 AT 0:05
FILENAME: DD3AD47M.CIB RUN ID: MAIN LOG (RODS) PLOTTED ON 06-OCT-1993 AT 00:45

↑ MAIN LOG (RODS) ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 05-OCT-1993 AT 23:48

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.03	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	12.20
BIT SIZE 3	.00	BIT DEPTH 3	178.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	310.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-47
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

DIPMETER ANALYSIS

#879

COMPANY	MANALTA
WELL	T93D-47
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93D-47
COMPANY:
MANALTA

LOCATION				OTHER SERVICES
TELKWA				CCS
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL, ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-OCT-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	178.9M			
DEPTH-LOGGER	178.9M			
FIRST READING	80.0M			
LAST READING	0M			
CASING-DRILLER	12.2M			
CASING-LOGGER	12.0M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.03 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	95MM	12.2M	TD	105MM	N/A	SURFACE	12.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
VERT	233			

REMARKS

DIPMETER ANALYSIS

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-OCT-1993 AT 1:59
FILENAME: DIP3D47M.CIB RUN ID: MAIN LOG PLOTTED ON 06-OCT-1993 AT 04:21

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-OCT-1993 AT 1:59
FILENAME: DIP3D47M.CIB RUN ID: MAIN LOG PLOTTED ON 06-OCT-1993 AT 04:21

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 06-OCT-1993 AT 04:05 DATA LAST REPROCESSED: 6-OCT-1993 AT 4:05

LOGGING CONSTANTS & GAMMA CALIBRATION

CORRELATION STEP (M.)	.25	CORRELATION INTERVAL (M.)	.50
BIT SIZE #1 (MM)	105.00	BIT DEPTH #1 (M.)	.00
BIT SIZE #2	95.00	BIT DEPTH #2	12.20
BIT SIZE #3	.00	BIT DEPTH #3	178.90
BIT SIZE #4	.00	BIT DEPTH #4	0.00
BIT SIZE #5	.00	BIT DEPTH #5	0.00
GAMMA CALIBRATOR (API)	510.00	GAMMA COUNTS	311.50
UNUSED	XXXXXXXX	SEARCH ANGLE (DEGREES)	45.00
STRUCTURAL DIP ANGLE (DEGREES)	.00	STRUCTURAL DIP AZI. (DEGREES)	.00
DECLINATION (DEGREES)	26.50 E	DETAIL PAD DATA	NO
CORRELATE	YES	CALIPER UNITS	MM
DEPTH UNITS	METRIC	CALIPER USED IN CALCULATIONS	YES

LEVEL CELL CALIBRATION

TILT(DEGREES)	LC1(COUNTS)	LC2(COUNTS)
-10.00	114.00	121.00
-8.00	136.00	142.00
-6.00	158.00	166.00
-4.00	179.00	185.00
-2.00	198.00	202.00
.00	221.00	222.00
2.00	243.00	240.00
4.00	264.00	258.00
6.00	285.00	277.00
8.00	305.00	303.00
10.00	326.00	322.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00

CALIBRATION IDENTIFICATION: VERT # 233

MAGNETOMETER CALIBRATION

	MAG.X	MAG.Y	MAG.Z
MAX.	209.00	213.00	199.00
MIN.	150.00	148.00	161.00

CALIBRATION IDENTIFICATION: VERT # 233

CALIPER CAL. & PAD OFFSETS

CALIBRATOR(MM)	COUNTS	PAD 2 OFFSET(MM)	PAD 3 OFFSET(MM)
76.20	203.00	.00	.00
101.60	225.00	.00	.00
127.00	249.00	.00	.00
152.40	271.00	.00	.00
203.20	310.00	.00	.00
254.00	277.00	.00	.00

CALIBRATION IDENTIFICATION: 221

COMPANY	MANALTA
WELL	T93D-47
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

#829

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~Version Information         DIPMETER/STICK PLOT DATA LISTING
 VERS.             1.20:     CWLS Log ASCII Standard -Version 1.20
 WRAP.               NO:     One line per depth step
#
#
~Well Information Block
#MNEM.UNIT   Data Type       Description
#---------   ------------    -----------------------------
 STRT.M            80.50:
 STOP.M             3.00:
 STEP.M             0.00:
 NULL.           -999.25:
 COMP.          COMPANY:     MANALTA
 WELL.             WELL:     T93D-47
 FLD .            FIELD:
 LOC .         LOCATION:     TELKWA
 PROV.         PROVINCE:     BRITISH COLUMBIA
 SRVC.  SERVICE COMPANY:     BPB Wireline Services
 DATE.         LOG DATE:      6-OCT-1993
 UWI .   UNIQUE WELL ID:
#
#
~Curve Information Block
#MNEM.UNIT                   Curve Description
#---------                   -----------------
 DEPT.M                 :    DEPTH ROUNDED TO NEAREST CALIBRATION STEP MULTIPLE
 CALD.mm                :    DIPMETER CALIPER
 TILD.degs              :    BOREHOLE TILT
 AZID.degs              :    BOREHOLE AZIMUTH
 DIPF.degs              :    FORMATION DIP
 AZIF.degs              :    FORMATION AZIMUTH
 CORC.----              :    CORRELATION COEFFICIENT
 STK1.degs              :    STICK PLOT SECTION 1
 STK2.degs              :    STICK PLOT SECTION 2
#
#
~Parameter Information
#MNEM.UNIT   Value           Description
#---------   ------------    -----------------------------
 DECL.deg          26.50:    MAGNETIC DECLINATION (EAST OF NORTH)
 CORS.m             0.25:    CORRELATION STEP
 CORI.m             0.50:    CORRELATION INTERVAL
 SANG.deg          45.00:    SEARCH ANGLE
 SDIP.deg           0.00:    STRUCTURAL DIP
 SAZI.deg           0.00:    STRUCTURAL AZIMUTH
#
#
~Other Information
File Identification          MAIN LOG

DIPMETER LISTINGS



Run number    THREE        Log 1st rdg    80.0m       Log last rdg  0m
Driller TD    178.9m       Logger TD      178.9m      Water level
Perm Datum    GROUND LEVEL Elevation      N/A         Other srvcs   CCS
Dril mes from 00m          Log meas from  00m         Other srvcs
Elevation: KB N/A          DF             N/A         GL            N/A
Casing Driler 12.2m        Casing Logger  12.0m       Casing size   105mm
Casing Weight N/A          From           SURFACE     To            12.2m
Bit size      95mm         From           12.2m       To            TD
Hole fl type  BENTONITE    Sample source              Fluid loss    N/A
Density       1.03         Viscosity      N/A         pH            N/A
RM @ meas tmp              RMF @ mes tmp              RMC @ mes tmp
RM @ BHT                   RMF source                 RMC-source
Max rec temp               Time snc circ              LsdSecTwpRge
Equipment no. V222         Base           RDR         Equip. name   VERT
Recorded by   A. LE BRETON Witnessed by   T. BRAZZONI Sonde srl no. 233
Last title    WATER LEVEL  Last line      00m         Permit no.
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BPB DIPMETER ANALYSIS INTERPRETATION NOTES

1. All plots are correct to the resolution of the plotter used, ie. one two-hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background.

2. Rose diagrams when plotted occur between every major division and are delimited by two bold arrows. For certain replay scales it may be desirable to plot these less frequently; this option is available on request.

3. The grid over which the computed dip is displayed is locally linear. That is to say it is linear between 0 and 10 degrees, 10 and 20, 20 and 30 etc.

4. The correlation value will vary depending on the interval size selected. Generally speaking the larger the correlation interval, the lower the value becomes. For this reason a direct comparison of this value for differing correlation intervals is meaningless, quality control being exercised with an appreciation of this effect.

5. Stick data may be shown relative to any two vertical planes and is the angle (to the horizontal) of the intersection of the resolved plane and the vertical plane.

6. The angle of declination is taken to be the angle between Magnetic North and reference North (True, Grid or Magnetic) measured in an anti-clockwise direction.

7. For customised control of computed dipmeter analysis the following parameters must be specified:
    - correlation step and interval(s)
    - magnetic declination
    - search angle(s)
    - depth range(s)
    - replay scale(s)
    - the frequency for rose diagrams
    - the sections for stick plots
    - (quality control is exercised in accordance with the correlation interval used, alternatively all correlations may be displayed on request)

The following information is a listing of ALL the output from BPB's dipmeter analysis. Below is a full description of each data item:

DEPTH	the depth corresponding to the centre of the correlation interval.
CALIPER	the average borehole caliper recorded over the correlation interval.
HOLE DRIFT	the average borehole deviation from vertical over the correlation interval.
HOLE AZIMUTH	the average borehole azimuth over the correlation interval in degrees East of true North.
DIP ANGLE	the computed formation dip in degrees, from the horizontal plane.
DIP AZIMUTH	the formation azimuth in degrees East of true North.
CORRELATION	a measure of the reliability of the computed result. This parameter is also used in the visual display to determine the quality of result.
SECTION	the formation dip across the specified sections.

Further recorrelations over any step and interval size are available on any scale over any section of the log. Alternative methods of presentation, or analysis may be available on request.

```
#
#  Depth    Caliper      Borehole            Formation        Correlation       S
tick Plot Section
#                      Tilt    Azimuth      Dip     Azimuth   Coefficient    180.0
-   0.0    270.0- 90.0
#    (M)        (mm)     (deg)     (deg)       (deg)     (deg)      (----)          (d
eg)        (deg)
~A
    80.50   -999.25 -999.25   -999.25      0.0      0.0     -1.00         0
.00          0.00
    80.00     104.8     5.3     200.1      0.0      0.0     -1.00         0
.00          0.00
    79.50     102.7     5.3     200.7     54.8     40.5      0.22        47
.17         42.63
    79.00      97.0     5.4     200.9     34.6      2.6      0.08        34
.55          1.78
    78.50      97.0     5.3     201.6     44.8     32.1      0.07        40
.04         27.82
    78.00      97.0     5.3     202.8     34.4    346.8      0.12        33
.68         -8.91
    77.50      97.0     5.3     203.6     49.4     23.9      0.17        46
.90         25.30
    77.00      97.0     5.2     204.2     25.7    169.1      0.11       -25
.28          5.20
    76.50      98.1     5.2     204.3      0.0      0.0     -1.00         0
.00          0.00
    76.00      97.0     5.2     205.0     36.3     26.1      0.24        33
.43         17.96
    75.50      95.8     5.2     205.1     35.4    309.7      0.12        24
.37        -28.65
    75.00      95.8     5.2     205.7      0.0      0.0     -1.00         0
.00          0.00
    74.50      95.8     5.1     206.2     43.6     34.6      0.11        38
.13         28.43
    74.00      95.8     5.1     205.7     39.5     37.0      0.26        33
.37         26.37
    73.50      97.0     5.1     205.8      0.0      0.0     -1.00         0
.00          0.00
    73.00      99.3     5.1     206.4     16.8     43.3      0.67        12
.40         11.70
    72.50      99.3     5.1     207.1     20.8    306.2      0.53        12
.63        -17.00
    72.00      99.3     5.1     207.7     44.2    202.1      0.38       -41
.99        -20.04
    71.50     100.4     5.0     207.5     15.8    268.5      0.23        -0
.42        -15.83
    71.00     102.7     5.0     208.1      0.0      0.0     -1.00         0
.00          0.00
    70.50     103.7     5.1     208.3     12.4    333.6      0.28        11
.14         -5.59
    70.00     103.7     5.0     207.5     12.6    333.3      0.28        11
.28         -5.72
    69.50     103.7     5.0     207.5     31.0    171.1      0.35       -30
.66          5.30
    69.00     103.7     5.1     207.9      0.0      0.0     -1.00         0
.00          0.00
    68.50     102.7     5.1     208.9     26.3    306.3      0.21        16
.32        -21.72
    68.00     103.7     5.0     207.5     32.6    182.1      0.06       -32
.62         -1.35
    67.50      98.1     5.1     207.8     29.2     36.7      0.18        24
.14         18.47
    67.00      99.3     5.1     207.8      0.0      0.0     -1.00         0
.00          0.00
    66.50     100.4     5.1     208.3      0.0      0.0     -1.00         0
.00          0.00
    66.00     100.4     5.1     208.3     50.7     58.2      0.27        32
.72         46.06
    65.50     102.7     5.1     207.7     45.2    225.9      0.38       -35
.05        -35.88
    65.00     101.6     5.1     207.1     45.3    208.7      0.23       -41
.55        -25.92
    64.50     102.7     5.2     206.5     40.2    302.8      0.20        24
.61        -35.39
    64.00     103.7     5.2     207.0     42.9     84.5      0.22         5
.08         42.80
    63.50     102.7     5.2     205.8     46.3    227.7      0.34       -35
.12        -37.73
    63.00     103.7     5.2     205.8     19.2    296.9      0.54         8
.95        -17.23
    62.50     103.7     5.2     206.3     47.2    208.0      0.57       -43
.60        -26.81
    62.00     101.6     5.2     205.7     38.1    255.8      0.74       -10
.90        -37.23
    61.50     105.8     5.3     206.9     41.6     88.5      0.21         1
.35         41.60
    61.00     107.9     5.2     206.2     39.1    293.8      0.74        18
.16        -36.69
    60.50     113.2     5.3     206.4     40.2    218.1      0.46       -33
.61        -27.57
    60.00     112.2     5.3     206.9      3.6    242.1      0.13        -1
.69         -3.19
    59.50     110.1     5.3     206.3     19.1    301.8      0.39        10
.32        -16.40
    59.00     111.1     5.2     205.5     42.8    233.8      0.54       -28
.64        -36.73
    58.50     109.0     4.3     205.8      0.0      0.0     -1.00         0
.00          0.00
    58.00     121.7     5.1     209.5      2.9      2.4      0.75         2
.90          0.12
    57.50     114.3     5.2     210.1     54.8     26.1      0.10        51
.87         31.92
    57.00     112.2     5.2     208.3     16.8    247.2      0.35        -6
.66        -15.56
    56.50     111.1     5.2     207.4     40.2    232.1      0.27       -27
.42        -33.71
    56.00     111.1     5.3     205.4     37.0    249.1      0.22       -15
.02        -35.09
    55.50     111.1     5.4     203.9     27.3    308.5      0.56        17
.80        -21.97
    55.00     109.0     5.4     203.0     41.6    258.6      0.66        -9
.97        -41.05
    54.50     107.9     5.4     201.0      0.0      0.0     -1.00         0
.00          0.00
    54.00     107.9     5.4     200.5     14.7     39.2      0.06        11
.48          9.42
    53.50     105.8     5.5     199.0      0.0      0.0     -1.00         0
.00          0.00
    53.00     105.8     5.5     198.1     28.9    213.7      0.77       -24
.64        -16.99
    52.50     105.8     5.4     198.1     35.5    249.8      0.79       -13
.82        -33.75
    52.00     102.7     5.5     197.9      0.0      0.0     -1.00         0
.00          0.00
    51.50     101.6     5.5     197.9     32.7    261.1      0.05        -5
.65        -32.42
    51.00     102.7     5.5     197.9     54.3    191.6      0.18       -53
.72        -15.62
    50.50     103.7     5.5     197.9     36.7     79.2      0.20         7
.91         36.20
    50.00     103.7     5.5     197.9     16.4    266.1      0.12        -1
.16        -16.33
    49.50     103.7     5.5     197.7     48.8     32.9      0.11        43
.83         31.85
    49.00     105.8     5.5     198.7     37.0      8.9      0.52        36
.70          6.67
    48.50     103.7     5.5     198.4     30.8    343.8      0.32        29
.78         -9.45
    48.00     109.0     5.5     199.7      0.0      0.0     -1.00         0
.00          0.00
    47.50     102.7     5.5     199.8      0.0      0.0     -1.00         0
.00          0.00
    47.00     102.7     5.5     200.1      0.0      0.0     -1.00         0
.00          0.00
    46.50     101.6     5.5     200.7     37.7    259.6      0.23        -7
.96        -37.19
    46.00     101.6     5.5     200.3     39.2    246.3      0.52       -18
.19        -36.78
    45.50      99.3     5.5     201.0     46.1     19.6      0.33        44
.40         19.18
    45.00     100.4     5.5     202.1     56.4     38.6      0.23        49
.61         43.21
    44.50     101.6     5.4     201.8      0.0      0.0     -1.00         0
.00          0.00
    44.00     102.7     5.4     203.0     43.1     31.5      0.37        38
.59         26.07
    43.50     104.8     5.4     202.5     13.1    232.3      0.78        -8
.10        -10.44
    43.00     102.7     5.4     203.2     37.0     27.9      0.48        33
.61         19.39
    42.50     101.6     5.5     203.7     54.9     40.2      0.28        47
.37         42.57
    42.00      99.3     5.4     203.8      0.0      0.0     -1.00         0
.00          0.00
    41.50      99.3     5.4     203.2     10.8     47.8      0.25         7
.32          8.06
    41.00     101.6     5.5     203.6      0.0      0.0     -1.00         0
.00          0.00
    40.50     101.6     5.5     202.3      0.0      0.0     -1.00         0
.00          0.00
    40.00     100.4     5.5     201.5      0.0      0.0     -1.00         0
.00          0.00
    39.50      98.1     5.5     201.3      0.0      0.0     -1.00         0
.00          0.00
    39.00      99.3     5.6     200.4     18.2     17.1      0.35        17
.46          5.52
    38.50     100.4     5.5     199.2     31.8    315.9      0.65        24
.04        -23.38
    38.00      98.1     5.5     199.6     35.8    270.9      0.39         0
.65        -35.80
    37.50      95.8     5.5     199.0     39.1    262.1      0.59        -6
.36        -38.79
    37.00      94.7     5.5     198.4     41.5    354.6      0.26        41
.40         -4.77
    36.50      95.8     5.5     198.3     30.7    255.2      0.31        -8
.60        -29.87
    36.00      97.0     5.5     198.7     19.4    271.2      0.32         0
.44        -19.44
    35.50     100.4     5.5     197.7     43.2    297.2      0.53        23
.22        -39.87
    35.00     100.4     5.4     198.3     53.4     29.2      0.50        49
.60         33.32
    34.50     101.6     5.5     199.2     36.2    335.1      0.59        33
.62        -17.17
    34.00     100.4     5.5     198.3     18.7    287.2      0.38         5
.74        -17.95
    33.50     101.6     5.5     199.0     49.4    206.3      0.33       -46
.33        -27.36
    33.00      98.1     5.5     200.3     36.0    254.6      0.32       -10
.89        -35.00
    32.50      98.1     5.5     201.1     38.7      9.7      0.09        38
.31          7.70
    32.00      97.0     5.5     201.4     41.7     34.6      0.80        36
.26         26.83
    31.50     100.4     5.5     202.8     22.6    275.6      0.16         2
.31        -22.51
    31.00     101.6     5.6     204.1     53.6     48.4      0.51        41
.99         45.38
    30.50     101.6     5.5     204.5     42.0    211.0      0.44       -37
.62        -24.87
    30.00     102.7     5.5     206.7      0.0      0.0     -1.00         0
.00          0.00
    29.50     103.7     5.4     206.4      0.0      0.0     -1.00         0
.00          0.00
    29.00     102.7     5.4     207.7     44.0    237.8      0.78       -27
.25        -39.23
    28.50     103.7     5.3     208.4     36.0    225.0      0.79       -27
.17        -27.18
    28.00     101.6     5.3     210.2      0.0      0.0     -1.00         0
.00          0.00
    27.50     114.3     5.2     210.8      0.0      0.0     -1.00         0
.00          0.00
    27.00     111.1     5.2     210.9     28.5    270.8      0.31         0
.44        -28.50
    26.50     111.1     5.2     211.6     49.9    214.5      0.60       -44
.38        -33.88
    26.00     115.4     5.1     210.9      0.0      0.0     -1.00         0
.00          0.00
    25.50     111.1     5.1     212.2     37.7    251.5      0.77       -13
.78        -36.19
    25.00     110.1     5.0     211.5      0.0      0.0     -1.00         0
.00          0.00
    24.50     111.1     5.0     212.8      0.0      0.0     -1.00         0
.00          0.00
    24.00     109.0     5.0     212.8     27.4    235.4      0.12       -16
.38        -23.07
    23.50     107.9     4.9     211.9     38.0    236.1      0.50       -23
.56        -32.96
    23.00     135.1     5.0     212.2     15.8    287.4      0.33         4
.85        -15.14
    22.50     116.4     5.0     213.3      0.0      0.0     -1.00         0
.00          0.00
    22.00     113.2     5.1     212.2     31.3    261.8      0.62        -4
.99        -31.06
    21.50     107.9     5.1     212.2     40.6    106.0      0.42       -13
.29         39.53
    21.00     109.0     5.2     211.7     41.1    223.3      0.86       -32
.38        -30.89
    20.50     110.1     5.2     211.2      0.0      0.0     -1.00         0
.00          0.00
    20.00     110.1     5.2     210.6     52.8     33.1      0.14        47
.81         35.71
    19.50     109.0     5.3     209.6     35.2    109.2      0.43       -13
.07         33.66
    19.00     110.1     5.3     209.6     37.3    293.2      0.51        16
.72        -35.00
    18.50     116.4     5.3     208.9      0.0      0.0     -1.00         0
.00          0.00
    18.00     114.3     5.3     208.3     47.5     64.5      0.01        25
.19         44.57
    17.50     113.2     5.4     209.1      4.1    192.5      0.57        -4
.04         -0.89
    17.00     188.9     5.3     208.4      0.0      0.0     -1.00         0
.00          0.00
    16.50     125.9     5.4     209.6     47.3     63.0      0.26        26
.23         44.02
    16.00     123.8     5.4     208.5     32.3     69.9      0.79        12
.24         30.69
    15.50     128.2     5.4     208.9     45.7    237.4      0.64       -28
.87        -40.76
    15.00     120.7     5.4     209.6      0.0      0.0     -1.00         0
.00          0.00
    14.50     119.6     5.4     208.0     42.6    271.4      0.45         1
.31        -42.57
    14.00     123.8     5.4     214.5     40.7     78.0      0.57        10
.14         40.11
    13.50     121.7     5.3     207.4     31.8    270.3      0.34         0
.17        -31.85
    13.00     121.7     5.4     194.5      0.0      0.0     -1.00         0
.00          0.00
    12.50     122.8     5.1     205.2     19.2     55.5      0.94        11
.14         16.00
    12.00     118.5     4.9     199.6      9.9     69.1      0.61         3
.57          9.30
    11.50     122.8     5.0     216.6      5.2     24.5      0.87         4
.73          2.16
    11.00     145.5     5.2     295.1      5.2     40.9      0.95         3
.93          3.41
    10.50     125.9     5.2     137.1      4.4    351.4      0.78         4
.35         -0.66
    10.00     130.5     5.2     199.5      5.3     29.4      0.99
```

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93D-53
COMPANY:
MANALTA

SHORT SPACED DENSITY GAMMA RAY CALIPER (DETAIL LOG) 20:1

#S79

COMPANY MANALTA
WELL T93D-53
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	15-OCT-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	91.4M			
DEPTH-LOGGER	91.0M			
FIRST READING	90.5M			
LAST READING	0M			
CASING-DRILLER	7.6M			
CASING-LOGGER	7.5M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.02 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
FM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	95MM	7.6M	TD	105MM	N/A	SURFACE	7.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER (DETAIL LOG) 20:1

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 15-OCT-1993 AT 11:50
FILENAME: DD3AD53A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-OCT-1993 AT 18:44

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 15-OCT-1993 AT 11:50
FILENAME: DD3AD53A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-OCT-1993 AT 18:44

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 15-OCT-1993 AT 11:46 DATA LAST REPROCESSED: 15-OCT-1993 AT 13:58

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.02	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	7.60
BIT SIZE 3	.00	BIT DEPTH 3	91.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-53
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY MANALTA
WELL T93D-53
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93D-53
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	15-OCT-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	91.4M			
DEPTH-LOGGER	91.0M			
FIRST READING	90.5M			
LAST READING	0M			
CASING-DRILLER	7.6M			
CASING-LOGGER	7.5M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.02 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	95MM	7.6M	TD	105MM	N/A	SURFACE	7.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 15-OCT-1993 AT 11:50
FILENAME: DD3AD53M.CIB RUN ID: MAIN LOG PLOTTED ON 15-OCT-1993 AT 18:35

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 15-OCT-1993 AT 11:50
FILENAME: DD3AD53M.CIB RUN ID: MAIN LOG PLOTTED ON 15-OCT-1993 AT 18:35

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 15-OCT-1993 AT 11:46

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.02	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	7.60
BIT SIZE 3	.00	BIT DEPTH 3	91.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-53
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY CALIPER
(DETAIL LOG) 20:1

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93D-53
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93D-53
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#879

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	15-OCT-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	91.4M			
DEPTH-LOGGER	91.0M			
FIRST READING	90.5M			
LAST READING	0M			
CASING-DRILLER	7.6M			
CASING-LOGGER	7.5M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.02 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	OOM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	95MM	7.6M	TD	105MM	N/A	SURFACE	7.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER (DETAIL LOG) 20:1

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 15-OCT-1993 AT 11:50
FILENAME: DD3AD53A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-OCT-1993 AT 18:51

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 15-OCT-1993 AT 11:50
FILENAME: DD3AD53A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-OCT-1993 AT 18:51

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 15-OCT-1993 AT 11:46 DATA LAST REPROCESSED: 15-OCT-1993 AT 13:58

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.02	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	7.60
BIT SIZE 3	.00	BIT DEPTH 3	91.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-53
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY MANALTA
WELL T93D-53
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
LSD | SEC | TWP | RGE

OTHER SERVICES
CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93D-53
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	15-OCT-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	91.4M	
DEPTH-LOGGER	91.0M	
FIRST READING	90.5M	
LAST READING	0M	
CASING-DRILLER	7.6M	
CASING-LOGGER	7.5M	
BIT SIZE	95MM	
HOLE FLUID TYPE	BENTONITE	
DENS./VISC.	1.02	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	A. LE BRETON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	OOM	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1. 2. 5. 10. 20. 50 OR 100 METRES/ FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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T93D-53

VERTICALITY DATA LISTING

ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH

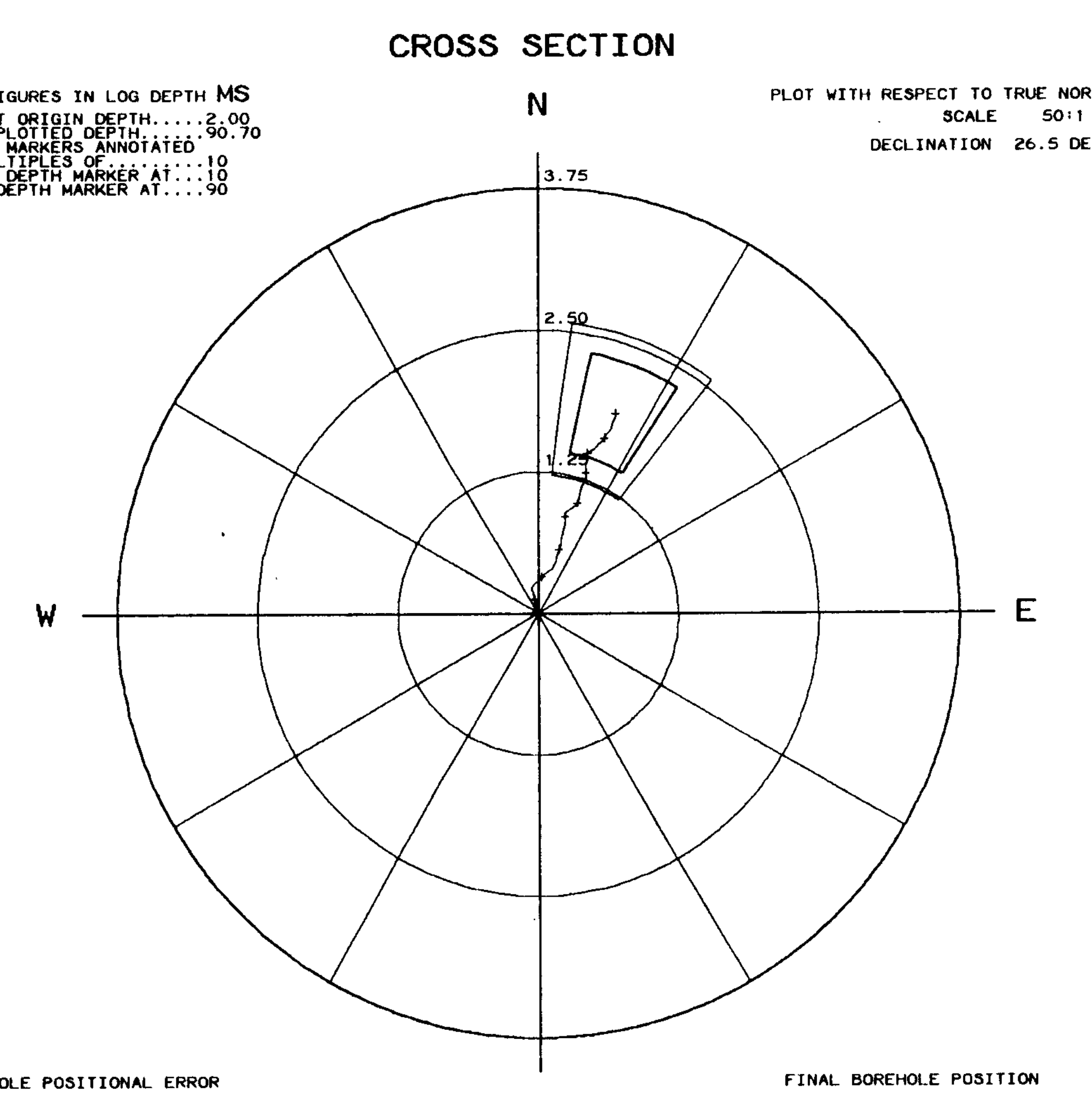
DATE PROCESSED: 15-OCT-1993
DATE LOGGED: 15-OCT-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
3.00	3.00	1.2	120	0.00	0.01	104	0.01	104	0.02	103	0.01	104	0.02	104	0.01
4.00	4.00	1.2	241	0.00	0.01	118	0.01	119	0.01	117	0.01	119	0.01	118	0.01
5.00	5.00	0.8	325	0.00	0.01	93	0.01	91	0.01	96	0.01	92	0.01	95	0.01
6.00	6.00	0.5	40	0.01	0.01	30	0.01	27	0.02	36	0.01	28	0.01	33	0.01
7.00	7.00	1.0	302	0.02	0.00	359	0.02	358	0.03	359	0.02	358	0.03	359	0.02
8.00	8.00	1.2	346	0.03	-0.01	344	0.04	344	0.04	343	0.03	344	0.04	343	0.03
9.00	9.00	2.1	353	0.07	-0.02	347	0.07	347	0.08	347	0.06	347	0.08	347	0.06
10.00	10.00	1.5	336	0.10	-0.02	346	0.10	346	0.12	346	0.09	346	0.11	346	0.09
11.00	11.00	1.4	345	0.12	-0.03	345	0.13	345	0.14	345	0.11	345	0.13	345	0.12
12.00	12.00	2.1	346	0.15	-0.04	345	0.16	345	0.18	345	0.13	345	0.17	345	0.14
13.00	13.00	1.5	341	0.18	-0.05	345	0.19	345	0.22	345	0.16	345	0.20	345	0.18
14.00	14.00	1.2	343	0.21	-0.06	344	0.22	344	0.24	344	0.19	344	0.23	344	0.20
15.00	15.00	0.9	359	0.23	-0.06	345	0.23	345	0.27	344	0.20	345	0.25	344	0.22
16.00	16.00	1.5	52	0.24	-0.06	347	0.25	347	0.28	347	0.21	347	0.26	347	0.23
17.00	17.00	1.9	44	0.26	-0.04	352	0.26	352	0.30	351	0.22	352	0.28	352	0.24
18.00	17.99	1.7	38	0.28	-0.02	356	0.28	356	0.32	356	0.24	356	0.30	356	0.26
19.00	18.99	1.3	49	0.30	0.00	360	0.30	0	0.34	360	0.25	360	0.32	360	0.27
20.00	19.99	1.3	49	0.31	0.02	3	0.31	3	0.35	3	0.27	3	0.33	3	0.29
21.00	20.99	1.3	60	0.32	0.03	6	0.33	6	0.37	6	0.28	6	0.35	6	0.30
22.00	21.99	1.3	49	0.34	0.05	9	0.34	9	0.39	8	0.29	9	0.37	9	0.32
23.00	22.99	1.2	57	0.35	0.07	11	0.36	11	0.41	11	0.31	11	0.38	11	0.33
24.00	23.99	1.3	58	0.37	0.09	13	0.38	13	0.43	13	0.32	13	0.40	13	0.35
25.00	24.99	1.2	47	0.38	0.10	15	0.39	15	0.45	15	0.34	15	0.42	15	0.36
26.00	25.99	1.5	47	0.39	0.12	17	0.41	17	0.47	17	0.35	17	0.44	17	0.38
27.00	26.99	2.0	29	0.42	0.14	18	0.44	18	0.51	18	0.38	18	0.47	18	0.41
28.00	27.99	1.9	20	0.45	0.15	18	0.48	19	0.54	18	0.41	19	0.51	18	0.44
29.00	28.99	2.4	18	0.49	0.16	18	0.52	19	0.59	18	0.44	18	0.55	18	0.48
30.00	29.99	2.1	14	0.52	0.17	18	0.55	18	0.63	18	0.48	18	0.59	18	0.51
31.00	30.99	2.2	16	0.56	0.18	18	0.59	18	0.67	18	0.51	18	0.63	18	0.55
32.00	31.99	2.2	17	0.59	0.19	18	0.62	18	0.71	18	0.54	18	0.67	18	0.58
33.00	32.99	2.0	7	0.63	0.20	18	0.66	18	0.74	18	0.58	18	0.70	18	0.62
34.00	33.99	1.5	12	0.66	0.21	17	0.69	17	0.78	17	0.60	17	0.73	17	0.65
35.00	34.99	1.8	20	0.69	0.21	17	0.72	17	0.81	17	0.63	17	0.76	17	0.67
36.00	35.99	1.7	21	0.72	0.22	17	0.75	17	0.84	17	0.66	17	0.80	17	0.70
37.00	36.99	1.9	20	0.74	0.23	17	0.78	17	0.88	17	0.68	17	0.83	17	0.73
38.00	37.99	1.5	16	0.77	0.24	17	0.81	17	0.91	17	0.71	17	0.86	17	0.76
39.00	38.99	1.6	359	0.80	0.24	17	0.83	17	0.94	17	0.73	17	0.88	17	0.78
40.00	39.99	1.7	3	0.83	0.24	16	0.86	16	0.97	16	0.75	16	0.91	16	0.81
41.00	40.99	1.9	351	0.85	0.24	16	0.89	16	1.00	16	0.78	16	0.94	16	0.83
42.00	41.98	0.6	345	0.87	0.24	15	0.90	15	1.01	15	0.79	15	0.96	15	0.84
43.00	42.98	0.7	329	0.88	0.23	15	0.91	15	1.03	15	0.79	15	0.97	15	0.85
44.00	43.98	1.0	45	0.89	0.25	16	0.92	16	1.04	16	0.80	16	0.98	16	0.86
45.00	44.98	1.2	63	0.90	0.27	16	0.94	16	1.06	16	0.82	16	1.00	16	0.88
46.00	45.98	1.1	52	0.91	0.28	17	0.96	17	1.08	17	0.83	17	1.02	17	0.89
47.00	46.98	1.1	50	0.92	0.30	18	0.97	18	1.10	18	0.84	18	1.04	18	0.91
48.00	47.98	1.1	51	0.94	0.31	19	0.99	19	1.12	18	0.86	19	1.05	18	0.92
49.00	48.98	0.9	49	0.94	0.33	19	1.00	19	1.13	19	0.87	19	1.07	19	0.93
50.00	49.98	1.0	66	0.96	0.34	20	1.01	20	1.15	19	0.88	20	1.08	20	0.95
51.00	50.98	1.7	26	0.97	0.36	20	1.03	20	1.17	20	0.89	20	1.10	20	0.96
52.00	51.98	1.9	12	1.00	0.36	20	1.06	20	1.21	20	0.92	20	1.13	20	0.99
53.00	52.98	1.7	21	1.03	0.37	20	1.09	20	1.24	19	0.95	20	1.17	20	1.02
54.00	53.98	1.7	16	1.06	0.37	19	1.12	20	1.27	19	0.97	20	1.20	19	1.05
55.00	54.98	1.7	18	1.09	0.38	19	1.15	20	1.31	19	1.00	19	1.23	19	1.08
56.00	55.98	1.8	14	1.12	0.39	19	1.18	19	1.34	19	1.03	19	1.26	19	1.11
57.00	56.98	1.6	27	1.14	0.40	19	1.21	20	1.37	19	1.05	20	1.29	19	1.13
58.00	57.98	1.7	32	1.17	0.42	20	1.24	20	1.41	19	1.08	20	1.33	20	1.16
59.00	58.98	1.3	359	1.20	0.43	20	1.27	20	1.44	19	1.10	20	1.35	19	1.19
60.00	59.98	1.2	1	1.22	0.43	19	1.29	19	1.46	19	1.12	19	1.38	19	1.21
61.00	60.98	1.4	354	1.24	0.43	19	1.31	19	1.49	19	1.14	19	1.40	19	1.23
62.00	61.98	1.4	358	1.27	0.43	19	1.34	19	1.52	18	1.16	19	1.43	19	1.25
63.00	62.98	1.4	6	1.29	0.43	18	1.36	18	1.54	18	1.18	18	1.45	18	1.27
64.00	63.98	1.6	8	1.32	0.43	18	1.39	18	1.57	18	1.20	18	1.48	18	1.30
65.00	64.98	1.6	10	1.35	0.44	18	1.42	18	1.60	18	1.23	18	1.51	18	1.32
66.00	65.98	1.5	9	1.37	0.44	18	1.44	18	1.63	18	1.25	18	1.53	18	1.34
67.00	66.98	0.7	321	1.39	0.44	17	1.46	18	1.65	17	1.26	17	1.56	17	1.36
68.00	67.98	0.4	7	1.40	0.43	17	1.46	17	1.66	17	1.27	17	1.56	17	1.37
69.00	68.98	0.3	357	1.40	0.44	17	1.47	17	1.67	17	1.27	17	1.57	17	1.37
70.00	69.98	0.4	344	1.41	0.44	17	1.47	17	1.68	17	1.27	17	1.58	17	1.37
71.00	70.98	0.9	57	1.41	0.44	17	1.48	17	1.69	17	1.27	17	1.58	17	1.38
72.00	71.98	0.8	61	1.42	0.45	18	1.49	18	1.70	18	1.28	18	1.60	18	1.39
73.00	72.98	1.0	60	1.43	0.47	18	1.50	18	1.71	18	1.29	18	1.61	18	1.40
74.00	73.98	1.3	47	1.44	0.48	19	1.52	19	1.73	18	1.30	19	1.62	18	1.41
75.00	74.98	1.4	41	1.46	0.50	19	1.54	19	1.76	19	1.32	19	1.65	19	1.43
76.00	75.98	1.3	41	1.47	0.51	19	1.56	19	1.78	19	1.34	19	1.67	19	1.45
77.00	76.98	1.1	52	1.49	0.53	20	1.58	20	1.80	19	1.36	20	1.69	20	1.47
78.00	77.98	1.0	59	1.50	0.55	20	1.59	20	1.82	20	1.37	20	1.71	20	1.48
79.00	78.98	1.3	59	1.51	0.56	20	1.61	21	1.84	20	1.38	20	1.72	20	1.49
80.00	79.98	1.4	32	1.52	0.57	21	1.63	21	1.86	20	1.40	21	1.74	21	1.51
81.00	80.98	1.7	30	1.55	0.59	21	1.65	21	1.89	21	1.42	21	1.77	21	1.54
82.00	81.97	1.6	28	1.57	0.60	21	1.68	21	1.92	21	1.44	21	1.80	21	1.56
83.00	82.97	1.3	40	1.59	0.61	21	1.70	21	1.95	21	1.46	21	1.83	21	1.58
84.00	83.97	1.3	51	1.61	0.63	21	1.73	22	1.97	21	1.48	22	1.85	21	1.60
85.00	84.97	1.5	29	1.63	0.64	22	1.75	22	2.00	21	1.50	22	1.87	22	1.62
86.00	85.97	1.6	15	1.65	0.65	22	1.78	22	2.03	21	1.52	22	1.90	21	1.65
87.00	86.97	1.5	21	1.68	0.66	22	1.80	22	2.06	21	1.55	22	1.93	21	1.67
88.00	87.97	1.6	19	1.70	0.67	22	1.83	22	2.09	21	1.57	22	1.96	21	1.70
89.00	88.97	1.6	24	1.73	0.68	22	1.86	22	2.12	21	1.59	22	1.99	21	1.72
90.00	89.97	1.4	9	1.75	0.69	22	1.88	22	2.15	21	1.62	22	2.02	21	1.75
90.70	90.67	1.3	7	1.77	0.69	21	1.90	22	2.17	21	1.63	21	2.03	21	1.76

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....2.00
LAST PLOTTED DEPTH......90.70
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....90

PLOT WITH RESPECT TO TRUE NORTH
SCALE 50:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

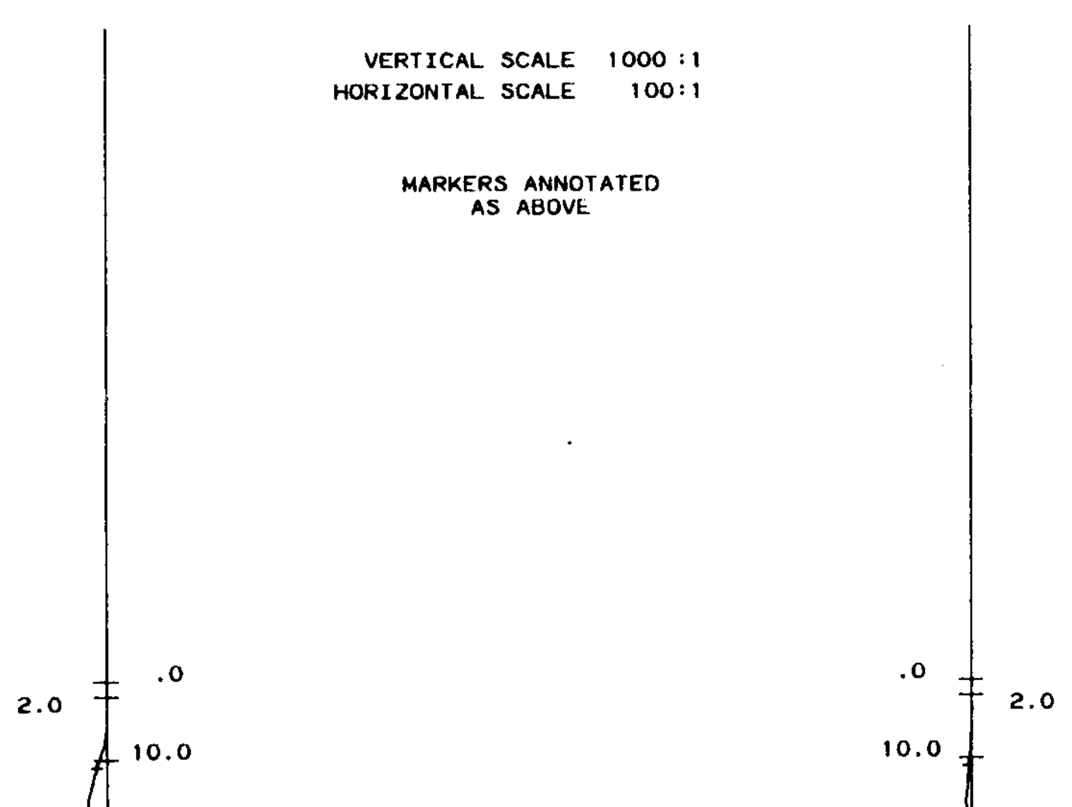
THE LAST PLOTTED DEPTH IS AT 1.77 MS NORTH, .69 MS EAST IE. 1.90 MS FROM THE ORIGIN, 21 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

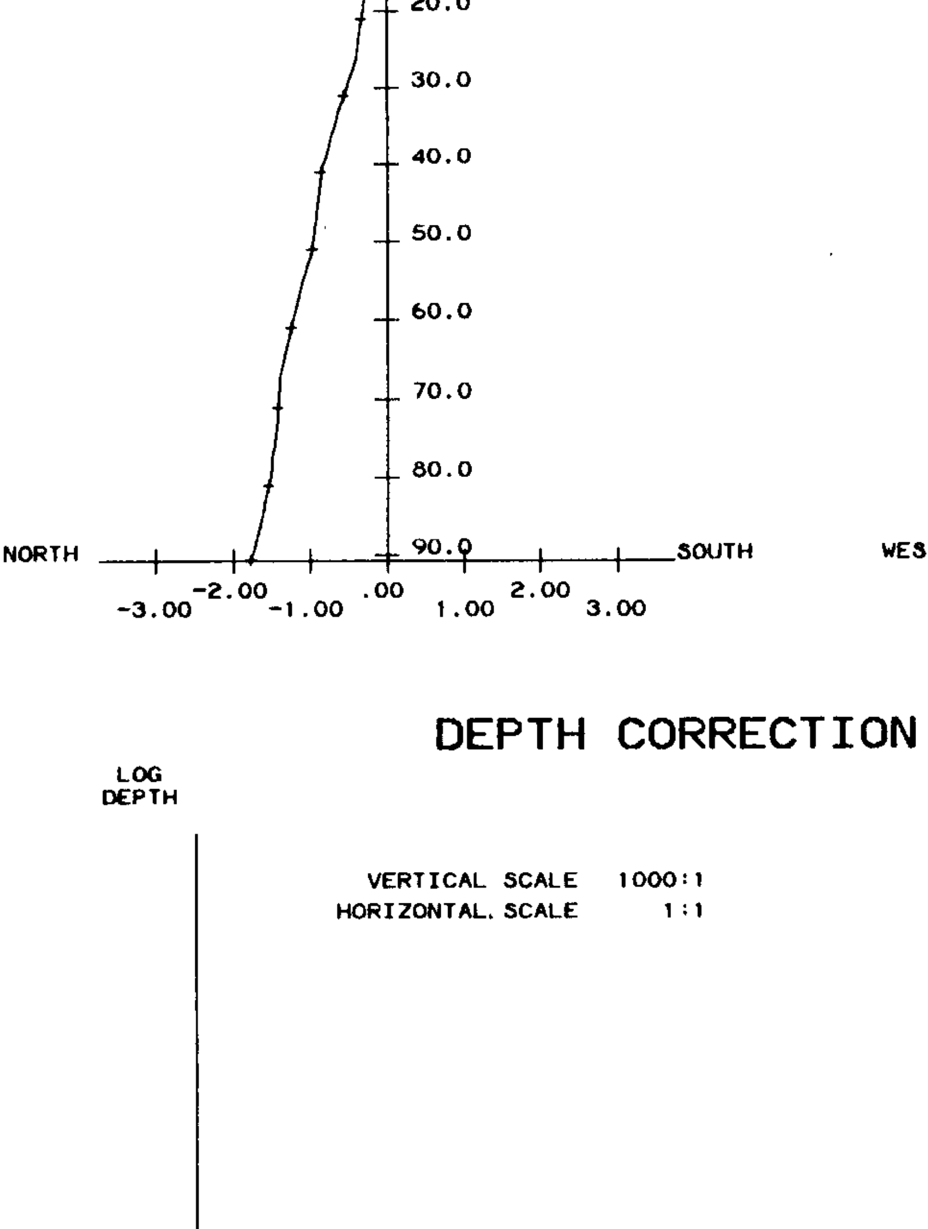
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 100:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 1:1



DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE
3.00	3.00	73.00	72.98
4.00	4.00	74.00	73.98
5.00	5.00	75.00	74.98
6.00	6.00	76.00	75.98
7.00	7.00	77.00	76.98
8.00	8.00	78.00	77.98
9.00	9.00	79.00	78.98
10.00	10.00	80.00	79.98
11.00	11.00	81.00	80.98
12.00	12.00	82.00	81.97
13.00	13.00	83.00	82.97
14.00	14.00	84.00	83.97
15.00	15.00	85.00	84.97
16.00	16.00	86.00	85.97
17.00	17.00	87.00	86.97
18.00	17.99	88.00	87.97
19.00	18.99	89.00	88.97
20.00	19.99	90.00	89.97
21.00	20.99	90.70	90.67
22.00	21.99		
23.00	22.99		
24.00	23.99		
25.00	24.99		
26.00	25.99		
27.00	26.99		
28.00	27.99		
29.00	28.99		
30.00	29.99		
31.00	30.99		
32.00	31.99		
33.00	32.99		
34.00	33.99		
35.00	34.99		
36.00	35.99		
37.00	36.99		
38.00	37.99		
39.00	38.99		
40.00	39.99		
41.00	40.99		
42.00	41.98		
43.00	42.98		
44.00	43.98		
45.00	44.98		
46.00	45.98		
47.00	46.98		
48.00	47.98		
49.00	48.98		
50.00	49.98		
51.00	50.98		
52.00	51.98		
53.00	52.98		
54.00	53.98		
55.00	54.98		
56.00	55.98		
57.00	56.98		
58.00	57.98		
59.00	58.98		
60.00	59.98		
61.00	60.98		
62.00	61.98		
63.00	62.98		
64.00	63.98		
65.00	64.98		
66.00	65.98		
67.00	66.98		
68.00	67.98		
69.00	68.98		
70.00	69.98		
71.00	70.98		
72.00	71.98		

COMPANY	MANALTA
WELL	T93D-53
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 214
WELL:
T93R-01
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-01
FIELD SITE 214
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	1-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	42.7M			
DEPTH-LOGGER	42.5M			
FIRST READING	42M			
LAST READING	6M			
CASING-DRILLER	5.3M			
CASING-LOGGER	5.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	6.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	5.3M	TD	178MM	N/A	SURFACE	5.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-SEP-1993 AT 17:13
FILENAME: DD3AR01A.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-SEP-1993 AT 20:45

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-SEP-1993 AT 17:13
FILENAME: DD3AR01A.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-SEP-1993 AT 20:45

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 01-SEP-1993 AT 17:08 DATA LAST REPROCESSED: 1-SEP-1993 AT 20:37

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.30
BIT SIZE 3	.00	BIT DEPTH 3	42.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-01
FIELD	SITE 214
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY	MANALTA
WELL	T93R-01
FIELD	SITE 214
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 214
WELL:
T93R-01
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	1-SEP-93				
RUN NUMBER	TWO				
DEPTH-DRILLER	42.7M				
DEPTH-LOGGER	42.5M				
FIRST READING	42M				
LAST READING	6M				
CASING-DRILLER	5.3M				
CASING-LOGGER	5.3M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01	N/A			
PH/FLUID LOSS	N/A	N/			
SAMPLE SOURCE					
RM @ MEAS TEMP					
RMF @ MEAS TEMP					
RMC @ MEAS TEMP					
SOURCE: RMF/RMC					
RM @ BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	B.STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	6.5M				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	5.3M	TD	178MM	N/A	SURFACE	5.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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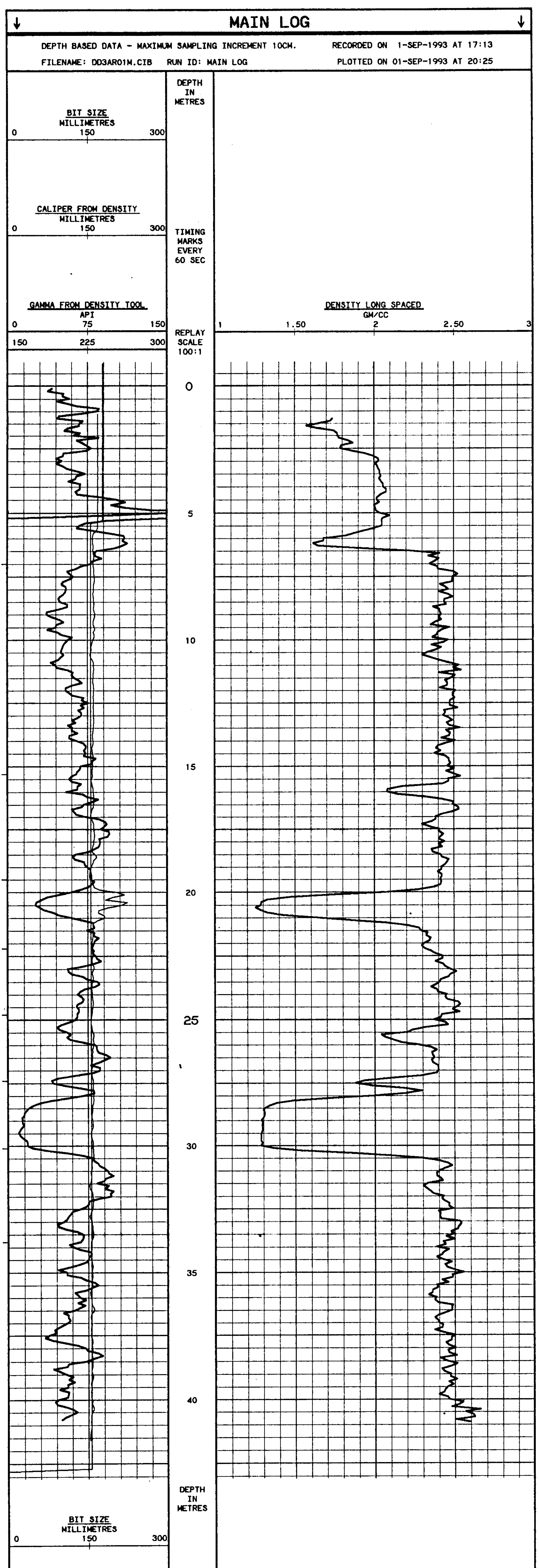
↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 1-SEP-1993 AT 17:13
FILENAME: DD3AR01M.CIB RUN ID: MAIN LOG PLOTTED ON 01-SEP-1993 AT 20:25



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 1-SEP-1993 AT 17:13
FILENAME: DD3AR01M.CIB RUN ID: MAIN LOG PLOTTED ON 01-SEP-1993 AT 20:25

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 01-SEP-1993 AT 17:08

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.30
BIT SIZE 3	.00	BIT DEPTH 3	42.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-01
FIELD	SITE 214
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 214
WELL:
T93R-01
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-01
FIELD SITE 214
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				CCS
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	1-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	42.7M	
DEPTH-LOGGER	42.5M	
FIRST READING	42M	
LAST READING	6M	
CASING-DRILLER	5.3M	
CASING-LOGGER	5.5M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	Y222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	6.5M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1. 2. 5. 10. 20. 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE. AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR. OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT. AND DO NOT. GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS. AND WE SHALL NOT. EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART. BE LIABLE OR RESPONSIBLE FOR ANY LOSS. COSTS. DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS. AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

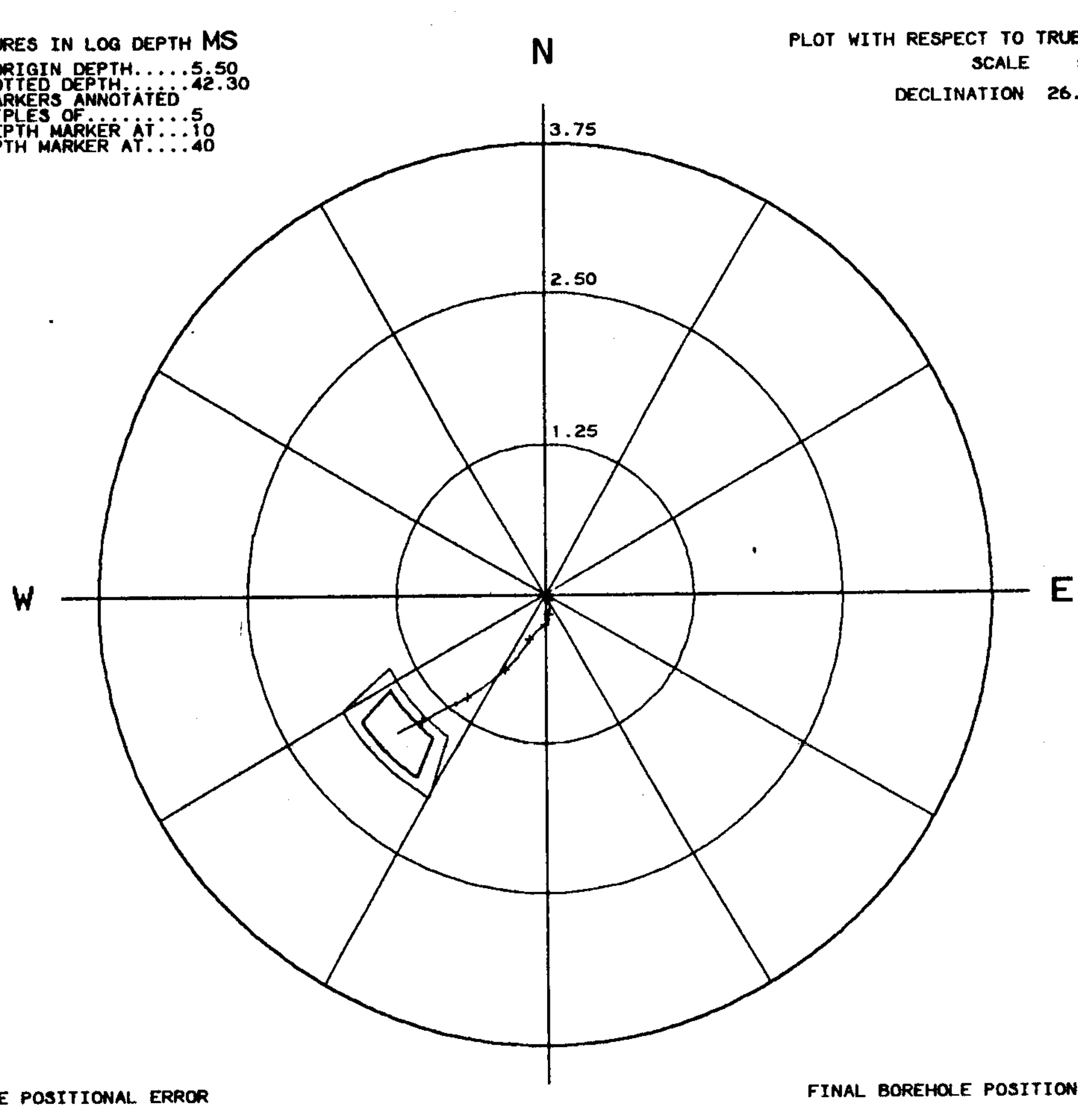
```
T93R-01                          VERTICALITY DATA LISTING                        DATE PROCESSED:  1-SEP-1993
                       ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH               DATE.LOGGED:     1-SEP-1993
    DEPTHS          BOREHOLE   AXIAL CO-ORDS    POLAR      POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
   LOG      TRUE    TILT AZI   NORTH      EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

   6.00     6.00    0.6 107    0.00     0.00 131    0.00 133    0.00 127    0.00 132    0.00 130    0.00
   7.00     7.00    0.7 145   -0.01     0.01 138    0.01 137    0.02 138    0.01 137    0.01 138    0.01
   8.00     8.00    0.8 162   -0.02     0.01 145    0.03 145    0.03 146    0.02 145    0.03 145    0.02
   9.00     9.00    0.8 136   -0.03     0.02 150    0.04 149    0.05 151    0.03 150    0.05 150    0.03
  10.00    10.00    1.0 167   -0.05     0.03 153    0.06 152    0.07 154    0.04 152    0.06 153    0.05
  11.00    11.00    1.2 154   -0.07     0.03 154    0.07 153    0.09 154    0.06 153    0.08 154    0.06
  12.00    12.00    1.3 163   -0.09     0.04 156    0.09 156    0.12 157    0.07 156    0.10 156    0.08
  13.00    13.00    1.5 188   -0.11     0.04 160    0.12 159    0.14 161    0.09 160    0.13 160    0.11
  14.00    14.00    1.7 193   -0.14     0.03 166    0.14 165    0.17 167    0.12 165    0.16 166    0.13
  15.00    15.00    1.7 185   -0.17     0.03 170    0.17 169    0.20 171    0.14 169    0.19 170    0.16
  16.00    16.00    1.5 168   -0.20     0.03 171    0.20 170    0.23 172    0.16 170    0.21 171    0.18
  17.00    17.00    0.9 194   -0.21     0.03 171    0.22 171    0.25 173    0.18 171    0.23 172    0.20
  18.00    18.00    1.0 225   -0.23     0.02 174    0.23 173    0.27 175    0.19 174    0.25 174    0.21
  19.00    19.00    1.0 219   -0.24     0.01 177    0.24 177    0.28 178    0.20 177    0.26 177    0.22
  20.00    20.00    0.9 204   -0.25     0.00 179    0.25 179    0.30 180    0.21 179    0.27 180    0.23
  21.00    21.00    1.3 237   -0.26    -0.01 182    0.26 182    0.31 183    0.22 182    0.29 182    0.24
  22.00    22.00    2.3 241   -0.28    -0.04 188    0.28 187    0.33 188    0.23 187    0.30 188    0.26
  23.00    23.00    3.0 231   -0.30    -0.07 193    0.31 192    0.36 195    0.26 193    0.34 194    0.29
  24.00    23.99    3.3 223   -0.34    -0.11 198    0.35 196    0.41 199    0.30 197    0.38 198    0.33
  25.00    24.99    3.3 216   -0.38    -0.14 200    0.40 199    0.46 202    0.35 200    0.43 201    0.38
  26.00    25.99    3.3 212   -0.43    -0.17 202    0.46 201    0.52 204    0.40 202    0.49 203    0.43
  27.00    26.99    3.7 221   -0.48    -0.21 204    0.52 203    0.58 205    0.46 203    0.55 205    0.49
  28.00    27.99    4.0 210   -0.53    -0.25 205    0.59 204    0.65 206    0.52 204    0.62 206    0.55
  29.00    28.98    4.5 227   -0.59    -0.29 207    0.66 206    0.72 208    0.59 206    0.69 207    0.62
  30.00    29.98    4.2 228   -0.64    -0.35 208    0.72 207    0.80 210    0.65 208    0.76 209    0.69
  31.00    30.98    4.6 227   -0.68    -0.40 210    0.79 209    0.87 212    0.72 210    0.83 211    0.76
  32.00    31.98    4.9 230   -0.73    -0.46 212    0.86 211    0.94 214    0.79 212    0.90 213    0.83
  33.00    32.97    5.1 236   -0.78    -0.53 214    0.94 213    1.02 215    0.86 214    0.98 215    0.90
  34.00    33.97    4.6 236   -0.82    -0.59 216    1.02 215    1.10 217    0.94 215    1.06 216    0.98
  35.00    34.97    4.3 240   -0.86    -0.66 217    1.09 217    1.17 219    1.00 217    1.13 218    1.05
  36.00    35.96    4.7 240   -0.90    -0.73 219    1.16 218    1.25 220    1.07 219    1.20 220    1.12
  37.00    36.96    4.3 243   -0.93    -0.80 221    1.23 220    1.32 222    1.14 220    1.28 221    1.19
  38.00    37.96    5.5 244   -0.97    -0.88 222    1.31 221    1.40 223    1.22 222    1.36 223    1.26
  39.00    38.95    5.0 241   -1.02    -0.96 223    1.40 222    1.49 224    1.30 223    1.45 224    1.35
  40.00    39.95    5.9 247   -1.06    -1.05 225    1.49 224    1.59 226    1.39 224    1.54 225    1.44
  41.00    40.94    5.5 244   -1.10    -1.14 226    1.58 225    1.68 227    1.48 226    1.63 226    1.53
  42.00    41.94    5.9 244   -1.14    -1.22 227    1.67 226    1.78 228    1.57 226    1.73 227    1.62
  42.30    42.24    5.9 243   -1.16    -1.25 227    1.70 226    1.81 228    1.60 227    1.76 228    1.65
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....5.50
LAST PLOTTED DEPTH......42.30
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........5
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....40

PLOT WITH RESPECT TO TRUE NORTH
SCALE 50:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL. AND MAXIMUM. POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 1.16 MS SOUTH. 1.25 MS WEST IE. 1.70 MS FROM THE ORIGIN. 227 DEG FROM TRUE NORTH

VERTICAL SECTIONS

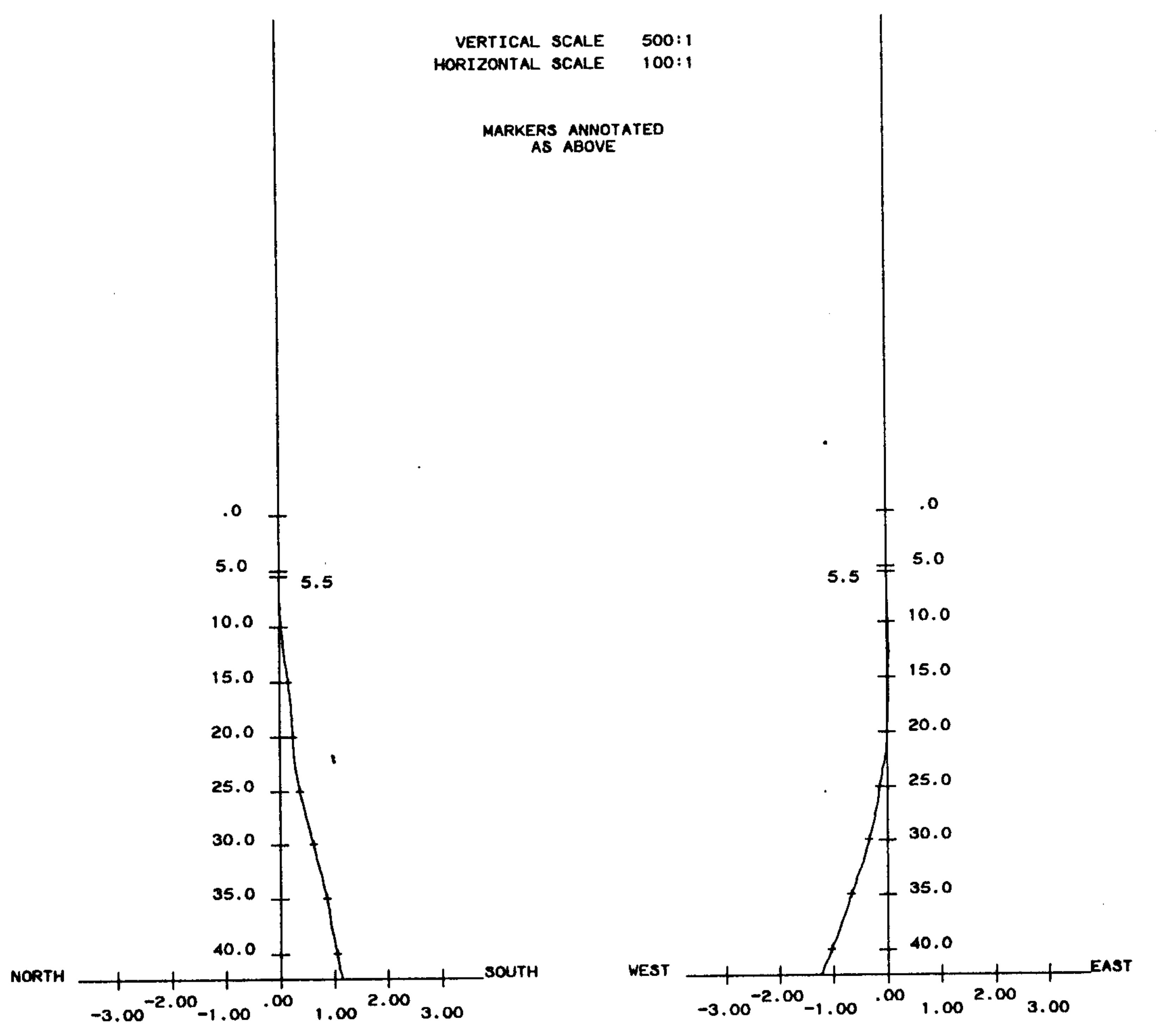
(TRUE DEPTH VS DISPLACEMENT)

N-S SECTION

E-W SECTION

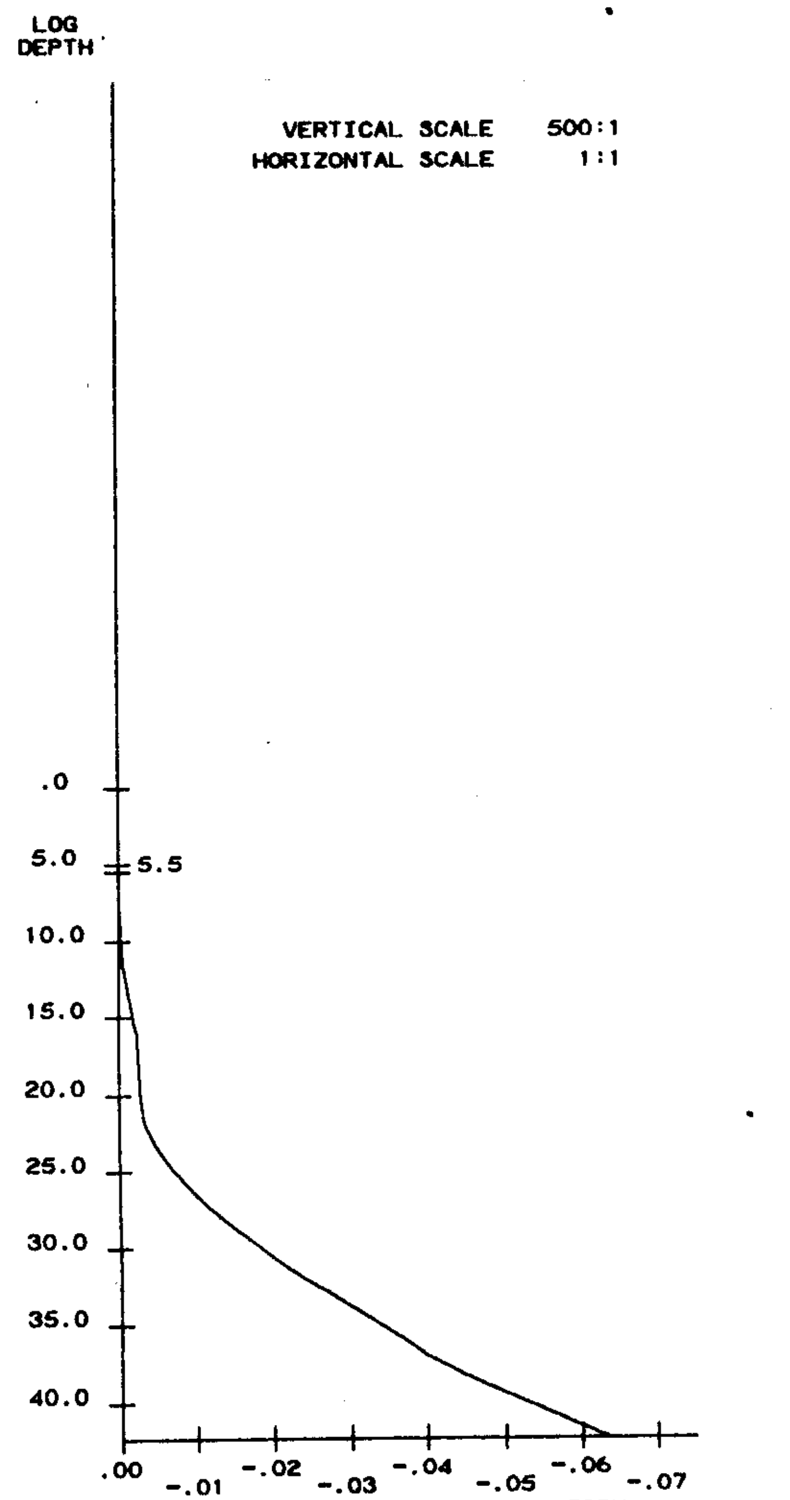
VERTICAL SCALE 500:1
HORIZONTAL SCALE 100:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 500:1
HORIZONTAL SCALE 1:1



DEPTHS:

LOG	TRUE
6.00	6.00
7.00	7.00
8.00	8.00
9.00	9.00
10.00	10.00
11.00	11.00
12.00	12.00
13.00	13.00
14.00	14.00
15.00	15.00
16.00	16.00
17.00	17.00
18.00	18.00
19.00	19.00
20.00	20.00
21.00	21.00
22.00	22.00
23.00	23.00
24.00	23.99
25.00	24.99
26.00	25.99
27.00	26.99
28.00	27.99
29.00	28.98
30.00	29.98
31.00	30.98
32.00	31.98
33.00	32.97
34.00	33.97
35.00	34.97
36.00	35.96
37.00	36.96
38.00	37.96
39.00	38.95
40.00	39.95
41.00	40.94
42.00	41.94
42.30	42.24

COMPANY	MANALTA
WELL	T93R-01
FIELD	SITE 214
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 214
WELL: T93R-01
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-01
FIELD SITE 214
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	1-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	42.7M			
DEPTH-LOGGER	42.5M			
FIRST READING	42M			
LAST READING	6M			
CASING-DRILLER	5.3M			
CASING-LOGGER	5.5M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A NA/			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	6.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	5.3M	TD	178MM	N/A	SURFACE	5.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-SEP-1993 AT 17:13
FILENAME: DD3AR01A.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-SEP-1993 AT 20:41

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 1-SEP-1993 AT 17:13
FILENAME: DD3AR01A.CIB RUN ID: DETAIL SECTION PLOTTED ON 01-SEP-1993 AT 20:39

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 01-SEP-1993 AT 17:08 DATA LAST REPROCESSED: 1-SEP-1993 AT 20:37

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.30
BIT SIZE 3	.00	BIT DEPTH 3	42.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
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CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-01
FIELD	SITE 214
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER #879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 214
WELL:
T93R-01C
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-01C
FIELD	SITE 214
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	34.4			
DEPTH-LOGGER	34.5M			
FIRST READING	34.0M			
LAST READING	0OM			
CASING-DRILLER	5.3M			
CASING-LOGGER	5.6M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	8.4M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	5.6M	TD	178MM	N/A	SURFACE	5.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

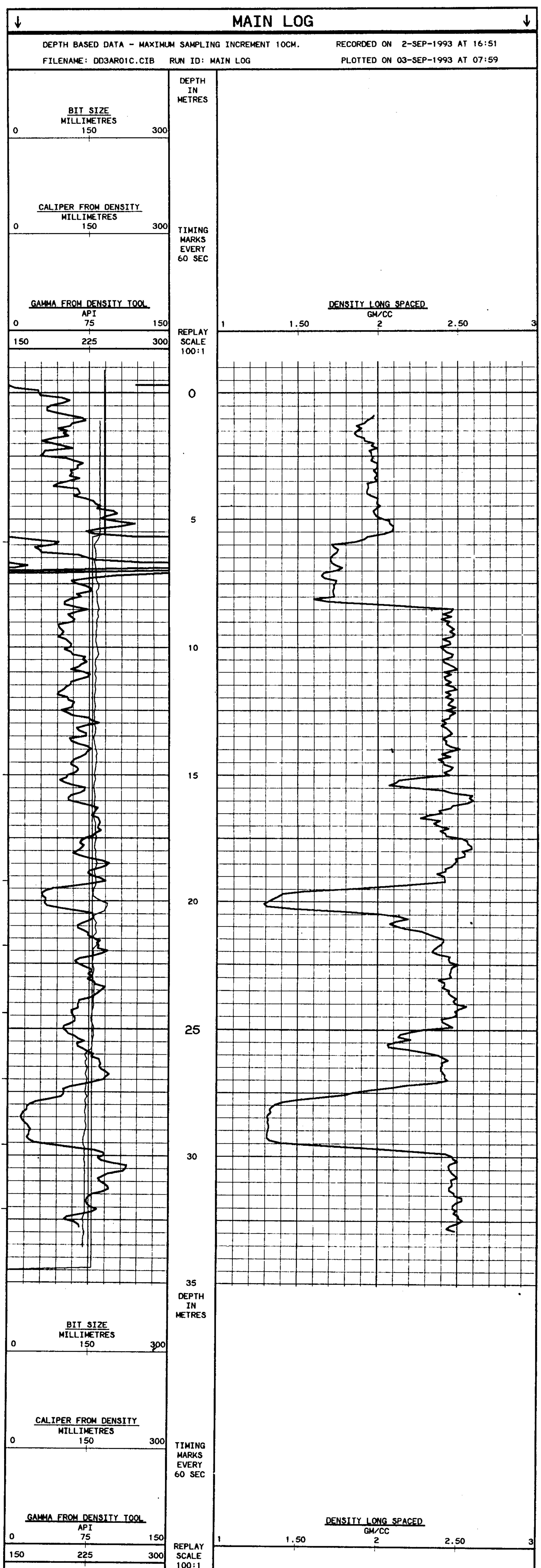
LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-SEP-1993 AT 16:51
FILENAME: DD3AR01C.CIB RUN ID: MAIN LOG PLOTTED ON 03-SEP-1993 AT 07:59



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-SEP-1993 AT 16:51
FILENAME: DD3AR01C.CIB RUN ID: MAIN LOG PLOTTED ON 03-SEP-1993 AT 07:59

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-SEP-1993 AT 16:44

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.60
BIT SIZE 3	.00	BIT DEPTH 3	34.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-01C
FIELD	SITE 214
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 214
WELL:
T93R-01C
COMPANY:
MANALTA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

COMPANY MANALTA
WELL T93R-01C
FIELD SITE 214
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	34.4			
DEPTH-LOGGER	34.5M			
FIRST READING	34.0M			
LAST READING	OOM			
CASING-DRILLER	5.3M			
CASING-LOGGER	5.6M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	8.4M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	5.6M	TD	178MM	N/A	SURFACE	5.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-SEP-1993 AT 16:51
FILENAME: DD3AC01A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-SEP-1993 AT 08:07

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

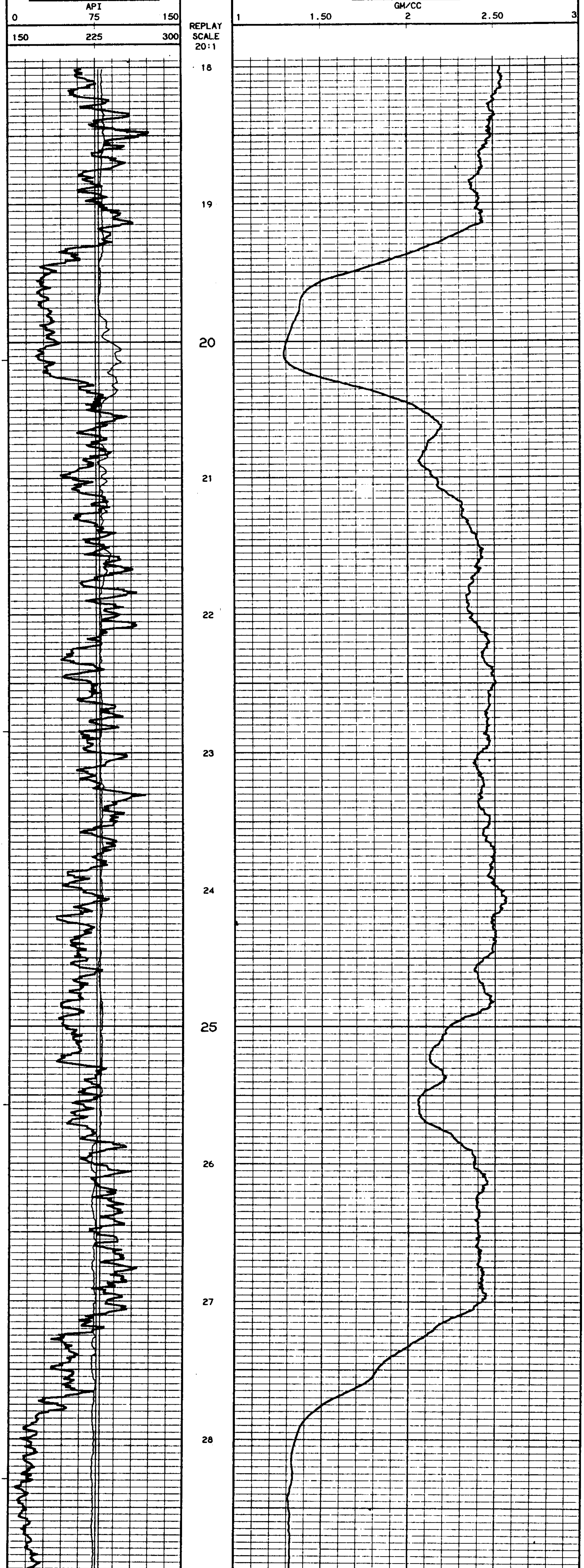
CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-SEP-1993 AT 16:51
FILENAME: DD3AC01A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-SEP-1993 AT 08:04

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-SEP-1993 AT 16:44 DATA LAST REPROCESSED: 3-SEP-1993 AT 8:03

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.60
BIT SIZE 3	.00	BIT DEPTH 3	34.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-01C
FIELD	SITE 214
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 214
WELL:
T93R-01C
COMPANY:
MANALTA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-01C
FIELD	SITE 214
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION				OTHER SERVICES
TELKWA				
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL, ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	34.4			
DEPTH-LOGGER	34.5M			
FIRST READING	34.0M			
LAST READING	00M			
CASING-DRILLER	5.3M			
CASING-LOGGER	5.6M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	8.4M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	5.6M	TD	178MM	N/A	SURFACE	5.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-SEP-1993 AT 16:51
FILENAME: DD3AC01A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-SEP-1993 AT 08:09

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-SEP-1993 AT 16:51
FILENAME: DD3AC01A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-SEP-1993 AT 08:09

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-SEP-1993 AT 16:44 DATA LAST REPROCESSED: 3-SEP-1993 AT 8:03

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.60
BIT SIZE 3	.00	BIT DEPTH 3	34.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
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CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-01C
FIELD	SITE 214
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 108
WELL:
T93R-02
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-02
FIELD	SITE # 108
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-SEP-93	
RUN NUMBER	FOUR	
DEPTH-DRILLER	80.5M	
DEPTH-LOGGER	80.5M	
FIRST READING	80M	
LAST READING	0M	
CASING-DRILLER	2.1M	
CASING-LOGGER	2.1M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	2.8M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE. AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR. OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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T93R-02                      VERTICALITY DATA LISTING                      DATE PROCESSED:  3-SEP-1993
                     ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH           DATE LOGGED:     2-SEP-1993
    DEPTHS          BOREHOLE   AXIAL CO-ORDS    POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG      TRUE     TILT AZI   NORTH      EAST BRG   RADIUS BRG   RADIUS BRG   RADIUS BRG   RADIUS BRD   RADIUS

   5.00     5.00     1.3 237    0.00     -0.01 247    0.01 245    0.01 248    0.01 246    0.01 247    0.01
   6.00     6.00     1.3 231   -0.02     -0.03 234    0.03 234    0.04 234    0.03 234    0.04 234    0.03
   7.00     7.00     1.5 216   -0.04     -0.04 230    0.06 230    0.07 229    0.05 230    0.06 229    0.05
   8.00     8.00     1.2 226   -0.05     -0.06 228    0.08 228    0.09 228    0.07 228    0.09 228    0.07
   9.00     9.00     1.3 218   -0.06     -0.07 228    0.10 229    0.11 228    0.08 229    0.10 228    0.09
  10.00    10.00     0.9 231   -0.07     -0.08 230    0.11 230    0.13 229    0.09 230    0.12 229    0.10
  11.00    11.00     0.7 272   -0.08     -0.10 231    0.12 232    0.15 231    0.10 232    0.13 231    0.11
  12.00    12.00     1.2 293   -0.08     -0.11 236    0.14 236    0.16 235    0.11 236    0.15 235    0.12
  13.00    13.00     1.4 290   -0.08     -0.13 240    0.15 240    0.18 239    0.12 240    0.17 240    0.14
  14.00    14.00     1.5 279   -0.07     -0.15 245    0.17 245    0.20 245    0.14 245    0.19 245    0.16
  15.00    15.00     1.9 277   -0.07     -0.18 249    0.20 249    0.23 249    0.16 249    0.21 249    0.18
  16.00    16.00     2.3 271   -0.07     -0.22 253    0.23 252    0.27 253    0.19 253    0.25 253    0.21
  17.00    17.00     1.8 239   -0.07     -0.26 254    0.27 254    0.31 255    0.23 254    0.29 254    0.25
  18.00    17.99     3.0 245   -0.09     -0.31 254    0.32 254    0.36 254    0.27 254    0.34 254    0.30
  19.00    18.99     2.5 238   -0.11     -0.35 253    0.37 253    0.41 253    0.32 253    0.39 253    0.34
  20.00    19.99     2.8 236   -0.13     -0.39 251    0.41 251    0.46 251    0.36 251    0.44 251    0.39
  21.00    20.99     2.6 228   -0.16     -0.43 249    0.46 249    0.51 249    0.40 249    0.48 249    0.43
  22.00    21.99     2.5 229   -0.19     -0.46 248    0.50 248    0.55 247    0.44 248    0.53 248    0.47
  23.00    22.99     2.2 230   -0.22     -0.49 246    0.53 246    0.60 246    0.47 246    0.56 246    0.50
  24.00    23.99     2.1 237   -0.24     -0.52 245    0.57 245    0.64 245    0.51 245    0.60 245    0.54
  25.00    24.99     2.2 238   -0.27     -0.55 244    0.61 244    0.68 244    0.54 244    0.64 244    0.58
  26.00    25.99     2.2 232   -0.29     -0.58 244    0.65 244    0.72 244    0.58 244    0.69 244    0.61
  27.00    26.99     2.3 232   -0.31     -0.62 243    0.69 243    0.76 243    0.62 243    0.73 243    0.65
  28.00    27.99     2.6 245   -0.33     -0.65 243    0.73 243    0.81 243    0.65 243    0.77 243    0.69
  29.00    28.98     2.8 246   -0.35     -0.70 244    0.78 244    0.86 244    0.70 244    0.82 244    0.74
  30.00    29.98     2.8 255   -0.36     -0.75 244    0.83 244    0.92 244    0.75 244    0.87 244    0.79
  31.00    30.98     3.6 252   -0.39     -0.80 244    0.89 244    0.98 244    0.80 244    0.93 244    0.84
  32.00    31.98     3.9 249   -0.41     -0.86 245    0.95 245    1.04 244    0.86 245    1.00 245    0.91
  33.00    32.98     4.2 244   -0.44     -0.92 245    1.02 245    1.12 245    0.93 245    1.07 245    0.97
  34.00    33.97     4.4 231   -0.48     -0.99 244    1.10 244    1.20 244    1.00 244    1.15 244    1.05
  35.00    34.97     4.3 226   -0.53     -1.05 243    1.17 243    1.27 243    1.07 243    1.22 243    1.12
  36.00    35.97     3.6 219   -0.58     -1.09 242    1.24 242    1.34 242    1.13 242    1.29 242    1.18
  37.00    36.97     3.2 217   -0.63     -1.13 241    1.29 241    1.40 241    1.18 241    1.35 241    1.24
  38.00    37.97     2.5 230   -0.66     -1.16 240    1.34 240    1.45 240    1.22 240    1.39 240    1.28
  39.00    38.96     2.8 251   -0.68     -1.20 240    1.38 241    1.50 240    1.27 240    1.44 240    1.32
  40.00    39.96     4.3 256   -0.70     -1.26 241    1.44 241    1.56 241    1.32 241    1.50 241    1.38
  41.00    40.96     5.0 251   -0.72     -1.34 242    1.52 242    1.64 242    1.40 242    1.58 242    1.46
  42.00    41.96     5.3 243   -0.76     -1.42 242    1.61 242    1.74 242    1.49 242    1.68 242    1.55
  43.00    42.95     5.1 231   -0.81     -1.50 242    1.70 242    1.83 242    1.57 242    1.77 242    1.64
  44.00    43.95     5.4 229   -0.87     -1.57 241    1.79 241    1.93 241    1.66 241    1.86 241    1.73
  45.00    44.94     5.1 224   -0.93     -1.63 240    1.88 240    2.02 240    1.75 240    1.95 240    1.81
  46.00    45.94     5.0 221   -1.00     -1.69 239    1.97 240    2.10 239    1.83 240    2.04 239    1.90
  47.00    46.93     5.3 222   -1.06     -1.75 239    2.05 239    2.19 239    1.90 239    2.12 239    1.98
  48.00    47.93     5.0 222   -1.13     -1.81 238    2.13 238    2.28 238    1.99 238    2.20 238    2.06
  49.00    48.93     4.8 226   -1.19     -1.87 238    2.21 238    2.36 237    2.07 238    2.29 237    2.14
  50.00    49.92     4.7 223   -1.25     -1.92 237    2.29 237    2.45 237    2.14 237    2.37 237    2.22
  51.00    50.92     4.4 226   -1.30     -1.98 237    2.37 237    2.53 236    2.22 237    2.45 237    2.29
  52.00    51.92     4.4 233   -1.35     -2.04 236    2.45 237    2.61 236    2.29 237    2.53 236    2.37
  53.00    52.91     4.6 242   -1.39     -2.11 237    2.52 237    2.69 236    2.36 237    2.61 236    2.44
  54.00    53.91     5.1 248   -1.43     -2.18 237    2.61 237    2.77 237    2.44 237    2.69 237    2.53
  55.00    54.91     5.6 247   -1.47     -2.27 237    2.70 237    2.87 237    2.53 237    2.79 237    2.62
  56.00    55.90     6.3 244   -1.51     -2.37 237    2.81 238    2.98 237    2.63 238    2.89 237    2.72
  57.00    56.89     6.5 237   -1.56     -2.46 238    2.92 238    3.09 237    2.74 238    3.01 238    2.83
  58.00    57.89     6.4 225   -1.63     -2.55 237    3.03 237    3.21 237    2.85 237    3.12 237    2.94
  59.00    58.88     5.9 216   -1.72     -2.62 237    3.13 237    3.31 237    2.95 237    3.22 237    3.04
  60.00    59.88     5.1 213   -1.79     -2.67 236    3.22 236    3.40 236    3.03 236    3.31 236    3.13
  61.00    60.88     4.1 221   -1.86     -2.72 236    3.29 236    3.48 235    3.10 236    3.39 236    3.20
  62.00    61.87     4.1 245   -1.90     -2.77 236    3.36 236    3.55 235    3.17 236    3.46 236    3.26
  63.00    62.87     5.1 250   -1.92     -2.85 236    3.44 236    3.64 236    3.24 236    3.54 236    3.34
  64.00    63.86     6.3 250   -1.96     -2.95 236    3.54 237    3.74 236    3.34 236    3.64 236    3.44
  65.00    64.86     6.4 242   -2.01     -3.05 237    3.65 237    3.85 237    3.45 237    3.75 237    3.55
  66.00    65.85     7.0 235   -2.07     -3.15 237    3.77 237    3.98 237    3.56 237    3.87 237    3.67
  67.00    66.84     6.9 226   -2.15     -3.25 237    3.89 237    4.10 236    3.68 237    4.00 236    3.79
  68.00    67.84     6.8 222   -2.23     -3.33 236    4.01 236    4.22 236    3.80 236    4.11 236    3.90
  69.00    68.83     6.6 222   -2.32     -3.41 236    4.12 236    4.34 236    3.90 236    4.23 236    4.01
  70.00    69.82     6.4 220   -2.41     -3.48 235    4.23 235    4.45 235    4.01 235    4.34 235    4.12
  71.00    70.82     6.1 219   -2.49     -3.54 235    4.33 235    4.55 235    4.11 235    4.44 235    4.22
  72.00    71.81     5.5 233   -2.56     -3.61 235    4.43 235    4.65 235    4.20 235    4.54 235    4.32
  73.00    72.81     5.8 239   -2.61     -3.70 235    4.53 235    4.76 235    4.30 235    4.64 235    4.41
  74.00    73.80     6.1 243   -2.66     -3.79 235    4.63 235    4.86 235    4.40 235    4.75 235    4.51
  75.00    74.80     6.3 242   -2.71     -3.88 235    4.74 235    4.97 235    4.50 235    4.85 235    4.62
  76.00    75.79     7.1 247   -2.76     -3.99 235    4.85 235    5.09 235    4.61 235    4.97 235    4.73
  77.00    76.78     7.5 245   -2.81     -4.10 236    4.97 236    5.21 235    4.73 236    5.09 236    4.85
  78.00    77.77     7.8 240   -2.87     -4.22 236    5.10 236    5.35 236    4.86 236    5.23 236    4.98
  79.00    78.76     7.6 236   -2.94     -4.33 236    5.24 236    5.49 236    4.99 236    5.36 236    5.11
  80.00    79.64  ****** ***   -3.02     -4.34 235    5.29 235    5.54 235    5.03 235    5.41 235    5.16
```
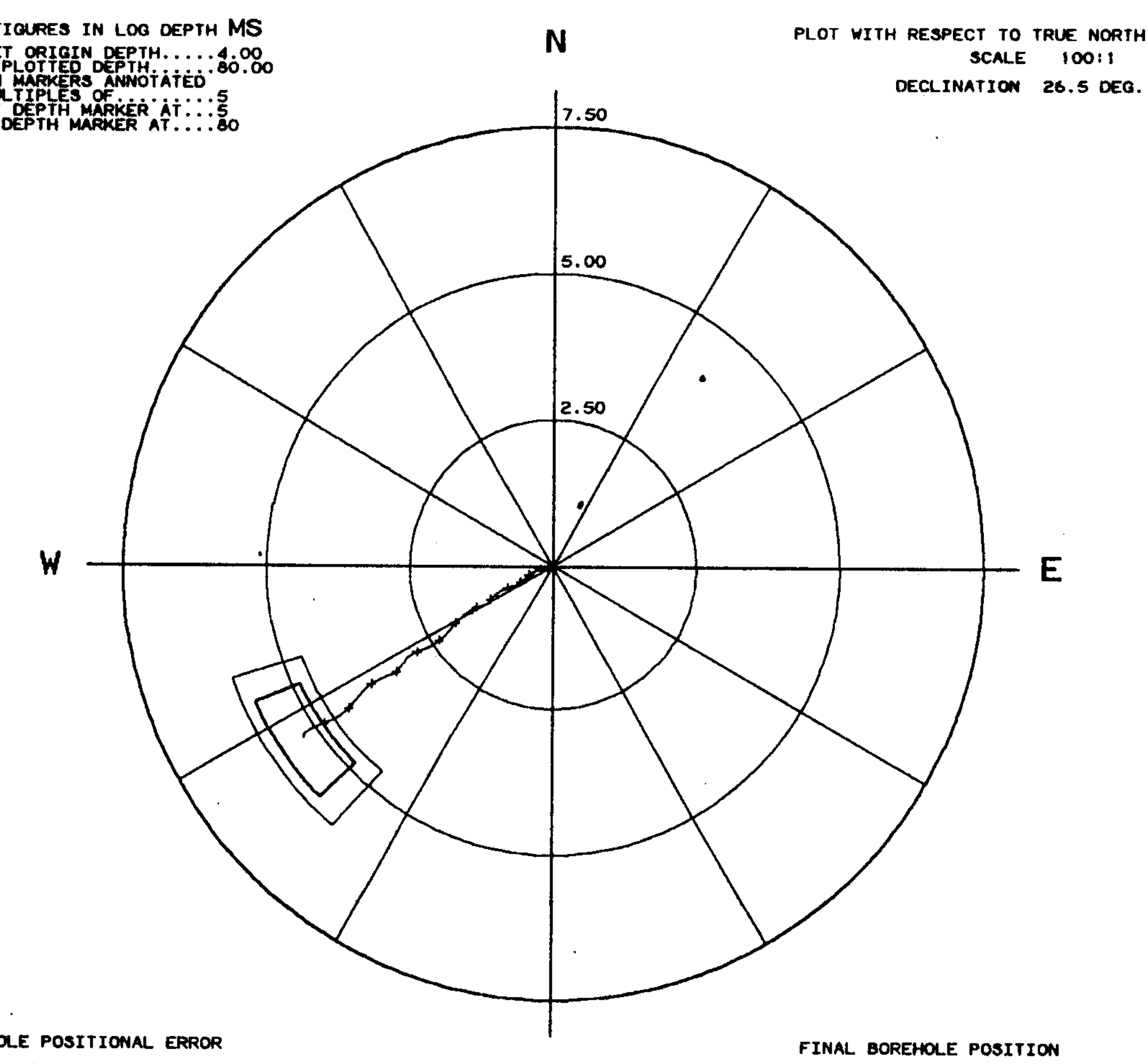

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....4.00
LAST PLOTTED DEPTH......80.00
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........5
FIRST DEPTH MARKER AT...5
LAST DEPTH MARKER AT....80

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

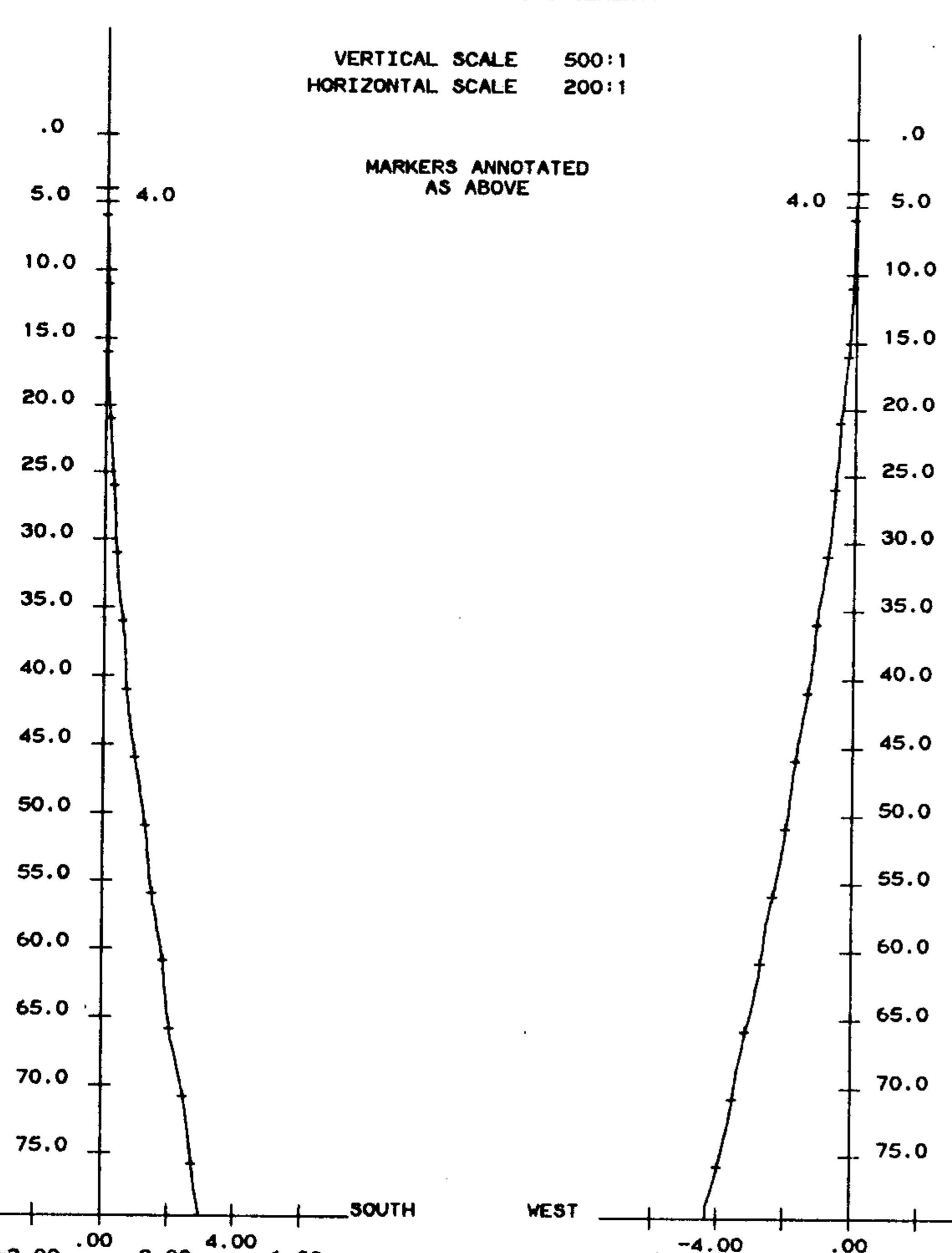
THE LAST PLOTTED DEPTH IS AT 3.02 MS SOUTH, 4.34 MS WEST IE. 5.29 MS FROM THE ORIGIN, 235 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

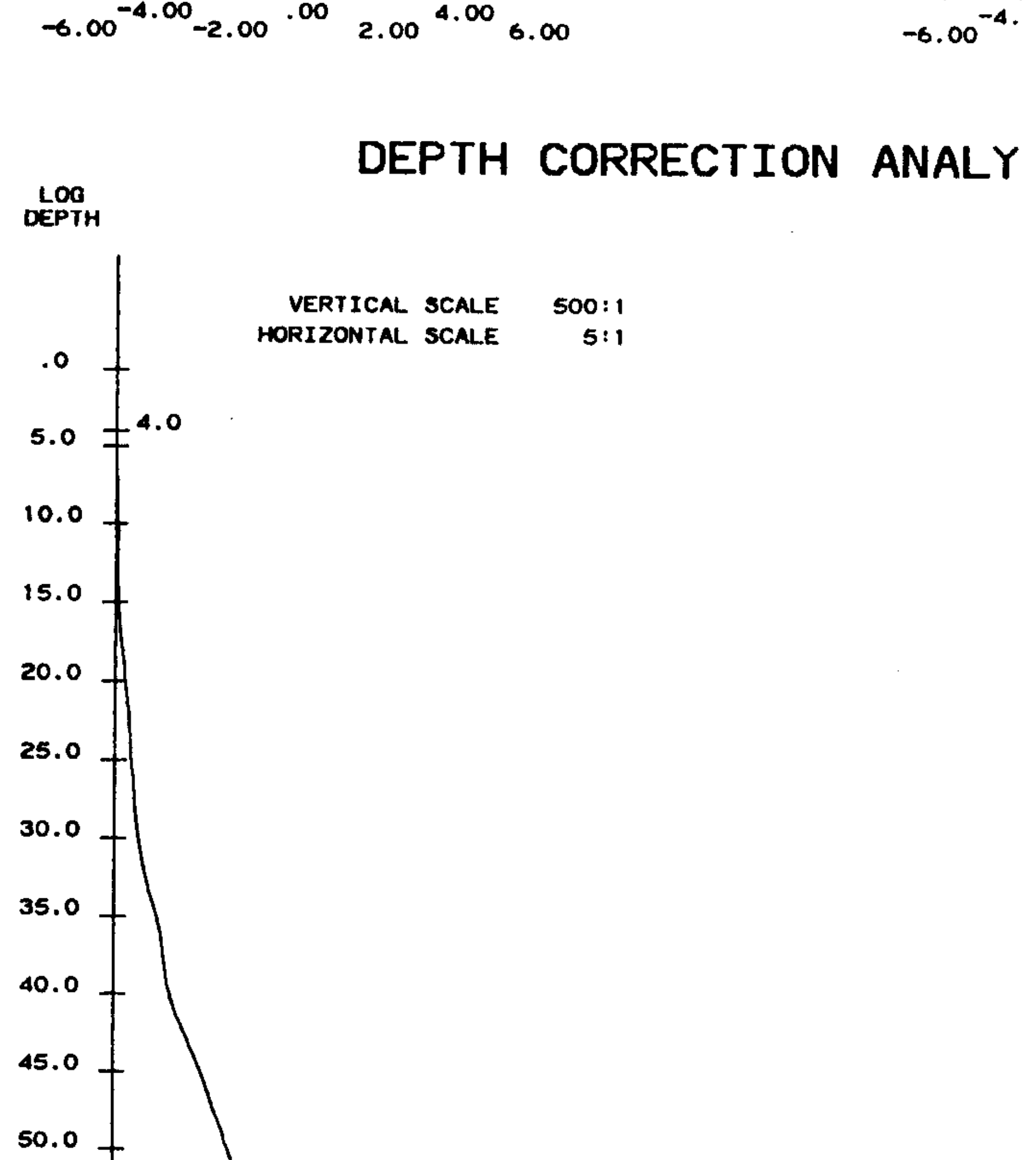
VERTICAL SCALE 500:1
HORIZONTAL SCALE 200:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 500:1
HORIZONTAL SCALE 5:1



DEPTHS: LOG	TRUE	DEPTHS: LOG	TRUE
5.00	5.00	75.00	74.80
6.00	6.00	76.00	75.79
7.00	7.00	77.00	76.78
8.00	8.00	78.00	77.77
9.00	9.00	79.00	78.76
10.00	10.00	80.00	79.64
11.00	11.00		
12.00	12.00		
13.00	13.00		
14.00	14.00		
15.00	15.00		
16.00	16.00		
17.00	17.00		
18.00	17.99		
19.00	18.99		
20.00	19.99		
21.00	20.99		
22.00	21.99		
23.00	22.99		
24.00	23.99		
25.00	24.99		
26.00	25.99		
27.00	26.99		
28.00	27.99		
29.00	28.98		
30.00	29.98		
31.00	30.98		
32.00	31.98		
33.00	32.98		
34.00	33.97		
35.00	34.97		
36.00	35.97		
37.00	36.97		
38.00	37.97		
39.00	38.96		
40.00	39.96		
41.00	40.96		
42.00	41.96		
43.00	42.95		
44.00	43.95		
45.00	44.94		
46.00	45.94		
47.00	46.93		
48.00	47.93		
49.00	48.93		
50.00	49.92		
51.00	50.92		
52.00	51.92		
53.00	52.91		
54.00	53.91		
55.00	54.91		
56.00	55.90		
57.00	56.89		
58.00	57.89		
59.00	58.88		
60.00	59.88		
61.00	60.88		
62.00	61.87		
63.00	62.87		
64.00	63.86		
65.00	64.86		
66.00	65.85		
67.00	66.84		
68.00	67.84		
69.00	68.83		
70.00	69.82		
71.00	70.82		
72.00	71.81		
73.00	72.81		
74.00	73.80		

COMPANY	MANALTA
WELL	T93R-02
FIELD	SITE # 108
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 108
WELL:
T93R-02
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-02
FIELD SITE 108
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#8779

LOCATION TELKWA	LSD	SEC	TWP	RGE

OTHER SERVICES
DIPMETER

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	80.5M			
DEPTH-LOGGER	80.5M			
FIRST READING	80M			
LAST READING	0M			
CASING-DRILLER	2.1M			
CASING-LOGGER				
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	2.8M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	2.1M	TD	178MM	N/A	SURFACE	2.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-SEP-1993 AT 20:35
FILENAME: DD3AR02M.CIB RUN ID: MAIN LOG PLOTTED ON 03-SEP-1993 AT 08:24

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES
TIMING MARKS EVERY 60 SEC
REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES
TIMING MARKS EVERY 60 SEC
REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-SEP-1993 AT 20:35
FILENAME: DD3AR02M.CIB RUN ID: MAIN LOG PLOTTED ON 03-SEP-1993 AT 08:24

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-SEP-1993 AT 20:35

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.10
BIT SIZE 3	.00	BIT DEPTH 3	80.50
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-02
FIELD	SITE 108
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

COMPANY MANALTA
WELL T93R-02
FIELD SITE 108 #879
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
DIPMETER

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 108
WELL:
T93R-02
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	80.5M			
DEPTH-LOGGER	80.5M			
FIRST READING	80M			
LAST READING	0M			
CASING-DRILLER	2.1M			
CASING-LOGGER				
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	2.8M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	2.1M	TD	178MM	N/A	SURFACE	2.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-SEP-1993 AT 20:35
FILENAME: DD3AR02A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-SEP-1993 AT 08:42

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-SEP-1993 AT 20:35
FILENAME: DD3AR02A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-SEP-1993 AT 08:38

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-SEP-1993 AT 20:35 DATA LAST REPROCESSED: 3-SEP-1993 AT 8:35

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.10
BIT SIZE 3	.00	BIT DEPTH 3	80.50
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-02
FIELD	SITE 108
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 108
WELL: T93R-02
COMPANY: MANALTA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY MANALTA
WELL T93R-02
FIELD SITE 108
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
DIPMETER

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	80.5M			
DEPTH-LOGGER	80.5M			
FIRST READING	80M			
LAST READING	0M			
CASING-DRILLER	2.1M			
CASING-LOGGER				
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	2.8M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	2.1M	TD	178MM	N/A	SURFACE	2.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

DETAIL SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-SEP-1993 AT 20:35
FILENAME: DD3AR02A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-SEP-1993 AT 08:49

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-SEP-1993 AT 20:35
FILENAME: DD3AR02A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-SEP-1993 AT 08:49

DETAIL SECTION

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-SEP-1993 AT 20:35 DATA LAST REPROCESSED: 3-SEP-1993 AT 8:35

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.10
BIT SIZE 3	.00	BIT DEPTH 3	80.50
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-02
FIELD	SITE 108
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

#879

```
                                                                ~Version
 Information        DIPMETER/STICK PLOT DATA LISTING
 VERS.             1.20:    CWLS Log ASCII Standard -Version 1.20
 WRAP.               NO:    One line per depth step
#
#
~Well Information Block
#MNEM.UNIT   Data Type       Description
#---------   ------------    ----------------------------
 STRT.M             80.50:
 STOP.M              3.00:
 STEP.M              0.00:
 NULL.            -999.25:
 COMP.           COMPANY:    MANALTA
 WELL.              WELL:    T93R-02
 FLD .             FIELD:    SITE # 108
 LOC .          LOCATION:    TELKWA
 PROV.          PROVINCE:    BRITISH COLUMBIA
 SRVC.   SERVICE COMPANY:    BPB Wireline Services
 DATE.          LOG DATE:     2-SEP-1993
 UWI .    UNIQUE WELL ID:
#
#
~Curve Information Block
#MNEM.UNIT                   Curve Description
#---------                   -----------------
 DEPT.M                 :    DEPTH ROUNDED TO NEAREST CALIBRATION STEP MULTIPLE
 CALD.mm                :    DIPMETER CALIPER
 TILD.degs              :    BOREHOLE TILT
 AZID.degs              :    BOREHOLE AZIMUTH
 DIPF.degs              :    FORMATION DIP
 AZIF.degs              :    FORMATION AZIMUTH
 CORC.----              :    CORRELATION COEFFICIENT
 STK1.degs              :    STICK PLOT SECTION 1
 STK2.degs              :    STICK PLOT SECTION 2
#
#
~Parameter Information
#MNEM.UNIT   Value           Description
#---------   ------------    ----------------------------
 DECL.deg           26.50:   MAGNETIC DECLINATION (EAST OF NORTH)
 CORS.m              0.25:   CORRELATION STEP
 CORI.m              0.50:   CORRELATION INTERVAL
 SANG.deg           45.00:   SEARCH ANGLE
 SDIP.deg            0.00:   STRUCTURAL DIP
 SAZI.deg            0.00:   STRUCTURAL AZIMUTH
#
#
~Other Information
File Identification          MAIN LOG

DIPMETER LISTINGS



Run number     SIX          Log 1st rdg    80m          Log last rdg  0m
Driller TD     80.5m        Logger TD      80.5m        Water level
Perm Datum     GROUND LEVEL Elevation      N/A          Other srvcs   CCS
Dril mes from  00m          Log meas from  00m          Other srvcs
Elevation: KB  N/A          DF             N/A          GL            N/A
Casing Driler  2.1m         Casing Logger  2.1m         Casing size   178mm
Casing Weight  N/A          From           SURFACE      To            2.1m
Bit size       156mm        From           2.1m         To            TD
Hole fl type   AIR/WATER    Sample source               Fluid loss    N/A
Density        1.01         Viscosity      N/A          pH            N/A
RM @ meas tmp               RMF @ mes tmp               RMC @ mes tmp
RM @ BHT                    RMF source                  RMC-source
Max rec temp                Time snc circ               LsdSecTwpRge
Equipment no.  V222         Base           RDR          Equip. name   VERT/DIP
Recorded by    B.STEVENSON  Witnessed by   T. BRAZZONI  Sonde srl no. 233/233
Last title     WATER LEVEL  Last line      2.8m         Permit no.


                 BPB DIPMETER ANALYSIS INTERPRETATION NOTES
                 -----------------------------------------


  1.     All plots are correct to the resolution of the plotter used, ie.
    one two-hundredth of an inch. Vertical resolution may vary by up to one
    percent but each plot is correct within itself, the plotted data being
    dynamically merged with its gridded background.


  2.     Rose diagrams when plotted occur between every major division and
    are delimited by two bold arrows. For certain replay scales it may be
    desirable to plot these less frequently; this option is available on
    request.


  3.     The grid over which the computed dip is displayed is locally
    linear. That is to say it is linear between 0 and 10 degrees, 10 and 20,
    20 and 30 etc.


  4.     The correlation value will vary depending on the interval size
    selected. Generally speaking the larger the correlation interval, the
    lower the value becomes. For this reason a direct comparison of this
    value for differing correlation intervals is meaningless, quality control
    being exercised with an appreciation of this effect.


  5.     Stick data may be shown relative to any two vertical planes and is
    the angle (to the horizontal) of the intersection of the resolved plane
    and the vertical plane.


  6.     The angle of declination is taken to be the angle between Magnetic
    North and reference North (True, Grid or Magnetic) measured in an
    anti-clockwise direction.


  7.     For customised control of computed dipmeter analysis the following
    parameters must be specified:
              correlation step and interval(s)
              magnetic declination
              search angle(s)
              depth range(s)
              replay scale(s)
              the frequency for rose diagrams
              the sections for stick plots
              (quality control is exercised in accordance with the
               correlation interval used, alternatively all correlations
               may be displayed on request)

         The following information is a listing of ALL the output from BPB's
    dipmeter analysis. Below is a full description of each data item:

         DEPTH          the depth corresponding to the centre of the
                        correlation interval.
         CALIPER        the average borehole caliper recorded over the
                        correlation interval.
         HOLE DRIFT     the average borehole deviation from vertical over the
                        correlation interval.
         HOLE AZIMUTH   the average borehole azimuth over the correlation
                        interval in degrees East of true North.
         DIP ANGLE      the computed formation dip in degrees, from the
                        horizontal plane.
         DIP AZIMUTH    the formation azimuth in degrees East of true North.
         CORRELATION    a measure of the reliability of the computed result.
                        This parameter is also used in the visual display to
                        determine the quality of result.
         SECTION        the formation dip across the specified sections.


         Further recorrelations over any step and interval size are
    available on any scale over any section of the log. Alternative methods
    of presentation, or analysis may be available on request.


#
#   Depth    Caliper      Borehole           Formation      Correlation        S
tick Plot Section
#                      Tilt     Azimuth     Dip     Azimuth   Coefficient   180.0
-  0.0   270.0- 90.0
#    (M)       (mm)    (deg)      (deg)      (deg)    (deg)      (----)          (d
eg)         (deg)
~A
    80.50   -999.25  -999.25   -999.25      0.0      0.0       -1.00           0
.00          0.00
    80.00     101.6      7.6     233.0      0.0      0.0       -1.00           0
.00          0.00
    79.50     135.5      7.8     235.8     46.5     89.1        0.36           0
.95         46.45
    79.00     149.6      7.8     238.5     18.2     78.9        0.43           3
.63         17.89
    78.50     152.4      7.8     240.2     27.4     82.1        0.66           4
.06         27.23
    78.00     149.6      7.4     242.1     18.1     57.9        0.66           9
.87         15.49
    77.50     152.4      7.6     244.3     34.8     42.9        0.52          27
.00         25.37
    77.00     152.4      7.5     247.1     14.4    342.2        0.29          13
.76         -4.50
    76.50     152.4      7.2     246.4     21.6     64.0        0.45           9
.85         19.63
    76.00     152.4      6.7     242.9      8.5     29.9        0.35           7
.41          4.28
    75.50     155.4      6.5     244.1     26.9     62.6        0.75          13
.14         24.27
    75.00     152.4      6.4     245.2     39.5     50.4        0.31          27
.71         32.43
    74.50     152.4      6.3     243.8     32.1    102.0        0.43          -7
.44         31.54
    74.00     152.4      6.1     242.3     27.4     99.3        0.32          -4
.79         27.14
    73.50     152.4      5.9     238.9     25.1     88.5        0.78           0
.71         25.07
    73.00     152.4      5.8     240.3      0.0      0.0       -1.00           0
.00          0.00
    72.50     152.4      5.7     238.3     22.0    128.1        0.28         -14
.00         17.63
    72.00     155.4      5.6     229.8     21.0     92.9        0.41          -1
.10         21.00
    71.50     152.4      5.9     221.0     26.9     28.2        0.63          24
.12         13.48
    71.00     152.4      5.9     219.9     46.9    105.9        0.57         -16
.30         45.78
    70.50     155.4      6.2     217.8     42.3     18.1        0.53          40
.88         15.76
    70.00     152.4      6.5     218.3     37.4    128.6        0.32         -25
.48         30.86
    69.50     152.4      6.5     218.5     12.0    349.6        0.57          11
.77         -2.20
    69.00     152.4      6.4     224.1     38.3    301.0        0.38          22
.09        -34.08
    68.50     155.4      6.7     220.5     30.1     75.6        0.28           8
.18         29.31
    68.00     152.4      7.0     223.6     22.7     43.6        0.77          16
.84         16.10
    67.50     152.4      7.0     225.1     22.7     52.6        0.64          14
.25         18.38
    67.00     152.4      7.1     225.7      0.0      0.0       -1.00           0
.00          0.00
    66.50     152.4      7.0     231.0     28.9      1.9        0.54          28
.84          1.04
    66.00     155.4      7.0     236.4     25.0     36.0        0.55          20
.66         15.32
    65.50     152.4      6.6     238.5     54.0     68.1        0.26          27
.21         51.95
    65.00     155.4      6.7     242.3     14.6     97.0        0.25          -1
.82         14.50
    64.50     152.4      6.4     244.5     45.2     94.1        0.19          -4
.13         45.15
    64.00     155.4      6.1     249.4     20.7     64.8        0.49           9
.12         18.86
    63.50     155.4      5.1     246.6     19.1     55.8        0.33          11
.02         15.97
    63.00     152.4      5.3     252.6     15.9     23.3        0.38          14
.68          6.45
    62.50     155.4      4.6     247.0     24.1     55.0        0.64          14
.40         20.13
    62.00     155.4      4.1     240.8     17.3     61.0        0.62           8
.61         15.26
    61.50     155.4      3.8     232.3     29.0     66.4        0.46          12
.52         26.96
    61.00     152.4      4.0     220.1     31.2     67.2        0.77          13
.22         29.21
    60.50     155.4      4.5     215.8     17.2     61.8        0.77           8
.33         15.30
    60.00     161.4      5.2     213.3      2.7     66.2        0.42           1
.10          2.50
    59.50     155.4      5.6     214.0      7.9    256.6        0.53          -1
.85         -7.70
    59.00     155.4      5.9     216.8     11.9     34.0        0.41           9
.89          6.70
    58.50     155.4      6.3     220.8     18.9    105.8        0.24          -5
.33         18.25
    58.00     155.4      6.5     227.0     50.4     33.1        0.23          45
.37         33.43
    57.50     161.4      6.6     232.1     40.6    309.4        0.43          28
.59        -33.56
    57.00     155.4      6.6     238.0     30.2      4.3        0.46          30
.11          2.47
    56.50     158.4      6.4     242.7      4.9     66.0        0.77           2
.01          4.50
    56.00     158.4      6.3     245.5      5.4     76.6        0.89           1
.25          5.22
    55.50     155.4      6.0     247.0     36.5     95.2        0.25          -3
.81         36.40
    55.00     158.4      5.7     247.7     19.6     60.7        0.77           9
.90         17.27
    54.50     155.4      5.3     246.4     17.2     43.9        0.79          12
.61         12.15
    54.00     155.4      5.1     244.8     22.3    142.9        0.32         -18
.15         13.93
    53.50     155.4      4.7     244.2      0.0      0.0       -1.00           0
.00          0.00
    53.00     155.4      4.6     241.2     21.6     66.8        0.68           8
.90         20.03
    52.50     158.4      4.5     235.9      9.8     29.2        0.68           8
.54          4.80
    52.00     155.4      4.3     236.5     10.9     98.8        0.54          -1
.68         10.78
    51.50     158.4      4.4     230.0     15.7     46.8        0.75          10
.92         11.62
    51.00     155.4      4.5     227.5     24.0     18.1        0.86          22
.95          7.90
    50.50     155.4      4.4     230.0     18.5     46.5        0.56          12
.94         13.63
    50.00     158.4      4.8     222.2     20.3     29.4        0.41          17
.88         10.30
    49.50     155.4      4.7     223.8     22.3     51.8        0.82          14
.26         17.91
    49.00     155.4      5.0     221.4     13.8     26.3        0.33          12
.43          6.22
    48.50     155.4      4.9     220.5     17.9      9.2        0.73          17
.73          2.96
    48.00     155.4      5.3     220.2     26.0      9.3        0.48          25
.66          4.48
    47.50     155.4      5.1     222.8     34.8     30.1        0.34          31
.05         19.24
    47.00     155.4      4.9     223.8     22.4     17.5        0.82          21
.49          7.09
    46.50     158.4      4.9     222.6     27.3      6.8        0.50          27
.11          3.50
    46.00     155.4      4.8     221.2     23.4     35.9        0.70          19
.32         14.24
    45.50     155.4      5.2     222.6     16.2     50.2        0.73          10
.52         12.58
    45.00     155.4      5.2     225.7     43.8    153.4        0.55         -40
.64         23.21
    44.50     155.4      5.5     225.5     24.5     30.8        0.58          21
.42         13.16
    44.00     158.4      5.3     227.9     30.3     40.9        0.33          23
.79         20.92
    43.50     155.4      5.4     228.7     28.7     44.6        0.62          21
.28         21.02
    43.00     158.4      5.1     228.7     12.8     54.5        0.45           7
.48         10.45
    42.50     155.4      5.4     238.0     31.3     45.9        0.30          22
.94         23.61
    42.00     155.4      5.7     244.4     54.5     82.1        0.26          10
.98         54.28
    41.50     155.4      5.2     246.1     12.0    332.9        0.69          10
.68         -5.52
    41.00     158.4      4.8     252.7     24.7    235.1        0.21         -14
.75        -20.69
    40.50     155.4      4.6     257.1      0.0      0.0       -1.00           0
.00          0.00
    40.00     158.4      4.2     258.2     24.7     26.6        0.43          22
.38         11.64
    39.50     155.4      3.3     255.5     16.9     41.4        0.50          12
.84         11.35
    39.00     158.4      2.8     252.0     15.7    332.3        0.57          13
.93         -7.43
    38.50     158.4      2.6     241.3      9.3     57.0        0.54           5
.11          7.84
    38.00     158.4      2.7     226.0     33.3      7.9        0.44          33
.01          5.13
    37.50     158.4      2.8     220.1     15.1     44.1        0.85          10
.99         10.65
    37.00     158.4      3.1     215.6     14.7     55.2        0.47           8
.52         12.14
    36.50     161.4      3.6     216.3     18.9     68.9        0.47           7
.04         17.73
    36.00     164.4      4.0     218.9      7.2    107.1        0.85          -2
.13          6.90
    35.50     164.4      4.1     222.6     18.9    305.9        0.33          11
.36        -15.52
    35.00     164.4      4.2     226.0     30.1    170.1        0.49         -29
.72          5.66
    34.50     158.4      4.3     230.4     30.1     67.1        0.73          12
.70         28.09
    34.00     158.4      4.3     233.5     30.7     71.8        0.55          10
.52         29.43
    33.50     158.4      4.4     240.2     17.6     58.3        0.80           9
.45         15.10
    33.00     158.4      4.3     245.6     47.2    108.4        0.46         -18
.88         45.74
    32.50     158.4      3.9     246.9     13.6     45.9        0.53           9
.58          9.89
    32.00     158.4      3.9     248.1     24.3    328.7        0.55          21
.07        -13.21
    31.50     158.4      3.6     251.2     12.4     33.2        0.44          10
.43          6.86
    31.00     155.4      3.4     248.7     15.6     56.7        0.75           8
.71         13.10
    30.50     155.4      3.1     246.0     52.2    298.4        0.52          31
.50        -48.56
    30.00     158.4      2.9     240.9     11.9     57.7        0.28           6
.41         10.08
    29.50     155.4      2.9     247.6     16.5     15.9        0.77          15
.94          4.64
    29.00     161.4      3.1     250.9     17.9     91.6        0.53          -0
.50         17.94
    28.50     158.4      2.7     243.3     19.8     75.5        0.46           5
.16         19.21
    28.00     155.4      2.5     246.0     26.1    138.8        0.59         -20
.25         17.92
    27.50     155.4      2.4     242.6      0.0      0.0       -1.00           0
.00          0.00
    27.00     158.4      2.4     240.8     11.8     11.0        0.52          11
.58          2.29
    26.50     158.4      2.3     228.9     25.5     16.8        0.80          24
.55          7.87
    26.00     158.4      2.2     238.1     22.1     56.7        0.86          12
.54         18.74
    25.50     161.4      2.2     236.6      9.5     59.1        0.69           4
.91          8.17
    25.00     158.4      2.4     230.2     15.9     41.2        0.73          12
.12         10.64
    24.50     158.4      2.2     230.4     13.1     61.0        0.57           6
.45         11.51
    24.00     158.4      2.1     234.3     19.3     38.0        0.82          15
.40         12.15
    23.50     158.4      2.4     226.4     25.3     25.4        0.52          23
.16         11.46
    23.00     155.4      2.3     229.3     16.5    356.0        0.77          16
.41         -1.18
    22.50     155.4      2.3     229.9     14.3     60.3        0.85           7
.18         12.44
    22.00     158.4      2.4     227.8     15.7     35.5        0.77          12
.86          9.24
    21.50     158.4      2.6     230.2     14.9     30.3        0.80          12
.91          7.62
    21.00     158.4      2.7     231.6     14.5     46.9        0.76          10
.03         10.70
    20.50     158.4      3.0     232.5     18.6     42.4        0.68          13
.93         12.76
    20.00     158.4      2.5     238.6     19.1     19.0        0.60          18
.12          6.44
    19.50     155.4      2.6     237.5     23.0    175.5        0.80         -22
.99          1.91
    19.00     155.4      2.9     236.4     46.2    311.2        0.52          34
.45        -38.12
    18.50     158.4      2.7     244.9     17.1     18.1        0.66          16
.26          5.46
    18.00     158.4      2.5     246.4     12.2     53.2        0.40           7
.39          9.85
    17.50     158.4      2.9     256.5     11.9    348.3        0.46          11
.64         -2.45
    17.00     155.4      2.3     264.7     16.5     91.1        0.75          -0
.33         16.54
    16.50     158.4      2.6     266.7     42.2    105.3        0.31         -13
.44         41.21
    16.00     158.4      2.0     271.3     25.2     45.3        0.62          18
.35         18.54
    15.50     158.4      2.1     272.2     12.4     49.4        0.65           8
.15          9.48
    15.00     158.4      1.9     278.4     11.3     31.3        0.79           9
.65          5.91
    14.50     158.4      1.6     274.2     17.2     44.0        0.72          12
.52         12.10
    14.00     158.4      1.4     273.8     10.1     86.4        0.53           0
.65         10.10
    13.50     158.4      1.4     270.2     19.1     36.4        0.68          15
.56         11.62
    13.00     158.4      1.2     241.1     13.5     85.8        0.45           1
.02         13.51
    12.50     158.4      1.0     287.0      9.9     79.2        0.64           1
.87          9.68
    12.00     158.4      1.1     258.2     41.2    172.4        0.50         -40
.92          6.57
    11.50     158.4      1.0     262.8     14.0     47.4        0.64           9
.57         10.39
    11.00     158.4      0.8     241.8     13.6     24.0        0.27          12
.50          5.62
    10.50     155.4      0.5     238.4     42.8    339.3        0.31          40
.86        -18.11
    10.00     158.4      0.8     252.2     39.7    340.5        0.54
```

DIPMETER ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-02
FIELD	SITE # 108
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 108
WELL:
T93R-02
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-SEP-93			
RUN NUMBER	FIVE			
DEPTH-DRILLER	80.5M			
DEPTH-LOGGER	80.5M			
FIRST READING	80M			
LAST READING	0M			
CASING-DRILLER	2.1M			
CASING-LOGGER	2.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	2.8M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT.	FROM	TO	SIZE	WEIGHT	FROM	TO
FIVE	156MM	2.1M	TD	178MM	N/A	SURFACE	2.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
VERT/DIP	233/233			

REMARKS

DIPMETER ANALYSIS

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 .PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-SEP-1993 AT 19:45
FILENAME: DIP3R02M.CIB RUN ID: MAIN LOG PLOTTED ON 03-SEP-1993 AT 09:20

GAMMA RAY
API
0 75 150
150 225 300

DEPTH IN METRES

PAD 3
CPS
6000 3500 1000

DIPMETER CALIPER
MM
0 150 300

TIMING MARKS EVERY 60 SEC

PAD 2
CPS
5000 2500 0

BIT SIZE
MM
0 150 300

REPLAY SCALE 100:1

PAD 1
CPS
4000 1500 -1000

FORMATION DIP
SOLID TADPOLES >.50 HOLLOW >.30
0 90

DEPTH IN METRES

GAMMA RAY
API
0 75 150
150 225 300

PAD 3
CPS
6000 3500 1000

DIPMETER CALIPER
MM
0 150 300

TIMING MARKS EVERY 60 SEC

PAD 2
CPS
5000 2500 0

BIT SIZE
MM
0 150 300

REPLAY SCALE 100:1

PAD 1
CPS
4000 1500 -1000

FORMATION DIP
SOLID TADPOLES >.50 HOLLOW >.30
0 90

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-SEP-1993 AT 19:45
FILENAME: DIP3R02M.CIB RUN ID: MAIN LOG PLOTTED ON 03-SEP-1993 AT 09:20

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 03-SEP-1993 AT 09:14 DATA LAST REPROCESSED: 3-SEP-1993 AT 09:14

LOGGING CONSTANTS & GAMMA CALIBRATION

CORRELATION STEP (M.)	.25	CORRELATION INTERVAL (M.)	.50
BIT SIZE #1 (MM)	178.00	BIT DEPTH #1 (M.)	.00
BIT SIZE #2	156.00	BIT DEPTH #2	2.10
BIT SIZE #3	.00	BIT DEPTH #3	80.50
BIT SIZE #4	.00	BIT DEPTH #4	0.00
BIT SIZE #5	.00	BIT DEPTH #5	0.00
GAMMA CALIBRATOR (API)	510.00	GAMMA COUNTS	311.50
UNUSED	XXXXXXXX	SEARCH ANGLE (DEGREES)	45.00
STRUCTURAL DIP ANGLE (DEGREES)	.00	STRUCTURAL DIP AZI. (DEGREES)	.00
DECLINATION (DEGREES)	26.50 E	DETAIL PAD DATA	NO
CORRELATE	YES	CALIPER UNITS	MM
DEPTH UNITS	METRIC	CALIPER USED IN CALCULATIONS	YES

LEVEL CELL CALIBRATION

TILT(DEGREES)	LC1(COUNTS)	LC2(COUNTS)
-10.00	114.00	121.00
-8.00	136.00	142.00
-6.00	158.00	166.00
-4.00	179.00	185.00
-2.00	198.00	202.00
.00	221.00	222.00
2.00	243.00	240.00
4.00	264.00	258.00
6.00	285.00	277.00
8.00	305.00	303.00
10.00	326.00	322.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00

CALIBRATION IDENTIFICATION: VERT # 233

MAGNETOMETER CALIBRATION

	MAG.X	MAG.Y	MAG.Z
MAX.	209.00	213.00	199.00
MIN.	150.00	148.00	161.00

CALIBRATION IDENTIFICATION: VERT # 233

CALIPER CAL. & PAD OFFSETS

CALIBRATOR(MM)	COUNTS	PAD 2 OFFSET(MM)	PAD 3 OFFSET(MM)
76.20	112.00	.00	.00
101.60	120.00	.00	.00
127.00	128.00	.00	.00
152.40	137.00	.00	.00
203.20	154.00	.00	.00
254.00	172.00	.00	.00

CALIBRATION IDENTIFICATION: 233

COMPANY	MANALTA
WELL	T93R-02
FIELD	SITE # 108
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-03
FIELD	SITE 110
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 110
WELL:
T93R-03
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	5-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	101.0M	
DEPTH-LOGGER	100.8M	
FIRST READING		
LAST READING	0M	
CASING-DRILLER	6.1M	
CASING-LOGGER	6.1M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL		

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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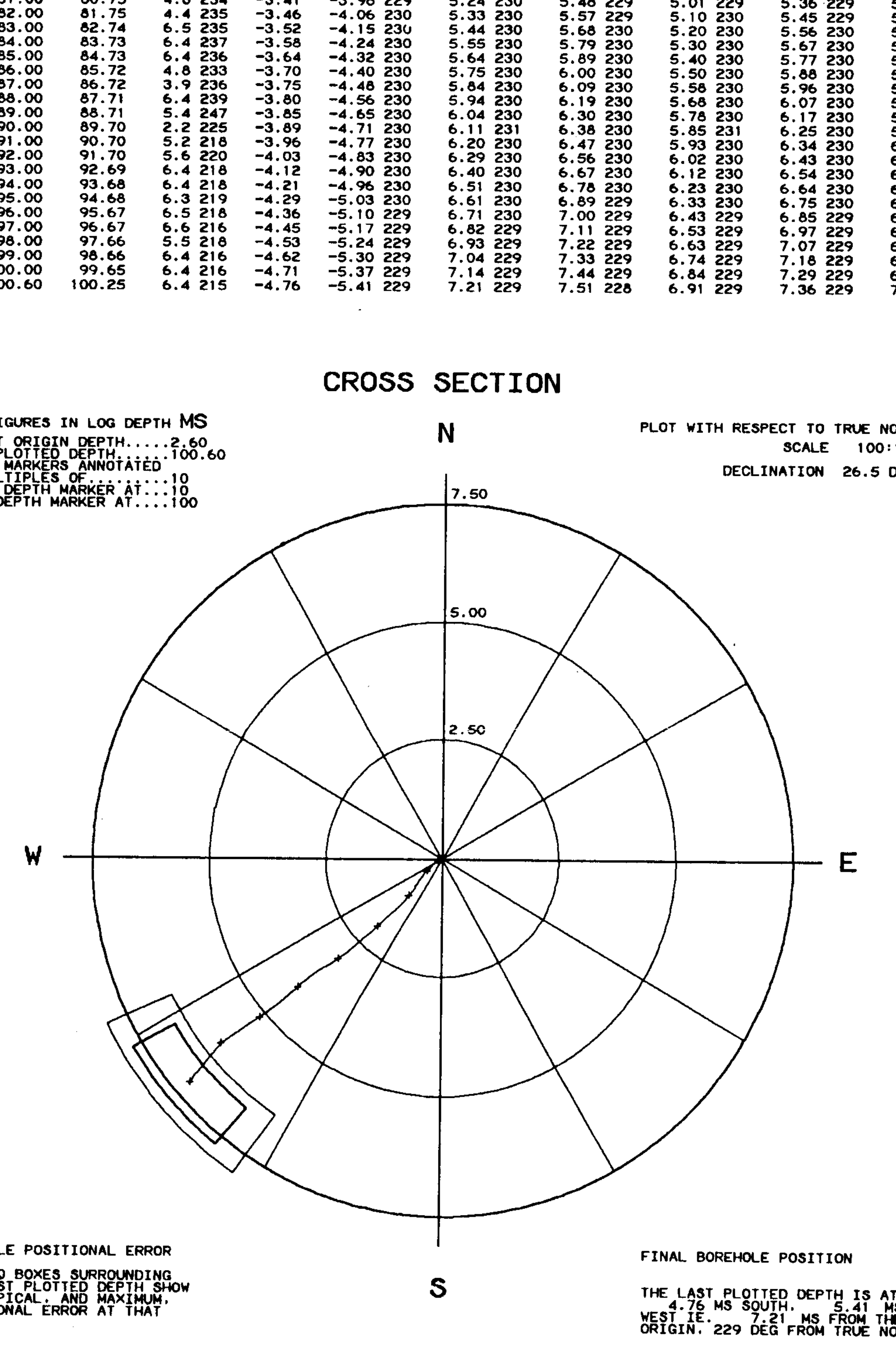
T93R-03                          VERTICALITY DATA LISTING                     DATE PROCESSED:  5-SEP-1993
                     ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH              DATE LOGGED:     5-SEP-1993
   DEPTHS         BOREHOLE   AXIAL CO-ORDS   POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG      TRUE    TILT AZI   NORTH      EAST BRG   RADIUS BRG   RADIUS BRG   RADIUS BRG   RADIUS BRD   RADIUS

  3.00     3.00    0.5  39    0.00      0.00 344    0.00 345     0.00 342     0.00 344     0.00 343     0.00
  4.00     4.00    0.5  51    0.00      0.01  64    0.01  64     0.01  64     0.00  64     0.01  64     0.01
  5.00     5.00    0.5 324    0.01      0.01  41    0.01  42     0.02  40     0.01  42     0.02  41     0.01
  6.00     6.00    0.5  35    0.02      0.01  26    0.02  27     0.03  26     0.01  26     0.02  26     0.02
  7.00     7.00    0.4 330    0.02      0.01  19    0.02  19     0.03  19     0.01  19     0.03  19     0.02
  8.00     8.00    0.5 290    0.03      0.00   0    0.03   1     0.04 359     0.01   0     0.03 360     0.02
  9.00     9.00    0.9 247    0.02     -0.01 338    0.03 340     0.04 334     0.02 339     0.03 336     0.02
 10.00    10.00    0.9 229    0.02     -0.02 312    0.03 316     0.04 304     0.02 315     0.03 309     0.02
 11.00    11.00    0.9 217    0.01     -0.03 289    0.03 294     0.04 280     0.02 292     0.04 285     0.03
 12.00    12.00    0.7 285    0.01     -0.04 289    0.04 293     0.06 282     0.03 292     0.05 286     0.04
 13.00    13.00    0.6 282    0.02     -0.05 290    0.05 293     0.07 284     0.04 291     0.06 287     0.05
 14.00    14.00    0.5 275    0.02     -0.06 290    0.06 293     0.08 285     0.04 292     0.07 288     0.05
 15.00    15.00    0.3 227    0.02     -0.06 287    0.07 289     0.09 283     0.05 288     0.08 285     0.06
 16.00    16.00    0.2 228    0.01     -0.07 281    0.07 283     0.09 278     0.05 282     0.08 280     0.06
 17.00    17.00    0.2 217    0.01     -0.08 275    0.08 277     0.10 272     0.05 276     0.09 274     0.06
 18.00    18.00    0.9 205    0.00     -0.08 267    0.08 269     0.11 264     0.06 268     0.09 266     0.07
 19.00    19.00    1.4 198   -0.02     -0.09 256    0.09 259     0.12 251     0.07 258     0.11 254     0.08
 20.00    20.00    1.3 201   -0.04     -0.10 248    0.11 251     0.14 243     0.08 250     0.12 246     0.09
 21.00    21.00    0.8 230   -0.05     -0.11 244    0.12 247     0.15 239     0.09 245     0.14 242     0.11
 22.00    22.00    1.1 250   -0.06     -0.12 242    0.14 245     0.17 238     0.11 244     0.16 240     0.12
 23.00    23.00    1.6 258   -0.07     -0.14 243    0.16 245     0.20 239     0.12 244     0.18 241     0.14
 24.00    24.00    1.3 223   -0.08     -0.16 244    0.18 246     0.22 240     0.14 245     0.20 242     0.16
 25.00    25.00    1.3 237   -0.09     -0.18 244    0.20 246     0.25 241     0.16 245     0.22 243     0.18
 26.00    26.00    1.4 237   -0.10     -0.20 243    0.22 245     0.27 241     0.18 244     0.25 242     0.20
 27.00    27.00    2.2 201   -0.13     -0.21 240    0.25 241     0.30 237     0.20 241     0.27 239     0.22
 28.00    28.00    3.2 212   -0.17     -0.24 235    0.29 237     0.35 232     0.24 236     0.32 234     0.27
 29.00    28.99    3.7 222   -0.22     -0.28 233    0.36 234     0.41 230     0.30 234     0.38 231     0.33
 30.00    29.99    3.7 239   -0.25     -0.33 233    0.42 234     0.48 231     0.36 234     0.45 232     0.39
 31.00    30.99    2.2 227   -0.28     -0.38 233    0.47 235     0.53 231     0.41 234     0.50 232     0.44
 32.00    31.99    2.6 213   -0.31     -0.41 232    0.51 234     0.58 231     0.45 233     0.55 231     0.48
 33.00    32.99    3.0 213   -0.36     -0.43 231    0.56 232     0.63 229     0.49 231     0.60 230     0.53
 34.00    33.99    4.0 212   -0.41     -0.47 229    0.62 230     0.69 227     0.55 230     0.66 228     0.58
 35.00    34.98    3.5 211   -0.46     -0.50 227    0.68 229     0.76 226     0.61 228     0.72 227     0.64
 36.00    35.98    4.2 213   -0.52     -0.54 226    0.75 227     0.83 225     0.67 227     0.79 225     0.71
 37.00    36.98    3.9 219   -0.58     -0.58 225    0.81 226     0.90 224     0.73 226     0.86 224     0.77
 38.00    37.98    4.5 211   -0.64     -0.62 224    0.89 225     0.98 223     0.81 225     0.93 224     0.85
 39.00    38.97    4.6 215   -0.70     -0.66 223    0.97 224     1.05 222     0.88 224     1.01 223     0.92
 40.00    39.97    4.5 217   -0.77     -0.71 223    1.05 224     1.14 222     0.96 223     1.10 222     1.00
 41.00    40.97    5.2 223   -0.84     -0.76 222    1.14 223     1.23 221     1.04 223     1.18 222     1.09
 42.00    41.96    5.4 226   -0.91     -0.82 222    1.23 223     1.32 221     1.13 223     1.28 222     1.18
 43.00    42.96    5.3 224   -0.98     -0.89 222    1.32 223     1.42 221     1.22 223     1.37 222     1.27
 44.00    43.95    5.5 225   -1.04     -0.96 223    1.41 223     1.52 222     1.31 223     1.47 222     1.36
 45.00    44.95    5.3 227   -1.10     -1.02 223    1.50 224     1.61 222     1.39 223     1.56 222     1.45
 46.00    45.95    5.6 231   -1.16     -1.09 223    1.59 224     1.70 223     1.48 224     1.65 223     1.54
 47.00    46.94    5.2 228   -1.21     -1.16 224    1.68 224     1.79 223     1.56 224     1.74 223     1.62
 48.00    47.94    5.9 228   -1.28     -1.23 224    1.78 225     1.90 223     1.66 224     1.84 224     1.72
 49.00    48.93    6.1 224   -1.35     -1.30 224    1.88 225     2.00 223     1.76 224     1.94 224     1.82
 50.00    49.93    6.0 227   -1.43     -1.38 224    1.98 225     2.11 224     1.86 224     2.05 224     1.92
 51.00    50.92    6.3 229   -1.50     -1.46 224    2.09 225     2.22 224     1.96 225     2.16 224     2.03
 52.00    51.91    6.6 229   -1.57     -1.54 224    2.19 225     2.33 224     2.06 225     2.26 224     2.13
 53.00    52.91    6.3 229   -1.64     -1.62 225    2.31 225     2.44 224     2.17 225     2.37 224     2.24
 54.00    53.90    5.4 227   -1.71     -1.70 225    2.41 225     2.55 224     2.27 225     2.48 225     2.34
 55.00    54.90    5.9 230   -1.78     -1.78 225    2.52 225     2.66 225     2.37 225     2.59 225     2.45
 56.00    55.89    6.4 229   -1.85     -1.87 225    2.63 226     2.78 225     2.48 225     2.70 225     2.56
 57.00    56.88    6.5 231   -1.92     -1.95 225    2.74 226     2.89 225     2.59 226     2.81 225     2.66
 58.00    57.88    6.5 235   -1.99     -2.04 226    2.85 226     3.00 225     2.69 226     2.92 225     2.77
 59.00    58.87    6.6 232   -2.06     -2.13 226    2.96 226     3.12 226     2.80 226     3.04 226     2.88
 60.00    59.87    5.8 239   -2.12     -2.21 226    3.07 227     3.23 226     2.90 226     3.15 226     2.99
 61.00    60.86    5.8 238   -2.18     -2.30 227    3.17 227     3.33 226     3.00 227     3.25 226     3.09
 62.00    61.86    5.8 240   -2.23     -2.38 227    3.26 227     3.43 227     3.09 227     3.35 227     3.18
 63.00    62.85    6.0 240   -2.28     -2.47 227    3.36 227     3.53 227     3.19 227     3.45 227     3.27
 64.00    63.85    5.6 241   -2.33     -2.56 228    3.46 228     3.63 227     3.29 228     3.55 228     3.37
 65.00    64.84    4.7 234   -2.38     -2.64 228    3.56 228     3.74 228     3.38 228     3.65 228     3.47
 66.00    65.83    6.4 237   -2.44     -2.73 228    3.66 228     3.85 228     3.48 228     3.75 228     3.57
 67.00    66.83    5.9 234   -2.50     -2.82 228    3.77 229     3.96 228     3.59 228     3.86 228     3.68
 68.00    67.82    6.6 231   -2.58     -2.91 228    3.89 229     4.08 228     3.70 229     3.98 228     3.79
 69.00    68.82    6.5 230   -2.64     -2.99 229    3.99 229     4.18 228     3.80 229     4.09 228     3.90
 70.00    69.81    6.6 226   -2.71     -3.08 229    4.10 229     4.30 228     3.91 229     4.20 228     4.01
 71.00    70.80    6.5 228   -2.79     -3.16 229    4.22 229     4.42 228     4.02 229     4.32 228     4.12
 72.00    71.80    5.9 232   -2.86     -3.24 229    4.32 229     4.53 228     4.12 229     4.42 228     4.22
 73.00    72.79    5.6 229   -2.93     -3.32 229    4.42 229     4.63 228     4.22 229     4.53 228     4.32
 74.00    73.79    6.2 231   -3.00     -3.40 229    4.53 229     4.74 228     4.32 229     4.64 228     4.43
 75.00    74.78    6.4 235   -3.06     -3.49 229    4.64 229     4.85 228     4.43 229     4.75 229     4.53
 76.00    75.78    6.0 238   -3.12     -3.56 229    4.74 229     4.95 229     4.52 229     4.84 229     4.63
 77.00    76.77    6.3 239   -3.18     -3.64 229    4.83 229     5.05 229     4.61 229     4.94 229     4.72
 78.00    77.77    6.4 233   -3.24     -3.73 229    4.94 229     5.16 229     4.72 229     5.05 229     4.83
 79.00    78.76    6.0 242   -3.30     -3.81 229    5.05 229     5.27 229     4.82 229     5.16 229     4.93
 80.00    79.75    6.3 235   -3.36     -3.90 229    5.14 229     5.37 229     4.91 229     5.26 229     5.03
 81.00    80.75    4.8 234   -3.41     -3.98 229    5.24 230     5.48 229     5.01 229     5.36 229     5.12
 82.00    81.75    4.4 235   -3.46     -4.06 230    5.33 230     5.57 229     5.10 230     5.45 229     5.21
 83.00    82.74    6.5 235   -3.52     -4.15 230    5.44 230     5.68 230     5.20 230     5.56 230     5.32
 84.00    83.73    6.4 237   -3.58     -4.24 230    5.55 230     5.79 230     5.30 230     5.67 230     5.43
 85.00    84.73    6.4 236   -3.64     -4.32 230    5.64 230     5.89 230     5.40 230     5.77 230     5.52
 86.00    85.72    4.8 233   -3.70     -4.40 230    5.75 230     6.00 230     5.50 230     5.88 230     5.63
 87.00    86.72    3.9 236   -3.75     -4.48 230    5.84 230     6.09 230     5.58 230     5.96 230     5.71
 88.00    87.71    6.4 239   -3.80     -4.56 230    5.94 230     6.19 230     5.68 230     6.07 230     5.81
 89.00    88.71    5.4 247   -3.85     -4.65 230    6.04 230     6.30 230     5.78 230     6.17 230     5.91
 90.00    89.70    2.2 225   -3.89     -4.71 230    6.11 231     6.38 230     5.85 231     6.25 230     5.98
 91.00    90.70    5.2 218   -3.96     -4.77 230    6.20 230     6.47 230     5.93 230     6.34 230     6.07
 92.00    91.70    5.6 220   -4.03     -4.83 230    6.29 230     6.56 230     6.02 230     6.43 230     6.16
 93.00    92.69    6.4 218   -4.12     -4.90 230    6.40 230     6.67 230     6.12 230     6.54 230     6.26
 94.00    93.68    6.4 218   -4.21     -4.96 230    6.51 230     6.78 230     6.23 230     6.64 230     6.37
 95.00    94.68    6.3 219   -4.29     -5.03 230    6.61 230     6.89 229     6.33 230     6.75 230     6.47
 96.00    95.67    6.5 218   -4.36     -5.10 229    6.71 230     7.00 229     6.43 229     6.85 229     6.57
 97.00    96.67    6.6 216   -4.45     -5.17 229    6.82 229     7.11 229     6.53 229     6.97 229     6.68
 98.00    97.66    5.5 218   -4.53     -5.24 229    6.93 229     7.22 229     6.63 229     7.07 229     6.78
 99.00    98.66    6.4 216   -4.62     -5.30 229    7.04 229     7.33 229     6.74 229     7.18 229     6.89
100.00    99.65    6.4 216   -4.71     -5.37 229    7.14 229     7.44 229     6.84 229     7.29 229     6.99
100.60   100.25    6.4 215   -4.76     -5.41 229    7.21 229     7.51 228     6.91 229     7.36 229     7.06
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....2.60
LAST PLOTTED DEPTH......100.60
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....100

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

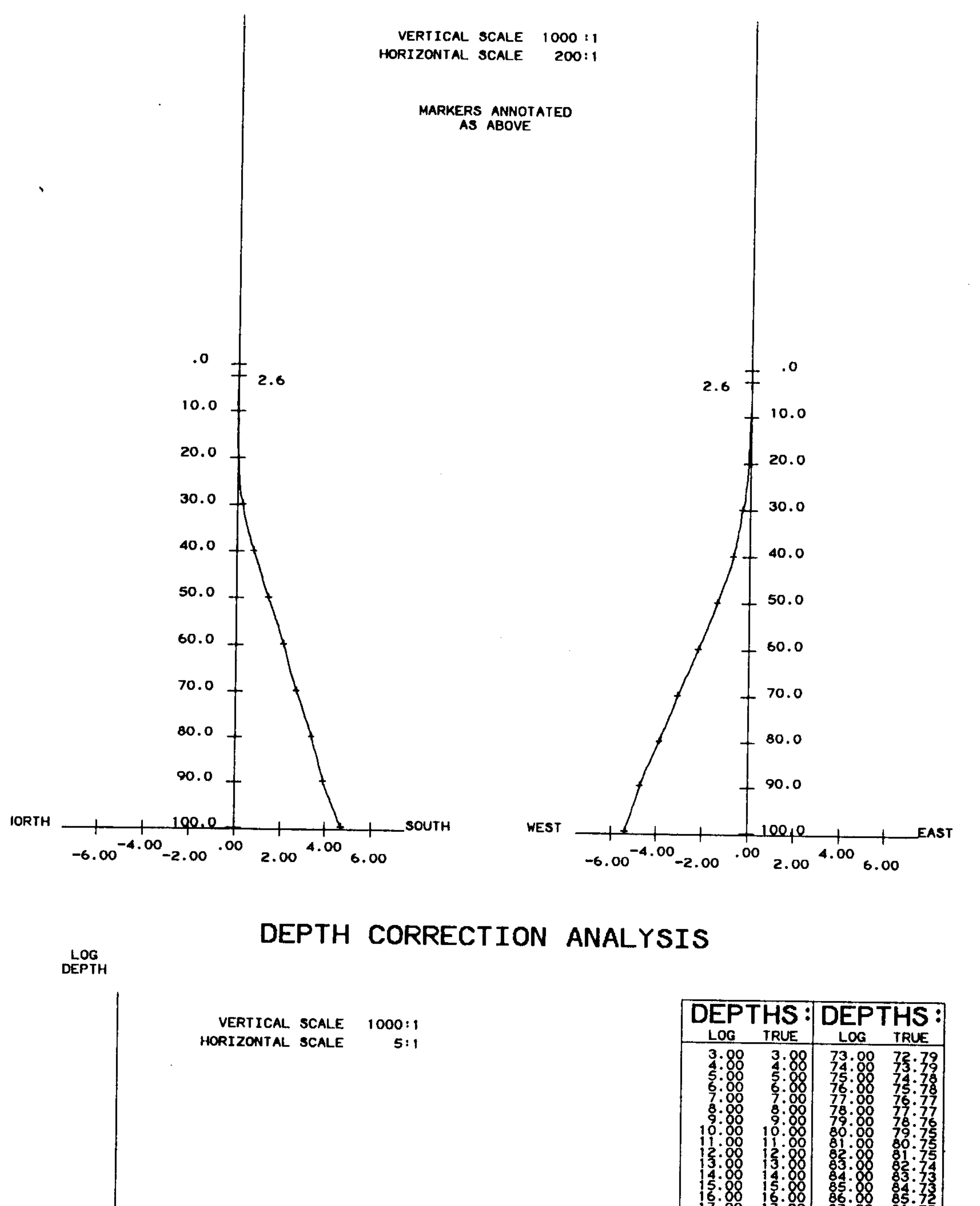
THE LAST PLOTTED DEPTH IS AT 4.76 MS SOUTH, 5.41 MS WEST IE. 7.21 MS FROM THE ORIGIN, 229 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

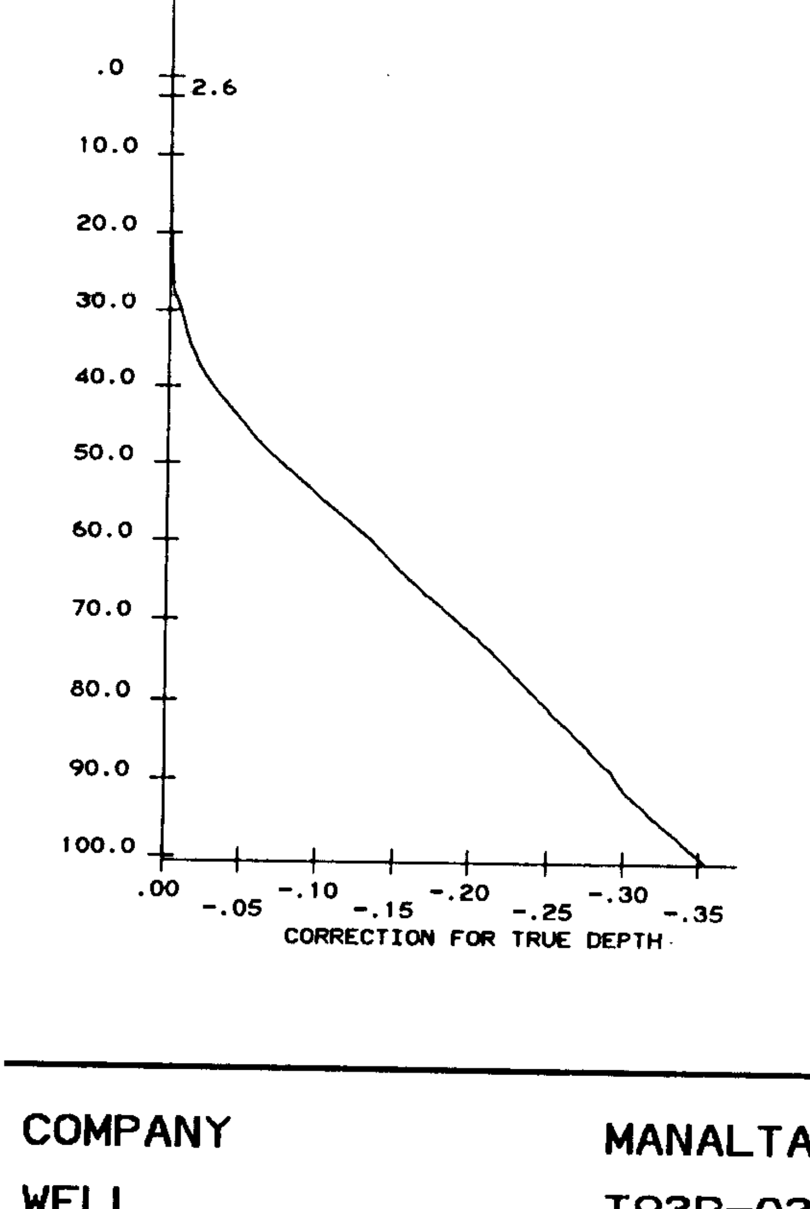
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 200:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 5:1



DEPTHS: LOG	DEPTHS: TRUE
3.00	3.00
4.00	4.00
5.00	5.00
6.00	6.00
7.00	7.00
8.00	8.00
9.00	9.00
10.00	10.00
11.00	11.00
12.00	12.00
13.00	13.00
14.00	14.00
15.00	15.00
16.00	16.00
17.00	17.00
18.00	18.00
19.00	19.00
20.00	20.00
21.00	21.00
22.00	22.00
23.00	23.00
24.00	24.00
25.00	25.00
26.00	26.00
27.00	27.00
28.00	28.00
29.00	28.99
30.00	29.99
31.00	30.99
32.00	31.99
33.00	32.99
34.00	33.99
35.00	34.98
36.00	35.98
37.00	36.98
38.00	37.98
39.00	38.97
40.00	39.97
41.00	40.97
42.00	41.96
43.00	42.96
44.00	43.95
45.00	44.95
46.00	45.95
47.00	46.94
48.00	47.94
49.00	48.93
50.00	49.93
51.00	50.92
52.00	51.91
53.00	52.91
54.00	53.90
55.00	54.90
56.00	55.89
57.00	56.88
58.00	57.88
59.00	58.87
60.00	59.87
61.00	60.86
62.00	61.86
63.00	62.85
64.00	63.85
65.00	64.84
66.00	65.83
67.00	66.83
68.00	67.82
69.00	68.82
70.00	69.81
71.00	70.80
72.00	71.80
73.00	72.79
74.00	73.79
75.00	74.78
76.00	75.78
77.00	76.77
78.00	77.77
79.00	78.76
80.00	79.75
81.00	80.75
82.00	81.75
83.00	82.74
84.00	83.73
85.00	84.73
86.00	85.72
87.00	86.72
88.00	87.71
89.00	88.71
90.00	89.70
91.00	90.70
92.00	91.70
93.00	92.69
94.00	93.68
95.00	94.68
96.00	95.67
97.00	96.67
98.00	97.66
99.00	98.66
100.00	99.65
100.60	100.25

COMPANY	MANALTA
WELL	T93R-03
FIELD	SITE 110
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY MANALTA
WELL T93R-03
FIELD SITE 110
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 110
WELL: T93R-03
COMPANY: MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	5-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	101.0M	
DEPTH-LOGGER	100.8M	
FIRST READING	100.5M	
LAST READING	0M	
CASING-DRILLER	6.1M	
CASING-LOGGER	6.1M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	0OM	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 5-SEP-1993 AT 11:11
FILENAME: DD3AR03M.CIB RUN ID: MAIN LOG PLOTTED ON 05-SEP-1993 AT 12:32

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 5-SEP-1993 AT 11:11
FILENAME: DD3AR03M.CIB RUN ID: MAIN LOG PLOTTED ON 05-SEP-1993 AT 12:32

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 05-SEP-1993 AT 11:07

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET DRY STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	101.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-03
FIELD	SITE 110
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 110
WELL: T93R-03
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-03
FIELD SITE 110
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	5-SEP-93						
RUN NUMBER	FOUR						
DEPTH-DRILLER	101.0M						
DEPTH-LOGGER	100.8M						
FIRST READING	100.5M						
LAST READING	0M						
CASING-DRILLER	6.1M						
CASING-LOGGER	6.1M						
BIT SIZE	156MM						
HOLE FLUID TYPE	AIR/WATER						
DENS./VISC.	1.01	N/A					
PH/FLUID LOSS	N/A	N/A					
SAMPLE SOURCE							
RM ● MEAS TEMP							
RMF ● MEAS TEMP							
RMC ● MEAS TEMP							
SOURCE: RMF/RMC							
RM ● BHT							
TIME SINCE CIRC							
MAX REC TEMP							
EQUIPMENT/BASE	V222	RDR					
RECORDED BY	B.STEVENSON						
WITNESSED BY	T. BRAZZONI						
WATER LEVEL	00M						

BOREHOLE RECORD				CASING RECORD			
RUN NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 11:11
FILENAME: DD3AR03A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 13:39

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 11:11
FILENAME: DD3AR03A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 13:39

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 05-SEP-1993 AT 11:07 DATA LAST REPROCESSED: 5-SEP-1993 AT 13:09

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	101.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY MANALTA
WELL T93R-03
FIELD SITE 110
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 110
WELL: T93R-03
COMPANY: MANALTA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-03
FIELD	SITE 110
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL, ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	5-SEP-93				
RUN NUMBER	THREE				
DEPTH-DRILLER	101.0M				
DEPTH-LOGGER	100.8M				
FIRST READING	100.5M				
LAST READING	0M				
CASING-DRILLER	6.1M				
CASING-LOGGER	6.1M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE					
RM @ MEAS TEMP					
RMF @ MEAS TEMP					
RMC @ MEAS TEMP					
SOURCE: RMF/RMC					
RM @ BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	B.STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	00M				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 11:11
FILENAME: DD3AR03A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 13:19

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 11:11
FILENAME: DD3AR03A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 13:19

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 05-SEP-1993 AT 11:07 DATA LAST REPROCESSED: 5-SEP-1993 AT 13:09

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	101.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-03
FIELD	SITE 110
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 114
WELL:
T93R-07C
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-07C
FIELD SITE 114
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	13-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	114.1M	
DEPTH-LOGGER	114.3M	
FIRST READING	114M	
LAST READING	0M	
CASING-DRILLER	24.4M	
CASING-LOGGER	24.4M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

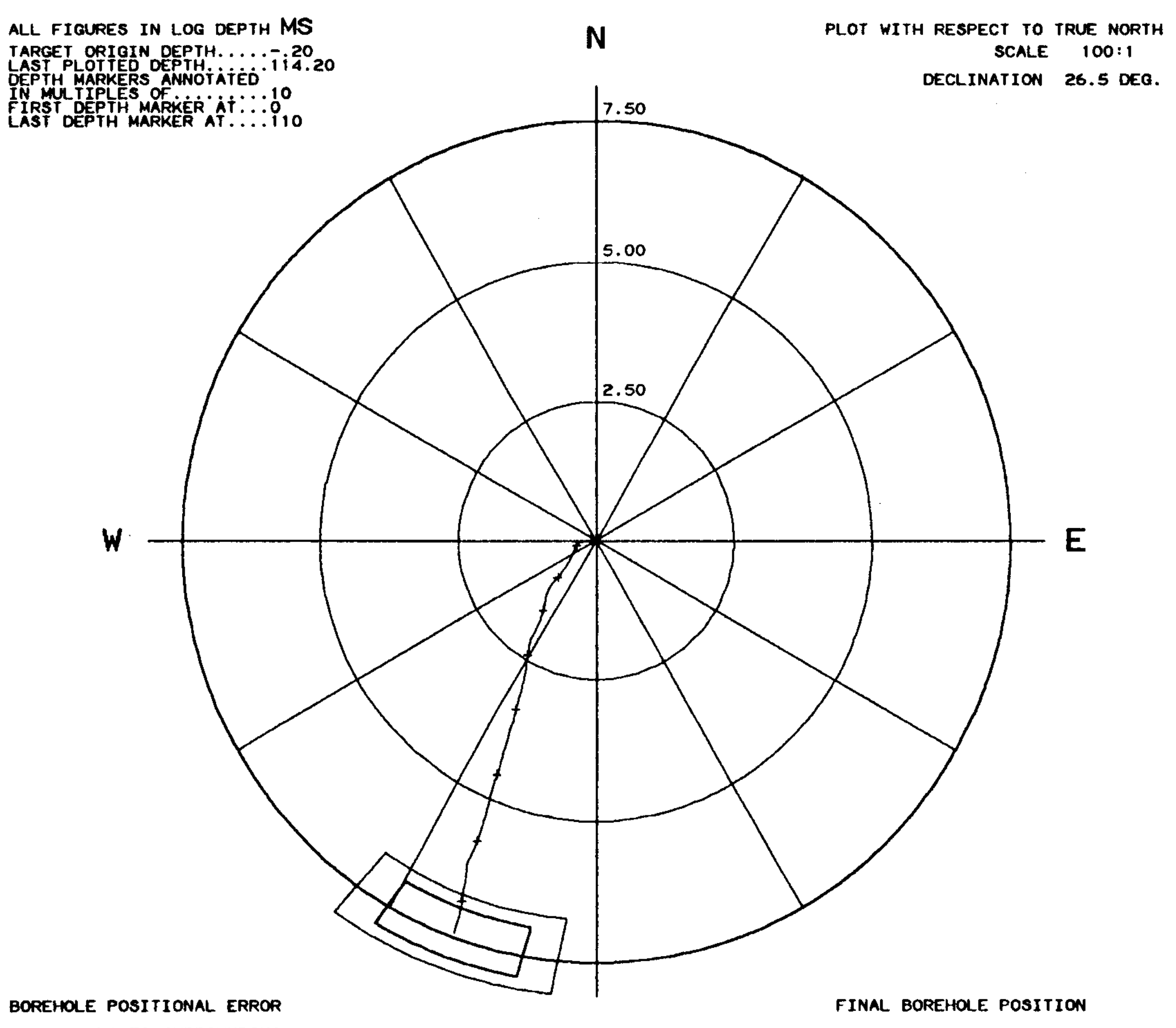
T93R-07C

VERTICALITY DATA LISTING
ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH

DATE PROCESSED: 13-SEP-1993
DATE LOGGED: 13-SEP-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
0.00	0.00	2.2	184	0.00	0.00	184	0.00	184	0.00	184	0.00	184	0.00	184	0.00
0.00	0.00	1.9	277	0.00	0.00	227	0.00	227	0.01	226	0.00	227	0.01	226	0.00
1.00	1.00	2.0	107	-0.01	0.02	109	0.02	109	0.02	109	0.02	109	0.02	109	0.02
2.00	2.00	0.7	223	-0.01	0.02	112	0.02	111	0.02	112	0.02	112	0.02	112	0.02
3.00	3.00	0.2	79	-0.01	0.02	126	0.02	130	0.03	121	0.02	128	0.03	124	0.02
4.00	4.00	0.2	51	-0.01	0.02	121	0.02	122	0.03	121	0.02	122	0.03	121	0.02
5.00	5.00	0.5	38	-0.01	0.02	106	0.02	103	0.03	109	0.02	104	0.02	107	0.02
6.00	6.00	0.8	50	-0.01	0.03	105	0.03	103	0.03	108	0.02	104	0.03	106	0.03
7.00	7.00	0.9	94	-0.02	0.04	115	0.04	114	0.05	117	0.03	115	0.05	116	0.04
8.00	8.00	1.0	55	-0.01	0.05	100	0.05	99	0.06	102	0.04	100	0.06	101	0.05
9.00	9.00	1.3	52	0.01	0.06	85	0.06	84	0.07	86	0.05	85	0.06	86	0.05
10.00	10.00	0.9	2	0.02	0.06	69	0.06	68	0.08	70	0.05	69	0.07	70	0.06
11.00	11.00	1.3	1	0.03	0.06	62	0.07	62	0.08	63	0.05	62	0.07	63	0.06
12.00	12.00	1.5	344	0.05	0.07	55	0.08	55	0.10	56	0.06	55	0.09	55	0.07
13.00	13.00	1.0	251	0.05	0.05	45	0.07	44	0.08	46	0.06	45	0.08	45	0.06
14.00	14.00	0.9	262	0.05	0.03	36	0.06	35	0.07	37	0.05	35	0.07	36	0.05
15.00	15.00	1.0	281	0.05	0.02	21	0.05	20	0.06	23	0.04	21	0.06	22	0.05
16.00	16.00	0.8	299	0.05	0.00	5	0.05	3	0.06	8	0.04	4	0.06	6	0.05
17.00	17.00	0.9	280	0.05	-0.01	352	0.06	350	0.07	354	0.04	351	0.06	353	0.05
18.00	18.00	1.0	185	0.06	-0.02	345	0.06	344	0.07	348	0.05	344	0.07	346	0.05
19.00	19.00	1.0	19	0.06	-0.01	355	0.06	353	0.07	358	0.05	354	0.07	356	0.05
20.00	20.00	1.0	143	0.07	0.00	358	0.07	357	0.08	1	0.05	357	0.07	359	0.06
21.00	21.00	1.1	290	0.07	0.01	7	0.07	5	0.08	9	0.05	6	0.07	8	0.06
22.00	22.00	1.1	128	0.06	0.02	19	0.06	17	0.07	22	0.05	18	0.07	20	0.06
23.00	23.00	1.3	1	0.05	0.03	33	0.06	31	0.07	36	0.05	32	0.07	34	0.05
24.00	24.00	1.4	329	0.05	0.04	39	0.06	36	0.07	42	0.05	37	0.07	40	0.05
25.00	25.00	1.5	239	0.04	0.02	31	0.05	29	0.06	35	0.04	30	0.05	33	0.04
26.00	26.00	2.0	247	0.03	0.00	354	0.03	354	0.04	353	0.02	354	0.03	353	0.02
27.00	26.99	1.7	251	0.02	-0.03	299	0.04	304	0.04	292	0.03	302	0.04	296	0.03
28.00	27.99	1.8	253	0.01	-0.06	279	0.06	282	0.07	274	0.05	281	0.07	276	0.06
29.00	28.99	2.0	255	0.00	-0.09	271	0.09	273	0.10	267	0.08	272	0.10	269	0.09
30.00	29.99	1.9	256	-0.01	-0.12	267	0.12	269	0.14	264	0.11	268	0.13	266	0.12
31.00	30.99	1.8	255	-0.01	-0.15	265	0.15	266	0.17	263	0.14	266	0.16	264	0.14
32.00	31.99	1.7	259	-0.02	-0.18	264	0.18	265	0.20	262	0.16	265	0.19	263	0.17
33.00	32.99	1.7	266	-0.02	-0.21	264	0.21	265	0.23	262	0.19	264	0.22	263	0.20
34.00	33.99	2.0	264	-0.03	-0.24	264	0.24	265	0.27	263	0.21	264	0.25	263	0.23
35.00	34.99	1.9	261	-0.03	-0.27	264	0.27	265	0.30	263	0.24	264	0.29	263	0.26
36.00	35.99	1.6	264	-0.03	-0.30	263	0.30	264	0.34	262	0.27	264	0.32	263	0.29
37.00	36.99	1.3	255	-0.04	-0.33	263	0.33	264	0.37	262	0.29	263	0.35	262	0.31
38.00	37.99	2.1	238	-0.06	-0.35	260	0.36	260	0.40	259	0.32	260	0.38	259	0.34
39.00	38.99	2.1	206	-0.09	-0.37	257	0.39	257	0.43	256	0.34	257	0.41	256	0.36
40.00	39.99	2.9	202	-0.13	-0.39	252	0.41	253	0.46	251	0.37	252	0.43	251	0.39
41.00	40.99	3.0	207	-0.18	-0.41	247	0.45	248	0.50	246	0.40	248	0.47	247	0.43
42.00	41.98	3.7	205	-0.23	-0.44	243	0.50	243	0.55	241	0.45	243	0.52	242	0.47
43.00	42.98	3.9	203	-0.29	-0.47	238	0.55	239	0.60	237	0.50	239	0.57	238	0.52
44.00	43.98	4.0	206	-0.35	-0.50	235	0.61	236	0.66	234	0.55	236	0.63	234	0.58
45.00	44.98	4.1	207	-0.41	-0.53	233	0.67	234	0.72	231	0.61	233	0.70	232	0.64
46.00	45.98	4.4	214	-0.47	-0.57	231	0.74	232	0.80	230	0.68	231	0.77	230	0.71
47.00	46.97	4.6	213	-0.53	-0.61	229	0.81	230	0.87	228	0.75	230	0.84	229	0.78
48.00	47.97	4.9	214	-0.60	-0.66	228	0.89	229	0.95	227	0.82	228	0.92	227	0.86
49.00	48.97	4.5	220	-0.66	-0.71	227	0.97	228	1.04	226	0.90	227	1.00	226	0.94
50.00	49.96	4.2	222	-0.72	-0.76	226	1.05	227	1.12	225	0.98	227	1.08	226	1.01
51.00	50.96	4.2	221	-0.77	-0.81	226	1.12	227	1.19	225	1.04	227	1.16	226	1.08
52.00	51.96	4.6	220	-0.83	-0.85	226	1.18	226	1.26	225	1.11	226	1.22	225	1.14
53.00	52.96	3.1	201	-0.88	-0.88	225	1.24	226	1.32	224	1.16	226	1.28	225	1.20
54.00	53.95	3.6	195	-0.93	-0.90	224	1.29	225	1.38	223	1.21	224	1.34	224	1.25
55.00	54.95	3.5	196	-0.99	-0.91	223	1.35	223	1.43	222	1.26	223	1.39	222	1.30
56.00	55.95	3.7	192	-1.05	-0.93	221	1.40	222	1.49	221	1.31	222	1.45	221	1.36
57.00	56.95	3.9	191	-1.12	-0.94	220	1.46	221	1.55	219	1.37	220	1.51	220	1.42
58.00	57.95	4.0	189	-1.19	-0.96	219	1.53	219	1.62	218	1.43	219	1.57	218	1.48
59.00	58.94	4.6	192	-1.26	-0.97	218	1.59	218	1.69	217	1.49	218	1.64	217	1.54
60.00	59.94	5.1	203	-1.33	-0.99	217	1.66	217	1.76	216	1.56	217	1.71	216	1.61
61.00	60.94	5.1	201	-1.41	-1.02	216	1.74	216	1.84	215	1.64	216	1.79	216	1.69
62.00	61.93	4.2	201	-1.49	-1.05	215	1.83	216	1.93	215	1.72	215	1.88	215	1.77
63.00	62.93	5.3	208	-1.57	-1.09	215	1.92	215	2.03	214	1.81	215	1.97	214	1.86
64.00	63.92	5.7	207	-1.66	-1.14	214	2.02	215	2.13	214	1.90	215	2.07	214	1.96
65.00	64.92	4.6	223	-1.74	-1.18	214	2.10	215	2.22	214	1.99	215	2.16	214	2.04
66.00	65.92	4.0	198	-1.80	-1.21	214	2.17	214	2.29	213	2.05	214	2.23	214	2.11
67.00	66.91	4.7	193	-1.88	-1.23	213	2.24	214	2.37	213	2.12	213	2.31	213	2.18
68.00	67.91	4.6	191	-1.97	-1.24	212	2.32	213	2.45	212	2.20	212	2.39	212	2.26
69.00	68.91	5.4	190	-2.05	-1.25	211	2.41	212	2.53	211	2.28	212	2.47	211	2.34
70.00	69.90	5.3	188	-2.15	-1.27	211	2.49	211	2.62	210	2.36	211	2.56	210	2.43
71.00	70.90	5.4	188	-2.24	-1.28	210	2.58	210	2.72	209	2.45	210	2.65	210	2.51
72.00	71.89	5.1	193	-2.33	-1.30	209	2.67	210	2.81	209	2.53	209	2.74	209	2.60
73.00	72.89	5.4	191	-2.43	-1.31	208	2.76	209	2.90	208	2.62	209	2.83	208	2.69
74.00	73.88	5.7	190	-2.52	-1.33	208	2.85	208	3.00	207	2.71	208	2.92	208	2.78
75.00	74.88	5.0	197	-2.61	-1.36	207	2.94	208	3.09	207	2.80	208	3.02	207	2.87
76.00	75.87	6.5	194	-2.71	-1.38	207	3.04	207	3.19	207	2.89	207	3.12	207	2.97
77.00	76.87	5.9	197	-2.81	-1.41	207	3.15	207	3.30	206	2.99	207	3.22	206	3.07
78.00	77.86	6.9	193	-2.92	-1.44	206	3.25	207	3.41	206	3.10	206	3.33	206	3.18
79.00	78.86	6.6	193	-3.03	-1.47	206	3.37	206	3.53	205	3.21	206	3.45	206	3.29
80.00	79.85	7.4	198	-3.15	-1.50	206	3.49	206	3.65	205	3.32	206	3.57	205	3.40
81.00	80.84	7.3	198	-3.27	-1.54	205	3.61	206	3.78	205	3.44	205	3.69	205	3.53
82.00	81.83	7.1	197	-3.39	-1.57	205	3.73	205	3.90	204	3.56	205	3.82	205	3.65
83.00	82.82	6.9	196	-3.50	-1.61	205	3.85	205	4.03	204	3.68	205	3.94	204	3.77
84.00	83.82	6.5	197	-3.62	-1.64	204	3.97	205	4.15	204	3.79	205	4.06	204	3.88
85.00	84.81	7.1	197	-3.73	-1.67	204	4.09	204	4.27	204	3.91	204	4.18	204	4.00
86.00	85.80	5.0	201	-3.85	-1.71	204	4.21	204	4.39	204	4.02	204	4.30	204	4.12
87.00	86.80	7.1	193	-3.97	-1.74	204	4.33	204	4.52	203	4.14	204	4.42	203	4.24
88.00	87.79	6.8	195	-4.08	-1.77	204	4.44	204	4.63	203	4.26	204	4.54	203	4.35
89.00	88.78	7.3	201	-4.18	-1.81	203	4.55	204	4.75	203	4.36	204	4.65	203	4.46
90.00	89.77	7.2	199	-4.30	-1.85	203	4.68	204	4.88	203	4.48	203	4.78	203	4.58
91.00	90.77	7.3	196	-4.42	-1.89	203	4.81	203	5.00	203	4.61	203	4.90	203	4.71
92.00	91.76	7.3	195	-4.54	-1.93	203	4.93	203	5.13	203	4.73	203	5.03	203	4.83
93.00	92.75	7.1	195	-4.66	-1.96	203	5.05	203	5.26	202	4.85	203	5.16	203	4.95
94.00	93.74	6.8	195	-4.78	-1.99	203	5.18	203	5.38	202	4.97	203	5.28	202	5.07
95.00	94.74	6.7	195	-4.89	-2.02	202	5.29	203	5.50	202	5.08	203	5.40	202	5.18
96.00	95.73	7.0	199	-5.00	-2.05	202	5.41	203	5.62	202	5.19	202	5.52	202	5.30
97.00	96.72	7.0	200	-5.11	-2.09	202	5.52	203	5.74	202	5.30	202	5.63	202	5.41
98.00	97.72	7.0	202	-5.22	-2.13	202	5.64	202	5.86	202	5.42	202	5.75	202	5.53
99.00	98.71	7.2	202	-5.33	-2.17	202	5.75	202	5.98	202	5.53	202	5.87	202	5.64
100.00	99.70	7.0	202	-5.44	-2.22	202	5.88	202	6.11	202	5.65	202	5.99	202	5.76
101.00	100.69	5.9	217	-5.54	-2.27	202	5.99	203	6.22	202	5.76	202	6.11	202	5.87
102.00	101.69	5.5	214	-5.63	-2.32	202	6.09	203	6.32	202	5.85	203	6.21	202	5.97
103.00	102.69	5.3	193	-5.71	-2.36	202	6.17	203	6.41	202	5.93	203	6.29	202	6.05
104.00	103.68	5.3	186	-5.80	-2.37	202	6.27	202	6.51	202	6.03	202	6.39	202	6.15
105.00	104.68	6.6	185	-5.91	-2.38	202	6.37	202	6.62	202	6.13	202	6.50	202	6.25
106.00	105.67	6.9	189	-6.03	-2.39	202	6.49	202	6.74	201	6.24	202	6.61	202	6.36
107.00	106.66	7.0	188	-6.15	-2.41	201	6.60	202	6.86	201	6.35	202	6.73	201	6.48
108.00	107.65	6.6	186	-6.27	-2.43	201	6.72	201	6.97	201	6.46	201	6.85	201	6.59
109.00	108.65	6.7	185	-6.38	-2.44	201	6.83	201	7.09	201	6.57	201	6.96	201	6.70
110.00	109.64	6.9	190	-6.50	-2.46	201	6.95	201	7.21	200	6.69	201	7.08	201	6.82
111.00	110.63	7.0	191	-6.62	-2.48	201	7.07	201	7.33	200	6.80	201	7.20	200	6.93
112.00	111.62	6.9	202	-6.74	-2.52	200	7.19	201	7.46	200	6.92	201	7.33	200	7.06
113.00	112.62	5.4	210	-6.83	-2.56	201	7.29	201	7.57	200	7.02	201	7.43	200	7.16
114.00	113.61	6.4	186	-6.93	-2.58	200	7.39	201	7.67	200	7.12	201	7.53	200	7.26
114.20	113.81	6.7	186	-6.95	-2.58	200	7.42	201	7.69	200	7.14	200	7.56	200	7.28

CROSS SECTION



BOREHOLE POSITIONAL ERROR

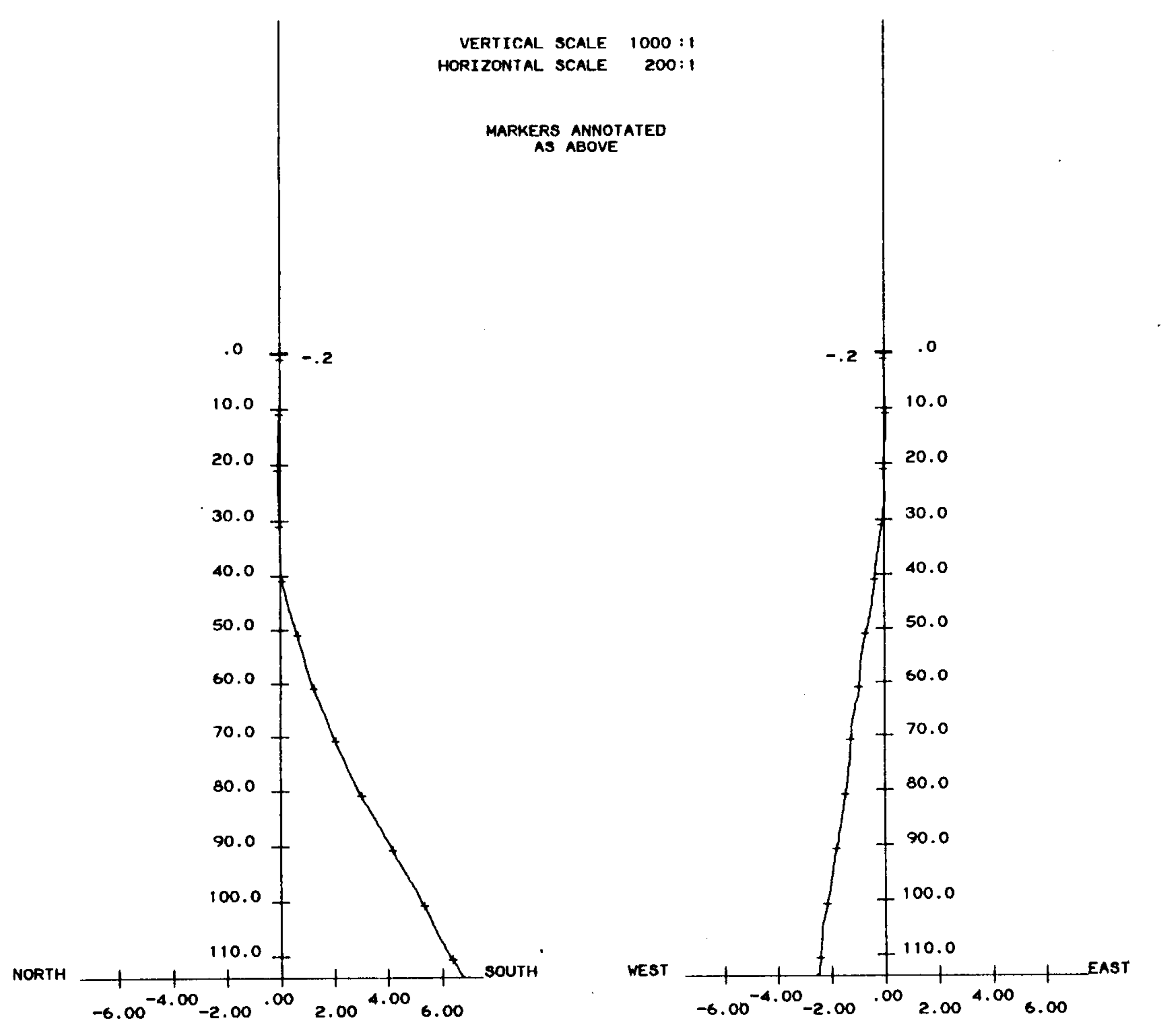
THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

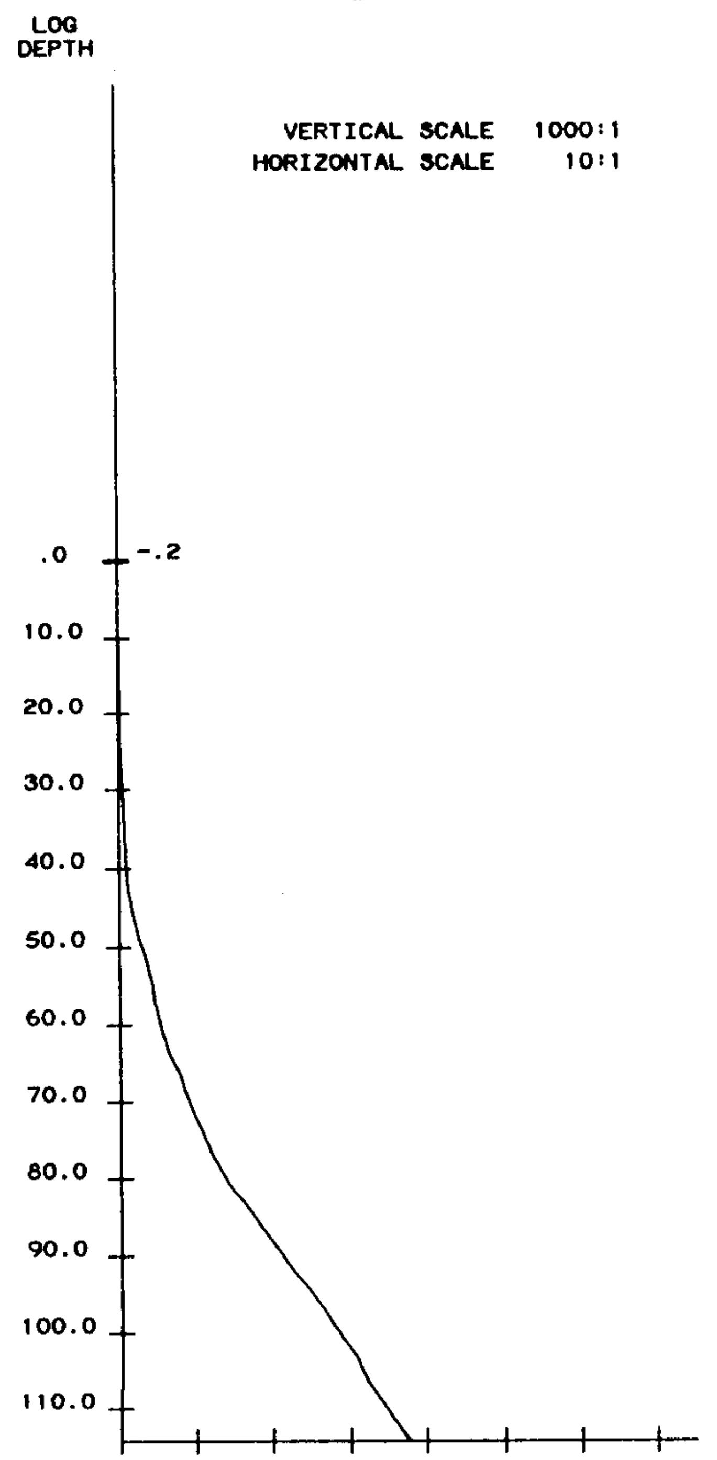
THE LAST PLOTTED DEPTH IS AT 6.95 MS SOUTH, 2.58 MS WEST IE. 7.42 MS FROM THE ORIGIN, 200 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)



DEPTH CORRECTION ANALYSIS



DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE
1.00	1.00	71.00	70.91
2.00	2.00	72.00	71.90
3.00	3.00	73.00	72.90
4.00	4.00	74.00	73.89
5.00	5.00	75.00	74.89
6.00	6.00	76.00	75.88
7.00	7.00	77.00	76.88
8.00	8.00	78.00	77.87
9.00	9.00	79.00	78.87
10.00	10.00	80.00	79.86
11.00	11.00	81.00	80.86
12.00	12.00	82.00	81.85
13.00	13.00	83.00	82.84
14.00	14.00	84.00	83.83
15.00	15.00	85.00	84.82
16.00	16.00	86.00	85.82
17.00	17.00	87.00	86.81
18.00	18.00	88.00	87.80
19.00	19.00	89.00	88.80
20.00	20.00	90.00	89.79
21.00	21.00	91.00	90.78
22.00	22.00	92.00	91.77
23.00	23.00	93.00	92.77
24.00	24.00	94.00	93.76
25.00	25.00	95.00	94.75
26.00	26.00	96.00	95.74
27.00	27.00	97.00	96.74
28.00	28.00	98.00	97.73
29.00	28.99	99.00	98.72
30.00	29.99	100.00	99.72
31.00	30.99	101.00	100.71
32.00	31.99	102.00	101.70
33.00	32.99	103.00	102.69
34.00	33.99	104.00	103.69
35.00	34.99	105.00	104.69
36.00	35.99	106.00	105.68
37.00	36.99	107.00	106.68
38.00	37.99	108.00	107.67
39.00	38.99	109.00	108.66
40.00	39.99	110.00	109.65
41.00	40.99	111.00	110.65
42.00	41.99	112.00	111.64
43.00	42.99	113.00	112.63
44.00	43.98	114.00	113.62
45.00	44.98	115.00	114.62
46.00	45.98	116.00	115.61
47.00	46.98	114.20	113.81
48.00	47.98		
49.00	48.97		
50.00	49.97		
51.00	50.97		
52.00	51.96		
53.00	52.96		
54.00	53.96		
55.00	54.96		
56.00	55.95		
57.00	56.95		
58.00	57.95		
59.00	58.95		
60.00	59.95		
61.00	60.94		
62.00	61.94		
63.00	62.94		
64.00	63.93		
65.00	64.93		
66.00	65.92		
67.00	66.92		
68.00	67.92		
69.00	68.91		
70.00	69.91		

COMPANY	MANALTA
WELL	T93R-07C
FIELD	SITE 114
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#829

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 114
WELL:
T93R-07C
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-07C
FIELD SITE 114
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA				OTHER SERVICES
LSD	SEC	TWP	RGE	VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	13-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	114.1M			
DEPTH-LOGGER	114.3M			
FIRST READING	114M			
LAST READING	0M			
CASING-DRILLER	24.4M			
CASING-LOGGER	24.4M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	24.4M	TD	178MM	N/A	SURFACE	24.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY , CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 13-SEP-1993 AT 13:38
FILENAME: DD3AR07C.CIB RUN ID: MAIN LOG PLOTTED ON 13-SEP-1993 AT 16:10

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 13-SEP-1993 AT 13:38
FILENAME: DD3AR07C.CIB RUN ID: MAIN LOG PLOTTED ON 13-SEP-1993 AT 16:10

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 13-SEP-1993 AT 13:33

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	24.40
BIT SIZE 3	.00	BIT DEPTH 3	114.10
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-07C
FIELD	SITE 114
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 114
WELL:
T93R-07C
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-07C
FIELD SITE 114
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	13-SEP-93	
RUN NUMBER	THREE	
DEPTH-DRILLER	114.1M	
DEPTH-LOGGER	114.3M	
FIRST READING	114M	
LAST READING	0M	
CASING-DRILLER	24.4M	
CASING-LOGGER	24.4M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	24.4M	TD	178MM	N/A	SURFACE	24.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 13-SEP-1993 AT 13:38
FILENAME: DD3AR07A.CIB RUN ID: DETAIL SECTION PLOTTED ON 13-SEP-1993 AT 16:31

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 13-SEP-1993 AT 13:38
FILENAME: DD3AR07A.CIB RUN ID: DETAIL SECTION PLOTTED ON 13-SEP-1993 AT 16:27

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 13-SEP-1993 AT 13:33 DATA LAST REPROCESSED: 13-SEP-1993 AT 16:25

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	24.40
BIT SIZE 3	.00	BIT DEPTH 3	114.10
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-07C
FIELD	SITE 114
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-07C
FIELD	SITE 114
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 114
WELL:
T93R-07C
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL, ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	13-SEP-93	
RUN NUMBER	FOUR	
DEPTH-DRILLER	114.1M	
DEPTH-LOGGER	114.3M	
FIRST READING	114M	
LAST READING	0M	
CASING-DRILLER	24.4M	
CASING-LOGGER	24.4M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	0OM	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	24.4M	TD	178MM	N/A	SURFACE	24.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 13-SEP-1993 AT 13:38
FILENAME: DD3AR07A.CIB RUN ID: DETAIL SECTION PLOTTED ON 13-SEP-1993 AT 16:37

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 13-SEP-1993 AT 13:38
FILENAME: DD3AR07A.CIB RUN ID: DETAIL SECTION PLOTTED ON 13-SEP-1993 AT 16:37

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 13-SEP-1993 AT 13:33 DATA LAST REPROCESSED: 13-SEP-1993 AT 16:25

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	24.40
BIT SIZE 3	.00	BIT DEPTH 3	114.10
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-07C
FIELD	SITE 114
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-08
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-08
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	5-SEP-93	
RUN NUMBER	THREE	
DEPTH-DRILLER	42.7M	
DEPTH-LOGGER	43.0M	
FIRST READING	42.5M	
LAST READING	OM	
CASING-DRILLER	2.3M	
CASING-LOGGER	2.3M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	OOM	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	2.3M	TD	178MM	N/A	SURFACE	2.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

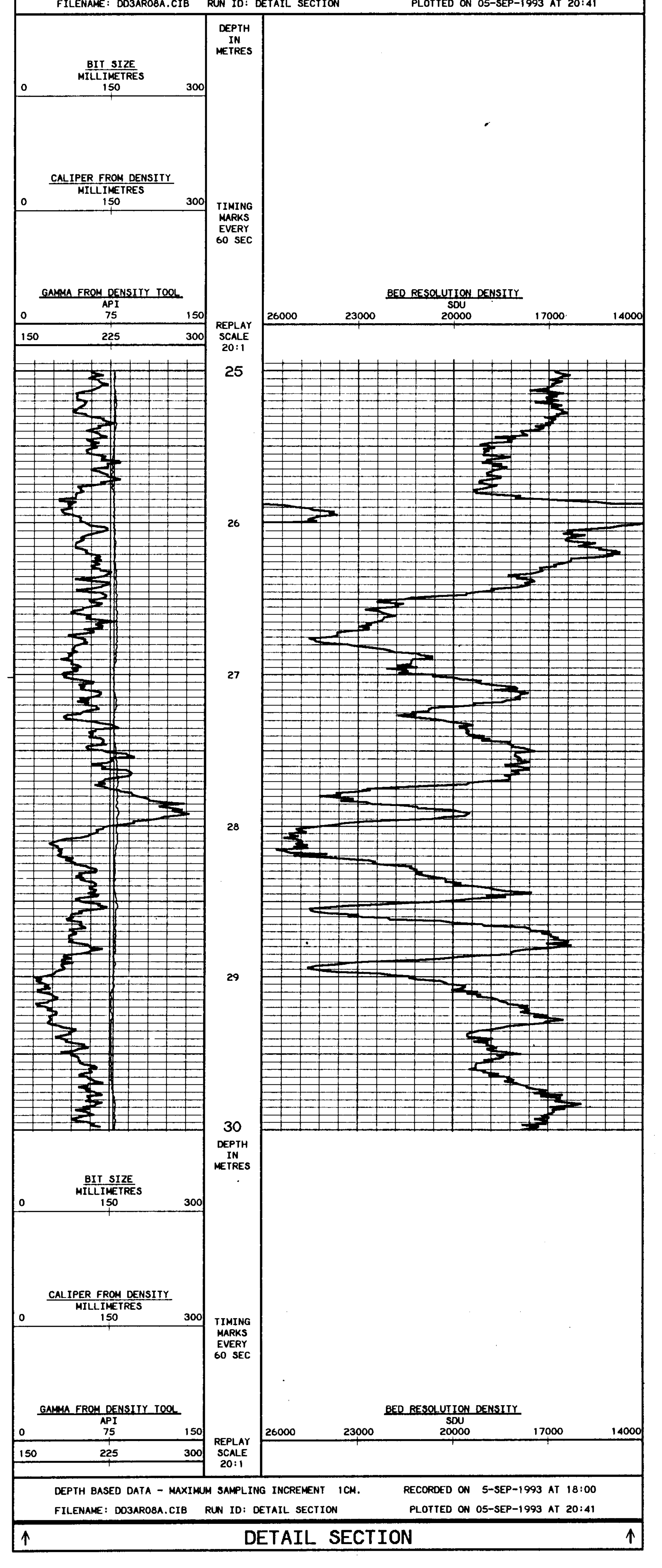
DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 18:00
FILENAME: DD3AR08B.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 20:42

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 18:00
FILENAME: DD3AR08B.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 20:42

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 18:00
FILENAME: DD3AR08A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 20:41



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 18:00
FILENAME: DD3AR08A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 20:41

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 05-SEP-1993 AT 17:55 DATA LAST REPROCESSED: 5-SEP-1993 AT 20:21

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.30
BIT SIZE 3	.00	BIT DEPTH 3	42.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-08
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-08
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL: T93R-08
COMPANY: MANALTA

LOCATION				OTHER SERVICES
TELKWA				
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	5-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	42.7M			
DEPTH-LOGGER	43.0M			
FIRST READING	42.5M			
LAST READING	0M			
CASING-DRILLER	2.3M			
CASING-LOGGER	2.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	2.3M	TD	178MM	N/A	SURFACE	2.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

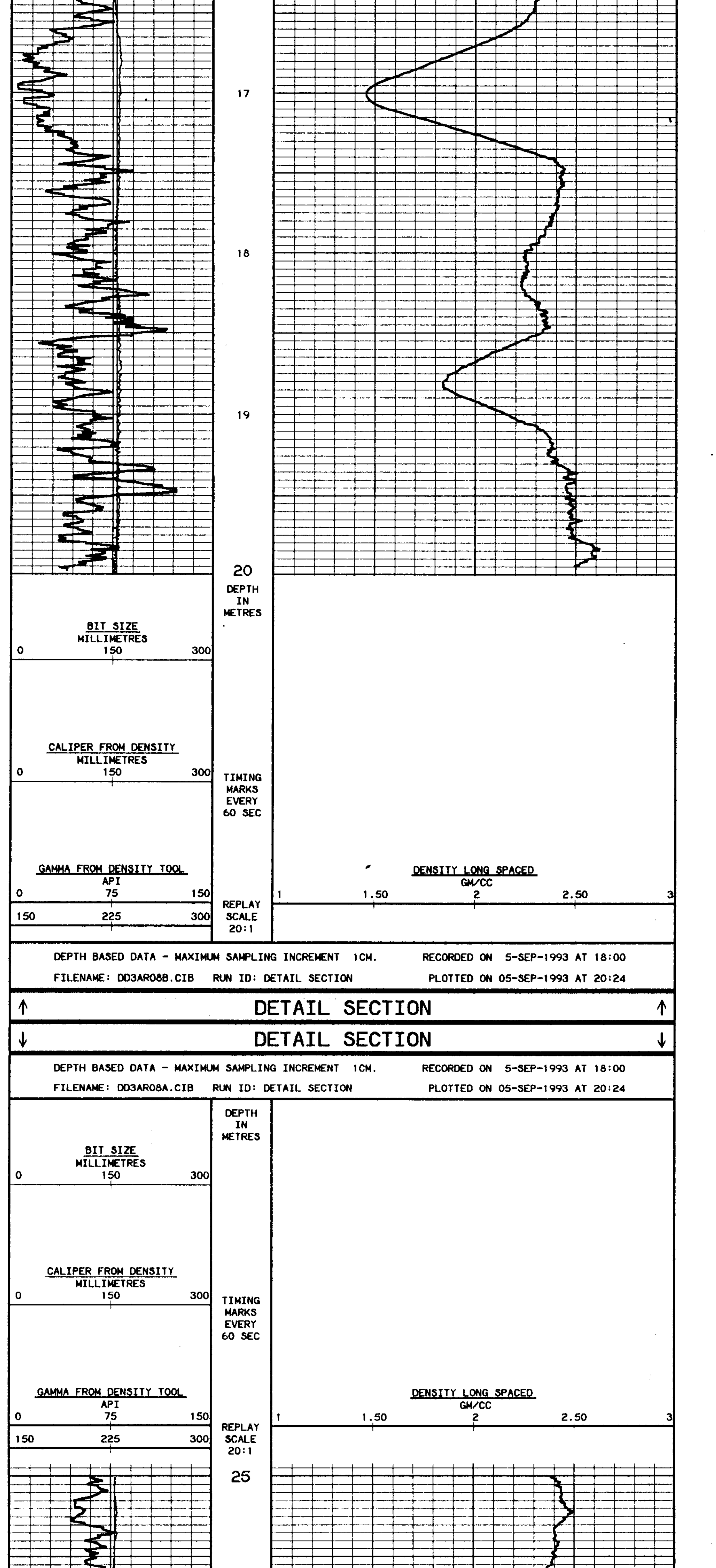
DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 18:00
FILENAME: DD3AR08B.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 20:27

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 18:00
FILENAME: DD3AR08B.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 20:24

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 18:00
FILENAME: DD3AR08A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 20:24



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-SEP-1993 AT 18:00
FILENAME: DD3AR08A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-SEP-1993 AT 20:23

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 05-SEP-1993 AT 17:55 DATA LAST REPROCESSED: 5-SEP-1993 AT 20:21

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.30
BIT SIZE 3	.00	BIT DEPTH 3	42.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-08
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#829

COMPANY	MANALTA
WELL	T93R-08
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION				OTHER SERVICES
TELKWA				
LSD	SEC	TWP	RGE	

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-08
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	5-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	42.7			
DEPTH-LOGGER	43.0M			
FIRST READING	42.5M			
LAST READING	0M			
CASING-DRILLER	2.3M			
CASING-LOGGER	2.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	2.3M	TD	178MM	N/A	SURFACE	2.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 5-SEP-1993 AT 18:00
FILENAME: DD3AR08M.CIB RUN ID: MAIN LOG PLOTTED ON 05-SEP-1993 AT 19:53

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

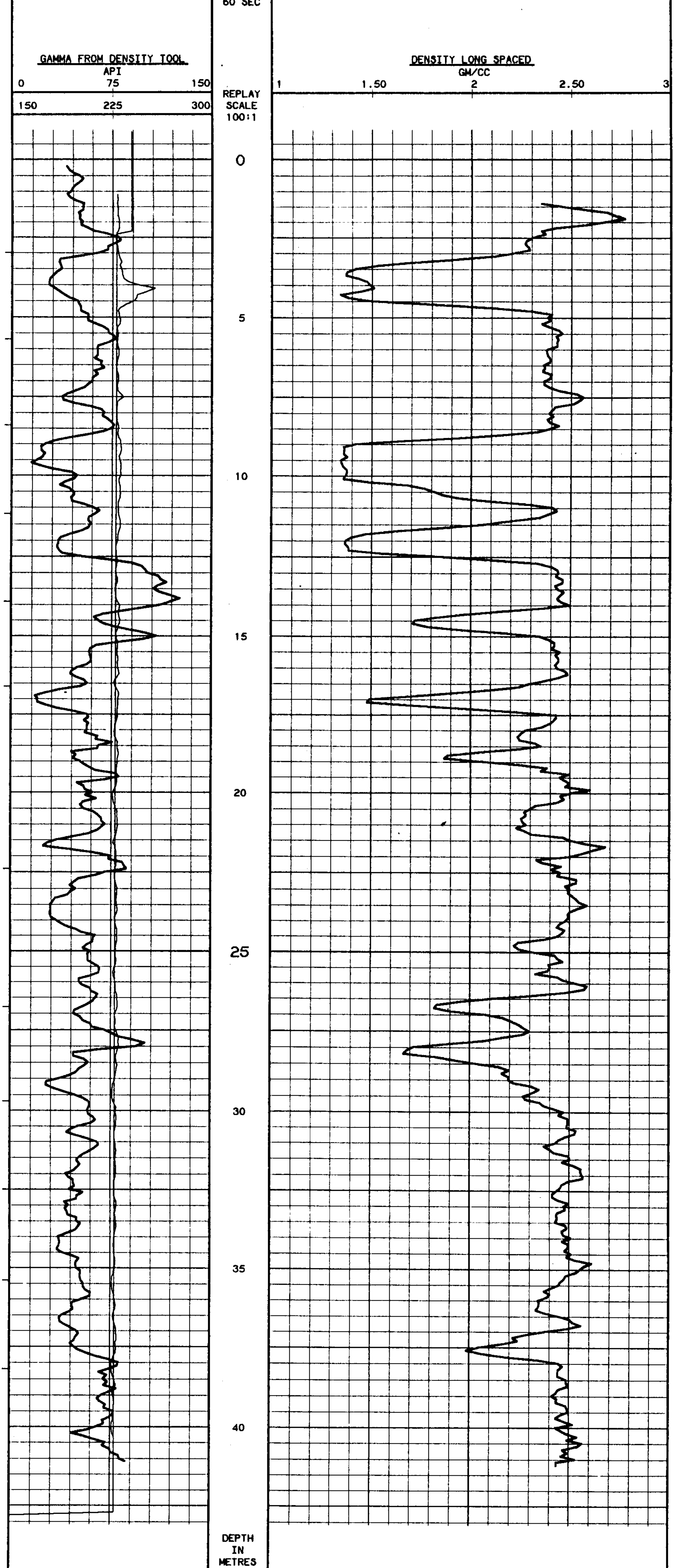
CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 5-SEP-1993 AT 18:00
FILENAME: DD3AR08M.CIB RUN ID: MAIN LOG PLOTTED ON 05-SEP-1993 AT 19:53

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 05-SEP-1993 AT 17:55

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.30
BIT SIZE 3	.00	BIT DEPTH 3	42.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-08
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-08C
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-08C
COMPANY:
MANALTA

LOCATION				OTHER SERVICES
TELKWA				
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	16.8M			
DEPTH-LOGGER	17.4M			
FIRST READING	16.5M			
LAST READING	0M			
CASING-DRILLER	1.8M			
CASING-LOGGER	1.8M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	1.8M	TD	178MM	N/A	SURFACE	1.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 12:23
FILENAME: DD3AR08A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 15:45

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 12:23
FILENAME: DD3AR08A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 15:45

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 06-SEP-1993 AT 12:22 DATA LAST REPROCESSED: 6-SEP-1993 AT 15:34

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	1.80
BIT SIZE 3	.00	BIT DEPTH 3	16.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-08C
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-08C
COMPANY:
MANALTA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#829

COMPANY MANALTA
WELL T93R-08C
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION			OTHER SERVICES
TELKWA			
LSD	SEC	TWP	RGE

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	16.8M	
DEPTH-LOGGER	17.4M	
FIRST READING	16.5M	
LAST READING	0M	
CASING-DRILLER	1.8M	
CASING-LOGGER	1.8M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	1.8M	TD	178MM	N/A	SURFACE	1.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 12:23
FILENAME: DD3AR08A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 15:38

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 12:23
FILENAME: DD3AR08A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 15:35

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 06-SEP-1993 AT 12:22 DATA LAST REPROCESSED: 6-SEP-1993 AT 15:34

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	1.80
BIT SIZE 3	.00	BIT DEPTH 3	16.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-08C
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#079

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-08C
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-08C
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	16.8M			
DEPTH-LOGGER	17.4M			
FIRST READING	16.5M			
LAST READING	0M			
CASING-DRILLER	1.8M			
CASING-LOGGER	1.8M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	1.8M	TD	178MM	N/A	SURFACE	1.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

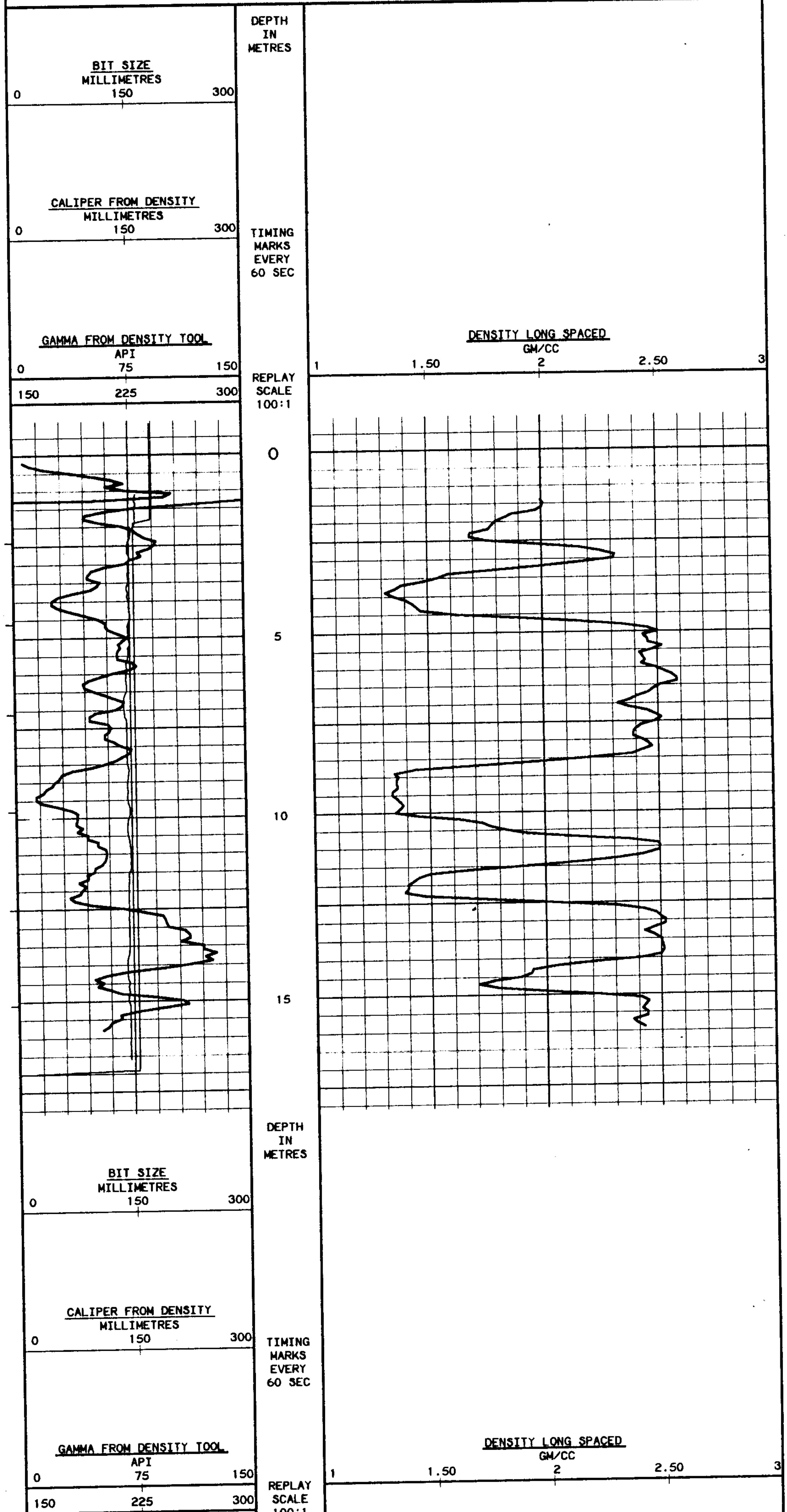
LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-SEP-1993 AT 12:23
FILENAME: DD3AR08C.CIB RUN ID: MAIN LOG PLOTTED ON 06-SEP-1993 AT 14:27



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-SEP-1993 AT 12:23
FILENAME: DD3AR08C.CIB RUN ID: MAIN LOG PLOTTED ON 06-SEP-1993 AT 14:27

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 06-SEP-1993 AT 12:22

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	1.80
BIT SIZE 3	.00	BIT DEPTH 3	16.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-08C
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#829

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 115
WELL: T93R-09
COMPANY: MANALTA

COMPANY	MANALTA
WELL	T93R-09
FIELD	SITE 115
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT, DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	7-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	171.3M			
DEPTH-LOGGER	167.5M			
FIRST READING	162.0M			
LAST READING	0M			
CASING-DRILLER	2.7M			
CASING-LOGGER	2.7M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	1.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	2.7M	TD	178MM	N/A	SURFACE	2.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 7-SEP-1993 AT 14:49
FILENAME: DD3AR09M.CIB RUN ID: MAIN LOG PLOTTED ON 07-SEP-1993 AT 15:17

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 7-SEP-1993 AT 14:49
FILENAME: DD3AR09M.CIB RUN ID: MAIN LOG PLOTTED ON 07-SEP-1993 AT 15:17

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 07-SEP-1993 AT 13:07

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.70
BIT SIZE 3	.00	BIT DEPTH 3	171.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-09
FIELD	SITE 115
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 115
WELL: T93R-09
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-09
FIELD SITE 115
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#879

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	7-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	171.3M			
DEPTH-LOGGER	167.5M			
FIRST READING	162.0M			
LAST READING	0M			
CASING-DRILLER	2.7M			
CASING-LOGGER	2.7M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	1.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	2.7M	TD	178MM	N/A	SURFACE	2.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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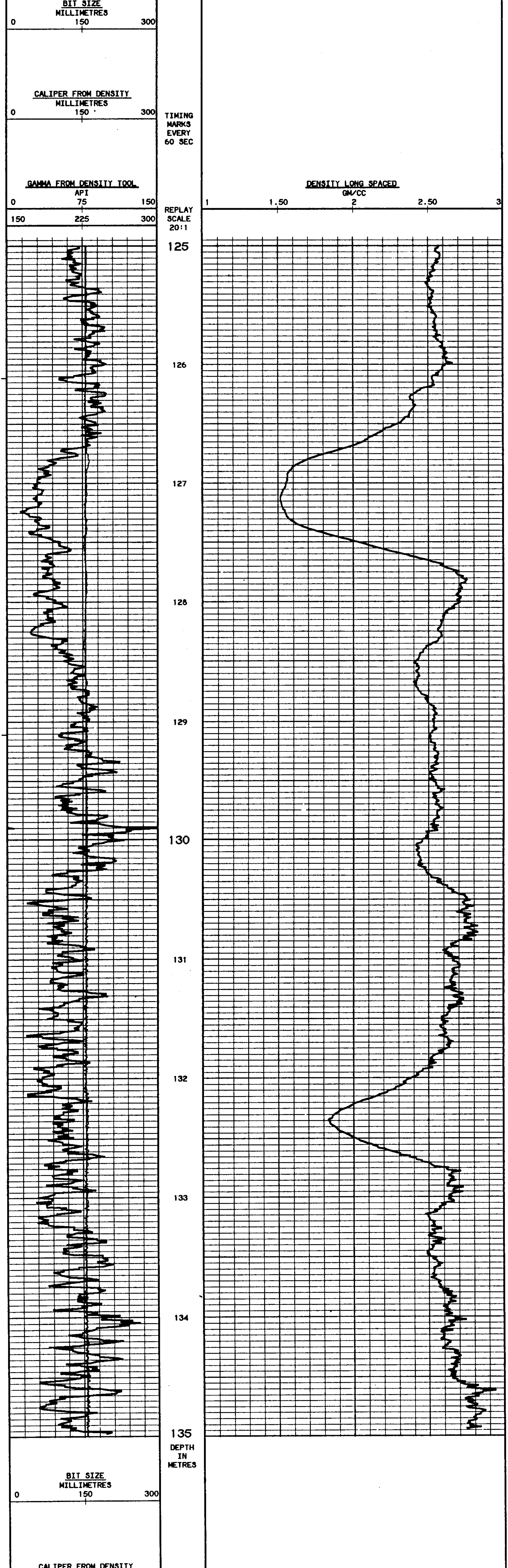
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 14:49
FILENAME: DD3AR09A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 10:48



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 14:49
FILENAME: DD3AR09A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 10:46

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 07-SEP-1993 AT 13:07 DATA LAST REPROCESSED: 3-SEP-1993 AT 10:45

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.70
BIT SIZE 3	.00	BIT DEPTH 3	171.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-09
FIELD	SITE 115
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#279

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 115
WELL:
T93R-09
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-09
FIELD SITE 115
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	7-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	171.3M			
DEPTH-LOGGER	167.5M			
FIRST READING	162.0M			
LAST READING	0M			
CASING-DRILLER	2.7M			
CASING-LOGGER	2.7M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	1.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	2.7M	TD	178MM	N/A	SURFACE	2.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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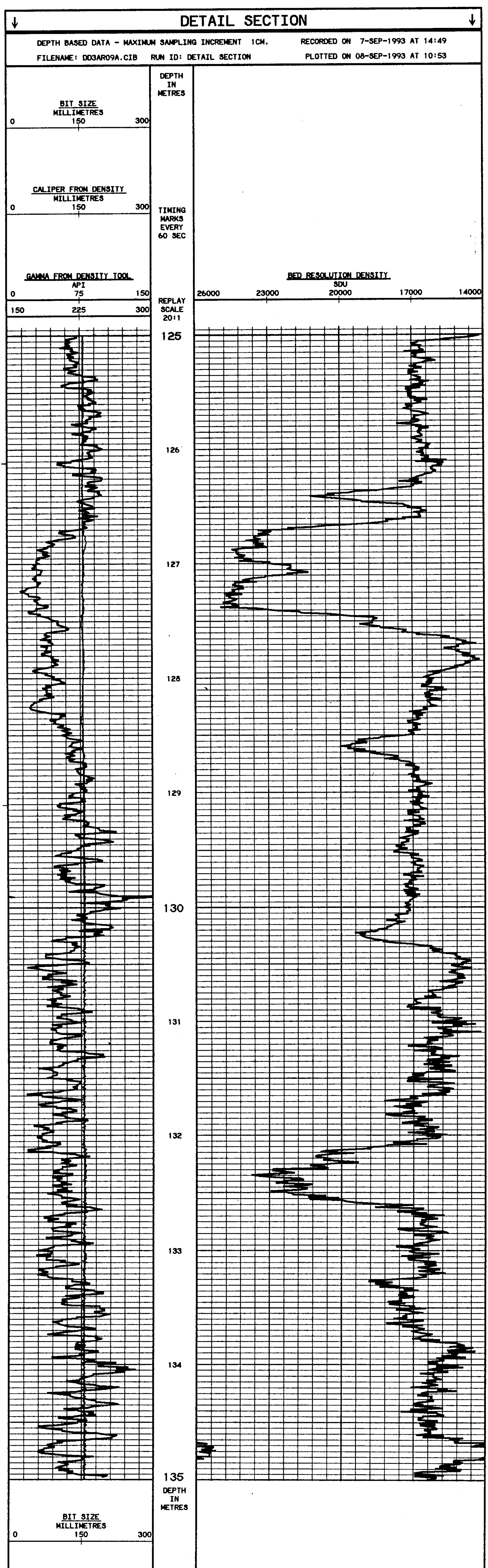
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 14:49
FILENAME: DD3AR09A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 10:53



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 14:49
FILENAME: DD3AR09A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 10:53

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 07-SEP-1993 AT 13:07 DATA LAST REPROCESSED: 8-SEP-1993 AT 10:45

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.70
BIT SIZE 3	.00	BIT DEPTH 3	171.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-09
FIELD	SITE 115
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-09
FIELD	SITE 115
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 115
WELL:
T93R-09
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	7-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	171.3M	
DEPTH-LOGGER	167.5M	
FIRST READING	167M	
LAST READING	0M	
CASING-DRILLER	2.7M	
CASING-LOGGER	2.7M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	1.5M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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T93R-09                      VERTICALITY DATA LISTING                 DATE PROCESSED:  8-SEP-1993
                    ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH       DATE LOGGED:     7-SEP-1993
    DEPTHS        BOREHOLE   AXIAL CO-ORDS   POLAR      POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
   LOG     TRUE   TILT AZI   NORTH    EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

   2.00    2.00   1.7 225   -0.01   -0.03 257   0.03 256   0.03 257   0.03 257   0.03 257    0.03
   3.00    3.00   0.5 352    0.00   -0.03 268   0.03 271   0.03 264   0.03 269   0.03 266    0.03
   4.00    4.00   0.5 306    0.01   -0.03 281   0.03 288   0.03 273   0.03 285   0.03 277    0.03
   5.00    5.00   0.4 270    0.01   -0.03 279   0.03 285   0.04 272   0.03 282   0.03 276    0.03
   6.00    6.00   0.4 221    0.00   -0.04 273   0.04 276   0.05 269   0.03 275   0.04 271    0.04
   7.00    7.00   0.5 220    0.00   -0.04 264   0.04 265   0.05 263   0.03 265   0.05 264    0.04
   8.00    8.00   0.4 191   -0.01   -0.04 255   0.05 254   0.06 257   0.04 255   0.05 256    0.04
   9.00    9.00   0.5 170   -0.02   -0.04 246   0.05 244   0.06 250   0.04 245   0.05 248    0.04
  10.00   10.00   0.7 128   -0.02   -0.04 237   0.04 233   0.06 244   0.03 235   0.05 240    0.04
  11.00   11.00   0.6  91   -0.02   -0.03 233   0.04 228   0.05 241   0.03 230   0.04 237    0.03
  12.00   12.00   0.5  84   -0.02   -0.03 233   0.03 227   0.04 242   0.03 230   0.04 237    0.03
  13.00   13.00   0.6 157   -0.02   -0.03 229   0.04 223   0.04 239   0.03 226   0.04 234    0.03
  14.00   14.00   0.4 135   -0.03   -0.02 218   0.04 210   0.05 231   0.03 213   0.04 223    0.03
  15.00   15.00   0.6  97   -0.03   -0.02 206   0.04 196   0.05 222   0.03 200   0.04 213    0.03
  16.00   16.00   0.3 139   -0.04   -0.01 194   0.04 184   0.05 214   0.03 189   0.04 202    0.03
  17.00   17.00   0.5 100   -0.04    0.00 183   0.04 173   0.06 204   0.03 178   0.05 192    0.03
  18.00   18.00   0.4  87   -0.04    0.01 172   0.04 163   0.06 195   0.03 167   0.05 181    0.03
  19.00   19.00   0.4  41   -0.04    0.01 162   0.04 152   0.06 187   0.02 156   0.05 171    0.03
  20.00   20.00   0.5  20   -0.03    0.02 152   0.04 142   0.06 181   0.02 146   0.05 163    0.03
  21.00   21.00   0.3   2   -0.03    0.02 145   0.03 134   0.05 179   0.02 138   0.04 157    0.02
  22.00   22.00   0.5 314   -0.02    0.02 144   0.03 130   0.04 186   0.02 136   0.03 159    0.02
  23.00   23.00   0.7 237   -0.02    0.01 165   0.02 145   0.03 207   0.02 153   0.03 183    0.02
  24.00   24.00   0.8 192   -0.03    0.00 179   0.03 163   0.04 206   0.03 170   0.04 191    0.03
  25.00   25.00   0.7 202   -0.05    0.00 184   0.05 172   0.06 204   0.04 177   0.05 193    0.04
  26.00   26.00   0.9 203   -0.06   -0.01 187   0.06 177   0.07 202   0.05 181   0.07 193    0.05
  27.00   27.00   0.7 188   -0.07   -0.01 188   0.07 180   0.09 201   0.06 184   0.08 194    0.06
  28.00   28.00   0.8 174   -0.09   -0.01 188   0.09 181   0.11 199   0.07 184   0.10 193    0.08
  29.00   29.00   0.8 225   -0.09   -0.01 187   0.10 181   0.12 198   0.07 184   0.11 192    0.08
  30.00   30.00   1.3 232   -0.10   -0.03 195   0.10 189   0.13 205   0.08 192   0.12 199    0.09
  31.00   31.00   1.4 222   -0.11   -0.04 201   0.12 196   0.15 209   0.10 198   0.14 204    0.11
  32.00   32.00   1.7 212   -0.14   -0.06 204   0.15 199   0.18 211   0.12 201   0.16 207    0.13
  33.00   33.00   1.6 209   -0.16   -0.08 205   0.18 201   0.21 211   0.15 203   0.19 208    0.16
  34.00   34.00   2.1 212   -0.19   -0.09 206   0.21 203   0.24 211   0.17 204   0.22 208    0.19
  35.00   35.00   1.9 206   -0.21   -0.11 207   0.24 204   0.28 211   0.20 205   0.26 209    0.22
  36.00   36.00   1.7 197   -0.24   -0.12 207   0.27 204   0.31 210   0.23 205   0.29 208    0.25
  37.00   36.99   1.0 236   -0.26   -0.13 207   0.29 204   0.33 210   0.25 206   0.31 208    0.27
  38.00   37.99   1.6 246   -0.27   -0.16 210   0.31 208   0.36 213   0.26 209   0.33 211    0.29
  39.00   38.99   1.3 249   -0.28   -0.18 213   0.33 211   0.38 216   0.28 212   0.35 214    0.31
  40.00   39.99   2.3 242   -0.29   -0.21 216   0.36 213   0.41 219   0.31 214   0.39 217    0.34
  41.00   40.99   2.5 241   -0.32   -0.25 218   0.40 216   0.45 221   0.35 217   0.43 220    0.37
  42.00   41.99   2.4 228   -0.34   -0.28 220   0.44 218   0.50 222   0.39 219   0.47 221    0.41
  43.00   42.99   2.3 211   -0.37   -0.31 220   0.48 218   0.54 222   0.42 219   0.51 221    0.45
  44.00   43.99   2.7 238   -0.39   -0.34 220   0.52 219   0.58 223   0.46 219   0.55 221    0.49
  45.00   44.99   2.2 200   -0.43   -0.36 220   0.56 218   0.63 222   0.49 219   0.59 221    0.53
  46.00   45.99   1.9 191   -0.46   -0.37 219   0.59 217   0.66 220   0.52 218   0.63 219    0.56
  47.00   46.99   1.8 199   -0.49   -0.37 218   0.61 216   0.69 219   0.54 217   0.65 218    0.58
  48.00   47.99   1.7 234   -0.51   -0.38 217   0.64 215   0.72 219   0.56 216   0.68 218    0.60
  49.00   48.99   1.7 252   -0.52   -0.41 218   0.66 217   0.74 220   0.58 217   0.70 219    0.62
  50.00   49.99   2.1 242   -0.53   -0.44 219   0.69 218   0.77 221   0.61 219   0.73 220    0.65
  51.00   50.99   1.6 230   -0.55   -0.47 220   0.72 219   0.81 222   0.64 220   0.77 221    0.68
  52.00   51.99   2.5 231   -0.57   -0.50 221   0.76 220   0.85 223   0.68 220   0.81 222    0.72
  53.00   52.98   2.4 223   -0.60   -0.53 221   0.81 220   0.90 223   0.71 221   0.85 222    0.76
  54.00   53.98   2.3 241   -0.64   -0.56 221   0.85 220   0.94 223   0.75 221   0.89 222    0.80
  55.00   54.98   2.2 209   -0.67   -0.59 221   0.89 220   0.99 223   0.80 221   0.94 222    0.84
  56.00   55.98   1.8 245   -0.69   -0.61 222   0.92 221   1.02 223   0.82 221   0.97 222    0.87
  57.00   56.98   1.8 254   -0.70   -0.64 223   0.95 222   1.05 224   0.85 222   1.00 223    0.90
  58.00   57.98   1.9 258   -0.71   -0.67 223   0.98 222   1.08 225   0.87 223   1.03 224    0.92
  59.00   58.98   2.4 258   -0.72   -0.71 225   1.01 224   1.12 226   0.90 224   1.06 225    0.95
  60.00   59.98   2.4 254   -0.73   -0.75 226   1.04 225   1.16 227   0.93 225   1.10 226    0.99
  61.00   60.98   3.1 242   -0.74   -0.79 227   1.09 226   1.20 228   0.97 226   1.15 227    1.03
  62.00   61.98   3.1 222   -0.77   -0.83 227   1.14 226   1.25 228   1.02 227   1.19 228    1.08
  63.00   62.98   2.3 213   -0.81   -0.86 227   1.18 226   1.30 228   1.06 226   1.24 227    1.12
  64.00   63.98   1.4 223   -0.83   -0.88 226   1.21 226   1.34 228   1.09 226   1.27 227    1.15
  65.00   64.98   1.5 241   -0.85   -0.90 227   1.23 226   1.36 228   1.11 226   1.30 227    1.17
  66.00   65.98   1.0 239   -0.86   -0.92 227   1.26 226   1.39 228   1.13 227   1.32 227    1.19
  67.00   66.97   1.8 240   -0.88   -0.94 227   1.29 226   1.42 228   1.15 227   1.35 227    1.22
  68.00   67.97   1.9 244   -0.89   -0.97 227   1.31 227   1.45 228   1.17 227   1.38 228    1.24
  69.00   68.97   2.8 257   -0.90   -1.01 228   1.35 227   1.49 229   1.21 228   1.42 229    1.28
  70.00   69.97   2.7 255   -0.91   -1.05 229   1.39 228   1.54 230   1.25 229   1.46 229    1.32
  71.00   70.97   3.4 253   -0.93   -1.10 230   1.44 229   1.59 231   1.29 229   1.51 230    1.36
  72.00   71.97   2.4 250   -0.95   -1.14 230   1.49 229   1.64 231   1.34 230   1.56 231    1.41
  73.00   72.97   2.8 216   -0.99   -1.19 230   1.54 230   1.70 231   1.39 230   1.62 231    1.47
  74.00   73.97   1.7 254   -1.00   -1.21 230   1.57 230   1.73 231   1.42 230   1.65 231    1.49
  75.00   74.97   1.3 242   -1.01   -1.24 231   1.60 230   1.76 232   1.44 230   1.68 231    1.52
  76.00   75.97   1.5 253   -1.02   -1.26 231   1.62 230   1.79 232   1.46 231   1.70 231    1.54
  77.00   76.97   1.6 258   -1.03   -1.28 231   1.65 231   1.81 232   1.48 231   1.73 232    1.56
  78.00   77.97   2.8 255   -1.04   -1.32 232   1.68 231   1.85 233   1.51 231   1.77 232    1.60
  79.00   78.96   2.6 280   -1.04   -1.37 233   1.72 232   1.89 233   1.55 232   1.81 233    1.63
  80.00   79.96   2.9 230   -1.05   -1.41 233   1.76 233   1.94 234   1.59 233   1.85 234    1.67
  81.00   80.96   3.6 230   -1.08   -1.45 233   1.81 233   1.99 234   1.63 233   1.90 234    1.72
  82.00   81.96   3.4 249   -1.10   -1.51 234   1.87 233   2.05 235   1.68 234   1.96 234    1.77
  83.00   82.96   2.3 237   -1.12   -1.55 234   1.91 233   2.10 235   1.73 234   2.00 234    1.82
  84.00   83.96   1.6 264   -1.14   -1.57 234   1.94 234   2.13 235   1.75 234   2.04 235    1.85
  85.00   84.96   1.8 270   -1.13   -1.61 235   1.97 234   2.16 235   1.77 234   2.06 235    1.87
  86.00   85.96   1.8 281   -1.13   -1.64 235   1.99 235   2.18 236   1.80 235   2.09 236    1.89
  87.00   86.96   2.6 285   -1.12   -1.68 236   2.02 236   2.21 237   1.82 236   2.11 237    1.92
  88.00   87.96   3.0 288   -1.11   -1.73 237   2.05 237   2.25 238   1.85 237   2.15 238    1.95
  89.00   88.95   3.3 281   -1.09   -1.78 238   2.09 238   2.28 239   1.89 238   2.18 239    1.99
  90.00   89.95   3.9 271   -1.08   -1.84 239   2.13 239   2.33 240   1.93 239   2.23 240    2.03
  91.00   90.95   3.0 241   -1.10   -1.90 240   2.20 239   2.40 241   1.99 239   2.30 240    2.09
  92.00   91.95   3.7 237   -1.12   -1.97 240   2.26 240   2.47 241   2.06 240   2.37 241    2.16
  93.00   92.95   2.1 234   -1.15   -2.01 240   2.32 240   2.53 241   2.11 240   2.42 241    2.21
  94.00   93.95   2.2 245   -1.17   -2.04 240   2.36 240   2.57 241   2.14 240   2.46 240    2.25
  95.00   94.94   2.2 269   -1.18   -2.08 240   2.39 240   2.61 241   2.17 240   2.50 241    2.28
  96.00   95.94   2.4 284   -1.17   -2.12 241   2.42 240   2.64 242   2.20 241   2.53 241    2.31
  97.00   96.94   2.2 280   -1.16   -2.16 242   2.45 241   2.67 242   2.23 241   2.56 242    2.34
  98.00   97.94   3.8 278   -1.16   -2.21 242   2.49 242   2.72 243   2.27 242   2.60 243    2.38
  99.00   98.94   3.9 270   -1.15   -2.28 243   2.55 243   2.78 244   2.32 243   2.66 243    2.44
 100.00   99.94   2.8 279   -1.16   -2.33 244   2.60 243   2.83 244   2.37 243   2.72 244    2.49
 101.00  100.94   3.9 237   -1.17   -2.40 244   2.67 243   2.90 245   2.43 244   2.78 244    2.55
 102.00  101.93   2.9 226   -1.21   -2.44 244   2.72 243   2.96 244   2.49 243   2.84 244    2.60
 103.00  102.93   2.5 231   -1.24   -2.47 243   2.77 243   3.01 244   2.53 243   2.89 244    2.65
 104.00  103.93   2.1 253   -1.26   -2.50 243   2.80 243   3.05 244   2.56 243   2.92 244    2.68
 105.00  104.93   2.4 276   -1.26   -2.54 244   2.84 243   3.09 244   2.59 243   2.96 244    2.72
 106.00  105.93   3.4 283   -1.26   -2.59 244   2.88 244   3.13 245   2.63 244   3.01 244    2.76
 107.00  106.93   4.1 278   -1.25   -2.66 245   2.93 244   3.19 246   2.68 245   3.06 245    2.81
 108.00  107.93   3.6 276   -1.24   -2.72 245   2.99 245   3.25 246   2.74 245   3.12 246    2.87
 109.00  108.92   5.0 261   -1.24   -2.80 246   3.06 246   3.32 247   2.81 246   3.19 246    2.93
 110.00  109.92   4.4 273   -1.26   -2.87 246   3.14 246   3.40 247   2.87 246   3.27 247    3.00
 111.00  110.92   5.0 240   -1.29   -2.96 247   3.23 246   3.49 247   2.96 246   3.36 247    3.10
 112.00  111.91   2.9 230   -1.32   -3.01 246   3.28 246   3.55 247   3.02 246   3.42 247    3.15
 113.00  112.91   2.1 253   -1.34   -3.04 246   3.32 246   3.60 247   3.05 246   3.46 247    3.19
 114.00  113.91   2.7 270   -1.35   -3.09 246   3.37 246   3.64 247   3.09 246   3.50 247    3.23
 115.00  114.91   3.6 284   -1.34   -3.14 247   3.41 246   3.69 247   3.14 247   3.55 247    3.27
 116.00  115.91   4.7 278   -1.33   -3.20 247   3.47 247   3.75 248   3.19 247   3.61 248    3.33
 117.00  116.90   4.2 271   -1.34   -3.28 248   3.54 247   3.83 248   3.26 247   3.68 248    3.40
 118.00  117.90   5.1 242   -1.37   -3.37 248   3.63 247   3.92 249   3.35 248   3.78 248    3.49
 119.00  118.90   3.6 236   -1.41   -3.43 248   3.71 247   4.00 248   3.42 247   3.85 248    3.56
 120.00  119.90   2.8 258   -1.43   -3.48 248   3.76 247   4.05 248   3.47 247   3.91 248    3.61
 121.00  120.89   3.8 279   -1.44   -3.53 248   3.81 247   4.11 248   3.52 248   3.96 248    3.66
 122.00  121.89   2.8 263   -1.44   -3.59 248   3.86 248   4.16 249   3.57 248   4.01 248    3.71
 123.00  122.89   3.9 277   -1.44   -3.64 249   3.92 248   4.22 249   3.61 248   4.07 249    3.77
 124.00  123.89   4.6 278   -1.42   -3.71 249   3.98 249   4.28 250   3.67 249   4.13 249    3.82
 125.00  124.88   5.7 256   -1.44   -3.80 249   4.06 249   4.37 250   3.75 249   4.22 250    3.91
 126.00  125.88   4.7 237   -1.48   -3.89 249   4.16 249   4.47 250   3.85 249   4.32 249    4.00
 127.00  126.88   4.1 233   -1.53   -3.95 249   4.23 248   4.55 249   3.92 249   4.39 249    4.08
 128.00  127.87   5.3 265   -1.55   -4.02 249   4.31 248   4.62 249   3.99 249   4.46 249    4.15
 129.00  128.87   4.7 234   -1.59   -4.10 249   4.40 248   4.72 249   4.07 249   4.56 249    4.23
 130.00  129.87   3.6 257   -1.61   -4.16 249   4.46 248   4.78 249   4.13 249   4.62 249    4.30
 131.00  130.87   3.5 262   -1.61   -4.22 249   4.52 249   4.85 250   4.19 249   4.68 249    4.36
 132.00  131.86   5.3 247   -1.61   -4.30 249   4.59 249   4.92 250   4.26 249   4.76 250    4.43
 133.00  132.86   4.4 235   -1.65   -4.38 249   4.68 249   5.02 250   4.35 249   4.85 250    4.52
 134.00  133.86   3.4 255   -1.68   -4.44 249   4.75 249   5.09 250   4.41 249   4.92 250    4.58
 135.00  134.85   3.6 267   -1.68   -4.51 250   4.81 249   5.15 250   4.47 249   4.98 250    4.64
 136.00  135.85   3.3 255   -1.69   -4.56 250   4.87 249   5.21 250   4.52 249   5.04 250    4.70
 137.00  136.85   4.4 274   -1.70   -4.63 250   4.93 249   5.28 250   4.58 250   5.10 250    4.76
 138.00  137.84   5.9 240   -1.73   -4.72 250   5.03 249   5.38 250   4.68 250   5.20 250    4.85
 139.00  138.84   4.3 236   -1.78   -4.80 250   5.12 249   5.47 250   4.76 249   5.29 250    4.94
 140.00  139.84   3.8 242   -1.81   -4.86 250   5.19 249   5.54 250   4.83 249   5.36 250    5.01
 141.00  140.84   3.7 246   -1.85   -4.92 249   5.25 249   5.62 250   4.89 249   5.44 250    5.07
 142.00  141.83   3.8 247   -1.87   -4.98 249   5.32 249   5.68 250   4.95 249   5.50 250    5.14
 143.00  142.83   3.5 257   -1.88   -5.04 249   5.38 249   5.75 250   5.01 249   5.57 250    5.20
 144.00  143.83   3.6 261   -1.89   -5.11 250   5.45 249   5.82 250   5.07 249   5.63 250    5.26
 145.00  144.83   3.8 264   -1.90   -5.17 250   5.51 249   5.89 250   5.13 250   5.70 250    5.32
 146.00  145.82   4.4 270   -1.91   -5.24 250   5.58 250   5.96 250   5.20 250   5.77 250    5.39
 147.00  146.82   3.9 267   -1.91   -5.31 250   5.65 250   6.03 251   5.27 250   5.84 250    5.46
 148.00  147.82   3.5 265   -1.91   -5.39 250   5.72 250   6.10 251   5.33 250   5.91 251    5.53
 149.00  148.81   6.1 244   -1.94   -5.48 250   5.81 250   6.20 251   5.43 250   6.01 251    5.62
 150.00  149.81   5.1 233   -1.99   -5.56 250   5.90 250   6.29 251   5.51 250   6.10 250    5.71
 151.00  150.81   3.8 238   -2.04   -5.63 250   5.99 250   6.39 250   5.60 250   6.19 250    5.79
 152.00  151.80   3.6 251   -2.07   -5.69 250   6.06 250   6.46 250   5.66 250   6.26 250    5.86
 153.00  152.80   3.3 244   -2.09   -5.75 250   6.12 250   6.52 250   5.71 250   6.32 250    5.91
 154.00  153.80   3.6 256   -2.11   -5.81 250   6.18 250   6.58 250   5.77 250   6.38 250    5.98
 155.00  154.80   4.4 264   -2.12   -5.88 250   6.25 250   6.65 251   5.84 250   6.45 250    6.04
 156.00  155.80   4.8 268   -2.13   -5.95 250   6.32 250   6.73 251   5.91 250   6.52 251    6.11
 157.00  156.79   5.3 269   -2.13   -6.03 251   6.40 250   6.81 251   5.98 250   6.61 251    6.19
 158.00  157.79   4.5 274   -2.13   -6.13 251   6.48 250   6.90 251   6.07 251   6.69 251    6.28
 159.00  158.78   5.8 270   -2.12   -6.21 251   6.57 251   6.99 252   6.14 251   6.78 251    6.36
 160.00  159.78   4.3 259   -2.13   -6.29 251   6.64 251   7.06 252   6.21 251   6.85 251    6.43
 161.00  160.78   4.6 261   -2.13   -6.38 251   6.72 251   7.15 252   6.30 251   6.94 252    6.51
 162.00  161.77   5.7 268   -2.14   -6.47 252   6.82 251   7.25 252   6.39 251   7.03 252    6.60
 163.00  162.77   5.7 264   -2.16   -6.57 252   6.92 251   7.35 252   6.48 252   7.13 252    6.70
 164.00  163.76   6.4 250   -2.18   -6.67 252   7.02 252   7.45 252   6.58 252   7.24 252    6.80
 165.00  164.76   6.1 235   -2.23   -6.76 252   7.12 251   7.56 252   6.68 252   7.34 252    6.90
 166.00  165.75   6.5 230   -2.30   -6.85 251   7.23 251   7.67 252   6.78 251   7.45 252    7.00
 167.00  166.63 ****** ***  -2.38   -6.83 251   7.23 251   7.68 251   6.78 251   7.46 251    7.01
```
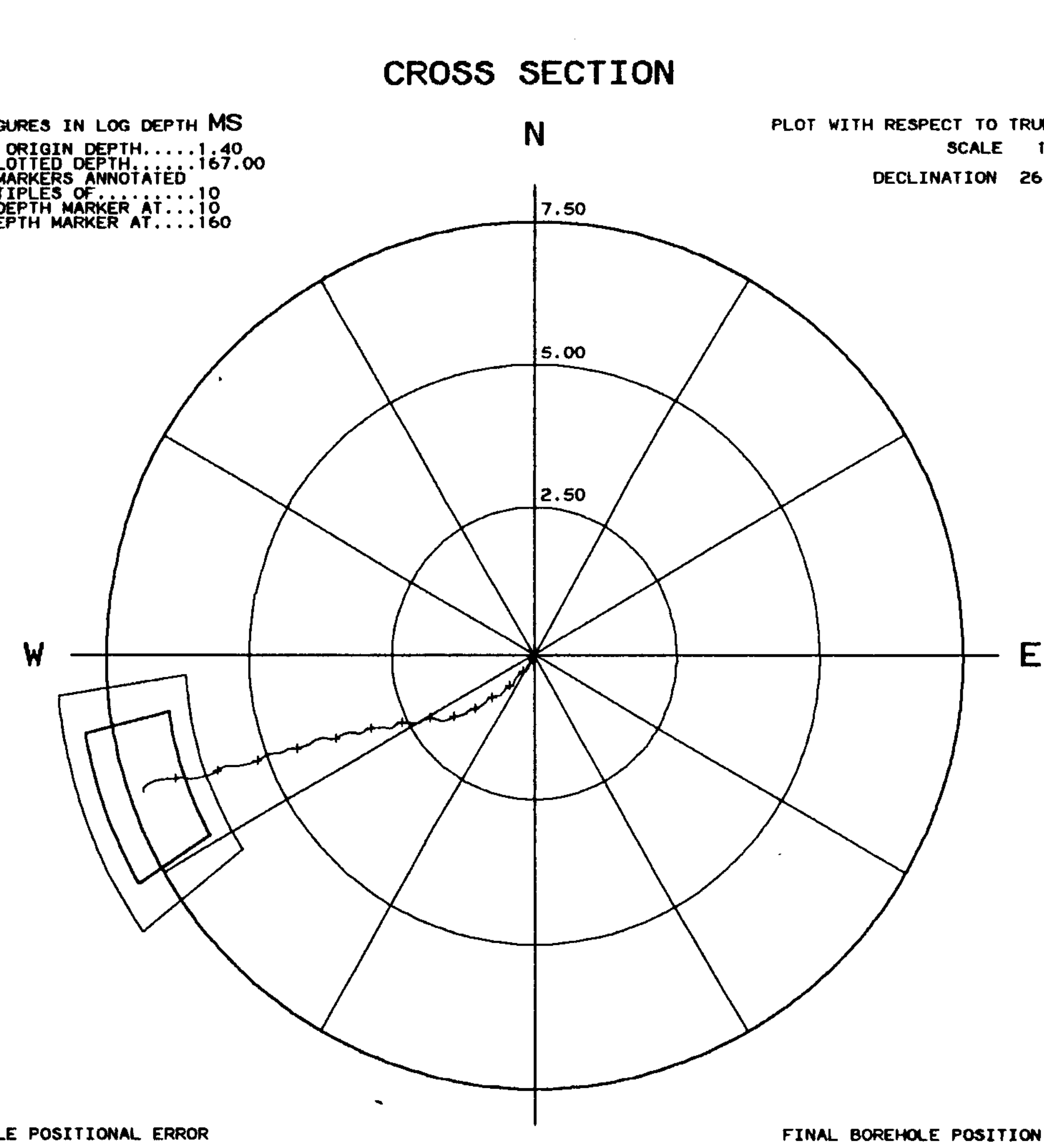

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....1.40
LAST PLOTTED DEPTH......167.00
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....160

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

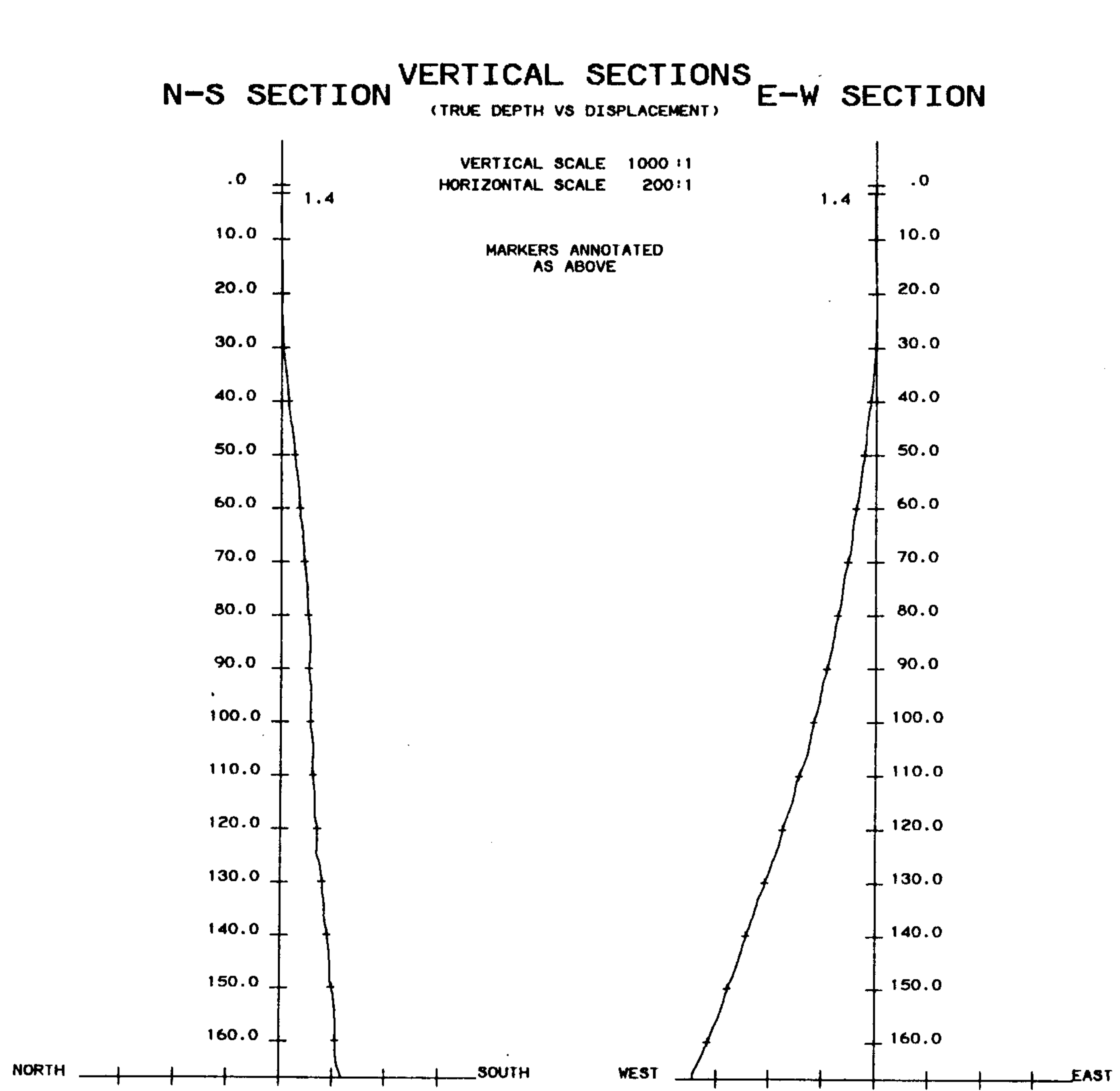
THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

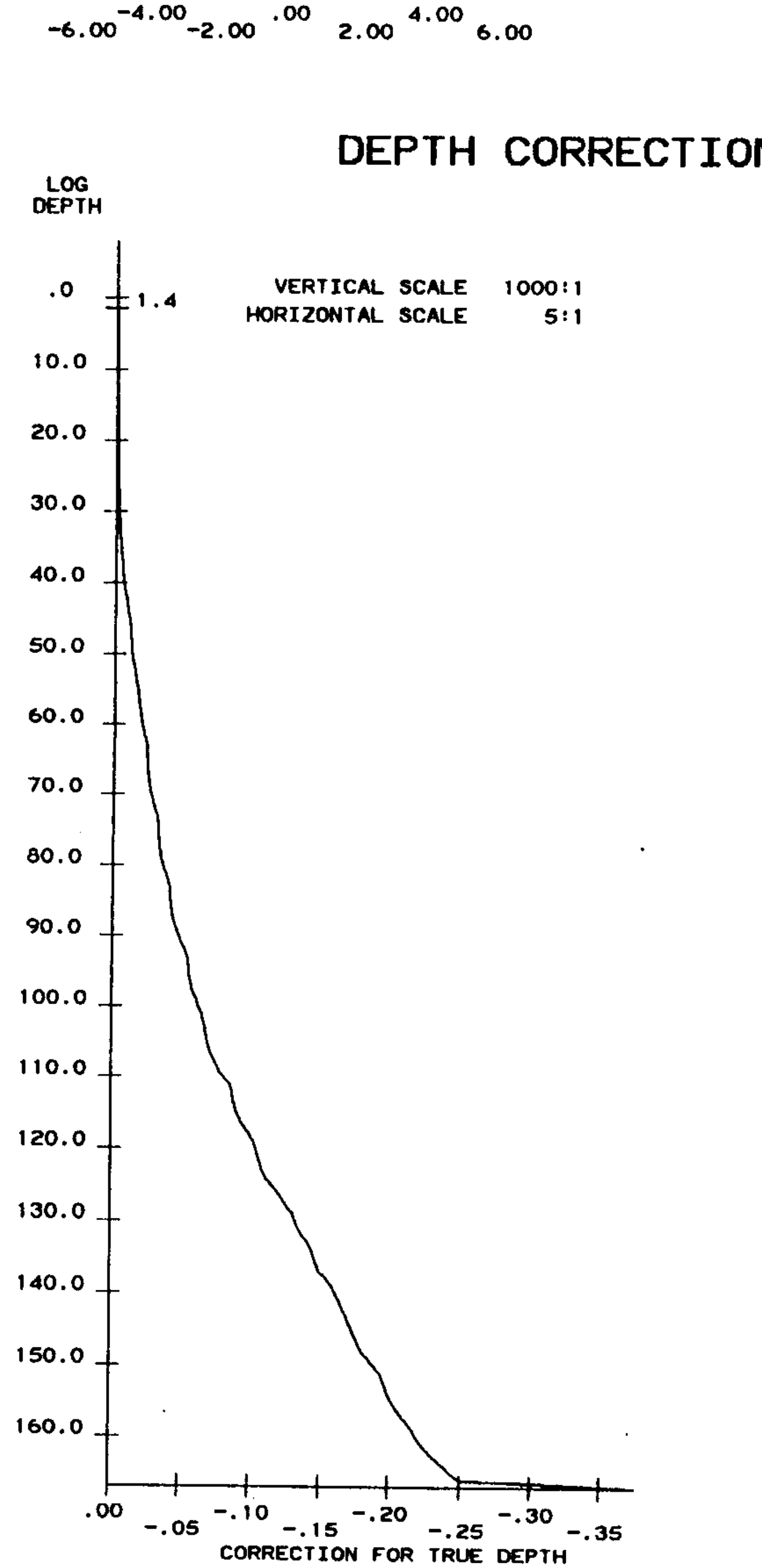
THE LAST PLOTTED DEPTH IS AT 2.38 MS SOUTH, 6.83 MS WEST IE. 7.23 MS FROM THE ORIGIN, 251 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)



DEPTH CORRECTION ANALYSIS



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
2.00	2.00	72.00	71.97	142.00	141.83
3.00	3.00	73.00	72.97	143.00	142.83
4.00	4.00	74.00	73.97	144.00	143.83
5.00	5.00	75.00	74.97	145.00	144.83
6.00	6.00	76.00	75.97	146.00	145.82
7.00	7.00	77.00	76.97	147.00	146.82
8.00	8.00	78.00	77.97	148.00	147.82
9.00	9.00	79.00	78.96	149.00	148.81
10.00	10.00	80.00	79.96	150.00	149.81
11.00	11.00	81.00	80.96	151.00	150.81
12.00	12.00	82.00	81.96	152.00	151.80
13.00	13.00	83.00	82.96	153.00	152.80
14.00	14.00	84.00	83.96	154.00	153.80
15.00	15.00	85.00	84.96	155.00	154.80
16.00	16.00	86.00	85.96	156.00	155.80
17.00	17.00	87.00	86.96	157.00	156.79
18.00	18.00	88.00	87.96	158.00	157.79
19.00	19.00	89.00	88.95	159.00	158.78
20.00	20.00	90.00	89.95	160.00	159.78
21.00	21.00	91.00	90.95	161.00	160.78
22.00	22.00	92.00	91.95	162.00	161.77
23.00	23.00	93.00	92.95	163.00	162.77
24.00	24.00	94.00	93.95	164.00	163.76
25.00	25.00	95.00	94.94	165.00	164.76
26.00	26.00	96.00	95.94	166.00	165.75
27.00	27.00	97.00	96.94	167.00	166.63
28.00	28.00	98.00	97.94		
29.00	29.00	99.00	98.94		
30.00	30.00	100.00	99.94		
31.00	31.00	101.00	100.94		
32.00	32.00	102.00	101.93		
33.00	33.00	103.00	102.93		
34.00	34.00	104.00	103.93		
35.00	35.00	105.00	104.93		
36.00	36.00	106.00	105.93		
37.00	36.99	107.00	106.93		
38.00	37.99	108.00	107.93		
39.00	38.99	109.00	108.92		
40.00	39.99	110.00	109.92		
41.00	40.99	111.00	110.92		
42.00	41.99	112.00	111.91		
43.00	42.99	113.00	112.91		
44.00	43.99	114.00	113.91		
45.00	44.99	115.00	114.91		
46.00	45.99	116.00	115.91		
47.00	46.99	117.00	116.90		
48.00	47.99	118.00	117.90		
49.00	48.99	119.00	118.90		
50.00	49.99	120.00	119.90		
51.00	50.99	121.00	120.89		
52.00	51.99	122.00	121.89		
53.00	52.98	123.00	122.89		
54.00	53.98	124.00	123.89		
55.00	54.98	125.00	124.88		
56.00	55.98	126.00	125.88		
57.00	56.98	127.00	126.88		
58.00	57.98	128.00	127.87		
59.00	58.98	129.00	128.87		
60.00	59.98	130.00	129.87		
61.00	60.98	131.00	130.87		
62.00	61.98	132.00	131.86		
63.00	62.98	133.00	132.86		
64.00	63.98	134.00	133.86		
65.00	64.98	135.00	134.85		
66.00	65.98	136.00	135.85		
67.00	66.97	137.00	136.85		
68.00	67.97	138.00	137.84		
69.00	68.97	139.00	138.84		
70.00	69.97	140.00	139.84		
71.00	70.97	141.00	140.84		

COMPANY	MANALTA
WELL	T93R-09
FIELD	SITE 115
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-11
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-11
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	7-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	73.2M			
DEPTH-LOGGER	73.3M			
FIRST READING	73.0M			
LAST READING	0M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	23.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

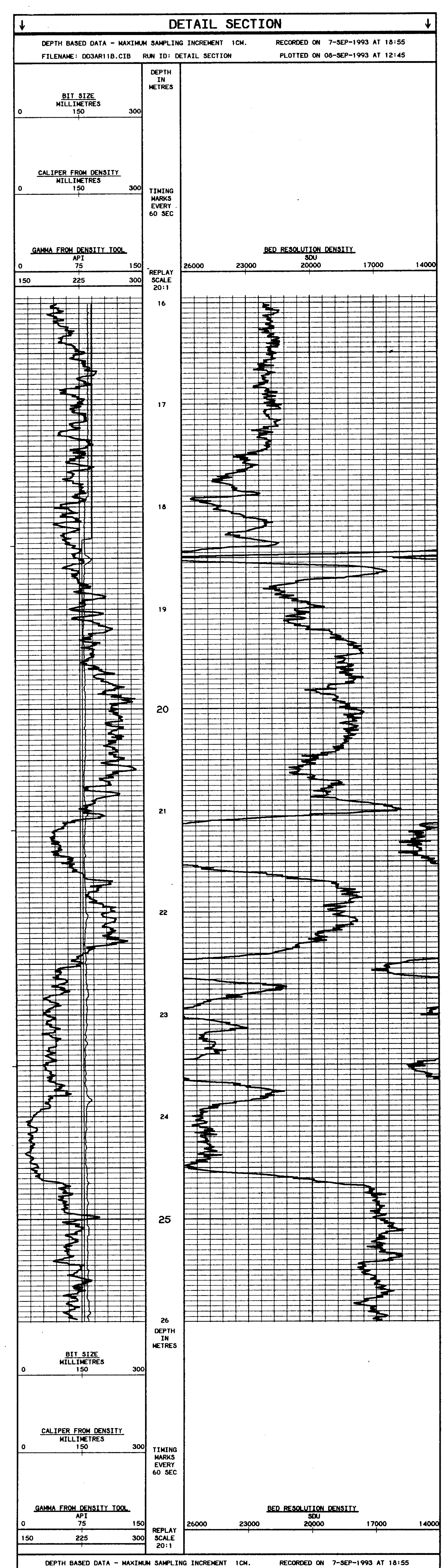
NO WATER AVAILABLE THEREFORE W.L. AT 23.5M

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 18:55
FILENAME: DD3AR11B.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 12:45



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 18:55
FILENAME: DD3AR11B.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 12:45

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 18:55
FILENAME: DD3AR11A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 12:42

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 18:55
FILENAME: DD3AR11A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 12:42

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 07-SEP-1993 AT 18:53 DATA LAST REPROCESSED: 8-SEP-1993 AT 12:16

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	73.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-11
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL: T93R-11
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-11
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	7-SEP-93				
RUN NUMBER	TWO				
DEPTH-DRILLER	73.2M				
DEPTH-LOGGER	73.3M				
FIRST READING	73.0M				
LAST READING	0M				
CASING-DRILLER	18.3M				
CASING-LOGGER	18.3M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE					
RM ● MEAS TEMP					
RMF ● MEAS TEMP					
RMC ● MEAS TEMP					
SOURCE: RMF/RMC					
RM ● BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	B.STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	23.5M				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

NO WATER AVAILABLE THEREFORE W.L. AT 23.5M

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 7-SEP-1993 AT 18:55
FILENAME: DD3AR11M.CIB RUN ID: MAIN LOG PLOTTED ON 08-SEP-1993 AT 12:03

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 7-SEP-1993 AT 18:55
FILENAME: DD3AR11M.CIB RUN ID: MAIN LOG PLOTTED ON 08-SEP-1993 AT 12:03

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 07-SEP-1993 AT 18:53 DATA LAST REPROCESSED: 8-SEP-1993 AT 11:49

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	73.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-11
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-11
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-11
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	7-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	171.3M	
DEPTH-LOGGER	73.3M	
FIRST READING	73.0	
LAST READING	0M	
CASING-DRILLER	18.3M	
CASING-LOGGER	18.3M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	OOM	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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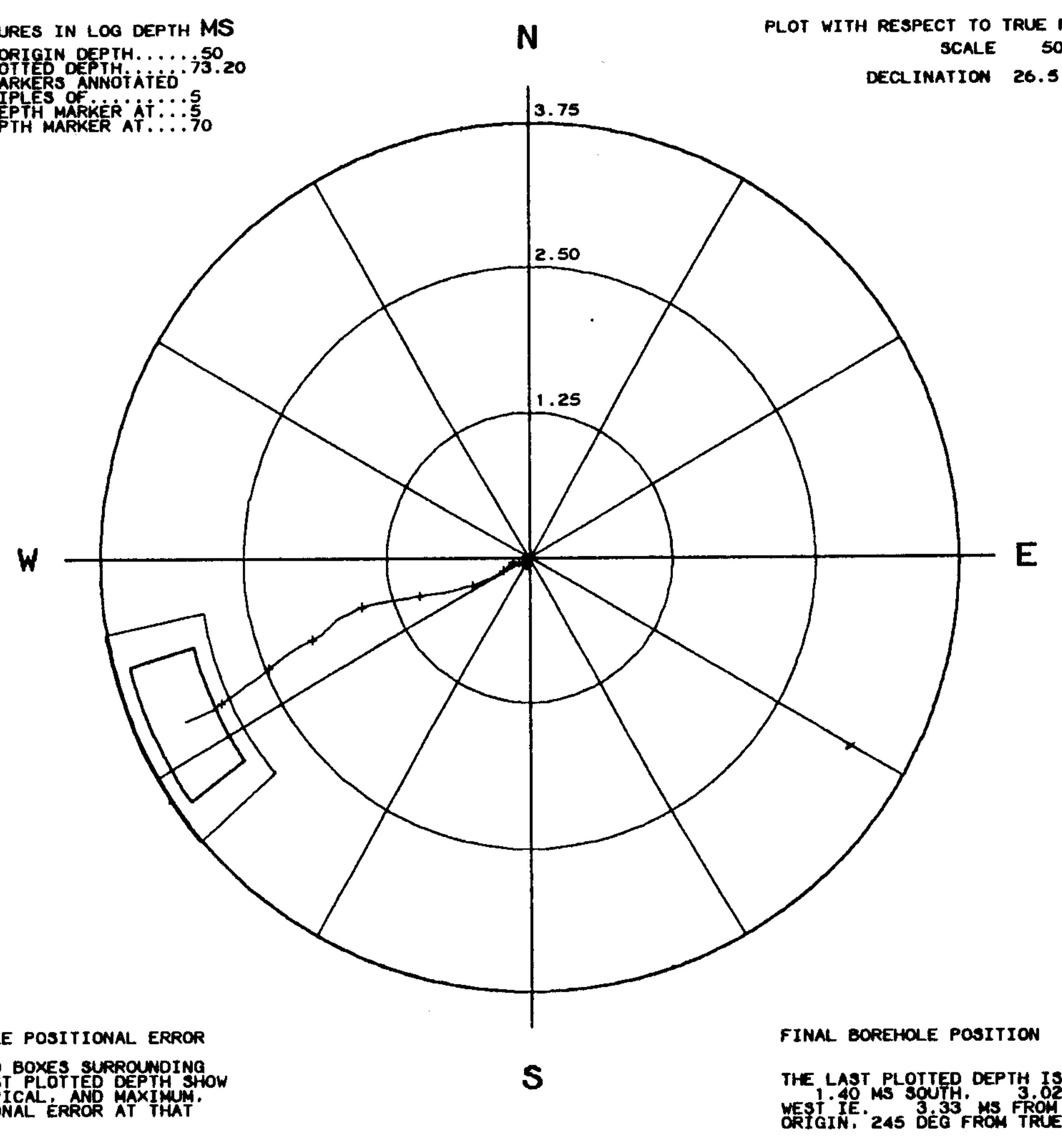
T93R-11                        VERTICALITY DATA LISTING                 DATE PROCESSED:  8-SEP-1993
                     ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH        DATE LOGGED:     7-SEP-1993
   DEPTHS           BOREHOLE   AXIAL CO-ORDS   POLAR      POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
 LOG      TRUE      TILT AZI   NORTH     EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

  1.00     1.00     1.7 299    0.01    -0.01 298    0.01 298    0.02 298    0.01 298    0.02 298    0.01
  2.00     2.00     0.6 293    0.02    -0.02 312    0.03 312    0.04 311    0.03 312    0.03 311    0.03
  3.00     3.00     0.5 280    0.02    -0.03 304    0.04 303    0.04 306    0.03 303    0.04 305    0.03
  4.00     4.00     0.2 217    0.02    -0.04 300    0.04 297    0.05 304    0.03 298    0.05 302    0.04
  5.00     5.00     0.2  98    0.02    -0.03 297    0.04 293    0.04 303    0.03 295    0.04 300    0.03
  6.00     6.00     0.6 220    0.02    -0.03 301    0.03 297    0.04 307    0.03 299    0.04 304    0.03
  7.00     7.00     0.9 173    0.01    -0.03 289    0.03 283    0.04 296    0.03 286    0.03 292    0.03
  8.00     8.00     0.5 133    0.00    -0.02 276    0.02 267    0.02 290    0.02 271    0.02 282    0.02
  9.00     9.00     0.6 198   -0.01    -0.02 241    0.02 233    0.03 257    0.02 237    0.02 248    0.02
 10.00    10.00     0.6 161   -0.02    -0.02 222    0.03 216    0.04 233    0.02 219    0.03 226    0.02
 11.00    11.00     0.8 165   -0.03    -0.02 213    0.03 209    0.05 222    0.02 211    0.04 217    0.03
 12.00    12.00     0.5 121   -0.04    -0.01 201    0.04 198    0.05 208    0.02 199    0.05 203    0.03
 13.00    13.00     0.5 264   -0.04    -0.02 202    0.05 200    0.06 208    0.03 201    0.05 205    0.04
 14.00    14.00     0.4 211   -0.05    -0.02 208    0.05 206    0.07 213    0.03 207    0.06 210    0.04
 15.00    15.00     0.4 173   -0.05    -0.03 207    0.06 205    0.08 211    0.04 206    0.07 209    0.05
 16.00    16.00     0.4 120   -0.06    -0.02 202    0.06 200    0.09 207    0.04 201    0.07 204    0.05
 17.00    17.00     0.4  84   -0.06    -0.02 195    0.06 193    0.09 201    0.04 194    0.07 198    0.05
 18.00    18.00     0.6  71   -0.05    -0.01 191    0.06 188    0.08 197    0.03 189    0.07 193    0.04
 19.00    19.00     0.5 218   -0.05    -0.01 192    0.06 189    0.08 199    0.03 190    0.07 194    0.04
 20.00    20.00     0.5 207   -0.06    -0.02 195    0.06 192    0.09 201    0.04 193    0.08 197    0.05
 21.00    21.00     0.7 221   -0.07    -0.02 196    0.07 194    0.10 201    0.04 195    0.09 198    0.06
 22.00    22.00     0.5 180   -0.08    -0.02 194    0.08 192    0.11 199    0.05 193    0.10 196    0.06
 23.00    23.00     0.3 357   -0.08    -0.02 193    0.08 191    0.11 199    0.05 192    0.10 195    0.07
 24.00    24.00     0.5 304   -0.07    -0.02 199    0.08 196    0.11 204    0.05 197    0.09 201    0.06
 25.00    25.00     0.7 300   -0.07    -0.04 207    0.08 204    0.11 214    0.05 205    0.09 210    0.06
 26.00    26.00     1.0 274   -0.07    -0.05 215    0.08 212    0.11 223    0.05 213    0.10 218    0.07
 27.00    27.00     1.0 290   -0.06    -0.06 224    0.09 220    0.11 231    0.06 221    0.10 227    0.07
 28.00    28.00     1.2 286   -0.06    -0.07 231    0.09 227    0.12 239    0.06 229    0.11 234    0.08
 29.00    29.00     0.5 292   -0.05    -0.08 238    0.10 234    0.13 245    0.07 235    0.11 241    0.08
 30.00    30.00     0.9 283   -0.05    -0.10 243    0.11 239    0.14 250    0.08 241    0.13 246    0.09
 31.00    31.00     1.3 276   -0.05    -0.11 248    0.12 244    0.16 254    0.09 246    0.14 251    0.11
 32.00    32.00     0.5 270   -0.04    -0.13 251    0.13 248    0.17 258    0.10 250    0.15 254    0.12
 33.00    33.00     0.5 307   -0.04    -0.14 254    0.14 250    0.18 259    0.10 252    0.16 256    0.12
 34.00    34.00     0.6 233   -0.04    -0.15 256    0.15 252    0.19 260    0.11 253    0.17 257    0.13
 35.00    35.00     0.7 227   -0.05    -0.16 254    0.16 251    0.21 259    0.12 252    0.18 256    0.14
 36.00    36.00     0.8 239   -0.05    -0.16 253    0.17 250    0.22 257    0.13 251    0.20 254    0.15
 37.00    37.00     0.9 221   -0.06    -0.18 251    0.19 249    0.24 255    0.14 250    0.21 253    0.16
 38.00    38.00     1.4 220   -0.07    -0.19 249    0.20 247    0.26 252    0.15 248    0.23 250    0.18
 39.00    39.00     1.8 227   -0.09    -0.21 246    0.23 245    0.29 249    0.17 245    0.26 247    0.20
 40.00    40.00     2.5 226   -0.11    -0.23 244    0.26 242    0.32 245    0.20 243    0.29 244    0.23
 41.00    41.00     2.5 260   -0.14    -0.27 243    0.31 242    0.37 245    0.24 243    0.34 244    0.27
 42.00    41.99     3.6 237   -0.16    -0.31 242    0.35 242    0.42 243    0.28 242    0.39 243    0.32
 43.00    42.99     3.8 245   -0.19    -0.37 242    0.41 242    0.49 243    0.34 242    0.45 243    0.38
 44.00    43.99     4.0 252   -0.22    -0.43 243    0.48 243    0.56 244    0.41 243    0.52 244    0.44
 45.00    44.99     4.6 251   -0.24    -0.51 244    0.56 244    0.64 245    0.48 244    0.60 245    0.52
 46.00    45.98     5.4 259   -0.27    -0.59 246    0.65 245    0.73 247    0.56 245    0.69 246    0.60
 47.00    46.98     5.5 258   -0.29    -0.68 247    0.74 246    0.82 248    0.65 247    0.78 247    0.69
 48.00    47.97     5.7 258   -0.31    -0.78 248    0.83 248    0.92 249    0.75 248    0.88 249    0.79
 49.00    48.97     5.6 263   -0.32    -0.87 250    0.93 249    1.02 251    0.84 249    0.97 250    0.88
 50.00    49.96     6.0 258   -0.34    -0.97 251    1.02 250    1.12 252    0.93 250    1.07 251    0.97
 51.00    50.96     6.1 260   -0.35    -1.06 252    1.12 251    1.22 253    1.02 251    1.17 252    1.07
 52.00    51.95     6.0 263   -0.37    -1.17 253    1.22 252    1.32 253    1.12 252    1.27 253    1.17
 53.00    52.95     6.0 257   -0.38    -1.26 253    1.32 252    1.42 254    1.21 253    1.37 253    1.27
 54.00    53.94     6.0 260   -0.40    -1.37 254    1.42 253    1.53 254    1.32 253    1.48 254    1.37
 55.00    54.94     7.2 259   -0.43    -1.47 254    1.54 253    1.65 255    1.42 254    1.59 254    1.48
 56.00    55.93     5.6 251   -0.48    -1.58 253    1.65 253    1.77 254    1.54 253    1.71 254    1.59
 57.00    56.92     7.2 232   -0.53    -1.69 252    1.77 252    1.89 253    1.65 252    1.83 253    1.71
 58.00    57.92     5.0 229   -0.61    -1.77 251    1.87 251    1.99 251    1.74 251    1.93 251    1.81
 59.00    58.91     4.9 236   -0.67    -1.83 250    1.95 250    2.07 250    1.82 250    2.01 250    1.89
 60.00    59.91     5.1 239   -0.71    -1.90 250    2.03 249    2.16 250    1.90 249    2.10 250    1.97
 61.00    60.90     5.1 251   -0.75    -1.98 249    2.12 249    2.25 250    1.99 249    2.19 250    2.05
 62.00    61.90     4.4 243   -0.79    -2.06 249    2.20 249    2.34 249    2.07 249    2.27 249    2.14
 63.00    62.90     5.7 234   -0.84    -2.13 248    2.29 248    2.43 249    2.15 248    2.36 249    2.22
 64.00    63.89     5.5 239   -0.90    -2.21 248    2.38 248    2.53 248    2.24 248    2.46 248    2.31
 65.00    64.89     5.8 231   -0.95    -2.29 247    2.48 247    2.62 248    2.33 247    2.55 247    2.40
 66.00    65.88     5.6 234   -1.02    -2.36 247    2.57 246    2.72 247    2.42 247    2.65 247    2.50
 67.00    66.88     6.1 229   -1.07    -2.44 246    2.67 246    2.82 247    2.51 246    2.75 246    2.59
 68.00    67.87     5.7 236   -1.14    -2.53 246    2.77 246    2.93 246    2.61 246    2.85 246    2.69
 69.00    68.87     5.7 240   -1.19    -2.61 246    2.87 245    3.03 246    2.71 245    2.95 246    2.79
 70.00    69.86     6.8 228   -1.25    -2.70 245    2.97 245    3.13 245    2.80 245    3.05 245    2.89
 71.00    70.86     6.3 242   -1.31    -2.79 245    3.08 245    3.25 245    2.91 245    3.16 245    2.99
 72.00    71.85     5.9 243   -1.36    -2.88 245    3.19 245    3.36 245    3.02 245    3.27 245    3.10
 73.00    72.84     7.0 256   -1.39    -2.99 245    3.30 245    3.48 245    3.13 245    3.39 245    3.21
 73.20    73.04     7.6 257   -1.40    -3.02 245    3.33 245    3.50 245    3.15 245    3.41 245    3.24
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......50
LAST PLOTTED DEPTH......73.20
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........5
FIRST DEPTH MARKER AT...5
LAST DEPTH MARKER AT....70

PLOT WITH RESPECT TO TRUE NORTH
SCALE 50:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

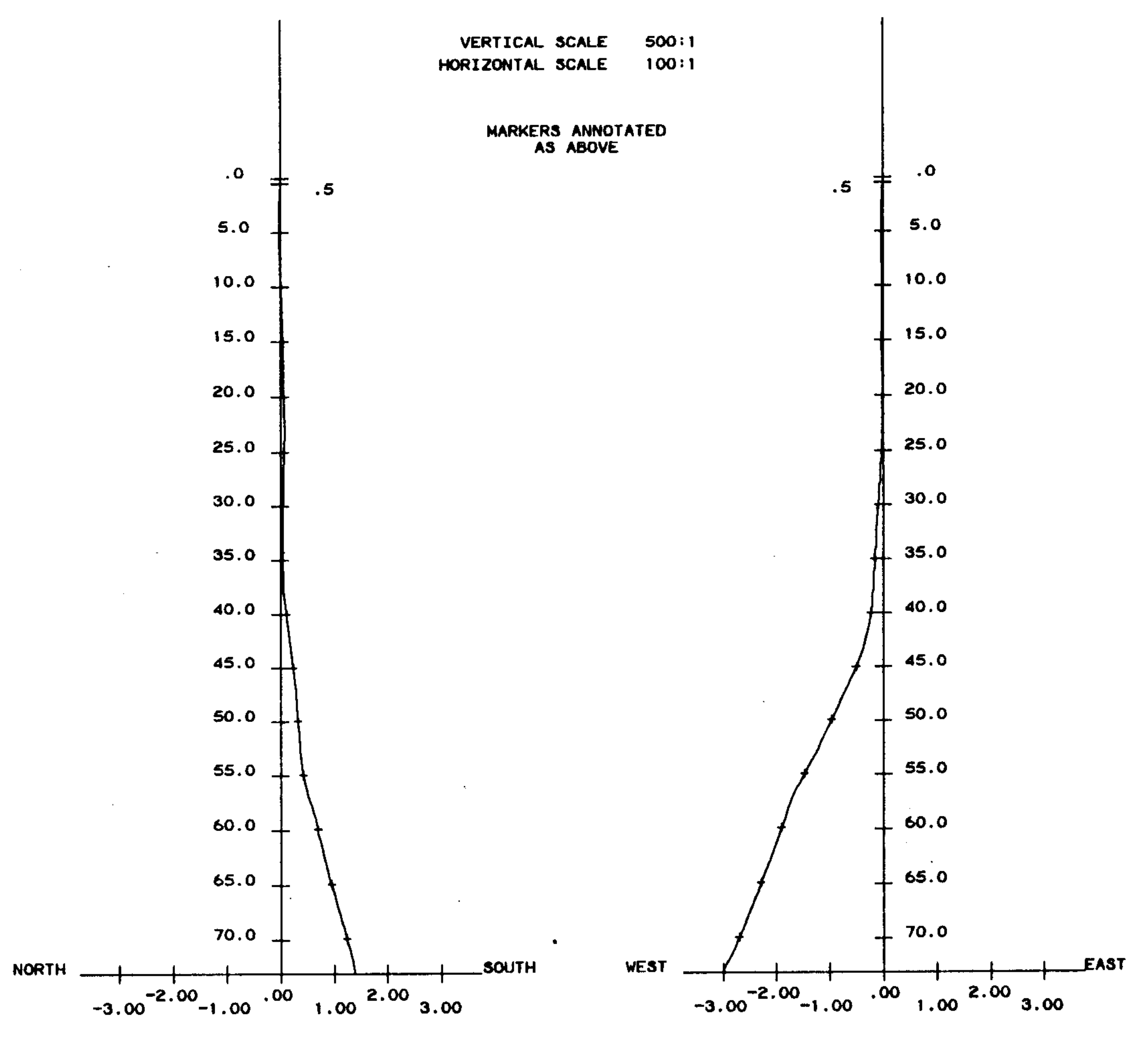
THE LAST PLOTTED DEPTH IS AT 1.40 MS SOUTH, 3.02 MS WEST IE. 3.33 MS FROM THE ORIGIN, 245 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

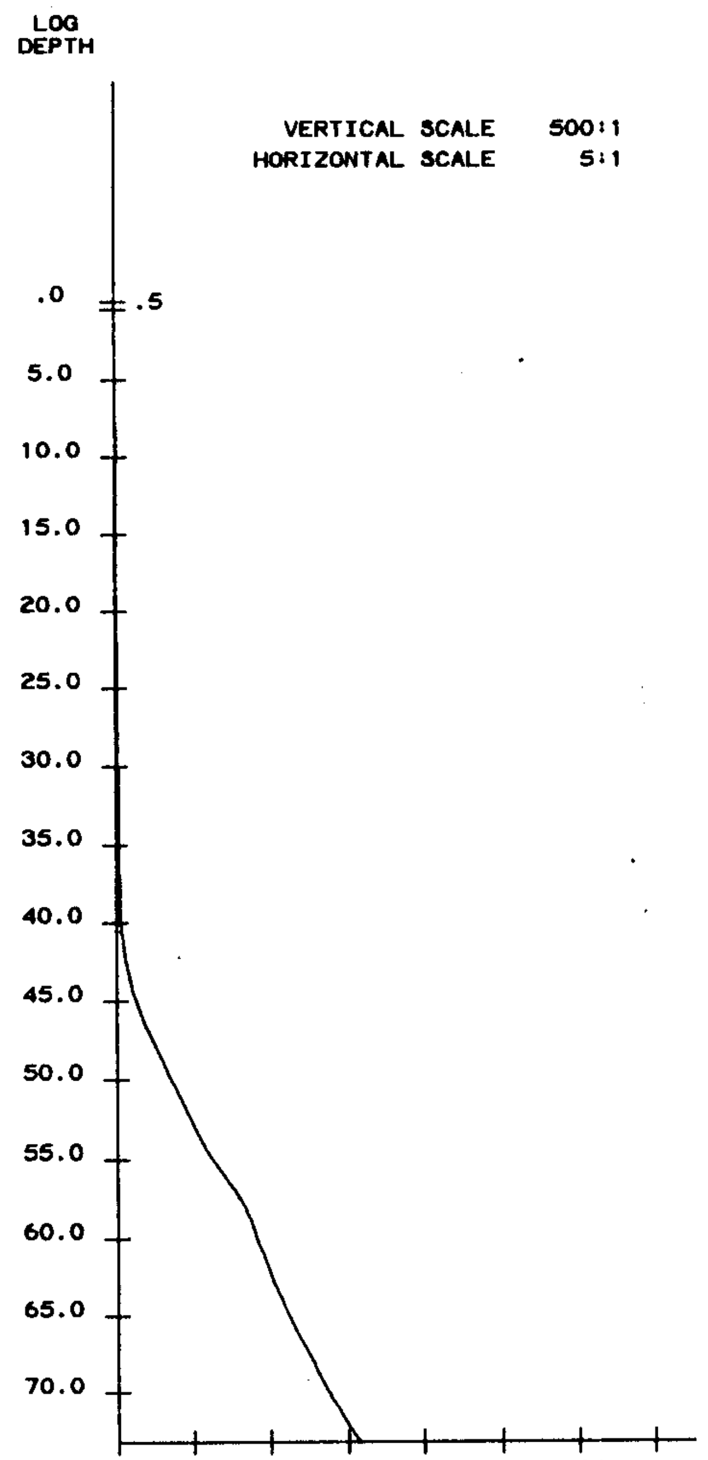
VERTICAL SCALE 500:1
HORIZONTAL SCALE 100:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 500:1
HORIZONTAL SCALE 5:1



DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE
1.00	1.00	71.00	70.86
2.00	2.00	72.00	71.85
3.00	3.00	73.00	72.84
4.00	4.00	73.20	73.04
5.00	5.00		
6.00	6.00		
7.00	7.00		
8.00	8.00		
9.00	9.00		
10.00	10.00		
11.00	11.00		
12.00	12.00		
13.00	13.00		
14.00	14.00		
15.00	15.00		
16.00	16.00		
17.00	17.00		
18.00	18.00		
19.00	19.00		
20.00	20.00		
21.00	21.00		
22.00	22.00		
23.00	23.00		
24.00	24.00		
25.00	25.00		
26.00	26.00		
27.00	27.00		
28.00	28.00		
29.00	29.00		
30.00	30.00		
31.00	31.00		
32.00	32.00		
33.00	33.00		
34.00	34.00		
35.00	35.00		
36.00	36.00		
37.00	37.00		
38.00	38.00		
39.00	39.00		
40.00	40.00		
41.00	41.00		
42.00	41.99		
43.00	42.99		
44.00	43.99		
45.00	44.99		
46.00	45.98		
47.00	46.98		
48.00	47.97		
49.00	48.97		
50.00	49.96		
51.00	50.96		
52.00	51.95		
53.00	52.95		
54.00	53.94		
55.00	54.94		
56.00	55.93		
57.00	56.92		
58.00	57.92		
59.00	58.91		
60.00	59.91		
61.00	60.90		
62.00	61.90		
63.00	62.90		
64.00	63.89		
65.00	64.89		
66.00	65.88		
67.00	66.88		
68.00	67.87		
69.00	68.87		
70.00	69.86		

COMPANY MANALTA
WELL T93R-11
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LONG SPACED DENSITYY GAMMA RAY CALIPER 20:1
DETAIL LOG

#829

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-11
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-11
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	7-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	73.2M			
DEPTH-LOGGER	73.3M			
FIRST READING	73.0M			
LAST READING	0M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	23.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITYY GAMMA RAY CALIPER 20:1 DETAIL LOG

NO WATER AVAILABLE THEREFORE W.L. AT 23.5M

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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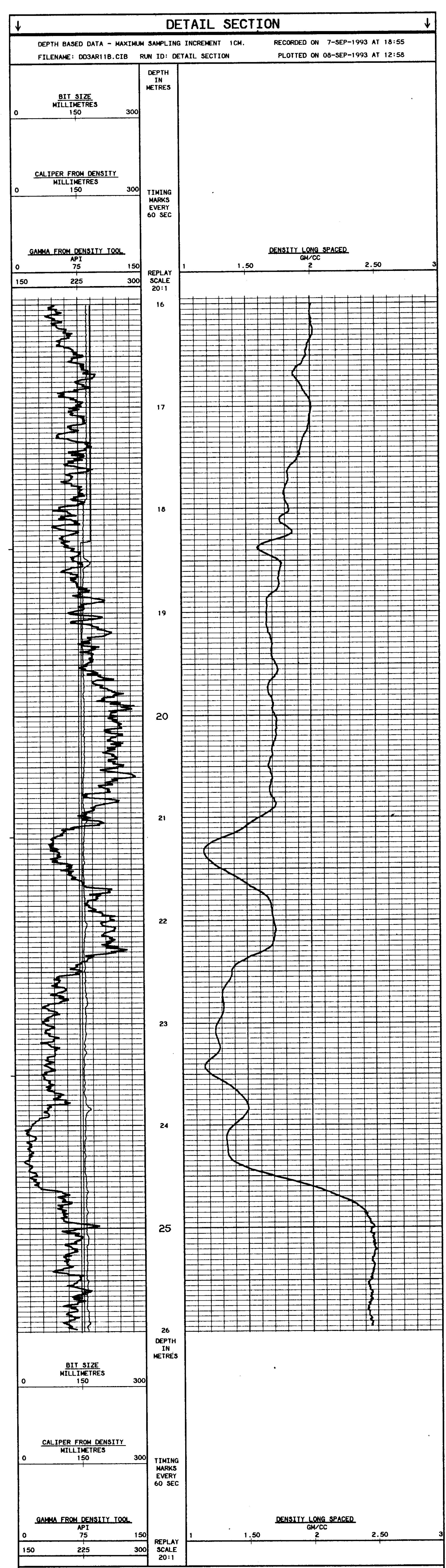
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 18:55
FILENAME: DD3AR11B.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 12:58



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 18:55
FILENAME: DD3AR11B.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 12:58

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 18:55
FILENAME: DD3AR11A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 12:55

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 7-SEP-1993 AT 18:55
FILENAME: DD3AR11A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 12:55

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 07-SEP-1993 AT 18:53 DATA LAST REPROCESSED: 8-SEP-1993 AT 12:16

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	73.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-11
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-11C
FIELD	SITE # 107
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 107
WELL:
T93R-11C
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	9-SEP-93			
RUN NUMBER	SIX			
DEPTH-DRILLER	54.9M			
DEPTH-LOGGER	55.2M			
FIRST READING	55.0M			
LAST READING	0M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	VZ22 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	15M			

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

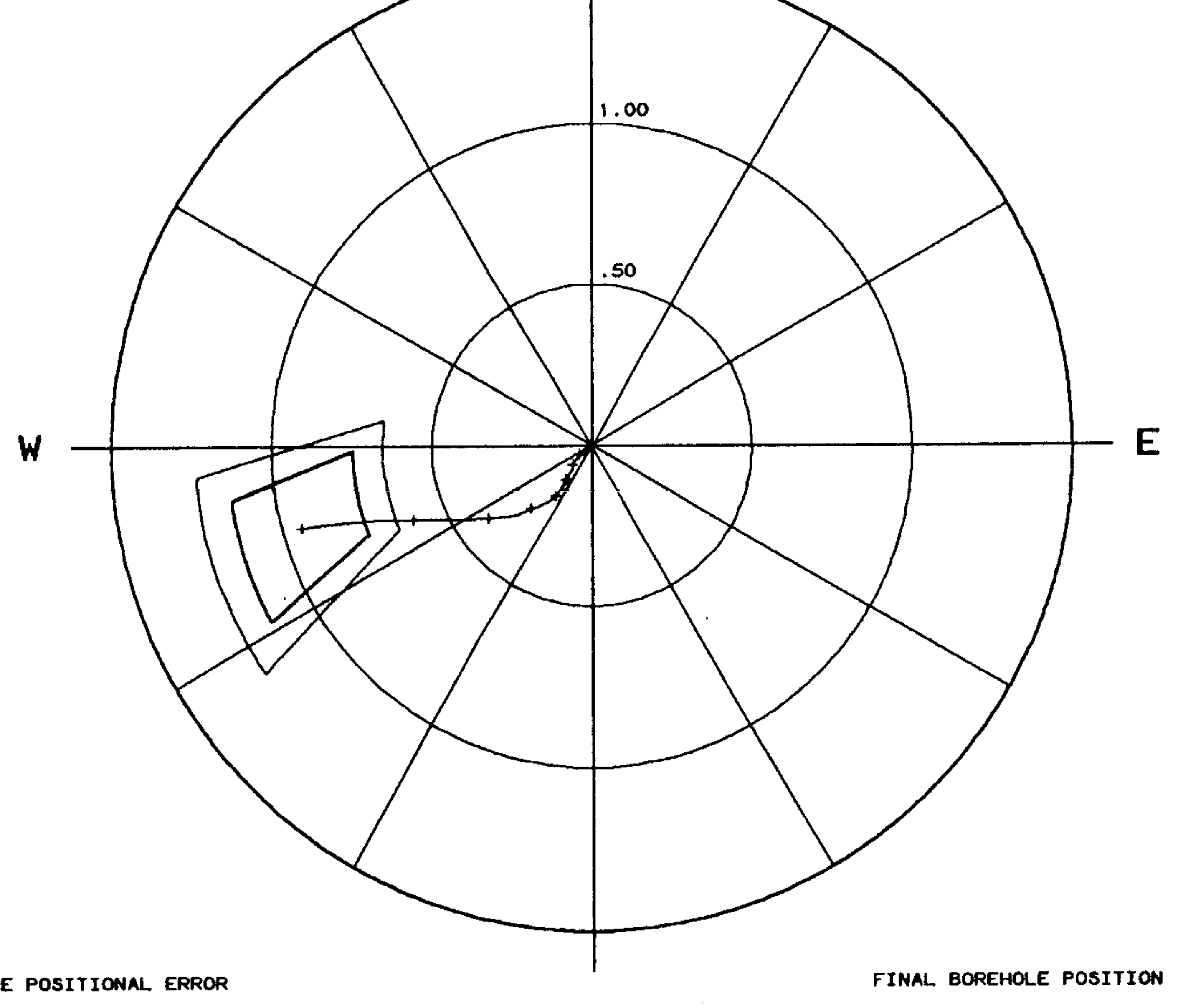
```
T93R-11C                          VERTICALITY DATA LISTING                     DATE PROCESSED:  9-SEP-1993
                          ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH          DATE LOGGED:     9-SEP-1993
      DEPTHS          BOREHOLE    AXIAL CO-ORDS    POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
   LOG      TRUE      TILT AZI    NORTH      EAST BRG   RADIUS BRG   RADIUS BRG   RADIUS BRG   RADIUS BRD   RADIUS

  15.00    15.00      0.6 231     0.00       0.00 236    0.00 236     0.01 236     0.00 236     0.01 236     0.00
  16.00    16.00      0.7 229    -0.01      -0.01 232    0.01 232     0.02 232     0.01 232     0.02 232     0.01
  17.00    17.00      0.5 224    -0.02      -0.02 230    0.03 230     0.03 229     0.02 230     0.03 230     0.02
  18.00    18.00      0.6 235    -0.03      -0.03 226    0.04 226     0.05 226     0.02 226     0.04 226     0.03
  19.00    19.00      0.8 338    -0.03      -0.03 229    0.04 230     0.05 229     0.03 230     0.05 229     0.03
  20.00    20.00      0.6 197    -0.03      -0.04 234    0.05 234     0.07 234     0.03 234     0.06 234     0.04
  21.00    21.00      0.6 250    -0.03      -0.04 231    0.05 231     0.06 230     0.03 231     0.06 231     0.04
  22.00    22.00      0.6 222    -0.04      -0.05 230    0.06 230     0.08 230     0.04 230     0.07 230     0.05
  23.00    23.00      0.6 229    -0.05      -0.05 230    0.07 230     0.09 230     0.05 230     0.08 230     0.06
  24.00    24.00      0.5 200    -0.05      -0.06 228    0.08 228     0.10 228     0.05 228     0.09 228     0.07
  25.00    25.00      0.6 196    -0.06      -0.06 225    0.09 224     0.12 225     0.06 225     0.10 225     0.07
  26.00    26.00      0.6 206    -0.07      -0.06 222    0.09 221     0.13 222     0.06 222     0.11 222     0.08
  27.00    27.00      0.5 208    -0.08      -0.07 220    0.10 220     0.14 221     0.07 220     0.12 221     0.09
  28.00    28.00      0.8 227    -0.09      -0.07 220    0.11 220     0.15 220     0.08 220     0.13 220     0.10
  29.00    29.00      0.6 212    -0.10      -0.08 220    0.12 219     0.17 220     0.08 219     0.15 220     0.10
  30.00    30.00      0.6 212    -0.11      -0.08 219    0.13 218     0.18 219     0.09 219     0.16 219     0.11
  31.00    31.00      0.6 203    -0.11      -0.09 218    0.14 218     0.19 218     0.10 218     0.17 218     0.12
  32.00    32.00      0.7 206    -0.12      -0.09 217    0.16 217     0.21 218     0.10 217     0.18 217     0.13
  33.00    33.00      0.8 212    -0.13      -0.10 217    0.17 217     0.22 217     0.11 217     0.19 217     0.14
  34.00    34.00      0.9 214    -0.15      -0.11 216    0.18 216     0.24 217     0.12 216     0.21 217     0.15
  35.00    35.00      0.7 225    -0.16      -0.12 217    0.20 217     0.26 217     0.13 217     0.23 217     0.16
  36.00    36.00      0.8 228    -0.17      -0.13 217    0.21 217     0.28 218     0.14 217     0.24 217     0.18
  37.00    37.00      0.8 249    -0.17      -0.14 219    0.22 218     0.29 219     0.15 219     0.26 219     0.19
  38.00    38.00      1.0 241    -0.18      -0.15 220    0.24 220     0.31 221     0.16 220     0.27 220     0.20
  39.00    39.00      1.1 245    -0.19      -0.17 222    0.25 222     0.33 223     0.18 222     0.29 222     0.22
  40.00    40.00      1.2 247    -0.19      -0.19 224    0.27 224     0.35 226     0.19 224     0.31 225     0.23
  41.00    41.00      1.4 248    -0.20      -0.21 226    0.29 225     0.37 228     0.21 226     0.33 227     0.25
  42.00    42.00      1.5 260    -0.21      -0.23 228    0.32 227     0.40 229     0.23 227     0.36 228     0.27
  43.00    43.00      1.7 262    -0.22      -0.26 230    0.34 229     0.43 232     0.25 229     0.38 231     0.30
  44.00    44.00      2.0 264    -0.22      -0.29 232    0.36 231     0.46 235     0.27 232     0.41 233     0.32
  45.00    45.00      2.0 262    -0.22      -0.32 235    0.39 234     0.49 238     0.30 234     0.44 236     0.35
  46.00    46.00      2.4 269    -0.23      -0.36 238    0.43 237     0.52 241     0.33 237     0.48 239     0.38
  47.00    46.99      2.6 269    -0.23      -0.41 241    0.47 239     0.56 244     0.37 240     0.51 242     0.42
  48.00    47.99      2.7 269    -0.23      -0.45 243    0.51 241     0.61 246     0.41 242     0.56 245     0.46
  49.00    48.99      3.5 269    -0.23      -0.51 246    0.55 244     0.66 249     0.45 245     0.61 247     0.50
  50.00    49.99      3.2 268    -0.23      -0.56 248    0.60 246     0.71 251     0.50 247     0.66 249     0.55
  51.00    50.99      3.2 268    -0.23      -0.62 250    0.66 248     0.77 253     0.55 249     0.71 251     0.61
  52.00    51.99      3.9 266    -0.23      -0.68 251    0.72 249     0.83 254     0.61 250     0.78 253     0.67
  53.00    52.98      4.2 265    -0.24      -0.75 253    0.79 251     0.90 255     0.68 252     0.85 254     0.73
  54.00    53.98      4.1 264    -0.24      -0.83 254    0.86 252     0.98 256     0.75 253     0.92 255     0.81
  55.00    54.98      4.7 261    -0.25      -0.91 254    0.94 252     1.06 257     0.82 253     1.00 255     0.88
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....14.50
LAST PLOTTED DEPTH......55.00
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........5
FIRST DEPTH MARKER AT...15
LAST DEPTH MARKER AT....55

PLOT WITH RESPECT TO TRUE NORTH
SCALE 20:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT .25 MS SOUTH, .91 MS WEST IE. .94 MS FROM THE ORIGIN, 254 DEG FROM TRUE NORTH

VERTICAL SECTIONS

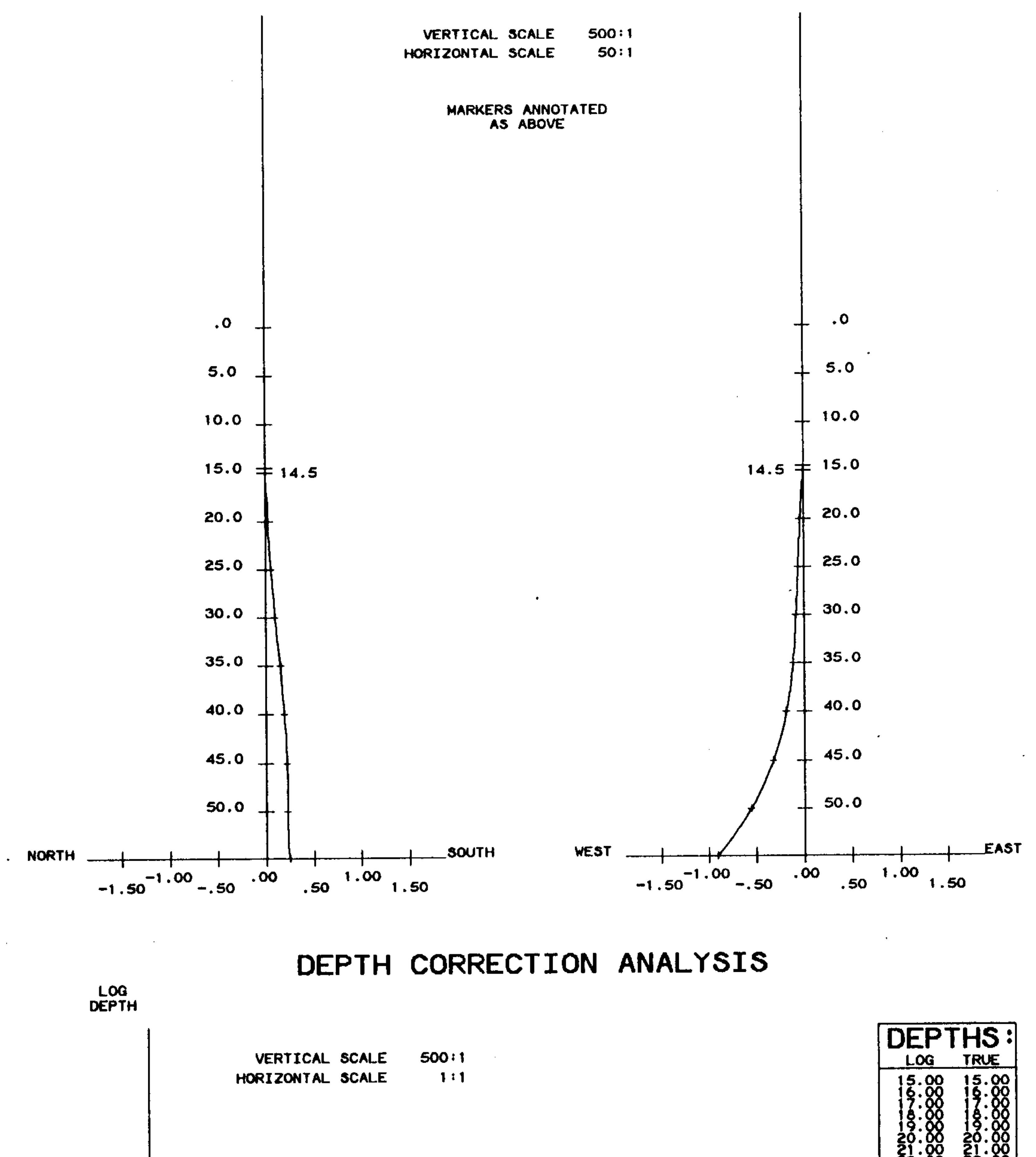
(TRUE DEPTH VS DISPLACEMENT)

N-S SECTION

E-W SECTION

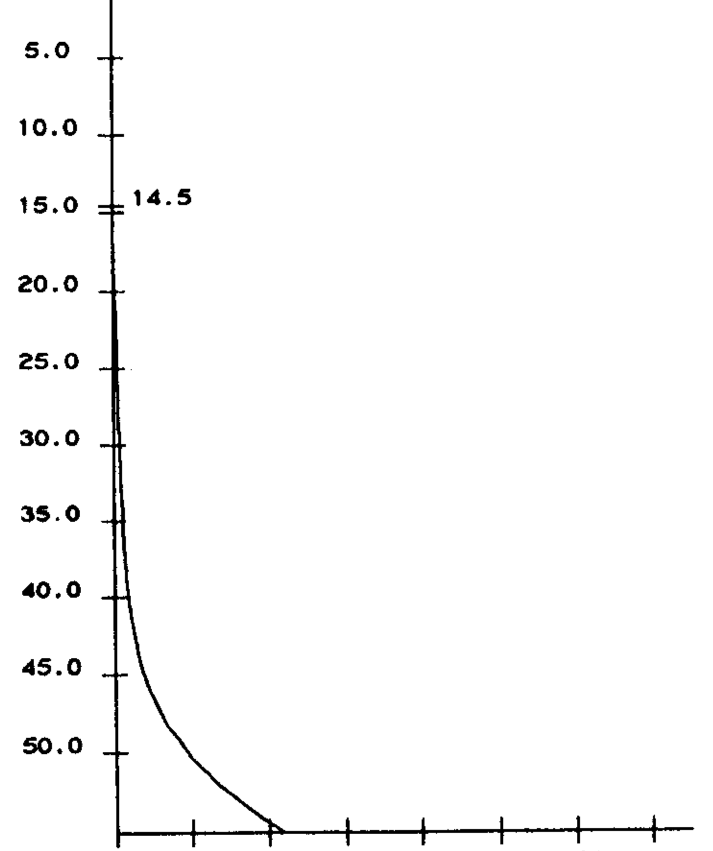
VERTICAL SCALE 500:1
HORIZONTAL SCALE 50:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 500:1
HORIZONTAL SCALE 1:1



DEPTHS:

LOG	TRUE
15.00	15.00
16.00	16.00
17.00	17.00
18.00	18.00
19.00	19.00
20.00	20.00
21.00	21.00
22.00	22.00
23.00	23.00
24.00	24.00
25.00	25.00
26.00	26.00
27.00	27.00
28.00	28.00
29.00	29.00
30.00	30.00
31.00	31.00
32.00	32.00
33.00	33.00
34.00	34.00
35.00	35.00
36.00	36.00
37.00	37.00
38.00	38.00
39.00	39.00
40.00	40.00
41.00	41.00
42.00	42.00
43.00	43.00
44.00	44.00
45.00	45.00
46.00	46.00
47.00	46.99
48.00	47.99
49.00	48.99
50.00	49.99
51.00	50.99
52.00	51.99
53.00	52.98
54.00	53.98
55.00	54.98

COMPANY	MANALTA
WELL	T93R-11C
FIELD	SITE # 107
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

```
~Version Information           DIPMETER/STICK PLOT DATA LISTING
 VERS.              1.20:      CWLS Log ASCII Standard -Version 1.20
 WRAP.                NO:      One line per depth step
#
#
~Well Information Block
#MNEM.UNIT   Data Type         Description
#---------   ------------      ------------------------------
 STRT.M             55.50:
 STOP.M             14.00:
 STEP.M              0.00:
 NULL.            -999.25:
 COMP.           COMPANY:      MANALTA
 WELL.              WELL:      T93R-11C
 FLD .             FIELD:      SITE # 107
 LOC .          LOCATION:      TELKWA
 PROV.          PROVINCE:      BRITISH COLUMBIA
 SRVC.   SERVICE COMPANY:      BPB Wireline Services
 DATE.          LOG DATE:       9-SEP-1993
 UWI .    UNIQUE WELL ID:
#
#
~Curve Information Block
#MNEM.UNIT                     Curve Description
#---------                     -----------------
 DEPT.M               :        DEPTH ROUNDED TO NEAREST CALIBRATION STEP MULTIPLE
 CALD.mm              :        DIPMETER CALIPER
 TILD.degs            :        BOREHOLE TILT
 AZID.degs            :        BOREHOLE AZIMUTH
 DIPF.degs            :        FORMATION DIP
 AZIF.degs            :        FORMATION AZIMUTH
 CORC.----            :        CORRELATION COEFFICIENT
 STK1.degs            :        STICK PLOT SECTION 1
 STK2.degs            :        STICK PLOT SECTION 2
#
#
~Parameter Information
#MNEM.UNIT   Value             Description
#---------   ------------      ------------------------------
 DECL.deg          26.50:      MAGNETIC DECLINATION (EAST OF NORTH)
 CORS.m             0.25:      CORRELATION STEP
 CORI.m             0.50:      CORRELATION INTERVAL
 SANG.deg          45.00:      SEARCH ANGLE
 SDIP.deg           0.00:      STRUCTURAL DIP
 SAZI.deg           0.00:      STRUCTURAL AZIMUTH
#
#
~Other Information
File Identification            MAIN LOG

DIPMETER LISTING
```

Run number	FIVE	Log 1st rdg	55.0m	Log last rdg	0m
Driller TD	54.9m	Logger TD	55.2m	Water level	
Perm Datum	GROUND LEVEL	Elevation	N/A	Other srvcs	CCS
Dril mes from	00m	Log meas from	00m	Other srvcs	
Elevation: KB	N/A	DF	N/A	GL	N/A
Casing Driler	18.3m	Casing Logger	18.3m	Casing size	178mm
Casing Weight	N/A	From	SURFACE	To	18.3m
Bit size	156mm	From	18.3m	To	TD
Hole fl type	AIR/WATER	Sample source		Fluid loss	N/A
Density	1.01	Viscosity	N/A	pH	N/A
RM @ meas tmp		RMF @ mes tmp		RMC @ mes tmp	
RM @ BHT		RMF source		RMC-source	
Max rec temp		Time snc circ		LsdSecTwpRge	
Equipment no.	V222	Base	RDR	Equip. name	DIP/VERT
Recorded by	B.STEVENSON	Witnessed by	T. BRAZZONI	Sonde srl no.	221/233
Last title	WATER LEVEL	Last line	15m	Permit no.	

BPB DIPMETER ANALYSIS INTERPRETATION NOTES

1. All plots are correct to the resolution of the plotter used, ie. one two-hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background.

2. Rose diagrams when plotted occur between every major division and are delimited by two bold arrows. For certain replay scales it may be desirable to plot these less frequently; this option is available on request.

3. The grid over which the computed dip is displayed is locally linear. That is to say it is linear between 0 and 10 degrees, 10 and 20, 20 and 30 etc.

4. The correlation value will vary depending on the interval size selected. Generally speaking the larger the correlation interval, the lower the value becomes. For this reason a direct comparison of this value for differing correlation intervals is meaningless, quality control being exercised with an appreciation of this effect.

5. Stick data may be shown relative to any two vertical planes and is the angle (to the horizontal) of the intersection of the resolved plane and the vertical plane.

6. The angle of declination is taken to be the angle between Magnetic North and reference North (True, Grid or Magnetic) measured in an anti-clockwise direction.

7. For customised control of computed dipmeter analysis the following parameters must be specified:
    - correlation step and interval(s)
    - magnetic declination
    - search angle(s)
    - depth range(s)
    - replay scale(s)
    - the frequency for rose diagrams
    - the sections for stick plots
    - (quality control is exercised in accordance with the correlation interval used, alternatively all correlations may be displayed on request)

The following information is a listing of ALL the output from BPB's dipmeter analysis. Below is a full description of each data item:

DEPTH	the depth corresponding to the centre of the correlation interval.
CALIPER	the average borehole caliper recorded over the correlation interval.
HOLE DRIFT	the average borehole deviation from vertical over the correlation interval.
HOLE AZIMUTH	the average borehole azimuth over the correlation interval in degrees East of true North.
DIP ANGLE	the computed formation dip in degrees, from the horizontal plane.
DIP AZIMUTH	the formation azimuth in degrees East of true North.
CORRELATION	a measure of the reliability of the computed result. This parameter is also used in the visual display to determine the quality of result.
SECTION	the formation dip across the specified sections.

Further recorrelations over any step and interval size are available on any scale over any section of the log. Alternative methods of presentation, or analysis may be available on request.

```
#
#   Depth    Caliper      Borehole            Formation      Correlation       S
tick Plot Section
#                       Tilt    Azimuth     Dip     Azimuth  Coefficient   180.0
-  0.0   270.0- 90.0
#    (M)       (mm)    (deg)      (deg)     (deg)     (deg)      (----)         (d
eg)          (deg)
~A
    55.50   -999.25  -999.25   -999.25       0.0       0.0      -1.00          0
.00          0.00
    55.00     155.5      4.8     261.2       0.0       0.0      -1.00          0
.00          0.00
    54.50     154.5      4.5     263.0      30.7     226.3       0.59        -22
.30        -23.24
    54.00     155.5      4.3     264.6      11.0      62.5       0.49          5
.12          9.78
    53.50     156.5      4.3     265.1      23.5      66.4       0.60          9
.87         21.72
    53.00     156.5      4.2     266.3      13.4      79.3       0.41          2
.52         13.15
    52.50     156.5      3.6     265.5      25.0      35.5       0.39         20
.78         15.13
    52.00     156.5      3.8     268.2      16.0      76.1       0.84          3
.95         15.56
    51.50     157.6      3.8     267.6      10.2      28.6       0.72          8
.98          4.93
    51.00     156.5      3.2     269.7      43.7      75.2       0.53         13
.73         42.76
    50.50     159.7      3.2     269.3      19.4     104.5       0.57         -5
.02         18.78
    50.00     157.6      3.3     269.5      23.8      98.8       0.58         -3
.84         23.51
    49.50     157.6      3.1     266.4      26.7      83.1       0.77          3
.46         26.58
    49.00     157.6      3.1     270.8      19.9      68.5       0.54          7
.54         18.60
    48.50     157.6      2.9     269.4      22.7     102.2       0.70         -5
.05         22.24
    48.00     157.6      2.9     271.1      23.3      76.6       0.52          5
.70         22.75
    47.50     156.5      2.6     270.0      25.9      76.5       0.60          6
.45         25.24
    47.00     157.6      2.6     269.6      22.3      57.6       0.83         12
.41         19.14
    46.50     157.6      2.5     270.8      22.0      70.3       0.87          7
.76         20.82
    46.00     156.5      2.4     269.3      10.2      70.6       0.54          3
.42          9.64
    45.50     157.6      2.2     267.6      35.9     292.4       0.60         15
.44        -33.78
    45.00     159.7      2.2     266.5      19.4      84.4       0.46          1
.95         19.27
    44.50     157.6      2.0     266.0      15.3      78.2       0.38          3
.21         15.00
    44.00     157.6      1.9     270.0      10.8      72.4       0.32          3
.31         10.33
    43.50     157.6      1.7     267.1      18.1      70.0       0.62          6
.38         17.10
    43.00     158.6      1.6     260.0      44.0     312.0       0.54         32
.83        -35.67
    42.50     157.6      1.4     254.2      17.2      86.7       0.66          1
.02         17.22
    42.00     158.6      1.5     255.1      16.5      66.5       0.67          6
.75         15.23
    41.50     157.6      1.4     241.0      18.5      67.7       0.51          7
.22         17.18
    41.00     157.6      1.2     255.8      11.1      27.1       0.69          9
.89          5.10
    40.50     158.6      1.2     251.3      27.4      43.9       0.44         20
.52         19.81
    40.00     157.6      1.3     248.3      31.8      70.0       0.45         11
.99         30.28
    39.50     160.7      1.2     250.6      15.6      60.3       0.47          7
.85         13.61
    39.00     160.7      1.0     244.8      22.7      68.8       0.28          8
.61         21.30
    38.50     160.7      1.0     252.5       0.0       0.0      -1.00          0
.00          0.00
    38.00     160.7      0.9     247.3      46.2     337.0       0.38         43
.82        -22.16
    37.50     158.6      0.9     243.1      22.9      51.6       0.71         14
.70         18.28
    37.00     160.7      0.8     241.2      50.2     341.1       0.24         46
.67        -21.23
    36.50     159.7      0.9     232.1      21.7      94.8       0.55
.91         21.66
    36.00     158.6      0.8     224.6      27.6     106.6  [illegible]
.50         26.64
    35.50     159.7      0.8     222.8      13.3      60.4  [illegible]
.64         11.60
    35.00     160.7      0.9     218.1      15.9      73.8       0.48
.55         15.32
    34.50     160.7      1.1     218.3      13.3      76.3       0.92
.21         12.92
    34.00     159.7      0.8     217.4      48.3      47.6       0.51          3
.12         39.65
    33.50     160.7      0.8     209.5      42.5      58.1       0.41          2
.86         37.86
    33.00     160.7      0.7     204.8      59.6      31.5       0.46          5
.52         41.75
    32.50     160.7      0.7     211.0      38.4      16.6       0.57          3
.18         12.72
    32.00     160.7      0.6     212.4      34.7     311.5       0.30          2
.62        -27.37
    31.50     160.7      0.7     208.2       0.0       0.0      -1.00
.00          0.00
    31.00     160.7      0.7     203.1      45.0      82.1       0.54
.85         44.68
    30.50     159.7      0.6     211.2      18.8      78.5       0.85
.90         18.47
    30.00     161.7      0.6     205.6      21.0     163.3       0.29         -2
.21          6.31
    29.50     161.7      0.6     206.8      30.2      68.3       0.74          1
.11         28.39
    29.00     162.8      0.5     208.3      16.3      83.6       0.80
.85         16.18
    28.50     160.7      0.6     221.7      23.8      78.7       0.91
.92         23.34
    28.00     160.7      0.7     220.6      19.0      82.1       0.84
.72         18.83
    27.50     160.7      0.6     214.5      13.1      92.0       0.49         -
.46         13.10
    27.00     161.7      0.6     215.4      12.3     193.6       0.53         -1
.98         -2.94
    26.50     162.8      0.5     207.5      48.3     277.8       0.23
.61        -48.04
    26.00     161.7      0.5     185.7      20.4      76.3       0.88
.02         19.88
    25.50     160.7      0.6     218.3      23.7      84.5       0.78
.40         23.57
    25.00     160.7      0.5     198.1      30.8      97.8       0.62         -
.62         30.56
    24.50     161.7      0.5     194.5      45.5     310.4       0.27          3
.37        -37.77
    24.00     160.7      0.4     200.4      21.8      74.0       0.83
.31         21.05
    23.50     160.7      0.6     213.2      18.2      64.6       0.58
.04         16.55
    23.00     159.7      0.7     240.5      30.4      44.6       0.48
.70         22.42
    22.50     159.7      0.5     215.3      19.7      66.4       0.82
.16         18.17
    22.00     160.7      0.6     234.0      17.2      87.2       0.55
.85         17.14
    21.50     159.7      0.6     219.6      19.8      75.1       0.82
.28         19.18
    21.00     161.7      0.6     240.1      40.7     317.9       0.50
.59        -29.99
    20.50     159.7      0.6       7.7      53.7       9.3       0.36
.31         12.35
    20.00     160.7      0.5     218.4       0.0       0.0      -1.00
.00          0.00
    19.50     163.8      0.7     258.0      45.2     136.8       0.25         -
.31         34.58
    19.00     162.8      0.6     330.0       1.4       2.7       0.84
.41          0.07
    18.50     170.0      0.7     198.4       1.1      86.5       0.88
.06          1.05
    18.00     171.1      0.7     215.3       0.7     132.7       0.86
.48          0.52
    17.50     171.1      0.7     233.0       0.0      32.1       0.98
.00          0.00
    17.00     171.1      0.7     224.4       0.0      51.0       0.99
.00          0.00
    16.50     171.1      0.6     231.0       0.2     271.7       0.99
.01         -0.18
    16.00     171.1      0.5     238.6       0.5     269.2       1.00
.01         -0.53
    15.50     171.1      0.5     215.7       0.2     118.3       0.99
.08          0.15
    15.00     171.1      0.5     240.8       0.0       0.0      -1.00
.00          0.00
    14.50   -999.25  -999.25   -999.25       0.0       0.0      -1.00
.00          0.00
    14.00   -999.25  -999.25   -999.25       0.0       0.0      -1.00
.00          0.00
```

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY MANALTA
WELL T93R-11C
FIELD SITE # 107
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 107
WELL:
T93R-11C
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
DIPMETER

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	9-SEP-93	
RUN NUMBER	THREE	
DEPTH-DRILLER	54.9M	
DEPTH-LOGGER	55.2M	
FIRST READING	55.0M	
LAST READING	0M	
CASING-DRILLER	18.3M	
CASING-LOGGER	18.3M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM ● MEAS TEMP		
RMF ● MEAS TEMP		
RMC ● MEAS TEMP		
SOURCE: RMF/RMC		
RM ● BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	21.5M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 9-SEP-1993 AT 11:05
FILENAME: DD3AR11B.CIB RUN ID: DETAIL SECTION PLOTTED ON 09-SEP-1993 AT 14:07

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

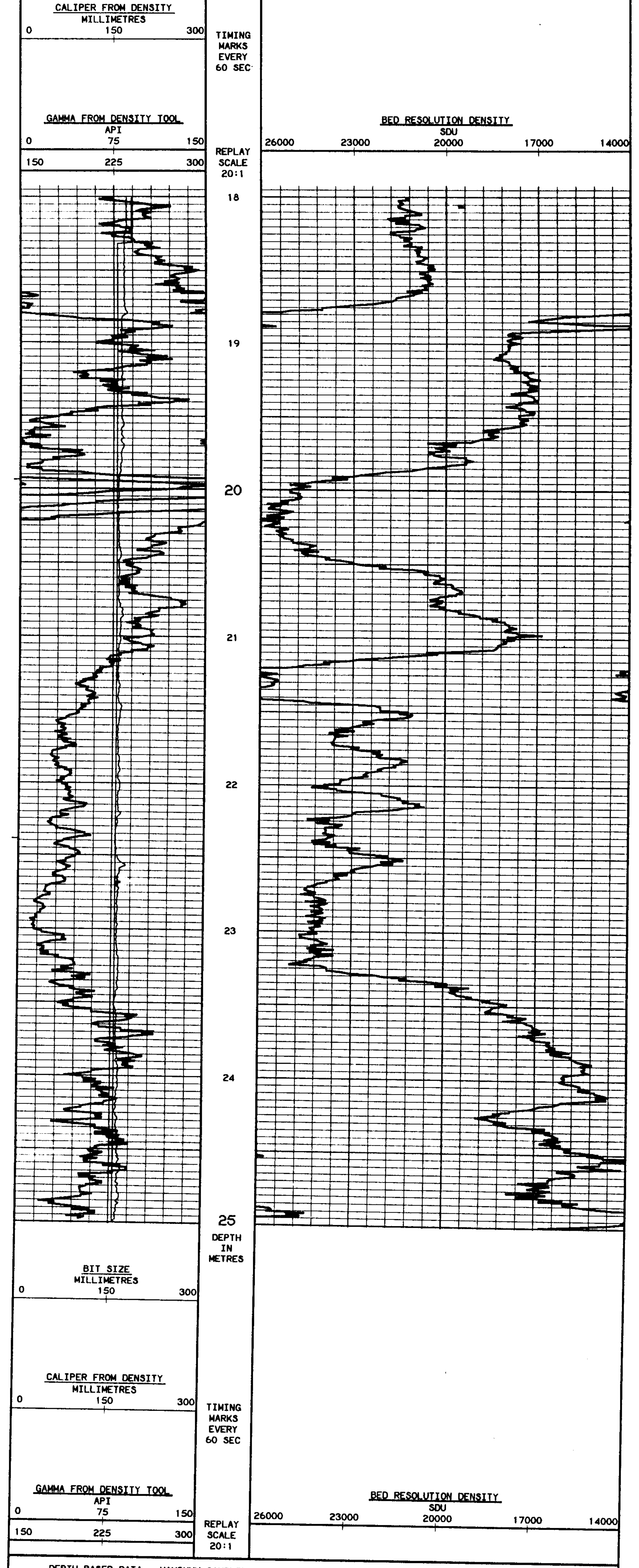
CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 9-SEP-1993 AT 11:05
FILENAME: DD3AR11B.CIB RUN ID: DETAIL SECTION PLOTTED ON 09-SEP-1993 AT 14:07

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 9-SEP-1993 AT 11:05
FILENAME: DD3AR11A.CIB RUN ID: DETAIL SECTION PLOTTED ON 09-SEP-1993 AT 14:05

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

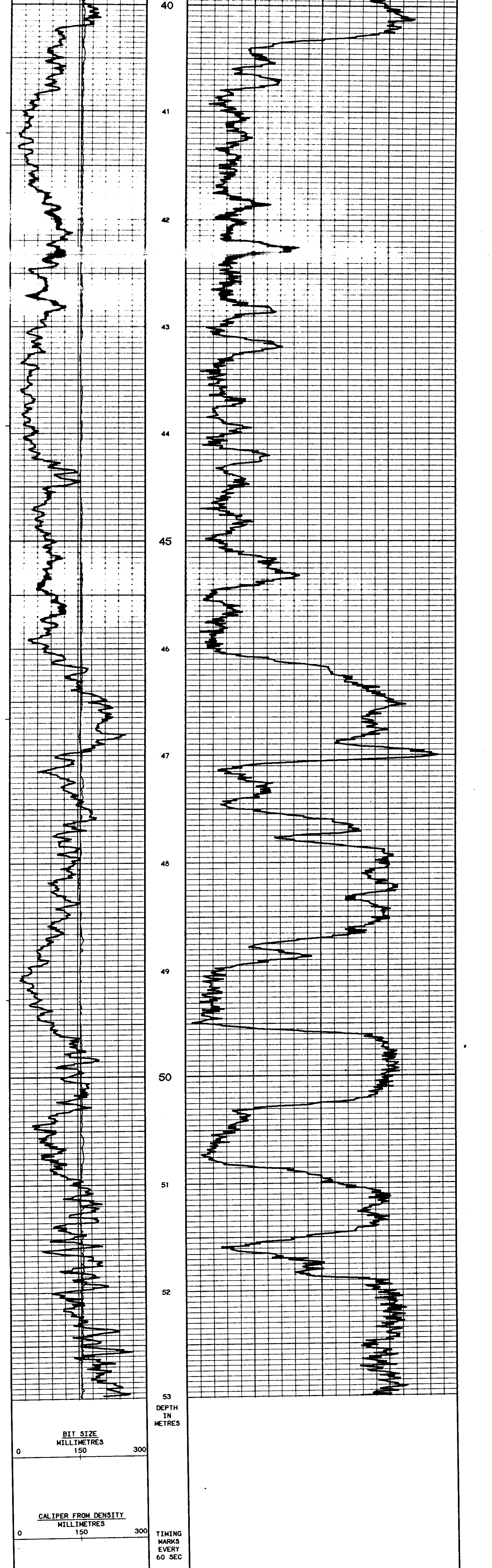
CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150

REPLAY SCALE

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 9-SEP-1993 AT 11:05
FILENAME: DD3AR11A.CIB RUN ID: DETAIL SECTION PLOTTED ON 09-SEP-1993 AT 14:05

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 09-SEP-1993 AT 10:26 DATA LAST REPROCESSED: 9-SEP-1993 AT 13:56

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	54.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-11C
FIELD	SITE # 107
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 107
WELL:
T93R-11C
COMPANY:
MANALTA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

COMPANY MANALTA
WELL T93R-11C
FIELD SITE # 107
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#879

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
DIPMETER

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	9-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	54.9M	
DEPTH-LOGGER	55.2M	
FIRST READING	55.0M	
LAST READING	0M	
CASING-DRILLER	18.3M	
CASING-LOGGER	18.3M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	21.5M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

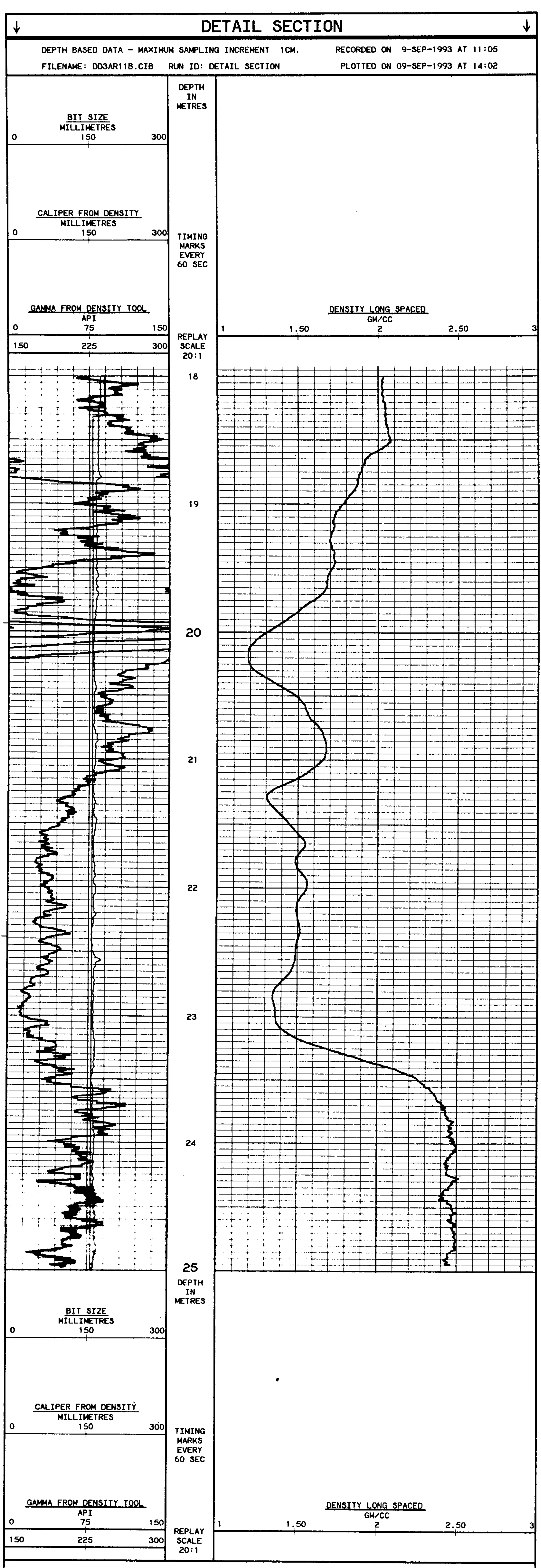
LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 9-SEP-1993 AT 11:05
FILENAME: DD3AR11B.CIB RUN ID: DETAIL SECTION PLOTTED ON 09-SEP-1993 AT 14:02



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 9-SEP-1993 AT 11:05
FILENAME: DD3AR11B.CIB RUN ID: DETAIL SECTION PLOTTED ON 09-SEP-1993 AT 14:00

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 9-SEP-1993 AT 11:05
FILENAME: DD3AR11A.CIB RUN ID: DETAIL SECTION PLOTTED ON 09-SEP-1993 AT 14:00

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 9-SEP-1993 AT 11:05
FILENAME: DD3AR11A.CIB RUN ID: DETAIL SECTION PLOTTED ON 09-SEP-1993 AT 13:58

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 09-SEP-93 AT 10:26 DATA LAST REPROCESSED: 9-SEP-1993 AT 13:56

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDT)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	54.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	516.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY MANALTA
WELL T93R-11C
FIELD SITE # 107
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 107
WELL:
T93R-11C
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-11C
FIELD SITE # 107
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
DIPMETER

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	9-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	54.9M			
DEPTH-LOGGER	55.2M			
FIRST READING	55.0M			
LAST READING	0M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	21.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 9-SEP-1993 AT 11:05
FILENAME: DD3AR11C.CIB RUN ID: MAIN LOG PLOTTED ON 09-SEP-1993 AT 11:22

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 9-SEP-1993 AT 11:05
FILENAME: DD3AR11C.CIB RUN ID: MAIN LOG PLOTTED ON 09-SEP-1993 AT 11:22

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 09-SEP-1993 AT 10:26

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	54.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-11C
FIELD	SITE # 107
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

DIPMETER ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 107
WELL:
T93R-11C
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-11C
FIELD SITE # 107
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	9-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	54.9M			
DEPTH-LOGGER	55.2M			
FIRST READING	55.0M			
LAST READING	0M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	15M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
DIP/VERT	221/233			

REMARKS

DIPMETER ANALYSIS

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 9-SEP-1993 AT 11:28
FILENAME: DIP3R11C.CIB RUN ID: MAIN LOG PLOTTED ON 11-SEP-1993 AT 19:42

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 9-SEP-1993 AT 11:28
FILENAME: DIP3R11C.CIB RUN ID: MAIN LOG PLOTTED ON 11-SEP-1993 AT 19:42

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 09-SEP-1993 AT 10:25 DATA LAST REPROCESSED: 11-SEP-1993 AT 19:33

LOGGING CONSTANTS & GAMMA CALIBRATION

CORRELATION STEP (M.)	.25	CORRELATION INTERVAL (M.)	.50
BIT SIZE #1 (MM)	178.00	BIT DEPTH #1 (M.)	.00
BIT SIZE #2	156.00	BIT DEPTH #2	18.30
BIT SIZE #3	.00	BIT DEPTH #3	54.90
BIT SIZE #4	.00	BIT DEPTH #4	0.00
BIT SIZE #5	.00	BIT DEPTH #5	0.00
GAMMA CALIBRATOR (API)	510.00	GAMMA COUNTS	313.00
UNUSED	XXXXXXXX	SEARCH ANGLE (DEGREES)	45.00
STRUCTURAL DIP ANGLE (DEGREES)	.00	STRUCTURAL DIP AZI. (DEGREES)	.00
DECLINATION (DEGREES)	26.50 E	DETAIL PAD DATA	NO
CORRELATE	YES	CALIPER UNITS	MM
DEPTH UNITS	METRIC	CALIPER USED IN CALCULATIONS	YES

LEVEL CELL CALIBRATION

TILT(DEGREES)	LC1(COUNTS)	LC2(COUNTS)
-10.00	114.00	121.00
-8.00	136.00	142.00
-6.00	158.00	166.00
-4.00	179.00	185.00
-2.00	198.00	202.00
.00	221.00	222.00
2.00	243.00	240.00
4.00	264.00	258.00
6.00	285.00	277.00
8.00	305.00	303.00
10.00	326.00	322.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00

CALIBRATION IDENTIFICATION: VERT # 233

MAGNETOMETER CALIBRATION

	MAG.X	MAG.Y	MAG.Z
MAX.	209.00	213.00	199.00
MIN.	150.00	148.00	161.00

CALIBRATION IDENTIFICATION: VERT # 233

CALIPER CAL. & PAD OFFSETS

CALIBRATOR(MM)	COUNTS	PAD 2 OFFSET(MM)	PAD 3 OFFSET(MM)
76.20	133.00	.00	.00
101.60	155.00	.00	.00
127.00	179.00	.00	.00
152.40	201.00	.00	.00
203.20	250.00	.00	.00
254.00	307.00	.00	.00

CALIBRATION IDENTIFICATION: 221

COMPANY	MANALTA
WELL	T93R-11C
FIELD	SITE # 107
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-22
FIELD	SITE 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 28
WELL:
T93R-22
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	18-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	176.8M			
DEPTH-LOGGER	176.7M			
FIRST READING	176M			
LAST READING	0M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

T93R-22

VERTICALITY DATA LISTING

ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH

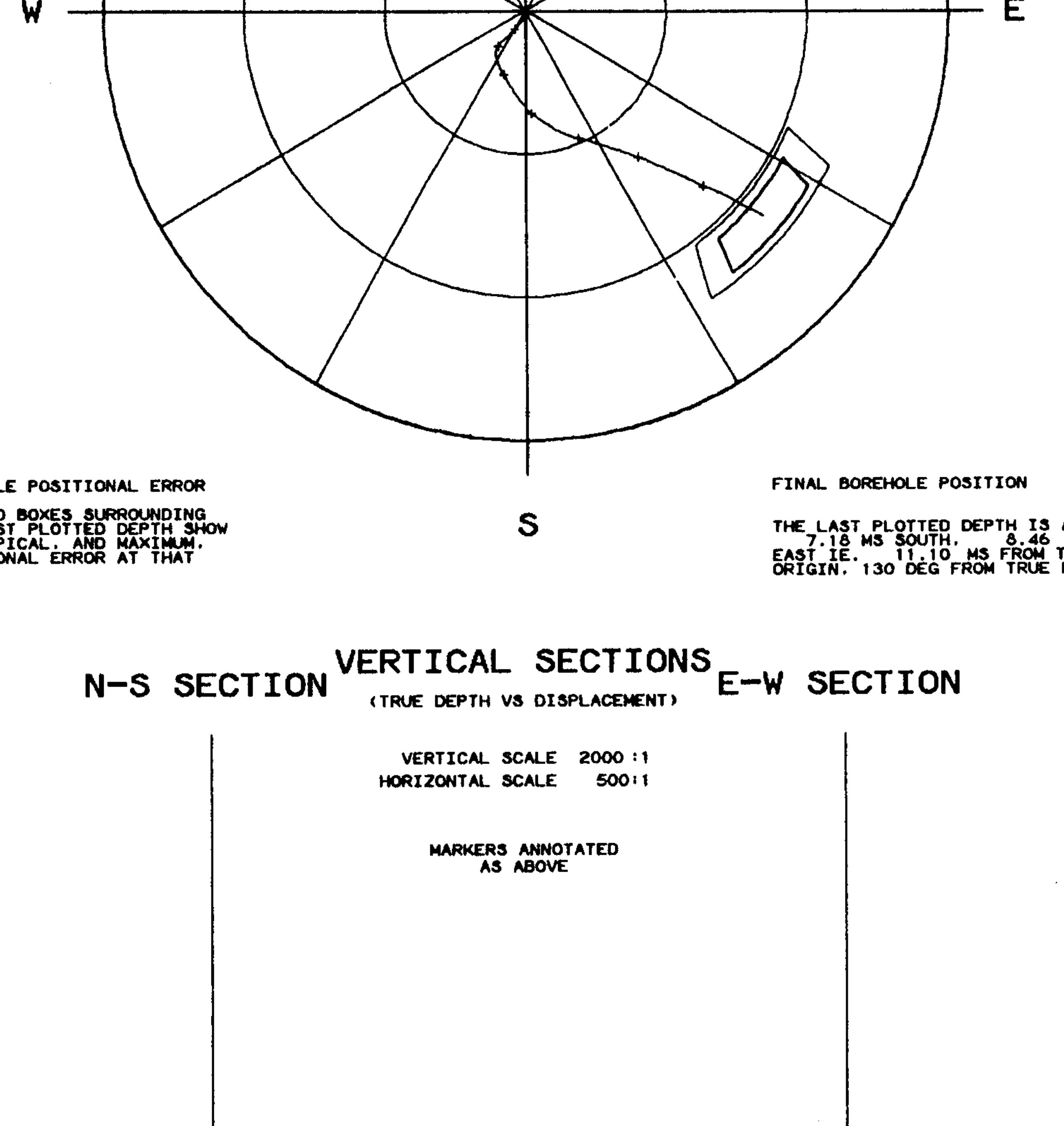
DATE PROCESSED: 19-SEP-1993
DATE LOGGED: 18-SEP-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
1.00	1.00	2.7	89	0.00	0.04	89	0.04	89	0.05	89	0.04	89	0.05	89	0.04
2.00	2.00	1.1	200	-0.01	0.06	97	0.07	98	0.07	96	0.06	97	0.07	97	0.06
3.00	3.00	0.8	236	-0.02	0.06	107	0.06	110	0.07	104	0.06	108	0.07	106	0.06
4.00	4.00	0.3	239	-0.03	0.06	115	0.06	119	0.07	109	0.06	117	0.06	112	0.06
5.00	5.00	0.4	199	-0.03	0.05	122	0.06	129	0.06	113	0.06	126	0.06	118	0.06
6.00	6.00	0.3	156	-0.04	0.05	125	0.06	134	0.07	115	0.06	130	0.07	121	0.06
7.00	7.00	0.4	8	-0.03	0.05	123	0.06	130	0.07	114	0.06	127	0.07	119	0.06
8.00	8.00	0.6	97	-0.03	0.06	118	0.06	123	0.07	111	0.06	120	0.07	114	0.06
9.00	9.00	0.6	103	-0.03	0.07	114	0.07	118	0.08	109	0.06	116	0.08	111	0.07
10.00	10.00	0.6	156	-0.03	0.07	115	0.08	118	0.09	110	0.07	117	0.09	112	0.08
11.00	11.00	0.6	156	-0.05	0.08	121	0.09	124	0.10	115	0.07	123	0.10	118	0.08
12.00	12.00	0.7	54	-0.05	0.08	123	0.10	127	0.12	118	0.08	125	0.11	121	0.09
13.00	13.00	0.8	186	-0.06	0.08	125	0.10	129	0.11	119	0.08	127	0.11	123	0.09
14.00	14.00	0.9	22	-0.04	0.08	119	0.09	123	0.11	114	0.08	121	0.10	116	0.08
15.00	15.00	0.9	356	-0.03	0.08	111	0.09	115	0.10	106	0.07	113	0.09	109	0.08
16.00	16.00	0.8	359	-0.02	0.08	102	0.08	105	0.09	98	0.07	104	0.09	100	0.08
17.00	17.00	0.9	337	0.00	0.08	93	0.08	95	0.09	90	0.07	94	0.08	91	0.07
18.00	18.00	0.6	306	0.00	0.07	87	0.07	89	0.08	84	0.06	88	0.07	85	0.06
19.00	19.00	1.3	223	0.00	0.05	94	0.05	97	0.06	90	0.05	95	0.06	92	0.05
20.00	20.00	1.3	218	-0.02	0.04	117	0.05	121	0.06	111	0.04	119	0.05	114	0.05
21.00	21.00	1.6	208	-0.04	0.03	142	0.06	146	0.07	138	0.05	144	0.06	140	0.05
22.00	22.00	1.8	198	-0.07	0.02	163	0.07	165	0.09	161	0.06	164	0.08	162	0.07
23.00	23.00	1.8	192	-0.10	0.01	175	0.10	175	0.12	174	0.09	175	0.11	174	0.09
24.00	23.99	2.4	203	-0.14	0.00	182	0.14	182	0.15	182	0.12	182	0.15	182	0.13
25.00	24.99	2.3	213	-0.17	-0.03	188	0.17	188	0.20	189	0.15	188	0.19	189	0.16
26.00	25.99	2.0	206	-0.21	-0.05	193	0.21	193	0.24	193	0.19	193	0.22	193	0.20
27.00	26.99	3.0	208	-0.25	-0.07	196	0.26	196	0.29	197	0.23	196	0.27	197	0.24
28.00	27.99	2.7	208	-0.29	-0.10	198	0.31	198	0.34	199	0.27	198	0.32	199	0.29
29.00	28.99	2.2	204	-0.33	-0.11	199	0.34	199	0.38	200	0.31	199	0.36	200	0.33
30.00	29.99	2.2	208	-0.36	-0.13	200	0.38	200	0.42	200	0.34	200	0.40	200	0.36
31.00	30.99	2.1	216	-0.40	-0.16	201	0.43	201	0.47	202	0.39	201	0.45	202	0.41
32.00	31.99	2.9	243	-0.43	-0.19	204	0.47	204	0.52	204	0.42	204	0.49	204	0.45
33.00	32.99	2.0	227	-0.45	-0.23	207	0.51	206	0.55	207	0.46	206	0.53	207	0.48
34.00	33.99	2.2	232	-0.48	-0.25	208	0.54	207	0.59	208	0.49	207	0.57	208	0.51
35.00	34.98	1.9	220	-0.50	-0.27	209	0.57	208	0.62	209	0.51	209	0.60	209	0.54
36.00	35.98	2.2	205	-0.53	-0.29	209	0.61	209	0.66	209	0.55	209	0.63	209	0.58
37.00	36.98	2.3	207	-0.57	-0.31	209	0.65	209	0.71	209	0.59	209	0.68	209	0.62
38.00	37.98	2.6	215	-0.60	-0.34	209	0.69	209	0.75	209	0.62	209	0.72	209	0.66
39.00	38.98	2.6	205	-0.64	-0.36	209	0.73	209	0.80	210	0.66	209	0.77	209	0.70
40.00	39.98	1.9	224	-0.67	-0.38	210	0.77	209	0.85	210	0.70	210	0.81	210	0.74
41.00	40.98	2.4	218	-0.71	-0.41	210	0.82	210	0.89	210	0.74	210	0.85	210	0.78
42.00	41.98	2.7	220	-0.74	-0.44	211	0.86	211	0.93	211	0.78	211	0.89	211	0.82
43.00	42.98	3.1	234	-0.77	-0.47	212	0.90	211	0.99	212	0.82	211	0.94	212	0.86
44.00	43.98	2.5	235	-0.80	-0.51	213	0.95	213	1.03	213	0.86	213	0.99	213	0.90
45.00	44.97	2.9	234	-0.82	-0.55	214	0.99	214	1.08	214	0.90	214	1.04	214	0.95
46.00	45.97	2.9	238	-0.85	-0.59	215	1.04	215	1.13	215	0.95	215	1.09	215	0.99
47.00	46.97	3.0	228	-0.88	-0.63	216	1.09	215	1.18	216	0.99	216	1.13	216	1.04
48.00	47.97	3.1	224	-0.92	-0.67	216	1.14	216	1.23	217	1.04	216	1.19	216	1.09
49.00	48.97	2.8	227	-0.96	-0.71	217	1.19	216	1.29	217	1.09	216	1.24	217	1.14
50.00	49.97	3.2	217	-0.99	-0.75	217	1.24	217	1.34	217	1.13	217	1.29	217	1.19
51.00	50.97	3.4	227	-1.03	-0.79	217	1.30	217	1.41	218	1.19	217	1.35	217	1.24
52.00	51.97	3.0	231	-1.07	-0.82	218	1.35	217	1.46	218	1.24	218	1.40	218	1.29
53.00	52.96	2.3	232	-1.09	-0.86	218	1.39	218	1.51	218	1.28	218	1.45	218	1.33
54.00	53.96	2.0	235	-1.12	-0.89	219	1.43	218	1.55	219	1.31	218	1.49	219	1.37
55.00	54.96	1.7	231	-1.14	-0.92	219	1.46	219	1.58	219	1.34	219	1.52	219	1.40
56.00	55.96	1.7	235	-1.16	-0.94	219	1.49	219	1.62	219	1.37	219	1.56	219	1.43
57.00	56.96	1.6	236	-1.18	-0.97	219	1.52	219	1.65	220	1.39	219	1.59	220	1.46
58.00	57.96	1.1	195	-1.19	-0.98	219	1.54	219	1.68	220	1.41	219	1.61	220	1.48
59.00	58.96	2.6	182	-1.22	-0.98	219	1.57	219	1.70	219	1.43	219	1.64	219	1.50
60.00	59.96	2.9	220	-1.27	-1.00	218	1.62	218	1.76	218	1.48	218	1.69	218	1.55
61.00	60.96	2.2	214	-1.31	-1.03	218	1.66	218	1.80	218	1.52	218	1.73	218	1.59
62.00	61.96	2.1	210	-1.34	-1.05	218	1.70	218	1.85	218	1.55	218	1.77	218	1.63
63.00	62.96	2.1	213	-1.37	-1.06	218	1.74	218	1.88	218	1.59	218	1.81	218	1.66
64.00	63.96	2.1	205	-1.40	-1.08	218	1.77	217	1.92	218	1.62	218	1.85	218	1.70
65.00	64.96	1.8	181	-1.43	-1.09	217	1.80	217	1.96	218	1.65	217	1.88	217	1.73
66.00	65.96	1.9	177	-1.46	-1.10	217	1.83	217	1.99	217	1.67	217	1.91	217	1.75
67.00	66.96	2.3	169	-1.50	-1.09	216	1.86	216	2.02	216	1.69	216	1.94	216	1.77
68.00	67.95	2.8	164	-1.54	-1.08	215	1.88	215	2.05	215	1.72	215	1.97	215	1.80
69.00	68.95	2.8	172	-1.59	-1.08	214	1.92	214	2.09	214	1.75	214	2.00	214	1.84
70.00	69.95	3.0	164	-1.64	-1.06	213	1.95	213	2.12	213	1.79	213	2.04	213	1.87
71.00	70.95	3.3	164	-1.69	-1.05	212	1.99	212	2.16	212	1.82	212	2.08	212	1.90
72.00	71.95	3.3	157	-1.75	-1.03	211	2.03	211	2.20	211	1.86	211	2.11	211	1.94
73.00	72.95	3.1	164	-1.80	-1.02	210	2.06	209	2.24	210	1.89	209	2.15	210	1.98
74.00	73.95	3.8	157	-1.85	-0.99	208	2.10	208	2.28	208	1.92	208	2.19	208	2.01
75.00	74.94	3.5	154	-1.91	-0.97	207	2.14	207	2.32	207	1.96	207	2.23	207	2.05
76.00	75.94	4.2	155	-1.97	-0.94	206	2.18	206	2.37	206	2.00	206	2.28	206	2.09
77.00	76.94	4.2	156	-2.03	-0.91	204	2.23	204	2.41	204	2.04	204	2.32	204	2.14
78.00	77.94	4.5	148	-2.10	-0.88	203	2.28	203	2.46	203	2.09	203	2.37	203	2.18
79.00	78.93	4.6	149	-2.17	-0.84	201	2.33	201	2.51	201	2.14	201	2.42	201	2.23
80.00	79.93	4.7	148	-2.24	-0.80	200	2.38	200	2.57	199	2.19	200	2.47	199	2.28
81.00	80.92	4.8	149	-2.31	-0.74	198	2.43	198	2.62	197	2.24	198	2.53	198	2.33
82.00	81.92	5.0	146	-2.39	-0.70	196	2.49	197	2.68	196	2.29	196	2.58	196	2.39
83.00	82.92	5.2	148	-2.46	-0.65	195	2.55	195	2.75	194	2.35	195	2.65	195	2.45
84.00	83.91	4.6	144	-2.54	-0.61	193	2.61	194	2.80	193	2.41	194	2.71	193	2.51
85.00	84.91	4.7	148	-2.61	-0.56	192	2.67	193	2.87	192	2.47	192	2.77	192	2.57
86.00	85.91	4.7	147	-2.68	-0.52	191	2.73	191	2.93	190	2.53	191	2.83	191	2.63
87.00	86.90	5.0	146	-2.75	-0.47	190	2.79	190	2.99	189	2.58	190	2.89	190	2.68
88.00	87.90	4.7	149	-2.81	-0.43	189	2.84	189	3.05	188	2.64	189	2.95	188	2.74
89.00	88.90	5.0	150	-2.88	-0.38	188	2.90	188	3.11	187	2.69	188	3.00	187	2.80
90.00	89.89	4.0	151	-2.94	-0.34	187	2.96	187	3.17	186	2.75	187	3.07	186	2.86
91.00	90.89	4.9	140	-3.01	-0.29	186	3.02	186	3.23	185	2.81	186	3.13	185	2.91
92.00	91.89	5.0	142	-3.07	-0.24	185	3.08	185	3.29	184	2.86	185	3.18	184	2.97
93.00	92.88	5.0	140	-3.13	-0.19	183	3.14	184	3.35	183	2.92	184	3.24	183	3.03
94.00	93.88	4.9	142	-3.19	-0.14	182	3.20	183	3.41	182	2.98	183	3.30	182	3.09
95.00	94.88	4.7	145	-3.25	-0.09	182	3.26	182	3.48	181	3.04	182	3.37	181	3.15
96.00	95.87	5.5	136	-3.32	-0.03	181	3.32	181	3.54	180	3.10	181	3.43	180	3.21
97.00	96.87	3.9	122	-3.37	0.03	179	3.37	180	3.60	179	3.15	180	3.49	179	3.26
98.00	97.87	4.7	131	-3.44	0.09	178	3.44	179	3.66	178	3.22	179	3.55	178	3.33
99.00	98.86	4.5	136	-3.50	0.15	178	3.50	178	3.73	177	3.28	178	3.62	177	3.39
100.00	99.86	5.4	131	-3.56	0.22	177	3.56	177	3.79	176	3.34	177	3.68	176	3.45
101.00	100.85	5.6	130	-3.61	0.29	175	3.63	176	3.86	175	3.40	176	3.74	175	3.51
102.00	101.85	5.2	128	-3.67	0.36	174	3.69	175	3.92	174	3.46	175	3.81	174	3.58
103.00	102.85	4.9	126	-3.73	0.44	173	3.76	174	3.99	172	3.52	174	3.87	173	3.64
104.00	103.84	5.8	125	-3.79	0.52	172	3.82	173	4.06	171	3.59	173	3.94	172	3.70
105.00	104.84	6.0	129	-3.84	0.59	171	3.89	172	4.12	170	3.65	172	4.00	171	3.77
106.00	105.83	4.7	114	-3.89	0.67	170	3.95	171	4.19	169	3.72	171	4.07	170	3.83
107.00	106.83	5.5	123	-3.95	0.76	169	4.02	170	4.26	168	3.78	170	4.14	169	3.90
108.00	107.82	5.3	116	-4.00	0.84	168	4.09	169	4.33	167	3.85	168	4.21	168	3.97
109.00	108.82	5.6	121	-4.05	0.93	167	4.15	168	4.40	166	3.91	168	4.27	167	4.03
110.00	109.81	5.3	116	-4.10	1.01	166	4.22	167	4.47	165	3.98	167	4.35	166	4.10
111.00	110.81	5.5	117	-4.15	1.10	165	4.29	166	4.54	164	4.05	166	4.41	165	4.17
112.00	111.80	5.5	118	-4.19	1.18	164	4.36	165	4.60	163	4.11	165	4.48	164	4.23
113.00	112.80	5.7	117	-4.24	1.27	163	4.42	164	4.67	162	4.18	164	4.55	163	4.30
114.00	113.79	5.2	109	-4.27	1.35	162	4.48	163	4.73	161	4.23	163	4.60	162	4.36
115.00	114.79	5.6	112	-4.31	1.44	162	4.54	162	4.79	161	4.30	162	4.67	161	4.42
116.00	115.78	5.0	103	-4.34	1.53	161	4.60	161	4.85	160	4.35	161	4.73	160	4.48
117.00	116.78	5.3	102	-4.37	1.62	160	4.66	161	4.91	159	4.41	160	4.78	159	4.53
118.00	117.78	5.1	109	-4.40	1.70	159	4.72	160	4.97	158	4.47	159	4.85	158	4.59
119.00	118.77	5.1	88	-4.42	1.80	158	4.77	159	5.02	157	4.52	158	4.89	157	4.64
120.00	119.77	5.5	103	-4.45	1.89	157	4.83	158	5.09	156	4.58	157	4.96	157	4.71
121.00	120.76	4.5	92	-4.46	1.98	156	4.88	157	5.14	155	4.63	156	5.01	156	4.76
122.00	121.76	6.0	100	-4.48	2.08	155	4.94	156	5.19	154	4.68	155	5.06	155	4.81
123.00	122.75	6.1	109	-4.51	2.18	154	5.01	155	5.27	153	4.76	155	5.14	154	4.88
124.00	123.74	6.7	113	-4.55	2.28	153	5.09	154	5.35	152	4.83	154	5.22	153	4.96
125.00	124.74	6.1	107	-4.58	2.39	152	5.16	153	5.42	151	4.91	153	5.29	152	5.03
126.00	125.73	6.3	114	-4.61	2.49	152	5.24	152	5.50	151	4.98	152	5.37	151	5.11
127.00	126.73	5.9	104	-4.64	2.60	151	5.32	152	5.58	150	5.06	151	5.45	150	5.19
128.00	127.72	6.9	113	-4.68	2.70	150	5.40	151	5.66	149	5.14	150	5.53	150	5.27
129.00	128.71	6.1	105	-4.71	2.81	149	5.49	150	5.75	148	5.22	150	5.62	149	5.36
130.00	129.71	6.2	107	-4.75	2.91	148	5.57	149	5.83	147	5.30	149	5.70	148	5.44
131.00	130.70	5.9	102	-4.78	3.02	148	5.65	149	5.92	147	5.38	148	5.78	147	5.52
132.00	131.70	6.4	105	-4.81	3.12	147	5.73	148	6.00	146	5.46	147	5.86	147	5.59
133.00	132.69	6.3	106	-4.84	3.22	146	5.81	147	6.08	145	5.54	147	5.95	146	5.68
134.00	133.68	6.1	113	-4.87	3.33	146	5.90	147	6.17	145	5.63	146	6.04	145	5.76
135.00	134.68	6.3	112	-4.92	3.44	145	6.00	146	6.28	144	5.73	145	6.14	145	5.87
136.00	135.67	6.3	107	-4.95	3.55	144	6.09	145	6.37	143	5.82	145	6.23	144	5.95
137.00	136.66	6.5	113	-4.99	3.65	144	6.18	145	6.46	143	5.91	144	6.32	143	6.04
138.00	137.66	7.7	118	-5.04	3.77	143	6.29	144	6.57	142	6.01	144	6.43	143	6.15
139.00	138.65	6.4	105	-5.08	3.88	143	6.39	143	6.67	142	6.11	143	6.53	142	6.25
140.00	139.64	6.5	102	-5.10	3.99	142	6.47	143	6.76	141	6.19	142	6.62	142	6.33
141.00	140.64	6.6	111	-5.13	4.10	141	6.57	142	6.85	140	6.28	142	6.71	141	6.43
142.00	141.63	8.1	118	-5.19	4.21	141	6.68	142	6.97	140	6.40	141	6.83	140	6.54
143.00	142.62	7.2	114	-5.25	4.33	140	6.80	141	7.09	140	6.52	141	6.95	140	6.66
144.00	143.61	7.1	115	-5.30	4.45	140	6.92	141	7.21	139	6.63	140	7.06	140	6.77
145.00	144.60	6.8	109	-5.34	4.56	140	7.02	140	7.31	139	6.73	140	7.17	139	6.87
146.00	145.60	6.7	110	-5.38	4.66	139	7.12	140	7.41	138	6.82	139	7.26	139	6.97
147.00	146.59	5.4	113	-5.41	4.77	139	7.21	139	7.51	138	6.92	139	7.36	138	7.06
148.00	147.58	7.7	115	-5.47	4.90	138	7.35	139	7.65	137	7.05	139	7.49	138	7.20
149.00	148.57	7.8	117	-5.53	5.02	138	7.47	139	7.77	137	7.17	138	7.62	137	7.32
150.00	149.56	7.4	117	-5.60	5.14	137	7.60	138	7.90	137	7.29	138	7.75	137	7.45
151.00	150.56	7.0	113	-5.64	5.25	137	7.71	138	8.01	136	7.40	137	7.86	137	7.55
152.00	151.55	6.8	104	-5.68	5.36	137	7.81	137	8.12	136	7.50	137	7.96	136	7.66
153.00	152.54	7.7	115	-5.73	5.47	136	7.92	137	8.23	135	7.61	137	8.07	136	7.76
154.00	153.53	8.0	119	-5.79	5.59	136	8.05	137	8.37	135	7.74	136	8.21	136	7.89
155.00	154.52	7.6	114	-5.85	5.71	136	8.17	136	8.49	135	7.86	136	8.33	135	8.02
156.00	155.51	7.4	113	-5.91	5.83	135	8.30	136	8.62	135	7.98	136	8.46	135	8.14
157.00	156.51	7.5	117	-5.95	5.95	135	8.41	136	8.73	134	8.09	135	8.57	135	8.25
158.00	157.50	8.2	118	-6.00	6.07	135	8.53	135	8.86	134	8.21	135	8.70	134	8.37
159.00	158.49	8.2	118	-6.08	6.20	134	8.68	135	9.01	134	8.35	135	8.84	134	8.52
160.00	159.48	7.4	110	-6.13	6.32	134	8.80	135	9.13	133	8.47	134	8.97	134	8.64
161.00	160.47	7.0	111	-6.18	6.44	134	8.92	135	9.25	133	8.59	134	9.09	133	8.75
162.00	161.46	7.4	114	-6.21	6.55	133	9.03	134	9.36	133	8.69	134	9.19	133	8.86
163.00	162.45	7.4	113	-6.26	6.67	133	9.15	134	9.49	132	8.81	134	9.32	133	8.98
164.00	163.45	7.2	110	-6.31	6.79	133	9.27	134	9.61	132	8.93	133	9.44	133	9.10
165.00	164.44	7.6	119	-6.37	6.91	133	9.40	133	9.74	132	9.05	133	9.57	132	9.22
166.00	165.43	8.9	120	-6.44	7.03	132	9.53	133	9.88	132	9.19	133	9.70	132	9.36
167.00	166.42	8.4	118	-6.50	7.15	132	9.66	133	10.01	132	9.31	133	9.84	132	9.49
168.00	167.41	8.5	120	-6.57	7.28	132	9.81	133	10.16	131	9.46	132	9.99	132	9.63
169.00	168.39	8.7	120	-6.64	7.42	132	9.96	133	10.31	131	9.60	132	10.14	132	9.78
170.00	169.38	9.2	117	-6.71	7.55	132	10.11	132	10.46	131	9.75	132	10.29	131	9.93
171.00	170.37	8.9	118	-6.79	7.69	131	10.26	132	10.62	131	9.90	132	10.44	131	10.08
172.00	171.36	9.0	119	-6.86	7.83	131	10.41	132	10.77	131	10.05	132	10.59	131	10.23
173.00	172.35	9.1	116	-6.93	7.97	131	10.56	132	10.93	130	10.20	131	10.75	131	10.38
174.00	173.33	9.8	114	-7.00	8.12	131	10.72	131	11.09	130	10.35	131	10.90	130	10.53
175.00	174.32	8.9	119	-7.07	8.26	131	10.87	131	11.25	130	10.50	131	11.06	130	10.69
176.00	175.31	9.0	113	-7.14	8.39	130	11.02	131	11.40	130	10.65	131	11.21	130	10.83
176.50	175.80	9.6	116	-7.18	8.46	130	11.10	131	11.47	130	10.72	131	11.29	130	10.91

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......00
LAST PLOTTED DEPTH......176.50
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........20
FIRST DEPTH MARKER AT...20
LAST DEPTH MARKER AT....160

PLOT WITH RESPECT TO TRUE NORTH
SCALE 200:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

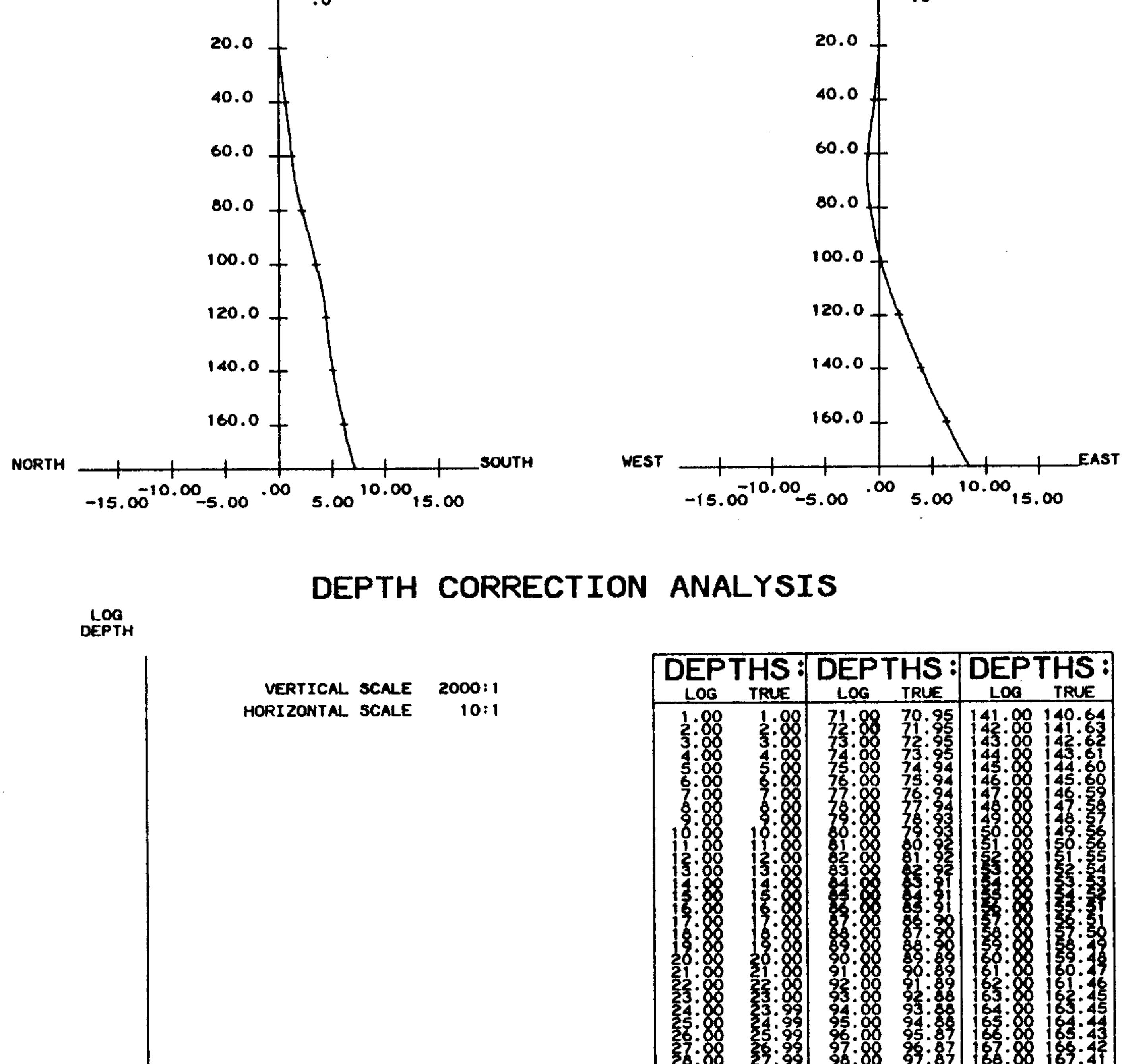
THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

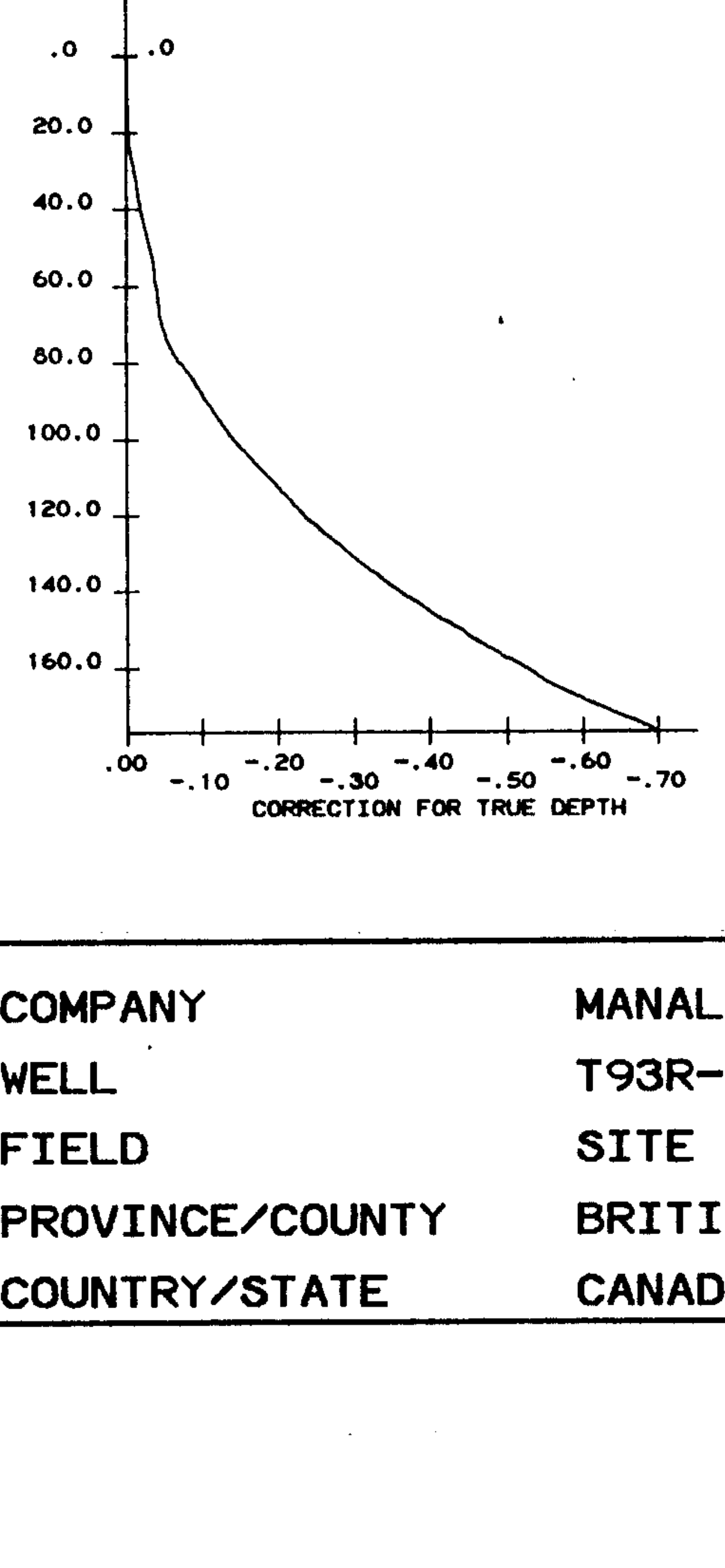
THE LAST PLOTTED DEPTH IS AT 7.18 MS SOUTH, 8.46 MS EAST IE. 11.10 MS FROM THE ORIGIN, 130 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)



DEPTH CORRECTION ANALYSIS



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
1.00	1.00	71.00	70.95	141.00	140.64
2.00	2.00	72.00	71.95	142.00	141.63
3.00	3.00	73.00	72.95	143.00	142.62
4.00	4.00	74.00	73.95	144.00	143.61
5.00	5.00	75.00	74.94	145.00	144.60
6.00	6.00	76.00	75.94	146.00	145.60
7.00	7.00	77.00	76.94	147.00	146.59
8.00	8.00	78.00	77.94	148.00	147.58
9.00	9.00	79.00	78.93	149.00	148.57
10.00	10.00	80.00	79.93	150.00	149.56
11.00	11.00	81.00	80.92	151.00	150.56
12.00	12.00	82.00	81.92	152.00	151.55
13.00	13.00	83.00	82.92	153.00	152.54
14.00	14.00	84.00	83.91	154.00	153.53
15.00	15.00	85.00	84.91	155.00	154.52
16.00	16.00	86.00	85.91	156.00	155.51
17.00	17.00	87.00	86.90	157.00	156.51
18.00	18.00	88.00	87.90	158.00	157.50
19.00	19.00	89.00	88.90	159.00	158.49
20.00	20.00	90.00	89.89	160.00	159.48
21.00	21.00	91.00	90.89	161.00	160.47
22.00	22.00	92.00	91.89	162.00	161.46
23.00	23.00	93.00	92.88	163.00	162.45
24.00	23.99	94.00	93.88	164.00	163.45
25.00	24.99	95.00	94.88	165.00	164.44
26.00	25.99	96.00	95.87	166.00	165.43
27.00	26.99	97.00	96.87	167.00	166.42
28.00	27.99	98.00	97.87	168.00	167.41
29.00	28.99	99.00	98.86	169.00	168.39
30.00	29.99	100.00	99.86	170.00	169.38
31.00	30.99	101.00	100.85	171.00	170.37
32.00	31.99	102.00	101.85	172.00	171.36
33.00	32.99	103.00	102.85	173.00	172.35
34.00	33.99	104.00	103.84	174.00	173.33
35.00	34.98	105.00	104.84	175.00	174.32
36.00	35.98	106.00	105.83	176.00	175.31
37.00	36.98	107.00	106.83	176.50	175.80
38.00	37.98	108.00	107.82		
39.00	38.98	109.00	108.82		
40.00	39.98	110.00	109.81		
41.00	40.98	111.00	110.81		
42.00	41.98	112.00	111.80		
43.00	42.98	113.00	112.80		
44.00	43.98	114.00	113.79		
45.00	44.97	115.00	114.79		
46.00	45.97	116.00	115.78		
47.00	46.97	117.00	116.78		
48.00	47.97	118.00	117.78		
49.00	48.97	119.00	118.77		
50.00	49.97	120.00	119.77		
51.00	50.97	121.00	120.76		
52.00	51.97	122.00	121.76		
53.00	52.96	123.00	122.75		
54.00	53.96	124.00	123.74		
55.00	54.96	125.00	124.74		
56.00	55.96	126.00	125.73		
57.00	56.96	127.00	126.73		
58.00	57.96	128.00	127.72		
59.00	58.96	129.00	128.71		
60.00	59.96	130.00	129.71		
61.00	60.96	131.00	130.70		
62.00	61.96	132.00	131.70		
63.00	62.96	133.00	132.69		
64.00	63.96	134.00	133.68		
65.00	64.96	135.00	134.68		
66.00	65.96	136.00	135.67		
67.00	66.96	137.00	136.66		
68.00	67.95	138.00	137.66		
69.00	68.95	139.00	138.65		
70.00	69.95	140.00	139.64		

COMPANY	MANALTA
WELL	T93R-22
FIELD	SITE 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 28
WELL:
T93R-22
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-22
FIELD SITE 28
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	18-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	176.8M			
DEPTH-LOGGER	176.7M			
FIRST READING	176M			
LAST READING	OOM			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	OOM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 18-SEP-1993 AT 14:19
FILENAME: DD3AR22M.CIB RUN ID: MAIN LOG PLOTTED ON 18-SEP-1993 AT 14:59

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 18-SEP-1993 AT 14:19
FILENAME: DD3AR22M.CIB RUN ID: MAIN LOG PLOTTED ON 18-SEP-1993 AT 14:20

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 18-SEP-1993 AT 14:09

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	176.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-22
FIELD	SITE 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-22
FIELD	SITE 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 28
WELL: T93R-22
COMPANY: MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	18-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	176.8M			
DEPTH-LOGGER	176.7M			
FIRST READING	176M			
LAST READING	0OM			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 18-SEP-1993 AT 14:19
FILENAME: DD3AR22B.CIB RUN ID: DETAIL SECTION PLOTTED ON 19-SEP-1993 AT 11:02

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000
92
123
124
125
126
127

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 18-SEP-1993 AT 14:19
FILENAME: DD3AR22B.CIB RUN ID: DETAIL SECTION PLOTTED ON 19-SEP-1993 AT 11:02

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 18-SEP-1993 AT 14:19
FILENAME: DD3AR22A.CIB RUN ID: DETAIL SECTION PLOTTED ON 19-SEP-1993 AT 10:59

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000
141
142
143
144
172
173

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 18-SEP-1993 AT 14:19
FILENAME: DD3AR22A.CIB RUN ID: DETAIL SECTION PLOTTED ON 19-SEP-1993 AT 10:59

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 18-SEP-1993 AT 14:09 DATA LAST REPROCESSED: 19-SEP-1993 AT 10:28

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	176.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-22
FIELD	SITE 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

BPB

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 28
WELL: T93R-22
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-22
FIELD SITE 28
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS: KB N/A DF N/A GL

DATE	18-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	176.8M			
DEPTH-LOGGER	176.7M			
FIRST READING	176M			
LAST READING	00M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASIG RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 18-SEP-1993 AT 14:19
FILENAME: DD3AR22B.CIB RUN ID: DETAIL SECTION PLOTTED ON 19-SEP-1993 AT 10:41

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 18-SEP-1993 AT 14:19
FILENAME: DD3AR22B.CIB RUN ID: DETAIL SECTION PLOTTED ON 19-SEP-1993 AT 10:36

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 18-SEP-1993 AT 14:19
FILENAME: DD3AR22A.CIB RUN ID: DETAIL SECTION PLOTTED ON 19-SEP-1993 AT 10:35

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 18-SEP-1993 AT 14:19
FILENAME: DD3AR22A.CIB RUN ID: DETAIL SECTION PLOTTED ON 19-SEP-1993 AT 10:31

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 18-SEP-1993 AT 14:09 DATA LAST REPROCESSED: 19-SEP-1993 AT 10:28

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	176.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-22
FIELD	SITE 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS #879

COMPANY	MANALTA
WELL	T93R-23
FIELD	SITE # 19
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA
LOCATION	TELKWA
LSD	
SEC	
TWP	
RGE	
OTHER SERVICES	CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 19
WELL:
T93R-23
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	24-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	165.2M			
DEPTH-LOGGER	164.8M			
FIRST READING	164.5M			
LAST READING	0M			
CASING-DRILLER	36.0M			
CASING-LOGGER	36.0M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

T93R-23

VERTICALITY DATA LISTING

ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH

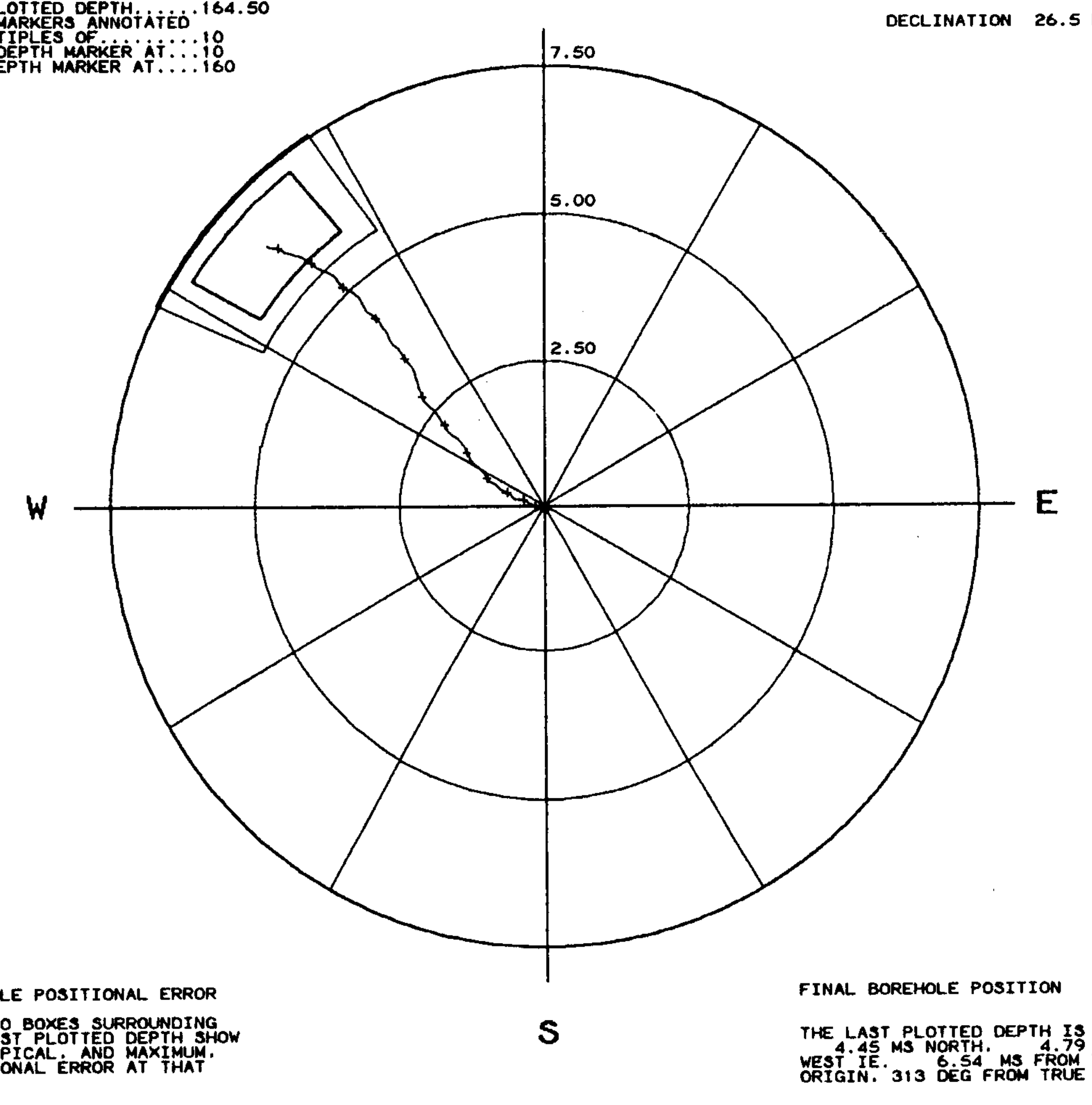
DATE PROCESSED: 25-SEP-1993
DATE LOGGED: 24-SEP-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
3.00	3.00	1.0	152	-0.01	0.01	151	0.01	151	0.01	152	0.01	151	0.01	151	0.01
4.00	4.00	0.7	183	-0.02	0.01	157	0.03	157	0.03	157	0.02	157	0.03	157	0.02
5.00	5.00	0.7	136	-0.04	0.01	163	0.04	163	0.05	163	0.03	163	0.04	163	0.04
6.00	6.00	0.8	185	-0.05	0.01	166	0.05	166	0.07	166	0.04	166	0.06	166	0.05
7.00	7.00	0.5	180	-0.06	0.01	168	0.06	169	0.08	168	0.05	169	0.07	168	0.05
8.00	8.00	0.5	90	-0.06	0.02	163	0.07	163	0.09	164	0.05	163	0.08	163	0.06
9.00	9.00	0.5	61	-0.07	0.03	157	0.07	156	0.09	159	0.05	157	0.08	158	0.06
10.00	10.00	0.4	49	-0.06	0.03	152	0.07	150	0.09	155	0.05	151	0.08	153	0.06
11.00	11.00	0.4	56	-0.06	0.04	146	0.07	144	0.09	151	0.05	145	0.08	148	0.06
12.00	12.00	0.4	7	-0.05	0.04	141	0.07	138	0.09	148	0.05	139	0.08	144	0.06
13.00	13.00	0.4	52	-0.05	0.05	137	0.07	133	0.09	146	0.05	135	0.08	141	0.06
14.00	14.00	0.4	338	-0.05	0.05	134	0.07	129	0.08	144	0.05	131	0.07	138	0.06
15.00	15.00	0.3	327	-0.04	0.04	133	0.06	127	0.08	144	0.05	130	0.07	138	0.05
16.00	16.00	0.4	250	-0.04	0.04	137	0.06	131	0.07	147	0.04	134	0.06	141	0.05
17.00	17.00	0.4	236	-0.04	0.03	143	0.05	138	0.06	150	0.04	141	0.06	146	0.05
18.00	18.00	0.4	294	-0.04	0.03	149	0.05	145	0.06	154	0.04	147	0.05	151	0.05
19.00	19.00	0.4	214	-0.05	0.02	155	0.05	153	0.06	157	0.04	154	0.06	156	0.05
20.00	20.00	0.4	249	-0.05	0.02	162	0.05	163	0.06	161	0.04	162	0.05	162	0.05
21.00	21.00	0.3	237	-0.05	0.01	169	0.05	171	0.06	165	0.04	170	0.06	167	0.05
22.00	22.00	0.4	212	-0.05	0.00	175	0.05	179	0.06	168	0.04	177	0.06	172	0.05
23.00	23.00	0.3	94	-0.06	0.01	173	0.06	176	0.07	168	0.04	174	0.06	170	0.05
24.00	24.00	0.3	154	-0.05	0.01	170	0.06	173	0.07	167	0.04	172	0.06	169	0.05
25.00	25.00	0.2	132	-0.06	0.01	170	0.06	171	0.07	167	0.04	170	0.06	168	0.05
26.00	26.00	0.3	44	-0.05	0.01	166	0.06	167	0.07	166	0.04	167	0.06	166	0.05
27.00	27.00	0.5	77	-0.05	0.02	162	0.06	160	0.07	164	0.04	161	0.06	163	0.05
28.00	28.00	0.4	46	-0.05	0.02	156	0.06	153	0.07	162	0.04	154	0.06	159	0.05
29.00	29.00	0.3	49	-0.05	0.03	150	0.06	145	0.07	158	0.04	147	0.06	153	0.05
30.00	30.00	0.3	74	-0.04	0.03	144	0.06	137	0.07	154	0.04	140	0.06	148	0.05
31.00	31.00	0.2	311	-0.04	0.04	141	0.06	132	0.07	154	0.04	136	0.06	147	0.05
32.00	32.00	0.1	307	-0.04	0.04	140	0.06	131	0.07	153	0.04	135	0.06	146	0.05
33.00	33.00	0.4	224	-0.04	0.03	142	0.06	135	0.07	153	0.04	138	0.06	147	0.05
34.00	34.00	0.2	206	-0.05	0.03	146	0.06	141	0.07	154	0.05	143	0.06	150	0.05
35.00	35.00	0.4	172	-0.06	0.03	150	0.06	146	0.08	156	0.05	148	0.07	153	0.06
36.00	36.00	0.5	263	-0.06	0.03	157	0.07	154	0.08	162	0.05	155	0.07	159	0.06
37.00	37.00	0.8	307	-0.06	0.02	161	0.06	158	0.07	166	0.05	159	0.07	163	0.05
38.00	38.00	1.0	310	-0.05	0.01	168	0.05	164	0.06	174	0.04	166	0.05	171	0.04
39.00	39.00	1.1	301	-0.04	0.00	183	0.04	178	0.04	189	0.03	180	0.04	186	0.04
40.00	40.00	0.9	305	-0.03	-0.02	206	0.03	203	0.04	210	0.03	205	0.04	208	0.03
41.00	41.00	0.7	278	-0.03	-0.03	229	0.04	229	0.04	229	0.03	229	0.04	229	0.04
42.00	42.00	0.8	296	-0.02	-0.04	244	0.05	245	0.06	243	0.04	245	0.05	244	0.05
43.00	43.00	1.1	291	-0.02	-0.06	256	0.06	257	0.07	255	0.05	257	0.07	255	0.06
44.00	44.00	1.6	284	-0.01	-0.08	263	0.08	264	0.10	262	0.07	264	0.09	263	0.08
45.00	45.00	1.1	271	-0.01	-0.11	266	0.11	267	0.13	265	0.09	266	0.12	266	0.10
46.00	46.00	0.9	251	-0.01	-0.13	265	0.13	266	0.15	265	0.11	266	0.14	265	0.12
47.00	47.00	0.8	244	-0.02	-0.15	264	0.15	264	0.17	263	0.12	264	0.16	264	0.14
48.00	48.00	0.9	259	-0.02	-0.16	263	0.16	263	0.19	262	0.13	263	0.17	262	0.15
49.00	49.00	0.6	284	-0.02	-0.17	263	0.17	263	0.20	262	0.14	263	0.18	263	0.15
50.00	50.00	0.8	319	-0.02	-0.17	265	0.18	265	0.21	264	0.14	265	0.19	264	0.16
51.00	51.00	0.9	321	-0.01	-0.18	268	0.19	268	0.22	267	0.15	268	0.20	268	0.17
52.00	52.00	1.1	319	0.00	-0.20	271	0.20	272	0.23	271	0.16	272	0.21	271	0.18
53.00	53.00	0.7	292	0.02	-0.21	275	0.21	275	0.25	274	0.17	275	0.23	274	0.19
54.00	54.00	1.2	310	0.03	-0.23	278	0.23	278	0.27	277	0.19	278	0.25	278	0.21
55.00	55.00	1.5	310	0.05	-0.25	281	0.26	281	0.30	280	0.21	281	0.28	280	0.23
56.00	56.00	1.4	299	0.06	-0.28	282	0.28	282	0.33	282	0.23	282	0.31	282	0.26
57.00	56.99	1.7	280	0.07	-0.30	283	0.31	283	0.36	283	0.25	283	0.33	283	0.28
58.00	57.99	1.6	285	0.08	-0.32	283	0.33	284	0.39	283	0.28	284	0.36	283	0.31
59.00	58.99	1.6	305	0.09	-0.35	284	0.36	284	0.42	284	0.30	284	0.39	284	0.33
60.00	59.99	2.0	295	0.10	-0.37	285	0.39	285	0.45	285	0.32	285	0.42	285	0.36
61.00	60.99	2.0	278	0.11	-0.41	285	0.43	285	0.49	285	0.36	285	0.46	285	0.39
62.00	61.99	2.1	268	0.12	-0.45	285	0.47	285	0.54	284	0.40	285	0.50	285	0.43
63.00	62.99	1.3	265	0.12	-0.49	283	0.50	283	0.58	283	0.43	283	0.54	283	0.47
64.00	63.99	1.0	275	0.12	-0.51	283	0.53	283	0.60	283	0.45	283	0.57	283	0.49
65.00	64.99	1.3	295	0.12	-0.53	283	0.55	283	0.63	283	0.47	283	0.59	283	0.51
66.00	65.99	1.3	321	0.14	-0.55	284	0.57	284	0.65	284	0.48	284	0.61	284	0.52
67.00	66.99	1.7	318	0.16	-0.57	285	0.59	286	0.67	285	0.50	286	0.63	285	0.54
68.00	67.99	1.3	319	0.18	-0.58	287	0.61	287	0.70	287	0.52	287	0.66	287	0.57
69.00	68.99	1.5	306	0.20	-0.61	288	0.64	288	0.74	288	0.55	288	0.69	288	0.60
70.00	69.99	2.4	299	0.23	-0.65	289	0.69	289	0.79	290	0.60	289	0.74	289	0.64
71.00	70.99	2.7	293	0.25	-0.69	290	0.74	290	0.84	290	0.64	290	0.79	290	0.69
72.00	71.99	1.8	298	0.27	-0.73	290	0.78	290	0.88	290	0.67	290	0.83	290	0.73
73.00	72.99	2.0	303	0.28	-0.76	290	0.81	290	0.92	291	0.71	290	0.87	290	0.76
74.00	73.98	1.9	320	0.31	-0.79	292	0.85	291	0.95	292	0.74	291	0.90	292	0.79
75.00	74.98	3.3	311	0.35	-0.82	293	0.89	293	1.00	293	0.78	293	0.95	293	0.84
76.00	75.98	3.2	298	0.38	-0.87	294	0.95	294	1.06	294	0.83	294	1.01	294	0.89
77.00	76.98	2.8	284	0.40	-0.92	294	1.00	294	1.12	294	0.89	294	1.06	294	0.94
78.00	77.98	1.9	348	0.42	-0.95	294	1.04	294	1.16	294	0.91	294	1.10	294	0.98
79.00	78.98	1.5	320	0.44	-0.97	295	1.06	294	1.19	295	0.94	294	1.13	295	1.00
80.00	79.98	2.8	331	0.48	-0.99	296	1.10	296	1.23	296	0.97	296	1.17	296	1.04
81.00	80.98	3.2	328	0.53	-1.01	297	1.14	297	1.27	298	1.01	297	1.21	298	1.08
82.00	81.98	4.2	324	0.57	-1.04	299	1.19	298	1.32	299	1.06	299	1.26	299	1.12
83.00	82.97	4.0	319	0.62	-1.08	300	1.24	299	1.38	300	1.11	300	1.31	300	1.18
84.00	83.97	4.2	310	0.66	-1.13	300	1.31	300	1.45	301	1.17	300	1.38	301	1.24
85.00	84.97	3.2	304	0.70	-1.18	301	1.37	300	1.51	301	1.23	300	1.44	301	1.30
86.00	85.97	3.1	309	0.73	-1.22	301	1.42	300	1.57	301	1.27	301	1.49	301	1.35
87.00	86.97	3.1	324	0.76	-1.25	301	1.47	301	1.62	302	1.32	301	1.54	302	1.39
88.00	87.97	3.4	328	0.81	-1.28	302	1.52	302	1.67	303	1.36	302	1.59	303	1.44
89.00	88.96	3.6	333	0.87	-1.31	303	1.57	303	1.73	304	1.42	303	1.65	304	1.49
90.00	89.96	3.6	333	0.92	-1.34	305	1.63	304	1.79	305	1.47	304	1.71	305	1.55
91.00	90.96	2.7	342	0.98	-1.36	306	1.68	305	1.84	306	1.52	305	1.76	306	1.60
92.00	91.96	3.9	325	1.03	-1.39	306	1.73	306	1.89	307	1.57	306	1.81	307	1.65
93.00	92.96	3.4	316	1.08	-1.43	307	1.80	306	1.96	308	1.63	307	1.88	307	1.71
94.00	93.95	4.4	312	1.13	-1.49	307	1.87	307	2.04	308	1.70	307	1.95	308	1.78
95.00	94.95	4.1	305	1.18	-1.54	307	1.94	307	2.12	308	1.77	307	2.03	308	1.86
96.00	95.95	3.2	305	1.22	-1.59	307	2.01	307	2.18	308	1.83	307	2.10	308	1.92
97.00	96.95	2.9	310	1.25	-1.64	307	2.06	307	2.24	308	1.88	307	2.15	308	1.97
98.00	97.95	2.2	322	1.28	-1.66	308	2.10	307	2.29	308	1.92	307	2.19	308	2.01
99.00	98.94	3.3	341	1.33	-1.68	308	2.14	308	2.33	309	1.96	308	2.24	308	2.05
100.00	99.94	4.6	321	1.39	-1.72	309	2.21	309	2.40	310	2.02	309	2.31	309	2.12
101.00	100.94	3.5	324	1.44	-1.77	309	2.28	309	2.47	310	2.08	309	2.37	309	2.18
102.00	101.94	4.7	332	1.50	-1.79	310	2.34	309	2.53	310	2.14	310	2.43	310	2.24
103.00	102.93	5.6	321	1.57	-1.84	310	2.42	310	2.62	311	2.22	310	2.52	311	2.32
104.00	103.93	5.2	317	1.64	-1.90	311	2.51	310	2.72	311	2.31	311	2.61	311	2.41
105.00	104.93	4.1	310	1.69	-1.96	311	2.58	310	2.79	311	2.38	311	2.69	311	2.48
106.00	105.92	2.5	314	1.72	-2.00	311	2.64	310	2.85	311	2.43	311	2.74	311	2.53
107.00	106.92	2.8	314	1.76	-2.03	311	2.69	310	2.90	311	2.47	311	2.79	311	2.58
108.00	107.92	2.7	332	1.79	-2.06	311	2.73	311	2.95	312	2.52	311	2.84	311	2.63
109.00	108.92	3.0	332	1.84	-2.08	311	2.78	311	3.00	312	2.56	311	2.89	312	2.67
110.00	109.92	2.7	337	1.88	-2.10	312	2.82	311	3.04	312	2.60	312	2.93	312	2.71
111.00	110.92	3.1	338	1.93	-2.12	312	2.87	312	3.09	313	2.64	312	2.98	312	2.75
112.00	111.92	3.1	333	1.98	-2.15	313	2.92	312	3.15	313	2.69	312	3.03	313	2.80
113.00	112.91	3.4	341	2.03	-2.17	313	2.97	313	3.20	314	2.74	313	3.09	313	2.86
114.00	113.91	4.5	343	2.10	-2.19	314	3.03	313	3.27	314	2.80	314	3.15	314	2.92
115.00	114.91	5.0	344	2.18	-2.21	315	3.10	314	3.34	315	2.87	314	3.22	315	2.98
116.00	115.91	4.9	344	2.26	-2.23	315	3.18	315	3.42	316	2.94	315	3.30	316	3.06
117.00	116.90	5.7	337	2.34	-2.26	316	3.25	316	3.50	317	3.01	316	3.38	316	3.13
118.00	117.90	5.9	323	2.42	-2.31	316	3.34	316	3.59	317	3.10	316	3.47	317	3.22
119.00	118.89	4.2	315	2.49	-2.37	316	3.44	316	3.68	317	3.19	316	3.56	317	3.31
120.00	119.89	4.7	339	2.54	-2.41	317	3.50	316	3.75	317	3.25	316	3.63	317	3.37
121.00	120.89	6.2	333	2.62	-2.44	317	3.58	317	3.84	318	3.33	317	3.71	317	3.45
122.00	121.88	5.8	314	2.70	-2.51	317	3.69	317	3.95	318	3.43	317	3.82	317	3.56
123.00	122.88	4.3	309	2.76	-2.58	317	3.77	317	4.04	317	3.51	317	3.90	317	3.64
124.00	123.88	3.4	320	2.80	-2.62	317	3.84	317	4.10	317	3.57	317	3.97	317	3.70
125.00	124.87	3.4	328	2.85	-2.65	317	3.89	317	4.16	318	3.62	317	4.03	317	3.76
126.00	125.87	5.5	338	2.92	-2.68	318	3.97	317	4.24	318	3.69	317	4.10	318	3.83
127.00	126.86	6.1	328	3.02	-2.73	318	4.07	317	4.34	318	3.79	318	4.21	318	3.93
128.00	127.86	3.7	315	3.09	-2.79	318	4.16	317	4.44	318	3.88	318	4.30	318	4.02
129.00	128.86	4.9	322	3.15	-2.84	318	4.24	318	4.52	318	3.96	318	4.38	318	4.10
130.00	129.85	6.2	311	3.23	-2.91	318	4.35	318	4.63	319	4.06	318	4.49	318	4.21
131.00	130.85	4.9	307	3.29	-2.98	318	4.44	317	4.73	318	4.15	318	4.58	318	4.29
132.00	131.84	4.5	301	3.33	-3.04	318	4.51	317	4.80	318	4.22	317	4.66	318	4.36
133.00	132.84	3.2	327	3.37	-3.08	318	4.57	317	4.87	318	4.27	317	4.72	318	4.42
134.00	133.84	3.7	332	3.43	-3.11	318	4.63	317	4.93	318	4.33	318	4.78	318	4.48
135.00	134.84	4.9	336	3.50	-3.14	318	4.70	318	5.00	319	4.40	318	4.85	318	4.55
136.00	135.83	6.1	317	3.58	-3.19	318	4.79	318	5.10	319	4.49	318	4.94	318	4.64
137.00	136.83	5.2	315	3.63	-3.25	318	4.87	318	5.18	319	4.56	318	5.02	318	4.71
138.00	137.82	6.2	300	3.69	-3.34	318	4.97	318	5.29	318	4.66	318	5.13	318	4.82
139.00	138.82	4.3	289	3.72	-3.41	318	5.05	317	5.37	318	4.74	317	5.21	318	4.89
140.00	139.82	3.3	306	3.75	-3.46	317	5.11	317	5.43	318	4.79	317	5.27	317	4.95
141.00	140.82	3.3	322	3.80	-3.50	317	5.16	317	5.49	318	4.84	317	5.32	318	5.00
142.00	141.82	4.1	324	3.84	-3.54	317	5.23	317	5.55	318	4.90	317	5.39	318	5.06
143.00	142.81	4.9	322	3.91	-3.59	317	5.30	317	5.63	318	4.97	317	5.47	318	5.14
144.00	143.81	5.6	306	3.97	-3.65	317	5.39	317	5.73	318	5.06	317	5.56	318	5.23
145.00	144.80	4.5	292	4.01	-3.73	317	5.48	317	5.82	317	5.14	317	5.65	317	5.31
146.00	145.80	5.4	288	4.05	-3.81	317	5.56	316	5.90	317	5.22	317	5.73	317	5.39
147.00	146.80	3.2	283	4.06	-3.88	316	5.62	316	5.96	317	5.28	316	5.79	316	5.45
148.00	147.80	2.8	306	4.09	-3.92	316	5.67	316	6.01	316	5.32	316	5.84	316	5.49
149.00	148.79	3.4	315	4.12	-3.97	316	5.72	316	6.07	316	5.37	316	5.89	316	5.54
150.00	149.79	3.7	315	4.17	-4.01	316	5.79	316	6.14	316	5.43	316	5.96	316	5.61
151.00	150.79	4.8	303	4.21	-4.07	316	5.86	316	6.22	316	5.50	316	6.04	316	5.68
152.00	151.79	5.1	296	4.25	-4.15	316	5.94	315	6.30	316	5.58	316	6.12	316	5.76
153.00	152.78	4.5	288	4.28	-4.23	315	6.01	315	6.38	316	5.65	315	6.20	316	5.83
154.00	153.78	3.8	283	4.30	-4.30	315	6.08	315	6.45	315	5.71	315	6.26	315	5.90
155.00	154.78	4.4	305	4.32	-4.36	315	6.14	315	6.51	315	5.77	315	6.32	315	5.95
156.00	155.77	2.7	271	4.34	-4.42	314	6.20	314	6.57	315	5.82	314	6.38	315	6.01
157.00	156.77	2.2	294	4.34	-4.47	314	6.23	314	6.61	314	5.85	314	6.42	314	6.04
158.00	157.77	2.4	311	4.36	-4.50	314	6.27	314	6.65	314	5.89	314	6.46	314	6.08
159.00	158.77	3.4	309	4.39	-4.54	314	6.31	314	6.70	314	5.93	314	6.51	314	6.12
160.00	159.77	3.2	286	4.41	-4.60	314	6.37	314	6.76	314	5.99	314	6.57	314	6.18
161.00	160.77	3.3	267	4.43	-4.66	314	6.43	313	6.82	314	6.05	313	6.63	314	6.24
162.00	161.77	1.8	272	4.43	-4.70	313	6.47	313	6.86	314	6.07	313	6.66	313	6.27
163.00	162.77	2.1	287	4.44	-4.74	313	6.49	313	6.89	313	6.10	313	6.69	313	6.30
164.00	163.77	1.9	279	4.44	-4.77	313	6.52	313	6.92	313	6.12	313	6.72	313	6.32
164.50	164.26	2.6	299	4.45	-4.79	313	6.54	313	6.94	313	6.14	313	6.74	313	6.34

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....2.30
LAST PLOTTED DEPTH......164.50
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....160

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

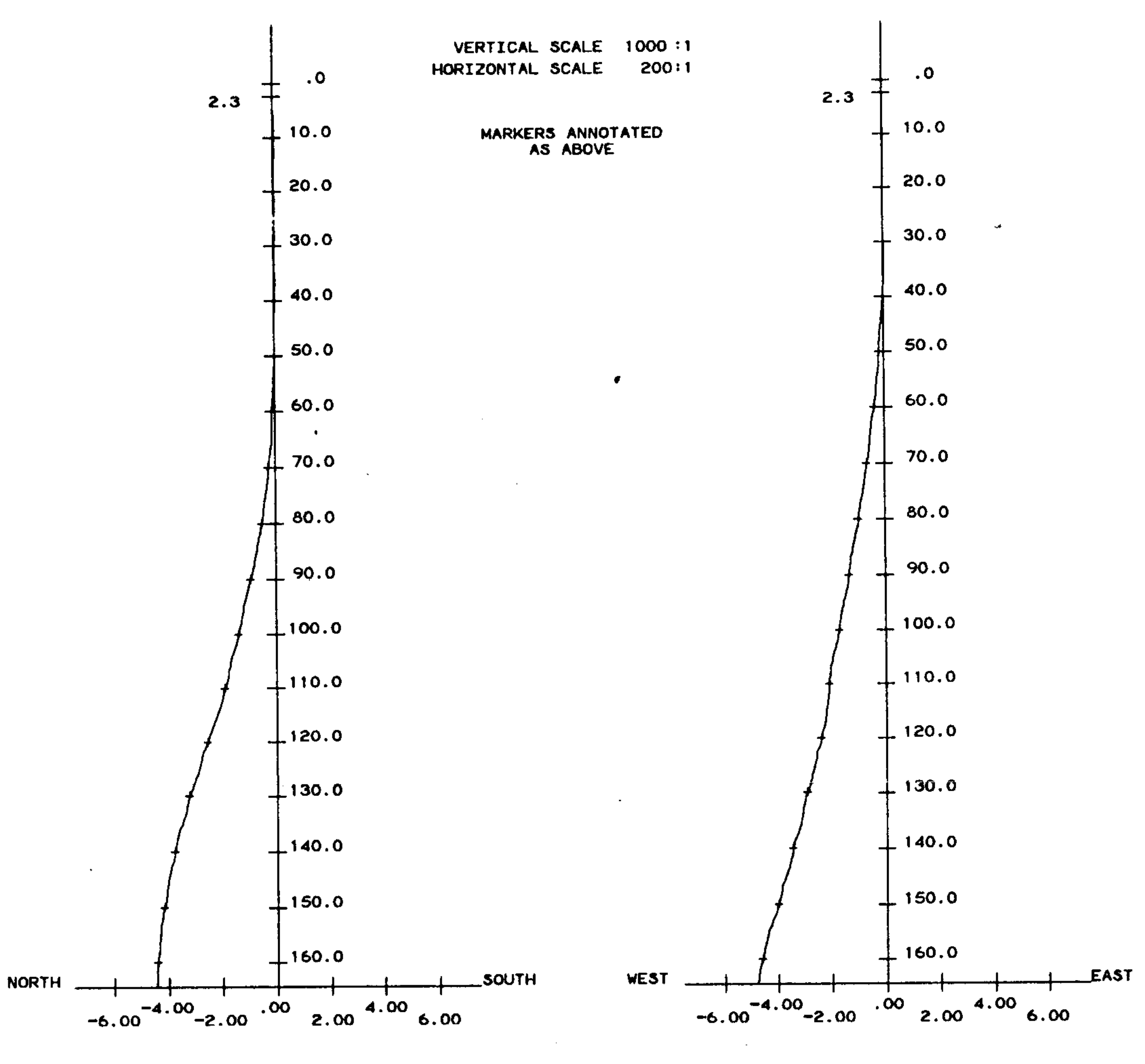
THE LAST PLOTTED DEPTH IS AT 4.45 MS NORTH, 4.79 MS WEST IE. 6.54 MS FROM THE ORIGIN, 313 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

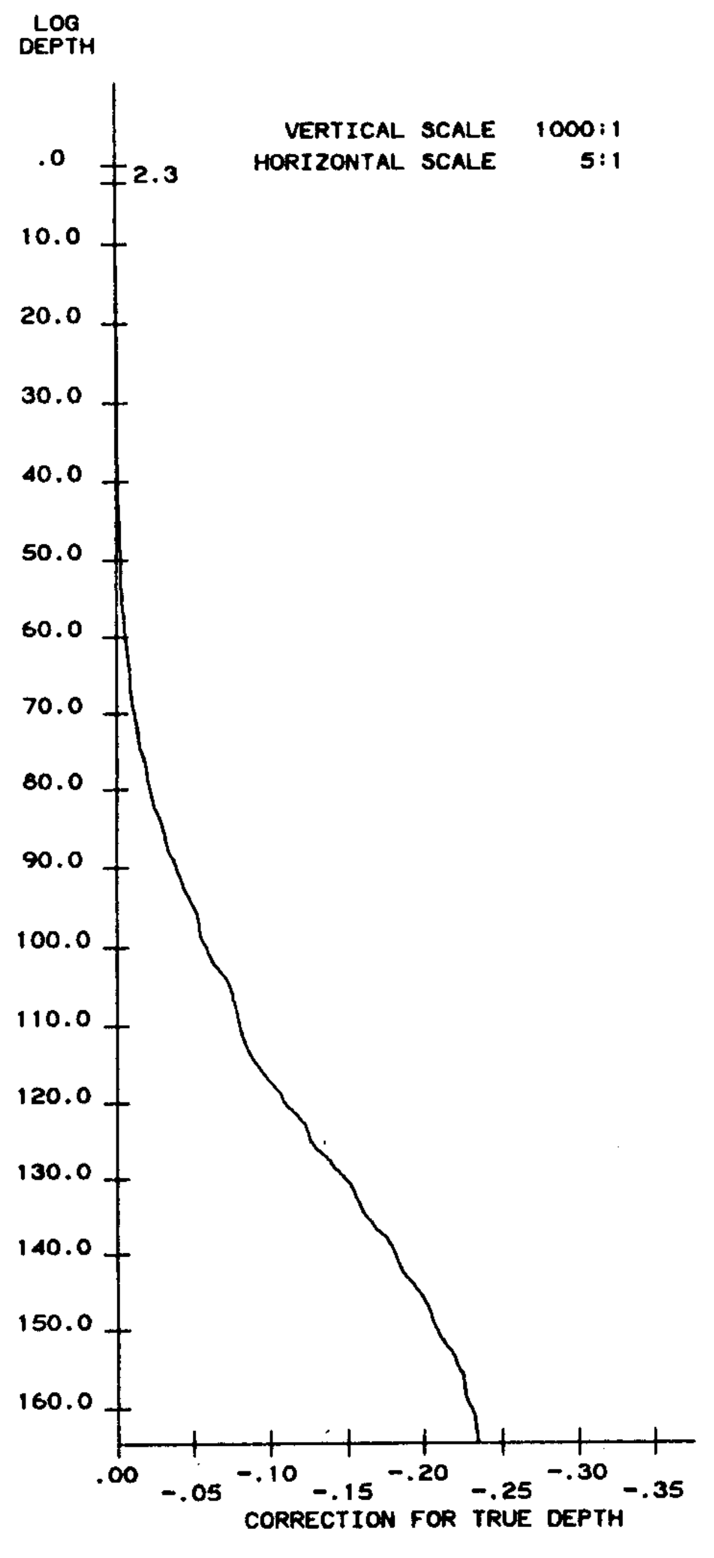
VERTICAL SCALE 1000 :1
HORIZONTAL SCALE 200:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 5:1



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
3.00	3.00	73.00	72.99	143.00	142.81
4.00	4.00	74.00	73.98	144.00	143.81
5.00	5.00	75.00	74.98	145.00	144.80
6.00	6.00	76.00	75.98	146.00	145.80
7.00	7.00	77.00	76.98	147.00	146.80
8.00	8.00	78.00	77.98	148.00	147.80
9.00	9.00	79.00	78.98	149.00	148.79
10.00	10.00	80.00	79.98	150.00	149.79
11.00	11.00	81.00	80.98	151.00	150.79
12.00	12.00	82.00	81.98	152.00	151.79
13.00	13.00	83.00	82.97	153.00	152.78
14.00	14.00	84.00	83.97	154.00	153.78
15.00	15.00	85.00	84.97	155.00	154.78
16.00	16.00	86.00	85.97	156.00	155.77
17.00	17.00	87.00	86.97	157.00	156.77
18.00	18.00	88.00	87.97	158.00	157.77
19.00	19.00	89.00	88.96	159.00	158.77
20.00	20.00	90.00	89.96	160.00	159.77
21.00	21.00	91.00	90.96	161.00	160.77
22.00	22.00	92.00	91.96	162.00	161.77
23.00	23.00	93.00	92.96	163.00	162.77
24.00	24.00	94.00	93.95	164.00	163.77
25.00	25.00	95.00	94.95	164.50	164.26
26.00	26.00	96.00	95.95		
27.00	27.00	97.00	96.95		
28.00	28.00	98.00	97.95		
29.00	29.00	99.00	98.94		
30.00	30.00	100.00	99.94		
31.00	31.00	101.00	100.94		
32.00	32.00	102.00	101.94		
33.00	33.00	103.00	102.93		
34.00	34.00	104.00	103.93		
35.00	35.00	105.00	104.93		
36.00	36.00	106.00	105.92		
37.00	37.00	107.00	106.92		
38.00	38.00	108.00	107.92		
39.00	39.00	109.00	108.92		
40.00	40.00	110.00	109.92		
41.00	41.00	111.00	110.92		
42.00	42.00	112.00	111.92		
43.00	43.00	113.00	112.91		
44.00	44.00	114.00	113.91		
45.00	45.00	115.00	114.91		
46.00	46.00	116.00	115.91		
47.00	47.00	117.00	116.90		
48.00	48.00	118.00	117.90		
49.00	49.00	119.00	118.89		
50.00	50.00	120.00	119.89		
51.00	51.00	121.00	120.89		
52.00	52.00	122.00	121.88		
53.00	53.00	123.00	122.88		
54.00	54.00	124.00	123.88		
55.00	55.00	125.00	124.87		
56.00	56.00	126.00	125.87		
57.00	56.99	127.00	126.86		
58.00	57.99	128.00	127.86		
59.00	58.99	129.00	128.86		
60.00	59.99	130.00	129.85		
61.00	60.99	131.00	130.85		
62.00	61.99	132.00	131.84		
63.00	62.99	133.00	132.84		
64.00	63.99	134.00	133.84		
65.00	64.99	135.00	134.84		
66.00	65.99	136.00	135.83		
67.00	66.99	137.00	136.83		
68.00	67.99	138.00	137.82		
69.00	68.99	139.00	138.82		
70.00	69.99	140.00	139.82		
71.00	70.99	141.00	140.82		
72.00	71.99	142.00	141.82		

COMPANY	MANALTA
WELL	T93R-23
FIELD	SITE # 19
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1

DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 19
WELL:
T93R-23
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-23
FIELD SITE # 19
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	24-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	165.2M			
DEPTH-LOGGER	164.8M			
FIRST READING	163.0M			
LAST READING	00M			
CASING-DRILLER	36.0M			
CASING-LOGGER	36.0M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	42.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	36.0M	TD	178MM	N/A	SURFACE	36.0M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	.110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 24-SEP-1993 AT 13:00
FILENAME: DD3AR23A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 10:32

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 24-SEP-1993 AT 13:00
FILENAME: DD3AR23A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 10:32

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 24-SEP-1993 AT 10:57 DATA LAST REPROCESSED: 25-SEP-1993 AT 10:23

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	36.00
BIT SIZE 3	.00	BIT DEPTH 3	165.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-23
FIELD	SITE # 19
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#8779

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 19
WELL:
T93R-23
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-23
FIELD	SITE # 19
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	24-SEP-93
RUN NUMBER	THREE
DEPTH-DRILLER	165.2M
DEPTH-LOGGER	164.8M
FIRST READING	163.0M
LAST READING	00M
CASING-DRILLER	36.0M
CASING-LOGGER	36.0M
BIT SIZE	156MM
HOLE FLUID TYPE	AIR/WATER
DENS./VISC.	1.01 N/A
PH/FLUID LOSS	N/A N/A
SAMPLE SOURCE	N/A
RM @ MEAS TEMP	
RMF @ MEAS TEMP	
RMC @ MEAS TEMP	
SOURCE: RMF/RMC	
RM @ BHT	
TIME SINCE CIRC	
MAX REC TEMP	
EQUIPMENT/BASE	V222 RDR
RECORDED BY	B. STEVENSON
WITNESSED BY	T. BRAZZONI
WATER LEVEL	42.5M

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	36.0M	TD	178MM	N/A	SURFACE	36.0M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 24-SEP-1993 AT 13:00
FILENAME: DD3AR23A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 10:28

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 24-SEP-1993 AT 13:00
FILENAME: DD3AR23A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 10:24

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 24-SEP-1993 AT 10:57 DATA LAST REPROCESSED: 25-SEP-1993 AT 10:23

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	36.00
BIT SIZE 3	.00	BIT DEPTH 3	165.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-23
FIELD	SITE # 19
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 19
WELL: T93R-23
COMPANY: MANALTA

COMPANY MANALTA #879
WELL T93R-23
FIELD SITE # 19
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	24-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	165.2M			
DEPTH-LOGGER	164.8M			
FIRST READING	163.0M			
LAST READING	00M			
CASING-DRILLER	36.0M			
CASING-LOGGER	36.0M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	42.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	36.0M	TD	178MM	N/A	SURFACE	36.0M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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MAIN LOG

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 24-SEP-1993 AT 13:00
FILENAME: DD3AR23M.CIB RUN ID: MAIN LOG PLOTTED ON 25-SEP-1993 AT 09:51

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 24-SEP-1993 AT 13:00
FILENAME: DD3AR23M.CIB RUN ID: MAIN LOG PLOTTED ON 25-SEP-1993 AT 09:51

MAIN LOG

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 24-SEP-1993 AT 10:57

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	36.00
BIT SIZE 3	.00	BIT DEPTH 3	165.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-23
FIELD	SITE # 19
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 21
WELL:
T93R-25
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-25
FIELD SITE 21
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	20-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	185.9M	
DEPTH-LOGGER	185.2M	
FIRST READING	185M	
LAST READING	0M	
CASING-DRILLER	12.8M	
CASING-LOGGER	12.8M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	OOM	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE. AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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T93R-25                      VERTICALITY DATA LISTING                    DATE PROCESSED: 20-SEP-1993
                     ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH         DATE LOGGED:    20-SEP-1993
     DEPTHS       BOREHOLE   AXIAL CO-ORDS     POLAR      POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
   LOG     TRUE   TILT AZI   NORTH     EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

   1.00    1.00    0.8 220   -0.01    -0.01 241    0.02 241    0.02 241    0.01 241    0.02 241    0.01
   2.00    2.00    0.7 222   -0.02    -0.02 235    0.03 235    0.03 236    0.02 235    0.03 235    0.02
   3.00    3.00    0.7 263   -0.02    -0.03 239    0.04 239    0.05 240    0.03 239    0.04 239    0.03
   4.00    4.00    0.7 282   -0.02    -0.05 246    0.05 246    0.06 246    0.04 246    0.06 246    0.04
   5.00    5.00    0.9 264   -0.02    -0.06 252    0.06 252    0.08 252    0.05 252    0.07 252    0.05
   6.00    6.00    0.8 329   -0.01    -0.07 259    0.07 259    0.09 260    0.05 259    0.08 260    0.06
   7.00    7.00    0.6 356   -0.01    -0.07 265    0.07 265    0.09 265    0.05 265    0.08 265    0.06
   8.00    8.00    0.5 101    0.00    -0.07 269    0.07 269    0.08 268    0.05 269    0.07 269    0.06
   9.00    9.00    0.4 128    0.00    -0.06 269    0.06 269    0.07 268    0.05 269    0.07 268    0.05
  10.00   10.00    0.3 159    0.00    -0.06 266    0.06 266    0.07 267    0.04 266    0.06 267    0.05
  11.00   11.00    0.2 266   -0.01    -0.06 263    0.06 261    0.07 266    0.04 262    0.06 264    0.05
  12.00   12.00    0.5 286   -0.01    -0.06 262    0.06 260    0.08 266    0.05 261    0.07 264    0.05
  13.00   13.00    0.8 299   -0.01    -0.07 262    0.07 260    0.09 266    0.05 261    0.08 264    0.06
  14.00   14.00    0.4 287   -0.01    -0.08 266    0.08 265    0.10 269    0.06 265    0.09 267    0.07
  15.00   15.00    1.0 330    0.00    -0.08 270    0.08 269    0.11 272    0.06 269    0.10 271    0.07
  16.00   16.00    0.7 313    0.01    -0.09 276    0.09 275    0.12 278    0.07 276    0.11 277    0.08
  17.00   17.00    0.8 315    0.02    -0.10 280    0.10 279    0.13 282    0.08 280    0.12 281    0.09
  18.00   18.00    0.6 329    0.03    -0.11 283    0.11 283    0.14 285    0.08 283    0.13 284    0.10
  19.00   19.00    0.5 357    0.03    -0.11 287    0.12 286    0.15 287    0.08 286    0.13 287    0.10
  20.00   20.00    0.5 357    0.04    -0.11 290    0.12 290    0.15 290    0.09 290    0.14 290    0.10
  21.00   21.00    0.4 354    0.05    -0.11 294    0.13 294    0.16 293    0.09 294    0.14 293    0.11
  22.00   22.00    0.4 357    0.06    -0.11 297    0.13 297    0.17 295    0.09 297    0.15 296    0.11
  23.00   23.00    0.5  13    0.07    -0.11 300    0.13 301    0.17 298    0.09 300    0.15 299    0.11
  24.00   24.00    0.3 353    0.07    -0.11 302    0.14 304    0.18 300    0.10 303    0.16 301    0.12
  25.00   25.00    0.4 311    0.08    -0.12 303    0.14 305    0.19 300    0.10 304    0.17 302    0.12
  26.00   26.00    0.9 279    0.08    -0.13 302    0.15 303    0.20 299    0.11 303    0.18 301    0.13
  27.00   27.00    0.5 289    0.08    -0.14 301    0.17 302    0.22 298    0.12 301    0.19 300    0.14
  28.00   28.00    0.6 264    0.09    -0.15 299    0.17 300    0.23 297    0.12 300    0.20 298    0.15
  29.00   29.00    0.6 220    0.08    -0.16 298    0.18 299    0.24 296    0.13 299    0.21 297    0.15
  30.00   30.00    0.6 178    0.08    -0.16 296    0.18 297    0.23 294    0.12 297    0.21 295    0.15
  31.00   31.00    0.2 169    0.07    -0.16 293    0.17 294    0.23 291    0.12 294    0.20 292    0.15
  32.00   32.00    1.9 198    0.05    -0.16 286    0.17 288    0.22 282    0.12 287    0.19 284    0.14
  33.00   33.00    1.8 211    0.02    -0.17 277    0.17 280    0.22 271    0.12 278    0.20 274    0.15
  34.00   34.00    1.3 198    0.00    -0.18 269    0.18 273    0.23 262    0.13 271    0.21 266    0.16
  35.00   35.00    1.7 187   -0.03    -0.19 260    0.19 265    0.24 252    0.14 263    0.21 257    0.16
  36.00   36.00    2.6 183   -0.07    -0.19 250    0.20 256    0.25 241    0.16 254    0.22 246    0.18
  37.00   37.00    3.1 191   -0.11    -0.19 241    0.22 247    0.27 231    0.18 244    0.25 236    0.20
  38.00   37.99    2.9 202   -0.15    -0.21 233    0.26 240    0.30 225    0.22 237    0.28 230    0.24
  39.00   38.99    3.1 209   -0.20    -0.23 229    0.30 235    0.34 221    0.26 232    0.32 225    0.28
  40.00   39.99    3.2 210   -0.24    -0.25 226    0.35 231    0.39 220    0.30 229    0.37 223    0.32
  41.00   40.99    2.8 211   -0.28    -0.27 224    0.39 229    0.44 219    0.35 227    0.41 222    0.37
  42.00   41.99    1.7 200   -0.32    -0.30 223    0.43 227    0.48 218    0.39 225    0.46 220    0.41
  43.00   42.99    3.1 203   -0.37    -0.31 219    0.48 223    0.53 215    0.44 222    0.51 217    0.46
  44.00   43.99    3.5 180   -0.42    -0.31 216    0.53 220    0.58 212    0.48 218    0.55 214    0.50
  45.00   44.98    4.2 171   -0.48    -0.31 213    0.57 216    0.62 208    0.52 214    0.60 211    0.55
  46.00   45.98    4.9 177   -0.56    -0.30 208    0.63 212    0.68 204    0.59 210    0.66 206    0.61
  47.00   46.98    5.1 180   -0.65    -0.30 205    0.71 208    0.76 201    0.66 206    0.74 203    0.69
  48.00   47.97    5.4 183   -0.74    -0.30 202    0.80 205    0.85 199    0.75 204    0.83 201    0.77
  49.00   48.97    5.8 193   -0.84    -0.32 201    0.90 203    0.96 198    0.85 202    0.93 199    0.88
  50.00   49.96    5.0 196   -0.94    -0.34 200    1.00 202    1.05 197    0.94 201    1.02 199    0.97
  51.00   50.96    4.9 203   -1.02    -0.37 200    1.08 202    1.14 198    1.02 201    1.11 199    1.05
  52.00   51.96    6.0 200   -1.10    -0.38 199    1.16 201    1.23 197    1.10 200    1.19 198    1.13
  53.00   52.95    4.5 189   -1.18    -0.40 199    1.24 201    1.31 197    1.18 200    1.28 198    1.21
  54.00   53.95    5.1 176   -1.26    -0.40 198    1.32 199    1.39 196    1.25 199    1.36 197    1.29
  55.00   54.94    6.0 172   -1.36    -0.39 196    1.41 198    1.48 194    1.34 197    1.45 195    1.38
  56.00   55.94    5.9 172   -1.46    -0.37 194    1.51 196    1.58 193    1.43 195    1.54 194    1.47
  57.00   56.93    5.4 181   -1.56    -0.36 193    1.60 195    1.68 191    1.53 194    1.64 192    1.57
  58.00   57.93    7.4 183   -1.67    -0.36 192    1.71 194    1.78 191    1.63 193    1.74 192    1.67
  59.00   58.92    7.8 186   -1.79    -0.37 192    1.83 193    1.91 190    1.75 193    1.87 191    1.79
  60.00   59.91    7.8 187   -1.92    -0.39 191    1.96 193    2.04 190    1.87 192    2.00 191    1.92
  61.00   60.90    7.4 190   -2.04    -0.41 191    2.08 193    2.17 190    2.00 192    2.13 191    2.04
  62.00   61.90    4.8 183   -2.16    -0.43 191    2.21 192    2.30 190    2.12 192    2.25 191    2.16
  63.00   62.89    7.9 195   -2.29    -0.46 191    2.33 192    2.43 190    2.24 192    2.38 191    2.29
  64.00   63.88    5.0 188   -2.40    -0.49 192    2.45 193    2.55 190    2.36 192    2.50 191    2.41
  65.00   64.87    6.8 199   -2.52    -0.51 191    2.57 192    2.67 190    2.47 192    2.62 191    2.52
  66.00   65.87    7.4 171   -2.63    -0.50 191    2.68 192    2.78 190    2.57 191    2.73 190    2.63
  67.00   66.86    8.1 170   -2.76    -0.48 190    2.80 191    2.91 189    2.70 190    2.86 189    2.75
  68.00   67.85    8.1 171   -2.90    -0.46 189    2.94 190    3.05 188    2.83 189    2.99 188    2.88
  69.00   68.84    7.6 174   -3.04    -0.43 188    3.07 189    3.18 187    2.96 189    3.12 188    3.01
  70.00   69.83    8.5 175   -3.18    -0.42 188    3.20 188    3.32 187    3.09 188    3.26 187    3.15
  71.00   70.82    8.0 189   -3.33    -0.42 187    3.35 188    3.47 186    3.24 188    3.41 187    3.30
  72.00   71.81    6.8 182   -3.46    -0.44 187    3.49 188    3.61 186    3.37 188    3.55 187    3.43
  73.00   72.80    7.4 171   -3.58    -0.42 187    3.61 188    3.73 186    3.48 187    3.67 186    3.54
  74.00   73.79    7.9 173   -3.72    -0.40 186    3.74 187    3.87 185    3.61 186    3.80 186    3.68
  75.00   74.78    9.5 171   -3.87    -0.37 186    3.89 186    4.02 185    3.76 186    3.95 185    3.83
  76.00   75.76    9.2 169   -4.03    -0.35 185    4.04 186    4.17 184    3.91 185    4.11 185    3.98
  77.00   76.75    8.6 173   -4.18    -0.33 184    4.19 185    4.32 184    4.05 185    4.26 184    4.12
  78.00   77.74    8.9 169   -4.33    -0.30 184    4.34 185    4.47 183    4.20 184    4.40 184    4.27
  79.00   78.73    9.8 169   -4.48    -0.28 184    4.49 184    4.63 183    4.35 184    4.56 183    4.42
  80.00   79.71    9.2 174   -4.65    -0.26 183    4.66 184    4.80 183    4.51 183    4.73 183    4.58
  81.00   80.70   10.0 173   -4.82    -0.23 183    4.82 183    4.97 182    4.68 183    4.90 182    4.75
  82.00   81.69    9.7 181   -4.98    -0.22 183    4.99 183    5.14 182    4.84 183    5.06 182    4.91
  83.00   82.68    7.5 172   -5.13    -0.22 182    5.13 183    5.28 182    4.98 183    5.21 182    5.05
  84.00   83.67    6.4 177   -5.27    -0.24 183    5.27 183    5.43 182    5.12 183    5.35 182    5.19
  85.00   84.65    9.3 166   -5.41    -0.22 182    5.42 183    5.58 182    5.26 183    5.50 182    5.34
  86.00   85.64   10.4 170   -5.58    -0.19 182    5.58 182    5.74 181    5.42 182    5.66 182    5.50
  87.00   86.62   10.2 170   -5.75    -0.15 182    5.75 182    5.92 181    5.59 182    5.84 181    5.67
  88.00   87.61    9.8 174   -5.93    -0.13 181    5.93 182    6.10 181    5.76 182    6.01 181    5.84
  89.00   88.59    9.0 196   -6.10    -0.14 181    6.11 182    6.28 181    5.93 182    6.19 181    6.02
  90.00   89.58    7.4 186   -6.26    -0.14 181    6.26 182    6.44 181    6.09 182    6.35 181    6.18
  91.00   90.57    9.7 168   -6.41    -0.12 181    6.42 182    6.59 181    6.24 181    6.51 181    6.33
  92.00   91.55    8.1 162   -6.57    -0.08 181    6.57 181    6.76 180    6.39 181    6.67 180    6.48
  93.00   92.54   11.0 169   -6.75    -0.04 180    6.75 181    6.94 180    6.57 181    6.85 180    6.66
  94.00   93.52   11.4 170   -6.94    -0.01 180    6.94 181    7.13 180    6.75 180    7.03 180    6.85
  95.00   94.50   10.7 173   -7.12     0.01 180    7.12 180    7.31 179    6.93 180    7.21 180    7.02
  96.00   95.48   11.8 169   -7.30     0.03 180    7.30 180    7.50 179    7.11 180    7.40 180    7.20
  97.00   96.46   11.4 182   -7.50     0.05 180    7.50 180    7.70 179    7.31 180    7.60 179    7.40
  98.00   97.45   10.9 188   -7.69     0.05 180    7.69 180    7.89 179    7.49 180    7.79 179    7.59
  99.00   98.43    9.7 183   -7.84     0.03 180    7.84 180    8.05 179    7.64 180    7.95 180    7.74
 100.00   99.42    9.2 183   -8.00     0.03 180    8.00 180    8.21 179    7.80 180    8.11 180    7.90
 101.00  100.40   12.2 169   -8.17     0.06 180    8.17 180    8.39 179    7.96 180    8.28 179    8.07
 102.00  101.38   10.0 181   -8.38     0.10 179    8.38 180    8.59 179    8.16 180    8.49 179    8.27
 103.00  102.36   12.5 173   -8.58     0.11 179    8.58 180    8.80 179    8.36 179    8.69 179    8.47
 104.00  103.34   11.2 165   -8.78     0.12 179    8.78 180    9.00 179    8.56 179    8.89 179    8.67
 105.00  104.32   10.2 193   -8.98     0.09 179    8.98 180    9.20 179    8.75 180    9.09 179    8.86
 106.00  105.30   11.6 169   -9.15     0.11 179    9.15 180    9.38 179    8.92 179    9.26 179    9.04
 107.00  106.28   13.1 170   -9.34     0.16 179    9.34 179    9.57 179    9.11 179    9.46 179    9.23
 108.00  107.26   12.8 171   -9.57     0.20 179    9.57 179    9.80 178    9.33 179    9.68 179    9.45
 109.00  108.24   11.8 179   -9.77     0.22 179    9.78 179   10.01 178    9.54 179    9.89 179    9.66
 110.00  109.21   14.0 185   -9.98     0.21 179    9.99 179   10.23 178    9.75 179   10.11 179    9.87
 111.00  110.19   10.4 190  -10.18     0.18 179   10.18 179   10.43 179    9.94 179   10.31 179   10.06
 112.00  111.18    9.9 185  -10.36     0.15 179   10.36 179   10.61 179   10.11 179   10.48 179   10.24
 113.00  112.16   11.7 170  -10.54     0.17 179   10.54 179   10.79 179   10.29 179   10.66 179   10.41
 114.00  113.14   12.6 176  -10.74     0.19 179   10.74 179   10.99 179   10.48 179   10.87 179   10.61
 115.00  114.12   11.6 176  -10.94     0.20 179   10.94 179   11.20 179   10.68 179   11.07 179   10.81
 116.00  115.10   12.8 171  -11.14     0.22 179   11.14 179   11.41 179   10.88 179   11.27 179   11.01
 117.00  116.07   13.7 169  -11.36     0.26 179   11.37 179   11.63 178   11.10 179   11.50 179   11.24
 118.00  117.05   13.2 171  -11.57     0.30 179   11.57 179   11.84 178   11.31 179   11.71 178   11.44
 119.00  118.02   13.4 172  -11.80     0.34 178   11.80 179   12.07 178   11.53 179   11.94 178   11.67
 120.00  119.00   13.6 170  -12.02     0.37 178   12.03 179   12.30 178   11.75 178   12.16 178   11.89
 121.00  119.97   13.4 172  -12.24     0.39 178   12.25 178   12.53 178   11.97 178   12.39 178   12.11
 122.00  120.94   13.5 174  -12.47     0.42 178   12.48 178   12.76 178   12.20 178   12.62 178   12.34
 123.00  121.92   12.9 177  -12.69     0.44 178   12.70 178   12.98 178   12.41 178   12.84 178   12.56
 124.00  122.89   13.3 174  -12.91     0.45 178   12.92 178   13.20 178   12.63 178   13.06 178   12.77
 125.00  123.87   12.5 173  -13.13     0.47 178   13.14 178   13.43 178   12.85 178   13.28 178   12.99
 126.00  124.85   12.0 184  -13.34     0.47 178   13.35 178   13.64 178   13.05 178   13.49 178   13.20
 127.00  125.83   12.1 180  -13.53     0.47 178   13.54 178   13.84 178   13.24 178   13.69 178   13.39
 128.00  126.80   12.3 177  -13.75     0.47 178   13.76 178   14.06 178   13.46 178   13.91 178   13.61
 129.00  127.78   12.7 179  -13.96     0.48 178   13.97 178   14.27 178   13.66 178   14.12 178   13.82
 130.00  128.76   12.6 178  -14.17     0.48 178   14.17 178   14.48 178   13.87 178   14.33 178   14.02
 131.00  129.74   12.1 178  -14.37     0.49 178   14.38 178   14.69 178   14.07 178   14.54 178   14.23
 132.00  130.72   11.0 181  -14.58     0.49 178   14.59 178   14.91 178   14.28 178   14.75 178   14.43
 133.00  131.70   12.3 180  -14.78     0.49 178   14.79 178   15.11 178   14.47 178   14.95 178   14.63
 134.00  132.67   12.6 183  -15.00     0.48 178   15.00 178   15.32 178   14.68 178   15.16 178   14.84
 135.00  133.65   12.1 183  -15.20     0.47 178   15.21 178   15.54 178   14.89 178   15.37 178   15.05
 136.00  134.63   12.3 181  -15.42     0.47 178   15.42 178   15.75 178   15.09 178   15.59 178   15.26
 137.00  135.61   12.2 184  -15.63     0.45 178   15.64 179   15.97 178   15.30 178   15.80 178   15.47
 138.00  136.58   11.2 183  -15.84     0.43 178   15.85 179   16.18 178   15.51 179   16.02 178   15.68
 139.00  137.56   11.3 184  -16.03     0.42 179   16.04 179   16.38 178   15.70 179   16.21 178   15.87
 140.00  138.54   13.3 188  -16.24     0.40 179   16.25 179   16.59 178   15.91 179   16.42 178   16.08
 141.00  139.52   13.3 193  -16.46     0.37 179   16.46 179   16.81 179   16.12 179   16.63 179   16.29
 142.00  140.49   13.3 190  -16.68     0.33 179   16.68 179   17.03 179   16.33 179   16.86 179   16.51
 143.00  141.47   12.3 186  -16.90     0.30 179   16.90 179   17.25 179   16.54 179   17.07 179   16.72
 144.00  142.44   12.0 185  -17.11     0.27 179   17.11 179   17.47 179   16.75 179   17.29 179   16.93
 145.00  143.42   12.8 186  -17.33     0.25 179   17.33 179   17.69 179   16.97 179   17.51 179   17.15
 146.00  144.39   12.8 186  -17.54     0.22 179   17.55 179   17.91 179   17.18 179   17.73 179   17.36
 147.00  145.37    9.3 180  -17.75     0.20 179   17.75 180   18.12 179   17.38 179   17.93 179   17.57
 148.00  146.35   12.0 184  -17.95     0.18 179   17.95 180   18.32 179   17.58 180   18.13 179   17.76
 149.00  147.33   13.4 193  -18.17     0.14 180   18.17 180   18.55 179   17.80 180   18.36 179   17.99
 150.00  148.30   12.5 187  -18.39     0.11 180   18.39 180   18.76 179   18.01 180   18.58 180   18.20
 151.00  149.28   13.2 191  -18.60     0.07 180   18.60 180   18.98 180   18.22 180   18.79 180   18.41
 152.00  150.25   13.3 191  -18.83     0.03 180   18.83 180   19.21 180   18.44 180   19.02 180   18.63
 153.00  151.23   12.2 189  -19.04    -0.02 180   19.04 180   19.43 180   18.65 180   19.23 180   18.85
 154.00  152.20   13.1 195  -19.26    -0.07 180   19.26 180   19.65 180   18.87 180   19.46 180   19.07
 155.00  153.18   12.5 192  -19.47    -0.12 180   19.47 181   19.87 180   19.08 180   19.67 180   19.28
 156.00  154.15   13.1 195  -19.69    -0.17 180   19.69 181   20.09 180   19.29 181   19.89 180   19.49
 157.00  155.13   13.2 196  -19.91    -0.23 181   19.91 181   20.31 181   19.51 181   20.11 181   19.71
 158.00  156.10   13.2 197  -20.12    -0.29 181   20.12 181   20.52 181   19.71 181   20.32 181   19.92
 159.00  157.08   12.8 197  -20.33    -0.35 181   20.33 181   20.74 181   19.93 181   20.54 181   20.13
 160.00  158.05   13.3 196  -20.55    -0.41 181   20.55 181   20.96 181   20.14 181   20.76 181   20.34
 161.00  159.03   12.7 198  -20.76    -0.47 181   20.76 181   21.18 181   20.35 181   20.97 181   20.56
 162.00  160.01   12.8 198  -20.96    -0.53 181   20.96 182   21.38 181   20.55 182   21.17 181   20.75
 163.00  160.98   12.7 199  -21.17    -0.60 182   21.18 182   21.60 181   20.76 182   21.39 182   20.97
 164.00  161.96   12.2 200  -21.37    -0.67 182   21.38 182   21.81 182   20.96 182   21.60 182   21.17
 165.00  162.93   12.8 198  -21.57    -0.74 182   21.58 182   22.01 182   21.15 182   21.80 182   21.37
 166.00  163.91   12.9 199  -21.78    -0.80 182   21.80 182   22.23 182   21.36 182   22.01 182   21.58
 167.00  164.89   12.2 199  -21.98    -0.87 182   22.00 182   22.43 182   21.56 182   22.22 182   21.78
 168.00  165.87   11.9 203  -22.16    -0.95 182   22.18 183   22.62 182   21.74 183   22.40 182   21.96
 169.00  166.84   13.0 200  -22.37    -1.03 183   22.39 183   22.83 182   21.95 183   22.61 183   22.17
 170.00  167.82   12.2 200  -22.57    -1.10 183   22.60 183   23.04 183   22.15 183   22.82 183   22.37
 171.00  168.80   11.9 202  -22.76    -1.17 183   22.79 183   23.24 183   22.34 183   23.02 183   22.57
 172.00  169.78   11.8 202  -22.96    -1.25 183   22.99 183   23.44 183   22.54 183   23.22 183   22.76
 173.00  170.76   11.1 203  -23.14    -1.32 183   23.18 183   23.64 183   22.73 183   23.41 183   22.95
 174.00  171.73   12.8 201  -23.34    -1.40 183   23.38 184   23.84 183   22.92 183   23.61 183   23.15
 175.00  172.71   12.5 200  -23.54    -1.48 184   23.59 184   24.05 183   23.12 184   23.82 184   23.36
 176.00  173.69   12.3 201  -23.73    -1.55 184   23.78 184   24.25 184   23.32 184   24.01 184   23.55
 177.00  174.67   12.3 202  -23.93    -1.63 184   23.98 184   24.45 184   23.51 184   24.22 184   23.75
 178.00  175.64   12.3 204  -24.12    -1.71 184   24.18 184   24.65 184   23.71 184   24.41 184   23.94
 179.00  176.62   12.0 203  -24.31    -1.79 184   24.38 184   24.85 184   23.90 184   24.61 184   24.14
 180.00  177.60   10.0 207  -24.49    -1.87 184   24.56 184   25.04 184   24.09 184   24.80 184   24.33
 181.00  178.58   11.0 202  -24.68    -1.95 185   24.76 185   25.24 184   24.27 185   25.00 184   24.51
 182.00  179.56   12.2 203  -24.86    -2.03 185   24.94 185   25.43 185   24.46 185   25.18 185   24.70
 183.00  180.54   11.6 203  -25.04    -2.11 185   25.13 185   25.62 185   24.64 185   25.38 185   24.89
 184.00  181.52   10.5 207  -25.22    -2.19 185   25.32 185   25.81 185   24.82 185   25.56 185   25.07
 185.00  182.50   10.5 206  -25.40    -2.27 185   25.50 185   25.99 185   25.00 185   25.75 185   25.25
```
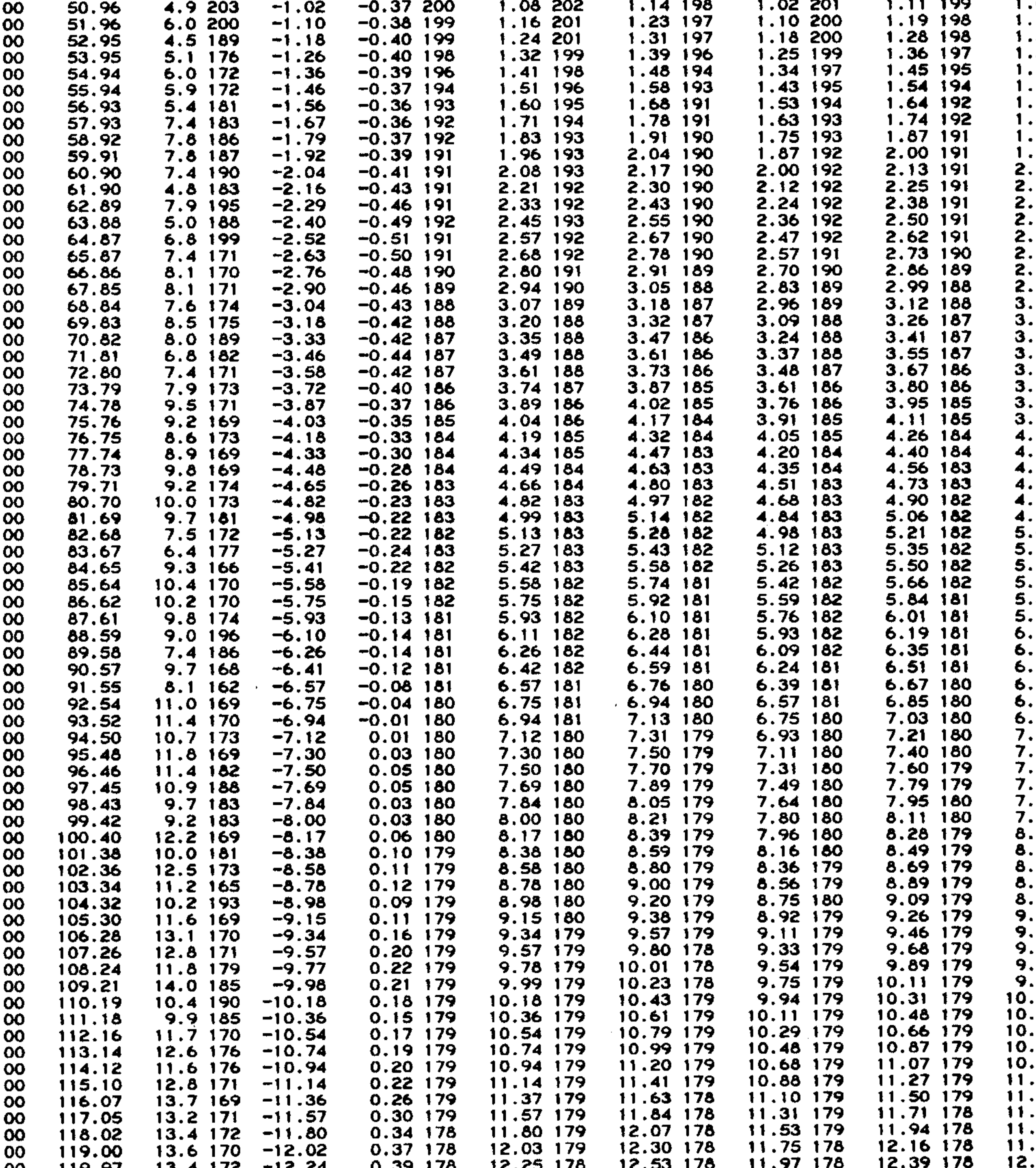

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.......00
LAST PLOTTED DEPTH......185.00
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........20
FIRST DEPTH MARKER AT...20
LAST DEPTH MARKER AT....180

PLOT WITH RESPECT TO TRUE NORTH
SCALE 500:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

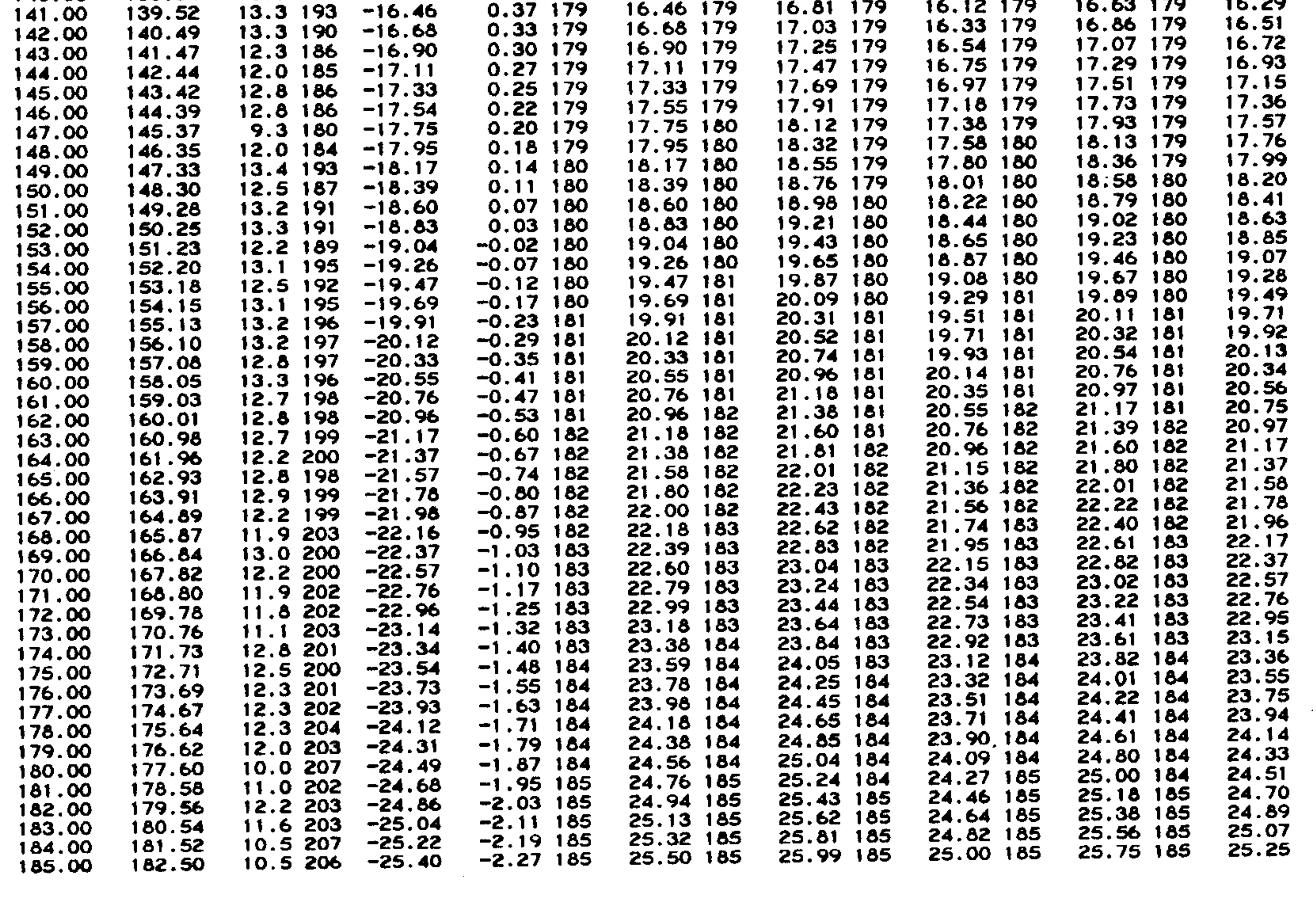
THE LAST PLOTTED DEPTH IS AT 25.40 MS SOUTH, 2.27 MS WEST IE. 25.50 MS FROM THE ORIGIN, 185 DEG FROM TRUE NORTH

VERTICAL SECTIONS

(TRUE DEPTH VS DISPLACEMENT)

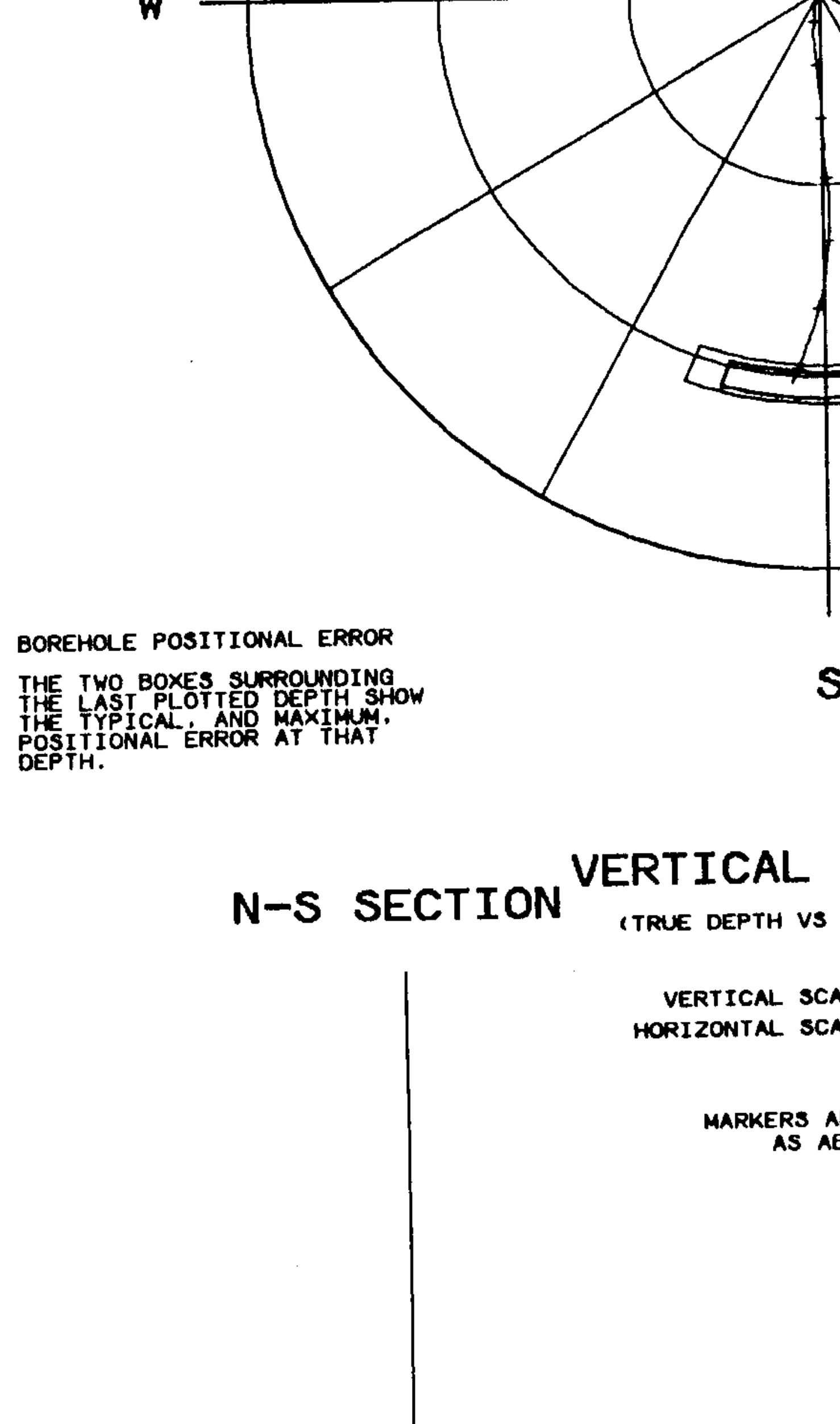
VERTICAL SCALE 2000:1
HORIZONTAL SCALE 1000:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 2000:1
HORIZONTAL SCALE 50:1



DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE
1.00	1.00	71.00	70.82	141.00	139.52
2.00	2.00	72.00	71.81	142.00	140.49
3.00	3.00	73.00	72.80	143.00	141.47
4.00	4.00	74.00	73.79	144.00	142.44
5.00	5.00	75.00	74.78	145.00	143.42
6.00	6.00	76.00	75.76	146.00	144.39
7.00	7.00	77.00	76.75	147.00	145.37
8.00	8.00	78.00	77.74	148.00	146.35
9.00	9.00	79.00	78.73	149.00	147.33
10.00	10.00	80.00	79.71	150.00	148.30
11.00	11.00	81.00	80.70	151.00	149.28
12.00	12.00	82.00	81.69	152.00	150.25
13.00	13.00	83.00	82.68	153.00	151.23
14.00	14.00	84.00	83.67	154.00	152.20
15.00	15.00	85.00	84.65	155.00	153.18
16.00	16.00	86.00	85.64	156.00	154.15
17.00	17.00	87.00	86.62	157.00	155.13
18.00	18.00	88.00	87.61	158.00	156.10
19.00	19.00	89.00	88.59	159.00	157.08
20.00	20.00	90.00	89.58	160.00	158.05
21.00	21.00	91.00	90.57	161.00	159.03
22.00	22.00	92.00	91.55	162.00	160.01
23.00	23.00	93.00	92.54	163.00	160.98
24.00	24.00	94.00	93.52	164.00	161.96
25.00	25.00	95.00	94.50	165.00	162.93
26.00	26.00	96.00	95.48	166.00	163.91
27.00	27.00	97.00	96.46	167.00	164.89
28.00	28.00	98.00	97.45	168.00	165.87
29.00	29.00	99.00	98.43	169.00	166.84
30.00	30.00	100.00	99.42	170.00	167.82
31.00	31.00	101.00	100.40	171.00	168.80
32.00	32.00	102.00	101.38	172.00	169.78
33.00	33.00	103.00	102.36	173.00	170.76
34.00	34.00	104.00	103.34	174.00	171.73
35.00	35.00	105.00	104.32	175.00	172.71
36.00	36.00	106.00	105.30	176.00	173.69
37.00	37.00	107.00	106.28	177.00	174.67
38.00	37.99	108.00	107.26	178.00	175.64
39.00	38.99	109.00	108.24	179.00	176.62
40.00	39.99	110.00	109.21	180.00	177.60
41.00	40.99	111.00	110.19	181.00	178.58
42.00	41.99	112.00	111.18	182.00	179.56
43.00	42.99	113.00	112.16	183.00	180.54
44.00	43.99	114.00	113.14	184.00	181.52
45.00	44.98	115.00	114.12	185.00	182.50
46.00	45.98	116.00	115.10		
47.00	46.98	117.00	116.07		
48.00	47.97	118.00	117.05		
49.00	48.97	119.00	118.02		
50.00	49.96	120.00	119.00		
51.00	50.96	121.00	119.97		
52.00	51.96	122.00	120.94		
53.00	52.95	123.00	121.92		
54.00	53.95	124.00	122.89		
55.00	54.94	125.00	123.87		
56.00	55.94	126.00	124.85		
57.00	56.93	127.00	125.83		
58.00	57.93	128.00	126.80		
59.00	58.92	129.00	127.78		
60.00	59.91	130.00	128.76		
61.00	60.90	131.00	129.74		
62.00	61.90	132.00	130.72		
63.00	62.89	133.00	131.70		
64.00	63.88	134.00	132.67		
65.00	64.87	135.00	133.65		
66.00	65.87	136.00	134.63		
67.00	66.86	137.00	135.61		
68.00	67.85	138.00	136.58		
69.00	68.84	139.00	137.56		
70.00	69.83	140.00	138.54		

COMPANY	MANALTA
WELL	T93R-25
FIELD	SITE 21
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 21
WELL:
T93R-25
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-25
FIELD SITE 21
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#8

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	20-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	185.9M	
DEPTH-LOGGER	183.2M	
FIRST READING	183M	
LAST READING	00M	
CASING-DRILLER	12.8M	
CASING-LOGGER	12.8M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE	N/A	
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	12.8M	TD	178MM	N/A	SURFACE	12.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 20-SEP-1993 AT 14:35
FILENAME: DD3AR25M.CIB RUN ID: MAIN LOG PLOTTED ON 20-SEP-1993 AT 15:01

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 20-SEP-1993 AT 14:35
FILENAME: DD3AR25M.CIB RUN ID: MAIN LOG PLOTTED ON 20-SEP-1993 AT 14:36

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 20-SEP-1993 AT 12:53

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	12.80
BIT SIZE 3	.00	BIT DEPTH 3	185.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-25
FIELD	SITE 21
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 21
WELL:
T93R-25
COMPANY:
MANALTA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-25
FIELD	SITE 21
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	20-SEP-93						
RUN NUMBER	FOUR						
DEPTH-DRILLER	185.9M						
DEPTH-LOGGER	183.2M						
FIRST READING	183M						
LAST READING	00M						
CASING-DRILLER	12.8M						
CASING-LOGGER	12.8M						
BIT SIZE	156MM						
HOLE FLUID TYPE	AIR/WATER						
DENS./VISC.	1.01	N/A					
PH/FLUID LOSS	N/A	N/A					
SAMPLE SOURCE	N/A						
RM ● MEAS TEMP							
RMF ● MEAS TEMP							
RMC ● MEAS TEMP							
SOURCE: RMF/RMC							
RM ● BHT							
TIME SINCE CIRC							
MAX REC TEMP							
EQUIPMENT/BASE	V222	RDR					
RECORDED BY	B. STEVENSON						
WITNESSED BY	T. BRAZZONI						
WATER LEVEL	00M						

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	12.8M	TD	178MM	N/A	SURFACE	12.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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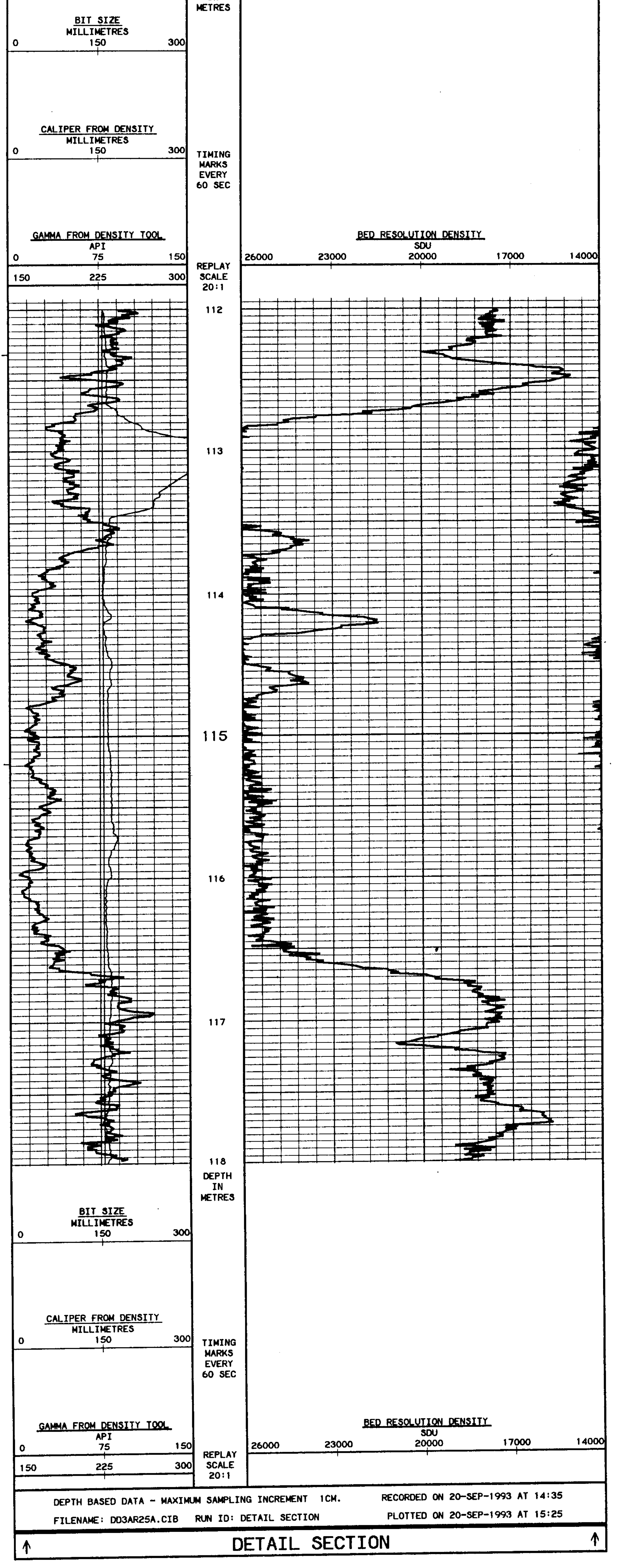
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 20-SEP-1993 AT 14:35
FILENAME: DD3AR25A.CIB RUN ID: DETAIL SECTION PLOTTED ON 20-SEP-1993 AT 15:25



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 20-SEP-1993 AT 14:35
FILENAME: DD3AR25A.CIB RUN ID: DETAIL SECTION PLOTTED ON 20-SEP-1993 AT 15:25

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 20-SEP-1993 AT 12:53 DATA LAST REPROCESSED: 20-SEP-1993 AT 15:18

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	12.80
BIT SIZE 3	.00	BIT DEPTH 3	185.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-25
FIELD	SITE 21
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

COMPANY	MANALTA
WELL	T93R-25
FIELD	SITE 21
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

#87

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 21
WELL: T93R-25
COMPANY: MANALTA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	20-SEP-93				
RUN NUMBER	THREE				
DEPTH-DRILLER	185.9M				
DEPTH-LOGGER	183.2M				
FIRST READING	183M				
LAST READING	00M				
CASING-DRILLER	12.8M				
CASING-LOGGER	12.8M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE	N/A				
RM ● MEAS TEMP					
RMF ● MEAS TEMP					
RMC ● MEAS TEMP					
SOURCE: RMF/RMC					
RM ● BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	B. STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	00M				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	12.8M	TD	178MM	N/A	SURFACE	12.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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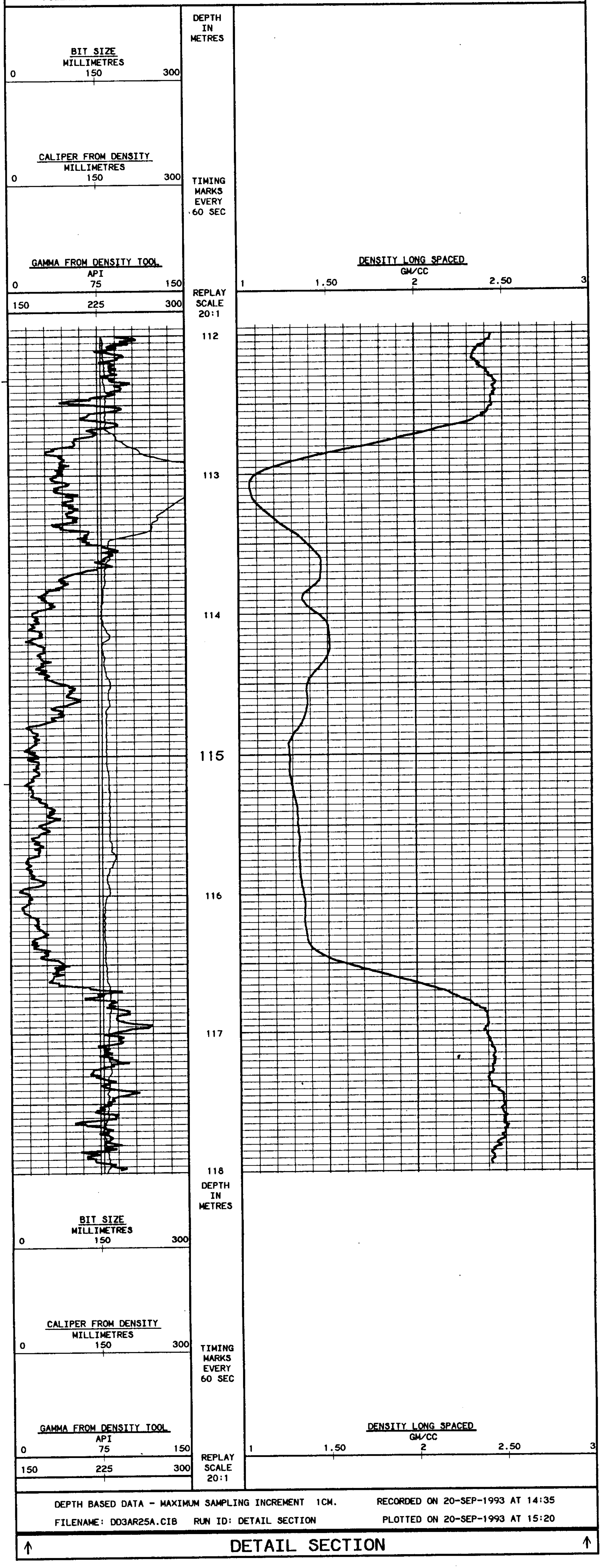
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 20-SEP-1993 AT 14:35
FILENAME: DD3AR25A.CIB RUN ID: DETAIL SECTION PLOTTED ON 20-SEP-1993 AT 15:21



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 20-SEP-1993 AT 14:35
FILENAME: DD3AR25A.CIB RUN ID: DETAIL SECTION PLOTTED ON 20-SEP-1993 AT 15:20

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 20-SEP-1993 AT 12:53 DATA LAST REPROCESSED: 20-SEP-1993 AT 15:18

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	12.80
BIT SIZE 3	.00	BIT DEPTH 3	185.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-25
FIELD	SITE 21
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

879

#8[illegible]

COMPANY MANALTA
WELL T93R-26
FIELD SITE 23
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 23
WELL:
T93R-26
COMPANY:
MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	19-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	86M	
DEPTH-LOGGER	86M	
FIRST READING	85M	
LAST READING	0M	
CASING-DRILLER	31.4M	
CASING-LOGGER	31.4M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

T93R-26

VERTICALITY DATA LISTING

ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH

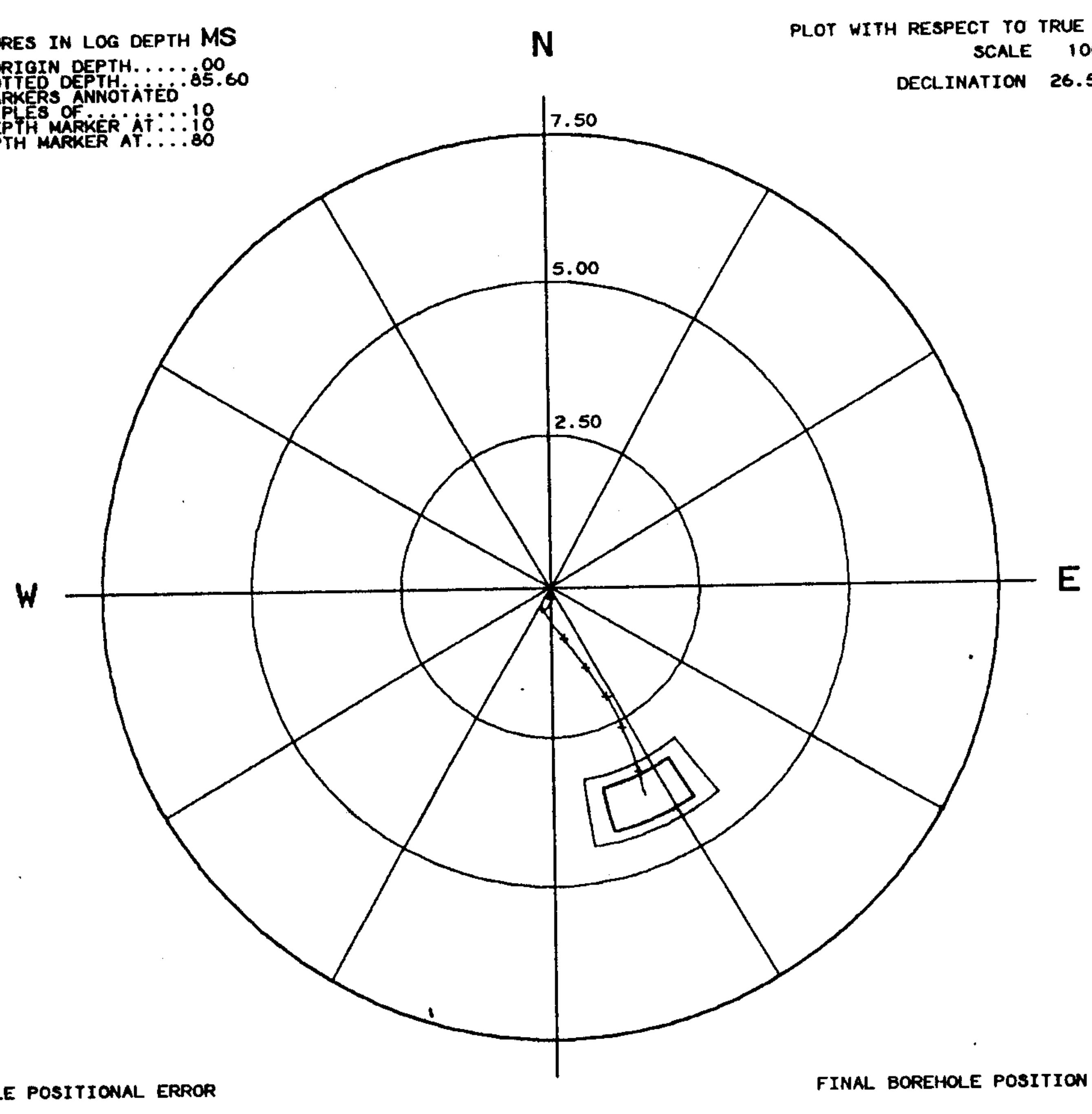
DATE PROCESSED: 19-SEP-1993
DATE LOGGED: 19-SEP-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
1.00	1.00	3.6	150	-0.06	-0.02	203	0.06	203	0.06	203	0.06	203	0.06	203	0.06
2.00	2.00	1.3	149	-0.08	-0.01	189	0.08	188	0.09	190	0.08	188	0.09	189	0.08
3.00	3.00	1.0	181	-0.10	-0.01	187	0.10	186	0.11	188	0.09	186	0.11	187	0.10
4.00	4.00	1.0	175	-0.12	-0.01	184	0.12	183	0.13	185	0.11	183	0.13	184	0.11
5.00	5.00	0.9	186	-0.14	-0.01	183	0.14	182	0.15	184	0.12	183	0.14	184	0.13
6.00	6.00	1.1	239	-0.13	-0.01	184	0.13	183	0.15	185	0.12	183	0.14	184	0.13
7.00	7.00	0.8	165	-0.14	-0.01	183	0.14	183	0.16	185	0.12	183	0.15	184	0.13
8.00	8.00	0.6	110	-0.15	0.00	180	0.15	178	0.17	182	0.13	179	0.16	181	0.14
9.00	9.00	0.8	114	-0.15	0.01	175	0.15	173	0.17	178	0.13	174	0.16	176	0.14
10.00	10.00	0.6	79	-0.16	0.02	171	0.16	169	0.18	174	0.14	170	0.17	172	0.15
11.00	11.00	0.1	214	-0.16	0.03	169	0.16	167	0.18	173	0.14	168	0.17	171	0.15
12.00	12.00	0.4	190	-0.15	0.03	169	0.16	167	0.18	173	0.13	168	0.17	171	0.14
13.00	13.00	0.5	145	-0.16	0.03	168	0.16	165	0.19	172	0.14	166	0.17	170	0.15
14.00	14.00	0.6	156	-0.17	0.04	167	0.17	165	0.20	171	0.14	166	0.19	169	0.16
15.00	15.00	0.7	187	-0.18	0.04	167	0.18	165	0.22	171	0.15	166	0.20	169	0.17
16.00	16.00	0.9	223	-0.19	0.03	170	0.20	168	0.23	173	0.16	169	0.21	172	0.18
17.00	17.00	1.0	194	-0.21	0.02	173	0.21	171	0.25	176	0.17	172	0.23	175	0.19
18.00	17.99	0.7	339	-0.20	0.02	174	0.20	172	0.24	177	0.17	173	0.22	175	0.18
19.00	18.99	0.3	337	-0.19	0.02	175	0.19	173	0.22	178	0.16	174	0.21	176	0.18
20.00	19.99	0.2	29	-0.19	0.02	175	0.19	173	0.22	178	0.16	174	0.20	177	0.17
21.00	20.99	0.1	231	-0.19	0.01	175	0.19	174	0.22	178	0.16	174	0.20	177	0.17
22.00	21.99	0.7	168	-0.19	0.02	174	0.19	172	0.23	177	0.16	173	0.21	176	0.18
23.00	22.99	1.0	143	-0.20	0.02	175	0.20	173	0.24	178	0.17	174	0.22	177	0.19
24.00	23.99	1.6	229	-0.22	0.01	178	0.22	177	0.25	181	0.18	177	0.23	180	0.20
25.00	24.99	2.6	224	-0.24	0.00	181	0.24	179	0.28	184	0.20	180	0.26	182	0.22
26.00	25.99	2.9	200	-0.28	-0.03	186	0.28	185	0.32	189	0.24	185	0.30	188	0.26
27.00	26.99	3.2	222	-0.33	-0.06	190	0.33	188	0.37	193	0.29	189	0.35	191	0.31
28.00	27.99	3.4	260	-0.37	-0.10	195	0.38	193	0.43	197	0.34	194	0.40	196	0.36
29.00	28.99	2.9	279	-0.39	-0.14	200	0.42	198	0.46	202	0.37	199	0.44	201	0.39
30.00	29.99	2.4	276	-0.36	-0.16	204	0.39	201	0.43	206	0.35	202	0.41	205	0.37
31.00	30.99	1.8	132	-0.38	-0.14	199	0.41	197	0.45	202	0.36	198	0.43	201	0.38
32.00	31.98	3.6	146	-0.42	-0.10	194	0.43	192	0.48	196	0.38	193	0.45	195	0.41
33.00	32.98	3.6	148	-0.47	-0.07	188	0.47	187	0.52	190	0.42	187	0.50	189	0.45
34.00	33.98	3.8	144	-0.52	-0.03	184	0.52	183	0.57	185	0.46	183	0.55	184	0.49
35.00	34.98	4.0	145	-0.57	0.00	180	0.57	179	0.62	181	0.51	179	0.60	180	0.54
36.00	35.98	4.7	147	-0.63	0.04	176	0.63	176	0.69	177	0.57	176	0.66	176	0.60
37.00	36.97	4.6	136	-0.69	0.09	173	0.70	172	0.76	173	0.63	173	0.73	173	0.66
38.00	37.97	3.9	135	-0.75	0.13	170	0.76	170	0.83	170	0.69	170	0.79	170	0.73
39.00	38.97	4.0	147	-0.81	0.18	168	0.83	168	0.90	168	0.75	168	0.86	168	0.79
40.00	39.97	3.9	146	-0.86	0.22	166	0.89	166	0.96	166	0.81	166	0.93	166	0.85
41.00	40.96	3.6	147	-0.92	0.26	164	0.95	164	1.03	164	0.87	164	0.99	164	0.91
42.00	41.96	3.5	149	-0.97	0.29	163	1.01	163	1.10	163	0.93	163	1.06	163	0.97
43.00	42.96	3.2	133	-1.01	0.33	162	1.06	162	1.15	162	0.98	162	1.11	162	1.02
44.00	43.96	3.8	142	-1.05	0.36	161	1.12	161	1.20	161	1.03	161	1.16	161	1.07
45.00	44.96	3.4	139	-1.10	0.40	160	1.17	160	1.26	160	1.08	160	1.22	160	1.13
46.00	45.95	3.3	142	-1.14	0.43	159	1.22	159	1.32	159	1.13	159	1.27	159	1.18
47.00	46.95	3.5	144	-1.19	0.47	158	1.28	159	1.38	158	1.18	159	1.33	158	1.23
48.00	47.95	3.3	146	-1:24	0.50	158	1.34	158	1.44	158	1.24	158	1.39	158	1.29
49.00	48.95	4.0	144	-1.29	0.54	157	1.40	157	1.50	157	1.29	157	1.45	157	1.34
50.00	49.95	4.3	144	-1.35	0.58	157	1.47	157	1.58	156	1.36	157	1.52	156	1.41
51.00	50.94	4.0	145	-1.41	0.63	156	1.54	156	1.65	156	1.43	156	1.59	156	1.48
52.00	51.94	3.5	147	-1.46	0.67	156	1.61	156	1.72	155	1.49	156	1.66	155	1.55
53.00	52.94	3.6	145	-1.51	0.70	155	1.66	155	1.78	155	1.55	155	1.72	155	1.61
54.00	53.94	3.1	147	-1.56	0.73	155	1.72	155	1.84	155	1.60	155	1.78	155	1.66
55.00	54.94	2.8	137	-1.60	0.76	155	1.77	155	1.89	154	1.65	155	1.83	154	1.71
56.00	55.94	3.9	145	-1.65	0.80	154	1.83	154	1.96	154	1.70	154	1.90	154	1.77
57.00	56.93	3.4	149	-1.70	0.83	154	1.89	154	2.03	154	1.76	154	1.96	154	1.83
58.00	57.93	3.2	150	-1.75	0.86	154	1.95	154	2.08	154	1.81	154	2.02	154	1.88
59.00	58.93	2.5	144	-1.78	0.89	154	1.99	154	2.13	153	1.85	154	2.06	154	1.92
60.00	59.93	3.0	149	-1.83	0.91	153	2.04	154	2.18	153	1.90	153	2.11	153	1.97
61.00	60.93	2.5	146	-1.87	0.94	153	2.09	153	2.24	153	1.95	153	2.16	153	2.02
62.00	61.93	2.8	148	-1.91	0.96	153	2.14	153	2.28	153	1.99	153	2.21	153	2.06
63.00	62.92	4.2	148	-1.97	1.00	153	2.21	153	2.36	153	2.05	153	2.28	153	2.13
64.00	63.92	3.2	154	-2.03	1.03	153	2.27	153	2.43	153	2.12	153	2.35	153	2.20
65.00	64.92	3.5	151	-2.08	1.06	153	2.33	153	2.49	153	2.17	153	2.41	153	2.25
66.00	65.92	3.8	156	-2.14	1.08	153	2.39	153	2.56	153	2.23	153	2.48	153	2.31
67.00	66.92	2.9	159	-2.19	1.11	153	2.45	153	2.62	153	2.29	153	2.53	153	2.37
68.00	67.92	3.4	159	-2.24	1.13	153	2.51	153	2.68	153	2.34	153	2.59	153	2.42
69.00	68.91	3.3	158	-2.30	1.15	153	2.57	153	2.74	153	2.39	153	2.65	153	2.48
70.00	69.91	3.2	162	-2.35	1.17	154	2.62	154	2.80	153	2.45	154	2.71	153	2.54
71.00	70.91	4.1	157	-2.41	1.19	154	2.69	154	2.87	154	2.51	154	2.78	154	2.60
72.00	71.91	4.9	148	-2.47	1.22	154	2.76	154	2.94	154	2.58	154	2.85	154	2.67
73.00	72.90	4.7	153	-2.55	1.26	154	2.84	154	3.03	154	2.65	154	2.93	154	2.75
74.00	73.90	4.9	158	-2.62	1.29	154	2.92	154	3.11	154	2.73	154	3.02	154	2.83
75.00	74.90	4.7	158	-2.70	1.32	154	3.00	154	3.20	154	2.81	154	3.10	154	2.91
76.00	75.89	4.7	164	-2.77	1.35	154	3.08	154	3.28	154	2.88	154	3.18	154	2.98
77.00	76.89	4.3	160	-2.84	1.36	154	3.15	154	3.35	154	2.95	154	3.25	154	3.05
78.00	77.89	4.2	161	-2.91	1.39	155	3.23	155	3.43	154	3.02	155	3.33	154	3.13
79.00	78.88	4.5	162	-2.99	1.42	155	3.31	155	3.52	155	3.10	155	3.41	155	3.21
80.00	79.88	4.9	164	-3.07	1.44	155	3.39	155	3.60	155	3.18	155	3.50	155	3.28
81.00	80.88	5.1	165	-3.15	1.46	155	3.47	155	3.68	155	3.26	155	3.58	155	3.36
82.00	81.88	4.8	142	-3.22	1.48	155	3.54	155	3.76	155	3.32	155	3.65	155	3.43
83.00	82.87	4.5	173	-3.30	1.49	156	3.62	156	3.84	156	3.40	156	3.73	156	3.51
84.00	83.87	3.7	156	-3.37	1.51	156	3.69	156	3.92	156	3.47	156	3.80	156	3.58
85.00	84.87	5.0	152	-3.43	1.54	156	3.76	156	3.99	156	3.54	156	3.88	156	3.65
85.60	85.46	6.1	163	-3.48	1.56	156	3.82	156	4.05	156	3.59	156	3.93	156	3.70

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......00
LAST PLOTTED DEPTH......85.60
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....80

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

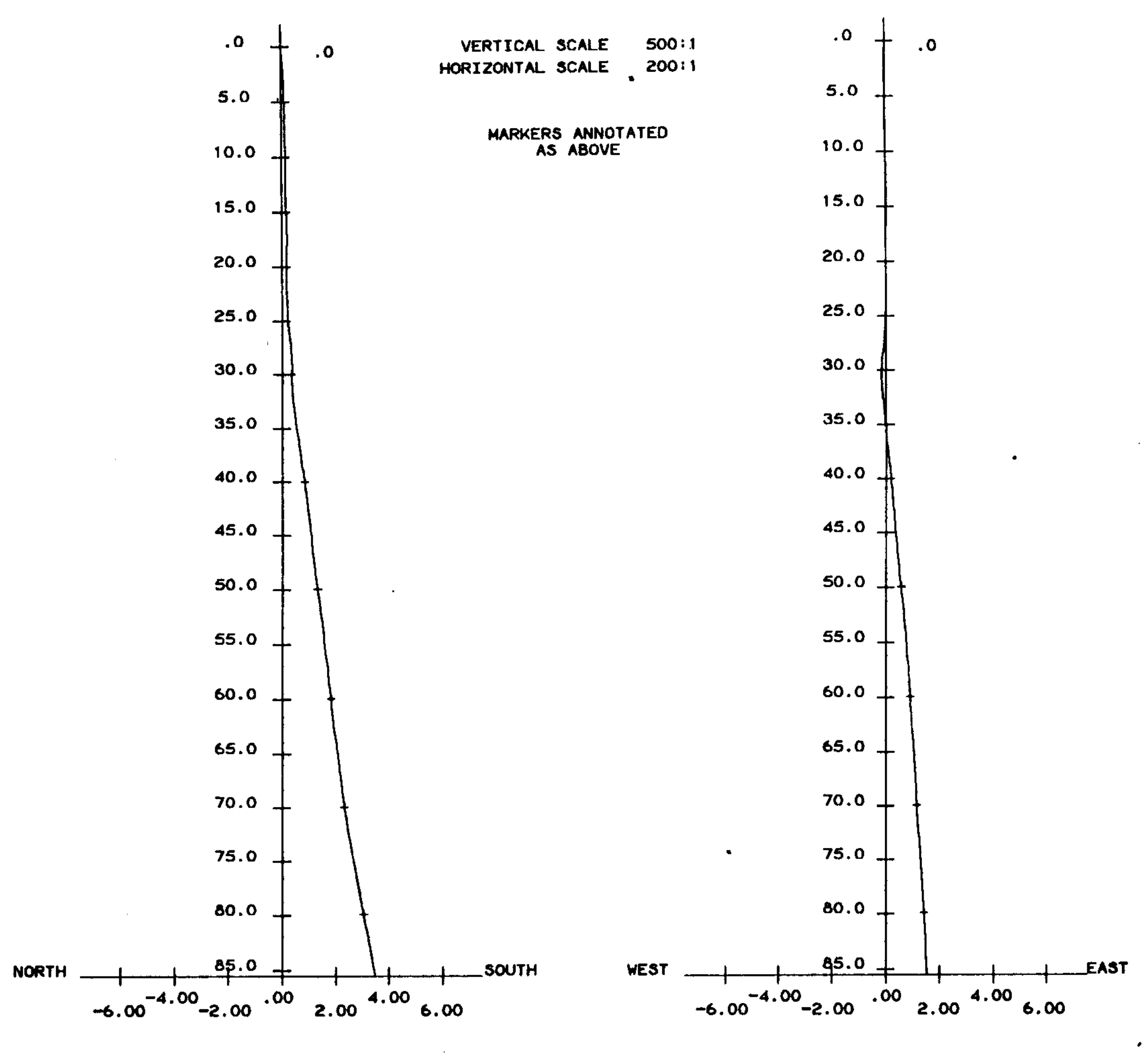
THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

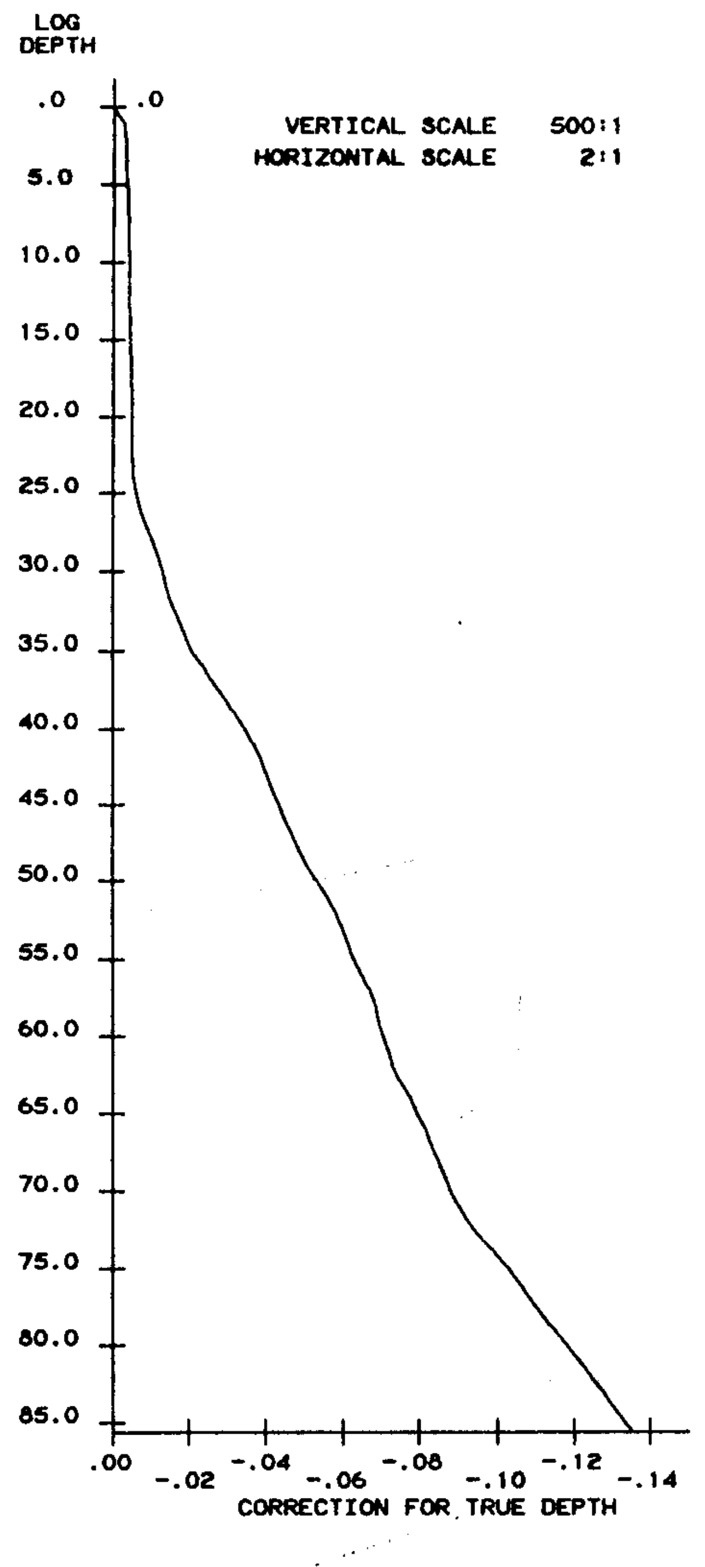
THE LAST PLOTTED DEPTH IS AT 3.48 MS SOUTH, 1.56 MS EAST IE. 3.82 MS FROM THE ORIGIN, 156 DEG FROM TRUE NORTH

VERTICAL SECTIONS

(TRUE DEPTH VS DISPLACEMENT)



DEPTH CORRECTION ANALYSIS



DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE
1.00	1.00	71.00	70.91
2.00	2.00	72.00	71.91
3.00	3.00	73.00	72.90
4.00	4.00	74.00	73.90
5.00	5.00	75.00	74.90
6.00	6.00	76.00	75.89
7.00	7.00	77.00	76.89
8.00	8.00	78.00	77.89
9.00	9.00	79.00	78.88
10.00	10.00	80.00	79.88
11.00	11.00	81.00	80.88
12.00	12.00	82.00	81.88
13.00	13.00	83.00	82.87
14.00	14.00	84.00	83.87
15.00	15.00	85.00	84.87
16.00	16.00	85.60	85.46
17.00	17.00		
18.00	17.99		
19.00	18.99		
20.00	19.99		
21.00	20.99		
22.00	21.99		
23.00	22.99		
24.00	23.99		
25.00	24.99		
26.00	25.99		
27.00	26.99		
28.00	27.99		
29.00	28.99		
30.00	29.99		
31.00	30.99		
32.00	31.98		
33.00	32.98		
34.00	33.98		
35.00	34.98		
36.00	35.98		
37.00	36.97		
38.00	37.97		
39.00	38.97		
40.00	39.97		
41.00	40.96		
42.00	41.96		
43.00	42.96		
44.00	43.96		
45.00	44.96		
46.00	45.95		
47.00	46.95		
48.00	47.95		
49.00	48.95		
50.00	49.95		
51.00	50.94		
52.00	51.94		
53.00	52.94		
54.00	53.94		
55.00	54.94		
56.00	55.94		
57.00	56.93		
58.00	57.93		
59.00	58.93		
60.00	59.93		
61.00	60.93		
62.00	61.93		
63.00	62.92		
64.00	63.92		
65.00	64.92		
66.00	65.92		
67.00	66.92		
68.00	67.92		
69.00	68.91		
70.00	69.91		

COMPANY	MANALTA
WELL	T93R-26
FIELD	SITE 23
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 23
WELL:
T93R-26
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-26
FIELD	SITE 23
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	19-SEP-93				
RUN NUMBER	THREE				
DEPTH-DRILLER	86M				
DEPTH-LOGGER	86M				
FIRST READING	85M				
LAST READING	OOM				
CASING-DRILLER	31.4M				
CASING-LOGGER	31.4M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE	N/A				
RM ● MEAS TEMP					
RMF ● MEAS TEMP					
RMC ● MEAS TEMP					
SOURCE: RMF/RMC					
RM ● BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	B. STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	OOM				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	31.4M	TD	178MM	N/A	SURFACE	31.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 19-SEP-1993 AT 16:25
FILENAME: DD3AR26A.CIB RUN ID: DETAIL SECTION PLOTTED ON 20-SEP-1993 AT 15:54

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

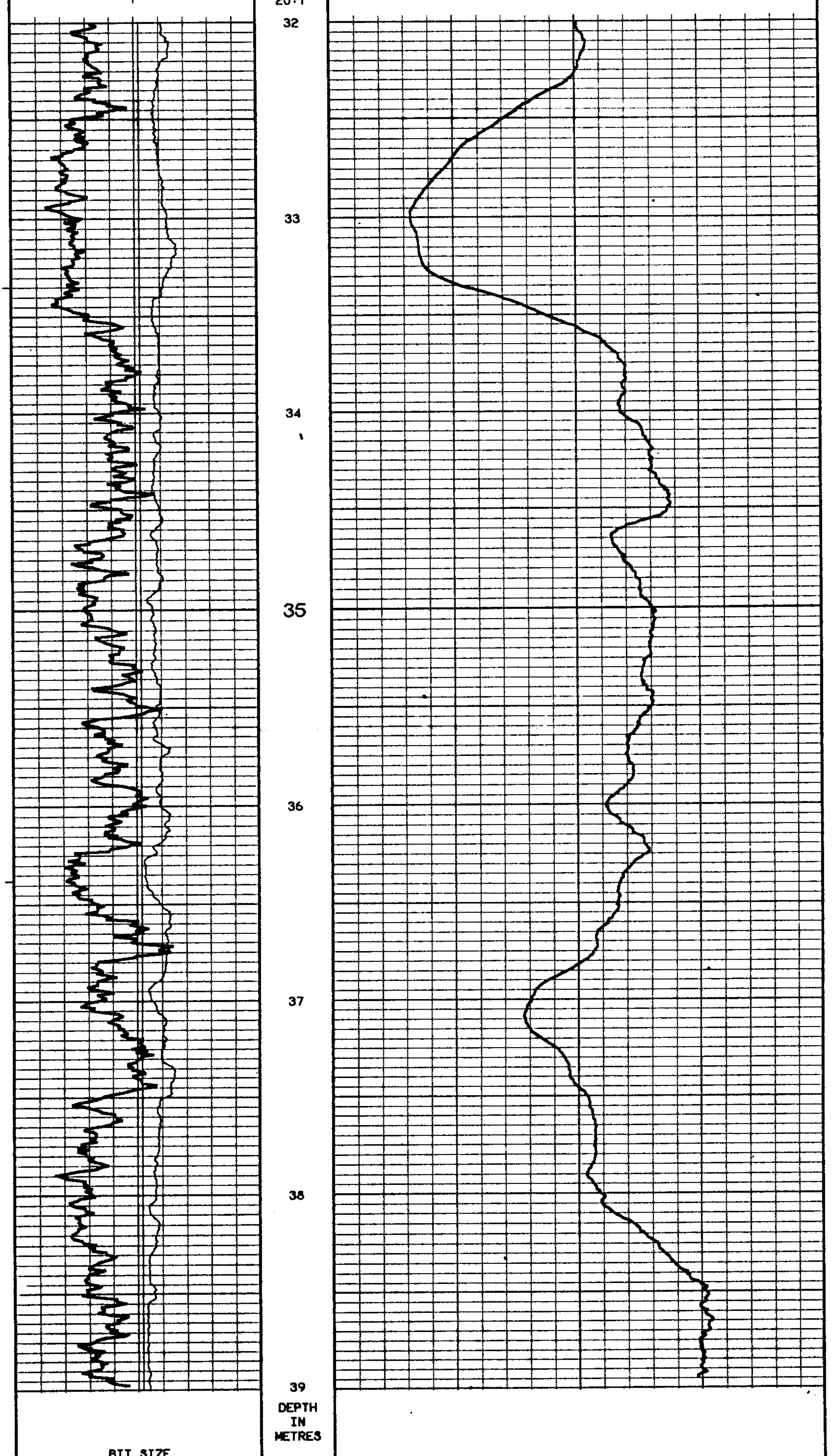
CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 19-SEP-1993 AT 16:25
FILENAME: DD3AR26A.CIB RUN ID: DETAIL SECTION PLOTTED ON 20-SEP-1993 AT 15:52

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 19-SEP-1993 AT 15:37 DATA LAST REPROCESSED: 20-SEP-1993 AT 15:51

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	31.40
BIT SIZE 3	.00	BIT DEPTH 3	86.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-26
FIELD	SITE 23
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

8379

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 23
WELL:
T93R-26
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-26
FIELD SITE 23
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	19-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	86M			
DEPTH-LOGGER	86M			
FIRST READING	85M			
LAST READING	00M			
CASING-DRILLER	31.4M			
CASING-LOGGER	31.4M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	31.4M	TD	178MM	N/A	SURFACE	31.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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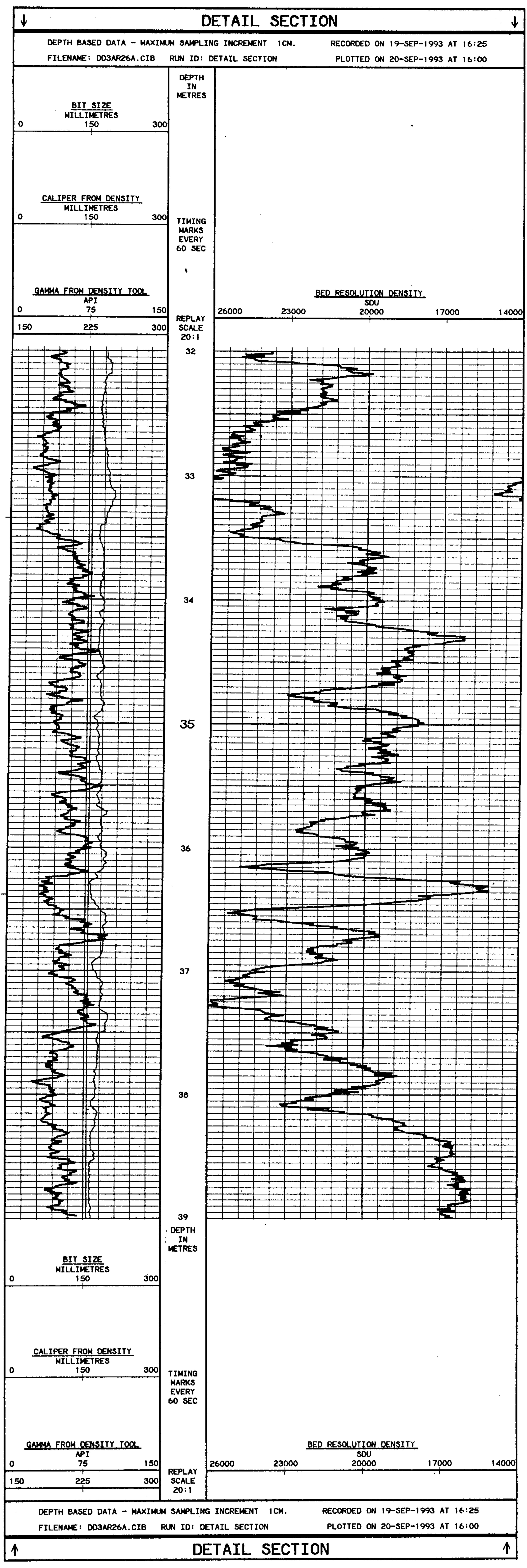
DETAIL SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 19-SEP-1993 AT 16:25
FILENAME: DD3AR26A.CIB RUN ID: DETAIL SECTION PLOTTED ON 20-SEP-1993 AT 16:00



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 19-SEP-1993 AT 16:25
FILENAME: DD3AR26A.CIB RUN ID: DETAIL SECTION PLOTTED ON 20-SEP-1993 AT 16:00

DETAIL SECTION

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 19-SEP-1993 AT 15:37 DATA LAST REPROCESSED: 20-SEP-1993 AT 15:51

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	31.40
BIT SIZE 3	.00	BIT DEPTH 3	86.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-26
FIELD	SITE 23
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

79

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 23
WELL:
T93R-26
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-26
FIELD	SITE 23
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	19-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	86M	
DEPTH-LOGGER	86M	
FIRST READING	85M	
LAST READING	00M	
CASING-DRILLER	31.4M	
CASING-LOGGER	31.4M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE	N/A	
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	31.4M	TD	178MM	N/A	SURFACE	31.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 19-SEP-1993 AT 16:25
FILENAME: DD3AR26M.CIB RUN ID: MAIN LOG PLOTTED ON 19-SEP-1993 AT 16:40

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 19-SEP-1993 AT 16:25
FILENAME: DD3AR26M.CIB RUN ID: MAIN LOG PLOTTED ON 19-SEP-1993 AT 16:26

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 19-SEP-1993 AT 15:37

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	31.40
BIT SIZE 3	.00	BIT DEPTH 3	86.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-26
FIELD	SITE 23
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 22
WELL: T93R-28
COMPANY: MANALTA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY MANALTA
WELL T93R-28
FIELD SITE 22
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	21-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	146.9M			
DEPTH-LOGGER	146.7M			
FIRST READING	146M			
LAST READING	00M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS. VISC.	1.01 N/A			
PH FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC. TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	26M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 16:20
FILENAME: DD3AR28B.CIB RUN ID: DETAIL SECTION PLOTTED ON 21-SEP-1993 AT 17:27

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

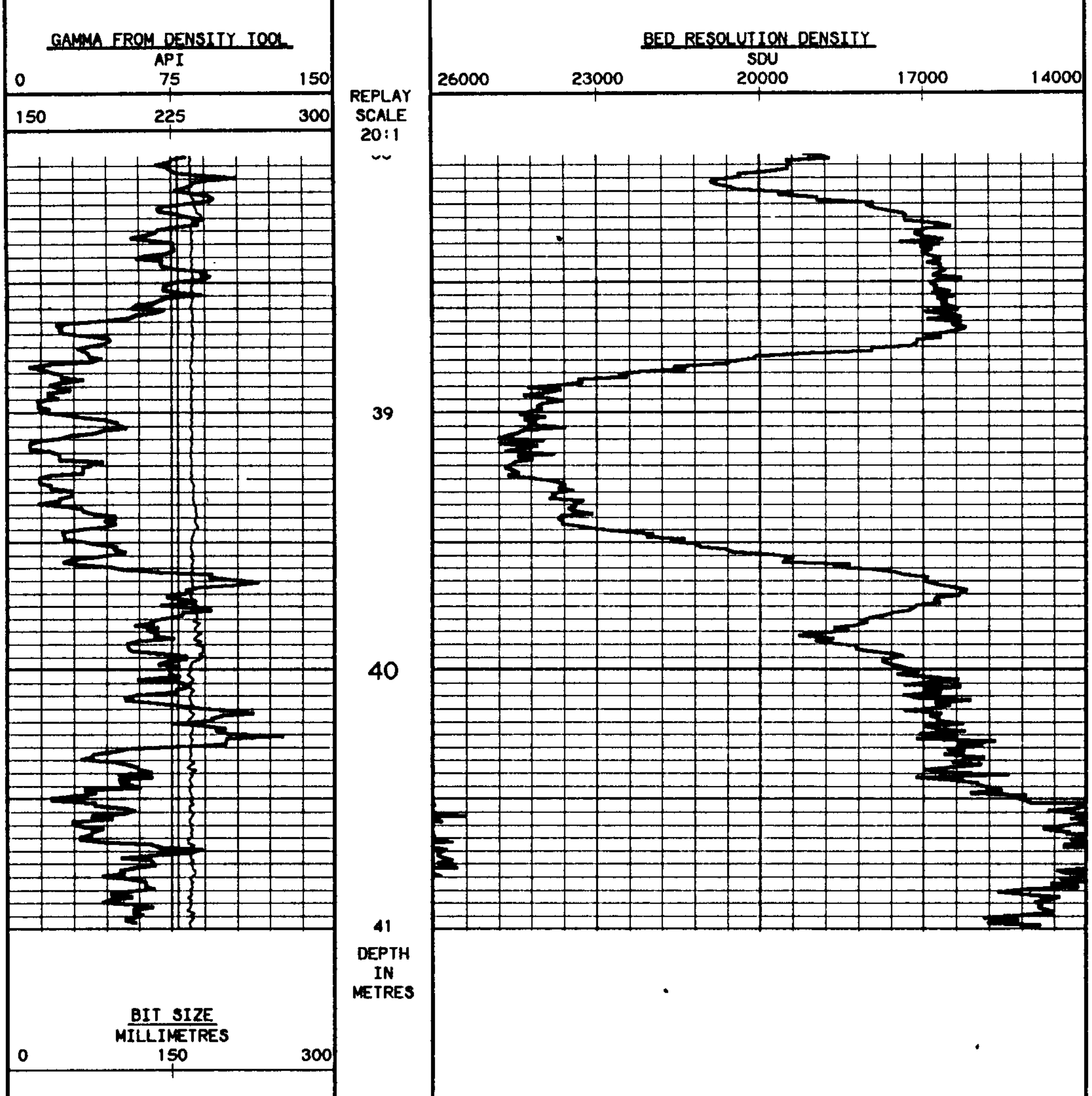
GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 16:20
FILENAME: DD3AR28B.CIB RUN ID: DETAIL SECTION PLOTTED ON 21-SEP-1993 AT 17:27

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 16:20
FILENAME: DD3AR28A.CIB RUN ID: DETAIL SECTION PLOTTED ON 21-SEP-1993 AT 17:24

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 16:20
FILENAME: DD3AR28A.CIB RUN ID: DETAIL SECTION PLOTTED ON 21-SEP-1993 AT 17:24

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 21-SEP-1993 AT 16:17 DATA LAST REPROCESSED: 21-SEP-1993 AT 17:12

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	146.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-28
FIELD	SITE 22
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER
#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 22
WELL:
T93R-28
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-28
FIELD SITE 22
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	21-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	146.9M			
DEPTH-LOGGER	146.7M			
FIRST READING	146M			
LAST READING	00M			
CASING-DRILLER	18.3M			
CASING-LOGGER	18.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	26M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 21-SEP-1993 AT 16:20
FILENAME: DD3AR28M.CIB RUN ID: MAIN LOG PLOTTED ON 21-SEP-1993 AT 17:02

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 21-SEP-1993 AT 16:20
FILENAME: DD3AR28M.CIB RUN ID: MAIN LOG PLOTTED ON 21-SEP-1993 AT 17:02

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 21-SEP-1993 AT 16:17

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	146.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-28
FIELD	SITE 22
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 22
WELL:
T93R-28
COMPANY:
MANALTA

LONG SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#0 879

COMPANY	MANALTA
WELL	T93R-28
FIELD	SITE 22
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION: TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	21-SEP-93
RUN NUMBER	THREE
DEPTH-DRILLER	146.9M
DEPTH-LOGGER	146.7M
FIRST READING	146M
LAST READING	0OM
CASING-DRILLER	18.3M
CASING-LOGGER	18.3M
BIT SIZE	156MM
HOLE FLUID TYPE	AIR/WATER
DENS./VISC.	1.01 N/A
PH/FLUID LOSS	N/A N/A
SAMPLE SOURCE	N/A
RM @ MEAS TEMP	
RMF @ MEAS TEMP	
RMC @ MEAS TEMP	
SOURCE: RMF/RMC	
RM @ BHT	
TIME SINCE CIRC	
MAX REC TEMP	
EQUIPMENT/BASE	V222 RDR
RECORDED BY	B. STEVENSON
WITNESSED BY	T. BRAZZONI
WATER LEVEL	26M

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	18.3M	TD	178MM	N/A	SURFACE	18.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

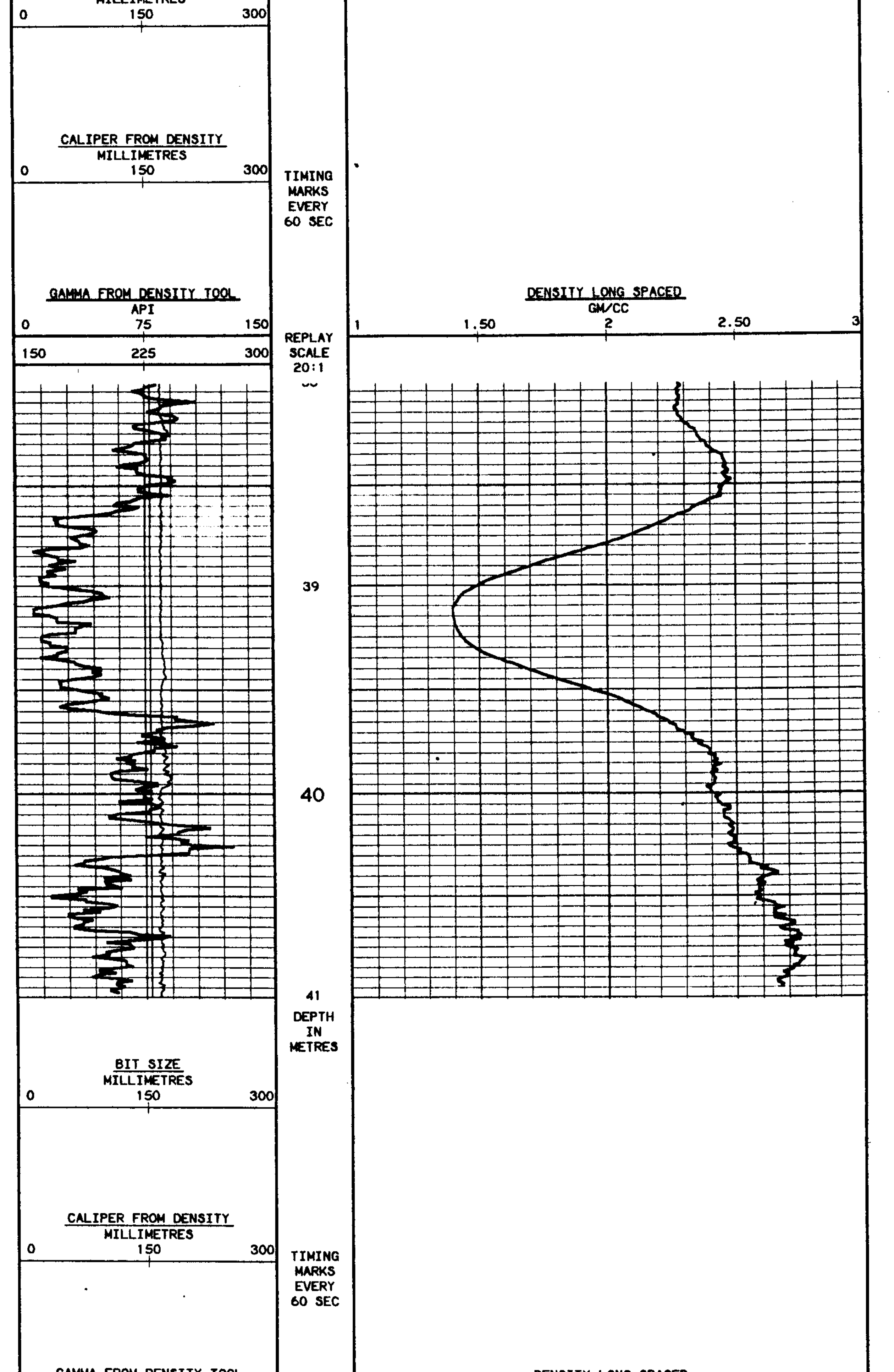
LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

DETAIL SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 16:20
FILENAME: DD3AR28B.CIB RUN ID: DETAIL SECTION PLOTTED ON 21-SEP-1993 AT 17:18



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 16:20
FILENAME: DD3AR28B.CIB RUN ID: DETAIL SECTION PLOTTED ON 21-SEP-1993 AT 17:17

DETAIL SECTION

DETAIL SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 16:20
FILENAME: DD3AR28A.CIB RUN ID: DETAIL SECTION PLOTTED ON 21-SEP-1993 AT 17:17

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 16:20
FILENAME: DD3AR28A.CIB RUN ID: DETAIL SECTION PLOTTED ON 21-SEP-1993 AT 17:13

DETAIL SECTION

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 21-SEP-1993 AT 16:17 DATA LAST REPROCESSED: 21-SEP-1993 AT 17:12

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.30
BIT SIZE 3	.00	BIT DEPTH 3	146.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-28
FIELD	SITE 22
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 22
WELL:
T93R-28
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-28
FIELD SITE 22
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES CCS

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	21-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	146.9M	
DEPTH-LOGGER	146.7M	
FIRST READING	146M	
LAST READING	0M	
CASING-DRILLER	18.3M	
CASING-LOGGER	18.3M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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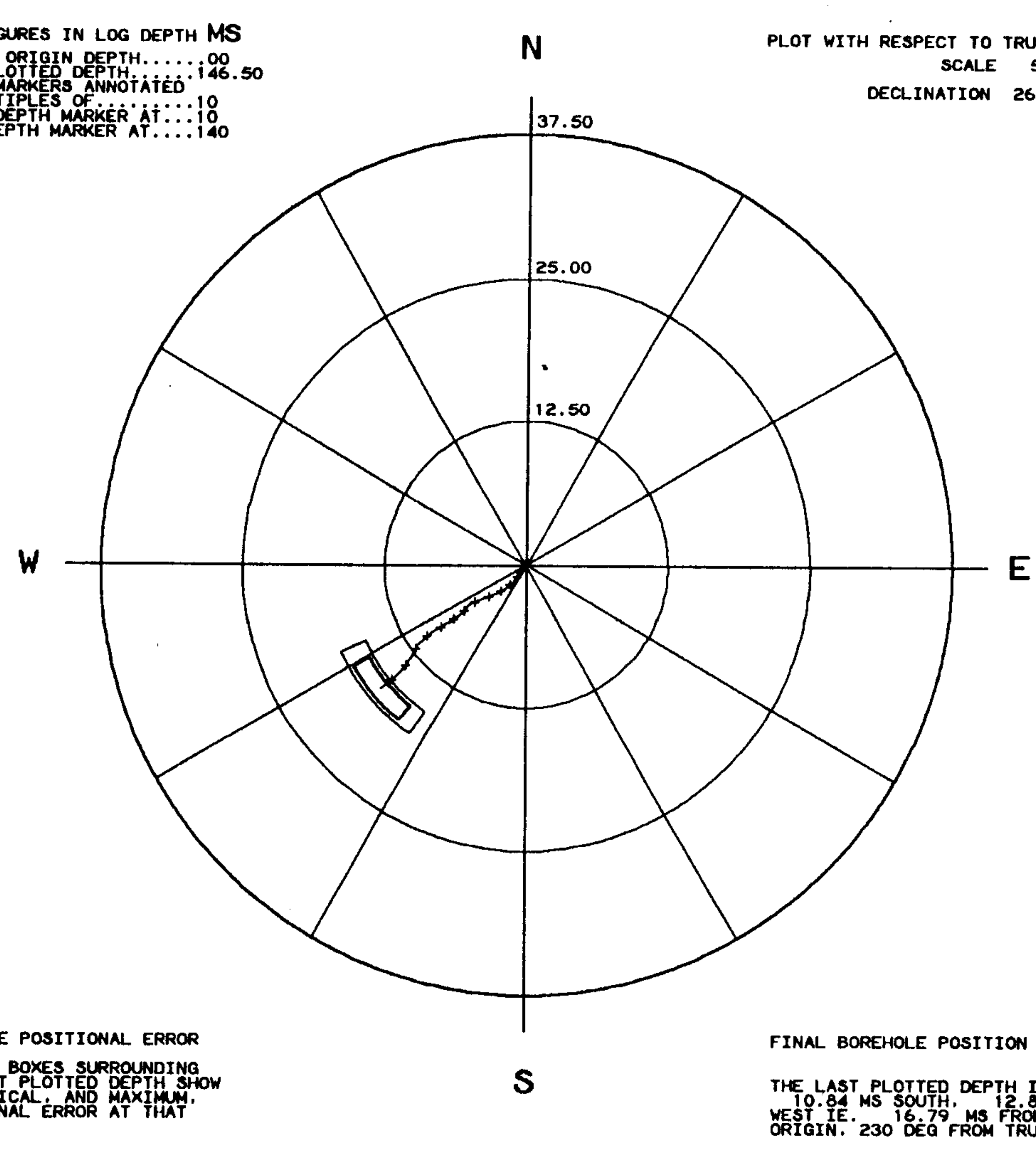
T93R-28                          VERTICALITY DATA LISTING                      DATE PROCESSED: 21-SEP-1993
                       ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH             DATE LOGGED:    21-SEP-1993
    DEPTHS         BOREHOLE   AXIAL CO-ORDS    POLAR        POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG     TRUE     TILT AZI   NORTH     EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

   1.00     1.00   3.8 240   -0.07   -0.04 209   0.08 209   0.09 209   0.08 209   0.08 209   0.08
   2.00     2.00   0.3  35   -0.06   -0.04 216   0.07 217   0.07 216   0.07 217   0.07 216   0.07
   3.00     3.00   0.3 264   -0.06   -0.05 219   0.08 221   0.08 217   0.07 220   0.08 218   0.07
   4.00     4.00   0.8 236   -0.06   -0.06 225   0.09 228   0.09 222   0.08 226   0.09 224   0.08
   5.00     5.00   1.0 322   -0.05   -0.07 234   0.08 238   0.09 230   0.08 236   0.09 232   0.08
   6.00     6.00   1.3 359   -0.04   -0.08 246   0.09 250   0.09 240   0.08 248   0.09 243   0.08
   7.00     6.99   1.2 236   -0.03   -0.09 253   0.09 258   0.10 247   0.08 256   0.10 251   0.09
   8.00     7.99   1.2 255   -0.04   -0.11 252   0.11 255   0.13 247   0.10 254   0.12 249   0.11
   9.00     8.99   1.4 249   -0.05   -0.13 251   0.14 254   0.15 247   0.12 252   0.14 249   0.13
  10.00     9.99   1.8 217   -0.06   -0.15 248   0.16 251   0.18 245   0.14 249   0.17 246   0.15
  11.00    10.99   2.4 232   -0.08   -0.17 246   0.19 248   0.21 243   0.17 247   0.20 244   0.18
  12.00    11.99   2.1 259   -0.10   -0.20 245   0.22 247   0.25 242   0.20 246   0.24 244   0.21
  13.00    12.99   2.4 254   -0.11   -0.24 246   0.27 247   0.30 244   0.24 247   0.28 245   0.25
  14.00    13.99   3.0 227   -0.13   -0.29 246   0.32 247   0.35 244   0.29 246   0.33 245   0.30
  15.00    14.99   3.5 185   -0.18   -0.31 239   0.36 241   0.39 237   0.32 240   0.37 238   0.34
  16.00    15.99   3.8 186   -0.24   -0.31 232   0.39 234   0.43 231   0.36 233   0.41 231   0.38
  17.00    16.99   1.4 186   -0.29   -0.31 227   0.43 229   0.46 226   0.39 228   0.45 227   0.41
  18.00    17.98   3.2 211   -0.33   -0.33 225   0.47 227   0.51 224   0.43 226   0.49 224   0.45
  19.00    18.98   3.6 210   -0.38   -0.37 224   0.53 225   0.57 222   0.49 224   0.55 223   0.51
  20.00    19.98   3.7 208   -0.44   -0.40 222   0.59 223   0.64 221   0.55 223   0.61 222   0.57
  21.00    20.98   3.6 208   -0.49   -0.43 221   0.65 222   0.70 220   0.61 222   0.68 220   0.63
  22.00    21.98   4.0 211   -0.55   -0.46 220   0.72 221   0.77 219   0.66 221   0.74 220   0.69
  23.00    22.97   3.8 210   -0.61   -0.49 219   0.78 220   0.83 218   0.73 220   0.81 219   0.75
  24.00    23.97   4.6 209   -0.66   -0.53 218   0.85 219   0.91 217   0.79 219   0.88 218   0.82
  25.00    24.97   4.5 216   -0.73   -0.57 218   0.92 219   0.98 217   0.86 219   0.95 218   0.89
  26.00    25.97   4.7 221   -0.78   -0.62 218   1.00 219   1.06 217   0.93 219   1.03 218   0.96
  27.00    26.96   4.7 227   -0.84   -0.67 218   1.08 219   1.14 218   1.01 219   1.11 218   1.04
  28.00    27.96   4.9 223   -0.91   -0.72 219   1.16 219   1.23 218   1.09 219   1.20 218   1.12
  29.00    28.96   5.2 218   -0.97   -0.77 219   1.24 219   1.32 218   1.17 219   1.28 218   1.21
  30.00    29.95   5.2 218   -1.04   -0.83 219   1.33 219   1.40 218   1.25 219   1.37 218   1.29
  31.00    30.95   4.5 218   -1.10   -0.87 218   1.41 219   1.49 218   1.33 219   1.45 218   1.37
  32.00    31.94   5.5 221   -1.18   -0.93 218   1.50 219   1.58 218   1.41 219   1.54 218   1.46
  33.00    32.94   5.5 223   -1.25   -0.98 218   1.59 219   1.68 218   1.50 218   1.63 218   1.54
  34.00    33.94   4.9 224   -1.31   -1.04 218   1.67 219   1.77 218   1.58 219   1.72 218   1.63
  35.00    34.93   5.4 226   -1.37   -1.09 219   1.75 219   1.85 218   1.66 219   1.80 218   1.70
  36.00    35.93   5.6 226   -1.43   -1.16 219   1.84 219   1.94 219   1.74 219   1.89 219   1.79
  37.00    36.92   6.1 224   -1.51   -1.23 219   1.95 220   2.05 219   1.84 220   2.00 219   1.89
  38.00    37.92   5.6 230   -1.57   -1.30 220   2.04 220   2.15 219   1.94 220   2.09 220   1.99
  39.00    38.91   5.3 213   -1.65   -1.37 220   2.14 220   2.25 219   2.04 220   2.20 220   2.09
  40.00    39.91   6.0 235   -1.71   -1.45 220   2.24 221   2.35 220   2.13 220   2.30 220   2.18
  41.00    40.90   6.3 229   -1.77   -1.53 221   2.34 221   2.46 220   2.23 221   2.40 221   2.29
  42.00    41.90   5.8 230   -1.84   -1.61 221   2.45 221   2.57 221   2.33 221   2.51 221   2.39
  43.00    42.89   5.1 231   -1.90   -1.69 222   2.54 222   2.66 221   2.42 222   2.60 221   2.48
  44.00    43.89   5.6 230   -1.96   -1.76 222   2.64 222   2.76 222   2.51 222   2.70 222   2.57
  45.00    44.88   6.3 235   -2.03   -1.84 222   2.74 222   2.87 222   2.61 222   2.80 222   2.67
  46.00    45.88   4.8 240   -2.09   -1.92 223   2.84 223   2.97 222   2.71 223   2.91 223   2.77
  47.00    46.87   6.6 240   -2.14   -2.01 223   2.94 223   3.07 223   2.80 223   3.00 223   2.87
  48.00    47.87   5.4 242   -2.19   -2.10 224   3.04 224   3.18 224   2.89 224   3.11 224   2.96
  49.00    48.86   6.6 238   -2.24   -2.18 224   3.13 224   3.27 224   2.98 224   3.20 224   3.06
  50.00    49.85   7.0 246   -2.30   -2.29 225   3.24 225   3.39 225   3.10 225   3.32 225   3.17
  51.00    50.85   6.7 246   -2.35   -2.40 226   3.35 226   3.50 225   3.20 226   3.43 226   3.28
  52.00    51.84   6.4 245   -2.39   -2.49 226   3.45 226   3.60 226   3.30 226   3.53 226   3.37
  53.00    52.83   6.9 249   -2.44   -2.60 227   3.57 227   3.72 227   3.41 227   3.64 227   3.49
  54.00    53.83   6.5 247   -2.48   -2.70 227   3.67 228   3.83 227   3.51 228   3.75 227   3.59
  55.00    54.82   7.0 251   -2.52   -2.80 228   3.77 228   3.93 228   3.60 228   3.85 228   3.68
  56.00    55.81   6.9 250   -2.56   -2.91 229   3.88 229   4.05 229   3.71 229   3.96 229   3.80
  57.00    56.81   7.2 248   -2.60   -3.02 229   3.99 229   4.16 229   3.82 229   4.07 229   3.90
  58.00    57.80   6.6 241   -2.65   -3.12 230   4.09 230   4.27 230   3.92 230   4.18 230   4.01
  59.00    58.80   6.5 245   -2.70   -3.22 230   4.21 230   4.38 230   4.03 230   4.30 230   4.12
  60.00    59.79   7.1 243   -2.76   -3.35 230   4.34 231   4.52 230   4.16 231   4.43 230   4.25
  61.00    60.78   7.9 247   -2.82   -3.47 231   4.47 231   4.66 231   4.29 231   4.57 231   4.38
  62.00    61.77   7.5 246   -2.87   -3.59 231   4.60 231   4.79 231   4.41 231   4.69 231   4.50
  63.00    62.76   7.9 248   -2.92   -3.71 232   4.73 232   4.92 232   4.54 232   4.82 232   4.63
  64.00    63.75   7.7 248   -2.97   -3.83 232   4.84 232   5.04 232   4.65 232   4.94 232   4.75
  65.00    64.74   7.1 254   -3.02   -3.95 233   4.97 233   5.17 233   4.77 233   5.07 233   4.87
  66.00    65.73   7.1 250   -3.06   -4.06 233   5.09 233   5.29 233   4.89 233   5.19 233   4.99
  67.00    66.73   8.0 249   -3.11   -4.18 233   5.21 233   5.42 233   5.01 233   5.31 233   5.11
  68.00    67.72   7.5 241   -3.16   -4.30 234   5.34 234   5.55 234   5.13 234   5.44 234   5.24
  69.00    68.71   3.6 215   -3.22   -4.40 234   5.45 234   5.66 234   5.24 234   5.56 234   5.35
  70.00    69.70   8.0 252   -3.26   -4.52 234   5.58 234   5.79 234   5.36 234   5.68 234   5.47
  71.00    70.69   6.8 250   -3.30   -4.64 235   5.69 235   5.91 235   5.48 235   5.80 235   5.58
  72.00    71.69   7.4 247   -3.33   -4.76 235   5.81 235   6.03 235   5.59 235   5.92 235   5.70
  73.00    72.68   8.5 238   -3.40   -4.88 235   5.95 235   6.17 235   5.72 235   6.06 235   5.83
  74.00    73.67   8.3 251   -3.46   -4.98 235   6.07 235   6.30 235   5.84 235   6.18 235   5.95
  75.00    74.66   8.6 228   -3.54   -5.11 235   6.21 235   6.45 235   5.98 235   6.33 235   6.10
  76.00    75.65   8.0 218   -3.64   -5.20 235   6.35 235   6.58 235   6.11 235   6.47 235   6.23
  77.00    76.64   7.7 213   -3.74   -5.27 235   6.46 235   6.70 235   6.23 235   6.58 235   6.34
  78.00    77.64   7.0 214   -3.83   -5.34 234   6.57 234   6.81 234   6.33 234   6.69 234   6.45
  79.00    78.63   7.1 214   -3.93   -5.41 234   6.69 234   6.93 234   6.44 234   6.81 234   6.57
  80.00    79.62   7.1 214   -4.04   -5.48 234   6.81 234   7.05 234   6.56 234   6.93 234   6.68
  81.00    80.61   7.4 214   -4.14   -5.55 233   6.92 233   7.17 233   6.67 233   7.05 233   6.80
  82.00    81.60   6.7 233   -4.24   -5.62 233   7.04 233   7.29 233   6.79 233   7.17 233   6.91
  83.00    82.60   7.6 248   -4.30   -5.72 233   7.16 233   7.41 233   6.90 233   7.28 233   7.03
  84.00    83.59   6.7 239   -4.36   -5.83 233   7.28 233   7.54 233   7.02 233   7.41 233   7.15
  85.00    84.58   6.7 241   -4.42   -5.92 233   7.39 233   7.65 233   7.12 233   7.52 233   7.25
  86.00    85.58   5.8 227   -4.48   -6.01 233   7.50 233   7.77 233   7.23 233   7.63 233   7.37
  87.00    86.57   7.6 240   -4.56   -6.10 233   7.62 233   7.89 233   7.34 233   7.75 233   7.48
  88.00    87.56   7.6 244   -4.62   -6.21 233   7.74 233   8.01 233   7.47 233   7.88 233   7.60
  89.00    88.55   7.4 242   -4.68   -6.32 233   7.87 233   8.14 233   7.59 233   8.00 233   7.73
  90.00    89.55   7.7 244   -4.74   -6.43 234   7.99 234   8.27 234   7.71 234   8.13 234   7.85
  91.00    90.54   6.1 236   -4.81   -6.53 234   8.11 234   8.39 234   7.82 234   8.25 234   7.97
  92.00    91.53   7.3 241   -4.88   -6.64 234   8.24 234   8.53 234   7.95 234   8.38 234   8.09
  93.00    92.52   6.9 235   -4.95   -6.74 234   8.36 234   8.65 234   8.07 234   8.51 234   8.21
  94.00    93.51   7.7 240   -5.02   -6.85 234   8.49 234   8.78 234   8.19 234   8.64 234   8.34
  95.00    94.51   8.0 241   -5.09   -6.96 234   8.62 234   8.92 234   8.32 234   8.77 234   8.47
  96.00    95.50   6.9 241   -5.15   -7.07 234   8.75 234   9.05 234   8.45 234   8.90 234   8.60
  97.00    96.49   7.8 238   -5.22   -7.19 234   8.89 234   9.19 234   8.58 234   9.04 234   8.74
  98.00    97.48   7.8 234   -5.29   -7.32 234   9.03 234   9.34 234   8.72 234   9.18 234   8.88
  99.00    98.47   8.7 240   -5.37   -7.44 234   9.17 234   9.49 234   8.86 234   9.33 234   9.02
 100.00    99.46   8.6 240   -5.44   -7.56 234   9.32 234   9.63 234   9.00 234   9.47 234   9.16
 101.00   100.45   8.1 241   -5.52   -7.69 234   9.46 234   9.78 234   9.14 234   9.62 234   9.30
 102.00   101.44   8.0 240   -5.59   -7.81 234   9.60 234   9.93 234   9.28 234   9.76 234   9.44
 103.00   102.43   8.1 236   -5.66   -7.92 234   9.73 234  10.06 234   9.41 234   9.90 234   9.57
 104.00   103.42   8.2 240   -5.74   -8.04 234   9.88 234  10.21 234   9.55 234  10.04 234   9.71
 105.00   104.41   7.0 232   -5.82   -8.16 235  10.02 235  10.35 235   9.69 235  10.19 235   9.85
 106.00   105.40   7.8 230   -5.90   -8.27 235  10.16 235  10.50 235   9.82 235  10.33 235   9.99
 107.00   106.39   7.9 233   -5.98   -8.38 234  10.29 234  10.64 234   9.95 234  10.47 234  10.12
 108.00   107.38   7.6 226   -6.07   -8.48 234  10.43 234  10.77 234  10.08 234  10.60 234  10.25
 109.00   108.37   7.7 227   -6.15   -8.58 234  10.56 234  10.91 234  10.22 234  10.74 234  10.39
 110.00   109.36   8.4 231   -6.24   -8.69 234  10.70 234  11.05 234  10.35 234  10.88 234  10.53
 111.00   110.35   8.0 231   -6.33   -8.81 234  10.85 234  11.20 234  10.49 234  11.02 234  10.67
 112.00   111.34   7.2 224   -6.42   -8.92 234  10.99 234  11.34 234  10.63 234  11.16 234  10.81
 113.00   112.33   7.8 228   -6.51   -9.01 234  11.12 234  11.48 234  10.76 234  11.30 234  10.94
 114.00   113.32   8.1 220   -6.61   -9.11 234  11.26 234  11.62 234  10.89 234  11.44 234  11.08
 115.00   114.31   8.2 222   -6.71   -9.21 234  11.39 234  11.76 234  11.03 234  11.58 234  11.21
 116.00   115.30   8.8 232   -6.80   -9.33 234  11.54 234  11.91 234  11.17 234  11.73 234  11.36
 117.00   116.29   9.9 232   -6.90   -9.45 234  11.70 234  12.07 234  11.32 234  11.89 234  11.51
 118.00   117.27  10.0 204   -7.03   -9.56 234  11.87 234  12.24 234  11.49 234  12.06 234  11.68
 119.00   118.25  10.7 207   -7.17   -9.68 233  12.04 233  12.42 233  11.66 233  12.23 233  11.85
 120.00   119.24   9.6 203   -7.33   -9.75 233  12.20 233  12.58 233  11.81 233  12.39 233  12.00
 121.00   120.22  10.3 204   -7.49   -9.81 233  12.35 233  12.73 233  11.96 233  12.54 233  12.15
 122.00   121.21   9.9 205   -7.66   -9.89 232  12.51 232  12.90 232  12.12 232  12.71 232  12.32
 123.00   122.19  10.2 204   -7.82   -9.96 232  12.66 232  13.06 232  12.27 232  12.86 232  12.47
 124.00   123.18   9.1 215   -7.96  -10.04 232  12.81 232  13.21 232  12.42 232  13.01 232  12.61
 125.00   124.16   9.1 219   -8.09  -10.13 231  12.97 231  13.36 231  12.57 231  13.16 231  12.77
 126.00   125.15   9.6 208   -8.21  -10.23 231  13.12 231  13.52 231  12.72 231  13.32 231  12.92
 127.00   126.14   9.3 216   -8.34  -10.33 231  13.28 231  13.69 231  12.87 231  13.48 231  13.08
 128.00   127.12   9.2 215   -8.50  -10.41 231  13.44 231  13.85 231  13.03 231  13.64 231  13.23
 129.00   128.11   9.9 207   -8.64  -10.49 231  13.59 231  14.00 231  13.18 231  13.80 231  13.39
 130.00   129.09  10.1 207   -8.78  -10.58 230  13.75 230  14.16 230  13.33 230  13.95 230  13.54
 131.00   130.08   9.6 216   -8.93  -10.67 230  13.91 230  14.33 230  13.49 230  14.12 230  13.70
 132.00   131.07  10.2 224   -9.04  -10.79 230  14.08 230  14.50 230  13.65 230  14.29 230  13.87
 133.00   132.05   9.8 221   -9.17  -10.90 230  14.24 230  14.67 230  13.82 230  14.46 230  14.03
 134.00   133.04  10.0 219   -9.30  -11.01 230  14.41 230  14.84 230  13.98 230  14.63 230  14.20
 135.00   134.02  10.4 224   -9.43  -11.14 230  14.59 230  15.02 230  14.16 230  14.81 230  14.38
 136.00   135.00  10.7 228   -9.55  -11.27 230  14.77 230  15.21 230  14.34 230  14.99 230  14.55
 137.00   135.98  10.3 222   -9.68  -11.42 230  14.97 230  15.41 230  14.53 230  15.19 230  14.75
 138.00   136.97  10.3 228   -9.80  -11.55 230  15.15 230  15.59 230  14.71 230  15.37 230  14.93
 139.00   137.95  11.7 230   -9.93  -11.70 230  15.35 230  15.79 230  14.90 230  15.57 230  15.12
 140.00   138.93   9.7 228  -10.05  -11.85 230  15.54 230  15.99 230  15.09 230  15.76 230  15.32
 141.00   139.91   9.7 234  -10.16  -11.98 230  15.70 230  16.16 230  15.25 230  15.93 230  15.48
 142.00   140.90  10.1 228  -10.27  -12.11 230  15.88 230  16.33 230  15.42 230  16.11 230  15.65
 143.00   141.88  11.8 231  -10.39  -12.26 230  16.07 230  16.53 230  15.61 230  16.30 230  15.84
 144.00   142.86  12.3 231  -10.53  -12.44 230  16.29 230  16.76 230  15.83 230  16.52 230  16.06
 145.00   143.83  10.8 227  -10.65  -12.60 230  16.50 230  16.96 230  16.03 230  16.73 230  16.26
 146.00   144.81  11.8 233  -10.78  -12.75 230  16.69 230  17.16 230  16.22 230  16.93 230  16.46
 146.50   145.30  11.7 232  -10.84  -12.83 230  16.79 230  17.27 230  16.32 230  17.03 230  16.56
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......00
LAST PLOTTED DEPTH......146.50
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....140

PLOT WITH RESPECT TO TRUE NORTH
SCALE 500:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 10.84 MS SOUTH, 12.83 MS WEST IE. 16.79 MS FROM THE ORIGIN, 230 DEG FROM TRUE NORTH

VERTICAL SECTIONS

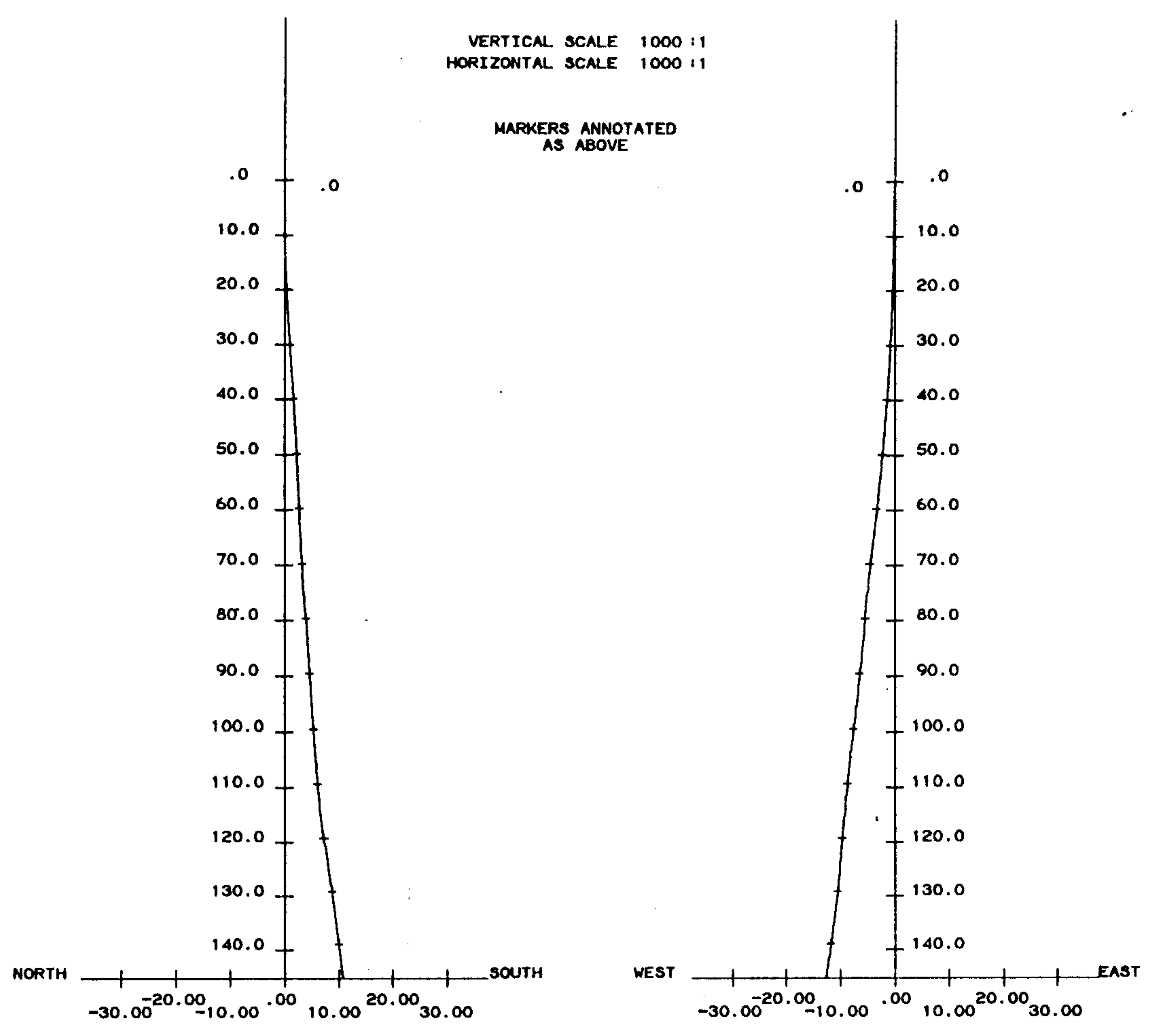
(TRUE DEPTH VS DISPLACEMENT)

N-S SECTION

E-W SECTION

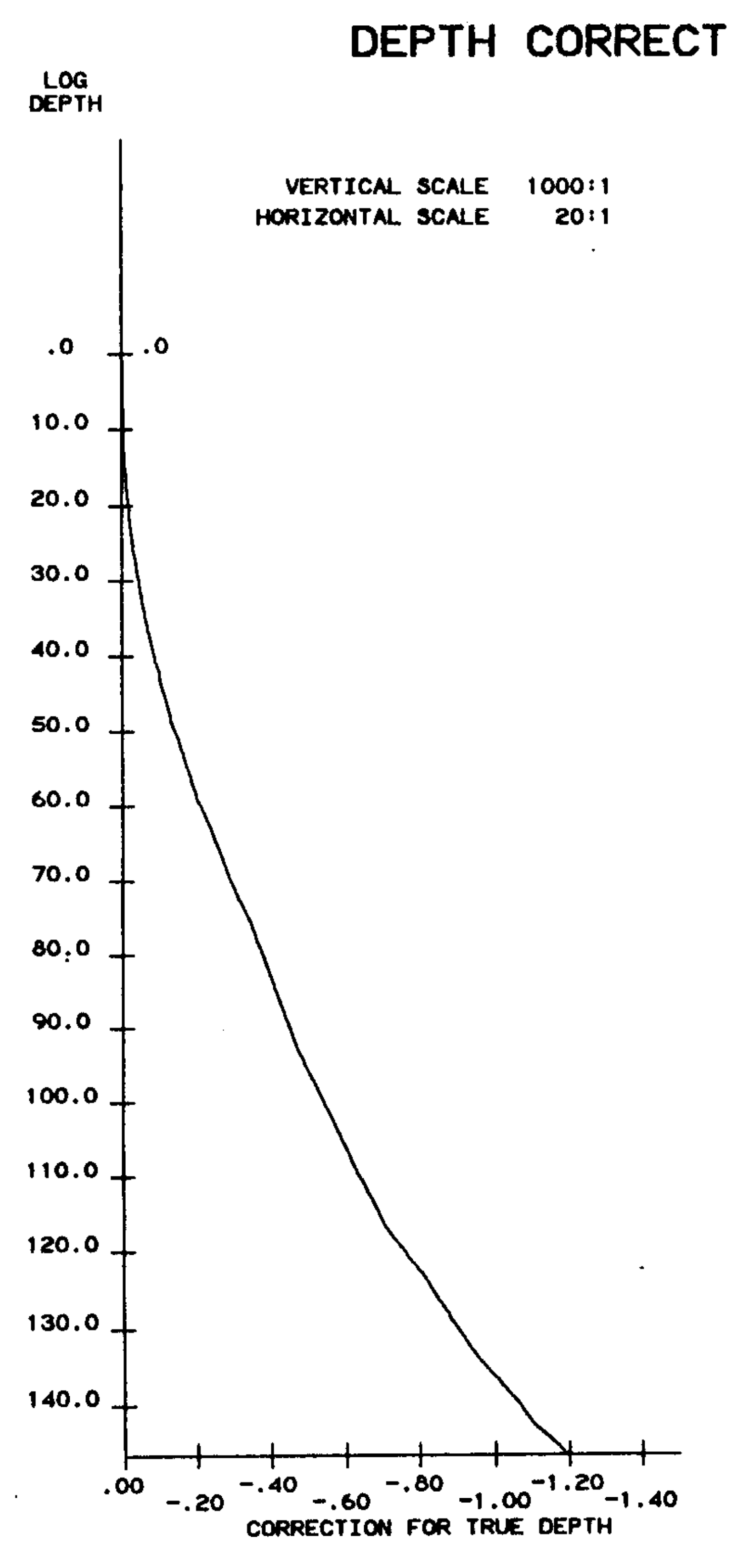
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 1000:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 20:1



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
1.00	1.00	71.00	70.69	141.00	139.91
2.00	2.00	72.00	71.69	142.00	140.90
3.00	3.00	73.00	72.68	143.00	141.88
4.00	4.00	74.00	73.67	144.00	142.86
5.00	5.00	75.00	74.66	145.00	143.83
6.00	6.00	76.00	75.65	146.00	144.81
7.00	6.99	77.00	76.64	146.50	145.30
8.00	7.99	78.00	77.64		
9.00	8.99	79.00	78.63		
10.00	9.99	80.00	79.62		
11.00	10.99	81.00	80.61		
12.00	11.99	82.00	81.60		
13.00	12.99	83.00	82.60		
14.00	13.99	84.00	83.59		
15.00	14.99	85.00	84.58		
16.00	15.99	86.00	85.58		
17.00	16.99	87.00	86.57		
18.00	17.98	88.00	87.56		
19.00	18.98	89.00	88.55		
20.00	19.98	90.00	89.55		
21.00	20.98	91.00	90.54		
22.00	21.98	92.00	91.53		
23.00	22.97	93.00	92.52		
24.00	23.97	94.00	93.51		
25.00	24.97	95.00	94.51		
26.00	25.97	96.00	95.50		
27.00	26.96	97.00	96.49		
28.00	27.96	98.00	97.48		
29.00	28.96	99.00	98.47		
30.00	29.95	100.00	99.46		
31.00	30.95	101.00	100.45		
32.00	31.94	102.00	101.44		
33.00	32.94	103.00	102.43		
34.00	33.94	104.00	103.42		
35.00	34.93	105.00	104.41		
36.00	35.93	106.00	105.40		
37.00	36.92	107.00	106.39		
38.00	37.92	108.00	107.38		
39.00	38.91	109.00	108.37		
40.00	39.91	110.00	109.36		
41.00	40.90	111.00	110.35		
42.00	41.90	112.00	111.34		
43.00	42.89	113.00	112.33		
44.00	43.89	114.00	113.32		
45.00	44.88	115.00	114.31		
46.00	45.88	116.00	115.30		
47.00	46.87	117.00	116.29		
48.00	47.87	118.00	117.27		
49.00	48.86	119.00	118.25		
50.00	49.85	120.00	119.24		
51.00	50.85	121.00	120.22		
52.00	51.84	122.00	121.21		
53.00	52.83	123.00	122.19		
54.00	53.83	124.00	123.18		
55.00	54.82	125.00	124.16		
56.00	55.81	126.00	125.15		
57.00	56.81	127.00	126.14		
58.00	57.80	128.00	127.12		
59.00	58.80	129.00	128.11		
60.00	59.79	130.00	129.09		
61.00	60.78	131.00	130.08		
62.00	61.77	132.00	131.07		
63.00	62.76	133.00	132.05		
64.00	63.75	134.00	133.04		
65.00	64.74	135.00	134.02		
66.00	65.73	136.00	135.00		
67.00	66.73	137.00	135.98		
68.00	67.72	138.00	136.97		
69.00	68.71	139.00	137.95		
70.00	69.70	140.00	138.93		

COMPANY	MANALTA
WELL	T93R-28
FIELD	SITE 22
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 22
WELL:
T93R-28P
COMPANY:
MANALTA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY	MANALTA
WELL	T93R-28P
FIELD	SITE 22
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	22-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	71.9M			
DEPTH-LOGGER	71.5M			
FIRST READING	71M			
LAST READING	00M			
CASING-DRILLER	11.3M			
CASING-LOGGER	11.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	11.3M	TD	178MM	N/A	SURFACE	11.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

NOTE BOREHOLE DRILLED FOR PIESOMETER.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 22-SEP-1993 AT 16:27
FILENAME: DD3AR28A.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 17:46

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 22-SEP-1993 AT 16:27
FILENAME: DD3AR28A.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 17:43

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 22-SEP-1993 AT 16:11 DATA LAST REPROCESSED: 22-SEP-1993 AT 17:42

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	11.30
BIT SIZE 3	.00	BIT DEPTH 3	71.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-28P
FIELD	SITE 22
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#8

COMPANY MANALTA
WELL T93R-28P
FIELD SITE 22
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 22
WELL:
T93R-28P
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	22-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	71.9M	
DEPTH-LOGGER	71.5M	
FIRST READING	71M	
LAST READING	00M	
CASING-DRILLER	11.3M	
CASING-LOGGER	11.3M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE	N/A	
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	11.3M	TD	178MM	N/A	SURFACE	11.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

NOTE BOREHOLE DRILLED FOR PIESOMETER.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 22-SEP-1993 AT 16:27
FILENAME: DD3AR28P.CIB RUN ID: MAIN LOG PLOTTED ON 22-SEP-1993 AT 17:57

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 22-SEP-1993 AT 16:27
FILENAME: DD3AR28P.CIB RUN ID: MAIN LOG PLOTTED ON 22-SEP-1993 AT 17:57

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 22-SEP-1993 AT 16:11

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	11.30
BIT SIZE 3	.00	BIT DEPTH 3	71.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-28P
FIELD	SITE 22
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 22
WELL: T93R-28P
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-28P
FIELD SITE 22
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	22-SEP-93	
RUN NUMBER	THREE	
DEPTH-DRILLER	71.9M	
DEPTH-LOGGER	71.5M	
FIRST READING	71M	
LAST READING	00M	
CASING-DRILLER	11.3M	
CASING-LOGGER	11.3M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE	N/A	
RM ● MEAS TEMP		
RMF ● MEAS TEMP		
RMC ● MEAS TEMP		
SOURCE: RMF/RMC		
RM ● BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	11.3M	TD	178MM	N/A	SURFACE	11.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER

NOTE BOREHOLE DRILLED FOR PIESOMETER.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 22-SEP-1993 AT 16:27
FILENAME: DD3AR28A.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 17:50

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 22-SEP-1993 AT 16:27
FILENAME: DD3AR28A.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 17:50

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 22-SEP-1993 AT 16:11 DATA LAST REPROCESSED: 22-SEP-1993 AT 17:42

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	11.30
BIT SIZE 3	.00	BIT DEPTH 3	71.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-28P
FIELD	SITE 22
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 18
WELL:
T93R-29
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-29
FIELD	SITE 18
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA
LOCATION	TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	21-SEP-93				
RUN NUMBER	THREE				
DEPTH-DRILLER	134.1M				
DEPTH-LOGGER	133.3M				
FIRST READING	133M				
LAST READING	00M				
CASING-DRILLER	42.7M				
CASING-LOGGER	42.7M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE	N/A				
RM @ MEAS TEMP					
RMF @ MEAS TEMP					
RMC @ MEAS TEMP					
SOURCE: RMF/RMC					
RM @ BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	B. STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	00M				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	42.7M	TD	178MM	N/A	SURFACE	42.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 18:58
FILENAME: DD3AR29B.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 10:25

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

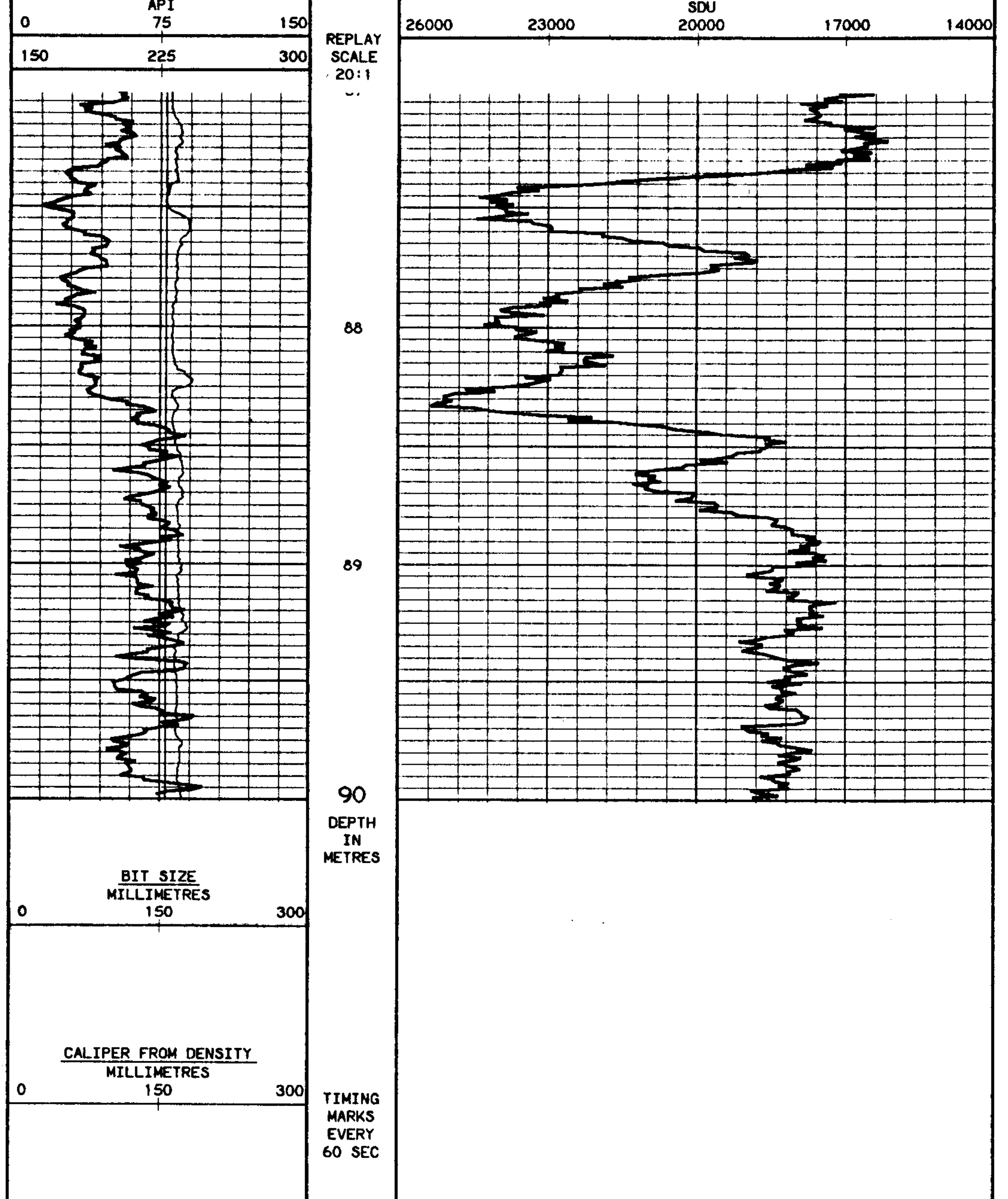
GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 18:58
FILENAME: DD3AR29B.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 10:25

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 18:58
FILENAME: DD3AR29A.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 10:22

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 18:58
FILENAME: DD3AR29A.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 10:22

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 21-SEP-1993 AT 18:26 DATA LAST REPROCESSED: 22-SEP-1993 AT 10:05

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	42.70
BIT SIZE 3	.00	BIT DEPTH 3	134.10
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-29
FIELD	SITE 18
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 18
WELL:
T93R-29
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-29
FIELD SITE 18
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

879

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	21-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	134.1M			
DEPTH-LOGGER	133.3M			
FIRST READING	133M			
LAST READING	00M			
CASING-DRILLER	42.7M			
CASING-LOGGER	42.7M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	42.7M	TD	178MM	N/A	SURFACE	42.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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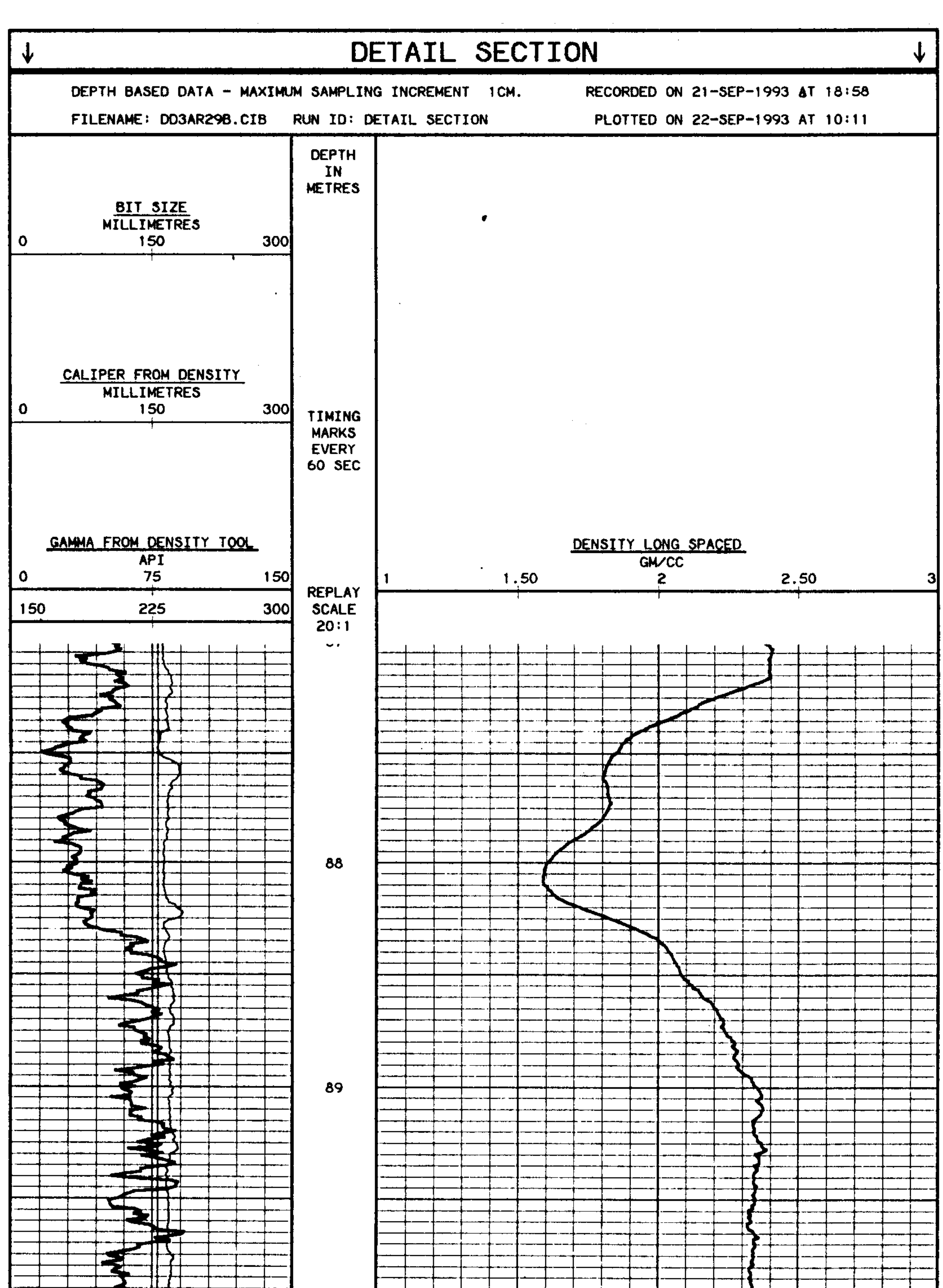
DETAIL SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 18:58
FILENAME: DD3AR29B.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 10:11



DEPTH IN METRES

BIT SIZE MILLIMETRES 0 150 300

CALIPER FROM DENSITY MILLIMETRES 0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL API 0 75 150 | 150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED GM/CC 1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 18:58
FILENAME: DD3AR29B.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 10:10

DETAIL SECTION

DETAIL SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 18:58
FILENAME: DD3AR29A.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 10:10

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 20:1
DENSITY LONG SPACED GM/CC
1 1.50 2 2.50 3
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124

DEPTH IN METRES

BIT SIZE MILLIMETRES 0 150 300

CALIPER FROM DENSITY MILLIMETRES 0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL API 0 75 150 | 150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED GM/CC 1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 21-SEP-1993 AT 18:58
FILENAME: DD3AR29A.CIB RUN ID: DETAIL SECTION PLOTTED ON 22-SEP-1993 AT 10:06

DETAIL SECTION

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 21-SEP-1993 AT 18:26 DATA LAST REPROCESSED: 22-SEP-1993 AT 10:05

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	42.70
BIT SIZE 3	.00	BIT DEPTH 3	134.10
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-29
FIELD	SITE 18
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 18
WELL:
T93R-29
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-29
FIELD	SITE 18
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA
LOCATION	TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	21-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	134.1M			
DEPTH-LOGGER	133.3M			
FIRST READING	133M			
LAST READING	00M			
CASING-DRILLER	42.7M			
CASING-LOGGER	42.7M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	42.7M	TD	178MM	N/A	SURFACE	42.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 21-SEP-1993 AT 18:58
FILENAME: DD3AR29M.CIB RUN ID: MAIN LOG PLOTTED ON 22-SEP-1993 AT 09:56

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 21-SEP-1993 AT 18:58
FILENAME: DD3AR29M.CIB RUN ID: MAIN LOG PLOTTED ON 22-SEP-1993 AT 09:56

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 21-SEP-1993 AT 18:26

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	42.70
BIT SIZE 3	.00	BIT DEPTH 3	134.10
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-29
FIELD	SITE 18
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

#879

COMPANY MANALTA
WELL T93R-30
FIELD SITE # 17
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 17
WELL:
T93R-30
COMPANY:
MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	24-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	134.1M	
DEPTH-LOGGER	134.1M	
FIRST READING	134.0M	
LAST READING	0M	
CASING-DRILLER	24.4M	
CASING-LOGGER	24.4M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVE SON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL		

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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T93R-30                       VERTICALITY DATA LISTING                 DATE PROCESSED: 25-SEP-1993
                       ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH     DATE LOGGED:    24-SEP-1993
    DEPTHS        BOREHOLE   AXIAL CO-ORDS   POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG      TRUE   TILT AZI   NORTH    EAST BRG   RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

   3.00     3.00  0.3 235    0.00    0.00 226    0.00 226    0.00 226    0.00 226    0.00 226    0.00
   4.00     4.00  0.3 239   -0.01    0.00 212    0.01 214    0.01 207    0.00 213    0.01 211    0.01
   5.00     5.00  0.3 197   -0.01   -0.01 224    0.01 225    0.02 222    0.01 224    0.02 223    0.01
   6.00     6.00  0.3 255   -0.01   -0.01 230    0.02 231    0.03 227    0.01 230    0.02 229    0.01
   7.00     7.00  0.3 357   -0.01   -0.01 236    0.02 237    0.02 233    0.01 237    0.02 235    0.01
   8.00     8.00  0.4 335    0.00   -0.01 255    0.01 257    0.02 249    0.01 256    0.02 253    0.01
   9.00     9.00  0.3 355    0.00   -0.01 280    0.01 281    0.02 273    0.01 281    0.02 278    0.01
  10.00    10.00  0.3 335    0.01   -0.01 300    0.02 302    0.02 293    0.01 301    0.02 298    0.01
  11.00    11.00  0.3 346    0.01   -0.01 311    0.02 312    0.03 304    0.01 312    0.02 309    0.01
  12.00    12.00  0.3 336    0.02   -0.02 319    0.02 320    0.04 313    0.01 319    0.03 317    0.02
  13.00    13.00  0.2 224    0.01   -0.02 306    0.02 308    0.04 296    0.01 307    0.03 303    0.02
  14.00    14.00  0.3 198    0.01   -0.02 297    0.03 299    0.04 290    0.01 298    0.03 295    0.02
  15.00    15.00  0.4 266    0.01   -0.03 286    0.03 288    0.04 280    0.01 287    0.04 284    0.02
  16.00    16.00  0.4 245    0.01   -0.03 279    0.03 281    0.05 273    0.01 280    0.04 277    0.02
  17.00    17.00  0.3 258    0.01   -0.04 280    0.04 281    0.06 274    0.02 281    0.05 278    0.03
  18.00    18.00  0.5 159    0.00   -0.04 274    0.04 276    0.06 269    0.02 275    0.05 273    0.03
  19.00    19.00  0.3 239    0.00   -0.04 273    0.04 275    0.06 268    0.02 274    0.05 271    0.03
  20.00    20.00  0.4 166    0.00   -0.04 265    0.04 266    0.07 259    0.02 266    0.05 263    0.03
  21.00    21.00  0.3 176   -0.01   -0.04 257    0.04 258    0.07 253    0.02 258    0.05 256    0.03
  22.00    22.00  0.2 157   -0.01   -0.04 251    0.04 252    0.07 249    0.02 251    0.06 250    0.03
  23.00    23.00  0.2 160   -0.02   -0.04 247    0.05 247    0.07 246    0.02 247    0.06 246    0.03
  24.00    24.00  0.3 120   -0.02   -0.04 243    0.04 243    0.06 243    0.02 243    0.05 243    0.03
  25.00    25.00  0.3 242   -0.02   -0.04 242    0.04 242    0.07 243    0.02 242    0.06 242    0.03
  26.00    26.00  0.4 234   -0.02   -0.04 242    0.05 242    0.08 242    0.02 242    0.06 242    0.04
  27.00    27.00  0.5 247   -0.03   -0.05 241    0.06 241    0.09 242    0.02 241    0.07 241    0.04
  28.00    28.00  0.3 256   -0.03   -0.05 242    0.06 242    0.09 242    0.03 242    0.08 242    0.04
  29.00    29.00  0.2 271   -0.03   -0.06 243    0.07 243    0.10 243    0.03 243    0.08 243    0.05
  30.00    30.00  0.3 244   -0.03   -0.06 244    0.07 244    0.11 244    0.03 244    0.09 244    0.05
  31.00    31.00  0.1 233   -0.03   -0.07 245    0.08 245    0.12 244    0.03 245    0.10 245    0.05
  32.00    32.00  0.2 227   -0.03   -0.07 244    0.08 244    0.13 244    0.03 244    0.10 244    0.06
  33.00    33.00  0.4 201   -0.04   -0.07 243    0.08 243    0.13 243    0.03 243    0.11 243    0.06
  34.00    34.00  0.3 179   -0.04   -0.08 240    0.09 240    0.14 241    0.03 240    0.11 241    0.06
  35.00    35.00  0.5 170   -0.05   -0.07 237    0.09 237    0.14 237    0.04 237    0.12 237    0.06
  36.00    36.00  0.5 153   -0.06   -0.07 233    0.09 233    0.15 231    0.04 233    0.12 232    0.06
  37.00    37.00  0.7 152   -0.07   -0.07 227    0.10 228    0.15 221    0.04 227    0.12 225    0.07
  38.00    38.00  0.7 146   -0.08   -0.06 219    0.10 222    0.16 210    0.04 221    0.13 216    0.07
  39.00    39.00  1.2 145   -0.09   -0.06 212    0.11 216    0.16 198    0.05 214    0.13 207    0.08
  40.00    40.00  1.0 139   -0.10   -0.05 204    0.11 210    0.17 188    0.06 207    0.14 199    0.09
  41.00    41.00  1.0 154   -0.12   -0.04 197    0.13 204    0.18 181    0.07 201    0.15 191    0.10
  42.00    42.00  1.1 155   -0.14   -0.03 192    0.14 199    0.20 176    0.09 196    0.17 186    0.11
  43.00    43.00  1.2 159   -0.16   -0.02 187    0.16 194    0.22 173    0.10 191    0.19 182    0.13
  44.00    44.00  1.3 156   -0.18   -0.01 184    0.18 191    0.24 171    0.12 188    0.21 179    0.15
  45.00    45.00  1.6 160   -0.20    0.00 181    0.20 187    0.26 169    0.14 185    0.23 176    0.17
  46.00    46.00  1.8 166   -0.23    0.01 178    0.23 185    0.29 168    0.17 182    0.26 174    0.20
  47.00    47.00  1.8 161   -0.26    0.02 176    0.26 182    0.33 167    0.20 180    0.29 172    0.23
  48.00    48.00  1.8 164   -0.29    0.02 175    0.29 181    0.36 167    0.23 178    0.33 172    0.26
  49.00    49.00  2.1 183   -0.33    0.03 175    0.33 180    0.40 168    0.26 178    0.36 172    0.29
  50.00    49.99  2.5 186   -0.37    0.02 177    0.37 181    0.45 170    0.30 179    0.41 174    0.33
  51.00    50.99  3.8 193   -0.42    0.01 178    0.42 182    0.50 173    0.34 180    0.46 176    0.38
  52.00    51.99  3.9 189   -0.48    0.01 179    0.48 182    0.57 175    0.40 181    0.52 177    0.44
  53.00    52.99  4.1 190   -0.54    0.00 180    0.54 183    0.63 177    0.45 182    0.59 179    0.50
  54.00    53.99  3.9 186   -0.61   -0.01 181    0.61 184    0.70 178    0.52 182    0.66 180    0.56
  55.00    54.98  4.2 183   -0.68   -0.02 182    0.68 184    0.78 179    0.59 183    0.73 181    0.63
  56.00    55.98  4.7 185   -0.76   -0.03 182    0.76 184    0.86 180    0.66 183    0.81 181    0.71
  57.00    56.98  4.9 177   -0.84   -0.03 182    0.84 184    0.94 180    0.74 183    0.89 181    0.79
  58.00    57.97  5.0 180   -0.92   -0.03 182    0.92 183    1.03 180    0.82 182    0.98 181    0.87
  59.00    58.97  5.2 176   -1.00   -0.02 181    1.00 182    1.11 179    0.89 182    1.06 180    0.95
  60.00    59.97  5.0 172   -1.09   -0.01 181    1.09 182    1.20 179    0.98 181    1.15 180    1.03
  61.00    60.96  4.2 170   -1.18    0.00 180    1.18 181    1.29 178    1.06 180    1.24 179    1.12
  62.00    61.96  5.7 165   -1.27    0.02 179    1.27 180    1.39 177    1.15 180    1.33 178    1.21
  63.00    62.95  5.5 164   -1.36    0.05 178    1.36 179    1.48 176    1.24 179    1.42 177    1.30
  64.00    63.95  5.6 165   -1.44    0.07 177    1.44 178    1.57 176    1.32 178    1.50 176    1.38
  65.00    64.95  4.8 162   -1.52    0.10 176    1.52 178    1.65 175    1.40 177    1.59 176    1.46
  66.00    65.94  5.3 164   -1.61    0.13 176    1.61 177    1.74 174    1.48 176    1.68 175    1.55
  67.00    66.94  5.6 158   -1.69    0.16 175    1.70 176    1.83 173    1.57 175    1.76 174    1.63
  68.00    67.93  6.0 160   -1.78    0.19 174    1.79 175    1.93 173    1.66 175    1.86 173    1.72
  69.00    68.93  4.9 157   -1.87    0.22 173    1.89 174    2.02 172    1.75 174    1.95 173    1.82
  70.00    69.93  5.7 160   -1.96    0.26 172    1.98 173    2.12 171    1.83 173    2.05 172    1.91
  71.00    70.92  5.5 158   -2.04    0.29 172    2.06 173    2.21 171    1.92 172    2.14 171    1.99
  72.00    71.92  5.6 156   -2.13    0.33 171    2.16 172    2.30 170    2.01 172    2.23 171    2.08
  73.00    72.91  5.5 160   -2.22    0.37 171    2.25 172    2.40 170    2.10 171    2.33 170    2.18
  74.00    73.91  5.8 156   -2.31    0.40 170    2.35 171    2.50 169    2.19 171    2.42 170    2.27
  75.00    74.90  5.1 156   -2.40    0.44 170    2.44 170    2.60 168    2.29 170    2.52 169    2.36
  76.00    75.90  4.9 156   -2.48    0.48 169    2.53 170    2.69 168    2.37 170    2.61 169    2.45
  77.00    76.90  3.8 170   -2.55    0.49 169    2.60 170    2.76 168    2.44 170    2.68 169    2.52
  78.00    77.89  4.0 186   -2.62    0.50 169    2.67 170    2.83 168    2.50 170    2.75 169    2.58
  79.00    78.89  3.7 178   -2.69    0.51 169    2.73 170    2.90 168    2.56 170    2.82 169    2.65
  80.00    79.89  4.0 172   -2.75    0.51 170    2.80 170    2.97 169    2.63 170    2.89 169    2.71
  81.00    80.89  4.3 163   -2.82    0.52 170    2.87 170    3.05 169    2.69 170    2.96 169    2.78
  82.00    81.88  4.1 181   -2.89    0.52 170    2.94 171    3.12 169    2.76 170    3.03 169    2.85
  83.00    82.88  4.2 184   -2.97    0.52 170    3.01 171    3.19 169    2.83 171    3.10 170    2.92
  84.00    83.88  4.1 184   -3.04    0.52 170    3.08 171    3.27 169    2.89 171    3.17 170    2.99
  85.00    84.88  4.3 185   -3.11    0.51 171    3.15 171    3.35 170    2.96 171    3.25 170    3.06
  86.00    85.87  4.6 191   -3.19    0.50 171    3.23 172    3.43 170    3.04 171    3.33 171    3.13
  87.00    86.87  4.7 188   -3.27    0.49 171    3.31 172    3.51 171    3.11 172    3.41 171    3.21
  88.00    87.87  5.1 193   -3.36    0.47 172    3.39 173    3.59 171    3.19 172    3.49 172    3.29
  89.00    88.86  5.9 192   -3.45    0.45 173    3.48 173    3.69 172    3.28 173    3.59 172    3.38
  90.00    89.86  6.1 191   -3.55    0.44 173    3.58 174    3.79 172    3.37 173    3.68 173    3.47
  91.00    90.85  6.8 185   -3.65    0.43 173    3.68 174    3.89 173    3.47 174    3.78 173    3.57
  92.00    91.84  6.9 184   -3.76    0.42 174    3.79 174    4.00 173    3.57 174    3.90 173    3.68
  93.00    92.84  7.3 177   -3.88    0.42 174    3.91 174    4.13 173    3.69 174    4.02 174    3.80
  94.00    93.83  6.4 178   -4.00    0.42 174    4.03 174    4.25 173    3.80 174    4.14 174    3.92
  95.00    94.82  6.0 175   -4.12    0.43 174    4.14 174    4.37 173    3.92 174    4.26 174    4.03
  96.00    95.82  5.8 173   -4.22    0.44 174    4.24 174    4.47 173    4.01 174    4.36 174    4.13
  97.00    96.81  7.3 164   -4.34    0.47 174    4.36 174    4.59 173    4.13 174    4.48 174    4.24
  98.00    97.80  6.3 166   -4.45    0.50 174    4.48 174    4.71 173    4.24 174    4.60 173    4.36
  99.00    98.80  6.3 165   -4.56    0.53 173    4.59 174    4.83 173    4.35 174    4.71 173    4.47
 100.00    99.79  5.7 189   -4.66    0.54 173    4.69 174    4.93 173    4.44 174    4.81 173    4.56
 101.00   100.79  6.6 196   -4.76    0.51 174    4.79 174    5.04 173    4.54 174    4.91 174    4.66
 102.00   101.78  6.9 182   -4.89    0.49 174    4.91 175    5.16 174    4.66 174    5.04 174    4.79
 103.00   102.77  8.0 181   -5.02    0.49 174    5.05 175    5.30 174    4.79 175    5.17 174    4.92
 104.00   103.76  7.4 180   -5.14    0.49 175    5.16 175    5.42 174    4.91 175    5.29 174    5.03
 105.00   104.75  7.3 179   -5.28    0.48 175    5.30 175    5.56 174    5.04 175    5.43 175    5.17
 106.00   105.74  7.0 178   -5.41    0.49 175    5.44 175    5.70 174    5.17 175    5.57 175    5.30
 107.00   106.73  7.0 172   -5.53    0.51 175    5.56 175    5.83 174    5.29 175    5.69 175    5.42
 108.00   107.72  8.5 164   -5.67    0.54 175    5.69 175    5.97 174    5.42 175    5.83 174    5.56
 109.00   108.71  7.6 163   -5.80    0.58 174    5.83 175    6.11 174    5.56 175    5.97 174    5.69
 110.00   109.71  5.4 175   -5.92    0.61 174    5.95 174    6.23 174    5.67 174    6.09 174    5.81
 111.00   110.70  7.4 161   -6.05    0.65 174    6.09 174    6.37 173    5.81 174    6.23 174    5.95
 112.00   111.69  8.0 159   -6.17    0.69 174    6.21 174    6.50 173    5.93 174    6.35 173    6.07
 113.00   112.68  8.3 160   -6.30    0.74 173    6.34 174    6.63 173    6.06 173    6.49 173    6.20
 114.00   113.67  7.2 156   -6.42    0.78 173    6.47 173    6.76 173    6.18 173    6.62 173    6.33
 115.00   114.66  7.9 160   -6.55    0.82 173    6.60 173    6.89 172    6.31 173    6.75 173    6.45
 116.00   115.65  8.3 159   -6.68    0.88 173    6.73 173    7.03 172    6.44 173    6.88 172    6.59
 117.00   116.64  7.6 162   -6.80    0.92 172    6.87 173    7.17 172    6.56 172    7.02 172    6.72
 118.00   117.63  6.9 169   -6.93    0.96 172    6.99 172    7.30 172    6.69 172    7.14 172    6.84
 119.00   118.63  8.6 184   -7.05    0.97 172    7.11 172    7.42 172    6.81 172    7.27 172    6.96
 120.00   119.62  6.7 184   -7.18    0.95 172    7.24 173    7.55 172    6.93 173    7.39 172    7.08
 121.00   120.61  7.1 168   -7.29    0.97 172    7.36 173    7.67 172    7.04 173    7.51 172    7.20
 122.00   121.60  7.1 169   -7.42    1.00 172    7.48 173    7.80 172    7.16 173    7.64 172    7.32
 123.00   122.59  7.5 167   -7.54    1.02 172    7.61 173    7.93 172    7.29 172    7.77 172    7.45
 124.00   123.59  7.6 164   -7.67    1.06 172    7.74 172    8.07 172    7.42 172    7.91 172    7.58
 125.00   124.58  7.1 173   -7.80    1.09 172    7.88 172    8.21 172    7.55 172    8.04 172    7.72
 126.00   125.57  6.2 158   -7.91    1.13 172    7.99 172    8.32 172    7.66 172    8.16 172    7.83
 127.00   126.56  8.4 168   -8.04    1.16 172    8.12 172    8.45 171    7.78 172    8.29 172    7.95
 128.00   127.55  8.9 166   -8.17    1.20 172    8.26 172    8.60 171    7.92 172    8.43 172    8.09
 129.00   128.54  8.6 169   -8.32    1.23 172    8.41 172    8.75 171    8.07 172    8.58 171    8.24
 130.00   129.53  8.5 165   -8.47    1.26 172    8.56 172    8.90 171    8.21 172    8.73 171    8.39
 131.00   130.52  8.3 168   -8.61    1.29 171    8.70 172    9.05 171    8.35 172    8.88 171    8.53
 132.00   131.51  8.3 166   -8.74    1.33 171    8.84 172    9.19 171    8.49 172    9.02 171    8.67
 133.00   132.50  6.2 192   -8.87    1.35 171    8.97 172    9.32 171    8.62 171    9.15 171    8.79
 134.00   133.38 ****** ***  -9.01    1.44 171    9.13 171    9.49 171    8.77 171    9.31 171    8.95
```
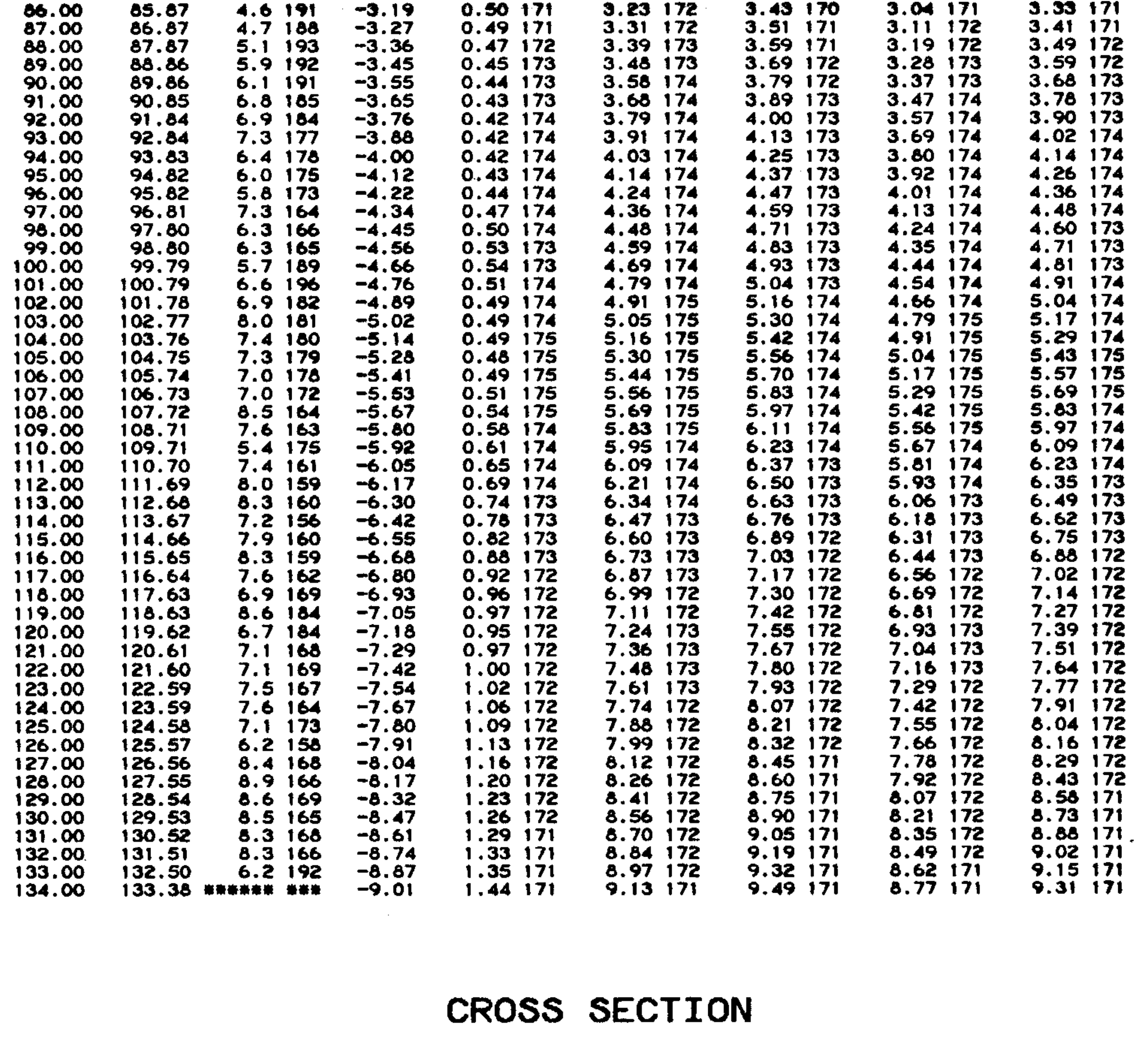

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....2.50
LAST PLOTTED DEPTH......134.00
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....130

PLOT WITH RESPECT TO TRUE NORTH
SCALE 200:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

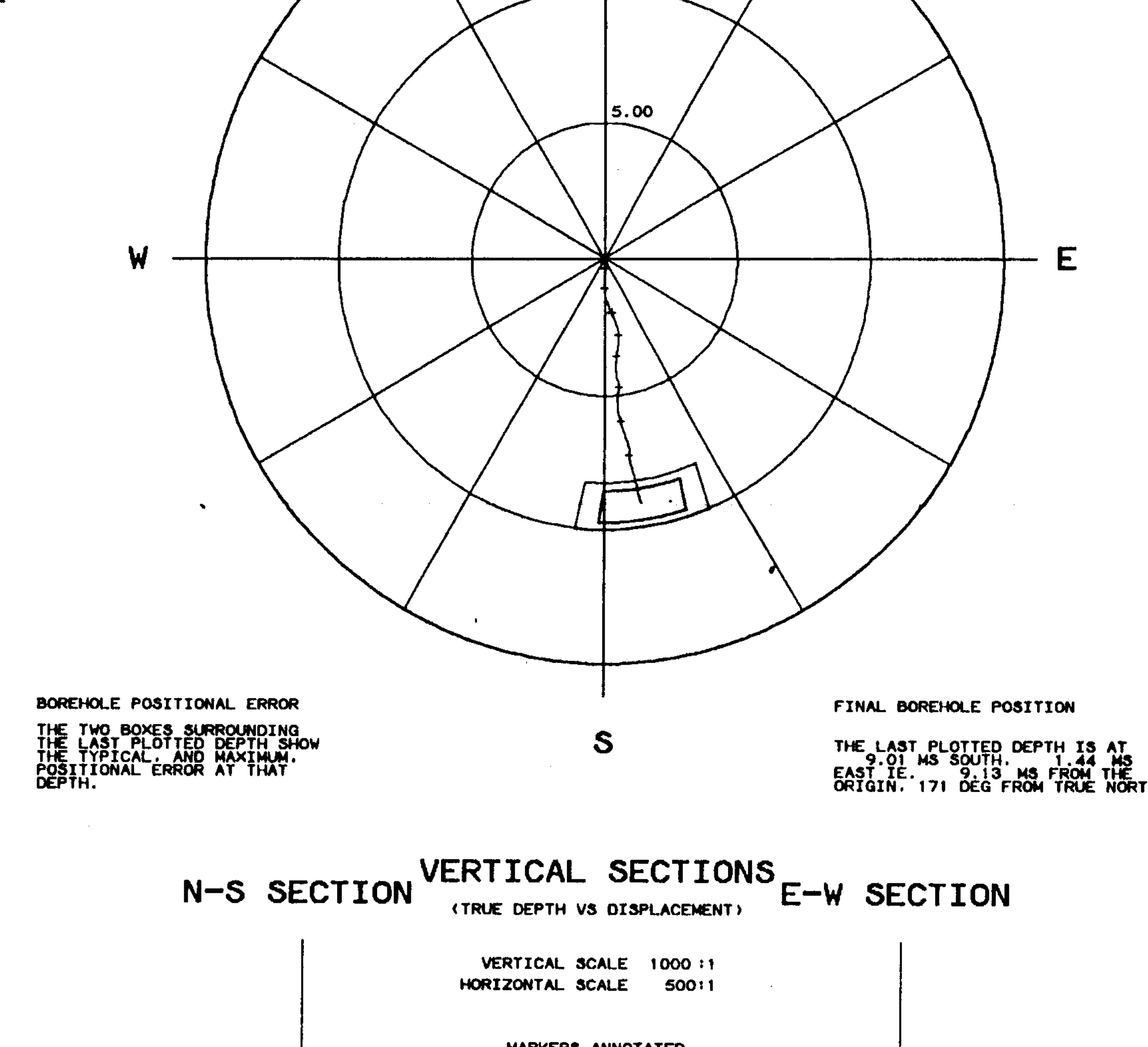
THE LAST PLOTTED DEPTH IS AT 9.01 MS SOUTH, 1.44 MS EAST IE. 9.13 MS FROM THE ORIGIN, 171 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

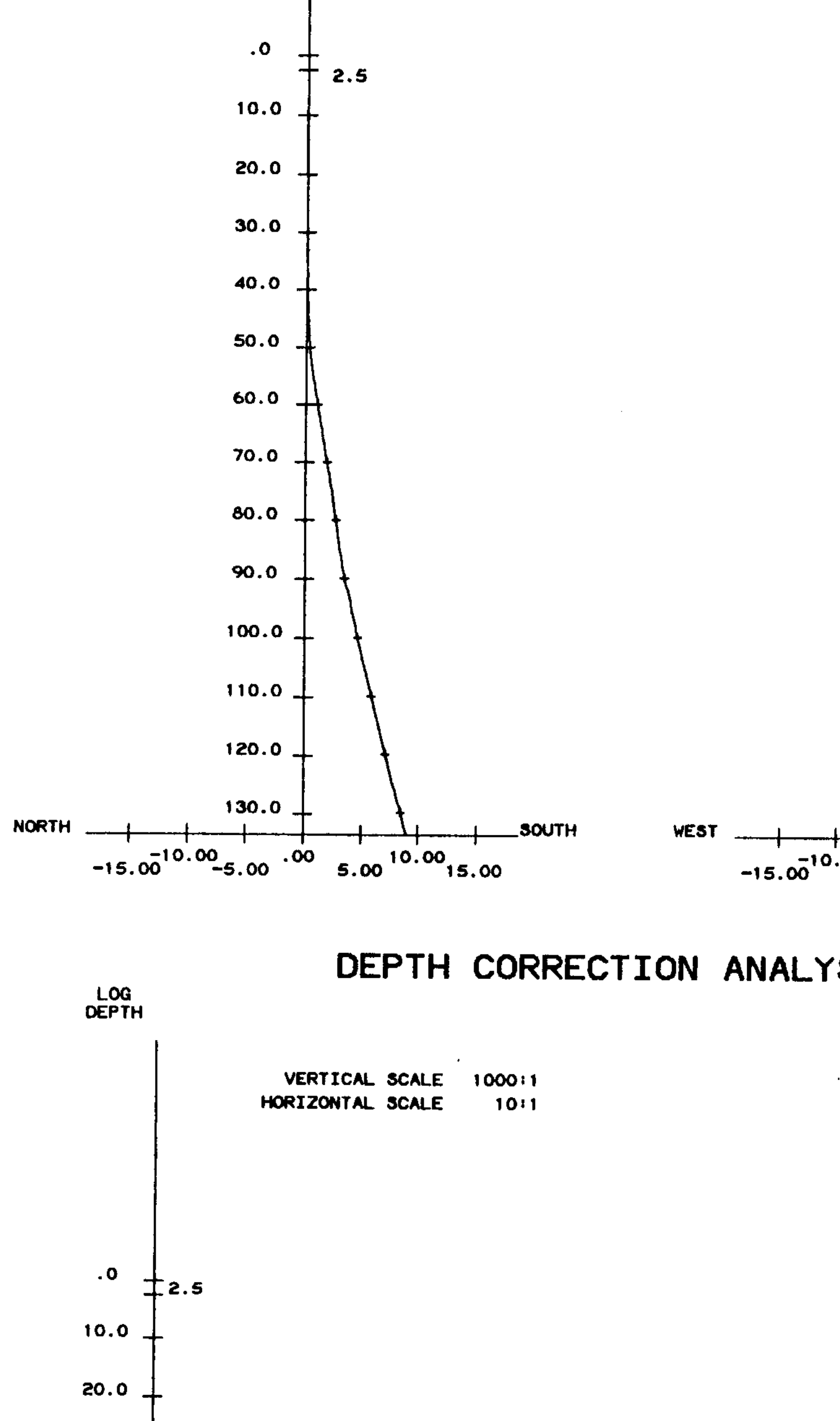
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 500:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 10:1



DEPTHS: LOG	TRUE	DEPTHS: LOG	TRUE
3.00	3.00	73.00	72.91
4.00	4.00	74.00	73.91
5.00	5.00	75.00	74.90
6.00	6.00	76.00	75.90
7.00	7.00	77.00	76.90
8.00	8.00	78.00	77.89
9.00	9.00	79.00	78.89
10.00	10.00	80.00	79.89
11.00	11.00	81.00	80.89
12.00	12.00	82.00	81.88
13.00	13.00	83.00	82.88
14.00	14.00	84.00	83.88
15.00	15.00	85.00	84.88
16.00	16.00	86.00	85.87
17.00	17.00	87.00	86.87
18.00	18.00	88.00	87.87
19.00	19.00	89.00	88.86
20.00	20.00	90.00	89.86
21.00	21.00	91.00	90.85
22.00	22.00	92.00	91.84
23.00	23.00	93.00	92.84
24.00	24.00	94.00	93.83
25.00	25.00	95.00	94.82
26.00	26.00	96.00	95.82
27.00	27.00	97.00	96.81
28.00	28.00	98.00	97.80
29.00	29.00	99.00	98.80
30.00	30.00	100.00	99.79
31.00	31.00	101.00	100.79
32.00	32.00	102.00	101.78
33.00	33.00	103.00	102.77
34.00	34.00	104.00	103.76
35.00	35.00	105.00	104.75
36.00	36.00	106.00	105.74
37.00	37.00	107.00	106.73
38.00	38.00	108.00	107.72
39.00	39.00	109.00	108.71
40.00	40.00	110.00	109.71
41.00	41.00	111.00	110.70
42.00	42.00	112.00	111.69
43.00	43.00	113.00	112.68
44.00	44.00	114.00	113.67
45.00	45.00	115.00	114.66
46.00	46.00	116.00	115.65
47.00	47.00	117.00	116.64
48.00	48.00	118.00	117.63
49.00	49.00	119.00	118.63
50.00	49.99	120.00	119.62
51.00	50.99	121.00	120.61
52.00	51.99	122.00	121.60
53.00	52.99	123.00	122.59
54.00	53.99	124.00	123.59
55.00	54.98	125.00	124.58
56.00	55.98	126.00	125.57
57.00	56.98	127.00	126.56
58.00	57.97	128.00	127.55
59.00	58.97	129.00	128.54
60.00	59.97	130.00	129.53
61.00	60.96	131.00	130.52
62.00	61.96	132.00	131.51
63.00	62.95	133.00	132.50
64.00	63.95	134.00	133.38
65.00	64.95		
66.00	65.94		
67.00	66.94		
68.00	67.93		
69.00	68.93		
70.00	69.93		
71.00	70.92		
72.00	71.92		

COMPANY	MANALTA
WELL	T93R-30
FIELD	SITE # 17
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY MANALTA
WELL T93R-30
FIELD SITE # 17
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 17
WELL:
T93R-30
COMPANY:
MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	24-SEP-93	
RUN NUMBER	FOUR	
DEPTH-DRILLER	134.1M	
DEPTH-LOGGER	134.1M	
FIRST READING	133.5M	
LAST READING	00M	
CASING-DRILLER	24.4M	
CASING-LOGGER	24.4M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE	N/A	
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	13.0M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	24.4M	TD	178MM	N/A	SURFACE	24.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 24-SEP-1993 AT 18:40
FILENAME: DD3AR30A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 11:19

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 24-SEP-1993 AT 18:40
FILENAME: DD3AR30A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 11:13

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 24-SEP-1993 AT 18:31 DATA LAST REPROCESSED: 25-SEP-1993 AT 11:11

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	24.40
BIT SIZE 3	.00	BIT DEPTH 3	134.10
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-30
FIELD	SITE # 17
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY	MANALTA
WELL	T93R-30
FIELD	SITE # 17
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 17
WELL:
T93R-30
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	24-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	134.1M			
DEPTH-LOGGER	134.1M			
FIRST READING	133.5M			
LAST READING	0OM			
CASING-DRILLER	24.4M			
CASING-LOGGER	24.4M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	13.0M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	24.4M	TD	178MM	N/A	SURFACE	24.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 24-SEP-1993 AT 18:40
FILENAME: DD3AR30M.CIB RUN ID: MAIN LOG PLOTTED ON 25-SEP-1993 AT 11:00

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 24-SEP-1993 AT 18:40
FILENAME: DD3AR30M.CIB RUN ID: MAIN LOG PLOTTED ON 25-SEP-1993 AT 11:00

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 24-SEP-1993 AT 18:31

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	24.40
BIT SIZE 3	.00	BIT DEPTH 3	134.10
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-30
FIELD	SITE # 17
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

COMPANY MANALTA
WELL T93R-30
FIELD SITE # 17 #879
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 17
WELL: T93R-30
COMPANY: MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	24-SEP-93	
RUN NUMBER	FIVE	
DEPTH-DRILLER	134.1M	
DEPTH-LOGGER	134.1M	
FIRST READING	133.5M	
LAST READING	OOM	
CASING-DRILLER	24.4M	
CASING-LOGGER	24.4M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE	N/A	
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	13.0M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FIVE	156MM	24.4M	TD	178MM	N/A	SURFACE	24.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 24-SEP-1993 AT 18:40
FILENAME: DD3AR30A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 11:25

BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300
DEPTH IN METRES
TIMING MARKS EVERY 60 SEC
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 24-SEP-1993 AT 18:40
FILENAME: DD3AR30A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 11:25

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 24-SEP-1993 AT 18:31 DATA LAST REPROCESSED: 25-SEP-1993 AT 11:11

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	24.40
BIT SIZE 3	.00	BIT DEPTH 3	134.10
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-30
FIELD	SITE # 17
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-32
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-32
COMPANY:
MANALTA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	25-SEP-93
RUN NUMBER	THREE
DEPTH-DRILLER	110.6M
DEPTH-LOGGER	110.0M
FIRST READING	109.5M
LAST READING	00M
CASING-DRILLER	3.5M
CASING-LOGGER	3.5M
BIT SIZE	156MM
HOLE FLUID TYPE	AIR/WATER
DENS./VISC.	1.01 N/A
PH/FLUID LOSS	N/A N/A
SAMPLE SOURCE	N/A
RM @ MEAS TEMP	
RMF @ MEAS TEMP	
RMC @ MEAS TEMP	
SOURCE: RMF/RMC	
RM @ BHT	
TIME SINCE CIRC	
MAX REC TEMP	
EQUIPMENT/BASE	V222 RDR
RECORDED BY	B. STEVENSON
WITNESSED BY	T. BRAZZONI
WATER LEVEL	00M

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	3.5M	TD	178MM	N/A	SURFACE	3.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

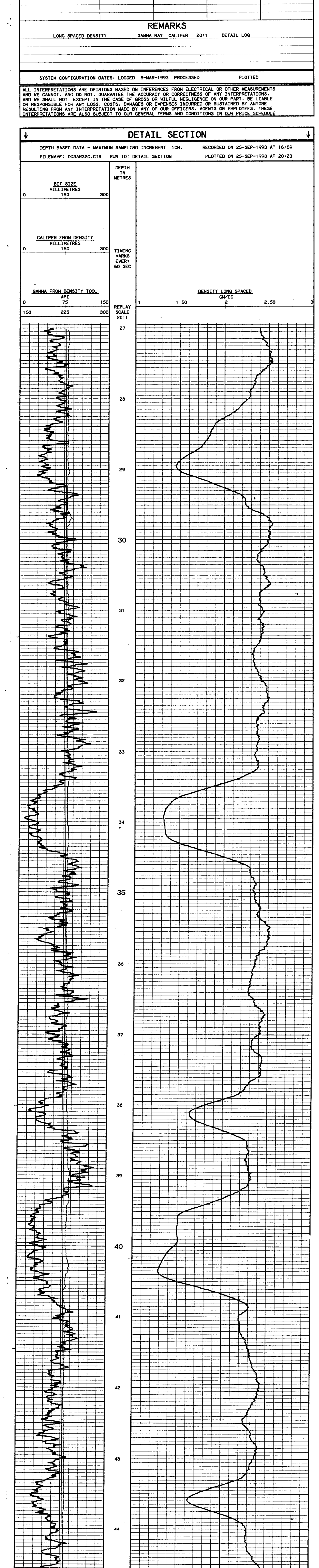
LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32C.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:23

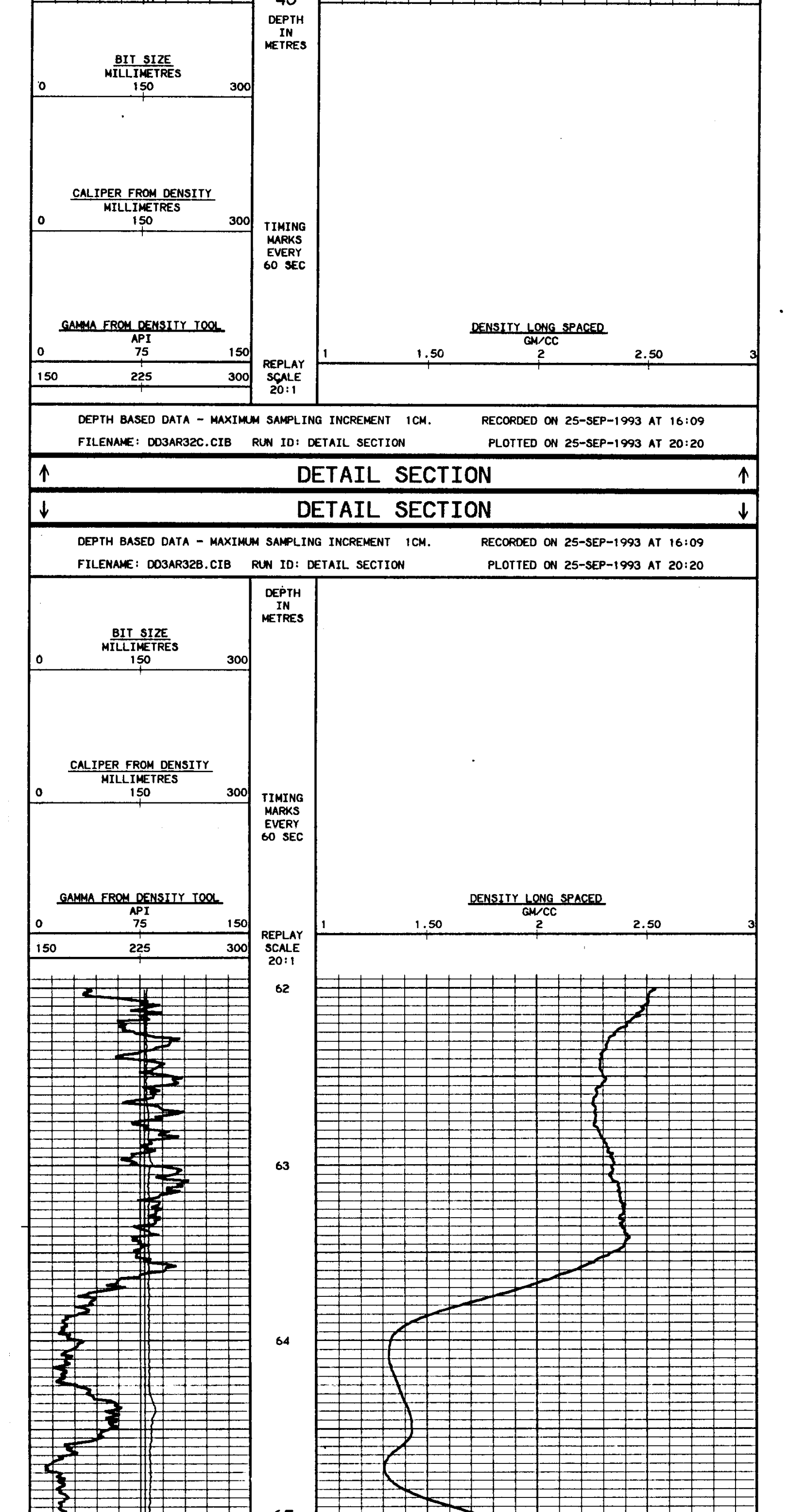


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32C.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:20

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32B.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:20



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32B.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:18

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:18

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:14

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 25-SEP-1993 AT 15:51 DATA LAST REPROCESSED: 25-SEP-1993 AT 20:12

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	3.50
BIT SIZE 3	.00	BIT DEPTH 3	110.60
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-32
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-32
COMPANY:
MANALTA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY MANALTA
WELL T93R-32
FIELD
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	25-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	110.6M			
DEPTH-LOGGER	110.0M			
FIRST READING	109.5M			
LAST READING	00M			
CASING-DRILLER	3.5M			
CASING-LOGGER				
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	3.5M	TD	178MM	N/A	SURFACE	3.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

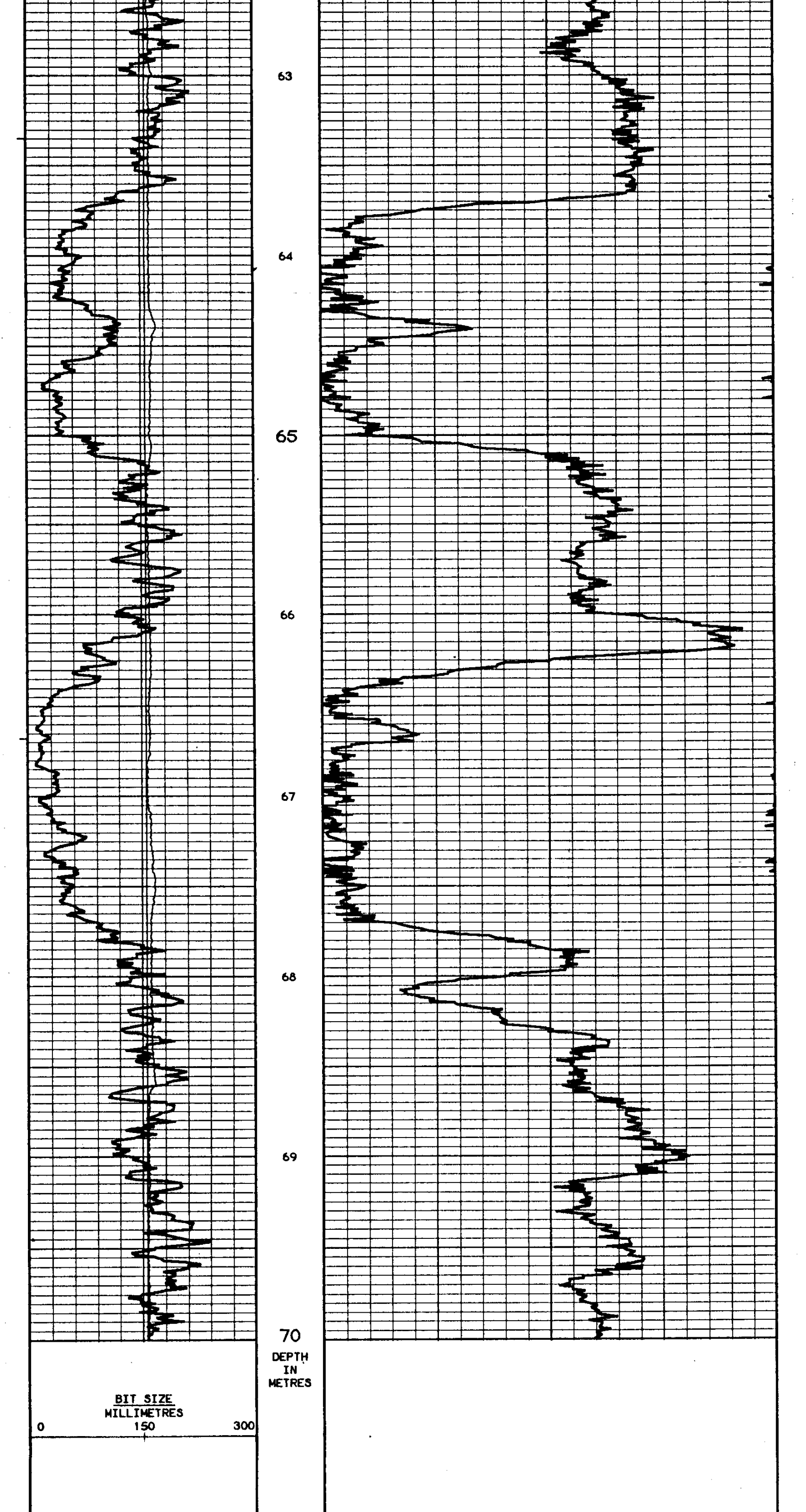
DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32C.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:43

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32C.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:43

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32B.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:41



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32B.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:41

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:38

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32A.CIB RUN ID: DETAIL SECTION PLOTTED ON 25-SEP-1993 AT 20:38

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 25-SEP-1993 AT 20:29 DATA LAST REPROCESSED: 25-SEP-1993 AT 20:29

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	3.50
BIT SIZE 3	.00	BIT DEPTH 3	110.60
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	3052.00
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-32
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY	MANALTA
WELL	T93R-32
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-32
COMPANY:
MANALTA

DATE	25-SEP-93				
RUN NUMBER	TWO				
DEPTH-DRILLER	110.6M				
DEPTH-LOGGER	110.0M				
FIRST READING	109.5M				
LAST READING	00M				
CASING-DRILLER	3.5M				
CASING-LOGGER	3.5M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE	N/A				
RM @ MEAS TEMP					
RMF @ MEAS TEMP					
RMC @ MEAS TEMP					
SOURCE: RMF/RMC					
RM @ BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	B. STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	00M				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	3.5M	TD	178MM	N/A	SURFACE	3.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32M.CIB RUN ID: MAIN LOG PLOTTED ON 25-SEP-1993 AT 20:05

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 25-SEP-1993 AT 16:09
FILENAME: DD3AR32M.CIB RUN ID: MAIN LOG PLOTTED ON 25-SEP-1993 AT 20:05

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 25-SEP-1993 AT 15:51

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	3.50
BIT SIZE 3	.00	BIT DEPTH 3	110.60
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-32
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

#879

COMPANY	MANALTA
WELL	T93R-32
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-32
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	25-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	110.6M	
DEPTH-LOGGER	109.9M	
FIRST READING	109.5M	
LAST READING	0M	
CASING-DRILLER	3.9M	
CASING-LOGGER	3.5M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

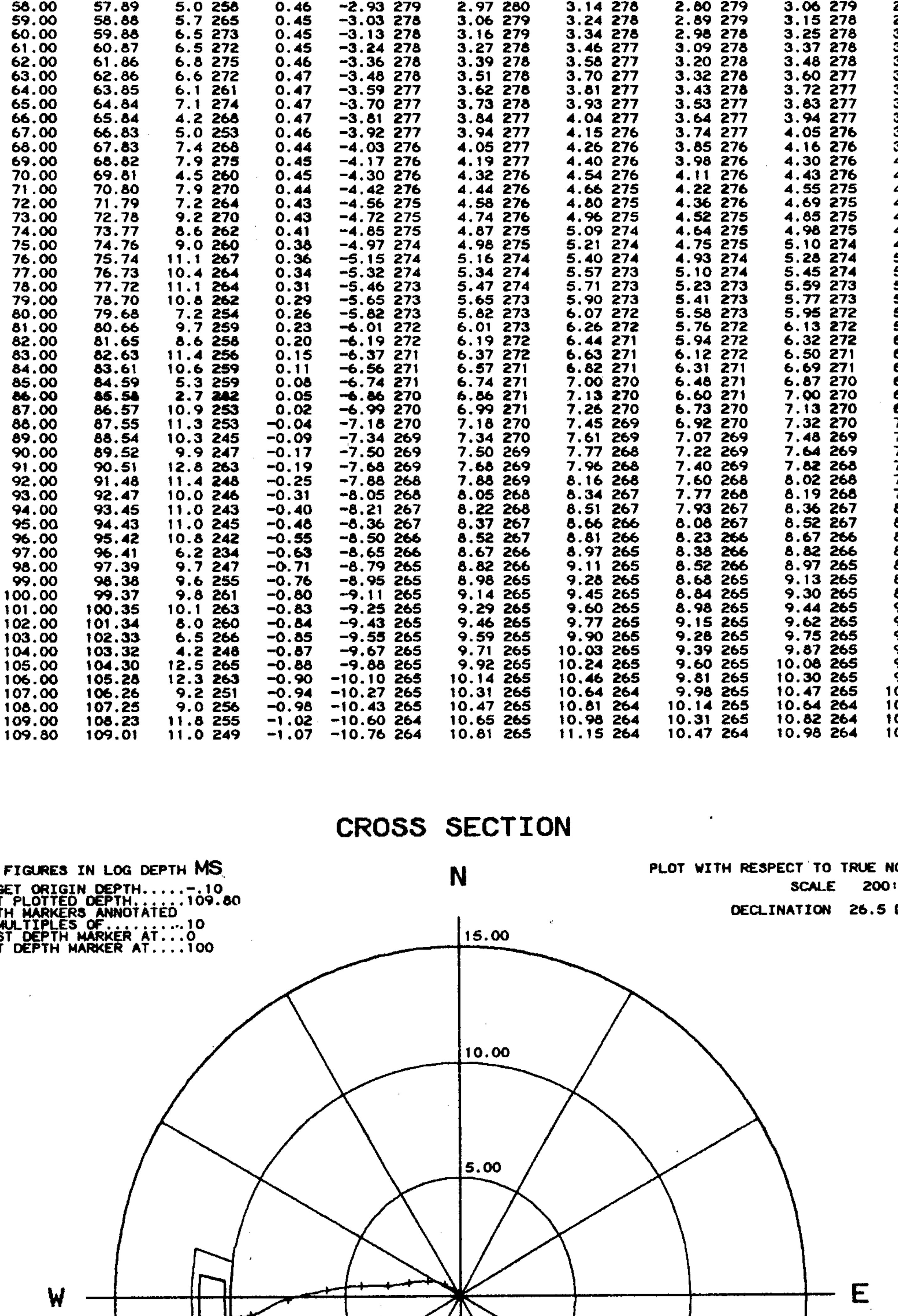
T93R-32 VERTICALITY DATA LISTING DATE PROCESSED: 25-SEP-1993
- ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH DATE LOGGED: 25-SEP-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
0.00	0.00	1.4	186	0.00	0.00	186	0.00	186	0.00	186	0.00	186	0.00	186	0.00
1.00	1.00	1.1	88	-0.01	0.02	110	0.02	110	0.02	111	0.02	110	0.02	110	0.02
2.00	2.00	1.0	313	0.00	0.02	81	0.02	80	0.02	82	0.02	81	0.02	81	0.02
3.00	3.00	1.3	319	0.01	0.01	50	0.02	49	0.02	51	0.01	49	0.02	50	0.02
4.00	4.00	1.1	300	0.02	0.00	8	0.02	7	0.02	9	0.01	8	0.02	8	0.02
5.00	5.00	1.1	317	0.03	-0.01	337	0.03	337	0.04	338	0.03	337	0.04	337	0.03
6.00	6.00	1.0	314	0.04	-0.02	333	0.05	333	0.06	333	0.04	333	0.05	333	0.04
7.00	7.00	1.1	319	0.06	-0.04	329	0.07	329	0.08	330	0.06	329	0.08	330	0.06
8.00	8.00	1.7	314	0.08	-0.05	326	0.10	326	0.11	326	0.08	326	0.10	326	0.09
9.00	9.00	1.2	307	0.09	-0.07	323	0.12	323	0.14	323	0.10	323	0.13	323	0.11
10.00	10.00	1.0	305	0.11	-0.09	320	0.14	320	0.16	320	0.12	320	0.15	320	0.13
11.00	11.00	0.9	299	0.11	-0.10	317	0.15	317	0.18	318	0.13	317	0.17	317	0.14
12.00	12.00	1.5	295	0.12	-0.12	315	0.17	315	0.20	315	0.14	315	0.19	315	0.16
13.00	13.00	1.2	309	0.13	-0.14	314	0.19	314	0.22	314	0.16	314	0.21	314	0.17
14.00	14.00	1.6	314	0.15	-0.16	314	0.22	314	0.25	314	0.18	314	0.23	314	0.20
15.00	15.00	1.8	327	0.17	-0.17	315	0.24	315	0.28	315	0.20	315	0.26	315	0.22
16.00	16.00	1.6	324	0.20	-0.19	316	0.27	316	0.31	316	0.23	316	0.29	316	0.25
17.00	17.00	2.1	320	0.22	-0.21	317	0.30	317	0.35	317	0.26	317	0.33	317	0.28
18.00	17.99	1.8	318	0.25	-0.23	317	0.34	317	0.39	317	0.29	317	0.36	317	0.31
19.00	18.99	1.8	306	0.27	-0.25	317	0.37	317	0.42	317	0.32	317	0.40	317	0.34
20.00	19.99	1.8	302	0.29	-0.28	316	0.40	316	0.46	316	0.35	316	0.43	316	0.37
21.00	20.99	2.1	301	0.31	-0.31	315	0.44	314	0.50	315	0.38	314	0.47	315	0.41
22.00	21.99	2.1	293	0.32	-0.34	313	0.47	313	0.53	313	0.40	313	0.50	313	0.44
23.00	22.99	2.1	290	0.33	-0.38	312	0.50	312	0.57	312	0.44	312	0.54	312	0.47
24.00	23.99	2.4	291	0.35	-0.41	310	0.54	310	0.61	310	0.47	310	0.57	310	0.50
25.00	24.99	2.3	287	0.36	-0.45	309	0.57	309	0.65	308	0.50	309	0.61	308	0.54
26.00	25.99	2.6	287	0.37	-0.49	307	0.61	307	0.69	307	0.54	307	0.65	307	0.57
27.00	26.99	2.8	294	0.39	-0.53	306	0.66	306	0.74	306	0.58	306	0.70	306	0.62
28.00	27.99	3.8	300	0.41	-0.59	305	0.72	305	0.80	305	0.63	305	0.76	305	0.68
29.00	28.98	3.9	301	0.45	-0.64	305	0.78	305	0.87	305	0.69	305	0.82	305	0.74
30.00	29.98	4.1	298	0.48	-0.70	304	0.84	305	0.93	304	0.75	304	0.89	304	0.80
31.00	30.98	4.1	294	0.50	-0.76	304	0.91	304	1.01	303	0.82	304	0.96	303	0.87
32.00	31.98	4.5	293	0.53	-0.83	303	0.98	303	1.08	302	0.89	303	1.03	303	0.94
33.00	32.97	5.0	290	0.56	-0.90	302	1.06	302	1.16	301	0.96	302	1.11	301	1.01
34.00	33.97	3.2	282	0.58	-0.98	300	1.13	301	1.24	300	1.03	301	1.19	300	1.08
35.00	34.97	4.6	281	0.59	-1.05	299	1.21	300	1.31	299	1.10	299	1.26	299	1.15
36.00	35.97	4.5	279	0.60	-1.13	298	1.28	298	1.39	298	1.17	298	1.34	298	1.23
37.00	36.96	4.5	277	0.61	-1.21	297	1.36	297	1.47	296	1.24	297	1.41	297	1.30
38.00	37.96	4.3	278	0.62	-1.29	296	1.43	296	1.55	295	1.31	296	1.49	295	1.37
39.00	38.96	4.6	270	0.62	-1.37	294	1.51	295	1.63	294	1.39	295	1.57	294	1.45
40.00	39.95	4.0	266	0.62	-1.45	293	1.58	294	1.70	293	1.46	293	1.64	293	1.52
41.00	40.95	3.2	270	0.62	-1.51	292	1.64	293	1.76	292	1.51	293	1.70	292	1.57
42.00	41.95	3.4	276	0.62	-1.57	292	1.69	292	1.81	291	1.56	292	1.75	291	1.62
43.00	42.95	3.6	269	0.63	-1.62	291	1.74	292	1.87	291	1.61	291	1.80	291	1.67
44.00	43.94	3.9	266	0.62	-1.69	290	1.80	291	1.93	290	1.67	290	1.87	290	1.73
45.00	44.94	4.6	263	0.62	-1.77	289	1.87	290	2.01	289	1.74	289	1.94	289	1.80
46.00	45.94	5.3	263	0.61	-1.85	288	1.95	289	2.09	288	1.81	288	2.02	288	1.88
47.00	46.93	5.4	264	0.60	-1.94	287	2.03	288	2.17	287	1.89	287	2.10	287	1.96
48.00	47.93	5.8	260	0.59	-2.04	286	2.12	287	2.27	286	1.98	286	2.20	286	2.05
49.00	48.92	5.0	268	0.58	-2.14	285	2.22	286	2.36	284	2.07	285	2.29	285	2.14
50.00	49.92	5.1	264	0.56	-2.24	284	2.31	285	2.46	284	2.16	284	2.38	284	2.23
51.00	50.91	5.2	261	0.54	-2.33	283	2.39	284	2.55	283	2.24	283	2.47	283	2.32
52.00	51.91	4.7	254	0.52	-2.41	282	2.47	283	2.63	282	2.31	283	2.55	282	2.39
53.00	52.91	4.5	266	0.51	-2.49	282	2.55	282	2.71	281	2.39	282	2.63	281	2.47
54.00	53.90	5.0	261	0.51	-2.58	281	2.63	282	2.79	281	2.46	281	2.71	281	2.55
55.00	54.90	5.4	263	0.50	-2.66	281	2.71	281	2.87	280	2.54	281	2.79	280	2.63
56.00	55.90	5.4	264	0.49	-2.75	280	2.80	281	2.96	279	2.63	280	2.88	280	2.71
57.00	56.89	5.4	256	0.48	-2.84	280	2.88	280	3.06	279	2.71	280	2.97	279	2.80
58.00	57.89	5.0	258	0.46	-2.93	279	2.97	280	3.14	278	2.80	279	3.06	279	2.88
59.00	58.88	5.7	265	0.45	-3.03	278	3.06	279	3.24	278	2.89	279	3.15	278	2.98
60.00	59.88	6.5	273	0.45	-3.13	278	3.16	279	3.34	278	2.98	278	3.25	278	3.07
61.00	60.87	6.5	272	0.45	-3.24	278	3.27	278	3.46	277	3.09	278	3.37	278	3.18
62.00	61.86	6.8	275	0.46	-3.36	278	3.39	278	3.58	277	3.20	278	3.48	278	3.29
63.00	62.86	6.6	272	0.47	-3.48	278	3.51	278	3.70	277	3.32	278	3.60	277	3.41
64.00	63.85	6.1	261	0.47	-3.59	277	3.62	278	3.81	277	3.43	278	3.72	277	3.52
65.00	64.84	7.1	274	0.47	-3.70	277	3.73	278	3.93	277	3.53	277	3.83	277	3.63
66.00	65.84	4.2	268	0.47	-3.81	277	3.84	277	4.04	277	3.64	277	3.94	277	3.74
67.00	66.83	5.0	253	0.46	-3.92	277	3.94	277	4.15	276	3.74	277	4.05	276	3.84
68.00	67.83	7.4	268	0.44	-4.03	276	4.05	277	4.26	276	3.85	276	4.16	276	3.95
69.00	68.82	7.9	275	0.45	-4.17	276	4.19	277	4.40	276	3.98	276	4.30	276	4.09
70.00	69.81	4.5	260	0.45	-4.30	276	4.32	276	4.54	276	4.11	276	4.43	276	4.22
71.00	70.80	7.9	270	0.44	-4.42	276	4.44	276	4.66	275	4.22	276	4.55	275	4.33
72.00	71.79	7.2	264	0.43	-4.56	275	4.58	276	4.80	275	4.36	276	4.69	275	4.47
73.00	72.78	9.2	270	0.43	-4.72	275	4.74	276	4.96	275	4.52	275	4.85	275	4.63
74.00	73.77	8.6	262	0.41	-4.85	275	4.87	275	5.09	274	4.64	275	4.98	275	4.75
75.00	74.76	9.0	260	0.38	-4.97	274	4.98	275	5.21	274	4.75	275	5.10	274	4.87
76.00	75.74	11.1	267	0.36	-5.15	274	5.16	274	5.40	274	4.93	274	5.28	274	5.05
77.00	76.73	10.4	264	0.34	-5.32	274	5.34	274	5.57	273	5.10	274	5.45	274	5.22
78.00	77.72	11.1	264	0.31	-5.46	273	5.47	274	5.71	273	5.23	273	5.59	273	5.35
79.00	78.70	10.8	262	0.29	-5.65	273	5.65	273	5.90	273	5.41	273	5.77	273	5.53
80.00	79.68	7.2	254	0.26	-5.82	273	5.82	273	6.07	272	5.58	273	5.95	272	5.70
81.00	80.66	9.7	259	0.23	-6.01	272	6.01	273	6.26	272	5.76	272	6.13	272	5.89
82.00	81.65	8.6	258	0.20	-6.19	272	6.19	272	6.44	271	5.94	272	6.32	272	6.07
83.00	82.63	11.4	256	0.15	-6.37	271	6.37	272	6.63	271	6.12	272	6.50	271	6.25
84.00	83.61	10.6	259	0.11	-6.56	271	6.57	271	6.82	271	6.31	271	6.69	271	6.44
85.00	84.59	5.3	259	0.08	-6.74	271	6.74	271	7.00	270	6.48	271	6.87	270	6.61
86.00	85.58	2.7	282	0.05	-6.86	270	6.86	271	7.13	270	6.60	271	7.00	270	6.73
87.00	86.57	10.9	253	0.02	-6.99	270	6.99	271	7.26	270	6.73	270	7.13	270	6.86
88.00	87.55	11.3	253	-0.04	-7.18	270	7.18	270	7.45	269	6.92	270	7.32	270	7.05
89.00	88.54	10.3	245	-0.09	-7.34	269	7.34	270	7.61	269	7.07	269	7.48	269	7.21
90.00	89.52	9.9	247	-0.17	-7.50	269	7.50	269	7.77	268	7.22	269	7.64	269	7.36
91.00	90.51	12.8	263	-0.19	-7.68	269	7.68	269	7.96	268	7.40	269	7.82	268	7.54
92.00	91.48	11.4	248	-0.25	-7.88	268	7.88	269	8.16	268	7.60	268	8.02	268	7.74
93.00	92.47	10.0	246	-0.31	-8.05	268	8.05	268	8.34	267	7.77	268	8.19	268	7.91
94.00	93.45	11.0	243	-0.40	-8.21	267	8.22	268	8.51	267	7.93	267	8.36	267	8.08
95.00	94.43	11.0	245	-0.48	-8.36	267	8.37	267	8.66	266	8.08	267	8.52	267	8.23
96.00	95.42	10.8	242	-0.55	-8.50	266	8.52	267	8.81	266	8.23	266	8.67	266	8.38
97.00	96.41	6.2	234	-0.63	-8.65	266	8.67	266	8.97	265	8.38	266	8.82	266	8.52
98.00	97.39	9.7	247	-0.71	-8.79	265	8.82	266	9.11	265	8.52	266	8.97	265	8.67
99.00	98.38	9.6	255	-0.76	-8.95	265	8.98	265	9.28	265	8.68	265	9.13	265	8.83
100.00	99.37	9.8	261	-0.80	-9.11	265	9.14	265	9.45	265	8.84	265	9.30	265	8.99
101.00	100.35	10.1	263	-0.83	-9.25	265	9.29	265	9.60	265	8.98	265	9.44	265	9.14
102.00	101.34	8.0	260	-0.84	-9.43	265	9.46	265	9.77	265	9.15	265	9.62	265	9.31
103.00	102.33	6.5	266	-0.85	-9.55	265	9.59	265	9.90	265	9.28	265	9.75	265	9.43
104.00	103.32	4.2	248	-0.87	-9.67	265	9.71	265	10.03	265	9.39	265	9.87	265	9.55
105.00	104.30	12.5	265	-0.88	-9.88	265	9.92	265	10.24	265	9.60	265	10.08	265	9.76
106.00	105.28	12.3	263	-0.90	-10.10	265	10.14	265	10.46	265	9.81	265	10.30	265	9.97
107.00	106.26	9.2	251	-0.94	-10.27	265	10.31	265	10.64	264	9.98	265	10.47	265	10.14
108.00	107.25	9.0	256	-0.98	-10.43	265	10.47	265	10.81	264	10.14	265	10.64	264	10.31
109.00	108.23	11.8	255	-1.02	-10.60	264	10.65	265	10.98	264	10.31	265	10.82	264	10.48
109.80	109.01	11.0	249	-1.07	-10.76	264	10.81	265	11.15	264	10.47	264	10.98	264	10.64

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....-.10
LAST PLOTTED DEPTH......109.80
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...0
LAST DEPTH MARKER AT....100

PLOT WITH RESPECT TO TRUE NORTH
SCALE 200:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 1.07 MS SOUTH, 10.76 MS WEST IE. 10.81 MS FROM THE ORIGIN, 264 DEG FROM TRUE NORTH

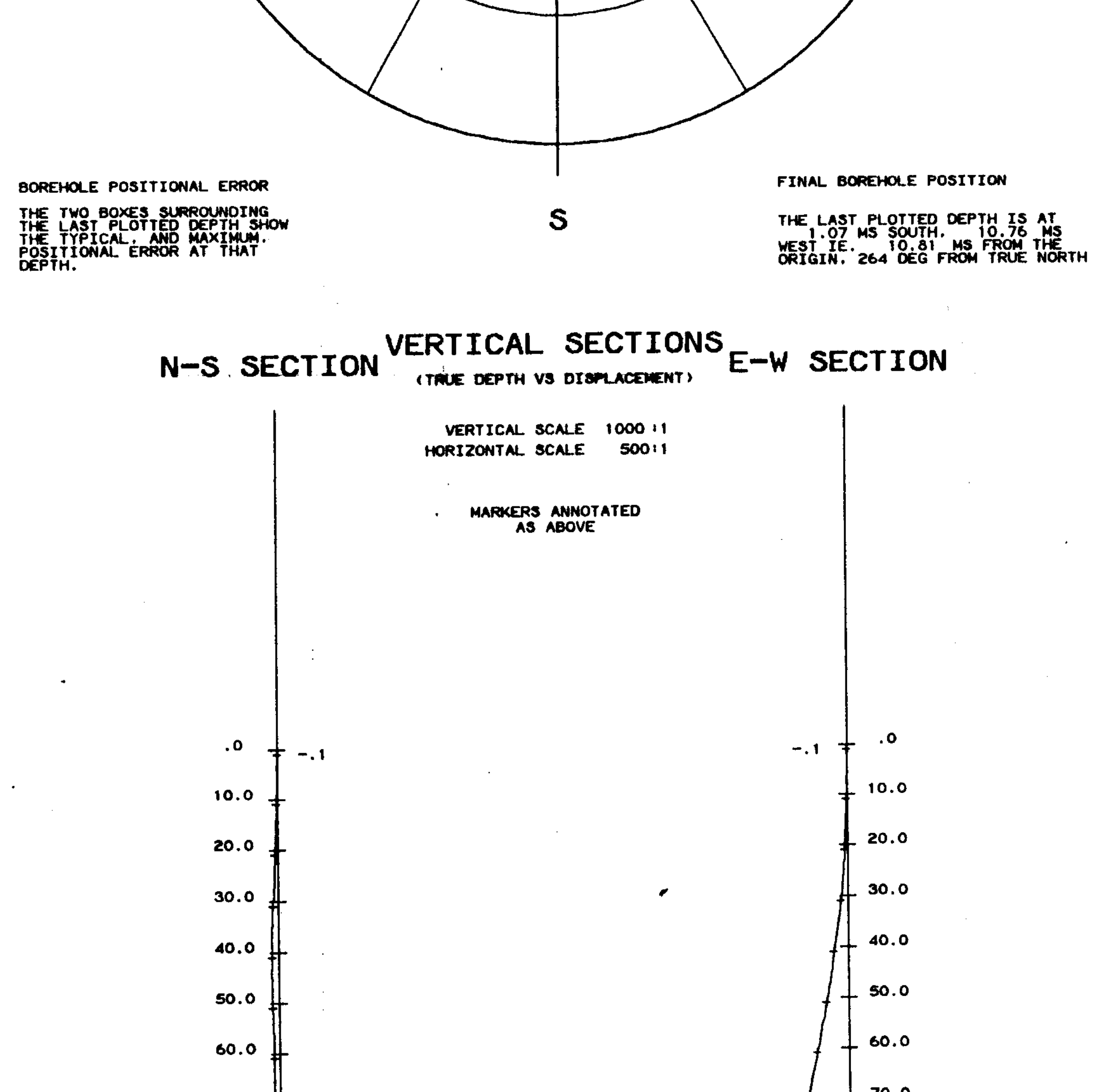
VERTICAL SECTIONS

(TRUE DEPTH VS DISPLACEMENT)

N-S SECTION E-W SECTION

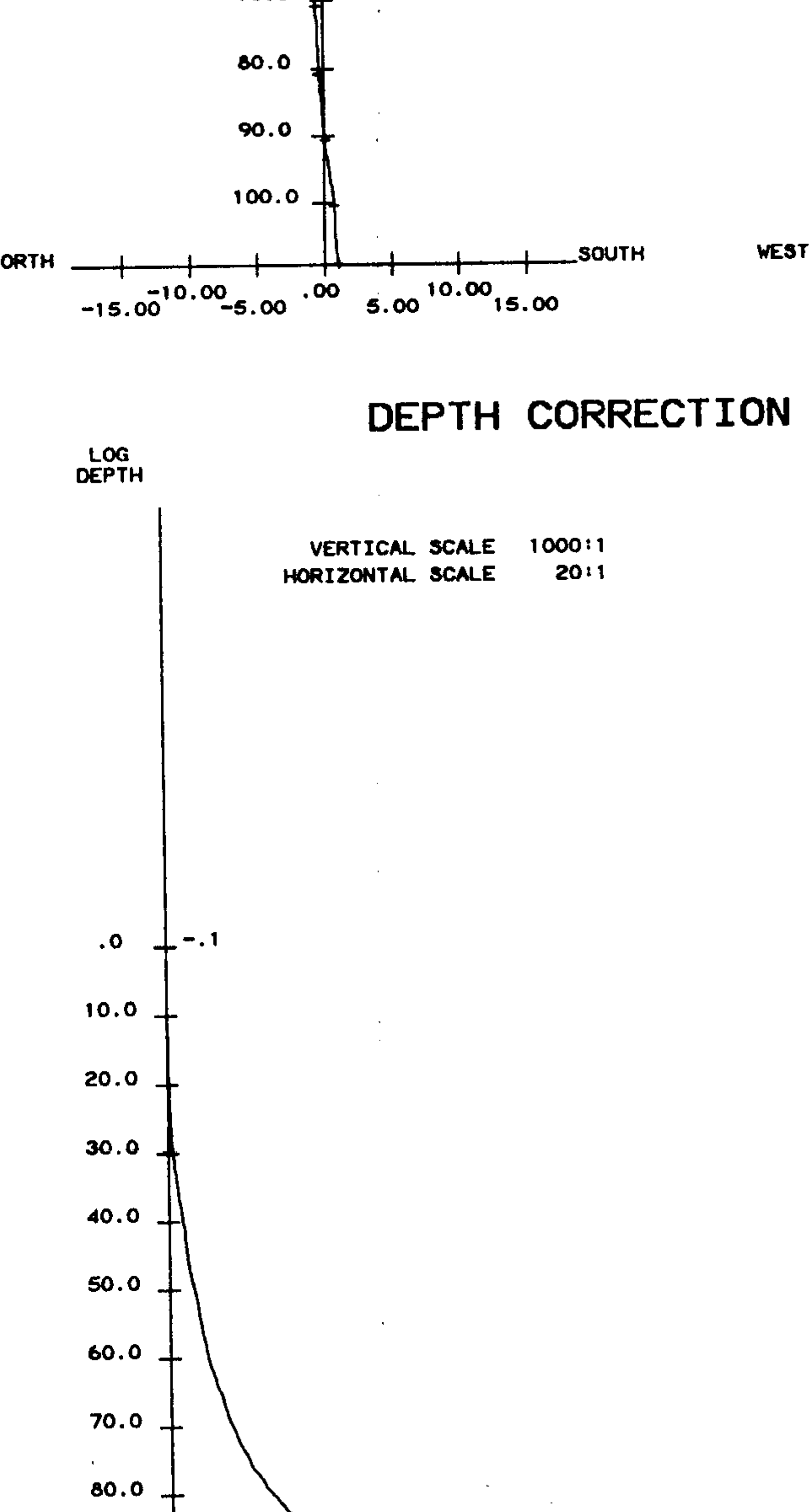
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 500:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 20:1



DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE
1.00	1.00	71.00	70.81
2.00	2.00	72.00	71.80
3.00	3.00	73.00	72.79
4.00	4.00	74.00	73.78
5.00	5.00	75.00	74.77
6.00	6.00	76.00	75.76
7.00	7.00	77.00	76.74
8.00	8.00	78.00	77.73
9.00	9.00	79.00	78.72
10.00	10.00	80.00	79.70
11.00	11.00	81.00	80.68
12.00	12.00	82.00	81.66
13.00	13.00	83.00	82.65
14.00	14.00	84.00	83.63
15.00	15.00	85.00	84.61
16.00	16.00	86.00	85.59
17.00	17.00	87.00	86.58
18.00	18.00	88.00	87.57
19.00	18.99	89.00	88.55
20.00	19.99	90.00	89.54
21.00	20.99	91.00	90.52
22.00	21.99	92.00	91.51
23.00	22.99	93.00	92.48
24.00	23.99	94.00	93.47
25.00	24.99	95.00	94.45
26.00	25.99	96.00	95.43
27.00	26.99	97.00	96.42
28.00	27.99	98.00	97.41
29.00	28.99	99.00	98.39
30.00	29.98	100.00	99.38
31.00	30.98	101.00	100.37
32.00	31.98	102.00	101.35
33.00	32.98	103.00	102.34
34.00	33.97	104.00	103.33
35.00	34.97	105.00	104.32
36.00	35.97	106.00	105.30
37.00	36.97	107.00	106.28
38.00	37.96	108.00	107.26
39.00	38.96	109.00	108.25
40.00	39.96	110.00	109.23
41.00	40.95	109.80	109.01
42.00	41.95		
43.00	42.95		
44.00	43.95		
45.00	44.94		
46.00	45.94		
47.00	46.94		
48.00	47.93		
49.00	48.93		
50.00	49.92		
51.00	50.92		
52.00	51.91		
53.00	52.91		
54.00	53.91		
55.00	54.90		
56.00	55.90		
57.00	56.90		
58.00	57.89		
59.00	58.89		
60.00	59.88		
61.00	60.88		
62.00	61.87		
63.00	62.86		
64.00	63.86		
65.00	64.85		
66.00	65.84		
67.00	66.84		
68.00	67.83		
69.00	68.83		
70.00	69.82		

COMPANY	MANALTA
WELL	T93R-32
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 16
WELL:
T93R-33
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-33
FIELD SITE 16
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	26-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	152.4M	
DEPTH-LOGGER	152.4M	
FIRST READING	152M	
LAST READING	0M	
CASING-DRILLER	6.1M	
CASING-LOGGER	6.1M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT, ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH.· CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

T93R-33

VERTICALITY DATA LISTING

ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH

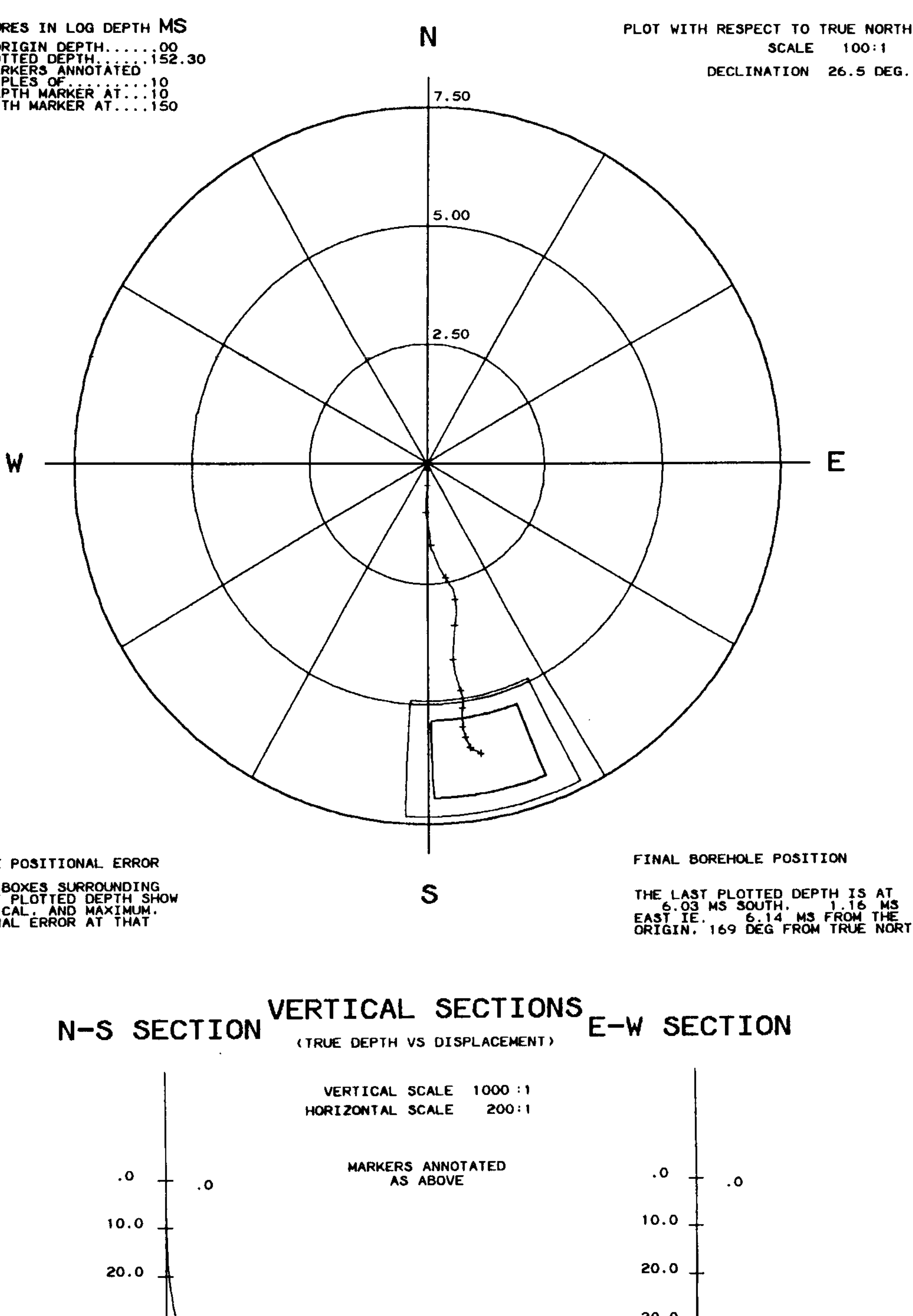
DATE PROCESSED: 26-SEP-1993
DATE LOGGED: 26-SEP-1993

DEPTHS LOG	DEPTHS TRUE	BOREHOLE TILT	BOREHOLE AZI	AXIAL CO-ORDS NORTH	AXIAL CO-ORDS EAST	POLAR BRG	POLAR RADIUS	POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL) BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
1.00	1.00	0.9	32	-0.01	0.02	115	0.02	115	0.02	115	0.02	115	0.02	115	0.02
2.00	2.00	0.1	195	-0.01	0.03	105	0.03	105	0.03	106	0.02	105	0.03	106	0.02
3.00	3.00	0.3	244	-0.01	0.02	112	0.02	113	0.03	109	0.02	113	0.03	111	0.02
4.00	4.00	0.3	233	-0.01	0.02	121	0.02	126	0.03	114	0.02	124	0.03	118	0.02
5.00	5.00	0.3	269	-0.01	0.02	130	0.02	139	0.03	118	0.02	135	0.02	124	0.02
6.00	6.00	0.4	242	-0.02	0.02	137	0.02	147	0.03	121	0.02	142	0.03	130	0.02
7.00	7.00	0.3	244	-0.02	0.01	146	0.03	157	0.03	127	0.02	152	0.03	138	0.02
8.00	8.00	0.4	181	-0.03	0.01	152	0.03	163	0.04	131	0.02	158	0.04	144	0.03
9.00	9.00	0.3	165	-0.03	0.02	154	0.04	163	0.05	134	0.02	159	0.04	146	0.03
10.00	10.00	0.2	152	-0.04	0.02	155	0.04	163	0.06	137	0.03	160	0.05	148	0.03
11.00	11.00	0.4	141	-0.05	0.02	154	0.05	161	0.07	138	0.03	158	0.06	148	0.04
12.00	12.00	0.3	148	-0.05	0.02	154	0.06	161	0.08	140	0.03	158	0.07	149	0.05
13.00	13.00	0.5	167	-0.06	0.03	155	0.06	161	0.09	142	0.04	158	0.08	150	0.05
14.00	14.00	0.2	170	-0.07	0.03	156	0.07	161	0.10	144	0.04	159	0.09	152	0.06
15.00	15.00	0.7	187	-0.08	0.03	159	0.08	163	0.12	148	0.05	161	0.10	155	0.07
16.00	16.00	0.5	147	-0.09	0.03	160	0.09	164	0.13	151	0.06	162	0.11	157	0.07
17.00	17.00	0.8	188	-0.10	0.03	162	0.10	166	0.15	155	0.06	164	0.13	159	0.08
18.00	18.00	0.5	179	-0.11	0.03	164	0.12	167	0.16	158	0.07	166	0.14	162	0.09
19.00	19.00	0.9	175	-0.13	0.03	166	0.13	169	0.18	161	0.08	168	0.16	164	0.11
20.00	20.00	1.3	189	-0.15	0.03	169	0.15	171	0.20	165	0.10	170	0.18	167	0.12
21.00	21.00	1.0	182	-0.17	0.03	171	0.17	173	0.23	169	0.11	172	0.20	170	0.14
22.00	22.00	1.6	190	-0.19	0.02	173	0.19	174	0.25	171	0.13	174	0.22	172	0.16
23.00	23.00	1.8	184	-0.22	0.02	174	0.22	175	0.29	173	0.16	175	0.25	174	0.19
24.00	24.00	1.7	170	-0.25	0.02	175	0.25	175	0.32	174	0.19	175	0.29	175	0.22
25.00	25.00	2.2	170	-0.29	0.03	175	0.29	175	0.36	174	0.22	175	0.32	175	0.25
26.00	26.00	1.8	174	-0.32	0.03	174	0.32	175	0.40	174	0.25	175	0.36	174	0.29
27.00	27.00	2.4	179	-0.36	0.03	175	0.36	175	0.44	174	0.29	175	0.40	174	0.33
28.00	27.99	2.7	188	-0.40	0.03	175	0.40	176	0.48	175	0.32	176	0.44	175	0.36
29.00	28.99	2.0	185	-0.44	0.03	177	0.44	177	0.52	177	0.36	177	0.48	177	0.40
30.00	29.99	2.2	188	-0.47	0.02	178	0.47	178	0.56	178	0.39	178	0.52	178	0.43
31.00	30.99	2.5	207	-0.51	0.00	180	0.51	179	0.60	180	0.42	179	0.56	180	0.46
32.00	31.99	2.6	190	-0.55	-0.01	181	0.55	181	0.65	181	0.46	181	0.60	181	0.51
33.00	32.99	2.7	184	-0.60	-0.02	182	0.60	181	0.70	182	0.50	181	0.65	182	0.55
34.00	33.99	2.1	177	-0.65	-0.02	182	0.65	182	0.75	182	0.55	182	0.70	182	0.60
35.00	34.99	3.1	180	-0.70	-0.03	182	0.70	182	0.81	182	0.60	182	0.76	182	0.65
36.00	35.99	2.9	182	-0.76	-0.03	182	0.76	182	0.87	183	0.66	182	0.82	182	0.71
37.00	36.98	3.9	182	-0.82	-0.03	182	0.82	182	0.93	182	0.71	182	0.88	182	0.77
38.00	37.98	3.8	180	-0.89	-0.03	182	0.89	182	1.00	182	0.77	182	0.95	182	0.83
39.00	38.98	3.7	184	-0.95	-0.04	182	0.95	182	1.07	182	0.84	182	1.01	182	0.89
40.00	39.98	3.7	175	-1.02	-0.03	182	1.02	182	1.14	182	0.89	182	1.08	182	0.96
41.00	40.98	4.2	171	-1.08	-0.02	181	1.08	181	1.20	181	0.95	181	1.14	181	1.02
42.00	41.97	3.6	167	-1.15	-0.01	180	1.15	180	1.27	181	1.02	180	1.21	181	1.08
43.00	42.97	3.9	161	-1.20	0.01	180	1.20	180	1.34	180	1.07	180	1.27	180	1.14
44.00	43.97	4.2	163	-1.27	0.03	179	1.27	179	1.41	179	1.14	179	1.34	179	1.21
45.00	44.97	4.0	163	-1.34	0.05	178	1.34	178	1.48	178	1.20	178	1.41	178	1.27
46.00	45.96	4.5	174	-1.41	0.06	177	1.41	178	1.56	177	1.27	178	1.48	177	1.34
47.00	46.96	3.8	179	-1.48	0.07	177	1.48	178	1.63	177	1.34	177	1.56	177	1.41
48.00	47.96	4.0	182	-1.55	0.07	178	1.55	178	1.70	177	1.40	178	1.63	178	1.48
49.00	48.96	4.3	179	-1.62	0.07	178	1.62	178	1.77	178	1.47	178	1.70	178	1.55
50.00	49.95	4.4	168	-1.70	0.08	177	1.70	177	1.85	177	1.54	177	1.78	177	1.62
51.00	50.95	4.3	158	-1.77	0.10	177	1.77	177	1.93	177	1.61	177	1.85	177	1.69
52.00	51.95	4.3	154	-1.84	0.13	176	1.85	176	2.01	176	1.68	176	1.93	176	1.77
53.00	52.94	4.4	158	-1.91	0.16	175	1.92	175	2.09	175	1.75	175	2.00	175	1.84
54.00	53.94	4.5	159	-1.98	0.19	175	1.99	175	2.16	174	1.82	175	2.08	175	1.91
55.00	54.94	4.9	163	-2.05	0.21	174	2.06	174	2.24	174	1.89	174	2.15	174	1.98
56.00	55.94	4.3	155	-2.12	0.25	173	2.14	174	2.31	173	1.96	174	2.23	173	2.05
57.00	56.93	4.1	149	-2.19	0.28	173	2.21	173	2.39	173	2.03	173	2.30	173	2.12
58.00	57.93	3.1	155	-2.25	0.31	172	2.28	172	2.46	172	2.09	172	2.37	172	2.18
59.00	58.93	4.1	148	-2.31	0.35	171	2.34	172	2.52	171	2.15	171	2.43	171	2.25
60.00	59.93	3.4	142	-2.37	0.39	171	2.40	171	2.59	170	2.21	171	2.49	170	2.30
61.00	60.92	3.2	149	-2.42	0.43	170	2.45	170	2.65	170	2.26	170	2.55	170	2.36
62.00	61.92	4.6	143	-2.47	0.46	169	2.52	170	2.71	169	2.32	170	2.61	169	2.42
63.00	62.92	3.2	146	-2.53	0.50	169	2.58	169	2.77	169	2.38	169	2.67	169	2.48
64.00	63.92	3.1	144	-2.57	0.53	168	2.62	169	2.82	168	2.42	169	2.72	168	2.52
65.00	64.92	2.2	161	-2.61	0.55	168	2.67	168	2.87	168	2.47	168	2.77	168	2.57
66.00	65.92	2.7	174	-2.65	0.57	168	2.71	168	2.92	168	2.51	168	2.82	168	2.61
67.00	66.91	2.1	170	-2.69	0.57	168	2.75	168	2.96	168	2.54	168	2.86	168	2.65
68.00	67.91	2.2	154	-2.73	0.58	168	2.79	168	3.00	168	2.57	168	2.89	168	2.68
69.00	68.91	2.4	175	-2.77	0.59	168	2.83	168	3.04	168	2.61	168	2.94	168	2.72
70.00	69.91	2.4	169	-2.81	0.59	168	2.87	168	3.09	168	2.65	168	2.98	168	2.76
71.00	70.91	2.7	163	-2.85	0.61	168	2.91	168	3.14	168	2.69	168	3.03	168	2.80
72.00	71.91	2.8	187	-2.90	0.61	168	2.96	168	3.19	168	2.73	168	3.08	168	2.85
73.00	72.91	2.6	175	-2.94	0.61	168	3.01	168	3.24	168	2.78	168	3.12	168	2.89
74.00	73.91	2.7	175	-2.99	0.62	168	3.05	169	3.29	168	2.82	168	3.17	168	2.93
75.00	74.91	2.8	181	-3.03	0.62	168	3.10	169	3.34	168	2.86	169	3.22	168	2.98
76.00	75.91	2.8	186	-3.08	0.62	169	3.15	169	3.39	168	2.90	169	3.27	169	3.02
77.00	76.90	3.1	174	-3.14	0.61	169	3.20	169	3.44	169	2.95	169	3.32	169	3.08
78.00	77.90	2.9	187	-3.20	0.60	169	3.25	170	3.50	169	3.00	169	3.38	169	3.13
79.00	78.90	4.1	191	-3.26	0.59	170	3.31	170	3.57	169	3.06	170	3.44	170	3.19
80.00	79.90	3.9	189	-3.33	0.58	170	3.38	170	3.63	170	3.12	170	3.50	170	3.25
81.00	80.90	4.1	190	-3.39	0.58	170	3.44	171	3.70	170	3.18	170	3.57	170	3.31
82.00	81.89	4.4	189	-3.46	0.57	171	3.51	171	3.77	170	3.24	171	3.64	171	3.37
83.00	82.89	4.6	182	-3.53	0.57	171	3.58	171	3.84	171	3.31	171	3.71	171	3.44
84.00	83.89	4.4	187	-3.61	0.56	171	3.65	171	3.92	171	3.38	171	3.79	171	3.52
85.00	84.88	4.4	184	-3.69	0.55	171	3.73	172	4.00	171	3.45	172	3.86	171	3.59
86.00	85.88	4.7	185	-3.75	0.55	172	3.79	172	4.07	171	3.52	172	3.93	172	3.65
87.00	86.88	4.2	183	-3.83	0.55	172	3.87	172	4.15	172	3.59	172	4.01	172	3.73
88.00	87.88	3.2	181	-3.89	0.54	172	3.93	172	4.21	172	3.65	172	4.07	172	3.79
89.00	88.87	4.5	184	-3.96	0.54	172	4.00	172	4.28	172	3.71	172	4.14	172	3.86
90.00	89.87	4.5	173	-4.04	0.54	172	4.08	172	4.37	172	3.79	172	4.22	172	3.93
91.00	90.87	4.2	171	-4.12	0.55	172	4.16	172	4.45	172	3.86	172	4.30	172	4.01
92.00	91.87	4.6	168	-4.20	0.56	172	4.23	172	4.53	172	3.94	172	4.38	172	4.09
93.00	92.86	4.5	168	-4.27	0.58	172	4.31	172	4.61	172	4.01	172	4.46	172	4.16
94.00	93.86	4.0	165	-4.34	0.60	172	4.38	172	4.68	172	4.08	172	4.53	172	4.23
95.00	94.86	3.1	172	-4.41	0.62	172	4.45	172	4.76	172	4.14	172	4.60	172	4.30
96.00	95.86	3.9	163	-4.47	0.63	172	4.51	172	4.82	172	4.20	172	4.67	172	4.36
97.00	96.85	3.7	161	-4.53	0.65	172	4.57	172	4.89	172	4.26	172	4.73	172	4.42
98.00	97.85	3.5	160	-4.59	0.67	172	4.63	172	4.95	172	4.32	172	4.79	172	4.48
99.00	98.85	3.4	162	-4.64	0.69	172	4.69	172	5.01	171	4.37	172	4.85	172	4.53
100.00	99.85	2.9	168	-4.69	0.70	171	4.74	172	5.07	171	4.42	172	4.91	171	4.58
101.00	100.85	2.6	161	-4.74	0.72	171	4.79	171	5.12	171	4.47	171	4.96	171	4.63
102.00	101.85	2.6	165	-4.78	0.73	171	4.84	171	5.17	171	4.51	171	5.00	171	4.67
103.00	102.85	2.3	165	-4.82	0.74	171	4.88	171	5.22	171	4.55	171	5.05	171	4.71
104.00	103.84	1.9	172	-4.86	0.75	171	4.92	171	5.26	171	4.58	171	5.09	171	4.75
105.00	104.84	2.2	190	-4.90	0.75	171	4.96	171	5.30	171	4.62	171	5.13	171	4.79
106.00	105.84	1.9	179	-4.94	0.75	171	4.99	171	5.34	171	4.65	171	5.17	171	4.82
107.00	106.84	1.8	174	-4.97	0.75	171	5.03	171	5.37	171	4.68	171	5.20	171	4.85
108.00	107.84	1.8	189	-5.00	0.75	171	5.06	172	5.41	171	4.70	171	5.23	171	4.88
109.00	108.84	1.9	185	-5.03	0.75	172	5.09	172	5.44	171	4.73	172	5.26	171	4.91
110.00	109.84	2.5	182	-5.07	0.74	172	5.12	172	5.48	172	4.77	172	5.30	172	4.95
111.00	110.84	2.2	189	-5.11	0.74	172	5.17	172	5.53	172	4.81	172	5.35	172	4.99
112.00	111.84	2.8	183	-5.15	0.73	172	5.21	172	5.57	172	4.84	172	5.39	172	5.02
113.00	112.84	3.0	177	-5.20	0.73	172	5.25	172	5.62	172	4.89	172	5.44	172	5.07
114.00	113.84	2.2	183	-5.25	0.73	172	5.30	172	5.67	172	4.93	172	5.48	172	5.11
115.00	114.84	2.5	162	-5.29	0.73	172	5.34	172	5.71	172	4.96	172	5.53	172	5.15
116.00	115.83	2.2	161	-5.33	0.74	172	5.38	172	5.76	172	5.00	172	5.57	172	5.19
117.00	116.83	2.1	168	-5.37	0.75	172	5.42	172	5.80	172	5.04	172	5.61	172	5.23
118.00	117.83	1.8	181	-5.41	0.75	172	5.46	172	5.84	172	5.07	172	5.65	172	5.26
119.00	118.83	1.7	185	-5.44	0.75	172	5.49	172	5.88	172	5.10	172	5.68	172	5.30
120.00	119.83	1.3	176	-5.47	0.75	172	5.52	172	5.91	172	5.12	172	5.71	172	5.32
121.00	120.83	1.3	171	-5.49	0.75	172	5.54	172	5.94	172	5.15	172	5.74	172	5.34
122.00	121.83	1.3	162	-5.51	0.76	172	5.56	172	5.96	172	5.16	172	5.76	172	5.36
123.00	122.83	1.1	167	-5.53	0.76	172	5.58	172	5.98	172	5.18	172	5.78	172	5.38
124.00	123.83	1.2	154	-5.55	0.77	172	5.60	172	6.01	172	5.19	172	5.80	172	5.40
125.00	124.83	1.3	163	-5.57	0.77	172	5.62	172	6.03	172	5.21	172	5.83	172	5.42
126.00	125.83	1.2	166	-5.59	0.78	172	5.65	172	6.06	172	5.23	172	5.85	172	5.44
127.00	126.83	1.1	157	-5.61	0.78	172	5.67	172	6.08	172	5.25	172	5.87	172	5.46
128.00	127.83	1.2	158	-5.63	0.79	172	5.69	172	6.11	172	5.27	172	5.90	172	5.48
129.00	128.83	1.1	168	-5.65	0.80	172	5.71	172	6.13	172	5.29	172	5.92	172	5.50
130.00	129.83	1.4	157	-5.68	0.81	172	5.74	172	6.16	172	5.31	172	5.95	172	5.52
131.00	130.83	1.3	156	-5.70	0.81	172	5.76	172	6.19	172	5.33	172	5.97	172	5.55
132.00	131.83	1.4	159	-5.73	0.82	172	5.78	172	6.22	172	5.35	172	6.00	172	5.57
133.00	132.83	1.5	151	-5.75	0.83	172	5.81	172	6.24	172	5.37	172	6.02	172	5.59
134.00	133.83	1.4	152	-5.77	0.84	172	5.83	172	6.27	172	5.39	172	6.05	172	5.61
135.00	134.83	1.5	162	-5.79	0.85	172	5.85	172	6.29	172	5.41	172	6.07	172	5.63
136.00	135.83	1.5	148	-5.81	0.86	172	5.88	172	6.32	171	5.43	172	6.10	172	5.65
137.00	136.83	1.3	153	-5.83	0.87	171	5.90	172	6.35	171	5.45	171	6.12	171	5.67
138.00	137.83	1.3	153	-5.85	0.88	171	5.92	171	6.37	171	5.47	171	6.15	171	5.69
139.00	138.83	1.4	154	-5.87	0.90	171	5.94	171	6.40	171	5.49	171	6.17	171	5.71
140.00	139.83	1.0	167	-5.89	0.90	171	5.96	171	6.42	171	5.50	171	6.19	171	5.73
141.00	140.83	2.0	153	-5.92	0.92	171	5.99	171	6.45	171	5.52	171	6.22	171	5.75
142.00	141.83	1.9	121	-5.94	0.94	171	6.01	171	6.48	171	5.55	171	6.25	171	5.78
143.00	142.83	1.4	111	-5.95	0.97	171	6.03	171	6.50	171	5.56	171	6.26	171	5.79
144.00	143.83	1.9	114	-5.96	0.99	171	6.04	171	6.51	171	5.57	171	6.28	171	5.81
145.00	144.82	1.6	113	-5.97	1.02	170	6.06	170	6.53	170	5.59	170	6.29	170	5.82
146.00	145.82	1.9	115	-5.99	1.04	170	6.08	170	6.55	170	5.60	170	6.31	170	5.84
147.00	146.82	1.7	115	-6.00	1.07	170	6.10	170	6.57	170	5.62	170	6.33	170	5.86
148.00	147.82	0.6	96	-6.01	1.09	170	6.11	170	6.58	170	5.63	170	6.35	170	5.87
149.00	148.82	0.5	98	-6.01	1.10	170	6.11	170	6.59	170	5.63	170	6.35	170	5.87
150.00	149.82	0.6	117	-6.02	1.11	170	6.12	169	6.60	170	5.64	169	6.36	170	5.88
151.00	150.82	0.6	122	-6.02	1.12	169	6.13	169	6.61	170	5.64	169	6.37	169	5.89
152.00	151.82	1.7	96	-6.03	1.16	169	6.14	169	6.62	169	5.65	169	6.38	169	5.89
152.30	152.12	1.6	98	-6.03	1.16	169	6.14	169	6.62	169	5.65	169	6.38	169	5.90

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......00
LAST PLOTTED DEPTH......152.30
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....150

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

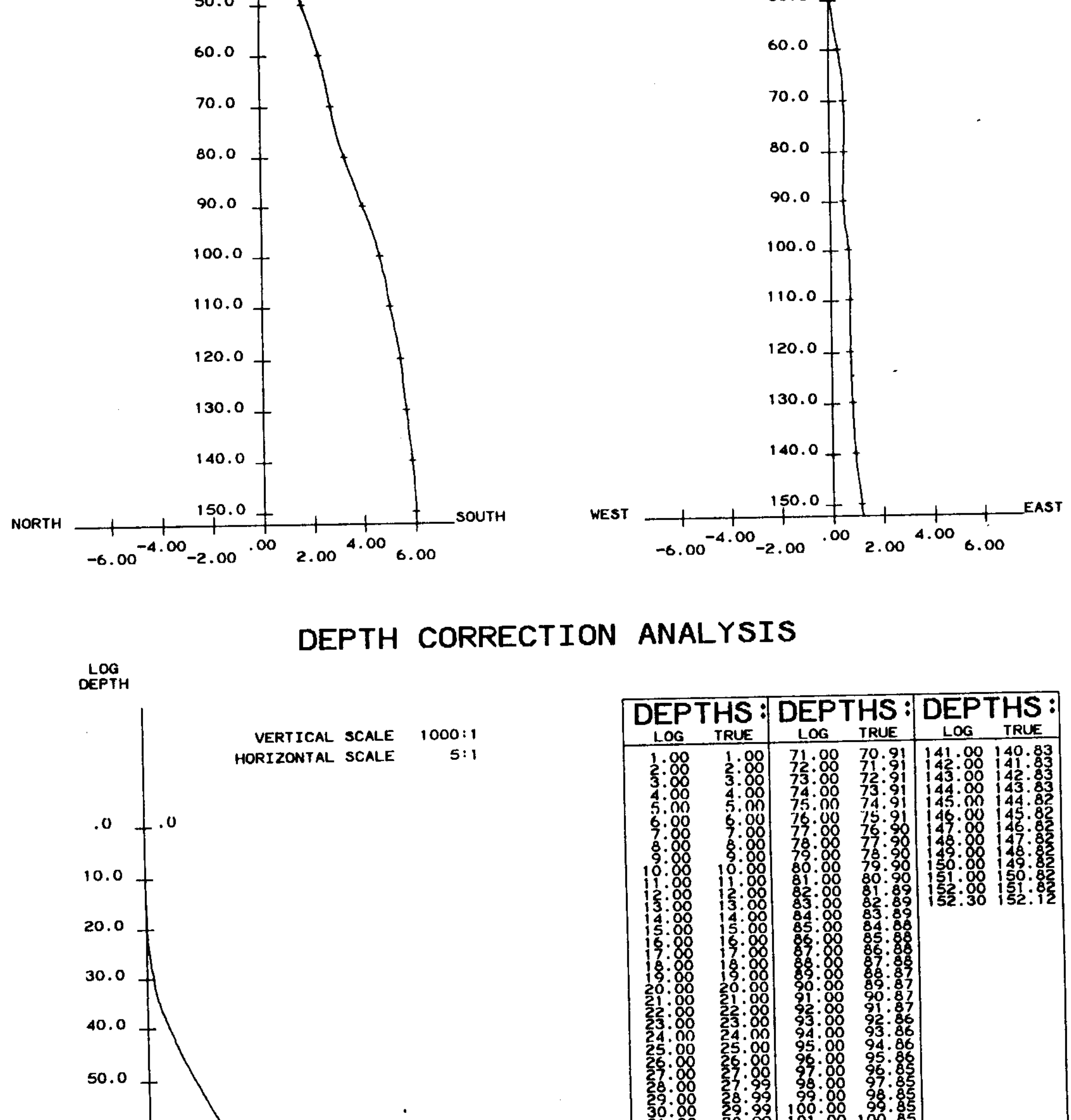
THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

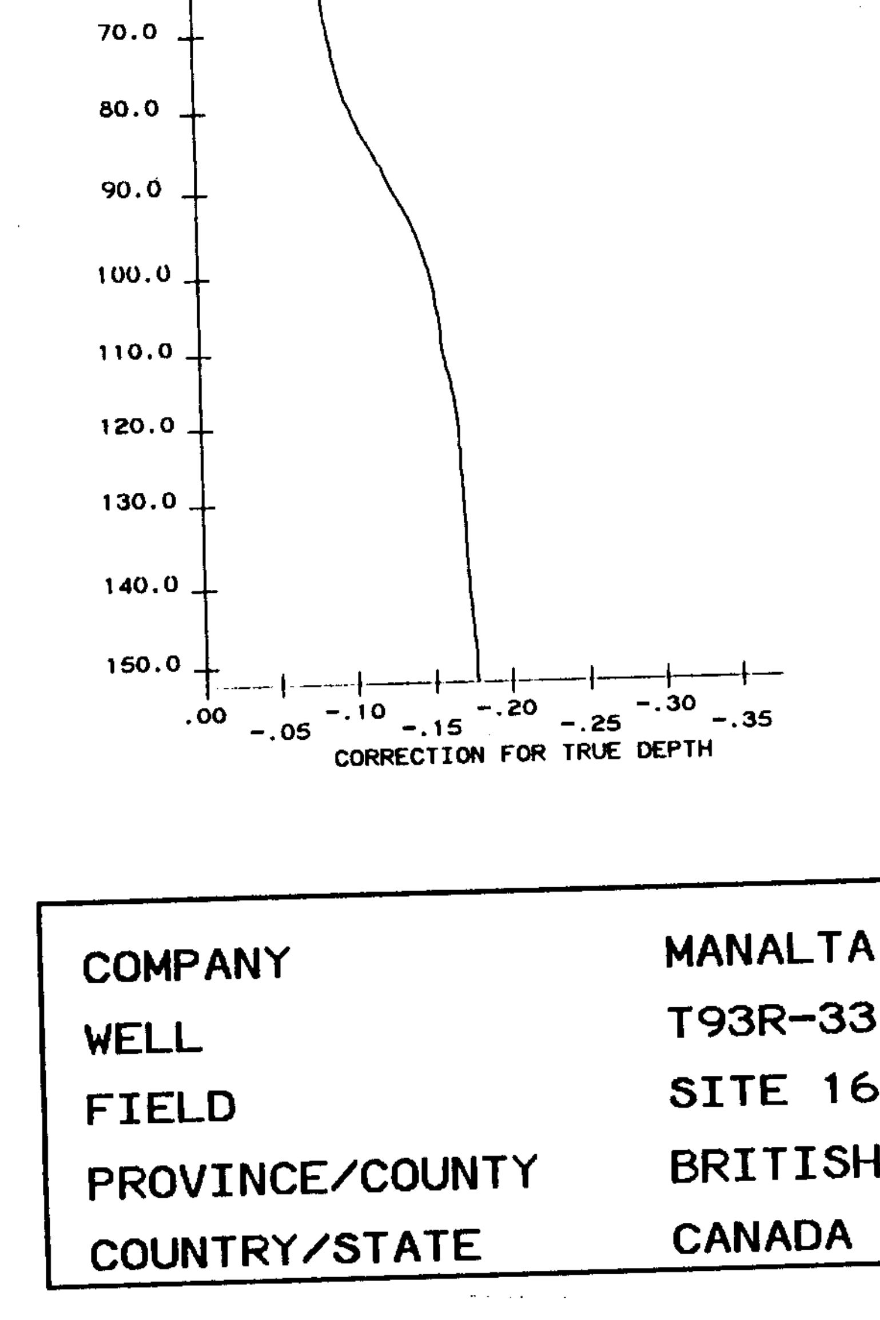
THE LAST PLOTTED DEPTH IS AT 6.03 MS SOUTH, 1.16 MS EAST IE. 6.14 MS FROM THE ORIGIN, 169 DEG FROM TRUE NORTH

VERTICAL SECTIONS

(TRUE DEPTH VS DISPLACEMENT)



DEPTH CORRECTION ANALYSIS



DEPTHS: LOG	TRUE	DEPTHS: LOG	TRUE	DEPTHS: LOG	TRUE
1.00	1.00	71.00	70.91	141.00	140.83
2.00	2.00	72.00	71.91	142.00	141.83
3.00	3.00	73.00	72.91	143.00	142.83
4.00	4.00	74.00	73.91	144.00	143.83
5.00	5.00	75.00	74.91	145.00	144.82
6.00	6.00	76.00	75.91	146.00	145.82
7.00	7.00	77.00	76.90	147.00	146.82
8.00	8.00	78.00	77.90	148.00	147.82
9.00	9.00	79.00	78.90	149.00	148.82
10.00	10.00	80.00	79.90	150.00	149.82
11.00	11.00	81.00	80.90	151.00	150.82
12.00	12.00	82.00	81.89	152.00	151.82
13.00	13.00	83.00	82.89	152.30	152.12
14.00	14.00	84.00	83.89		
15.00	15.00	85.00	84.88		
16.00	16.00	86.00	85.88		
17.00	17.00	87.00	86.88		
18.00	18.00	88.00	87.88		
19.00	19.00	89.00	88.87		
20.00	20.00	90.00	89.87		
21.00	21.00	91.00	90.87		
22.00	22.00	92.00	91.87		
23.00	23.00	93.00	92.86		
24.00	24.00	94.00	93.86		
25.00	25.00	95.00	94.86		
26.00	26.00	96.00	95.86		
27.00	27.00	97.00	96.85		
28.00	27.99	98.00	97.85		
29.00	28.99	99.00	98.85		
30.00	29.99	100.00	99.85		
31.00	30.99	101.00	100.85		
32.00	31.99	102.00	101.85		
33.00	32.99	103.00	102.85		
34.00	33.99	104.00	103.84		
35.00	34.99	105.00	104.84		
36.00	35.99	106.00	105.84		
37.00	36.98	107.00	106.84		
38.00	37.98	108.00	107.84		
39.00	38.98	109.00	108.84		
40.00	39.98	110.00	109.84		
41.00	40.98	111.00	110.84		
42.00	41.97	112.00	111.84		
43.00	42.97	113.00	112.84		
44.00	43.97	114.00	113.84		
45.00	44.97	115.00	114.84		
46.00	45.96	116.00	115.83		
47.00	46.96	117.00	116.83		
48.00	47.96	118.00	117.83		
49.00	48.96	119.00	118.83		
50.00	49.95	120.00	119.83		
51.00	50.95	121.00	120.83		
52.00	51.95	122.00	121.83		
53.00	52.94	123.00	122.83		
54.00	53.94	124.00	123.83		
55.00	54.94	125.00	124.83		
56.00	55.94	126.00	125.83		
57.00	56.93	127.00	126.83		
58.00	57.93	128.00	127.83		
59.00	58.93	129.00	128.83		
60.00	59.93	130.00	129.83		
61.00	60.92	131.00	130.83		
62.00	61.92	132.00	131.83		
63.00	62.92	133.00	132.83		
64.00	63.92	134.00	133.83		
65.00	64.92	135.00	134.83		
66.00	65.92	136.00	135.83		
67.00	66.91	137.00	136.83		
68.00	67.91	138.00	137.83		
69.00	68.91	139.00	138.83		
70.00	69.91	140.00	139.83		

COMPANY	MANALTA
WELL	T93R-33
FIELD	SITE 16
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

8870

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 16
WELL:
T93R-33
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-33
FIELD SITE 16
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	26-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	152.4M			
DEPTH-LOGGER	152.4M			
FIRST READING	152M			
LAST READING	00M			
CASING-DRILLER	6.1M			
CASING-LOGGER	6.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	99M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS. AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

MAIN LOG

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 26-SEP-1993 AT 14:35
FILENAME: DD3AR33M.CIB RUN ID: MAIN LOG PLOTTED ON 26-SEP-1993 AT 15:15

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 26-SEP-1993 AT 14:35
FILENAME: DD3AR33M.CIB RUN ID: MAIN LOG PLOTTED ON 26-SEP-1993 AT 15:15

MAIN LOG

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 26-SEP-1993 AT 13:23

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDT)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	152.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-33
FIELD	SITE 16
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-34
FIELD	SITE #37
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA
LOCATION	TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #37
WELL:
T93R-34
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	27-SEP-93				
RUN NUMBER	ONE				
DEPTH-DRILLER	165.2M				
DEPTH-LOGGER	165M				
FIRST READING	164.5M				
LAST READING	0M				
CASING-DRILLER	39.9M				
CASING-LOGGER	39.9M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01 | N/A				
PH/FLUID LOSS	N/A | N/A				
SAMPLE SOURCE					
RM @ MEAS TEMP					
RMF @ MEAS TEMP					
RMC @ MEAS TEMP					
SOURCE: RMF/RMC					
RM @ BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222 | RDR				
RECORDED BY	B.STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	00M				

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE. AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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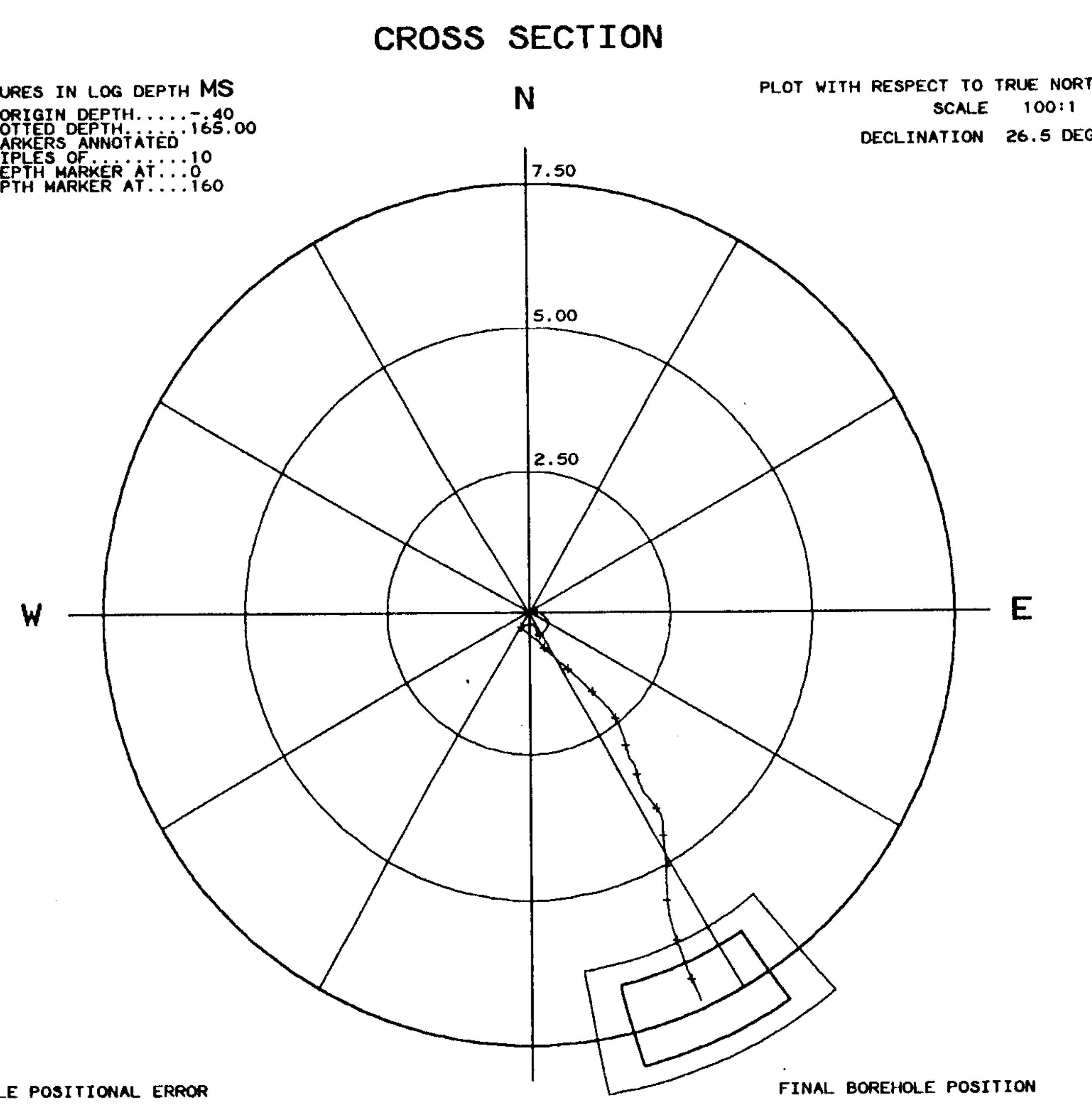
T93R-34                     VERTICALITY DATA LISTING                  DATE PROCESSED: 27-SEP-1993
                 ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH          DATE LOGGED:    27-SEP-1993
    DEPTHS        BOREHOLE   AXIAL CO-ORDS    POLAR      POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG     TRUE    TILT AZI   NORTH      EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

  0.00    0.00    0.2  50    0.00      0.00  29   0.00  31   0.00  19    0.00  30   0.00  26    0.00
  0.00    0.00    0.3 334    0.00      0.00  16   0.00  18   0.00  10    0.00  17   0.00  15    0.00
  1.00    1.00    0.3 236    0.00      0.00 321   0.01 323   0.01 314    0.00 322   0.01 319    0.00
  2.00    2.00    0.3  75    0.00     -0.01 292   0.01 292   0.01 292    0.00 292   0.01 292    0.00
  3.00    3.00    0.6 240    0.00     -0.01 253   0.01 255   0.01 248    0.00 254   0.01 251    0.01
  4.00    4.00    0.1 126    0.00     -0.01 263   0.01 263   0.02 263    0.01 263   0.02 263    0.01
  5.00    5.00    0.1  75    0.00     -0.01 264   0.01 266   0.02 261    0.01 265   0.02 263    0.01
  6.00    6.00    0.3 156    0.00     -0.01 257   0.01 256   0.01 258    0.01 256   0.01 257    0.01
  7.00    7.00    0.6 125   -0.01     -0.01 215   0.01 211   0.01 225    0.01 213   0.01 219    0.01
  8.00    8.00    0.9 141   -0.02      0.00 173   0.02 172   0.02 177    0.01 172   0.02 175    0.01
  9.00    9.00    1.1 124   -0.02      0.01 152   0.03 153   0.04 150    0.02 152   0.03 151    0.02
 10.00   10.00    1.0 178   -0.04      0.02 146   0.04 147   0.05 144    0.03 147   0.05 145    0.04
 11.00   11.00    1.0 198   -0.05      0.03 146   0.06 146   0.07 145    0.04 146   0.07 145    0.05
 12.00   12.00    1.5  12   -0.04      0.03 146   0.05 146   0.07 144    0.04 146   0.06 145    0.04
 13.00   13.00    1.1  54   -0.03      0.05 122   0.05 124   0.07 118    0.04 123   0.06 120    0.05
 14.00   14.00    1.0  22   -0.01      0.06 103   0.06 106   0.07  98    0.05 105   0.07 101    0.05
 15.00   15.00    1.1  12    0.00      0.06  87   0.06  90   0.07  82    0.05  89   0.07  85    0.06
 16.00   16.00    1.2  37    0.02      0.07  75   0.07  78   0.09  72    0.06  77   0.08  74    0.07
 17.00   17.00    1.4  92    0.03      0.09  71   0.09  73   0.11  68    0.08  72   0.10  70    0.08
 18.00   18.00    1.8 108    0.02      0.10  82   0.10  83   0.12  79    0.08  82   0.11  81    0.09
 19.00   19.00    2.1 113    0.00      0.13  92   0.13  93   0.15  91    0.11  92   0.14  92    0.12
 20.00   20.00    2.8 115   -0.02      0.17  98   0.17  98   0.19  97    0.14  98   0.18  97    0.15
 21.00   21.00    2.9 122   -0.04      0.21 102   0.21 102   0.24 102    0.18 102   0.23 102    0.20
 22.00   21.99    3.1 121   -0.07      0.25 106   0.26 106   0.29 106    0.23 106   0.28 106    0.25
 23.00   22.99    3.3 116   -0.11      0.30 109   0.32 109   0.35 110    0.28 109   0.33 110    0.30
 24.00   23.99    3.7 151   -0.15      0.34 114   0.37 113   0.41 115    0.33 114   0.39 114    0.35
 25.00   24.99    3.6 196   -0.21      0.33 122   0.39 122   0.43 123    0.35 122   0.41 123    0.37
 26.00   25.99    3.6 205   -0.27      0.31 131   0.41 130   0.45 132    0.37 130   0.43 131    0.39
 27.00   26.98    3.7 219   -0.32      0.28 139   0.42 138   0.46 140    0.39 138   0.44 140    0.40
 28.00   27.98    4.1 232   -0.37      0.23 148   0.43 146   0.47 150    0.40 147   0.45 149    0.42
 29.00   28.98    3.4 234   -0.40      0.18 156   0.44 154   0.47 158    0.40 155   0.46 157    0.42
 30.00   29.98    3.2 258   -0.43      0.14 163   0.45 161   0.49 165    0.42 162   0.47 163    0.44
 31.00   30.98    2.7   8   -0.42      0.13 163   0.44 161   0.47 165    0.41 162   0.46 164    0.42
 32.00   31.98    1.4 347   -0.38      0.12 162   0.40 160   0.43 164    0.37 161   0.41 163    0.38
 33.00   32.98    3.1 355   -0.34      0.13 159   0.36 157   0.39 162    0.33 158   0.37 160    0.35
 34.00   33.97    3.5 350   -0.28      0.11 158   0.30 155   0.33 161    0.28 156   0.31 159    0.29
 35.00   34.97    4.1 314   -0.23      0.08 162   0.24 158   0.26 166    0.22 160   0.25 164    0.23
 36.00   35.97    4.2 230   -0.22      0.02 174   0.22 170   0.24 179    0.21 172   0.23 176    0.22
 37.00   36.97    3.8 263   -0.23     -0.04 190   0.24 186   0.25 195    0.23 188   0.24 192    0.23
 38.00   37.96    3.4 255   -0.25     -0.11 203   0.27 200   0.28 207    0.26 202   0.27 205    0.26
 39.00   38.96    3.5 118   -0.27     -0.16 210   0.31 208   0.32 213    0.30 209   0.31 212    0.30
 40.00   39.96    3.9 134   -0.31     -0.12 202   0.33 199   0.35 205    0.32 201   0.34 203    0.33
 41.00   40.96    3.7 126   -0.35     -0.08 193   0.36 190   0.37 196    0.34 191   0.36 194    0.35
 42.00   41.96    2.9 125   -0.38     -0.03 185   0.38 182   0.40 188    0.36 184   0.39 186    0.37
 43.00   42.96    2.6 136   -0.41      0.01 179   0.41 176   0.44 181    0.39 177   0.42 180    0.40
 44.00   43.95    3.0 124   -0.44      0.06 173   0.44 171   0.47 175    0.42 172   0.46 174    0.43
 45.00   44.95    3.5 129   -0.47      0.10 168   0.48 166   0.52 171    0.45 167   0.50 169    0.47
 46.00   45.95    3.5 135   -0.51      0.14 165   0.53 163   0.56 167    0.49 164   0.55 166    0.51
 47.00   46.95    3.7 133   -0.55      0.18 162   0.58 160   0.62 164    0.54 161   0.60 163    0.56
 48.00   47.95    2.8 139   -0.59      0.22 160   0.63 158   0.68 161    0.59 159   0.65 160    0.61
 49.00   48.95    2.8 135   -0.63      0.26 158   0.69 157   0.73 159    0.64 157   0.71 159    0.66
 50.00   49.94    3.1 137   -0.68      0.30 156   0.74 155   0.79 158    0.69 156   0.77 157    0.71
 51.00   50.94    3.7 132   -0.72      0.34 154   0.79 153   0.85 156    0.74 154   0.82 155    0.77
 52.00   51.94    3.4 128   -0.75      0.39 153   0.85 152   0.91 154    0.79 152   0.88 153    0.82
 53.00   52.94    3.4 131   -0.79      0.43 152   0.90 151   0.96 153    0.84 151   0.93 152    0.87
 54.00   53.94    3.0 137   -0.83      0.47 150   0.95 150   1.02 151    0.89 150   0.99 151    0.92
 55.00   54.94    3.2 129   -0.87      0.51 149   1.01 148   1.08 150    0.94 149   1.04 150    0.97
 56.00   55.93    3.0 128   -0.90      0.56 148   1.06 147   1.13 149    0.99 148   1.10 149    1.02
 57.00   56.93    2.8 130   -0.94      0.60 147   1.11 147   1.19 148    1.03 147   1.15 148    1.07
 58.00   57.93    2.8 131   -0.97      0.64 147   1.16 146   1.24 147    1.08 146   1.20 147    1.12
 59.00   58.93    3.0 127   -1.00      0.68 146   1.21 145   1.30 147    1.13 145   1.25 146    1.17
 60.00   59.93    2.6 132   -1.03      0.72 145   1.26 144   1.35 146    1.17 145   1.30 145    1.22
 61.00   60.93    3.1 130   -1.07      0.76 145   1.31 144   1.40 145    1.22 144   1.35 145    1.26
 62.00   61.93    3.1 126   -1.10      0.80 144   1.36 144   1.45 145    1.26 144   1.41 144    1.31
 63.00   62.93    2.8 134   -1.14      0.84 144   1.41 143   1.51 144    1.31 143   1.46 144    1.36
 64.00   63.92    3.7 134   -1.18      0.88 143   1.47 143   1.58 144    1.37 143   1.52 144    1.42
 65.00   64.92    3.9 138   -1.23      0.93 143   1.54 142   1.64 144    1.43 143   1.59 143    1.48
 66.00   65.92    4.0 138   -1.28      0.97 143   1.60 142   1.71 143    1.49 143   1.65 143    1.54
 67.00   66.92    3.6 132   -1.32      1.01 143   1.67 142   1.78 143    1.55 142   1.72 143    1.61
 68.00   67.91    3.6 132   -1.37      1.06 142   1.73 142   1.84 143    1.61 142   1.79 143    1.67
 69.00   68.91    3.6 133   -1.41      1.10 142   1.79 142   1.91 142    1.67 142   1.85 142    1.73
 70.00   69.91    3.4 138   -1.45      1.14 142   1.84 141   1.97 142    1.72 142   1.91 142    1.78
 71.00   70.91    3.7 132   -1.49      1.19 141   1.90 141   2.03 142    1.78 141   1.97 142    1.84
 72.00   71.91    3.7 135   -1.53      1.23 141   1.97 141   2.10 142    1.84 141   2.03 141    1.90
 73.00   72.91    3.7 135   -1.58      1.28 141   2.03 141   2.16 142    1.90 141   2.10 141    1.96
 74.00   73.90    3.5 134   -1.62      1.32 141   2.09 141   2.23 141    1.95 141   2.16 141    2.02
 75.00   74.90    3.3 135   -1.67      1.36 141   2.15 140   2.29 141    2.01 141   2.22 141    2.08
 76.00   75.90    3.6 141   -1.71      1.40 141   2.21 140   2.36 141    2.07 140   2.29 141    2.14
 77.00   76.90    3.8 143   -1.76      1.44 141   2.28 140   2.42 141    2.13 141   2.35 141    2.20
 78.00   77.90    3.3 145   -1.81      1.48 141   2.34 140   2.49 141    2.19 141   2.42 141    2.26
 79.00   78.89    3.6 147   -1.86      1.51 141   2.40 141   2.56 141    2.25 141   2.48 141    2.32
 80.00   79.89    3.4 150   -1.92      1.54 141   2.46 141   2.62 142    2.31 141   2.54 141    2.38
 81.00   80.89    3.5 154   -1.97      1.57 141   2.52 141   2.68 142    2.36 141   2.60 142    2.44
 82.00   81.89    3.3 155   -2.02      1.59 142   2.57 141   2.74 142    2.41 142   2.66 142    2.49
 83.00   82.89    3.3 156   -2.08      1.62 142   2.63 142   2.80 142    2.46 142   2.72 142    2.55
 84.00   83.88    3.4 163   -2.13      1.64 142   2.69 142   2.86 143    2.52 142   2.77 143    2.60
 85.00   84.88    2.8 166   -2.18      1.65 143   2.74 143   2.91 143    2.56 143   2.82 143    2.65
 86.00   85.88    2.6 162   -2.22      1.67 143   2.78 143   2.96 143    2.60 143   2.87 143    2.69
 87.00   86.88    2.3 163   -2.27      1.68 143   2.82 143   3.00 144    2.64 143   2.91 144    2.73
 88.00   87.88    2.1 172   -2.31      1.69 144   2.86 144   3.04 144    2.67 144   2.95 144    2.77
 89.00   88.88    2.2 166   -2.34      1.70 144   2.89 144   3.08 144    2.71 144   2.99 144    2.80
 90.00   89.88    3.6 162   -2.39      1.71 144   2.94 144   3.13 145    2.75 144   3.04 145    2.85
 91.00   90.88    2.2 165   -2.45      1.73 145   2.99 145   3.19 145    2.80 145   3.09 145    2.90
 92.00   91.88    3.5 161   -2.50      1.74 145   3.05 145   3.24 145    2.85 145   3.14 145    2.95
 93.00   92.87    3.5 155   -2.55      1.76 145   3.10 145   3.30 146    2.90 145   3.20 146    3.00
 94.00   93.87    4.0 142   -2.60      1.79 145   3.15 145   3.36 146    2.95 145   3.26 146    3.05
 95.00   94.87    2.7 149   -2.65      1.82 145   3.21 145   3.42 146    3.01 145   3.32 146    3.11
 96.00   95.87    3.0 151   -2.69      1.84 146   3.26 145   3.47 146    3.05 145   3.37 146    3.16
 97.00   96.87    2.7 167   -2.73      1.86 146   3.31 146   3.52 146    3.09 146   3.41 146    3.20
 98.00   97.87    3.4 174   -2.78      1.87 146   3.35 146   3.57 146    3.13 146   3.46 146    3.24
 99.00   98.87    4.0 167   -2.84      1.88 147   3.40 146   3.62 147    3.18 146   3.51 147    3.29
100.00   99.86    4.8 164   -2.91      1.89 147   3.47 147   3.69 147    3.24 147   3.58 147    3.36
101.00  100.86    4.7 153   -2.98      1.92 147   3.54 147   3.77 147    3.32 147   3.66 147    3.43
102.00  101.86    4.8 162   -3.05      1.95 147   3.62 147   3.85 148    3.39 147   3.74 147    3.51
103.00  102.85    4.5 153   -3.12      1.98 148   3.70 147   3.93 148    3.46 148   3.81 148    3.58
104.00  103.85    4.4 140   -3.18      2.02 148   3.77 147   4.01 148    3.53 147   3.89 148    3.65
105.00  104.85    4.0 135   -3.23      2.07 147   3.84 147   4.08 148    3.60 147   3.96 148    3.72
106.00  105.85    4.1 137   -3.28      2.12 147   3.90 147   4.15 147    3.66 147   4.03 147    3.78
107.00  106.84    3.5 137   -3.33      2.16 147   3.97 147   4.22 147    3.72 147   4.09 147    3.84
108.00  107.84    3.4 141   -3.38      2.20 147   4.03 147   4.28 147    3.78 147   4.15 147    3.90
109.00  108.84    3.4 143   -3.43      2.23 147   4.09 147   4.34 147    3.83 147   4.22 147    3.96
110.00  109.84    2.4 151   -3.47      2.26 147   4.14 147   4.40 147    3.88 147   4.27 147    4.01
111.00  110.84    2.3 152   -3.50      2.28 147   4.18 147   4.44 147    3.92 147   4.31 147    4.05
112.00  111.84    2.4 154   -3.54      2.30 147   4.23 147   4.49 147    3.96 147   4.36 147    4.09
113.00  112.84    2.4 167   -3.59      2.32 147   4.27 147   4.54 147    4.00 147   4.40 147    4.14
114.00  113.84    2.9 170   -3.63      2.33 147   4.31 147   4.58 148    4.04 147   4.45 147    4.18
115.00  114.83    2.9 173   -3.68      2.33 148   4.36 147   4.63 148    4.08 148   4.49 148    4.22
116.00  115.83    3.1 178   -3.73      2.33 148   4.40 148   4.68 148    4.12 148   4.54 148    4.26
117.00  116.83    3.1 173   -3.78      2.34 148   4.45 148   4.73 148    4.17 148   4.59 148    4.31
118.00  117.83    3.1 180   -3.84      2.34 149   4.49 148   4.78 149    4.21 149   4.64 149    4.35
119.00  118.83    3.0 178   -3.89      2.34 149   4.54 149   4.83 149    4.26 149   4.69 149    4.40
120.00  119.83    3.2 171   -3.95      2.35 149   4.59 149   4.88 149    4.30 149   4.74 149    4.45
121.00  120.83    3.0 171   -4.00      2.36 149   4.64 149   4.93 150    4.35 149   4.79 150    4.49
122.00  121.82    2.9 174   -4.05      2.36 150   4.69 150   4.98 150    4.39 150   4.83 150    4.54
123.00  122.82    3.0 179   -4.10      2.36 150   4.73 150   5.03 150    4.44 150   4.88 150    4.58
124.00  123.82    3.0 167   -4.15      2.37 150   4.78 150   5.08 150    4.48 150   4.93 150    4.63
125.00  124.82    2.8 167   -4.20      2.38 150   4.83 150   5.13 151    4.52 150   4.98 151    4.67
126.00  125.82    3.0 180   -4.25      2.38 151   4.88 151   5.18 151    4.57 151   5.03 151    4.72
127.00  126.82    2.9 178   -4.31      2.39 151   4.92 151   5.23 151    4.61 151   5.08 151    4.77
128.00  127.82    3.1 180   -4.36      2.39 151   4.97 151   5.29 151    4.66 151   5.13 151    4.81
129.00  128.81    3.2 183   -4.41      2.39 152   5.02 151   5.34 152    4.70 152   5.18 152    4.86
130.00  129.81    3.3 176   -4.46      2.39 152   5.06 152   5.38 152    4.74 152   5.22 152    4.90
131.00  130.81    3.3 178   -4.51      2.40 152   5.11 152   5.43 152    4.79 152   5.27 152    4.95
132.00  131.81    3.2 182   -4.57      2.40 152   5.16 152   5.49 152    4.84 152   5.32 152    5.00
133.00  132.81    3.4 179   -4.63      2.40 153   5.21 152   5.54 153    4.88 153   5.38 153    5.05
134.00  133.81    3.6 179   -4.69      2.40 153   5.27 153   5.60 153    4.93 153   5.43 153    5.10
135.00  134.80    3.1 174   -4.75      2.40 153   5.32 153   5.65 153    4.98 153   5.49 153    5.15
136.00  135.80    3.0 170   -4.80      2.41 153   5.37 153   5.71 154    5.03 153   5.54 153    5.20
137.00  136.80    3.6 180   -4.87      2.41 154   5.43 154   5.77 154    5.09 154   5.60 154    5.26
138.00  137.80    3.8 177   -4.93      2.41 154   5.49 154   5.84 154    5.15 154   5.66 154    5.32
139.00  138.80    3.8 177   -5.00      2.41 154   5.55 154   5.90 154    5.20 154   5.73 154    5.38
140.00  139.79    4.1 173   -5.07      2.42 154   5.61 154   5.96 155    5.26 154   5.79 155    5.44
141.00  140.79    4.2 174   -5.14      2.43 155   5.68 155   6.04 155    5.33 155   5.86 155    5.50
142.00  141.79    4.2 169   -5.21      2.44 155   5.75 155   6.11 155    5.39 155   5.93 155    5.57
143.00  142.79    4.2 168   -5.28      2.45 155   5.82 155   6.18 155    5.46 155   6.00 155    5.64
144.00  143.78    4.2 164   -5.35      2.47 155   5.89 155   6.26 155    5.53 155   6.07 155    5.71
145.00  144.78    3.8 164   -5.42      2.49 155   5.96 155   6.33 155    5.60 155   6.15 155    5.78
146.00  145.78    3.4 160   -5.49      2.51 155   6.03 155   6.40 156    5.66 155   6.22 156    5.85
147.00  146.78    4.3 160   -5.56      2.53 156   6.11 155   6.48 156    5.73 155   6.29 156    5.92
148.00  147.77    4.1 163   -5.62      2.55 156   6.18 155   6.55 156    5.80 156   6.37 156    5.99
149.00  148.77    3.9 159   -5.69      2.58 156   6.24 156   6.62 156    5.86 156   6.43 156    6.05
150.00  149.77    3.6 161   -5.75      2.60 156   6.31 156   6.70 156    5.93 156   6.50 156    6.12
151.00  150.77    2.9 155   -5.81      2.62 156   6.37 156   6.76 156    5.99 156   6.57 156    6.18
152.00  151.76    4.1 161   -5.88      2.64 156   6.44 156   6.83 156    6.05 156   6.64 156    6.25
153.00  152.76    4.5 159   -5.94      2.66 156   6.51 156   6.91 156    6.12 156   6.71 156    6.31
154.00  153.76    4.3 159   -6.01      2.69 156   6.59 156   6.99 156    6.19 156   6.79 156    6.39
155.00  154.76    3.3 161   -6.08      2.71 156   6.66 156   7.06 156    6.26 156   6.86 156    6.46
156.00  155.75    4.5 156   -6.15      2.74 156   6.74 156   7.14 156    6.33 156   6.94 156    6.53
157.00  156.75    3.9 158   -6.22      2.77 156   6.81 156   7.22 156    6.40 156   7.02 156    6.61
158.00  157.75    4.2 156   -6.29      2.80 156   6.89 156   7.30 156    6.47 156   7.09 156    6.68
159.00  158.75    4.1 154   -6.36      2.83 156   6.96 156   7.38 156    6.55 156   7.17 156    6.75
160.00  159.74    3.9 154   -6.42      2.87 156   7.03 156   7.45 156    6.61 156   7.24 156    6.82
161.00  160.74    4.2 151   -6.49      2.90 156   7.10 156   7.53 156    6.68 156   7.32 156    6.89
162.00  161.74    4.1 154   -6.55      2.92 156   7.17 156   7.60 156    6.74 156   7.38 156    6.96
163.00  162.74    4.1 156   -6.61      2.96 156   7.24 156   7.67 156    6.81 156   7.46 156    7.03
164.00  163.73    4.2 156   -6.68      2.98 156   7.31 156   7.75 156    6.88 156   7.53 156    7.09
165.00  164.73    3.7 166   -6.74      3.00 156   7.38 156   7.82 156    6.94 156   7.60 156    7.16
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....-.40
LAST PLOTTED DEPTH......165.00
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...0
LAST DEPTH MARKER AT....160

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

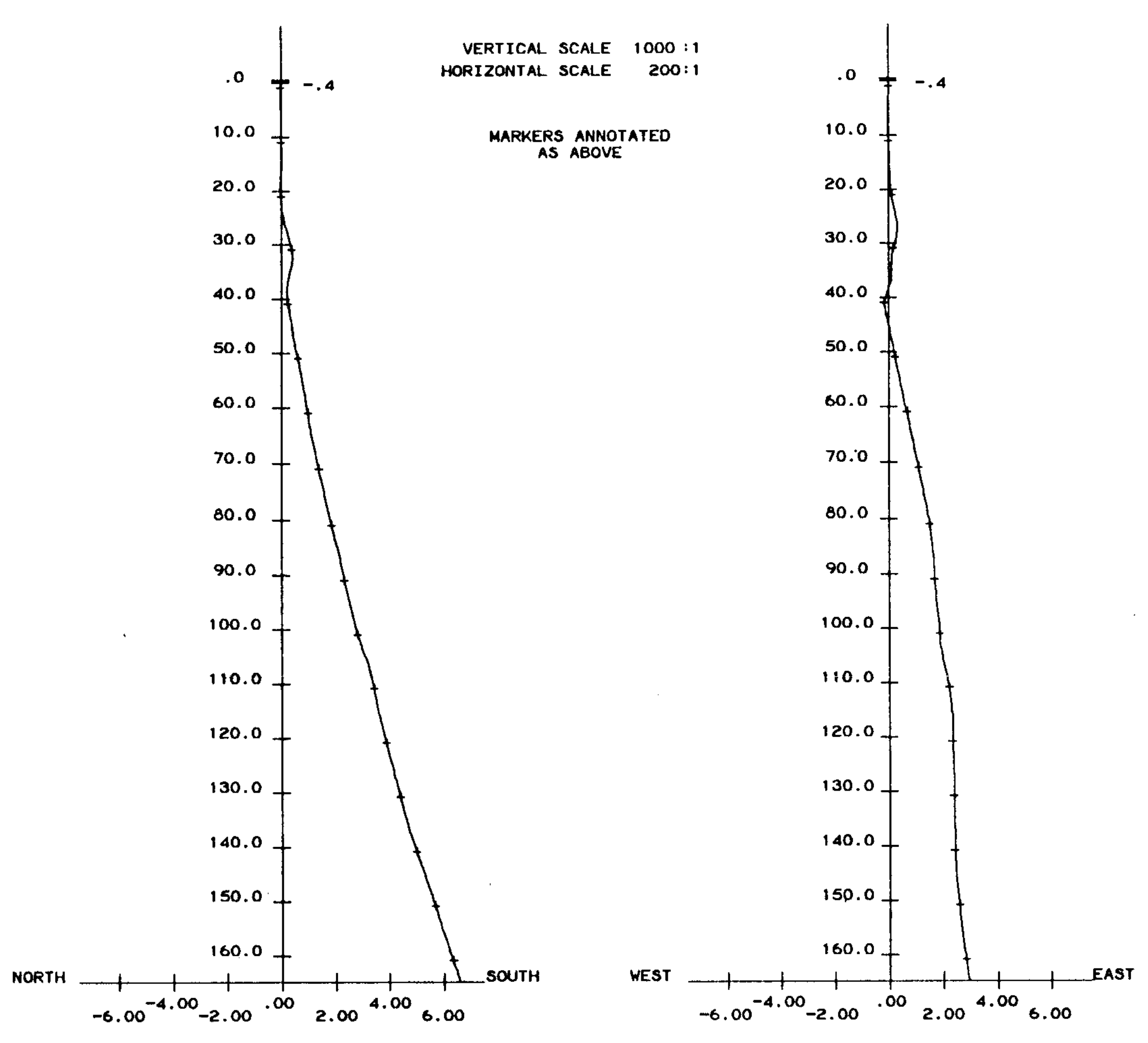
THE LAST PLOTTED DEPTH IS AT 6.74 MS SOUTH, 3.00 MS EAST IE. 7.38 MS FROM THE ORIGIN, 156 DEG FROM TRUE NORTH

VERTICAL SECTIONS

(TRUE DEPTH VS DISPLACEMENT)

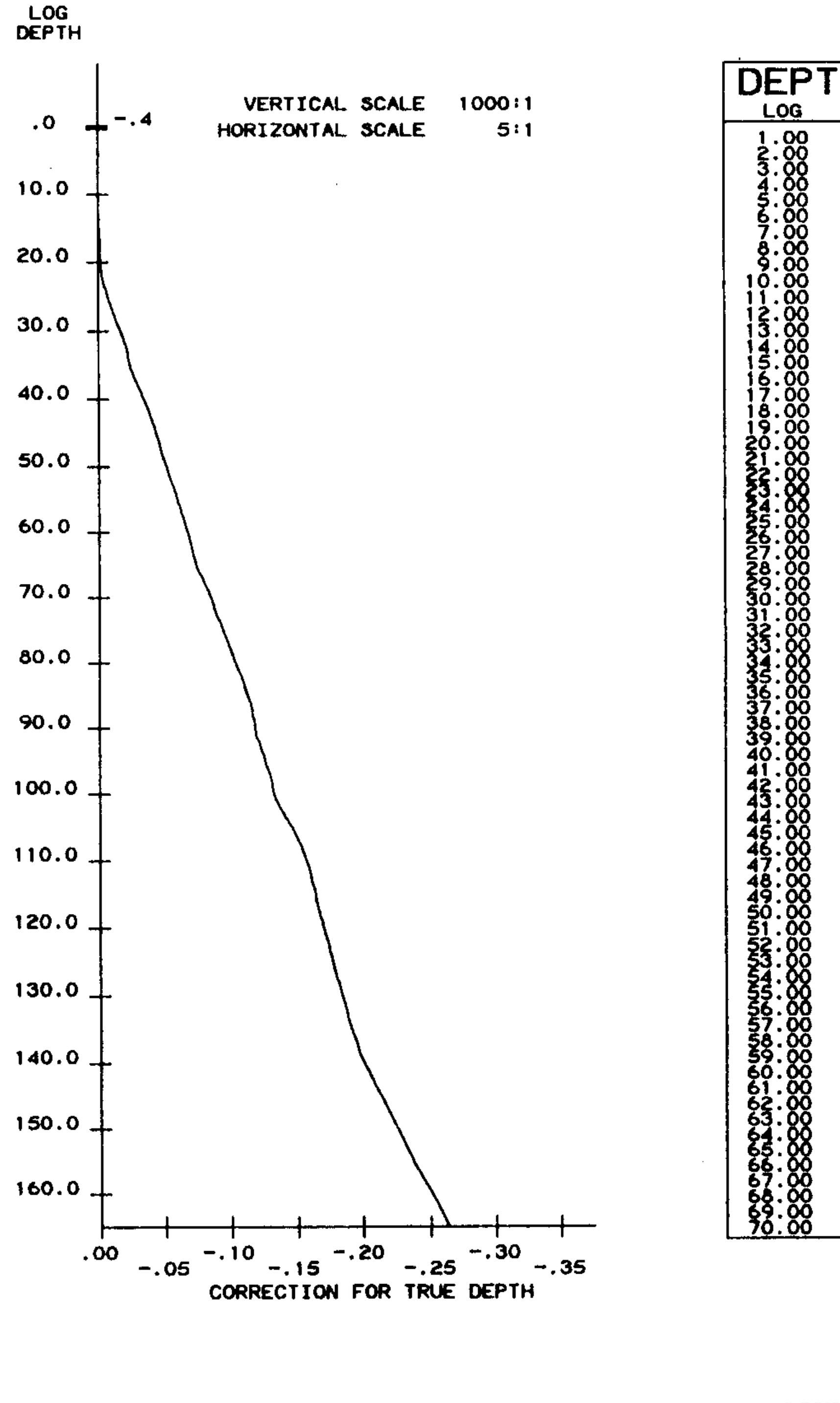
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 200:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 5:1



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
1.00	1.00	71.00	70.91	141.00	140.80
2.00	2.00	72.00	71.91	142.00	141.79
3.00	3.00	73.00	72.91	143.00	142.79
4.00	4.00	74.00	73.91	144.00	143.79
5.00	5.00	75.00	74.91	145.00	144.79
6.00	6.00	76.00	75.90	146.00	145.78
7.00	7.00	77.00	76.90	147.00	146.78
8.00	8.00	78.00	77.90	148.00	147.78
9.00	9.00	79.00	78.90	149.00	148.78
10.00	10.00	80.00	79.90	150.00	149.77
11.00	11.00	81.00	80.89	151.00	150.77
12.00	12.00	82.00	81.89	152.00	151.77
13.00	13.00	83.00	82.89	153.00	152.77
14.00	14.00	84.00	83.89	154.00	153.76
15.00	15.00	85.00	84.89	155.00	154.76
16.00	16.00	86.00	85.88	156.00	155.76
17.00	17.00	87.00	86.88	157.00	156.76
18.00	18.00	88.00	87.88	158.00	157.75
19.00	19.00	89.00	88.88	159.00	158.75
20.00	20.00	90.00	89.88	160.00	159.75
21.00	21.00	91.00	90.88	161.00	160.75
22.00	22.00	92.00	91.88	162.00	161.74
23.00	23.00	93.00	92.88	163.00	162.74
24.00	23.99	94.00	93.88	164.00	163.74
25.00	24.99	95.00	94.87	165.00	164.74
26.00	25.99	96.00	95.87	166.00	165.73
27.00	26.99	97.00	96.87	165.00	164.73
28.00	27.99	98.00	97.87		
29.00	28.98	99.00	98.87		
30.00	29.98	100.00	99.87		
31.00	30.98	101.00	100.87		
32.00	31.98	102.00	101.86		
33.00	32.98	103.00	102.86		
34.00	33.98	104.00	103.86		
35.00	34.98	105.00	104.85		
36.00	35.97	106.00	105.85		
37.00	36.97	107.00	106.85		
38.00	37.97	108.00	107.85		
39.00	38.97	109.00	108.84		
40.00	39.96	110.00	109.84		
41.00	40.96	111.00	110.84		
42.00	41.96	112.00	111.84		
43.00	42.96	113.00	112.84		
44.00	43.96	114.00	113.84		
45.00	44.96	115.00	114.84		
46.00	45.95	116.00	115.84		
47.00	46.95	117.00	116.83		
48.00	47.95	118.00	117.83		
49.00	48.95	119.00	118.83		
50.00	49.95	120.00	119.83		
51.00	50.95	121.00	120.83		
52.00	51.94	122.00	121.83		
53.00	52.94	123.00	122.83		
54.00	53.94	124.00	123.82		
55.00	54.94	125.00	124.82		
56.00	55.94	126.00	125.82		
57.00	56.94	127.00	126.82		
58.00	57.93	128.00	127.82		
59.00	58.93	129.00	128.82		
60.00	59.93	130.00	129.82		
61.00	60.93	131.00	130.81		
62.00	61.93	132.00	131.81		
63.00	62.93	133.00	132.81		
64.00	63.93	134.00	133.81		
65.00	64.93	135.00	134.81		
66.00	65.92	136.00	135.81		
67.00	66.92	137.00	136.80		
68.00	67.92	138.00	137.80		
69.00	68.92	139.00	138.80		
70.00	69.91	140.00	139.80		

COMPANY	MANALTA
WELL	T93R-34
FIELD	SITE #37
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

XLONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY	MANALTA
WELL	T93R-34
FIELD	SITE #37
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA				OTHER SERVICES VERT
LSD	SEC	TWP	RGE	

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #37
WELL: T93R-34
COMPANY: MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	27-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	165.2M	
DEPTH-LOGGER	165M	
FIRST READING	165M	
LAST READING	00M	
CASING-DRILLER	39.9M	
CASING-LOGGER	39.9M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE	N/A	
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	39.9M	TD	178MM	N/A	SURFACE	39.9M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	101			

REMARKS

XLONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 27-SEP-1993 AT 16:55
FILENAME: DD3AR34M.CIB RUN ID: MAIN LOG PLOTTED ON 27-SEP-1993 AT 17:41

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 27-SEP-1993 AT 16:55
FILENAME: DD3AR34M.CIB RUN ID: MAIN LOG PLOTTED ON 27-SEP-1993 AT 17:41

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 27-SEP-1993 AT 16:23

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	39.90
BIT SIZE 3	.00	BIT DEPTH 3	165.20
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	325.20
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2890.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1297.10
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	469.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	530.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	588.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	648.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	762.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	882.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-34
FIELD	SITE #37
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

#879

LONG SPACED DENSITY
GAMMA RAY CALIPER 20:1
(DETAIL LOG)

COMPANY MANALTA
WELL T93R-39
FIELD SITE # 33
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 33
WELL: T93R-39
COMPANY: MANALTA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	30-SEP-93				
RUN NUMBER	THREE				
DEPTH-DRILLER	110.3M				
DEPTH-LOGGER	109.5M				
FIRST READING	109M				
LAST READING	0M				
CASING-DRILLER	8.8M				
CASING-LOGGER	8.8M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE					
RM ● MEAS TEMP					
RMF ● MEAS TEMP					
RMC ● MEAS TEMP					
SOURCE: RMF/RMC					
RM ● BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	B. STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	00M				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	8.8M	TD	178MM	N/A	SURFACE	8.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

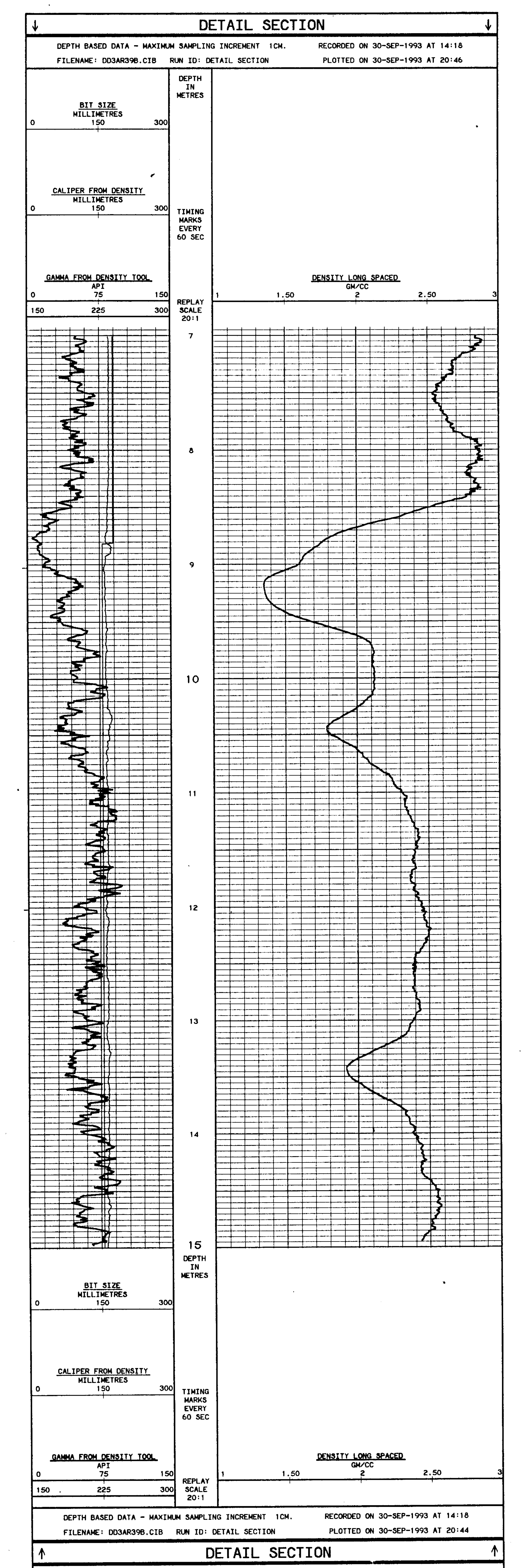
LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 14:18
FILENAME: DD3AR39B.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:46

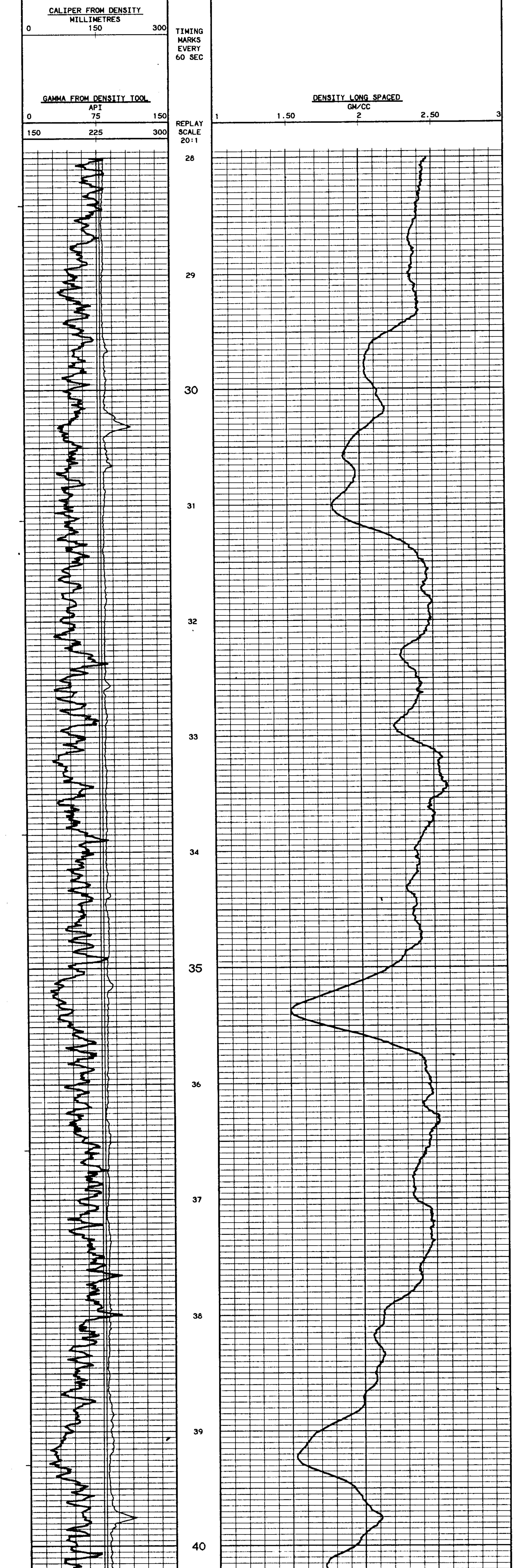


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 14:18
FILENAME: DD3AR39B.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:44

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 14:18
FILENAME: DD3AR39A.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:44



BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 14:18
FILENAME: DD3AR39A.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:41

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 30-SEP-1993 AT 14:15 DATA LAST REPROCESSED: 30-SEP-1993 AT 20:40

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	8.80
BIT SIZE 3	.00	BIT DEPTH 3	110.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-39
FIELD	SITE # 33
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1
(DETAIL LOG)

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 33
WELL:
T93R-39
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-39
FIELD SITE # 33
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	30-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	110.3M			
DEPTH-LOGGER	109.5M			
FIRST READING	109M			
LAST READING	0M			
CASING-DRILLER	8.8M			
CASING-LOGGER	8.8M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	8.8M	TD	178MM	N/A	SURFACE	8.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 14:18
FILENAME: DD3AR39B.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:50

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

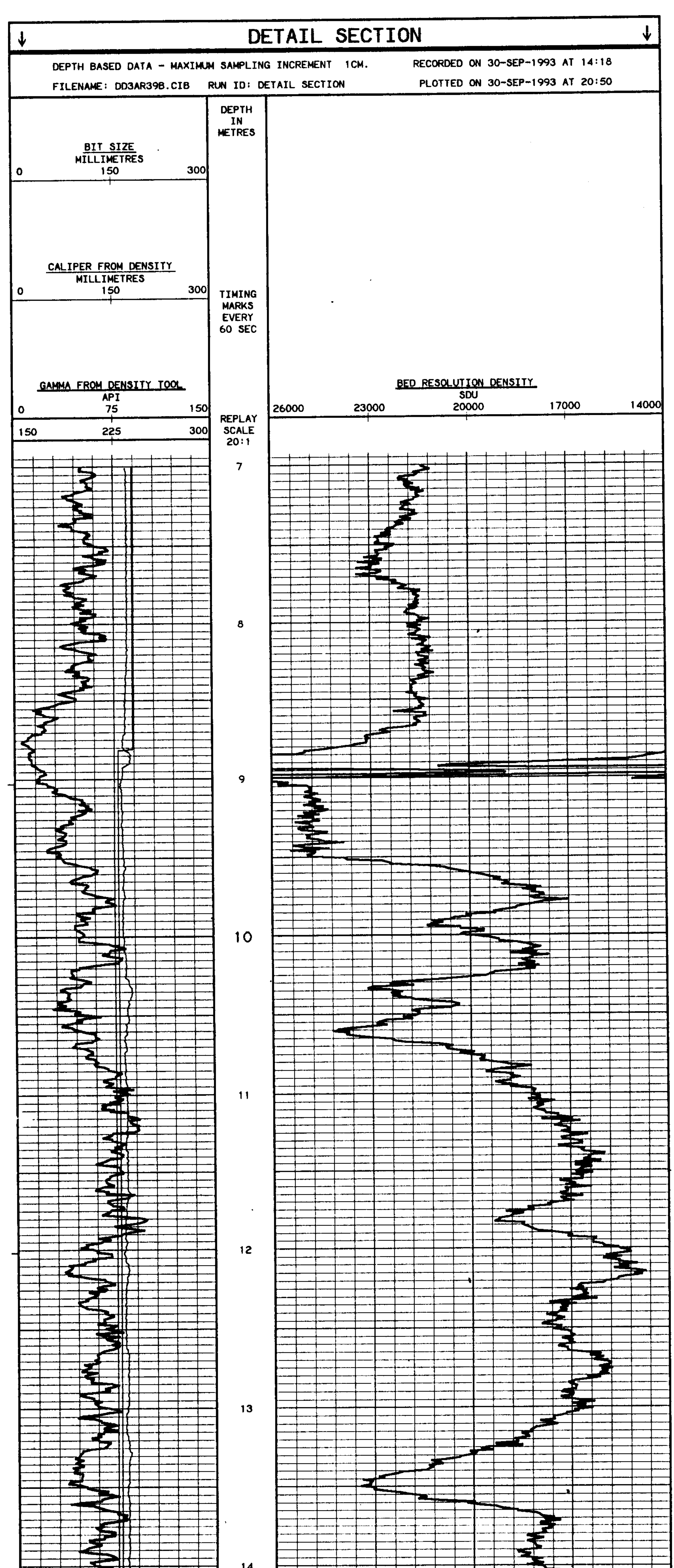
CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 14:18
FILENAME: DD3AR39B.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:50

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 14:18
FILENAME: DD3AR39A.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:48

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 14:18
FILENAME: DD3AR39A.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:48

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 30-SEP-1993 AT 14:15 DATA LAST REPROCESSED: 30-SEP-1993 AT 20:40

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	8.80
BIT SIZE 3	.00	BIT DEPTH 3	110.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-39
FIELD	SITE # 33
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY	MANALTA
WELL	T93R-39
FIELD	SITE #33
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #33
WELL:
T93R-39
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	30-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	110.3M	
DEPTH-LOGGER	109.5M	
FIRST READING	109M	
LAST READING	0M	
CASING-DRILLER	8.8M	
CASING-LOGGER	8.8M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE. RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	OOM	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	8.8M	TD	178MM	N/A	SURFACE	8.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 30-SEP-1993 AT 14:18
FILENAME: DD3AR39M.CIB RUN ID: MAIN LOG PLOTTED ON 30-SEP-1993 AT 15:03

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 100:1
DENSITY LONG SPACED GM/CC 1 1.50 2 2.50 3
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 100:1
DENSITY LONG SPACED GM/CC 1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 30-SEP-1993 AT 14:18
FILENAME: DD3AR39M.CIB RUN ID: MAIN LOG PLOTTED ON 30-SEP-1993 AT 15:03

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 30-SEP-1993 AT 14:15

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	8.80
BIT SIZE 3	.00	BIT DEPTH 3	110.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
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CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
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DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-39
FIELD	SITE #33
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY MANALTA
WELL T93R-39
FIELD SITE #33
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #33
WELL: T93R-39
COMPANY: MANALTA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES CCS

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	30-SEP-93							
RUN NUMBER	ONE							
DEPTH-DRILLER	110M							
DEPTH-LOGGER	109.5M							
FIRST READING	109M							
LAST READING	0M							
CASING-DRILLER	8.8M							
CASING-LOGGER	8.8M							
BIT SIZE	156MM							
HOLE FLUID TYPE	AIR/WATER							
DENS./VISC.	1.01	N/A						
PH/FLUID LOSS	N/A	N/A						
SAMPLE SOURCE								
RM @ MEAS TEMP								
RMF @ MEAS TEMP								
RMC @ MEAS TEMP								
SOURCE: RMF/RMC								
RM @ BHT								
TIME SINCE CIRC								
MAX REC TEMP								
EQUIPMENT/BASE	V222	RDR						
RECORDED BY	B.STEVENSON							
WITNESSED BY	T. BRAZZONI							
WATER LEVEL	00M							

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE. AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR. OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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T93R-39                         VERTICALITY DATA LISTING                    DATE PROCESSED: 30-SEP-1993
                    ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH             DATE LOGGED:    30-SEP-1993
   DEPTHS          BOREHOLE   AXIAL CO-ORDS    POLAR      POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG     TRUE     TILT AZI   NORTH     EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

   1.00     1.00    1.0 319   0.02     0.00  15    0.02  14    0.02  15    0.02  14    0.02  15    0.02
   2.00     2.00    0.9 248   0.02    -0.01 333    0.02 330    0.02 336    0.02 332    0.02 334    0.02
   3.00     3.00    0.9 272   0.01    -0.02 299    0.03 297    0.03 303    0.02 298    0.03 301    0.02
   4.00     4.00    1.0 277   0.01    -0.04 286    0.04 285    0.05 289    0.03 285    0.04 288    0.03
   5.00     5.00    0.6 277   0.01    -0.05 285    0.05 283    0.06 287    0.04 284    0.06 286    0.05
   6.00     6.00    0.4  51   0.02    -0.06 287    0.06 287    0.07 288    0.04 287    0.07 288    0.05
   7.00     7.00    0.3  99   0.02    -0.05 291    0.06 291    0.07 290    0.04 291    0.06 290    0.05
   8.00     8.00    0.7 260   0.02    -0.06 285    0.06 286    0.08 284    0.05 285    0.07 285    0.05
   9.00     9.00    1.4 358   0.01    -0.07 280    0.07 281    0.08 279    0.05 280    0.08 279    0.06
  10.00    10.00    1.1 301   0.02    -0.08 282    0.09 283    0.11 282    0.07 282    0.10 282    0.08
  11.00    11.00    1.1 300   0.03    -0.10 285    0.10 285    0.13 285    0.08 285    0.12 285    0.09
  12.00    12.00    1.1 293   0.04    -0.12 287    0.12 287    0.15 286    0.10 287    0.14 286    0.11
  13.00    13.00    1.2 286   0.04    -0.14 287    0.14 287    0.17 287    0.11 287    0.16 287    0.13
  14.00    14.00    0.8 275   0.05    -0.15 287    0.16 287    0.19 287    0.12 287    0.17 287    0.14
  15.00    15.00    0.8 259   0.05    -0.16 286    0.17 286    0.21 286    0.13 286    0.19 286    0.15
  16.00    16.00    0.6 274   0.05    -0.18 285    0.18 285    0.22 285    0.14 285    0.20 285    0.16
  17.00    17.00    0.6 246   0.05    -0.19 284    0.19 284    0.24 284    0.15 284    0.21 284    0.17
  18.00    18.00    0.3 208   0.04    -0.19 283    0.20 283    0.25 283    0.15 283    0.22 283    0.18
  19.00    19.00    0.3  82   0.04    -0.19 283    0.20 282    0.24 283    0.15 282    0.22 283    0.18
  20.00    20.00    0.6  50   0.05    -0.19 284    0.19 284    0.24 284    0.15 284    0.21 284    0.17
  21.00    21.00    0.3  53   0.05    -0.18 286    0.19 286    0.23 286    0.15 286    0.21 286    0.17
  22.00    22.00    0.4  24   0.06    -0.18 289    0.19 290    0.23 289    0.15 290    0.21 289    0.17
  23.00    23.00    0.8 344   0.08    -0.18 293    0.19 294    0.24 292    0.15 293    0.21 292    0.17
  24.00    24.00    0.7 327   0.09    -0.18 296    0.20 296    0.25 295    0.16 296    0.23 295    0.18
  25.00    25.00    0.8 313   0.10    -0.19 297    0.22 298    0.26 296    0.17 298    0.24 297    0.19
  26.00    26.00    0.4 280   0.10    -0.20 297    0.23 298    0.28 296    0.17 298    0.25 297    0.20
  27.00    27.00    0.4 279   0.11    -0.21 297    0.23 297    0.29 296    0.18 297    0.26 297    0.20
  28.00    28.00    0.1  60   0.11    -0.21 297    0.24 297    0.29 296    0.18 297    0.26 296    0.21
  29.00    29.00    0.5  68   0.11    -0.20 298    0.23 298    0.28 297    0.18 298    0.26 297    0.20
  30.00    30.00    0.7  45   0.11    -0.19 300    0.23 301    0.28 299    0.17 301    0.25 300    0.20
  31.00    31.00    1.1  34   0.12    -0.19 304    0.22 304    0.27 302    0.17 304    0.25 303    0.20
  32.00    32.00    1.0  23   0.14    -0.18 308    0.22 309    0.28 307    0.17 309    0.25 308    0.20
  33.00    33.00    1.1  21   0.16    -0.17 313    0.23 313    0.28 312    0.17 313    0.26 312    0.20
  34.00    34.00    0.8 354   0.17    -0.16 316    0.24 317    0.30 316    0.18 317    0.27 316    0.21
  35.00    35.00    0.9  20   0.19    -0.16 319    0.25 320    0.31 319    0.19 320    0.28 319    0.22
  36.00    36.00    1.2  23   0.20    -0.16 323    0.26 323    0.32 322    0.20 323    0.29 323    0.23
  37.00    37.00    1.1   5   0.22    -0.15 325    0.27 325    0.33 325    0.20 325    0.30 325    0.24
  38.00    38.00    0.9  92   0.22    -0.14 327    0.27 327    0.33 327    0.20 327    0.30 327    0.23
  39.00    39.00    1.1  79   0.22    -0.12 331    0.26 331    0.32 331    0.20 331    0.29 331    0.23
  40.00    40.00    1.4  79   0.23    -0.10 337    0.25 336    0.31 337    0.19 336    0.28 337    0.22
  41.00    41.00    1.4  79   0.24    -0.07 344    0.25 343    0.31 346    0.19 343    0.28 344    0.22
  42.00    41.99    2.1  62   0.25    -0.04 351    0.25 349    0.31 354    0.20 350    0.28 353    0.23
  43.00    42.99    1.9  56   0.27    -0.01 358    0.27 356    0.33   2    0.21 357    0.30 360    0.24
  44.00    43.99    1.7  48   0.29     0.02   3    0.29   1    0.35   8    0.23   2    0.32   5    0.26
  45.00    44.99    2.0  38   0.31     0.04   8    0.31   5    0.38  12    0.25   6    0.34   9    0.28
  46.00    45.99    1.5  63   0.33     0.06  10    0.34   7    0.40  14    0.27   9    0.37  12    0.30
  47.00    46.99    1.6  89   0.33     0.08  14    0.34  11    0.40  18    0.28  12    0.37  16    0.31
  48.00    47.99    1.9  99   0.33     0.11  19    0.35  16    0.41  23    0.29  17    0.38  21    0.32
  49.00    48.99    2.2 102   0.33     0.15  24    0.36  21    0.42  29    0.30  23    0.39  27    0.33
  50.00    49.99    2.5  85   0.32     0.20  31    0.38  27    0.44  36    0.32  29    0.41  34    0.35
  51.00    50.99    3.9  80   0.33     0.26  38    0.42  34    0.48  43    0.36  36    0.45  41    0.39
  52.00    51.99    3.3  81   0.34     0.32  43    0.46  39    0.52  48    0.41  41    0.49  46    0.43
  53.00    52.98    4.0  74   0.35     0.38  47    0.51  43    0.57  52    0.46  45    0.54  49    0.49
  54.00    53.98    3.7  78   0.36     0.44  50    0.57  47    0.63  55    0.52  48    0.60  52    0.54
  55.00    54.98    2.7  66   0.38     0.49  52    0.63  49    0.69  56    0.57  50    0.66  54    0.60
  56.00    55.98    2.9  54   0.41     0.55  53    0.68  50    0.75  57    0.62  52    0.72  55    0.65
  57.00    56.98    2.5  92   0.43     0.59  54    0.73  51    0.80  57    0.67  52    0.76  55    0.70
  58.00    57.98    1.8  84   0.44     0.62  55    0.76  52    0.83  58    0.70  53    0.80  56    0.73
  59.00    58.98    2.5  96   0.44     0.66  57    0.80  54    0.87  60    0.73  55    0.83  58    0.76
  60.00    59.98    2.6  99   0.43     0.70  58    0.83  56    0.90  61    0.76  57    0.86  60    0.79
  61.00    60.97    3.7  96   0.43     0.76  61    0.87  58    0.94  64    0.80  59    0.90  62    0.83
  62.00    61.97    5.0  91   0.42     0.82  63    0.92  60    0.99  65    0.85  61    0.96  64    0.88
  63.00    62.97    4.2  87   0.43     0.90  64    0.99  62    1.07  67    0.92  63    1.03  66    0.96
  64.00    63.97    4.5  72   0.44     0.96  65    1.06  63    1.14  68    0.98  64    1.10  67    1.02
  65.00    64.96    2.3  82   0.46     1.01  65    1.11  63    1.19  68    1.03  64    1.15  67    1.07
  66.00    65.96    2.1  82   0.47     1.05  66    1.15  64    1.23  68    1.06  65    1.19  67    1.11
  67.00    66.96    2.9  98   0.46     1.09  67    1.19  65    1.27  69    1.10  66    1.23  68    1.14
  68.00    67.96    2.6  99   0.45     1.14  68    1.23  66    1.32  70    1.14  67    1.27  69    1.18
  69.00    68.96    2.8 104   0.44     1.19  69    1.27  68    1.36  72    1.18  69    1.31  70    1.22
  70.00    69.96    3.4 104   0.43     1.24  71    1.32  69    1.41  73    1.22  70    1.36  72    1.27
  71.00    70.96    4.7 100   0.42     1.31  72    1.38  70    1.47  74    1.28  71    1.42  73    1.33
  72.00    71.95    4.9  95   0.41     1.39  73    1.45  72    1.54  75    1.35  73    1.50  74    1.40
  73.00    72.95    4.6  91   0.40     1.46  75    1.52  73    1.62  76    1.42  74    1.57  76    1.47
  74.00    73.95    4.3  60   0.42     1.53  75    1.59  73    1.69  76    1.49  74    1.64  75    1.54
  75.00    74.95    2.1  76   0.44     1.58  74    1.64  73    1.74  76    1.53  74    1.69  75    1.58
  76.00    75.95    2.5  95   0.44     1.62  75    1.68  73    1.79  76    1.57  74    1.73  76    1.62
  77.00    76.94    3.4 103   0.44     1.67  75    1.72  74    1.83  77    1.61  75    1.78  76    1.67
  78.00    77.94    3.1  99   0.43     1.72  76    1.77  75    1.89  78    1.66  75    1.83  77    1.72
  79.00    78.94    3.2 107   0.41     1.77  77    1.82  76    1.94  78    1.70  76    1.88  78    1.76
  80.00    79.94    3.0 103   0.40     1.83  78    1.87  76    1.99  79    1.75  77    1.93  78    1.81
  81.00    80.94    4.0 106   0.38     1.90  79    1.94  77    2.06  80    1.81  78    2.00  79    1.87
  82.00    81.93    3.5  99   0.37     1.97  79    2.00  78    2.13  81    1.88  79    2.06  80    1.94
  83.00    82.93    3.0  84   0.35     2.04  80    2.07  79    2.20  81    1.94  80    2.13  81    2.01
  84.00    83.93    2.9  63   0.37     2.11  80    2.14  79    2.27  81    2.01  79    2.20  81    2.07
  85.00    84.93    2.3  85   0.38     2.15  80    2.18  79    2.32  81    2.05  79    2.25  80    2.12
  86.00    85.93    2.2  95   0.39     2.19  80    2.23  79    2.36  81    2.09  79    2.29  81    2.16
  87.00    86.93    2.4  94   0.38     2.23  80    2.27  79    2.41  81    2.13  80    2.34  81    2.20
  88.00    87.93    2.6  98   0.38     2.27  80    2.31  79    2.45  82    2.16  80    2.38  81    2.23
  89.00    88.92    3.4 112   0.37     2.32  81    2.35  80    2.50  82    2.20  81    2.42  82    2.28
  90.00    89.92    3.2 110   0.35     2.38  82    2.40  81    2.55  83    2.25  81    2.47  82    2.33
  91.00    90.92    3.1 112   0.33     2.43  82    2.45  81    2.60  83    2.30  82    2.52  83    2.37
  92.00    91.92    3.2 113   0.31     2.48  83    2.50  82    2.65  84    2.35  82    2.58  83    2.42
  93.00    92.92    3.2  77   0.30     2.54  83    2.56  82    2.72  84    2.40  83    2.64  84    2.48
  94.00    93.92    2.9  66   0.33     2.59  83    2.61  82    2.77  84    2.45  82    2.69  83    2.53
  95.00    94.92    2.5  68   0.34     2.63  83    2.66  82    2.82  84    2.49  82    2.74  83    2.57
  96.00    95.91    2.2  80   0.35     2.67  83    2.70  82    2.86  84    2.53  82    2.78  83    2.61
  97.00    96.91    2.3 104   0.34     2.71  83    2.73  82    2.91  84    2.56  82    2.82  83    2.65
  98.00    97.91    2.6 114   0.33     2.75  83    2.77  82    2.95  84    2.60  83    2.86  84    2.69
  99.00    98.91    2.8 119   0.31     2.80  84    2.82  83    2.99  85    2.64  83    2.90  84    2.73
 100.00    99.91    3.0 119   0.28     2.84  84    2.86  83    3.04  85    2.68  84    2.95  85    2.77
 101.00   100.91    3.4 111   0.26     2.89  85    2.91  84    3.09  86    2.73  84    3.00  85    2.82
 102.00   101.91    3.6  72   0.27     2.96  85    2.97  84    3.16  86    2.79  84    3.06  85    2.88
 103.00   102.91    2.5  73   0.28     3.00  85    3.02  84    3.21  85    2.83  84    3.11  85    2.92
 104.00   103.90    1.8  85   0.29     3.03  85    3.05  84    3.24  85    2.86  84    3.14  85    2.95
 105.00   104.90    2.3 115   0.29     3.07  85    3.08  84    3.27  86    2.88  84    3.18  85    2.98
 106.00   105.90    3.2 117   0.27     3.11  85    3.12  84    3.32  86    2.92  85    3.22  85    3.02
 107.00   106.90    4.0 106   0.24     3.16  86    3.17  85    3.37  86    2.97  85    3.27  86    3.07
 108.00   107.90    3.0  77   0.25     3.22  86    3.23  85    3.43  86    3.02  85    3.33  86    3.12
 109.00   108.90    2.6  71   0.25     3.27  86    3.28  85    3.49  86    3.07  85    3.38  86    3.18
 109.30   109.20    2.5  91   0.25     3.28  86    3.29  85    3.50  87    3.08  85    3.40  86    3.19
```
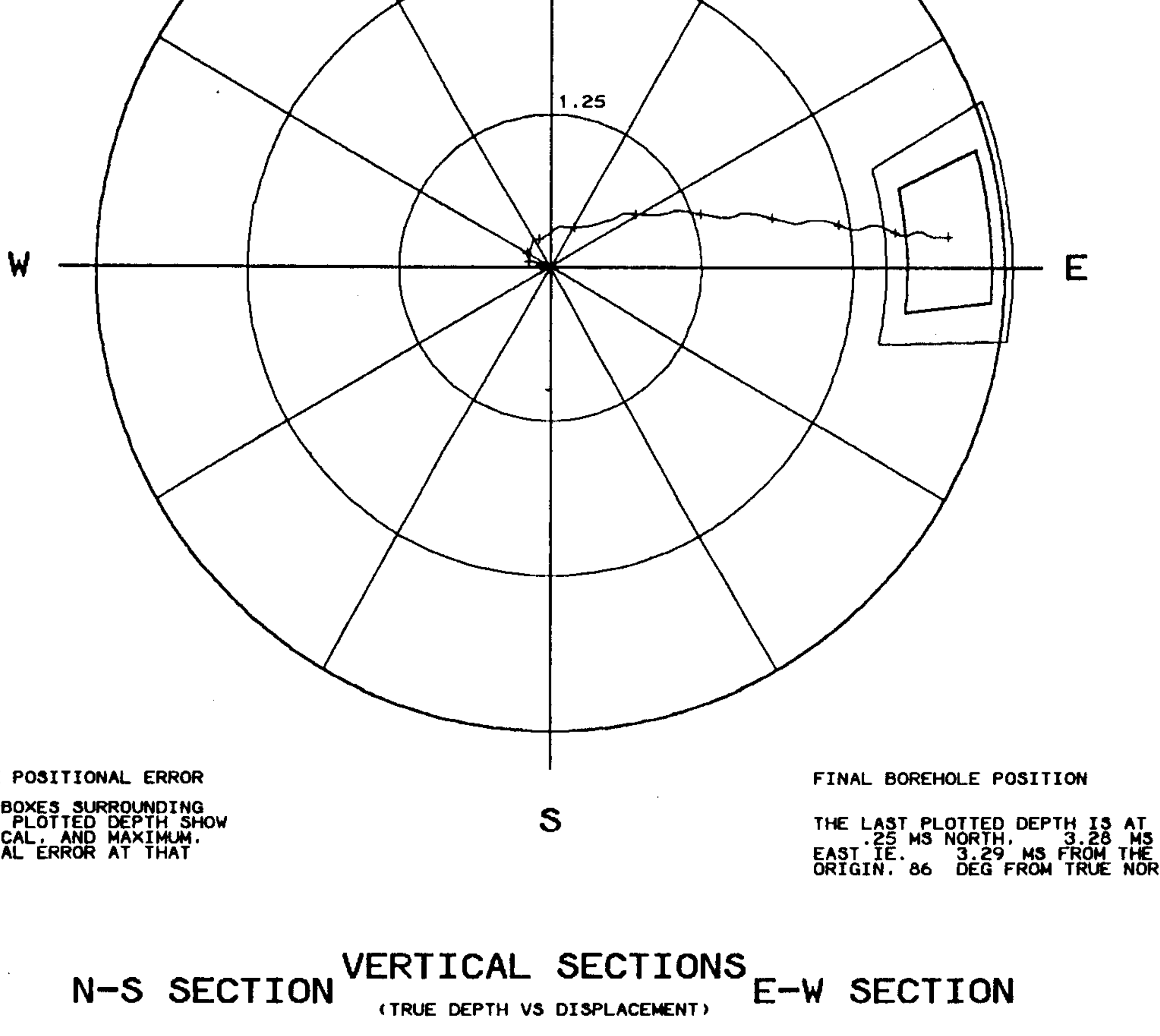

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......00
LAST PLOTTED DEPTH......109.30
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....100

PLOT WITH RESPECT TO TRUE NORTH
SCALE 50:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM. POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT .25 MS NORTH, 3.28 MS EAST IE. 3.29 MS FROM THE ORIGIN. 86 DEG FROM TRUE NORTH

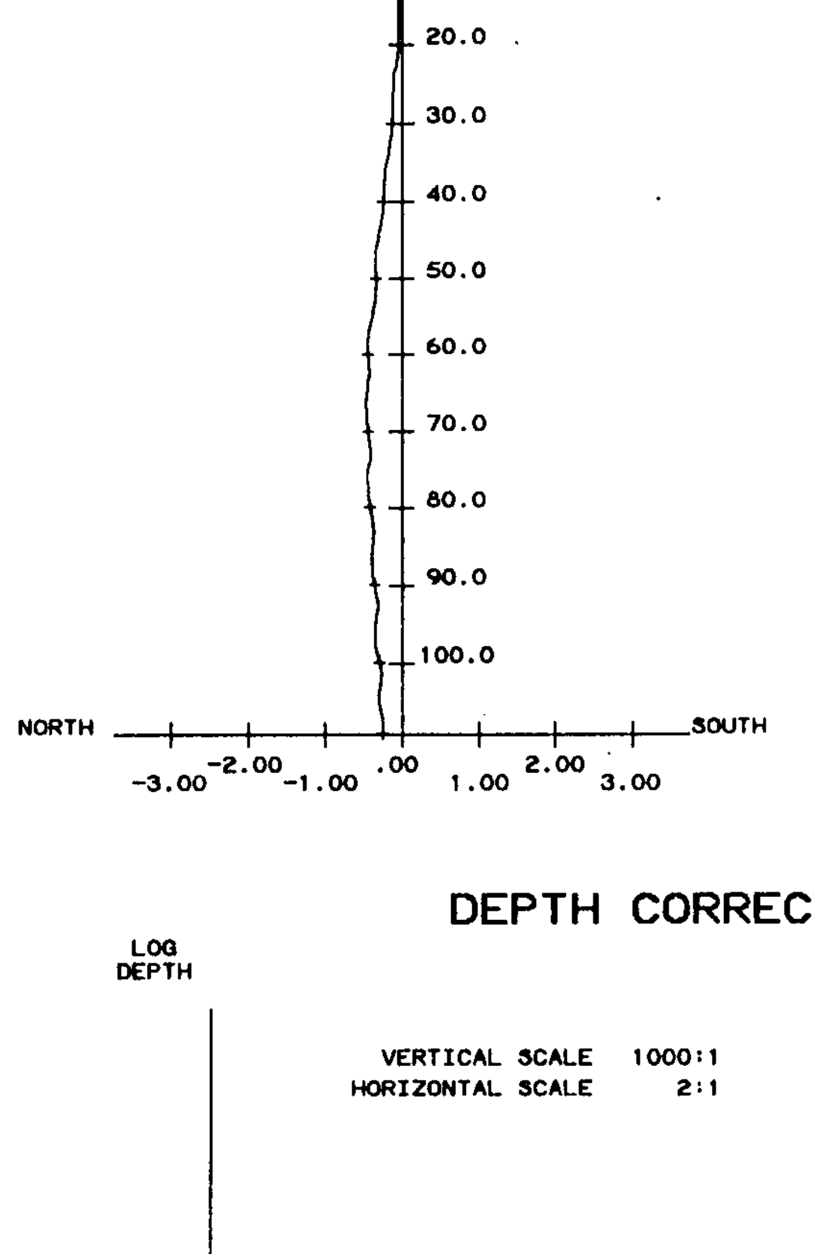
VERTICAL SECTIONS

(TRUE DEPTH VS DISPLACEMENT)

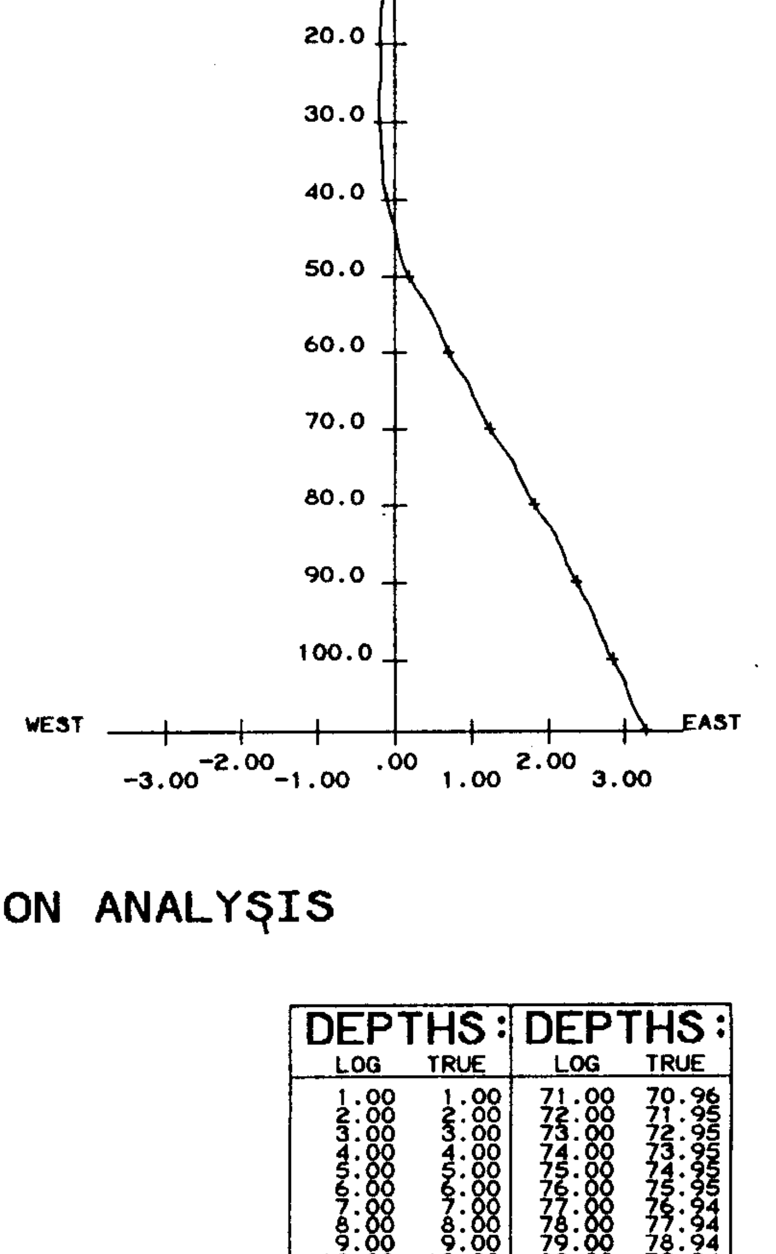
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 100:1

MARKERS ANNOTATED AS ABOVE

N-S SECTION

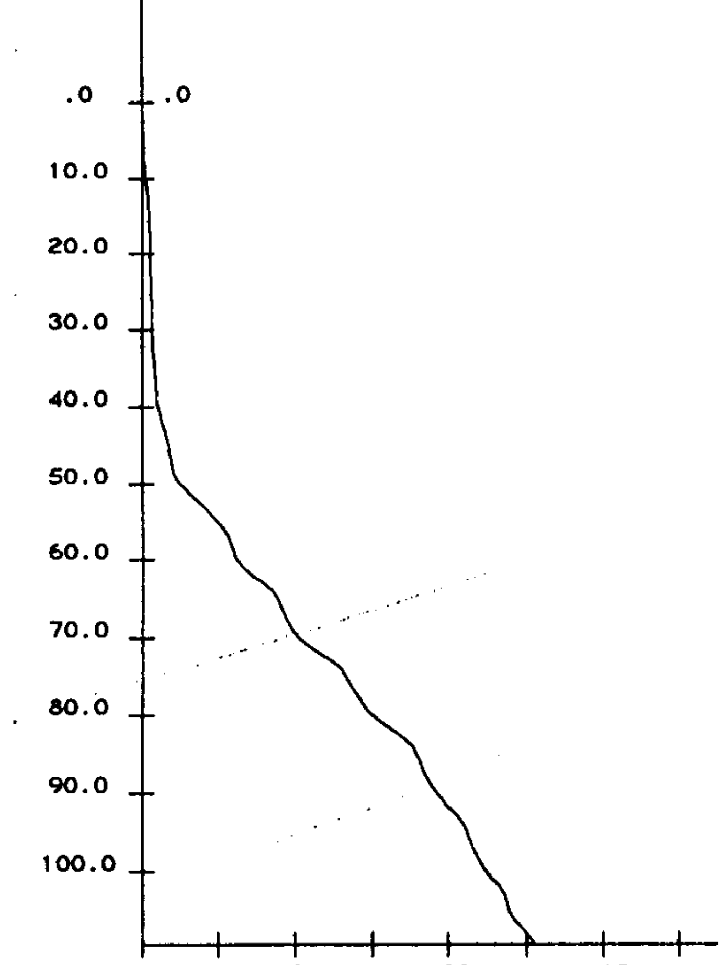


E-W SECTION



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 2:1



DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE
1.00	1.00	71.00	70.96
2.00	2.00	72.00	71.95
3.00	3.00	73.00	72.95
4.00	4.00	74.00	73.95
5.00	5.00	75.00	74.95
6.00	6.00	76.00	75.95
7.00	7.00	77.00	76.94
8.00	8.00	78.00	77.94
9.00	9.00	79.00	78.94
10.00	10.00	80.00	79.94
11.00	11.00	81.00	80.94
12.00	12.00	82.00	81.93
13.00	13.00	83.00	82.93
14.00	14.00	84.00	83.93
15.00	15.00	85.00	84.93
16.00	16.00	86.00	85.93
17.00	17.00	87.00	86.93
18.00	18.00	88.00	87.93
19.00	19.00	89.00	88.92
20.00	20.00	90.00	89.92
21.00	21.00	91.00	90.92
22.00	22.00	92.00	91.92
23.00	23.00	93.00	92.92
24.00	24.00	94.00	93.92
25.00	25.00	95.00	94.92
26.00	26.00	96.00	95.91
27.00	27.00	97.00	96.91
28.00	28.00	98.00	97.91
29.00	29.00	99.00	98.91
30.00	30.00	100.00	99.91
31.00	31.00	101.00	100.91
32.00	32.00	102.00	101.91
33.00	33.00	103.00	102.91
34.00	34.00	104.00	103.90
35.00	35.00	105.00	104.90
36.00	36.00	106.00	105.90
37.00	37.00	107.00	106.90
38.00	38.00	108.00	107.90
39.00	39.00	109.00	108.90
40.00	40.00	109.30	109.20
41.00	41.00		
42.00	41.99		
43.00	42.99		
44.00	43.99		
45.00	44.99		
46.00	45.99		
47.00	46.99		
48.00	47.99		
49.00	48.99		
50.00	49.99		
51.00	50.99		
52.00	51.99		
53.00	52.98		
54.00	53.98		
55.00	54.98		
56.00	55.98		
57.00	56.98		
58.00	57.98		
59.00	58.98		
60.00	59.98		
61.00	60.97		
62.00	61.97		
63.00	62.97		
64.00	63.97		
65.00	64.96		
66.00	65.96		
67.00	66.96		
68.00	67.96		
69.00	68.96		
70.00	69.96		

COMPANY	MANALTA
WELL	T93R-39
FIELD	SITE #33
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-40C
FIELD	SITE # 211
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 211
WELL:
T93R-40C
COMPANY:
MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	30-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	65.6M			
DEPTH-LOGGER	65.6M			
FIRST READING	65M			
LAST READING	0M			
CASING-DRILLER	6.1M			
CASING-LOGGER	6.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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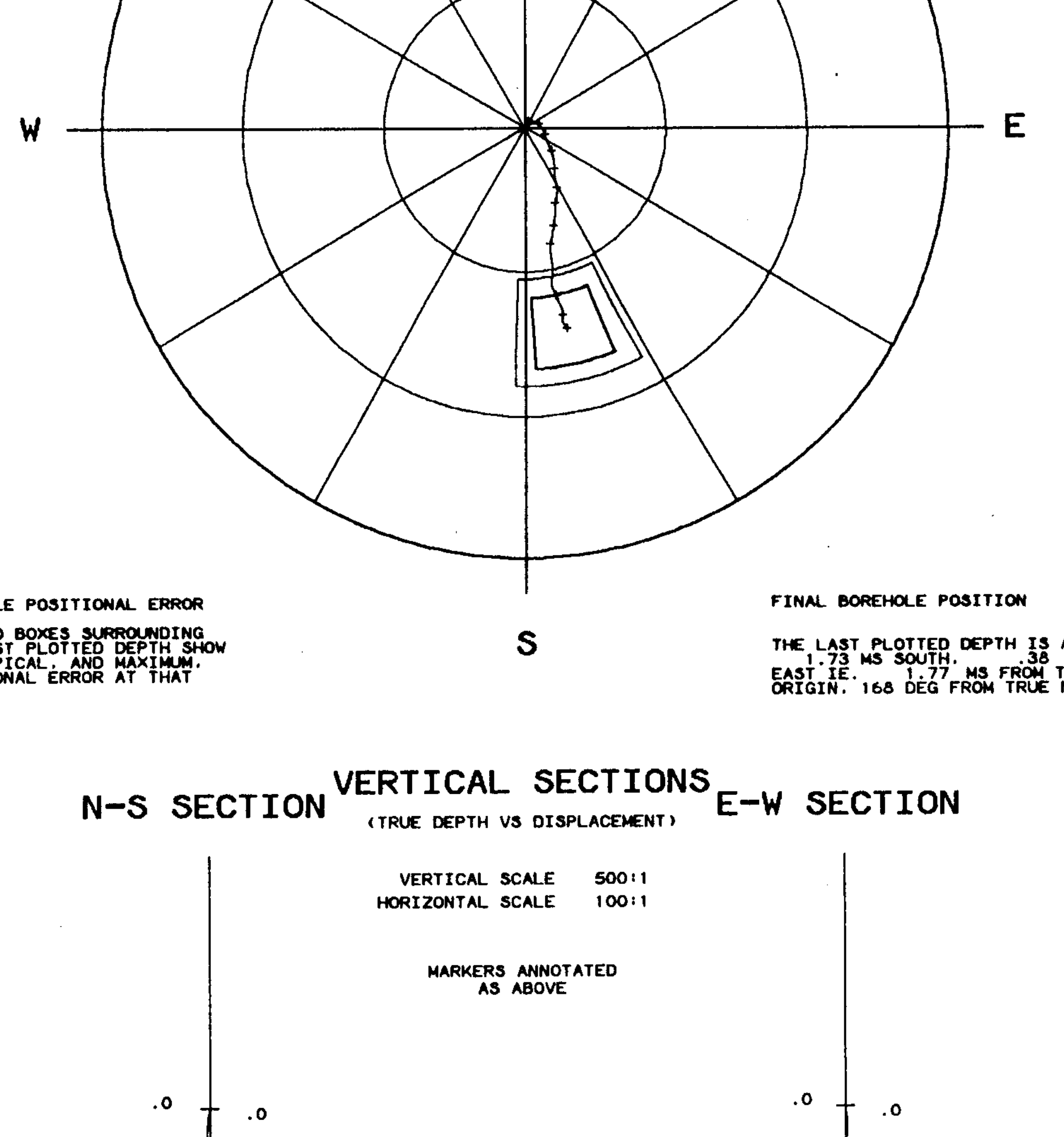
T93R-40C                        VERTICALITY DATA LISTING                  DATE PROCESSED: 30-SEP-1993
                        ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH       DATE LOGGED:    30-SEP-1993
    DEPTHS          BOREHOLE   AXIAL CO-ORDS    POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
   LOG      TRUE    TILT AZI    NORTH      EAST BRG   RADIUS BRG   RADIUS BRG   RADIUS BRG   RADIUS BRD   RADIUS

   1.00     1.00    2.0  34     0.04      0.03  40     0.05  40     0.05  40     0.05  40     0.05  40     0.05
   2.00     2.00    1.0 301     0.05      0.03  33     0.06  33     0.07  34     0.06  33     0.07  34     0.06
   3.00     3.00    1.3 318     0.06      0.02  18     0.06  16     0.07  20     0.06  17     0.07  19     0.06
   4.00     4.00    1.2  97     0.07      0.02  15     0.07  13     0.08  17     0.06  14     0.08  16     0.07
   5.00     5.00    1.1 187     0.07      0.03  27     0.08  26     0.08  28     0.07  27     0.08  27     0.07
   6.00     6.00    1.5 168     0.08      0.04  30     0.09  30     0.10  31     0.08  30     0.09  31     0.08
   7.00     7.00    1.6 108     0.06      0.07  49     0.09  49     0.10  49     0.08  49     0.10  49     0.09
   8.00     8.00    1.4 109     0.05      0.09  61     0.11  61     0.12  61     0.10  61     0.11  61     0.10
   9.00     9.00    0.7 109     0.05      0.11  66     0.12  67     0.14  66     0.11  67     0.13  66     0.11
  10.00    10.00    0.6 134     0.04      0.12  70     0.13  71     0.15  69     0.11  71     0.14  70     0.12
  11.00    11.00    0.4 178     0.04      0.13  73     0.13  75     0.15  71     0.12  74     0.14  72     0.13
  12.00    12.00    1.6 156     0.02      0.13  82     0.13  84     0.15  80     0.11  83     0.14  81     0.12
  13.00    13.00    1.5 141    -0.01      0.15  92     0.15  94     0.17  91     0.13  93     0.16  92     0.14
  14.00    14.00    1.8 149    -0.03      0.16 100     0.17 101     0.19  99     0.14 101     0.18  99     0.15
  15.00    14.99    2.0 160    -0.06      0.18 108     0.19 109     0.21 107     0.16 109     0.20 108     0.17
  16.00    15.99    1.9 167    -0.09      0.19 116     0.21 116     0.24 115     0.18 116     0.22 115     0.19
  17.00    16.99    1.9 168    -0.12      0.20 122     0.23 122     0.26 121     0.20 122     0.25 122     0.21
  18.00    17.99    1.8 162    -0.15      0.21 126     0.25 126     0.29 126     0.22 126     0.27 126     0.24
  19.00    18.99    1.9 157    -0.18      0.22 129     0.28 129     0.32 129     0.24 129     0.30 129     0.26
  20.00    19.99    1.7 160    -0.20      0.23 131     0.31 131     0.35 131     0.27 131     0.33 131     0.29
  21.00    20.99    1.8 164    -0.23      0.24 134     0.34 134     0.38 134     0.29 134     0.36 134     0.32
  22.00    21.99    1.9 165    -0.27      0.26 136     0.37 136     0.42 137     0.32 136     0.39 136     0.35
  23.00    22.99    1.8 173    -0.30      0.26 139     0.40 139     0.45 139     0.35 139     0.42 139     0.37
  24.00    23.99    2.0 178    -0.33      0.26 142     0.42 141     0.48 142     0.37 142     0.45 142     0.40
  25.00    24.99    1.6 178    -0.36      0.26 144     0.45 144     0.50 144     0.39 144     0.47 144     0.42
  26.00    25.99    1.8 178    -0.39      0.26 146     0.47 146     0.53 147     0.41 146     0.50 146     0.44
  27.00    26.99    1.9 167    -0.42      0.26 148     0.50 148     0.56 148     0.44 148     0.53 148     0.47
  28.00    27.99    2.2 156    -0.45      0.27 149     0.53 149     0.59 149     0.46 149     0.56 149     0.50
  29.00    28.99    2.1 165    -0.49      0.28 150     0.56 150     0.63 151     0.49 150     0.60 150     0.53
  30.00    29.99    2.1 167    -0.52      0.28 151     0.60 151     0.67 152     0.52 151     0.63 152     0.56
  31.00    30.99    2.0 184    -0.56      0.28 153     0.63 153     0.70 153     0.55 153     0.66 153     0.59
  32.00    31.99    1.6 186    -0.58      0.28 154     0.65 154     0.73 155     0.57 154     0.69 155     0.61
  33.00    32.99    1.3 194    -0.61      0.28 156     0.67 155     0.75 156     0.59 155     0.71 156     0.63
  34.00    33.99    1.1 193    -0.63      0.27 157     0.68 156     0.77 157     0.60 156     0.73 157     0.64
  35.00    34.98    1.5 185    -0.65      0.27 158     0.71 158     0.79 158     0.62 158     0.75 158     0.66
  36.00    35.98    2.2 179    -0.69      0.27 159     0.74 159     0.83 159     0.65 159     0.79 159     0.70
  37.00    36.98    2.3 183    -0.73      0.26 160     0.78 160     0.87 160     0.69 160     0.82 160     0.73
  38.00    37.98    2.3 185    -0.77      0.26 161     0.81 161     0.91 162     0.72 161     0.86 161     0.77
  39.00    38.98    1.9 187    -0.81      0.26 162     0.85 162     0.95 163     0.75 162     0.90 162     0.80
  40.00    39.98    2.0 197    -0.85      0.25 163     0.89 163     0.99 164     0.78 163     0.94 164     0.83
  41.00    40.98    2.0 191    -0.88      0.25 164     0.92 164     1.02 165     0.81 164     0.97 164     0.87
  42.00    41.98    2.0 192    -0.92      0.24 165     0.95 165     1.05 166     0.84 165     1.00 165     0.89
  43.00    42.98    1.8 196    -0.95      0.23 166     0.97 166     1.08 166     0.86 166     1.03 166     0.92
  44.00    43.98    1.7 190    -0.97      0.23 167     1.00 167     1.11 167     0.89 167     1.06 167     0.94
  45.00    44.98    1.8 189    -1.00      0.22 167     1.03 167     1.14 168     0.91 167     1.08 168     0.97
  46.00    45.98    2.6 171    -1.04      0.22 168     1.07 168     1.19 168     0.95 168     1.13 168     1.01
  47.00    46.98    2.6 169    -1.09      0.23 168     1.11 168     1.24 168     0.99 168     1.17 168     1.05
  48.00    47.98    2.7 174    -1.13      0.24 168     1.16 168     1.29 168     1.03 168     1.22 168     1.10
  49.00    48.97    2.7 177    -1.18      0.24 169     1.21 168     1.34 169     1.08 168     1.27 169     1.14
  50.00    49.97    2.7 181    -1.23      0.24 169     1.25 169     1.39 169     1.12 169     1.32 169     1.19
  51.00    50.97    3.0 178    -1.28      0.24 169     1.30 169     1.44 170     1.16 169     1.37 169     1.23
  52.00    51.97    2.4 186    -1.32      0.24 170     1.34 170     1.48 170     1.20 170     1.41 170     1.27
  53.00    52.97    2.6 176    -1.36      0.23 170     1.38 170     1.53 170     1.24 170     1.45 170     1.31
  54.00    53.97    2.4 152    -1.40      0.25 170     1.43 170     1.57 170     1.28 170     1.50 170     1.35
  55.00    54.97    2.5 151    -1.44      0.27 169     1.47 169     1.62 170     1.32 169     1.54 169     1.39
  56.00    55.97    2.3 151    -1.48      0.29 169     1.51 169     1.66 169     1.35 169     1.59 169     1.43
  57.00    56.97    2.7 155    -1.52      0.31 168     1.55 168     1.71 169     1.39 168     1.63 169     1.47
  58.00    57.97    2.6 136    -1.56      0.33 168     1.59 168     1.76 168     1.43 168     1.68 168     1.51
  59.00    58.96    1.4 186    -1.58      0.34 168     1.62 168     1.78 168     1.45 168     1.70 168     1.54
  60.00    59.96    1.4 189    -1.61      0.33 168     1.64 168     1.81 168     1.47 168     1.72 168     1.56
  61.00    60.96    1.5 184    -1.63      0.33 169     1.67 168     1.84 169     1.50 169     1.75 169     1.58
  62.00    61.96    1.2 182    -1.66      0.33 169     1.69 169     1.86 169     1.52 169     1.78 169     1.60
  63.00    62.96    1.3 142    -1.68      0.33 169     1.71 169     1.89 169     1.53 169     1.80 169     1.62
  64.00    63.96    1.2 153    -1.70      0.35 168     1.73 168     1.91 168     1.55 168     1.82 168     1.64
  65.00    64.96    1.8 138    -1.72      0.37 168     1.76 168     1.94 168     1.58 168     1.85 168     1.67
  65.50    65.46    1.5 146    -1.73      0.38 168     1.77 168     1.95 168     1.59 168     1.86 168     1.68
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......00
LAST PLOTTED DEPTH......65.50
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........5
FIRST DEPTH MARKER AT...5
LAST DEPTH MARKER AT....65

PLOT WITH RESPECT TO TRUE NORTH
SCALE 50:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

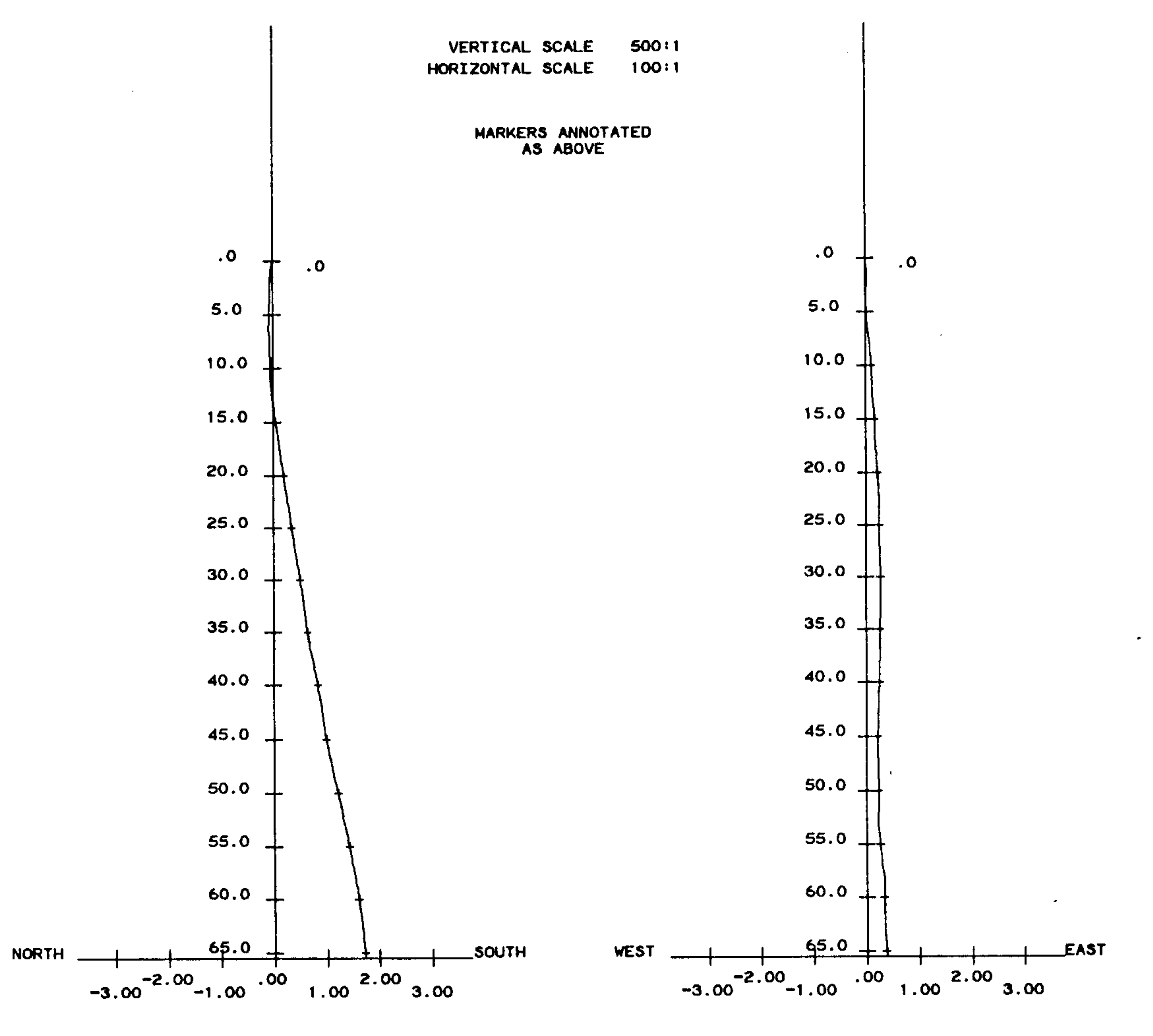
THE LAST PLOTTED DEPTH IS AT 1.73 MS SOUTH, .38 MS EAST IE. 1.77 MS FROM THE ORIGIN, 168 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

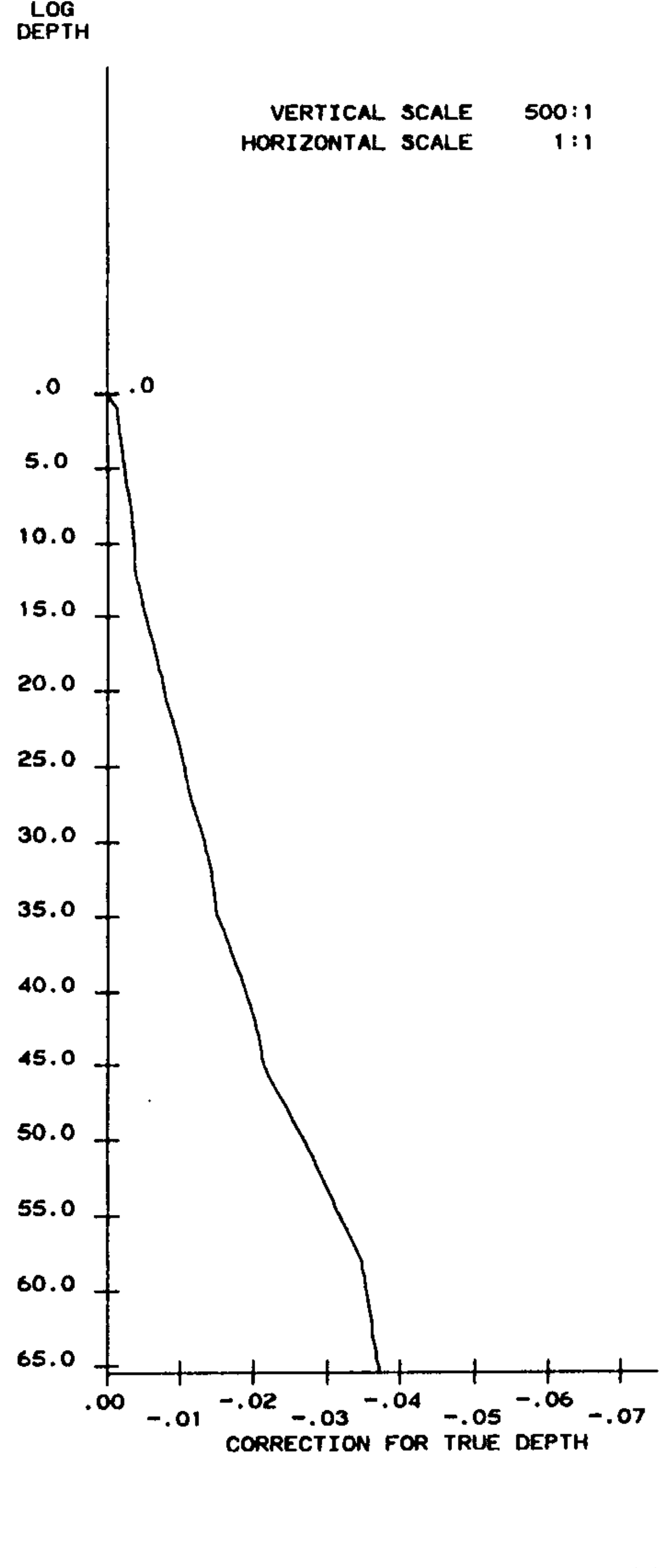
VERTICAL SCALE 500:1
HORIZONTAL SCALE 100:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 500:1
HORIZONTAL SCALE 1:1



DEPTHS:

LOG	TRUE
1.00	1.00
2.00	2.00
3.00	3.00
4.00	4.00
5.00	5.00
6.00	6.00
7.00	7.00
8.00	8.00
9.00	9.00
10.00	10.00
11.00	11.00
12.00	12.00
13.00	13.00
14.00	14.00
15.00	14.99
16.00	15.99
17.00	16.99
18.00	17.99
19.00	18.99
20.00	19.99
21.00	20.99
22.00	21.99
23.00	22.99
24.00	23.99
25.00	24.99
26.00	25.99
27.00	26.99
28.00	27.99
29.00	28.99
30.00	29.99
31.00	30.99
32.00	31.99
33.00	32.99
34.00	33.99
35.00	34.98
36.00	35.98
37.00	36.98
38.00	37.98
39.00	38.98
40.00	39.98
41.00	40.98
42.00	41.98
43.00	42.98
44.00	43.98
45.00	44.98
46.00	45.98
47.00	46.98
48.00	47.98
49.00	48.97
50.00	49.97
51.00	50.97
52.00	51.97
53.00	52.97
54.00	53.97
55.00	54.97
56.00	55.97
57.00	56.97
58.00	57.97
59.00	58.96
60.00	59.96
61.00	60.96
62.00	61.96
63.00	62.96
64.00	63.96
65.00	64.96
65.50	65.46

COMPANY	MANALTA
WELL	T93R-40C
FIELD	SITE # 211
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY CALIPER 20:1
(DETAIL LOG)

BPB

#S79

COMPANY MANALTA
WELL T93R-40C
FIELD SITE # 211
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 211
WELL:
T93R-40C
COMPANY:
MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	30-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	65.6M			
DEPTH-LOGGER	65.6M			
FIRST READING	65M			
LAST READING	0M			
CASING-DRILLER	6.1M			
CASING-LOGGER	6.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

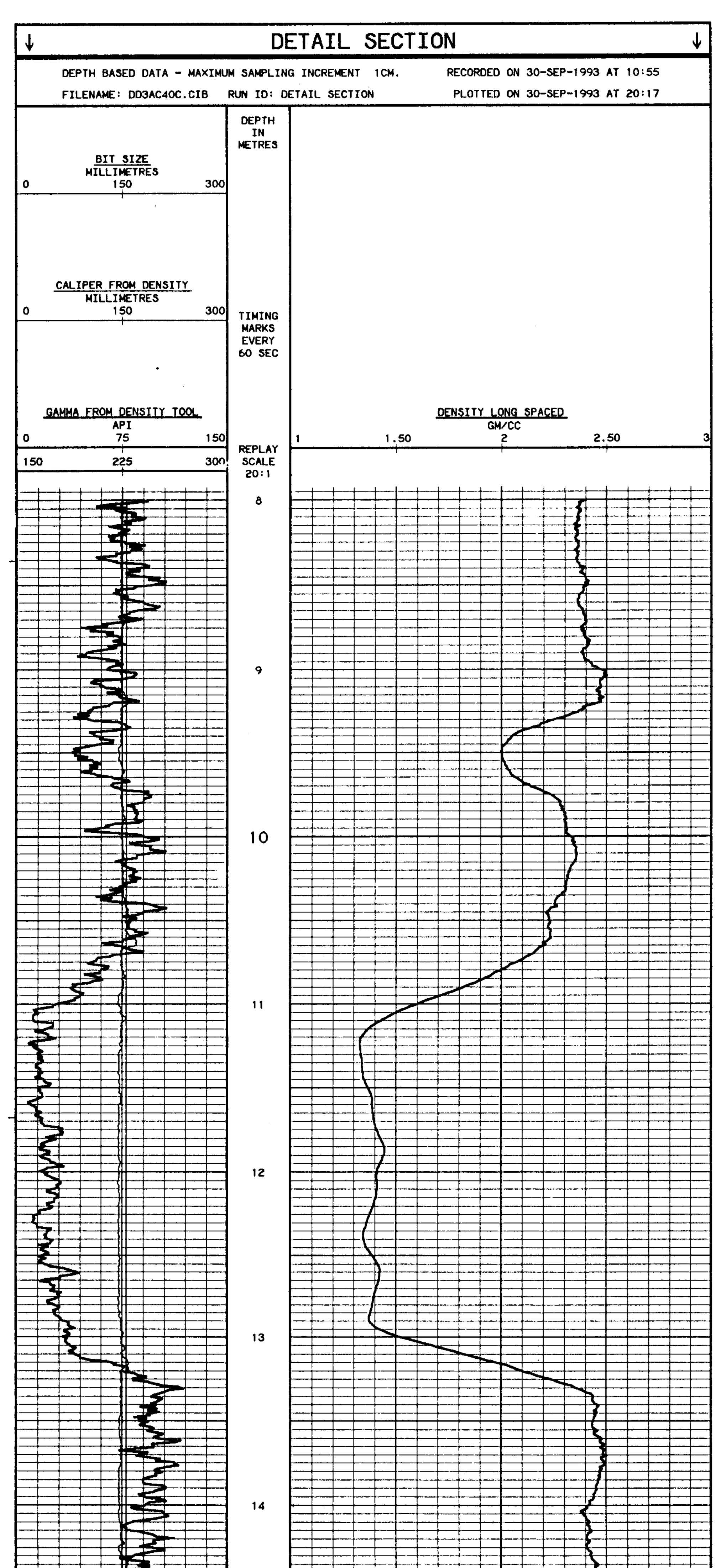
LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40C.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:17

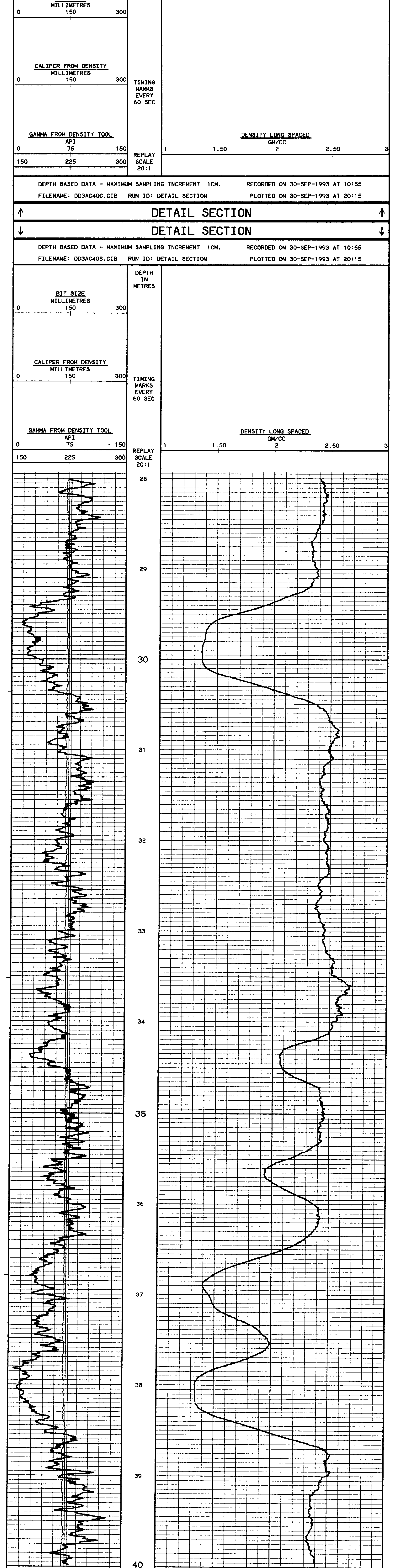


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40C.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:15

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40B.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:15

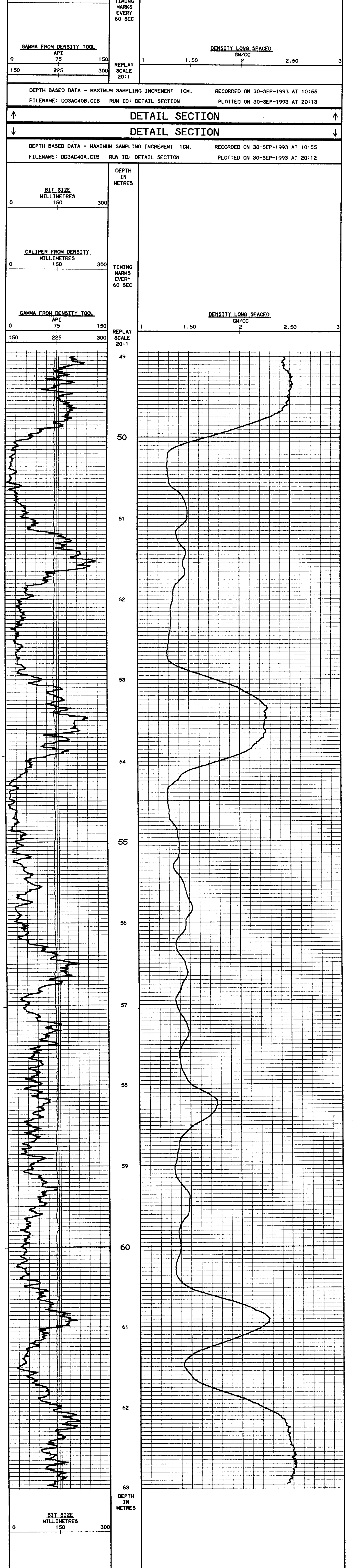


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40B.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:13

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40A.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:12



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40A.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:10

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 30-SEP-1993 AT 10:50 DATA LAST REPROCESSED: 30-SEP-1993 AT 20:09

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	65.60
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-40C
FIELD	SITE # 211
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

COMPANY	MANALTA
WELL	T93R-40C
FIELD	SITE # 211
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 211
WELL:
T93R-40C
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	30-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	65.6M			
DEPTH-LOGGER	65.6M			
FIRST READING	65M			
LAST READING	0M			
CASING-DRILLER	6.1M			
CASING-LOGGER	6.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40C.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:24

DEPTH IN METRES

BIT SIZE MILLIMETRES 0 150 300

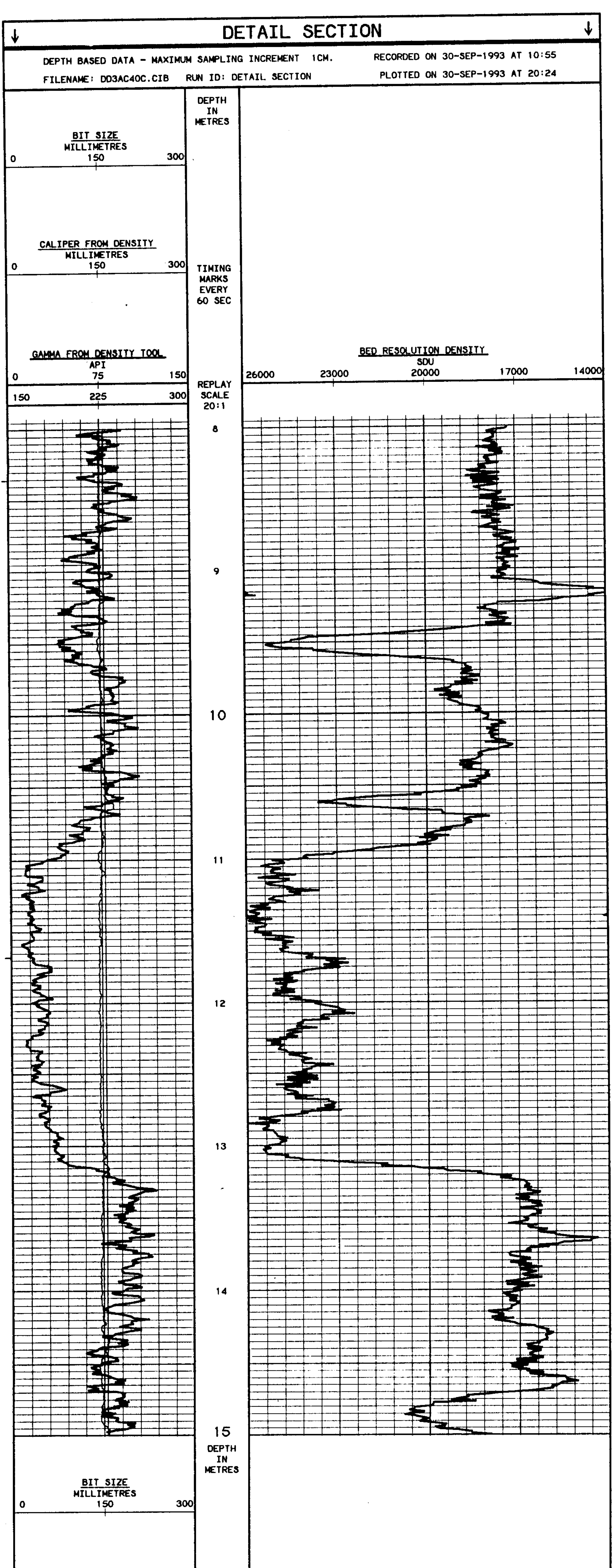
CALIPER FROM DENSITY MILLIMETRES 0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000



DEPTH IN METRES

BIT SIZE MILLIMETRES 0 150 300

CALIPER FROM DENSITY MILLIMETRES 0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40C.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:24

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40B.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:22

DEPTH IN METRES

BIT SIZE MILLIMETRES 0 150 300

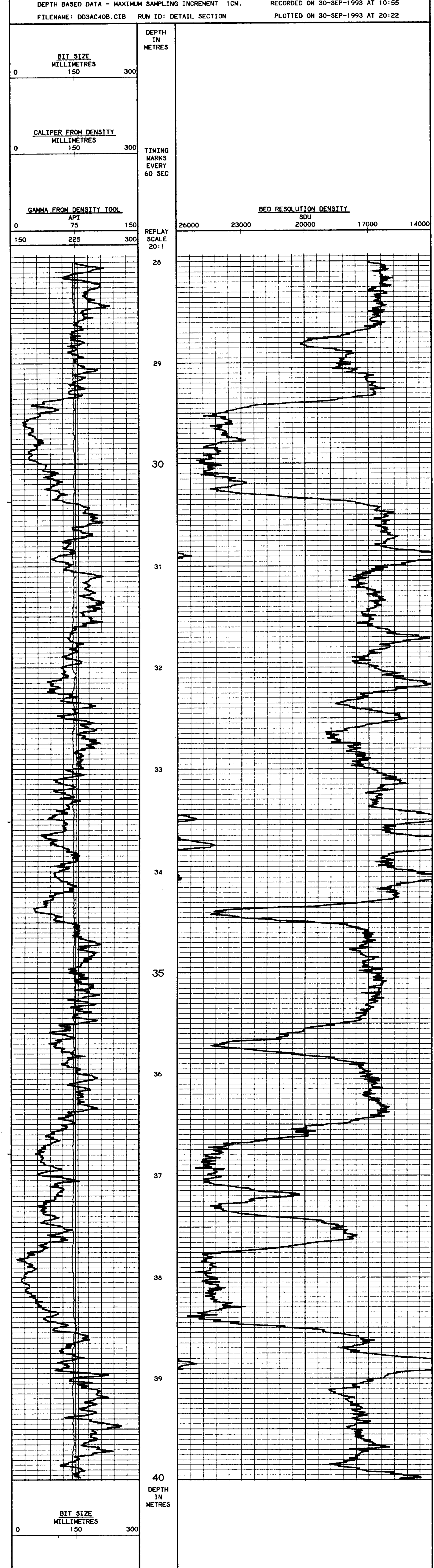
CALIPER FROM DENSITY MILLIMETRES 0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000



DEPTH IN METRES

BIT SIZE MILLIMETRES 0 150 300

CALIPER FROM DENSITY MILLIMETRES 0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40B.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:22

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40A.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:20

DEPTH IN METRES

BIT SIZE MILLIMETRES 0 150 300

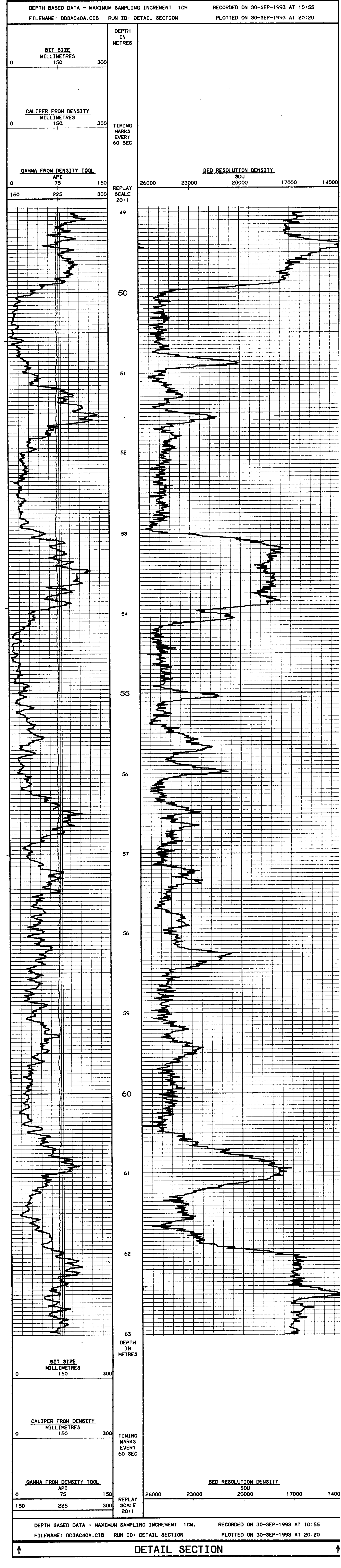
CALIPER FROM DENSITY MILLIMETRES 0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000



DEPTH IN METRES

BIT SIZE MILLIMETRES 0 150 300

CALIPER FROM DENSITY MILLIMETRES 0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL API 0 75 150 / 150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 1400

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40A.CIB RUN ID: DETAIL SECTION PLOTTED ON 30-SEP-1993 AT 20:20

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 30-SEP-1993 AT 10:50 DATA LAST REPROCESSED: 30-SEP-1993 AT 20:09

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	65.60
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-40C
FIELD	SITE # 211
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 211
WELL: T93R-40C
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-40C
FIELD SITE # 211
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#879

LOCATION				OTHER SERVICES
TELKWA				
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	30-SEP-93				
RUN NUMBER	TWO				
DEPTH-DRILLER	65.6M				
DEPTH-LOGGER	65.6M				
FIRST READING	65M				
LAST READING	0M				
CASING-DRILLER	6.1M				
CASING-LOGGER	6.1M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE					
RM ● MEAS TEMP					
RMF ● MEAS TEMP					
RMC ● MEAS TEMP					
SOURCE: RMF/RMC					
RM ● BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	B. STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	00M				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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MAIN LOG

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40M.CIB RUN ID: MAIN LOG PLOTTED ON 30-SEP-1993 AT 20:03

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 30-SEP-1993 AT 10:55
FILENAME: DD3AC40M.CIB RUN ID: MAIN LOG PLOTTED ON 30-SEP-1993 AT 20:03

MAIN LOG

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 30-SEP-1993 AT 10:50

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	65.60
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-40C
FIELD	SITE # 211
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

COMPANY	MANALTA
WELL	T93R-41C
FIELD	SITE 201
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 201
WELL:
T93R-41C
COMPANY:
MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-OCT-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	141.7M			
DEPTH-LOGGER	141.1M			
FIRST READING	140.5M			
LAST READING	0M			
CASING-DRILLER	5.5M			
CASING-LOGGER	5.5M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	5.5M	TD	178MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41M.CIB RUN ID: MAIN LOG PLOTTED ON 02-OCT-1993 AT 17:40

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41M.CIB RUN ID: MAIN LOG PLOTTED ON 02-OCT-1993 AT 17:40

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-OCT-1993 AT 14:36

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	141.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-41C
FIELD	SITE 201
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 201
WELL:
T93R-41C
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-41C
FIELD SITE 201 #879
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-OCT-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	141.7M			
DEPTH-LOGGER	141.1M			
FIRST READING	140.5M			
LAST READING	0M			
CASING-DRILLER	5.5M			
CASING-LOGGER	5.5M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	5.5M	TD	178MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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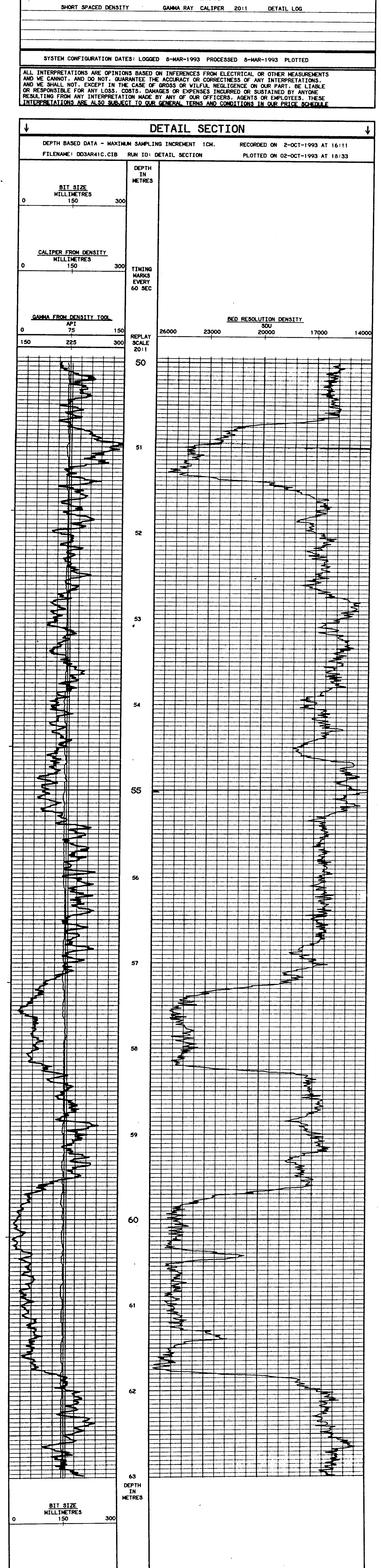
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41C.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:33

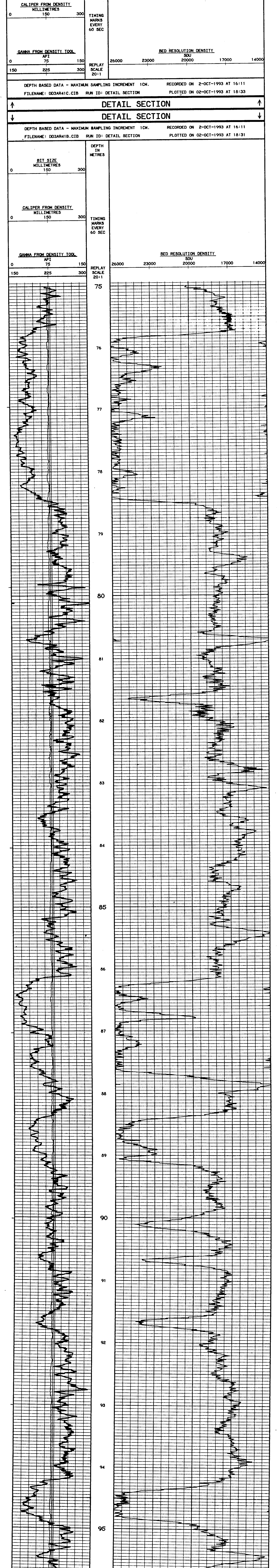


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41C.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:33

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41B.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:31

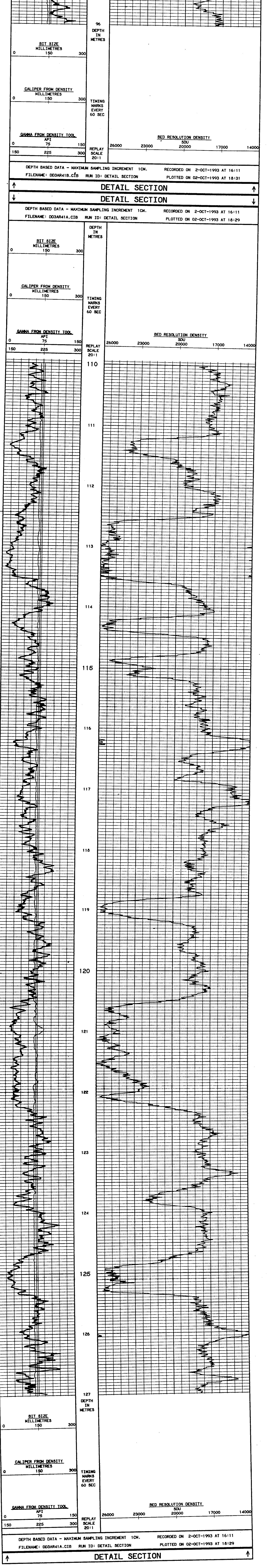


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41B.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:31

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41A.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:29



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41A.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:29

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-OCT-1993 AT 14:36 DATA LAST REPROCESSED: 2-OCT-1993 AT 18:11

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	141.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-41C
FIELD	SITE 201
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

COMPANY	MANALTA
WELL	T93R-41C #879
FIELD	SITE 201
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA
LOCATION	TELKWA
LSD	
SEC	
TWP	
RGE	
OTHER SERVICES	

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 201
WELL: T93R-41C
COMPANY: MANALTA

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM OGM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OGM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-OCT-93
RUN NUMBER	TWO
DEPTH-DRILLER	141.7M
DEPTH-LOGGER	141.1M
FIRST READING	140.5M
LAST READING	0M
CASING-DRILLER	5.5M
CASING-LOGGER	5.5M
BIT SIZE	156MM
HOLE FLUID TYPE	AIR/WATER
DENS./VISC.	1.01 N/A
PH/FLUID LOSS	N/A N/A
SAMPLE SOURCE	
RM @ MEAS TEMP	
RMF @ MEAS TEMP	
RMC @ MEAS TEMP	
SOURCE: RMF/RMC	
RM @ BHT	
TIME SINCE CIRC	
MAX REC TEMP	
EQUIPMENT/BASE	V222 RDR
RECORDED BY	B. STEVENSON
WITNESSED BY	T. BRAZZONI
WATER LEVEL	00M

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	5.5M	TD	178MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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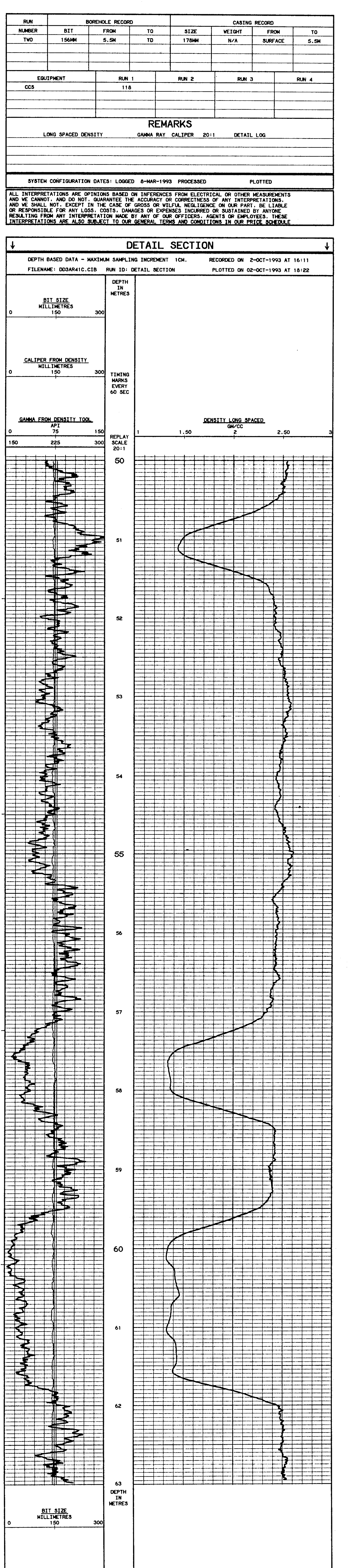
DETAIL SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41C.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:22



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41C.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:19

DETAIL SECTION

DETAIL SECTION

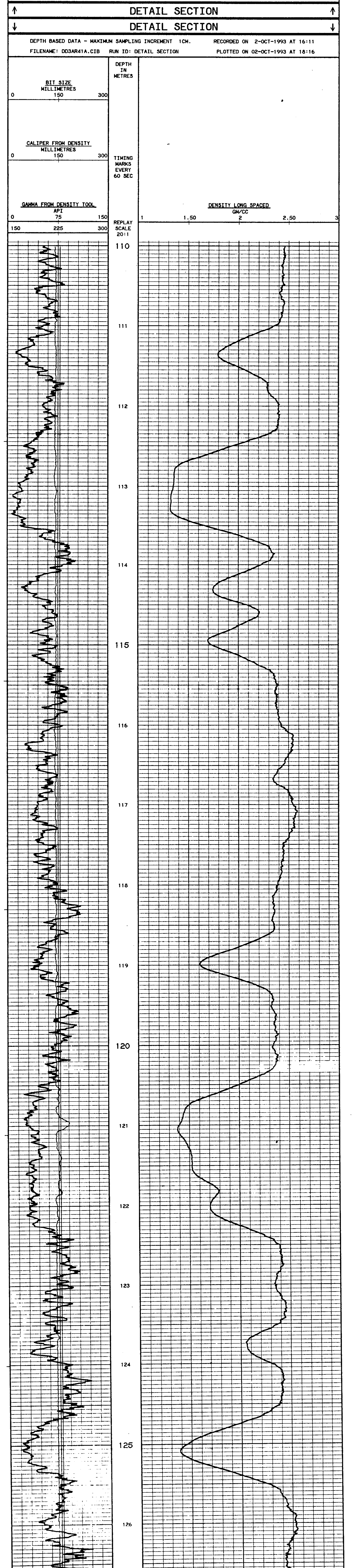
DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41B.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:19

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41B.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:16

DETAIL SECTION

DETAIL SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41A.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:16



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 16:11
FILENAME: DD3AR41A.CIB RUN ID: DETAIL SECTION PLOTTED ON 02-OCT-1993 AT 18:13

DETAIL SECTION

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-OCT-1993 AT 14:36 DATA LAST REPROCESSED: 2-OCT-1993 AT 18:11

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	141.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-41C
FIELD	SITE 201
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 203
WELL:
T93R-42C
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-42C
FIELD SITE 203
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-OCT-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	75.3M			
DEPTH-LOGGER	75.3M			
FIRST READING	75M			
LAST READING	0M			
CASING-DRILLER	15.3M			
CASING-LOGGER	15.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	15.3M	TD	178MM	N/A	SURFACE	15.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

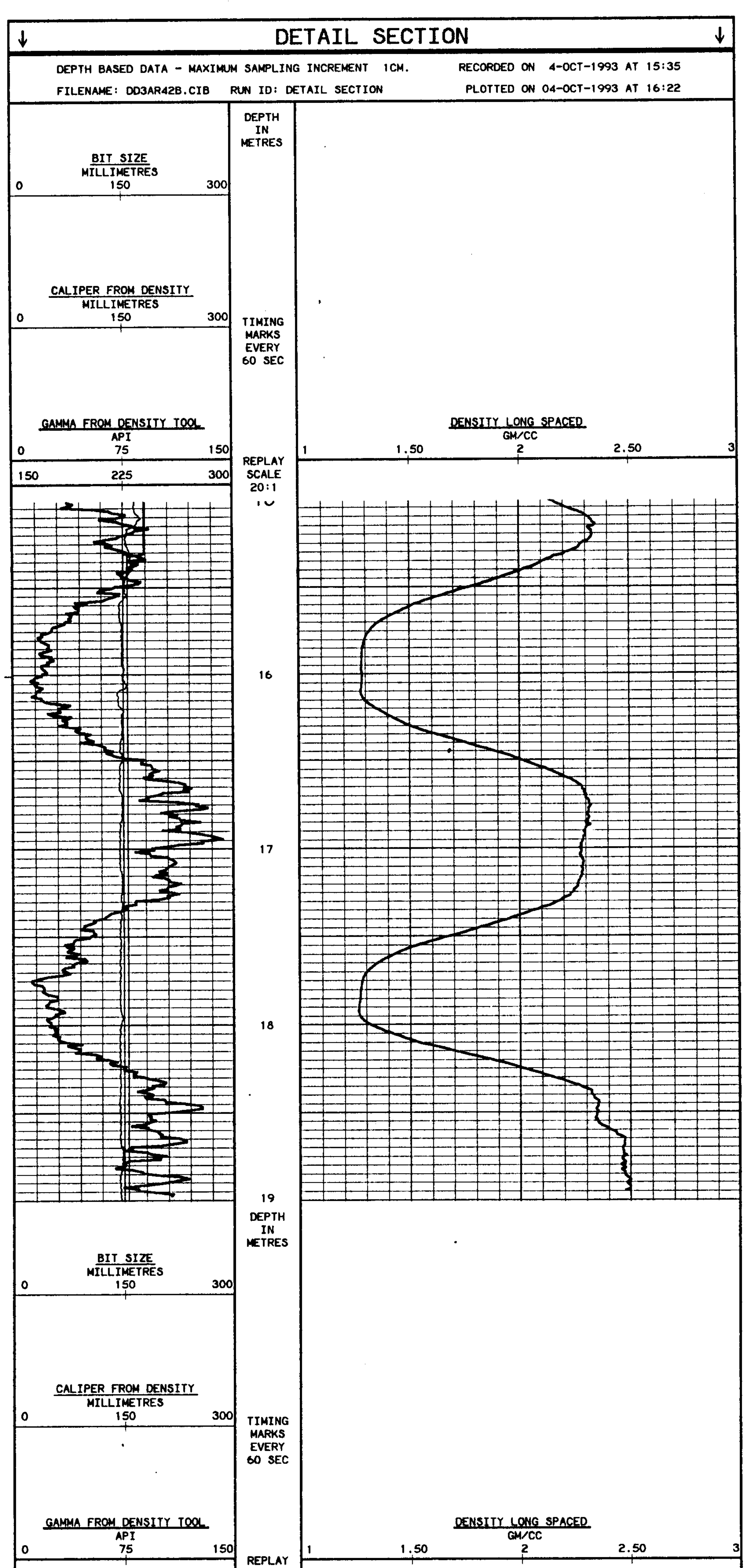
LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-OCT-1993 AT 15:35
FILENAME: DD3AR42B.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-OCT-1993 AT 16:22



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-OCT-1993 AT 15:35
FILENAME: DD3AR42B.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-OCT-1993 AT 16:20

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-OCT-1993 AT 15:35
FILENAME: DD3AR42A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-OCT-1993 AT 16:20

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-OCT-1993 AT 15:35
FILENAME: DD3AR42A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-OCT-1993 AT 16:18

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 04-OCT-1993 AT 15:28 DATA LAST REPROCESSED: 4-OCT-1993 AT 16:16

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	15.30
BIT SIZE 3	.00	BIT DEPTH 3	75.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-42C
FIELD	SITE 203
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 203
WELL:
T93R-42C
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-42C
FIELD	SITE 203
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION			OTHER SERVICES
TELKWA			
LSD	SEC	TWP	RGE

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-OCT-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	75.3M			
DEPTH-LOGGER	75.3M			
FIRST READING	75M			
LAST READING	0M			
CASING-DRILLER	15.3M			
CASING-LOGGER	15.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	15.3M	TD	178MM	N/A	SURFACE	15.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-OCT-1993 AT 15:35
FILENAME: DD3AR42M.CIB RUN ID: MAIN LOG PLOTTED ON 04-OCT-1993 AT 16:40

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-OCT-1993 AT 15:35
FILENAME: DD3AR42M.CIB RUN ID: MAIN LOG PLOTTED ON 04-OCT-1993 AT 16:40

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 04-OCT-1993 AT 15:28

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	15.30
BIT SIZE 3	.00	BIT DEPTH 3	75.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-42C
FIELD	SITE 203
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

COMPANY MANALTA
WELL T93R-42C
FIELD SITE 203
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 203
WELL: T93R-42C
COMPANY: MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-OCT-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	75.3M			
DEPTH-LOGGER	75.3M			
FIRST READING	75M			
LAST READING	0M			
CASING-DRILLER	15.3M			
CASING-LOGGER	15.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	15.3M	TD	178MM	N/A	SURFACE	15.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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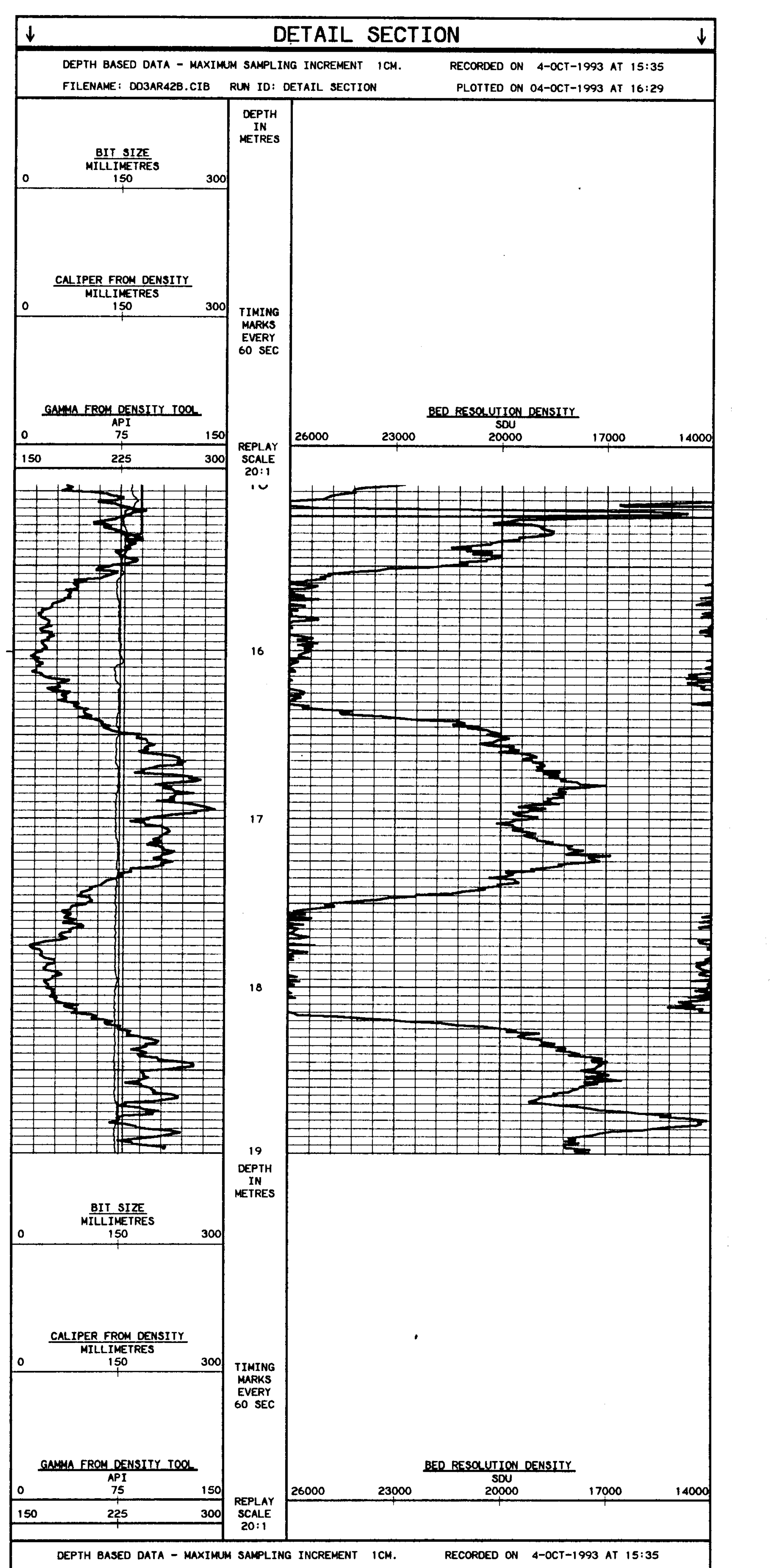
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-OCT-1993 AT 15:35
FILENAME: DD3AR42B.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-OCT-1993 AT 16:29

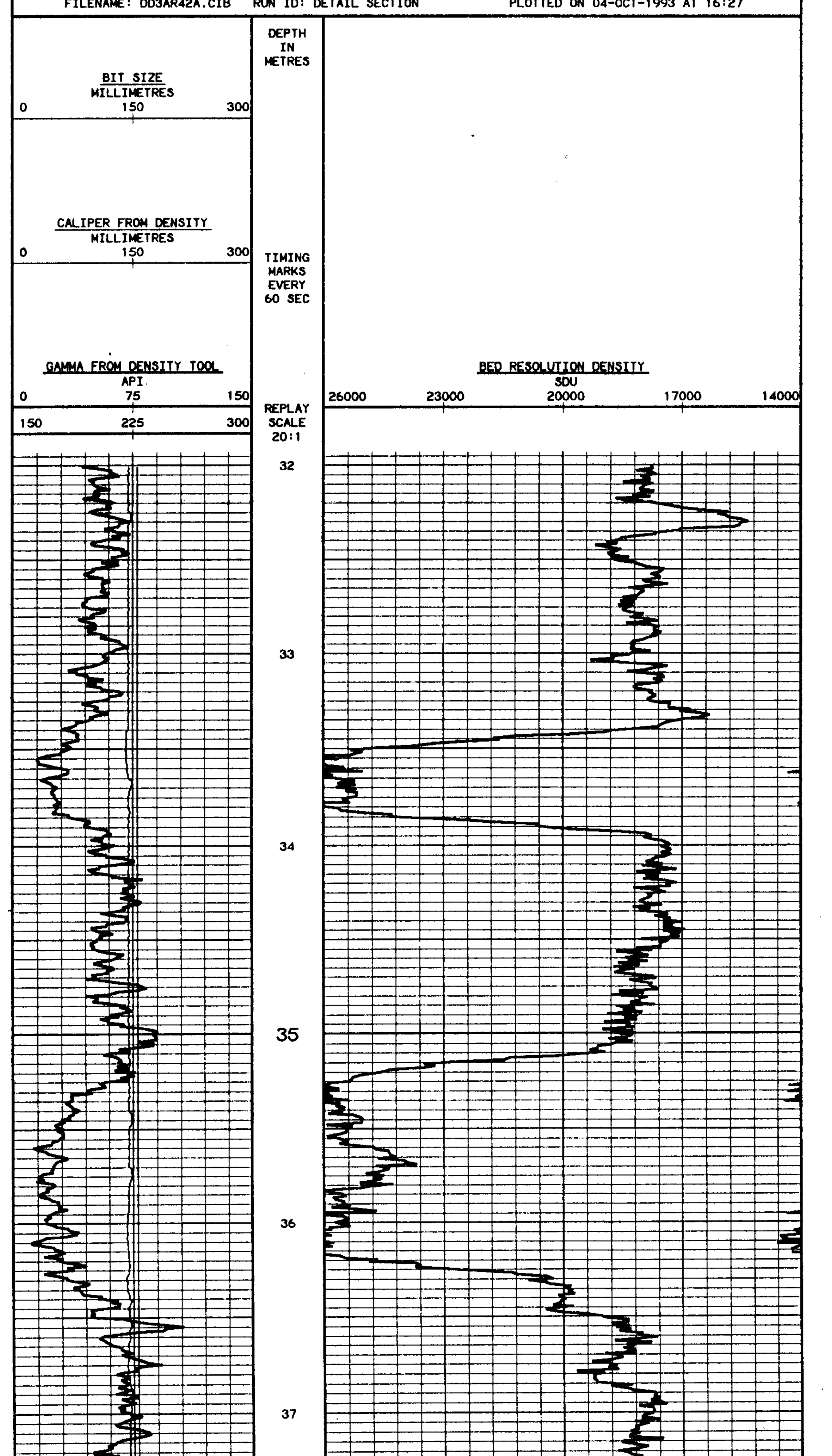


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-OCT-1993 AT 15:35
FILENAME: DD3AR42B.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-OCT-1993 AT 16:29

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-OCT-1993 AT 15:35
FILENAME: DD3AR42A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-OCT-1993 AT 16:27



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-OCT-1993 AT 15:35
FILENAME: DD3AR42A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-OCT-1993 AT 16:27

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 04-OCT-1993 AT 15:28 DATA LAST REPROCESSED: 4-OCT-1993 AT 16:16

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	15.30
BIT SIZE 3	.00	BIT DEPTH 3	75.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-42C
FIELD	SITE 203
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION	TELKWA
PRVNC/CO.	BRITISH COLUMBIA
FIELD	SITE # 35
WELL:	T93R-48
COMPANY:	MANALTA

COMPANY	MANALTA
WELL	T93R-48
FIELD	SITE # 35
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-OCT-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	137.0M			
DEPTH-LOGGER	137.0M			
FIRST READING	136.5M			
LAST READING	0M			
CASING-DRILLER	6.0M			
CASING-LOGGER	6.0M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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T93R-48

VERTICALITY DATA LISTING
ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH

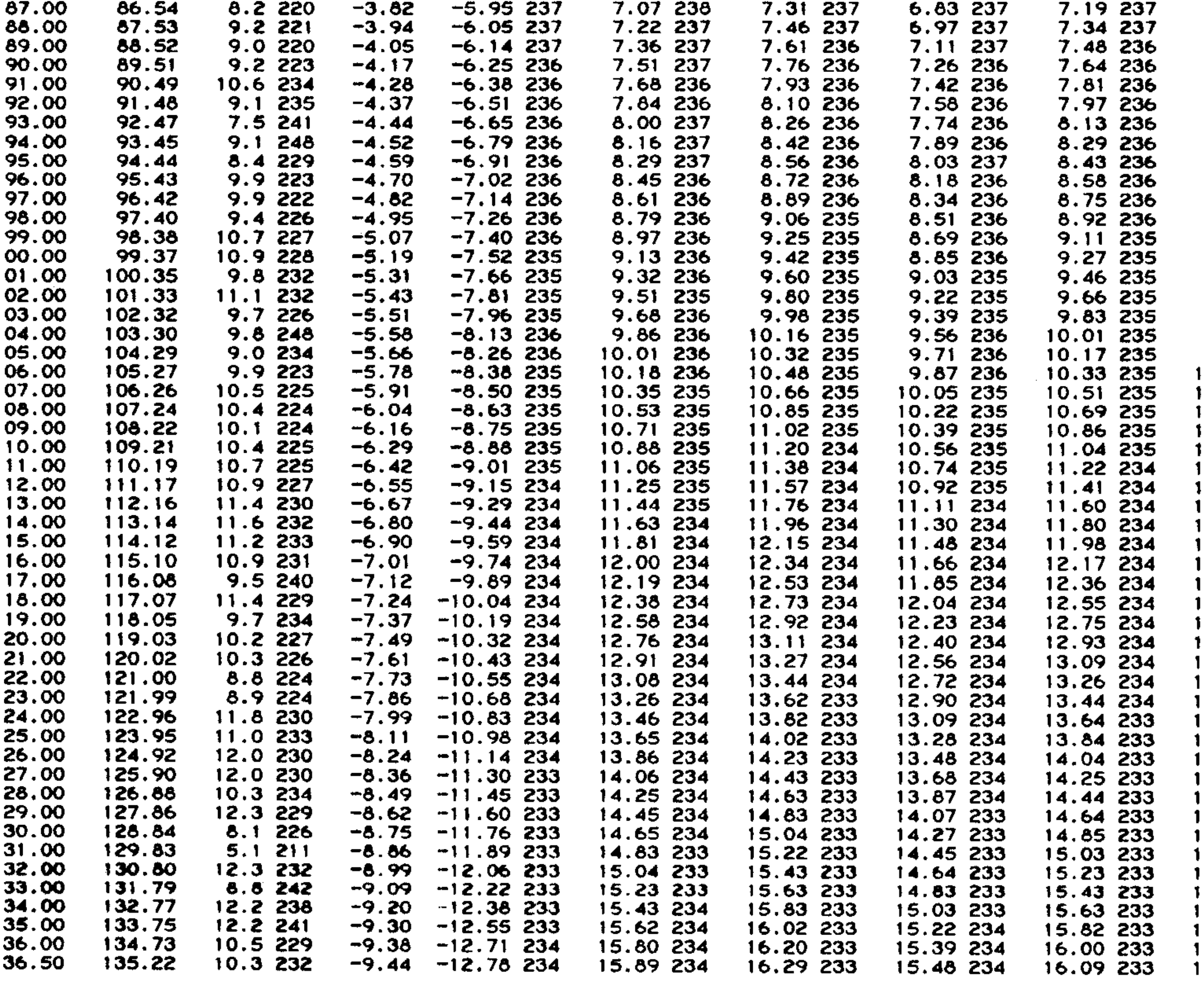
DATE PROCESSED: 3-OCT-1993
DATE LOGGED: 2-OCT-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
3.00	3.00	0.5	254	0.00	0.00	276	0.00	276	0.01	276	0.00	276	0.01	276	0.00
4.00	4.00	0.5	332	0.00	-0.01	266	0.01	266	0.02	266	0.01	266	0.01	266	0.01
5.00	5.00	0.5	275	0.00	-0.02	279	0.02	279	0.02	279	0.01	279	0.02	279	0.01
6.00	6.00	0.5	131	0.00	-0.02	270	0.02	270	0.03	269	0.01	270	0.02	270	0.01
7.00	7.00	0.5	325	0.00	-0.02	280	0.02	281	0.03	280	0.01	281	0.03	280	0.02
8.00	8.00	0.4	6	0.01	-0.03	296	0.03	296	0.04	296	0.02	296	0.04	296	0.02
9.00	9.00	0.4	352	0.02	-0.03	309	0.03	309	0.05	309	0.02	309	0.04	309	0.03
10.00	10.00	0.7	347	0.03	-0.03	318	0.04	318	0.06	318	0.02	318	0.05	318	0.03
11.00	11.00	0.3	331	0.04	-0.03	324	0.05	324	0.07	323	0.03	324	0.06	324	0.04
12.00	12.00	0.5	327	0.05	-0.03	326	0.05	326	0.08	326	0.03	326	0.07	326	0.04
13.00	13.00	0.7	302	0.05	-0.04	323	0.07	324	0.09	322	0.04	324	0.08	323	0.05
14.00	14.00	0.8	299	0.06	-0.05	321	0.08	322	0.11	320	0.05	321	0.09	320	0.06
15.00	15.00	1.1	294	0.07	-0.06	318	0.09	319	0.12	316	0.06	319	0.11	317	0.07
16.00	16.00	1.0	295	0.07	-0.07	317	0.10	318	0.14	315	0.06	317	0.12	316	0.08
17.00	17.00	0.5	186	0.07	-0.07	316	0.10	317	0.14	315	0.07	317	0.12	316	0.08
18.00	18.00	0.8	219	0.07	-0.08	310	0.10	311	0.14	308	0.07	311	0.12	309	0.08
19.00	19.00	1.0	231	0.05	-0.09	300	0.10	303	0.14	296	0.07	302	0.12	299	0.09
20.00	20.00	1.3	246	0.04	-0.11	291	0.12	294	0.15	285	0.08	293	0.14	289	0.10
21.00	21.00	1.2	249	0.04	-0.13	285	0.14	289	0.17	279	0.10	287	0.15	283	0.12
22.00	22.00	1.3	236	0.03	-0.15	280	0.15	283	0.19	274	0.11	282	0.17	277	0.13
23.00	23.00	1.4	241	0.01	-0.17	274	0.17	278	0.21	268	0.13	276	0.19	272	0.15
24.00	24.00	1.7	234	0.00	-0.19	269	0.19	273	0.23	263	0.15	271	0.21	266	0.17
25.00	25.00	1.8	233	-0.02	-0.21	264	0.22	268	0.26	258	0.17	266	0.24	261	0.19
26.00	26.00	2.4	233	-0.04	-0.24	260	0.25	263	0.29	254	0.20	262	0.27	257	0.22
27.00	27.00	2.9	228	-0.06	-0.27	257	0.28	260	0.33	252	0.23	258	0.30	254	0.26
28.00	28.00	2.8	236	-0.09	-0.30	254	0.32	257	0.37	250	0.27	256	0.34	252	0.29
29.00	28.99	3.2	232	-0.11	-0.34	252	0.36	255	0.41	248	0.31	254	0.39	250	0.33
30.00	29.99	3.5	251	-0.13	-0.39	252	0.41	254	0.47	248	0.36	253	0.44	250	0.38
31.00	30.99	3.7	261	-0.14	-0.44	252	0.47	254	0.53	249	0.41	253	0.50	250	0.44
32.00	31.99	2.5	266	-0.15	-0.50	253	0.52	255	0.58	250	0.45	254	0.55	252	0.49
33.00	32.99	2.0	252	-0.15	-0.54	254	0.56	256	0.63	252	0.49	255	0.60	253	0.53
34.00	33.99	2.0	254	-0.16	-0.57	254	0.60	256	0.67	252	0.53	255	0.63	253	0.56
35.00	34.99	4.0	234	-0.20	-0.62	252	0.65	254	0.72	250	0.58	253	0.69	251	0.61
36.00	35.98	4.3	263	-0.23	-0.69	252	0.73	254	0.80	250	0.65	253	0.77	251	0.69
37.00	36.98	3.4	254	-0.24	-0.75	252	0.79	254	0.87	251	0.71	253	0.83	252	0.75
38.00	37.98	3.5	237	-0.27	-0.80	251	0.85	253	0.93	250	0.76	252	0.89	251	0.81
39.00	38.98	4.1	230	-0.31	-0.85	250	0.91	251	1.00	248	0.82	251	0.95	249	0.87
40.00	39.97	4.9	226	-0.36	-0.91	248	0.98	250	1.07	247	0.89	249	1.02	248	0.93
41.00	40.97	5.0	231	-0.42	-0.98	247	1.06	248	1.15	245	0.97	248	1.11	246	1.02
42.00	41.97	5.3	230	-0.48	-1.05	246	1.15	247	1.25	244	1.06	246	1.20	245	1.11
43.00	42.96	5.4	234	-0.53	-1.13	245	1.25	246	1.35	243	1.15	245	1.30	244	1.20
44.00	43.96	6.3	246	-0.59	-1.22	244	1.35	245	1.45	243	1.25	245	1.40	244	1.30
45.00	44.95	6.3	246	-0.64	-1.31	244	1.45	245	1.56	243	1.35	244	1.51	243	1.40
46.00	45.95	5.5	259	-0.67	-1.40	244	1.55	245	1.66	243	1.44	245	1.60	244	1.50
47.00	46.94	6.6	258	-0.71	-1.49	245	1.65	246	1.76	244	1.54	245	1.70	244	1.59
48.00	47.94	4.2	251	-0.73	-1.58	245	1.74	246	1.85	244	1.62	246	1.79	245	1.68
49.00	48.93	4.4	232	-0.77	-1.64	245	1.81	246	1.93	244	1.69	245	1.87	245	1.75
50.00	49.93	5.8	228	-0.83	-1.71	244	1.90	245	2.02	243	1.78	245	1.96	244	1.84
51.00	50.92	5.6	230	-0.90	-1.78	243	1.99	244	2.12	242	1.87	244	2.06	243	1.93
52.00	51.92	7.1	232	-0.97	-1.86	243	2.10	243	2.23	242	1.97	243	2.16	242	2.04
53.00	52.91	6.6	233	-1.04	-1.95	242	2.22	243	2.35	241	2.09	242	2.28	242	2.15
54.00	53.90	7.7	237	-1.11	-2.05	242	2.34	242	2.47	241	2.20	242	2.40	241	2.27
55.00	54.89	7.6	235	-1.19	-2.16	241	2.47	242	2.60	240	2.33	242	2.54	241	2.40
56.00	55.89	7.3	243	-1.26	-2.27	241	2.60	242	2.74	240	2.46	241	2.67	241	2.53
57.00	56.88	7.4	239	-1.32	-2.39	241	2.73	242	2.87	240	2.59	241	2.80	241	2.66
58.00	57.87	8.2	245	-1.38	-2.51	241	2.87	242	3.01	241	2.72	242	2.94	241	2.79
59.00	58.86	7.7	255	-1.43	-2.64	242	3.00	242	3.15	241	2.85	242	3.07	241	2.92
60.00	59.85	8.2	253	-1.48	-2.75	242	3.12	242	3.27	241	2.97	242	3.20	241	3.04
61.00	60.84	6.5	234	-1.53	-2.85	242	3.24	242	3.39	241	3.08	242	3.31	242	3.16
62.00	61.84	7.8	224	-1.61	-2.94	241	3.35	242	3.51	241	3.19	242	3.43	241	3.27
63.00	62.83	8.3	232	-1.70	-3.05	241	3.49	241	3.65	240	3.33	241	3.57	241	3.41
64.00	63.82	8.2	234	-1.78	-3.16	241	3.62	241	3.79	240	3.46	241	3.71	240	3.54
65.00	64.81	8.5	239	-1.85	-3.27	240	3.76	241	3.93	240	3.59	241	3.85	240	3.68
66.00	65.80	9.0	235	-1.93	-3.39	240	3.91	241	4.08	240	3.73	241	3.99	240	3.82
67.00	66.79	8.7	244	-2.01	-3.53	240	4.06	241	4.24	240	3.88	241	4.15	240	3.97
68.00	67.78	6.8	240	-2.08	-3.65	240	4.20	241	4.38	240	4.02	241	4.29	240	4.11
69.00	68.77	6.7	222	-2.13	-3.77	241	4.33	241	4.52	240	4.15	241	4.42	240	4.24
70.00	69.75	7.1	247	-2.19	-3.91	241	4.48	241	4.67	240	4.29	241	4.57	240	4.39
71.00	70.75	7.7	224	-2.26	-3.99	240	4.59	241	4.78	240	4.40	241	4.68	240	4.49
72.00	71.74	8.3	221	-2.36	-4.08	240	4.71	240	4.91	240	4.52	240	4.81	240	4.62
73.00	72.73	8.9	222	-2.47	-4.17	239	4.85	240	5.04	239	4.65	240	4.94	239	4.75
74.00	73.72	9.2	229	-2.58	-4.28	239	5.00	239	5.20	239	4.80	239	5.10	239	4.90
75.00	74.70	10.2	238	-2.69	-4.42	239	5.17	239	5.37	238	4.97	239	5.27	239	5.07
76.00	75.69	9.1	242	-2.78	-4.56	239	5.34	239	5.55	238	5.14	239	5.44	239	5.24
77.00	76.67	9.6	249	-2.85	-4.70	239	5.50	239	5.71	238	5.29	239	5.60	239	5.39
78.00	77.66	7.9	245	-2.90	-4.84	239	5.64	239	5.85	239	5.43	239	5.75	239	5.53
79.00	78.66	8.1	220	-2.98	-4.93	239	5.76	239	5.98	238	5.55	239	5.87	239	5.65
80.00	79.64	9.5	221	-3.10	-5.03	238	5.90	239	6.12	238	5.68	239	6.01	238	5.79
81.00	80.63	9.8	225	-3.22	-5.14	238	6.07	238	6.29	238	5.84	238	6.18	238	5.96
82.00	81.62	9.3	227	-3.33	-5.27	238	6.23	238	6.46	237	6.01	238	6.35	238	6.12
83.00	82.60	10.6	231	-3.45	-5.40	237	6.41	238	6.64	237	6.18	238	6.53	237	6.30
84.00	83.58	10.6	235	-3.56	-5.55	237	6.59	238	6.83	237	6.36	237	6.71	237	6.48
85.00	84.57	9.8	248	-3.65	-5.71	237	6.77	238	7.01	237	6.54	238	6.89	237	6.65
86.00	85.55	10.4	246	-3.73	-5.84	237	6.93	238	7.17	237	6.69	238	7.05	237	6.81
87.00	86.54	8.2	220	-3.82	-5.95	237	7.07	238	7.31	237	6.83	237	7.19	237	6.95
88.00	87.53	9.2	221	-3.94	-6.05	237	7.22	237	7.46	237	6.97	237	7.34	237	7.09
89.00	88.52	9.0	220	-4.05	-6.14	237	7.36	237	7.61	236	7.11	237	7.48	236	7.24
90.00	89.51	9.2	223	-4.17	-6.25	236	7.51	237	7.76	236	7.26	236	7.64	236	7.38
91.00	90.49	10.6	234	-4.28	-6.38	236	7.68	236	7.93	236	7.42	236	7.81	236	7.55
92.00	91.48	9.1	235	-4.37	-6.51	236	7.84	236	8.10	236	7.58	236	7.97	236	7.71
93.00	92.47	7.5	241	-4.44	-6.65	236	8.00	237	8.26	236	7.74	236	8.13	236	7.87
94.00	93.45	9.1	248	-4.52	-6.79	236	8.16	237	8.42	236	7.89	236	8.29	236	8.02
95.00	94.44	8.4	229	-4.59	-6.91	236	8.29	237	8.56	236	8.03	237	8.43	236	8.16
96.00	95.43	9.9	223	-4.70	-7.02	236	8.45	236	8.72	236	8.18	236	8.58	236	8.31
97.00	96.42	9.9	222	-4.82	-7.14	236	8.61	236	8.89	236	8.34	236	8.75	236	8.48
98.00	97.40	9.4	226	-4.95	-7.26	236	8.79	236	9.06	235	8.51	236	8.92	236	8.65
99.00	98.38	10.7	227	-5.07	-7.40	236	8.97	236	9.25	235	8.69	236	9.11	235	8.83
100.00	99.37	10.9	228	-5.19	-7.52	235	9.13	236	9.42	235	8.85	236	9.27	235	8.99
101.00	100.35	9.8	232	-5.31	-7.66	235	9.32	236	9.60	235	9.03	235	9.46	235	9.17
102.00	101.33	11.1	232	-5.43	-7.81	235	9.51	235	9.80	235	9.22	235	9.66	235	9.37
103.00	102.32	9.7	226	-5.51	-7.96	235	9.68	236	9.98	235	9.39	235	9.83	235	9.54
104.00	103.30	9.8	248	-5.58	-8.13	236	9.86	236	10.16	235	9.56	236	10.01	235	9.71
105.00	104.29	9.0	234	-5.66	-8.26	236	10.01	236	10.32	235	9.71	236	10.17	235	9.86
106.00	105.27	9.9	223	-5.78	-8.38	235	10.18	236	10.48	235	9.87	236	10.33	235	10.03
107.00	106.26	10.5	225	-5.91	-8.50	235	10.35	235	10.66	235	10.05	235	10.51	235	10.20
108.00	107.24	10.4	224	-6.04	-8.63	235	10.53	235	10.85	235	10.22	235	10.69	235	10.38
109.00	108.22	10.1	224	-6.16	-8.75	235	10.71	235	11.02	235	10.39	235	10.86	235	10.55
110.00	109.21	10.4	225	-6.29	-8.88	235	10.88	235	11.20	234	10.56	235	11.04	235	10.72
111.00	110.19	10.7	225	-6.42	-9.01	235	11.06	235	11.38	234	10.74	235	11.22	234	10.90
112.00	111.17	10.9	227	-6.55	-9.15	234	11.25	235	11.57	234	10.92	235	11.41	234	11.08
113.00	112.16	11.4	230	-6.67	-9.29	234	11.44	235	11.76	234	11.11	234	11.60	234	11.27
114.00	113.14	11.6	232	-6.80	-9.44	234	11.63	234	11.96	234	11.30	234	11.80	234	11.47
115.00	114.12	11.2	233	-6.90	-9.59	234	11.81	234	12.15	234	11.48	234	11.98	234	11.64
116.00	115.10	10.9	231	-7.01	-9.74	234	12.00	234	12.34	234	11.66	234	12.17	234	11.83
117.00	116.08	9.5	240	-7.12	-9.89	234	12.19	234	12.53	234	11.85	234	12.36	234	12.02
118.00	117.07	11.4	229	-7.24	-10.04	234	12.38	234	12.73	234	12.04	234	12.55	234	12.21
119.00	118.05	9.7	234	-7.37	-10.19	234	12.58	234	12.92	234	12.23	234	12.75	234	12.40
120.00	119.03	10.2	227	-7.49	-10.32	234	12.76	234	13.11	234	12.40	234	12.93	234	12.58
121.00	120.02	10.3	226	-7.61	-10.43	234	12.91	234	13.27	234	12.56	234	13.09	234	12.74
122.00	121.00	8.8	224	-7.73	-10.55	234	13.08	234	13.44	234	12.72	234	13.26	234	12.90
123.00	121.99	8.9	224	-7.86	-10.68	234	13.26	234	13.62	233	12.90	234	13.44	234	13.08
124.00	122.96	11.8	230	-7.99	-10.83	234	13.46	234	13.82	233	13.09	234	13.64	233	13.27
125.00	123.95	11.0	233	-8.11	-10.98	234	13.65	234	14.02	233	13.28	234	13.84	233	13.47
126.00	124.92	12.0	230	-8.24	-11.14	234	13.86	234	14.23	233	13.48	234	14.04	233	13.67
127.00	125.90	12.0	230	-8.36	-11.30	233	14.06	234	14.43	233	13.68	234	14.25	233	13.87
128.00	126.88	10.3	234	-8.49	-11.45	233	14.25	234	14.63	233	13.87	234	14.44	233	14.06
129.00	127.86	12.3	229	-8.62	-11.60	233	14.45	234	14.83	233	14.07	233	14.64	233	14.26
130.00	128.84	8.1	226	-8.75	-11.76	233	14.65	234	15.04	233	14.27	233	14.85	233	14.46
131.00	129.83	5.1	211	-8.86	-11.89	233	14.83	233	15.22	233	14.45	233	15.03	233	14.64
132.00	130.80	12.3	232	-8.99	-12.06	233	15.04	233	15.43	233	14.64	233	15.23	233	14.84
133.00	131.79	8.8	242	-9.09	-12.22	233	15.23	233	15.63	233	14.83	233	15.43	233	15.03
134.00	132.77	12.2	238	-9.20	-12.38	233	15.43	234	15.83	233	15.03	233	15.63	233	15.23
135.00	133.75	12.2	241	-9.30	-12.55	233	15.62	234	16.02	233	15.22	234	15.82	233	15.42
136.00	134.73	10.5	229	-9.38	-12.71	234	15.80	234	16.20	233	15.39	234	16.00	233	15.59
136.50	135.22	10.3	232	-9.44	-12.78	234	15.89	234	16.29	233	15.48	234	16.09	233	15.68

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....2.50
LAST PLOTTED DEPTH......136.50
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....130

PLOT WITH RESPECT TO TRUE NORTH
SCALE 500:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

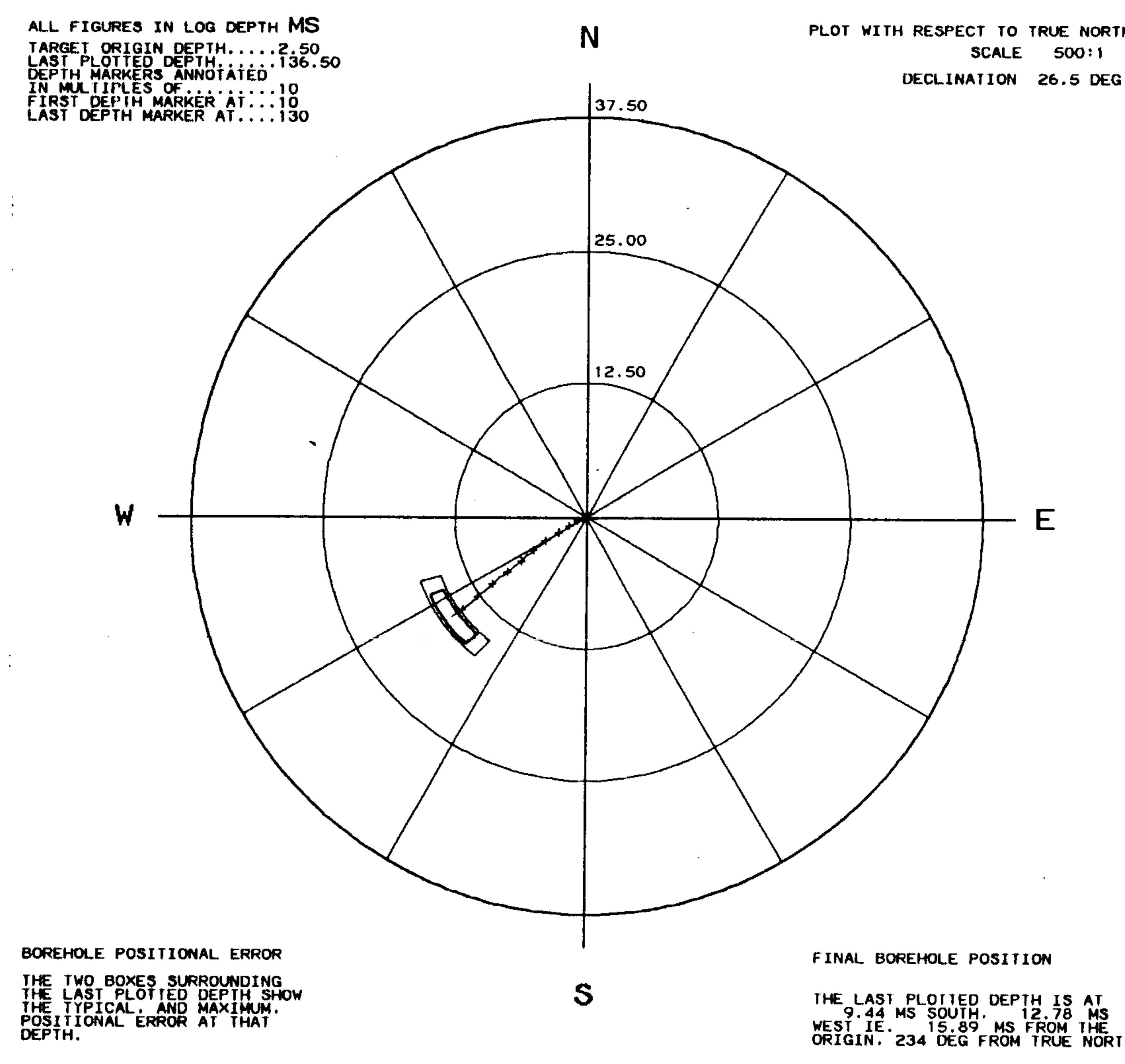
THE LAST PLOTTED DEPTH IS AT 9.44 MS SOUTH, 12.78 MS WEST IE. 15.89 MS FROM THE ORIGIN, 234 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

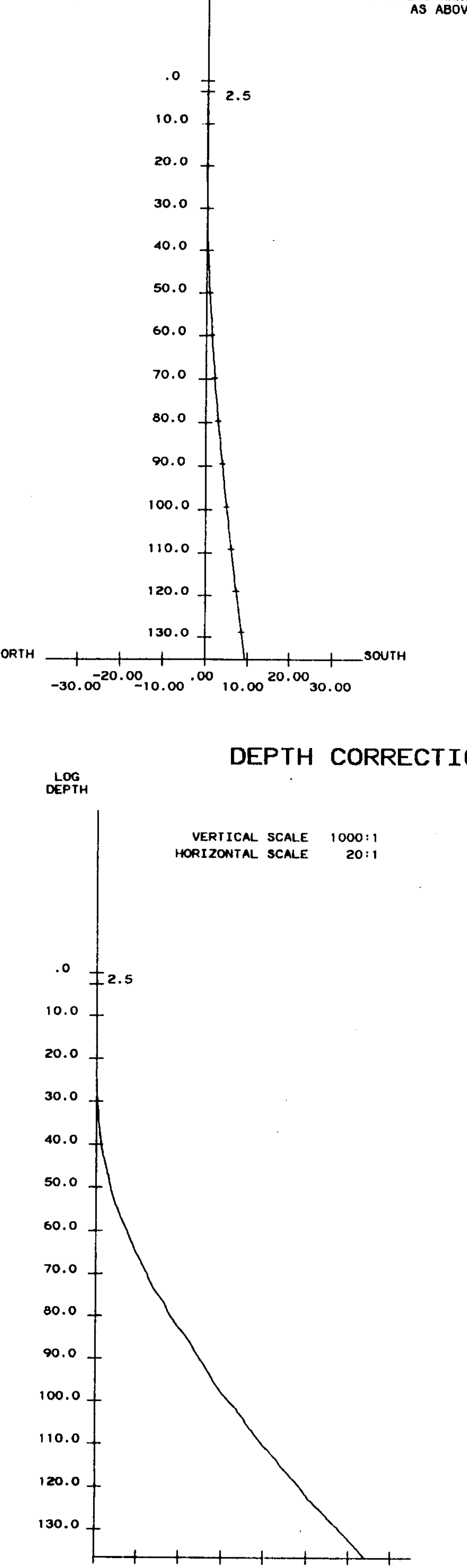
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 1000:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 20:1



DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE
3.00	3.00	73.00	72.73
4.00	4.00	74.00	73.72
5.00	5.00	75.00	74.70
6.00	6.00	76.00	75.69
7.00	7.00	77.00	76.67
8.00	8.00	78.00	77.66
9.00	9.00	79.00	78.66
10.00	10.00	80.00	79.64
11.00	11.00	81.00	80.63
12.00	12.00	82.00	81.62
13.00	13.00	83.00	82.60
14.00	14.00	84.00	83.58
15.00	15.00	85.00	84.57
16.00	16.00	86.00	85.55
17.00	17.00	87.00	86.54
18.00	18.00	88.00	87.53
19.00	19.00	89.00	88.52
20.00	20.00	90.00	89.51
21.00	21.00	91.00	90.49
22.00	22.00	92.00	91.48
23.00	23.00	93.00	92.47
24.00	24.00	94.00	93.45
25.00	25.00	95.00	94.44
26.00	26.00	96.00	95.43
27.00	27.00	97.00	96.42
28.00	28.00	98.00	97.40
29.00	28.99	99.00	98.38
30.00	29.99	100.00	99.37
31.00	30.99	101.00	100.35
32.00	31.99	102.00	101.33
33.00	32.99	103.00	102.32
34.00	33.99	104.00	103.30
35.00	34.99	105.00	104.29
36.00	35.98	106.00	105.27
37.00	36.98	107.00	106.26
38.00	37.98	108.00	107.24
39.00	38.98	109.00	108.22
40.00	39.97	110.00	109.21
41.00	40.97	111.00	110.19
42.00	41.97	112.00	111.17
43.00	42.96	113.00	112.16
44.00	43.96	114.00	113.14
45.00	44.95	115.00	114.12
46.00	45.95	116.00	115.10
47.00	46.94	117.00	116.08
48.00	47.94	118.00	117.07
49.00	48.93	119.00	118.05
50.00	49.93	120.00	119.03
51.00	50.92	121.00	120.02
52.00	51.92	122.00	121.00
53.00	52.91	123.00	121.99
54.00	53.90	124.00	122.96
55.00	54.89	125.00	123.95
56.00	55.89	126.00	124.92
57.00	56.88	127.00	125.90
58.00	57.87	128.00	126.88
59.00	58.86	129.00	127.86
60.00	59.85	130.00	128.84
61.00	60.84	131.00	129.83
62.00	61.84	132.00	130.80
63.00	62.83	133.00	131.79
64.00	63.82	134.00	132.77
65.00	64.81	135.00	133.75
66.00	65.80	136.00	134.73
67.00	66.79	136.50	135.22
68.00	67.78		
69.00	68.77		
70.00	69.75		
71.00	70.75		
72.00	71.74		

COMPANY	MANALTA
WELL	T93R-48
FIELD	SITE # 35
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

8½

COMPANY MANALTA
WELL T93R-48
FIELD SITE # 35
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 35
WELL:
T93R-48
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL, ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-OCT-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	137.0M			
DEPTH-LOGGER	137.0M			
FIRST READING	135.5M			
LAST READING	0M			
CASING-DRILLER	6.0M			
CASING-LOGGER	6.0M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	6.0M	TD	178MM	N/A	SURFACE	6.0M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-OCT-1993 AT 21:26
FILENAME: DD3AR48M.CIB RUN ID: MAIN LOG PLOTTED ON 03-OCT-1993 AT 07:52

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-OCT-1993 AT 21:26
FILENAME: DD3AR48M.CIB RUN ID: MAIN LOG PLOTTED ON 03-OCT-1993 AT 07:52

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-OCT-1993 AT 21:10

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.00
BIT SIZE 3	.00	BIT DEPTH 3	137.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-48
FIELD	SITE # 35
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

#879

COMPANY	MANALTA
WELL	T93R-48
FIELD	SITE # 35
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 35
WELL:
T93R-48
COMPANY:
MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-OCT-93	
RUN NUMBER	THREE	
DEPTH-DRILLER	137.0M	
DEPTH-LOGGER	137.0M	
FIRST READING	135.5M	
LAST READING	0M	
CASING-DRILLER	6.0M	
CASING-LOGGER	6.0M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	A. LE BRETON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	6.0M	TD	178MM	N/A	SURFACE	6.0M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ DETAIL SECTION ↓

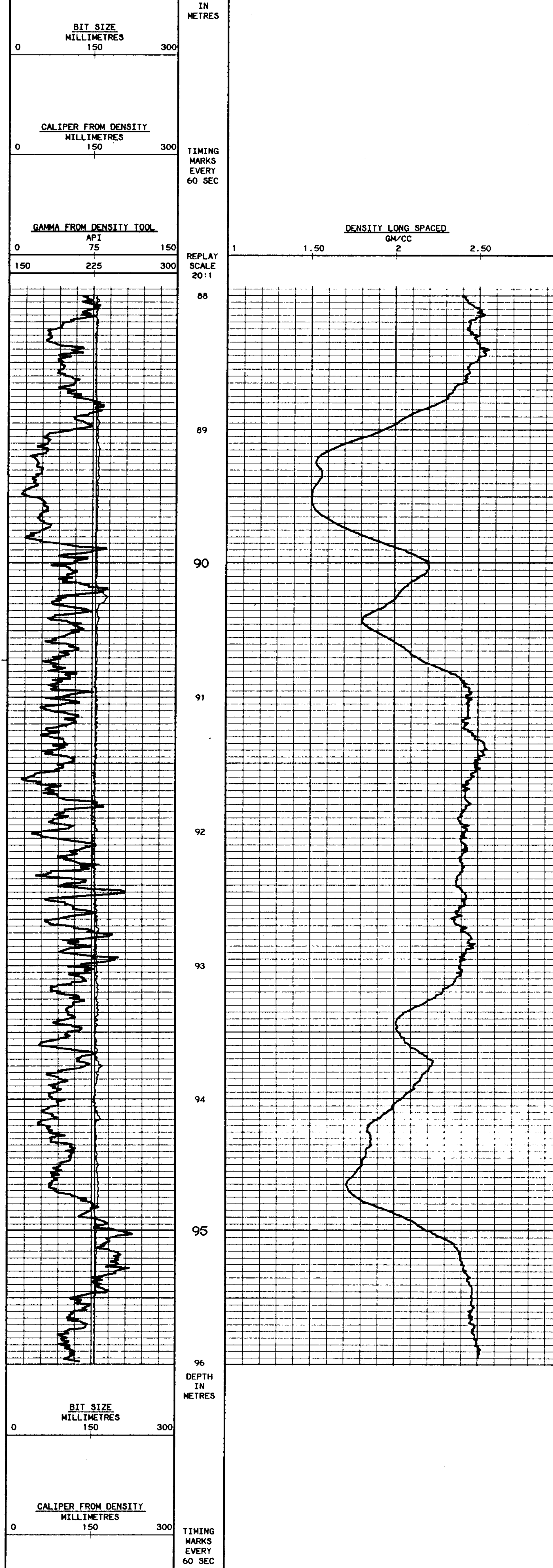
DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 21:26
FILENAME: DD3AR48B.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:24

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 21:26
FILENAME: DD3AR48B.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:20

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 21:26
FILENAME: DD3AR48A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:20



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 21:26
FILENAME: DD3AR48A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:18

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-OCT-1993 AT 21:10 DATA LAST REPROCESSED: 3-OCT-1993 AT 8:17

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.00
BIT SIZE 3	.00	BIT DEPTH 3	137.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-48
FIELD	SITE # 35
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
(DETAIL LOG)

#8

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 35
WELL:
T93R-48
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-48
FIELD SITE # 35
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-OCT-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	137.0M			
DEPTH-LOGGER	137.0M			
FIRST READING	135.5M			
LAST READING	0M			
CASING-DRILLER	6.0M			
CASING-LOGGER	6.0M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	6.0M	TD	178MM	N/A	SURFACE	6.0M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 21:26
FILENAME: DD3AR48B.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:28

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000
53
54
55
56
57
58
59
60
61
62
63
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65
66
67
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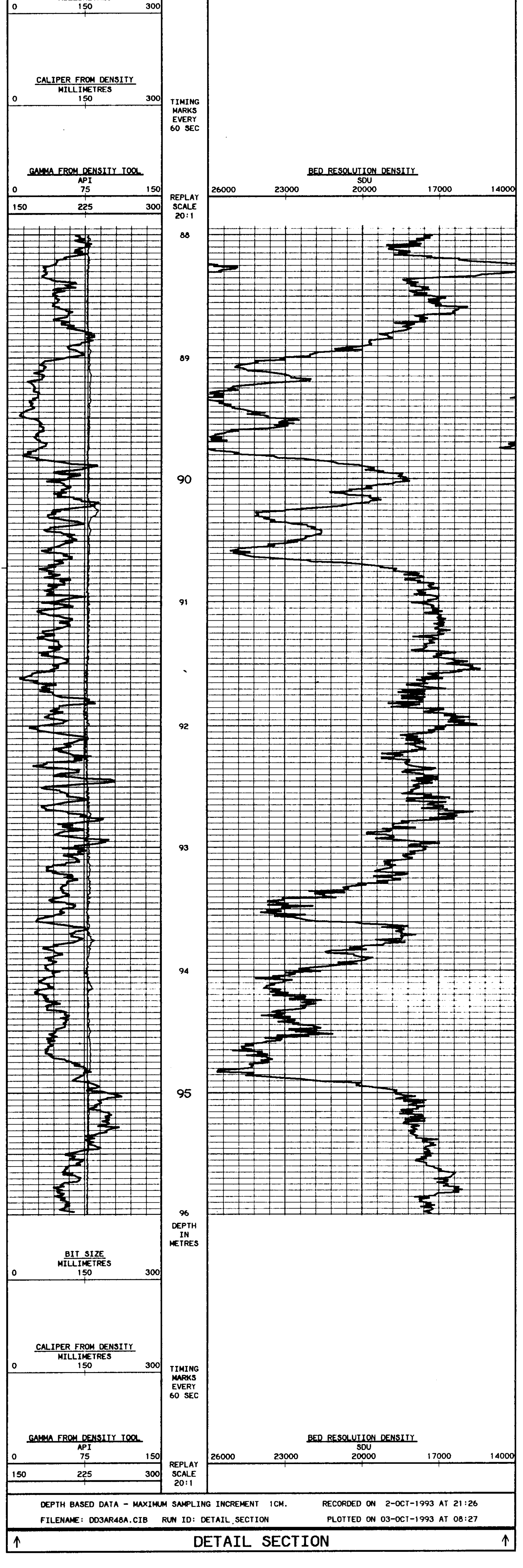
69
70
71
72
73
74
75
76
77
78
79
DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 21:26
FILENAME: DD3AR48B.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:28

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 21:26
FILENAME: DD3AR48A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:27



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 2-OCT-1993 AT 21:26
FILENAME: DD3AR48A.CIB RUN ID: DETAIL SECTION PLOTTED ON 03-OCT-1993 AT 08:27

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-OCT-1993 AT 21:10 DATA LAST REPROCESSED: 3-OCT-1993 AT 8:17

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.00
BIT SIZE 3	.00	BIT DEPTH 3	137.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-48
FIELD	SITE # 35
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY MANALTA
WELL T93R-49
FIELD SITE # 101
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
LSD SEC TWP RGE

OTHER SERVICES
CCS
DSN(RODS)

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 101
WELL:
T93R-49
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	3-OCT-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	116.7M	
DEPTH-LOGGER	102M	
FIRST READING	101.5M	
LAST READING	0M	
CASING-DRILLER	12.2M	
CASING-LOGGER	12.0M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	A. LE BRETON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

T93R-49

VERTICALITY DATA LISTING

ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH

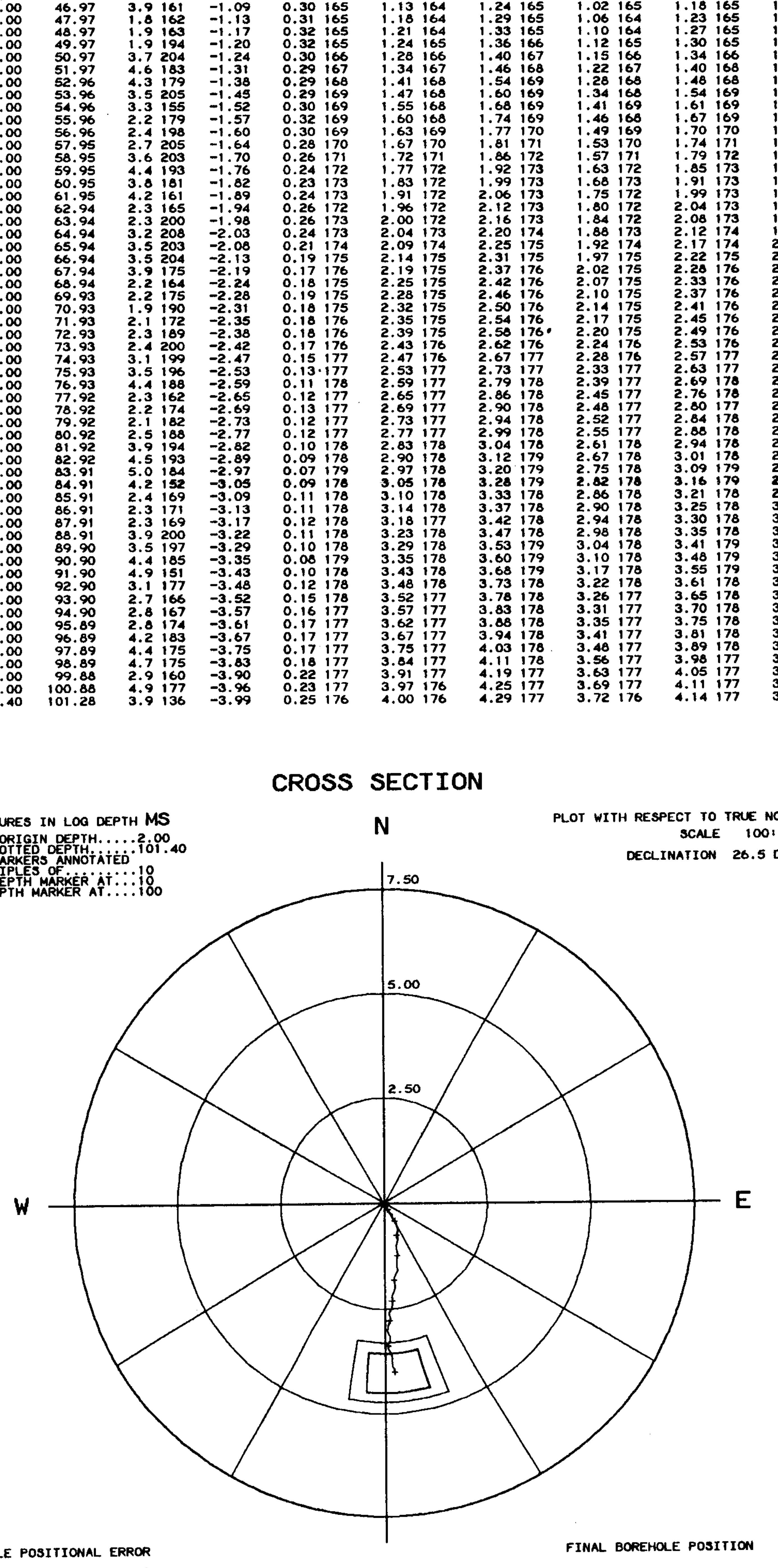
DATE PROCESSED: 4-OCT-1993
DATE LOGGED: 3-OCT-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
3.00	3.00	0.7	94	0.01	0.00	19	0.01	19	0.01	19	0.01	19	0.01	19	0.01
4.00	4.00	1.2	66	0.01	0.02	55	0.02	54	0.03	56	0.02	54	0.03	55	0.02
5.00	5.00	1.4	216	0.02	0.03	59	0.03	58	0.04	59	0.03	58	0.04	59	0.03
6.00	6.00	1.4	342	0.02	0.03	64	0.04	63	0.05	65	0.03	63	0.04	64	0.03
7.00	7.00	1.4	301	0.01	0.02	49	0.02	49	0.03	48	0.02	49	0.02	48	0.02
8.00	8.00	2.0	273	0.03	-0.01	345	0.03	349	0.03	339	0.02	347	0.03	342	0.03
9.00	9.00	1.8	235	0.01	-0.04	291	0.04	295	0.04	287	0.04	293	0.04	289	0.04
10.00	10.00	2.0	258	0.00	-0.06	272	0.06	274	0.07	270	0.06	273	0.07	271	0.06
11.00	11.00	1.1	171	-0.01	-0.08	263	0.08	264	0.09	262	0.07	264	0.08	263	0.08
12.00	12.00	0.6	63	-0.01	-0.08	260	0.08	261	0.09	260	0.07	260	0.08	260	0.08
13.00	13.00	1.9	147	-0.03	-0.07	248	0.08	247	0.08	249	0.07	247	0.08	248	0.07
14.00	14.00	1.6	134	-0.05	-0.05	222	0.07	221	0.08	224	0.06	222	0.07	223	0.07
15.00	15.00	1.5	127	-0.07	-0.02	200	0.07	198	0.08	202	0.07	199	0.08	201	0.07
16.00	16.00	1.4	134	-0.09	0.00	182	0.09	181	0.10	185	0.08	181	0.09	183	0.08
17.00	17.00	1.7	133	-0.10	0.02	171	0.11	169	0.12	173	0.09	170	0.11	172	0.10
18.00	17.99	1.9	109	-0.12	0.04	160	0.13	159	0.15	161	0.11	159	0.14	160	0.12
19.00	18.99	1.1	116	-0.13	0.06	153	0.14	152	0.16	155	0.12	152	0.15	154	0.13
20.00	19.99	0.8	150	-0.14	0.08	151	0.16	150	0.18	153	0.14	151	0.17	152	0.15
21.00	20.99	1.4	172	-0.16	0.08	152	0.18	151	0.20	154	0.15	152	0.19	153	0.16
22.00	21.99	2.0	131	-0.19	0.10	151	0.21	150	0.24	152	0.18	151	0.23	152	0.20
23.00	22.99	1.6	149	-0.21	0.12	150	0.24	149	0.27	150	0.21	149	0.26	150	0.23
24.00	23.99	2.4	151	-0.24	0.13	151	0.27	150	0.31	151	0.24	150	0.29	151	0.25
25.00	24.99	1.9	112	-0.26	0.16	148	0.31	148	0.35	149	0.27	148	0.33	149	0.29
26.00	25.99	1.1	149	-0.28	0.19	146	0.34	146	0.38	147	0.29	146	0.36	146	0.32
27.00	26.99	1.8	166	-0.31	0.19	148	0.36	147	0.41	148	0.32	147	0.39	148	0.34
28.00	27.99	2.6	168	-0.34	0.20	149	0.40	149	0.45	150	0.35	149	0.42	150	0.37
29.00	28.99	2.4	154	-0.38	0.21	151	0.44	151	0.49	152	0.39	151	0.46	151	0.41
30.00	29.99	2.8	140	-0.42	0.23	151	0.48	150	0.53	151	0.42	151	0.51	151	0.45
31.00	30.99	1.0	133	-0.44	0.26	149	0.51	149	0.57	150	0.45	149	0.54	149	0.48
32.00	31.99	1.3	134	-0.45	0.27	149	0.53	148	0.59	149	0.46	148	0.56	149	0.50
33.00	32.99	1.1	157	-0.47	0.29	149	0.55	148	0.61	149	0.48	149	0.58	149	0.52
34.00	33.99	1.9	171	-0.49	0.29	150	0.57	149	0.64	150	0.50	149	0.60	150	0.54
35.00	34.99	2.6	168	-0.53	0.29	151	0.60	151	0.68	151	0.53	151	0.64	151	0.57
36.00	35.98	2.8	156	-0.57	0.31	152	0.65	152	0.72	152	0.57	152	0.69	152	0.61
37.00	36.98	1.4	160	-0.61	0.32	152	0.69	152	0.77	153	0.61	152	0.73	153	0.65
38.00	37.98	2.0	186	-0.64	0.32	154	0.72	153	0.80	154	0.63	153	0.76	154	0.67
39.00	38.98	3.1	180	-0.68	0.31	155	0.75	155	0.83	156	0.67	155	0.79	156	0.71
40.00	39.98	3.0	187	-0.73	0.31	157	0.79	157	0.88	158	0.70	157	0.83	157	0.75
41.00	40.98	3.5	180	-0.77	0.30	159	0.83	158	0.92	159	0.74	159	0.88	159	0.79
42.00	41.98	1.8	150	-0.82	0.32	159	0.88	158	0.97	159	0.78	159	0.92	159	0.83
43.00	42.98	2.4	205	-0.85	0.31	160	0.91	159	1.00	160	0.81	160	0.95	160	0.86
44.00	43.98	3.7	194	-0.90	0.30	161	0.95	161	1.05	162	0.85	161	1.00	162	0.90
45.00	44.98	3.4	192	-0.96	0.29	163	1.00	163	1.10	164	0.90	163	1.05	163	0.95
46.00	45.97	4.3	178	-1.03	0.29	164	1.07	164	1.17	165	0.96	164	1.12	165	1.01
47.00	46.97	3.9	161	-1.09	0.30	165	1.13	164	1.24	165	1.02	165	1.18	165	1.08
48.00	47.97	1.8	162	-1.13	0.31	165	1.18	164	1.29	165	1.06	164	1.23	165	1.12
49.00	48.97	1.9	163	-1.17	0.32	165	1.21	164	1.33	165	1.10	164	1.27	165	1.15
50.00	49.97	1.9	194	-1.20	0.32	165	1.24	165	1.36	166	1.12	165	1.30	165	1.18
51.00	50.97	3.7	204	-1.24	0.30	166	1.28	166	1.40	167	1.15	166	1.34	166	1.22
52.00	51.97	4.6	183	-1.31	0.29	167	1.34	167	1.46	168	1.22	167	1.40	168	1.28
53.00	52.96	4.3	179	-1.38	0.29	168	1.41	168	1.54	169	1.28	168	1.48	168	1.35
54.00	53.96	3.5	205	-1.45	0.29	169	1.47	168	1.60	169	1.34	168	1.54	169	1.41
55.00	54.96	3.3	155	-1.52	0.30	169	1.55	168	1.68	169	1.41	169	1.61	169	1.48
56.00	55.96	2.2	179	-1.57	0.32	169	1.60	168	1.74	169	1.46	168	1.67	169	1.53
57.00	56.96	2.4	198	-1.60	0.30	169	1.63	169	1.77	170	1.49	169	1.70	170	1.56
58.00	57.95	2.7	205	-1.64	0.28	170	1.67	170	1.81	171	1.53	170	1.74	171	1.60
59.00	58.95	3.6	203	-1.70	0.26	171	1.72	171	1.86	172	1.57	171	1.79	172	1.64
60.00	59.95	4.4	193	-1.76	0.24	172	1.77	172	1.92	173	1.63	172	1.85	173	1.70
61.00	60.95	3.8	181	-1.82	0.23	173	1.83	172	1.99	173	1.68	173	1.91	173	1.76
62.00	61.95	4.2	161	-1.89	0.24	173	1.91	172	2.06	173	1.75	172	1.99	173	1.83
63.00	62.94	2.3	165	-1.94	0.26	172	1.96	172	2.12	173	1.80	172	2.04	173	1.88
64.00	63.94	2.3	200	-1.98	0.26	173	2.00	172	2.16	173	1.84	172	2.08	173	1.92
65.00	64.94	3.2	208	-2.03	0.24	173	2.04	173	2.20	174	1.88	173	2.12	174	1.96
66.00	65.94	3.5	203	-2.08	0.21	174	2.09	174	2.25	175	1.92	174	2.17	174	2.00
67.00	66.94	3.5	204	-2.13	0.19	175	2.14	175	2.31	175	1.97	175	2.22	175	2.05
68.00	67.94	3.9	175	-2.19	0.17	176	2.19	175	2.37	176	2.02	175	2.28	176	2.11
69.00	68.94	2.2	164	-2.24	0.18	175	2.25	175	2.42	176	2.07	175	2.33	176	2.16
70.00	69.93	2.2	175	-2.28	0.19	175	2.28	175	2.46	176	2.10	175	2.37	176	2.19
71.00	70.93	1.9	190	-2.31	0.18	175	2.32	175	2.50	176	2.14	175	2.41	176	2.23
72.00	71.93	2.1	172	-2.35	0.18	176	2.35	175	2.54	176	2.17	175	2.45	176	2.26
73.00	72.93	2.3	189	-2.38	0.18	176	2.39	175	2.58	176	2.20	175	2.49	176	2.30
74.00	73.93	2.4	200	-2.42	0.17	176	2.43	176	2.62	176	2.24	176	2.53	176	2.33
75.00	74.93	3.1	199	-2.47	0.15	177	2.47	176	2.67	177	2.28	176	2.57	177	2.37
76.00	75.93	3.5	196	-2.53	0.13	177	2.53	177	2.73	177	2.33	177	2.63	177	2.43
77.00	76.93	4.4	188	-2.59	0.11	178	2.59	177	2.79	178	2.39	177	2.69	178	2.49
78.00	77.92	2.3	162	-2.65	0.12	177	2.65	177	2.86	178	2.45	177	2.76	178	2.55
79.00	78.92	2.2	174	-2.69	0.13	177	2.69	177	2.90	178	2.48	177	2.80	177	2.59
80.00	79.92	2.1	182	-2.73	0.12	177	2.73	177	2.94	178	2.52	177	2.84	178	2.63
81.00	80.92	2.5	188	-2.77	0.12	177	2.77	177	2.99	178	2.55	177	2.88	178	2.66
82.00	81.92	3.9	194	-2.82	0.10	178	2.83	178	3.04	178	2.61	178	2.94	178	2.72
83.00	82.92	4.5	193	-2.89	0.09	178	2.90	178	3.12	179	2.67	178	3.01	178	2.78
84.00	83.91	5.0	184	-2.97	0.07	179	2.97	178	3.20	179	2.75	178	3.09	179	2.86
85.00	84.91	4.2	152	-3.05	0.09	178	3.05	178	3.28	179	2.82	178	3.16	179	2.93
86.00	85.91	2.4	169	-3.09	0.11	178	3.10	178	3.33	178	2.86	178	3.21	178	2.98
87.00	86.91	2.3	171	-3.13	0.11	178	3.14	178	3.37	178	2.90	178	3.25	178	3.02
88.00	87.91	2.3	169	-3.17	0.12	178	3.18	177	3.42	178	2.94	178	3.30	178	3.06
89.00	88.91	3.9	200	-3.22	0.11	178	3.23	178	3.47	178	2.98	178	3.35	178	3.10
90.00	89.90	3.5	197	-3.29	0.10	178	3.29	178	3.53	179	3.04	178	3.41	179	3.16
91.00	90.90	4.4	185	-3.35	0.08	179	3.35	178	3.60	179	3.10	178	3.48	179	3.23
92.00	91.90	4.9	151	-3.43	0.10	178	3.43	178	3.68	179	3.17	178	3.55	179	3.30
93.00	92.90	3.1	177	-3.48	0.12	178	3.48	178	3.73	178	3.22	178	3.61	178	3.35
94.00	93.90	2.7	166	-3.52	0.15	178	3.52	177	3.78	178	3.26	177	3.65	178	3.39
95.00	94.90	2.8	167	-3.57	0.16	177	3.57	177	3.83	178	3.31	177	3.70	178	3.44
96.00	95.89	2.8	174	-3.61	0.17	177	3.62	177	3.88	178	3.35	177	3.75	178	3.48
97.00	96.89	4.2	183	-3.67	0.17	177	3.67	177	3.94	178	3.41	177	3.81	178	3.54
98.00	97.89	4.4	175	-3.75	0.17	177	3.75	177	4.03	178	3.48	177	3.89	178	3.62
99.00	98.89	4.7	175	-3.83	0.18	177	3.84	177	4.11	178	3.56	177	3.98	177	3.70
100.00	99.88	2.9	160	-3.90	0.22	177	3.91	177	4.19	177	3.63	177	4.05	177	3.77
101.00	100.88	4.9	177	-3.96	0.23	177	3.97	176	4.25	177	3.69	177	4.11	177	3.83
101.40	101.28	3.9	136	-3.99	0.25	176	4.00	176	4.29	177	3.72	176	4.14	177	3.86

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....2.00
LAST PLOTTED DEPTH......101.40
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....100

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

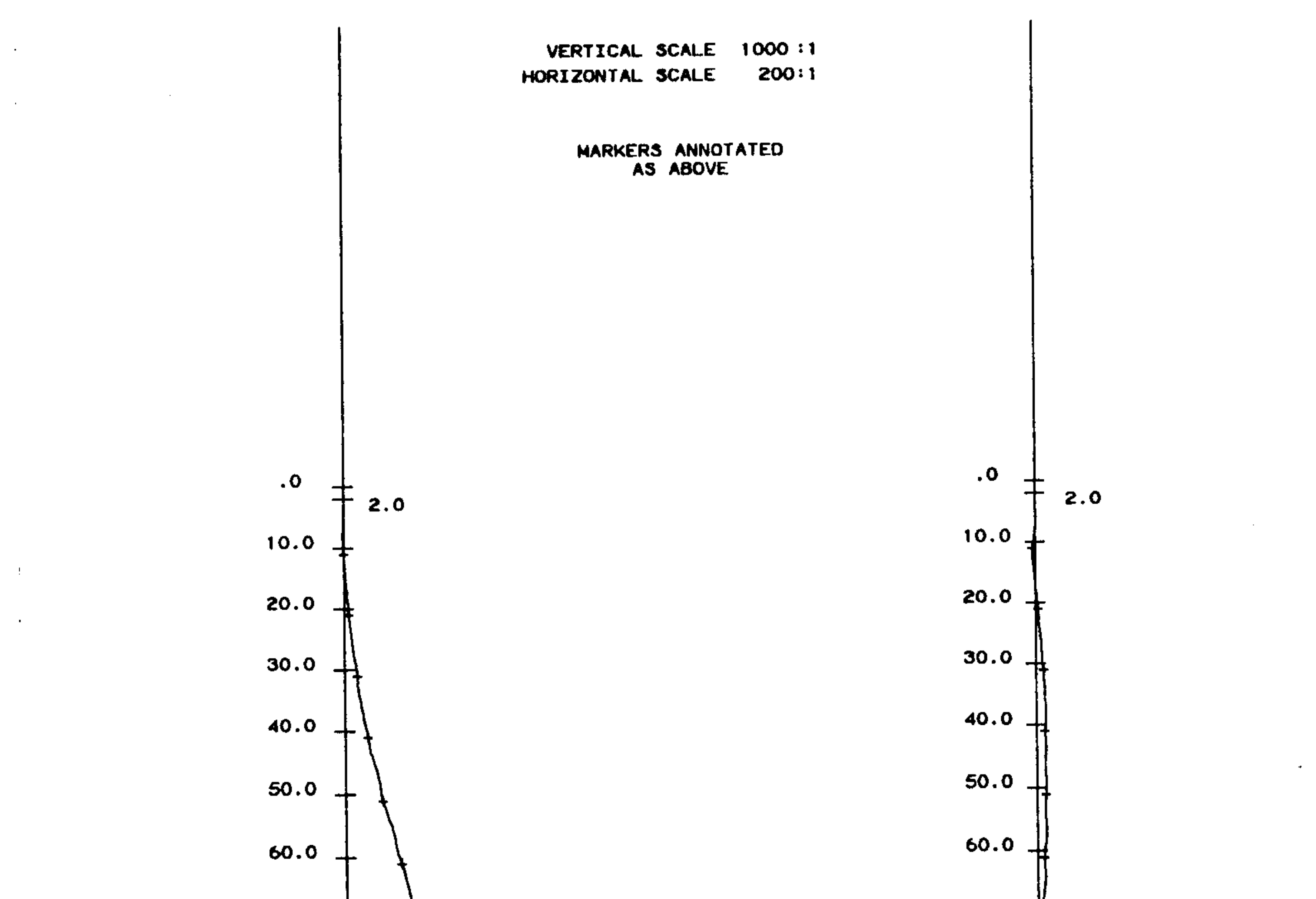
THE LAST PLOTTED DEPTH IS AT 3.99 MS SOUTH, .25 MS EAST IE. 4.00 MS FROM THE ORIGIN, 176 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

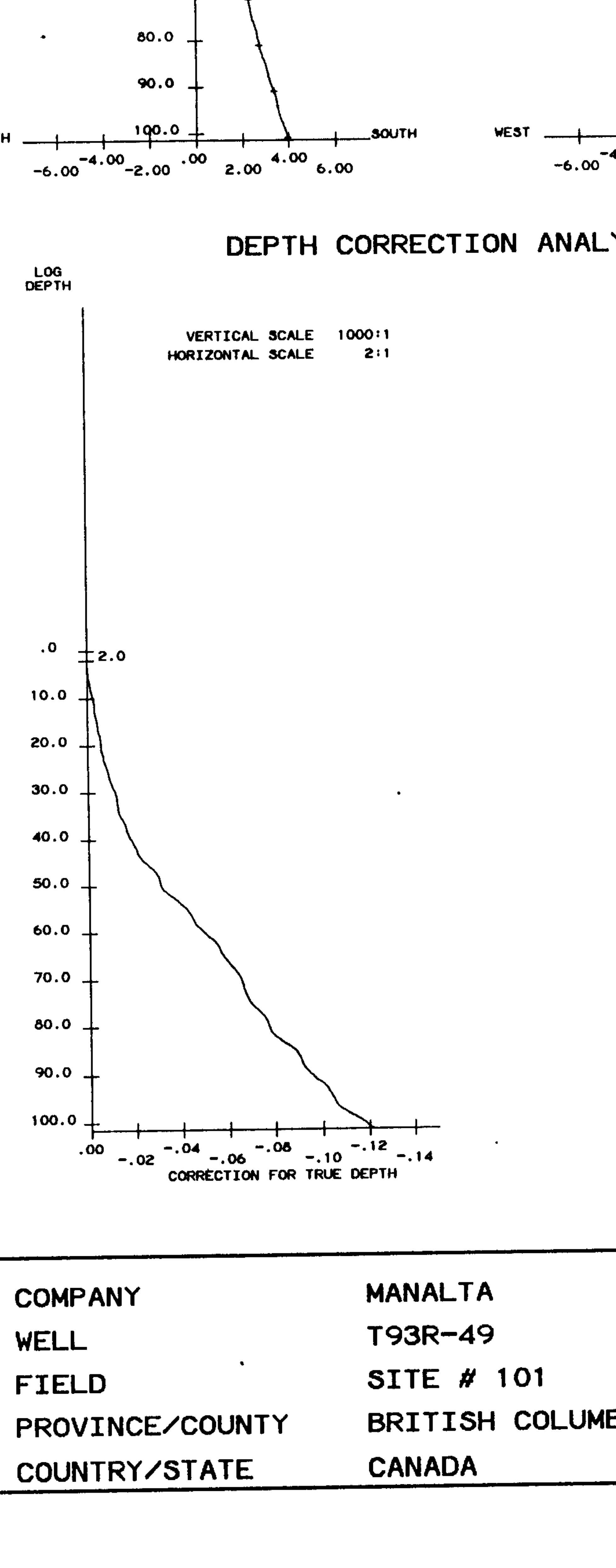
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 200:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 2:1



DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE
3.00	3.00	73.00	72.93
4.00	4.00	74.00	73.93
5.00	5.00	75.00	74.93
6.00	6.00	76.00	75.93
7.00	7.00	77.00	76.93
8.00	8.00	78.00	77.92
9.00	9.00	79.00	78.92
10.00	10.00	80.00	79.92
11.00	11.00	81.00	80.92
12.00	12.00	82.00	81.92
13.00	13.00	83.00	82.92
14.00	14.00	84.00	83.91
15.00	15.00	85.00	84.91
16.00	16.00	86.00	85.91
17.00	17.00	87.00	86.91
18.00	17.99	88.00	87.91
19.00	18.99	89.00	88.91
20.00	19.99	90.00	89.90
21.00	20.99	91.00	90.90
22.00	21.99	92.00	91.90
23.00	22.99	93.00	92.90
24.00	23.99	94.00	93.90
25.00	24.99	95.00	94.90
26.00	25.99	96.00	95.89
27.00	26.99	97.00	96.89
28.00	27.99	98.00	97.89
29.00	28.99	99.00	98.89
30.00	29.99	100.00	99.88
31.00	30.99	101.00	100.88
32.00	31.99	101.40	101.28
33.00	32.99		
34.00	33.99		
35.00	34.99		
36.00	35.98		
37.00	36.98		
38.00	37.98		
39.00	38.98		
40.00	39.98		
41.00	40.98		
42.00	41.98		
43.00	42.98		
44.00	43.98		
45.00	44.98		
46.00	45.97		
47.00	46.97		
48.00	47.97		
49.00	48.97		
50.00	49.97		
51.00	50.97		
52.00	51.97		
53.00	52.96		
54.00	53.96		
55.00	54.96		
56.00	55.96		
57.00	56.96		
58.00	57.95		
59.00	58.95		
60.00	59.95		
61.00	60.95		
62.00	61.95		
63.00	62.94		
64.00	63.94		
65.00	64.94		
66.00	65.94		
67.00	66.94		
68.00	67.94		
69.00	68.94		
70.00	69.93		
71.00	70.93		
72.00	71.93		

COMPANY	MANALTA
WELL	T93R-49
FIELD	SITE # 101
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED NEUTRON
GAMMA RAY

COMPANY MANALTA
WELL T93R-49
FIELD SITE 101
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS .VERT

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 101
WELL:
T93R-49
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-OCT-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	116.7M			
DEPTH-LOGGER	109.7M			
FIRST READING	109.7M			
LAST READING	OOM			
CASING-DRILLER	12.2M			
CASING-LOGGER	12.2M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	OOM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	12.2M	TD	178MM	N/A	SURFACE	12.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
DSN	515			

REMARKS

LONG SPACED NEUTRON GAMMA RAY

DUE TO BOREHOLE CONDITIONS NEUTRON RUN THROUGH RODS.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-OCT-1993 AT 12:54
FILENAME: DSNGR49M.CIB RUN ID: MAIN LOG PLOTTED ON 04-OCT-1993 AT 20:17

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-OCT-1993 AT 12:54
FILENAME: DSNGR49M.CIB RUN ID: MAIN LOG PLOTTED ON 04-OCT-1993 AT 20:17

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 04-OCT-1993 AT 09:24

LOGGING CONSTANTS AND BIT SIZE MEASUREMENTS

POROSITY EQUATION TYPE	1 CURIE	NEUTRON POROSITY MATRIX	SANDSTNE
CALIPER SOURCE FOR PROCESSING	BIT SIZE	CALIPER UNITS (INS/MM)	MILLIMTR
CALIPER ARM LENGTH (CM)	29.60	ANNULAR VOLUME DIAMETER	127.05
BIT DEPTH UNITS (M/FT)	METRES		
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	12.20
BIT SIZE 3	0.00	BIT DEPTH 3	116.70
BIT SIZS 4	0.00	BIT DEPTH 4	0.00
BIT SIZE 5	0.00	BIT DEPTH 5	0.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	299.00
LSN CALIBRATOR VALUE 1	235.00	LSN COUNT RATE 1	284.80
LSN CALIBRATOR VALUE 2	0.00	LSN COUNT RATE 2	0.00
SSN CALIBRATOR VALUE 1	1040.00	SSN COUNT RATE 1	128.90
SSN CALIBRATOR VALUE 2	0.00	SSN COUNT RATE 2	0.00
CALIPER RING SIZE 1	76.23	CALIPER COUNT FOR RING 1	598.00
CALIPER RING SIZE 2	101.64	CALIPER COUNT FOR RING 2	657.00
CALIPER RING SIZE 3	127.05	CALIPER COUNT FOR RING 3	719.00
CALIPER RING SIZE 4	152.46	CALIPER COUNT FOR RING 4	781.00
CALIPER RING SIZE 5	203.28	CALIPER COUNT FOR RING 5	846.00
CALIPER RING SIZE 6	254.10	CALIPER COUNT FOR RING 6	905.00

COMPANY	MANALTA
WELL	T93R-49
FIELD	SITE 101
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY MANALTA
WELL T93R-49
FIELD SITE # 101
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 101
WELL:
T93R-49
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT
DSN(RODS)

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	3-OCT-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	116.7M			
DEPTH-LOGGER	102M			
FIRST READING	101.5M			
LAST READING	0M			
CASING-DRILLER	12.2M			
CASING-LOGGER	12.0M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	12.2M	TD	178MM	N/A	SURFACE	12.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

WELL BLOCKED AT 102.0M

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 3-OCT-1993 AT 20:35
FILENAME: DD3AR49M.CIB RUN ID: MAIN LOG PLOTTED ON 04-OCT-1993 AT 20:04

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 3-OCT-1993 AT 20:35
FILENAME: DD3AR49M.CIB RUN ID: MAIN LOG PLOTTED ON 04-OCT-1993 AT 20:04

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 03-OCT-1993 AT 20:30

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	12.20
BIT SIZE 3	.00	BIT DEPTH 3	116.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-49
FIELD	SITE # 101
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#8[illegible]

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD
WELL:
T93R-51
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-51
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION				OTHER SERVICES
TELKWA				
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-OCT-93		
RUN NUMBER	ONE		
DEPTH-DRILLER	71.3M		
DEPTH-LOGGER	71.3M		
FIRST READING	71M		
LAST READING	0M		
CASING-DRILLER	5.5M		
CASING-LOGGER	5.5M		
BIT SIZE	156MM		
HOLE FLUID TYPE	AIR/WATER		
DENS./VISC.	1.01 N/A		
PH/FLUID LOSS	N/A N/A		
SAMPLE SOURCE			
RM @ MEAS TEMP			
RMF @ MEAS TEMP			
RMC @ MEAS TEMP			
SOURCE: RMF/RMC			
RM @ BHT			
TIME SINCE CIRC			
MAX REC TEMP			
EQUIPMENT/BASE	V222 RDR		
RECORDED BY	B. STEVENSON		
WITNESSED BY	T. BRAZZONI		
WATER LEVEL	OOM		

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	5.5M	TD	178MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-OCT-1993 AT 18:07
FILENAME: DD3AR51M.CIB RUN ID: MAIN LOG PLOTTED ON 04-OCT-1993 AT 18:23

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 100:1
DENSITY LONG SPACED GM/CC
1 1.50 2 2.50 3
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-OCT-1993 AT 18:07
FILENAME: DD3AR51M.CIB RUN ID: MAIN LOG PLOTTED ON 04-OCT-1993 AT 18:08

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 04-OCT-1993 AT 18:00

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	71.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	[illegible]
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	[illegible]

COMPANY	MANALTA
WELL	T93R-51
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

COMPANY MANALTA
WELL T93R-35
FIELD SITE #24
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #24
WELL: T93R-35
COMPANY: MANALTA

LOCATION				OTHER SERVICES
TELKWA				DIPMETER
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	28-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	110.0M			
DEPTH-LOGGER	110.0M			
FIRST READING	109.5M			
LAST READING	00M			
CASING-DRILLER	42.7M			
CASING-LOGGER	42.7M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	42.7M	TD	178MM	N/A	SURFACE	42.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	101			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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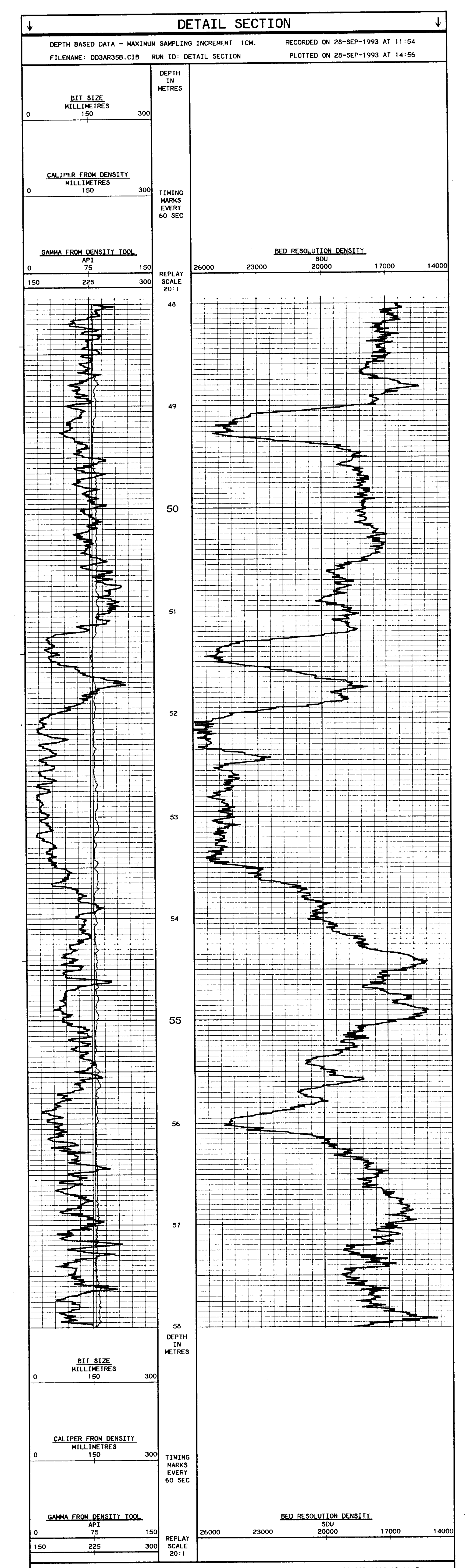
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 11:54
FILENAME: DD3AR35B.CIB RUN ID: DETAIL SECTION PLOTTED ON 28-SEP-1993 AT 14:56



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 11:54
FILENAME: DD3AR35B.CIB RUN ID: DETAIL SECTION PLOTTED ON 28-SEP-1993 AT 14:56

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 11:54
FILENAME: DD3AR35A.CIB RUN ID: DETAIL SECTION PLOTTED ON 28-SEP-1993 AT 14:53

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 11:54
FILENAME: DD3AR35A.CIB RUN ID: DETAIL SECTION PLOTTED ON 28-SEP-1993 AT 14:53

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 28-SEP-1993 AT 11:54 DATA LAST REPROCESSED: 28-SEP-1993 AT 14:43

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	42.70
BIT SIZE 3	.00	BIT DEPTH 3	110.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	325.20
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2890.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1297.10
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	469.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	530.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	588.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	648.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	762.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	882.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-35
FIELD	SITE #24
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #24
WELL: T93R-35
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-35
FIELD SITE #24
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#879

LOCATION	OTHER SERVICES
TELKWA	DIPMETER

LSD	SEC	TWP	RGE

PERMANENT DATUM GROUND LEVEL, ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	28-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	110.0M	
DEPTH-LOGGER	110.0M	
FIRST READING	109.5M	
LAST READING	0OM	
CASING-DRILLER	42.7M	
CASING-LOGGER	42.7M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE	N/A	
RM ● MEAS TEMP		
RMF ● MEAS TEMP		
RMC ● MEAS TEMP		
SOURCE: RMF/RMC		
RM ● BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	A. LE BRETON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	0OM	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	42.7M	TD	178MM	N/A	SURFACE	42.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	101			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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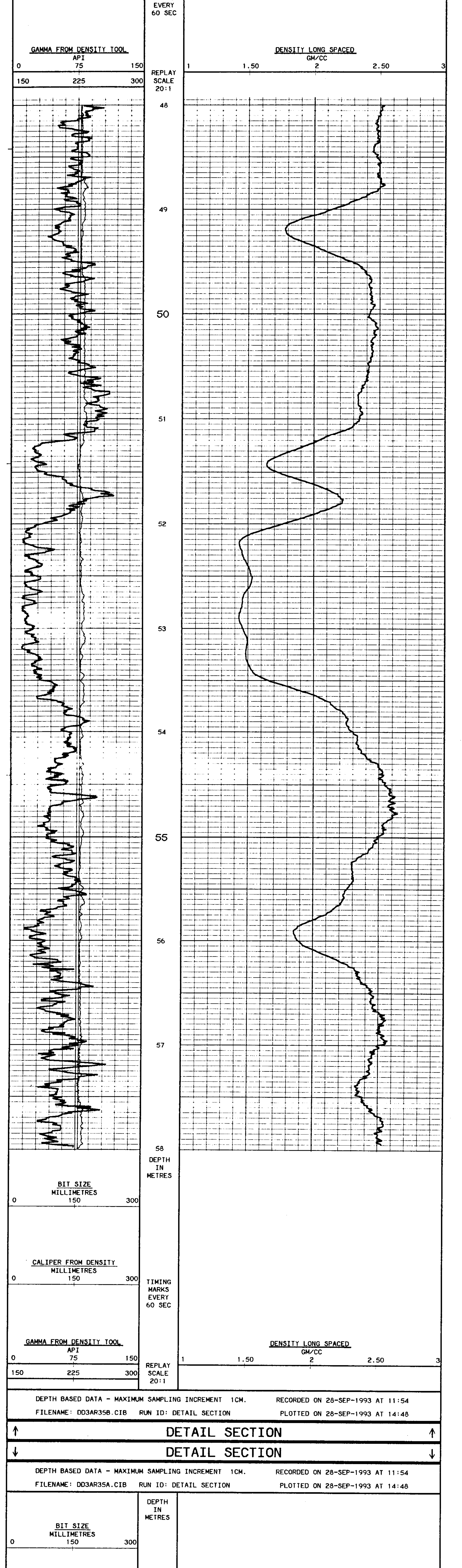
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 11:54
FILENAME: DD3AR35B.CIB RUN ID: DETAIL SECTION PLOTTED ON 28-SEP-1993 AT 14:50



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 11:54
FILENAME: DD3AR35B.CIB RUN ID: DETAIL SECTION PLOTTED ON 28-SEP-1993 AT 14:48

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 11:54
FILENAME: DD3AR35A.CIB RUN ID: DETAIL SECTION PLOTTED ON 28-SEP-1993 AT 14:48

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 11:54
FILENAME: DD3AR35A.CIB RUN ID: DETAIL SECTION PLOTTED ON 28-SEP-1993 AT 14:44

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 28-SEP-1993 AT 11:54 DATA LAST REPROCESSED: 28-SEP-1993 AT 14:43

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	42.70
BIT SIZE 3	.00	BIT DEPTH 3	110.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	325.20
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2890.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1297.10
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	469.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	530.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	588.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	648.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	762.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	882.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-35
FIELD	SITE #24
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

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 ~Version Information          DIPMETER/STICK PLOT DATA LISTING
 VERS.              1.20:   CWLS Log ASCII Standard -Version 1.20
 WRAP.                NO:   One line per depth step
#
#
~Well Information Block
#MNEM.UNIT   Data Type      Description
#---------   ------------   -----------------------------
 STRT.M           109.50:
 STOP.M            38.00:
 STEP.M             0.00:
 NULL.           -999.25:
 COMP.          COMPANY:    MANALTA
 WELL.             WELL:    T93R-35
 FLD .            FIELD:    SITE # 24
 LOC .         LOCATION:    TELKWA
 PROV.         PROVINCE:    BRITISH COLUMBIA
 SRVC.  SERVICE COMPANY:    BPB Wireline Services
 DATE.         LOG DATE:    28-SEP-1993
 UWI .   UNIQUE WELL ID:
#
#
~Curve Information Block
#MNEM.UNIT                  Curve Description
#---------                  -----------------
 DEPT.M                 :   DEPTH ROUNDED TO NEAREST CALIBRATION STEP MULTIPLE
 CALD.mm                :   DIPMETER CALIPER
 TILD.degs              :   BOREHOLE TILT
 AZID.degs              :   BOREHOLE AZIMUTH
 DIPF.degs              :   FORMATION DIP
 AZIF.degs              :   FORMATION AZIMUTH
 CORC.----              :   CORRELATION COEFFICIENT
 STK1.degs              :   STICK PLOT SECTION 1
 STK2.degs              :   STICK PLOT SECTION 2
#
#
~Parameter Information
#MNEM.UNIT   Value          Description
#---------   ------------   -----------------------------
 DECL.deg          26.50:   MAGNETIC DECLINATION (EAST OF NORTH)
 CORS.m             0.25:   CORRELATION STEP
 CORI.m             0.50:   CORRELATION INTERVAL
 SANG.deg          45.00:   SEARCH ANGLE
 SDIP.deg           0.00:   STRUCTURAL DIP
 SAZI.deg           0.00:   STRUCTURAL AZIMUTH
#
#
~Other Information
File Identification         MAIN LOG
```

DIPMETER LISTINGS

Run number	FIVE	Log 1st rdg	109.5m	Log last rdg	0m
Driller TD	110.0m	Logger TD	110.0m	Water level	
Perm Datum	GROUND LEVEL	Elevation	N/A	Other srvcs	CCS
Dril mes from	00m	Log meas from	00m	Other srvcs	
Elevation: KB	N/A	DF	N/A	GL	N/A
Casing Driler	42.7m	Casing Logger	42.7m	Casing size	178mm
Casing Weight	N/A	From	SURFACE	To	42.7m
Bit size	156mm	From	42.7m	To	TD
Hole fl type	AIR/WATER	Sample source		Fluid loss	N/A
Density	1.01	Viscosity	N/A	pH	N/A
RM @ meas tmp		RMF @ mes tmp		RMC @ mes tmp	
RM @ BHT		RMF source		RMC-source	
Max rec temp		Time snc circ		LsdSecTwpRge	
Equipment no.	V222	Base	RDR	Equip. name	VERT/DIP
Recorded by	A. LE BRETON	Witnessed by	T. BRAZZONI	Sonde srl no.	233/221
Last title	WATER LEVEL	Last line	00m	Permit no.	

BPB DIPMETER ANALYSIS INTERPRETATION NOTES

1. All plots are correct to the resolution of the plotter used, ie. one two-hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background.

2. Rose diagrams when plotted occur between every major division and are delimited by two bold arrows. For certain replay scales it may be desirable to plot these less frequently; this option is available on request.

3. The grid over which the computed dip is displayed is locally linear. That is to say it is linear between 0 and 10 degrees, 10 and 20, 20 and 30 etc.

4. The correlation value will vary depending on the interval size selected. Generally speaking the larger the correlation interval, the lower the value becomes. For this reason a direct comparison of this value for differing correlation intervals is meaningless, quality control being exercised with an appreciation of this effect.

5. Stick data may be shown relative to any two vertical planes and is the angle (to the horizontal) of the intersection of the resolved plane and the vertical plane.

6. The angle of declination is taken to be the angle between Magnetic North and reference North (True, Grid or Magnetic) measured in an anti-clockwise direction.

7. For customised control of computed dipmeter analysis the following parameters must be specified:
   correlation step and interval(s)
   magnetic declination
   search angle(s)
   depth range(s)
   replay scale(s)
   the frequency for rose diagrams
   the sections for stick plots
   (quality control is exercised in accordance with the correlation interval used, alternatively all correlations may be displayed on request)

The following information is a listing of ALL the output from BPB's dipmeter analysis. Below is a full description of each data item:

DEPTH	the depth corresponding to the centre of the correlation interval.
CALIPER	the average borehole caliper recorded over the correlation interval.
HOLE DRIFT	the average borehole deviation from vertical over the correlation interval.
HOLE AZIMUTH	the average borehole azimuth over the correlation interval in degrees East of true North.
DIP ANGLE	the computed formation dip in degrees, from the horizontal plane.
DIP AZIMUTH	the formation azimuth in degrees East of true North.
CORRELATION	a measure of the reliability of the computed result. This parameter is also used in the visual display to determine the quality of result.
SECTION	the formation dip across the specified sections.

Further recorrelations over any step and interval size are available on any scale over any section of the log. Alternative methods of presentation, or analysis may be available on request.

```
#
#  Depth    Caliper      Borehole            Formation         Correlation      S
tick Plot Section
#                        Tilt    Azimuth     Dip    Azimuth   Coefficient    180.0
-  0.0   270.0- 90.0
#   (M)       (mm)       (deg)    (deg)      (deg)   (deg)      (----)          (d
eg)      (deg)
~A
   109.50     117.5      13.8     215.0       0.0      0.0      -1.00           0
.00        0.00
   109.00     158.6      14.4     216.3      29.5     65.0       0.60          13
.43       27.12
   108.50     158.6      14.8     219.6      17.5     50.7       0.56          11
.30       13.71
   108.00     158.6      14.6     221.0      27.1     68.8       0.75          10
.49       25.50
   107.50     158.6      14.0     220.1      47.7     79.2       0.34          11
.58       47.18
   107.00     159.7      13.8     219.0      34.0    325.2       0.35          29
.03      -21.08
   106.50     160.7      14.0     221.5      24.4     71.7       0.89           8
.10       23.27
   106.00     157.6      14.5     217.9      49.2    332.9       0.51          45
.86      -27.83
   105.50     163.8      14.3     215.9       0.0      0.0      -1.00           0
.00        0.00
   105.00     159.7      14.5     223.0      22.4    223.3       0.53         -16
.71      -15.82
   104.50     160.7      14.1     223.3       0.0      0.0      -1.00           0
.00        0.00
   104.00     160.7      14.3     219.3      46.9    110.8       0.42         -20
.78       44.96
   103.50     158.6      14.6     219.2      24.3    103.0       0.44          -5
.79       23.73
   103.00     158.6      14.5     220.0      26.3    332.7       0.41          23
.71      -12.78
   102.50     159.7      14.5     219.1      45.0     75.5       0.75          14
.07       44.02
   102.00     159.7      14.7     219.4      23.3     69.9       0.69           8
.41       22.04
   101.50     159.7      14.5     218.5      29.2     85.0       0.38           2
.81       29.11
   101.00     160.7      14.5     218.6      23.6     99.4       0.62          -4
.07       23.30
   100.50     161.7      14.4     218.3      27.4    355.8       0.45          27
.39       -2.17
   100.00     160.7      14.2     216.2      36.5    269.0       0.41          -0
.77      -36.51
    99.50     160.7      14.5     217.4      24.4     52.4       0.59          15
.44       19.75
    99.00     160.7      13.7     214.0      30.0     39.1       0.78          24
.14       20.00
    98.50     162.8      14.5     217.7      30.0     25.7       0.77          27
.48       14.06
    98.00     162.8      14.2     219.9      71.9     77.0       0.35          34
.40       71.44
    97.50     161.7      14.1     220.0      40.4    252.5       0.28         -14
.33      -39.05
    97.00     161.7      14.2     220.6      28.0     44.3       0.57          20
.83       20.34
    96.50     161.7      13.8     220.5      20.7     35.5       0.78          17
.08       12.35
    96.00     159.7      13.8     220.6      21.7     52.5       0.90          13
.63       17.55
    95.50     161.7      13.6     220.3      23.7     45.0       0.84          17
.20       17.23
    95.00     162.8      13.6     220.1      19.8     54.5       0.66          11
.82       16.32
    94.50     160.7      13.9     219.7      25.0     23.1       0.53          23
.21       10.35
    94.00     162.8      13.9     220.5      20.1     36.9       0.49          16
.28       12.36
    93.50     160.7      13.8     220.1      36.6     32.6       0.48          32
.04       21.79
    93.00     163.8      13.5     220.3      22.5     31.7       0.75          19
.44       12.29
    92.50     161.7      13.5     220.4      26.4     36.1       0.80          21
.85       16.29
    92.00     160.7      13.1     220.3      45.6    100.4       0.48         -10
.47       45.09
    91.50     162.8      12.9     220.2      25.1     49.1       0.80          17
.03       19.47
    91.00     162.8      12.8     220.9      22.4     46.3       0.39          15
.93       16.61
    90.50     161.7      12.5     220.9      25.9     51.6       0.56          16
.78       20.79
    90.00     162.8      12.7     220.3      22.7     47.4       0.49          15
.80       17.12
    89.50     162.8      12.7     220.7      44.5     90.0       0.41           0
.03       44.52
    89.00     162.8      13.1     220.5      26.5     36.2       0.66          21
.91       16.38
    88.50     162.8      12.8     219.6      26.2     32.0       0.74          22
.68       14.61
    88.00     165.9      12.9     220.6      23.6      1.3       0.48          23
.57        0.55
    87.50     165.9      12.4     221.0      32.3    337.4       0.60          30
.27      -13.62
    87.00     163.8      12.4     220.1      33.2     49.8       0.46          22
.87       26.53
    86.50     162.8      12.4     220.4      11.9     46.8       0.70           8
.19        8.72
    86.00     165.9      12.4     219.4      22.3     42.3       0.57          16
.91       15.47
    85.50     163.8      12.0     219.1      52.0     73.4       0.28          20
.03       50.81
    85.00     163.8      11.9     217.3      23.3     50.3       0.59          15
.38       18.35
    84.50     160.7      12.1     219.7      28.4     56.5       0.88          16
.64       24.28
    84.00     162.8      12.3     219.9      25.2     85.1       0.19           2
.28       25.08
    83.50     161.7      12.4     219.3      50.9      6.0       0.51          50
.78        7.36
    83.00     162.8      12.5     219.4      49.9    336.0       0.42          47
.30      -25.81
    82.50     162.8      12.6     219.4      22.1     45.5       0.65          15
.88       16.14
    82.00     161.7      12.3     219.0      21.5     63.1       0.97          10
.10       19.32
    81.50     160.7      12.6     218.8      23.6     66.4       0.63           9
.91       21.80
    81.00     161.7      12.5     218.5       0.0      0.0      -1.00           0
.00        0.00
    80.50     162.8      12.4     218.9      28.2     81.8       0.60           4
.38       28.00
    80.00     162.8      12.2     218.1      21.0     22.8       0.85          19
.51        8.48
    79.50     162.8      12.1     218.5       0.0      0.0      -1.00           0
.00        0.00
    79.00     162.8      11.8     218.2      22.7    304.2       0.41          13
.23      -19.08
    78.50     161.7      11.8     218.6      27.3    281.9       0.34           6
.06      -26.77
    78.00     161.7      11.6     218.1       0.0      0.0      -1.00           0
.00        0.00
    77.50     159.7      11.8     217.5      24.4     65.7       0.60          10
.56       22.43
    77.00     162.8      11.7     217.9      26.6     39.2       0.43          21
.17       17.56
    76.50     162.8      11.7     217.2      38.6    331.2       0.40          35
.00      -21.05
    76.00     162.8      11.7     217.7       0.0      0.0      -1.00           0
.00        0.00
    75.50     162.8      11.5     217.5      28.0     41.2       0.26          21
.79       19.28
    75.00     161.7      11.5     216.6      30.4     41.6       0.62          23
.64       21.25
    74.50     163.8      11.5     217.3      14.8     56.0       0.67           8
.38       12.34
    74.00     162.8      10.9     217.5      56.9      2.9       0.39          56
.89        4.50
    73.50     162.8      10.9     217.6      28.5      5.2       0.40          28
.40        2.83
    73.00     162.8      10.6     218.1      15.6     38.3       0.73          12
.31        9.80
    72.50     162.8      10.7     217.3      28.2     48.7       0.41          19
.47       21.89
    72.00     163.8      10.6     217.3      17.3    338.7       0.34          16
.21       -6.47
    71.50     163.8      10.4     218.1       0.0      0.0      -1.00           0
.00        0.00
    71.00     162.8      10.1     218.0      49.0    108.0       0.32         -19
.57       47.58
    70.50     163.8      10.1     218.2      18.7    107.5       0.39          -5
.81       17.93
    70.00     162.8      10.6     216.3      44.4    301.0       0.50          26
.76      -40.05
    69.50     162.8      10.4     216.2      34.1    224.6       0.49         -25
.78      -25.44
    69.00     163.8      10.1     216.9      19.7     63.8       0.72           8
.99       17.81
    68.50     163.8       9.9     216.9      18.8     66.3       0.46           7
.80       17.34
    68.00     163.8       9.8     216.5      19.5     65.4       0.84           8
.41       17.87
    67.50     162.8       9.4     216.4      18.0     67.3       0.35           7
.16       16.72
    67.00     162.8       9.3     213.7      19.4     63.0       0.74           9
.11       17.46
    66.50     164.8       9.8     216.5      56.7     82.5       0.52          11
.22       56.43
    66.00     163.8       9.4     217.3      20.2     51.3       0.75          12
.98       16.05
    65.50     163.8       9.2     216.8      22.3     44.6       0.68          16
.24       16.04
    65.00     163.8       8.7     216.4      25.5     40.7       0.57          19
.88       17.30
    64.50     164.8       8.9     217.0      25.2     54.8       0.36          15
.21       21.08
    64.00     162.8       8.8     218.3      36.2    235.1       0.39         -22
.68      -30.94
    63.50     162.8       8.7     216.8      21.2    138.9       0.50         -16
.28       14.32
    63.00     164.8       8.4     217.4      56.4     52.1       0.60          42
.76       49.89
    62.50     164.8       8.2     216.8      26.0     47.7       0.53          18
.14       19.79
    62.00     161.7       8.1     217.6      45.6    326.4       0.51          40
.34      -29.47
    61.50     161.7       8.2     217.0      20.1     40.3       0.58          15
.63       13.35
    61.00     162.8       8.0     217.5      47.1     51.8       0.45          33
.60       40.20
    60.50     164.8       8.2     218.1      19.5     43.4       0.88          14
.46       13.69
    60.00     164.8       7.9     219.1      21.9     48.8       0.51          14
.83       16.84
    59.50     163.8       7.8     217.9      23.5     47.0       0.81          16
.51       17.63
    59.00     164.8       8.0     218.8      21.9     42.3       0.74          16
.56       15.15
    58.50     165.9       7.8     219.2      22.8     49.6       0.66          15
.22       17.74
    58.00     165.9       7.8     218.0      27.4     42.9       0.65          20
.75       19.42
    57.50     165.9       7.4     216.8      23.0     33.7       0.60          19
.49       13.29
    57.00     166.9       7.6     218.2      22.0     40.0       0.71          17
.20       14.54
    56.50     168.0       7.6     219.0      31.2     34.2       0.14          26
.62       18.84
    56.00     164.8       7.5     218.5      28.9     46.0       0.77          20
.94       21.63
    55.50     170.0       7.2     219.9      33.7    207.6       0.61         -30
.58      -17.17
    55.00     166.9       7.1     221.7      24.7     42.0       0.44          18
.90       17.11
    54.50     164.8       6.7     221.0      12.7     26.5       0.44          11
.37        5.73
    54.00     169.0       7.0     219.7      27.1    303.9       0.30          15
.91      -23.02
    53.50     166.9       6.8     220.5      28.2     44.3       0.85          20
.94       20.51
    53.00     166.9       6.7     220.5      32.8     69.1       0.50          12
.93       31.07
    52.50     165.9       6.8     220.9      26.8     35.5       0.82          22
.39       16.36
    52.00     165.9       6.5     219.4       8.8     57.2       0.69           4
.79        7.41
    51.50     163.8       6.3     219.2      23.6     38.5       0.90          18
.85       15.21
    51.00     170.0       5.9     223.6      28.2     50.1       0.44          18
.93       22.33
    50.50     168.0       5.7     222.9      45.8     33.3       0.35          40
.72       29.46
    50.00     168.0       5.6     223.7       8.6     20.4       0.38           8
.09        3.03
    49.50     166.9       5.3     223.7      23.4     26.1       0.77          21
.23       10.80
    49.00     165.9       5.2     224.8      26.6     44.9       0.89          19
.51       19.43
    48.50     164.8       4.6     226.5      55.7     93.0       0.39          -4
.46       55.65
    48.00     163.8       4.6     226.0      21.5     41.8       0.79          16
.34       14.69
    47.50     164.8       4.0     226.1      20.9     40.2       0.63          16
.29       13.88
    47.00     163.8       4.0     226.4      22.8     36.0       0.68          18
.77       13.87
    46.50     164.8       4.0     226.8      24.1     34.1       0.74          20
.34       14.07
    46.00     161.7       3.6     225.8      21.4     36.4       0.62          17
.48       13.09
    45.50     163.8       3.6     228.0      22.2     40.9       0.81          17
.11       14.94
    45.00     163.8       3.4     227.7      19.8     43.1       0.48          14
.72       13.82
    44.50     162.8       3.4     255.9      41.3    219.9       0.38         -33
.94      -29.37
    44.00     163.8       3.2     116.2      24.7    293.0       0.24          10
.22      -22.96
    43.50     163.8       2.9     150.9      25.2    283.8       0.60           6
.40      -24.52
    43.00     162.8       2.9     147.5      14.7    272.4       0.55           0
.63      -14.68
    42.50     162.8       2.6     135.9       3.1    296.0       0.39           1
.35       -2.77
    42.00     172.1       2.6      41.7       3.2    147.0       0.74          -2
.66        1.72
    41.50     173.1       2.5      71.1       2.4    228.7       0.94          -1
.57       -1.78
    41.00     172.1       2.4     101.7       2.6    284.8       0.94           0
.65       -2.47
    40.50     172.1       2.4     112.9       2.3    290.4       0.98           0
.80       -2.14
    40.00     173.1       2.3      60.4       2.3    238.5       0.99          -1
.19       -1.95
    39.50     172.1       2.3      73.6       2.3    255.0       0.99          -0
.59       -2.21
    39.00     173.1       2.1      90.2       0.0      0.0      -1.00
```

DIPMETER ANALYSIS

#879

COMPANY MANALTA
WELL T93R-35
FIELD SITE # 24
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 24
WELL: T93R-35
COMPANY: MANALTA

LOCATION				OTHER SERVICES
TELKWA				CCS
LSE	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS
KB N/A
DF N/A
GL N/A

DATE	25-SEP-93	
RUN NUMBER	FOUR	
DEPTH-DRILLER	110.0M	
DEPTH-LOGGER	110.0M	
FIRST READING	109.5M	
LAST READING	0M	
CASING-DRILLER	42.7M	
CASING-LOGGER	42.7M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	A. LE BRETON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	42.7M	TD	178MM	N/A	SURFACE	42.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
VERT/DIP	233/221			

REMARKS

DIPMETER ANALYSIS

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 28-SEP-1993 AT 12:39
FILENAME: DIP3R35M.CIB RUN ID: MAIN LOG PLOTTED ON 29-SEP-1993 AT 09:22

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 28-SEP-1993 AT 23:03 DATA LAST REPROCESSED: 29-SEP-1993 AT 9:07

LOGGING CONSTANTS & GAMMA CALIBRATION

CORRELATION STEP (M.)	.25	CORRELATION INTERVAL (M.)	.50
BIT SIZE #1 (MM)	178.00	BIT DEPTH #1 (M.)	.00
BIT SIZE #2	156.00	BIT DEPTH #2	42.70
BIT SIZE #3	.00	BIT DEPTH #3	109.70
BIT SIZE #4	.00	BIT DEPTH #4	0.00
BIT SIZE #5	.00	BIT DEPTH #5	0.00
GAMMA CALIBRATOR (API)	510.00	GAMMA COUNTS	325.20
UNUSED	XXXXXXXX	SEARCH ANGLE (DEGREES)	45.00
STRUCTURAL DIP ANGLE (DEGREES)	.00	STRUCTURAL DIP AZI. (DEGREES)	.00
DECLINATION (DEGREES)	26.50 E	DETAIL PAD DATA	NO
CORRELATE	YES	CALIPER UNITS	MM
DEPTH UNITS	METRIC	CALIPER USED IN CALCULATIONS	YES

LEVEL CELL CALIBRATION

TILT(DEGREES)	LC1(COUNTS)	LC2(COUNTS)
-10.00	114.00	121.00
-8.00	136.00	142.00
-6.00	158.00	166.00
-4.00	179.00	185.00
-2.00	198.00	202.00
.00	221.00	222.00
2.00	243.00	240.00
4.00	264.00	258.00
6.00	285.00	277.00
8.00	305.00	303.00
10.00	326.00	322.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00

CALIBRATION IDENTIFICATION: VERT # 233

MAGNETOMETER CALIBRATION

	MAG.X	MAG.Y	MAG.Z
MAX.	209.00	213.00	199.00
MIN.	150.00	148.00	161.00

CALIBRATION IDENTIFICATION: VERT # 233

CALIPER CAL. & PAD OFFSETS

CALIBRATOR(MM)	COUNTS	PAD 2 OFFSET(MM)	PAD 3 OFFSET(MM)
76.20	133.00	.00	.00
101.60	155.00	.00	.00
127.00	179.00	.00	.00
152.40	201.00	.00	.00
203.20	250.00	.00	.00
254.00	307.00	.00	.00

CALIBRATION IDENTIFICATION: 221

COMPANY	MANALTA
WELL	T93R-35
FIELD	SITE # 24
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-35
FIELD	SITE # 24
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 24
WELL:
T93R-35
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	28-SEP-93	
RUN NUMBER	SIX	
DEPTH-DRILLER	110.0M	
DEPTH-LOGGER	110.0M	
FIRST READING	109.5M	
LAST READING	0M	
CASING-DRILLER	42.7M	
CASING-LOGGER	42.7M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	A. LE BRETON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	OOM	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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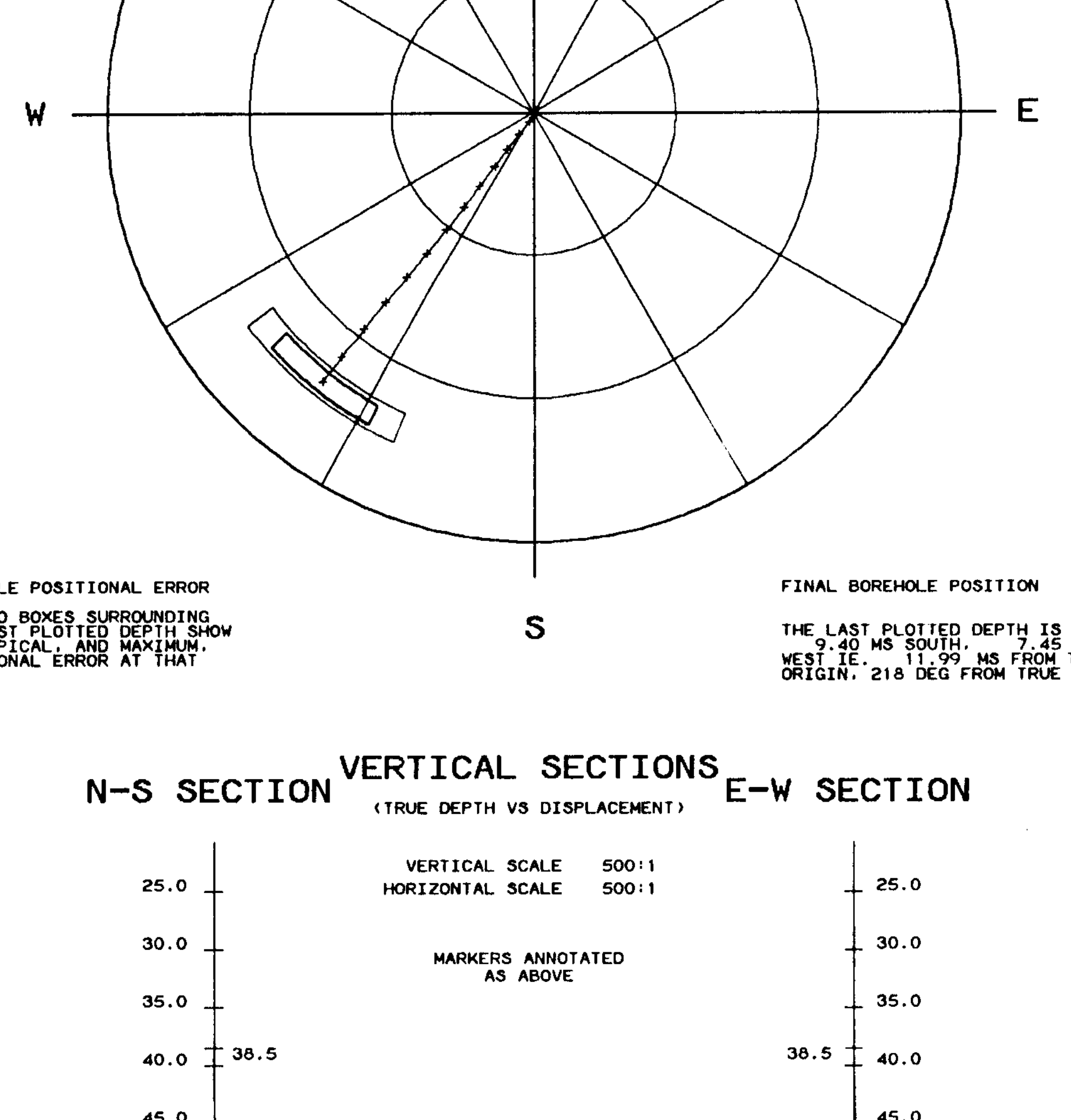
T93R-35                          VERTICALITY DATA LISTING                  DATE PROCESSED: 28-SEP-1993
                        ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH        DATE LOGGED:    28-SEP-1993
    DEPTHS        BOREHOLE   AXIAL CO-ORDS    POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG      TRUE   TILT AZI   NORTH     EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

  39.00    39.00   2.1  97    0.00     0.01  71    0.01  71    0.01  71    0.01  71    0.01  71    0.01
  40.00    40.00   2.3  69    0.02     0.04  70    0.05  70    0.05  70    0.04  70    0.05  70    0.04
  41.00    41.00   2.4  94    0.00     0.08  88    0.08  88    0.09  88    0.07  88    0.09  88    0.08
  42.00    42.00   2.7 336    0.02     0.09  76    0.09  76    0.10  76    0.08  76    0.09  76    0.09
  43.00    43.00   2.9 143   -0.02     0.11 100    0.11 100    0.12 100    0.10 100    0.11 100    0.10
  44.00    43.99   3.4 132   -0.05     0.15 108    0.16 107    0.17 108    0.15 108    0.16 108    0.15
  45.00    44.99   3.6 229   -0.08     0.11 125    0.13 124    0.14 126    0.12 125    0.14 125    0.13
  46.00    45.99   3.7 226   -0.12     0.06 153    0.13 152    0.14 154    0.12 152    0.14 153    0.13
  47.00    46.99   4.1 227   -0.16     0.01 177    0.16 175    0.17 178    0.16 176    0.17 177    0.16
  48.00    47.99   4.5 227   -0.22    -0.04 191    0.22 190    0.23 192    0.21 191    0.23 192    0.21
  49.00    48.98   5.2 225   -0.27    -0.10 201    0.29 200    0.31 201    0.28 200    0.30 201    0.29
  50.00    49.98   5.6 225   -0.34    -0.17 206    0.38 206    0.40 207    0.36 206    0.39 207    0.37
  51.00    50.97   6.0 222   -0.41    -0.24 210    0.48 209    0.50 210    0.46 210    0.49 210    0.47
  52.00    51.97   6.5 221   -0.50    -0.31 212    0.59 211    0.61 212    0.56 212    0.60 212    0.58
  53.00    52.96   6.8 221   -0.59    -0.38 213    0.70 213    0.73 214    0.68 213    0.72 213    0.69
  54.00    53.95   7.0 219   -0.68    -0.46 214    0.82 214    0.85 214    0.79 214    0.84 214    0.81
  55.00    54.94   7.1 221   -0.77    -0.54 215    0.94 215    0.97 215    0.91 215    0.96 215    0.93
  56.00    55.94   7.6 219   -0.87    -0.62 215    1.07 215    1.11 216    1.03 215    1.09 216    1.05
  57.00    56.93   7.6 219   -0.98    -0.70 216    1.20 215    1.24 216    1.16 216    1.22 216    1.18
  58.00    57.92   7.8 218   -1.08    -0.78 216    1.34 216    1.38 216    1.29 216    1.36 216    1.31
  59.00    58.91   7.9 218   -1.19    -0.87 216    1.47 216    1.52 216    1.43 216    1.50 216    1.45
  60.00    59.90   7.8 218   -1.30    -0.95 216    1.61 216    1.66 217    1.56 216    1.63 216    1.58
  61.00    60.89   8.3 217   -1.41    -1.04 217    1.75 216    1.80 217    1.70 216    1.78 217    1.72
  62.00    61.88   8.2 217   -1.52    -1.13 217    1.89 216    1.95 217    1.84 217    1.92 217    1.86
  63.00    62.87   8.4 216   -1.63    -1.22 217    2.04 217    2.10 217    1.98 217    2.07 217    2.01
  64.00    63.86   8.8 216   -1.75    -1.31 217    2.19 217    2.25 217    2.12 217    2.22 217    2.15
  65.00    64.85   8.8 217   -1.88    -1.40 217    2.34 217    2.40 217    2.27 217    2.37 217    2.30
  66.00    65.83   9.5 217   -2.00    -1.49 217    2.50 217    2.57 217    2.43 217    2.53 217    2.46
  67.00    66.82   9.8 216   -2.14    -1.59 217    2.67 217    2.74 217    2.59 217    2.70 217    2.63
  68.00    67.80   9.9 217   -2.27    -1.69 217    2.84 217    2.91 217    2.76 217    2.87 217    2.80
  69.00    68.79  10.1 216   -2.41    -1.80 217    3.01 217    3.09 217    2.93 217    3.05 217    2.97
  70.00    69.77  10.4 216   -2.56    -1.90 217    3.19 217    3.27 217    3.11 217    3.23 217    3.15
  71.00    70.76  10.1 218   -2.70    -2.01 217    3.37 217    3.45 217    3.28 217    3.41 217    3.32
  72.00    71.74  10.7 218   -2.84    -2.12 217    3.55 217    3.64 217    3.46 217    3.59 217    3.50
  73.00    72.72  10.6 218   -2.99    -2.24 217    3.73 217    3.83 217    3.64 217    3.78 217    3.68
  74.00    73.71  10.9 218   -3.14    -2.35 217    3.92 217    4.02 217    3.82 217    3.97 217    3.87
  75.00    74.69  11.3 217   -3.29    -2.47 217    4.12 217    4.22 217    4.02 217    4.17 217    4.07
  76.00    75.67  11.7 217   -3.45    -2.59 217    4.32 217    4.42 217    4.21 217    4.37 217    4.27
  77.00    76.65  11.8 218   -3.61    -2.72 217    4.52 217    4.63 217    4.41 217    4.57 217    4.47
  78.00    77.62  11.7 218   -3.77    -2.84 217    4.72 217    4.84 217    4.61 217    4.78 217    4.67
  79.00    78.60  12.1 218   -3.93    -2.97 217    4.93 217    5.04 217    4.81 217    4.99 217    4.87
  80.00    79.58  12.2 219   -4.10    -3.10 217    5.14 217    5.26 217    5.02 217    5.20 217    5.08
  81.00    80.56  12.6 219   -4.27    -3.23 217    5.35 217    5.48 217    5.23 217    5.41 217    5.29
  82.00    81.53  12.3 219   -4.44    -3.37 217    5.57 217    5.69 217    5.44 217    5.63 217    5.51
  83.00    82.51  12.6 219   -4.60    -3.51 217    5.79 217    5.92 217    5.66 217    5.85 217    5.72
  84.00    83.49  12.4 220   -4.77    -3.64 217    6.00 217    6.13 217    5.87 217    6.07 217    5.93
  85.00    84.46  11.8 218   -4.93    -3.77 217    6.21 217    6.34 217    6.07 217    6.28 217    6.14
  86.00    85.44  12.4 220   -5.09    -3.90 217    6.42 217    6.56 218    6.28 217    6.49 218    6.35
  87.00    86.42  12.5 220   -5.26    -4.04 218    6.63 218    6.77 218    6.49 218    6.70 218    6.56
  88.00    87.39  12.9 221   -5.42    -4.19 218    6.85 218    7.00 218    6.71 218    6.92 218    6.78
  89.00    88.37  13.3 220   -5.60    -4.33 218    7.08 218    7.23 218    6.93 218    7.15 218    7.00
  90.00    89.34  12.6 220   -5.77    -4.48 218    7.30 218    7.45 218    7.15 218    7.37 218    7.22
  91.00    90.32  13.1 220   -5.93    -4.62 218    7.52 218    7.68 218    7.36 218    7.60 218    7.44
  92.00    91.29  13.3 220   -6.11    -4.77 218    7.74 218    7.90 218    7.59 218    7.82 218    7.67
  93.00    92.27  13.5 220   -6.28    -4.92 218    7.98 218    8.14 218    7.81 218    8.06 218    7.90
  94.00    93.24  13.9 220   -6.46    -5.07 218    8.22 218    8.38 218    8.05 218    8.30 218    8.13
  95.00    94.21  13.6 221   -6.65    -5.22 218    8.45 218    8.62 218    8.28 218    8.54 218    8.37
  96.00    95.18  13.7 221   -6.83    -5.38 218    8.69 218    8.86 218    8.52 218    8.78 218    8.60
  97.00    96.15  14.0 220   -7.01    -5.53 218    8.93 218    9.11 218    8.75 218    9.02 218    8.84
  98.00    97.12  14.2 220   -7.20    -5.69 218    9.17 218    9.35 218    8.99 218    9.26 218    9.08
  99.00    98.09  13.9 214   -7.39    -5.84 218    9.42 218    9.60 218    9.24 218    9.51 218    9.33
 100.00    99.06  14.0 215   -7.59    -5.98 218    9.66 218    9.85 218    9.48 218    9.76 218    9.57
 101.00   100.03  14.4 218   -7.79    -6.13 218    9.91 218   10.10 218    9.72 218   10.01 218    9.82
 102.00   101.00  14.7 220   -7.98    -6.29 218   10.16 218   10.36 218    9.97 218   10.26 218   10.07
 103.00   101.96  14.6 222   -8.18    -6.45 218   10.42 218   10.61 218   10.22 218   10.51 218   10.32
 104.00   102.93  14.4 220   -8.37    -6.61 218   10.66 218   10.86 218   10.46 218   10.76 218   10.56
 105.00   103.90  14.3 219   -8.55    -6.77 218   10.91 218   11.11 218   10.71 218   11.01 218   10.81
 106.00   104.87  14.4 218   -8.75    -6.92 218   11.16 218   11.36 218   10.95 218   11.26 218   11.05
 107.00   105.84  13.9 220   -8.94    -7.07 218   11.40 218   11.61 218   11.19 218   11.50 218   11.29
 108.00   106.81  14.7 221   -9.13    -7.23 218   11.64 218   11.86 218   11.43 218   11.75 218   11.54
 109.00   107.78  14.4 216   -9.32    -7.39 218   11.89 218   12.11 218   11.68 218   12.00 218   11.79
 109.40   108.17  13.8 215   -9.40    -7.45 218   11.99 218   12.21 218   11.77 218   12.10 218   11.88
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....38.50
LAST PLOTTED DEPTH......109.40
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........5
FIRST DEPTH MARKER AT...40
LAST DEPTH MARKER AT....105

PLOT WITH RESPECT TO TRUE NORTH
SCALE 200:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

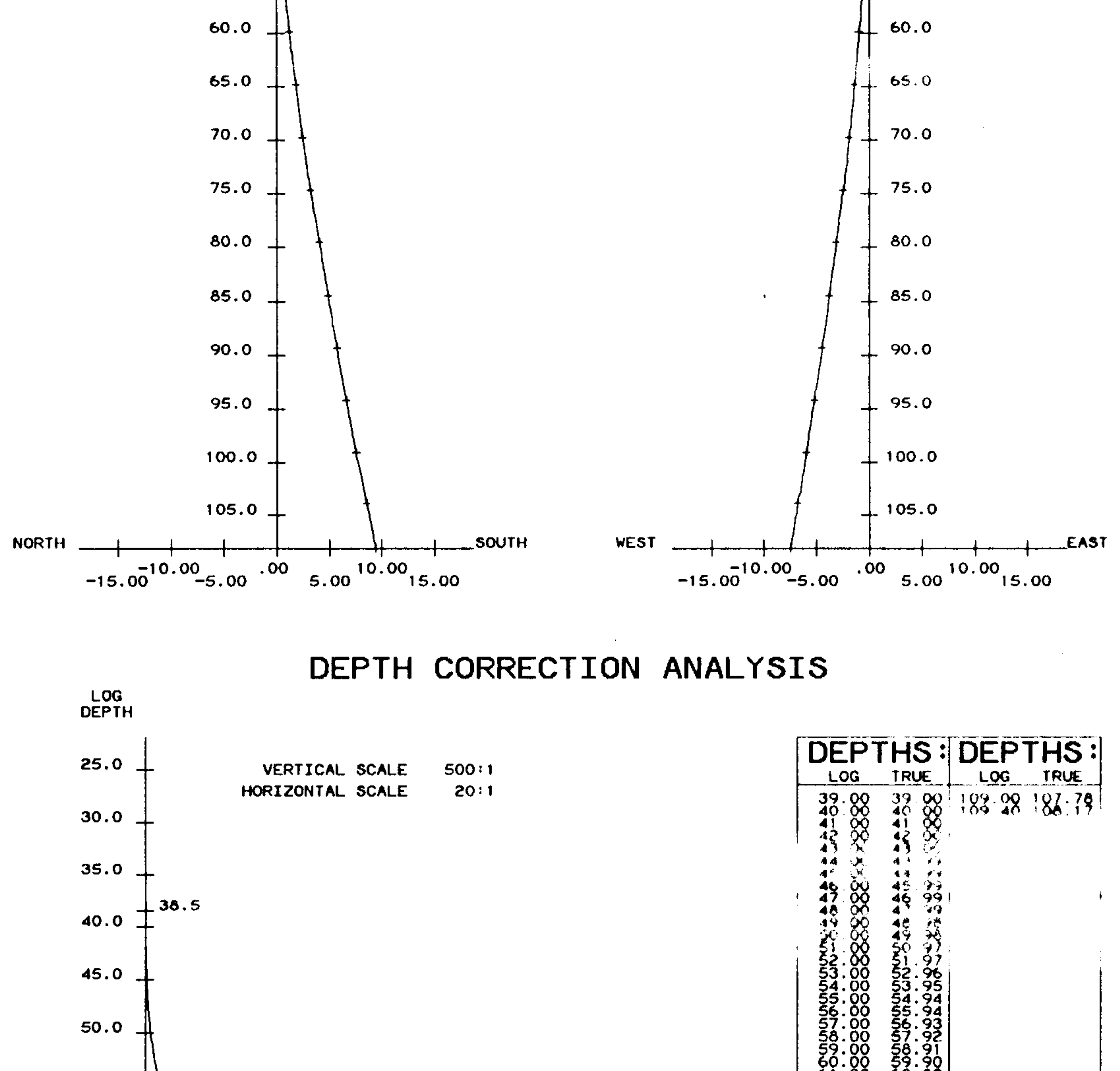
THE LAST PLOTTED DEPTH IS AT 9.40 MS SOUTH, 7.45 MS WEST IE. 11.99 MS FROM THE ORIGIN, 218 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

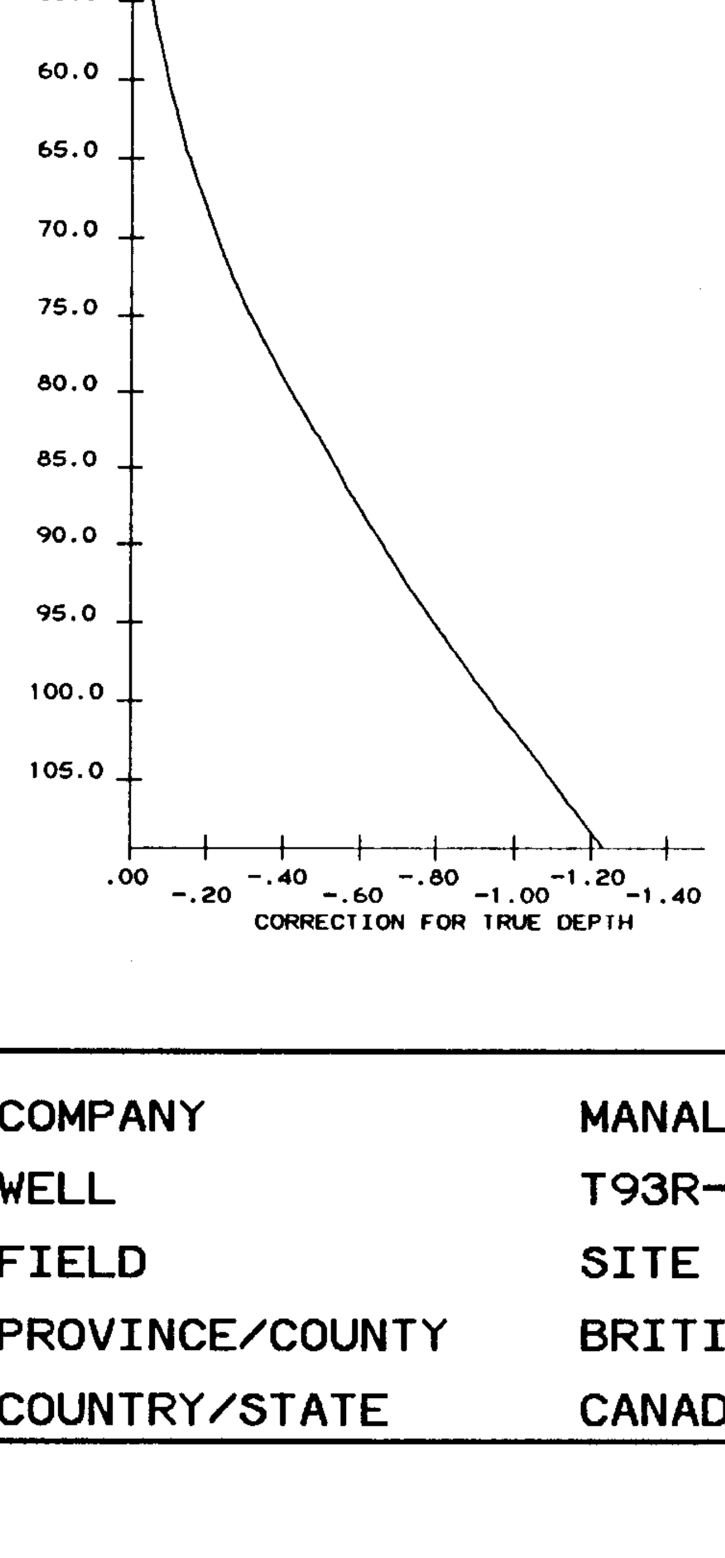
VERTICAL SCALE 500:1
HORIZONTAL SCALE 500:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 500:1
HORIZONTAL SCALE 20:1



DEPTHS: LOG	TRUE	DEPTHS: LOG	TRUE
39.00	39.00	109.00	107.78
40.00	40.00	109.40	108.17
41.00	41.00		
42.00	42.00		
43.00	43.00		
44.00	43.99		
45.00	44.99		
46.00	45.99		
47.00	46.99		
48.00	47.99		
49.00	48.98		
50.00	49.98		
51.00	50.97		
52.00	51.97		
53.00	52.96		
54.00	53.95		
55.00	54.94		
56.00	55.94		
57.00	56.93		
58.00	57.92		
59.00	58.91		
60.00	59.90		
61.00	60.89		
62.00	61.88		
63.00	62.87		
64.00	63.86		
65.00	64.85		
66.00	65.83		
67.00	66.82		
68.00	67.80		
69.00	68.79		
70.00	69.77		
71.00	70.76		
72.00	71.74		
73.00	72.72		
74.00	73.71		
75.00	74.69		
76.00	75.67		
77.00	76.65		
78.00	77.62		
79.00	78.60		
80.00	79.58		
81.00	80.56		
82.00	81.53		
83.00	82.51		
84.00	83.49		
85.00	84.46		
86.00	85.44		
87.00	86.42		
88.00	87.39		
89.00	88.37		
90.00	89.34		
91.00	90.32		
92.00	91.29		
93.00	92.27		
94.00	93.24		
95.00	94.21		
96.00	95.18		
97.00	96.15		
98.00	97.12		
99.00	98.09		
100.00	99.06		
101.00	100.03		
102.00	101.00		
103.00	101.96		
104.00	102.93		
105.00	103.90		
106.00	104.87		
107.00	105.84		
108.00	106.81		

COMPANY	MANALTA
WELL	T93R-35
FIELD	SITE # 24
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER #879

COMPANY	MANALTA
WELL	T93D-31
FIELD	SITE #
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #
WELL: T93D-31
COMPANY: MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL, ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	25-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	182.9M			
DEPTH-LOGGER	182.3M			
FIRST READING	182.0M			
LAST READING	00M			
CASING-DRILLER	33.5M			
CASING-LOGGER	33.5M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.03 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	95MM	33.5M	TD	105MM	N/A	SURFACE	33.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 25-SEP-1993 AT 7:35
FILENAME: DD3AD31M.CIB RUN ID: MAIN LOG PLOTTED ON 25-SEP-1993 AT 21:02

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 25-SEP-1993 AT 7:35
FILENAME: DD3AD31M.CIB RUN ID: MAIN LOG PLOTTED ON 25-SEP-1993 AT 21:02

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 25-SEP-1993 AT 20:59 DATA LAST REPROCESSED: 25-SEP-1993 AT 21:00

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.03	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	.00
BIT SIZE 2	95.00	BIT DEPTH 2	33.50
BIT SIZE 3	.00	BIT DEPTH 3	182.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	3052.00
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-31
FIELD	SITE #
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY MANALTA
WELL T93D-31
FIELD SITE #
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE
		,	

OTHER SERVICES
CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #
WELL: T93D-31
COMPANY: MANALTA

PERMANENT DATUM GROUND LEVEL, ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	25-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	182.9M	
DEPTH-LOGGER	182.3M	
FIRST READING	182M	
LAST READING	0M	
CASING-DRILLER	33.9M	
CASING-LOGGER	33.9M	
BIT SIZE	96MM	
HOLE FLUID TYPE	BENTONITE	
DENS./VISC.	1.03	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	A. LE BRETON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH, CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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T93D-31                           VERTICALITY DATA LISTING                    DATE PROCESSED: 25-SEP-1993
                        ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH           DATE LOGGED:    25-SEP-1993
     DEPTHS         BOREHOLE   AXIAL  CO-ORDS   POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
   LOG      TRUE    TILT AZI   NORTH     EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

    3.00     3.00    3.0 346    0.00   -0.01 241    0.01 241    0.01 241    0.01 241    0.01 241    0.01
    4.00     4.00    2.9   8   -0.01    0.02 119    0.02 118    0.03 119    0.02 118    0.02 119    0.02
    5.00     5.00    2.9 158   -0.02    0.01 160    0.03 160    0.03 160    0.02 160    0.03 160    0.02
    6.00     6.00    3.1 306   -0.05    0.04 145    0.07 145    0.07 145    0.06 145    0.07 145    0.06
    7.00     6.99    3.1 297   -0.03   -0.01 193    0.03 192    0.03 193    0.03 192    0.03 193    0.03
    8.00     7.99    2.8 315   -0.01   -0.04 254    0.04 254    0.05 254    0.04 254    0.04 254    0.04
    9.00     8.99    2.5 258    0.01   -0.07 274    0.07 274    0.08 274    0.07 274    0.08 274    0.07
   10.00     9.99    1.7 332   -0.02   -0.08 258    0.08 258    0.09 258    0.08 258    0.09 258    0.08
   11.00    10.99    1.3 216   -0.03   -0.09 251    0.10 250    0.10 252    0.09 251    0.10 251    0.09
   12.00    11.99    1.4 352   -0.02   -0.10 257    0.10 256    0.11 257    0.10 257    0.11 257    0.10
   13.00    12.99    1.9 220   -0.02   -0.10 261    0.10 261    0.11 261    0.09 261    0.10 261    0.09
   14.00    13.99    2.4 243   -0.02   -0.10 256    0.10 256    0.11 256    0.09 256    0.11 256    0.10
   15.00    14.99    2.9 268   -0.06   -0.12 243    0.13 243    0.14 243    0.12 243    0.14 243    0.13
   16.00    15.99    2.8 247   -0.09   -0.13 236    0.16 236    0.17 235    0.14 236    0.16 236    0.15
   17.00    16.99    2.9 208   -0.12   -0.14 230    0.19 230    0.20 230    0.17 230    0.20 230    0.18
   18.00    17.98    2.9 182   -0.15   -0.16 228    0.22 228    0.24 228    0.20 228    0.23 228    0.21
   19.00    18.98    2.6 324   -0.11   -0.16 235    0.20 235    0.21 235    0.18 235    0.21 235    0.19
   20.00    19.98    2.5 271   -0.09   -0.16 240    0.18 240    0.20 239    0.17 240    0.19 240    0.18
   21.00    20.98    2.9  31   -0.11   -0.13 230    0.16 230    0.18 229    0.15 230    0.17 229    0.16
   22.00    21.98    2.5   8   -0.11   -0.15 232    0.18 233    0.20 232    0.17 233    0.19 232    0.18
   23.00    22.98    2.8 162   -0.13   -0.15 228    0.20 228    0.22 227    0.18 228    0.21 228    0.19
   24.00    23.98    2.9 126   -0.17   -0.13 218    0.22 218    0.24 218    0.20 218    0.23 218    0.21
   25.00    24.98    2.8 206   -0.18   -0.14 219    0.22 219    0.24 218    0.21 219    0.23 219    0.22
   26.00    25.98    2.4 353   -0.15   -0.13 223    0.20 223    0.21 222    0.18 223    0.21 222    0.19
   27.00    26.97    2.0 135   -0.17   -0.14 220    0.22 220    0.23 220    0.20 220    0.23 220    0.21
   28.00    27.97    1.7 221   -0.18   -0.16 222    0.24 222    0.26 222    0.22 222    0.25 222    0.23
   29.00    28.97    2.5   9   -0.19   -0.16 220    0.25 221    0.27 220    0.23 220    0.26 220    0.24
   30.00    29.97    2.6 152   -0.21   -0.15 215    0.26 215    0.28 215    0.24 215    0.27 215    0.25
   31.00    30.97    2.6 312   -0.20   -0.17 221    0.26 221    0.28 221    0.24 221    0.27 221    0.25
   32.00    31.97    2.5 203   -0.20   -0.20 226    0.28 226    0.31 226    0.26 226    0.29 226    0.27
   33.00    32.97    2.0 282   -0.21   -0.22 227    0.30 227    0.33 227    0.28 227    0.31 227    0.29
   34.00    33.97    1.6 147   -0.21   -0.23 227    0.31 227    0.34 227    0.29 227    0.32 227    0.30
   35.00    34.97    1.5 151   -0.23   -0.21 222    0.32 222    0.34 222    0.29 222    0.33 222    0.30
   36.00    35.97    1.6 160   -0.26   -0.20 218    0.33 218    0.36 218    0.30 218    0.34 218    0.31
   37.00    36.97    1.1 161   -0.28   -0.20 215    0.34 215    0.37 216    0.31 215    0.36 216    0.33
   38.00    37.97    0.9 176   -0.30   -0.20 213    0.36 213    0.39 214    0.32 213    0.37 214    0.34
   39.00    38.97    1.3 197   -0.32   -0.20 212    0.38 211    0.41 213    0.34 212    0.39 212    0.36
   40.00    39.97    1.5 202   -0.34   -0.20 211    0.40 210    0.44 212    0.36 211    0.42 211    0.38
   41.00    40.97    1.5 206   -0.36   -0.21 210    0.42 210    0.46 211    0.38 210    0.44 211    0.40
   42.00    41.97    1.6 198   -0.39   -0.22 210    0.45 209    0.49 211    0.40 210    0.47 210    0.42
   43.00    42.97    1.7 201   -0.41   -0.23 209    0.48 209    0.53 210    0.42 209    0.50 210    0.45
   44.00    43.97    1.8 199   -0.44   -0.24 209    0.50 208    0.56 210    0.45 208    0.53 209    0.48
   45.00    44.97    1.6 199   -0.47   -0.25 208    0.53 208    0.59 209    0.48 208    0.56 209    0.51
   46.00    45.97    1.5 201   -0.49   -0.26 208    0.56 208    0.62 209    0.50 208    0.59 208    0.53
   47.00    46.96    1.4 198   -0.52   -0.27 208    0.58 207    0.65 208    0.52 207    0.62 208    0.55
   48.00    47.96    1.3 199   -0.54   -0.28 207    0.61 207    0.68 208    0.54 207    0.64 208    0.57
   49.00    48.96    1.4 198   -0.56   -0.29 207    0.63 207    0.70 208    0.56 207    0.67 207    0.60
   50.00    49.96    1.8 202   -0.59   -0.30 207    0.66 206    0.74 207    0.59 207    0.70 207    0.62
   51.00    50.96    1.9 200   -0.62   -0.31 206    0.70 206    0.77 207    0.62 206    0.73 207    0.66
   52.00    51.96    2.2 194   -0.66   -0.32 206    0.73 206    0.81 207    0.65 206    0.77 206    0.69
   53.00    52.96    2.4 194   -0.70   -0.33 206    0.77 205    0.86 206    0.69 205    0.81 206    0.73
   54.00    53.96    2.4 195   -0.74   -0.34 205    0.81 205    0.90 206    0.72 205    0.86 205    0.77
   55.00    54.96    2.1 192   -0.78   -0.35 205    0.85 204    0.94 205    0.76 204    0.90 205    0.81
   56.00    55.96    2.6 194   -0.82   -0.37 204    0.90 204    0.99 204    0.80 204    0.94 204    0.85
   57.00    56.96    1.9 194   -0.86   -0.37 204    0.94 203    1.04 204    0.84 203    0.99 204    0.89
   58.00    57.96    2.5 187   -0.90   -0.38 203    0.98 203    1.08 203    0.88 203    1.03 203    0.93
   59.00    58.96    2.8 184   -0.95   -0.39 202    1.03 202    1.13 202    0.92 202    1.08 202    0.97
   60.00    59.95    2.7 182   -1.00   -0.39 201    1.07 201    1.18 201    0.96 201    1.13 201    1.02
   61.00    60.95    2.6 184   -1.05   -0.39 200    1.12 200    1.23 201    1.00 200    1.17 201    1.06
   62.00    61.95    2.7 183   -1.09   -0.39 200    1.16 200    1.28 200    1.04 200    1.22 200    1.10
   63.00    62.95    2.9 182   -1.14   -0.39 199    1.21 199    1.33 199    1.09 199    1.27 199    1.15
   64.00    63.95    2.4 191   -1.19   -0.40 199    1.25 198    1.37 199    1.13 198    1.31 199    1.19
   65.00    64.95    2.8 186   -1.23   -0.40 198    1.30 198    1.42 198    1.17 198    1.36 198    1.24
   66.00    65.95    2.6 191   -1.28   -0.41 198    1.35 198    1.48 198    1.22 198    1.41 198    1.28
   67.00    66.95    2.7 186   -1.33   -0.42 197    1.39 197    1.53 197    1.26 197    1.46 197    1.33
   68.00    67.95    2.9 180   -1.38   -0.42 197    1.44 197    1.58 197    1.30 197    1.51 197    1.37
   69.00    68.94    2.6 177   -1.43   -0.41 196    1.48 196    1.62 196    1.34 196    1.55 196    1.41
   70.00    69.94    2.8 176   -1.47   -0.41 196    1.53 196    1.67 196    1.38 196    1.60 196    1.45
   71.00    70.94    2.5 175   -1.51   -0.40 195    1.57 195    1.71 195    1.42 195    1.64 195    1.49
   72.00    71.94    2.4 179   -1.56   -0.40 194    1.61 194    1.76 194    1.46 194    1.68 194    1.53
   73.00    72.94    2.3 172   -1.60   -0.40 194    1.65 194    1.80 194    1.49 194    1.72 194    1.57
   74.00    73.94    2.0 174   -1.63   -0.39 193    1.68 193    1.84 194    1.52 193    1.76 194    1.60
   75.00    74.94    1.7 178   -1.67   -0.39 193    1.71 193    1.87 193    1.55 193    1.79 193    1.63
   76.00    75.94    1.8 181   -1.70   -0.39 193    1.75 193    1.91 193    1.58 193    1.83 193    1.66
   77.00    76.94    1.9 182   -1.74   -0.39 193    1.78 193    1.94 193    1.61 193    1.86 193    1.70
   78.00    77.94    1.8 188   -1.77   -0.39 193    1.81 193    1.98 193    1.64 193    1.90 193    1.73
   79.00    78.94    2.2 203   -1.80   -0.40 193    1.84 193    2.02 193    1.67 193    1.93 193    1.76
   80.00    79.94    2.1 206   -1.83   -0.42 193    1.88 193    2.06 193    1.70 193    1.97 193    1.79
   81.00    80.94    2.5 199   -1.87   -0.43 193    1.92 193    2.10 193    1.74 193    2.01 193    1.83
   82.00    81.94    2.4 200   -1.90   -0.45 193    1.96 193    2.14 193    1.77 193    2.05 193    1.86
   83.00    82.93    2.5 201   -1.95   -0.46 193    2.00 193    2.19 193    1.81 193    2.09 193    1.91
   84.00    83.93    2.6 192   -1.99   -0.47 193    2.04 193    2.23 193    1.85 193    2.14 193    1.95
   85.00    84.93    2.4 190   -2.03   -0.48 193    2.09 193    2.28 193    1.90 193    2.19 193    1.99
   86.00    85.93    3.1 180   -2.08   -0.48 193    2.14 193    2.34 193    1.94 193    2.24 193    2.04
   87.00    86.93    2.7 166   -2.13   -0.47 193    2.18 193    2.38 193    1.98 193    2.28 193    2.08
   88.00    87.93    2.5 160   -2.18   -0.46 192    2.22 192    2.43 192    2.02 192    2.33 192    2.12
   89.00    88.93    2.1 157   -2.21   -0.45 191    2.26 191    2.47 191    2.05 191    2.36 191    2.16
   90.00    89.93    1.1 175   -2.24   -0.44 191    2.28 191    2.49 191    2.07 191    2.39 191    2.18
   91.00    90.93    1.3 195   -2.26   -0.44 191    2.31 191    2.52 191    2.09 191    2.41 191    2.20
   92.00    91.93    1.3 211   -2.29   -0.45 191    2.33 191    2.55 191    2.11 191    2.44 191    2.22
   93.00    92.93    1.6 208   -2.31   -0.46 191    2.35 191    2.57 191    2.13 191    2.46 191    2.24
   94.00    93.93    1.7 215   -2.33   -0.47 191    2.38 191    2.60 191    2.16 191    2.49 191    2.27
   95.00    94.93    1.9 207   -2.36   -0.48 192    2.41 192    2.64 192    2.19 192    2.52 192    2.30
   96.00    95.93    2.0 210   -2.39   -0.50 192    2.44 192    2.67 192    2.21 192    2.56 192    2.33
   97.00    96.92    2.4 206   -2.43   -0.52 192    2.48 192    2.71 192    2.25 192    2.60 192    2.36
   98.00    97.92    2.8 204   -2.46   -0.53 192    2.52 192    2.75 192    2.28 192    2.64 192    2.40
   99.00    98.92    2.5 206   -2.50   -0.55 192    2.56 192    2.80 192    2.32 192    2.68 192    2.44
  100.00    99.92    2.0 197   -2.54   -0.56 192    2.60 192    2.84 192    2.35 192    2.72 192    2.48
  101.00   100.92    2.7 192   -2.58   -0.57 193    2.64 193    2.89 192    2.39 193    2.76 193    2.52
  102.00   101.92    2.5 197   -2.62   -0.58 193    2.68 193    2.93 193    2.43 193    2.81 193    2.56
  103.00   102.92    2.8 186   -2.67   -0.59 192    2.73 192    2.98 192    2.48 192    2.86 192    2.60
  104.00   103.92    2.8 185   -2.71   -0.60 192    2.78 192    3.03 192    2.52 192    2.91 192    2.65
  105.00   104.92    2.8 180   -2.76   -0.60 192    2.82 192    3.08 192    2.56 192    2.95 192    2.69
  106.00   105.92    2.8 181   -2.80   -0.60 192    2.86 192    3.13 192    2.60 192    3.00 192    2.73
  107.00   106.91    2.8 181   -2.84   -0.61 192    2.91 192    3.17 192    2.64 192    3.04 192    2.77
  108.00   107.91    2.7 185   -2.89   -0.61 192    2.95 192    3.22 192    2.68 192    3.09 192    2.82
  109.00   108.91    2.4 181   -2.94   -0.61 192    3.00 192    3.27 192    2.72 192    3.14 192    2.86
  110.00   109.91    2.6 177   -2.98   -0.61 192    3.04 192    3.32 192    2.76 192    3.18 192    2.90
  111.00   110.91    2.5 183   -3.02   -0.61 191    3.08 191    3.37 191    2.80 191    3.23 191    2.94
  112.00   111.91    2.5 180   -3.06   -0.61 191    3.13 191    3.41 191    2.84 191    3.27 191    2.98
  113.00   112.91    2.3 183   -3.11   -0.61 191    3.17 191    3.45 191    2.88 191    3.31 191    3.02
  114.00   113.91    2.7 182   -3.15   -0.62 191    3.21 191    3.50 191    2.91 191    3.35 191    3.06
  115.00   114.91    2.5 182   -3.19   -0.62 191    3.25 191    3.55 191    2.95 191    3.40 191    3.10
  116.00   115.91    2.2 183   -3.23   -0.62 191    3.29 191    3.59 191    2.99 191    3.44 191    3.14
  117.00   116.91    2.3 187   -3.27   -0.62 191    3.33 191    3.63 191    3.03 191    3.48 191    3.18
  118.00   117.90    2.2 184   -3.31   -0.62 191    3.37 191    3.68 191    3.07 191    3.52 191    3.22
  119.00   118.90    2.2 184   -3.35   -0.62 191    3.41 191    3.72 191    3.10 191    3.56 191    3.25
  120.00   119.90    2.0 187   -3.39   -0.63 190    3.45 190    3.76 190    3.14 190    3.60 190    3.29
  121.00   120.90    2.2 180   -3.43   -0.63 190    3.48 190    3.80 190    3.17 190    3.64 190    3.33
  122.00   121.90    2.1 181   -3.46   -0.63 190    3.52 190    3.84 190    3.20 190    3.68 190    3.36
  123.00   122.90    2.1 182   -3.50   -0.63 190    3.56 190    3.88 190    3.23 190    3.72 190    3.39
  124.00   123.90    1.9 184   -3.53   -0.64 190    3.59 190    3.92 190    3.26 190    3.75 190    3.43
  125.00   124.90    2.1 188   -3.57   -0.64 190    3.62 190    3.95 190    3.29 190    3.79 190    3.46
  126.00   125.90    1.8 206   -3.60   -0.65 190    3.66 190    3.99 190    3.32 190    3.82 190    3.49
  127.00   126.90    1.7 205   -3.63   -0.66 190    3.69 190    4.02 190    3.35 190    3.86 190    3.52
  128.00   127.90    1.8 193   -3.66   -0.67 190    3.72 190    4.06 190    3.38 190    3.89 190    3.55
  129.00   128.90    1.9 213   -3.69   -0.68 191    3.76 191    4.10 190    3.41 191    3.93 190    3.58
  130.00   129.90    1.8 201   -3.73   -0.70 191    3.79 191    4.14 191    3.44 191    3.96 191    3.62
  131.00   130.90    2.3 216   -3.76   -0.72 191    3.83 191    4.18 191    3.48 191    4.00 191    3.65
  132.00   131.90    2.6 204   -3.80   -0.73 191    3.87 191    4.22 191    3.51 191    4.04 191    3.69
  133.00   132.89    2.8 205   -3.83   -0.75 191    3.90 191    4.26 191    3.55 191    4.08 191    3.73
  134.00   133.89    3.2 190   -3.88   -0.77 191    3.95 191    4.31 191    3.59 191    4.13 191    3.77
  135.00   134.89    2.5 186   -3.93   -0.77 191    4.00 191    4.37 191    3.64 191    4.19 191    3.82
  136.00   135.89    2.7 192   -3.98   -0.78 191    4.05 191    4.42 191    3.69 191    4.24 191    3.87
  137.00   136.89    2.7 179   -4.02   -0.79 191    4.10 191    4.47 191    3.73 191    4.29 191    3.91
  138.00   137.89    2.4 170   -4.07   -0.78 191    4.14 191    4.52 191    3.77 191    4.33 191    3.96
  139.00   138.89    2.3 166   -4.11   -0.77 191    4.18 191    4.56 191    3.80 191    4.37 191    3.99
  140.00   139.89    1.6 173   -4.14   -0.77 190    4.21 191    4.59 190    3.83 190    4.40 190    4.02
  141.00   140.89    1.5 181   -4.16   -0.77 190    4.23 190    4.62 190    3.85 190    4.43 190    4.04
  142.00   141.89    1.3 197   -4.19   -0.77 190    4.26 190    4.65 190    3.87 190    4.45 190    4.06
  143.00   142.89    1.5 196   -4.21   -0.78 191    4.28 191    4.67 190    3.89 191    4.48 191    4.09
  144.00   143.89    1.5 216   -4.23   -0.79 191    4.31 191    4.70 191    3.91 191    4.50 191    4.11
  145.00   144.89    1.7 203   -4.26   -0.81 191    4.33 191    4.73 191    3.94 191    4.53 191    4.14
  146.00   145.89    2.3 215   -4.29   -0.82 191    4.36 191    4.77 191    3.96 191    4.56 191    4.16
  147.00   146.88    2.5 215   -4.32   -0.85 191    4.40 191    4.80 191    4.00 191    4.60 191    4.20
  148.00   147.88    2.7 210   -4.35   -0.87 191    4.44 191    4.85 191    4.03 191    4.64 191    4.24
  149.00   148.88    2.4 218   -4.39   -0.89 191    4.48 192    4.89 191    4.07 192    4.68 191    4.27
  150.00   149.88    2.7 209   -4.43   -0.92 192    4.52 192    4.93 192    4.11 192    4.73 192    4.31
  151.00   150.88    2.7 209   -4.47   -0.94 192    4.57 192    4.98 192    4.15 192    4.77 192    4.36
  152.00   151.88    2.8 205   -4.51   -0.96 192    4.61 192    5.03 192    4.19 192    4.82 192    4.40
  153.00   152.88    2.6 204   -4.55   -0.98 192    4.66 192    5.08 192    4.23 192    4.87 192    4.45
  154.00   153.88    2.8 196   -4.60   -1.00 192    4.71 192    5.14 192    4.28 192    4.92 192    4.49
  155.00   154.88    2.9 193   -4.65   -1.01 192    4.76 192    5.19 192    4.33 192    4.97 192    4.54
  156.00   155.87    2.7 193   -4.70   -1.02 192    4.81 192    5.24 192    4.37 192    5.03 192    4.59
  157.00   156.87    2.3 192   -4.75   -1.03 192    4.86 192    5.30 192    4.42 192    5.08 192    4.64
  158.00   157.87    2.3 188   -4.79   -1.03 192    4.90 192    5.34 192    4.46 192    5.12 192    4.68
  159.00   158.87    2.1 193   -4.83   -1.04 192    4.94 192    5.38 192    4.49 192    5.16 192    4.72
  160.00   159.87    2.0 193   -4.86   -1.05 192    4.97 192    5.42 192    4.52 192    5.20 192    4.75
  161.00   160.87    2.3 215   -4.89   -1.06 192    5.01 192    5.46 192    4.56 192    5.23 192    4.78
  162.00   161.87    3.0 184   -4.94   -1.08 192    5.06 192    5.51 192    4.60 192    5.28 192    4.83
  163.00   162.87    1.8 167   -4.98   -1.07 192    5.10 192    5.55 192    4.64 192    5.33 192    4.87
  164.00   163.87    1.1 191   -5.01   -1.07 192    5.12 192    5.58 192    4.66 192    5.35 192    4.89
  165.00   164.87    1.4 203   -5.03   -1.08 192    5.14 192    5.61 192    4.68 192    5.37 192    4.91
  166.00   165.87    1.3 206   -5.05   -1.09 192    5.16 192    5.63 192    4.69 192    5.40 192    4.93
  167.00   166.87    1.3 197   -5.07   -1.10 192    5.19 192    5.66 192    4.71 192    5.42 192    4.95
  168.00   167.87    1.2 213   -5.09   -1.11 192    5.21 192    5.68 192    4.73 192    5.45 192    4.97
  169.00   168.87    1.8 220   -5.11   -1.13 192    5.23 192    5.71 192    4.75 192    5.47 192    4.99
  170.00   169.87    1.7 215   -5.13   -1.14 193    5.26 193    5.74 193    4.78 193    5.50 193    5.02
  171.00   170.87    2.0 216   -5.16   -1.16 193    5.29 193    5.77 193    4.80 193    5.53 193    5.04
  172.00   171.86    2.3 219   -5.19   -1.19 193    5.32 193    5.81 193    4.83 193    5.57 193    5.08
  173.00   172.86    2.4 212   -5.22   -1.21 193    5.36 193    5.85 193    4.87 193    5.60 193    5.11
  174.00   173.86    2.8 204   -5.26   -1.23 193    5.40 193    5.89 193    4.91 193    5.65 193    5.15
  175.00   174.86    2.8 209   -5.30   -1.25 193    5.45 193    5.95 193    4.95 193    5.70 193    5.20
  176.00   175.86    3.0 204   -5.35   -1.27 193    5.50 193    6.00 193    5.00 193    5.75 193    5.25
  177.00   176.86    2.8 202   -5.39   -1.29 193    5.55 193    6.05 193    5.04 193    5.80 193    5.29
  178.00   177.86    2.8 198   -5.44   -1.31 194    5.60 194    6.10 194    5.09 194    5.85 194    5.34
  179.00   178.86    3.0 199   -5.49   -1.33 194    5.65 194    6.16 194    5.13 194    5.90 194    5.39
  180.00   179.86    2.8 200   -5.53   -1.34 194    5.69 194    6.21 194    5.18 194    5.95 194    5.44
  181.00   180.85    2.8 197   -5.58   -1.36 194    5.74 194    6.26 194    5.23 194    6.00 194    5.48
  182.00   181.85    2.0 190   -5.62   -1.37 194    5.79 194    6.31 194    5.27 194    6.05 194    5.53
  182.10   181.95    1.9 214   -5.63   -1.37 194    5.79 194    6.31 194    5.27 194    6.05 194    5.53
```
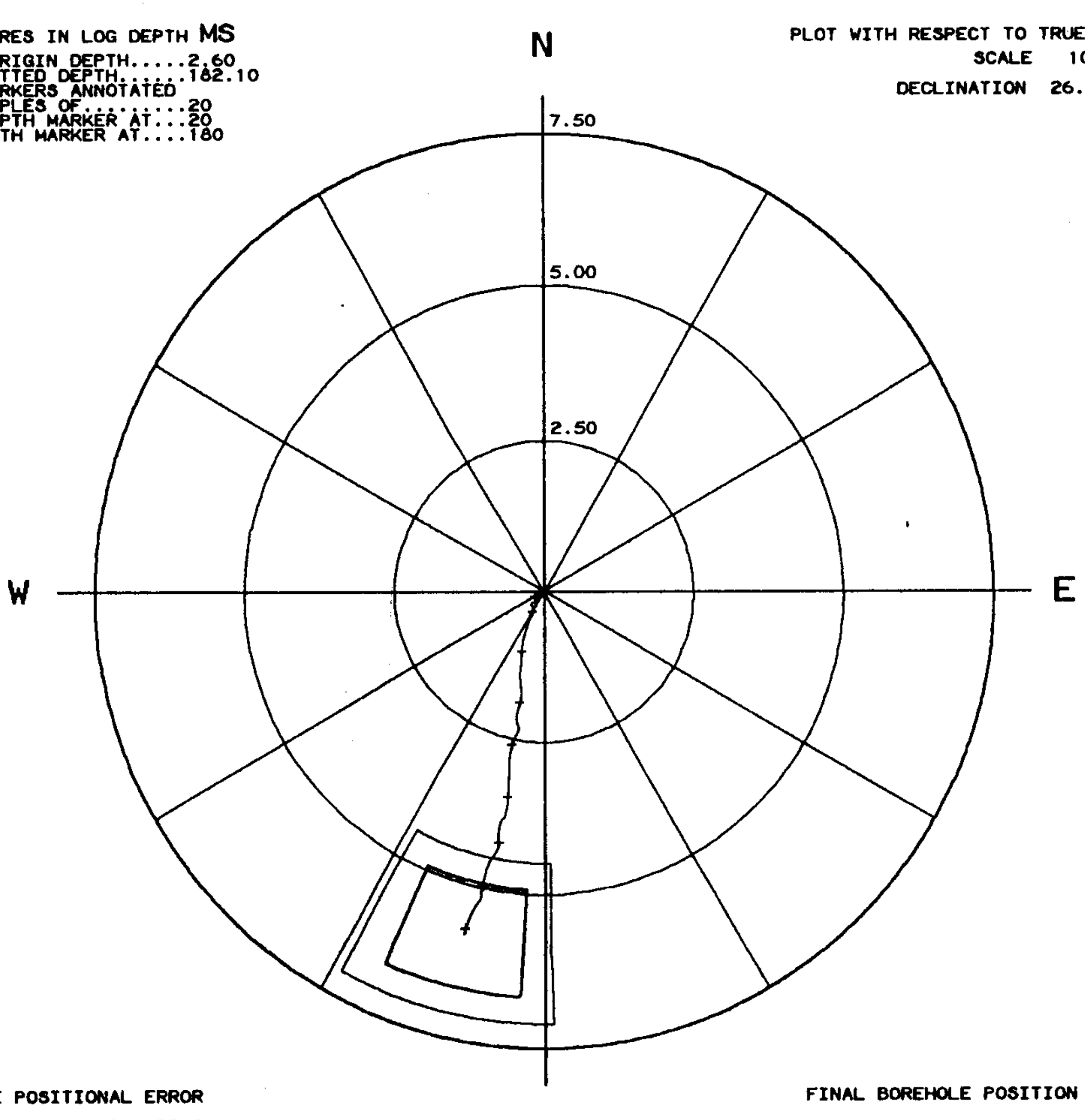

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....2.60
LAST PLOTTED DEPTH......182.10
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........20
FIRST DEPTH MARKER AT...20
LAST DEPTH MARKER AT....180

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

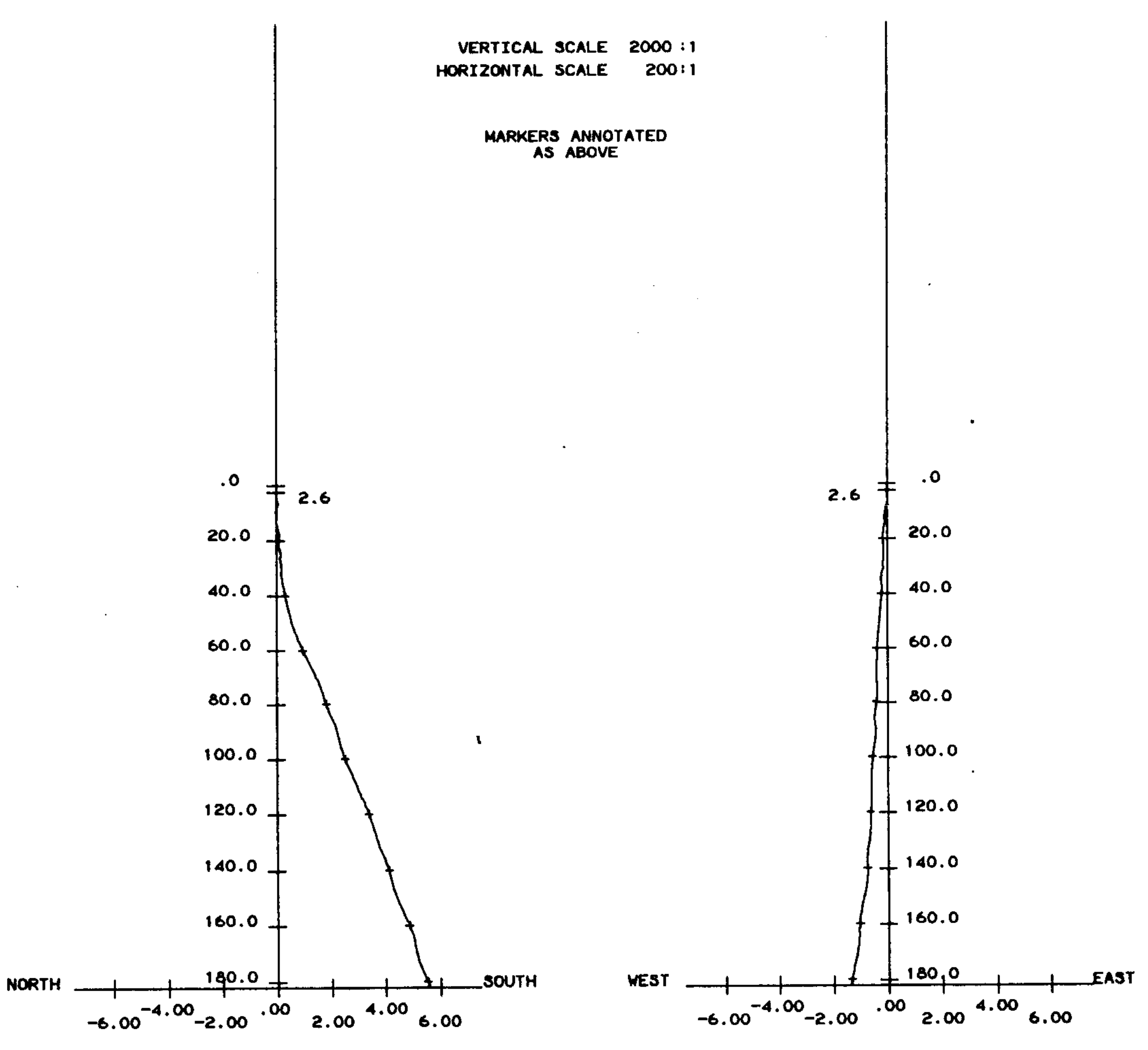
THE LAST PLOTTED DEPTH IS AT 5.63 MS SOUTH, 1.37 MS WEST IE. 5.79 MS FROM THE ORIGIN, 194 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

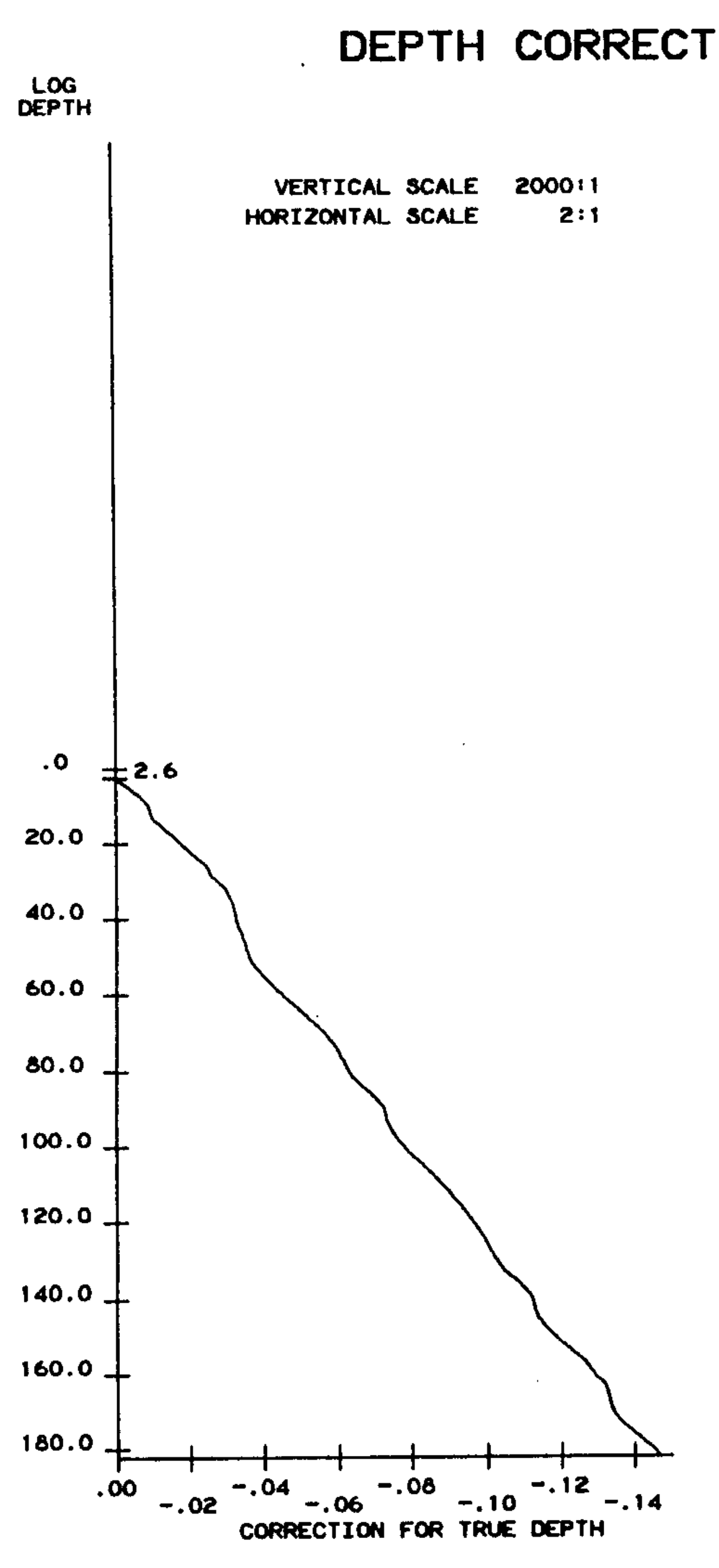
VERTICAL SCALE 2000:1
HORIZONTAL SCALE 200:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 2000:1
HORIZONTAL SCALE 2:1



DEPTHS: LOG	TRUE	DEPTHS: LOG	TRUE	DEPTHS: LOG	TRUE
3.00	3.00	73.00	72.94	143.00	142.89
4.00	4.00	74.00	73.94	144.00	143.89
5.00	5.00	75.00	74.94	145.00	144.89
6.00	6.00	76.00	75.94	146.00	145.89
7.00	6.99	77.00	76.94	147.00	146.88
8.00	7.99	78.00	77.94	148.00	147.88
9.00	8.99	79.00	78.94	149.00	148.88
10.00	9.99	80.00	79.94	150.00	149.88
11.00	10.99	81.00	80.94	151.00	150.88
12.00	11.99	82.00	81.94	152.00	151.88
13.00	12.99	83.00	82.93	153.00	152.88
14.00	13.99	84.00	83.93	154.00	153.88
15.00	14.99	85.00	84.93	155.00	154.88
16.00	15.99	86.00	85.93	156.00	155.87
17.00	16.99	87.00	86.93	157.00	156.87
18.00	17.98	88.00	87.93	158.00	157.87
19.00	18.98	89.00	88.93	159.00	158.87
20.00	19.98	90.00	89.93	160.00	159.87
21.00	20.98	91.00	90.93	161.00	160.87
22.00	21.98	92.00	91.93	162.00	161.87
23.00	22.98	93.00	92.93	163.00	162.87
24.00	23.98	94.00	93.93	164.00	163.87
25.00	24.98	95.00	94.93	165.00	164.87
26.00	25.98	96.00	95.93	166.00	165.87
27.00	26.97	97.00	96.92	167.00	166.87
28.00	27.97	98.00	97.92	168.00	167.87
29.00	28.97	99.00	98.92	169.00	168.87
30.00	29.97	100.00	99.92	170.00	169.87
31.00	30.97	101.00	100.92	171.00	170.87
32.00	31.97	102.00	101.92	172.00	171.86
33.00	32.97	103.00	102.92	173.00	172.86
34.00	33.97	104.00	103.92	174.00	173.86
35.00	34.97	105.00	104.92	175.00	174.86
36.00	35.97	106.00	105.92	176.00	175.86
37.00	36.97	107.00	106.91	177.00	176.86
38.00	37.97	108.00	107.91	178.00	177.86
39.00	38.97	109.00	108.91	179.00	178.86
40.00	39.97	110.00	109.91	180.00	179.86
41.00	40.97	111.00	110.91	181.00	180.85
42.00	41.97	112.00	111.91	182.00	181.85
43.00	42.97	113.00	112.91	182.10	181.95
44.00	43.97	114.00	113.91		
45.00	44.97	115.00	114.91		
46.00	45.97	116.00	115.91		
47.00	46.96	117.00	116.91		
48.00	47.96	118.00	117.90		
49.00	48.96	119.00	118.90		
50.00	49.96	120.00	119.90		
51.00	50.96	121.00	120.90		
52.00	51.96	122.00	121.90		
53.00	52.96	123.00	122.90		
54.00	53.96	124.00	123.90		
55.00	54.96	125.00	124.90		
56.00	55.96	126.00	125.90		
57.00	56.96	127.00	126.90		
58.00	57.96	128.00	127.90		
59.00	58.96	129.00	128.90		
60.00	59.95	130.00	129.90		
61.00	60.95	131.00	130.90		
62.00	61.95	132.00	131.90		
63.00	62.95	133.00	132.89		
64.00	63.95	134.00	133.89		
65.00	64.95	135.00	134.89		
66.00	65.95	136.00	135.89		
67.00	66.95	137.00	136.89		
68.00	67.95	138.00	137.89		
69.00	68.94	139.00	138.89		
70.00	69.94	140.00	139.89		
71.00	70.94	141.00	140.89		
72.00	71.94	142.00	141.89		

COMPANY	MANALTA
WELL	T93D-31
FIELD	SITE #
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 27
WELL:
T93D-27
COMPANY:
MANALTA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY MANALTA
WELL T93D-27
FIELD SITE 27
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	23-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	114.3M			
DEPTH-LOGGER	114.3M			
FIRST READING	114M			
LAST READING	OOM			
CASING-DRILLER	73.2M			
CASING-LOGGER	73.2M			
BIT SIZE	95MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	95MM	73.2M	TD	105MM	N/A	SURFACE	73.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

WELL LOGGED IN DRILL RODS ONLY.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 23-SEP-1993 AT 14:28
FILENAME: DD3AD27A.CIB RUN ID: DETAIL SECTION PLOTTED ON 24-SEP-1993 AT 10:44

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 23-SEP-1993 AT 14:28
FILENAME: DD3AD27A.CIB RUN ID: DETAIL SECTION PLOTTED ON 24-SEP-1993 AT 10:44

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 23-SEP-1993 AT 14:20 DATA LAST REPROCESSED: 24-SEP-1993 AT 10:33

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	.00
BIT SIZE 2	95.00	BIT DEPTH 2	73.20
BIT SIZE 3	.00	BIT DEPTH 3	114.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-27
FIELD	SITE 27
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY CALIPER
DETAIL LOG 20:1

079

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 27
WELL:
T93D-27
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93D-27
FIELD SITE 27
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	23-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	114.3M	
DEPTH-LOGGER	114.3M	
FIRST READING	114M	
LAST READING	00M	
CASING-DRILLER	73.2M	
CASING-LOGGER	73.2M	
BIT SIZE	95MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE	N/A	
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL		

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	95MM	73.2M	TD	105MM	N/A	SURFACE	73.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

WELL LOGGED IN DRILL RODS ONLY.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 23-SEP-1993 AT 14:28
FILENAME: DD3AD27A.CIB RUN ID: DETAIL SECTION PLOTTED ON 24-SEP-1993 AT 10:37

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 23-SEP-1993 AT 14:28
FILENAME: DD3AD27A.CIB RUN ID: DETAIL SECTION PLOTTED ON 24-SEP-1993 AT 10:35

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 23-SEP-1993 AT 14:20 DATA LAST REPROCESSED: 24-SEP-1993 AT 10:33

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	.00
BIT SIZE 2	95.00	BIT DEPTH 2	73.20
BIT SIZE 3	.00	BIT DEPTH 3	114.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-27
FIELD	SITE 27
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY CALIPER
(LOGGED IN RODS)

#379

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 27
WELL:
T93D-27
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93D-27
FIELD	SITE 27
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	23-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	114.3M			
DEPTH-LOGGER	114.3M			
FIRST READING	114M			
LAST READING	0OM			
CASING-DRILLER	73.2M			
CASING-LOGGER	73.2M			
BIT SIZE	95MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE	N/A			
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	95MM	73.2M	TD	105MM	N/A	SURFACE	73.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER (LOGGED IN RODS)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 23-SEP-1993 AT 14:28
FILENAME: DD3AD27M.CIB RUN ID: MAIN LOG PLOTTED ON 24-SEP-1993 AT 10:24

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 23-SEP-1993 AT 14:28
FILENAME: DD3AD27M.CIB RUN ID: MAIN LOG PLOTTED ON 24-SEP-1993 AT 10:24

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 23-SEP-1993 AT 14:20

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	.00
BIT SIZE 2	95.00	BIT DEPTH 2	73.20
BIT SIZE 3	.00	BIT DEPTH 3	114.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-27
FIELD	SITE 27
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 28
WELL:
T93D-22
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93D-22
FIELD	SITE # 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION	OTHER SERVICES
TELKWA	CCS

LSD	SEC	TWP	RGE

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A

LOG MEASURED FROM 00M ABOVE PERMANENT DATUM

DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	28-SEP-93				
RUN NUMBER	SIX				
DEPTH-DRILLER	207.3M				
DEPTH-LOGGER	207.0M				
FIRST READING	206.0M				
LAST READING	0M				
CASING-DRILLER	16.8M				
CASING-LOGGER	18.0M				
BIT SIZE	95MM				
HOLE FLUID TYPE	BENTONITE				
DENS./VISC.	1.03 N/A				
PH/FLUID LOSS	N/A N/A				
SAMPLE SOURCE					
RM @ MEAS TEMP					
RMF @ MEAS TEMP					
RMC @ MEAS TEMP					
SOURCE: RMF/RMC					
RM @ BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222 RDR				
RECORDED BY	A. LE BRETON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	00M				

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1. 2. 5. 10. 20. 50 OR 100 METRES/ FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE. AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR. OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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T93D-22                         VERTICALITY DATA LISTING                  DATE PROCESSED: 29-SEP-1993
                     ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH          DATE LOGGED:    28-SEP-1993
    DEPTHS         BOREHOLE   AXIAL CO-ORDS     POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
   LOG     TRUE    TILT AZI   NORTH    EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

  14.00   14.00    4.1 293    0.01   -0.02 302   0.03 302    0.03 302    0.03 302    0.03 302    0.03
  15.00   15.00    4.3 297    0.03   -0.09 288   0.10 288    0.10 288    0.09 288    0.10 288    0.09
  16.00   15.99    4.2 260    0.04   -0.16 284   0.17 284    0.17 284    0.16 284    0.17 284    0.16
  17.00   16.99    4.4 294    0.05   -0.23 283   0.24 283    0.25 283    0.23 283    0.24 283    0.23
  18.00   17.99    4.8 269    0.07   -0.31 282   0.32 282    0.33 282    0.30 282    0.32 282    0.31
  19.00   18.98    5.2 264    0.08   -0.39 282   0.40 282    0.42 282    0.38 282    0.41 282    0.39
  20.00   19.98    5.4 176    0.04   -0.45 275   0.46 275    0.48 275    0.44 275    0.47 275    0.45
  21.00   20.97    5.7 161   -0.05   -0.42 263   0.42 263    0.44 263    0.41 263    0.43 263    0.41
  22.00   21.97    5.6 161   -0.14   -0.39 250   0.41 250    0.43 249    0.39 250    0.42 249    0.40
  23.00   22.97    5.6 161   -0.24   -0.35 236   0.43 237    0.44 236    0.41 236    0.44 236    0.42
  24.00   23.96    5.5 158   -0.33   -0.32 224   0.46 225    0.48 224    0.44 225    0.47 224    0.45
  25.00   24.96    5.5 157   -0.42   -0.28 214   0.50 215    0.52 214    0.48 215    0.51 214    0.49
  26.00   25.95    5.6 156   -0.50   -0.25 206   0.56 206    0.58 206    0.54 206    0.57 206    0.55
  27.00   26.95    5.4 155   -0.59   -0.21 199   0.63 200    0.65 199    0.60 199    0.64 199    0.62
  28.00   27.94    5.4 154   -0.68   -0.17 194   0.70 194    0.72 193    0.67 194    0.71 194    0.68
  29.00   28.94    5.2 152   -0.76   -0.12 189   0.77 190    0.80 189    0.74 189    0.78 189    0.76
  30.00   29.93    5.2 153   -0.84   -0.08 186   0.85 186    0.88 185    0.81 186    0.86 185    0.83
  31.00   30.93    5.2 151   -0.92   -0.04 182   0.92 183    0.96 182    0.89 183    0.94 182    0.91
  32.00   31.93    5.1 153   -1.00    0.00 180   1.00 180    1.04 180    0.96 180    1.02 180    0.98
  33.00   32.92    4.9 152   -1.08    0.04 178   1.08 178    1.12 177    1.04 178    1.10 178    1.06
  34.00   33.92    5.0 150   -1.15    0.09 176   1.16 176    1.20 176    1.11 176    1.18 176    1.13
  35.00   34.91    4.6 153   -1.23    0.12 174   1.23 174    1.28 174    1.19 174    1.25 174    1.21
  36.00   35.91    4.7 154   -1.30    0.16 173   1.31 173    1.36 173    1.26 173    1.33 173    1.28
  37.00   36.91    4.7 153   -1.37    0.20 172   1.38 172    1.43 172    1.33 172    1.41 172    1.36
  38.00   37.90    4.5 153   -1.44    0.24 171   1.46 171    1.51 171    1.40 171    1.48 171    1.43
  39.00   38.90    4.4 153   -1.51    0.27 170   1.53 170    1.59 170    1.47 170    1.56 170    1.50
  40.00   39.90    4.7 152   -1.58    0.31 169   1.61 169    1.67 169    1.55 169    1.64 169    1.58
  41.00   40.90    4.8 150   -1.65    0.35 168   1.69 168    1.75 168    1.62 168    1.72 168    1.66
  42.00   41.89    4.8 150   -1.72    0.39 167   1.77 167    1.84 167    1.70 167    1.80 167    1.73
  43.00   42.89    4.9 150   -1.80    0.43 166   1.85 166    1.92 166    1.78 166    1.89 166    1.81
  44.00   43.88    4.8 150   -1.87    0.48 166   1.93 166    2.01 166    1.86 166    1.97 166    1.89
  45.00   44.88    4.8 150   -1.94    0.52 165   2.01 165    2.09 165    1.93 165    2.05 165    1.97
  46.00   45.88    4.8 150   -2.02    0.56 165   2.09 165    2.17 164    2.01 165    2.13 164    2.05
  47.00   46.87    5.0 150   -2.09    0.60 164   2.18 164    2.26 164    2.09 164    2.22 164    2.13
  48.00   47.87    5.1 152   -2.17    0.65 163   2.26 163    2.35 163    2.17 163    2.31 163    2.22
  49.00   48.87    5.3 152   -2.25    0.69 163   2.35 163    2.44 163    2.26 163    2.40 163    2.31
  50.00   49.86    5.3 151   -2.33    0.74 162   2.44 163    2.54 162    2.35 162    2.49 162    2.39
  51.00   50.86    5.3 150   -2.41    0.78 162   2.53 162    2.63 162    2.43 162    2.58 162    2.48
  52.00   51.85    5.2 150   -2.49    0.83 162   2.62 162    2.72 162    2.52 162    2.67 162    2.57
  53.00   52.85    5.1 150   -2.57    0.87 161   2.71 161    2.81 161    2.60 161    2.76 161    2.66
  54.00   53.84    5.3 151   -2.64    0.92 161   2.80 161    2.91 161    2.69 161    2.85 161    2.74
  55.00   54.84    5.3 150   -2.72    0.96 161   2.89 161    3.00 160    2.78 161    2.94 160    2.83
  56.00   55.84    5.5 150   -2.80    1.01 160   2.98 160    3.10 160    2.87 160    3.04 160    2.92
  57.00   56.83    5.5 151   -2.89    1.06 160   3.07 160    3.19 160    2.96 160    3.13 160    3.02
  58.00   57.83    5.5 153   -2.97    1.10 160   3.17 160    3.29 160    3.05 160    3.23 160    3.11
  59.00   58.82    5.6 152   -3.06    1.15 159   3.27 159    3.39 159    3.14 159    3.33 159    3.20
  60.00   59.82    5.6 151   -3.14    1.19 159   3.36 159    3.49 159    3.23 159    3.43 159    3.30
  61.00   60.81    5.6 153   -3.23    1.24 159   3.46 159    3.59 159    3.33 159    3.52 159    3.39
  62.00   61.81    5.6 152   -3.31    1.29 159   3.56 159    3.69 159    3.42 159    3.62 159    3.49
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  68.00   67.78    5.7 158   -3.86    1.53 158   4.15 158    4.30 158    3.99 158    4.23 158    4.07
  69.00   68.77    5.7 158   -3.95    1.56 158   4.25 158    4.41 158    4.09 158    4.33 158    4.17
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  83.00   82.70    5.8 155   -5.20    2.18 157   5.64 157    5.85 157    5.43 157    5.75 157    5.54
  84.00   83.70    5.8 156   -5.30    2.22 157   5.74 157    5.95 157    5.53 157    5.85 157    5.64
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  94.00   93.65    5.8 154   -6.23    2.59 157   6.74 157    6.99 157    6.50 157    6.87 157    6.62
  95.00   94.64    5.9 153   -6.32    2.64 157   6.85 157    7.10 157    6.60 157    6.97 157    6.72
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 100.00   99.62    5.3 141   -6.73    2.90 157   7.33 157    7.60 157    7.06 157    7.46 157    7.20
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 117.00  116.55    5.3 157   -8.11    3.62 156   8.88 156    9.21 156    8.56 156    9.05 156    8.72
 118.00  117.54    5.3 159   -8.20    3.66 156   8.97 156    9.30 156    8.65 156    9.14 156    8.81
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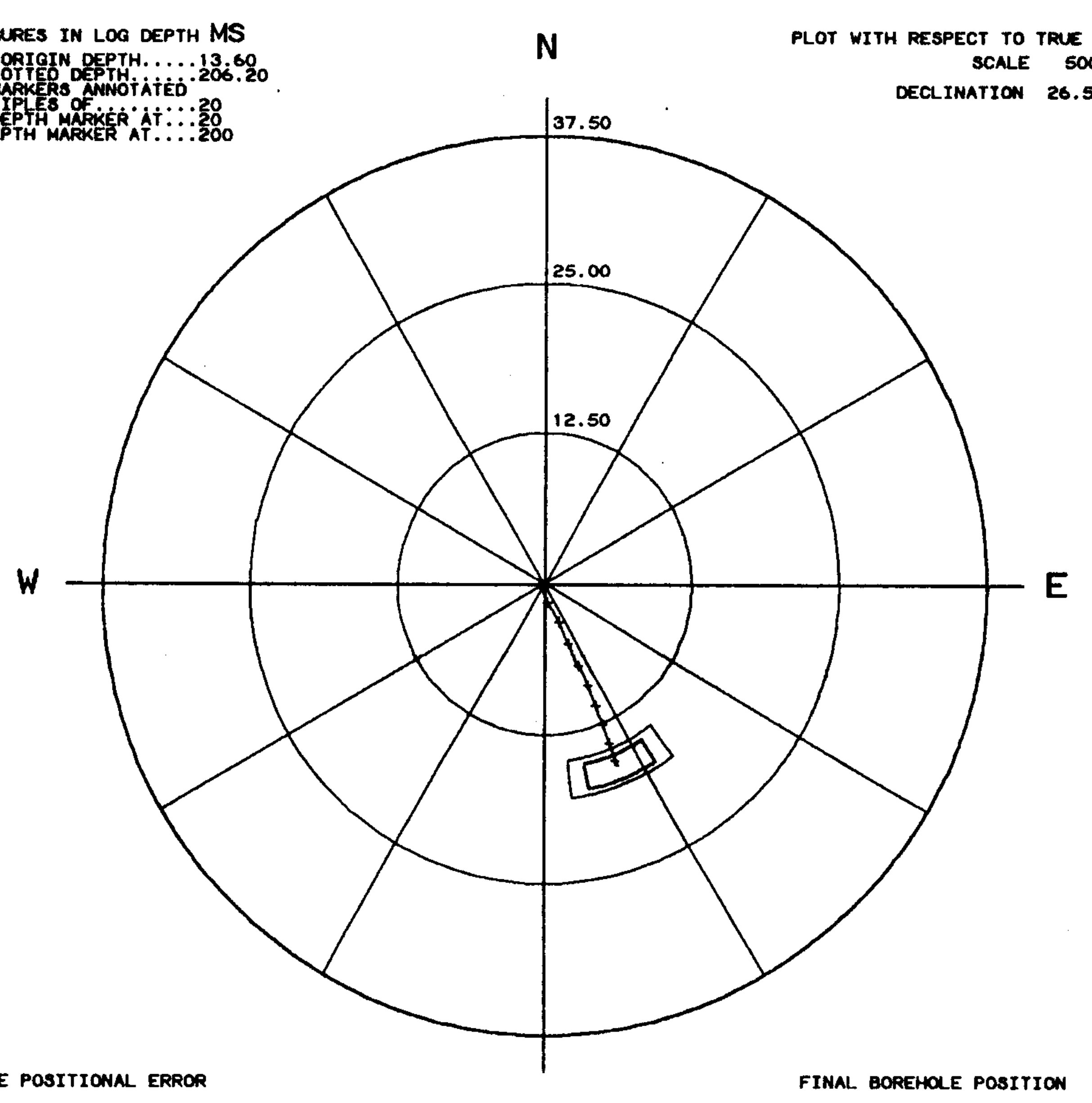
 205.00  204.24    5.3 140  -14.95    6.25 157  16.21 157   16.84 157   15.58 157   16.52 157   15.89
 206.00  205.23    4.9 134  -15.02    6.31 157  16.29 157   16.93 157   15.66 157   16.61 157   15.98
 206.20  205.43    4.8 133  -15.03    6.32 157  16.31 157   16.94 157   15.67 157   16.63 157   15.99
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....13.60
LAST PLOTTED DEPTH......206.20
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........20
FIRST DEPTH MARKER AT...20
LAST DEPTH MARKER AT....200

PLOT WITH RESPECT TO TRUE NORTH
SCALE 500:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

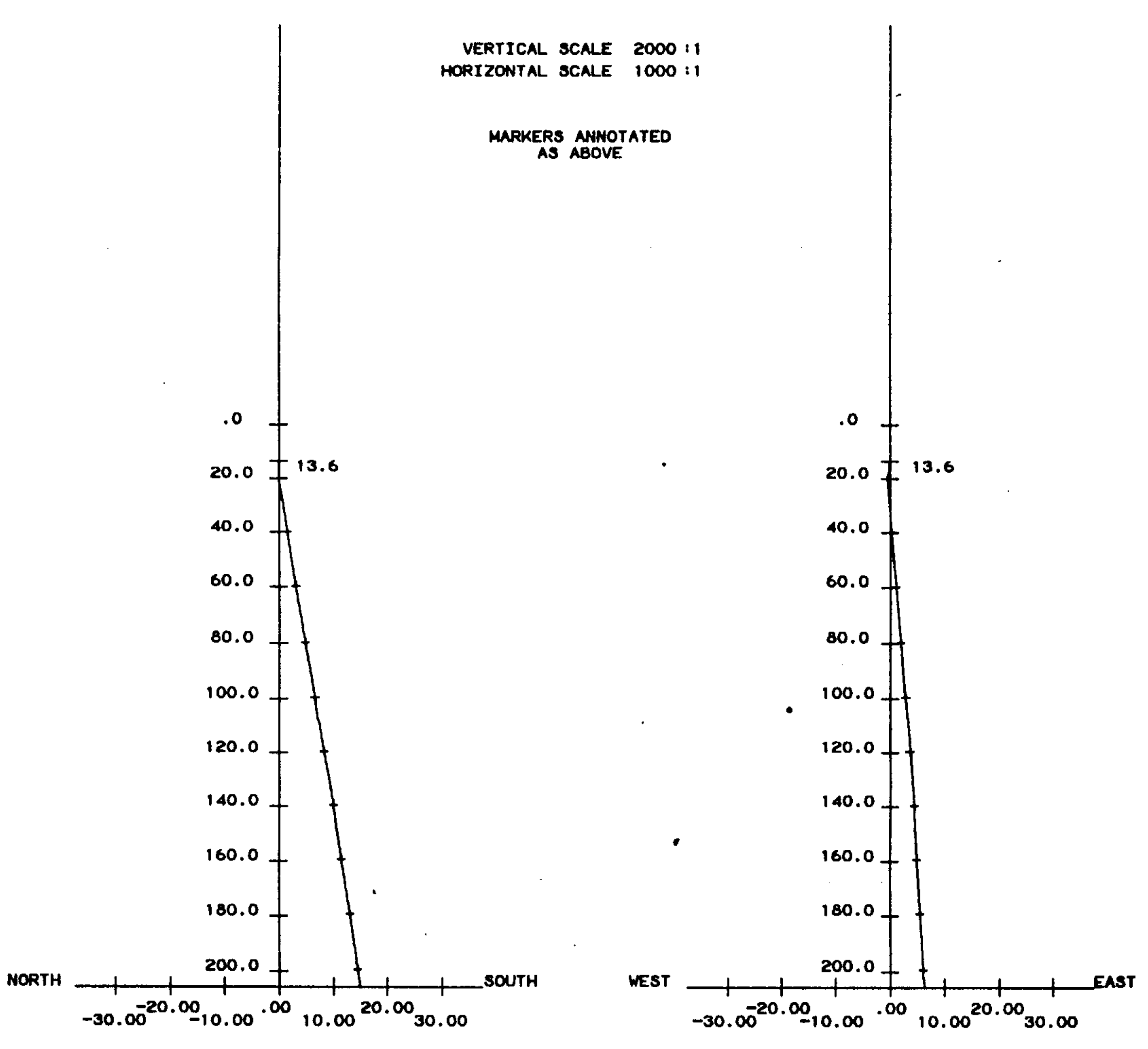
THE LAST PLOTTED DEPTH IS AT 15.03 MS SOUTH, 6.32 MS EAST IE. 16.31 MS FROM THE ORIGIN, 157 DEG FROM TRUE NORTH

VERTICAL SECTIONS

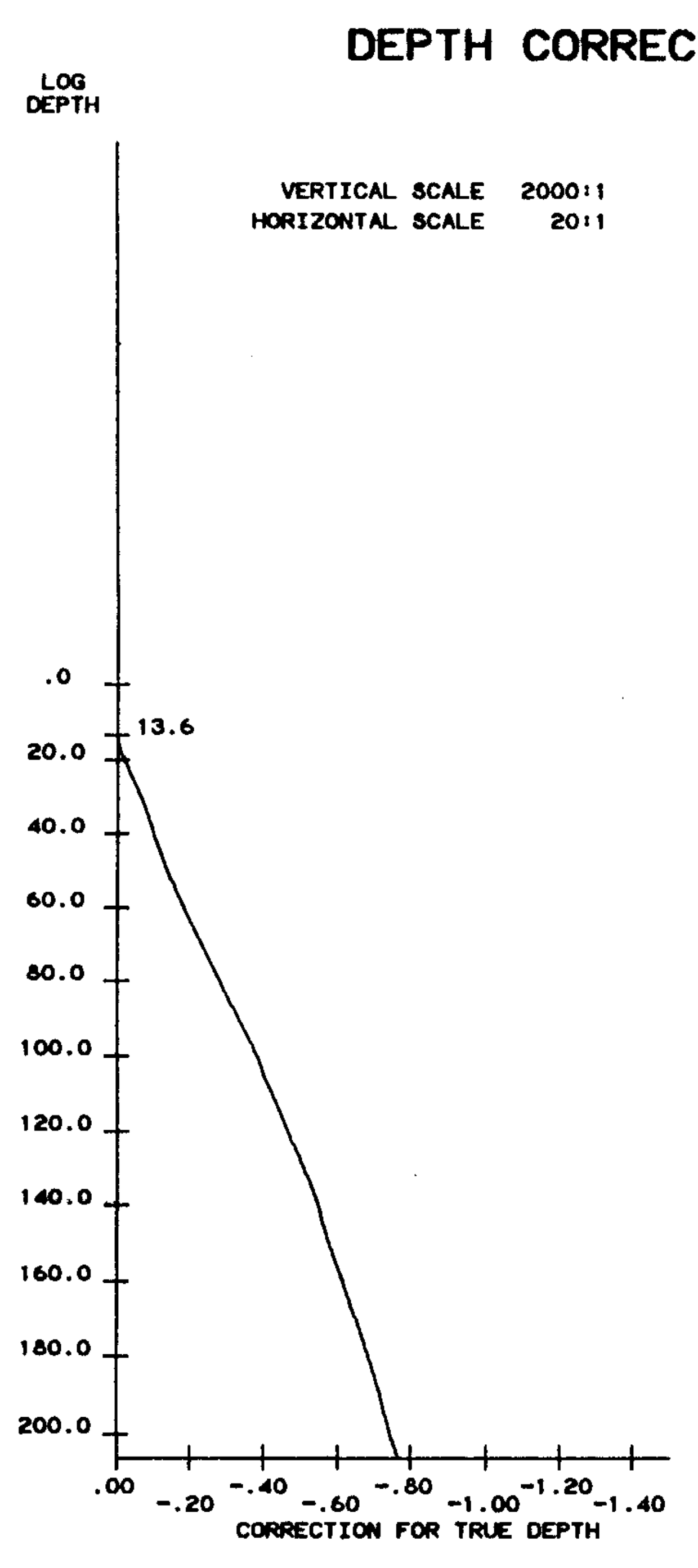
(TRUE DEPTH VS DISPLACEMENT)

N-S SECTION

E-W SECTION



DEPTH CORRECTION ANALYSIS



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
14.00	14.00	84.00	83.70	154.00	153.41
15.00	15.00	85.00	84.69	155.00	154.40
16.00	15.99	86.00	85.69	156.00	155.40
17.00	16.99	87.00	86.68	157.00	156.40
18.00	17.99	88.00	87.68	158.00	157.39
19.00	18.98	89.00	88.67	159.00	158.39
20.00	19.98	90.00	89.67	160.00	159.38
21.00	20.97	91.00	90.66	161.00	160.38
22.00	21.97	92.00	91.66	162.00	161.38
23.00	22.97	93.00	92.65	163.00	162.37
24.00	23.96	94.00	93.65	164.00	163.37
25.00	24.96	95.00	94.64	165.00	164.37
26.00	25.95	96.00	95.64	166.00	165.36
27.00	26.95	97.00	96.63	167.00	166.36
28.00	27.94	98.00	97.63	168.00	167.36
29.00	28.94	99.00	98.62	169.00	168.35
30.00	29.93	100.00	99.62	170.00	169.35
31.00	30.93	101.00	100.61	171.00	170.35
32.00	31.93	102.00	101.61	172.00	171.34
33.00	32.92	103.00	102.61	173.00	172.34
34.00	33.92	104.00	103.60	174.00	173.34
35.00	34.91	105.00	104.60	175.00	174.33
36.00	35.91	106.00	105.60	176.00	175.33
37.00	36.91	107.00	106.59	177.00	176.33
38.00	37.90	108.00	107.59	178.00	177.32
39.00	38.90	109.00	108.58	179.00	178.32
40.00	39.90	110.00	109.58	180.00	179.32
41.00	40.90	111.00	110.57	181.00	180.31
42.00	41.89	112.00	111.57	182.00	181.31
43.00	42.89	113.00	112.56	183.00	182.31
44.00	43.88	114.00	113.56	184.00	183.30
45.00	44.88	115.00	114.55	185.00	184.30
46.00	45.88	116.00	115.55	186.00	185.30
47.00	46.87	117.00	116.55	187.00	186.29
48.00	47.87	118.00	117.54	188.00	187.29
49.00	48.87	119.00	118.54	189.00	188.29
50.00	49.86	120.00	119.53	190.00	189.28
51.00	50.86	121.00	120.53	191.00	190.28
52.00	51.85	122.00	121.53	192.00	191.28
53.00	52.85	123.00	122.52	193.00	192.28
54.00	53.84	124.00	123.52	194.00	193.27
55.00	54.84	125.00	124.51	195.00	194.27
56.00	55.84	126.00	125.51	196.00	195.27
57.00	56.83	127.00	126.50	197.00	196.26
58.00	57.83	128.00	127.50	198.00	197.26
59.00	58.82	129.00	128.50	199.00	198.26
60.00	59.82	130.00	129.49	200.00	199.26
61.00	60.81	131.00	130.49	201.00	200.25
62.00	61.81	132.00	131.48	202.00	201.25
63.00	62.80	133.00	132.48	203.00	202.25
64.00	63.80	134.00	133.47	204.00	203.24
65.00	64.79	135.00	134.47	205.00	204.24
66.00	65.79	136.00	135.47	206.00	205.23
67.00	66.78	137.00	136.46	206.20	205.43
68.00	67.78	138.00	137.46		
69.00	68.77	139.00	138.46		
70.00	69.77	140.00	139.45		
71.00	70.76	141.00	140.45		
72.00	71.76	142.00	141.45		
73.00	72.75	143.00	142.44		
74.00	73.75	144.00	143.44		
75.00	74.74	145.00	144.44		
76.00	75.74	146.00	145.43		
77.00	76.73	147.00	146.43		
78.00	77.73	148.00	147.43		
79.00	78.72	149.00	148.43		
80.00	79.72	150.00	149.42		
81.00	80.71	151.00	150.42		
82.00	81.71	152.00	151.41		
83.00	82.70	153.00	152.41		

COMPANY	MANALTA
WELL	T93D-22
FIELD	SITE # 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
(DETAIL LOG)

BPB

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 28
WELL: T93D-22
COMPANY: MANALTA

COMPANY MANALTA
WELL T93D-22
FIELD SITE # 28
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
DIPMETER

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	28-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	207.3M			
DEPTH-LOGGER	207.0M			
FIRST READING	206.0M			
LAST READING	0M			
CASING-DRILLER	16.8M			
CASING-LOGGER	18.0M			
BIT SIZE	95MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 NDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	95MM	16.8M	TD	105MM	N/A	SURFACE	16.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

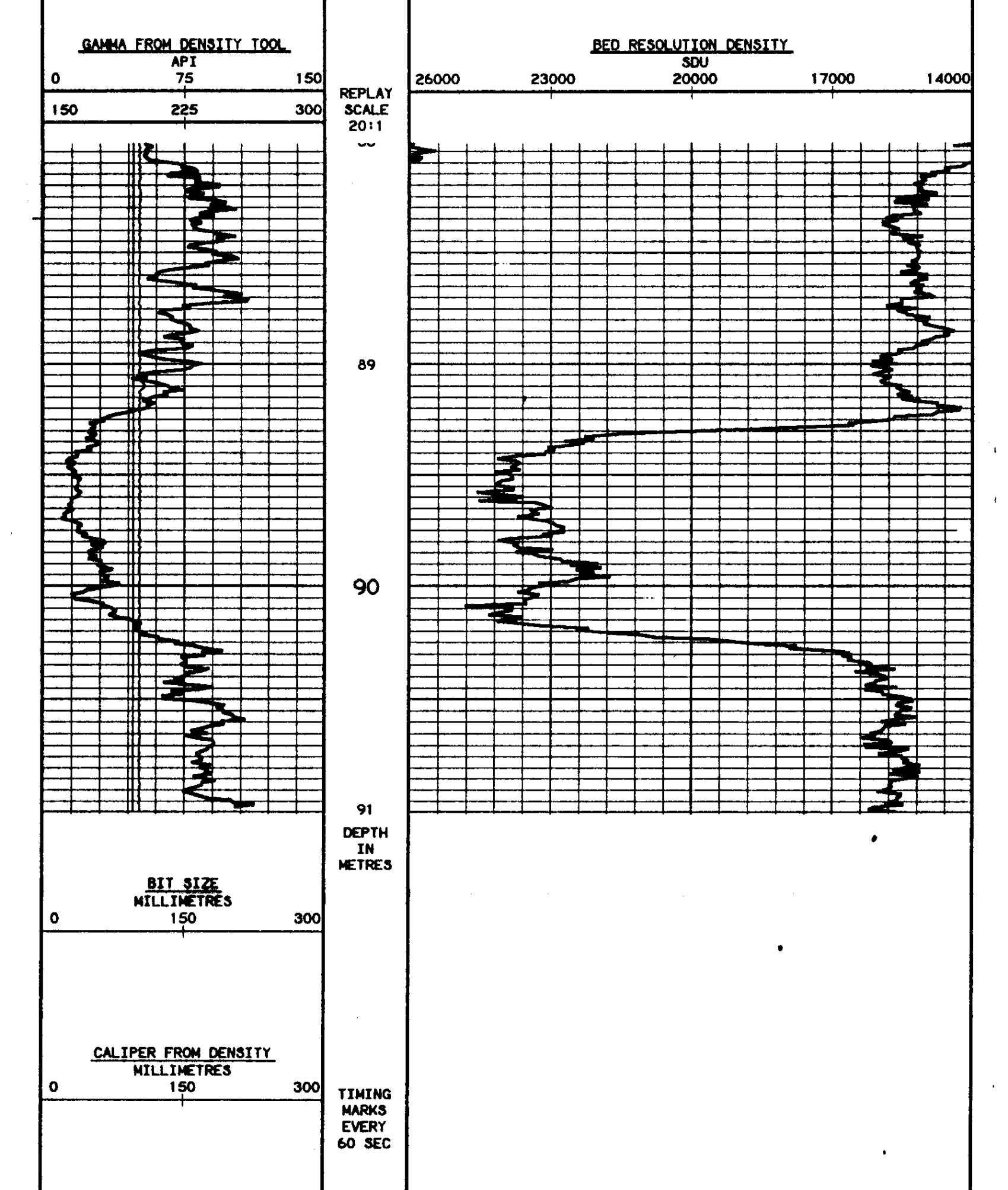
NOTE CASING MAY BE SEPERATED BETWEEN 10.5M AND 12.0M

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22C.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 10:07

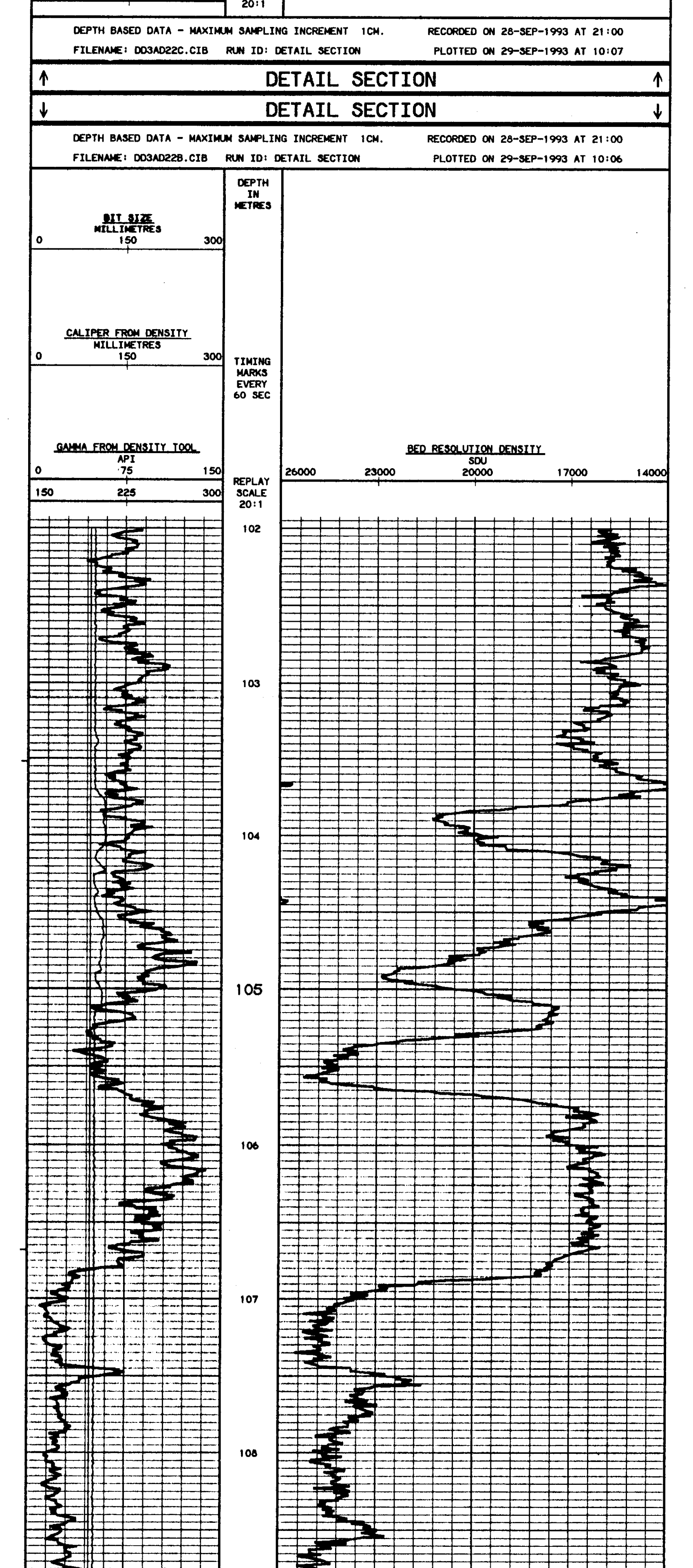


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22C.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 10:07

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22B.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 10:06



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22B.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 10:06

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22A.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 10:02

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22A.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 10:02

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 28-SEP-1993 AT 19:28 DATA LAST REPROCESSED: 29-SEP-1993 AT 9:46

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	16.80
BIT SIZE 3	.00	BIT DEPTH 3	207.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-22
FIELD	SITE # 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

DIPMETER ANALYSIS

SLIMLINE UNIT

#879

COMPANY MANALTA
WELL T93D-22
FIELD SITE # 28
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 28
WELL:
T93D-22
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	28-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	207.3M			
DEPTH-LOGGER	207.0M			
FIRST READING	206.0M			
LAST READING	OM			
CASING-DRILLER	16.8M			
CASING-LOGGER	18.0M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.03 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	OOM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	95MM	16.8M	TD	105MM	N/A	SURFACE	16.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
DIP/VERT	221/233			

REMARKS

DIPMETER ANALYSIS SLIMLINE UNIT

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 28-SEP-1993 AT 21:56
FILENAME: DIP3D22M.CIB RUN ID: MAIN LOG PLOTTED ON 29-SEP-1993 AT 10:13

GAMMA RAY API 0 75 150 / 150 225 300
DIPMETER CALIPER MM 0 150 300
BIT SIZE MM 0 150 300
DEPTH IN METRES
TIMING MARKS EVERY 60 SEC
REPLAY SCALE 100:1
PAD 3 CPS 6000 3500 1000
PAD 2 CPS 5000 2500 0
PAD 1 CPS 4000 1500 -1000
FORMATION DIP SOLID TADPOLES >.50 HOLLOW >.30 0 90

GAMMA RAY API 0 75 150 / 150 225 300
DIPMETER CALIPER MM 0 150 300
BIT SIZE MM 0 150 300
DEPTH IN METRES
TIMING MARKS EVERY 60 SEC
REPLAY SCALE 100:1
PAD 3 CPS 6000 3500 1000
PAD 2 CPS 5000 2500 0
PAD 1 CPS 4000 1500 -1000
FORMATION DIP SOLID TADPOLES >.50 HOLLOW >.30 0 90

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 28-SEP-1993 AT 21:56
FILENAME: DIP3D22M.CIB RUN ID: MAIN LOG PLOTTED ON 29-SEP-1993 AT 10:13

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 28-SEP-1993 AT 23:01 DATA LAST REPROCESSED: 29-SEP-1993 AT 09:13

LOGGING CONSTANTS & GAMMA CALIBRATION

CORRELATION STEP (M.)	.25	CORRELATION INTERVAL (M.)	.50
BIT SIZE #1 (MM)	105.00	BIT DEPTH #1 (M.)	.00
BIT SIZE #2	95.00	BIT DEPTH #2	16.80
BIT SIZE #3	.00	BIT DEPTH #3	207.30
BIT SIZE #4	.00	BIT DEPTH #4	0.00
BIT SIZE #5	.00	BIT DEPTH #5	0.00
GAMMA CALIBRATOR (API)	510.00	GAMMA COUNTS	311.50
UNUSED	XXXXXXXX	SEARCH ANGLE (DEGREES)	45.00
STRUCTURAL DIP ANGLE (DEGREES)	.00	STRUCTURAL DIP AZI. (DEGREES)	.00
DECLINATION (DEGREES)	26.50 E	DETAIL PAD DATA	NO
CORRELATE	YES	CALIPER UNITS	MM
DEPTH UNITS	METRIC	CALIPER USED IN CALCULATIONS	YES

LEVEL CELL CALIBRATION

TILT(DEGREES)	LC1(COUNTS)	LC2(COUNTS)
-10.00	114.00	121.00
-8.00	136.00	142.00
-6.00	158.00	166.00
-4.00	179.00	185.00
-2.00	198.00	202.00
.00	221.00	222.00
2.00	243.00	240.00
4.00	264.00	258.00
6.00	285.00	277.00
8.00	305.00	303.00
10.00	326.00	322.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00

CALIBRATION IDENTIFICATION: VERT # 233

MAGNETOMETER CALIBRATION

	MAG.X	MAG.Y	MAG.Z
MAX.	209.00	213.00	199.00
MIN.	150.00	148.00	161.00

CALIBRATION IDENTIFICATION: VERT # 233

CALIPER CAL. & PAD OFFSETS

CALIBRATOR(MM)	COUNTS	PAD 2 OFFSET(MM)	PAD 3 OFFSET(MM)
76.20	133.00	.00	.00
101.60	155.00	.00	.00
127.00	179.00	.00	.00
152.40	201.00	.00	.00
203.20	250.00	.00	.00
254.00	307.00	.00	.00

CALIBRATION IDENTIFICATION: 221

COMPANY	MANALTA
WELL	T93D-22
FIELD	SITE # 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

BPB

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 28
WELL: T93D-22
COMPANY: MANALTA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

COMPANY MANALTA
WELL T93D-22
FIELD SITE # 28
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#879

LOCATION	LSD	SEC	TWP	RGE
TELKWA				

OTHER SERVICES
DIPMETER

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	28-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	207.3M			
DEPTH-LOGGER	207.0M			
FIRST READING	206.0M			
LAST READING	0M			
CASING-DRILLER	16.8M			
CASING-LOGGER	16.0M			
BIT SIZE	95MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	95MM	16.8M	TD	105MM	N/A	SURFACE	16.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

NOTE CASING MAY BE SEPERATED BETWEEN 10.5M AND 12.0M

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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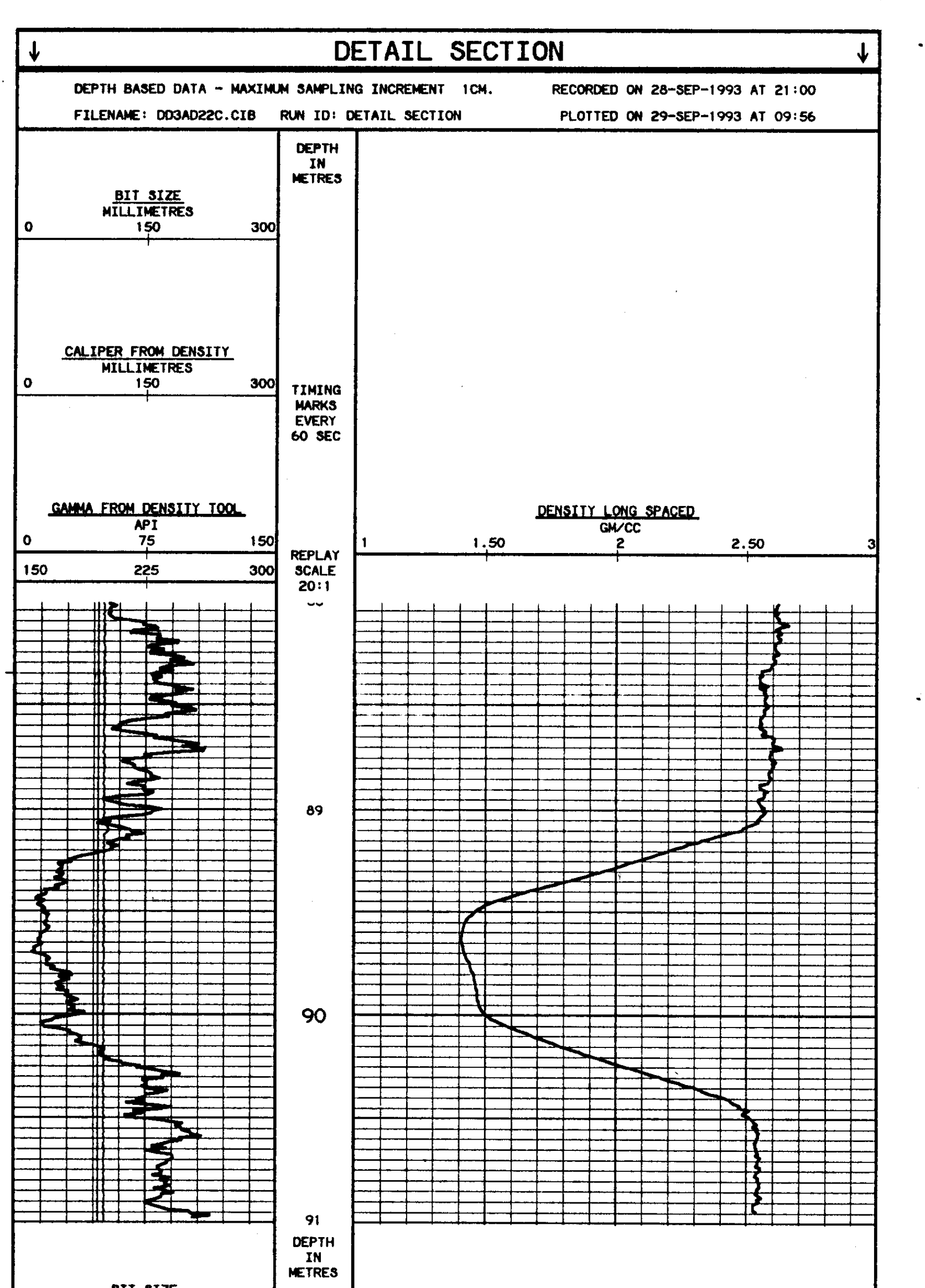
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22C.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 09:56



BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES
TIMING MARKS EVERY 60 SEC
REPLAY SCALE 20:1

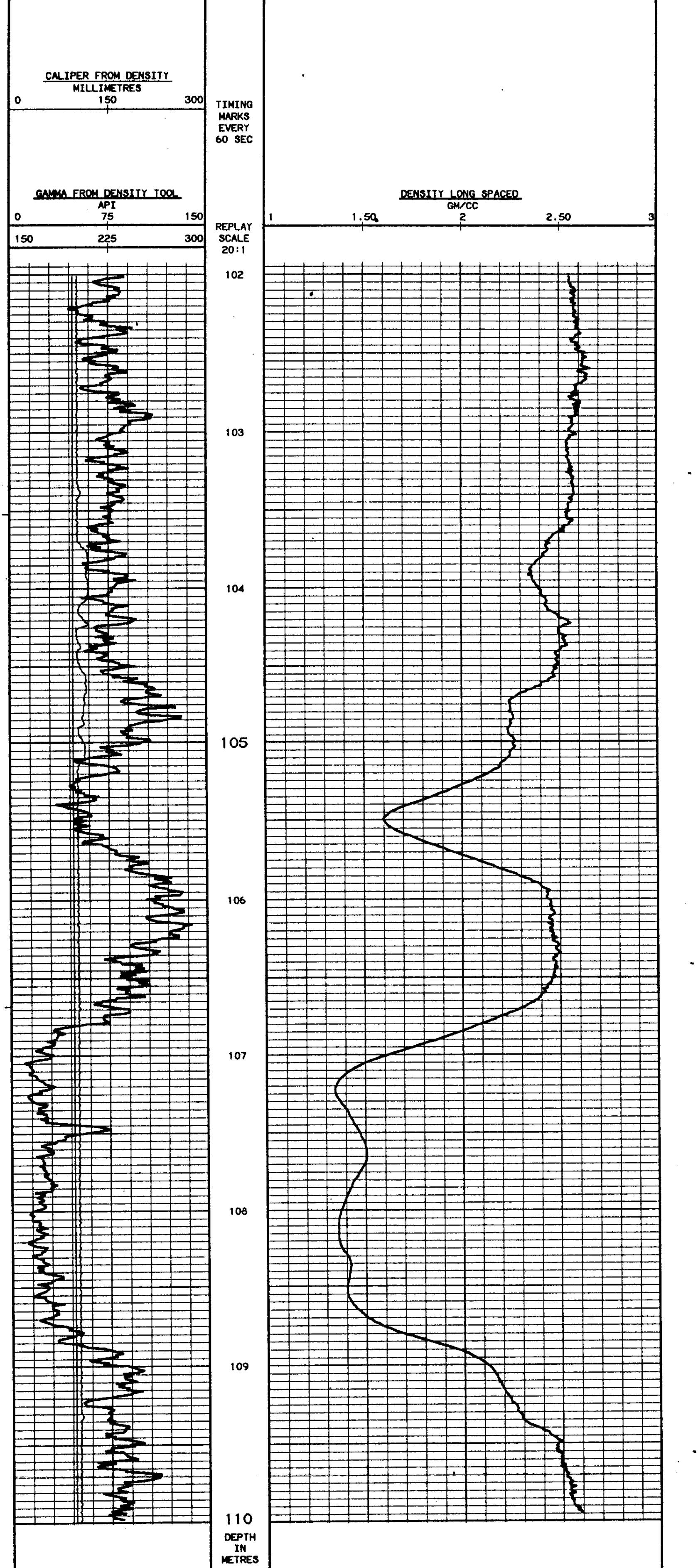
DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22C.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 09:55

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22B.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 09:54



BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES
TIMING MARKS EVERY 60 SEC
REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22B.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 09:53

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22A.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 09:52

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES
TIMING MARKS EVERY 60 SEC
REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22A.CIB RUN ID: DETAIL SECTION PLOTTED ON 29-SEP-1993 AT 09:47

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 28-SEP-1993 AT 19:28 DATA LAST REPROCESSED: 29-SEP-1993 AT 9:46

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	16.80
BIT SIZE 3	.00	BIT DEPTH 3	207.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-22
FIELD	SITE # 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#829 #1079

COMPANY	MANALTA
WELL	T93D-22
FIELD	SITE # 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
DIPMETER

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 28
WELL:
T93D-22
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	28-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	207.3M			
DEPTH-LOGGER	207.0M			
FIRST READING	206.0M			
LAST READING	0M			
CASING-DRILLER	16.8M			
CASING-LOGGER	16.8M			
BIT SIZE	95MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	95MM	16.8M	TD	105MM	N/A	SURFACE	16.8M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

NOTE CASING MAY BE SEPERATED BETWEEN 10.5M AND 12.0M

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

MAIN LOG

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22M.CIB RUN ID: MAIN LOG PLOTTED ON 29-SEP-1993 AT 09:41

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 28-SEP-1993 AT 21:00
FILENAME: DD3AD22M.CIB RUN ID: MAIN LOG PLOTTED ON 29-SEP-1993 AT 09:41

MAIN LOG

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 28-SEP-1993 AT 19:28

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	0.00
BIT SIZE 2	95.00	BIT DEPTH 2	16.80
BIT SIZE 3	.00	BIT DEPTH 3	207.30
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-22
FIELD	SITE # 28
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

#879

```
~Version Information          DIPMETER/STICK PLOT DATA LISTING
 VERS.                1.20:   CWLS Log ASCII Standard -Version 1.20
 WRAP.                  NO:   One line per depth step
#
#
~Well Information Block
#MNEM.UNIT   Data Type        Description
#---------   ------------     ----------------------------
 STRT.M             206.50:
 STOP.M              13.00:
 STEP.M               0.00:
 NULL.             -999.25:
 COMP.             COMPANY:   MANALTA
 WELL.                WELL:   T93D-22
 FLD .               FIELD:   SITE # 28
 LOC .            LOCATION:   TELKWA
 PROV.            PROVINCE:   BRITISH COLUMBIA
 SRVC.     SERVICE COMPANY:   BPB Wireline Services
 DATE.            LOG DATE:   28-SEP-1993
 UWI .      UNIQUE WELL ID:
#
#
~Curve Information Block
#MNEM.UNIT                    Curve Description
#---------                    -----------------
 DEPT.M                   :   DEPTH ROUNDED TO NEAREST CALIBRATION STEP MULTIPLE
 CALD.mm                  :   DIPMETER CALIPER
 TILD.degs                :   BOREHOLE TILT
 AZID.degs                :   BOREHOLE AZIMUTH
 DIPF.degs                :   FORMATION DIP
 AZIF.degs                :   FORMATION AZIMUTH
 CORC.----                :   CORRELATION COEFFICIENT
 STK1.degs                :   STICK PLOT SECTION 1
 STK2.degs                :   STICK PLOT SECTION 2
#
#
~Parameter Information
#MNEM.UNIT   Value            Description
#---------   ------------     ----------------------------
 DECL.deg            26.50:   MAGNETIC DECLINATION (EAST OF NORTH)
 CORS.m               0.25:   CORRELATION STEP
 CORI.m               0.50:   CORRELATION INTERVAL
 SANG.deg            45.00:   SEARCH ANGLE
 SDIP.deg             0.00:   STRUCTURAL DIP
 SAZI.deg             0.00:   STRUCTURAL AZIMUTH
#
#
~Other Information
File Identification           MAIN LOG

DIPMETER LISTINGS
```

```
Run number   FIVE          Log 1st rdg   206.0m      Log last rdg  0m
Driller TD   207.3m        Logger TD     207.0m      Water level
Perm Datum   GROUND LEVEL  Elevation     N/A         Other srvcs   CCS
Dril mes from 00m          Log meas from 00m         Other srvcs
Elevation: KB N/A          DF            N/A         GL            N/A
Casing Driler 16.8m        Casing Logger 18.0m       Casing size   105mm
Casing Weight N/A          From          SURFACE     To            16.8m
Bit size     95mm          From          16.8m       To            TD
Hole fl type BENTONITE     Sample source             Fluid loss    N/A
Density      1.03          Viscosity     N/A         pH            N/A
RM @ meas tmp              RMF @ mes tmp             RMC @ mes tmp
RM @ BHT                   RMF source                RMC-source
Max rec temp               Time snc circ             LsdSecTwpRge
Equipment no. V222         Base          RDR         Equip. name   DIP/VERT
Recorded by  A. LE BRETON  Witnessed by  T. BRAZZONI Sonde srl no. 221/233
Last title   WATER LEVEL   Last line     00m         Permit no.
```

BPB DIPMETER ANALYSIS INTERPRETATION NOTES

1. All plots are correct to the resolution of the plotter used, ie. one two-hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background.

2. Rose diagrams when plotted occur between every major division and are delimited by two bold arrows. For certain replay scales it may be desirable to plot these less frequently; this option is available on request.

3. The grid over which the computed dip is displayed is locally linear. That is to say it is linear between 0 and 10 degrees, 10 and 20, 20 and 30 etc.

4. The correlation value will vary depending on the interval size selected. Generally speaking the larger the correlation interval, the lower the value becomes. For this reason a direct comparison of this value for differing correlation intervals is meaningless, quality control being exercised with an appreciation of this effect.

5. Stick data may be shown relative to any two vertical planes and is the angle (to the horizontal) of the intersection of the resolved plane and the vertical plane.

6. The angle of declination is taken to be the angle between Magnetic North and reference North (True, Grid or Magnetic) measured in an anti-clockwise direction.

7. For customised control of computed dipmeter analysis the following parameters must be specified:
    - correlation step and interval(s)
    - magnetic declination
    - search angle(s)
    - depth range(s)
    - replay scale(s)
    - the frequency for rose diagrams
    - the sections for stick plots
    - (quality control is exercised in accordance with the correlation interval used, alternatively all correlations may be displayed on request)

The following information is a listing of ALL the output from BPB's dipmeter analysis. Below is a full description of each data item:

DEPTH	the depth corresponding to the centre of the correlation interval.
CALIPER	the average borehole caliper recorded over the correlation interval.
HOLE DRIFT	the average borehole deviation from vertical over the correlation interval.
HOLE AZIMUTH	the average borehole azimuth over the correlation interval in degrees East of true North.
DIP ANGLE	the computed formation dip in degrees, from the horizontal plane.
DIP AZIMUTH	the formation azimuth in degrees East of true North.
CORRELATION	a measure of the reliability of the computed result. This parameter is also used in the visual display to determine the quality of result.
SECTION	the formation dip across the specified sections.

Further recorrelations over any step and interval size are available on any scale over any section of the log. Alternative methods of presentation, or analysis may be available on request.

```
#
#  Depth    Caliper      Borehole            Formation      Correlation        S
tick Plot Section
#                         Tilt    Azimuth     Dip     Azimuth   Coefficient   180.0
-  0.0   270.0- 90.0
#    (M)       (mm)     (deg)      (deg)     (deg)     (deg)       (----)         (d
eg)          (deg)
~A
   206.50   -999.25  -999.25    -999.25       0.0       0.0       -1.00          0
.00          0.00
   206.00     117.5      5.0      133.8       6.2     328.5        0.64          5
.33         -3.28
   205.50     115.4      5.3      136.9      25.5     300.7        0.38         13
.69        -22.31
   205.00     112.2      5.3      140.8      24.5     149.2        0.60        -21
.34         13.10
   204.50     110.1      5.3      146.1      35.1      92.9        0.14         -2
.02         35.07
   204.00     110.1      5.2      148.0       9.8     261.3        0.49         -1
.49         -9.66
   203.50     110.1      5.1      151.1      15.9     322.1        0.79         12
.70         -9.93
   203.00     110.1      4.9      153.0       9.8      42.1        0.49          7
.27          6.59
   202.50     110.1      4.8      155.3      27.9     248.7        0.33        -10
.90        -26.24
   202.00     113.2      4.7      156.2       7.3      62.7        0.61          3
.36          6.50
   201.50     111.1      4.6      157.2       6.2     321.5        0.86          4
.83         -3.84
   201.00     111.1      4.5      158.7      15.7     325.0        0.70         12
.94         -9.12
   200.50     112.2      4.5      160.1      11.1     250.4        0.39         -3
.76        -10.46
   200.00     111.1      4.4      159.5      47.3     327.1        0.17         42
.32        -30.53
   199.50     110.1      4.3      159.9       5.6     295.2        0.91          2
.41         -5.10
   199.00     111.1      4.4      159.8       9.5     261.9        0.12         -1
.35         -9.41
   198.50     110.1      4.3      159.9       7.7     203.5        0.46         -7
.03         -3.06
   198.00     111.1      4.3      161.1       6.2     275.8        0.56          0
.63         -6.13
   197.50     114.3      4.2      159.9      51.6       3.7        0.33         51
.58          4.70
   197.00     110.1      4.2      160.5      60.1       4.9        0.43         60
.00          8.40
   196.50     110.1      4.3      161.3       5.3      33.3        0.15          4
.42          2.90
   196.00     111.1      4.2      159.1       0.0       0.0       -1.00          0
.00          0.00
   195.50     113.2      4.3      160.5       6.8     309.0        0.74          4
.28         -5.27
   195.00     115.4      4.3      160.0      10.1     355.3        0.54         10
.08         -0.84
   194.50     115.4      4.3      161.3      17.8      28.6        0.48         15
.72          8.73
   194.00     115.4      4.2      159.9      20.4     265.0        0.79         -1
.86        -20.34
   193.50     113.2      4.3      160.0      35.4     293.4        0.34         15
.74        -33.08
   193.00     112.2      4.3      161.3       8.0     355.5        0.72          7
.98         -0.64
   192.50     114.3      4.3      160.5       3.3      26.0        0.53          3
.01          1.47
   192.00     113.2      4.4      160.0       1.7      57.7        0.44          0
.89          1.41
   191.50     112.2      4.4      159.4      39.6      34.6        0.46         34
.25         25.15
   191.00     111.1      4.4      159.4       5.3      14.5        0.72          5
.11          1.32
   190.50     110.1      4.4      159.2      51.9     334.3        0.30         48
.97        -28.97
   190.00     110.1      4.4      159.4       4.0     353.3        0.82          3
.93         -0.46
   189.50     110.1      4.3      159.3      23.0      24.3        0.78         21
.11          9.89
   189.00     110.1      4.5      160.0      23.0     163.2        0.28        -22
.08          6.98
   188.50     110.1      4.4      159.4      15.1     346.7        0.49         14
.74         -3.57
   188.00     110.1      4.3      161.1      33.3       9.1        0.40         33
.01          5.94
   187.50     109.0      4.4      159.4       5.0       4.4        0.80          5
.00          0.39
   187.00     109.0      4.4      160.4       8.5     155.8        0.49         -7
.79          3.52
   186.50     110.1      4.4      159.8       3.2     254.6        0.42         -0
.84         -3.05
   186.00     110.1      4.5      159.7      18.9     157.0        0.42        -17
.51          7.61
   185.50     110.1      4.6      160.0      35.6     154.3        0.71        -32
.86         17.25
   185.00     110.1      4.6      159.6      11.0     345.0        0.60         10
.63         -2.88
   184.50     110.1      4.7      158.6      15.8       0.3        0.56         15
.84          0.09
   184.00     110.1      4.6      157.6      17.4     327.3        0.41         14
.80         -9.61
   183.50     110.1      4.7      157.5      22.8     307.3        0.31         14
.28        -18.48
   183.00     110.1      4.8      158.7      10.8     239.9        0.64         -5
.48         -9.39
   182.50     110.1      4.7      158.6      44.4     349.9        0.26         43
.98         -9.73
   182.00     110.1      4.7      158.6      38.7     246.8        0.16        -17
.52        -36.38
   181.50     110.1      4.6      157.4      25.6     296.4        0.15         12
.02        -23.23
   181.00     110.1      4.7      158.6      42.4     325.0        0.20         36
.79        -27.67
   180.50     110.1      4.6      159.0      22.7     313.1        0.82         15
.95        -16.98
   180.00     110.1      4.7      158.5      30.9     266.5        0.70         -2
.09        -30.83
   179.50     110.1      4.6      159.6       8.8     305.6        0.68          5
.15         -7.17
   179.00     110.1      4.7      158.5      17.3     325.7        0.95         14
.45         -9.98
   178.50     110.1      4.7      159.2      22.2     299.7        0.85         11
.42        -19.49
   178.00     111.1      4.6      158.8      30.9     170.9        0.68        -30
.56          5.43
   177.50     110.1      4.6      159.0      31.7     281.4        0.43          6
.93        -31.17
   177.00     110.1      4.7      158.6      38.6     312.0        0.80         28
.10        -30.72
   176.50     110.1      4.6      159.0      27.3     315.3        0.60         20
.12        -19.93
   176.00     110.1      4.6      159.6      27.0     283.2        0.58          6
.64        -26.39
   175.50     110.1      4.6      159.0      28.3     280.0        0.69          5
.37        -27.96
   175.00     109.0      4.6      159.0      30.7     282.1        0.55          7
.12        -30.14
   174.50     109.0      4.6      159.6      39.8     273.0        0.53          2
.50        -39.73
   174.00     109.0      4.7      158.5      37.9     287.4        0.83         13
.13        -36.62
   173.50     107.9      4.7      158.5      33.2     279.0        0.48          5
.83        -32.84
   173.00     109.0      4.7      158.7      25.9     195.5        0.49        -25
.04         -7.37
   172.50     109.0      4.7      158.5      10.6     291.9        0.45          4
.01         -9.89
   172.00     109.0      4.7      159.0      25.1     271.2        0.61          0
.58        -25.07
   171.50     109.0      4.7      158.7      32.6     279.5        0.67          6
.04        -32.28
   171.00     107.9      4.8      159.1      25.2     270.0        0.74          0
.01        -25.16
   170.50     109.0      4.8      159.7      27.0     276.3        0.70          3
.22        -26.87
   170.00     110.1      4.8      160.5      34.4     243.6        0.31        -16
.91        -31.53
   169.50     109.0      4.8      160.3      22.5     256.4        0.78         -5
.57        -21.95
   169.00     109.0      4.8      160.3      23.0     264.8        0.80         -2
.19        -22.88
   168.50     110.1      4.7      159.3      17.0     237.0        0.57         -9
.43        -14.37
   168.00     110.1      4.7      160.4      31.1     192.6        0.57        -30
.45         -7.46
   167.50     109.0      4.8      160.3      12.6     321.1        0.87          9
.85         -7.98
   167.00     110.1      4.7      159.3      39.8     176.7        0.32        -39
.72          2.78
   166.50     110.1      4.8      159.8       0.0       0.0       -1.00          0
.00          0.00
   166.00     111.1      4.7      159.5      41.4     228.1        0.33        -30
.53        -33.30
   165.50     110.1      4.8      160.5      20.7     291.0        0.38          7
.71        -19.40
   165.00     111.1      4.8      160.5      17.7     285.4        0.82          4
.84        -17.09
   164.50     110.1      4.8      160.9      32.4     267.0        0.96         -1
.88        -32.34
   164.00     110.1      4.9      160.9      39.4     303.8        0.33         24
.55        -34.34
   163.50     110.1      4.8      160.3      19.6     276.3        0.35          2
.26        -19.51
   163.00     110.1      4.9      160.7      26.6     274.0        0.55          1
.98        -26.51
   162.50     110.1      4.9      160.9      38.4     234.3        0.12        -24
.78        -32.74
   162.00     110.1      4.9      159.9      23.0     266.8        0.62         -1
.37        -22.93
   161.50     109.0      4.9      160.7      40.5      77.8        0.51         10
.19         39.83
   161.00     110.1      4.9      160.7      23.0     233.0        0.27        -14
.30        -18.70
   160.50     110.1      4.9      160.1      45.4     258.0        0.55        -11
.93        -44.76
   160.00     110.1      4.9      160.1      27.8     259.8        0.78         -5
.32        -27.43
   159.50     110.1      5.0      160.0      20.2     260.1        0.85         -3
.63        -19.96
   159.00     109.0      4.9      159.6      43.6     174.5        0.39        -43
.50          5.26
   158.50     110.1      4.8      160.6      27.0     255.2        0.48         -7
.40        -26.24
   158.00     110.1      5.0      160.0      27.4     221.7        0.64        -21
.14        -18.98
   157.50     110.1      4.9      159.3      45.0     292.0        0.77         20
.56        -42.88
   157.00     109.0      4.9      159.6       0.0       0.0       -1.00          0
.00          0.00
   156.50     109.0      4.9      158.8      27.1     269.6        0.80         -0
.22        -27.10
   156.00     109.0      4.8      159.8      29.3     271.1        0.82          0
.60        -29.29
   155.50     110.1      4.8      160.6      29.0     269.6        0.65         -0
.23        -29.03
   155.00     110.1      4.8      160.6      49.0      10.1        0.41         48
.56         11.36
   154.50     111.1      4.9      160.1      35.1     269.6        0.29         -0
.30        -35.10
   154.00     110.1      4.9      160.5      17.5      20.4        0.69         16
.47          6.28
   153.50     110.1      4.8      159.9      26.6     246.2        0.37        -11
.41        -24.59
   153.00     110.1      4.8      160.4      14.0     263.1        0.90         -1
.72        -13.89
   152.50     110.1      4.9      159.1      12.4     295.2        0.65          5
.34        -11.26
   152.00     110.1      5.0      159.7      15.0     242.8        0.79         -7
.01        -13.44
   151.50     110.1      5.0      159.4      17.8     222.5        0.66        -13
.30        -12.21
   151.00     110.1      4.9      158.8      27.9     288.0        0.15          9
.31        -26.71
   150.50     110.1      5.0      158.8      43.5     278.1        0.39          7
.63        -43.26
   150.00     110.1      5.0      158.0       9.9     227.0        0.33         -6
.81         -7.31
   149.50     111.1      4.6      160.8      32.5     277.4        0.68          4
.68        -32.25
   149.00     110.1      4.6      160.2      35.5     261.4        0.85         -6
.08        -35.15
   148.50     110.1      4.6      160.8      21.5     265.0        0.75         -1
.96        -21.39
   148.00     110.1      4.5      161.1      35.6     271.1        0.64          0
.77        -35.63
   147.50     110.1      4.5      162.3      32.6     266.4        0.51         -2
.30        -32.59
   147.00     110.1      4.6      160.6      31.3     269.0        0.72         -0
.58        -31.32
   146.50     105.8      4.6      160.6      33.7     266.0        0.39         -2
.68        -33.63
   146.00     103.7      4.6      161.2      37.4     271.8        0.42          1
.36        -37.38
   145.50     104.8      4.5      161.6       0.0       0.0       -1.00          0
.00          0.00
   145.00     110.1      4.5      160.8      26.0     158.4        0.28        -24
.34         10.17
   144.50     112.2      4.3      161.3       0.0       0.0       -1.00          0
.00          0.00
   144.00     111.1      4.3      161.9      35.9     249.1        0.72        -14
.48        -34.06
   143.50     111.1      4.3      160.7      25.5     275.3        0.77          2
.52        -25.42
   143.00     109.0      4.3      161.3      33.4     274.1        0.85          2
.68        -33.36
   142.50     103.7      4.4      160.7      24.7     166.8        0.32        -24
.14          6.00
   142.00     103.7      4.5      160.8      29.4     281.1        0.76          6
.18        -28.92
   141.50     107.9      4.5      161.4      29.6     259.2        0.39         -6
.09        -29.21
   141.00     109.0      4.5      161.8      38.1     134.6        0.28        -28
.84         29.16
   140.50     110.1      4.6      160.6      30.5     269.2        0.85         -0
.46        -30.53
   140.00     110.1      4.6      160.2      49.9     177.2        0.39        -49
.85          3.34
   139.50     110.1      4.7      159.8      41.5     276.3        0.56          5
.59        -41.35
   139.00     110.1      4.7      159.4      15.4     265.6        0.35         -1
.20        -15.35
   138.50     111.1      4.8      159.8      20.5     261.9        0.43         -3
.00        -20.31
   138.00     111.1      4.9      158.5       0.0       0.0       -1.00          0
.00          0.00
   137.50     111.1      4.9      158.8      12.1     188.8        0.64        -11
.92         -1.87
   137.00     111.1      5.0      158.0      33.6     174.0        0.29        -33
.46          3.96
   136.50     107.9      5.1      157.5      27.3     269.8        0.54         -0
.13        -27.27
   136.00     110.1      5.0      157.9      27.5     284.1        0.64
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VERTICALITY ANALYSIS

#879 #870

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 32
WELL:
T93R-36
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-36
FIELD SITE # 32
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL, ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	28-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	138.0M			
DEPTH-LOGGER	138.0M			
FIRST READING	137.5M			
LAST READING	0M			
CASING-DRILLER	5.4M			
CASING-LOGGER	5.4M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL				

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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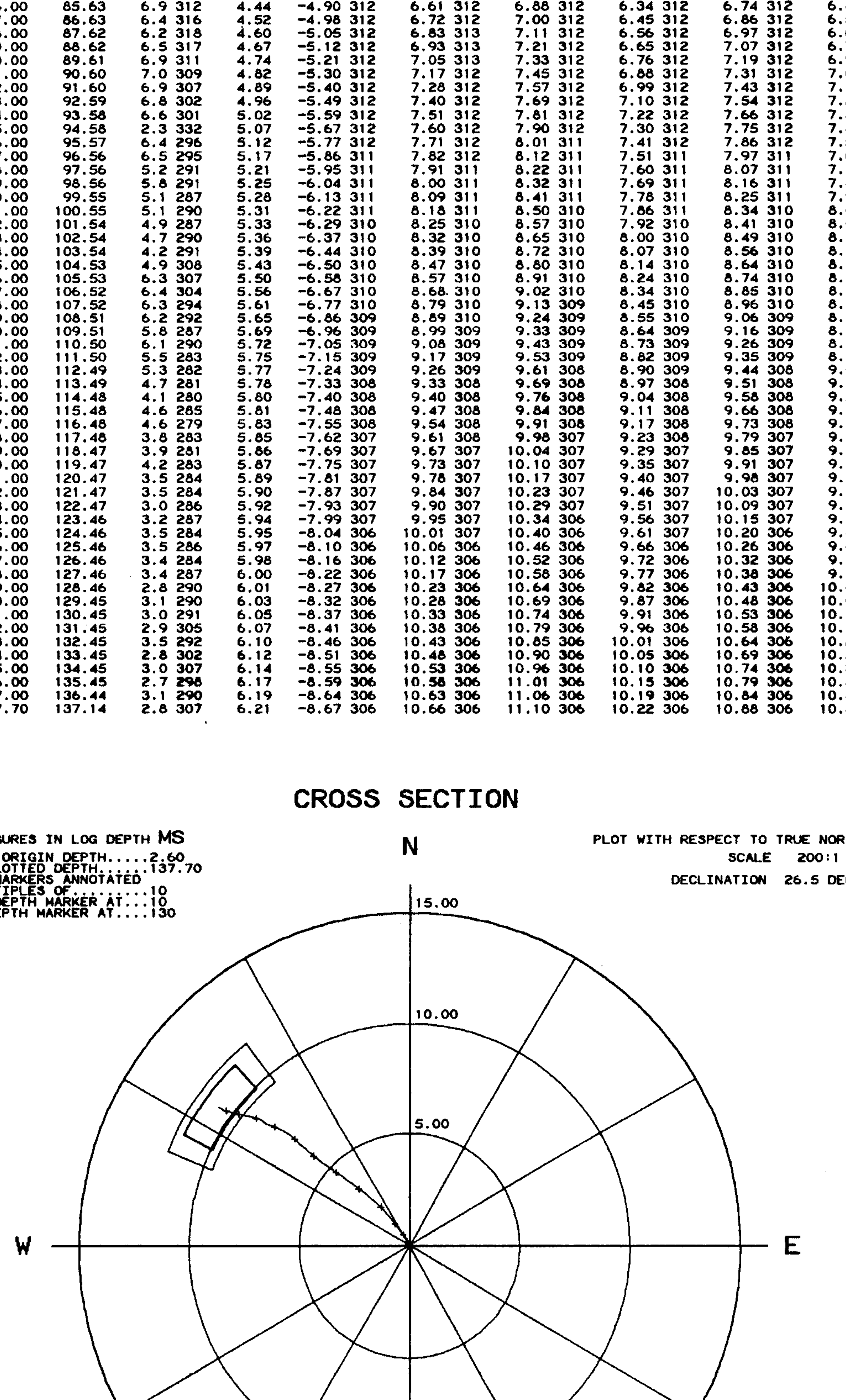
T93R-36                        VERTICALITY DATA LISTING                   DATE PROCESSED: 28-SEP-1993
                      ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH         DATE LOGGED:    28-SEP-1993
   DEPTHS        BOREHOLE   AXIAL CO-ORDS    POLAR      POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG     TRUE   TILT AZI   NORTH    EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

  3.00     3.00   0.8 119   0.00     0.00 284   0.00 284    0.00 284    0.00 284    0.00 284    0.00
  4.00     4.00   0.8 359   0.00     0.01  97   0.01  96    0.01  97    0.00  97    0.01  97    0.01
  5.00     5.00   1.0 254   0.00    -0.01 236   0.01 236    0.01 236    0.01 236    0.01 236    0.01
  6.00     6.00   1.0 314   0.01    -0.02 297   0.02 297    0.02 297    0.01 297    0.02 297    0.02
  7.00     7.00   0.9 311   0.02    -0.03 305   0.03 305    0.04 305    0.02 305    0.04 305    0.03
  8.00     8.00   0.2 302   0.02    -0.03 306   0.04 306    0.05 306    0.03 306    0.04 306    0.03
  9.00     9.00   0.2  60   0.03    -0.03 311   0.04 312    0.06 309    0.03 311    0.05 310    0.04
 10.00    10.00   0.5  29   0.04    -0.03 318   0.05 320    0.06 315    0.03 319    0.06 317    0.04
 11.00    11.00   0.7  39   0.05    -0.03 327   0.05 329    0.07 324    0.04 328    0.06 326    0.05
 12.00    12.00   0.8   0   0.06    -0.03 334   0.06 335    0.08 331    0.04 335    0.07 333    0.05
 13.00    13.00   0.8   8   0.07    -0.03 338   0.07 339    0.10 337    0.05 339    0.09 338    0.06
 14.00    14.00   0.7 336   0.08    -0.03 340   0.09 340    0.11 338    0.06 340    0.10 339    0.07
 15.00    15.00   1.0 331   0.09    -0.04 338   0.10 339    0.13 337    0.07 339    0.12 338    0.09
 16.00    16.00   1.1 311   0.11    -0.05 335   0.12 336    0.15 333    0.08 335    0.14 334    0.10
 17.00    17.00   1.2 309   0.12    -0.07 331   0.14 332    0.18 329    0.10 332    0.16 330    0.12
 18.00    18.00   1.2 306   0.14    -0.08 328   0.16 330    0.20 326    0.12 329    0.18 328    0.14
 19.00    19.00   1.2 328   0.15    -0.10 327   0.18 328    0.23 325    0.14 327    0.21 326    0.16
 20.00    20.00   1.4 322   0.17    -0.12 326   0.21 327    0.25 324    0.16 327    0.23 325    0.18
 21.00    21.00   1.7 339   0.19    -0.13 326   0.23 327    0.28 325    0.18 327    0.25 326    0.20
 22.00    22.00   1.8 338   0.22    -0.14 328   0.26 329    0.31 327    0.20 328    0.28 327    0.23
 23.00    23.00   2.0 343   0.25    -0.15 329   0.29 330    0.35 329    0.23 330    0.32 329    0.26
 24.00    24.00   2.2 341   0.28    -0.16 331   0.33 331    0.39 330    0.27 331    0.36 331    0.30
 25.00    25.00   2.1 346   0.32    -0.17 332   0.36 332    0.43 332    0.30 332    0.40 332    0.33
 26.00    25.99   2.4 335   0.36    -0.19 333   0.41 333    0.47 332    0.34 333    0.44 333    0.37
 27.00    26.99   2.5 327   0.40    -0.21 333   0.45 333    0.52 332    0.38 333    0.48 332    0.41
 28.00    27.99   2.5 317   0.43    -0.23 331   0.48 332    0.56 331    0.41 331    0.62 331    0.45
 29.00    28.99   2.0 314   0.45    -0.26 330   0.52 330    0.60 329    0.45 330    0.56 330    0.48
 30.00    29.99   2.4 311   0.48    -0.30 328   0.56 329    0.64 328    0.48 328    0.60 328    0.52
 31.00    30.99   2.7 310   0.51    -0.33 327   0.61 327    0.69 326    0.52 327    0.65 327    0.57
 32.00    31.99   3.0 317   0.55    -0.36 326   0.66 327    0.74 326    0.57 327    0.70 326    0.61
 33.00    32.99   3.2 320   0.59    -0.40 326   0.71 326    0.80 325    0.62 326    0.75 325    0.66
 34.00    33.99   3.3 319   0.63    -0.43 326   0.76 326    0.86 325    0.67 326    0.81 325    0.72
 35.00    34.98   3.4 319   0.68    -0.47 325   0.82 326    0.92 325    0.73 325    0.87 325    0.78
 36.00    35.98   3.6 322   0.73    -0.51 325   0.89 325    0.99 324    0.79 325    0.94 325    0.84
 37.00    36.98   4.1 328   0.78    -0.55 325   0.95 325    1.06 325    0.85 325    1.01 325    0.90
 38.00    37.98   3.9 319   0.83    -0.59 325   1.02 325    1.13 324    0.91 325    1.07 325    0.97
 39.00    38.97   4.0 317   0.89    -0.63 325   1.09 325    1.20 324    0.98 325    1.15 324    1.04
 40.00    39.97   5.1 326   0.96    -0.68 325   1.18 325    1.29 324    1.07 325    1.24 324    1.12
 41.00    40.97   5.4 324   1.04    -0.74 325   1.27 325    1.39 324    1.16 325    1.33 324    1.22
 42.00    41.96   5.1 322   1.11    -0.80 324   1.37 325    1.49 324    1.24 325    1.43 324    1.30
 43.00    42.96   4.9 308   1.18    -0.86 324   1.46 324    1.58 324    1.33 324    1.52 324    1.39
 44.00    43.95   6.0 316   1.25    -0.92 324   1.55 324    1.68 323    1.43 324    1.62 323    1.49
 45.00    44.95   5.8 322   1.33    -0.99 323   1.66 324    1.79 323    1.52 323    1.72 323    1.59
 46.00    45.94   5.7 320   1.41    -1.05 323   1.76 323    1.89 323    1.62 323    1.82 323    1.69
 47.00    46.94   5.8 321   1.48    -1.11 323   1.86 323    1.99 323    1.72 323    1.93 323    1.79
 48.00    47.93   5.2 315   1.56    -1.18 323   1.96 323    2.10 323    1.81 323    2.03 323    1.88
 49.00    48.93   6.1 320   1.63    -1.24 323   2.05 323    2.20 322    1.91 323    2.12 323    1.98
 50.00    49.92   7.1 316   1.71    -1.32 322   2.16 323    2.31 322    2.02 322    2.24 322    2.09
 51.00    50.91   7.0 313   1.80    -1.41 322   2.28 322    2.43 322    2.13 322    2.36 322    2.21
 52.00    51.91   7.0 310   1.88    -1.50 321   2.40 322    2.56 321    2.25 322    2.48 321    2.32
 53.00    52.90   7.2 313   1.96    -1.59 321   2.53 321    2.69 321    2.37 321    2.61 321    2.45
 54.00    53.89   7.6 310   2.04    -1.68 320   2.64 321    2.80 320    2.48 321    2.72 320    2.56
 55.00    54.88   7.5 311   2.12    -1.78 320   2.77 320    2.94 320    2.61 320    2.85 320    2.69
 56.00    55.87   7.7 310   2.20    -1.88 320   2.90 320    3.07 319    2.73 320    2.98 319    2.81
 57.00    56.87   7.8 307   2.28    -1.98 319   3.02 319    3.19 319    2.85 319    3.11 319    2.93
 58.00    57.86   7.9 306   2.36    -2.09 318   3.15 319    3.33 318    2.98 319    3.24 318    3.06
 59.00    58.85   7.2 302   2.43    -2.20 318   3.28 318    3.45 318    3.10 318    3.37 318    3.19
 60.00    59.84   5.9 304   2.50    -2.31 317   3.40 318    3.58 317    3.22 317    3.49 317    3.31
 61.00    60.83   7.9 305   2.58    -2.41 317   3.53 317    3.71 317    3.35 317    3.62 317    3.44
 62.00    61.82   6.9 305   2.65    -2.52 316   3.66 317    3.84 316    3.47 317    3.75 316    3.56
 63.00    62.81   7.6 310   2.73    -2.62 316   3.79 316    3.98 316    3.60 316    3.89 316    3.69
 64.00    63.81   7.7 309   2.81    -2.73 316   3.92 316    4.11 316    3.72 316    4.02 316    3.82
 65.00    64.80   7.9 309   2.87    -2.81 316   4.02 316    4.22 315    3.82 316    4.12 315    3.92
 66.00    65.79   8.0 309   2.94    -2.90 315   4.13 316    4.33 315    3.93 315    4.23 315    4.03
 67.00    66.78   7.5 305   3.01    -3.01 315   4.26 315    4.47 315    4.06 315    4.36 315    4.16
 68.00    67.78   5.7 304   3.09    -3.12 315   4.39 315    4.60 314    4.18 315    4.49 315    4.28
 69.00    68.77   7.8 306   3.16    -3.23 314   4.52 315    4.73 314    4.31 315    4.62 314    4.41
 70.00    69.76   7.7 303   3.24    -3.34 314   4.65 314    4.86 314    4.44 314    4.76 314    4.54
 71.00    70.75   8.0 303   3.30    -3.42 314   4.75 314    4.97 314    4.53 314    4.86 314    4.64
 72.00    71.75   7.7 304   3.36    -3.51 314   4.86 314    5.08 313    4.64 314    4.97 314    4.75
 73.00    72.74   7.9 303   3.43    -3.63 313   5.00 314    5.22 313    4.77 314    5.11 313    4.88
 74.00    73.73   7.8 305   3.51    -3.74 313   5.13 313    5.36 313    4.90 313    5.24 313    5.02
 75.00    74.72   7.7 303   3.58    -3.85 313   5.26 313    5.49 313    5.03 313    5.38 313    5.15
 76.00    75.71   7.7 304   3.66    -3.96 313   5.39 313    5.63 312    5.16 313    5.51 313    5.28
 77.00    76.70   7.6 308   3.73    -4.06 313   5.51 313    5.75 312    5.27 313    5.63 312    5.39
 78.00    77.69   7.6 309   3.81    -4.16 312   5.64 313    5.88 312    5.40 313    5.76 312    5.52
 79.00    78.69   7.4 312   3.89    -4.26 312   5.77 313    6.01 312    5.52 313    5.89 312    5.65
 80.00    79.68   7.2 311   3.97    -4.36 312   5.89 313    6.14 312    5.65 312    6.02 312    5.77
 81.00    80.67   7.2 310   4.05    -4.45 312   6.02 313    6.27 312    5.77 312    6.14 312    5.89
 82.00    81.66   7.2 310   4.12    -4.53 312   6.12 312    6.38 312    5.87 312    6.25 312    6.00
 83.00    82.66   7.4 310   4.20    -4.63 312   6.25 312    6.51 312    5.99 312    6.38 312    6.12
 84.00    83.65   6.9 312   4.28    -4.72 312   6.37 312    6.64 312    6.11 312    6.51 312    6.24
 85.00    84.64   7.0 312   4.36    -4.81 312   6.49 312    6.76 312    6.23 312    6.62 312    6.36
 86.00    85.63   6.9 312   4.44    -4.90 312   6.61 312    6.88 312    6.34 312    6.74 312    6.48
 87.00    86.63   6.4 316   4.52    -4.98 312   6.72 312    7.00 312    6.45 312    6.86 312    6.59
 88.00    87.62   6.2 318   4.60    -5.05 312   6.83 313    7.11 312    6.56 312    6.97 312    6.69
 89.00    88.62   6.5 317   4.67    -5.12 312   6.93 313    7.21 312    6.65 312    7.07 312    6.79
 90.00    89.61   6.9 311   4.74    -5.21 312   7.05 313    7.33 312    6.76 312    7.19 312    6.90
 91.00    90.60   7.0 309   4.82    -5.30 312   7.17 312    7.45 312    6.88 312    7.31 312    7.02
 92.00    91.60   6.9 307   4.89    -5.40 312   7.28 312    7.57 312    6.99 312    7.43 312    7.14
 93.00    92.59   6.8 302   4.96    -5.49 312   7.40 312    7.69 312    7.10 312    7.54 312    7.25
 94.00    93.58   6.6 301   5.02    -5.59 312   7.51 312    7.81 312    7.22 312    7.66 312    7.36
 95.00    94.58   2.3 332   5.07    -5.67 312   7.60 312    7.90 312    7.30 312    7.75 312    7.45
 96.00    95.57   6.4 296   5.12    -5.77 312   7.71 312    8.01 311    7.41 312    7.86 312    7.56
 97.00    96.56   6.5 295   5.17    -5.86 311   7.82 312    8.12 311    7.51 311    7.97 311    7.66
 98.00    97.56   5.2 291   5.21    -5.95 311   7.91 311    8.22 311    7.60 311    8.07 311    7.76
 99.00    98.56   5.8 291   5.25    -6.04 311   8.00 311    8.32 311    7.69 311    8.16 311    7.85
100.00    99.55   5.1 287   5.28    -6.13 311   8.09 311    8.41 311    7.78 311    8.25 311    7.94
101.00   100.55   5.1 290   5.31    -6.22 311   8.18 311    8.50 310    7.86 311    8.34 310    8.02
102.00   101.54   4.9 287   5.33    -6.29 310   8.25 310    8.57 310    7.92 310    8.41 310    8.08
103.00   102.54   4.7 290   5.36    -6.37 310   8.32 310    8.65 310    8.00 310    8.49 310    8.16
104.00   103.54   4.2 291   5.39    -6.44 310   8.39 310    8.72 310    8.07 310    8.56 310    8.23
105.00   104.53   4.9 308   5.43    -6.50 310   8.47 310    8.80 310    8.14 310    8.64 310    8.31
106.00   105.53   6.3 307   5.50    -6.58 310   8.57 310    8.91 310    8.24 310    8.74 310    8.40
107.00   106.52   6.4 304   5.56    -6.67 310   8.68 310    9.02 310    8.34 310    8.85 310    8.51
108.00   107.52   6.3 294   5.61    -6.77 310   8.79 310    9.13 309    8.45 310    8.96 310    8.62
109.00   108.51   6.2 292   5.65    -6.86 309   8.89 310    9.24 309    8.55 310    9.06 309    8.72
110.00   109.51   5.8 287   5.69    -6.96 309   8.99 309    9.33 309    8.64 309    9.16 309    8.81
111.00   110.50   6.1 290   5.72    -7.05 309   9.08 309    9.43 309    8.73 309    9.26 309    8.90
112.00   111.50   5.5 283   5.75    -7.15 309   9.17 309    9.53 309    8.82 309    9.35 309    8.99
113.00   112.49   5.3 282   5.77    -7.24 309   9.26 309    9.61 308    8.90 309    9.44 308    9.08
114.00   113.49   4.7 281   5.78    -7.33 308   9.33 308    9.69 308    8.97 308    9.51 308    9.15
115.00   114.48   4.1 280   5.80    -7.40 308   9.40 308    9.76 308    9.04 308    9.58 308    9.22
116.00   115.48   4.6 285   5.81    -7.48 308   9.47 308    9.84 308    9.11 308    9.66 308    9.29
117.00   116.48   4.6 279   5.83    -7.55 308   9.54 308    9.91 308    9.17 308    9.73 308    9.36
118.00   117.48   3.8 283   5.85    -7.62 307   9.61 308    9.98 307    9.23 308    9.79 307    9.42
119.00   118.47   3.9 281   5.86    -7.69 307   9.67 307   10.04 307    9.29 307    9.85 307    9.48
120.00   119.47   4.2 283   5.87    -7.75 307   9.73 307   10.10 307    9.35 307    9.91 307    9.54
121.00   120.47   3.5 284   5.89    -7.81 307   9.78 307   10.17 307    9.40 307    9.98 307    9.59
122.00   121.47   3.5 284   5.90    -7.87 307   9.84 307   10.23 307    9.46 307   10.03 307    9.65
123.00   122.47   3.0 286   5.92    -7.93 307   9.90 307   10.29 307    9.51 307   10.09 307    9.70
124.00   123.46   3.2 287   5.94    -7.99 307   9.95 307   10.34 306    9.56 307   10.15 307    9.76
125.00   124.46   3.5 284   5.95    -8.04 306  10.01 307   10.40 306    9.61 307   10.20 306    9.81
126.00   125.46   3.5 286   5.97    -8.10 306  10.06 306   10.46 306    9.66 306   10.26 306    9.86
127.00   126.46   3.4 284   5.98    -8.16 306  10.12 306   10.52 306    9.72 306   10.32 306    9.92
128.00   127.46   3.4 287   6.00    -8.22 306  10.17 306   10.58 306    9.77 306   10.38 306    9.97
129.00   128.46   2.8 290   6.01    -8.27 306  10.23 306   10.64 306    9.82 306   10.43 306   10.02
130.00   129.45   3.1 290   6.03    -8.32 306  10.28 306   10.69 306    9.87 306   10.48 306   10.07
131.00   130.45   3.0 291   6.05    -8.37 306  10.33 306   10.74 306    9.91 306   10.53 306   10.12
132.00   131.45   2.9 305   6.07    -8.41 306  10.38 306   10.79 306    9.96 306   10.58 306   10.17
133.00   132.45   3.5 292   6.10    -8.46 306  10.43 306   10.85 306   10.01 306   10.64 306   10.22
134.00   133.45   2.8 302   6.12    -8.51 306  10.48 306   10.90 306   10.05 306   10.69 306   10.27
135.00   134.45   3.0 307   6.14    -8.55 306  10.53 306   10.96 306   10.10 306   10.74 306   10.31
136.00   135.45   2.7 298   6.17    -8.59 306  10.58 306   11.01 306   10.15 306   10.79 306   10.36
137.00   136.44   3.1 290   6.19    -8.64 306  10.63 306   11.06 306   10.19 306   10.84 306   10.41
137.70   137.14   2.8 307   6.21    -8.67 306  10.66 306   11.10 306   10.22 306   10.88 306   10.44
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....2.60
LAST PLOTTED DEPTH......137.70
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....130

PLOT WITH RESPECT TO TRUE NORTH
SCALE 200:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

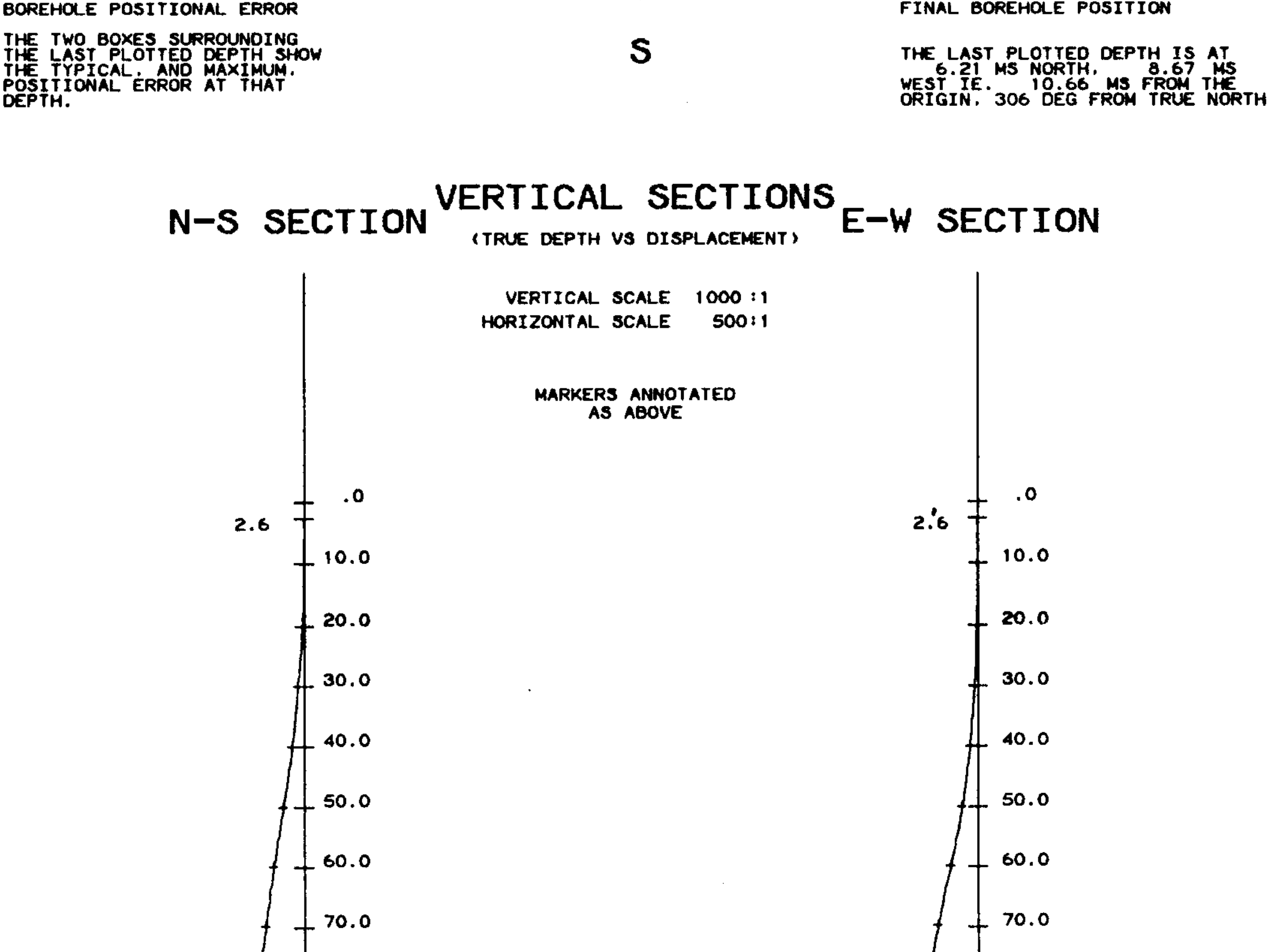
THE LAST PLOTTED DEPTH IS AT 6.21 MS NORTH, 8.67 MS WEST IE. 10.66 MS FROM THE ORIGIN, 306 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

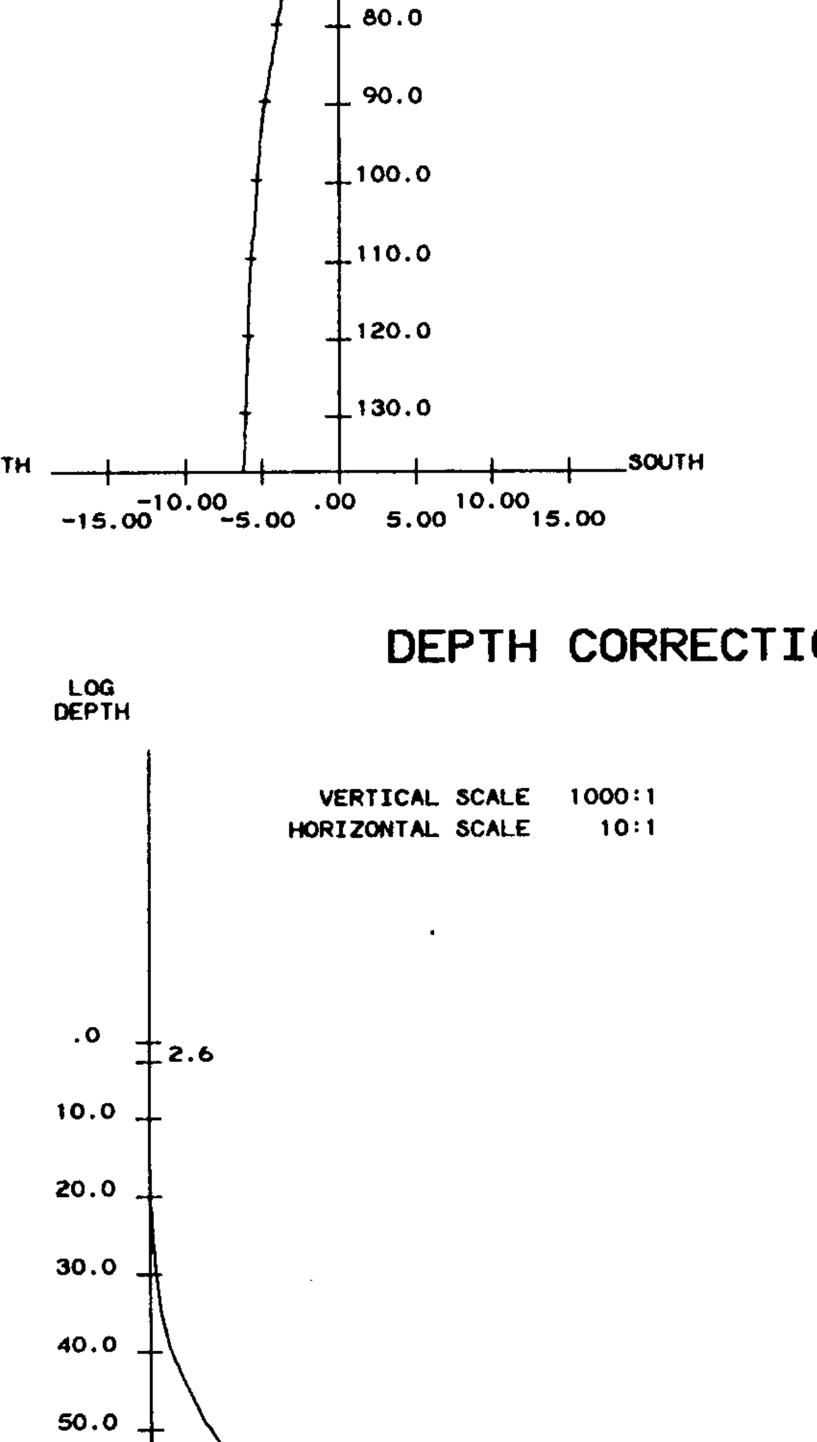
(TRUE DEPTH VS DISPLACEMENT)

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 500:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS



DEPTHS: LOG	TRUE	DEPTHS: LOG	TRUE
3.00	3.00	73.00	72.74
4.00	4.00	74.00	73.73
5.00	5.00	75.00	74.72
6.00	6.00	76.00	75.71
7.00	7.00	77.00	76.70
8.00	8.00	78.00	77.69
9.00	9.00	79.00	78.69
10.00	10.00	80.00	79.68
11.00	11.00	81.00	80.67
12.00	12.00	82.00	81.66
13.00	13.00	83.00	82.66
14.00	14.00	84.00	83.65
15.00	15.00	85.00	84.64
16.00	16.00	86.00	85.63
17.00	17.00	87.00	86.63
18.00	18.00	88.00	87.62
19.00	19.00	89.00	88.62
20.00	20.00	90.00	89.61
21.00	21.00	91.00	90.60
22.00	22.00	92.00	91.60
23.00	23.00	93.00	92.59
24.00	24.00	94.00	93.58
25.00	25.00	95.00	94.58
26.00	25.99	96.00	95.57
27.00	26.99	97.00	96.56
28.00	27.99	98.00	97.56
29.00	28.99	99.00	98.56
30.00	29.99	100.00	99.55
31.00	30.99	101.00	100.55
32.00	31.99	102.00	101.54
33.00	32.99	103.00	102.54
34.00	33.99	104.00	103.54
35.00	34.98	105.00	104.53
36.00	35.98	106.00	105.53
37.00	36.98	107.00	106.52
38.00	37.98	108.00	107.52
39.00	38.97	109.00	108.51
40.00	39.97	110.00	109.51
41.00	40.97	111.00	110.50
42.00	41.96	112.00	111.50
43.00	42.96	113.00	112.49
44.00	43.95	114.00	113.49
45.00	44.95	115.00	114.48
46.00	45.94	116.00	115.48
47.00	46.94	117.00	116.48
48.00	47.93	118.00	117.48
49.00	48.93	119.00	118.47
50.00	49.92	120.00	119.47
51.00	50.91	121.00	120.47
52.00	51.91	122.00	121.47
53.00	52.90	123.00	122.47
54.00	53.89	124.00	123.46
55.00	54.88	125.00	124.46
56.00	55.87	126.00	125.46
57.00	56.87	127.00	126.46
58.00	57.86	128.00	127.46
59.00	58.85	129.00	128.46
60.00	59.84	130.00	129.45
61.00	60.83	131.00	130.45
62.00	61.82	132.00	131.45
63.00	62.81	133.00	132.45
64.00	63.81	134.00	133.45
65.00	64.80	135.00	134.45
66.00	65.79	136.00	135.45
67.00	66.78	137.00	136.44
68.00	67.78	137.70	137.14
69.00	68.77		
70.00	69.76		
71.00	70.75		
72.00	71.75		

COMPANY	MANALTA
WELL	T93R-36
FIELD	SITE # 32
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

GAMMA RAY
CALIPER

#879

COMPANY	MANALTA
WELL	T93R-36
FIELD	SITE # 32
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 32
WELL:
T93R-36
COMPANY:
MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	28-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	138.0M			
DEPTH-LOGGER	138.0M			
FIRST READING	137.5M			
LAST READING	0OM			
CASING-DRILLER	5.4M			
CASING-LOGGER	5.4M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	5.4M	TD	178MM	N/A	SURFACE	5.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	101			

REMARKS

GAMMA RAY CALIPER

NO DENSITY ON THIS WELL DUE TO SONDE FAILURE.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 28-SEP-1993 AT 16:23
FILENAME: DD3AR36M.CIB RUN ID: MAIN LOG PLOTTED ON 28-SEP-1993 AT 19:01

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 100:1

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 28-SEP-1993 AT 16:23
FILENAME: DD3AR36M.CIB RUN ID: MAIN LOG PLOTTED ON 28-SEP-1993 AT 19:01

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 28-SEP-1993 AT 16:20

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.40
BIT SIZE 3	.00	BIT DEPTH 3	138.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	325.20
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2890.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1297.10
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	469.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	530.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	588.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	648.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	762.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	882.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-36
FIELD	SITE # 32
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY	MANALTA
WELL	T93R-46
FIELD	SITE #34
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #34
WELL
T93R-46
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	2-OCT-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	41.1M			
DEPTH-LOGGER	40.2M			
FIRST READING	40M			
LAST READING	0M			
CASING-DRILLER	18.0M			
CASING-LOGGER	18.0M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	18.0M	TD	178MM	N/A	SURFACE	18.0M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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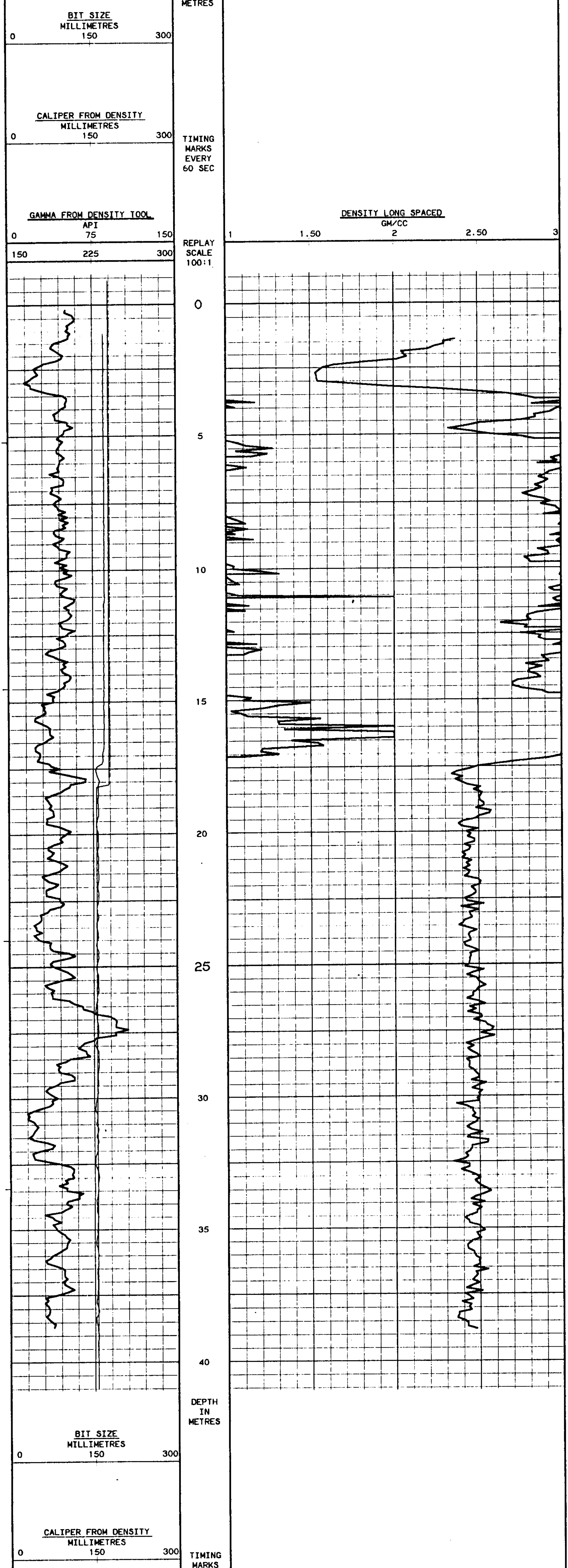
↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-OCT-1993 AT 9:48
FILENAME: DD3AR46M.CIB RUN ID: MAIN LOG PLOTTED ON 02-OCT-1993 AT 10:04



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 2-OCT-1993 AT 9:48
FILENAME: DD3AR46M.CIB RUN ID: MAIN LOG PLOTTED ON 02-OCT-1993 AT 10:04

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 02-OCT-1993 AT 09:44

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	18.00
BIT SIZE 3	.00	BIT DEPTH 3	41.10
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-46
FIELD	SITE #34
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY MANALTA
WELL T93R-37
FIELD SITE #36
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE #36
WELL:
T93R-37
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	29-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	137.8M			
DEPTH-LOGGER	137M			
FIRST READING	136.5M			
LAST READING	0M			
CASING-DRILLER	6.1M			
CASING-LOGGER	6.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	3.0M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 29-SEP-1993 AT 14:25
FILENAME: DD3AR37M.CIB RUN ID: MAIN LOG PLOTTED ON 29-SEP-1993 AT 14:54

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 29-SEP-1993 AT 14:25
FILENAME: DD3AR37M.CIB RUN ID: MAIN LOG PLOTTED ON 29-SEP-1993 AT 14:54

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 29-SEP-1993 AT 14:00

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	137.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-37
FIELD	SITE #36
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

```
~Version Information           DIPMETER/STICK PLOT DATA LISTING
 VERS.                 1.20:   CWLS Log ASCII Standard -Version 1.20
 WRAP.                   NO:   One line per depth step
#
#
~Well Information Block
#MNEM.UNIT    Data Type        Description
#---------    ------------     ----------------------------
 STRT.M              60.50:
 STOP.M               6.00:
 STEP.M               0.00:
 NULL.             -999.25:
 COMP.            COMPANY:     MANALTA
 WELL.               WELL:     T93R-10
 FLD .              FIELD:     SITE 105
 LOC .           LOCATION:     TELKWA
 PROV.           PROVINCE:     BRITISH COLUMBIA
 SRVC.    SERVICE COMPANY:     BPB Wireline Services
 DATE.           LOG DATE:      6-SEP-1993
 UWI .     UNIQUE WELL ID:
#
#
~Curve Information Block
#MNEM.UNIT                     Curve Description
#---------                     -----------------
 DEPT.M                 :      DEPTH ROUNDED TO NEAREST CALIBRATION STEP MULTIPLE
 CALD.mm                :      DIPMETER CALIPER
 TILD.degs              :      BOREHOLE TILT
 AZID.degs              :      BOREHOLE AZIMUTH
 DIPF.degs              :      FORMATION DIP
 AZIF.degs              :      FORMATION AZIMUTH
 CORC.----              :      CORRELATION COEFFICIENT
 STK1.degs              :      STICK PLOT SECTION 1
 STK2.degs              :      STICK PLOT SECTION 2
#
#
~Parameter Information
#MNEM.UNIT    Value            Description
#---------    ------------     ----------------------------
 DECL.deg           26.50:     MAGNETIC DECLINATION (EAST OF NORTH)
 CORS.m              0.25:     CORRELATION STEP
 CORI.m              0.50:     CORRELATION INTERVAL
 SANG.deg           45.00:     SEARCH ANGLE
 SDIP.deg            0.00:     STRUCTURAL DIP
 SAZI.deg            0.00:     STRUCTURAL AZIMUTH
#
#
~Other Information
File Identification            MAIN LOG

DIPMETER LISTING



Run number     SIX          Log 1st rdg    60.5m        Log last rdg  0m
Driller TD     61.0m        Logger TD      61.0m        Water level
Perm Datum     GROUND LEVEL Elevation      N/A          Other srvcs   CCS
Dril mes from  00m          Log meas from  00m          Other srvcs
Elevation: KB  N/A          DF             N/A          GL            N/A
Casing Driler  6.1m         Casing Logger  6.1m         Casing size   178mm
Casing Weight  N/A          From           SURFACE      To            6.1m
Bit size       156mm        From           6.1m         To            TD
Hole fl type   AIR/WATER    Sample source               Fluid loss    N/A
Density        1.01         Viscosity      N/A          pH            N/A
RM @ meas tmp               RMF @ mes tmp               RMC @ mes tmp
RM @ BHT                    RMF source                  RMC-source
Max rec temp                Time snc circ               LsdSecTwpRge
Equipment no.  V222         Base           RDR          Equip. name   DIP/VERT
Recorded by    B.STEVENSON  Witnessed by   T. BRAZZONI  Sonde srl no. 221/233
Last title     WATER LEVEL  Last line      00m          Permit no.
```

BPB DIPMETER ANALYSIS INTERPRETATION NOTES

----

1. All plots are correct to the resolution of the plotter used, ie. one two-hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background.

2. Rose diagrams when plotted occur between every major division and are delimited by two bold arrows. For certain replay scales it may be desirable to plot these less frequently; this option is available on request.

3. The grid over which the computed dip is displayed is locally linear. That is to say it is linear between 0 and 10 degrees, 10 and 20, 20 and 30 etc.

4. The correlation value will vary depending on the interval size selected. Generally speaking the larger the correlation interval, the lower the value becomes. For this reason a direct comparison of this value for differing correlation intervals is meaningless, quality control being exercised with an appreciation of this effect.

5. Stick data may be shown relative to any two vertical planes and is the angle (to the horizontal) of the intersection of the resolved plane and the vertical plane.

6. The angle of declination is taken to be the angle between Magnetic North and reference North (True, Grid or Magnetic) measured in an anti-clockwise direction.

7. For customised control of computed dipmeter analysis the following parameters must be specified:
    - correlation step and interval(s)
    - magnetic declination
    - search angle(s)
    - depth range(s)
    - replay scale(s)
    - the frequency for rose diagrams
    - the sections for stick plots
    - (quality control is exercised in accordance with the correlation interval used, alternatively all correlations may be displayed on request)

The following information is a listing of ALL the output from BPB's dipmeter analysis. Below is a full description of each data item:

DEPTH	the depth corresponding to the centre of the correlation interval.
CALIPER	the average borehole caliper recorded over the correlation interval.
HOLE DRIFT	the average borehole deviation from vertical over the correlation interval.
HOLE AZIMUTH	the average borehole azimuth over the correlation interval in degrees East of true North.
DIP ANGLE	the computed formation dip in degrees, from the horizontal plane.
DIP AZIMUTH	the formation azimuth in degrees East of true North.
CORRELATION	a measure of the reliability of the computed result. This parameter is also used in the visual display to determine the quality of result.
SECTION	the formation dip across the specified sections.

Further recorrelations over any step and interval size are available on any scale over any section of the log. Alternative methods of presentation, or analysis may be available on request.

```
#
#   Depth    Caliper      Borehole            Formation       Correlation        S
tick Plot Section
#                      Tilt    Azimuth     Dip     Azimuth  Coefficient   180.0
-  0.0    270.0- 90.0
#    (M)       (mm)    (deg)     (deg)     (deg)     (deg)     (----)          (d
eg)         (deg)
~A
   60.50     142.0     4.7     115.0      59.5     244.8       0.39          -35
.84        -56.90
   60.00     157.6     4.4     119.6      38.0     321.0       0.33           31
.27        -26.18
   59.50     159.7     4.9     116.5      25.7     116.3       0.26          -12
.01         23.34
   59.00     159.7     4.7     118.3      27.1     259.9       0.35           -5
.12        -26.74
   58.50     160.7     4.4     120.0      47.7     277.8       0.59            8
.52        -47.42
   58.00     160.7     4.2     122.2      47.1      23.3       0.59           44
.62         23.06
   57.50     158.6     4.4     120.5      47.3     337.1       0.31           44
.98        -22.89
   57.00     160.7     4.9     117.9      46.8      77.5       0.45           12
.99         46.12
   56.50     161.7     5.0     119.0      48.3       2.9       0.78           48
.26          3.29
   56.00     161.7     5.1     118.2      40.9     318.6       0.52           33
.04        -29.80
   55.50     160.7     4.8     120.7       0.0       0.0      -1.00            0
.00          0.00
   55.00     161.7     4.9     117.9      36.4     330.9       0.77           32
.82        -19.72
   54.50     162.8     4.6     118.8       0.0       0.0      -1.00            0
.00          0.00
   54.00     161.7     4.7     118.1      37.4     322.9       0.60           31
.35        -24.77
   53.50     161.7     4.5     118.8      46.5     305.5       0.53           31
.44        -40.57
   53.00     162.8     4.7     121.1      41.5     207.9       0.45          -38
.06        -22.48
   52.50     162.8     4.9     115.9      49.7     347.7       0.34           49
.05        -14.07
   52.00     163.8     4.6     120.6      23.8     285.4       0.31            6
.69        -23.08
   51.50     163.8     4.6     118.9      25.5     303.9       0.39           14
.89        -21.62
   51.00     163.8     4.7     117.5      28.2     318.1       0.37           21
.72        -19.66
   50.50     163.8     4.6     120.2      52.3     291.5       0.37           25
.30        -50.25
   50.00     164.8     4.5     120.8      58.0     286.4       0.37           24
.26        -56.90
   49.50     164.8     4.9     121.9      23.7      16.5       0.35           22
.79          7.09
   49.00     163.8     4.9     119.9      33.1     271.2       0.37            0
.81        -33.07
   48.50     163.8     4.9     121.2      21.2     186.1       0.38          -21
.09         -2.35
   48.00     162.8     5.0     121.9      36.5      24.7       0.38           33
.93         17.16
   47.50     164.8     4.8     121.3      22.0     260.1       0.42           -3
.98        -21.70
   47.00     164.8     4.6     119.8      40.0      15.5       0.27           38
.99         12.66
   46.50     163.8     4.7     120.5      33.2     348.5       0.35           32
.64         -7.41
   46.00     165.9     4.7     122.1       0.0       0.0      -1.00            0
.00          0.00
   45.50     163.8     4.6     121.3      43.7     341.8       0.64           42
.26        -16.60
   45.00     164.8     4.8     119.8      45.0     253.4       0.29          -15
.92        -43.74
   44.50     163.8     4.5     120.8      42.5     331.3       0.48           38
.78        -23.75
   44.00     163.8     4.6     120.7      36.3     328.8       0.63           32
.18        -20.84
   43.50     165.9     4.6     123.9      56.3     309.9       0.32           43
.91        -48.99
   43.00     165.9     4.8     123.6      42.9      70.2       0.30           17
.60         41.19
   42.50     164.8     4.5     124.1      25.0     333.9       0.41           22
.71        -11.57
   42.00     165.9     4.6     125.2      31.6     256.0       0.27           -8
.49        -30.81
   41.50     164.8     4.7     126.9      41.4      49.3       0.32           29
.94         33.78
   41.00     164.8     4.6     128.5      48.3     309.9       0.30           35
.77        -40.72
   40.50     163.8     4.5     130.3      37.7     352.7       0.24           37
.43         -5.63
   40.00     164.8     4.6     130.5      22.9     168.4       0.32          -22
.45          4.85
   39.50     161.7     4.3     133.3      41.2     349.0       0.58           40
.65         -9.43
   39.00     164.8     4.4     128.8      42.9     300.9       0.32           25
.52        -38.61
   38.50     163.8     4.1     131.3      26.9     339.3       0.41           25
.41        -10.18
   38.00     164.8     4.1     131.3      22.4     327.1       0.64           19
.11        -12.65
   37.50     163.8     4.2     131.7      56.7     301.8       0.32           38
.75        -52.36
   37.00     163.8     3.9     133.6       0.0       0.0      -1.00            0
.00          0.00
   36.50     164.8     4.1     132.0      32.3     119.2       0.41          -17
.16         28.87
   36.00     164.8     3.7     131.4      41.9     330.1       0.25           37
.84        -24.11
   35.50     165.9     3.8     132.2      28.8     312.7       0.50           20
.41        -21.99
   35.00     163.8     3.5     134.1      54.9     316.3       0.54           45
.79        -44.53
   34.50     164.8     3.4     133.4      46.0     330.3       0.56           41
.99        -27.15
   34.00     164.8     3.3     132.2      17.2     205.8       0.50          -15
.61         -7.70
   33.50     164.8     3.5     129.3      45.9     332.3       0.58           42
.45        -25.61
   33.00     164.8     3.2     132.1      36.6     329.9       0.53           32
.72        -20.44
   32.50     164.8     3.3     129.9      16.6     243.6       0.50           -7
.55        -14.98
   32.00     164.8     3.0     129.3      16.8     345.9       0.44           16
.32         -4.21
   31.50     164.8     2.9     133.9      51.9     346.1       0.55           51
.08        -16.98
   31.00     165.9     3.2     133.4      42.9     335.2       0.39           40
.17        -21.35
   30.50     164.8     3.0     134.5      33.8     328.3       0.44           29
.65        -19.37
   30.00     163.8     2.9     138.0      18.6       4.2       0.38           18
.52          1.40
   29.50     163.8     2.9     140.9      38.4     333.5       0.64           35
.31        -19.46
   29.00     164.8     2.5     138.3      36.8     339.1       0.50           34
.93        -14.92
   28.50     163.8     2.7     143.5      45.5     341.4       0.53           43
.95        -17.97
   28.00     163.8     2.4     139.6      40.6     179.2       0.46          -40
.55          0.68
   27.50     163.8     2.4     144.5      34.8     286.0       0.33           10
.87        -33.78
   27.00     164.8     2.1     142.6      32.8     352.5       0.46           32
.59         -4.83
   26.50     162.8     2.1     147.4       0.0       0.0      -1.00            0
.00          0.00
   26.00     163.8     1.8     147.1      30.1     344.5       0.59           29
.17         -8.81
   25.50     163.8     1.8     148.1      58.6      22.8       0.62           56
.48         32.41
   25.00     162.8     1.7     143.5      15.8     257.3       0.43           -3
.58        -15.47
   24.50     163.8     1.8     140.1      21.8     259.3       0.44           -4
.25        -21.47
   24.00     163.8     1.7     135.7      31.7     341.3       0.39           30
.30        -11.18
   23.50     162.8     1.7     137.9      51.0     237.0       0.46          -33
.98        -46.02
   23.00     163.8     1.8     139.1      28.7     318.4       0.23           22
.24        -19.97
   22.50     164.8     2.0     133.8      38.4     338.3       0.62           36
.42        -16.34
   22.00     162.8     1.8     137.4      58.0     269.3       0.48           -1
.10        -57.97
   21.50     163.8     2.0     133.0      42.8     336.7       0.68           40
.43        -20.11
   21.00     163.8     2.1     136.1      49.6     288.5       0.43           20
.44        -48.12
   20.50     163.8     2.0     137.7      26.3     303.2       0.44           15
.13        -22.48
   20.00     163.8     2.0     137.2       0.0       0.0      -1.00            0
.00          0.00
   19.50     162.8     2.1     138.9      43.1     315.3       0.55           33
.63        -33.37
   19.00     161.7     2.4     143.3      40.5     336.9       0.86           38
.13        -18.49
   18.50     162.8     2.3     143.3      46.1     339.2       0.36           44
.17        -20.25
   18.00     163.8     2.2     147.2      46.5     345.4       0.51           45
.61        -14.85
   17.50     163.8     2.1     143.0      10.1     176.6       0.35          -10
.10          0.61
   17.00     162.8     2.0     149.2      47.2     341.0       0.60           45
.56        -19.30
   16.50     164.8     2.1     155.0      53.1     349.2       0.63           52
.65        -14.00
   16.00     164.8     1.7     153.5      36.2     345.8       0.78           35
.40        -10.20
   15.50     164.8     2.0     157.4      21.7     308.6       0.47           13
.97        -17.30
   15.00     164.8     1.9     161.2      62.4     349.6       0.62           61
.98        -19.07
   14.50     163.8     1.6     163.1      34.8     326.5       0.89           30
.14        -20.99
   14.00     165.9     1.5     164.8      23.9     320.9       0.64           19
.01        -15.63
   13.50     162.8     1.7     162.6      31.3      24.5       0.26           28
.98         14.15
   13.00     162.8     1.5     164.7      46.0     351.1       0.31           45
.66         -9.13
   12.50     162.8     1.4     165.3      43.6     154.8       0.31          -40
.78         22.12
   12.00     162.8     1.2     157.9      55.5       5.4       0.50           55
.39          7.80
   11.50     163.8     1.3     155.2      42.6     332.9       0.51           39
.28        -22.73
   11.00     163.8     1.4     148.3      40.4     336.8       0.57           38
.02        -18.50
   10.50     165.9     0.9     155.4      61.6      41.5       0.49           54
.14         50.78
   10.00     164.8     0.9     134.8      41.5     235.5       0.50          -26
.66        -36.11
    9.50     164.8     1.1     127.2      40.5     338.1       0.43           38
.36        -17.68
    9.00     165.9     1.1     115.4      37.1     344.1       0.74           36
.06        -11.70
    8.50     164.8     1.0     138.0      40.5     332.1       0.73           37
.01        -21.77
    8.00     164.8     1.4     137.3      41.7      88.0       0.46            1
.75         41.68
    7.50     163.8     1.2     240.9       0.0       0.0      -1.00            0
.00          0.00
    7.00     165.9     1.1     208.1      44.3      57.6       0.54           27
.55         39.45
    6.50     163.8     1.6     192.4       0.0       0.0      -1.00            0
.00          0.00
    6.00   -999.25 -999.25   -999.25       0.0       0.0      -1.00            0
.00          0.00
```

LONG SPACED DENSITY
GAMMA RAY CALIPER 20:1
(DETAIL LOG)

#879

COMPANY MANALTA
WELL T93D-23
FIELD SITE # 19
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 19
WELL:
T93D-23
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	27-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	149.4M			
DEPTH-LOGGER	149.0M			
FIRST READING	148.5M			
LAST READING	0OM			
CASING-DRILLER	36.6M			
CASING-LOGGER	36.6M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.03 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	95MM	36.6M	TD	105MM	N/A	SURFACE	36.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 27-SEP-1993 AT 5:35
FILENAME: DD3AD23A.CIB RUN ID: DETAIL SECTION PLOTTED ON 27-SEP-1993 AT 09:00

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 27-SEP-1993 AT 5:35
FILENAME: DD3AD23A.CIB RUN ID: DETAIL SECTION PLOTTED ON 27-SEP-1993 AT 08:54

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 27-SEP-1993 AT 08:39 DATA LAST REPROCESSED: 27-SEP-1993 AT 8:53

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.03	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	.00
BIT SIZE 2	95.00	BIT DEPTH 2	36.60
BIT SIZE 3	.00	BIT DEPTH 3	149.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.00
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-23
FIELD	SITE # 19
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1
(DETAIL LOG)

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 19
WELL:
T93D-23
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93D-23
FIELD SITE # 19
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	27-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	149.4M			
DEPTH-LOGGER	149.0M			
FIRST READING	148.5M			
LAST READING	00M			
CASING-DRILLER	36.6M			
CASING-LOGGER	36.6M			
BIT SIZE	95MM			
HOLE FLUID TYPE	BENTONITE			
DENS./VISC.	1.03 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	A. LE BRETON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	95MM	36.6M	TD	105MM	N/A	SURFACE	36.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 (DETAIL LOG)

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 27-SEP-1993 AT 5:35
FILENAME: DD3AD23A.CIB RUN ID: DETAIL SECTION PLOTTED ON 27-SEP-1993 AT 09:03

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 27-SEP-1993 AT 5:35
FILENAME: DD3AD23A.CIB RUN ID: DETAIL SECTION PLOTTED ON 27-SEP-1993 AT 09:03

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 27-SEP-1993 AT 08:39 DATA LAST REPROCESSED: 27-SEP-1993 AT 8:53

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.03	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	.00
BIT SIZE 2	95.00	BIT DEPTH 2	36.60
BIT SIZE 3	.00	BIT DEPTH 3	149.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.00
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-23
FIELD	SITE # 19
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 19
WELL:
T93D-23
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93D-23
FIELD SITE # 19
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	27-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	149.4M	
DEPTH-LOGGER	149.0M	
FIRST READING	148.5M	
LAST READING	00M	
CASING-DRILLER	36.6M	
CASING-LOGGER	36.6M	
BIT SIZE	95MM	
HOLE FLUID TYPE	BENTONITE	
DENS./VISC.	1.03	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	A. LE BRETON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	95MM	36.6M	TD	105MM	N/A	SURFACE	36.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 27-SEP-1993 AT 5:35
FILENAME: DD3AD23M.CIB RUN ID: MAIN LOG PLOTTED ON 27-SEP-1993 AT 22:42

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 27-SEP-1993 AT 5:35
FILENAME: DD3AD23M.CIB RUN ID: MAIN LOG PLOTTED ON 27-SEP-1993 AT 22:42

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 27-SEP-1993 AT 08:39 DATA LAST REPROCESSED: 27-SEP-1993 AT 08:39

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.03	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	.00
BIT SIZE 2	95.00	BIT DEPTH 2	36.60
BIT SIZE 3	.00	BIT DEPTH 3	149.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.00
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-23
FIELD	SITE # 19
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93D-23
FIELD	SITE # 19
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 19
WELL:
T93D-23
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	27-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	149.4M	
DEPTH-LOGGER	149.0M	
FIRST READING	148.5M	
LAST READING	0M	
CASING-DRILLER	36.6M	
CASING-LOGGER	36.6M	
BIT SIZE	95MM	
HOLE FLUID TYPE	BENTONITE	
DENS./VISC.	1.03	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	A. LE BRETON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE. AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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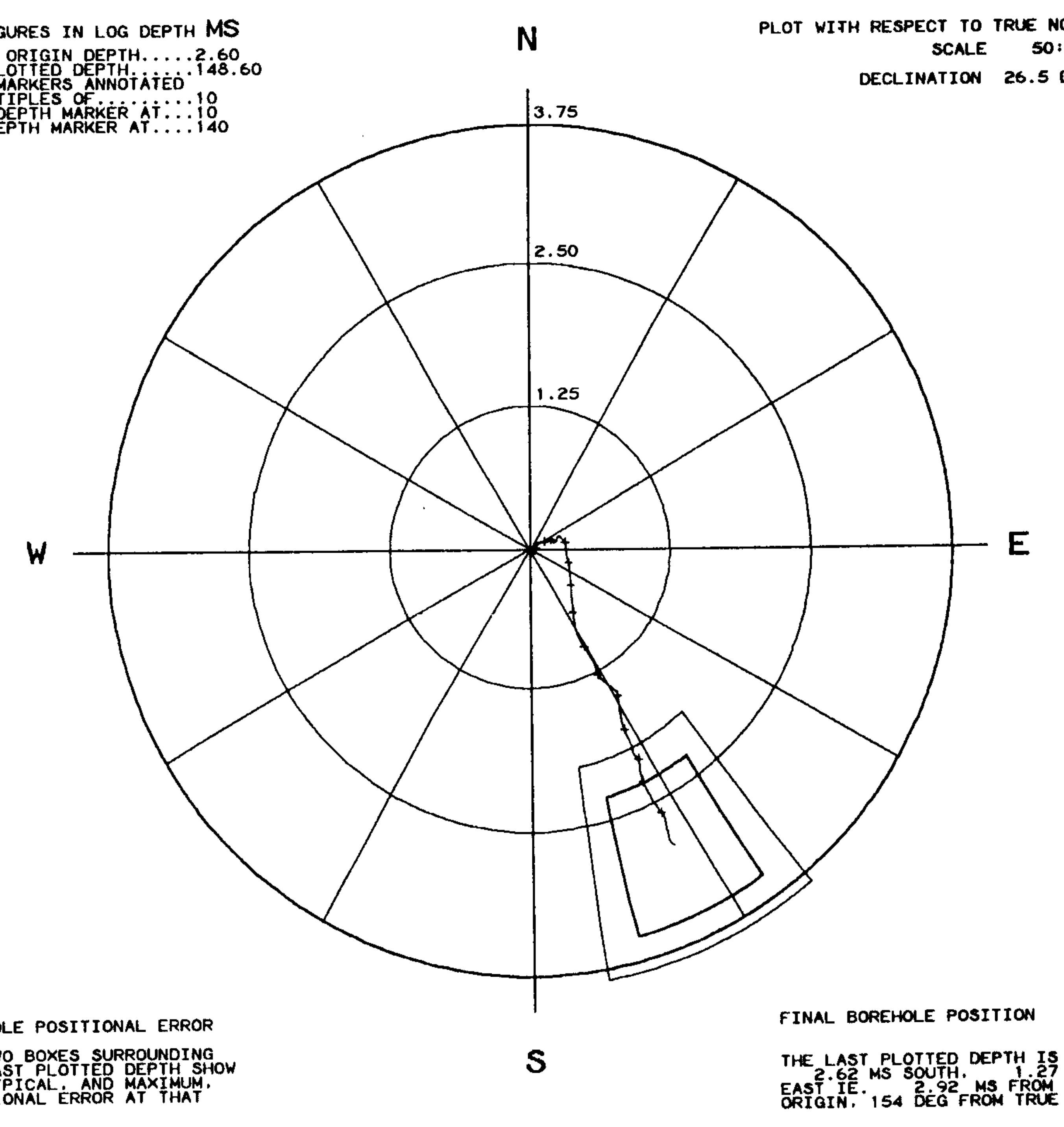
T93D-23
VERTICALITY DATA LISTING
ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH
DATE PROCESSED: 27-SEP-1993
DATE LOGGED: 27-SEP-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
3.00	3.00	2.4	147	0.00	0.01	103	0.01	102	0.01	103	0.01	103	0.01	103	0.01
4.00	4.00	2.5	192	-0.01	-0.01	207	0.02	207	0.02	207	0.01	207	0.02	207	0.01
5.00	5.00	1.8	144	-0.03	0.00	184	0.03	184	0.04	185	0.03	184	0.04	185	0.03
6.00	6.00	1.6	113	-0.04	0.01	171	0.04	171	0.05	172	0.04	171	0.04	172	0.04
7.00	7.00	1.7	322	-0.04	0.00	174	0.04	173	0.05	174	0.04	173	0.04	174	0.04
8.00	8.00	2.2	354	-0.04	0.00	179	0.04	179	0.05	180	0.04	179	0.05	179	0.04
9.00	9.00	2.4	70	-0.04	0.03	141	0.04	142	0.05	141	0.04	142	0.05	141	0.04
10.00	10.00	2.2	112	-0.01	0.04	103	0.05	104	0.05	103	0.04	104	0.05	103	0.04
11.00	10.99	2.0	151	0.00	0.07	90	0.07	90	0.07	89	0.06	90	0.07	90	0.06
12.00	11.99	1.3	301	0.01	0.08	82	0.08	82	0.08	81	0.07	82	0.08	82	0.07
13.00	12.99	1.0	231	0.01	0.08	81	0.08	81	0.09	80	0.08	81	0.09	80	0.08
14.00	13.99	1.4	286	0.01	0.07	83	0.07	83	0.07	82	0.06	83	0.07	83	0.07
15.00	14.99	1.5	254	0.01	0.05	72	0.05	72	0.05	73	0.05	72	0.05	73	0.05
16.00	15.99	2.5	154	0.03	0.04	47	0.05	46	0.05	49	0.05	47	0.05	48	0.05
17.00	16.99	2.4	308	0.04	0.04	45	0.05	44	0.05	47	0.05	45	0.05	46	0.05
18.00	17.99	2.3	93	0.06	0.06	45	0.09	44	0.09	46	0.08	45	0.09	46	0.08
19.00	18.99	2.1	90	0.07	0.10	56	0.12	56	0.13	56	0.11	56	0.12	56	0.11
20.00	19.99	2.2	64	0.07	0.13	60	0.15	60	0.16	61	0.13	60	0.15	61	0.14
21.00	20.99	2.5	46	0.08	0.16	65	0.18	64	0.19	65	0.16	65	0.18	65	0.17
22.00	21.99	2.6	73	0.08	0.18	65	0.20	65	0.21	65	0.18	65	0.20	65	0.19
23.00	22.99	2.3	96	0.09	0.20	66	0.22	66	0.24	66	0.20	66	0.23	66	0.21
24.00	23.99	2.0	65	0.09	0.22	68	0.24	68	0.25	68	0.22	68	0.25	68	0.23
25.00	24.99	1.6	216	0.09	0.20	66	0.22	66	0.24	67	0.20	66	0.23	67	0.21
26.00	25.98	1.2	66	0.08	0.19	66	0.21	66	0.22	67	0.19	66	0.21	67	0.20
27.00	26.98	1.6	124	0.08	0.18	67	0.20	67	0.21	67	0.19	67	0.21	67	0.19
28.00	27.98	2.2	255	0.07	0.18	68	0.19	68	0.20	69	0.18	68	0.20	68	0.18
29.00	28.98	2.2	305	0.09	0.18	64	0.21	64	0.22	64	0.19	64	0.21	64	0.20
30.00	29.98	2.3	114	0.08	0.19	66	0.20	66	0.22	66	0.19	66	0.21	66	0.20
31.00	30.98	2.0	128	0.07	0.21	73	0.22	73	0.23	73	0.20	73	0.23	73	0.21
32.00	31.98	1.8	349	0.07	0.23	74	0.24	74	0.25	74	0.22	74	0.24	74	0.23
33.00	32.98	1.6	191	0.07	0.23	73	0.24	73	0.25	73	0.22	73	0.25	73	0.23
34.00	33.98	1.5	46	0.08	0.24	71	0.25	71	0.27	72	0.23	71	0.26	71	0.24
35.00	34.98	1.7	302	0.10	0.24	67	0.26	67	0.28	67	0.24	67	0.27	67	0.25
36.00	35.98	1.7	24	0.12	0.26	65	0.28	65	0.30	66	0.26	65	0.29	65	0.27
37.00	36.98	1.9	142	0.11	0.26	67	0.28	66	0.31	67	0.26	66	0.30	67	0.27
38.00	37.98	1.4	126	0.10	0.28	71	0.30	71	0.32	71	0.28	71	0.31	71	0.29
39.00	38.98	1.3	138	0.08	0.30	75	0.31	75	0.34	75	0.29	75	0.32	75	0.30
40.00	39.98	1.2	152	0.06	0.31	78	0.32	79	0.35	78	0.29	79	0.33	78	0.31
41.00	40.98	1.2	167	0.05	0.32	82	0.32	83	0.35	81	0.29	82	0.34	82	0.31
42.00	41.98	1.2	179	0.02	0.32	86	0.32	87	0.35	85	0.29	86	0.34	85	0.31
43.00	42.98	1.4	174	0.00	0.32	90	0.32	91	0.35	88	0.29	90	0.34	89	0.31
44.00	43.98	1.5	181	-0.02	0.32	94	0.33	95	0.36	92	0.30	94	0.34	93	0.31
45.00	44.98	1.2	182	-0.05	0.33	98	0.33	99	0.36	96	0.30	99	0.35	97	0.31
46.00	45.98	1.2	172	-0.06	0.33	101	0.34	103	0.37	99	0.30	102	0.35	100	0.32
47.00	46.98	1.0	161	-0.08	0.33	104	0.34	106	0.38	101	0.31	105	0.36	102	0.33
48.00	47.98	1.1	167	-0.10	0.34	106	0.35	108	0.39	103	0.31	107	0.37	105	0.33
49.00	48.98	1.1	153	-0.11	0.34	108	0.36	110	0.40	105	0.32	109	0.38	106	0.34
50.00	49.98	1.1	165	-0.12	0.35	110	0.37	112	0.41	107	0.33	111	0.39	108	0.35
51.00	50.98	0.9	180	-0.14	0.35	112	0.38	114	0.42	109	0.33	113	0.40	110	0.36
52.00	51.98	1.2	175	-0.16	0.35	114	0.39	117	0.44	111	0.34	116	0.41	113	0.36
53.00	52.98	1.1	177	-0.18	0.35	117	0.40	120	0.45	114	0.35	119	0.42	116	0.37
54.00	53.98	1.3	186	-0.20	0.35	120	0.41	122	0.46	116	0.36	121	0.43	118	0.38
55.00	54.98	1.2	181	-0.22	0.36	122	0.42	125	0.47	119	0.36	123	0.45	120	0.39
56.00	55.97	0.9	181	-0.24	0.36	124	0.43	127	0.49	120	0.37	125	0.46	122	0.40
57.00	56.97	1.0	171	-0.26	0.36	126	0.44	128	0.50	122	0.38	127	0.47	124	0.41
58.00	57.97	1.1	175	-0.28	0.36	128	0.46	130	0.52	124	0.39	129	0.49	126	0.42
59.00	58.97	1.5	180	-0.30	0.36	130	0.47	133	0.54	127	0.41	131	0.51	128	0.44
60.00	59.97	1.3	177	-0.33	0.36	132	0.49	135	0.56	129	0.42	134	0.53	131	0.46
61.00	60.97	1.6	179	-0.35	0.37	134	0.51	136	0.58	131	0.44	135	0.55	133	0.47
62.00	61.97	1.6	173	-0.38	0.37	136	0.53	138	0.61	133	0.45	137	0.57	135	0.49
63.00	62.97	1.5	182	-0.41	0.37	138	0.55	140	0.63	135	0.47	139	0.59	137	0.51
64.00	63.97	1.4	175	-0.43	0.37	139	0.57	141	0.65	137	0.48	141	0.61	138	0.53
65.00	64.97	1.4	173	-0.46	0.37	141	0.59	143	0.68	138	0.50	142	0.63	140	0.54
66.00	65.97	1.1	169	-0.48	0.37	142	0.60	144	0.70	139	0.51	143	0.65	141	0.56
67.00	66.97	1.0	165	-0.49	0.38	143	0.62	144	0.71	140	0.52	144	0.67	141	0.57
68.00	67.97	1.5	179	-0.51	0.38	144	0.64	145	0.74	141	0.54	145	0.69	142	0.59
69.00	68.97	1.5	175	-0.54	0.38	145	0.66	147	0.76	142	0.56	146	0.71	144	0.61
70.00	69.97	1.9	172	-0.57	0.38	146	0.68	148	0.79	144	0.58	147	0.74	145	0.63
71.00	70.97	1.8	175	-0.60	0.39	147	0.71	149	0.82	145	0.60	148	0.76	146	0.66
72.00	71.97	1.8	173	-0.63	0.39	148	0.74	150	0.85	146	0.63	149	0.79	147	0.68
73.00	72.97	1.9	169	-0.66	0.39	149	0.77	150	0.88	147	0.65	150	0.82	148	0.71
74.00	73.97	2.0	172	-0.69	0.40	150	0.80	151	0.92	148	0.68	151	0.86	149	0.74
75.00	74.97	1.9	168	-0.72	0.41	151	0.83	152	0.95	149	0.71	151	0.89	150	0.77
76.00	75.97	1.8	160	-0.76	0.42	151	0.86	152	0.99	149	0.74	152	0.93	150	0.80
77.00	76.97	2.1	160	-0.79	0.43	151	0.90	152	1.03	150	0.77	152	0.96	151	0.83
78.00	77.97	2.0	151	-0.82	0.44	152	0.93	153	1.07	150	0.80	152	1.00	151	0.87
79.00	78.97	1.8	156	-0.85	0.46	152	0.97	153	1.10	150	0.83	152	1.03	151	0.90
80.00	79.97	1.6	148	-0.88	0.48	152	1.00	153	1.14	150	0.86	152	1.07	151	0.93
81.00	80.97	1.6	149	-0.90	0.49	151	1.03	152	1.17	150	0.88	152	1.10	151	0.95
82.00	81.96	1.6	148	-0.92	0.51	151	1.05	152	1.20	150	0.91	152	1.13	151	0.98
83.00	82.96	1.5	152	-0.95	0.52	151	1.08	152	1.23	150	0.93	152	1.16	151	1.01
84.00	83.96	1.4	146	-0.97	0.53	151	1.11	152	1.26	150	0.95	152	1.18	151	1.03
85.00	84.96	1.6	148	-1.00	0.55	151	1.14	152	1.29	150	0.98	152	1.21	151	1.06
86.00	85.96	1.5	153	-1.02	0.56	151	1.16	152	1.32	150	1.00	152	1.24	151	1.08
87.00	86.96	1.5	160	-1.04	0.57	151	1.19	152	1.35	150	1.02	152	1.27	151	1.11
88.00	87.96	1.5	160	-1.07	0.58	152	1.22	152	1.38	151	1.05	152	1.30	151	1.13
89.00	88.96	1.7	160	-1.10	0.59	152	1.25	153	1.42	151	1.07	152	1.33	151	1.16
90.00	89.96	2.4	156	-1.13	0.60	152	1.28	153	1.45	151	1.10	153	1.37	152	1.19
91.00	90.96	2.2	144	-1.17	0.62	152	1.32	153	1.50	151	1.14	153	1.41	152	1.23
92.00	91.96	2.3	132	-1.19	0.64	152	1.36	152	1.54	151	1.17	152	1.45	151	1.27
93.00	92.96	1.8	120	-1.21	0.67	151	1.39	152	1.57	150	1.20	151	1.48	151	1.30
94.00	93.96	1.8	121	-1.23	0.70	150	1.41	151	1.60	149	1.23	151	1.51	150	1.32
95.00	94.96	1.6	124	-1.24	0.72	150	1.44	151	1.63	149	1.25	150	1.53	150	1.34
96.00	95.96	1.3	128	-1.26	0.74	150	1.46	150	1.65	149	1.26	150	1.55	149	1.36
97.00	96.96	0.9	138	-1.27	0.75	149	1.48	150	1.67	149	1.28	150	1.57	149	1.38
98.00	97.96	1.1	140	-1.28	0.76	149	1.49	150	1.69	148	1.29	150	1.59	149	1.39
99.00	98.96	1.0	151	-1.30	0.77	149	1.51	150	1.71	149	1.31	150	1.61	149	1.41
100.00	99.96	1.1	159	-1.32	0.77	150	1.53	150	1.73	149	1.32	150	1.63	149	1.42
101.00	100.96	1.4	168	-1.34	0.78	150	1.55	150	1.76	149	1.34	150	1.65	149	1.44
102.00	101.96	1.5	174	-1.36	0.78	150	1.57	151	1.78	149	1.35	151	1.67	150	1.46
103.00	102.96	1.6	176	-1.39	0.78	151	1.59	151	1.81	150	1.37	151	1.70	150	1.48
104.00	103.96	1.9	176	-1.42	0.79	151	1.62	152	1.84	150	1.40	151	1.73	151	1.51
105.00	104.96	1.9	173	-1.45	0.79	151	1.65	152	1.87	151	1.42	152	1.76	151	1.54
106.00	105.96	2.1	164	-1.48	0.80	152	1.68	152	1.91	151	1.45	152	1.80	151	1.57
107.00	106.95	2.1	170	-1.52	0.80	152	1.72	153	1.95	151	1.49	152	1.83	152	1.60
108.00	107.95	1.6	168	-1.55	0.81	152	1.75	153	1.98	152	1.52	153	1.87	152	1.63
109.00	108.95	1.9	161	-1.58	0.82	153	1.78	153	2.02	152	1.55	153	1.90	152	1.66
110.00	109.95	2.2	157	-1.62	0.83	153	1.82	153	2.06	152	1.58	153	1.94	152	1.70
111.00	110.95	1.8	157	-1.65	0.85	153	1.85	153	2.10	152	1.61	153	1.98	152	1.73
112.00	111.95	1.8	154	-1.68	0.86	153	1.89	153	2.13	152	1.64	153	2.01	153	1.76
113.00	112.95	1.9	151	-1.71	0.88	153	1.92	153	2.17	152	1.67	153	2.04	153	1.79
114.00	113.95	1.5	161	-1.73	0.89	153	1.95	153	2.20	152	1.69	153	2.08	153	1.82
115.00	114.95	1.4	176	-1.76	0.89	153	1.97	154	2.23	152	1.71	153	2.10	153	1.84
116.00	115.95	1.7	179	-1.79	0.90	153	2.00	154	2.26	153	1.74	154	2.13	153	1.87
117.00	116.95	1.8	161	-1.82	0.90	154	2.03	154	2.29	153	1.76	154	2.16	153	1.90
118.00	117.95	1.8	137	-1.85	0.92	153	2.06	154	2.33	153	1.79	154	2.20	153	1.93
119.00	118.95	1.3	120	-1.86	0.94	153	2.09	154	2.36	153	1.81	153	2.22	153	1.95
120.00	119.95	0.7	169	-1.87	0.95	153	2.10	153	2.37	152	1.82	153	2.24	153	1.96
121.00	120.95	0.5	163	-1.88	0.96	153	2.11	154	2.39	152	1.83	153	2.25	153	1.97
122.00	121.95	1.0	184	-1.90	0.96	153	2.12	154	2.41	153	1.84	154	2.26	153	1.98
123.00	122.95	1.0	180	-1.91	0.96	153	2.14	154	2.42	153	1.86	154	2.28	153	2.00
124.00	123.95	1.2	173	-1.93	0.96	154	2.16	154	2.45	153	1.87	154	2.30	153	2.01
125.00	124.95	1.2	166	-1.95	0.96	154	2.18	154	2.47	153	1.89	154	2.32	154	2.03
126.00	125.95	1.1	167	-1.98	0.96	154	2.20	154	2.49	153	1.91	154	2.35	154	2.05
127.00	126.95	1.3	166	-2.00	0.97	154	2.22	155	2.52	154	1.92	154	2.37	154	2.07
128.00	127.95	1.4	159	-2.02	0.98	154	2.25	155	2.55	154	1.94	154	2.40	154	2.10
129.00	128.95	1.2	158	-2.04	0.98	154	2.27	155	2.57	154	1.96	155	2.42	154	2.12
130.00	129.95	1.2	163	-2.06	0.99	154	2.29	155	2.60	154	1.98	155	2.44	154	2.14
131.00	130.95	1.3	153	-2.09	1.00	154	2.31	155	2.62	154	2.00	155	2.47	154	2.16
132.00	131.95	1.6	155	-2.11	1.01	154	2.34	155	2.65	154	2.02	155	2.49	154	2.18
133.00	132.95	1.7	157	-2.13	1.02	154	2.36	155	2.68	154	2.05	155	2.52	154	2.20
134.00	133.94	1.9	154	-2.16	1.03	154	2.39	155	2.72	154	2.07	155	2.56	154	2.23
135.00	134.94	1.9	147	-2.19	1.05	154	2.43	155	2.75	154	2.10	155	2.59	154	2.26
136.00	135.94	2.0	146	-2.22	1.07	154	2.46	155	2.79	154	2.13	154	2.62	154	2.30
137.00	136.94	2.2	147	-2.25	1.09	154	2.50	155	2.83	154	2.16	154	2.66	154	2.33
138.00	137.94	2.1	142	-2.28	1.11	154	2.53	154	2.87	154	2.20	154	2.70	154	2.36
139.00	138.94	1.9	140	-2.30	1.13	154	2.57	154	2.91	153	2.23	154	2.74	154	2.40
140.00	139.94	1.9	143	-2.33	1.15	154	2.60	154	2.94	153	2.26	154	2.77	153	2.43
141.00	140.94	2.0	141	-2.36	1.17	154	2.63	154	2.98	153	2.29	154	2.81	153	2.46
142.00	141.94	2.0	164	-2.39	1.18	154	2.67	154	3.02	153	2.32	154	2.84	153	2.49
143.00	142.94	1.9	167	-2.42	1.19	154	2.70	154	3.05	153	2.35	154	2.88	154	2.52
144.00	143.94	2.2	169	-2.46	1.20	154	2.73	154	3.09	153	2.38	154	2.91	154	2.56
145.00	144.94	2.3	167	-2.50	1.21	154	2.77	155	3.13	154	2.41	154	2.95	154	2.59
146.00	145.94	2.2	166	-2.53	1.22	154	2.81	155	3.17	154	2.45	155	2.99	154	2.63
147.00	146.94	2.1	166	-2.57	1.22	155	2.85	155	3.22	154	2.48	155	3.03	154	2.67
148.00	147.94	2.7	135	-2.61	1.25	154	2.89	155	3.26	154	2.52	155	3.08	154	2.71
148.60	148.53	2.1	115	-2.62	1.27	154	2.92	155	3.29	154	2.54	154	3.10	154	2.73

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....2.60
LAST PLOTTED DEPTH......148.60
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF..........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....140

PLOT WITH RESPECT TO TRUE NORTH
SCALE 50:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

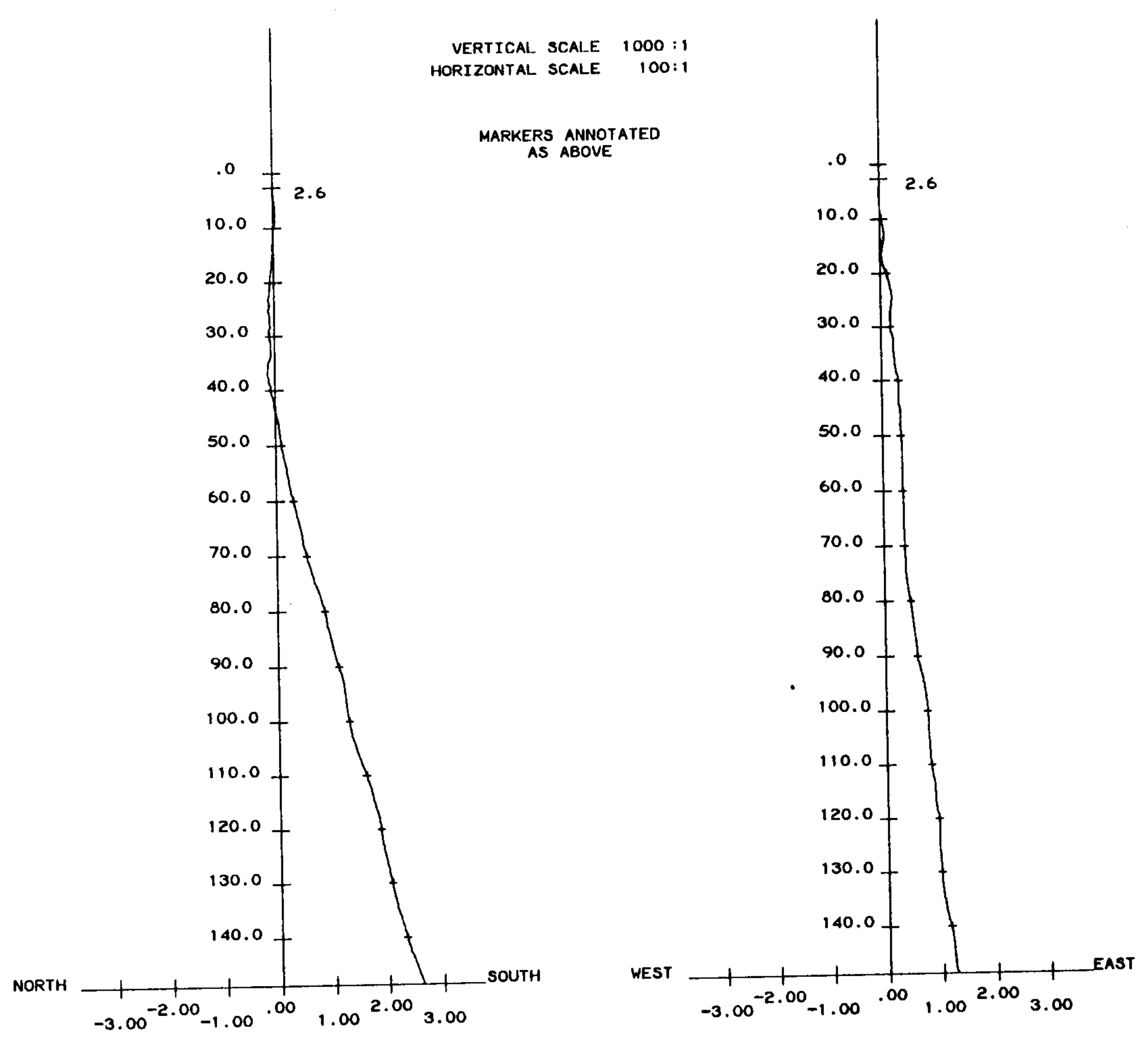
THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 2.62 MS SOUTH, 1.27 MS EAST IE. 2.92 MS FROM THE ORIGIN, 154 DEG FROM TRUE NORTH

VERTICAL SECTIONS

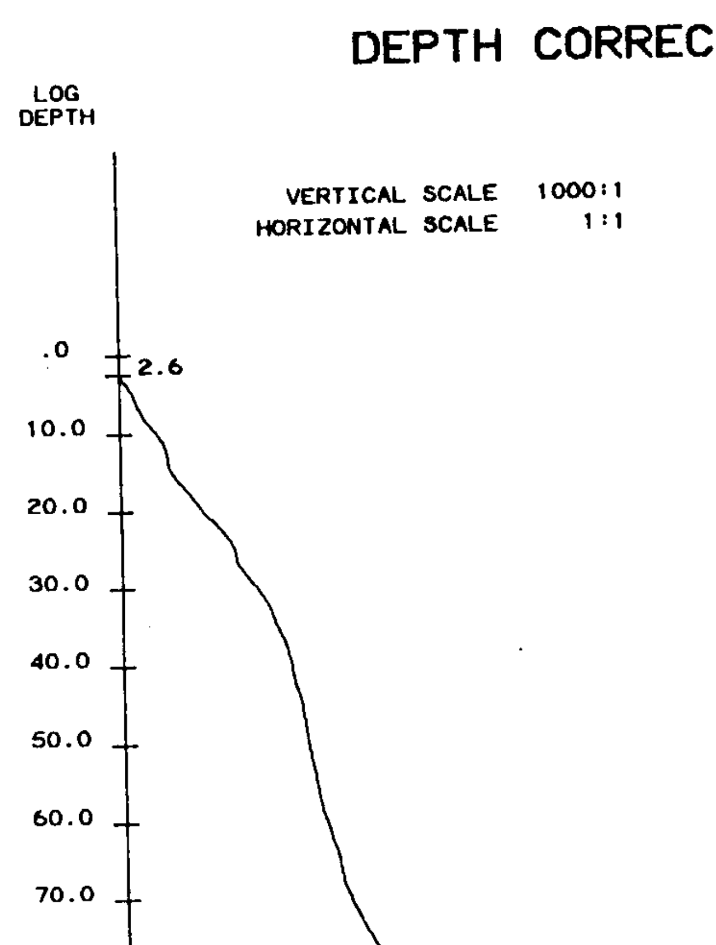
(TRUE DEPTH VS DISPLACEMENT)



VERTICAL SCALE 1000:1
HORIZONTAL SCALE 100:1

MARKERS ANNOTATED AS ABOVE

DEPTH CORRECTION ANALYSIS



VERTICAL SCALE 1000:1
HORIZONTAL SCALE 1:1

DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
3.00	3.00	73.00	72.97	143.00	142.94
4.00	4.00	74.00	73.97	144.00	143.94
5.00	5.00	75.00	74.97	145.00	144.94
6.00	6.00	76.00	75.97	146.00	145.94
7.00	7.00	77.00	76.97	147.00	146.94
8.00	8.00	78.00	77.97	148.00	147.94
9.00	9.00	79.00	78.97	148.60	148.53
10.00	10.00	80.00	79.97		
11.00	10.99	81.00	80.97		
12.00	11.99	82.00	81.96		
13.00	12.99	83.00	82.96		
14.00	13.99	84.00	83.96		
15.00	14.99	85.00	84.96		
16.00	15.99	86.00	85.96		
17.00	16.99	87.00	86.96		
18.00	17.99	88.00	87.96		
19.00	18.99	89.00	88.96		
20.00	19.99	90.00	89.96		
21.00	20.99	91.00	90.96		
22.00	21.99	92.00	91.96		
23.00	22.99	93.00	92.96		
24.00	23.99	94.00	93.96		
25.00	24.99	95.00	94.96		
26.00	25.98	96.00	95.96		
27.00	26.98	97.00	96.96		
28.00	27.98	98.00	97.96		
29.00	28.98	99.00	98.96		
30.00	29.98	100.00	99.96		
31.00	30.98	101.00	100.96		
32.00	31.98	102.00	101.96		
33.00	32.98	103.00	102.96		
34.00	33.98	104.00	103.96		
35.00	34.98	105.00	104.96		
36.00	35.98	106.00	105.96		
37.00	36.98	107.00	106.95		
38.00	37.98	108.00	107.95		
39.00	38.98	109.00	108.95		
40.00	39.98	110.00	109.95		
41.00	40.98	111.00	110.95		
42.00	41.98	112.00	111.95		
43.00	42.98	113.00	112.95		
44.00	43.98	114.00	113.95		
45.00	44.98	115.00	114.95		
46.00	45.98	116.00	115.95		
47.00	46.98	117.00	116.95		
48.00	47.98	118.00	117.95		
49.00	48.98	119.00	118.95		
50.00	49.98	120.00	119.95		
51.00	50.98	121.00	120.95		
52.00	51.98	122.00	121.95		
53.00	52.98	123.00	122.95		
54.00	53.98	124.00	123.95		
55.00	54.98	125.00	124.95		
56.00	55.97	126.00	125.95		
57.00	56.97	127.00	126.95		
58.00	57.97	128.00	127.95		
59.00	58.97	129.00	128.95		
60.00	59.97	130.00	129.95		
61.00	60.97	131.00	130.95		
62.00	61.97	132.00	131.95		
63.00	62.97	133.00	132.95		
64.00	63.97	134.00	133.94		
65.00	64.97	135.00	134.94		
66.00	65.97	136.00	135.94		
67.00	66.97	137.00	136.94		
68.00	67.97	138.00	137.94		
69.00	68.97	139.00	138.94		
70.00	69.97	140.00	139.94		
71.00	70.97	141.00	140.94		
72.00	71.97	142.00	141.94		

COMPANY	MANALTA
WELL	T93D-23
FIELD	SITE # 19
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY MANALTA
WELL T93D-24
FIELD SITE 39
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 39
WELL:
T93D-24
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	16-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	45.7M	
DEPTH-LOGGER	45.0M	
FIRST READING	45M	
LAST READING	00M	
CASING-DRILLER	1.5M	
CASING-LOGGER	1.5M	
BIT SIZE	95MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE	N/A	
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	95MM	1.5M	TD	105MM	N/A	SURFACE	1.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

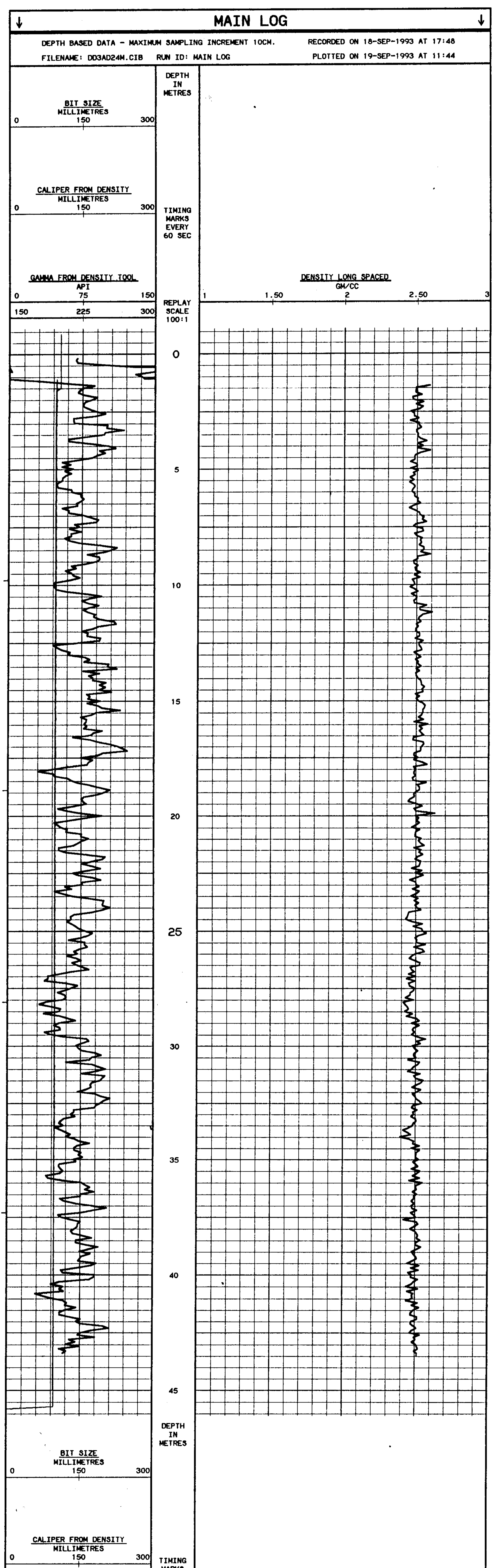
LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 18-SEP-1993 AT 17:48
FILENAME: DD3AD24M.CIB RUN ID: MAIN LOG PLOTTED ON 19-SEP-1993 AT 11:44



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 18-SEP-1993 AT 17:48
FILENAME: DD3AD24M.CIB RUN ID: MAIN LOG PLOTTED ON 19-SEP-1993 AT 11:44

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 18-SEP-1993 AT 17:28

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	105.00	BIT DEPTH 1	.00
BIT SIZE 2	95.00	BIT DEPTH 2	1.50
BIT SIZE 3	.00	BIT DEPTH 3	45.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93D-24
FIELD	SITE 39
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-21
FIELD	SITE 20
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 20
WELL: T93R-21
COMPANY: MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	16-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	140.8M	
DEPTH-LOGGER	140.8M	
FIRST READING	140M	
LAST READING	0M	
CASING-DRILLER	3.4M	
CASING-LOGGER	3.4M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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T93R-21

VERTICALITY DATA LISTING

ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH

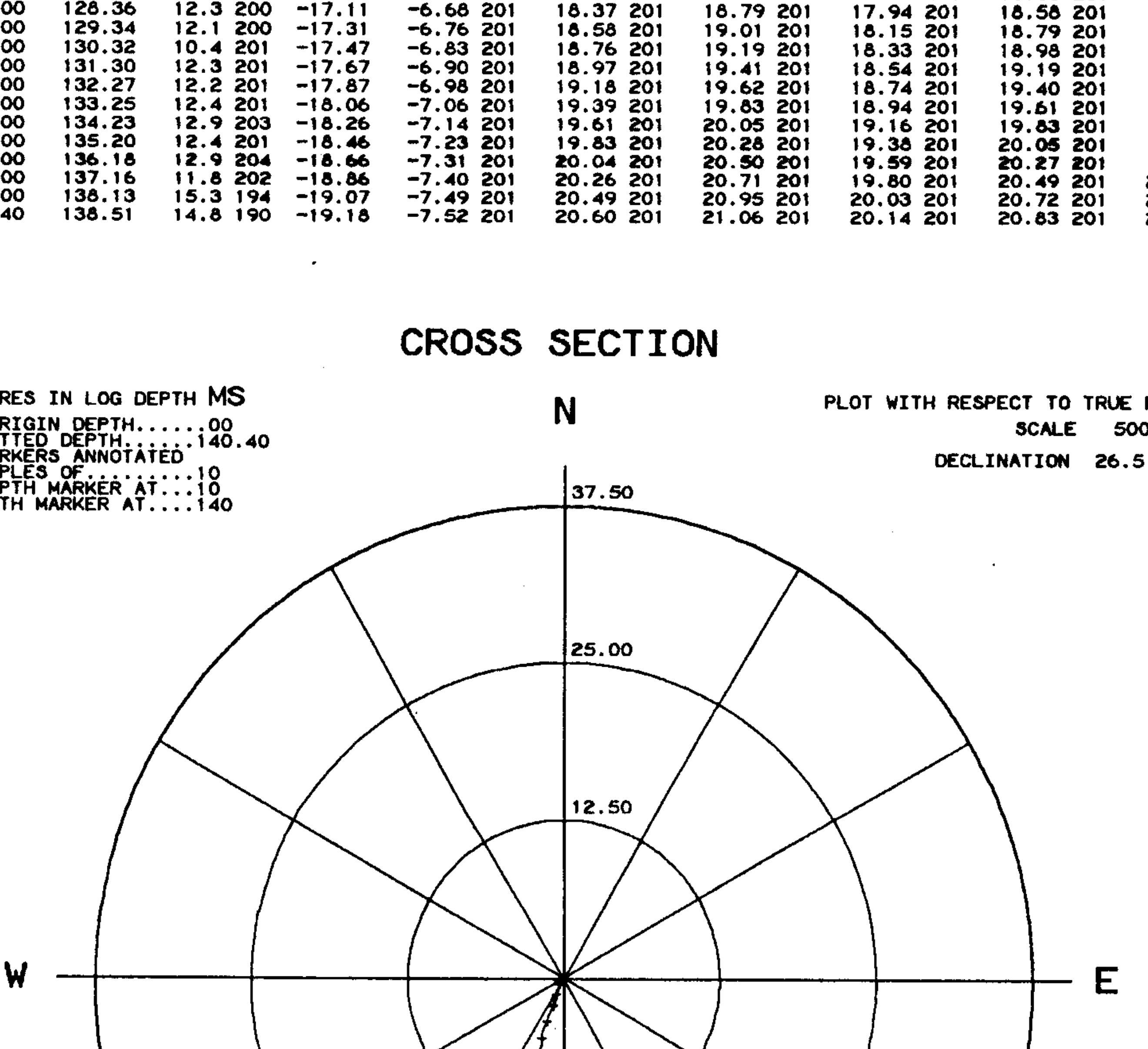
DATE PROCESSED: 16-SEP-1993
DATE LOGGED: 16-SEP-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
1.00	1.00	3.5	46	0.01	-0.01	318	0.01	319	0.02	317	0.01	319	0.02	318	0.01
2.00	2.00	0.6	90	0.01	-0.01	321	0.02	322	0.02	319	0.02	321	0.02	320	0.02
3.00	3.00	0.6	76	0.02	0.00	346	0.02	358	0.02	332	0.02	352	0.02	339	0.02
4.00	4.00	0.5	202	0.01	-0.01	323	0.01	334	0.01	316	0.01	328	0.01	319	0.01
5.00	5.00	0.9	188	-0.01	-0.01	240	0.01	219	0.01	264	0.01	229	0.01	253	0.01
6.00	6.00	1.2	196	-0.02	-0.02	215	0.03	207	0.04	228	0.02	210	0.03	221	0.03
7.00	7.00	1.4	247	-0.04	-0.03	217	0.05	211	0.06	225	0.04	214	0.05	220	0.04
8.00	8.00	2.0	222	-0.06	-0.05	222	0.07	218	0.09	227	0.06	220	0.08	224	0.07
9.00	9.00	1.6	227	-0.08	-0.07	223	0.11	220	0.12	226	0.09	222	0.11	225	0.10
10.00	9.99	1.9	224	-0.10	-0.10	223	0.14	221	0.16	226	0.12	222	0.15	225	0.13
11.00	10.99	2.0	229	-0.12	-0.12	224	0.17	222	0.19	226	0.15	223	0.18	225	0.16
12.00	11.99	2.1	224	-0.15	-0.14	223	0.21	222	0.24	225	0.18	223	0.22	224	0.20
13.00	12.99	2.4	222	-0.19	-0.17	223	0.25	222	0.28	225	0.22	222	0.27	224	0.24
14.00	13.99	2.7	218	-0.22	-0.20	222	0.30	222	0.33	224	0.27	222	0.32	223	0.28
15.00	14.99	2.9	216	-0.26	-0.23	222	0.35	221	0.39	223	0.31	221	0.37	222	0.33
16.00	15.99	3.2	212	-0.31	-0.26	221	0.40	220	0.44	221	0.36	220	0.42	221	0.38
17.00	16.99	3.1	181	-0.36	-0.28	218	0.46	217	0.50	218	0.41	218	0.48	218	0.43
18.00	17.99	2.6	202	-0.40	-0.29	216	0.50	215	0.54	216	0.45	216	0.52	216	0.47
19.00	18.98	2.8	211	-0.44	-0.31	215	0.54	215	0.59	216	0.49	215	0.57	215	0.52
20.00	19.98	2.7	207	-0.48	-0.34	215	0.59	214	0.64	215	0.54	214	0.62	215	0.56
21.00	20.98	3.2	210	-0.53	-0.36	214	0.64	214	0.70	214	0.58	214	0.67	214	0.61
22.00	21.98	4.7	196	-0.59	-0.39	213	0.71	213	0.77	214	0.65	213	0.74	214	0.68
23.00	22.98	4.6	178	-0.67	-0.40	211	0.78	211	0.84	211	0.72	211	0.81	211	0.75
24.00	23.97	2.7	176	-0.74	-0.39	208	0.84	208	0.90	208	0.77	208	0.87	208	0.80
25.00	24.97	3.4	213	-0.78	-0.41	207	0.88	207	0.95	207	0.81	207	0.92	207	0.85
26.00	25.97	5.3	200	-0.86	-0.44	207	0.97	207	1.04	207	0.90	207	1.01	207	0.93
27.00	26.96	6.0	196	-0.96	-0.47	206	1.07	206	1.15	206	0.99	206	1.11	206	1.03
28.00	27.96	6.2	195	-1.06	-0.50	205	1.17	205	1.25	205	1.09	205	1.21	205	1.13
29.00	28.95	6.3	198	-1.16	-0.54	205	1.28	205	1.36	205	1.20	205	1.32	205	1.24
30.00	29.95	6.4	200	-1.26	-0.58	205	1.39	205	1.47	205	1.30	205	1.43	205	1.34
31.00	30.94	6.7	198	-1.36	-0.62	204	1.50	204	1.59	204	1.41	204	1.54	204	1.45
32.00	31.93	7.1	191	-1.47	-0.65	204	1.61	204	1.71	204	1.52	204	1.66	204	1.57
33.00	32.93	5.4	176	-1.58	-0.66	203	1.71	203	1.81	203	1.61	203	1.76	203	1.66
34.00	33.92	4.8	196	-1.66	-0.68	202	1.79	202	1.89	202	1.69	202	1.84	202	1.74
35.00	34.92	4.6	197	-1.73	-0.70	202	1.87	202	1.97	202	1.77	202	1.92	202	1.82
36.00	35.92	4.8	195	-1.81	-0.73	202	1.95	202	2.06	202	1.84	202	2.00	202	1.90
37.00	36.91	5.2	203	-1.89	-0.76	202	2.04	202	2.15	202	1.93	202	2.09	202	1.98
38.00	37.91	5.1	193	-1.97	-0.79	202	2.13	202	2.24	202	2.01	202	2.18	202	2.07
39.00	38.91	5.4	201	-2.06	-0.83	202	2.22	202	2.34	202	2.10	202	2.28	202	2.16
40.00	39.90	6.2	208	-2.15	-0.87	202	2.32	202	2.44	202	2.20	202	2.38	202	2.26
41.00	40.90	6.3	206	-2.24	-0.92	202	2.42	202	2.55	202	2.30	202	2.49	202	2.36
42.00	41.89	7.3	209	-2.35	-0.97	203	2.54	203	2.67	202	2.41	203	2.60	203	2.48
43.00	42.88	8.5	203	-2.47	-1.04	203	2.68	203	2.81	203	2.55	203	2.75	203	2.62
44.00	43.87	8.0	207	-2.61	-1.10	203	2.83	203	2.97	203	2.70	203	2.90	203	2.76
45.00	44.86	7.5	202	-2.73	-1.16	203	2.97	203	3.10	203	2.83	203	3.04	203	2.90
46.00	45.85	9.0	205	-2.86	-1.21	203	3.10	203	3.24	203	2.96	203	3.17	203	3.03
47.00	46.84	8.7	206	-2.99	-1.27	203	3.25	203	3.39	203	3.10	203	3.32	203	3.17
48.00	47.83	9.2	204	-3.12	-1.33	203	3.39	203	3.54	203	3.25	203	3.47	203	3.32
49.00	48.82	8.6	180	-3.26	-1.35	202	3.53	203	3.68	202	3.37	203	3.60	202	3.45
50.00	49.81	5.6	189	-3.38	-1.35	202	3.64	202	3.80	202	3.49	202	3.72	202	3.56
51.00	50.80	8.4	214	-3.49	-1.39	202	3.76	202	3.92	202	3.60	202	3.84	202	3.68
52.00	51.79	7.9	212	-3.60	-1.46	202	3.89	202	4.05	202	3.73	202	3.97	202	3.81
53.00	52.79	8.3	213	-3.71	-1.53	202	4.02	202	4.18	202	3.85	202	4.10	202	3.93
54.00	53.77	8.0	213	-3.83	-1.61	203	4.16	203	4.33	203	3.99	203	4.24	203	4.07
55.00	54.76	8.3	212	-3.95	-1.68	203	4.30	203	4.47	203	4.12	203	4.38	203	4.21
56.00	55.75	9.6	204	-4.09	-1.74	203	4.44	203	4.62	203	4.27	203	4.53	203	4.35
57.00	56.74	9.1	177	-4.23	-1.77	203	4.59	203	4.77	203	4.41	203	4.68	203	4.50
58.00	57.73	7.8	191	-4.39	-1.77	202	4.73	202	4.92	202	4.55	202	4.82	202	4.64
59.00	58.72	9.3	178	-4.55	-1.76	201	4.88	201	5.06	201	4.69	201	4.97	201	4.78
60.00	59.71	9.4	178	-4.70	-1.76	201	5.02	201	5.21	200	4.83	201	5.12	200	4.93
61.00	60.69	8.0	187	-4.85	-1.76	200	5.16	200	5.35	200	4.97	200	5.26	200	5.07
62.00	61.68	7.8	186	-4.99	-1.77	200	5.30	200	5.49	199	5.10	200	5.39	200	5.20
63.00	62.67	7.6	183	-5.14	-1.77	199	5.44	199	5.64	199	5.24	199	5.54	199	5.34
64.00	63.66	7.8	202	-5.28	-1.80	199	5.57	199	5.78	199	5.37	199	5.68	199	5.47
65.00	64.65	10.0	208	-5.42	-1.88	199	5.74	199	5.94	199	5.53	199	5.84	199	5.63
66.00	65.64	9.9	209	-5.56	-1.95	199	5.89	199	6.10	199	5.68	199	6.00	199	5.79
67.00	66.62	10.8	211	-5.72	-2.03	200	6.07	200	6.28	200	5.86	200	6.18	200	5.96
68.00	67.61	8.6	208	-5.87	-2.09	200	6.24	200	6.45	200	6.02	200	6.34	200	6.13
69.00	68.59	10.1	181	-6.07	-2.11	199	6.42	199	6.64	199	6.20	199	6.53	199	6.31
70.00	69.57	10.0	180	-6.23	-2.11	199	6.58	199	6.80	199	6.35	199	6.69	199	6.47
71.00	70.56	9.2	185	-6.38	-2.13	198	6.73	199	6.96	198	6.50	198	6.84	198	6.62
72.00	71.55	8.8	191	-6.53	-2.16	198	6.88	198	7.10	198	6.65	198	6.99	198	6.76
73.00	72.54	8.8	186	-6.67	-2.20	198	7.03	198	7.26	198	6.80	198	7.14	198	6.91
74.00	73.53	8.7	205	-6.81	-2.25	198	7.18	198	7.41	198	6.94	198	7.29	198	7.06
75.00	74.51	10.9	209	-6.97	-2.34	199	7.35	199	7.59	198	7.11	199	7.47	199	7.23
76.00	75.49	12.0	207	-7.14	-2.43	199	7.54	199	7.78	199	7.30	199	7.66	199	7.42
77.00	76.48	12.3	182	-7.30	-2.47	199	7.71	199	7.95	199	7.46	199	7.83	199	7.58
78.00	77.46	8.5	187	-7.49	-2.48	198	7.89	198	8.14	198	7.64	198	8.01	198	7.76
79.00	78.45	9.6	205	-7.65	-2.51	198	8.05	198	8.30	198	7.79	198	8.17	198	7.92
80.00	79.43	10.1	211	-7.79	-2.57	198	8.21	198	8.46	198	7.95	198	8.33	198	8.08
81.00	80.42	9.3	192	-7.94	-2.63	198	8.37	198	8.63	198	8.11	198	8.50	198	8.24
82.00	81.41	9.7	196	-8.09	-2.69	198	8.53	198	8.79	198	8.27	198	8.66	198	8.40
83.00	82.39	9.9	207	-8.24	-2.74	198	8.69	198	8.95	198	8.42	198	8.82	198	8.55
84.00	83.38	11.1	212	-8.40	-2.83	199	8.86	199	9.13	199	8.59	199	9.00	199	8.73
85.00	84.36	10.2	216	-8.56	-2.92	199	9.04	199	9.32	199	8.77	199	9.18	199	8.91
86.00	85.35	8.1	203	-8.70	-2.99	199	9.20	199	9.48	199	8.93	199	9.34	199	9.06
87.00	86.33	10.1	205	-8.84	-3.06	199	9.36	199	9.64	199	9.08	199	9.50	199	9.22
88.00	87.32	11.4	213	-9.01	-3.15	199	9.54	199	9.83	199	9.26	199	9.69	199	9.40
89.00	88.29	11.6	211	-9.18	-3.26	200	9.74	200	10.03	200	9.46	200	9.89	200	9.60
90.00	89.27	12.2	211	-9.36	-3.37	200	9.95	200	10.24	200	9.66	200	10.09	200	9.80
91.00	90.25	12.6	210	-9.54	-3.47	200	10.16	200	10.45	200	9.86	200	10.30	200	10.01
92.00	91.23	12.7	211	-9.72	-3.58	200	10.36	200	10.66	200	10.06	200	10.51	200	10.21
93.00	92.20	11.9	212	-9.90	-3.69	200	10.57	200	10.87	200	10.27	200	10.72	200	10.42
94.00	93.19	9.7	205	-10.07	-3.78	201	10.76	201	11.06	201	10.45	201	10.91	201	10.61
95.00	94.17	10.7	198	-10.25	-3.86	201	10.95	201	11.26	201	10.64	201	11.10	201	10.80
96.00	95.15	13.6	209	-10.43	-3.92	201	11.14	201	11.45	201	10.83	201	11.30	201	10.99
97.00	96.12	11.7	201	-10.63	-4.03	201	11.37	201	11.68	201	11.05	201	11.52	201	11.21
98.00	97.09	13.8	209	-10.83	-4.13	201	11.59	201	11.91	201	11.28	201	11.75	201	11.44
99.00	98.07	13.1	207	-11.04	-4.24	201	11.83	201	12.15	201	11.50	201	11.99	201	11.66
100.00	99.04	12.7	204	-11.24	-4.35	201	12.05	201	12.38	201	11.73	201	12.21	201	11.89
101.00	100.02	13.6	207	-11.43	-4.43	201	12.26	201	12.59	201	11.94	201	12.43	201	12.10
102.00	100.99	14.1	209	-11.63	-4.52	201	12.48	201	12.81	201	12.15	201	12.65	201	12.31
103.00	101.97	11.2	200	-11.83	-4.61	201	12.70	201	13.03	201	12.37	201	12.87	201	12.53
104.00	102.95	12.4	203	-12.02	-4.68	201	12.90	201	13.24	201	12.56	201	13.07	201	12.73
105.00	103.92	13.3	203	-12.22	-4.76	201	13.12	201	13.46	201	12.78	201	13.29	201	12.95
106.00	104.90	13.0	204	-12.43	-4.85	201	13.34	201	13.68	201	13.00	201	13.51	201	13.17
107.00	105.87	14.0	210	-12.63	-4.95	201	13.57	201	13.92	201	13.22	201	13.74	201	13.39
108.00	106.84	13.6	206	-12.84	-5.06	202	13.80	202	14.15	201	13.45	202	13.98	201	13.63
109.00	107.82	13.5	206	-13.04	-5.16	202	14.03	202	14.38	202	13.67	202	14.20	202	13.85
110.00	108.79	13.2	203	-13.24	-5.24	202	14.24	202	14.60	202	13.89	202	14.42	202	14.06
111.00	109.77	13.3	206	-13.45	-5.34	202	14.47	202	14.83	202	14.11	202	14.65	202	14.29
112.00	110.75	10.9	200	-13.63	-5.41	202	14.67	202	15.03	202	14.30	202	14.85	202	14.49
113.00	111.73	13.2	201	-13.82	-5.48	202	14.87	202	15.24	202	14.50	202	15.05	202	14.69
114.00	112.70	11.5	200	-14.03	-5.57	202	15.09	202	15.47	202	14.72	202	15.28	202	14.91
115.00	113.68	11.1	198	-14.21	-5.63	202	15.29	202	15.66	202	14.91	202	15.47	202	15.10
116.00	114.66	12.8	202	-14.41	-5.70	202	15.50	202	15.88	202	15.12	202	15.69	202	15.31
117.00	115.63	12.6	201	-14.63	-5.79	202	15.73	202	16.11	202	15.35	202	15.92	202	15.54
118.00	116.61	12.2	200	-14.80	-5.85	202	15.92	202	16.30	202	15.53	202	16.11	202	15.72
119.00	117.59	11.4	198	-15.01	-5.93	202	16.13	202	16.52	202	15.75	202	16.33	202	15.94
120.00	118.57	12.7	201	-15.20	-5.99	202	16.34	202	16.73	202	15.95	202	16.54	202	16.15
121.00	119.55	12.2	200	-15.40	-6.06	201	16.55	201	16.95	201	16.16	201	16.75	201	16.35
122.00	120.53	11.8	200	-15.59	-6.13	201	16.75	201	17.15	201	16.35	201	16.95	201	16.55
123.00	121.50	12.0	200	-15.78	-6.20	201	16.95	201	17.35	201	16.55	201	17.15	201	16.75
124.00	122.48	12.0	199	-15.98	-6.27	201	17.16	201	17.57	201	16.76	201	17.36	201	16.96
125.00	123.46	6.9	213	-16.15	-6.33	201	17.35	201	17.76	201	16.94	201	17.55	201	17.14
126.00	124.44	12.2	200	-16.34	-6.41	201	17.55	201	17.96	201	17.13	201	17.75	201	17.34
127.00	125.42	12.1	200	-16.53	-6.48	201	17.76	201	18.17	201	17.34	201	17.97	201	17.55
128.00	126.40	12.3	200	-16.74	-6.55	201	17.97	201	18.39	201	17.55	201	18.18	201	17.76
129.00	127.38	10.8	198	-16.92	-6.62	201	18.17	201	18.59	201	17.75	201	18.38	201	17.96
130.00	128.36	12.3	200	-17.11	-6.68	201	18.37	201	18.79	201	17.94	201	18.58	201	18.16
131.00	129.34	12.1	200	-17.31	-6.76	201	18.58	201	19.01	201	18.15	201	18.79	201	18.36
132.00	130.32	10.4	201	-17.47	-6.83	201	18.76	201	19.19	201	18.33	201	18.98	201	18.54
133.00	131.30	12.3	201	-17.67	-6.90	201	18.97	201	19.41	201	18.54	201	19.19	201	18.75
134.00	132.27	12.2	201	-17.87	-6.98	201	19.18	201	19.62	201	18.74	201	19.40	201	18.96
135.00	133.25	12.4	201	-18.06	-7.06	201	19.39	201	19.83	201	18.94	201	19.61	201	19.17
136.00	134.23	12.9	203	-18.26	-7.14	201	19.61	201	20.05	201	19.16	201	19.83	201	19.38
137.00	135.20	12.4	201	-18.46	-7.23	201	19.83	201	20.28	201	19.38	201	20.05	201	19.60
138.00	136.18	12.9	204	-18.66	-7.31	201	20.04	201	20.50	201	19.59	201	20.27	201	19.82
139.00	137.16	11.8	202	-18.86	-7.40	201	20.26	201	20.71	201	19.80	201	20.49	201	20.03
140.00	138.13	15.3	194	-19.07	-7.49	201	20.49	201	20.95	201	20.03	201	20.72	201	20.26
140.40	138.51	14.8	190	-19.18	-7.52	201	20.60	201	21.06	201	20.14	201	20.83	201	20.37

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......00
LAST PLOTTED DEPTH......140.40
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....140

PLOT WITH RESPECT TO TRUE NORTH
SCALE 500:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 19.18 MS SOUTH, 7.52 MS WEST IE. 20.60 MS FROM THE ORIGIN, 201 DEG FROM TRUE NORTH

VERTICAL SECTIONS

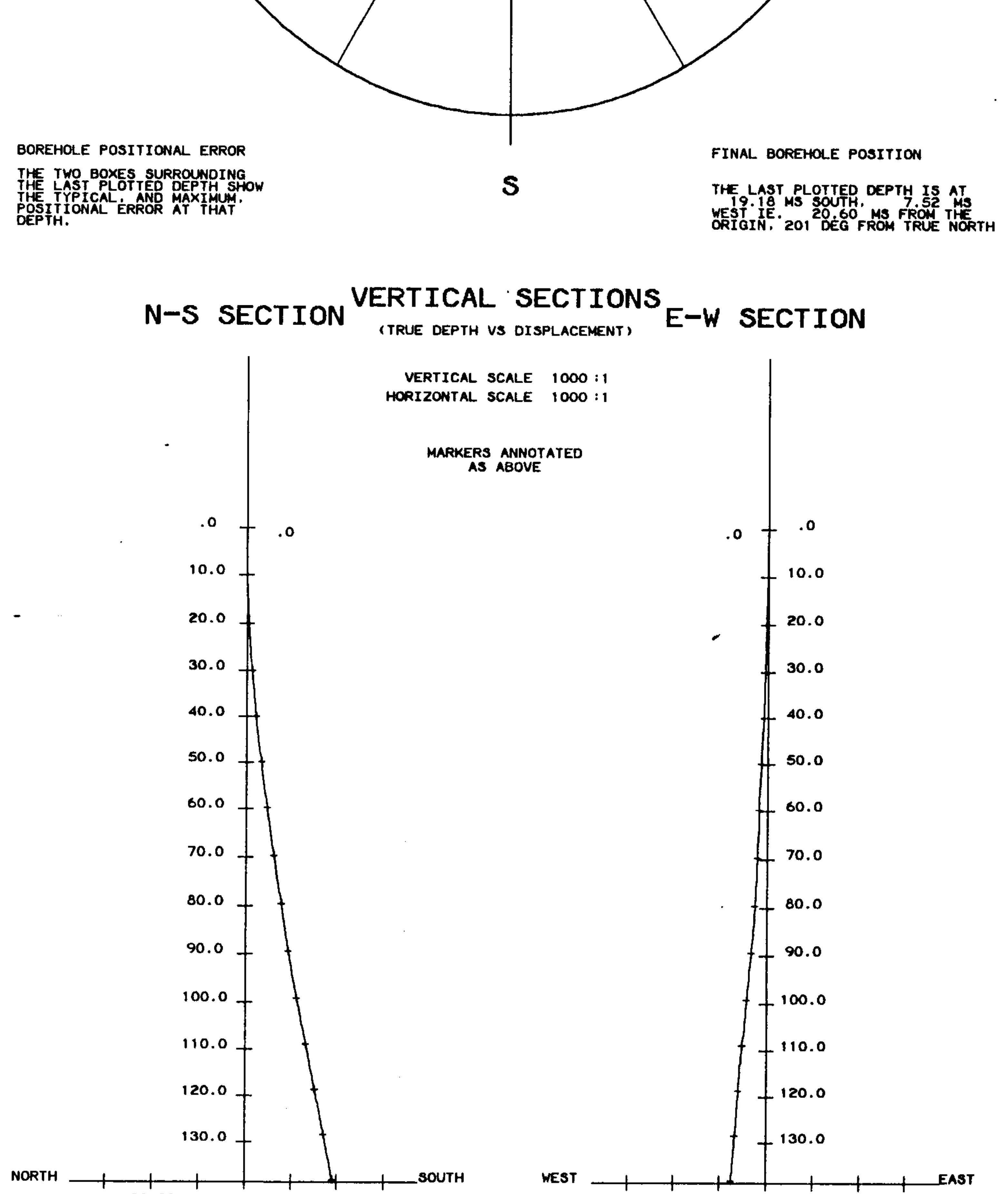
(TRUE DEPTH VS DISPLACEMENT)

N-S SECTION

E-W SECTION

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 1000:1

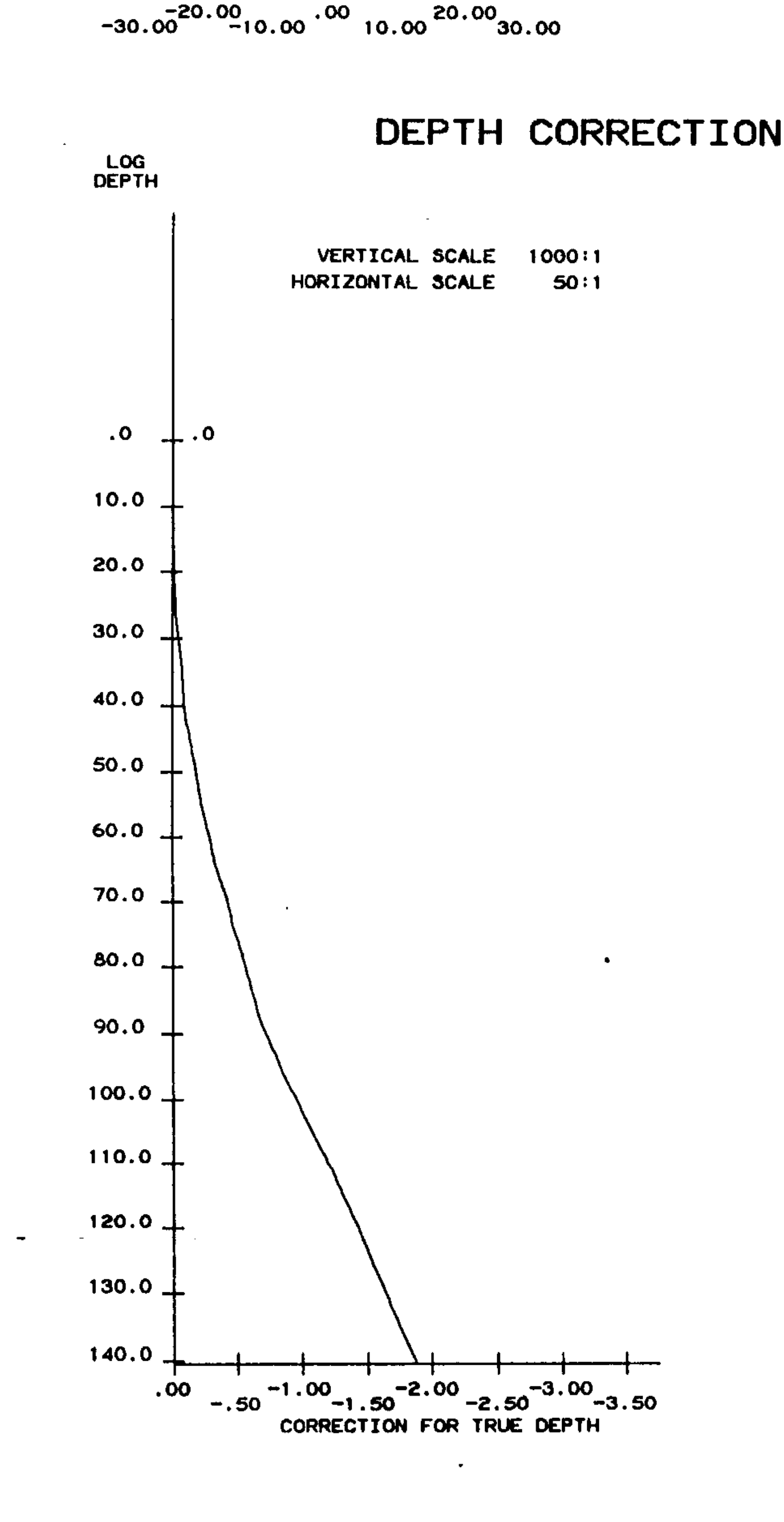
MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

LOG DEPTH

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 50:1



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
1.00	1.00	71.00	70.56	140.40	138.51
2.00	2.00	72.00	71.55		
3.00	3.00	73.00	72.54		
4.00	4.00	74.00	73.53		
5.00	5.00	75.00	74.51		
6.00	6.00	76.00	75.49		
7.00	7.00	77.00	76.48		
8.00	8.00	78.00	77.46		
9.00	9.00	79.00	78.45		
10.00	9.99	80.00	79.43		
11.00	10.99	81.00	80.42		
12.00	11.99	82.00	81.41		
13.00	12.99	83.00	82.39		
14.00	13.99	84.00	83.38		
15.00	14.99	85.00	84.36		
16.00	15.99	86.00	85.35		
17.00	16.99	87.00	86.33		
18.00	17.99	88.00	87.32		
19.00	18.98	89.00	88.29		
20.00	19.98	90.00	89.27		
21.00	20.98	91.00	90.25		
22.00	21.98	92.00	91.23		
23.00	22.98	93.00	92.20		
24.00	23.97	94.00	93.19		
25.00	24.97	95.00	94.17		
26.00	25.97	96.00	95.15		
27.00	26.96	97.00	96.12		
28.00	27.96	98.00	97.09		
29.00	28.95	99.00	98.07		
30.00	29.95	100.00	99.04		
31.00	30.94	101.00	100.02		
32.00	31.93	102.00	100.99		
33.00	32.93	103.00	101.97		
34.00	33.92	104.00	102.95		
35.00	34.92	105.00	103.92		
36.00	35.92	106.00	104.90		
37.00	36.91	107.00	105.87		
38.00	37.91	108.00	106.84		
39.00	38.91	109.00	107.82		
40.00	39.90	110.00	108.79		
41.00	40.90	111.00	109.77		
42.00	41.89	112.00	110.75		
43.00	42.88	113.00	111.73		
44.00	43.87	114.00	112.70		
45.00	44.86	115.00	113.68		
46.00	45.85	116.00	114.66		
47.00	46.84	117.00	115.63		
48.00	47.83	118.00	116.61		
49.00	48.82	119.00	117.59		
50.00	49.81	120.00	118.57		
51.00	50.80	121.00	119.55		
52.00	51.79	122.00	120.53		
53.00	52.79	123.00	121.50		
54.00	53.77	124.00	122.48		
55.00	54.76	125.00	123.46		
56.00	55.75	126.00	124.44		
57.00	56.74	127.00	125.42		
58.00	57.73	128.00	126.40		
59.00	58.72	129.00	127.38		
60.00	59.71	130.00	128.36		
61.00	60.69	131.00	129.34		
62.00	61.68	132.00	130.32		
63.00	62.67	133.00	131.30		
64.00	63.66	134.00	132.27		
65.00	64.65	135.00	133.25		
66.00	65.64	136.00	134.23		
67.00	66.62	137.00	135.20		
68.00	67.61	138.00	136.18		
69.00	68.59	139.00	137.16		
70.00	69.57	140.00	138.13		

COMPANY	MANALTA
WELL	T93R-21
FIELD	SITE 20
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER
#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 20
WELL:
T93R-21
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-21
FIELD SITE 20
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	16-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	140.8M			
DEPTH-LOGGER	140.8M			
FIRST READING	140M			
LAST READING	00M			
CASING-DRILLER	3.4M			
CASING-LOGGER	3.4M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE	N/A			
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	3.4M	TD	178MM	N/A	SURFACE	3.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 16-SEP-1993 AT 17:32
FILENAME: DD3AR21M.CIB RUN ID: MAIN LOG PLOTTED ON 16-SEP-1993 AT 18:05

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 16-SEP-1993 AT 17:32
FILENAME: DD3AR21M.CIB RUN ID: MAIN LOG PLOTTED ON 16-SEP-1993 AT 18:05

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 16-SEP-1993 AT 17:28

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	3.40
BIT SIZE 3	.00	BIT DEPTH 3	140.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-21
FIELD	SITE 20
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 20
WELL: T93R-21
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-21
FIELD SITE 20
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL, ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	16-SEP-93	
RUN NUMBER	THREE	
DEPTH-DRILLER	140.8M	
DEPTH-LOGGER	140.8M	
FIRST READING	140M	
LAST READING	00M	
CASING-DRILLER	3.4M	
CASING-LOGGER	3.4M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE	N/A	
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	3.4M	TD	178MM	N/A	SURFACE	3.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

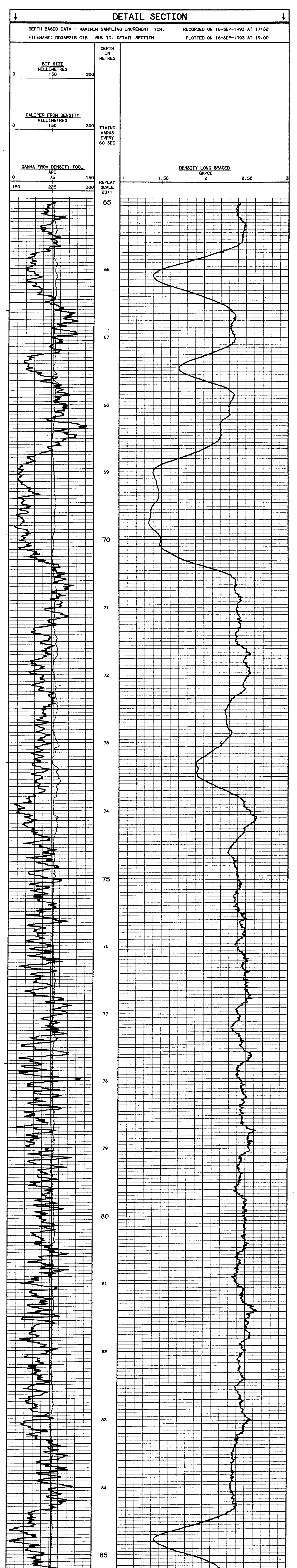
LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 16-SEP-1993 AT 17:32
FILENAME: DD3AR21B.CIB RUN ID: DETAIL SECTION PLOTTED ON 16-SEP-1993 AT 19:00



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 16-SEP-1993 AT 17:32
FILENAME: DD3AR21B.CIB RUN ID: DETAIL SECTION PLOTTED ON 16-SEP-1993 AT 18:57

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 16-SEP-1993 AT 17:32
FILENAME: DD3AR21A.CIB RUN ID: DETAIL SECTION PLOTTED ON 16-SEP-1993 AT 18:57

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 16-SEP-1993 AT 17:32
FILENAME: DD3AR21A.CIB RUN ID: DETAIL SECTION PLOTTED ON 16-SEP-1993 AT 18:52

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 16-SEP-1993 AT 17:28 DATA LAST REPROCESSED: 16-SEP-1993 AT 18:51

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	3.40
BIT SIZE 3	.00	BIT DEPTH 3	140.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-21
FIELD	SITE 20
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 20
WELL:
T93R-21
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-21
FIELD SITE 20
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL

DATE	16-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	140.8M			
DEPTH-LOGGER	140.8M			
FIRST READING	140M			
LAST READING	OOM			
CASING-DRILLER	3.4M			
CASING-LOGGER	3.4M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE	N/A			
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	OOM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	3.4M	TD	178MM	N/A	SURFACE	3.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 16-SEP-1993 AT 17:32
FILENAME: DD3AR21B.CIB RUN ID: DETAIL SECTION PLOTTED ON 17-SEP-1993 AT 09:53

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 16-SEP-1993 AT 17:32
FILENAME: DD3AR21B.CIB RUN ID: DETAIL SECTION PLOTTED ON 17-SEP-1993 AT 09:53

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 16-SEP-1993 AT 17:32
FILENAME: DD3AR21A.CIB RUN ID: DETAIL SECTION PLOTTED ON 17-SEP-1993 AT 09:50

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 16-SEP-1993 AT 17:32
FILENAME: DD3AR21A.CIB RUN ID: DETAIL SECTION PLOTTED ON 17-SEP-1993 AT 09:50

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 16-SEP-1993 AT 17:28 DATA LAST REPROCESSED: 16-SEP-1993 AT 18:51

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	.00
BIT SIZE 2	156.00	BIT DEPTH 2	3.40
BIT SIZE 3	.00	BIT DEPTH 3	140.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	313.00
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2952.20
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1447.30
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	593.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	651.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	709.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	772.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	885.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	987.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-21
FIELD	SITE 20
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER #879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 103
WELL:
T93R-04
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-04
FIELD	SITE 103
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	3-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	92.4M	
DEPTH-LOGGER	89M	
FIRST READING	88M	
LAST READING	0M	
CASING-DRILLER	3.7M	
CASING-LOGGER	3.7M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	5M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	3.7M	TD	178MM	N/A	SURFACE	3.7M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 3-SEP-1993 AT 15:20
FILENAME: DD3AR04M.CIB RUN ID: MAIN LOG PLOTTED ON 03-SEP-1993 AT 20:00

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 3-SEP-1993 AT 15:20
FILENAME: DD3AR04M.CIB RUN ID: MAIN LOG PLOTTED ON 03-SEP-1993 AT 20:00

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 03-SEP-1993 AT 15:17

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	3.70
BIT SIZE 3	.00	BIT DEPTH 3	92.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-04
FIELD	SITE 103
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-04
FIELD	SITE # 103
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION				OTHER SERVICES
TELKWA				CCS
LSD	SEC	TWP	RGE	

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 103
WELL:
T93R-04
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	3-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	92.4M	
DEPTH-LOGGER	89.0M	
FIRST READING	89M	
LAST READING	0M	
CASING-DRILLER	3.7M	
CASING-LOGGER	3.7M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	5M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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T93R-04                        VERTICALITY DATA LISTING                   DATE PROCESSED:  3-SEP-1993
                  ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH              DATE LOGGED:     3-SEP-1993
    DEPTHS         BOREHOLE   AXIAL CO-ORDS    POLAR        POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG      TRUE    TILT AZI   NORTH      EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

  4.00     4.00    0.5 208    0.00      0.00 208    0.00 208    0.00 208    0.00 208    0.00 208    0.00
  5.00     5.00    0.8 185   -0.01      0.00 193    0.01 193    0.02 193    0.01 193    0.02 193    0.01
  6.00     6.00    0.4 198   -0.03      0.00 189    0.03 189    0.03 189    0.02 189    0.03 189    0.02
  7.00     7.00    0.7 192   -0.04     -0.01 190    0.04 190    0.05 189    0.03 190    0.04 190    0.03
  8.00     8.00    0.6 173   -0.05     -0.01 187    0.05 187    0.06 187    0.03 187    0.05 187    0.04
  9.00     9.00    1.0 155   -0.06      0.00 184    0.06 184    0.08 184    0.04 184    0.07 184    0.05
 10.00    10.00    0.6 159   -0.07      0.00 181    0.07 181    0.09 181    0.05 181    0.08 181    0.06
 11.00    11.00    0.8 164   -0.08      0.00 180    0.08 180    0.10 179    0.05 180    0.09 180    0.07
 12.00    12.00    0.5 202   -0.09      0.00 180    0.09 180    0.12 180    0.06 180    0.10 180    0.07
 13.00    13.00    0.5 212   -0.10      0.00 183    0.10 183    0.13 182    0.07 183    0.11 183    0.08
 14.00    14.00    0.3 184   -0.10     -0.01 184    0.10 184    0.14 184    0.07 184    0.12 184    0.09
 15.00    15.00    0.6 185   -0.11     -0.01 184    0.11 184    0.15 184    0.08 184    0.13 184    0.10
 16.00    16.00    0.6 175   -0.12     -0.01 183    0.12 183    0.16 182    0.08 183    0.14 182    0.10
 17.00    17.00    0.6 147   -0.13      0.00 180    0.13 180    0.17 180    0.09 180    0.15 180    0.11
 18.00    18.00    0.4 158   -0.14      0.00 178    0.14 178    0.19 178    0.09 178    0.16 178    0.12
 19.00    19.00    0.6 168   -0.15      0.01 178    0.15 178    0.20 178    0.10 178    0.17 178    0.12
 20.00    20.00    0.3  90   -0.16      0.01 177    0.16 177    0.21 177    0.10 177    0.18 177    0.13
 21.00    21.00    0.3 347   -0.16      0.01 176    0.16 176    0.21 177    0.10 176    0.18 177    0.13
 22.00    22.00    0.6 292   -0.15      0.00 179    0.15 179    0.20 178    0.10 179    0.18 178    0.13
 23.00    23.00    0.7 280   -0.15     -0.01 182    0.15 182    0.20 181    0.10 182    0.18 182    0.13
 24.00    24.00    0.9 262   -0.15     -0.02 187    0.15 187    0.20 187    0.10 187    0.18 187    0.13
 25.00    25.00    1.0 261   -0.15     -0.04 193    0.16 192    0.21 194    0.11 193    0.18 193    0.13
 26.00    26.00    1.1 256   -0.16     -0.05 199    0.17 198    0.22 201    0.11 198    0.19 199    0.14
 27.00    27.00    1.1 263   -0.16     -0.07 204    0.18 203    0.23 207    0.12 203    0.20 205    0.15
 28.00    28.00    0.7 283   -0.16     -0.09 208    0.18 207    0.24 211    0.13 207    0.21 209    0.16
 29.00    29.00    0.6 248   -0.16     -0.10 211    0.19 209    0.25 214    0.13 210    0.22 212    0.16
 30.00    30.00    0.5 229   -0.17     -0.11 213    0.20 211    0.26 215    0.14 212    0.23 214    0.17
 31.00    31.00    0.7 228   -0.17     -0.11 213    0.20 212    0.27 216    0.14 213    0.24 214    0.17
 32.00    32.00    0.4 205   -0.18     -0.12 214    0.21 212    0.28 216    0.15 213    0.24 214    0.18
 33.00    33.00    0.8 192   -0.18     -0.12 213    0.22 212    0.29 215    0.15 212    0.25 214    0.18
 34.00    34.00    1.6 201   -0.20     -0.12 212    0.24 211    0.31 214    0.16 211    0.27 213    0.20
 35.00    35.00    1.8 204   -0.23     -0.14 211    0.26 210    0.34 213    0.19 211    0.30 212    0.23
 36.00    36.00    1.9 209   -0.25     -0.15 211    0.29 210    0.37 212    0.21 210    0.33 211    0.25
 37.00    37.00    1.8 213   -0.28     -0.17 212    0.33 211    0.41 213    0.24 211    0.37 212    0.28
 38.00    38.00    2.0 209   -0.31     -0.19 212    0.36 211    0.45 213    0.28 212    0.41 213    0.32
 39.00    39.00    1.7 210   -0.33     -0.21 213    0.40 212    0.48 214    0.31 212    0.44 213    0.35
 40.00    39.99    1.4 209   -0.35     -0.23 214    0.42 213    0.52 215    0.33 213    0.47 214    0.38
 41.00    40.99    2.3 221   -0.38     -0.26 214    0.46 213    0.56 215    0.37 214    0.51 215    0.42
 42.00    41.99    1.9 224   -0.41     -0.29 215    0.50 214    0.60 216    0.40 214    0.55 215    0.45
 43.00    42.99    2.1 231   -0.43     -0.31 215    0.53 215    0.64 217    0.43 215    0.58 216    0.48
 44.00    43.99    3.0 240   -0.46     -0.35 217    0.58 216    0.68 218    0.47 216    0.63 217    0.52
 45.00    44.99    2.3 227   -0.49     -0.38 218    0.62 217    0.73 219    0.51 217    0.68 218    0.57
 46.00    45.99    2.6 229   -0.52     -0.42 219    0.66 218    0.78 220    0.55 218    0.72 219    0.61
 47.00    46.99    3.2 234   -0.55     -0.46 220    0.72 219    0.83 221    0.60 219    0.77 220    0.66
 48.00    47.99    3.3 236   -0.58     -0.50 221    0.77 220    0.89 222    0.65 220    0.83 221    0.71
 49.00    48.99    3.3 230   -0.62     -0.55 222    0.83 221    0.95 223    0.70 221    0.89 222    0.76
 50.00    49.98    3.8 242   -0.64     -0.60 223    0.88 222    1.01 225    0.76 223    0.95 224    0.82
 51.00    50.98    3.9 240   -0.68     -0.66 224    0.95 223    1.08 225    0.82 223    1.01 225    0.88
 52.00    51.98    3.9 241   -0.72     -0.72 225    1.01 224    1.15 226    0.88 224    1.08 226    0.95
 53.00    52.98    3.2 230   -0.75     -0.77 226    1.08 225    1.21 227    0.94 225    1.14 226    1.01
 54.00    53.97    4.1 225   -0.79     -0.82 226    1.14 225    1.28 227    1.01 225    1.21 227    1.07
 55.00    54.97    3.8 219   -0.84     -0.87 226    1.21 225    1.35 227    1.07 225    1.28 226    1.14
 56.00    55.97    4.0 222   -0.90     -0.92 226    1.28 225    1.43 227    1.14 225    1.36 226    1.21
 57.00    56.97    4.3 222   -0.96     -0.97 225    1.36 225    1.51 226    1.21 225    1.44 226    1.29
 58.00    57.96    4.0 229   -1.01     -1.02 225    1.43 225    1.58 226    1.28 225    1.51 226    1.36
 59.00    58.96    4.1 230   -1.05     -1.07 226    1.50 225    1.66 226    1.35 225    1.58 226    1.43
 60.00    59.96    5.0 236   -1.10     -1.14 226    1.58 225    1.74 227    1.42 226    1.66 226    1.50
 61.00    60.95    5.7 233   -1.15     -1.21 226    1.67 226    1.83 227    1.51 226    1.75 227    1.59
 62.00    61.95    5.8 234   -1.21     -1.29 227    1.77 226    1.93 228    1.61 227    1.85 227    1.69
 63.00    62.94    4.9 238   -1.26     -1.37 227    1.86 227    2.03 228    1.69 227    1.94 228    1.78
 64.00    63.94    4.7 251   -1.30     -1.44 228    1.94 227    2.11 229    1.77 228    2.02 228    1.85
 65.00    64.94    5.4 248   -1.33     -1.52 229    2.02 228    2.19 230    1.85 228    2.11 229    1.93
 66.00    65.93    5.4 247   -1.37     -1.61 230    2.11 229    2.29 230    1.93 229    2.20 230    2.02
 67.00    66.93    5.3 245   -1.41     -1.69 230    2.20 230    2.38 231    2.02 230    2.29 231    2.11
 68.00    67.92    4.9 254   -1.44     -1.77 231    2.29 230    2.47 232    2.10 230    2.38 231    2.19
 69.00    68.92    5.3 245   -1.47     -1.85 232    2.36 231    2.55 232    2.17 231    2.45 232    2.27
 70.00    69.92    4.6 256   -1.50     -1.92 232    2.44 231    2.63 233    2.25 232    2.53 233    2.34
 71.00    70.91    4.1 255   -1.52     -2.00 233    2.51 232    2.70 234    2.32 232    2.61 233    2.42
 72.00    71.91    4.2 247   -1.54     -2.08 233    2.59 233    2.78 234    2.39 233    2.69 234    2.49
 73.00    72.91    4.4 250   -1.57     -2.15 234    2.66 233    2.86 235    2.47 234    2.76 234    2.56
 74.00    73.90    5.2 258   -1.59     -2.23 235    2.74 234    2.94 235    2.54 234    2.84 235    2.64
 75.00    74.90    5.0 250   -1.61     -2.32 235    2.83 235    3.03 236    2.63 235    2.93 236    2.73
 76.00    75.90    6.0 248   -1.65     -2.42 236    2.93 235    3.13 237    2.72 235    3.03 236    2.83
 77.00    76.89    5.7 255   -1.68     -2.52 236    3.03 236    3.24 237    2.82 236    3.13 237    2.92
 78.00    77.89    4.7 247   -1.71     -2.60 237    3.11 236    3.33 237    2.90 236    3.22 237    3.01
 79.00    78.88    5.5 252   -1.74     -2.69 237    3.20 236    3.42 238    2.99 237    3.31 237    3.09
 80.00    79.88    5.7 252   -1.77     -2.78 238    3.29 237    3.51 238    3.07 237    3.40 238    3.18
 81.00    80.87    5.2 254   -1.79     -2.87 238    3.38 237    3.61 239    3.16 238    3.49 238    3.27
 82.00    81.87    4.0 251   -1.82     -2.95 238    3.46 238    3.69 239    3.24 238    3.58 239    3.35
 83.00    82.87    5.5 254   -1.85     -3.03 239    3.55 238    3.78 239    3.32 238    3.66 239    3.44
 84.00    83.86    3.9 244   -1.88     -3.11 239    3.63 238    3.86 240    3.40 239    3.75 239    3.52
 85.00    84.86    5.9 253   -1.90     -3.19 239    3.71 239    3.95 240    3.48 239    3.83 240    3.60
 86.00    85.85    5.8 252   -1.93     -3.29 240    3.81 239    4.05 240    3.57 239    3.93 240    3.69
 87.00    86.85    3.7 247   -1.96     -3.37 240    3.90 239    4.14 240    3.66 239    4.02 240    3.78
 88.00    87.84    6.1 243   -2.00     -3.45 240    3.99 239    4.23 241    3.75 240    4.11 240    3.87
 88.40    88.24    6.1 234   -2.02     -3.48 240    4.03 239    4.27 241    3.78 240    4.15 240    3.91
```
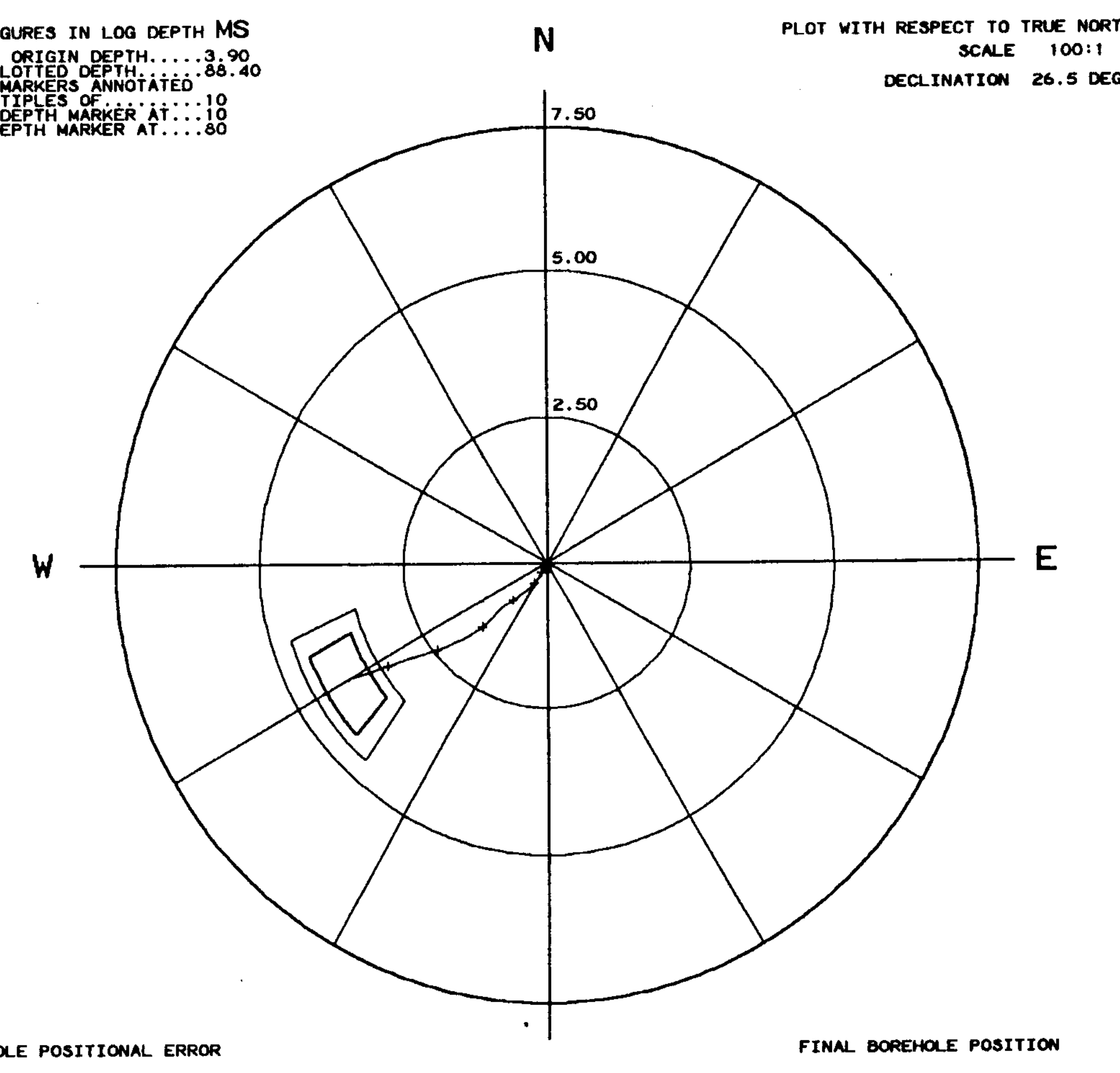

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....3.90
LAST PLOTTED DEPTH......88.40
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....80

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

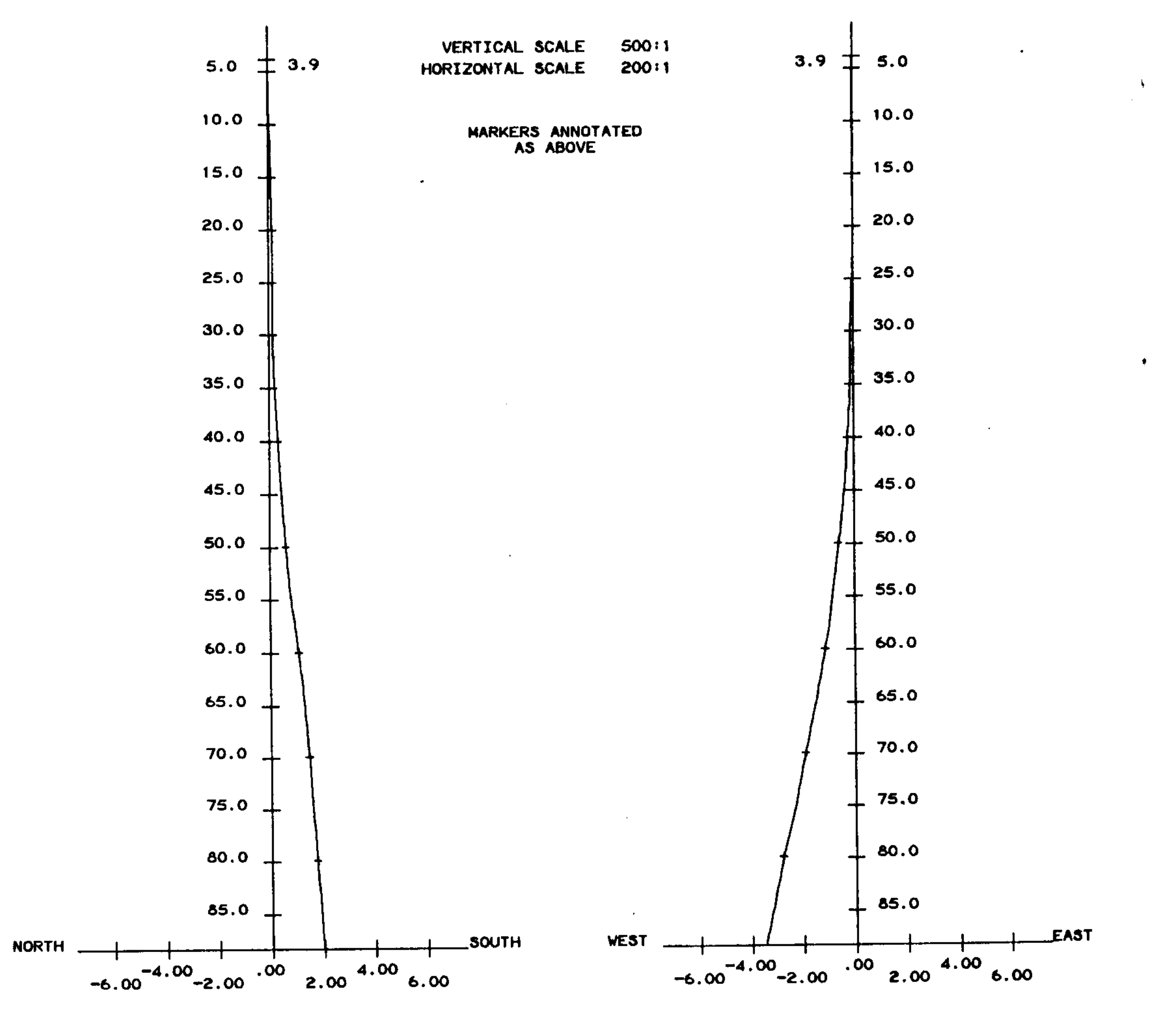
THE LAST PLOTTED DEPTH IS AT 2.02 MS SOUTH, 3.48 MS WEST IE. 4.03 MS FROM THE ORIGIN, 240 DEG FROM TRUE NORTH

VERTICAL SECTIONS

(TRUE DEPTH VS DISPLACEMENT)

VERTICAL SCALE 500:1
HORIZONTAL SCALE 200:1

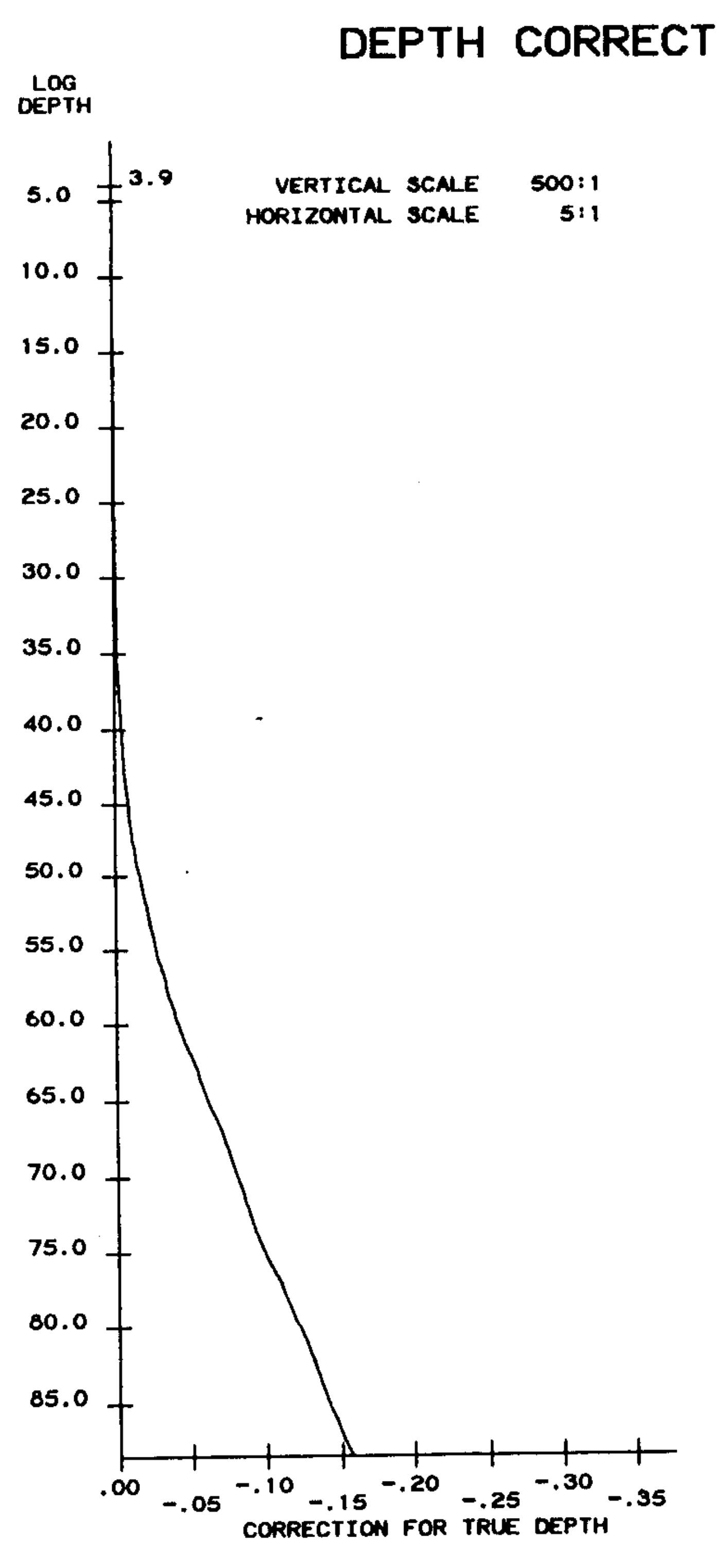
MARKERS ANNOTATED
AS ABOVE


N-S SECTION

E-W SECTION

DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 500:1
HORIZONTAL SCALE 5:1



DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE
4.00	4.00	74.00	73.90
5.00	5.00	75.00	74.90
6.00	6.00	76.00	75.90
7.00	7.00	77.00	76.89
8.00	8.00	78.00	77.89
9.00	9.00	79.00	78.88
10.00	10.00	80.00	79.88
11.00	11.00	81.00	80.87
12.00	12.00	82.00	81.87
13.00	13.00	83.00	82.87
14.00	14.00	84.00	83.86
15.00	15.00	85.00	84.86
16.00	16.00	86.00	85.85
17.00	17.00	87.00	86.85
18.00	18.00	88.00	87.84
19.00	19.00	88.40	88.24
20.00	20.00		
21.00	21.00		
22.00	22.00		
23.00	23.00		
24.00	24.00		
25.00	25.00		
26.00	26.00		
27.00	27.00		
28.00	28.00		
29.00	29.00		
30.00	30.00		
31.00	31.00		
32.00	32.00		
33.00	33.00		
34.00	34.00		
35.00	35.00		
36.00	36.00		
37.00	37.00		
38.00	38.00		
39.00	39.00		
40.00	39.99		
41.00	40.99		
42.00	41.99		
43.00	42.99		
44.00	43.99		
45.00	44.99		
46.00	45.99		
47.00	46.99		
48.00	47.99		
49.00	48.99		
50.00	49.98		
51.00	50.98		
52.00	51.98		
53.00	52.98		
54.00	53.97		
55.00	54.97		
56.00	55.97		
57.00	56.97		
58.00	57.96		
59.00	58.96		
60.00	59.96		
61.00	60.95		
62.00	61.95		
63.00	62.94		
64.00	63.94		
65.00	64.94		
66.00	65.93		
67.00	66.93		
68.00	67.92		
69.00	68.92		
70.00	69.92		
71.00	70.91		
72.00	71.91		
73.00	72.91		

COMPANY	MANALTA
WELL	T93R-04
FIELD	SITE # 103
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 105
WELL: T93R-10
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-10
FIELD SITE 105
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				DIP/VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	61.0M			
DEPTH-LOGGER	61.0M			
FIRST READING	60.5M			
LAST READING	0M			
CASING-DRILLER	6.1M			
CASING-LOGGER	6.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 20:05
FILENAME: DD3AR10A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 20:57

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 20:05
FILENAME: DD3AR10A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 20:57

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 06-SEP-1993 AT 18:48 DATA LAST REPROCESSED: 6-SEP-1993 AT 20:47

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	61.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-10
FIELD	SITE 105
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 105
WELL:
T93R-10
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-10
FIELD	SITE 105
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93			
RUN NUMBER	FIVE			
DEPTH-DRILLER	61.0M			
DEPTH-LOGGER	61.0M			
FIRST READING	60.5M			
LAST READING	0M			
CASING-DRILLER	6.1M			
CASING-LOGGER	6.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE. AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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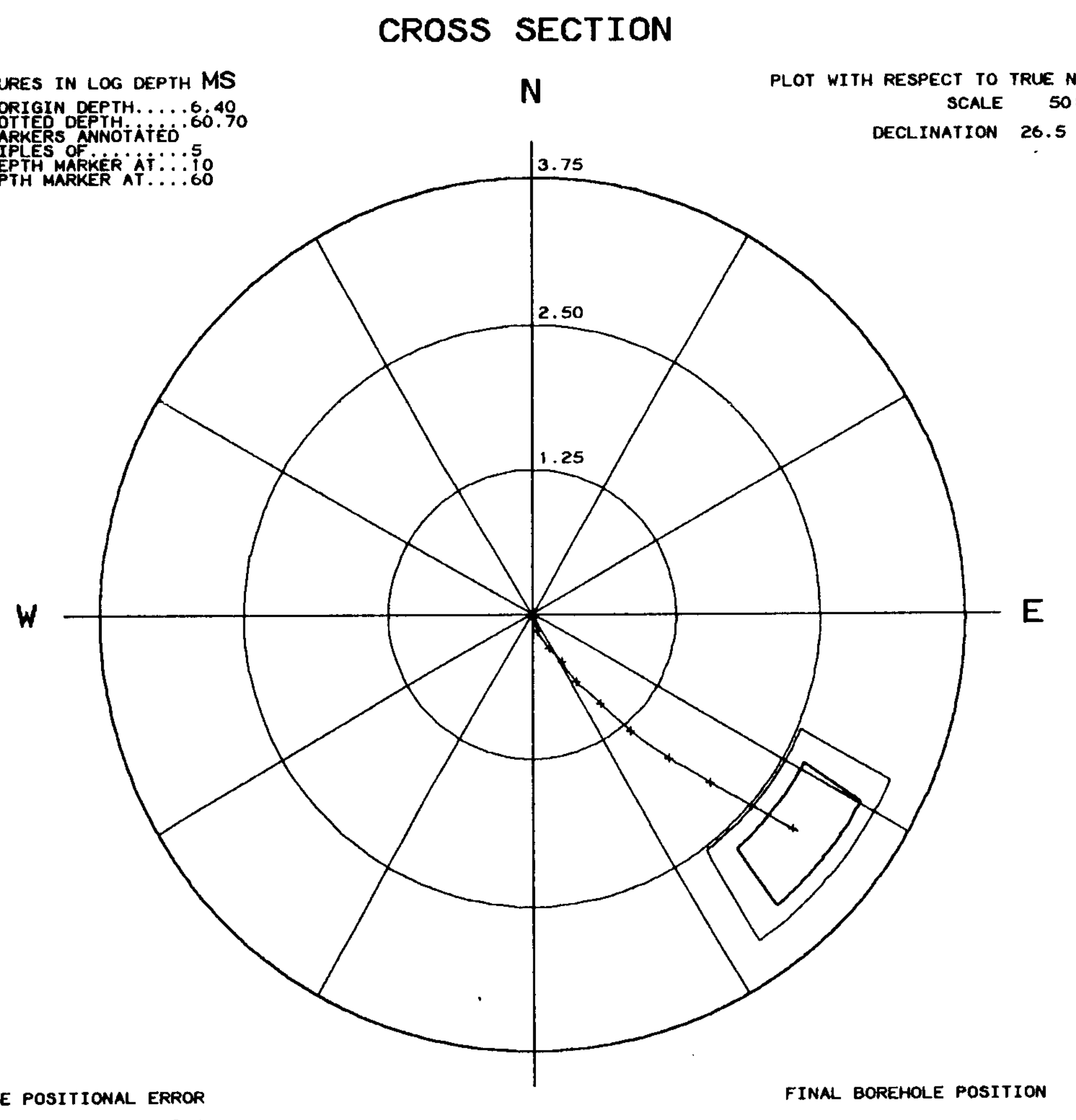
T93R-10                       VERTICALITY DATA LISTING                    DATE PROCESSED:  7-SEP-1993
                    ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH           DATE LOGGED:     6-SEP-1993
   DEPTHS         BOREHOLE   AXIAL CO-ORDS    POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG     TRUE    TILT AZI   NORTH      EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

  7.00     7.00    1.3 213   -0.01      0.00 196   0.01 197    0.02 196    0.01 197    0.01 196    0.01
  8.00     8.00    1.1 133   -0.02     -0.02 213   0.03 213    0.03 213    0.02 213    0.03 213    0.03
  9.00     9.00    1.1 118   -0.03     -0.01 191   0.03 190    0.03 191    0.02 191    0.03 191    0.03
 10.00    10.00    1.0 143   -0.04      0.01 169   0.04 169    0.05 170    0.03 169    0.04 170    0.04
 11.00    11.00    0.7 129   -0.05      0.02 162   0.06 161    0.07 163    0.04 161    0.06 162    0.05
 12.00    12.00    1.3 164   -0.07      0.02 162   0.08 161    0.09 162    0.06 161    0.08 162    0.07
 13.00    13.00    1.5 166   -0.10      0.03 162   0.10 162    0.12 163    0.09 162    0.11 163    0.09
 14.00    14.00    1.6 161   -0.12      0.04 163   0.13 162    0.15 163    0.11 162    0.14 163    0.12
 15.00    15.00    1.9 160   -0.15      0.05 162   0.16 162    0.18 163    0.14 162    0.17 163    0.15
 16.00    16.00    1.7 152   -0.18      0.06 161   0.19 161    0.22 161    0.16 161    0.21 161    0.18
 17.00    17.00    2.3 149   -0.21      0.08 160   0.23 160    0.26 160    0.20 160    0.24 160    0.21
 18.00    18.00    2.1 145   -0.25      0.10 158   0.27 158    0.30 158    0.23 158    0.28 158    0.25
 19.00    19.00    2.4 142   -0.28      0.12 156   0.30 156    0.34 156    0.26 156    0.32 156    0.28
 20.00    19.99    2.1 135   -0.31      0.15 154   0.34 154    0.38 154    0.30 154    0.36 154    0.32
 21.00    20.99    2.0 135   -0.33      0.17 153   0.37 153    0.42 152    0.33 153    0.40 153    0.35
 22.00    21.99    1.9 135   -0.36      0.20 151   0.41 151    0.45 151    0.36 151    0.43 151    0.38
 23.00    22.99    1.8 133   -0.38      0.22 150   0.44 150    0.49 150    0.39 150    0.46 150    0.41
 24.00    23.99    1.7 142   -0.40      0.24 149   0.47 149    0.52 149    0.41 149    0.49 149    0.44
 25.00    24.99    1.8 147   -0.42      0.26 149   0.50 149    0.56 149    0.44 149    0.53 149    0.47
 26.00    25.99    2.0 147   -0.45      0.28 149   0.53 149    0.59 148    0.47 149    0.56 149    0.50
 27.00    26.99    2.5 146   -0.48      0.30 148   0.57 148    0.63 148    0.50 148    0.60 148    0.54
 28.00    27.99    2.5 141   -0.52      0.32 148   0.61 148    0.68 148    0.54 148    0.64 148    0.58
 29.00    28.99    2.7 143   -0.55      0.35 148   0.65 148    0.73 147    0.58 148    0.69 148    0.62
 30.00    29.99    2.9 139   -0.59      0.38 147   0.70 147    0.78 147    0.63 147    0.74 147    0.67
 31.00    30.99    3.2 135   -0.63      0.42 146   0.75 146    0.83 146    0.68 146    0.79 146    0.71
 32.00    31.98    2.9 129   -0.66      0.46 145   0.80 146    0.89 145    0.72 145    0.85 145    0.76
 33.00    32.98    2.9 130   -0.70      0.50 144   0.86 145    0.94 144    0.77 145    0.90 144    0.82
 34.00    33.98    3.4 133   -0.74      0.54 144   0.91 144    1.00 143    0.83 144    0.96 143    0.87
 35.00    34.98    3.5 134   -0.78      0.59 143   0.97 143    1.07 143    0.88 143    1.02 143    0.93
 36.00    35.98    4.0 131   -0.82      0.64 142   1.04 142    1.13 142    0.94 142    1.09 142    0.99
 37.00    36.97    3.9 133   -0.87      0.69 142   1.11 142    1.21 141    1.01 142    1.16 141    1.06
 38.00    37.97    4.1 131   -0.92      0.74 141   1.18 141    1.28 141    1.08 141    1.23 141    1.13
 39.00    38.97    4.4 131   -0.96      0.80 140   1.25 141    1.36 140    1.15 141    1.30 140    1.20
 40.00    39.97    4.6 131   -1.02      0.86 140   1.33 140    1.44 140    1.22 140    1.38 140    1.28
 41.00    40.96    4.6 128   -1.07      0.92 139   1.41 140    1.52 139    1.30 139    1.47 139    1.35
 42.00    41.96    4.6 126   -1.12      0.98 139   1.49 139    1.60 138    1.37 139    1.55 138    1.43
 43.00    42.96    4.6 123   -1.16      1.05 138   1.57 138    1.69 138    1.45 138    1.63 138    1.51
 44.00    43.95    4.6 121   -1.20      1.12 137   1.64 137    1.77 137    1.52 137    1.70 137    1.58
 45.00    44.95    4.6 121   -1.25      1.19 136   1.72 137    1.85 136    1.59 137    1.78 136    1.66
 46.00    45.95    4.7 122   -1.29      1.25 136   1.80 136    1.93 135    1.67 136    1.86 136    1.73
 47.00    46.94    4.7 121   -1.33      1.32 135   1.88 135    2.01 135    1.74 135    1.94 135    1.81
 48.00    47.94    5.0 120   -1.37      1.40 135   1.96 135    2.09 134    1.82 135    2.03 134    1.89
 49.00    48.94    4.9 121   -1.42      1.47 134   2.04 134    2.18 134    1.90 134    2.11 134    1.97
 50.00    49.93    4.7 120   -1.46      1.54 133   2.12 134    2.26 133    1.98 134    2.19 133    2.05
 51.00    50.93    4.7 120   -1.50      1.61 133   2.20 133    2.35 133    2.06 133    2.27 133    2.13
 52.00    51.93    4.6 119   -1.54      1.68 132   2.28 133    2.43 132    2.13 133    2.35 132    2.20
 53.00    52.92    4.7 119   -1.58      1.75 132   2.36 132    2.51 132    2.21 132    2.43 132    2.28
 54.00    53.92    4.7 119   -1.62      1.82 132   2.44 132    2.59 131    2.28 132    2.51 131    2.36
 55.00    54.92    4.7 120   -1.66      1.89 131   2.52 131    2.68 131    2.36 131    2.60 131    2.44
 56.00    55.91    5.1 120   -1.70      1.97 131   2.60 131    2.76 130    2.44 131    2.68 131    2.52
 57.00    56.91    4.5 121   -1.74      2.05 130   2.69 131    2.85 130    2.52 131    2.77 130    2.60
 58.00    57.91    4.3 123   -1.78      2.11 130   2.76 130    2.93 130    2.59 130    2.84 130    2.68
 59.00    58.90    5.0 117   -1.82      2.18 130   2.84 130    3.01 129    2.67 130    2.92 130    2.75
 60.00    59.90    4.7 116   -1.86      2.25 129   2.92 130    3.09 129    2.75 130    3.01 129    2.83
 60.70    60.60    4.3 115   -1.88      2.30 129   2.97 130    3.15 129    2.80 129    3.06 129    2.88
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....6.40
LAST PLOTTED DEPTH.....60.70
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........5
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....60

PLOT WITH RESPECT TO TRUE NORTH
SCALE 50:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

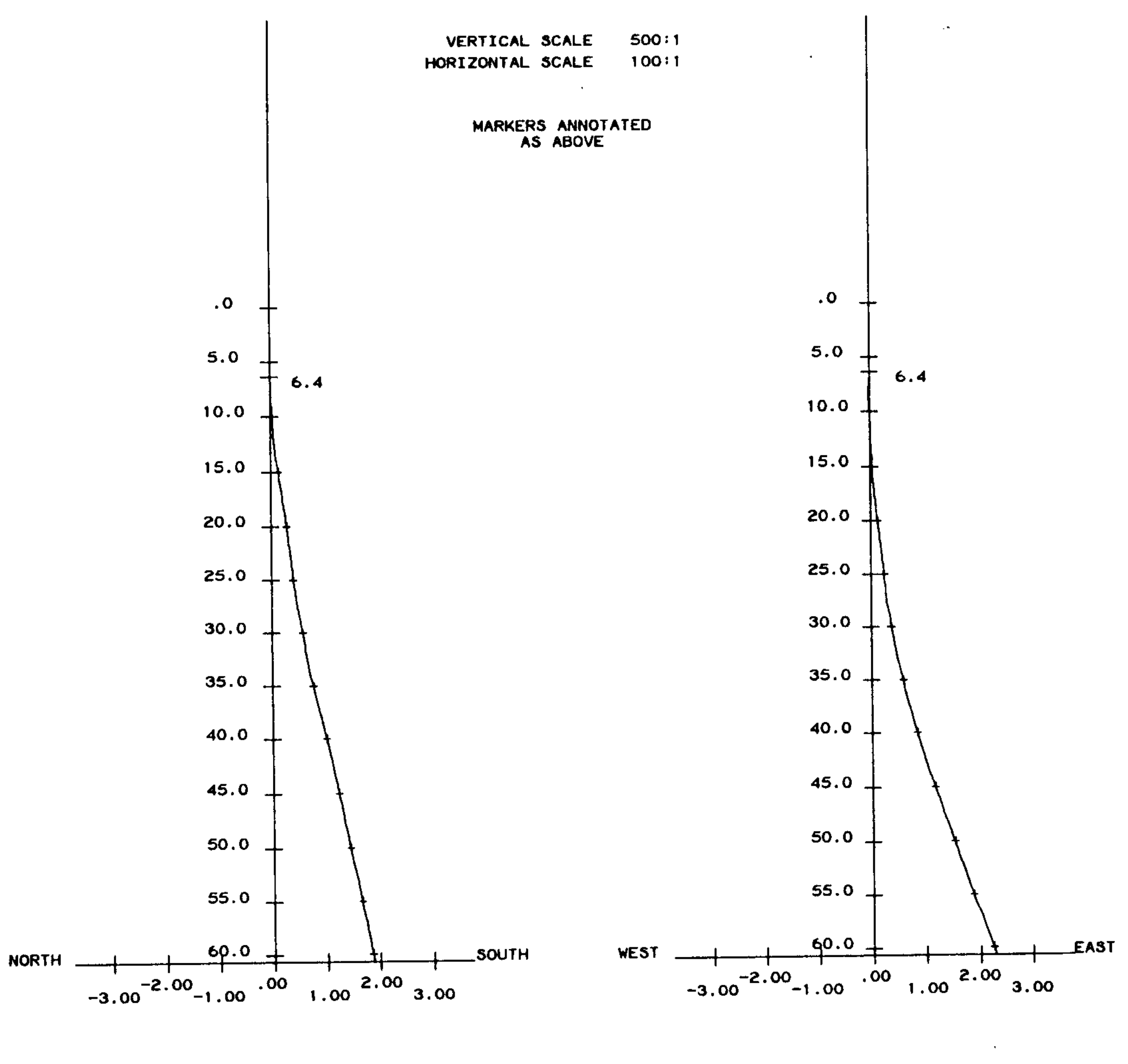
THE LAST PLOTTED DEPTH IS AT 1.88 MS SOUTH, 2.30 MS EAST IE. 2.97 MS FROM THE ORIGIN, 129 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

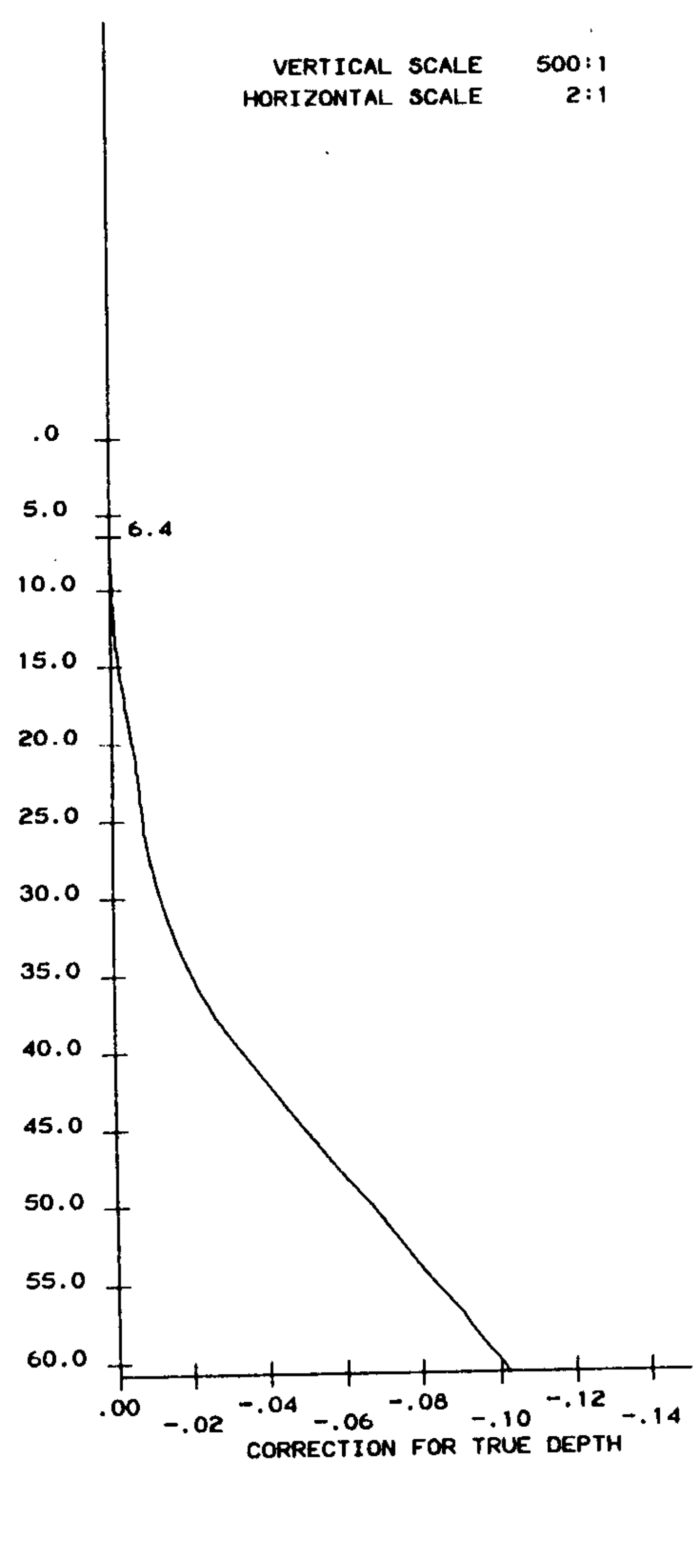
VERTICAL SCALE 500:1
HORIZONTAL SCALE 100:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 500:1
HORIZONTAL SCALE 2:1



DEPTHS:

LOG	TRUE
7.00	7.00
8.00	8.00
9.00	9.00
10.00	10.00
11.00	11.00
12.00	12.00
13.00	13.00
14.00	14.00
15.00	15.00
16.00	16.00
17.00	17.00
18.00	18.00
19.00	19.00
20.00	19.99
21.00	20.99
22.00	21.99
23.00	22.99
24.00	23.99
25.00	24.99
26.00	25.99
27.00	26.99
28.00	27.99
29.00	28.99
30.00	29.99
31.00	30.99
32.00	31.98
33.00	32.98
34.00	33.98
35.00	34.98
36.00	35.98
37.00	36.97
38.00	37.97
39.00	38.97
40.00	39.97
41.00	40.96
42.00	41.96
43.00	42.96
44.00	43.95
45.00	44.95
46.00	45.95
47.00	46.94
48.00	47.94
49.00	48.94
50.00	49.93
51.00	50.93
52.00	51.93
53.00	52.92
54.00	53.92
55.00	54.92
56.00	55.91
57.00	56.91
58.00	57.91
59.00	58.90
60.00	59.90
60.70	60.60

COMPANY	MANALTA
WELL	T93R-10
FIELD	SITE 105
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

COMPANY	MANALTA
WELL	T93R-10
FIELD	SITE 105
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
DIP/VERT

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 105
WELL:
T93R-10
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93							
RUN NUMBER	TWO							
DEPTH-DRILLER	61.0M							
DEPTH-LOGGER	61.0M							
FIRST READING	60.5M							
LAST READING	0M							
CASING-DRILLER	6.1M							
CASING-LOGGER	6.1M							
BIT SIZE	156MM							
HOLE FLUID TYPE	AIR/WATER							
DENS./VISC.	1.01	N/A						
PH/FLUID LOSS	N/A	N/A						
SAMPLE SOURCE								
RM @ MEAS TEMP								
RMF @ MEAS TEMP								
RMC @ MEAS TEMP								
SOURCE: RMF/RMC								
RM @ BHT								
TIME SINCE CIRC								
MAX REC TEMP								
EQUIPMENT/BASE	V222	RDR						
RECORDED BY	B.STEVENSON							
WITNESSED BY	T. BRAZZONI							
WATER LEVEL	00M							

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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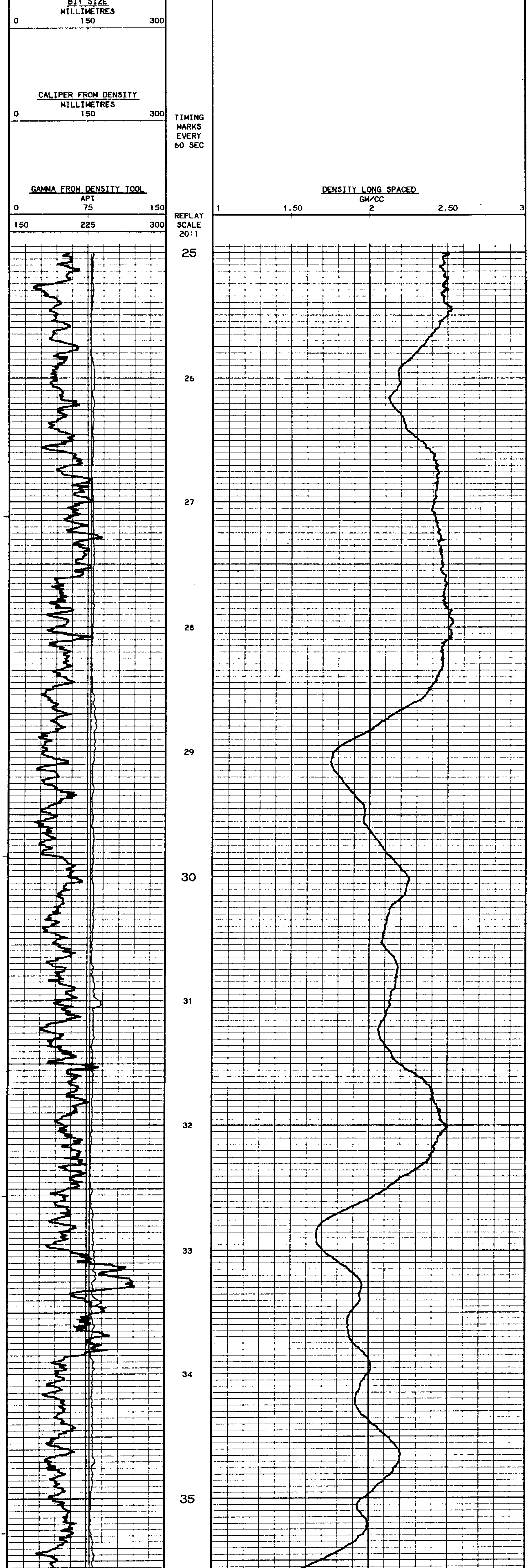
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 20:05
FILENAME: DD3AR10A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 20:51



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 20:05
FILENAME: DD3AR10A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 20:49

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 06-SEP-1993 AT 18:48 DATA LAST REPROCESSED: 6-SEP-1993 AT 20:47

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	61.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-10
FIELD	SITE 105
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

DIPMETER ANALYSIS

#879 #869

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 105
WELL: T93R-10
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-10
FIELD SITE 105
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				CCS
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93							
RUN NUMBER	FOUR							
DEPTH-DRILLER	61.0M							
DEPTH-LOGGER	61.0M							
FIRST READING	60.5M							
LAST READING	0M							
CASING-DRILLER	6.1M							
CASING-LOGGER	6.1M							
BIT SIZE	156MM							
HOLE FLUID TYPE	AIR/WATER							
DENS./VISC.	1.01	N/A						
PH/FLUID LOSS	N/A	N/A						
SAMPLE SOURCE								
RM @ MEAS TEMP								
RMF @ MEAS TEMP								
RMC @ MEAS TEMP								
SOURCE: RMF/RMC								
RM @ BHT								
TIME SINCE CIRC								
MAX REC TEMP								
EQUIPMENT/BASE	V222	RDR						
RECORDED BY	B.STEVENSON							
WITNESSED BY	T. BRAZZONI							
WATER LEVEL	00M							

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
DIP/VERT	221/233			

REMARKS

DIPMETER ANALYSIS

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-SEP-1993 AT 21:20
FILENAME: DIP3R10M.CIB RUN ID: MAIN LOG PLOTTED ON 07-SEP-1993 AT 10:13

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-SEP-1993 AT 21:20
FILENAME: DIP3R10M.CIB RUN ID: MAIN LOG PLOTTED ON 07-SEP-1993 AT 10:13

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 06-SEP-1993 AT 21:08 DATA LAST REPROCESSED: 7-SEP-1993 AT 9:52

LOGGING CONSTANTS & GAMMA CALIBRATION

CORRELATION STEP (M.)	.25	CORRELATION INTERVAL (M.)	.50
BIT SIZE #1 (MM)	178.00	BIT DEPTH #1 (M.)	.00
BIT SIZE #2	156.00	BIT DEPTH #2	6.10
BIT SIZE #3	.00	BIT DEPTH #3	61.00
BIT SIZE #4	.00	BIT DEPTH #4	0.00
BIT SIZE #5	.00	BIT DEPTH #5	0.00
GAMMA CALIBRATOR (API)	510.00	GAMMA COUNTS	313.00
UNUSED	XXXXXXXX	SEARCH ANGLE (DEGREES)	45.00
STRUCTURAL DIP ANGLE (DEGREES)	.00	STRUCTURAL DIP AZI. (DEGREES)	.00
DECLINATION (DEGREES)	26.50 E	DETAIL PAD DATA	NO
CORRELATE	YES	CALIPER UNITS	MM
DEPTH UNITS	METRIC	CALIPER USED IN CALCULATIONS	YES

LEVEL CELL CALIBRATION

TILT(DEGREES)	LC1(COUNTS)	LC2(COUNTS)
-10.00	114.00	121.00
-8.00	136.00	142.00
-6.00	158.00	166.00
-4.00	179.00	185.00
-2.00	198.00	202.00
.00	221.00	222.00
2.00	243.00	240.00
4.00	264.00	258.00
6.00	285.00	277.00
8.00	305.00	303.00
10.00	326.00	322.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00

CALIBRATION IDENTIFICATION: VERT # 233

MAGNETOMETER CALIBRATION

	MAG.X	MAG.Y	MAG.Z
MAX.	209.00	213.00	199.00
MIN.	150.00	148.00	161.00

CALIBRATION IDENTIFICATION: VERT # 233

CALIPER CAL. & PAD OFFSETS

CALIBRATOR(MM)	COUNTS	PAD 2 OFFSET(MM)	PAD 3 OFFSET(MM)
76.20	133.00	.00	.00
101.60	155.00	.00	.00
127.00	179.00	.00	.00
152.40	201.00	.00	.00
203.20	250.00	.00	.00
254.00	307.00	.00	.00

CALIBRATION IDENTIFICATION: 221

COMPANY	MANALTA
WELL	T93R-10
FIELD	SITE 105
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 105
WELL:
T93R-10
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-10
FIELD SITE 105
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
DIP/VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	61.0M			
DEPTH-LOGGER	61.0M			
FIRST READING	60.5M			
LAST READING	0M			
CASING-DRILLER	6.1M			
CASING-LOGGER	6.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-SEP-1993 AT 20:05
FILENAME: DD3AR10M.CIB RUN ID: MAIN LOG PLOTTED ON 06-SEP-1993 AT 20:29

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-SEP-1993 AT 20:05
FILENAME: DD3AR10M.CIB RUN ID: MAIN LOG PLOTTED ON 06-SEP-1993 AT 20:29

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 06-SEP-1993 AT 18:48

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	61.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-10
FIELD	SITE 105
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

COMPANY	MANALTA
WELL	T93R-14
FIELD	SITE 106
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 106
WELL: T93R-14
COMPANY: MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	10-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	109.7M			
DEPTH-LOGGER	110M			
FIRST READING	109M			
LAST READING	0M			
CASING-DRILLER	6.1M			
CASING-LOGGER	6.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 10-SEP-1993 AT 14:40
FILENAME: DD3AR14M.CIB RUN ID: MAIN LOG PLOTTED ON 10-SEP-1993 AT 14:54

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 10-SEP-1993 AT 14:40
FILENAME: DD3AR14M.CIB RUN ID: MAIN LOG PLOTTED ON 10-SEP-1993 AT 14:41

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 10-SEP-1993 AT 14:36

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	6.10
BIT SIZE 3	.00	BIT DEPTH 3	109.70
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-14
FIELD	SITE 106
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY MANALTA
WELL T93R-14
FIELD SITE 106
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

ELEVATIONS:
KB N/A
DF N/A
GL N/A

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 106
WELL:
T93R-14
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

DATE	10-SEP-93	
RUN NUMBER	FOUR	
DEPTH-DRILLER	109.7M	
DEPTH-LOGGER	110M	
FIRST READING	110M	
LAST READING	OM	
CASING-DRILLER	6.1M	
CASING-LOGGER	6.1M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	OOM	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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T93R-14                        VERTICALITY DATA LISTING                        DATE PROCESSED: 11-SEP-1993
                      ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH              DATE LOGGED:    10-SEP-1993
    DEPTHS         BOREHOLE   AXIAL CO-ORDS    POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG     TRUE     TILT AZI   NORTH     EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

   6.00     6.00   0.6  50    0.00     0.00  41   0.01  42    0.01  41    0.00  41    0.01  41    0.00
   7.00     7.00   0.7 347    0.01     0.00  13   0.01  13    0.02  15    0.01  13    0.02  14    0.01
   8.00     8.00   0.6 153    0.02     0.00   6   0.02   5    0.02   6    0.01   5    0.02   6    0.01
   9.00     9.00   0.6 265    0.02    -0.01 341   0.02 341    0.02 342    0.01 341    0.02 342    0.01
  10.00    10.00   0.4 263    0.01    -0.02 313   0.02 313    0.03 313    0.01 313    0.02 313    0.02
  11.00    11.00   0.5 256    0.01    -0.03 296   0.03 296    0.04 295    0.02 296    0.03 296    0.02
  12.00    12.00   0.4 294    0.01    -0.04 283   0.04 284    0.05 281    0.03 284    0.05 282    0.03
  13.00    13.00   0.5 273    0.01    -0.05 278   0.05 279    0.07 275    0.04 278    0.06 277    0.04
  14.00    14.00   1.0 267    0.01    -0.06 276   0.06 277    0.08 275    0.04 277    0.07 276    0.05
  15.00    15.00   0.7 266    0.01    -0.08 274   0.08 275    0.10 272    0.05 274    0.09 273    0.07
  16.00    16.00   0.8 258    0.00    -0.09 273   0.09 273    0.12 271    0.06 273    0.10 272    0.08
  17.00    17.00   0.6  31    0.01    -0.10 274   0.10 275    0.13 273    0.07 275    0.12 274    0.09
  18.00    18.00   0.8 297    0.01    -0.11 276   0.11 277    0.14 275    0.08 277    0.13 276    0.10
  19.00    19.00   0.7 306    0.02    -0.12 279   0.12 279    0.16 278    0.09 279    0.14 278    0.11
  20.00    20.00   0.8 300    0.03    -0.13 281   0.14 282    0.18 281    0.10 282    0.16 281    0.12
  21.00    21.00   0.7 311    0.04    -0.14 284   0.15 284    0.19 283    0.11 284    0.17 284    0.13
  22.00    22.00   0.7 312    0.04    -0.16 286   0.16 286    0.21 285    0.12 286    0.18 286    0.14
  23.00    23.00   0.9 297    0.05    -0.17 288   0.17 288    0.22 287    0.13 288    0.20 288    0.15
  24.00    24.00   0.8 302    0.06    -0.18 289   0.19 289    0.24 289    0.14 289    0.21 289    0.16
  25.00    25.00   0.8 304    0.07    -0.19 291   0.20 291    0.26 290    0.15 291    0.23 291    0.17
  26.00    26.00   0.7 312    0.08    -0.20 292   0.22 292    0.27 292    0.16 292    0.24 292    0.19
  27.00    27.00   0.8 318    0.09    -0.21 294   0.23 294    0.29 294    0.17 294    0.26 294    0.20
  28.00    28.00   0.5 341    0.10    -0.22 295   0.24 295    0.31 295    0.18 295    0.27 295    0.21
  29.00    29.00   0.8 321    0.11    -0.23 297   0.26 297    0.32 297    0.19 297    0.29 297    0.22
  30.00    30.00   0.7 330    0.13    -0.24 298   0.27 298    0.34 298    0.20 298    0.30 298    0.23
  31.00    31.00   0.7 331    0.14    -0.24 300   0.28 300    0.35 300    0.21 300    0.32 300    0.24
  32.00    32.00   0.9 329    0.15    -0.25 301   0.29 301    0.37 301    0.22 301    0.33 301    0.26
  33.00    33.00   1.0 323    0.16    -0.26 302   0.31 302    0.39 302    0.23 302    0.35 302    0.27
  34.00    34.00   1.0 337    0.18    -0.27 304   0.32 303    0.40 304    0.24 304    0.36 304    0.28
  35.00    35.00   0.9 350    0.19    -0.27 305   0.33 305    0.42 305    0.25 305    0.37 305    0.29
  36.00    36.00   0.4 345    0.20    -0.27 306   0.34 306    0.43 306    0.25 306    0.38 306    0.30
  37.00    37.00   0.8 359    0.21    -0.27 308   0.35 308    0.43 308    0.26 308    0.39 308    0.30
  38.00    38.00   0.3 355    0.22    -0.27 309   0.35 309    0.44 309    0.26 309    0.39 309    0.30
  39.00    39.00   0.4  34    0.23    -0.27 310   0.35 311    0.44 309    0.26 310    0.40 310    0.31
  40.00    40.00   0.4  14    0.23    -0.27 311   0.35 311    0.45 310    0.26 311    0.40 310    0.31
  41.00    41.00   0.3  28    0.24    -0.27 311   0.36 312    0.45 310    0.26 312    0.40 311    0.31
  42.00    42.00   0.3  38    0.24    -0.26 312   0.36 313    0.46 311    0.26 313    0.41 312    0.31
  43.00    43.00   0.7  27    0.25    -0.26 314   0.36 315    0.46 312    0.26 315    0.41 313    0.31
  44.00    44.00   0.8  34    0.26    -0.26 316   0.36 317    0.46 314    0.27 316    0.41 315    0.32
  45.00    45.00   0.4  31    0.27    -0.25 317   0.37 318    0.47 315    0.27 318    0.42 316    0.32
  46.00    46.00   0.5  21    0.28    -0.25 319   0.37 320    0.47 316    0.27 319    0.42 318    0.32
  47.00    47.00   0.7  31    0.29    -0.24 320   0.38 322    0.48 318    0.27 321    0.43 320    0.32
  48.00    48.00   0.9  31    0.30    -0.23 322   0.38 323    0.49 320    0.28 323    0.43 321    0.33
  49.00    49.00   0.7  32    0.31    -0.23 324   0.39 325    0.49 322    0.28 325    0.44 323    0.33
  50.00    50.00   0.7  30    0.32    -0.22 326   0.39 327    0.50 324    0.28 326    0.45 325    0.34
  51.00    51.00   0.7  30    0.33    -0.22 327   0.40 328    0.51 325    0.29 328    0.45 326    0.34
  52.00    52.00   0.7  21    0.34    -0.21 329   0.40 330    0.52 326    0.29 329    0.46 328    0.35
  53.00    53.00   0.6  32    0.35    -0.20 330   0.41 331    0.52 328    0.29 331    0.47 329    0.35
  54.00    54.00   0.9  39    0.36    -0.20 331   0.41 333    0.53 329    0.30 332    0.47 331    0.36
  55.00    55.00   0.5  37    0.37    -0.19 333   0.42 334    0.54 331    0.30 334    0.48 332    0.36
  56.00    56.00   0.7  37    0.39    -0.18 335   0.43 336    0.55 333    0.31 335    0.49 334    0.37
  57.00    57.00   0.9  41    0.40    -0.17 337   0.43 338    0.56 335    0.31 337    0.49 336    0.37
  58.00    58.00   0.6  28    0.41    -0.16 338   0.44 339    0.56 336    0.32 339    0.50 337    0.38
  59.00    59.00   0.8  42    0.42    -0.16 340   0.45 341    0.57 338    0.32 340    0.51 339    0.38
  60.00    60.00   0.5  45    0.43    -0.15 341   0.45 342    0.58 339    0.32 341    0.52 340    0.39
  61.00    61.00   0.5  38    0.44    -0.14 342   0.46 343    0.59 340    0.33 343    0.52 341    0.39
  62.00    62.00   0.8  57    0.44    -0.13 343   0.46 344    0.59 342    0.33 344    0.53 343    0.40
  63.00    63.00   0.5  49    0.45    -0.13 344   0.47 345    0.60 343    0.33 345    0.53 344    0.40
  64.00    64.00   0.4  42    0.46    -0.12 345   0.47 346    0.61 343    0.34 346    0.54 344    0.40
  65.00    65.00   0.3  36    0.46    -0.12 346   0.48 347    0.61 344    0.34 346    0.54 345    0.41
  66.00    66.00   0.4  46    0.47    -0.11 346   0.48 348    0.62 344    0.34 347    0.55 346    0.41
  67.00    67.00   0.4  70    0.47    -0.11 347   0.48 348    0.63 345    0.34 348    0.55 346    0.41
  68.00    68.00   0.4  54    0.48    -0.10 348   0.49 349    0.63 345    0.34 348    0.56 347    0.41
  69.00    69.00   0.2  47    0.48    -0.10 348   0.49 350    0.64 345    0.34 349    0.56 347    0.42
  70.00    70.00   0.3  10    0.49    -0.10 349   0.50 350    0.64 346    0.35 350    0.57 348    0.42
  71.00    71.00   0.5  36    0.49    -0.09 350   0.50 351    0.65 346    0.35 350    0.58 348    0.42
  72.00    72.00   0.4  62    0.50    -0.09 350   0.51 352    0.66 347    0.35 351    0.58 349    0.43
  73.00    73.00   0.5  40    0.50    -0.08 351   0.51 353    0.67 348    0.35 352    0.59 350    0.43
  74.00    74.00   0.6  42    0.51    -0.07 352   0.51 353    0.67 348    0.36 353    0.59 350    0.44
  75.00    75.00   0.5  38    0.52    -0.07 352   0.52 354    0.68 349    0.36 353    0.60 351    0.44
  76.00    75.99   0.5  63    0.52    -0.06 353   0.52 355    0.69 350    0.36 354    0.61 352    0.44
  77.00    76.99   0.3  36    0.53    -0.06 354   0.53 356    0.70 350    0.37 355    0.61 353    0.45
  78.00    77.99   0.5  35    0.53    -0.05 355   0.54 356    0.70 351    0.37 356    0.62 353    0.45
  79.00    78.99   0.6  35    0.54    -0.04 355   0.54 357    0.71 352    0.37 357    0.63 354    0.46
  80.00    79.99   0.6  42    0.55    -0.03 356   0.55 358    0.72 353    0.38 357    0.64 355    0.46
  81.00    80.99   0.8  44    0.56    -0.03 357   0.56 359    0.73 354    0.38 358    0.64 356    0.47
  82.00    81.99   0.7  52    0.56    -0.02 358   0.56   0    0.74 355    0.39 359    0.65 357    0.47
  83.00    82.99   0.6  50    0.57    -0.01 359   0.57   1    0.75 356    0.39   0    0.66 358    0.48
  84.00    83.99   0.7  45    0.58     0.00 360   0.58   2    0.76 357    0.40   1    0.67 359    0.49
  85.00    84.99   0.6  59    0.58     0.01   1   0.58   2    0.77 358    0.40   2    0.68 359    0.49
  86.00    85.99   0.4  52    0.59     0.01   1   0.59   3    0.78 358    0.40   2    0.68   0    0.50
  87.00    86.99   0.6  56    0.60     0.02   2   0.60   4    0.79 359    0.41   3    0.69   1    0.50
  88.00    87.99   0.7  47    0.60     0.03   3   0.60   5    0.80 360    0.41   4    0.70   2    0.51
  89.00    88.99   0.6  61    0.61     0.04   4   0.61   5    0.81   0    0.41   5    0.71   2    0.51
  90.00    89.99   0.7  55    0.62     0.05   4   0.62   6    0.82   1    0.42   5    0.72   3    0.52
  91.00    90.99   0.7  54    0.62     0.06   5   0.63   7    0.83   2    0.42   6    0.73   4    0.52
  92.00    91.99   0.7  59    0.63     0.07   6   0.63   8    0.84   3    0.43   7    0.74   5    0.53
  93.00    92.99   0.6  53    0.64     0.08   7   0.64   8    0.85   4    0.44   8    0.75   6    0.54
  94.00    93.99   0.6  52    0.64     0.09   8   0.65   9    0.86   5    0.44   9    0.75   7    0.55
  95.00    94.99   0.8  54    0.65     0.10   8   0.66  10    0.87   6    0.45   9    0.76   7    0.55
  96.00    95.99   0.7  52    0.66     0.11   9   0.67  11    0.88   7    0.45  10    0.77   8    0.56
  97.00    96.99   0.6  59    0.66     0.12  10   0.68  11    0.89   7    0.46  11    0.78   9    0.57
  98.00    97.99   0.7  58    0.67     0.13  11   0.68  12    0.90   8    0.46  12    0.79  10    0.57
  99.00    98.99   0.8  63    0.68     0.14  12   0.69  13    0.91   9    0.47  12    0.80  11    0.58
 100.00    99.99   0.8  65    0.68     0.15  12   0.70  14    0.92  10    0.47  13    0.81  11    0.59
 101.00   100.99   0.7  64    0.69     0.16  13   0.71  14    0.94  11    0.48  14    0.82  12    0.59
 102.00   101.99   0.8  62    0.70     0.17  14   0.72  15    0.95  12    0.49  15    0.83  13    0.60
 103.00   102.99   0.9  57    0.70     0.18  15   0.73  16    0.96  13    0.49  15    0.84  14    0.61
 104.00   103.99   0.8  58    0.71     0.20  15   0.74  17    0.97  13    0.50  16    0.85  15    0.62
 105.00   104.99   0.9  60    0.72     0.21  16   0.75  17    0.99  14    0.51  17    0.87  15    0.63
 106.00   105.99   0.9  59    0.73     0.22  17   0.76  18    1.00  15    0.52  18    0.88  16    0.64
 107.00   106.99   0.6  71    0.73     0.23  18   0.77  19    1.01  16    0.52  18    0.89  17    0.65
 108.00   107.99   0.7  64    0.74     0.25  18   0.78  19    1.02  17    0.53  19    0.90  18    0.65
 109.00   108.99   0.5  72    0.74     0.26  19   0.78  20    1.03  18    0.53  20    0.91  19    0.66
 109.90   109.89   0.6  99    0.74     0.27  20   0.79  21    1.04  18    0.54  20    0.91  19    0.66
```
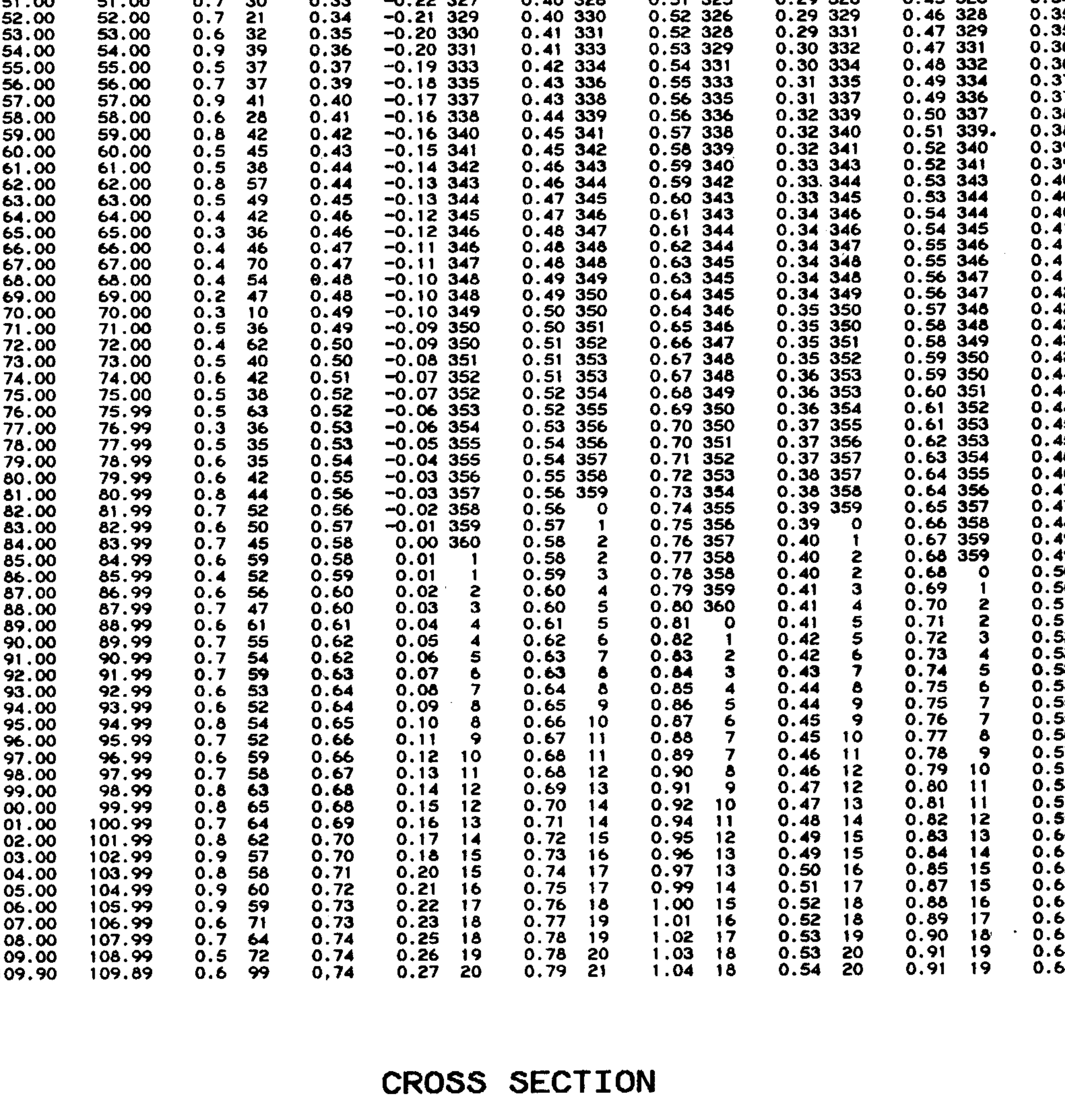

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....5.50
LAST PLOTTED DEPTH......109.90
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....100

PLOT WITH RESPECT TO TRUE NORTH
SCALE 20:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT .74 MS NORTH, .27 MS EAST IE. .79 MS FROM THE ORIGIN, 20 DEG FROM TRUE NORTH

VERTICAL SECTIONS

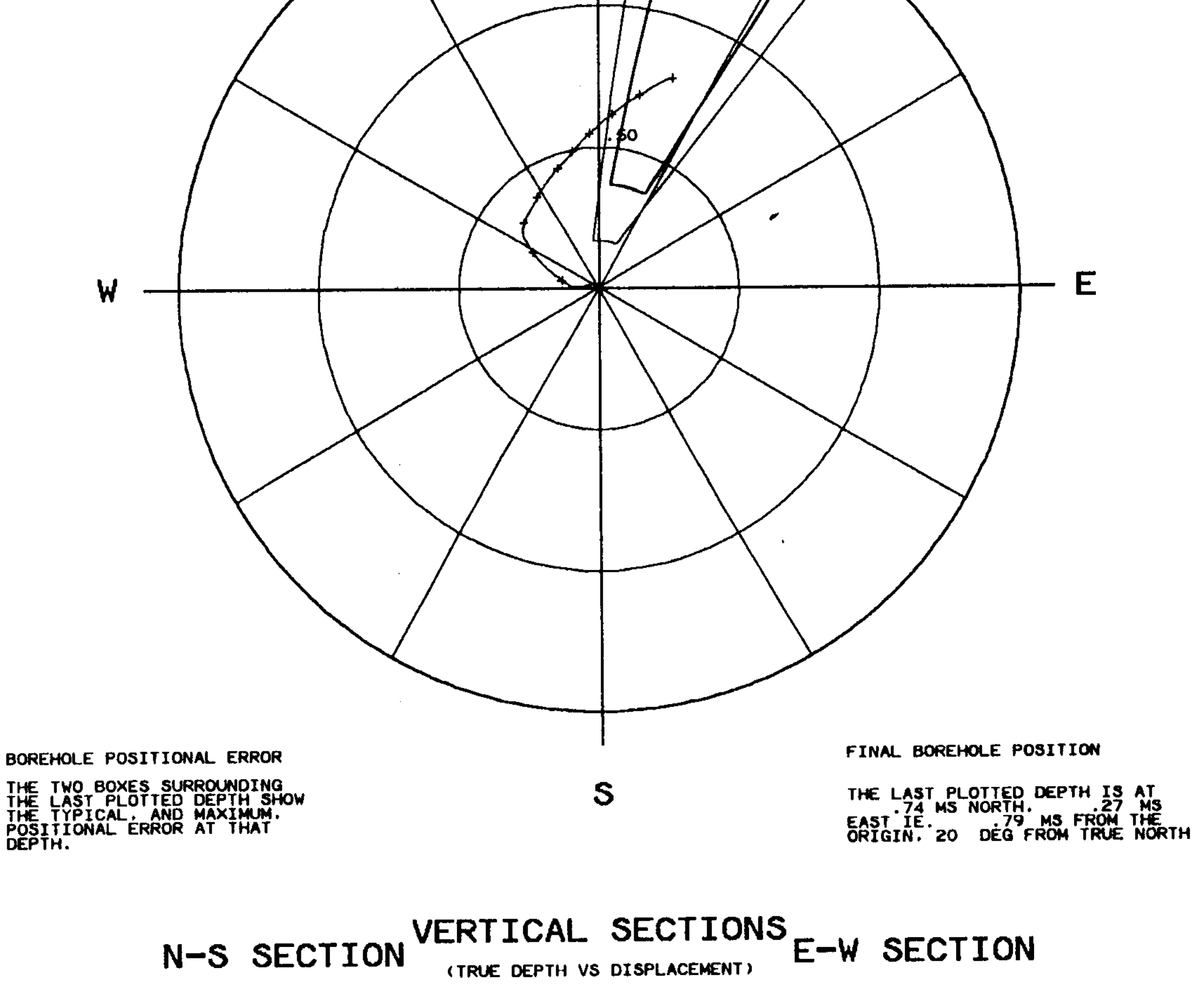
(TRUE DEPTH VS DISPLACEMENT)

N-S SECTION

E-W SECTION

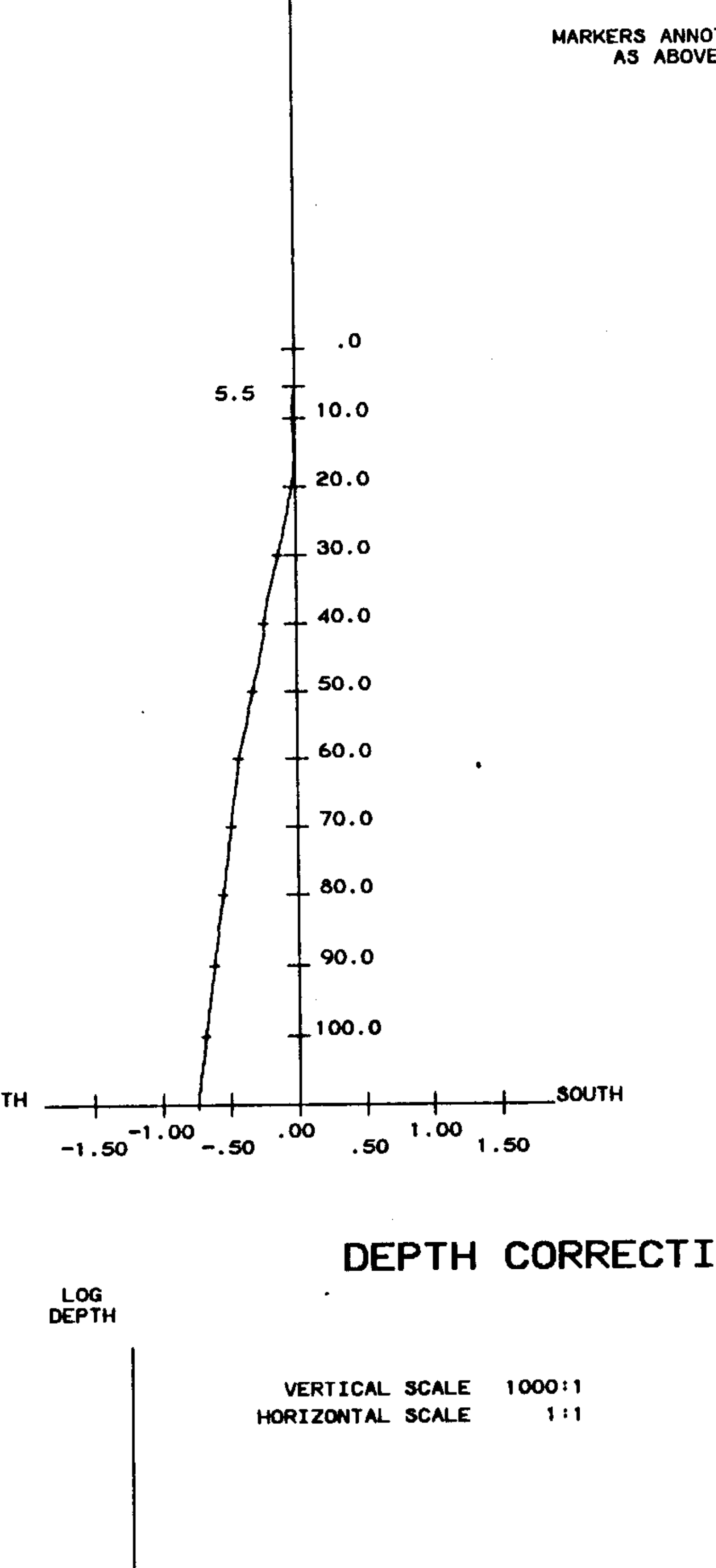
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 50:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 1:1



DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE
6.00	6.00	76.00	75.99
7.00	7.00	77.00	76.99
8.00	8.00	78.00	77.99
9.00	9.00	79.00	78.99
10.00	10.00	80.00	79.99
11.00	11.00	81.00	80.99
12.00	12.00	82.00	81.99
13.00	13.00	83.00	82.99
14.00	14.00	84.00	83.99
15.00	15.00	85.00	84.99
16.00	16.00	86.00	85.99
17.00	17.00	87.00	86.99
18.00	18.00	88.00	87.99
19.00	19.00	89.00	88.99
20.00	20.00	90.00	89.99
21.00	21.00	91.00	90.99
22.00	22.00	92.00	91.99
23.00	23.00	93.00	92.99
24.00	24.00	94.00	93.99
25.00	25.00	95.00	94.99
26.00	26.00	96.00	95.99
27.00	27.00	97.00	96.99
28.00	28.00	98.00	97.99
29.00	29.00	99.00	98.99
30.00	30.00	100.00	99.99
31.00	31.00	101.00	100.99
32.00	32.00	102.00	101.99
33.00	33.00	103.00	102.99
34.00	34.00	104.00	103.99
35.00	35.00	105.00	104.99
36.00	36.00	106.00	105.99
37.00	37.00	107.00	106.99
38.00	38.00	108.00	107.99
39.00	39.00	109.00	108.99
40.00	40.00	109.90	109.89
41.00	41.00		
42.00	42.00		
43.00	43.00		
44.00	44.00		
45.00	45.00		
46.00	46.00		
47.00	47.00		
48.00	48.00		
49.00	49.00		
50.00	50.00		
51.00	51.00		
52.00	52.00		
53.00	53.00		
54.00	54.00		
55.00	55.00		
56.00	56.00		
57.00	57.00		
58.00	58.00		
59.00	59.00		
60.00	60.00		
61.00	61.00		
62.00	62.00		
63.00	63.00		
64.00	64.00		
65.00	65.00		
66.00	66.00		
67.00	67.00		
68.00	68.00		
69.00	69.00		
70.00	70.00		
71.00	71.00		
72.00	72.00		
73.00	73.00		
74.00	74.00		
75.00	75.00		

COMPANY	MANALTA
WELL	T93R-14
FIELD	SITE 106
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

DIPMETER ANALYSIS

#829

COMPANY	MANALTA
WELL	T93R-14
FIELD	SITE 106
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 106
WELL: T93R-14
COMPANY: MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	10-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	109.7M			
DEPTH-LOGGER	110M			
FIRST READING	110M			
LAST READING	0M			
CASING-DRILLER	6.1M			
CASING-LOGGER	6.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	6.1M	TD	178MM	N/A	SURFACE	6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
DIP/VERT	221/233			

REMARKS

DIPMETER ANALYSIS

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 10-SEP-1993 AT 13:25
FILENAME: DIP3R14M.CIB RUN ID: MAIN.LOG PLOTTED ON 11-SEP-1993 AT 20:35

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 10-SEP-1993 AT 13:25
FILENAME: DIP3R14M.CIB RUN ID: MAIN LOG PLOTTED ON 11-SEP-1993 AT 20:35

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 10-SEP-1993 AT 13:20 DATA LAST REPROCESSED: 11-SEP-1993 AT 20:22

LOGGING CONSTANTS & GAMMA CALIBRATION

CORRELATION STEP (M.)	.25	CORRELATION INTERVAL (M.)	.50
BIT SIZE #1 (MM)	178.00	BIT DEPTH #1 (M.)	.00
BIT SIZE #2	156.00	BIT DEPTH #2	6.10
BIT SIZE #3	.00	BIT DEPTH #3	109.70
BIT SIZE #4	.00	BIT DEPTH #4	0.00
BIT SIZE #5	.00	BIT DEPTH #5	0.00
GAMMA CALIBRATOR (API)	510.00	GAMMA COUNTS	313.00
UNUSED	XXXXXXXX	SEARCH ANGLE (DEGREES)	45.00
STRUCTURAL DIP ANGLE (DEGREES)	.00	STRUCTURAL DIP AZI. (DEGREES)	.00
DECLINATION (DEGREES)	26.50 E	DETAIL PAD DATA	NO
CORRELATE	YES	CALIPER UNITS	MM
DEPTH UNITS	METRIC	CALIPER USED IN CALCULATIONS	YES

LEVEL CELL CALIBRATION

TILT(DEGREES)	LC1(COUNTS)	LC2(COUNTS)
-10.00	114.00	121.00
-8.00	136.00	142.00
-6.00	158.00	166.00
-4.00	179.00	185.00
-2.00	198.00	202.00
.00	221.00	222.00
2.00	243.00	240.00
4.00	264.00	258.00
6.00	285.00	277.00
8.00	305.00	303.00
10.00	326.00	322.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00
.00	.00	.00

CALIBRATION IDENTIFICATION: VERT # 233

MAGNETOMETER CALIBRATION

	MAG.X	MAG.Y	MAG.Z
MAX.	209.00	213.00	199.00
MIN.	150.00	148.00	161.00

CALIBRATION IDENTIFICATION: VERT # 233

CALIPER CAL. & PAD OFFSETS

CALIBRATOR(MM)	COUNTS	PAD 2 OFFSET(MM)	PAD 3 OFFSET(MM)
76.20	133.00	.00	.00
101.60	155.00	.00	.00
127.00	179.00	.00	.00
152.40	201.00	.00	.00
203.20	250.00	.00	.00
254.00	307.00	.00	.00

CALIBRATION IDENTIFICATION: 221

COMPANY	MANALTA
WELL	T93R-14
FIELD	SITE 106
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

T93R-14

```
~Version Information          DIPMETER/STICK PLOT DATA LISTING
 VERS.               1.20:    CWLS Log ASCII Standard -Version 1.20
 WRAP.                 NO:    One line per depth step
#
#
~Well Information Block
#MNEM.UNIT   Data Type        Description
#---------   ------------     ----------------------------
 STRT.M            109.50:
 STOP.M              5.00:
 STEP.M              0.00:
 NULL.            -999.25:
 COMP.           COMPANY:     MANALTA
 WELL.              WELL:     T93R-14
 FLD .             FIELD:     SITE 106
 LOC .          LOCATION:     TELKWA
 PROV.          PROVINCE:     BRITISH COLUMBIA
 SRVC.   SERVICE COMPANY:     BPB Wireline Services
 DATE.          LOG DATE:     10-SEP-1993
 UWI .    UNIQUE WELL ID:
#
#
~Curve Information Block
#MNEM.UNIT                    Curve Description
#---------                    -----------------
 DEPT.M             :         DEPTH ROUNDED TO NEAREST CALIBRATION STEP MULTIPLE
 CALD.mm            :         DIPMETER CALIPER
 TILD.degs          :         BOREHOLE TILT
 AZID.degs          :         BOREHOLE AZIMUTH
 DIPF.degs          :         FORMATION DIP
 AZIF.degs          :         FORMATION AZIMUTH
 CORC.----          :         CORRELATION COEFFICIENT
 STK1.degs          :         STICK PLOT SECTION 1
 STK2.degs          :         STICK PLOT SECTION 2
#
#
~Parameter Information
#MNEM.UNIT   Value            Description
#---------   ------------     ----------------------------
 DECL.deg           26.50:    MAGNETIC DECLINATION (EAST OF NORTH)
 CORS.m              0.25:    CORRELATION STEP
 CORI.m              0.50:    CORRELATION INTERVAL
 SANG.deg          45.00:     SEARCH ANGLE
 SDIP.deg            0.00:    STRUCTURAL DIP
 SAZI.deg            0.00:    STRUCTURAL AZIMUTH
#
#
~Other Information
File Identification           MAIN LOG

DIPMETER LISTING


Run number     THREE        Log 1st rdg    110m         Log last rdg  0m
Driller TD     109.7m       Logger TD      110m         Water level
Perm Datum     GROUND LEVEL Elevation      N/A          Other srvcs   CCS
Dril mes from  00m          Log meas from  00m          Other srvcs
Elevation: KB  N/A          DF             N/A          GL            N/A
Casing Driler  6.1m         Casing Logger  6.1m         Casing size   178mm
Casing Weight  N/A          From           SURFACE      To            6.1m
Bit size       156mm        From           6.1m         To            TD
Hole fl type   AIR/WATER    Sample source               Fluid loss    N/A
Density        1.01         Viscosity      N/A          pH            N/A
RM @ meas tmp               RMF @ mes tmp               RMC @ mes tmp
RM @ BHT                    RMF source                  RMC-source
Max rec temp                Time snc circ               LsdSecTwpRge
Equipment no.  V222         Base           RDR          Equip. name   DIP/VERT
Recorded by    B.STEVENSON  Witnessed by   T. BRAZZONI  Sonde srl no. 221/233
Last title     WATER LEVEL  Last line      00m          Permit no.
```

BPB DIPMETER ANALYSIS INTERPRETATION NOTES

1. All plots are correct to the resolution of the plotter used, ie. one two-hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background.

2. Rose diagrams when plotted occur between every major division and are delimited by two bold arrows. For certain replay scales it may be desirable to plot these less frequently; this option is available on request.

3. The grid over which the computed dip is displayed is locally linear. That is to say it is linear between 0 and 10 degrees, 10 and 20, 20 and 30 etc.

4. The correlation value will vary depending on the interval size selected. Generally speaking the larger the correlation interval, the lower the value becomes. For this reason a direct comparison of this value for differing correlation intervals is meaningless, quality control being exercised with an appreciation of this effect.

5. Stick data may be shown relative to any two vertical planes and is the angle (to the horizontal) of the intersection of the resolved plane and the vertical plane.

6. The angle of declination is taken to be the angle between Magnetic North and reference North (True, Grid or Magnetic) measured in an anti-clockwise direction.

7. For customised control of computed dipmeter analysis the following parameters must be specified:
    - correlation step and interval(s)
    - magnetic declination
    - search angle(s)
    - depth range(s)
    - replay scale(s)
    - the frequency for rose diagrams
    - the sections for stick plots
    - (quality control is exercised in accordance with the correlation interval used, alternatively all correlations may be displayed on request)

The following information is a listing of ALL the output from BPB's dipmeter analysis. Below is a full description of each data item:

DEPTH	the depth corresponding to the centre of the correlation interval.
CALIPER	the average borehole caliper recorded over the correlation interval.
HOLE DRIFT	the average borehole deviation from vertical over the correlation interval.
HOLE AZIMUTH	the average borehole azimuth over the correlation interval in degrees East of true North.
DIP ANGLE	the computed formation dip in degrees, from the horizontal plane.
DIP AZIMUTH	the formation azimuth in degrees East of true North.
CORRELATION	a measure of the reliability of the computed result. This parameter is also used in the visual display to determine the quality of result.
SECTION	the formation dip across the specified sections.

Further recorrelations over any step and interval size are available on any scale over any section of the log. Alternative methods of presentation, or analysis may be available on request.

```
#
#  Depth    Caliper     Borehole          Formation       Correlation      S
tick Plot Section
#                       Tilt   Azimuth    Dip   Azimuth   Coefficient  180.0
-  0.0   270.0- 90.0
#   (M)       (mm)      (deg)   (deg)     (deg)  (deg)      (----)        (d
eg)         (deg)
~A
   109.50    165.9      0.7    81.0       8.4    40.0       0.52          6
.43         5.39
   109.00    165.9      0.7    73.5      12.8    92.4       0.84         -0
.55        12.75
   108.50    165.9      0.6    81.3      12.4    34.7       0.46         10
.25         7.13
   108.00    165.9      0.7    71.3      21.4   258.1       0.69         -4
.60       -20.96
   107.50    164.8      0.7    67.1       9.3   349.9       0.72          9
.18        -1.64
   107.00    165.9      0.8    61.8       7.7    14.5       0.83          7
.50         1.96
   106.50    164.8      0.8    65.6       7.9   306.2       0.55          4
.70        -6.40
   106.00    164.8      0.7    67.6      36.3   245.7       0.59        -16
.86       -33.83
   105.50    164.8      0.8    56.0       3.4   336.0       0.79          3
.13        -1.40
   105.00    165.9      0.8    56.0       3.9    25.5       0.80          3
.49         1.67
   104.50    165.9      0.9    56.2      15.0   316.9       0.79         11
.10       -10.41
   104.00    165.9      0.8    58.2       8.8    24.8       0.52          8
.00         3.72
   103.50    164.8      0.7    63.7       9.1   118.5       0.52         -4
.39         8.06
   103.00    165.9      0.7    56.6      12.5    14.5       0.55         12
.10         3.18
   102.50    164.8      0.7    61.2       7.0    15.4       0.70          6
.70         1.86
   102.00    164.8      0.9    56.5       9.8   355.3       0.79          9
.73        -0.81
   101.50    164.8      0.9    56.5      41.0    37.9       0.26         34
.43        28.11
   101.00    164.8      0.8    57.5       4.6     0.5       0.53          4
.57         0.04
   100.50    164.8      0.8    66.6      40.5    29.5       0.32         36
.60        22.78
   100.00    164.8      0.7    64.8      23.9    26.9       0.29         21
.58        11.37
    99.50    165.9      0.7    64.4      11.4   356.1       0.35         11
.41        -0.79
    99.00    165.9      0.5    54.4       2.7   311.3       0.64          1
.80        -2.05
    98.50    164.8      0.4    66.1       7.7    21.8       0.57          7
.11         2.85
    98.00    164.8      0.7    58.0      46.1    96.6       0.26         -6
.78        45.91
    97.50    164.8      0.7    59.9      10.8    39.5       0.60          8
.39         6.93
    97.00    164.8      0.7    52.8      16.7     4.7       0.70         16
.66         1.41
    96.50    164.8      0.7    53.7       2.6   325.1       0.57          2
.09        -1.46
    96.00    164.8      0.8    59.8      52.3    86.5       0.64          4
.45        52.21
    95.50    164.8      0.7    52.8      31.8   223.5       0.37        -24
.18       -23.08
    95.00    164.8      0.7    51.4      19.2     6.0       0.42         19
.08         2.09
    94.50    163.8      0.6    59.7      39.2    35.9       0.59         33
.48        25.59
    94.00    163.8      0.6    53.4      44.1    39.9       0.43         36
.62        31.82
    93.50    164.8      0.6    53.4       6.1   299.3       0.77          2
.98        -5.30
    93.00    163.8      0.5    49.9      38.9   202.9       0.40        -36
.62       -17.39
    92.50    162.8      0.7    63.2      17.7   214.5       0.52        -14
.73       -10.23
    92.00    163.8      0.8    54.5       8.4    85.3       0.45          0
.70         8.42
    91.50    164.8      0.6    51.5       1.6   138.1       0.79         -1
.18         1.06
    91.00    163.8      0.6    51.5      13.5    17.4       0.48         12
.95         4.11
    90.50    164.8      0.7    54.2       2.0     6.9       0.67          2
.01         0.24
    90.00    164.8      0.7    54.2       0.0     0.0      -1.00          0
.00         0.00
    89.50    164.8      0.4    48.7      19.4    34.0       0.59         16
.32        11.16
    89.00    163.8      0.6    62.0      14.0   256.1       0.47         -3
.42       -13.60
    88.50    163.8      0.6    53.4       4.1    71.5       0.60          1
.31         3.92
    88.00    163.8      0.7    57.4       8.7    56.0       0.67          4
.90         7.23
    87.50    163.8      0.7    57.0       7.6    50.1       0.37          4
.86         5.82
    87.00    163.8      0.5    53.6      27.9    85.7       0.57          2
.29        27.82
    86.50    163.8      0.4    34.2      42.0    94.1       0.22         -3
.68        41.89
    86.00    163.8      0.5    43.0      40.8   285.0       0.20         12
.57       -39.85
    85.50    163.8      0.5    42.6       5.6   305.2       0.84          3
.25        -4.61
    85.00    164.8      0.5    56.7      20.1   264.0       0.35         -2
.18       -20.05
    84.50    164.8      0.5    50.8       5.9    25.4       0.73          5
.33         2.53
    84.00    164.8      0.7    44.9       6.4   354.6       0.68          6
.39        -0.61
    83.50    164.8      0.6    41.8      11.8    14.2       0.44         11
.44         2.93
    83.00    164.8      0.6    49.1      30.4   271.2       0.41          0
.73       -30.35
    82.50    162.8      0.6    55.4       5.5   287.8       0.64          1
.67        -5.20
    82.00    164.8      0.7    51.0       5.8   317.2       0.82          4
.27        -3.95
    81.50    164.8      0.8    51.6      20.9    60.5       0.91         10
.62        18.34
    81.00    164.8      0.7    51.0       0.0     0.0      -1.00          0
.00         0.00
    80.50    164.8      0.7    53.2       0.0     0.0      -1.00          0
.00         0.00
    80.00    164.8      0.8    58.7      34.6   185.0       0.70        -34
.47        -3.44
    79.50    164.8      0.5    50.8      47.2   349.3       0.39         46
.66       -11.31
    79.00    165.9      0.6    53.4      34.3   190.9       0.56        -33
.83        -7.35
    78.50    162.8      0.7    53.7      36.2   320.7       0.30         29
.47       -24.86
    78.00    164.8      0.5    53.1      48.7   104.8       0.71        -16
.26        47.77
    77.50    164.8      0.3    34.7      21.8    51.1       0.35         14
.11        17.31
    77.00    163.8      1.2    55.4      46.8   226.3       0.64        -36
.33       -37.61
    76.50    164.8      0.4    54.6      45.7   245.6       0.48        -22
.93       -42.98
    76.00    165.9      0.4    43.4      41.5   285.0       0.22         12
.95       -40.53
    75.50    165.9      0.4    34.7      55.2    80.1       0.32         13
.88        54.85
    75.00    166.9      0.5    53.5       2.4   158.5       0.50         -2
.21         0.87
    74.50    166.9      0.7    42.2      34.0   121.6       0.34        -19
.51        29.92
    74.00    166.9      0.4    47.3      37.0   309.3       0.52         25
.48       -30.20
    73.50    164.8      0.4    43.4      43.5   234.1       0.40        -29
.03       -37.53
    73.00    165.9      0.4    49.2      36.8    56.6       0.37         22
.38        31.95
    72.50    165.9      0.6   336.4      27.3   158.3       0.36        -25
.59        10.80
    72.00    166.9      0.5   354.7       0.0     0.0      -1.00          0
.00         0.00
    71.50    165.9      0.6    51.5      43.5   104.2       0.60        -13
.14        42.66
    71.00    165.9      0.4    28.7      44.4   275.9       0.24          5
.76       -44.28
    70.50    168.0      0.4    27.8       0.0     0.0      -1.00          0
.00         0.00
    70.00    166.9      0.5   348.3      44.7   128.0       0.45        -31
.32        37.96
    69.50    164.8      0.4    51.0       0.0     0.0      -1.00          0
.00         0.00
    69.00    168.0      0.4    41.1       0.0     0.0      -1.00          0
.00         0.00
    68.50    168.0      0.4    42.9      60.4   253.4       0.39        -26
.73       -59.38
    68.00    168.0      0.4    47.0      42.8   315.0       0.27         33
.19       -33.16
    67.50    168.0      0.2    57.9      39.1   191.0       0.30        -38
.63        -8.82
    67.00    166.9      0.3    29.6       0.0     0.0      -1.00          0
.00         0.00
    66.50    168.0      0.4    49.2      34.0    40.5       0.37         27
.20        23.68
    66.00    165.9      0.5    39.4      48.0    58.2       0.30         30
.34        43.39
    65.50    168.0      0.4    36.0      31.5   161.3       0.42        -30
.12        11.13
    65.00    165.9      0.2    16.7      32.6   195.6       0.42        -31
.58        -9.77
    64.50    166.9      0.4    44.1       9.8   290.4       0.33          3
.44        -9.16
    64.00    166.9      0.5    48.0       7.0   218.9       0.55         -5
.49        -4.43
    63.50    163.8      0.3    26.5      41.0    13.8       0.32         40
.16        11.75
    63.00    168.0      0.5    57.6      56.8   239.2       0.22        -38
.04       -52.75
    62.50    164.8      0.7    51.8      44.1   137.7       0.23        -35
.61        33.09
    62.00    168.0      0.7    32.5      40.5   337.2       0.39         38
.18       -18.31
    61.50    166.9      0.6    40.3      49.0    44.7       0.27         39
.28        38.98
    61.00    165.9      0.5    48.0      22.8     1.4       0.23         22
.78         0.57
    60.50    166.9      0.6    40.0      43.1   305.2       0.31         28
.34       -37.42
    60.00    164.8      0.4    42.3      25.2   260.8       0.52         -4
.30       -24.88
    59.50    164.8      0.7    45.7       9.7    86.2       0.33          0
.65         9.66
    59.00    164.8      0.8    27.4      48.8    80.1       0.45         11
.09        48.40
    58.50    164.8      0.7    36.7      44.9    26.5       0.21         41
.70        23.95
    58.00    166.9      0.5    34.5       0.0     0.0      -1.00          0
.00         0.00
    57.50    166.9      0.8    31.1      42.8    81.5       0.24          7
.78        42.53
    57.00    164.8      1.0    43.2      38.1   266.6       0.31         -2
.67       -38.04
    56.50    165.9      0.8    41.7       5.5   285.2       0.37          1
.46        -5.35
    56.00    165.9      0.8    36.2      47.4    36.0       0.23         41
.36        32.60
    55.50    168.0      0.9    36.1      10.1   306.1       0.28          6
.00        -8.21
    55.00    169.0      0.5    39.8      30.2   183.1       0.19        -30
.14        -1.78
    54.50    166.9      0.6    33.5      60.1   219.4       0.47        -53
.34       -47.80
    54.00    166.9      0.7    28.3       0.0     0.0      -1.00          0
.00         0.00
    53.50    164.8      0.5    38.9      50.5   203.3       0.53        -48
.09       -25.62
    53.00    164.8      0.7     7.3      31.8   227.6       0.51        -22
.67       -24.55
    52.50    165.9      0.5    30.8      43.3   342.8       0.40         41
.98       -15.56
    52.00    166.9      0.6    28.0      46.8    83.8       0.30          6
.54        46.64
    51.50    166.9      0.7    22.7      41.2    24.0       0.39         38
.64        19.55
    51.00    166.9      0.7    28.9      46.7   322.0       0.41         39
.91       -33.19
    50.50    165.9      0.5    34.7      54.2    51.8       0.33         40
.59        47.46
    50.00    165.9      1.0    36.8      35.5   209.9       0.29        -31
.77       -19.59
    49.50    166.9      0.8    28.5      55.2   209.0       0.40        -51
.58       -34.95
    49.00    166.9      0.7    26.1      45.8    66.0       0.25         22
.74        43.24
    48.50    166.9      0.7    25.2      42.8   333.4       0.44         39
.58       -22.49
    48.00    165.9      0.5    16.3      20.5   174.5       0.41        -20
.41         2.07
    47.50    166.9      0.6    31.1      45.2   328.0       0.32         40
.53       -28.08
    47.00    165.9      0.6    38.9      44.3   231.7       0.27        -31
.21       -37.48
    46.50    165.9      0.8    28.9      36.3   324.6       0.23         30
.95       -23.07
    46.00    168.0      0.6    35.3      34.2   120.7       0.41        -19
.13        30.33
    45.50    168.0      0.6    22.9      38.1   258.0       0.25         -9
.28       -37.48
    45.00    168.0      0.7    28.3      20.7   332.4       0.87         18
.50        -9.91
    44.50    169.0      0.5    26.5      44.3    13.9       0.29         43
.40        13.20
    44.00    166.9      0.7    23.8      34.9   237.5       0.37        -20
.57       -30.49
    43.50    168.0      0.5    18.3      53.0    51.6       0.46         39
.43        46.10
    43.00    168.0      0.6    26.8      42.0   291.5       0.13         18
.22       -39.93
    42.50    168.0      0.7    30.2       8.6    37.8       0.45          6
.83         5.31
    42.00    166.9      0.4    15.3       0.0     0.0      -1.00          0
.00         0.00
    41.50    166.9      0.3     2.5      60.1    42.6       0.68         52
.00        49.63
    41.00    165.9      0.3   349.7      39.4   349.3       0.32         38
.92        -8.66
    40.50    168.0      0.1   314.6       0.0     0.0      -1.00          0
.00         0.00
    40.00    168.0      0.2    13.2       0.0     0.0      -1.00          0
.00         0.00
    39.50    168.0      0.3    34.6      29.9   118.3       0.37        -15
.25        26.87
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LONG SPACED DENSITY
GAMMA RAY
CALIPER

COMPANY MANALTA
WELL T93R-06
FIELD SITE # 112
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 112
WELL:
T93R-06
COMPANY:
MANALTA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	55.8M			
DEPTH-LOGGER	55.8M			
FIRST READING	55M			
LAST READING	0M			
CASING-DRILLER	2.1M			
CASING-LOGGER	2.1M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	2.1M	TD	178MM	N/A	SURFACE	2.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-SEP-1993 AT 18:24
FILENAME: DD3AR06M.CIB RUN ID: MAIN LOG PLOTTED ON 04-SEP-1993 AT 21:26

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-SEP-1993 AT 18:24
FILENAME: DD3AR06M.CIB RUN ID: MAIN LOG PLOTTED ON 04-SEP-1993 AT 21:26

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 04-SEP-1993 AT 17:59

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.10
BIT SIZE 3	.00	BIT DEPTH 3	55.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-06
FIELD	SITE # 112
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 112
WELL: T93R-06
COMPANY: MANALTA

LONG SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

COMPANY MANALTA
WELL T93R-06
FIELD SITE # 112
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#879

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-SEP-93						
RUN NUMBER	TWO						
DEPTH-DRILLER	55.8M						
DEPTH-LOGGER	55.8M						
FIRST READING	55M						
LAST READING	0M						
CASING-DRILLER	2.1M						
CASING-LOGGER	2.1M						
BIT SIZE	156MM						
HOLE FLUID TYPE	AIR/WATER						
DENS./VISC.	1.01	N/A					
PH/FLUID LOSS	N/A	N/A					
SAMPLE SOURCE							
RM ● MEAS TEMP							
RMF ● MEAS TEMP							
RMC ● MEAS TEMP							
SOURCE: RMF/RMC							
RM ● BHT							
TIME SINCE CIRC							
MAX REC TEMP							
EQUIPMENT/BASE	V222	RDR					
RECORDED BY	B.STEVENSON						
WITNESSED BY	T. BRAZZONI						
WATER LEVEL	00M						

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	2.1M	TD	178MM	N/A	SURFACE	2.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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DETAIL SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 18:24
FILENAME: DD3AR06A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 21:35

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 18:24
FILENAME: DD3AR06A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 21:31

DETAIL SECTION

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 04-SEP-1993 AT 17:59 DATA LAST REPROCESSED: 4-SEP-1993 AT 21:30

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.10
BIT SIZE 3	.00	BIT DEPTH 3	55.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY MANALTA
WELL T93R-06
FIELD SITE # 112
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

SHORT SPACED DENSTIY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 112
WELL:
T93R-06
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-06
FIELD SITE # 112
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-SEP-93	
RUN NUMBER	THREE	
DEPTH-DRILLER	55.8M	
DEPTH-LOGGER	55.8M	
FIRST READING	55M	
LAST READING	0M	
CASING-DRILLER	2.1M	
CASING-LOGGER	2.1M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	2.1M	TD	178MM	N/A	SURFACE	2.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSTIY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 18:24
FILENAME: DD3AR06A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 21:37

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 18:24
FILENAME: DD3AR06A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 21:37

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 04-SEP-1993 AT 17:59 DATA LAST REPROCESSED: 4-SEP-1993 AT 21:30

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	2.10
BIT SIZE 3	.00	BIT DEPTH 3	55.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-06
FIELD	SITE # 112
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-19
FIELD	SITE 111
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA
LOCATION	TELKWA
LSD / SEC / TWP / RGE	
OTHER SERVICES	CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 111
WELL:
T93R-19
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	15-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	122M	
DEPTH-LOGGER		
FIRST READING		
LAST READING	OM	
CASING-DRILLER	11M	
CASING-LOGGER	11M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL		

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE. AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH, CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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T93R-19                        VERTICALITY DATA LISTING                     DATE PROCESSED: 16-SEP-1993
                     ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH            DATE LOGGED:    15-SEP-1993
    DEPTHS        BOREHOLE   AXIAL CO-ORDS    POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG      TRUE   TILT AZI   NORTH     EAST BRG  RADIUS BRG  RADIUS BRG ,RADIUS BRG  RADIUS BRD  RADIUS

   1.00     1.00   3.0 240   -0.01    -0.02 227    0.02 227    0.02 227    0.02 227    0.02 227    0.02
   2.00     2.00   1.9 113   -0.03    -0.02 215    0.04 215    0.04 215    0.04 215    0.04 215    0.04
   3.00     3.00   2.4 256   -0.04    -0.04 225    0.05 225    0.05 225    0.05 225    0.05 225    0.05
   4.00     4.00   1.8 150   -0.06    -0.04 216    0.07 216    0.08 217    0.06 216    0.07 216    0.07
   5.00     5.00   1.9 232   -0.08    -0.06 215    0.10 215    0.11 216    0.09 215    0.10 216    0.09
   6.00     6.00   1.6 240   -0.09    -0.08 221    0.12 221    0.13 221    0.11 221    0.12 221    0.11
   7.00     6.99   1.7 217   -0.11    -0.10 222    0.15 222    0.16 222    0.13 222    0.15 222    0.14
   8.00     7.99   1.6 257   -0.12    -0.12 224    0.17 224    0.19 224    0.15 224    0.18 224    0.16
   9.00     8.99   1.5 241   -0.14    -0.13 224    0.19 224    0.22 224    0.17 224    0.20 224    0.18
  10.00     9.99   1.3 212   -0.15    -0.15 225    0.21 225    0.23 224    0.18 225    0.22 224    0.20
  11.00    10.99   1.4 180   -0.16    -0.15 224    0.22 224    0.24 224    0.19 224    0.23 224    0.21
  12.00    11.99   1.4 172   -0.18    -0.15 219    0.23 219    0.26 219    0.21 219    0.25 219    0.22
  13.00    12.99   1.1 171   -0.20    -0.15 216    0.25 215    0.28 216    0.22 215    0.27 216    0.24
  14.00    13.99   1.5 160   -0.22    -0.14 212    0.26 212    0.30 213    0.23 212    0.28 212    0.25
  15.00    14.99   1.3 163   -0.24    -0.13 209    0.28 208    0.31 209    0.24 209    0.30 209    0.26
  16.00    15.99   1.7 154   -0.27    -0.13 206    0.30 205    0.33 206    0.26 205    0.32 206    0.28
  17.00    16.99   2.0 147   -0.29    -0.12 202    0.32 201    0.36 202    0.28 202    0.34 202    0.30
  18.00    17.99   1.9 147   -0.32    -0.10 198    0.34 197    0.38 198    0.29 197    0.36 198    0.32
  19.00    18.99   2.3 145   -0.35    -0.08 193    0.36 193    0.41 193    0.32 193    0.38 193    0.34
  20.00    19.99   1.7 140   -0.38    -0.06 189    0.38 189    0.43 189    0.33 189    0.41 189    0.36
  21.00    20.99   2.1 138   -0.40    -0.04 186    0.41 186    0.46 186    0.36 186    0.43 186    0.38
  22.00    21.99   2.3 135   -0.43    -0.02 182    0.43 182    0.48 182    0.38 182    0.46 182    0.40
  23.00    22.99   2.2 142   -0.46     0.01 179    0.46 179    0.51 179    0.40 179    0.48 179    0.43
  24.00    23.99   1.6 141   -0.48     0.03 177    0.48 177    0.54 177    0.42 177    0.51 177    0.45
  25.00    24.99   1.3 152   -0.50     0.04 175    0.50 175    0.56 175    0.44 175    0.53 175    0.47
  26.00    25.99   2.0 142   -0.53     0.06 173    0.53 174    0.60 173    0.47 174    0.56 173    0.50
  27.00    26.99   1.6 151   -0.56     0.08 172    0.56 172    0.63 172    0.49 172    0.59 172    0.53
  28.00    27.99   2.0 149   -0.58     0.09 171    0.59 171    0.66 171    0.52 171    0.63 171    0.56
  29.00    28.99   2.0 149   -0.61     0.11 170    0.62 170    0.70 170    0.55 170    0.66 170    0.59
  30.00    29.98   2.4 139   -0.64     0.13 168    0.66 169    0.73 168    0.58 168    0.69 168    0.62
  31.00    30.98   1.9 134   -0.67     0.16 167    0.69 167    0.77 167    0.61 167    0.73 167    0.65
  32.00    31.98   2.1 136   -0.69     0.18 165    0.72 165    0.80 165    0.63 165    0.76 165    0.68
  33.00    32.98   2.2 135   -0.72     0.21 164    0.75 164    0.83 164    0.66 164    0.79 164    0.71
  34.00    33.98   1.8 128   -0.74     0.23 163    0.78 163    0.87 162    0.69 163    0.82 162    0.73
  35.00    34.98   1.8 132   -0.76     0.26 161    0.80 162    0.90 161    0.71 162    0.85 161    0.76
  36.00    35.98   1.7 135   -0.78     0.28 160    0.83 161    0.93 160    0.74 161    0.88 160    0.79
  37.00    36.98   2.1 134   -0.81     0.30 160    0.86 160    0.96 159    0.76 160    0.91 159    0.81
  38.00    37.98   1.3 141   -0.83     0.32 159    0.89 159    0.99 159    0.79 159    0.94 159    0.84
  39.00    38.98   1.7 148   -0.85     0.34 158    0.92 159    1.02 158    0.81 158    0.97 158    0.86
  40.00    39.98   1.0 155   -0.88     0.35 158    0.94 158    1.05 158    0.84 158    1.00 158    0.89
  41.00    40.98   2.1 134   -0.90     0.38 157    0.98 158    1.09 157    0.87 157    1.03 157    0.92
  42.00    41.98   2.3 126   -0.93     0.41 156    1.01 157    1.13 156    0.90 156    1.07 156    0.96
  43.00    42.98   1.6 123   -0.95     0.43 155    1.04 156    1.16 155    0.92 155    1.10 155    0.98
  44.00    43.98   1.8 121   -0.96     0.46 155    1.06 155    1.18 154    0.94 155    1.12 155    1.00
  45.00    44.98   1.9 128   -0.98     0.48 154    1.09 154    1.21 154    0.96 154    1.15 154    1.02
  46.00    45.98   1.6 125   -0.99     0.50 153    1.11 153    1.23 153    0.98 153    1.17 153    1.05
  47.00    46.98   1.5 127   -1.01     0.52 153    1.13 153    1.26 152    1.01 153    1.20 153    1.07
  48.00    47.98   1.5 128   -1.02     0.55 152    1.16 152    1.29 152    1.03 152    1.23 152    1.10
  49.00    48.97   1.2 139   -1.04     0.57 151    1.19 152    1.32 151    1.05 151    1.25 151    1.12
  50.00    49.97   2.1 139   -1.06     0.59 151    1.22 151    1.35 151    1.08 151    1.29 151    1.15
  51.00    50.97   1.6 139   -1.08     0.61 151    1.24 151    1.38 150    1.10 151    1.31 151    1.17
  52.00    51.97   1.9 137   -1.10     0.63 150    1.27 150    1.42 150    1.13 150    1.34 150    1.20
  53.00    52.97   1.4 152   -1.13     0.65 150    1.30 150    1.45 150    1.16 150    1.38 150    1.23
  54.00    53.97   2.0 133   -1.15     0.67 150    1.34 150    1.49 150    1.19 150    1.41 150    1.26
  55.00    54.97   1.7 122   -1.18     0.70 149    1.37 149    1.52 149    1.21 149    1.45 149    1.29
  56.00    55.97   1.5 125   -1.19     0.72 149    1.39 149    1.55 149    1.24 149    1.47 149    1.31
  57.00    56.97   1.8 124   -1.21     0.75 148    1.42 148    1.58 148    1.26 148    1.50 148    1.34
  58.00    57.97   2.0 122   -1.22     0.78 147    1.45 148    1.62 147    1.29 148    1.53 147    1.37
  59.00    58.97   1.5 127   -1.24     0.81 147    1.48 147    1.64 147    1.31 147    1.56 147    1.39
  60.00    59.97   1.9 120   -1.25     0.83 146    1.50 147    1.67 146    1.33 147    1.59 146    1.42
  61.00    60.97   1.8 126   -1.27     0.85 146    1.53 146    1.70 146    1.36 146    1.62 146    1.44
  62.00    61.97   1.7 129   -1.29     0.88 146    1.56 146    1.74 146    1.39 146    1.65 146    1.47
  63.00    62.97   1.9 131   -1.31     0.91 145    1.59 145    1.77 145    1.42 145    1.68 145    1.51
  64.00    63.97   1.7 123   -1.33     0.93 145    1.62 145    1.81 145    1.44 145    1.72 145    1.53
  65.00    64.97   2.0 123   -1.35     0.96 145    1.66 145    1.84 144    1.47 145    1.75 145    1.56
  66.00    65.97   1.7 128   -1.37     0.99 144    1.69 144    1.88 144    1.50 144    1.78 144    1.59
  67.00    66.97   1.6 119   -1.38     1.01 144    1.71 144    1.91 144    1.52 144    1.81 144    1.62
  68.00    67.97   1.5 114   -1.40     1.04 143    1.74 143    1.93 143    1.54 143    1.84 143    1.64
  69.00    68.96   2.1 122   -1.41     1.07 143    1.77 143    1.97 143    1.57 143    1.87 143    1.67
  70.00    69.96   2.1 128   -1.43     1.10 143    1.81 143    2.01 142    1.60 143    1.91 142    1.71
  71.00    70.96   2.2 125   -1.45     1.13 142    1.84 142    2.05 142    1.64 142    1.94 142    1.74
  72.00    71.96   2.1 122   -1.47     1.16 142    1.87 142    2.08 142    1.66 142    1.98 142    1.77
  73.00    72.96   1.7  98   -1.48     1.19 141    1.90 141    2.11 141    1.69 141    2.01 141    1.79
  74.00    73.96   2.0 102   -1.49     1.22 141    1.92 141    2.14 141    1.71 141    2.03 141    1.82
  75.00    74.96   2.1 105   -1.50     1.25 140    1.95 140    2.17 140    1.74 140    2.06 140    1.85
  76.00    75.96   2.0  98   -1.50     1.29 139    1.98 140    2.20 139    1.76 140    2.09 139    1.87
  77.00    76.96   1.3  96   -1.51     1.31 139    2.00 139    2.22 139    1.78 139    2.11 139    1.89
  78.00    77.96   1.1 124   -1.52     1.33 139    2.02 139    2.24 139    1.79 139    2.13 139    1.90
  79.00    78.96   1.0 148   -1.53     1.34 139    2.04 139    2.26 139    1.81 139    2.15 139    1.92
  80.00    79.96   1.4 156   -1.55     1.35 139    2.05 139    2.29 139    1.82 139    2.17 139    1.94
  81.00    80.96   0.9 128   -1.56     1.36 139    2.07 139    2.30 139    1.83 139    2.19 139    1.95
  82.00    81.96   0.8 122   -1.56     1.38 139    2.08 139    2.32 139    1.84 139    2.20 139    1.96
  83.00    82.96   0.8 140   -1.57     1.39 139    2.10 139    2.34 138    1.85 139    2.22 139    1.98
  84.00    83.96   0.7 124   -1.58     1.40 138    2.11 139    2.36 138    1.87 138    2.23 138    1.99
  85.00    84.96   1.3 148   -1.60     1.41 139    2.13 139    2.38 138    1.88 139    2.26 138    2.01
  86.00    85.96   1.4 158   -1.62     1.42 139    2.15 139    2.41 139    1.90 139    2.28 139    2.03
  87.00    86.96   1.4 145   -1.64     1.43 139    2.18 139    2.43 139    1.92 139    2.30 139    2.05
  88.00    87.96   1.9 155   -1.66     1.45 139    2.21 139    2.46 139    1.95 139    2.33 139    2.08
  89.00    88.96   1.5 147   -1.69     1.46 139    2.23 139    2.49 139    1.97 139    2.36 139    2.10
  90.00    89.96   1.1 139   -1.71     1.47 139    2.25 139    2.52 139    1.99 139    2.39 139    2.12
  91.00    90.96   1.0 130   -1.72     1.48 139    2.27 139    2.54 139    2.00 139    2.41 139    2.14
  92.00    91.96   0.9 148   -1.74     1.50 139    2.29 139    2.57 139    2.02 139    2.43 139    2.16
  93.00    92.96   1.4 152   -1.76     1.51 139    2.32 139    2.59 139    2.04 139    2.45 139    2.18
  94.00    93.96   1.5 150   -1.78     1.52 139    2.34 140    2.62 139    2.06 139    2.48 139    2.20
  95.00    94.96   1.6 149   -1.80     1.54 140    2.37 140    2.65 139    2.09 140    2.51 140    2.23
  96.00    95.96   1.5 154   -1.83     1.55 140    2.40 140    2.68 140    2.11 140    2.54 140    2.25
  97.00    96.96   1.7 150   -1.85     1.56 140    2.42 140    2.71 140    2.13 140    2.57 140    2.28
  98.00    97.95   1.6 149   -1.88     1.57 140    2.45 140    2.74 140    2.16 140    2.60 140    2.30
  99.00    98.95   1.7 144   -1.90     1.59 140    2.48 140    2.77 140    2.18 140    2.62 140    2.33
 100.00    99.95   2.1 145   -1.93     1.61 140    2.51 140    2.81 140    2.21 140    2.66 140    2.36
 101.00   100.95   1.8 147   -1.96     1.63 140    2.54 140    2.85 140    2.24 140    2.70 140    2.39
 102.00   101.95   2.0 147   -1.99     1.65 140    2.58 140    2.89 140    2.27 140    2.73 140    2.43
 103.00   102.95   2.6 132   -2.02     1.68 140    2.62 140    2.94 140    2.31 140    2.78 140    2.47
 104.00   103.95   1.7 141   -2.05     1.71 140    2.66 140    2.98 140    2.35 140    2.82 140    2.51
 105.00   104.95   2.1 143   -2.07     1.73 140    2.70 140    3.02 140    2.38 140    2.86 140    2.54
 106.00   105.95   2.2 143   -2.10     1.75 140    2.74 140    3.06 140    2.41 140    2.90 140    2.57
 107.00   106.95   1.6 148   -2.13     1.77 140    2.77 140    3.09 140    2.44 140    2.93 140    2.60
 108.00   107.95   1.7 141   -2.15     1.78 140    2.79 140    3.12 140    2.47 140    2.96 140    2.63
 109.00   108.95   1.8 132   -2.17     1.80 140    2.82 140    3.15 140    2.49 140    2.98 140    2.65
 110.00   109.95   1.6 146   -2.20     1.81 140    2.85 141    3.18 140    2.51 141    3.01 140    2.68
 111.00   110.95   2.2 140   -2.23     1.83 141    2.88 141    3.22 140    2.54 141    3.05 141    2.71
 112.00   111.95   2.2 146   -2.26     1.85 141    2.92 141    3.26 141    2.58 141    3.09 141    2.75
 113.00   112.95   2.4 142   -2.29     1.88 141    2.96 141    3.30 141    2.61 141    3.13 141    2.78
 114.00   113.94   2.5 143   -2.32     1.90 141    3.00 141    3.35 141    2.65 141    3.17 141    2.83
 115.00   114.94   2.3 145   -2.35     1.92 141    3.04 141    3.39 141    2.68 141    3.21 141    2.86
 116.00   115.94   1.8 149   -2.38     1.94 141    3.07 141    3.43 141    2.71 141    3.25 141    2.89
 117.00   116.94   2.1 145   -2.41     1.96 141    3.10 141    3.46 141    2.75 141    3.28 141    2.93
 118.00   117.94   2.3 144   -2.44     1.99 141    3.15 141    3.51 141    2.78 141    3.33 141    2.96
 119.00   118.94   1.6 139   -2.47     2.01 141    3.18 141    3.54 141    2.81 141    3.36 141    3.00
 120.00   119.94   2.1 140   -2.49     2.03 141    3.21 141    3.58 141    2.84 141    3.40 141    3.03
 121.00   120.94   2.1 140   -2.52     2.05 141    3.25 141    3.62 141    2.88 141    3.44 141    3.06
 121.90   121.84   2.0 146   -2.55     2.07 141    3.28 141    3.66 141    2.91 141    3.47 141    3.10
```
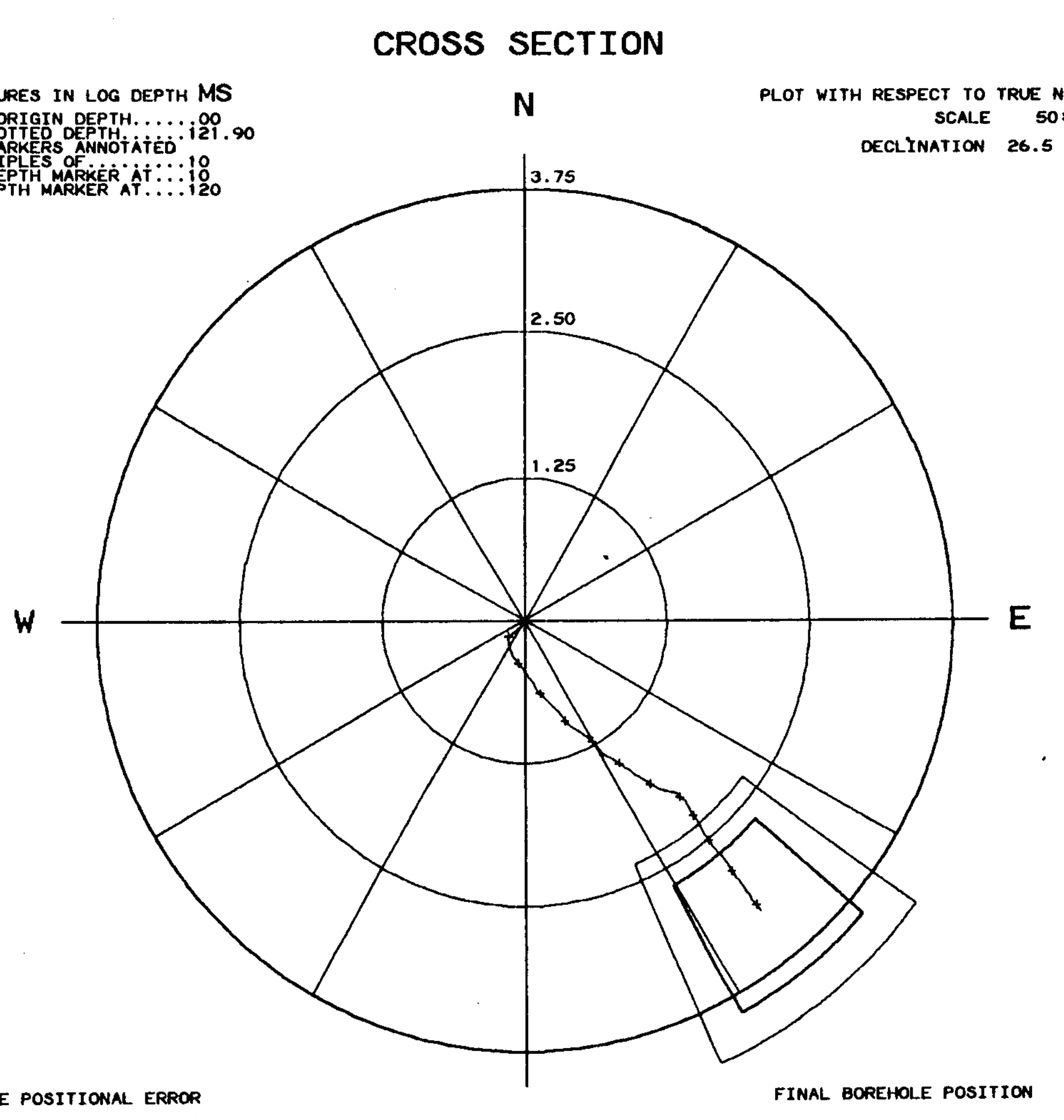

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......00
LAST PLOTTED DEPTH......121.90
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....120

PLOT WITH RESPECT TO TRUE NORTH
SCALE 50:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

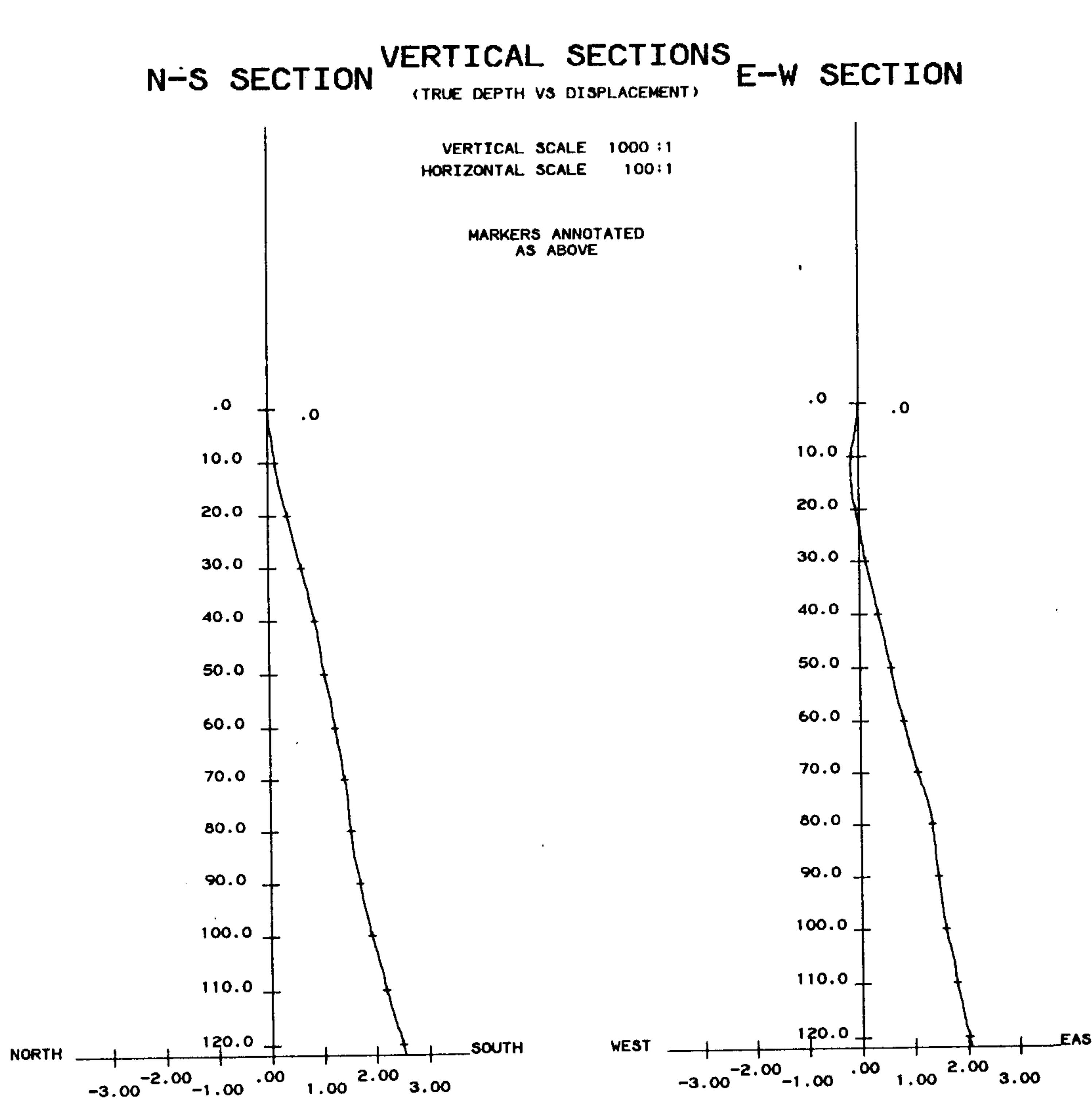
THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

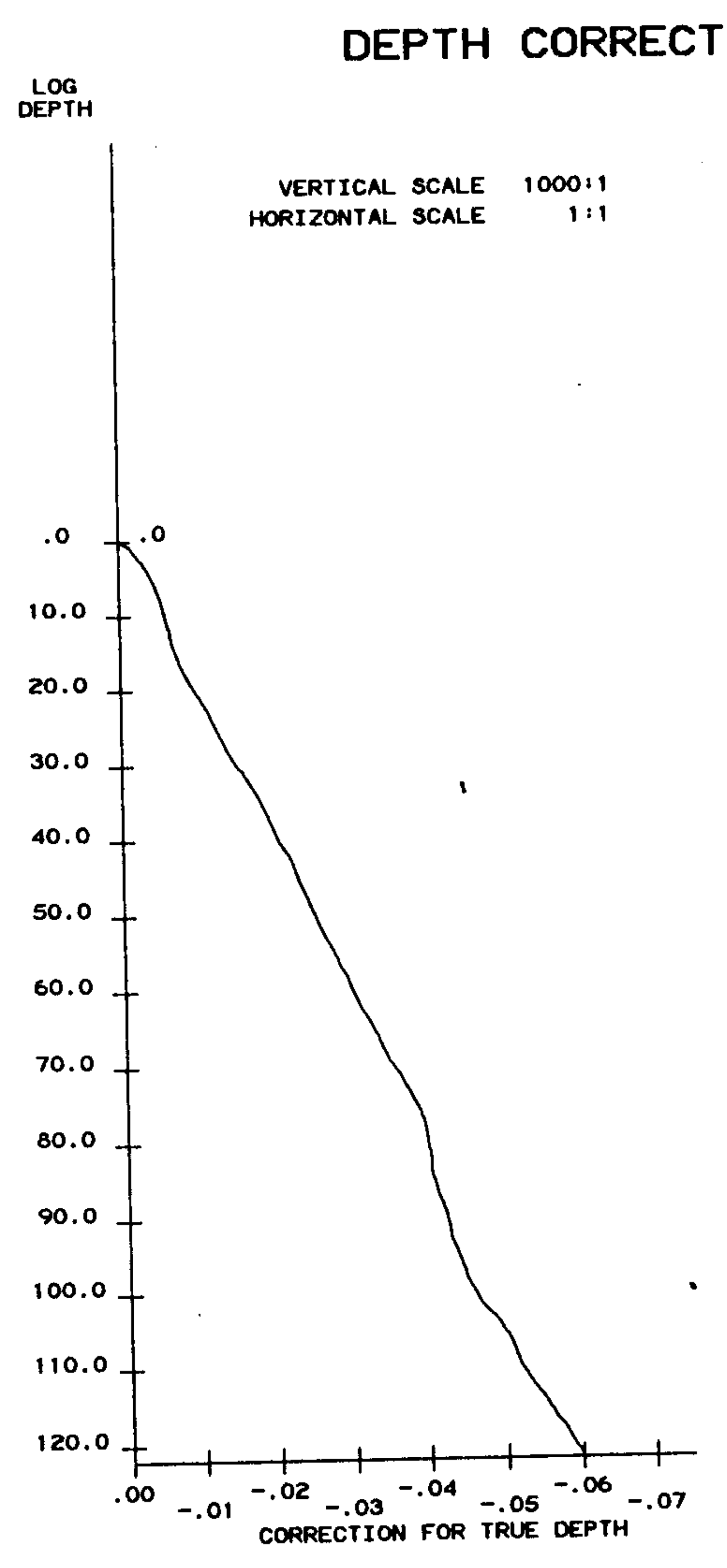
THE LAST PLOTTED DEPTH IS AT 2.55 MS SOUTH, 2.07 MS EAST IE. 3.28 MS FROM THE ORIGIN. 141 DEG FROM TRUE NORTH

VERTICAL SECTIONS

(TRUE DEPTH VS DISPLACEMENT)



DEPTH CORRECTION ANALYSIS



DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE
1.00	1.00	71.00	70.96
2.00	2.00	72.00	71.96
3.00	3.00	73.00	72.96
4.00	4.00	74.00	73.96
5.00	5.00	75.00	74.96
6.00	6.00	76.00	75.96
7.00	6.99	77.00	76.96
8.00	7.99	78.00	77.96
9.00	8.99	79.00	78.96
10.00	9.99	80.00	79.96
11.00	10.99	81.00	80.96
12.00	11.99	82.00	81.96
13.00	12.99	83.00	82.96
14.00	13.99	84.00	83.96
15.00	14.99	85.00	84.96
16.00	15.99	86.00	85.96
17.00	16.99	87.00	86.96
18.00	17.99	88.00	87.96
19.00	18.99	89.00	88.96
20.00	19.99	90.00	89.96
21.00	20.99	91.00	90.96
22.00	21.99	92.00	91.96
23.00	22.99	93.00	92.96
24.00	23.99	94.00	93.96
25.00	24.99	95.00	94.96
26.00	25.99	96.00	95.96
27.00	26.99	97.00	96.96
28.00	27.99	98.00	97.95
29.00	28.99	99.00	98.95
30.00	29.98	100.00	99.95
31.00	30.98	101.00	100.95
32.00	31.98	102.00	101.95
33.00	32.98	103.00	102.95
34.00	33.98	104.00	103.95
35.00	34.98	105.00	104.95
36.00	35.98	106.00	105.95
37.00	36.98	107.00	106.95
38.00	37.98	108.00	107.95
39.00	38.98	109.00	108.95
40.00	39.98	110.00	109.95
41.00	40.98	111.00	110.95
42.00	41.98	112.00	111.95
43.00	42.98	113.00	112.95
44.00	43.98	114.00	113.94
45.00	44.98	115.00	114.94
46.00	45.98	116.00	115.94
47.00	46.98	117.00	116.94
48.00	47.98	118.00	117.94
49.00	48.97	119.00	118.94
50.00	49.97	120.00	119.94
51.00	50.97	121.00	120.94
52.00	51.97	121.90	121.84
53.00	52.97		
54.00	53.97		
55.00	54.97		
56.00	55.97		
57.00	56.97		
58.00	57.97		
59.00	58.97		
60.00	59.97		
61.00	60.97		
62.00	61.97		
63.00	62.97		
64.00	63.97		
65.00	64.97		
66.00	65.97		
67.00	66.97		
68.00	67.97		
69.00	68.96		
70.00	69.96		

COMPANY	MANALTA
WELL	T93R-19
FIELD	SITE 111
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 111
WELL:
T93R-19
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-19
FIELD SITE 111
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	15-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	122M			
DEPTH-LOGGER	122M			
FIRST READING	122M			
LAST READING	0M			
CASING-DRILLER	11M -			
CASING-LOGGER	11M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	6.3M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	11M	TD	11M	N/A	SURFACE	5.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 15-SEP-1993 AT 15:37
FILENAME: DD3AR19M.CIB RUN ID: MAIN LOG PLOTTED ON 16-SEP-1993 AT 10:55

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 15-SEP-1993 AT 15:37
FILENAME: DD3AR19M.CIB RUN ID: MAIN LOG PLOTTED ON 16-SEP-1993 AT 10:55

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 15-SEP-1993 AT 15:34

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	11.00
BIT SIZE 3	.00	BIT DEPTH 3	122.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-19
FIELD	SITE 111
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 112
WELL:
T93R-06C
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-06C
FIELD SITE 112
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	11-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	31.4M			
DEPTH-LOGGER	31.6M			
FIRST READING	31M			
LAST READING	0M			
CASING-DRILLER	5.5M			
CASING-LOGGER	5.5M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	5.5M	TD	178MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

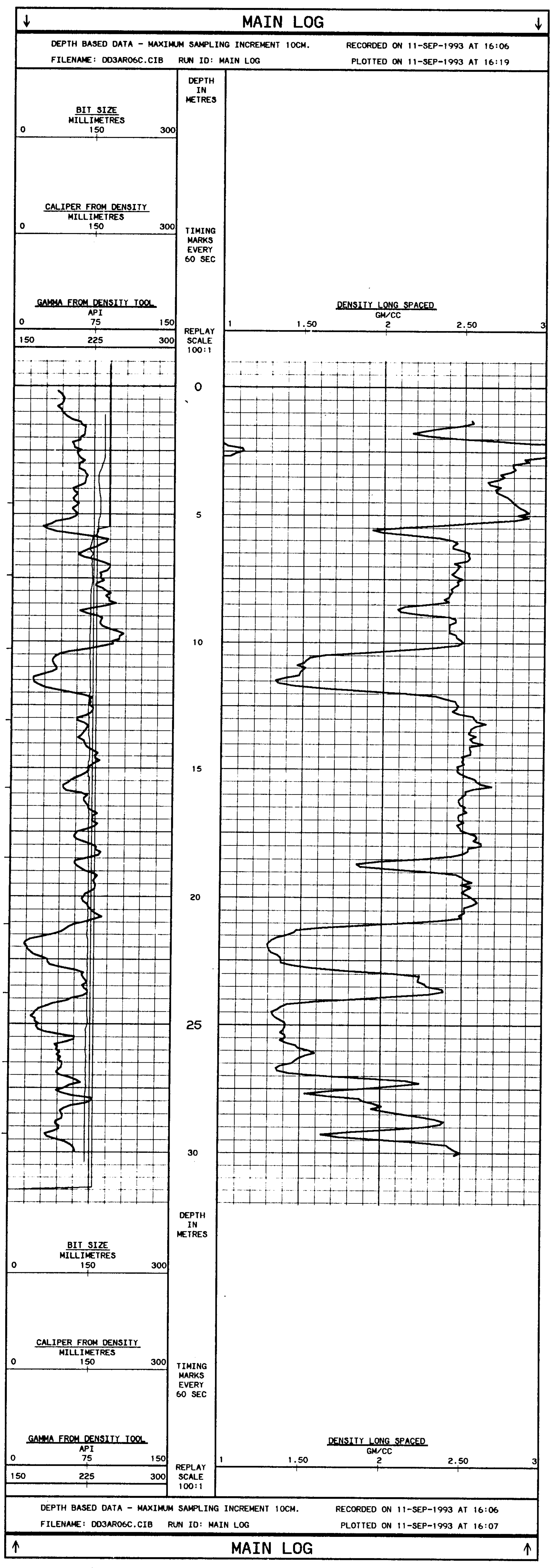
LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 11-SEP-1993 AT 16:06
FILENAME: DD3AR06C.CIB RUN ID: MAIN LOG PLOTTED ON 11-SEP-1993 AT 16:19



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 11-SEP-1993 AT 16:06
FILENAME: DD3AR06C.CIB RUN ID: MAIN LOG PLOTTED ON 11-SEP-1993 AT 16:07

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 11-SEP-1993 AT 15:48

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	31.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-06C
FIELD	SITE 112
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 112
WELL:
T93R-06C
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-06C
FIELD SITE 112
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	11-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	31.4M			
DEPTH-LOGGER	31.6M			
FIRST READING	31M			
LAST READING	0M			
CASING-DRILLER	5.5M			
CASING-LOGGER	5.5M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	OOM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	5.5M	TD	178MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 11-SEP-1993 AT 16:06
FILENAME: DD3AR06A.CIB RUN ID: DETAIL SECTION PLOTTED ON 11-SEP-1993 AT 21:46

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

DEPTH IN METRES

TIMING MARKS EVERY 60 SEC

REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 11-SEP-1993 AT 16:06
FILENAME: DD3AR06A.CIB RUN ID: DETAIL SECTION PLOTTED ON 11-SEP-1993 AT 21:43

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 11-SEP-1993 AT 15:48 DATA LAST REPROCESSED: 11-SEP-1993 AT 21:41

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	31.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-06C
FIELD	SITE 112
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION	TELKWA	
PRVNC/CO.	BRITISH COLUMBIA	
FIELD	SITE 112	
WELL:	T93R-06C	
COMPANY:	MANALTA	

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

COMPANY MANALTA
WELL T93R-06C
FIELD SITE 112
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

#879

LOCATION	OTHER SERVICES
TELKWA	

LSD	SEC	TWP	RGE

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	11-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	31.4M			
DEPTH-LOGGER	31.6M			
FIRST READING	31M			
LAST READING	0M			
CASING-DRILLER	5.5M			
CASING-LOGGER	5.5M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	OOM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	5.5M	TD	178MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 11-SEP-1993 AT 16:06
FILENAME: DD3AR06A.CIB RUN ID: DETAIL SECTION PLOTTED ON 11-SEP-1993 AT 21:52

BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
DEPTH IN METRES
TIMING MARKS EVERY 60 SEC
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 11-SEP-1993 AT 16:06
FILENAME: DD3AR06A.CIB RUN ID: DETAIL SECTION PLOTTED ON 11-SEP-1993 AT 21:52

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 11-SEP-1993 AT 15:48 DATA LAST REPROCESSED: 11-SEP-1993 AT 21:41

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	31.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-06C
FIELD	SITE 112
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#829

LOCATION	TELKWA
PRVNC/CO.	BRITISH COLUMBIA
FIELD	SITE 109
WELL:	T93R-13
COMPANY:	MANALTA

COMPANY	MANALTA
WELL	T93R-13
FIELD	SITE 109
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	10-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	140.8M			
DEPTH-LOGGER	140.5M			
FIRST READING	140.0M			
LAST READING	0M			
CASING-DRILLER	24.4M			
CASING-LOGGER	24.4M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	24.4M	TD	178MM	N/A	SURFACE	24.4M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 10-SEP-1993 AT 11:24
FILENAME: DD3AR13M.CIB RUN ID: MAIN LOG PLOTTED ON 10-SEP-1993 AT 11:48

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 10-SEP-1993 AT 11:24
FILENAME: DD3AR13M.CIB RUN ID: MAIN LOG PLOTTED ON 10-SEP-1993 AT 11:25

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 10-SEP-1993 AT 10:14

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	24.40
BIT SIZE 3	.00	BIT DEPTH 3	140.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-13
FIELD	SITE 109
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS #879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 109
WELL:
T93R-13
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-13
FIELD SITE 109
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION	TELKWA		
LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	10-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	140.8M	
DEPTH-LOGGER	140.5M	
FIRST READING	140M	
LAST READING	0M	
CASING-DRILLER	24.4M	
CASING-LOGGER	24.4M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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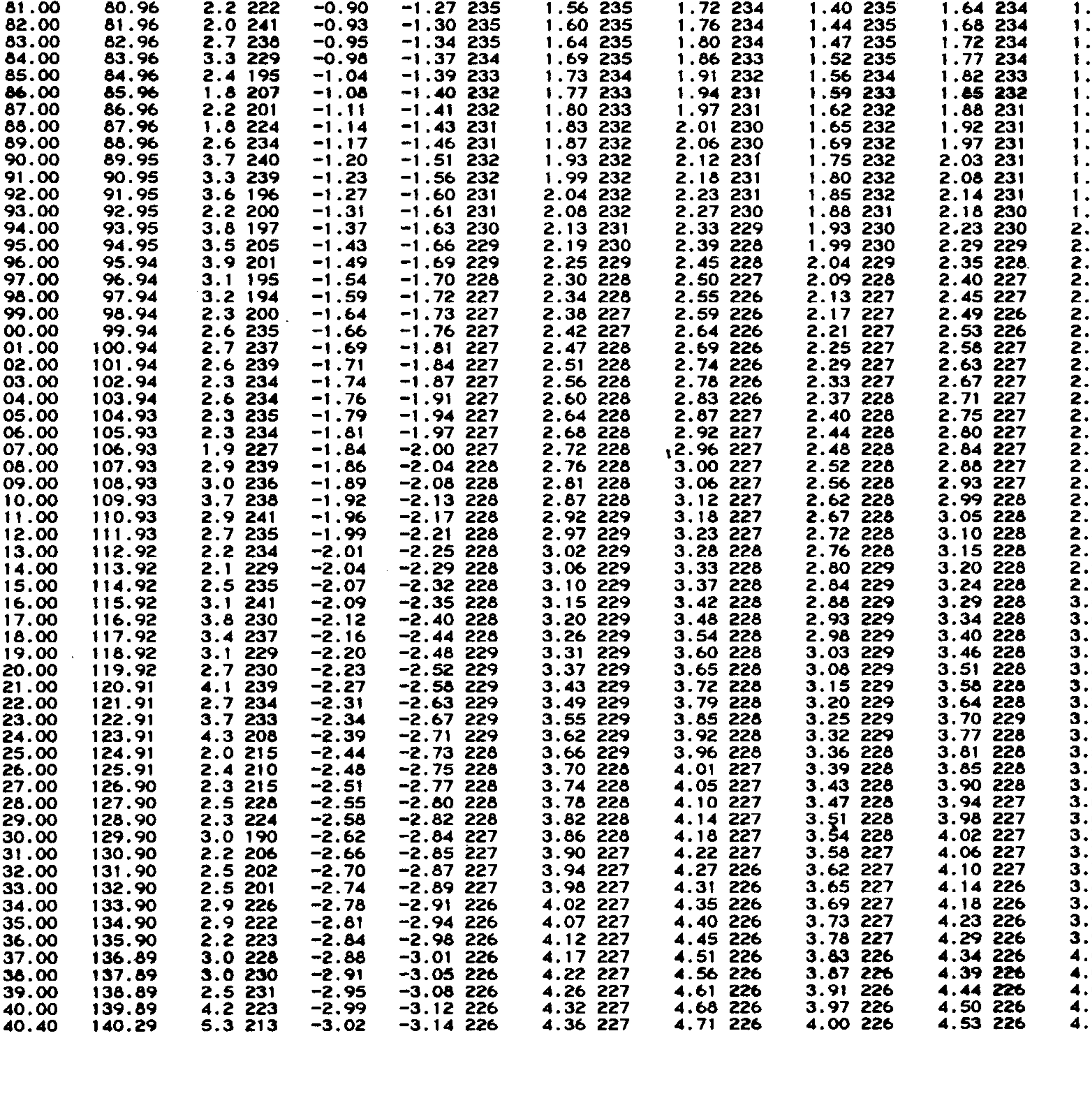
T93R-13                          VERTICALITY DATA LISTING                      DATE PROCESSED: 10-SEP-1993
                    ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH                DATE LOGGED:    10-SEP-1993
    DEPTHS          BOREHOLE    AXIAL CO-ORDS   POLAR      POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG      TRUE     TILT AZI    NORTH      EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

  0.00     0.00     3.9 238     0.00    -0.01 238    0.01 238    0.01 238    0.01 238    0.01 238    0.01
  1.00     1.00     2.9 249     0.00    -0.06 270    0.06 270    0.06 270    0.06 270    0.06 270    0.06
  2.00     2.00     0.6 132    -0.02    -0.06 247    0.06 246    0.07 248    0.06 246    0.06 247    0.06
  3.00     3.00     0.7 230    -0.03    -0.06 240    0.07 238    0.07 243    0.06 239    0.07 242    0.07
  4.00     4.00     0.8 309    -0.04    -0.07 241    0.08 240    0.09 243    0.07 240    0.08 242    0.07
  5.00     5.00     0.8 346    -0.03    -0.07.251    0.08 250    0.08 251    0.07 251    0.08 251    0.07
  6.00     6.00     0.3  48    -0.02    -0.07 253    0.07 253    0.08 253    0.07 253    0.07 253    0.07
  7.00     7.00     0.2  83    -0.02    -0.07 255    0.07 257    0.07 252    0.07 256    0.07 254    0.07
  8.00     8.00     0.2 331    -0.01    -0.07 259    0.07 263    0.07 254    0.07 261    0.07 257    0.07
  9.00     9.00     0.7 305    -0.01    -0.08 264    0.08 269    0.08 258    0.07 266    0.08 261    0.07
 10.00    10.00     0.9 278     0.00    -0.09 269    0.09 274    0.10 263    0.08 272    0.09 266    0.08
 11.00    11.00     1.1 288     0.00    -0.10 269    0.10 273    0.12 264    0.09 271    0.11 267    0.10
 12.00    12.00     1.0 148    -0.01    -0.11 267    0.11 270    0.13 262    0.10 269    0.12 265    0.11
 13.00    13.00     1.0 199    -0.01    -0.12 263    0.12 266    0.14 259    0.11 265    0.13 261    0.11
 14.00    14.00     0.7 205    -0.02    -0.13 260    0.13 262    0.15 256    0.11 261    0.14 258    0.12
 15.00    15.00     0.4  49    -0.02    -0.13 261    0.14 264    0.16 258    0.12 263    0.15 260    0.13
 16.00    16.00     0.4   5    -0.01    -0.13 264    0.13 268    0.15 259    0.11 266    0.14 262    0.12
 17.00    17.00     0.4 334    -0.01    -0.13 268    0.13 272    0.15 261    0.11 270    0.14 265    0.12
 18.00    18.00     0.5 242     0.00    -0.14 269    0.14 273    0.16 262    0.12 271    0.15 266    0.13
 19.00    19.00     0.4 162    -0.01    -0.14 266    0.14 270    0.17 261    0.12 268    0.15 264    0.13
 20.00    20.00     0.4 105    -0.01    -0.13 264    0.14 268    0.16 259    0.11 266    0.15 262    0.12
 21.00    21.00     0.4 342    -0.01    -0.13 266    0.13 270    0.15 261    0.11 269    0.14 264    0.12
 22.00    22.00     0.5 192    -0.01    -0.13 266    0.13 270    0.15 260    0.11 268    0.14 263    0.12
 23.00    23.00     0.4 236    -0.01    -0.13 264    0.13 267    0.15 259    0.11 266    0.14 261    0.12
 24.00    24.00     0.6 272    -0.02    -0.13 261    0.13 264    0.16 258    0.11 263    0.15 260    0.12
 25.00    25.00     0.6 298    -0.01    -0.14 264    0.14 268    0.16 260    0.12 266    0.15 262    0.13
 26.00    26.00     0.5 300    -0.01    -0.15 266    0.15 270    0.17 262    0.12 268    0.16 264    0.13
 27.00    27.00     0.4 284     0.00    -0.15 268    0.15 272    0.18 263    0.12 270    0.17 266    0.14
 28.00    28.00     0.4 301     0.00    -0.16 270    0.16 274    0.19 264    0.13 272    0.17 268    0.14
 29.00    29.00     0.4 327     0.01    -0.16 272    0.16 277    0.20 266    0.13 275    0.18 270    0.15
 30.00    30.00     0.4 339     0.01    -0.17 275    0.17 279    0.20 268    0.13 277    0.18 272    0.15
 31.00    31.00     0.4 341     0.02    -0.17 277    0.17 282    0.21 269    0.13 280    0.19 274    0.15
 32.00    32.00     0.5 326     0.03    -0.17 279    0.17 284    0.21 271    0.13 282    0.19 276    0.15
 33.00    33.00     0.4 358     0.03    -0.17 281    0.17 287    0.22 273    0.13 284    0.20 278    0.15
 34.00    34.00     0.6 156     0.03    -0.17 281    0.18 286    0.22 272    0.13 284    0.20 277    0.15
 35.00    35.00     0.5 130     0.03    -0.17 279    0.17 284    0.21 270    0.13 282    0.19 275    0.15
 36.00    36.00     0.4 154     0.02    -0.17 277    0.17 281    0.21 269    0.13 279    0.19 273    0.15
 37.00    37.00     0.4 160     0.01    -0.16 274    0.16 279    0.20 267    0.13 277    0.18 271    0.15
 38.00    38.00     0.4 173     0.00    -0.16 271    0.16 276    0.19 265    0.13 274    0.18 268    0.14
 39.00    39.00     0.5 217     0.00    -0.16 268    0.16 272    0.20 262    0.13 271    0.18 266    0.15
 40.00    40.00     0.5 194    -0.01    -0.17 266    0.17 269    0.20 260    0.13 267    0.18 263    0.15
 41.00    41.00     1.0 228    -0.02    -0.17 263    0.17 266    0.21 258    0.14 264    0.19 260    0.16
 42.00    42.00     0.9 212    -0.03    -0.18 260    0.18 262    0.22 255    0.15 261    0.20 258    0.16
 43.00    43.00     0.8 235    -0.05    -0.19 257    0.19 259    0.23 253    0.16 258    0.21 255    0.17
 44.00    44.00     1.1 228    -0.06    -0.20 254    0.21 257    0.25 251    0.17 256    0.23 253    0.19
 45.00    44.99     1.4 231    -0.07    -0.22 253    0.23 255    0.28 249    0.19 254    0.25 251    0.21
 46.00    45.99     0.4 235    -0.08    -0.23 250    0.24 252    0.29 247    0.19 252    0.27 249    0.22
 47.00    46.99     1.4 267    -0.08    -0.25 252    0.26 254    0.31 249    0.21 253    0.28 250    0.23
 48.00    47.99     1.1 255    -0.08    -0.26 252    0.28 254    0.33 250    0.22 253    0.30 251    0.25
 49.00    48.99     1.0 269    -0.09    -0.28 253    0.29 255    0.35 251    0.24 254    0.32 252    0.26
 50.00    49.99     0.9 243    -0.09    -0.30 253    0.31 255    0.37 251    0.25 254    0.34 252    0.28
 51.00    50.99     1.4 242    -0.10    -0.32 253    0.33 254    0.40 251    0.27 254    0.36 252    0.30
 52.00    51.99     1.1 240    -0.11    -0.33 252    0.35 253    0.42 250    0.28 253    0.38 251    0.32
 53.00    52.99     1.6 258    -0.12    -0.35 252    0.37 253    0.44 250    0.30 252    0.41 251    0.34
 54.00    53.99     2.7 227    -0.14    -0.39 251    0.41 252    0.49 249    0.34 252    0.45 250    0.38
 55.00    54.99     2.6 223    -0.17    -0.42 248    0.45 250    0.53 246    0.38 249    0.49 247    0.42
 56.00    55.99     2.9 230    -0.20    -0.46 246    0.50 248    0.58 244    0.42 247    0.54 245    0.46
 57.00    56.99     2.7 219    -0.24    -0.49 244    0.55 246    0.63 242    0.46 245    0.59 243    0.50
 58.00    57.99     2.4 221    -0.27    -0.52 243    0.59 244    0.67 241    0.50 243    0.63 242    0.55
 59.00    58.99     2.9 219    -0.31    -0.56 241    0.63 242    0.72 239    0.55 242    0.68 240    0.59
 60.00    59.99     3.0 222    -0.34    -0.59 240    0.68 241    0.77 238    0.59 240    0.73 239    0.64
 61.00    60.98     2.5 233    -0.38    -0.62 239    0.72 240    0.82 237    0.63 239    0.77 238    0.68
 62.00    61.98     1.7 218    -0.41    -0.65 238    0.77 239    0.87 236    0.67 239    0.82 237    0.72
 63.00    62.98     2.4 249    -0.43    -0.68 238    0.81 239    0.91 236    0.71 239    0.86 237    0.76
 64.00    63.98     2.7 249    -0.45    -0.73 238    0.85 240    0.96 237    0.75 239    0.90 238    0.80
 65.00    64.98     2.0 248    -0.46    -0.77 239    0.89 240    1.00 238    0.79 240    0.95 238    0.84
 66.00    65.98     2.0 253    -0.47    -0.80 240    0.93 241    1.04 238    0.82 240    0.98 239    0.87
 67.00    66.98     1.8 255    -0.48    -0.83 240    0.96 241    1.07 239    0.84 241    1.01 239    0.90
 68.00    67.98     1.7 208    -0.50    -0.85 240    0.99 241    1.10 238    0.87 240    1.05 239    0.93
 69.00    68.98     1.9 252    -0.51    -0.88 240    1.02 241    1.14 239    0.90 240    1.08 239    0.96
 70.00    69.98     2.2 243    -0.53    -0.91 240    1.05 241    1.18 239    0.93 240    1.12 239    0.99
 71.00    70.98     3.1 232    -0.55    -0.95 240    1.10 241    1.23 239    0.97 240    1.16 239    1.03
 72.00    71.98     1.8 232    -0.59    -0.99 239    1.15 240    1.29 238    1.02 240    1.22 239    1.09
 73.00    72.97     2.9 225    -0.62    -1.04 239    1.21 240    1.34 238    1.07 239    1.28 238    1.14
 74.00    73.97     2.5 233    -0.66    -1.08 239    1.27 239    1.40 237    1.13 239    1.34 238    1.20
 75.00    74.97     3.4 218    -0.70    -1.12 238    1.32 239    1.47 237    1.18 239    1.39 238    1.25
 76.00    75.97     3.3 230    -0.74    -1.16 237    1.37 238    1.52 236    1.23 238    1.44 237    1.30
 77.00    76.97     2.8 198    -0.79    -1.19 236    1.42 237    1.57 235    1.28 237    1.50 236    1.35
 78.00    77.97     1.9 214    -0.83    -1.20 236    1.46 236    1.61 234    1.31 236    1.53 235    1.38
 79.00    78.97     1.7 206    -0.85    -1.22 235    1.49 236    1.64 234    1.33 236    1.56 235    1.41
 80.00    79.96     2.2 220    -0.88    -1.24 235    1.52 235    1.68 234    1.37 235    1.60 234    1.44
 81.00    80.96     2.2 222    -0.90    -1.27 235    1.56 235    1.72 234    1.40 235    1.64 234    1.48
 82.00    81.96     2.0 241    -0.93    -1.30 235    1.60 235    1.76 234    1.44 235    1.68 234    1.52
 83.00    82.96     2.7 238    -0.95    -1.34 235    1.64 235    1.80 234    1.47 235    1.72 234    1.55
 84.00    83.96     3.3 229    -0.98    -1.37 234    1.69 235    1.86 233    1.52 235    1.77 234    1.60
 85.00    84.96     2.4 195    -1.04    -1.39 233    1.73 234    1.91 232    1.56 234    1.82 233    1.65
 86.00    85.96     1.8 207    -1.08    -1.40 232    1.77 233    1.94 231    1.59 233    1.85 232    1.68
 87.00    86.96     2.2 201    -1.11    -1.41 232    1.80 233    1.97 231    1.62 232    1.88 231    1.71
 88.00    87.96     1.8 224    -1.14    -1.43 231    1.83 232    2.01 230    1.65 232    1.92 231    1.74
 89.00    88.96     2.6 234    -1.17    -1.46 231    1.87 232    2.06 230    1.69 232    1.97 231    1.78
 90.00    89.95     3.7 240    -1.20    -1.51 232    1.93 232    2.12 231    1.75 232    2.03 231    1.84
 91.00    90.95     3.3 239    -1.23    -1.56 232    1.99 232    2.18 231    1.80 232    2.08 231    1.89
 92.00    91.95     3.6 196    -1.27    -1.60 231    2.04 232    2.23 231    1.85 232    2.14 231    1.94
 93.00    92.95     2.2 200    -1.31    -1.61 231    2.08 232    2.27 230    1.88 231    2.18 230    1.98
 94.00    93.95     3.8 197    -1.37    -1.63 230    2.13 231    2.33 229    1.93 230    2.23 230    2.03
 95.00    94.95     3.5 205    -1.43    -1.66 229    2.19 230    2.39 228    1.99 230    2.29 229    2.09
 96.00    95.94     3.9 201    -1.49    -1.69 229    2.25 229    2.45 228    2.04 229    2.35 228    2.15
 97.00    96.94     3.1 195    -1.54    -1.70 228    2.30 228    2.50 227    2.09 228    2.40 227    2.19
 98.00    97.94     3.2 194    -1.59    -1.72 227    2.34 228    2.55 226    2.13 227    2.45 227    2.24
 99.00    98.94     2.3 200    -1.64    -1.73 227    2.38 227    2.59 226    2.17 227    2.49 226    2.28
100.00    99.94     2.6 235    -1.66    -1.76 227    2.42 227    2.64 226    2.21 227    2.53 226    2.32
101.00   100.94     2.7 237    -1.69    -1.81 227    2.47 228    2.69 226    2.25 227    2.58 227    2.36
102.00   101.94     2.6 239    -1.71    -1.84 227    2.51 228    2.74 226    2.29 227    2.63 227    2.40
103.00   102.94     2.3 234    -1.74    -1.87 227    2.56 228    2.78 226    2.33 227    2.67 227    2.44
104.00   103.94     2.6 234    -1.76    -1.91 227    2.60 228    2.83 226    2.37 228    2.71 227    2.48
105.00   104.93     2.3 235    -1.79    -1.94 227    2.64 228    2.87 227    2.40 228    2.75 227    2.52
106.00   105.93     2.3 234    -1.81    -1.97 227    2.68 228    2.92 227    2.44 228    2.80 227    2.56
107.00   106.93     1.9 227    -1.84    -2.00 227    2.72 228    2.96 227    2.48 228    2.84 227    2.60
108.00   107.93     2.9 239    -1.86    -2.04 228    2.76 228    3.00 227    2.52 228    2.88 227    2.64
109.00   108.93     3.0 236    -1.89    -2.08 228    2.81 228    3.06 227    2.56 228    2.93 227    2.69
110.00   109.93     3.7 238    -1.92    -2.13 228    2.87 228    3.12 227    2.62 228    2.99 228    2.74
111.00   110.93     2.9 241    -1.96    -2.17 228    2.92 229    3.18 227    2.67 228    3.05 228    2.80
112.00   111.93     2.7 235    -1.99    -2.21 228    2.97 229    3.23 227    2.72 228    3.10 228    2.84
113.00   112.92     2.2 234    -2.01    -2.25 228    3.02 229    3.28 228    2.76 228    3.15 228    2.89
114.00   113.92     2.1 229    -2.04    -2.29 228    3.06 229    3.33 228    2.80 229    3.20 228    2.93
115.00   114.92     2.5 235    -2.07    -2.32 228    3.10 229    3.37 228    2.84 229    3.24 228    2.97
116.00   115.92     3.1 241    -2.09    -2.35 228    3.15 229    3.42 228    2.88 229    3.29 228    3.01
117.00   116.92     3.8 230    -2.12    -2.40 228    3.20 229    3.48 228    2.93 229    3.34 228    3.06
118.00   117.92     3.4 237    -2.16    -2.44 228    3.26 229    3.54 228    2.98 229    3.40 228    3.12
119.00   118.92     3.1 229    -2.20    -2.48 229    3.31 229    3.60 228    3.03 229    3.46 228    3.17
120.00   119.92     2.7 230    -2.23    -2.52 229    3.37 229    3.65 228    3.08 229    3.51 228    3.23
121.00   120.91     4.1 239    -2.27    -2.58 229    3.43 229    3.72 228    3.15 229    3.58 228    3.29
122.00   121.91     2.7 234    -2.31    -2.63 229    3.49 229    3.79 228    3.20 229    3.64 228    3.35
123.00   122.91     3.7 233    -2.34    -2.67 229    3.55 229    3.85 228    3.25 229    3.70 229    3.40
124.00   123.91     4.3 208    -2.39    -2.71 229    3.62 229    3.92 228    3.32 229    3.77 228    3.47
125.00   124.91     2.0 215    -2.44    -2.73 228    3.66 229    3.96 228    3.36 228    3.81 228    3.51
126.00   125.91     2.4 210    -2.48    -2.75 228    3.70 228    4.01 227    3.39 228    3.85 228    3.55
127.00   126.90     2.3 215    -2.51    -2.77 228    3.74 228    4.05 227    3.43 228    3.90 228    3.59
128.00   127.90     2.5 228    -2.55    -2.80 228    3.78 228    4.10 227    3.47 228    3.94 227    3.63
129.00   128.90     2.3 224    -2.58    -2.82 228    3.82 228    4.14 227    3.51 228    3.98 227    3.67
130.00   129.90     3.0 190    -2.62    -2.84 227    3.86 228    4.18 227    3.54 228    4.02 227    3.70
131.00   130.90     2.2 206    -2.66    -2.85 227    3.90 227    4.22 227    3.58 227    4.06 227    3.74
132.00   131.90     2.5 202    -2.70    -2.87 227    3.94 227    4.27 226    3.62 227    4.10 227    3.78
133.00   132.90     2.5 201    -2.74    -2.89 227    3.98 227    4.31 226    3.65 227    4.14 226    3.82
134.00   133.90     2.9 226    -2.78    -2.91 226    4.02 227    4.35 226    3.69 227    4.18 226    3.85
135.00   134.90     2.9 222    -2.81    -2.94 226    4.07 227    4.40 226    3.73 227    4.23 226    3.90
136.00   135.90     2.2 223    -2.84    -2.98 226    4.12 227    4.45 226    3.78 227    4.29 226    3.95
137.00   136.89     3.0 228    -2.88    -3.01 226    4.17 227    4.51 226    3.83 226    4.34 226    4.00
138.00   137.89     3.0 230    -2.91    -3.05 226    4.22 227    4.56 226    3.87 226    4.39 226    4.04
139.00   138.89     2.5 231    -2.95    -3.08 226    4.26 227    4.61 226    3.91 226    4.44 226    4.09
140.00   139.89     4.2 223    -2.99    -3.12 226    4.32 227    4.68 226    3.97 226    4.50 226    4.15
140.40   140.29     5.3 213    -3.02    -3.14 226    4.36 227    4.71 226    4.00 226    4.53 226    4.18
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....-.10
LAST PLOTTED DEPTH......140.40
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...0
LAST DEPTH MARKER AT....140

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

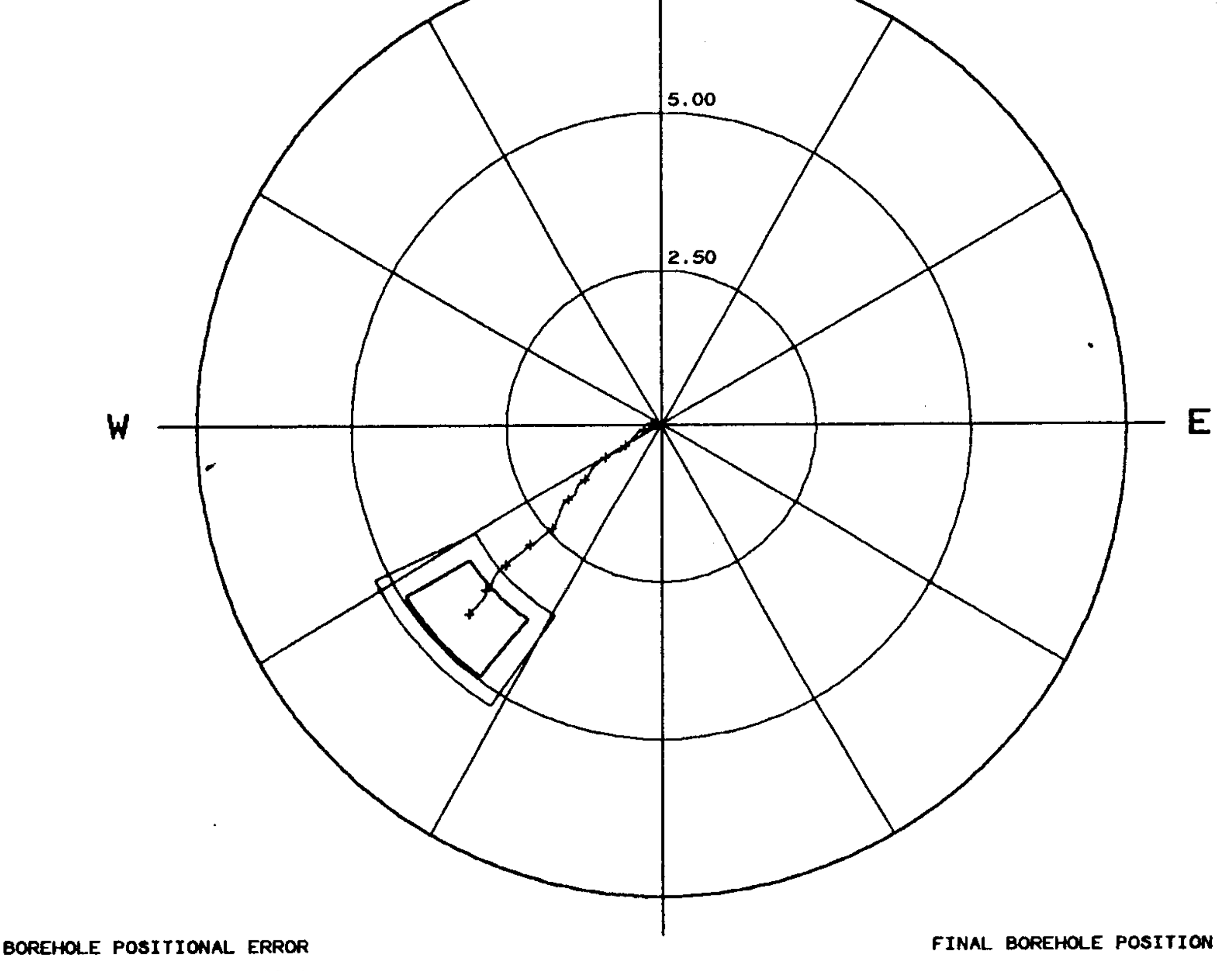
THE LAST PLOTTED DEPTH IS AT 3.02 MS SOUTH, 3.14 MS WEST IE. 4.36 MS FROM THE ORIGIN, 226 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

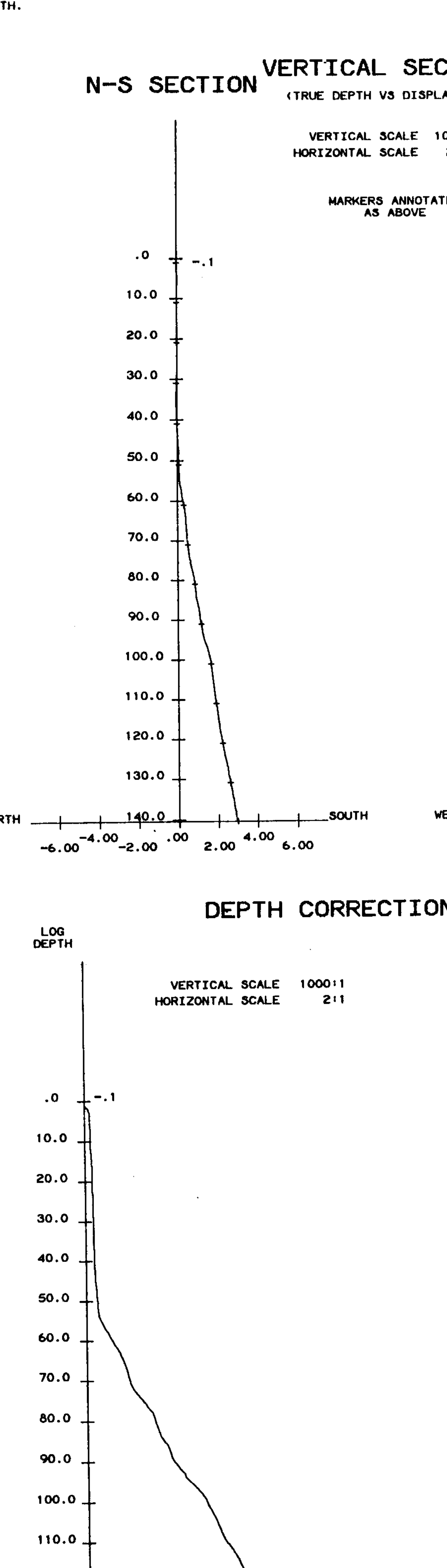
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 200:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 2:1



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
1.00	1.00	71.00	70.98	141.00	140.89
2.00	2.00	72.00	71.98	140.40	140.29
3.00	3.00	73.00	72.98		
4.00	4.00	74.00	73.97		
5.00	5.00	75.00	74.97		
6.00	6.00	76.00	75.97		
7.00	7.00	77.00	76.97		
8.00	8.00	78.00	77.97		
9.00	9.00	79.00	78.97		
10.00	10.00	80.00	79.97		
11.00	11.00	81.00	80.96		
12.00	12.00	82.00	81.96		
13.00	13.00	83.00	82.96		
14.00	14.00	84.00	83.96		
15.00	15.00	85.00	84.96		
16.00	16.00	86.00	85.96		
17.00	17.00	87.00	86.96		
18.00	18.00	88.00	87.96		
19.00	19.00	89.00	88.96		
20.00	20.00	90.00	89.96		
21.00	21.00	91.00	90.95		
22.00	22.00	92.00	91.95		
23.00	23.00	93.00	92.95		
24.00	24.00	94.00	93.95		
25.00	25.00	95.00	94.95		
26.00	26.00	96.00	95.95		
27.00	27.00	97.00	96.94		
28.00	28.00	98.00	97.94		
29.00	29.00	99.00	98.94		
30.00	30.00	100.00	99.94		
31.00	31.00	101.00	100.94		
32.00	32.00	102.00	101.94		
33.00	33.00	103.00	102.94		
34.00	34.00	104.00	103.94		
35.00	35.00	105.00	104.94		
36.00	36.00	106.00	105.93		
37.00	37.00	107.00	106.93		
38.00	38.00	108.00	107.93		
39.00	39.00	109.00	108.93		
40.00	40.00	110.00	109.93		
41.00	41.00	111.00	110.93		
42.00	42.00	112.00	111.93		
43.00	43.00	113.00	112.93		
44.00	44.00	114.00	113.92		
45.00	45.00	115.00	114.92		
46.00	45.99	116.00	115.92		
47.00	46.99	117.00	116.92		
48.00	47.99	118.00	117.92		
49.00	48.99	119.00	118.92		
50.00	49.99	120.00	119.92		
51.00	50.99	121.00	120.92		
52.00	51.99	122.00	121.91		
53.00	52.99	123.00	122.91		
54.00	53.99	124.00	123.91		
55.00	54.99	125.00	124.91		
56.00	55.99	126.00	125.91		
57.00	56.99	127.00	126.91		
58.00	57.99	128.00	127.90		
59.00	58.99	129.00	128.90		
60.00	59.99	130.00	129.90		
61.00	60.99	131.00	130.90		
62.00	61.98	132.00	131.90		
63.00	62.98	133.00	132.90		
64.00	63.98	134.00	133.90		
65.00	64.98	135.00	134.90		
66.00	65.98	136.00	135.90		
67.00	66.98	137.00	136.90		
68.00	67.98	138.00	137.89		
69.00	68.98	139.00	138.89		
70.00	69.98	140.00	139.89		

COMPANY	MANALTA
WELL	T93R-13
FIELD	SITE 109
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

LOCATION	TELKWA
PRVNC/CO.	BRITISH COLUMBIA
FIELD	SITE 113
WELL:	T93R-05
COMPANY:	MANALTA

COMPANY	MANALTA
WELL	T93R-05
FIELD	SITE 113
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	92.4M			
DEPTH-LOGGER	91M			
FIRST READING	88M			
LAST READING	0M			
CASING-DRILLER	5.5M			
CASING-LOGGER	5.5M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	2M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	5.5M	TD	178MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

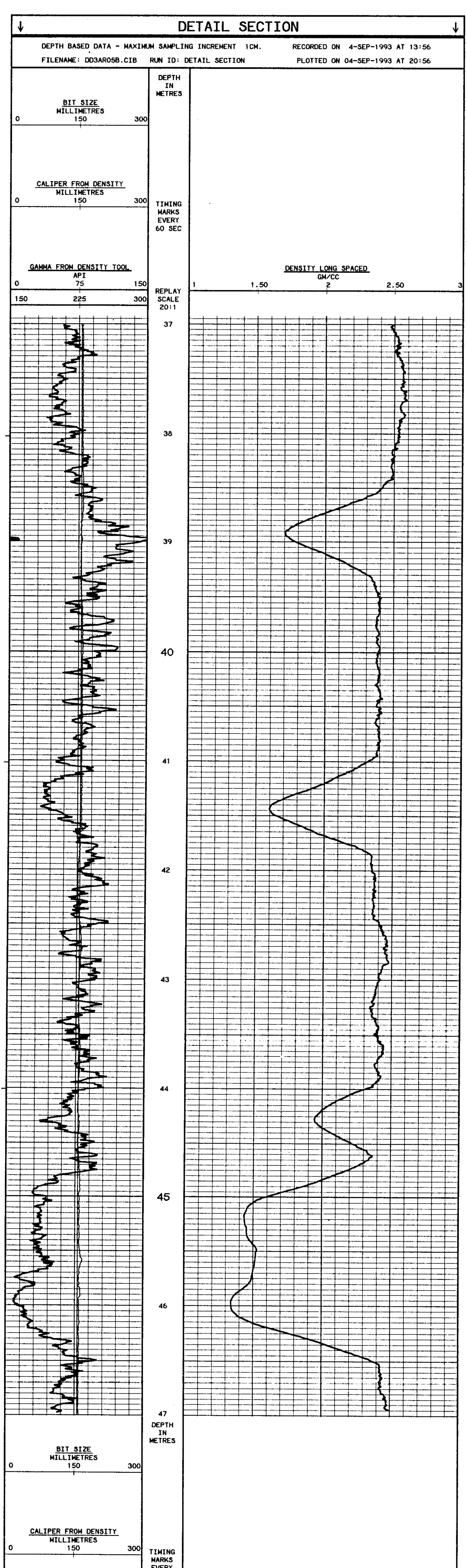
LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 13:56
FILENAME: DD3AR05B.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 20:56



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 13:56
FILENAME: DD3AR05B.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 20:54

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 13:56
FILENAME: DD3AR05A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 20:53

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 20:1
DENSITY LONG SPACED GM/CC 1 1.50 2 2.50 3
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 13:56
FILENAME: DD3AR05A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 20:51

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 04-SEP-1993 AT 13:53 DATA LAST REPROCESSED: 4-SEP-1993 AT 20:44

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	92.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-05
FIELD	SITE 113
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER
#879

COMPANY MANALTA
WELL T93R-05
FIELD SITE 113
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 113
WELL:
T93R-05
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	92.4M			
DEPTH-LOGGER	91M			
FIRST READING	88M			
LAST READING	0M			
CASING-DRILLER	5.5M			
CASING-LOGGER	5.5M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	2M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	5.5M	TD	178MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-SEP-1993 AT 13:56
FILENAME: DD3AR05M.CIB RUN ID: MAIN LOG PLOTTED ON 04-SEP-1993 AT 19:57

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 100:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 4-SEP-1993 AT 13:56
FILENAME: DD3AR05M.CIB RUN ID: MAIN LOG PLOTTED ON 04-SEP-1993 AT 19:57

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 04-SEP-1993 AT 13:53

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	92.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-05
FIELD	SITE 113
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 113
WELL:
T93R-05
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-05
FIELD SITE 113
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL ,ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	92.4M			
DEPTH-LOGGER	91M			
FIRST READING	88M			
LAST READING	0M			
CASING-DRILLER	5.5M			
CASING-LOGGER	5.5M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM ● MEAS TEMP				
RMF ● MEAS TEMP				
RMC ● MEAS TEMP				
SOURCE: RMF/RMC				
RM ● BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	2M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	5.5M	TD	178MM	N/A	SURFACE	5.5M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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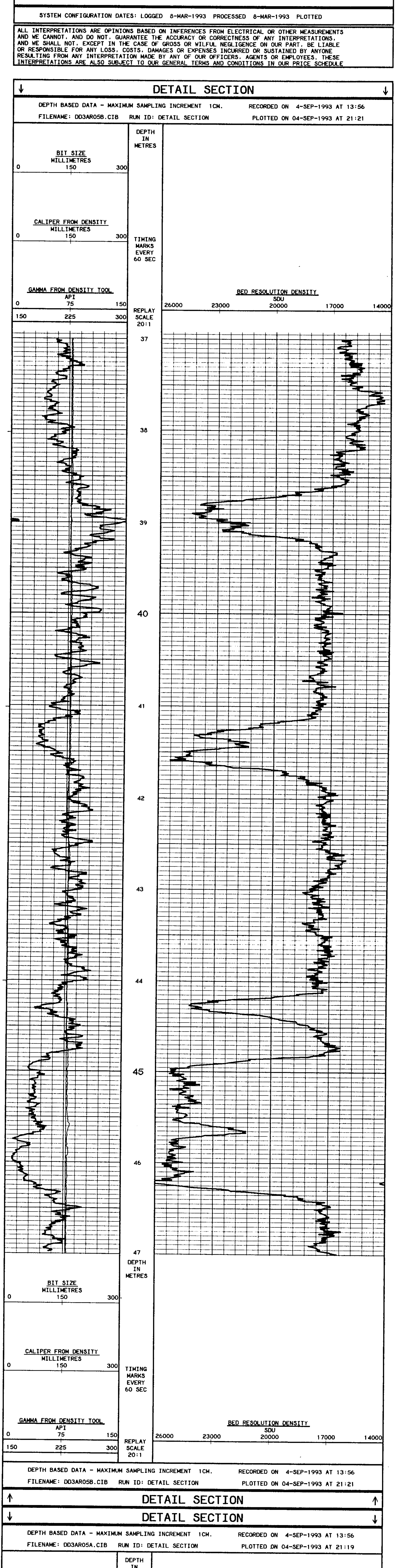
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 13:56
FILENAME: DD3AR05B.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 21:21



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 13:56
FILENAME: DD3AR05B.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 21:21

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 13:56
FILENAME: DD3AR05A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 21:19

DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
DEPTH IN METRES
BIT SIZE MILLIMETRES 0 150 300
CALIPER FROM DENSITY MILLIMETRES 0 150 300
TIMING MARKS EVERY 60 SEC
GAMMA FROM DENSITY TOOL API 0 75 150
150 225 300
REPLAY SCALE 20:1
BED RESOLUTION DENSITY SDU 26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 4-SEP-1993 AT 13:56
FILENAME: DD3AR05A.CIB RUN ID: DETAIL SECTION PLOTTED ON 04-SEP-1993 AT 21:19

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 04-SEP-1993 AT 13:53 DATA LAST REPROCESSED: 4-SEP-1993 AT 20:44

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.50
BIT SIZE 3	.00	BIT DEPTH 3	92.40
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY MANALTA
WELL T93R-05
FIELD SITE 113
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

VERTICALITY ANALYSIS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE # 113
WELL:
T93R-05
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-05
FIELD	SITE # 113
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES CCS

PERMANENT DATUM GROUND LEVEL . ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	4-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	92.4M	
DEPTH- OGGER	91M	
FIRST READING	90M	
LAST READING	0M	
CASING-DRILLER	5.5M	
CASING-LOGGER	5.5M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	2M	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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T93R-05

VERTICALITY DATA LISTING

ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH

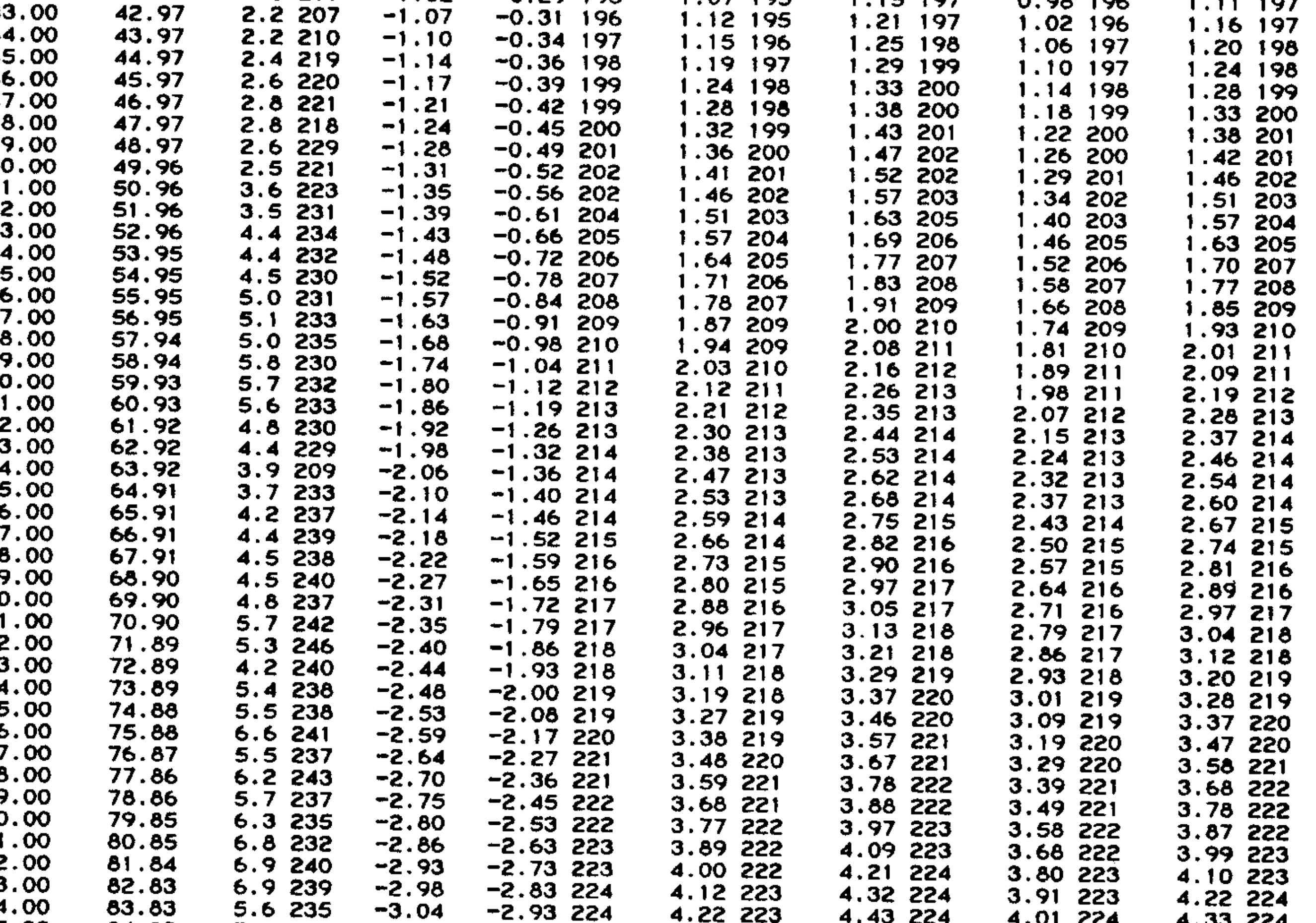
DATE PROCESSED: 4-SEP-1993
DATE LOGGED: 4-SEP-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
6.00	6.00	0.4	76	0.00	0.00	103	0.00	103	0.00	102	0.00	103	0.00	103	0.00
7.00	7.00	0.4	83	0.00	0.01	80	0.01	80	0.02	79	0.01	80	0.01	80	0.01
8.00	8.00	0.5	57	0.01	0.02	72	0.02	72	0.03	71	0.01	72	0.02	72	0.02
9.00	9.00	0.5	67	0.01	0.03	71	0.03	71	0.04	71	0.02	71	0.03	71	0.02
10.00	10.00	0.6	80	0.01	0.04	72	0.04	72	0.05	72	0.02	72	0.05	72	0.03
11.00	11.00	0.3	74	0.01	0.05	73	0.05	73	0.07	74	0.03	73	0.06	73	0.04
12.00	12.00	0.3	211	0.01	0.05	73	0.05	73	0.07	74	0.03	73	0.06	73	0.04
13.00	13.00	0.8	192	0.00	0.04	84	0.04	83	0.06	84	0.03	83	0.05	84	0.04
14.00	14.00	0.6	195	-0.01	0.04	102	0.04	100	0.06	106	0.03	101	0.05	104	0.03
15.00	15.00	0.8	195	-0.02	0.04	120	0.04	116	0.06	127	0.03	118	0.05	122	0.04
16.00	16.00	1.0	190	-0.04	0.03	137	0.05	133	0.07	146	0.04	135	0.06	141	0.04
17.00	17.00	1.6	184	-0.06	0.03	152	0.07	147	0.08	159	0.05	149	0.07	155	0.06
18.00	18.00	1.9	170	-0.09	0.03	159	0.09	155	0.11	165	0.07	157	0.10	161	0.08
19.00	19.00	1.7	155	-0.12	0.04	160	0.12	157	0.15	164	0.10	158	0.13	162	0.11
20.00	20.00	1.6	148	-0.14	0.06	158	0.15	156	0.18	162	0.13	157	0.16	160	0.14
21.00	21.00	1.4	160	-0.17	0.07	158	0.18	156	0.21	160	0.15	157	0.19	159	0.17
22.00	22.00	2.0	156	-0.19	0.08	158	0.21	156	0.24	160	0.17	157	0.22	159	0.19
23.00	23.00	1.1	170	-0.22	0.09	158	0.24	157	0.27	160	0.20	157	0.25	159	0.22
24.00	24.00	1.7	168	-0.25	0.09	159	0.26	158	0.30	161	0.23	159	0.28	160	0.24
25.00	25.00	1.6	177	-0.28	0.10	161	0.29	160	0.33	163	0.25	160	0.31	162	0.27
26.00	26.00	1.9	186	-0.31	0.09	163	0.32	162	0.37	165	0.28	163	0.34	164	0.30
27.00	26.99	2.5	187	-0.35	0.09	166	0.36	165	0.41	168	0.31	165	0.38	167	0.33
28.00	27.99	2.1	162	-0.39	0.08	168	0.40	167	0.45	169	0.35	167	0.43	169	0.38
29.00	28.99	1.8	218	-0.41	0.08	169	0.42	168	0.47	171	0.37	169	0.45	170	0.39
30.00	29.99	2.9	218	-0.45	0.06	173	0.45	172	0.51	174	0.39	172	0.48	174	0.42
31.00	30.99	2.9	209	-0.49	0.03	176	0.49	175	0.55	178	0.43	176	0.52	177	0.46
32.00	31.99	2.4	214	-0.53	0.01	179	0.53	178	0.59	181	0.47	179	0.56	180	0.50
33.00	32.99	2.8	213	-0.57	-0.02	182	0.57	180	0.63	183	0.51	181	0.60	182	0.54
34.00	33.99	3.2	215	-0.61	-0.05	184	0.62	183	0.68	186	0.55	184	0.65	185	0.58
35.00	34.99	3.1	207	-0.66	-0.07	186	0.66	185	0.73	188	0.59	186	0.70	187	0.63
36.00	35.98	3.0	217	-0.70	-0.10	188	0.71	187	0.78	190	0.64	188	0.74	189	0.67
37.00	36.98	3.2	211	-0.75	-0.14	190	0.76	189	0.83	192	0.69	190	0.80	191	0.73
38.00	37.98	3.1	215	-0.80	-0.17	192	0.82	191	0.89	193	0.74	191	0.86	192	0.78
39.00	38.98	3.2	219	-0.85	-0.20	193	0.87	192	0.95	195	0.79	193	0.91	194	0.83
40.00	39.98	4.1	215	-0.90	-0.23	194	0.93	193	1.01	196	0.85	194	0.97	195	0.89
41.00	40.97	4.3	212	-0.97	-0.27	196	1.00	195	1.09	197	0.92	195	1.04	196	0.96
42.00	41.97	3.0	217	-1.02	-0.29	196	1.07	195	1.15	197	0.98	196	1.11	197	1.02
43.00	42.97	2.2	207	-1.07	-0.31	196	1.12	195	1.21	197	1.02	196	1.16	197	1.07
44.00	43.97	2.2	210	-1.10	-0.34	197	1.15	196	1.25	198	1.06	197	1.20	198	1.11
45.00	44.97	2.4	219	-1.14	-0.36	198	1.19	197	1.29	199	1.10	197	1.24	198	1.14
46.00	45.97	2.6	220	-1.17	-0.39	199	1.24	198	1.33	200	1.14	198	1.28	199	1.19
47.00	46.97	2.8	221	-1.21	-0.42	199	1.28	198	1.38	200	1.18	199	1.33	200	1.23
48.00	47.97	2.8	218	-1.24	-0.45	200	1.32	199	1.43	201	1.22	200	1.38	201	1.27
49.00	48.97	2.6	229	-1.28	-0.49	201	1.36	200	1.47	202	1.26	200	1.42	201	1.31
50.00	49.96	2.5	221	-1.31	-0.52	202	1.41	201	1.52	202	1.29	201	1.46	202	1.35
51.00	50.96	3.6	223	-1.35	-0.56	202	1.46	202	1.57	203	1.34	202	1.51	203	1.40
52.00	51.96	3.5	231	-1.39	-0.61	204	1.51	203	1.63	205	1.40	203	1.57	204	1.46
53.00	52.96	4.4	234	-1.43	-0.66	205	1.57	204	1.69	206	1.46	205	1.63	205	1.51
54.00	53.95	4.4	232	-1.48	-0.72	206	1.64	205	1.77	207	1.52	206	1.70	207	1.58
55.00	54.95	4.5	230	-1.52	-0.78	207	1.71	206	1.83	208	1.58	207	1.77	208	1.65
56.00	55.95	5.0	231	-1.57	-0.84	208	1.78	207	1.91	209	1.66	208	1.85	209	1.72
57.00	56.95	5.1	233	-1.63	-0.91	209	1.87	209	2.00	210	1.74	209	1.93	210	1.80
58.00	57.94	5.0	235	-1.68	-0.98	210	1.94	209	2.08	211	1.81	210	2.01	211	1.88
59.00	58.94	5.8	230	-1.74	-1.04	211	2.03	210	2.16	212	1.89	211	2.09	211	1.96
60.00	59.93	5.7	232	-1.80	-1.12	212	2.12	211	2.26	213	1.98	211	2.19	212	2.05
61.00	60.93	5.6	233	-1.86	-1.19	213	2.21	212	2.35	213	2.07	212	2.28	213	2.14
62.00	61.92	4.8	230	-1.92	-1.26	213	2.30	213	2.44	214	2.15	213	2.37	214	2.23
63.00	62.92	4.4	229	-1.98	-1.32	214	2.38	213	2.53	214	2.24	213	2.46	214	2.31
64.00	63.92	3.9	209	-2.06	-1.36	214	2.47	213	2.62	214	2.32	213	2.54	214	2.39
65.00	64.91	3.7	233	-2.10	-1.40	214	2.53	213	2.68	214	2.37	213	2.60	214	2.45
66.00	65.91	4.2	237	-2.14	-1.46	214	2.59	214	2.75	215	2.43	214	2.67	215	2.51
67.00	66.91	4.4	239	-2.18	-1.52	215	2.66	214	2.82	216	2.50	215	2.74	215	2.58
68.00	67.91	4.5	238	-2.22	-1.59	216	2.73	215	2.90	216	2.57	215	2.81	216	2.65
69.00	68.90	4.5	240	-2.27	-1.65	216	2.80	215	2.97	217	2.64	216	2.89	216	2.72
70.00	69.90	4.8	237	-2.31	-1.72	217	2.88	216	3.05	217	2.71	216	2.97	217	2.80
71.00	70.90	5.7	242	-2.35	-1.79	217	2.96	217	3.13	218	2.79	217	3.04	218	2.87
72.00	71.89	5.3	246	-2.40	-1.86	218	3.04	217	3.21	218	2.86	217	3.12	218	2.95
73.00	72.89	4.2	240	-2.44	-1.93	218	3.11	218	3.29	219	2.93	218	3.20	219	3.02
74.00	73.89	5.4	238	-2.48	-2.00	219	3.19	218	3.37	220	3.01	219	3.28	219	3.10
75.00	74.88	5.5	238	-2.53	-2.08	219	3.27	219	3.46	220	3.09	219	3.37	220	3.18
76.00	75.88	6.6	241	-2.59	-2.17	220	3.38	219	3.57	221	3.19	220	3.47	220	3.29
77.00	76.87	5.5	237	-2.64	-2.27	221	3.48	220	3.67	221	3.29	220	3.58	221	3.39
78.00	77.86	6.2	243	-2.70	-2.36	221	3.59	221	3.78	222	3.39	221	3.68	222	3.49
79.00	78.86	5.7	237	-2.75	-2.45	222	3.68	221	3.88	222	3.49	221	3.78	222	3.58
80.00	79.85	6.3	235	-2.80	-2.53	222	3.77	222	3.97	223	3.58	222	3.87	222	3.68
81.00	80.85	6.8	232	-2.86	-2.63	223	3.89	222	4.09	223	3.68	222	3.99	223	3.79
82.00	81.84	6.9	240	-2.93	-2.73	223	4.00	222	4.21	224	3.80	223	4.10	223	3.90
83.00	82.83	6.9	239	-2.98	-2.83	224	4.12	223	4.32	224	3.91	223	4.22	224	4.01
84.00	83.83	5.6	235	-3.04	-2.93	224	4.22	223	4.43	224	4.01	224	4.33	224	4.12
85.00	84.82	7.2	240	-3.11	-3.02	224	4.34	224	4.55	225	4.13	224	4.45	224	4.23
86.00	85.81	6.8	233	-3.17	-3.12	224	4.45	224	4.67	225	4.23	224	4.56	225	4.34
87.00	86.81	7.3	232	-3.24	-3.21	225	4.56	224	4.78	225	4.34	224	4.67	225	4.45
88.00	87.80	6.8	230	-3.31	-3.30	225	4.68	224	4.90	226	4.45	225	4.79	225	4.56
89.00	88.79	7.0	220	-3.40	-3.39	225	4.80	224	5.03	225	4.58	225	4.92	225	4.69
90.00	89.78	7.5	214	-3.49	-3.47	225	4.92	224	5.15	225	4.69	225	5.04	225	4.81
90.40	90.18	7.0	214	-3.53	-3.50	225	4.97	224	5.20	225	4.74	224	5.08	225	4.85

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....5.60
LAST PLOTTED DEPTH......90.40
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....90

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 3.53 MS SOUTH, 3.50 MS WEST IE. 4.97 MS FROM THE ORIGIN, 225 DEG FROM TRUE NORTH

VERTICAL SECTIONS

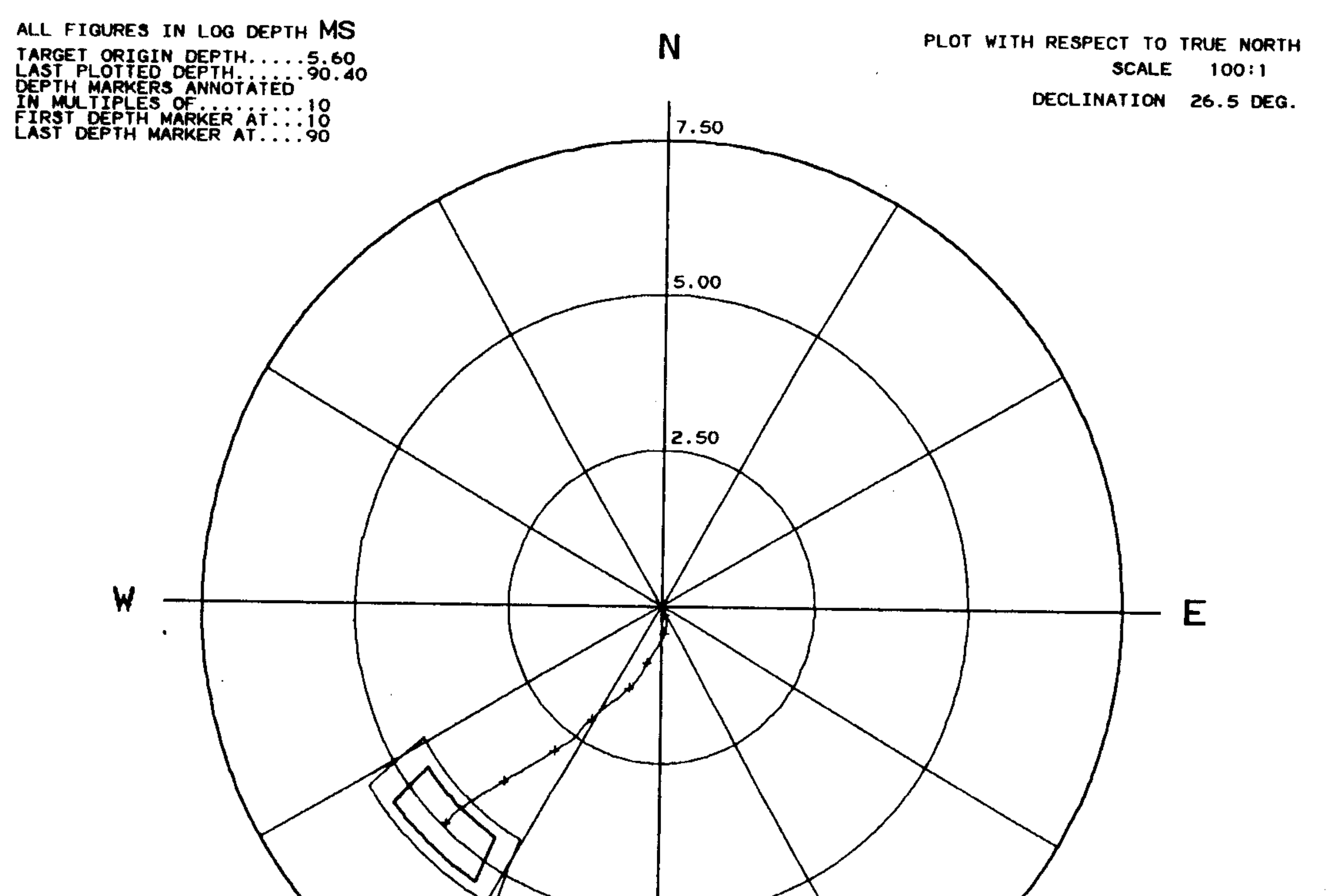
(TRUE DEPTH VS DISPLACEMENT)

N-S SECTION

E-W SECTION

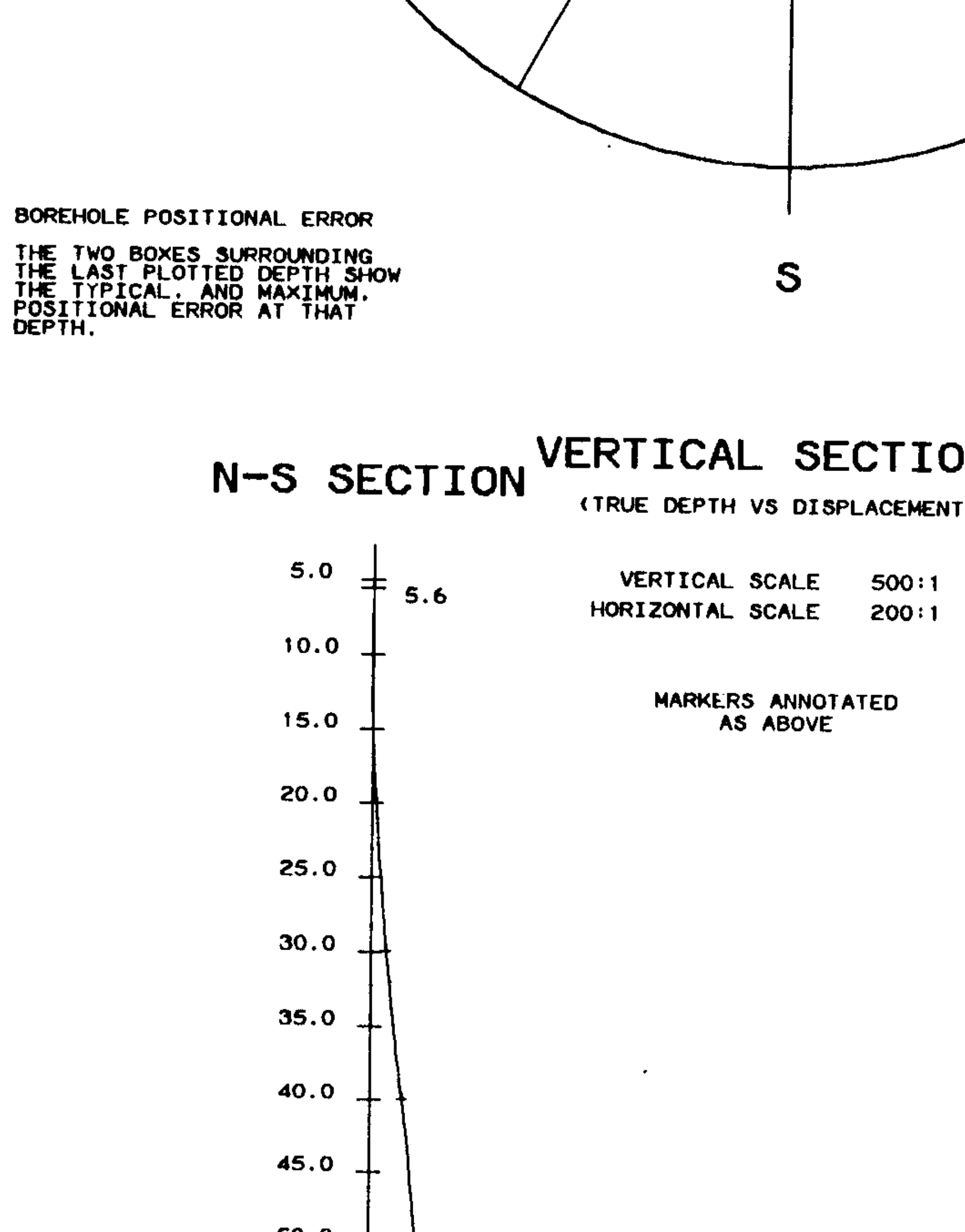
VERTICAL SCALE 500:1
HORIZONTAL SCALE 200:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 500:1
HORIZONTAL SCALE 5:1



DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE
6.00	6.00	76.00	75.88
7.00	7.00	77.00	76.87
8.00	8.00	78.00	77.86
9.00	9.00	79.00	78.86
10.00	10.00	80.00	79.85
11.00	11.00	81.00	80.85
12.00	12.00	82.00	81.84
13.00	13.00	83.00	82.83
14.00	14.00	84.00	83.83
15.00	15.00	85.00	84.82
16.00	16.00	86.00	85.81
17.00	17.00	87.00	86.81
18.00	18.00	88.00	87.80
19.00	19.00	89.00	88.79
20.00	20.00	90.00	89.78
21.00	21.00	90.40	90.18
22.00	22.00		
23.00	23.00		
24.00	24.00		
25.00	25.00		
26.00	26.00		
27.00	26.99		
28.00	27.99		
29.00	28.99		
30.00	29.99		
31.00	30.99		
32.00	31.99		
33.00	32.99		
34.00	33.99		
35.00	34.99		
36.00	35.98		
37.00	36.98		
38.00	37.98		
39.00	38.98		
40.00	39.98		
41.00	40.97		
42.00	41.97		
43.00	42.97		
44.00	43.97		
45.00	44.97		
46.00	45.97		
47.00	46.97		
48.00	47.97		
49.00	48.97		
50.00	49.96		
51.00	50.96		
52.00	51.96		
53.00	52.96		
54.00	53.95		
55.00	54.95		
56.00	55.95		
57.00	56.95		
58.00	57.94		
59.00	58.94		
60.00	59.93		
61.00	60.93		
62.00	61.92		
63.00	62.92		
64.00	63.92		
65.00	64.91		
66.00	65.91		
67.00	66.91		
68.00	67.91		
69.00	68.90		
70.00	69.90		
71.00	70.90		
72.00	71.89		
73.00	72.89		
74.00	73.89		
75.00	74.88		

COMPANY	MANALTA
WELL	T93R-05
FIELD	SITE # 113
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 114
WELL:
T93R-07
COMPANY:
MANALTA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-07
FIELD	SITE 114
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
CCS

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	128.9M	
DEPTH-LOGGER	128.2M	
FIRST READING	128M	
LAST READING	OM	
CASING-DRILLER	15.2M	
CASING-LOGGER	15.2M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	ROR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL		

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

T93R-07

VERTICALITY DATA LISTING

ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH

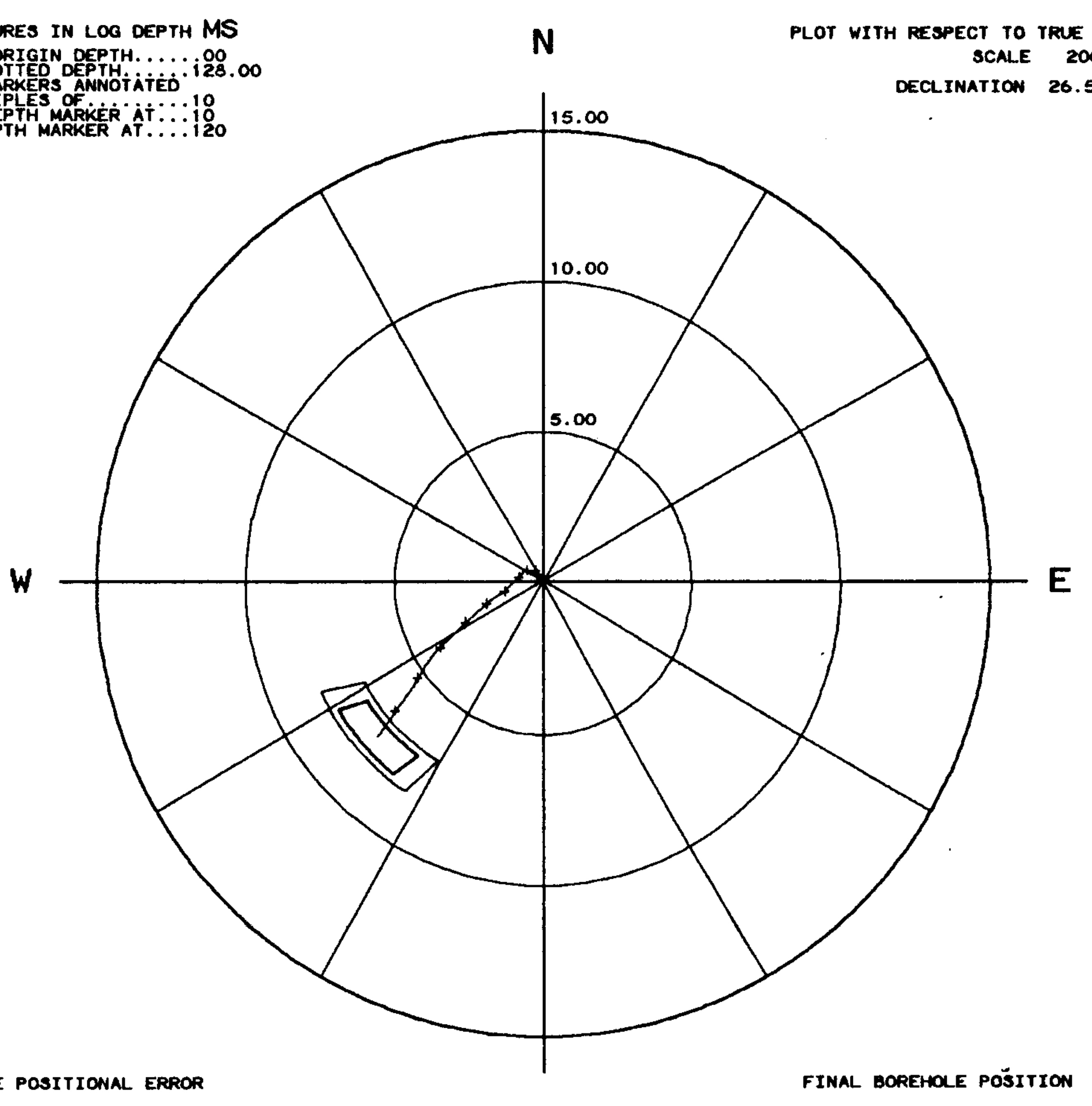
DATE PROCESSED: 6-SEP-1993
DATE LOGGED: 6-SEP-1993

DEPTHS		BOREHOLE		AXIAL CO-ORDS		POLAR		POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)							
LOG	TRUE	TILT	AZI	NORTH	EAST	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRG	RADIUS	BRD	RADIUS
1.00	1.00	0.6	50	0.01	0.02	66	0.02	65	0.03	67	0.02	66	0.02	66	0.02
2.00	2.00	0.3	303	0.01	0.02	63	0.02	61	0.02	65	0.02	62	0.02	64	0.02
3.00	3.00	0.5	18	0.01	0.02	51	0.02	45	0.02	58	0.02	47	0.02	54	0.02
4.00	4.00	0.9	345	0.02	0.01	27	0.02	17	0.02	42	0.02	22	0.02	34	0.02
5.00	5.00	0.9	276	0.02	0.00	5	0.02	354	0.03	22	0.02	359	0.02	12	0.02
6.00	6.00	0.9	188	0.02	-0.01	327	0.02	319	0.03	343	0.01	322	0.03	333	0.02
7.00	7.00	1.2	87	0.01	0.00	357	0.01	340	0.02	27	0.01	347	0.01	10	0.01
8.00	8.00	0.2	118	0.02	0.01	37	0.02	26	0.02	50	0.02	31	0.02	43	0.02
9.00	9.00	0.4	183	0.01	0.01	57	0.02	51	0.02	63	0.02	54	0.02	60	0.02
10.00	10.00	0.4	156	0.01	0.02	72	0.02	74	0.02	69	0.02	73	0.02	70	0.02
11.00	11.00	0.6	151	0.00	0.03	81	0.03	86	0.03	75	0.02	83	0.03	78	0.02
12.00	12.00	1.2	112	-0.01	0.03	100	0.03	104	0.04	93	0.03	102	0.03	97	0.03
13.00	13.00	0.5	325	-0.01	0.03	111	0.03	116	0.04	104	0.03	114	0.04	108	0.03
14.00	14.00	0.6	186	-0.02	0.03	122	0.03	129	0.04	111	0.02	126	0.03	117	0.03
15.00	15.00	1.0	17	-0.01	0.03	111	0.03	119	0.03	101	0.02	115	0.03	107	0.03
16.00	16.00	0.4	308	0.00	0.02	96	0.02	102	0.03	89	0.02	99	0.03	93	0.02
17.00	17.00	1.0	311	0.00	0.02	73	0.02	76	0.02	70	0.02	74	0.02	71	0.02
18.00	18.00	1.7	296	0.02	0.00	346	0.02	338	0.02	356	0.02	341	0.02	351	0.02
19.00	19.00	1.7	305	0.03	-0.02	327	0.03	322	0.04	332	0.03	324	0.04	329	0.03
20.00	20.00	1.3	301	0.04	-0.04	317	0.06	315	0.07	320	0.05	316	0.06	318	0.06
21.00	21.00	1.1	309	0.06	-0.06	314	0.08	312	0.09	316	0.07	313	0.09	315	0.07
22.00	22.00	1.4	321	0.08	-0.07	317	0.11	316	0.12	319	0.09	316	0.11	318	0.10
23.00	23.00	1.4	317	0.10	-0.09	317	0.13	316	0.15	319	0.11	317	0.14	318	0.12
24.00	24.00	1.2	307	0.12	-0.11	317	0.16	317	0.18	319	0.13	317	0.17	318	0.15
25.00	25.00	1.4	314	0.13	-0.12	317	0.18	317	0.21	318	0.16	317	0.19	318	0.17
26.00	26.00	1.3	320	0.15	-0.14	317	0.21	317	0.24	318	0.18	317	0.22	318	0.19
27.00	27.00	1.6	312	0.17	-0.16	317	0.23	317	0.27	318	0.20	317	0.25	318	0.22
28.00	27.99	1.7	322	0.19	-0.17	318	0.26	317	0.30	319	0.22	318	0.28	318	0.24
29.00	28.99	1.5	332	0.22	-0.19	319	0.29	318	0.33	320	0.25	319	0.31	319	0.27
30.00	29.99	1.6	330	0.24	-0.20	320	0.32	320	0.36	321	0.27	320	0.34	320	0.30
31.00	30.99	1.3	335	0.27	-0.22	321	0.34	321	0.39	322	0.30	321	0.37	321	0.32
32.00	31.99	1.3	336	0.29	-0.23	322	0.37	322	0.42	323	0.32	322	0.39	322	0.34
33.00	32.99	0.7	333	0.31	-0.23	323	0.38	323	0.44	323	0.33	323	0.41	323	0.36
34.00	33.99	0.9	345	0.32	-0.24	324	0.40	324	0.46	324	0.34	324	0.43	324	0.37
35.00	34.99	0.7	354	0.34	-0.24	325	0.41	324	0.47	325	0.35	325	0.44	325	0.38
36.00	35.99	0.5	338	0.35	-0.24	325	0.42	325	0.48	325	0.36	325	0.45	325	0.39
37.00	36.99	0.5	290	0.35	-0.25	325	0.43	325	0.50	325	0.36	325	0.46	325	0.40
38.00	37.99	0.6	289	0.36	-0.25	325	0.44	325	0.51	325	0.37	325	0.47	325	0.40
39.00	38.99	0.6	263	0.36	-0.26	324	0.44	324	0.51	324	0.37	324	0.48	324	0.41
40.00	39.99	1.0	256	0.35	-0.27	322	0.45	322	0.52	323	0.37	322	0.48	323	0.41
41.00	40.99	1.4	259	0.35	-0.29	320	0.45	319	0.53	320	0.38	319	0.49	320	0.42
42.00	41.99	1.6	261	0.35	-0.32	317	0.47	317	0.55	318	0.39	317	0.51	317	0.43
43.00	42.99	1.8	272	0.34	-0.35	314	0.49	314	0.57	315	0.41	314	0.53	315	0.45
44.00	43.99	2.0	274	0.35	-0.38	312	0.52	312	0.60	312	0.44	312	0.56	312	0.48
45.00	44.99	1.7	275	0.35	-0.42	310	0.55	310	0.63	310	0.46	310	0.59	310	0.50
46.00	45.99	1.8	279	0.35	-0.45	308	0.57	308	0.66	308	0.49	308	0.62	308	0.53
47.00	46.99	1.8	269	0.36	-0.48	307	0.60	307	0.69	307	0.51	307	0.65	307	0.56
48.00	47.99	1.8	272	0.36	-0.51	305	0.63	305	0.72	305	0.54	305	0.67	305	0.58
49.00	48.99	1.5	278	0.37	-0.54	304	0.65	304	0.75	304	0.56	304	0.70	304	0.61
50.00	49.99	1.4	256	0.36	-0.57	303	0.67	303	0.77	302	0.58	303	0.72	303	0.63
51.00	50.99	1.3	273	0.36	-0.60	301	0.70	301	0.80	301	0.59	301	0.75	301	0.65
52.00	51.99	1.3	260	0.36	-0.62	300	0.72	300	0.82	300	0.61	300	0.77	300	0.66
53.00	52.99	1.1	244	0.35	-0.64	299	0.73	299	0.84	298	0.63	299	0.79	299	0.68
54.00	53.99	1.8	236	0.33	-0.67	297	0.74	297	0.85	296	0.64	297	0.80	297	0.69
55.00	54.99	2.3	219	0.31	-0.69	294	0.75	294	0.86	294	0.64	294	0.81	294	0.70
56.00	55.99	2.3	214	0.27	-0.71	291	0.76	292	0.87	290	0.65	291	0.82	291	0.71
57.00	56.98	3.2	214	0.24	-0.73	288	0.77	289	0.88	287	0.66	288	0.83	288	0.72
58.00	57.98	3.2	246	0.20	-0.78	285	0.80	285	0.91	283	0.69	285	0.86	284	0.75
59.00	58.98	2.9	220	0.17	-0.81	282	0.83	283	0.94	281	0.72	282	0.89	281	0.78
60.00	59.98	2.8	216	0.14	-0.85	279	0.86	280	0.97	278	0.74	280	0.91	279	0.80
61.00	60.98	3.3	219	0.10	-0.88	276	0.88	277	1.00	275	0.77	277	0.94	275	0.83
62.00	61.98	4.1	227	0.05	-0.92	273	0.92	274	1.04	271	0.81	274	0.98	272	0.87
63.00	62.97	3.8	231	0.00	-0.97	270	0.97	272	1.08	268	0.85	271	1.02	269	0.91
64.00	63.97	3.8	226	-0.04	-1.01	268	1.02	269	1.13	266	0.90	269	1.07	267	0.96
65.00	64.97	4.3	223	-0.09	-1.06	265	1.06	267	1.18	263	0.95	266	1.12	264	1.00
66.00	65.97	4.1	220	-0.14	-1.10	263	1.11	265	1.23	261	0.99	264	1.17	262	1.05
67.00	66.97	4.4	223	-0.19	-1.16	260	1.17	262	1.29	258	1.05	261	1.23	259	1.11
68.00	67.96	3.5	229	-0.25	-1.21	258	1.24	260	1.36	256	1.11	259	1.30	257	1.17
69.00	68.96	4.0	223	-0.30	-1.26	257	1.29	258	1.42	255	1.17	258	1.36	256	1.23
70.00	69.96	4.4	227	-0.35	-1.31	255	1.36	257	1.49	253	1.23	256	1.42	254	1.30
71.00	70.95	4.3	236	-0.40	-1.38	254	1.43	256	1.56	252	1.31	255	1.50	253	1.37
72.00	71.95	4.8	236	-0.44	-1.44	253	1.51	255	1.64	251	1.38	254	1.58	252	1.45
73.00	72.95	4.5	241	-0.48	-1.51	252	1.58	254	1.72	250	1.45	253	1.65	251	1.52
74.00	73.94	4.4	240	-0.52	-1.57	252	1.66	253	1.79	250	1.52	252	1.73	251	1.59
75.00	74.94	4.2	243	-0.56	-1.63	251	1.73	253	1.87	249	1.59	252	1.80	250	1.66
76.00	75.94	3.9	236	-0.59	-1.69	251	1.79	252	1.93	249	1.65	251	1.86	250	1.72
77.00	76.94	3.5	228	-0.63	-1.75	250	1.86	252	2.00	248	1.71	251	1.93	249	1.78
78.00	77.94	3.9	231	-0.67	-1.80	250	1.93	251	2.07	248	1.78	250	2.00	249	1.85
79.00	78.93	4.2	233	-0.72	-1.86	249	2.00	250	2.15	247	1.85	250	2.07	248	1.92
80.00	79.93	4.4	228	-0.77	-1.92	248	2.07	250	2.22	247	1.91	249	2.14	247	1.99
81.00	80.93	4.7	230	-0.82	-1.98	247	2.14	249	2.30	246	1.99	248	2.22	247	2.06
82.00	81.92	5.1	233	-0.87	-2.05	247	2.23	248	2.39	245	2.07	248	2.31	246	2.15
83.00	82.92	5.5	234	-0.93	-2.12	246	2.32	248	2.48	245	2.16	247	2.40	246	2.24
84.00	83.91	6.1	233	-0.99	-2.20	246	2.41	247	2.58	244	2.25	246	2.50	245	2.33
85.00	84.91	5.8	231	-1.05	-2.28	245	2.51	246	2.67	244	2.34	246	2.59	245	2.42
86.00	85.90	5.7	230	-1.11	-2.35	245	2.60	246	2.77	243	2.43	245	2.68	244	2.51
87.00	86.90	5.8	230	-1.18	-2.42	244	2.69	245	2.86	243	2.52	245	2.78	243	2.60
88.00	87.89	5.7	232	-1.24	-2.50	244	2.79	245	2.96	242	2.61	244	2.88	243	2.70
89.00	88.89	5.0	222	-1.30	-2.57	243	2.88	244	3.06	242	2.70	244	2.97	242	2.79
90.00	89.88	5.1	226	-1.37	-2.64	243	2.97	244	3.16	241	2.79	243	3.06	242	2.88
91.00	90.88	6.2	226	-1.44	-2.72	242	3.08	243	3.26	241	2.89	243	3.17	242	2.98
92.00	91.87	6.4	228	-1.51	-2.80	242	3.18	243	3.37	240	2.99	242	3.27	241	3.09
93.00	92.87	6.6	229	-1.58	-2.88	241	3.29	242	3.48	240	3.10	242	3.38	241	3.19
94.00	93.86	6.6	226	-1.66	-2.97	241	3.40	242	3.59	240	3.21	241	3.50	240	3.30
95.00	94.85	6.0	223	-1.74	-3.05	240	3.51	241	3.70	239	3.31	241	3.61	240	3.41
96.00	95.85	5.9	220	-1.82	-3.12	240	3.61	241	3.81	239	3.42	240	3.71	239	3.51
97.00	96.84	7.4	225	-1.91	-3.21	239	3.73	240	3.93	238	3.53	240	3.83	239	3.63
98.00	97.83	6.9	230	-1.99	-3.29	239	3.85	240	4.05	238	3.64	239	3.95	238	3.75
99.00	98.83	6.9	226	-2.07	-3.38	238	3.96	239	4.17	238	3.75	239	4.06	238	3.86
100.00	99.82	7.4	227	-2.15	-3.46	238	4.08	239	4.29	237	3.87	239	4.18	238	3.97
101.00	100.81	6.8	228	-2.24	-3.55	238	4.20	239	4.41	237	3.99	238	4.31	237	4.09
102.00	101.80	7.2	226	-2.32	-3.64	237	4.32	238	4.54	237	4.10	238	4.43	237	4.21
103.00	102.80	7.5	221	-2.41	-3.73	237	4.45	238	4.66	236	4.23	238	4.55	237	4.34
104.00	103.79	7.8	218	-2.51	-3.81	237	4.56	237	4.78	236	4.34	237	4.67	236	4.45
105.00	104.78	7.9	216	-2.61	-3.88	236	4.68	237	4.91	235	4.46	236	4.79	236	4.57
106.00	105.77	8.1	213	-2.72	-3.96	235	4.80	236	5.03	235	4.58	236	4.92	235	4.69
107.00	106.76	6.8	214	-2.82	-4.03	235	4.92	236	5.15	234	4.69	235	5.03	235	4.80
108.00	107.75	7.9	209	-2.94	-4.10	234	5.04	235	5.27	234	4.81	235	5.16	234	4.93
109.00	108.75	7.5	212	-3.04	-4.16	234	5.15	235	5.39	233	4.92	234	5.27	233	5.04
110.00	109.74	6.9	212	-3.14	-4.23	233	5.27	234	5.51	233	5.03	234	5.39	233	5.15
111.00	110.73	8.2	213	-3.25	-4.30	233	5.39	234	5.63	232	5.15	233	5.51	233	5.27
112.00	111.72	8.0	208	-3.36	-4.37	232	5.52	233	5.76	232	5.28	233	5.64	232	5.40
113.00	112.71	7.7	213	-3.48	-4.45	232	5.65	233	5.89	231	5.40	232	5.77	232	5.53
114.00	113.70	6.7	216	-3.58	-4.52	232	5.77	232	6.02	231	5.52	232	5.89	231	5.64
115.00	114.69	7.9	217	-3.69	-4.60	231	5.90	232	6.15	231	5.64	232	6.02	231	5.77
116.00	115.69	7.8	216	-3.79	-4.68	231	6.02	232	6.28	230	5.77	231	6.15	231	5.90
117.00	116.68	7.9	219	-3.90	-4.76	231	6.15	231	6.41	230	5.90	231	6.28	230	6.03
118.00	117.67	7.8	216	-4.00	-4.84	230	6.28	231	6.54	230	6.02	231	6.41	230	6.15
119.00	118.66	8.2	213	-4.10	-4.90	230	6.39	231	6.65	229	6.13	230	6.52	230	6.26
120.00	119.65	7.9	219	-4.20	-4.98	230	6.52	230	6.78	229	6.25	230	6.65	229	6.38
121.00	120.65	8.4	217	-4.30	-5.04	230	6.63	230	6.90	229	6.36	230	6.76	229	6.49
122.00	121.64	8.6	217	-4.42	-5.12	229	6.76	230	7.04	229	6.49	230	6.90	229	6.63
123.00	122.63	8.0	216	-4.53	-5.21	229	6.90	230	7.18	228	6.63	229	7.04	229	6.76
124.00	123.62	8.3	218	-4.63	-5.28	229	7.02	229	7.30	228	6.74	229	7.16	228	6.88
125.00	124.61	6.6	214	-4.73	-5.35	229	7.14	229	7.42	228	6.86	229	7.28	228	7.00
126.00	125.60	9.0	218	-4.84	-5.43	228	7.27	229	7.55	228	6.98	229	7.41	228	7.13
127.00	126.59	7.5	214	-4.96	-5.52	228	7.42	229	7.70	227	7.13	228	7.56	228	7.27
128.00	127.58	8.7	217	-5.06	-5.61	228	7.56	229	7.85	227	7.27	228	7.70	228	7.41

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......00
LAST PLOTTED DEPTH......128.00
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....120

PLOT WITH RESPECT TO TRUE NORTH
SCALE 200:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

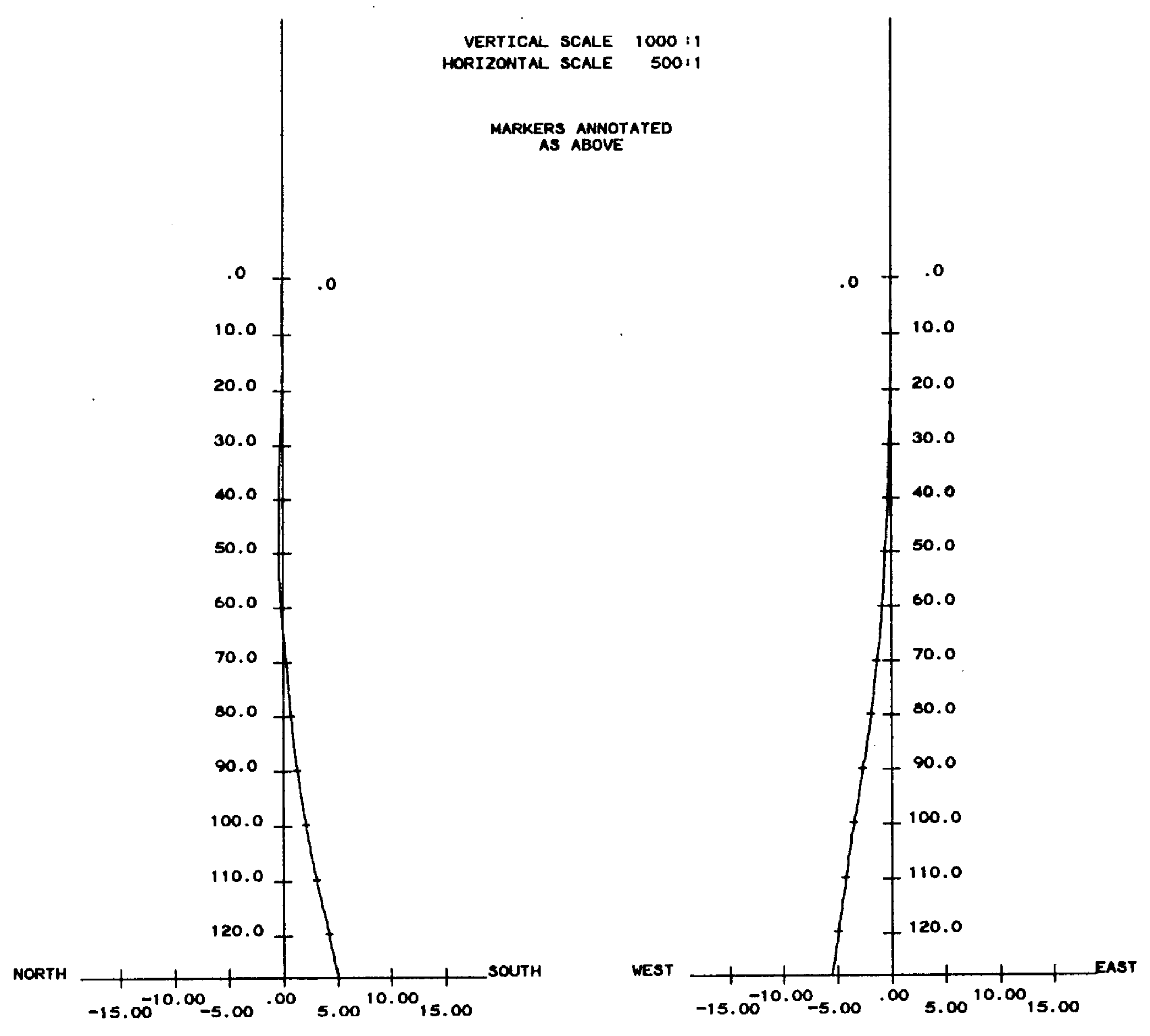
THE LAST PLOTTED DEPTH IS AT 5.06 MS SOUTH, 5.61 MS WEST IE. 7.56 MS FROM THE ORIGIN, 228 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

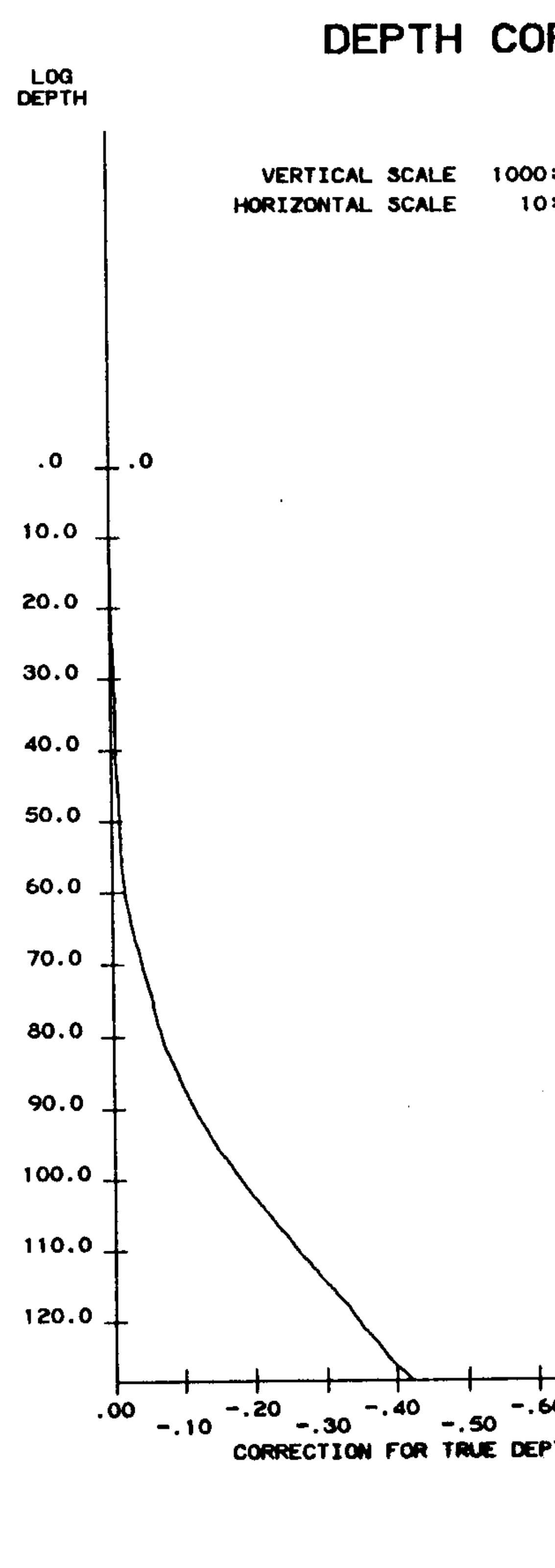
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 500:1

MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 10:1



DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE
1.00	1.00	71.00	70.95
2.00	2.00	72.00	71.95
3.00	3.00	73.00	72.95
4.00	4.00	74.00	73.94
5.00	5.00	75.00	74.94
6.00	6.00	76.00	75.94
7.00	7.00	77.00	76.94
8.00	8.00	78.00	77.94
9.00	9.00	79.00	78.93
10.00	10.00	80.00	79.93
11.00	11.00	81.00	80.93
12.00	12.00	82.00	81.92
13.00	13.00	83.00	82.92
14.00	14.00	84.00	83.91
15.00	15.00	85.00	84.91
16.00	16.00	86.00	85.90
17.00	17.00	87.00	86.90
18.00	18.00	88.00	87.89
19.00	19.00	89.00	88.89
20.00	20.00	90.00	89.88
21.00	21.00	91.00	90.88
22.00	22.00	92.00	91.87
23.00	23.00	93.00	92.87
24.00	24.00	94.00	93.86
25.00	25.00	95.00	94.85
26.00	26.00	96.00	95.85
27.00	27.00	97.00	96.84
28.00	27.99	98.00	97.83
29.00	28.99	99.00	98.83
30.00	29.99	100.00	99.82
31.00	30.99	101.00	100.81
32.00	31.99	102.00	101.80
33.00	32.99	103.00	102.80
34.00	33.99	104.00	103.79
35.00	34.99	105.00	104.78
36.00	35.99	106.00	105.77
37.00	36.99	107.00	106.76
38.00	37.99	108.00	107.75
39.00	38.99	109.00	108.75
40.00	39.99	110.00	109.74
41.00	40.99	111.00	110.73
42.00	41.99	112.00	111.72
43.00	42.99	113.00	112.71
44.00	43.99	114.00	113.70
45.00	44.99	115.00	114.69
46.00	45.99	116.00	115.69
47.00	46.99	117.00	116.68
48.00	47.99	118.00	117.67
49.00	48.99	119.00	118.66
50.00	49.99	120.00	119.65
51.00	50.99	121.00	120.65
52.00	51.99	122.00	121.64
53.00	52.99	123.00	122.63
54.00	53.99	124.00	123.62
55.00	54.99	125.00	124.61
56.00	55.99	126.00	125.60
57.00	56.98	127.00	126.59
58.00	57.98	128.00	127.58
59.00	58.98		
60.00	59.98		
61.00	60.98		
62.00	61.98		
63.00	62.97		
64.00	63.97		
65.00	64.97		
66.00	65.97		
67.00	66.97		
68.00	67.96		
69.00	68.96		
70.00	69.96		

COMPANY	MANALTA
WELL	T93R-07
FIELD	SITE 114
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 114
WELL:
T93R-07
COMPANY:
MANALTA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

COMPANY MANALTA
WELL T93R-07
FIELD SITE 114
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93	
RUN NUMBER	FOUR	
DEPTH-DRILLER	128.9M	
DEPTH-LOGGER	128.2M	
FIRST READING	128M	
LAST READING	0M	
CASING-DRILLER	15.2M	
CASING-LOGGER	15.2M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	15.2M	TD	178MM	N/A	SURFACE	15.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 9:27
FILENAME: DD3AR07B.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 14:15

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

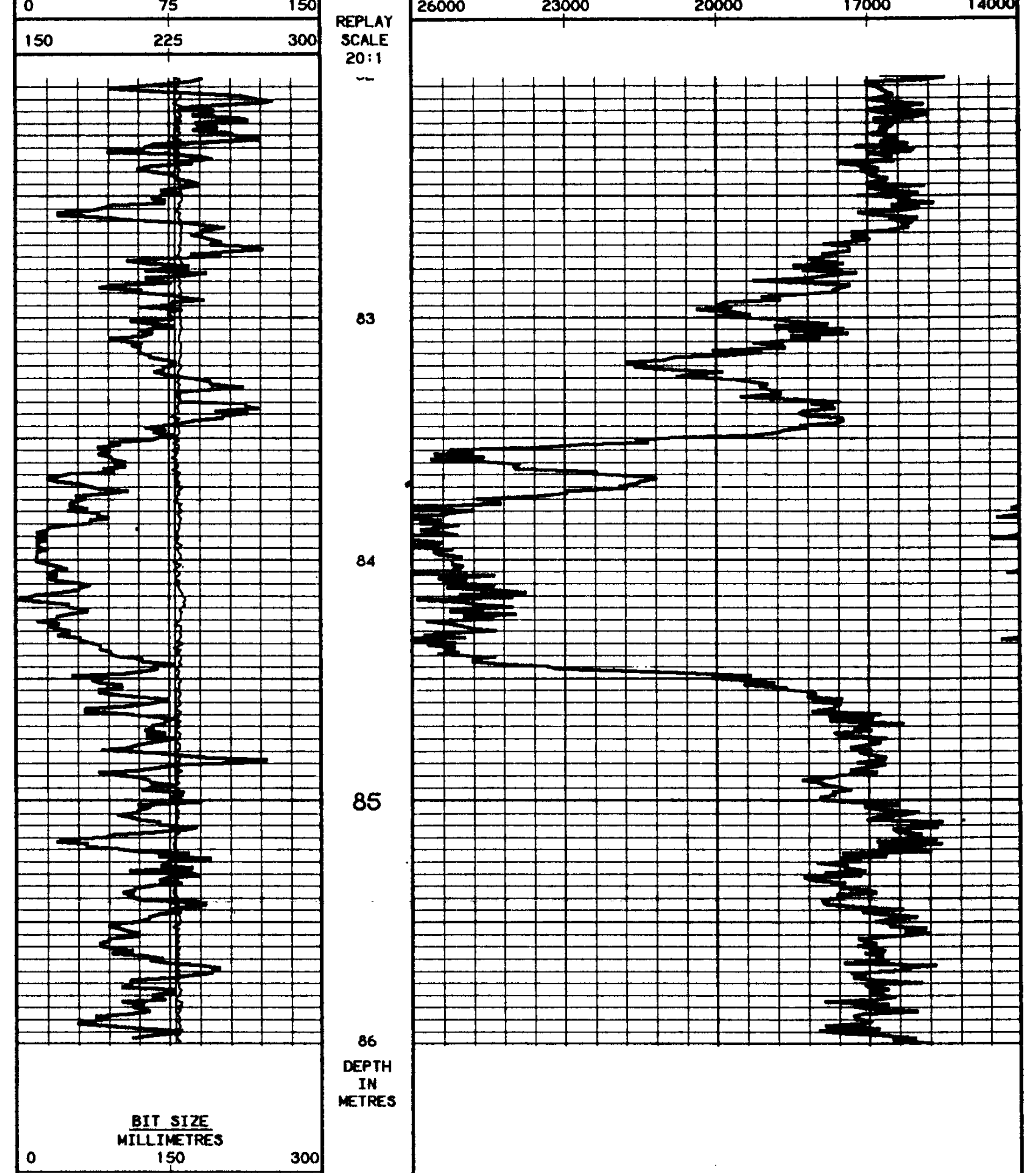
CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 9:27
FILENAME: DD3AR07B.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 14:15

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 9:27
FILENAME: DD3AR07A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 14:13

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

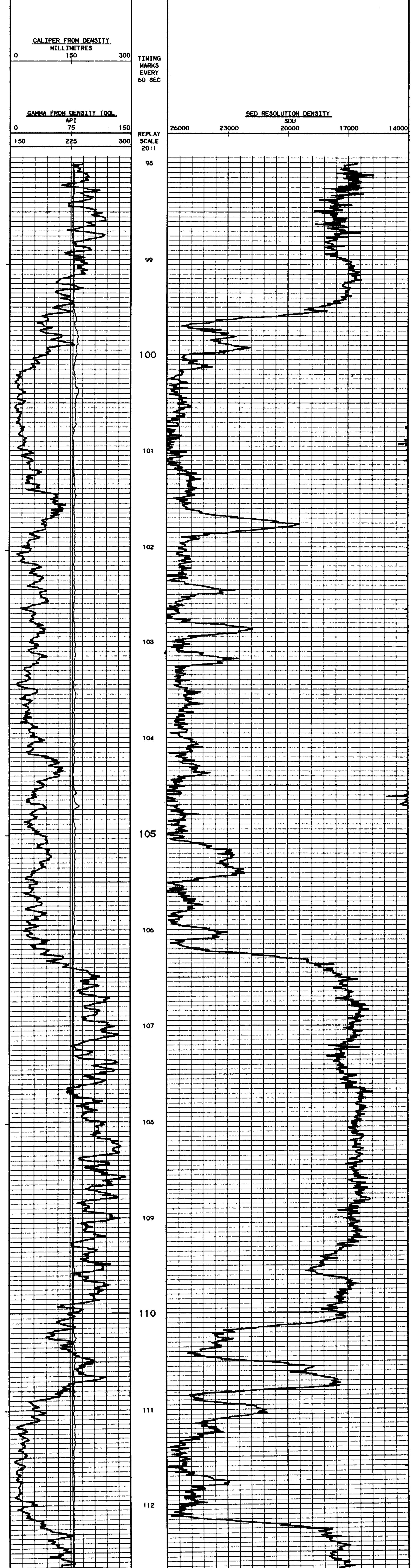
CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

BED RESOLUTION DENSITY
SDU
26000 23000 20000 17000 14000

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 9:27
FILENAME: DD3AR07A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 14:13

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 06-SEP-1993 AT 09:15 DATA LAST REPROCESSED: 6-SEP-1993 AT 11:53

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	15.20
BIT SIZE 3	.00	BIT DEPTH 3	128.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-07
FIELD	SITE 114
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 114
WELL:
T93R-07
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-07
FIELD SITE 114
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	128.9M	
DEPTH-LOGGER	128.2M	
FIRST READING	128M	
LAST READING	0M	
CASING-DRILLER	15.2M	
CASING-LOGGER	15.2M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	00M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	15.2M	TD	178MM	N/A	SURFACE	15.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-SEP-1993 AT 9:27
FILENAME: DD3AR07M.CIB RUN ID: MAIN LOG PLOTTED ON 06-SEP-1993 AT 10:51

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-SEP-1993 AT 9:27
FILENAME: DD3AR07M.CIB RUN ID: MAIN LOG PLOTTED ON 06-SEP-1993 AT 10:51

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 06-SEP-1993 AT 09:15

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	15.20
BIT SIZE 3	.00	BIT DEPTH 3	128.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-07
FIELD	SITE 114
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-07
FIELD	SITE 114
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 114
WELL: T93R-07
COMPANY: MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	6-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	128.9M			
DEPTH-LOGGER	128.2M			
FIRST READING	128M			
LAST READING	0M			
CASING-DRILLER	15.2M			
CASING-LOGGER	15.2M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	15.2M	TD	178MM	N/A	SURFACE	15.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 9:27
FILENAME: DD3AR07B.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 14:01

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

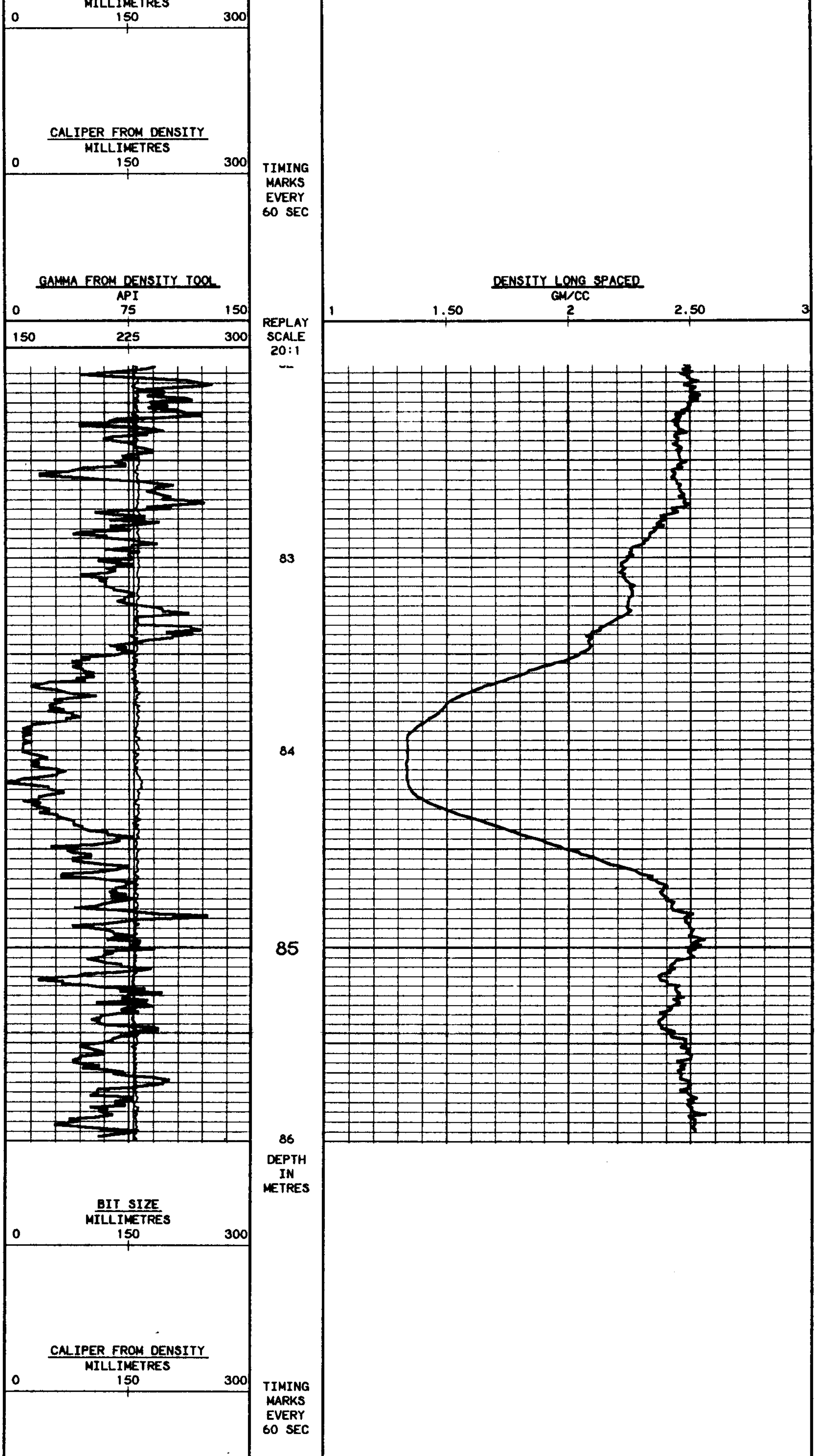
CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3



DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 9:27
FILENAME: DD3AR07B.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 14:01

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 9:27
FILENAME: DD3AR07A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 13:59

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH IN METRES

BIT SIZE
MILLIMETRES
0 150 300

CALIPER FROM DENSITY
MILLIMETRES
0 150 300

TIMING MARKS EVERY 60 SEC

GAMMA FROM DENSITY TOOL
API
0 75 150
150 225 300

REPLAY SCALE 20:1

DENSITY LONG SPACED
GM/CC
1 1.50 2 2.50 3

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 6-SEP-1993 AT 9:27
FILENAME: DD3AR07A.CIB RUN ID: DETAIL SECTION PLOTTED ON 06-SEP-1993 AT 13:59

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 06-SEP-1993 AT 09:15 DATA LAST REPROCESSED: 6-SEP-1993 AT 11:53

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	15.20
BIT SIZE 3	.00	BIT DEPTH 3	128.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-07
FIELD	SITE 114
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY	MANALTA
WELL	T93R-12
FIELD	SITE 116
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 116
LLL:
T93R-12
COMPANY:
MANALTA

LOCATION	LSD	SEC	TWP	RGE	OTHER SERVICES
TELKWA					CCS

PERMANE : DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	8-SEP-93		
RUN NUMBER	ONE		
DEPTH-DRILLER	128.9M		
DEPTH-LOGGER	126M		
FIRST READING	126M		
LAST READING	0M		
CASING-DRILLER	16.3M		
CASING-LOGGER	16.3M		
BIT SIZE	156MM		
HOLE FLUID TYPE	AIR/WATER		
DENS./VISC.	1.01	N/A	
PH/FLUID LOSS	N/A	N/A	
SAMPLE SOURCE			
RM @ MEAS TEMP			
RMF @ MEAS TEMP			
RMC @ MEAS TEMP			
SOURCE: RMF/RMC			
RM @ BHT			
TIME SINCE CIRC			
MAX REC TEMP			
EQUIPMENT/BASE	V222	RDR	
RECORDED BY	B.STEVENSON		
WITNESSED BY	T. BRAZZONI		
WATER LEVEL	00M		

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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T93R-12                          VERTICALITY DATA LISTING                       DATE PROCESSED:  8-SEP-1993
                         ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH            DATE LOGGED:     8-SEP-1993
    DEPTHS          BOREHOLE   AXIAL CO-ORDS    POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG      TRUE     TILT AZI   NORTH     EAST BRG   RADIUS BRG   RADIUS BRG   RADIUS BRG   RADIUS BRD   RADIUS

   1.00     1.00    2.0 143    -0.03     0.00 177    0.03 177    0.03 178    0.03 177    0.03 178      0.03
   2.00     2.00    0.5 238    -0.04    -0.02 204    0.04 205    0.05 203    0.04 205    0.04 204      0.04
   3.00     3.00    0.4  43    -0.04    -0.02 204    0.04 204    0.05 203    0.04 204    0.04 204      0.04
   4.00     4.00    0.6 286    -0.04    -0.02 206    0.05 207    0.05 205    0.04 207    0.05 206      0.04
   5.00     5.00    0.3 350    -0.04    -0.02 205    0.05 206    0.05 204    0.04 206    0.05 205      0.04
   6.00     6.00    0.7 283    -0.04    -0.03 214    0.05 217    0.06 210    0.04 216    0.05 212      0.05
   7.00     7.00    0.4 295    -0.04    -0.03 222    0.05 227    0.06 216    0.04 225    0.06 219      0.05
   8.00     8.00    0.5 286    -0.04    -0.04 229    0.06 234    0.07 222    0.05.232    0.06 226      0.05
   9.00     9.00    0.7 279    -0.04    -0.05 236    0.06 241    0.08 227    0.05 238    0.07 232      0.06
  10.00    10.00    0.3 307    -0.03    -0.06 244    0.06 250    0.08 234    0.05 247    0.07 240      0.06
  11.00    11.00    0.2 282    -0.03    -0.06 244    0.07 250    0.09 235    0.05 247    0.08 240      0.06
  12.00    12.00    1.2 263    -0.03    -0.07 247    0.07 252    0.10 238    0.05 249    0.09 243      0.06
  13.00    13.00    1.2   1    -0.02    -0.08 256    0.08 260    0.11 250    0.06 258    0.09 253      0.07
  14.00    14.00    0.6  13     0.00    -0.08 268    0.08 271    0.10 263    0.06 269    0.09 266      0.07
  15.00    15.00    0.1   6     0.00    -0.08 273    0.08 277    0.10 267    0.06 275    0.09 270      0.07
  16.00    16.00    0.3 267     0.01    -0.08 274    0.08 277    0.11 266    0.06 276    0.10 271      0.07
  17.00    17.00    0.9 222     0.00    -0.09 272    0.09 275    0.11 265    0.06 274    0.10 269      0.07
  18.00    18.00    0.7 230    -0.01    -0.10 266    0.10 269    0.13 259    0.07 268    0.11 263      0.09
  19.00    19.00    0.7 236    -0.01    -0.11 263    0.11 266    0.14 257    0.08 264    0.13 260      0.10
  20.00    20.00    0.3 194    -0.02    -0.12 260    0.12 263    0.15 255    0.09 262    0.14 258      0.10
  21.00    21.00    0.9 239    -0.02    -0.12 259    0.13 262    0.16 254    0.09 260    0.14 257      0.11
  22.00    22.00    1.5 263    -0.03    -0.14 258    0.14 260    0.18 254    0.10 259    0.16 256      0.12
  23.00    23.00    1.2 258    -0.04    -0.16 257    0.16 259    0.21 254    0.12 258    0.18 256      0.14
  24.00    24.00    0.9 245    -0.04    -0.18 257    0.18 259    0.23 254    0.13 258    0.20 256      0.16
  25.00    25.00    0.8 248    -0.05    -0.19 256    0.19 258    0.24 253    0.14 257    0.22 255      0.17
  26.00    26.00    0.6 247    -0.05    -0.20 256    0.21 258    0.26 253    0.15 257    0.24 255      0.18
  27.00    27.00    0.7 253    -0.05    -0.22 256    0.22 257    0.28 253    0.17 257    0.25 255      0.19
  28.00    28.00    0.4 286    -0.06    -0.23 256    0.24 258    0.30 254    0.17 257    0.27 255      0.21
  29.00    29.00    0.8 274    -0.05    -0.25 258    0.25 259    0.32 255    0.19 258    0.28 257      0.22
  30.00    30.00    1.0 257    -0.06    -0.27 258    0.27 259    0.34 256    0.20 258    0.31 257      0.24
  31.00    31.00    0.9 255    -0.06    -0.28 258    0.29 259    0.36 256    0.22 258    0.32 257      0.25
  32.00    32.00    0.7 251    -0.06    -0.29 258    0.30 259    0.37 256    0.23 258    0.34 257      0.26
  33.00    33.00    0.7 291    -0.06    -0.30 258    0.31 259    0.39 256    0.23 259    0.35 257      0.27
  34.00    34.00    0.7 289    -0.06    -0.31 259    0.32 260    0.40 257    0.24 260    0.36 258      0.28
  35.00    35.00    0.7 306    -0.06    -0.32 260    0.33 261    0.41 258    0.24 261    0.37 259      0.28
  36.00    36.00    0.6 321    -0.05    -0.33 261    0.33 263    0.42 259    0.25 262    0.38 260      0.29
  37.00    37.00    0.6 327    -0.04    -0.34 263    0.34 264    0.43 260    0.25 263    0.39 262      0.30
  38.00    38.00    0.4 317    -0.04    -0.34 264    0.35 265    0.44 262    0.25 265    0.39 263      0.30
  39.00    39.00    0.7 318    -0.03    -0.35 265    0.35 267    0.45 263    0.26 266    0.40 264      0.31
  40.00    40.00    0.6 336    -0.02    -0.36 267    0.36 268    0.45 264    0.26 268    0.40 266      0.31
  41.00    41.00    0.5 341    -0.01    -0.36 268    0.36 270    0.46 266    0.26 269    0.41 267      0.31
  42.00    42.00    0.9 350     0.00    -0.36 270    0.36 272    0.46 267    0.26 271    0.41 269      0.31
  43.00    43.00    0.7 355     0.01    -0.37 272    0.37 273    0.47 269    0.27 273    0.42 271      0.32
  44.00    44.00    0.8 344     0.02    -0.37 274    0.37 275    0.47 271    0.27 275    0.42 273      0.32
  45.00    45.00    0.7 338     0.04    -0.37 275    0.37 277    0.48 273    0.27 276    0.43 274      0.32
  46.00    46.00    0.9   1     0.05    -0.38 277    0.38 279    0.48 275    0.27 278    0.43 276      0.33
  47.00    47.00    1.0   6     0.07    -0.37 280    0.38 281    0.49 278    0.27 281    0.43 279      0.33
  48.00    47.99    1.0  21     0.08    -0.37 282    0.38 284    0.49 281    0.27 283    0.43 282      0.33
  49.00    48.99    0.9  16     0.10    -0.37 285    0.38 286    0.49 284    0.27 286    0.43 285      0.33
  50.00    49.99    1.3  29     0.12    -0.36 289    0.38 289    0.48 288    0.27 289    0.43 289      0.32
  51.00    50.99    1.8  44     0.15    -0.34 293    0.37 293    0.48 293    0.26 293    0.42 293      0.32
  52.00    51.99    1.9  49     0.17    -0.32 298    0.36 297    0.46 299    0.26 297    0.41 298      0.31
  53.00    52.99    1.5  51     0.18    -0.29 302    0.35 301    0.45 304    0.24 301    0.40 303      0.29
  54.00    53.99    1.9  46     0.20    -0.27 306    0.34 304    0.44 310    0.24 305    0.39 308      0.29
  55.00    54.99    1.9  52     0.22    -0.24 313    0.33 310    0.43 318    0.23 311    0.38 315      0.28
  56.00    55.99    2.2  63     0.24    -0.22 318    0.33 315    0.42 325    0.23 316    0.37 321      0.28
  57.00    56.99    2.3  65     0.26    -0.18 326    0.32 321    0.41 335    0.23 323    0.36 330      0.27
  58.00    57.99    2.6  74     0.28    -0.14 334    0.32 327    0.40 345    0.24 330    0.36 339      0.27
  59.00    58.99    2.1  73     0.30    -0.10 342    0.31 334    0.39 355    0.24 338    0.35 348      0.28
  60.00    59.99    3.2  72     0.31    -0.05 352    0.31 342    0.39   6    0.25 347    0.35 358      0.28
  61.00    60.99    3.1  87     0.32     0.01   1    0.32 351    0.38  16    0.27 356    0.35   8      0.29
  62.00    61.98    2.7  87     0.33     0.06  10    0.33 359    0.38  25    0.29   4    0.36  17      0.31
  63.00    62.98    2.6  93     0.33     0.11  18    0.34   7    0.39  32    0.32  12    0.37  25      0.33
  64.00    63.98    2.3  89     0.33     0.15  25    0.36  14    0.40  38    0.34  19    0.38  31      0.35
  65.00    64.98    1.7  89     0.33     0.19  30    0.38  19    0.41  42    0.36  24    0.39  36      0.37
  66.00    65.98    2.9  49     0.35     0.22  32    0.41  22    0.44  43    0.39  27    0.42  37      0.40
  67.00    66.98    3.3  77     0.37     0.26  35    0.45  26    0.48  45    0.44  31    0.47  40      0.44
  68.00    67.98    2.4  78     0.38     0.31  39    0.49  31    0.51  48    0.47  35    0.50  44      0.48
  69.00    68.98    3.0  86     0.39     0.36  43    0.52  35    0.55  51    0.51  39    0.54  47      0.52
  70.00    69.98    3.1  73     0.39     0.40  46    0.56  39    0.58  53    0.55  42    0.57  49      0.55
  71.00    70.97    2.9  65     0.41     0.45  48    0.61  41    0.63  55    0.59  44    0.62  51      0.60
  72.00    71.97    3.7  66     0.43     0.50  49    0.66  44    0.68  56    0.65  46    0.67  53      0.65
  73.00    72.97    3.7  79     0.45     0.56  51    0.72  46    0.74  57    0.70  49    0.73  54      0.71
  74.00    73.97    4.4  78     0.47     0.64  54    0.79  49    0.81  59    0.77  51    0.80  56      0.78
  75.00    74.96    5.0  77     0.49     0.71  55    0.86  51    0.89  60    0.84  53    0.87  58      0.85
  76.00    75.96    5.3  82     0.51     0.79  57    0.94  53    0.97  61    0.92  55    0.95  59      0.93
  77.00    76.96    5.1  76     0.53     0.87  59    1.02  55    1.05  63    1.00  57    1.04  61      1.01
  78.00    77.95    5.0  75     0.55     0.96  60    1.11  57    1.13  64    1.08  58    1.12  62      1.09
  79.00    78.95    5.3  83     0.57     1.05  61    1.19  58    1.22  65    1.17  60    1.21  63      1.18
  80.00    79.95    5.2  80     0.59     1.13  63    1.28  60    1.31  66    1.25  61    1.29  64      1.26
  81.00    80.94    4.7  86     0.60     1.23  64    1.36  61    1.40  67    1.33  63    1.38  66      1.35
  82.00    81.94    4.2  92     0.60     1.32  66    1.45  63    1.48  68    1.42  64    1.47  67      1.43
  83.00    82.93    5.5  89     0.60     1.42  67    1.54  65    1.58  70    1.51  66    1.56  68      1.53
  84.00    83.93    6.4  89     0.60     1.52  68    1.64  66    1.67  71    1.60  67    1.66  70      1.62
  85.00    84.92    5.8  96     0.60     1.63  70    1.74  68    1.78  72    1.70  69    1.76  71      1.72
  86.00    85.91    5.9  96     0.59     1.74  71    1.84  69    1.88  73    1.80  70    1.86  72      1.82
  87.00    86.91    6.6  96     0.58     1.85  73    1.94  71    1.98  74    1.90  72    1.96  73      1.92
  88.00    87.90    6.2  93     0.57     1.96  74    2.04  72    2.09  75    2.00  73    2.07  75      2.02
  89.00    88.90    6.6  91     0.57     2.07  75    2.14  73    2.19  76    2.10  74    2.17  75      2.12
  90.00    89.89    6.4  88     0.57     2.17  75    2.25  74    2.30  77    2.20  75    2.27  76      2.22
  91.00    90.88    5.6  97     0.57     2.29  76    2.36  75    2.41  78    2.31  75    2.38  77      2.33
  92.00    91.88    5.4  95     0.56     2.39  77    2.46  75    2.51  78    2.41  76    2.49  78      2.43
  93.00    92.87    7.0  93     0.55     2.51  78    2.56  76    2.62  79    2.51  77    2.59  78      2.54
  94.00    93.87    5.9 100     0.53     2.62  79    2.68  77    2.73  80    2.62  78    2.70  79      2.65
  95.00    94.86    7.1 100     0.51     2.74  79    2.79  78    2.85  81    2.73  79    2.82  80      2.76
  96.00    95.85    7.2 104     0.49     2.86  80    2.91  79    2.97  82    2.84  80    2.94  81      2.87
  97.00    96.84    7.4  99     0.47     2.98  81    3.02  80    3.08  82    2.95  80    3.05  82      2.99
  98.00    97.83    6.5 103     0.45     3.11  82    3.14  81    3.21  83    3.07  81    3.17  82      3.10
  99.00    98.83    6.9  97     0.43     3.22  82    3.25  81    3.32  84    3.18  82    3.28  83      3.21
 100.00    99.82    7.9 100     0.41     3.34  83    3.37  82    3.44  84    3.29  83    3.40  84      3.33
 101.00   100.81    6.9 103     0.38     3.47  84    3.49  83    3.56  85    3.41  83    3.52  84      3.45
 102.00   101.80    7.5 104     0.35     3.58  84    3.60  84    3.67  85    3.52  84    3.64  85      3.56
 103.00   102.80    6.8 105     0.32     3.70  85    3.71  84    3.79  86    3.63  85    3.75  86      3.67
 104.00   103.79    7.0 104     0.29     3.82  86    3.83  85    3.91  87    3.74  85    3.87  86      3.79
 105.00   104.78    7.9 102     0.26     3.95  86    3.96  85    4.05  87    3.87  86    4.00  87      3.92
 106.00   105.77    7.8  97     0.23     4.07  87    4.08  86    4.17  88    3.99  86    4.12  87      4.04
 107.00   106.76    7.0 103     0.21     4.20  87    4.21  86    4.30  88    4.11  87    4.25  88      4.16
 108.00   107.76    7.2  93     0.19     4.33  87    4.33  87    4.43  88    4.24  87    4.38  88      4.28
 109.00   108.75    6.9  93     0.18     4.45  88    4.46  87    4.55  88    4.36  87    4.50  88      4.41
 110.00   109.74    7.3  94     0.17     4.57  88    4.57  87    4.67  89    4.47  88    4.62  88      4.52
 111.00   110.73    6.7  96     0.16     4.68  88    4.69  87    4.79  89    4.58  88    4.74  88      4.63
 112.00   111.73    7.0  98     0.15     4.80  88    4.81  88    4.91  89    4.70  88    4.86  89      4.75
 113.00   112.72    3.3 109     0.14     4.90  88    4.90  88    5.01  89    4.79  88    4.96  89      4.85
 114.00   113.72    6.9  97     0.12     5.01  89    5.01  88    5.12  89    4.90  88    5.07  89      4.95
 115.00   114.71    6.6 100     0.11     5.12  89    5.12  88    5.24  89    5.01  89    5.18  89      5.06
 116.00   115.70    6.2 108     0.08     5.22  89    5.22  89    5.34  90    5.10  89    5.28  89      5.16
 117.00   116.70    6.4 106     0.05     5.32  89    5.32  89    5.45  90    5.20  89    5.38  90      5.26
 118.00   117.69    5.7  99     0.03     5.42  90    5.42  89    5.55  90    5.30  89    5.49  90      5.36
 119.00   118.69    6.7  99     0.01     5.53  90    5.53  89    5.66  91    5.41  90    5.60  90      5.47
 120.00   119.68    7.6  99    -0.01     5.66  90    5.66  90    5.79  91    5.52  90    5.72  90      5.59
 121.00   120.67    7.9 101    -0.04     5.78  90    5.78  90    5.92  91    5.64  90    5.85  91      5.71
 122.00   121.66    6.6 102    -0.07     5.90  91    5.90  90    6.04  91    5.76  90    5.97  91      5.83
 123.00   122.65    8.2 102    -0.10     6.03  91    6.03  90    6.18  91    5.89  91    6.11  91      5.96
 124.00   123.64    7.5 101    -0.13     6.17  91    6.17  91    6.32  92    6.03  91    6.24  91      6.10
 125.00   124.63    7.7 100    -0.15     6.30  91    6.31  91    6.45  92    6.16  91    6.38  92      6.23
 126.00   125.51 ****** ***    -0.19     6.52  92    6.52  91    6.67  92    6.37  91    6.60  92      6.45
```
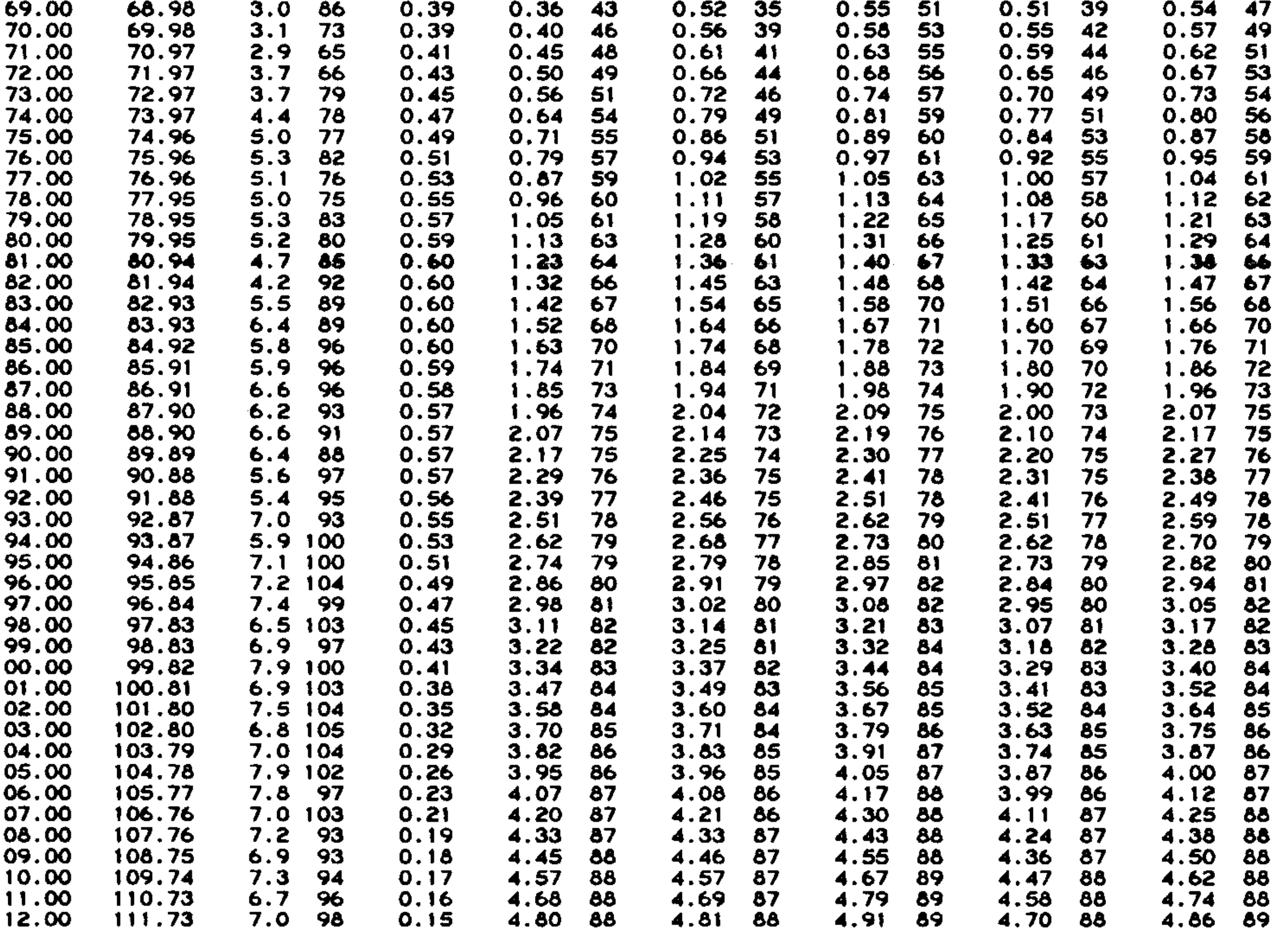

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......00
LAST PLOTTED DEPTH......126.00
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....120

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

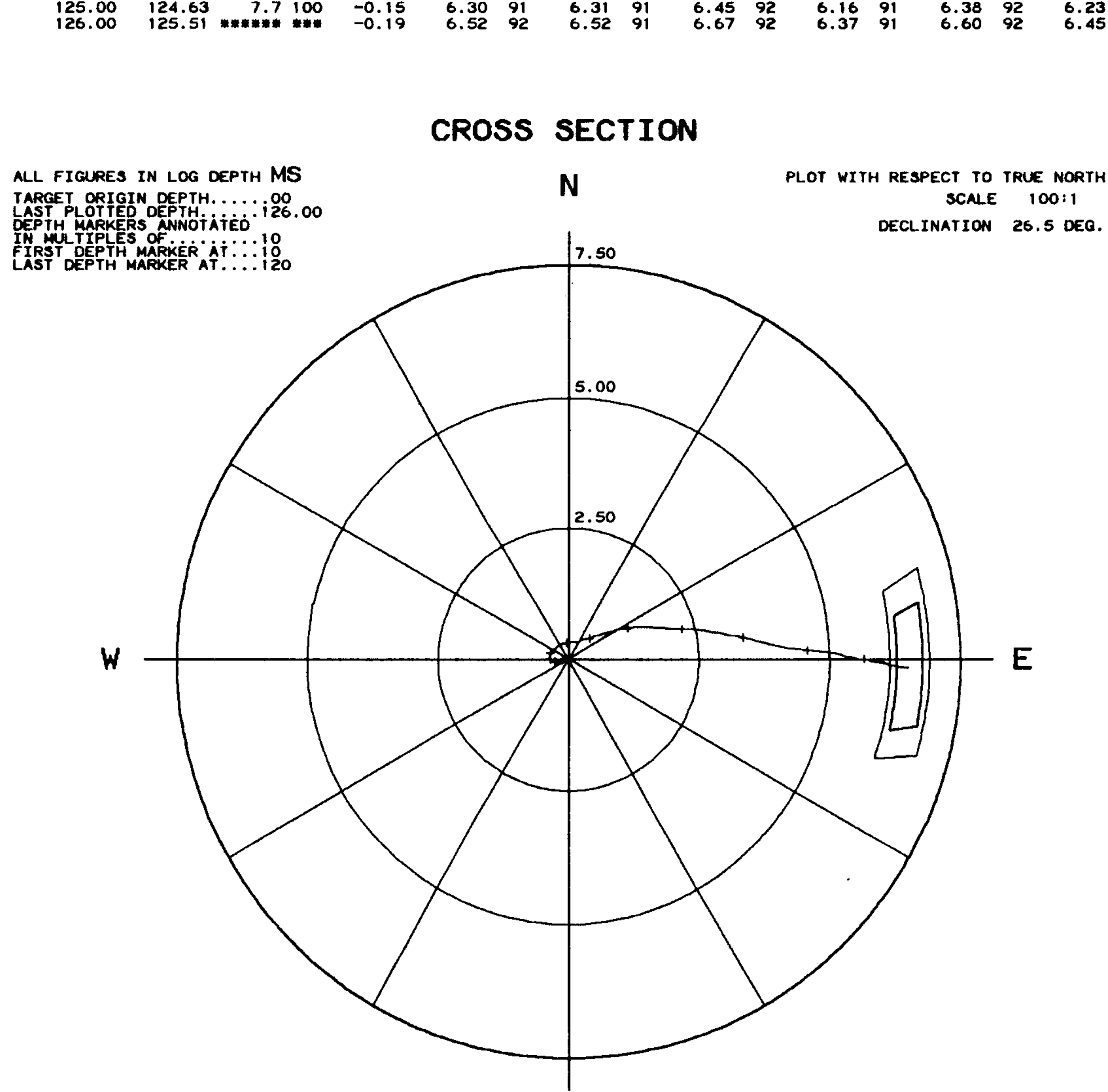
THE LAST PLOTTED DEPTH IS AT .19 MS SOUTH, 6.52 MS EAST IE. 6.52 MS FROM THE ORIGIN, 92 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

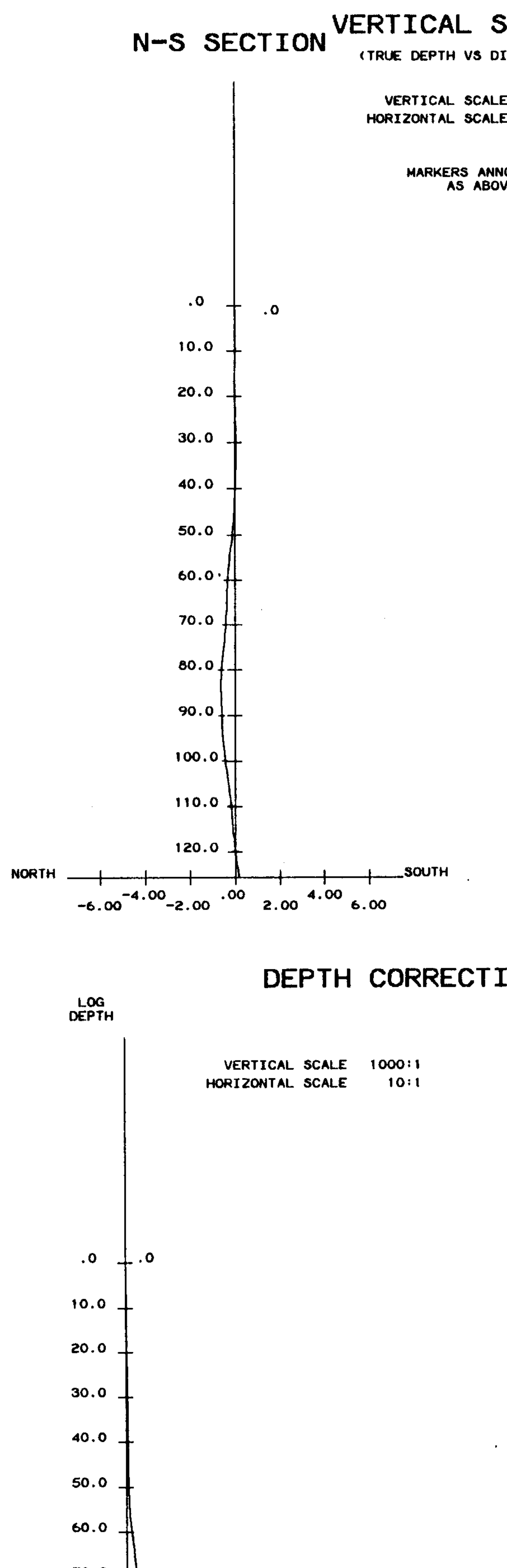
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 200:1

MARKERS ANNOTATED AS ABOVE



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 10:1



DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE
1.00	1.00	71.00	70.97
2.00	2.00	72.00	71.97
3.00	3.00	73.00	72.97
4.00	4.00	74.00	73.97
5.00	5.00	75.00	74.96
6.00	6.00	76.00	75.96
7.00	7.00	77.00	76.96
8.00	8.00	78.00	77.95
9.00	9.00	79.00	78.95
10.00	10.00	80.00	79.95
11.00	11.00	81.00	80.94
12.00	12.00	82.00	81.94
13.00	13.00	83.00	82.93
14.00	14.00	84.00	83.93
15.00	15.00	85.00	84.92
16.00	16.00	86.00	85.91
17.00	17.00	87.00	86.91
18.00	18.00	88.00	87.90
19.00	19.00	89.00	88.90
20.00	20.00	90.00	89.89
21.00	21.00	91.00	90.88
22.00	22.00	92.00	91.88
23.00	23.00	93.00	92.87
24.00	24.00	94.00	93.87
25.00	25.00	95.00	94.86
26.00	26.00	96.00	95.85
27.00	27.00	97.00	96.84
28.00	28.00	98.00	97.83
29.00	29.00	99.00	98.83
30.00	30.00	100.00	99.82
31.00	31.00	101.00	100.81
32.00	32.00	102.00	101.80
33.00	33.00	103.00	102.80
34.00	34.00	104.00	103.79
35.00	35.00	105.00	104.78
36.00	36.00	106.00	105.77
37.00	37.00	107.00	106.76
38.00	38.00	108.00	107.76
39.00	39.00	109.00	108.75
40.00	40.00	110.00	109.74
41.00	41.00	111.00	110.73
42.00	42.00	112.00	111.73
43.00	43.00	113.00	112.72
44.00	44.00	114.00	113.72
45.00	45.00	115.00	114.71
46.00	46.00	116.00	115.70
47.00	47.00	117.00	116.70
48.00	47.99	118.00	117.69
49.00	48.99	119.00	118.69
50.00	49.99	120.00	119.68
51.00	50.99	121.00	120.67
52.00	51.99	122.00	121.66
53.00	52.99	123.00	122.65
54.00	53.99	124.00	123.64
55.00	54.99	125.00	124.63
56.00	55.99	126.00	125.51
57.00	56.99		
58.00	57.99		
59.00	58.99		
60.00	59.99		
61.00	60.99		
62.00	61.98		
63.00	62.98		
64.00	63.98		
65.00	64.98		
66.00	65.98		
67.00	66.98		
68.00	67.98		
69.00	68.98		
70.00	69.98		

COMPANY	MANALTA
WELL	T93R-12
FIELD	SITE 116
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 116
WELL:
T93R-12
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-12
FIELD SITE 116
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	8-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	128.9M			
DEPTH-LOGGER	126.0M			
FIRST READING	125.0M			
LAST READING	0M			
CASING-DRILLER	16.3M			
CASING-LOGGER	16.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	16.3M	TD	178MM	N/A	SURFACE	16.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12M.CIB RUN ID: MAIN LOG PLOTTED ON 08-SEP-1993 AT 17:05

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12M.CIB RUN ID: MAIN LOG PLOTTED ON 08-SEP-1993 AT 16:37

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 08-SEP-1993 AT 16:20

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	16.30
BIT SIZE 3	.00	BIT DEPTH 3	128.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-12
FIELD	SITE 116
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 116
WELL: T93R-12
COMPANY: MANALTA

COMPANY MANALTA
WELL T93R-12
FIELD SITE 116
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION	OTHER SERVICES
TELKWA	VERT

LSD	SEC	TWP	RGE

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	8-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	128.9M			
DEPTH-LOGGER	126.0M			
FIRST READING	125.0M			
LAST READING	0M			
CASING-DRILLER	16.3M			
CASING-LOGGER	16.3M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	16.3M	TD	178MM	N/A	SURFACE	16.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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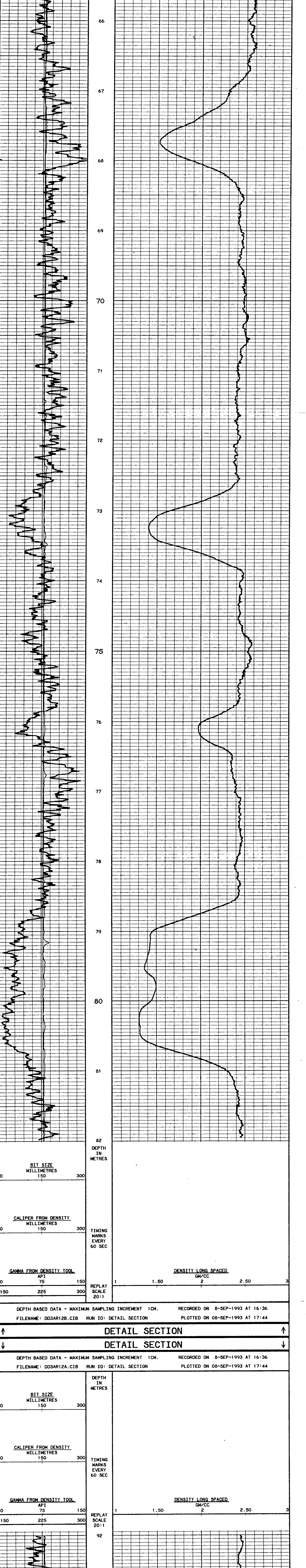
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12B.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 17:47



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12B.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 17:44

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 17:44

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 17:39

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 08-SEP-1993 AT 16:20 DATA LAST REPROCESSED: 8-SEP-1993 AT 17:38

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	16.30
BIT SIZE 3	.00	BIT DEPTH 3	128.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-12
FIELD	SITE 116
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION	TELKWA
PRVNC/CO.	BRITISH COLUMBIA
FIELD	SITE 116
WELL:	T93R-12
COMPANY:	MANALTA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-12
FIELD	SITE 116
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	8-SEP-93				
RUN NUMBER	FOUR				
DEPTH-DRILLER	128.9M				
DEPTH-LOGGER	126.0M				
FIRST READING	125.0M				
LAST READING	0M				
CASING-DRILLER	16.3M				
CASING-LOGGER	16.3M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE					
RM @ MEAS TEMP					
RMF @ MEAS TEMP					
RMC @ MEAS TEMP					
SOURCE: RMF/RMC					
RM @ BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	B.STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	OOM				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	16.3M	TD	178MM	N/A	SURFACE	16.3M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY , GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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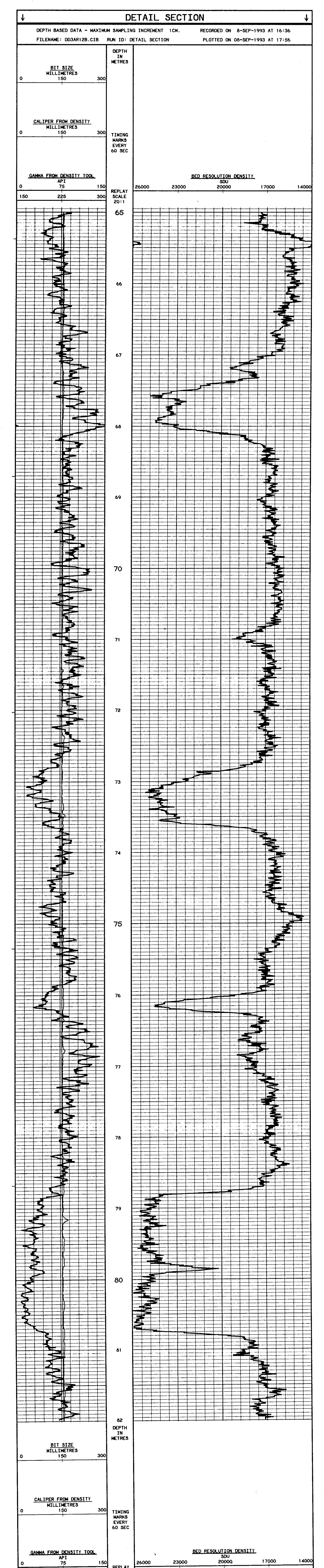
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12B.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 17:56



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12B.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 17:56

↑ DETAIL SECTION ↑

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 17:53

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 8-SEP-1993 AT 16:36
FILENAME: DD3AR12A.CIB RUN ID: DETAIL SECTION PLOTTED ON 08-SEP-1993 AT 17:53

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 08-SEP-1993 AT 16:20 DATA LAST REPROCESSED: 8-SEP-1993 AT 17:38

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	16.30
BIT SIZE 3	.00	BIT DEPTH 3	128.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-12
FIELD	SITE 116
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION	TELKWA
PRVNC/CO.	BRITISH COLUMBIA
FIELD	
WELL:	T93R-16
COMPANY:	MANALTA

LONG SPACED NEUTRON
GAMMA RAY

#879

COMPANY	MANALTA
WELL	T93R-16
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA
LOCATION	TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	11-SEP-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	29.6M			
DEPTH-LOGGER	29.0M			
FIRST READING	29.0M			
LAST READING	00M			
CASING-DRILLER	NIL			
CASING-LOGGER	NIL			
BIT SIZE	216MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	00M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	216MM	SURFACE	TD	N/A	N/A		

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
DSN	515			

REMARKS

LONG SPACED NEUTRON GAMMA RAY

DUE TO BOREHOLE CONDITIONS NEUTRON RUN THROUGH RODS.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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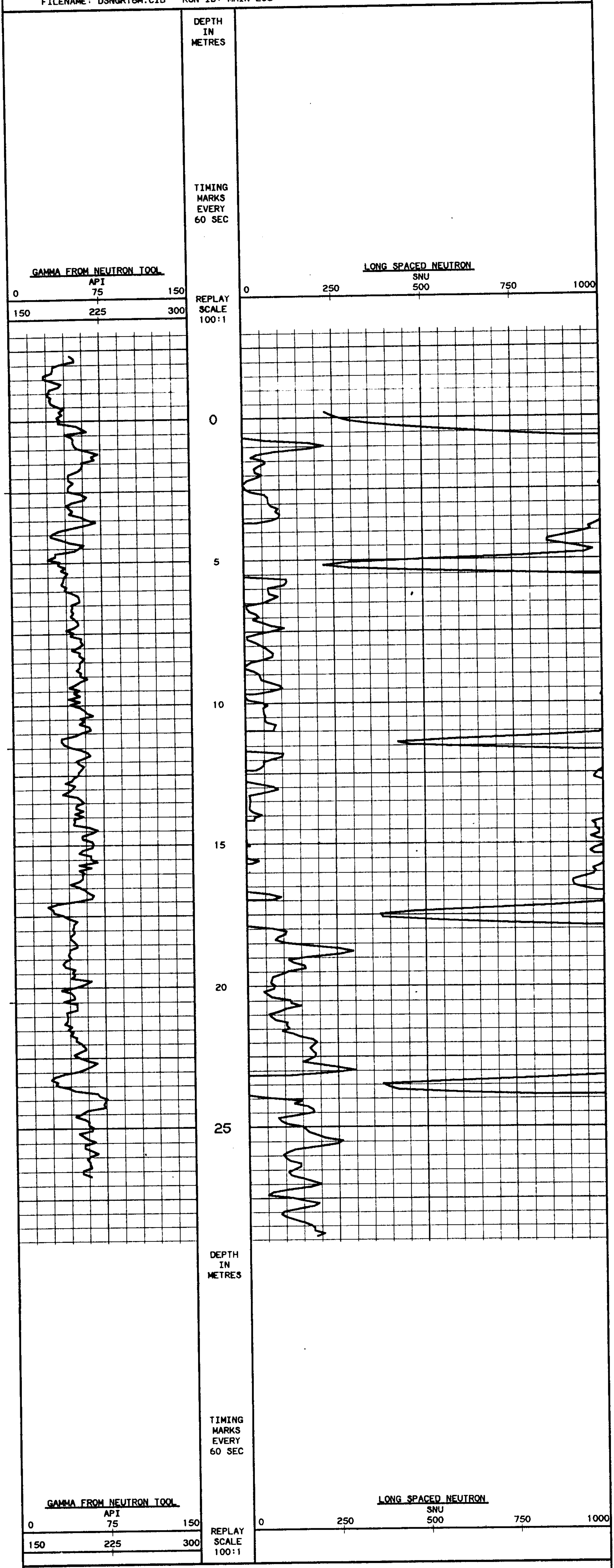
↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 11-SEP-1993 AT 13:20
FILENAME: DSNGR16M.CIB RUN ID: MAIN LOG PLOTTED ON 11-SEP-1993 AT 21:16



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 11-SEP-1993 AT 13:20
FILENAME: DSNGR16M.CIB RUN ID: MAIN LOG PLOTTED ON 11-SEP-1993 AT 21:16

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 11-SEP-1993 AT 13:08

LOGGING CONSTANTS AND BIT SIZE MEASUREMENTS

POROSITY EQUATION TYPE	1 CURIE	NEUTRON POROSITY MATRIX	SANDSTNE
CALIPER SOURCE FOR PROCESSING	BIT SIZE	CALIPER UNITS (INS/MM)	MILLIMTR
CALIPER ARM LENGTH (CM)	29.60	ANNULAR VOLUME DIAMETER	127.05
BIT DEPTH UNITS (M/FT)	METRES		
BIT SIZE 1	215.99	BIT DEPTH 1	0.00
BIT SIZE 2	0.00	BIT DEPTH 2	29.60
BIT SIZE 3	0.00	BIT DEPTH 3	0.00
BIT SIZS 4	0.00	BIT DEPTH 4	0.00
BIT SIZE 5	0.00	BIT DEPTH 5	0.00

CALIBRATION CONSTANTS

GAMMA	CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	299.00
LSN	CALIBRATOR VALUE 1	235.00	LSN COUNT RATE 1	284.80
LSN	CALIBRATOR VALUE 2	0.00	LSN COUNT RATE 2	0.00
SSN	CALIBRATOR VALUE 1	1040.00	SSN COUNT RATE 1	128.90
SSN	CALIBRATOR VALUE 2	0.00	SSN COUNT RATE 2	0.00
CALIPER	RING SIZE 1	76.23	CALIPER COUNT FOR RING 1	598.00
CALIPER	RING SIZE 2	101.64	CALIPER COUNT FOR RING 2	657.00
CALIPER	RING SIZE 3	127.05	CALIPER COUNT FOR RING 3	719.00
CALIPER	RING SIZE 4	152.46	CALIPER COUNT FOR RING 4	781.00
CALIPER	RING SIZE 5	203.28	CALIPER COUNT FOR RING 5	846.00
CALIPER	RING SIZE 6	254.10	CALIPER COUNT FOR RING 6	905.00

COMPANY	MANALTA
WELL	T93R-16
FIELD	
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

[illegible]

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 119
WELL:
T93R-17
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-17
FIELD SITE 119
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	12-SEP-93			
RUN NUMBER	TWO			
DEPTH-DRILLER	128.9			
DEPTH-LOGGER	127.0M			
FIRST READING	126M			
LAST READING	0M			
CASING-DRILLER	5.2M			
CASING-LOGGER	5.2M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	16.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	5.2M	TD	178MM	N/A	SURFACE	5.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 12-SEP-1993 AT 13:36
FILENAME: DD3AR17M.CIB RUN ID: MAIN LOG PLOTTED ON 13-SEP-1993 AT 12:54

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 12-SEP-1993 AT 13:36
FILENAME: DD3AR17M.CIB RUN ID: MAIN LOG PLOTTED ON 13-SEP-1993 AT 12:54

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 12-SEP-1993 AT 13:34

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.20
BIT SIZE 3	.00	BIT DEPTH 3	128.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-17
FIELD	SITE 119
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-17
FIELD	SITE 119
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 119
WELL: T93R-17
COMPANY: MANALTA

LOCATION				OTHER SERVICES
TELKWA				VERT
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	12-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	128.9			
DEPTH-LOGGER	127.0M			
FIRST READING	126M			
LAST READING	0M			
CASING-DRILLER	5.2M			
CASING-LOGGER	5.2M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	16.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	5.2M	TD	178MM	N/A	SURFACE	5.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 12-SEP-1993 AT 13:36
FILENAME: DD3AR17A.CIB RUN ID: DETAIL SECTION PLOTTED ON 13-SEP-1993 AT 12:38

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 12-SEP-1993 AT 13:36
FILENAME: DD3AR17A.CIB RUN ID: DETAIL SECTION PLOTTED ON 13-SEP-1993 AT 12:38

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 12-SEP-1993 AT 13:34 DATA LAST REPROCESSED: 13-SEP-1993 AT 12:28

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.20
BIT SIZE 3	.00	BIT DEPTH 3	128.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
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CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-17
FIELD	SITE 119
PROVINCE/COUNTY	BRITISH COLUMBIA
[illegible]	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

#879

COMPANY	MANALTA
WELL	T93R-17
FIELD	SITE 119
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 119
WELL:
T93R-17
COMPANY:
MANALTA

LOCATION			
TELKWA			
LSD	SEC	TWP	RGE

OTHER SERVICES
VERT

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	12-SEP-93			
RUN NUMBER	FOUR			
DEPTH-DRILLER	128.9			
DEPTH-LOGGER	127.0M			
FIRST READING	126M			
LAST READING	0M			
CASING-DRILLER	5.2M			
CASING-LOGGER	5.2M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	16.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	5.2M	TD	178MM	N/A	SURFACE	5.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

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↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 12-SEP-1993 AT 13:36
FILENAME: DD3AR17A.CIB RUN ID: DETAIL SECTION PLOTTED ON 13-SEP-1993 AT 12:47

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 12-SEP-1993 AT 13:36
FILENAME: DD3AR17A.CIB RUN ID: DETAIL SECTION PLOTTED ON 13-SEP-1993 AT 12:47

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 12-SEP-1993 AT 13:34 DATA LAST REPROCESSED: 13-SEP-1993 AT 12:28

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BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.20
BIT SIZE 3	.00	BIT DEPTH 3	128.90
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

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COMPANY	MANALTA
WELL	T93R-17
FIELD	SITE 119
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

COMPANY MANALTA
WELL T93R-17
FIELD SITE 119
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES CCS

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 119
WELL:
T93R-17
COMPANY:
MANALTA

PERMANENT DATUM GROUND LEVEL , ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	12-SEP-93	
RUN NUMBER	ONE	
DEPTH-DRILLER	128.9M	
DEPTH-LOGGER	127.0M	
FIRST READING	126.0M	
LAST READING	0M	
CASING-DRILLER	5.2M	
CASING-LOGGER	5.2M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	0OM	

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL), AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1, 2, 5, 10, 20, 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE, AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR, OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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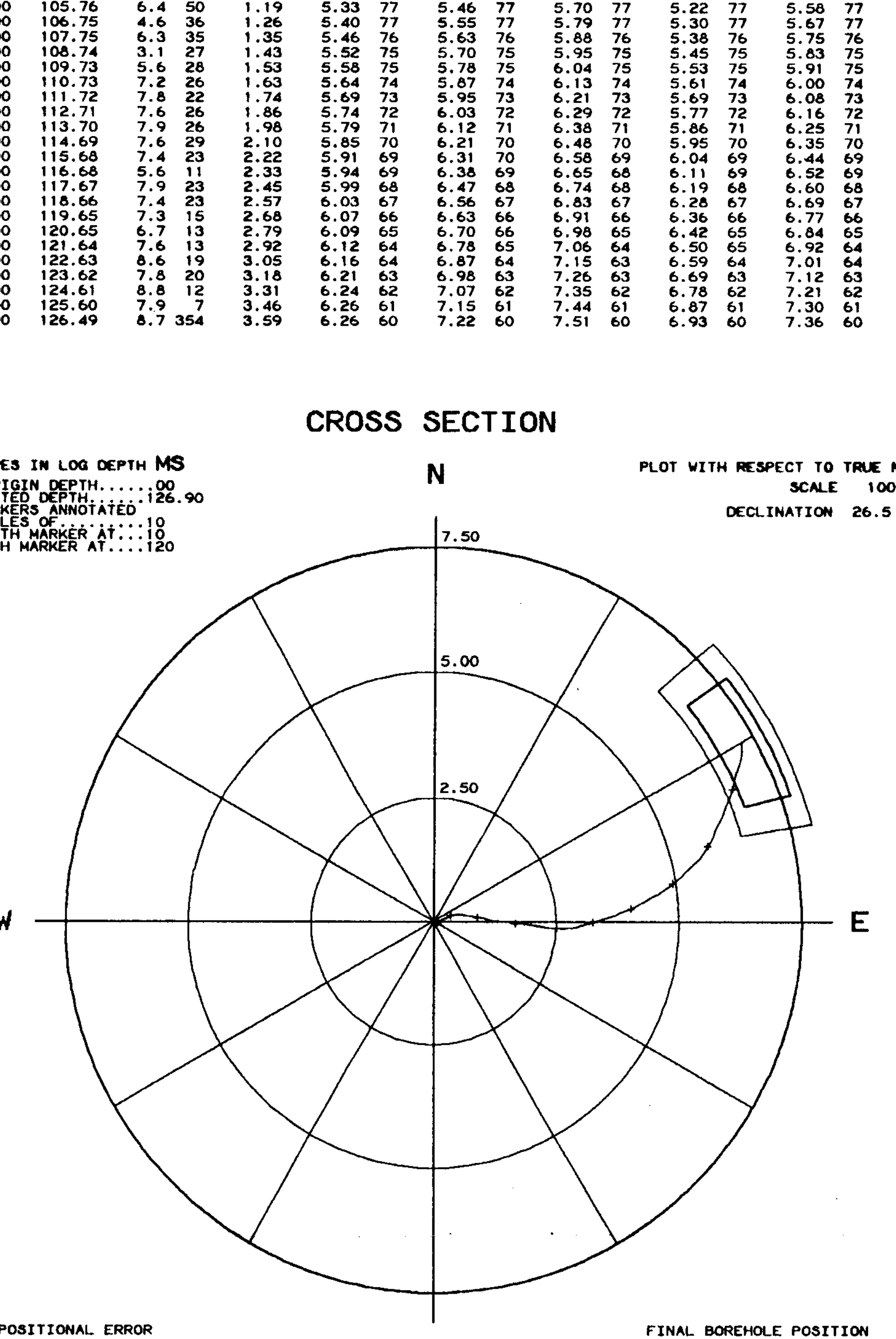
T93R-17                      VERTICALITY DATA LISTING                    DATE PROCESSED: 12-SEP-1993
                    ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH          DATE LOGGED:    12-SEP-1993
   DEPTHS          BOREHOLE   AXIAL CO-ORDS    POLAR      POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
  LOG      TRUE    TILT AZI   NORTH      EAST BRG   RADIUS BRG   RADIUS BRG   RADIUS BRG   RADIUS BRD   RADIUS

   1.00     1.00   4.3  53   -0.02      0.05 109     0.05 109     0.06 110     0.05 109     0.05 109     0.05
   2.00     2.00   0.6 152   -0.02      0.08 104     0.08 104     0.09 104     0.08 104     0.09 104     0.08
   3.00     3.00   0.3 231   -0.02      0.08 107     0.08 108     0.09 106     0.08 108     0.09 106     0.08
   4.00     3.99   0.5 190   -0.03      0.08 109     0.08 112     0.09 107     0.08 111     0.09 108     0.08
   5.00     4.99   0.4 359   -0.03      0.08 112     0.08 115     0.09 109     0.08 114     0.09 111     0.08
   6.00     5.99   0.4 128   -0.04      0.08 115     0.09 119     0.09 111     0.08 117     0.09 113     0.08
   7.00     6.99   0.4  66   -0.04      0.08 116     0.09 119     0.10 111     0.08 117     0.09 113     0.09
   8.00     7.99   0.4  90   -0.04      0.09 114     0.09 117     0.11 111     0.08 116     0.10 113     0.09
   9.00     8.99   0.4  16   -0.03      0.09 111     0.10 113     0.11 108     0.08 112     0.10 110     0.09
  10.00     9.99   0.5 356   -0.03      0.09 107     0.09 108     0.10 106     0.08 107     0.10 106     0.09
  11.00    10.99   0.4 283   -0.02      0.08 105     0.09 105     0.10 105     0.08 105     0.09 105     0.08
  12.00    11.99   0.4 236   -0.02      0.08 105     0.08 106     0.09 105     0.08 106     0.08 105     0.08
  13.00    12.99   0.4 254   -0.02      0.07 108     0.08 111     0.08 106     0.07 110     0.08 107     0.08
  14.00    13.99   0.6 243   -0.03      0.07 112     0.07 116     0.07 107     0.07 114     0.07 110     0.07
  15.00    14.99   0.4 324   -0.03      0.06 113     0.07 119     0.07 108     0.07 116     0.07 111     0.07
  16.00    15.99   0.4 211   -0.03      0.06 118     0.07 126     0.07 110     0.07 122     0.07 114     0.07
  17.00    16.99   0.4 197   -0.04      0.06 122     0.07 132     0.07 111     0.07 127     0.07 117     0.07
  18.00    17.99   0.4 129   -0.04      0.06 126     0.07 137     0.08 114     0.07 132     0.07 120     0.07
  19.00    18.99   1.0 185   -0.05      0.06 131     0.07 144     0.08 117     0.07 138     0.08 124     0.07
  20.00    19.99   0.6 166   -0.06      0.05 138     0.08 151     0.09 123     0.07 145     0.09 131     0.08
  21.00    20.99   0.7 142   -0.07      0.06 139     0.09 151     0.10 125     0.08 145     0.10 133     0.08
  22.00    21.99   0.4  80   -0.07      0.07 136     0.10 146     0.11 123     0.09 141     0.10 130     0.09
  23.00    22.99   0.6  28   -0.06      0.07 131     0.10 140     0.11 120     0.09 136     0.10 126     0.09
  24.00    23.99   0.5 332   -0.06      0.07 127     0.09 136     0.10 117     0.08 132     0.10 123     0.09
  25.00    24.99   0.5 318   -0.05      0.07 125     0.08 134     0.09 115     0.08 130     0.08 120     0.08
  26.00    25.99   0.6 304   -0.04      0.06 124     0.07 134     0.08 114     0.07 129     0.07 119     0.07
  27.00    26.99   0.6 322   -0.03      0.05 122     0.06 133     0.06 112     0.07 128     0.06 117     0.07
  28.00    27.99   0.6 350   -0.03      0.05 119     0.06 130     0.05 109     0.06 124     0.05 114     0.06
  29.00    28.99   0.4  20   -0.02      0.05 110     0.06 118     0.05 105     0.06 114     0.05 107     0.06
  30.00    29.99   0.9  49   -0.01      0.06 100     0.06 102     0.05  99     0.07 101     0.06  99     0.07
  31.00    30.99   1.0  56    0.00      0.07  92     0.07  90     0.07  93     0.08  91     0.07  92     0.08
  32.00    31.99   1.0  68    0.01      0.09  86     0.09  84     0.09  88     0.09  85     0.09  87     0.09
  33.00    32.99   1.3  67    0.01      0.11  83     0.11  80     0.11  85     0.11  81     0.11  84     0.11
  34.00    33.99   1.3  70    0.02      0.13  79     0.13  77     0.14  82     0.13  78     0.14  81     0.13
  35.00    34.99   1.6  65    0.03      0.16  77     0.16  76     0.17  79     0.15  76     0.16  78     0.15
  36.00    35.99   2.2  67    0.05      0.19  76     0.19  74     0.21  78     0.18  75     0.20  77     0.19
  37.00    36.99   2.1  70    0.06      0.22  75     0.23  73     0.25  76     0.21  74     0.24  75     0.22
  38.00    37.99   3.1  70    0.07      0.27  75     0.28  74     0.30  76     0.26  74     0.29  75     0.27
  39.00    38.99   2.3  63    0.10      0.31  73     0.32  72     0.35  74     0.30  72     0.34  73     0.31
  40.00    39.99   2.5  56    0.12      0.34  71     0.36  71     0.39  72     0.34  71     0.38  72     0.35
  41.00    40.99   2.3  86    0.13      0.38  71     0.40  70     0.43  72     0.37  71     0.42  71     0.39
  42.00    41.99   1.9  79    0.14      0.42  72     0.44  71     0.47  73     0.40  72     0.46  72     0.42
  43.00    42.99   2.8  61    0.14      0.45  73     0.48  72     0.51  73     0.44  72     0.50  73     0.46
  44.00    43.99   2.6  87    0.15      0.50  73     0.52  73     0.56  74     0.48  73     0.54  74     0.50
  45.00    44.98   3.1 100    0.14      0.54  75     0.56  75     0.61  76     0.52  75     0.58  76     0.54
  46.00    45.98   3.8  99    0.13      0.60  77     0.62  77     0.66  78     0.57  77     0.64  78     0.59
  47.00    46.98   4.6 101    0.12      0.67  80     0.68  79     0.73  80     0.63  79     0.71  80     0.66
  48.00    47.98   4.2 102    0.11      0.75  82     0.76  81     0.81  82     0.70  81     0.78  82     0.73
  49.00    48.97   3.9  97    0.09      0.82  83     0.82  83     0.88  84     0.77  83     0.85  84     0.80
  50.00    49.97   4.0 102    0.08      0.89  85     0.89  84     0.95  85     0.84  85     0.92  85     0.86
  51.00    50.97   4.8 101    0.07      0.97  86     0.97  86     1.03  87     0.91  86     1.00  86     0.94
  52.00    51.97   4.1  99    0.05      1.04  87     1.04  87     1.10  88     0.97  87     1.07  87     1.01
  53.00    52.96   4.4  99    0.04      1.11  88     1.11  88     1.18  89     1.04  88     1.14  88     1.08
  54.00    53.96   3.9  96    0.02      1.18  89     1.18  88     1.25  89     1.11  89     1.22  89     1.15
  55.00    54.96   3.9  93    0.01      1.26  89     1.26  89     1.33  90     1.18  89     1.29  90     1.22
  56.00    55.95   5.0  99    0.01      1.33  90     1.33  89     1.41  90     1.26  90     1.37  90     1.29
  57.00    56.95   5.1 102   -0.01      1.42  90     1.42  90     1.50  91     1.33  90     1.46  91     1.37
  58.00    57.95   4.9 100   -0.02      1.50  91     1.50  91     1.58  91     1.41  91     1.54  91     1.46
  59.00    58.94   5.1  99   -0.04      1.58  91     1.58  91     1.67  92     1.50  91     1.63  92     1.54
  60.00    59.94   4.1  92   -0.05      1.66  92     1.66  91     1.76  92     1.57  92     1.71  92     1.62
  61.00    60.94   4.4  93   -0.06      1.74  92     1.74  92     1.84  92     1.65  92     1.79  92     1.70
  62.00    61.93   5.5  95   -0.07      1.83  92     1.83  92     1.93  93     1.73  92     1.88  92     1.78
  63.00    62.93   5.5  95   -0.08      1.92  92     1.92  92     2.03  93     1.82  92     1.97  93     1.87
  64.00    63.92   4.7 101   -0.10      2.01  93     2.02  92     2.12  93     1.91  93     2.07  93     1.96
  65.00    64.92   4.8  96   -0.11      2.10  93     2.10  93     2.21  93     1.99  93     2.15  93     2.04
  66.00    65.92   4.8  97   -0.12      2.18  93     2.19  93     2.30  94     2.08  93     2.24  93     2.13
  67.00    66.91   4.7 100   -0.13      2.27  93     2.27  93     2.39  94     2.16  93     2.33  94     2.21
  68.00    67.91   4.7  97   -0.14      2.34  93     2.35  93     2.47  94     2.23  93     2.41  94     2.29
  69.00    68.91   4.3  90   -0.15      2.42  93     2.43  93     2.55  94     2.31  93     2.49  94     2.37
  70.00    69.90   5.1  95   -0.15      2.50  93     2.51  93     2.64  94     2.38  93     2.57  94     2.45
  71.00    70.90   5.1  97   -0.15      2.59  93     2.60  93     2.72  94     2.47  93     2.66  93     2.53
  72.00    71.90   4.6  87   -0.16      2.68  93     2.68  93     2.82  94     2.55  93     2.75  93     2.62
  73.00    72.89   4.8  83   -0.15      2.75  93     2.76  93     2.90  93     2.62  93     2.83  93     2.69
  74.00    73.89   4.4  83   -0.14      2.83  93     2.84  93     2.98  93     2.70  93     2.91  93     2.77
  75.00    74.89   4.1  79   -0.13      2.91  93     2.91  92     3.05  93     2.77  92     2.98  93     2.84
  76.00    75.88   4.1  75   -0.11      2.98  92     2.98  92     3.13  92     2.83  92     3.05  92     2.91
  77.00    76.88   4.2  75   -0.09      3.04  92     3.05  92     3.20  92     2.89  92     3.12  92     2.97
  78.00    77.88   3.8  71   -0.07      3.11  91     3.11  91     3.26  92     2.96  91     3.19  91     3.03
  79.00    78.88   3.8  70   -0.05      3.18  91     3.18  91     3.33  91     3.02  91     3.26  91     3.10
  80.00    79.88   3.8  69   -0.03      3.24  91     3.24  90     3.40  91     3.08  90     3.32  91     3.16
  81.00    80.87   4.1  73   -0.01      3.31  90     3.31  90     3.47  90     3.14  90     3.39  90     3.23
  82.00    81.87   4.6  72    0.02      3.37  90     3.37  90     3.54  90     3.20  90     3.45  90     3.29
  83.00    82.87   5.1  75    0.04      3.45  89     3.45  89     3.62  90     3.28  89     3.53  89     3.36
  84.00    83.86   4.8  70    0.07      3.53  89     3.53  89     3.70  89     3.35  89     3.61  89     3.44
  85.00    84.86   4.8  76    0.09      3.61  89     3.61  88     3.78  89     3.43  88     3.70  89     3.52
  86.00    85.86   4.8  71    0.12      3.69  88     3.69  88     3.87  88     3.51  88     3.78  88     3.60
  87.00    86.85   5.4  62    0.16      3.76  88     3.76  87     3.95  88     3.58  88     3.86  88     3.67
  88.00    87.85   5.5  71    0.19      3.85  87     3.85  87     4.04  87     3.67  87     3.95  87     3.76
  89.00    88.84   5.3  70    0.22      3.94  87     3.94  87     4.13  87     3.75  87     4.04  87     3.85
  90.00    89.84   5.6  65    0.25      4.02  86     4.03  86     4.22  87     3.84  86     4.13  86     3.93
  91.00    90.83   4.0  57    0.30      4.11  86     4.12  86     4.32  86     3.92  86     4.22  86     4.02
  92.00    91.83   6.5  62    0.35      4.20  85     4.21  85     4.41  85     4.01  85     4.31  85     4.11
  93.00    92.82   6.0  59    0.40      4.29  85     4.31  85     4.52  85     4.11  85     4.41  85     4.21
  94.00    93.82   6.5  58    0.45      4.39  84     4.41  84     4.62  84     4.20  84     4.51  84     4.31
  95.00    94.81   6.2  57    0.50      4.47  84     4.50  84     4.71  84     4.29  84     4.60  84     4.39
  96.00    95.81   5.7  60    0.55      4.55  83     4.59  83     4.80  83     4.37  83     4.69  83     4.48
  97.00    96.80   5.5  58    0.59      4.63  83     4.67  83     4.88  83     4.45  83     4.77  83     4.56
  98.00    97.80   6.2  57    0.65      4.72  82     4.76  82     4.98  82     4.54  82     4.87  82     4.65
  99.00    98.79   5.9  54    0.71      4.79  82     4.85  82     5.07  82     4.62  82     4.96  82     4.73
 100.00    99.79   6.2  51    0.77      4.87  81     4.93  81     5.16  81     4.70  81     5.04  81     4.82
 101.00   100.78   5.2  59    0.83      4.95  80     5.02  80     5.25  81     4.79  80     5.13  81     4.90
 102.00   101.78   6.0  45    0.89      5.03  80     5.11  80     5.34  80     4.87  80     5.22  80     4.99
 103.00   102.77   4.6  38    0.97      5.10  79     5.19  79     5.42  79     4.95  79     5.30  79     5.07
 104.00   103.77   6.6  47    1.04      5.17  79     5.27  79     5.51  79     5.03  79     5.39  79     5.15
 105.00   104.76   6.2  50    1.11      5.24  78     5.36  78     5.60  78     5.12  78     5.48  78     5.24
 106.00   105.76   6.4  50    1.19      5.33  77     5.46  77     5.70  77     5.22  77     5.58  77     5.34
 107.00   106.75   4.6  36    1.26      5.40  77     5.55  77     5.79  77     5.30  77     5.67  77     5.42
 108.00   107.75   6.3  35    1.35      5.46  76     5.63  76     5.88  76     5.38  76     5.75  76     5.50
 109.00   108.74   3.1  27    1.43      5.52  75     5.70  75     5.95  75     5.45  75     5.83  75     5.58
 110.00   109.73   5.6  28    1.53      5.58  75     5.78  75     6.04  75     5.53  75     5.91  75     5.65
 111.00   110.73   7.2  26    1.63      5.64  74     5.87  74     6.13  74     5.61  74     6.00  74     5.74
 112.00   111.72   7.8  22    1.74      5.69  73     5.95  73     6.21  73     5.69  73     6.08  73     5.82
 113.00   112.71   7.6  26    1.86      5.74  72     6.03  72     6.29  72     5.77  72     6.16  72     5.90
 114.00   113.70   7.9  26    1.98      5.79  71     6.12  71     6.38  71     5.86  71     6.25  71     5.99
 115.00   114.69   7.6  29    2.10      5.85  70     6.21  70     6.48  70     5.95  70     6.35  70     6.08
 116.00   115.68   7.4  23    2.22      5.91  69     6.31  70     6.58  69     6.04  69     6.44  69     6.17
 117.00   116.68   5.6  11    2.33      5.94  69     6.38  69     6.65  68     6.11  69     6.52  69     6.25
 118.00   117.67   7.9  23    2.45      5.99  68     6.47  68     6.74  68     6.19  68     6.60  68     6.33
 119.00   118.66   7.4  23    2.57      6.03  67     6.56  67     6.83  67     6.28  67     6.69  67     6.42
 120.00   119.65   7.3  15    2.68      6.07  66     6.63  66     6.91  66     6.36  66     6.77  66     6.50
 121.00   120.65   6.7  13    2.79      6.09  65     6.70  66     6.98  65     6.42  65     6.84  65     6.56
 122.00   121.64   7.6  13    2.92      6.12  64     6.78  65     7.06  64     6.50  65     6.92  64     6.64
 123.00   122.63   8.6  19    3.05      6.16  64     6.87  64     7.15  63     6.59  64     7.01  64     6.73
 124.00   123.62   7.8  20    3.18      6.21  63     6.98  63     7.26  63     6.69  63     7.12  63     6.83
 125.00   124.61   8.8  12    3.31      6.24  62     7.07  62     7.35  62     6.78  62     7.21  62     6.92
 126.00   125.60   7.9   7    3.46      6.26  61     7.15  61     7.44  61     6.87  61     7.30  61     7.01
 126.90   126.49   8.7 354    3.59      6.26  60     7.22  60     7.51  60     6.93  60     7.36  60     7.07
```

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH......00
LAST PLOTTED DEPTH......126.90
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........10
FIRST DEPTH MARKER AT...10
LAST DEPTH MARKER AT....120

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 3.59 MS NORTH, 6.26 MS EAST IE. 7.22 MS FROM THE ORIGIN, 60 DEG FROM TRUE NORTH

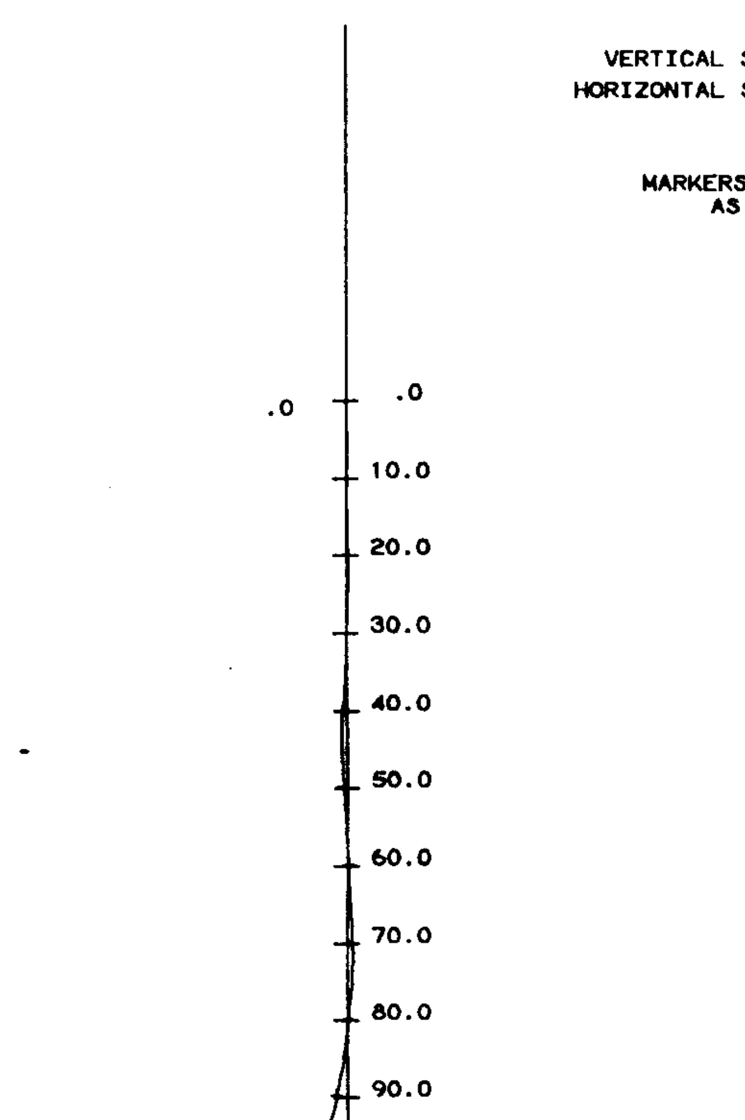
VERTICAL SECTIONS

(TRUE DEPTH VS DISPLACEMENT)

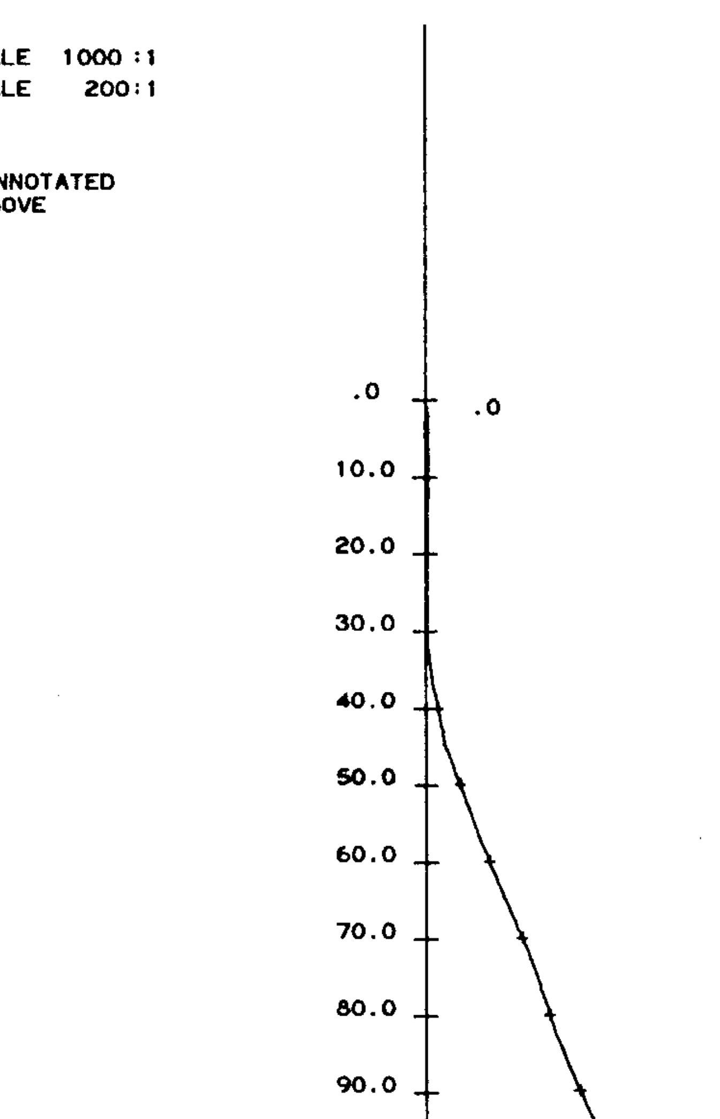
VERTICAL SCALE 1000:1
HORIZONTAL SCALE 200:1

MARKERS ANNOTATED AS ABOVE

N-S SECTION

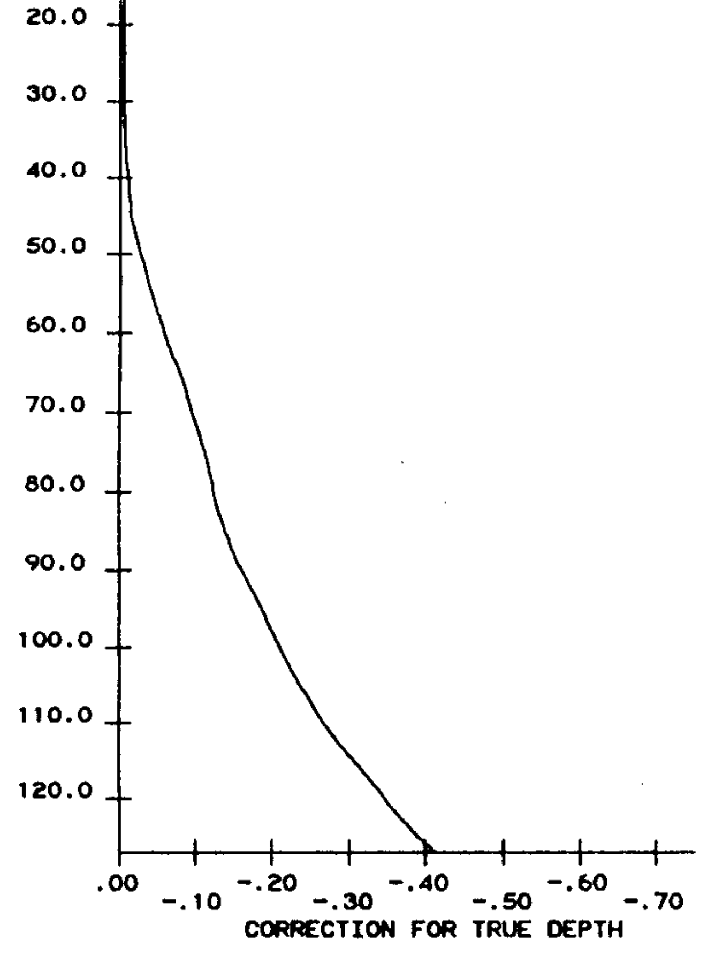


E-W SECTION



DEPTH CORRECTION ANALYSIS

VERTICAL SCALE 1000:1
HORIZONTAL SCALE 10:1



DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE
1.00	1.00	71.00	70.90
2.00	2.00	72.00	71.90
3.00	3.00	73.00	72.89
4.00	3.99	74.00	73.89
5.00	4.99	75.00	74.89
6.00	5.99	76.00	75.88
7.00	6.99	77.00	76.88
8.00	7.99	78.00	77.88
9.00	8.99	79.00	78.88
10.00	9.99	80.00	79.88
11.00	10.99	81.00	80.87
12.00	11.99	82.00	81.87
13.00	12.99	83.00	82.87
14.00	13.99	84.00	83.86
15.00	14.99	85.00	84.86
16.00	15.99	86.00	85.86
17.00	16.99	87.00	86.85
18.00	17.99	88.00	87.85
19.00	18.99	89.00	88.84
20.00	19.99	90.00	89.84
21.00	20.99	91.00	90.83
22.00	21.99	92.00	91.83
23.00	22.99	93.00	92.82
24.00	23.99	94.00	93.82
25.00	24.99	95.00	94.81
26.00	25.99	96.00	95.81
27.00	26.99	97.00	96.80
28.00	27.99	98.00	97.80
29.00	28.99	99.00	98.79
30.00	29.99	100.00	99.79
31.00	30.99	101.00	100.78
32.00	31.99	102.00	101.78
33.00	32.99	103.00	102.77
34.00	33.99	104.00	103.77
35.00	34.99	105.00	104.76
36.00	35.99	106.00	105.76
37.00	36.99	107.00	106.75
38.00	37.99	108.00	107.75
39.00	38.99	109.00	108.74
40.00	39.99	110.00	109.73
41.00	40.99	111.00	110.73
42.00	41.99	112.00	111.72
43.00	42.99	113.00	112.71
44.00	43.99	114.00	113.70
45.00	44.98	115.00	114.69
46.00	45.98	116.00	115.68
47.00	46.98	117.00	116.68
48.00	47.98	118.00	117.67
49.00	48.97	119.00	118.66
50.00	49.97	120.00	119.65
51.00	50.97	121.00	120.65
52.00	51.97	122.00	121.64
53.00	52.96	123.00	122.63
54.00	53.96	124.00	123.62
55.00	54.96	125.00	124.61
56.00	55.95	126.00	125.60
57.00	56.95	126.90	126.49
58.00	57.95		
59.00	58.94		
60.00	59.94		
61.00	60.94		
62.00	61.93		
63.00	62.93		
64.00	63.92		
65.00	64.92		
66.00	65.92		
67.00	66.91		
68.00	67.91		
69.00	68.91		
70.00	69.90		

COMPANY	MANALTA
WELL	T93R-17
FIELD	SITE 119
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

VERTICALITY ANALYSIS

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 120
WELL:
T93R-18
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-18
FIELD	SITE 120
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM OOM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM OOM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	14-SEP-93				
RUN NUMBER	ONE				
DEPTH-DRILLER	183.8M				
DEPTH-LOGGER	180.5M				
FIRST READING	180M				
LAST READING	0M				
CASING-DRILLER	25.6M				
CASING-LOGGER	25.6M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01 N/A				
PH/FLUID LOSS	N/A N/A				
SAMPLE SOURCE					
RM @ MEAS TEMP					
RMF @ MEAS TEMP					
RMC @ MEAS TEMP					
SOURCE: RMF/RMC					
RM @ BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222 RDR				
RECORDED BY	B.STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL					

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

1. ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 48000:1 (IMPERIAL). AND THE MINIMUM 1:1.

2. THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED WILL CONTAIN A MAXIMUM OF 200 POINTS IN MULTIPLES OF 1. 2. 5. 10. 20. 50 OR 100 METRES/FEET DEPENDING ON THE TOTAL RANGE OF THE ANALYSIS. HOWEVER THE ANALYSIS IS CALCULATED FOR THE ENTIRE RANGE OF THE BOREHOLE AND THE FINAL BOREHOLE POSITION IS INCLUDED IN THE LISTING.

3. COMPUTED VERTICALITY MAY ONLY BE FULLY DERIVED IN OPEN SECTIONS OF THE BOREHOLE. AWAY FROM THE INFLUENCE OF ANY UNUSUAL MAGNETIC EFFECTS (AS THE AZIMUTH CALCULATIONS ARE DERIVED FROM THREE SOLID STATE MAGNETOMETERS). SO THE ANALYSIS WILL GENERALLY BEGIN AT THE END OF THE CASING AND ALL BOREHOLE POSITIONAL INFORMATION WILL RELATE TO THIS DEPTH.

4. UP TO TEN CROSS SECTIONS MAY BE REQUESTED FOR ANY BOREHOLE TO BE DISPLAYED AT ANY SCALE (THE DEFAULT SCALE IS THAT OF THE CROSS-SECTION FOR THE ENTIRE HOLE).

5. BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.

	TILT(DEGREES)	AZIMUTH(DEGREES)
TYPICAL ERROR	+/- 0.3333	+/- 10
MAXIMUM ERROR	+/- 0.5	+/- 15

6. ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS:

   A) PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
   B) DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
   C) CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.

7. GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING:

LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLED BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
POLAR COORDINATES	THE POLAR. OR RADIAL COORDINATES OF THE BOREHOLE.
ERROR COORDINATES	THE POLAR COORDINATES CORRESPONDING TO THE TYPICAL AND MAXIMUM TILT ERROR.

N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT. AND DO NOT. GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS. AND WE SHALL NOT. EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART. BE LIABLE OR RESPONSIBLE FOR ANY LOSS. COSTS. DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS. AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

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T93R-18                         VERTICALITY DATA LISTING                        DATE PROCESSED: 15-SEP-1993
                        ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH             DATE LOGGED:    14-SEP-1993
     DEPTHS          BOREHOLE    AXIAL CO-ORDS     POLAR       POLAR ERROR CO-ORDINATES (MAXIMUM & TYPICAL)
   LOG      TRUE     TILT AZI    NORTH     EAST BRG  RADIUS BRG  RADIUS BRG  RADIUS BRG  RADIUS BRD  RADIUS

   0.00      0.00    0.4 131    0.00     0.00 131    0.00 131    0.00 131    0.00 131    0.00 131    0.00
   1.00      1.00    0.5 334    0.01     0.00 347    0.01 347    0.01 348    0.00 347    0.01 348    0.00
   2.00      2.00    0.4  43    0.01     0.00  12    0.01  12    0.02  14    0.01  12    0.01  13    0.01
   3.00      3.00    0.3  52    0.02     0.00   2    0.02   2    0.02   4    0.01   2    0.02   3    0.01
   4.00      4.00    0.4 358    0.02     0.00  11    0.02  12    0.03   9    0.01  12    0.02  10    0.01
   5.00      5.00    0.2 297    0.02     0.00 360    0.02 360    0.03   0    0.01 360    0.03 360    0.02
   6.00      6.00    0.3 222    0.02    -0.01 345    0.02 345    0.03 346    0.01 345    0.03 345    0.02
   7.00      7.00    0.4 216    0.01    -0.01 330    0.02 329    0.02 332    0.01 329    0.02 330    0.01
   8.00      8.00    0.4 164    0.01    -0.01 309    0.01 309    0.02 310    0.01 309    0.01 310    0.01
   9.00      9.00    0.4 109    0.00     0.00 325    0.00 322    0.01 336    0.00 323    0.01 328    0.00
  10.00     10.00    0.3  46    0.01     0.00  32    0.01  27    0.01  46    0.00  29    0.01  37    0.00
  11.00     11.00    0.6   0    0.01     0.01  22    0.01  20    0.02  28    0.01  21    0.02  24    0.01
  12.00     12.00    0.5  85    0.02     0.01  32    0.02  30    0.03  39    0.01  31    0.02  35    0.01
  13.00     13.00    0.7  23    0.02     0.02  42    0.03  40    0.04  47    0.02  41    0.03  44    0.02
  14.00     14.00    0.5  20    0.03     0.02  38    0.04  37    0.05  42    0.02  38    0.04  40    0.03
  15.00     15.00    0.6 109    0.03     0.03  40    0.05  39    0.06  43    0.03  39    0.05  41    0.04
  16.00     16.00    0.7 244    0.04     0.03  36    0.04  34    0.06  38    0.03  35    0.05  37    0.04
  17.00     17.00    0.5 230    0.03     0.02  43    0.04  41    0.05  47    0.02  41    0.04  44    0.03
  18.00     18.00    0.4 241    0.03     0.02  32    0.03  29    0.05  38    0.02  30    0.04  34    0.03
  19.00     19.00    0.4 269    0.03     0.01  20    0.03  17    0.04  29    0.02  18    0.04  23    0.02
  20.00     20.00    0.4 347    0.03     0.01  11    0.03   6    0.04  21    0.02   8    0.04  15    0.02
  21.00     21.00    0.4 227    0.03     0.01  15    0.03  12    0.04  25    0.02  13    0.04  19    0.03
  22.00     22.00    0.4 308    0.03     0.00   5    0.03   1    0.04  16    0.02   3    0.04   9    0.02
  23.00     23.00    0.4 249    0.03     0.00 356    0.03 351    0.05   8    0.02 353    0.04 360    0.03
  24.00     24.00    0.4 242    0.03    -0.01 346    0.03 341    0.05 359    0.02 343    0.04 351    0.02
  25.00     25.00    0.4  69    0.03    -0.01 350    0.04 346    0.05   2    0.02 348    0.04 354    0.03
  26.00     26.00    0.5 282    0.03     0.00 356    0.03 352    0.05   7    0.02 354    0.04 360    0.03
  27.00     27.00    0.5 245    0.03    -0.01 345    0.03 340    0.05 358    0.02 342    0.04 349    0.03
  28.00     28.00    0.4 266    0.03    -0.02 333    0.03 328    0.05 345    0.02 330    0.04 337    0.03
  29.00     29.00    0.4 274    0.03    -0.02 323    0.04 320    0.06 334    0.02 321    0.05 327    0.03
  30.00     30.00    0.3 307    0.03    -0.03 318    0.04 315    0.07 328    0.02 317    0.06 322    0.03
  31.00     31.00    0.4 296    0.03    -0.04 314    0.05 311    0.08 322    0.02 312    0.06 316    0.04
  32.00     32.00    0.6 289    0.04    -0.04 311    0.06 309    0.08 318    0.03 310    0.07 314    0.04
  33.00     33.00    0.4 307    0.04    -0.05 309    0.06 307    0.09 315    0.03 307    0.08 311    0.05
  34.00     34.00    0.4 306    0.04    -0.05 307    0.07 306    0.10 313    0.03 306    0.09 309    0.05
  35.00     35.00    0.3 283    0.05    -0.06 307    0.08 306    0.11 312    0.04 306    0.10 309    0.06
  36.00     36.00    0.4 342    0.05    -0.06 307    0.08 306    0.12 311    0.04 306    0.10 308    0.06
  37.00     37.00    0.4 293    0.05    -0.07 306    0.09 305    0.13 311    0.04 306    0.11 308    0.06
  38.00     38.00    0.3 291    0.05    -0.07 307    0.09 305    0.14 311    0.04 306    0.12 308    0.07
  39.00     39.00    0.4 252    0.06    -0.08 305    0.10 304    0.15 309    0.05 304    0.12 306    0.07
  40.00     40.00    0.5 240    0.05    -0.09 301    0.10 300    0.16 303    0.05 301    0.13 302    0.08
  41.00     41.00    0.7 222    0.05    -0.10 296    0.11 296    0.17 296    0.05 296    0.14 296    0.08
  42.00     42.00    0.5 213    0.04    -0.11 290    0.11 291    0.17 287    0.06 290    0.14 289    0.08
  43.00     43.00    0.8 211    0.03    -0.11 283    0.11 285    0.17 276    0.06 284    0.14 280    0.09
  44.00     44.00    0.9 200    0.01    -0.12 275    0.12 278    0.18 264    0.06 277    0.15 271    0.09
  45.00     45.00    1.2 203   -0.01    -0.12 267    0.12 272    0.18 254    0.07 270    0.15 262    0.10
  46.00     46.00    1.3 206   -0.03    -0.13 259    0.13 265    0.19 244    0.08 263    0.16 253    0.11
  47.00     47.00    1.3 218   -0.05    -0.14 253    0.15 259    0.21 238    0.10 256    0.18 247    0.12
  48.00     48.00    1.1 230   -0.06    -0.16 249    0.17 255    0.23 236    0.11 253    0.20 243    0.14
  49.00     49.00    1.0 229   -0.08    -0.17 246    0.19 253    0.25 234    0.13 250    0.22 241    0.16
  50.00     50.00    0.9 213   -0.09    -0.19 244    0.21 251    0.27 233    0.15 248    0.24 240    0.18
  51.00     51.00    1.1 230   -0.10    -0.20 243    0.22 249    0.29 233    0.16 246    0.26 239    0.19
  52.00     52.00    0.8 210   -0.11    -0.21 242    0.24 247    0.30 232    0.17 245    0.27 237    0.20
  53.00     53.00    1.0 199   -0.13    -0.22 240    0.25 245    0.32 231    0.18 243    0.28 236    0.22
  54.00     54.00    1.3 193   -0.14    -0.22 237    0.26 242    0.33 228    0.19 240    0.30 233    0.23
  55.00     55.00    2.2 165   -0.17    -0.21 231    0.27 237    0.34 222    0.21 235    0.31 227    0.24
  56.00     56.00    1.9 167   -0.21    -0.21 225    0.29 231    0.36 216    0.23 229    0.33 221    0.26
  57.00     56.99    2.4 168   -0.24    -0.20 220    0.31 227    0.38 211    0.25 224    0.34 216    0.28
  58.00     57.99    2.8 171   -0.28    -0.19 215    0.34 221    0.40 206    0.28 218    0.37 211    0.31
  59.00     58.99    2.6 164   -0.32    -0.19 210    0.37 217    0.43 202    0.31 214    0.40 206    0.34
  60.00     59.99    2.7 165   -0.37    -0.18 206    0.41 212    0.47 198    0.35 209    0.44 202    0.38
  61.00     60.99    2.2 171   -0.41    -0.17 202    0.44 208    0.50 195    0.38 205    0.47 199    0.41
  62.00     61.99    1.4 211   -0.43    -0.17 202    0.47 207    0.53 195    0.41 205    0.50 199    0.44
  63.00     62.99    1.6 201   -0.46    -0.18 202    0.49 207    0.56 195    0.43 205    0.53 199    0.46
  64.00     63.99    1.5 210   -0.49    -0.20 202    0.52 207    0.60 196    0.46 205    0.56 199    0.49
  65.00     64.99    1.8 199   -0.51    -0.21 202    0.55 207    0.63 196    0.48 205    0.59 199    0.52
  66.00     65.99    1.6 204   -0.54    -0.22 202    0.58 207    0.66 197    0.51 205    0.62 200    0.55
  67.00     66.99    1.6 183   -0.57    -0.23 202    0.61 206    0.70 197    0.54 204    0.65 200    0.57
  68.00     67.99    2.1 176   -0.60    -0.23 201    0.64 205    0.73 196    0.56 203    0.69 198    0.60
  69.00     68.99    2.4 164   -0.64    -0.22 199    0.68 203    0.76 194    0.59 201    0.72 197    0.63
  70.00     69.99    2.3 171   -0.68    -0.22 198    0.71 201    0.80 193    0.63 200    0.76 195    0.67
  71.00     70.99    3.0 166   -0.73    -0.20 196    0.75 199    0.84 191    0.67 197    0.80 193    0.71
  72.00     71.98    3.4 164   -0.78    -0.19 194    0.80 197    0.89 189    0.71 196    0.84 192    0.75
  73.00     72.98    2.9 161   -0.83    -0.17 192    0.85 195    0.94 188    0.76 194    0.89 190    0.80
  74.00     73.98    4.3 176   -0.89    -0.16 190    0.90 194    0.99 186    0.81 192    0.95 188    0.86
  75.00     74.98    3.6 176   -0.96    -0.16 189    0.97 192    1.06 186    0.88 191    1.02 188    0.92
  76.00     75.98    3.6 177   -1.03    -0.15 188    1.04 191    1.14 185    0.95 190    1.09 187    0.99
  77.00     76.97    4.0 165   -1.10    -0.14 187    1.11 190    1.21 184    1.01 189    1.16 185    1.06
  78.00     77.97    4.3 170   -1.17    -0.12 186    1.18 189    1.28 183    1.08 187    1.23 184    1.13
  79.00     78.97    3.9 164   -1.23    -0.11 185    1.24 188    1.34 182    1.14 186    1.29 183    1.19
  80.00     79.97    2.8 165   -1.29    -0.09 184    1.30 186    1.40 181    1.19 185    1.35 183    1.24
  81.00     80.96    3.0 165   -1.34    -0.08 183    1.34 186    1.45 180    1.24 185    1.40 182    1.29
  82.00     81.96    2.6 166   -1.39    -0.06 183    1.39 185    1.50 180    1.28 184    1.45 181    1.34
  83.00     82.96    2.9 166   -1.43    -0.05 182    1.44 184    1.55 179    1.32 183    1.49 181    1.38
  84.00     83.96    2.9 174   -1.48    -0.04 182    1.48 184    1.60 179    1.37 183    1.54 180    1.42
  85.00     84.96    2.9 164   -1.53    -0.03 181    1.53 183    1.65 179    1.41 182    1.59 180    1.47
  86.00     85.96    2.6 169   -1.58    -0.02 181    1.58 183    1.70 178    1.46 182    1.64 180    1.52
  87.00     86.96    2.2 195   -1.62    -0.02 181    1.62 183    1.74 178    1.49 182    1.68 180    1.55
  88.00     87.96    2.9 162   -1.66    -0.02 181    1.66 183    1.79 178    1.54 182    1.73 180    1.60
  89.00     88.96    2.2 196   -1.70    -0.03 181    1.70 183    1.83 179    1.57 182    1.77 180    1.64
  90.00     89.96    2.2 185   -1.74    -0.03 181    1.74 183    1.88 179    1.61 182    1.81 180    1.67
  91.00     90.95    2.7 173   -1.79    -0.02 181    1.79 183    1.93 179    1.65 182    1.86 180    1.72
  92.00     91.95    2.3 182   -1.83    -0.02 181    1.83 182    1.97 178    1.69 182    1.90 180    1.76
  93.00     92.95    2.2 192   -1.87    -0.02 181    1.87 182    2.01 179    1.73 182    1.94 180    1.80
  94.00     93.95    2.8 170   -1.91    -0.02 181    1.91 182    2.06 179    1.76 182    1.98 180    1.84
  95.00     94.95    3.3 164   -1.96    -0.01 180    1.96 182    2.12 178    1.81 181    2.04 179    1.89
  96.00     95.95    2.8 193   -2.02    -0.01 180    2.02 182    2.17 178    1.86 181    2.10 179    1.94
  97.00     96.95    3.0 201   -2.07    -0.03 181    2.07 182    2.23 179    1.91 182    2.15 180    1.99
  98.00     97.95    2.5 196   -2.12    -0.05 181    2.12 183    2.28 179    1.96 182    2.20 180    2.04
  99.00     98.94    2.6 168   -2.16    -0.05 181    2.16 183    2.33 180    2.00 182    2.25 181    2.08
 100.00     99.94    3.0 166   -2.21    -0.04 181    2.21 183    2.38 179    2.04 182    2.29 180    2.13
 101.00    100.94    2.8 171   -2.26    -0.03 181    2.26 182    2.43 179    2.09 181    2.35 180    2.17
 102.00    101.94    2.6 196   -2.31    -0.03 181    2.31 182    2.48 179    2.13 182    2.39 180    2.22
 103.00    102.94    2.8 192   -2.35    -0.04 181    2.35 182    2.53 179    2.18 182    2.44 180    2.26
 104.00    103.94    2.8 200   -2.40    -0.05 181    2.40 183    2.58 180    2.22 182    2.49 181    2.31
 105.00    104.94    2.6 198   -2.44    -0.07 182    2.44 183    2.63 180    2.26 182    2.54 181    2.35
 106.00    105.94    2.8 195   -2.49    -0.08 182    2.49 183    2.68 180    2.30 183    2.59 181    2.40
 107.00    106.93    3.2 199   -2.54    -0.10 182    2.54 184    2.74 181    2.35 183    2.64 182    2.45
 108.00    107.93    2.4 187   -2.59    -0.12 183    2.59 184    2.79 181    2.40 183    2.69 182    2.49
 109.00    108.93    3.1 202   -2.64    -0.14 183    2.65 184    2.85 182    2.44 184    2.75 182    2.54
 110.00    109.93    2.7 197   -2.69    -0.15 183    2.69 184    2.90 182    2.49 184    2.80 183    2.59
 111.00    110.93    3.1 192   -2.73    -0.16 183    2.74 185    2.95 182    2.53 184    2.84 183    2.64
 112.00    111.93    3.4 209   -2.79    -0.19 184    2.79 185    3.01 182    2.58 184    2.90 183    2.69
 113.00    112.93    3.8 206   -2.84    -0.21 184    2.85 185    3.07 183    2.64 185    2.96 184    2.74
 114.00    113.92    3.0 195   -2.90    -0.23 185    2.91 186    3.13 183    2.69 185    3.02 184    2.80
 115.00    114.92    3.8 191   -2.95    -0.24 185    2.96 186    3.18 183    2.74 185    3.07 184    2.85
 116.00    115.92    4.0 198   -3.01    -0.26 185    3.02 186    3.25 184    2.79 185    3.13 184    2.91
 117.00    116.92    3.3 198   -3.07    -0.28 185    3.08 186    3.31 184    2.85 186    3.20 185    2.96
 118.00    117.92    2.7 194   -3.12    -0.29 185    3.13 186    3.37 184    2.90 186    3.25 185    3.02
 119.00    118.92    3.4 197   -3.18    -0.31 186    3.19 187    3.43 184    2.95 186    3.31 185    3.07
 120.00    119.91    2.9 194   -3.23    -0.33 186    3.25 187    3.49 185    3.01 186    3.37 185    3.13
 121.00    120.91    3.2 196   -3.28    -0.34 186    3.30 187    3.54 185    3.05 186    3.42 185    3.17
 122.00    121.91    3.8 199   -3.33    -0.36 186    3.35 187    3.60 185    3.11 187    3.48 186    3.23
 123.00    122.91    4.6 194   -3.40    -0.38 186    3.42 187    3.68 185    3.17 187    3.55 186    3.30
 124.00    123.91    3.7 197   -3.47    -0.39 186    3.50 187    3.75 185    3.24 187    3.62 186    3.37
 125.00    124.90    4.0 190   -3.54    -0.41 187    3.56 187    3.82 186    3.30 187    3.69 186    3.43
 126.00    125.90    4.3 178   -3.61    -0.42 187    3.63 187    3.90 186    3.37 187    3.76 186    3.50
 127.00    126.90    3.6 188   -3.67    -0.42 187    3.69 187    3.96 186    3.43 187    3.83 186    3.56
 128.00    127.90    3.3 193   -3.73    -0.43 187    3.75 187    4.02 186    3.48 187    3.89 186    3.62
 129.00    128.90    2.4 179   -3.78    -0.44 187    3.81 187    4.08 186    3.53 187    3.94 186    3.67
 130.00    129.89    3.0 189   -3.84    -0.45 187    3.87 188    4.14 186    3.59 187    4.00 186    3.73
 131.00    130.89    3.3 191   -3.89    -0.46 187    3.92 188    4.20 186    3.64 187    4.06 186    3.78
 132.00    131.89    4.2 175   -3.96    -0.47 187    3.98 188    4.27 186    3.70 187    4.13 186    3.84
 133.00    132.89    4.6 154   -4.02    -0.45 186    4.05 187    4.33 186    3.76 187    4.19 186    3.90
 134.00    133.88    4.1 145   -4.09    -0.41 186    4.11 187    4.40 185    3.82 186    4.25 185    3.96
 135.00    134.88    4.0 151   -4.15    -0.37 185    4.17 186    4.46 184    3.88 186    4.31 185    4.02
 136.00    135.88    2.8 146   -4.20    -0.34 185    4.22 185    4.51 184    3.93 185    4.36 184    4.07
 137.00    136.88    1.9 159   -4.24    -0.32 184    4.25 185    4.55 183    3.96 185    4.40 184    4.10
 138.00    137.88    2.4 168   -4.28    -0.32 184    4.29 185    4.59 183    3.99 185    4.44 184    4.14
 139.00    138.88    2.7 185   -4.32    -0.31 184    4.33 185    4.63 183    4.02 185    4.48 184    4.18
 140.00    139.88    2.1 183   -4.36    -0.32 184    4.37 185    4.68 183    4.07 185    4.53 184    4.22
 141.00    140.88    1.9 160   -4.40    -0.32 184    4.41 185    4.72 183    4.10 185    4.56 184    4.25
 142.00    141.88    2.0 169   -4.43    -0.30 184    4.44 185    4.75 183    4.13 184    4.60 184    4.28
 143.00    142.87    2.7 190   -4.47    -0.31 184    4.48 185    4.80 183    4.16 184    4.64 184    4.32
 144.00    143.87    2.1 164   -4.51    -0.31 184    4.52 185    4.84 183    4.20 184    4.68 183    4.36
 145.00    144.87    2.6 181   -4.54    -0.30 184    4.55 184    4.88 183    4.23 184    4.72 183    4.39
 146.00    145.87    2.8 189   -4.59    -0.30 184    4.60 184    4.92 183    4.27 184    4.76 183    4.44
 147.00    146.87    2.0 174   -4.63    -0.30 184    4.64 184    4.97 183    4.31 184    4.81 183    4.48
 148.00    147.87    2.1 163   -4.67    -0.30 184    4.68 184    5.01 183    4.35 184    4.84 183    4.51
 149.00    148.87    2.5 146   -4.71    -0.28 183    4.72 184    5.05 183    4.38 184    4.89 183    4.55
 150.00    149.87    2.1 168   -4.75    -0.27 183    4.76 184    5.09 182    4.42 184    4.92 183    4.59
 151.00    150.87    3.6 185   -4.79    -0.26 183    4.80 184    5.14 182    4.46 184    4.97 183    4.63
 152.00    151.87    2.5 188   -4.83    -0.27 183    4.84 184    5.19 182    4.50 184    5.01 183    4.67
 153.00    152.87    2.7 184   -4.88    -0.27 183    4.89 184    5.24 182    4.54 184    5.06 183    4.71
 154.00    153.86    2.6 184   -4.92    -0.27 183    4.93 184    5.28 182    4.58 184    5.11 183    4.76
 155.00    154.86    2.6 178   -4.97    -0.27 183    4.98 184    5.33 182    4.62 183    5.16 183    4.80
 156.00    155.86    2.9 180   -5.02    -0.27 183    5.03 184    5.39 182    4.67 183    5.21 183    4.85
 157.00    156.86    3.1 182   -5.07    -0.27 183    5.08 184    5.44 182    4.72 183    5.26 183    4.90
 158.00    157.86    3.3 188   -5.13    -0.28 183    5.14 184    5.50 182    4.77 183    5.32 183    4.95
 159.00    158.86    2.9 184   -5.19    -0.28 183    5.19 184    5.56 182    4.82 183    5.38 183    5.01
 160.00    159.86    2.9 181   -5.24    -0.28 183    5.25 184    5.62 182    4.87 183    5.43 183    5.06
 161.00    160.85    4.1 183   -5.29    -0.28 183    5.30 184    5.67 182    4.92 183    5.49 183    5.11
 162.00    161.85    3.1 180   -5.35    -0.28 183    5.36 184    5.73 182    4.98 183    5.55 183    5.17
 163.00    162.85    4.3 170   -5.41    -0.28 183    5.42 184    5.80 182    5.04 183    5.61 183    5.23
 164.00    163.85    3.2 183   -5.48    -0.28 183    5.48 183    5.87 182    5.10 183    5.68 183    5.29
 165.00    164.85    3.4 185   -5.53    -0.28 183    5.54 183    5.93 182    5.15 183    5.74 183    5.35
 166.00    165.85    3.2 179   -5.59    -0.28 183    5.60 183    5.99 182    5.21 183    5.80 183    5.40
 167.00    166.84    3.8 181   -5.66    -0.28 183    5.67 183    6.06 182    5.27 183    5.87 183    5.47
 168.00    167.84    3.4 179   -5.73    -0.28 183    5.73 183    6.13 182    5.33 183    5.93 183    5.53
 169.00    168.84    3.5 182   -5.80    -0.28 183    5.80 183    6.21 182    5.40 183    6.01 182    5.60
 170.00    169.84    3.2 176   -5.85    -0.28 183    5.85 183    6.26 182    5.45 183    6.06 182    5.65
 171.00    170.84    4.0 174   -5.91    -0.27 183    5.92 183    6.33 182    5.51 183    6.13 182    5.72
 172.00    171.83    3.0 171   -5.98    -0.25 182    5.98 183    6.40 182    5.57 183    6.19 182    5.78
 173.00    172.83    3.4 174   -6.04    -0.25 182    6.04 183    6.46 182    5.63 183    6.25 182    5.83
 174.00    173.83    3.8 170   -6.10    -0.24 182    6.10 183    6.52 182    5.68 183    6.31 182    5.89
 175.00    174.83    3.8 173   -6.16    -0.23 182    6.16 183    6.59 182    5.74 182    6.37 182    5.95
 176.00    175.82    3.6 168   -6.23    -0.21 182    6.23 182    6.66 181    5.80 182    6.44 182    6.02
 177.00    176.82    3.3 162   -6.28    -0.20 182    6.29 182    6.72 181    5.86 182    6.50 182    6.07
 178.00    177.82    3.6 164   -6.34    -0.18 182    6.34 182    6.77 181    5.91 182    6.56 181    6.12
 179.00    178.82    2.9 166   -6.39    -0.17 182    6.39 182    6.83 181    5.96 182    6.61 181    6.18
 180.00    179.82    4.7 157   -6.45    -0.15 181    6.46 182    6.89 181    6.02 182    6.68 181    6.24
 180.40    180.22    4.7 147   -6.48    -0.14 181    6.48 182    6.92 181    6.04 181    6.70 181    6.26
```
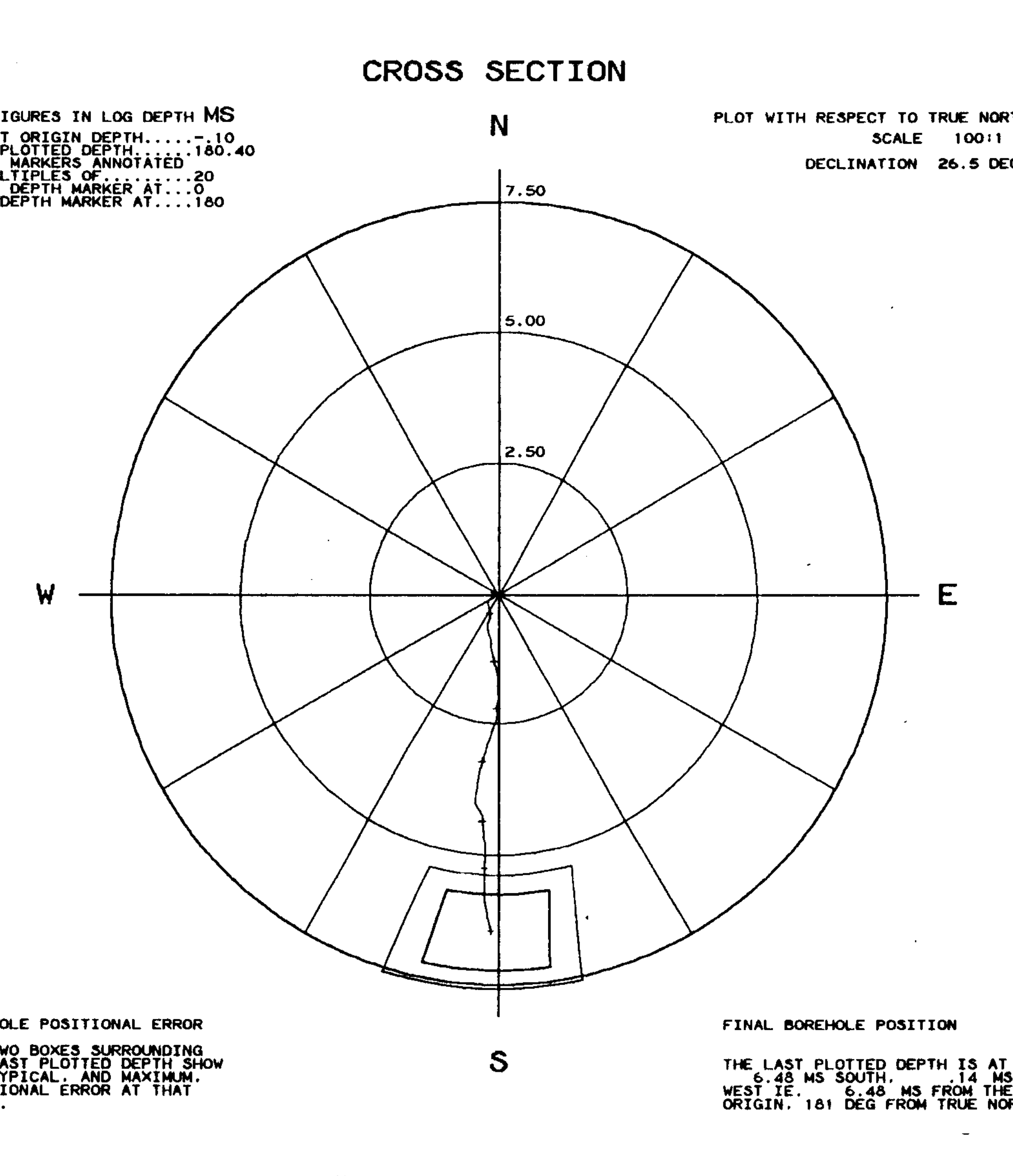

CROSS SECTION

ALL FIGURES IN LOG DEPTH MS
TARGET ORIGIN DEPTH.....-.10
LAST PLOTTED DEPTH......180.40
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.........20
FIRST DEPTH MARKER AT...0
LAST DEPTH MARKER AT....180

PLOT WITH RESPECT TO TRUE NORTH
SCALE 100:1
DECLINATION 26.5 DEG.



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL. AND MAXIMUM. POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

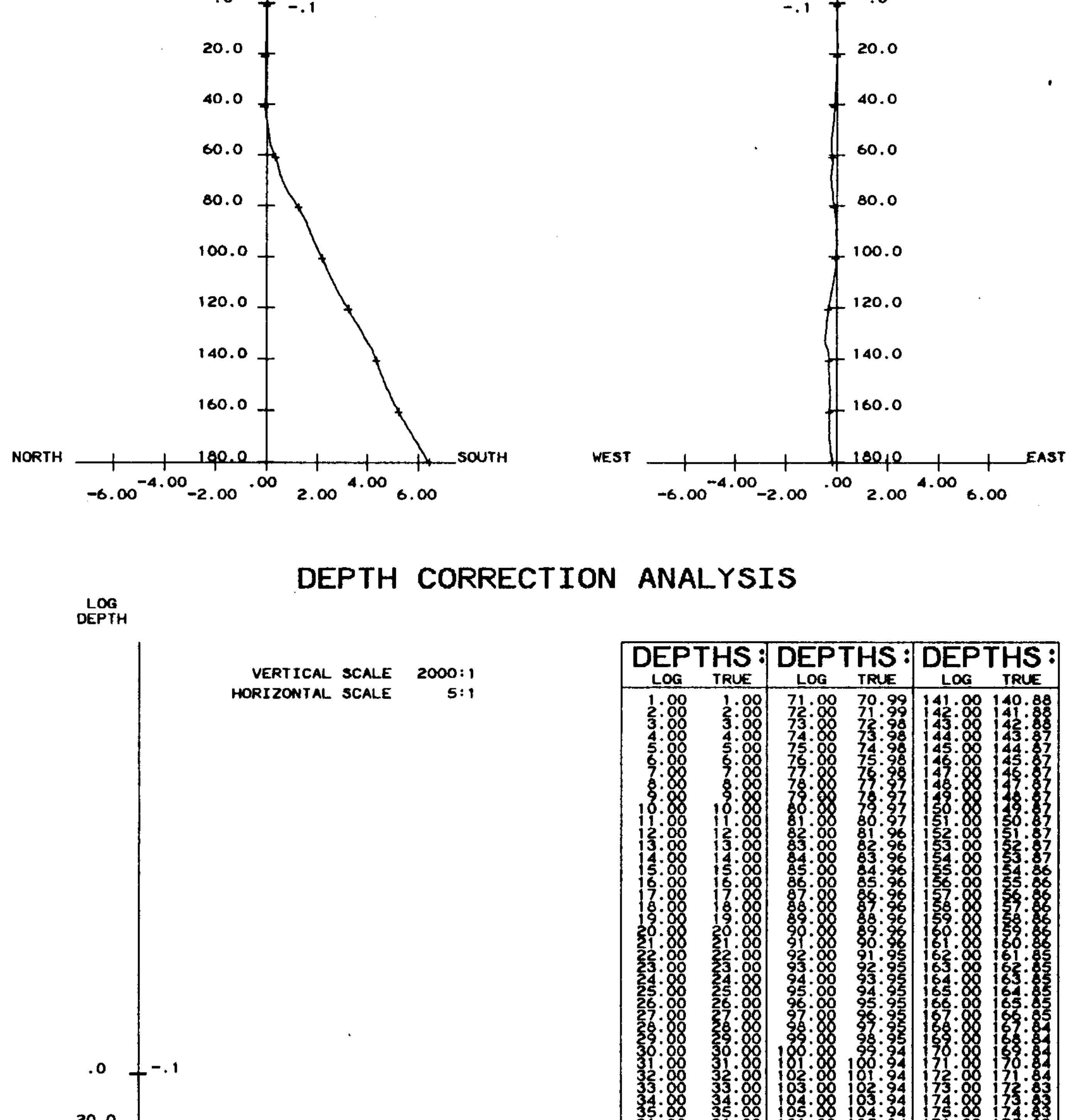
THE LAST PLOTTED DEPTH IS AT 6.48 MS SOUTH, .14 MS WEST IE. 6.48 MS FROM THE ORIGIN. 181 DEG FROM TRUE NORTH

N-S SECTION VERTICAL SECTIONS E-W SECTION

(TRUE DEPTH VS DISPLACEMENT)

VERTICAL SCALE 2000:1
HORIZONTAL SCALE 200:1

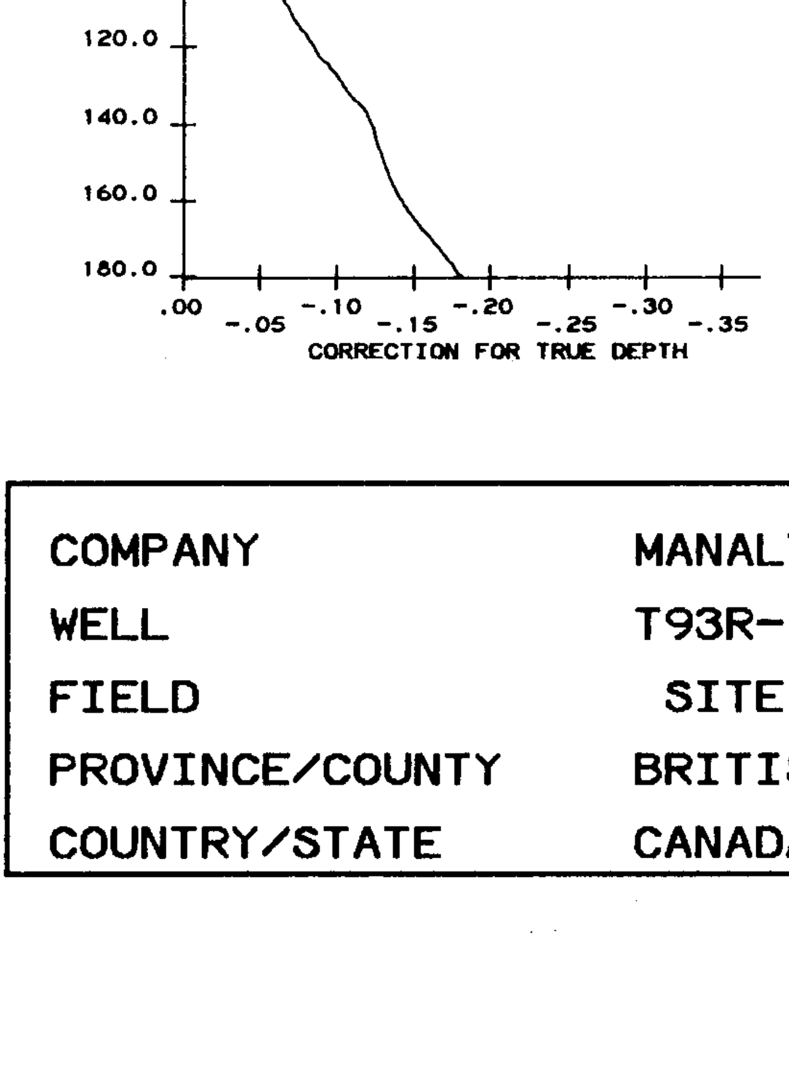
MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

LOG DEPTH

VERTICAL SCALE 2000:1
HORIZONTAL SCALE 5:1



DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE
1.00	1.00	71.00	70.99	141.00	140.88
2.00	2.00	72.00	71.99	142.00	141.88
3.00	3.00	73.00	72.98	143.00	142.88
4.00	4.00	74.00	73.98	144.00	143.87
5.00	5.00	75.00	74.98	145.00	144.87
6.00	6.00	76.00	75.98	146.00	145.87
7.00	7.00	77.00	76.98	147.00	146.87
8.00	8.00	78.00	77.97	148.00	147.87
9.00	9.00	79.00	78.97	149.00	148.87
10.00	10.00	80.00	79.97	150.00	149.87
11.00	11.00	81.00	80.97	151.00	150.87
12.00	12.00	82.00	81.96	152.00	151.87
13.00	13.00	83.00	82.96	153.00	152.87
14.00	14.00	84.00	83.96	154.00	153.87
15.00	15.00	85.00	84.96	155.00	154.86
16.00	16.00	86.00	85.96	156.00	155.86
17.00	17.00	87.00	86.96	157.00	156.86
18.00	18.00	88.00	87.96	158.00	157.86
19.00	19.00	89.00	88.96	159.00	158.86
20.00	20.00	90.00	89.96	160.00	159.86
21.00	21.00	91.00	90.96	161.00	160.86
22.00	22.00	92.00	91.95	162.00	161.85
23.00	23.00	93.00	92.95	163.00	162.85
24.00	24.00	94.00	93.95	164.00	163.85
25.00	25.00	95.00	94.95	165.00	164.85
26.00	26.00	96.00	95.95	166.00	165.85
27.00	27.00	97.00	96.95	167.00	166.85
28.00	28.00	98.00	97.95	168.00	167.84
29.00	29.00	99.00	98.95	169.00	168.84
30.00	30.00	100.00	99.94	170.00	169.84
31.00	31.00	101.00	100.94	171.00	170.84
32.00	32.00	102.00	101.94	172.00	171.84
33.00	33.00	103.00	102.94	173.00	172.83
34.00	34.00	104.00	103.94	174.00	173.83
35.00	35.00	105.00	104.94	175.00	174.83
36.00	36.00	106.00	105.94	176.00	175.83
37.00	37.00	107.00	106.94	177.00	176.82
38.00	38.00	108.00	107.93	178.00	177.82
39.00	39.00	109.00	108.93	179.00	178.82
40.00	40.00	110.00	109.93	180.00	179.82
41.00	41.00	111.00	110.93	181.00	180.82
42.00	42.00	112.00	111.93	180.40	180.22
43.00	43.00	113.00	112.93		
44.00	44.00	114.00	113.93		
45.00	45.00	115.00	114.92		
46.00	46.00	116.00	115.92		
47.00	47.00	117.00	116.92		
48.00	48.00	118.00	117.92		
49.00	49.00	119.00	118.92		
50.00	50.00	120.00	119.92		
51.00	51.00	121.00	120.91		
52.00	52.00	122.00	121.91		
53.00	53.00	123.00	122.91		
54.00	54.00	124.00	123.91		
55.00	55.00	125.00	124.91		
56.00	56.00	126.00	125.90		
57.00	57.00	127.00	126.90		
58.00	57.99	128.00	127.90		
59.00	58.99	129.00	128.90		
60.00	59.99	130.00	129.90		
61.00	60.99	131.00	130.89		
62.00	61.99	132.00	131.89		
63.00	62.99	133.00	132.89		
64.00	63.99	134.00	133.89		
65.00	64.99	135.00	134.88		
66.00	65.99	136.00	135.88		
67.00	66.99	137.00	136.88		
68.00	67.99	138.00	137.88		
69.00	68.99	139.00	138.88		
70.00	69.99	140.00	139.88		

COMPANY	MANALTA
WELL	T93R-18
FIELD	SITE 120
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
CALIPER 20:1
DETAIL LOG

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 120
WELL:
T93R-18
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-18
FIELD SITE 120
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

879

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT/DSN

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	14-SEP-93			
RUN NUMBER	THREE			
DEPTH-DRILLER	183.8M			
DEPTH-LOGGER	180.5M			
FIRST READING	180M			
LAST READING	0M			
CASING-DRILLER	25.6M			
CASING-LOGGER	25.6M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 / N/A			
PH/FLUID LOSS	N/A / N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 / RDR			
RECORDED BY	B.STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	42.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	25.6M	TD	178MM	N/A	SURFACE	25.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY CALIPER 20:1 DETAIL LOG

DUE TO BOREHOLE CONDITIONS GAMMA LOG FROM 40M TO 00M DISPLAYED ON NEUTRON LOG.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA – MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 14-SEP-1993 AT 13:52
FILENAME: DD3AR18A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-SEP-1993 AT 09:59

DEPTH BASED DATA – MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 14-SEP-1993 AT 13:52
FILENAME: DD3AR18A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-SEP-1993 AT 09:57

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 14-SEP-1993 AT 12:01 DATA LAST REPROCESSED: 15-SEP-1993 AT 9:56

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	25.60
BIT SIZE 3	.00	BIT DEPTH 3	183.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-18
FIELD	SITE 120
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY
CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 120
WELL:
T93R-18
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-18
FIELD	SITE 120
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION			OTHER SERVICES
TELKWA			VERT/DSN
LSD	SEC	TWP	RGE

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	14-SEP-93	
RUN NUMBER	FOUR	
DEPTH-DRILLER	183.8M	
DEPTH-LOGGER	180.5M	
FIRST READING	180M	
LAST READING	0M	
CASING-DRILLER	25.6M	
CASING-LOGGER	25.6M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	42.5M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FOUR	156MM	25.6M	TD	178MM	N/A	SURFACE	25.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY CALIPER 20:1 DETAIL LOG

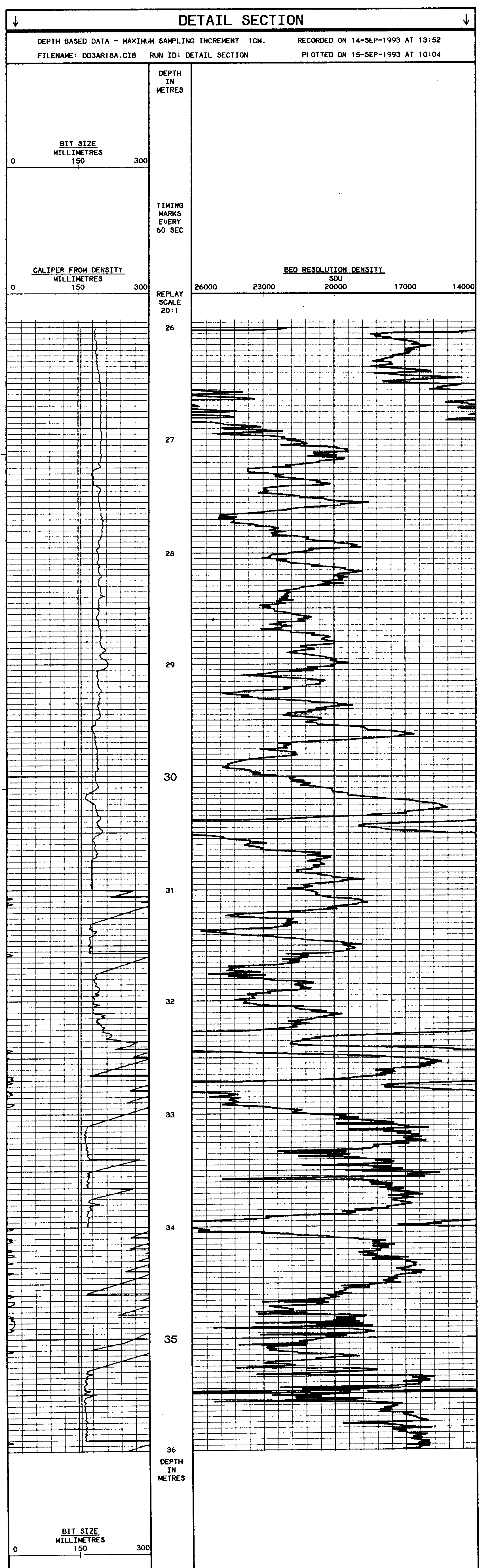
DUE TO BOREHOLE CONDITIONS GAMMA LOG FROM 40M TO 00M DISPLAYED ON NEUTRON LOG.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 14-SEP-1993 AT 13:52
FILENAME: DD3AR18A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-SEP-1993 AT 10:04



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 14-SEP-1993 AT 13:52
FILENAME: DD3AR18A.CIB RUN ID: DETAIL SECTION PLOTTED ON 15-SEP-1993 AT 10:04

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 14-SEP-1993 AT 12:01 DATA LAST REPROCESSED: 15-SEP-1993 AT 9:56

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	25.60
BIT SIZE 3	.00	BIT DEPTH 3	183.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-18
FIELD	SITE 120
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

GAMMA RAY

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 120
WELL:
T93R-18
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-18
FIELD SITE 120
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES
VERT.CCS

PERMANENT DATUM GROUND LEVEL .ELEVATION
LOG MEASURED FROM 00M ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 00M

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	14-SEP-93			
RUN NUMBER	FIVE			
DEPTH-DRILLER	183.8M			
DEPTH-LOGGER	180.5M			
FIRST READING	40M			
LAST READING	00			
CASING-DRILLER	25.6M			
CASING-LOGGER	25.6M			
BIT SIZE	156MM			
HOLE FLUID TYPE	AIR/WATER			
DENS./VISC.	1.01 N/A			
PH/FLUID LOSS	N/A N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	42.5M			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
FIVE	156MM	25.6M	183.8M	178MM	N/A	SURFACE	25.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
DSN	515			

REMARKS

GAMMA RAY
FROM NEUTRON SONDE

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 14-SEP-1993 AT 14:46
FILENAME: DSNGR18M.CIB RUN ID: MAIN LOG PLOTTED ON 16-SEP-1993 AT 11:52

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 14-SEP-1993 AT 14:46
FILENAME: DSNGR18M.CIB RUN ID: MAIN LOG PLOTTED ON 16-SEP-1993 AT 11:52

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 14-SEP-1993 AT 14:43

LOGGING CONSTANTS AND BIT SIZE MEASUREMENTS

POROSITY EQUATION TYPE	1 CURIE	NEUTRON POROSITY MATRIX	SANDSTNE
CALIPER SOURCE FOR PROCESSING	BIT SIZE	CALIPER UNITS (INS/MM)	MILLIMTR
CALIPER ARM LENGTH (CM)	29.60	ANNULAR VOLUME DIAMETER	127.05
BIT DEPTH UNITS (M/FT)	METRES		
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	25.60
BIT SIZE 3	0.00	BIT DEPTH 3	183.80
BIT SIZS 4	0.00	BIT DEPTH 4	0.00
BIT SIZE 5	0.00	BIT DEPTH 5	0.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	299.00
LSN CALIBRATOR VALUE 1	235.00	LSN COUNT RATE 1	284.80
LSN CALIBRATOR VALUE 2	0.00	LSN COUNT RATE 2	0.00
SSN CALIBRATOR VALUE 1	1040.00	SSN COUNT RATE 1	128.90
SSN CALIBRATOR VALUE 2	0.00	SSN COUNT RATE 2	0.00
CALIPER RING SIZE 1	76.23	CALIPER COUNT FOR RING 1	598.00
CALIPER RING SIZE 2	101.64	CALIPER COUNT FOR RING 2	657.00
CALIPER RING SIZE 3	127.05	CALIPER COUNT FOR RING 3	719.00
CALIPER RING SIZE 4	152.46	CALIPER COUNT FOR RING 4	781.00
CALIPER RING SIZE 5	203.28	CALIPER COUNT FOR RING 5	846.00
CALIPER RING SIZE 6	254.10	CALIPER COUNT FOR RING 6	905.00

COMPANY	MANALTA
WELL	T93R-18
FIELD	SITE 120
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#879

LOCATION	TELKWA
PRVNC/CO.	BRITISH COLUMBIA
FIELD	SITE 120
WELL:	T93R-18
COMPANY:	MANALTA

COMPANY	MANALTA
WELL	T93R-18
FIELD	SITE 120
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION				OTHER SERVICES
TELKWA				VERT/DSN
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	14-SEP-93	
RUN NUMBER	TWO	
DEPTH-DRILLER	183.8M	
DEPTH-LOGGER	180.5M	
FIRST READING	180M	
LAST READING	0M	
CASING-DRILLER	25.6M	
CASING-LOGGER	25.6M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B.STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	42.5M	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	25.6M	TD	178MM	N/A	SURFACE	25.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

DUE TO BOREHOLE CONDITIONS GAMMA LOG FROM 40M TO 00M DISPLAYED ON NEUTRON LOG.

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 14-SEP-1993 AT 13:52
FILENAME: DD3AR18M.CIB RUN ID: MAIN LOG PLOTTED ON 15-SEP-1993 AT 09:16

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 14-SEP-1993 AT 13:52
FILENAME: DD3AR18M.CIB RUN ID: MAIN LOG PLOTTED ON 15-SEP-1993 AT 09:16

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 14-SEP-1993 AT 12:01

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	25.60
BIT SIZE 3	.00	BIT DEPTH 3	183.80
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-18
FIELD	SITE 120
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#879

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 211
WELL:
T93R-43C
COMPANY:
MANALTA

COMPANY	MANALTA
WELL	T93R-43C
FIELD	SITE 211
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION				OTHER SERVICES
TELKWA				
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	5-OCT-93	
RUN NUMBER	THREE	
DEPTH-DRILLER	41.0M	
DEPTH-LOGGER	41.0M	
FIRST READING	40.5M	
LAST READING	0M	
CASING-DRILLER	5.2M	
CASING-LOGGER	5.2M	
BIT SIZE	156MM	
HOLE FLUID TYPE	AIR/WATER	
DENS./VISC.	1.01	N/A
PH/FLUID LOSS	N/A	N/A
SAMPLE SOURCE		
RM @ MEAS TEMP		
RMF @ MEAS TEMP		
RMC @ MEAS TEMP		
SOURCE: RMF/RMC		
RM @ BHT		
TIME SINCE CIRC		
MAX REC TEMP		
EQUIPMENT/BASE	V222	RDR
RECORDED BY	B. STEVENSON	
WITNESSED BY	T. BRAZZONI	
WATER LEVEL	0OM	

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
THREE	156MM	5.2M	TD	178MM	N/A	SURFACE	5.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

SHORT SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED 8-MAR-1993 PLOTTED

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN OUR PRICE SCHEDULE

↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-OCT-1993 AT 13:50
FILENAME: DD3AR43A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-OCT-1993 AT 14:24

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-OCT-1993 AT 13:50
FILENAME: DD3AR43A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-OCT-1993 AT 14:24

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 05-OCT-1993 AT 13:29 DATA LAST REPROCESSED: 5-OCT-1993 AT 14:17

LOGGING CONSTANTS

SONDE TYPE (DD3,CCS,DDI)	CCS	SONDE MODE (WET,DRY,STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS,MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT,M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.20
BIT SIZE 3	.00	BIT DEPTH 3	41.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-43C
FIELD	SITE 211
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1
DETAIL LOG

#8[illegible]

COMPANY	MANALTA
WELL	T93R-43C
FIELD	SITE 211
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 211
WELL:
T93R-43C
COMPANY:
MANALTA

LOCATION				OTHER SERVICES
TELKWA				
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	5-OCT-93				
RUN NUMBER	TWO				
DEPTH-DRILLER	41.0M				
DEPTH-LOGGER	41.0M				
FIRST READING	40.5M				
LAST READING	0M				
CASING-DRILLER	5.2M				
CASING-LOGGER	5.2M				
BIT SIZE	156MM				
HOLE FLUID TYPE	AIR/WATER				
DENS./VISC.	1.01	N/A			
PH/FLUID LOSS	N/A	N/A			
SAMPLE SOURCE					
RM @ MEAS TEMP					
RMF @ MEAS TEMP					
RMC @ MEAS TEMP					
SOURCE: RMF/RMC					
RM @ BHT					
TIME SINCE CIRC					
MAX REC TEMP					
EQUIPMENT/BASE	V222	RDR			
RECORDED BY	B. STEVENSON				
WITNESSED BY	T. BRAZZONI				
WATER LEVEL	00M				

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
TWO	156MM	5.2M	TD	178MM	N/A	SURFACE	5.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER 20:1 DETAIL LOG

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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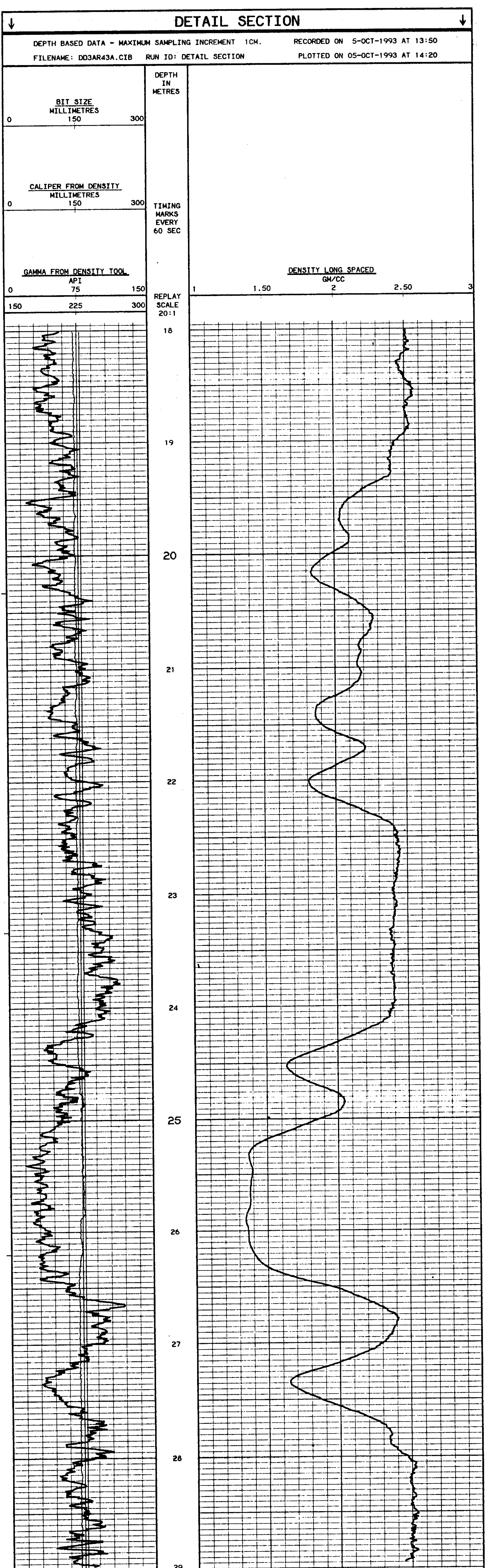
↓ DETAIL SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-OCT-1993 AT 13:50
FILENAME: DD3AR43A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-OCT-1993 AT 14:20



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM. RECORDED ON 5-OCT-1993 AT 13:50
FILENAME: DD3AR43A.CIB RUN ID: DETAIL SECTION PLOTTED ON 05-OCT-1993 AT 14:18

↑ DETAIL SECTION ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 05-OCT-1993 AT 13:29 DATA LAST REPROCESSED: 5-OCT-1993 AT 14:17

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.20
BIT SIZE 3	.00	BIT DEPTH 3	41.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-43C
FIELD	SITE 211
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

LONG SPACED DENSITY
GAMMA RAY
CALIPER

#870

LOCATION TELKWA
PRVNC/CO. BRITISH COLUMBIA
FIELD SITE 211
WELL:
T93R-43C
COMPANY:
MANALTA

COMPANY MANALTA
WELL T93R-43C
FIELD SITE 211
PROVINCE/COUNTY BRITISH COLUMBIA
COUNTRY/STATE CANADA

LOCATION
TELKWA

LSD	SEC	TWP	RGE

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL .ELEVATION N/A
LOG MEASURED FROM 0OM ABOVE PERMANENT DATUM
DRILLING MEASURED FROM 0OM

ELEVATIONS:
KB N/A
DF N/A
GL N/A

DATE	5-OCT-93			
RUN NUMBER	ONE			
DEPTH-DRILLER	41.0M			
DEPTH-LOGGER	41.0M			
FIRST READING	40.5M			
LAST READING	0M			
CASING-DRILLER	5.2M			
CASING-LOGGER	5.2M			
BIT SIZE	156MM			
HOLE-FLUID TYPE	AIR/WATER			
DENS./VISC.	1.0 | N/A			
PH/FLUID LOSS	N/A | N/A			
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC				
MAX REC TEMP				
EQUIPMENT/BASE	V222 | RDR			
RECORDED BY	B. STEVENSON			
WITNESSED BY	T. BRAZZONI			
WATER LEVEL	0OM			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	156MM	5.2M	TD	178MM	N/A	SURFACE	5.2M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	118			

REMARKS

LONG SPACED DENSITY GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 8-MAR-1993 PROCESSED PLOTTED

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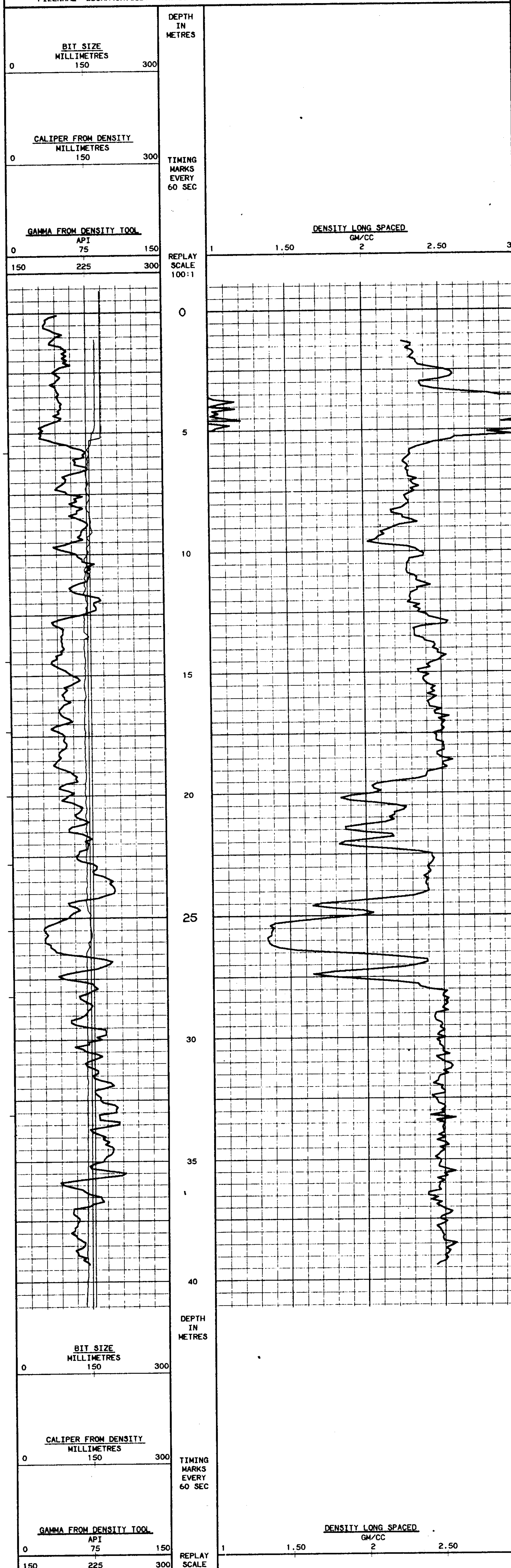
↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 5-OCT-1993 AT 13:50
FILENAME: DD3AR43M.CIB RUN ID: MAIN LOG PLOTTED ON 05-OCT-1993 AT 14:02



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 5-OCT-1993 AT 13:50
FILENAME: DD3AR43M.CIB RUN ID: MAIN LOG PLOTTED ON 05-OCT-1993 AT 13:50

↑ MAIN LOG ↑

LOGGING/CALIBRATION CONSTANTS

CONSTANTS LAST EDITED: 05-OCT-1993 AT 13:29

LOGGING CONSTANTS

SONDE TYPE (DD3.CCS.DDI)	CCS	SONDE MODE (WET.DRY.STD)	STD
MUD WEIGHT	1.01	STRIP COEFFICIENT	0.50
ANNULAR VOLUME DIAMETER	127.00	WATER LEVEL	0.00
CALIPER ARM LENGTH (CMS)	29.60	MATRIX DENSITY	2.71
CALIPER UNITS(INS.MMS)	MILLIMTR	DENSITY OF MUD FILTRATE	1.00
BRD POINT ONE	1.00	BRD POINT TWO	3.00
DENSITY POINT ONE	1.00	DENSITY POINT TWO	3.00
DENSITY SCALAR	1.40	BRD SCALAR	-.40
BIT DEPTHS & WATER LEVEL (FT.M)	METRES	CALIPER SOURCE FOR PROCESSING	CAL
BIT SIZE 1	178.00	BIT DEPTH 1	0.00
BIT SIZE 2	156.00	BIT DEPTH 2	5.20
BIT SIZE 3	.00	BIT DEPTH 3	41.00
BIT SIZE 4	.00	BIT DEPTH 4	.00
BIT SIZE 5	.00	BIT DEPTH 5	.00

CALIBRATION CONSTANTS

GAMMA CALIBRATOR VALUE 1	510.00	GAMMA COUNT RATE 1	311.55
BRD CALIBRATOR VALUE 1	25000.00	BRD COUNT RATE 1	2888.70
BRD CALIBRATOR VALUE 2	.00	BRD COUNT RATE 2	.00
LSD CALIBRATOR VALUE 1	10300.00	LSD COUNT RATE 1	1342.08
CALIPER RING SIZE 1	76.20	CALIPER COUNT FOR RING 1	529.00
CALIPER RING SIZE 2	101.60	CALIPER COUNT FOR RING 2	585.00
CALIPER RING SIZE 3	127.00	CALIPER COUNT FOR RING 3	640.00
CALIPER RING SIZE 4	152.40	CALIPER COUNT FOR RING 4	696.00
CALIPER RING SIZE 5	203.20	CALIPER COUNT FOR RING 5	816.00
CALIPER RING SIZE 6	254.00	CALIPER COUNT FOR RING 6	912.00
DRY HOLE CORRECTION Y1	0.00	DRY HOLE CORRECTION X1	0.00
DRY HOLE CORRECTION Y2	1.00	DRY HOLE CORRECTION X2	1.00

COMPANY	MANALTA
WELL	T93R-43C
FIELD	SITE 211
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA