



DIPMETER ANALYSIS

SLIMLINE UNIT



COMPANY WESTERN CANADIAN MINING CORP.

WELL DD91-13

FIELD WELDWOOD COAL PROJ.

PROVINCE/COUNTY BRITISH COLUMBIA

COUNTRY/STATE CANADA

LOCATION COURTENAY

PRVNC/CO. BRITISH COLUMBIA

FIELD WELDWOOD COAL PROJ.

WELL DD91-13

COMPANY WESTERN CANADIAN MINING CORP.

PROVINCE/COUNTY BRITISH COLUMBIA

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COMPANY WESTERN CANADIAN MINING CORP.

PROVINCE/COUNTY BRITISH COLUMBIA

COUNTRY/STATE CANADA

LOCATION COURTENAY

PRVNC/CO. BRITISH COLUMBIA

FIELD WELDWOOD COAL PROJ.

WELL DD91-13

COMPANY WESTERN CANADIAN MINING CORP.

PROVINCE/COUNTY BRITISH COLUMBIA

266

BOREHOLE RECORD				CASING RECORD			
RUN NUMBER	BIT	FROM	TO	SIZE	VEIGHT	FROM	TO
ONE	NO 2	4.6M	TD	NO	N/A	SURFACE	4.6M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
DIP/VERT	221/226			

REMARKS

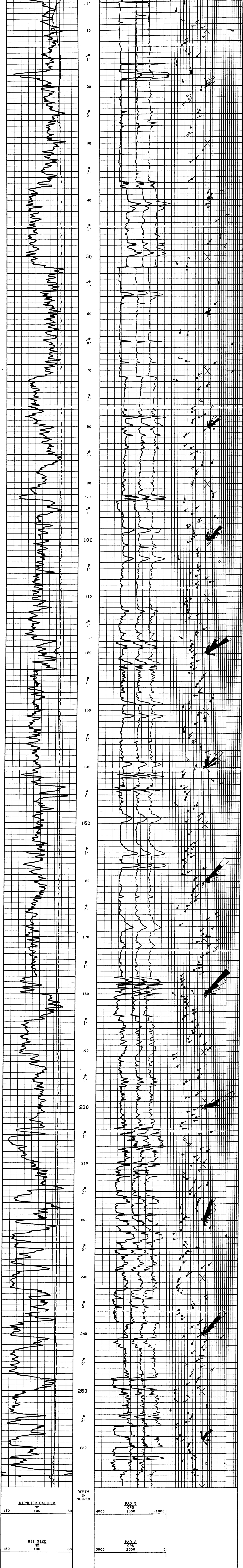
DIPMETER ANALYSIS SLIMLINE UNIT

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. A WE SHALL NOT, EXCEPT IN THE CASE OF CROSS OR VILFUL 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

DIPMETER ANALYSIS

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 25-JAN-1991 AT 12:36

FILENAME: HRCEDIP3.C18 RUN ID: DIPMETER ANALYSIS19 PLOTTED ON 25-JAN-1991 AT 12:55



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 25-JAN-1991 AT 12:36  
 FILENAME: HRCEDIP3.C18 RUN ID: DIPMETER ANALYSIS19 PLOTTED ON 25-JAN-1991 AT 12:55

DIPMETER ANALYSIS

COMPANY	WESTERN CANADIAN MINING CORP.
WELL	DD91-13
FIELD	WELDWOOD COAL PROJ.
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA



DIPMETER ANALYSIS

SLIMLINE UNIT

LOCATION PRVNC/CO. BRITISH COLUMBIA FIELD WELWOOD COAL PROJ. WELL DD91-19 COMPANY DD91-19	COURTENAY WESTERN CANADIAN MINING CORP. PROVINCE/COUNTY BRITISH-COLUMBIA COUNTRY/STATE CANADA	OTHER SERVICES OCS, CNL, FE BRD, MCS
PERMANENT DATUM LOC MEASURED FROM GROUND LEVEL ABOVE PERMANENT DATUM	LOCATION COURTENAY	ELEVATIONS: KB N/A DP N/A CL N/A
DRILLING MEASURED FROM GROUND LEVEL	GROUND LEVEL ELEVATION N/A	
DATE 6-FEB-91	DATE 6-FEB-91	
RUN NUMBER ONE	RUN NUMBER ONE	
DEPTH-COCKER 121.9M	DEPTH-COCKER 121.9M	
FIRST READING 0.0M	FIRST READING 0.0M	
LAST READING 16.7M	LAST READING 16.7M	
CASING-DRILLER 16.7M	CASING-DRILLER 16.7M	
CASING-LOGGER 16.7M	CASING-LOGGER 16.7M	
BIT SIZE NQ 2	BIT SIZE NQ 2	
HOLE FLUID TYPE WATER	HOLE FLUID TYPE WATER	
DENS./VISC. N/A	DENS./VISC. N/A	
PH/FLUID LOSS N/A	PH/FLUID LOSS N/A	
SAMPLE SOURCE PIT	SAMPLE SOURCE PIT	
RM @ MEAS. TEMP N/A	RM @ MEAS. TEMP N/A	
RMC @ MEAS. TEMP N/A	RMC @ MEAS. TEMP N/A	
RM @ MEAS. TEMP N/A	RM @ MEAS. TEMP N/A	
SOURCE, RMF/RMC N/A	SOURCE, RMF/RMC N/A	
RM @ BHT 6.3 @ 9C	RM @ BHT 6.3 @ 9C	
TIME SINCE CIRC 30 MIN	TIME SINCE CIRC 30 MIN	
MAX REC TEMP 9C	MAX REC TEMP 9C	
EQUIPMENT/BASE V629 HOR	EQUIPMENT/BASE V629 HOR	
RECORDED BY J.C. VISNER	RECORDED BY J.C. VISNER	
ATTENDED BY S. CASSELLMAN	ATTENDED BY S. CASSELLMAN	

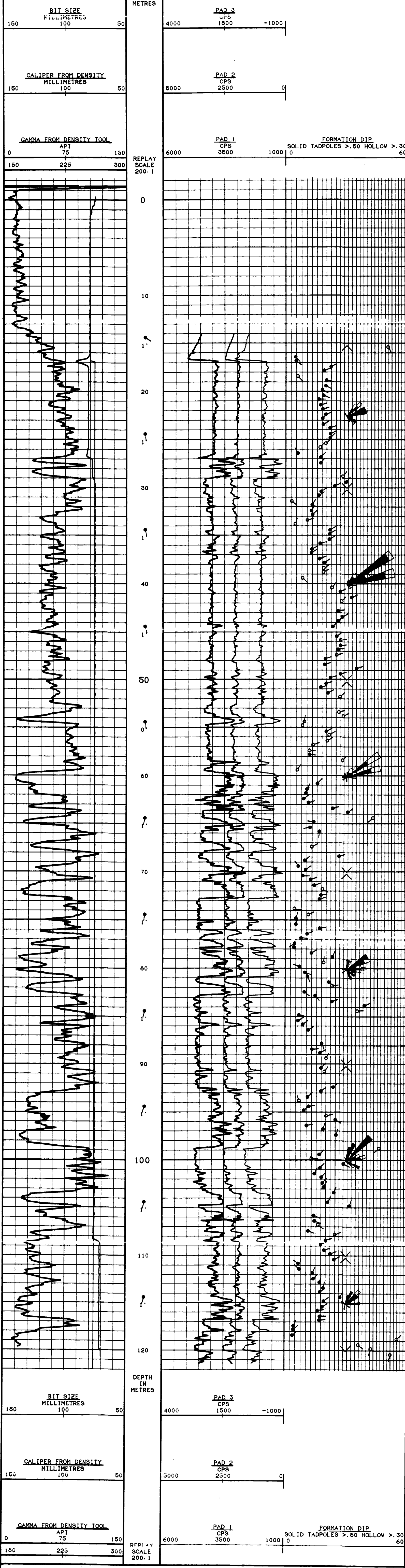
RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NQ 2	16.7M	TD	NQ	N/A	SURFACE	16.7M
EQUIPMENT		RUN 1	RUN 2	RUN 3	RUN 4		
DIP/VERT		221/226					

REMARKS  
DIPMETER ANALYSIS SLIMLINE UNIT

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DIPMETER ANALYSIS

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-FEB-1991 AT 09.26  
FILENAME: MRCE019M.CIB RUN ID: DIPMETER ANALYSIS PLOTTED ON 06-FEB-1991 AT 09.37



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 6-FEB-1991 AT 09.26  
FILENAME: MRCE019M.CIB RUN ID: DIPMETER ANALYSIS PLOTTED ON 06-FEB-1991 AT 09.37

DIPMETER ANALYSIS

COMPANY	WESTERN CANADIAN MINING CORP.
WELL	DD91-19
FIELD	WELWOOD COAL PROJ.
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA

866



Borehole: DD91-20  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

COMPENSATED NEUTRON  
 GAMMA RAY  
 CALIPER

SLIMLINE GRAPHICS UNIT

Permanent Datum	GROUND LEVEL, Elevation N/A	KB N/A	Location	COURTENAY
Log measured from	GROUND LEVEL above permanent datum	DF N/A		
Logging measured from	GROUND LEVEL above permanent datum	GL N/A		
Date	7-FEB-1991		LSD N/A	
Run Number	ONE		SEC	
Depth-Driller	99.6m		TIP	
Depth-Logger	99.3m		AGE	
Last Reading	99.2m		OTHER SERVICES	
Start Reading	0.0m		CDL, MCS	
Logging-Driller	17.9m		FE, BRD	
Logging-Logger	17.9m			
Bit Size	NO 2			
Fluid Type	WATER			
Vis. / Visc.	1.02GM N/A			
Fluid Loss	N/A NIL			
Sample Source	PIT			
W Meas Temp	N/A			
R Meas Temp	N/A			
C Meas Temp	N/A			
Surface: KmF/Kmc	N/A N/A			
W Bit	5.3 @ 9c			
Time Since Circ	30 MIN			
W Rec Temp	9c			
Equipment/Case	V829 RDR			
Recorded by	J.C. WISNER			
Processed by	S. CASSELMAN			

866

RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NO 2	17.9m	TD	NO	N/A	SURFACE	17.9m

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
DSN/CCS	501/110			

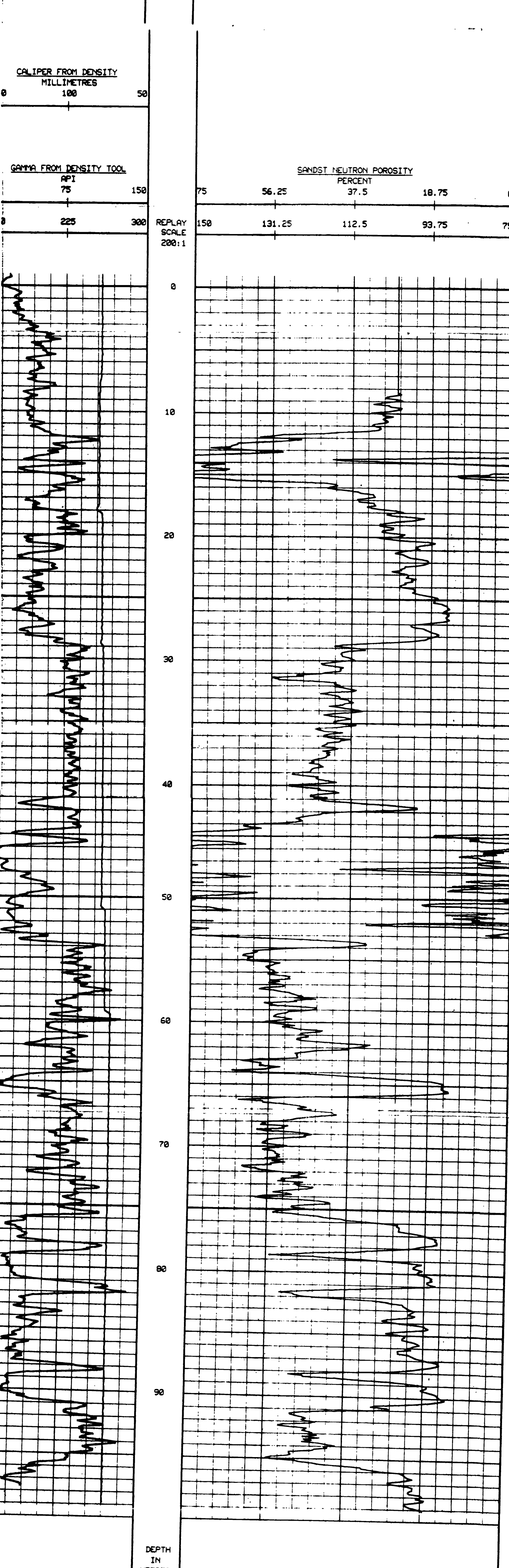
REMARKS: COMPENSATED NEUTRON GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 1-FEB-1990 PROCESSED 1-FEB-1990 PLOTTED 11-JAN-1991

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MAIN LOG

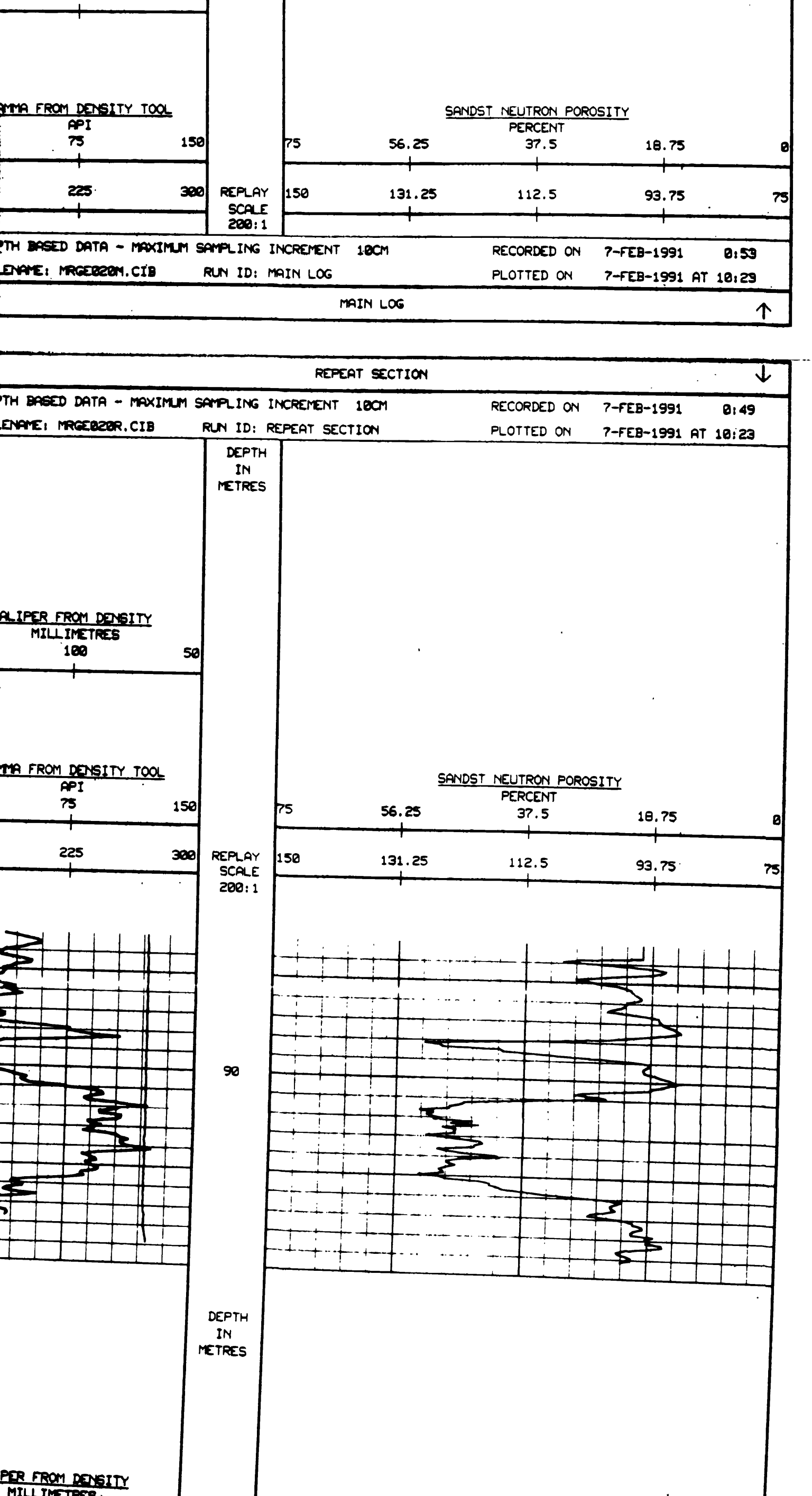
DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 7-FEB-1991 0:53  
 FILENAME: MAGE20M.CIB RUN ID: MAIN LOG PLOTTED ON 7-FEB-1991 AT 10:25



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 7-FEB-1991 0:53  
 LENAME: MAGE20M.CIB RUN ID: MAIN LOG PLOTTED ON 7-FEB-1991 AT 10:25

REPEAT SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 7-FEB-1991 0:49  
 LENAME: MAGE20R.CIB RUN ID: REPEAT SECTION PLOTTED ON 7-FEB-1991 AT 10:23



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 7-FEB-1991 0:49  
 FILENAME: MAGE20R.CIB RUN ID: REPEAT SECTION PLOTTED ON 7-FEB-1991 AT 10:22

REPEAT SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 7-FEB-1991 0:49  
 FILENAME: MAGE20R.CIB RUN ID: REPEAT SECTION PLOTTED ON 7-FEB-1991 AT 10:22

REPEAT SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 7-FEB-1991 0:49  
 FILENAME: MAGE20R.CIB RUN ID: REPEAT SECTION PLOTTED ON 7-FEB-1991 AT 10:22

CLIENT	WESTERN CANADIAN MINING CORP.
BOREHOLE	DD91-20
FIELD	WELWOOD COAL PROJ.
AREA	BRITISH COLUMBIA
COUNTRY	CANADA



Borehole: DD91-20  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

FOCUSSED ELECTRIC  
 GAMMA RAY

**SLIMLINE GRAPHICS UNIT**

Permanent Datum GROUND LEVEL, Elevation N/A	KB N/A	Location COURTENAY
Log measured from GROUND LEVEL above permanent datum	DF N/A	
Drilling measured from GROUND LEVEL above permanent datum	GL N/A	
Date 7-FEB-1991		LSD N/A
Run Number ONE		SEC
Depth-Driller 99.6m		TWP
Depth-Logger 99.5m		RGE
First Reading 98.5m		OTHER SERVICES
Last Reading 0.0m		CCS, CNL
Casing-Driller 17.9m		MCS, BRD
Casing-Logger 17.9m		
Bit Size NQ 2		
Hole Fluid Type WATER		
Dens./Visc. 1.02GM N/A		
PH/Fluid Loss N/A NIL		
Sample Source PIT		
Rm @ Meas Temp N/A		
Rmf @ Meas Temp N/A		
Rmc @ Meas Temp N/A		
Source: Rmf/Rmc N/A N/A		
Rm @ BHT 6.3 @ 9c		
Time Since Circ 30 MIN		
Max Rec Temp 9C		
Equipment/Base VB29 RDR		
Recorded by J.C. WISNER		
Witnessed by S. CASSELMAN		

866

RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NQ 2	17.9m	TD	NQ	N/A	SURFACE	17.9m

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
R04/CCS	104/110			

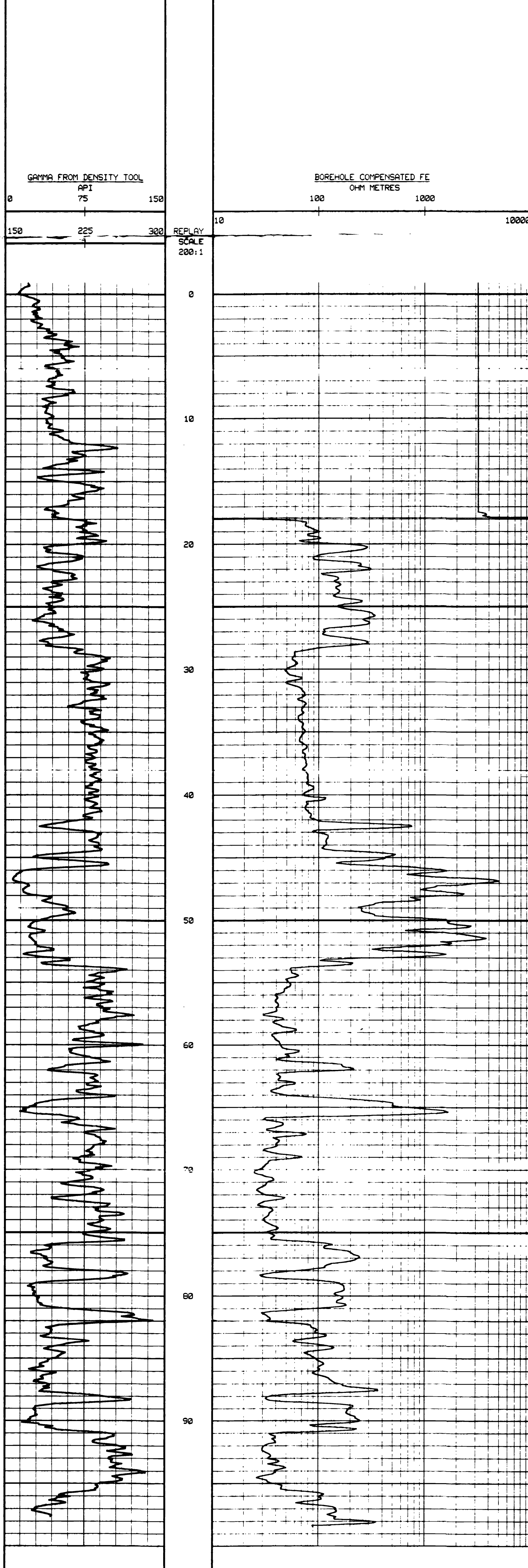
REMARKS:  
 FOCUSSED ELECTRIC GAMMA RAY

SYSTEM CONFIGURATION DATES: LOGGED 1-FEB-1990 PROCESSED 1-FEB-1990 PLOTTED 11-JAN-1991

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↓ MAIN LOG ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 7-FEB-1991 0:53  
 FILENAME: MRGE020M.CIB RUN ID: MAIN LOG PLOTTED ON 7-FEB-1991 AT 10:08

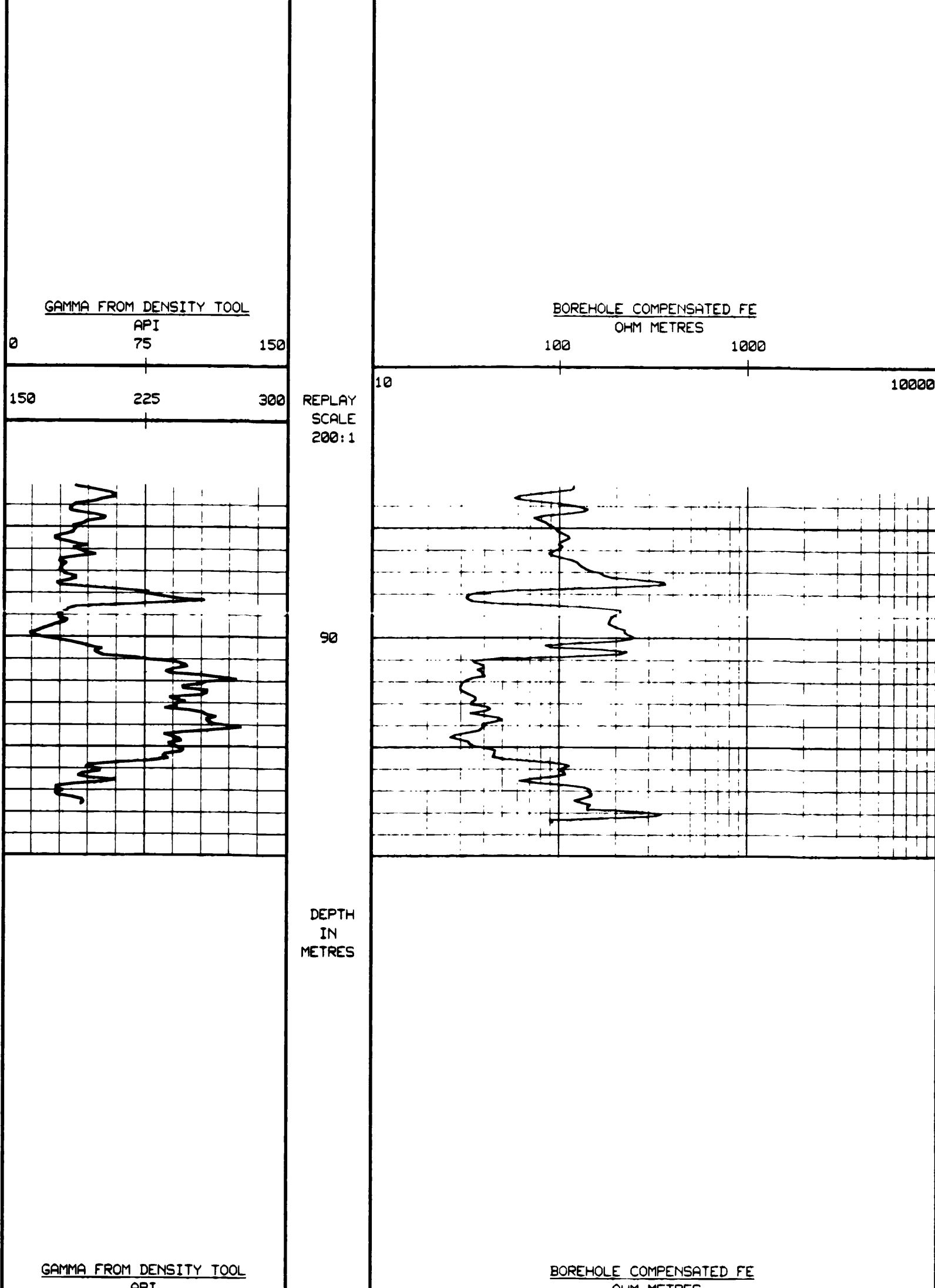


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 7-FEB-1991 0:53  
 FILENAME: MRGE020M.CIB RUN ID: MAIN LOG PLOTTED ON 7-FEB-1991 AT 10:07

↑ MAIN LOG ↑

↓ REPEAT SECTION ↓

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 7-FEB-1991 0:49  
 FILENAME: MRGE020R.CIB RUN ID: REPEAT SECTION PLOTTED ON 7-FEB-1991 AT 10:06

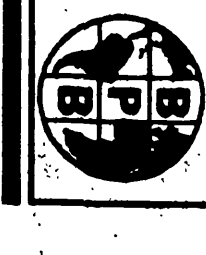


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 7-FEB-1991 0:49  
 FILENAME: MRGE020R.CIB RUN ID: REPEAT SECTION PLOTTED ON 7-FEB-1991 AT 10:06

↑ REPEAT SECTION ↑

CLIENT	WESTERN CANADIAN MINING CORP.
BOREHOLE	DD91-20
FIELD	WELWOOD COAL PROJ.
AREA	BRITISH COLUMBIA
COUNTRY	CANADA

866



DIPMETER ANALYSIS

SLIMLINE UNIT

LOCATION	COURTENAY	OTHER SERVICES	
PRVNC/CO.	BRITISH COLUMBIA	CDI... CNL... F.F.	
FIELD	VELDWOOD COAL PROJ.	BRD. MCS	
WELL	DD91-20		
COMPANY	WESTERN CANADIAN MINING CORP.		
PROVINC/COUNTY	BRITISH COLUMBIA		
COUNTRY/STATE	CANADA		
PERMANENT DATUM	GROUND LEVEL - ELEVATION N/A		
LOC MEASURED FROM	GROUND LEVEL, ABOVE PERMANENT DATUM		
DRILLING MEASURED FROM	GROUND LEVEL		
DATE	7-FEB-91		
RUN NUMBER	ONE		
DEPTH-DRILLER	99.6M		
DEPTH-LOGGER	99.3M		
FIRST READING	99.3M		
LAST READING	0.0M		
CASING-DRILLER	17.9M		
CASING-LOGGER	17.9M		
BIT SIZE	NO 2		
HOLE FLUID TYPE	WATER		
DENS. VISC.	1.020M N/A		
PRV FLUID LOSS	N/A		
SAMPLE SOURCE	PIT		
SRG # NEAS TEMP	N/A		
SRG # NEAS TEMP	N/A		
SRG # NEAS TEMP	N/A		
SOURCE: SRG/IRG	N/A		
SRG # BIT	N/A		
TIME SINCE CIRC	6.3 @ 3C		
MAX REC TEMP	30 MIN		
EQUIPMENT/BASE	9C		
RECORDED BY	J. G. VISNER		
WITNESSED BY	S. CASSELLMAN		

RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NO 2	17.9M	TD	NC	N/A	SURFACE	17.9M

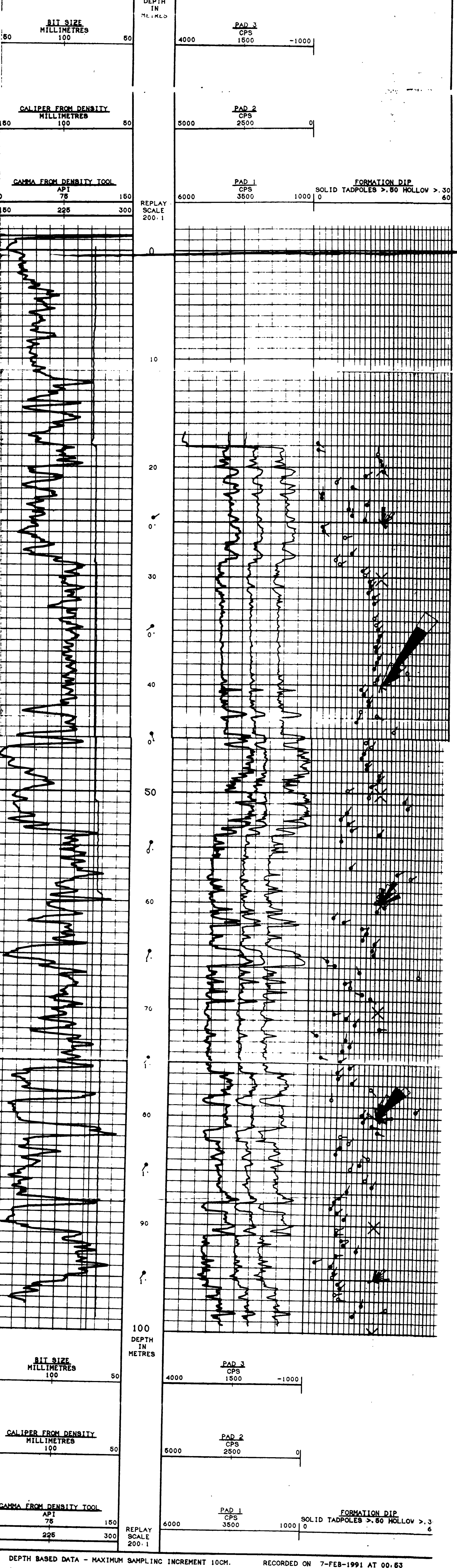
EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
DIP/VERT	221/226			

REMARKS  
DIPMETER ANALYSIS SLIMLINE UNIT

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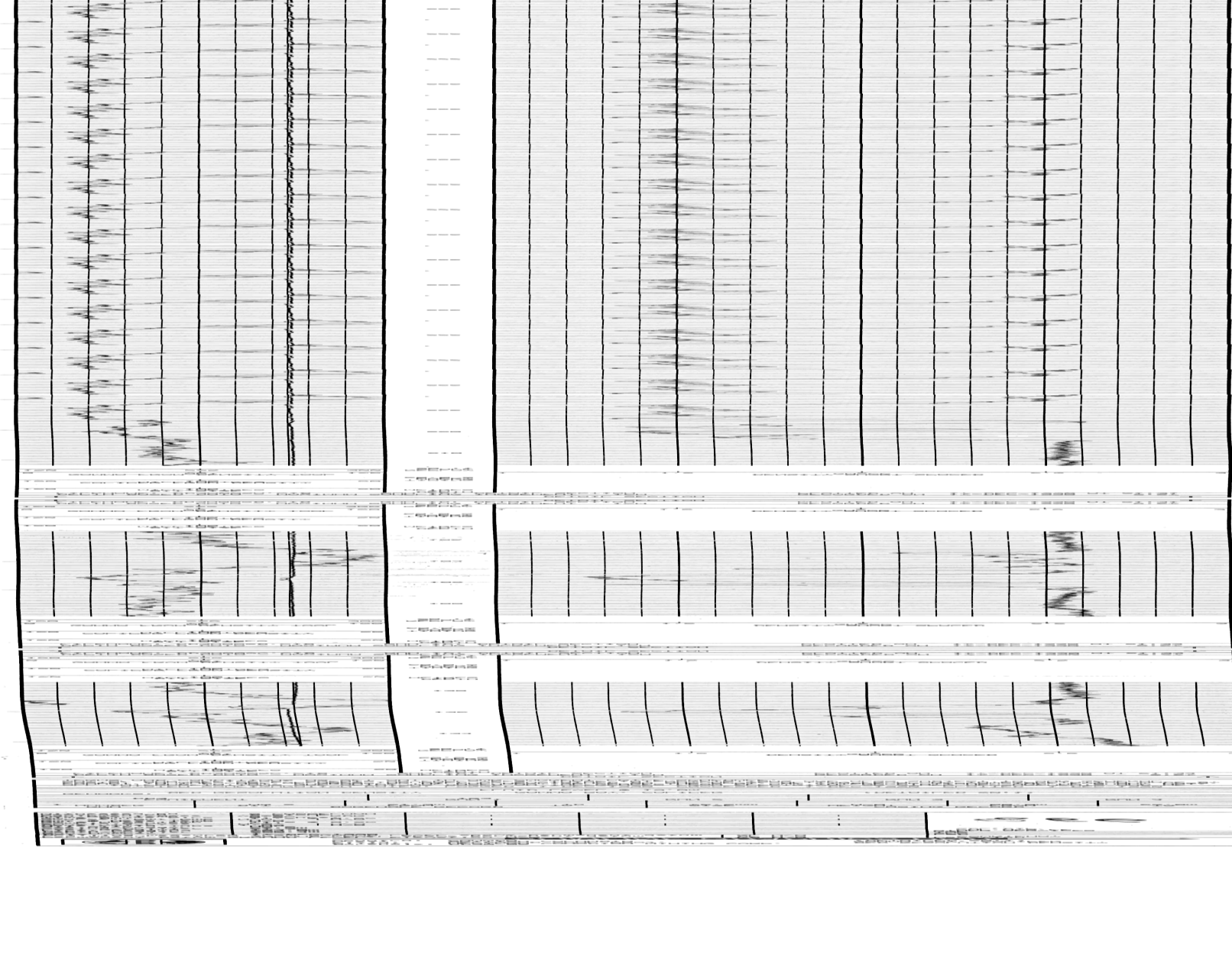
DIPMETER ANALYSIS

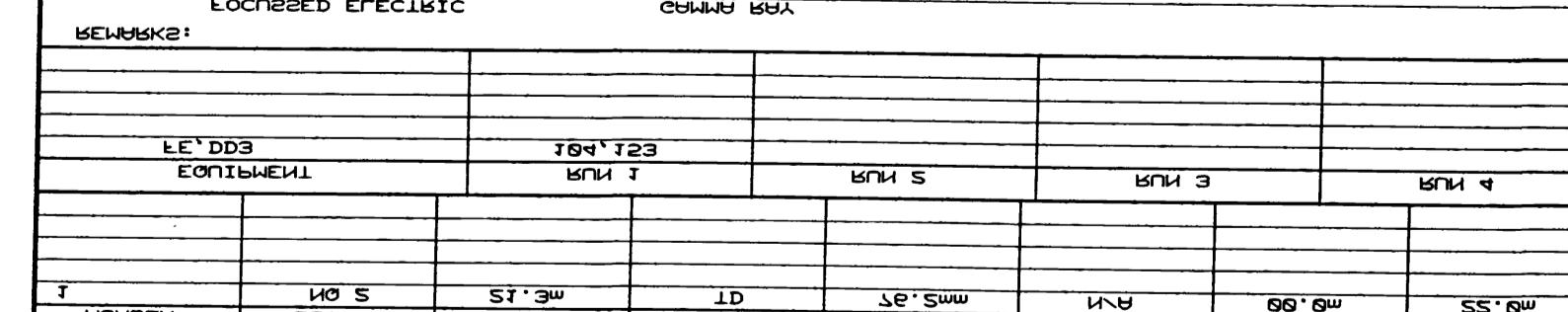
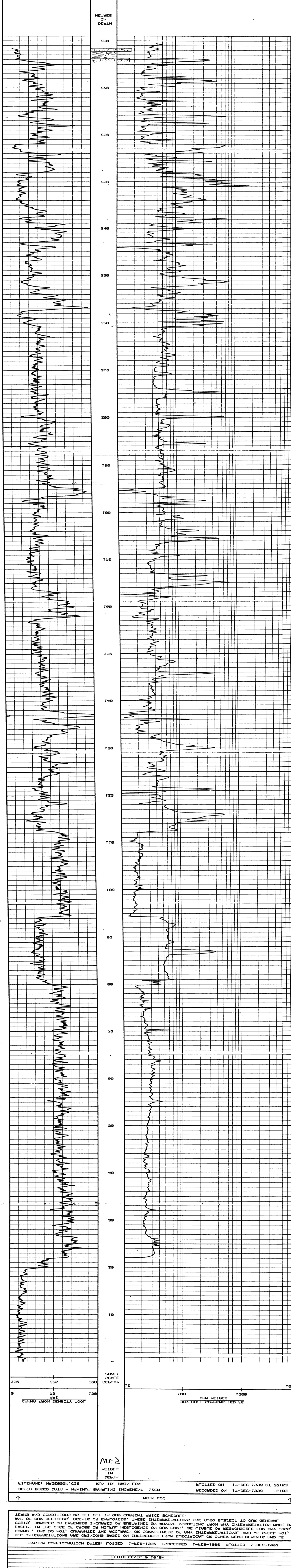
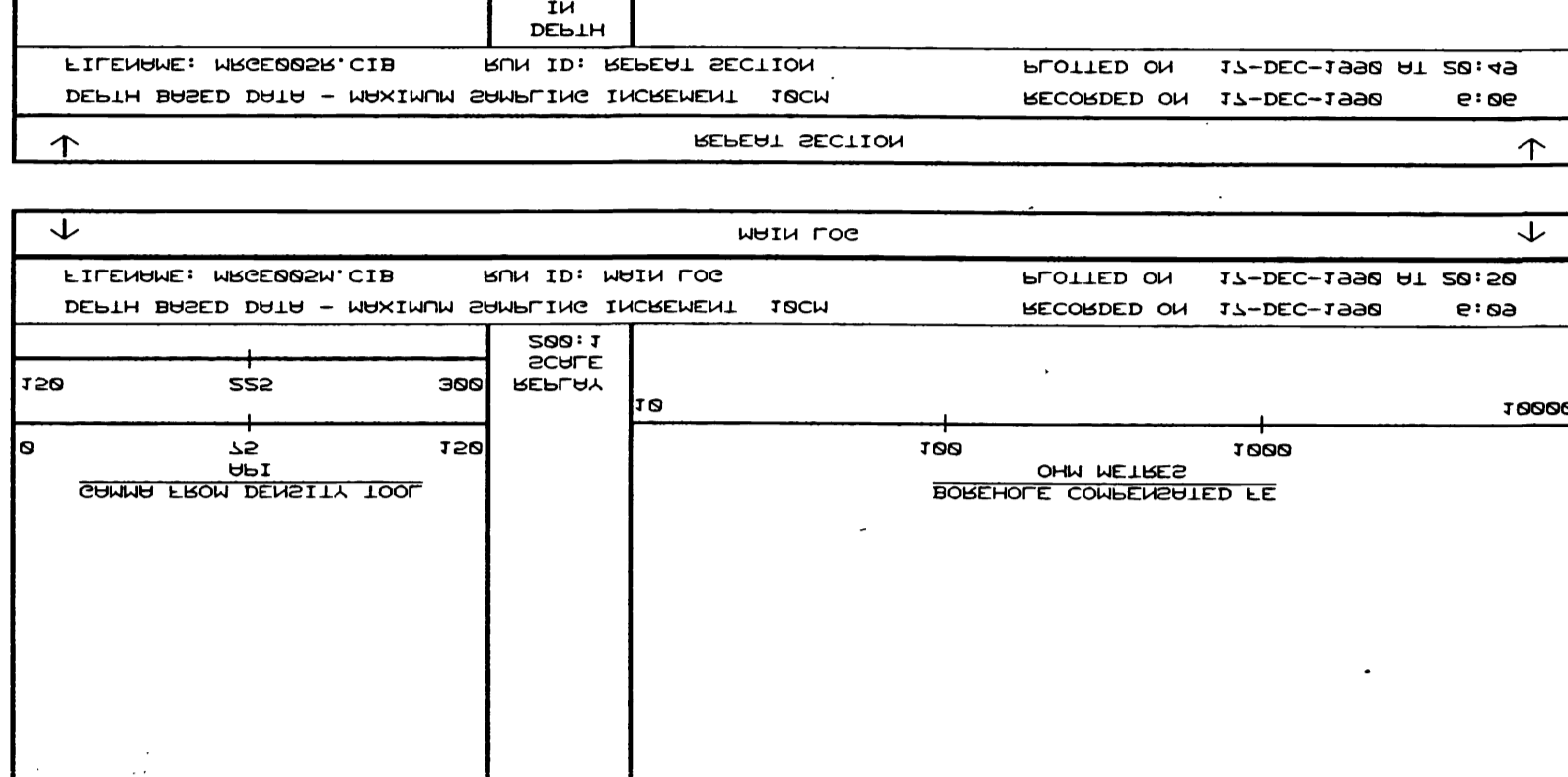
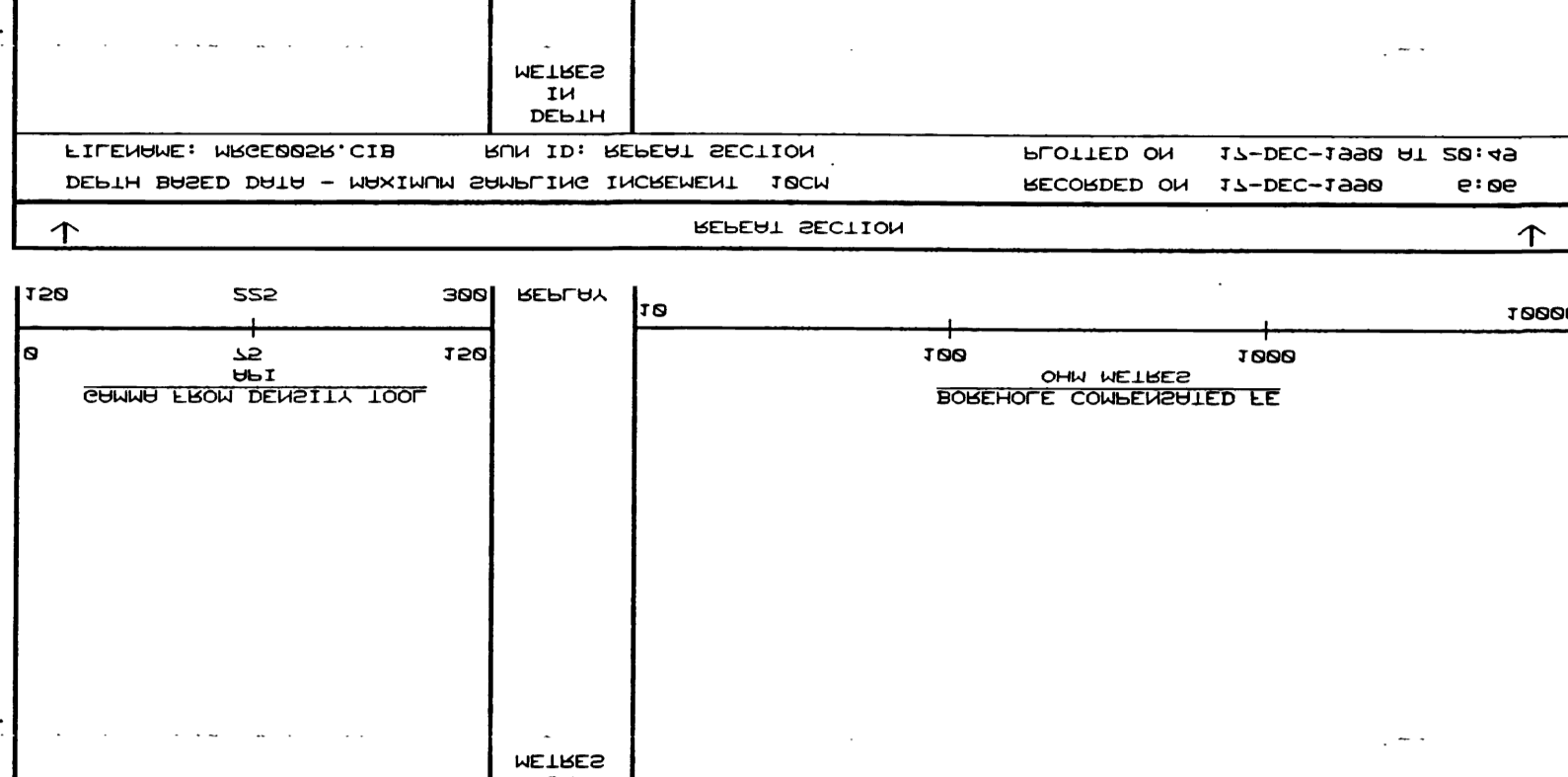
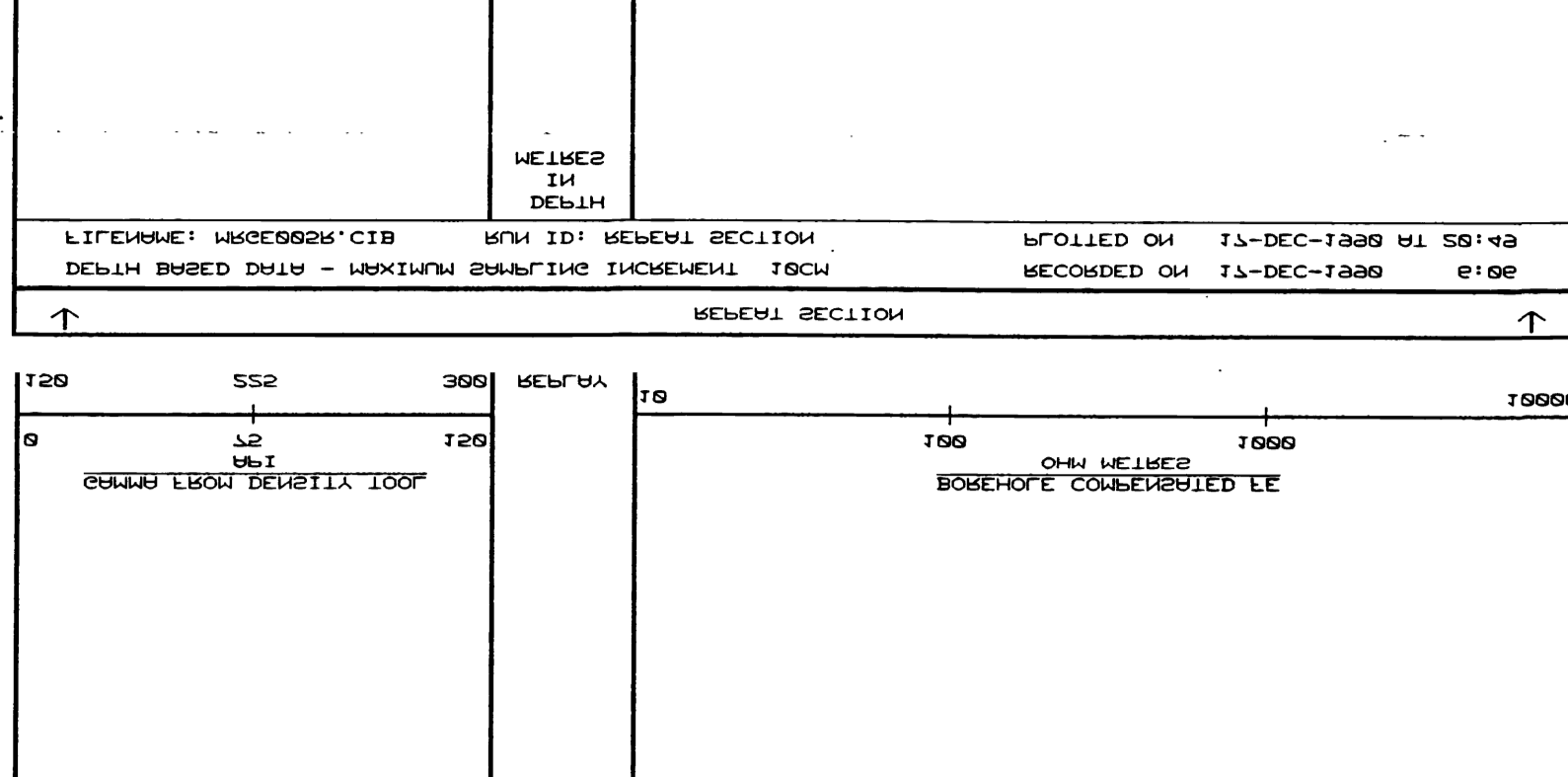
DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 7-FEB-1991 AT 00.63  
FILENAME: MRCE020M.C18 RUN ID: DIPMETER ANALYSIS PLOTTED ON 07-FEB-1991 AT 10.42



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 7-FEB-1991 AT 00.63  
FILENAME: MRCE020M.C18 RUN ID: DIPMETER ANALYSIS PLOTTED ON 07-FEB-1991 AT 10.42

COMPANY	WESTERN CANADIAN MINING CORP.
WELL	DD91-20
FIELD	VELDWOOD COAL PROJ.
PROVINC/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA





TESTS AND CONDITIONS AS SET OUT IN OTHER APPROPRIATE SCHEDULES  
 SHALL BE OF THE ORDER OF MAXIMUM STRAINING INSTRUMENT TESTS THESE INSTRUMENTATIONS ARE USED SUBJECT TO THE GENERAL  
 CONDITIONS OF SERVICE AS SPECIFIED BY THE GENERAL REGULATIONS AND THE INSTRUMENTATION MADE BY  
 COMBAT IN THE CASE OF CROSS OR HIGHLY RESISTANCE ON THE WAY OF THE INSTRUMENTATION MADE BY  
 COMBAT. THE DO NOT OPERATE THE INSTRUMENTS OR CONDUITS OR ANY INSTRUMENTATIONS AND THE SHANT HOUSING  
 BUT INSTRUMENTATIONS ARE OPTIONS BASED ON INDEPENDENT EVIDENCE OR OTHER INSTRUMENTATIONS MADE

SYSTEM CONFIGURATION NOTES: FORCED 7-FEB-7989 UNPROCESSED 7-FEB-7989 UNOLDED 7-DEC-7989

Liquid Level 6 10 30  
 LOCKED ELECTRIC OTHER DATA

I	NO S		ID	ΔE	IN	66	55
	5	7					

NUMBER	NO S	ID	ΔE	IN	66	55

Drilling operations shall proceed under the following conditions:  
 1. The maximum depth shall be 100 feet.  
 2. The maximum diameter shall be 12 inches.



**BRITISH COLUMBIA DEPARTMENT OF RESOURCES AND ENERGY DEVELOPMENT**

COMPLIANT: CANADIAN NATIONAL CODES  
 METHOD: FIELD DATA  
 DATE: 73-DEC-7989

*899*





Borehole: DD91-1B  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

FOCUSED ELECTRIC  
 GAMMA RAY

**SLIMLINE GRAPHICS UNIT**

Permanent Datum GROUND LEVEL, Elevation N/A	KB N/A	Location
Log measured from GROUND LEVEL above permanent datum	DF N/A	COURTENAY
Drilling measured from GROUND LEVEL above permanent datum	GL N/A	
Date	4-FEB-1991	LSD N/A
Run Number	ONE	SEC
Depth-Driller	128.0m	TAP
Depth-Logger	127.6m	TRG
First Reading	126.4m	OTHER SERVICES
Last Reading	8.0m	CCS, OIL
Casing-Driller	3.0m	MCS, BRD
Casing-Logger	3.0m	
Bit Size	NQ 2	
Hole Fluid Type	WATER	
Dens./Visc.	1.02GM N/A	
Mud/Loss	N/A NIL	
Sample Source	PIT	
Rmf # Meas Temp	N/A	
Rmc # Meas Temp	N/A	
Source: Rmf/Rmc	N/A N/A	
Rm # BHT	6.3 # 9c	
Time Since Circ	30 MIN	
Max Rec Temp	3C	
Equipment/Base	VE29 RDR	
Recorded by	J.C. WISNER	
Witnessed by	S. CASSELLMAN	

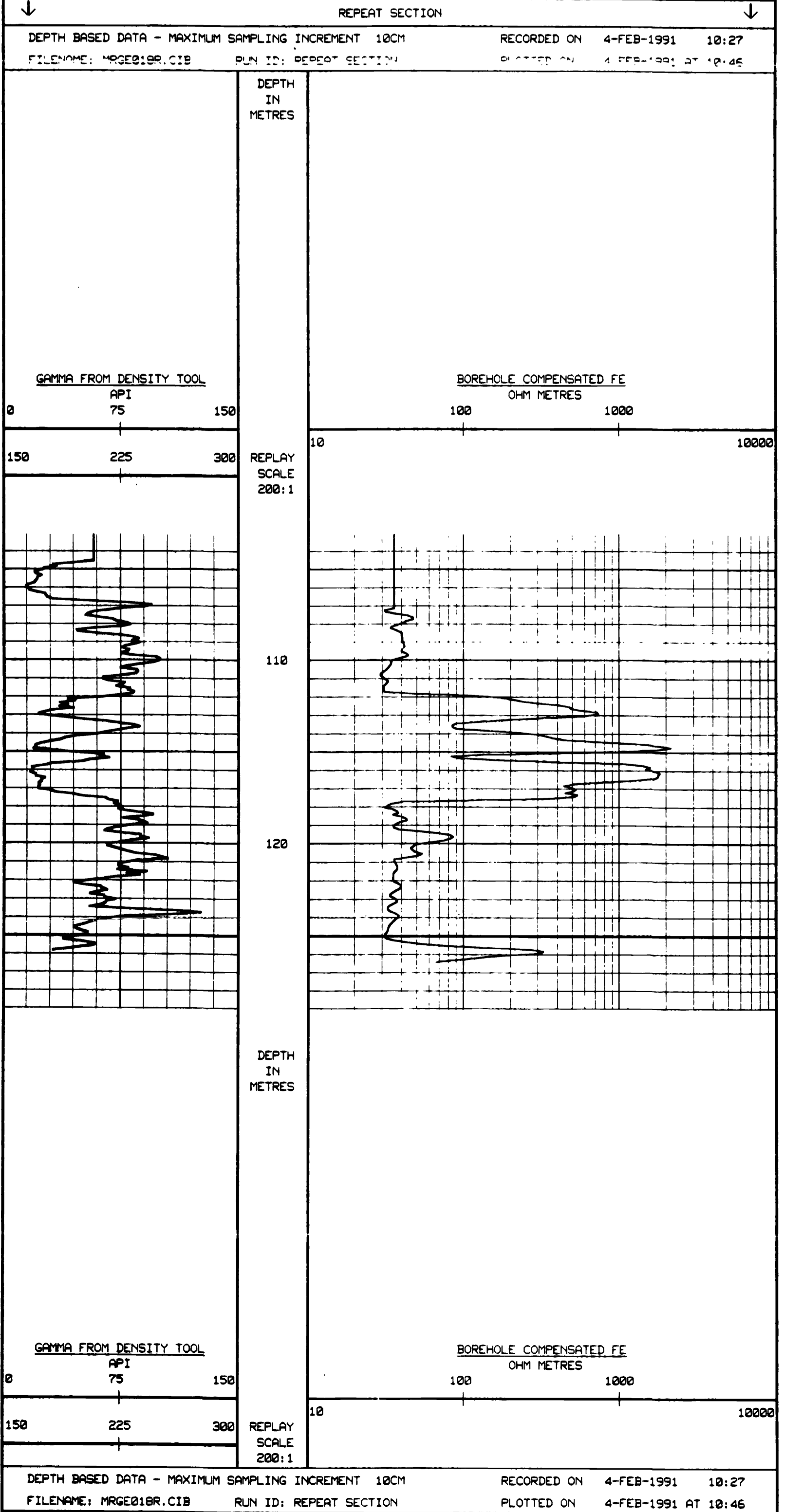
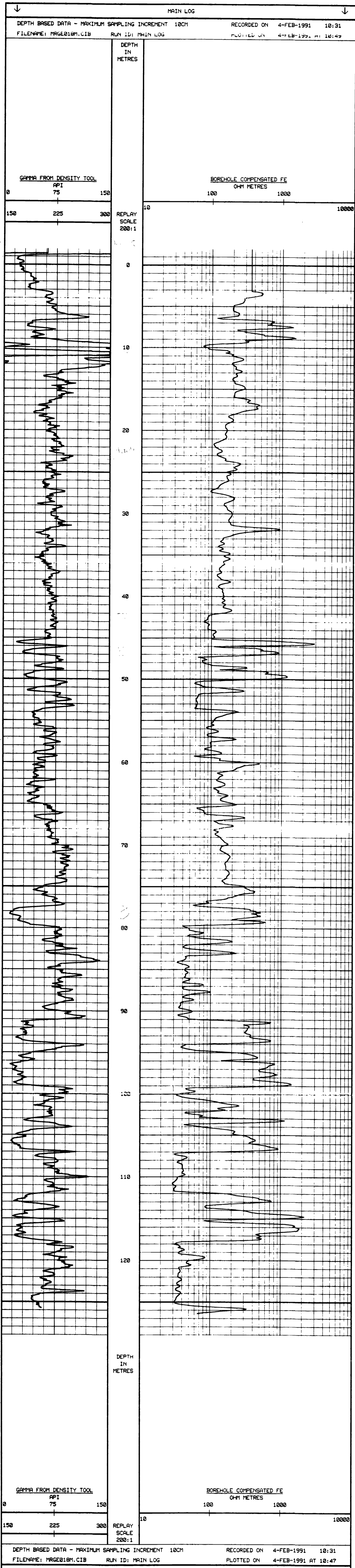
866

RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NQ 2	3.0m	TD	NQ	N/A	SURFACE	3.0m
EQUIPMENT		RUN 1	RUN 2	RUN 3	RUN 4		
R04/CCS		104/110					

REMARKS:  
 FOCUSED ELECTRIC                      GAMMA RAY

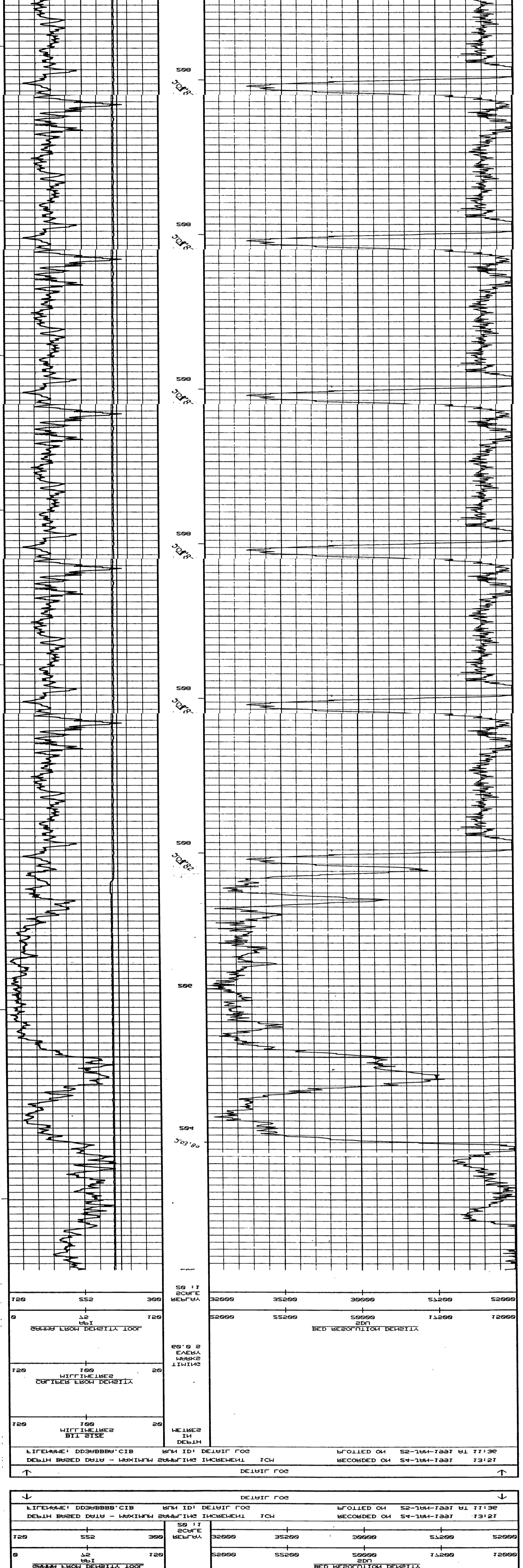
SYSTEM CONFIGURATION DATES: LOGGED 1-FEB-1990    PROCESSED 1-FEB-1990    PLOTTED 11-JAN-1991

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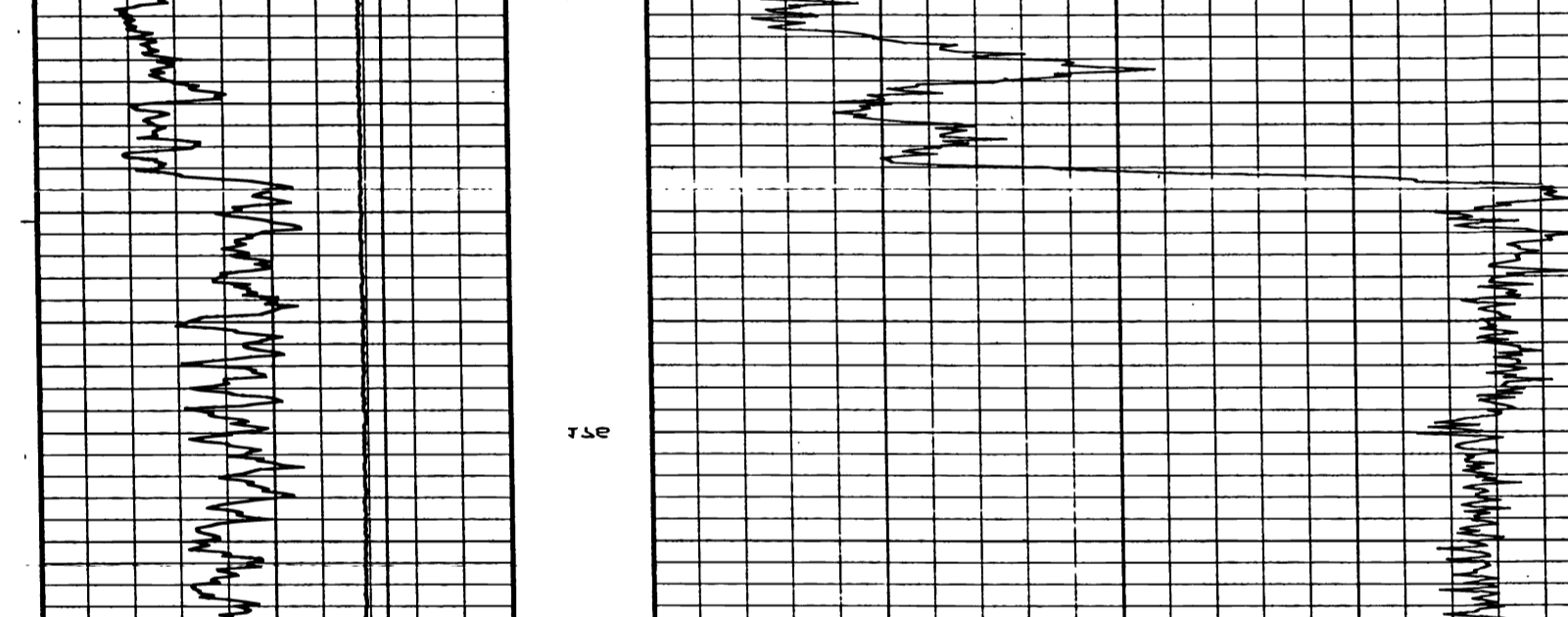
CLIENT: WESTERN CANADIAN MINING CORP.  
 BOREHOLE: DD91-1B  
 FIELD: WELWOOD COAL PROJ.  
 AREA: BRITISH COLUMBIA  
 COUNTRY: CANADA





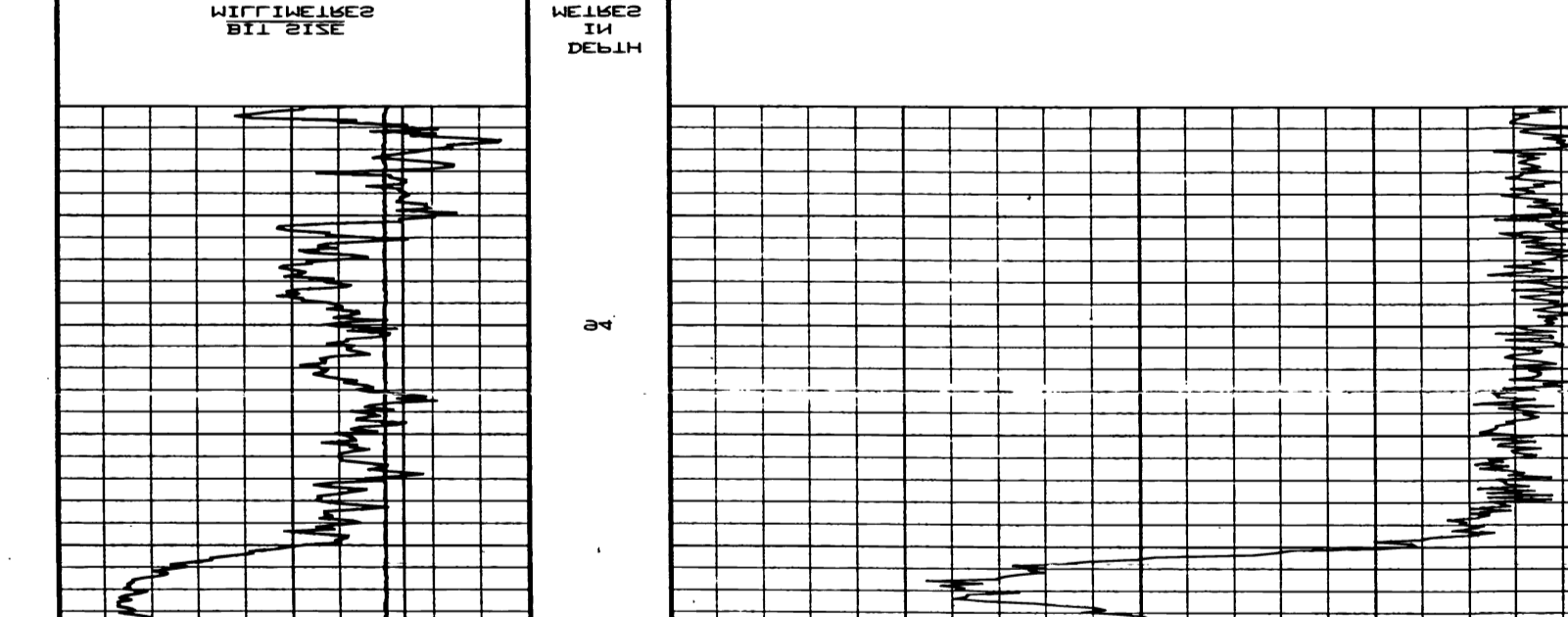
DEWH 100  
 596 595 594 593 592 591 590 589 588 587 586 585 584 583 582 581 580 579 578 577 576 575 574 573 572 571 570  
 DEWH 100  
 596 595 594 593 592 591 590 589 588 587 586 585 584 583 582 581 580 579 578 577 576 575 574 573 572 571 570  
 DEWH 100  
 596 595 594 593 592 591 590 589 588 587 586 585 584 583 582 581 580 579 578 577 576 575 574 573 572 571 570

LIT:SSAK: DDDBBBB:CIB MFM IDI DEWHI GCG FOLDED ON 52-104-7007 WJ 77:30  
 DEWH BRDZ DWH - MARKING SHALLOW INCREMENT ICM RECORDED ON 54-104-7007 73:27  
 DEWHI GCG  
 50' 0" 2  
 EAKA  
 MARKS  
 11MINO  
 700  
 WITTINGER  
 BIT SIZE  
 20  
 700  
 WITTINGER  
 BIT SIZE  
 20  
 700  
 WITTINGER  
 BIT SIZE  
 20



DEWH 100  
 709 708 707 706 705 704 703 702 701 700  
 DEWH 100  
 709 708 707 706 705 704 703 702 701 700  
 DEWH 100  
 709 708 707 706 705 704 703 702 701 700

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 WITTINGER  
 BIT SIZE  
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 700  
 WITTINGER  
 BIT SIZE  
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 700  
 WITTINGER  
 BIT SIZE  
 20



DEWH 100  
 709 708 707 706 705 704 703 702 701 700  
 DEWH 100  
 709 708 707 706 705 704 703 702 701 700  
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 BIT SIZE  
 20

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 709 708 707 706 705 704 703 702 701 700  
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 709 708 707 706 705 704 703 702 701 700  
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 WITTINGER  
 BIT SIZE  
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 709 708 707 706 705 704 703 702 701 700  
 DEWH 100  
 709 708 707 706 705 704 703 702 701 700  
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EAKA  
MARKS  
11MINO

700  
WITTINGER  
BIT SIZE  
20

700  
WITTINGER  
BIT SIZE  
20

700  
WITTINGER  
BIT SIZE  
20

DEWH 100  
 709 708 707 706 705 704 703 702 701 700  
 DEWH 100  
 709 708 707 706 705 704 703 702 701 700  
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 BIT SIZE  
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 WITTINGER  
 BIT SIZE  
 20

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 WITTINGER  
 BIT SIZE  
 20

DEWH 100  
 709 708 707 706 705 704 703 702 701 700  
 DEWH 100  
 709 708 707 706 705 704 703 702 701 700  
 DEWH 100  
 709 708 707 706 705 704 703 702 701 700





866



DIPMETER ANALYSIS  
SLIMLINE UNIT

LOCATION	COURTENAY	PRVNC/CO.	BRITISH COLUMBIA
FIELD	VELDWOOD COAL PROJ.	WELL	DD90-04
COMPANY	WESTERN CANADIAN MINING CORP.	PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA	DATE	13-DEC-90
VEIL	DD90-04	PERMANENT DATUM	LOC MEASURED FROM GROUND LEVEL ABOVE PERMANENT DATUM
FIELD	VELDWOOD COAL PROJ.	DRILLING MEASURED FROM	GROUND LEVEL
PROVINCE/COUNTY	BRITISH COLUMBIA	DATE	13-DEC-90
COUNTRY/STATE	CANADA	RUN NUMBER	1
		DEPTH-DRILLER	221-3M
		DEPTH-LOCKER	221-3M
		LAST READING	60.0M
		COSTING-DRILLER	6.1M
		COSTING-LOCKER	6.0M
		BIT SIZE	NO 2
		DENS. /VISC.	NO 2
		HOSE FLUID TYPE	MUD
		PHI/FLUID LOSS	N/A
		SAMPLE SOURCE	24.6 @ 10.2C
		RMC @ HEADS TEMP	N/A
		RMC @ HEADS TEMP	N/A
		SOURCE: RMT/RMC	N/A
		RMC @ BIT	24.6 @ 10.2C
		TIME SINCE CIR	6.0 HRS.
		MAX REC TEMP	122.0 C
		RECORDED BY	TE FICHER
		WITNESSED BY	S GOSSELINK

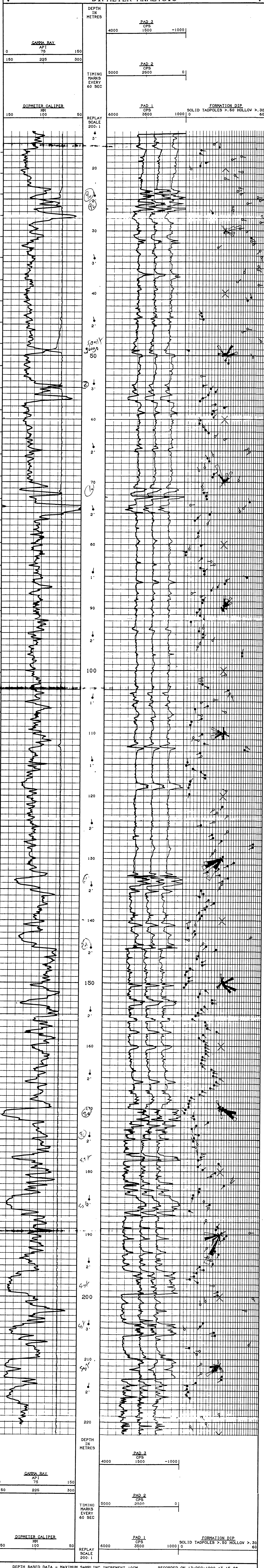
RUN NUMBER	BOREHOLE RECORD		CASING RECORD	
	BIT	FROM TO	SIZE	WEIGHT FROM TO
1	NQ 2	6.1M	76.2MM	N/A 00.0M 6.1M

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
DIP. DD3	221.226.153			

REMARKS  
DIPMETER ANALYSIS SLIMLINE UNIT  
FLUID LEVEL @ 12.3M

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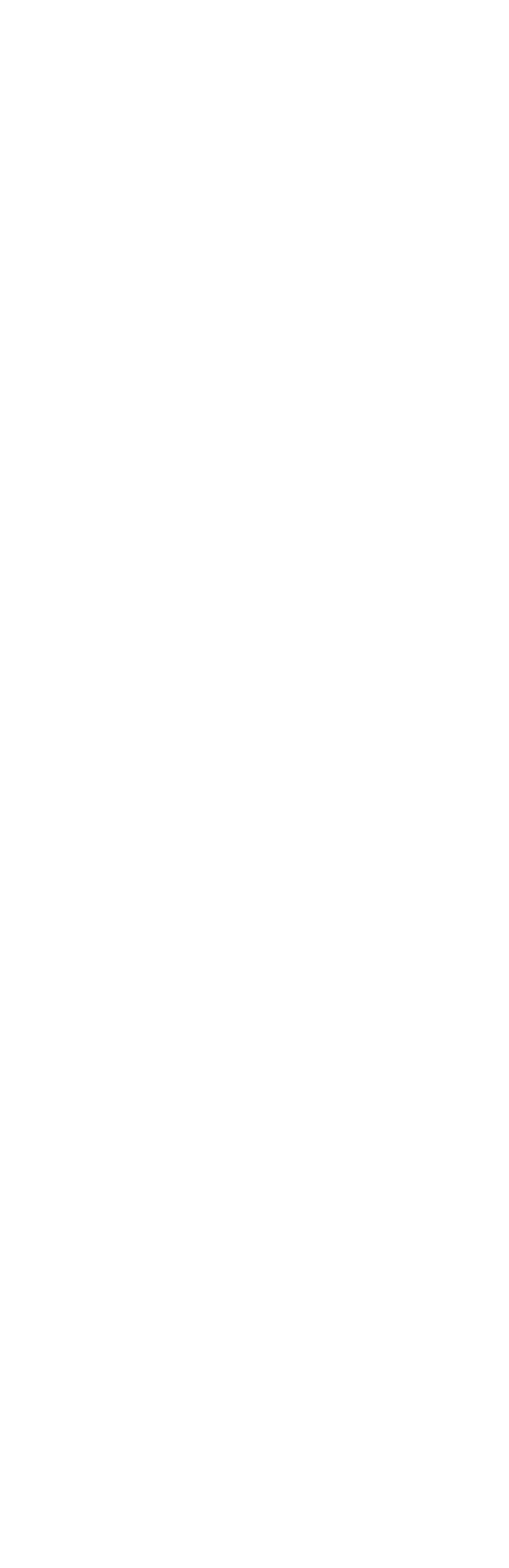
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FILENAME: DIP3004M.C18 RUN ID: DIPMETER ANALYSIS PLOTTED ON 13-DEC-1990 AT 19.17

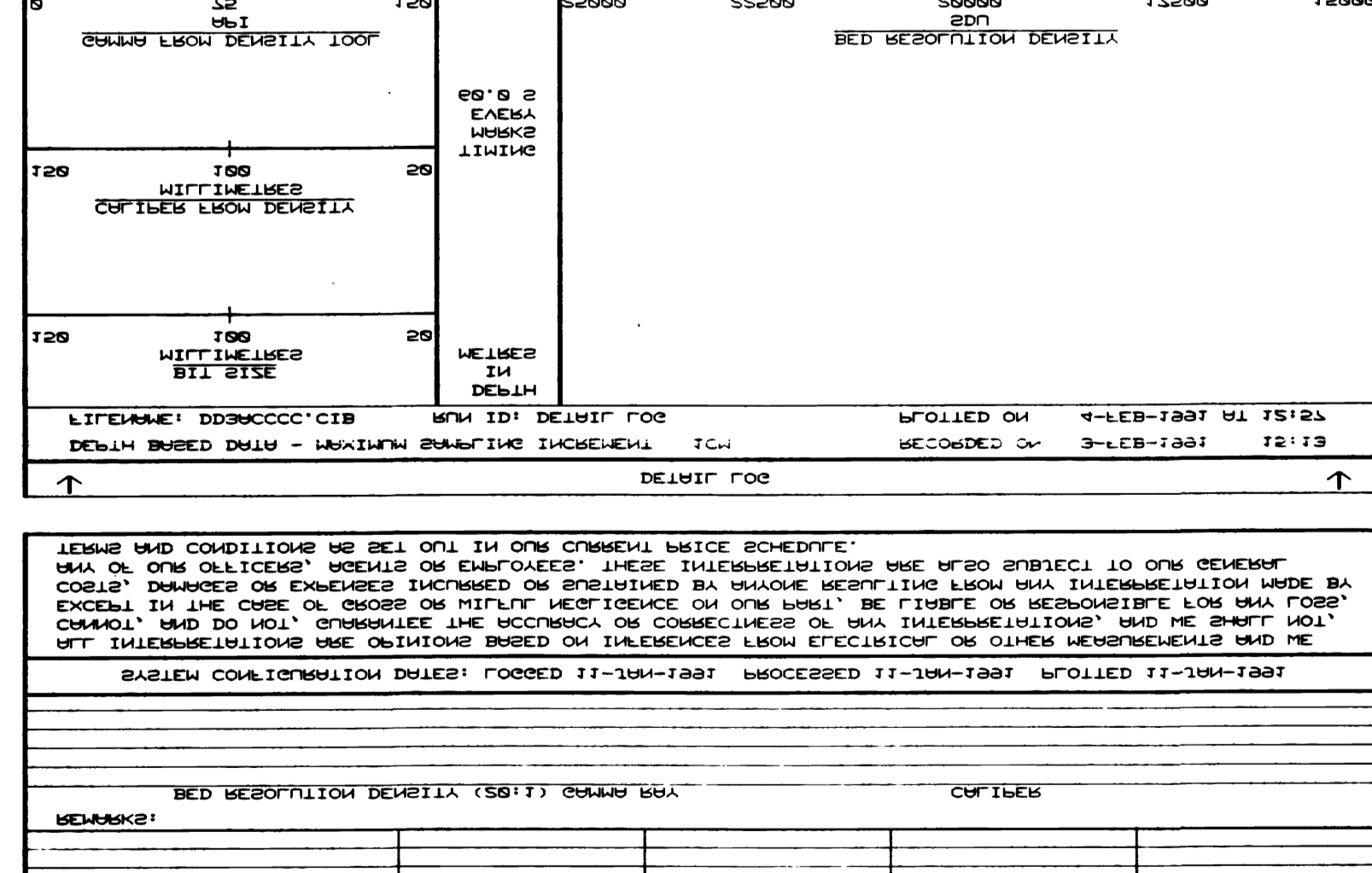
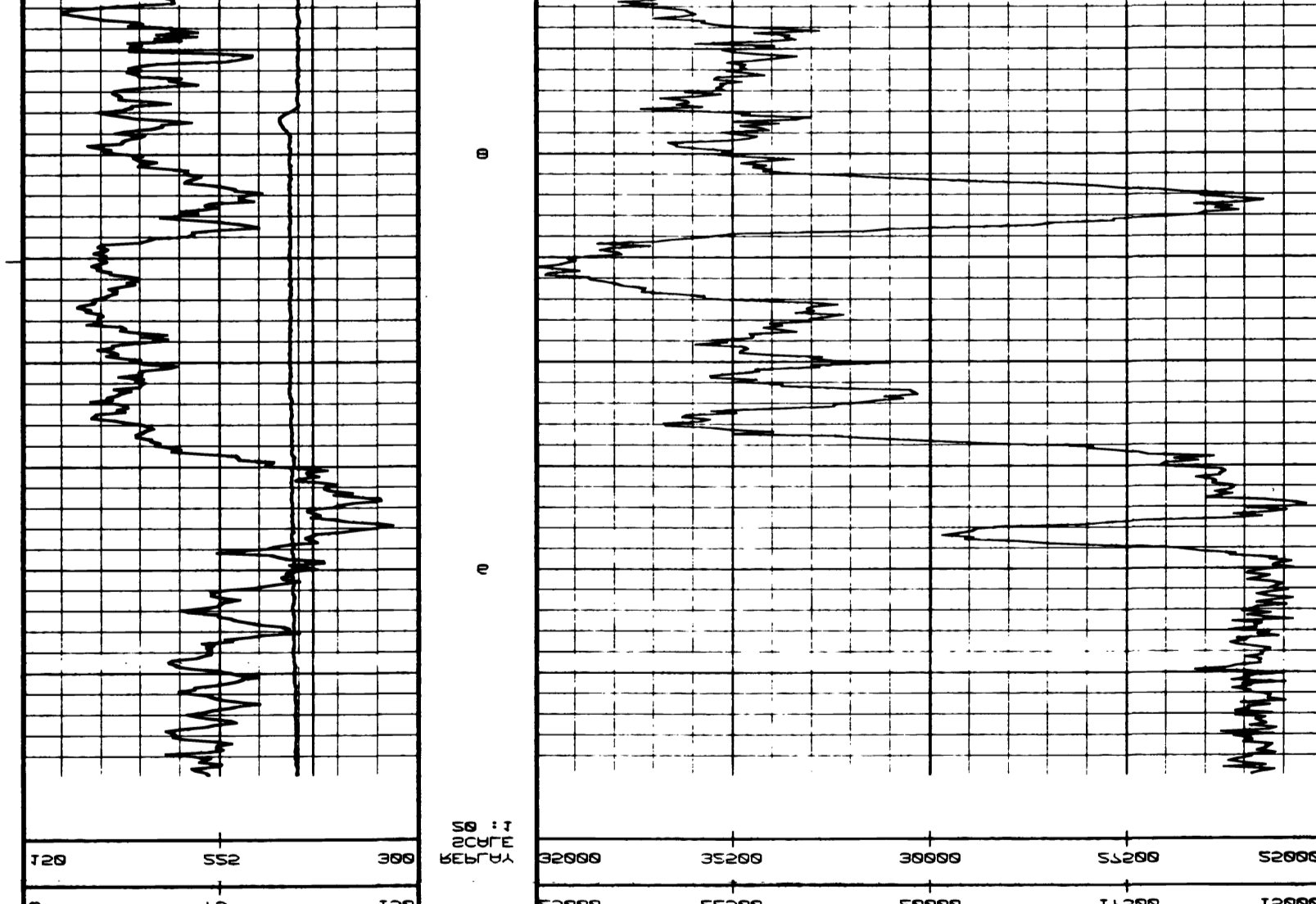
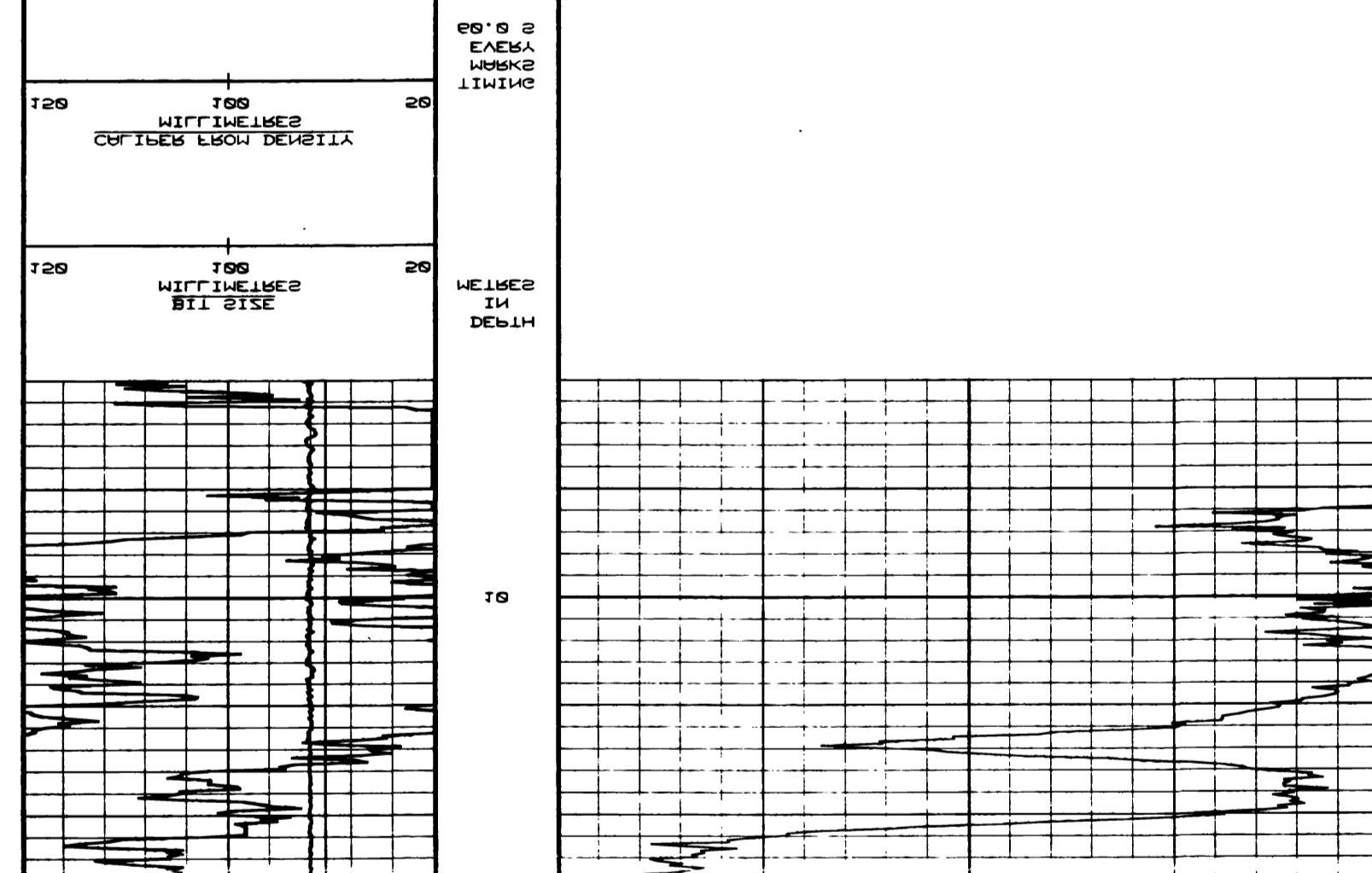
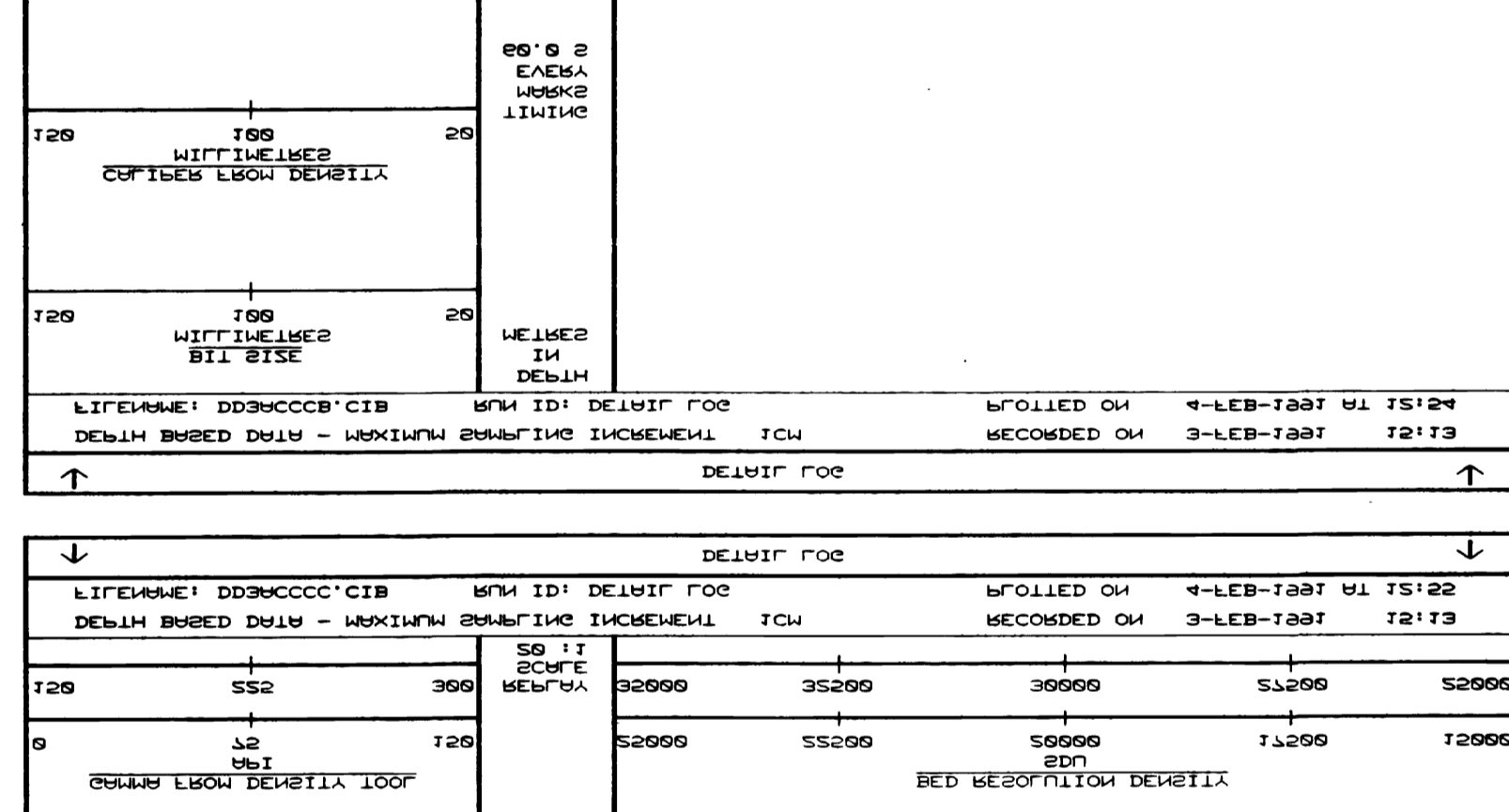
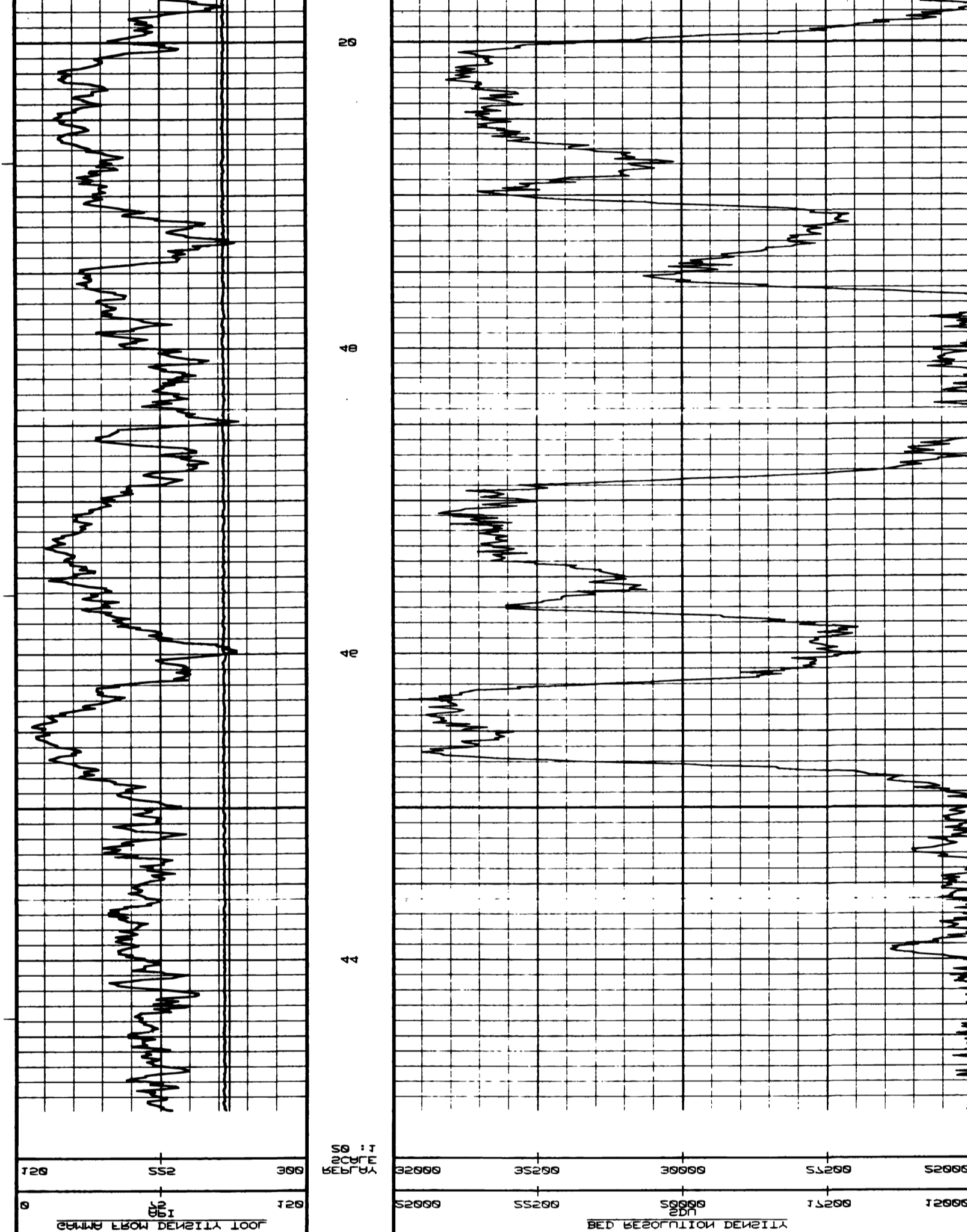
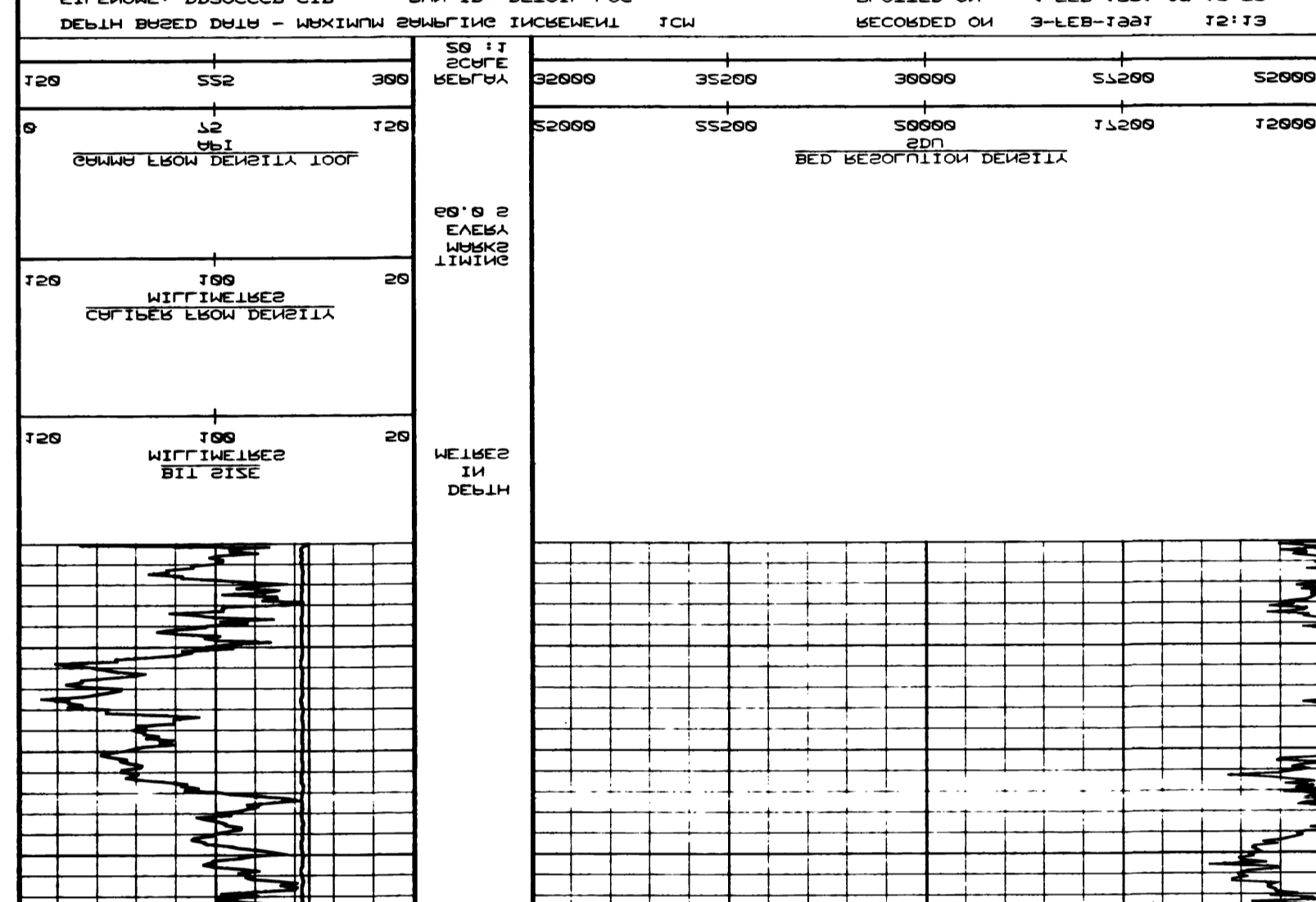
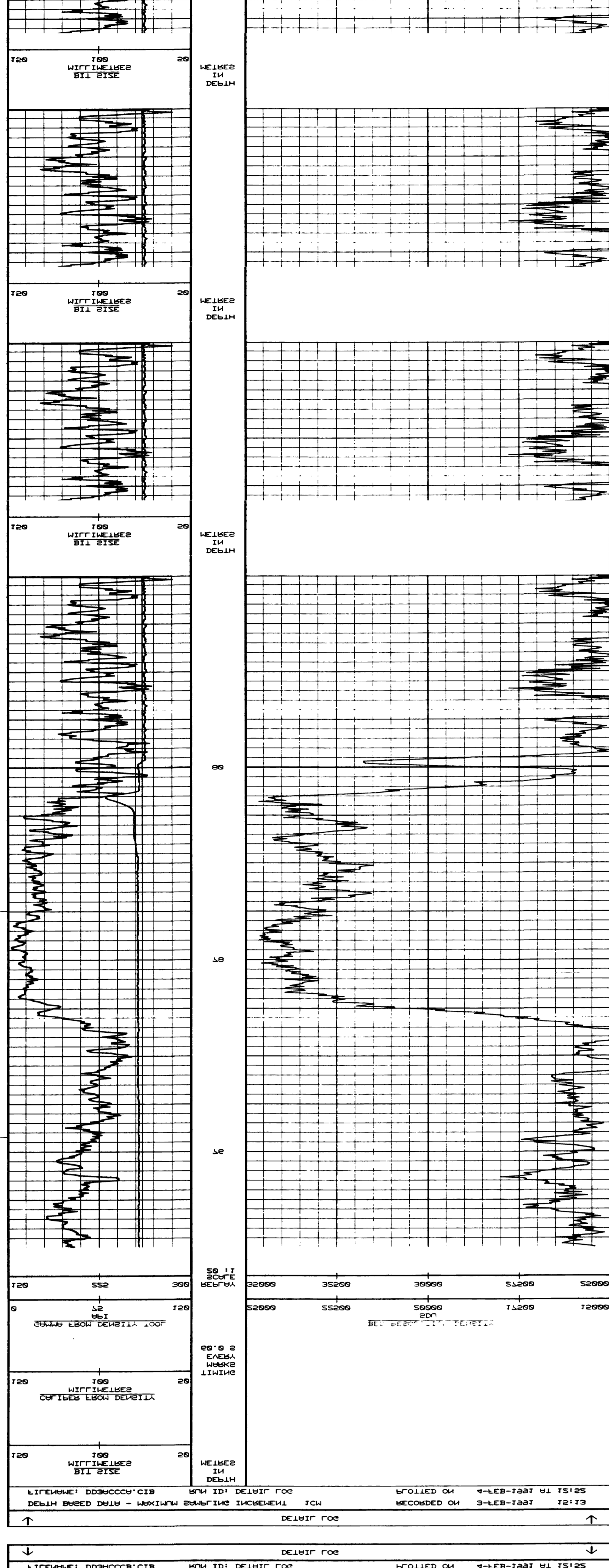


DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 13-DEC-1990 AT 15.28  
FILENAME: DIP3004M.C18 RUN ID: DIPMETER ANALYSIS PLOTTED ON 13-DEC-1990 AT 19.17

DIPMETER ANALYSIS

COMPANY	WESTERN CANADIAN MINING CORP.
WELL	DD90-04
FIELD	VELDWOOD COAL PROJ.
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA





REMARKS: BED RESOLUTION DEPTH (5517) CORRECTION COEFFICIENT

COEFFICIENT	WIGGLE	DEPTH	DEPTH	DEPTH	DEPTH
0.00	1.00	1.00	1.00	1.00	1.00

899

WIGGLE IN DEPTH	DEPTH	DEPTH	DEPTH	DEPTH	DEPTH
552	399	32999	35299	39999	51299
52999	52999	52999	52999	52999	52999

DEPTHS AND CONDITIONS OF WELL IN THE ABOVE TABLES: THESE INTERFERENCES ARE IN GENERAL TO BE USED AS A CHECK ON THE QUALITY OF THE DATA. THE QUALITY OF THE DATA IS INDICATED BY THE QUALITY OF THE WIGGLE IN DEPTH AND THE QUALITY OF THE DEPTH. THE QUALITY OF THE WIGGLE IN DEPTH IS INDICATED BY THE QUALITY OF THE DEPTH. THE QUALITY OF THE DEPTH IS INDICATED BY THE QUALITY OF THE WIGGLE IN DEPTH.

CONTRACT NO.	7-104-1007	RECORDED ON	3-104-1007
WELL NO.	7-104-1007	RECORDED ON	3-104-1007







Borehole: DD91-14  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

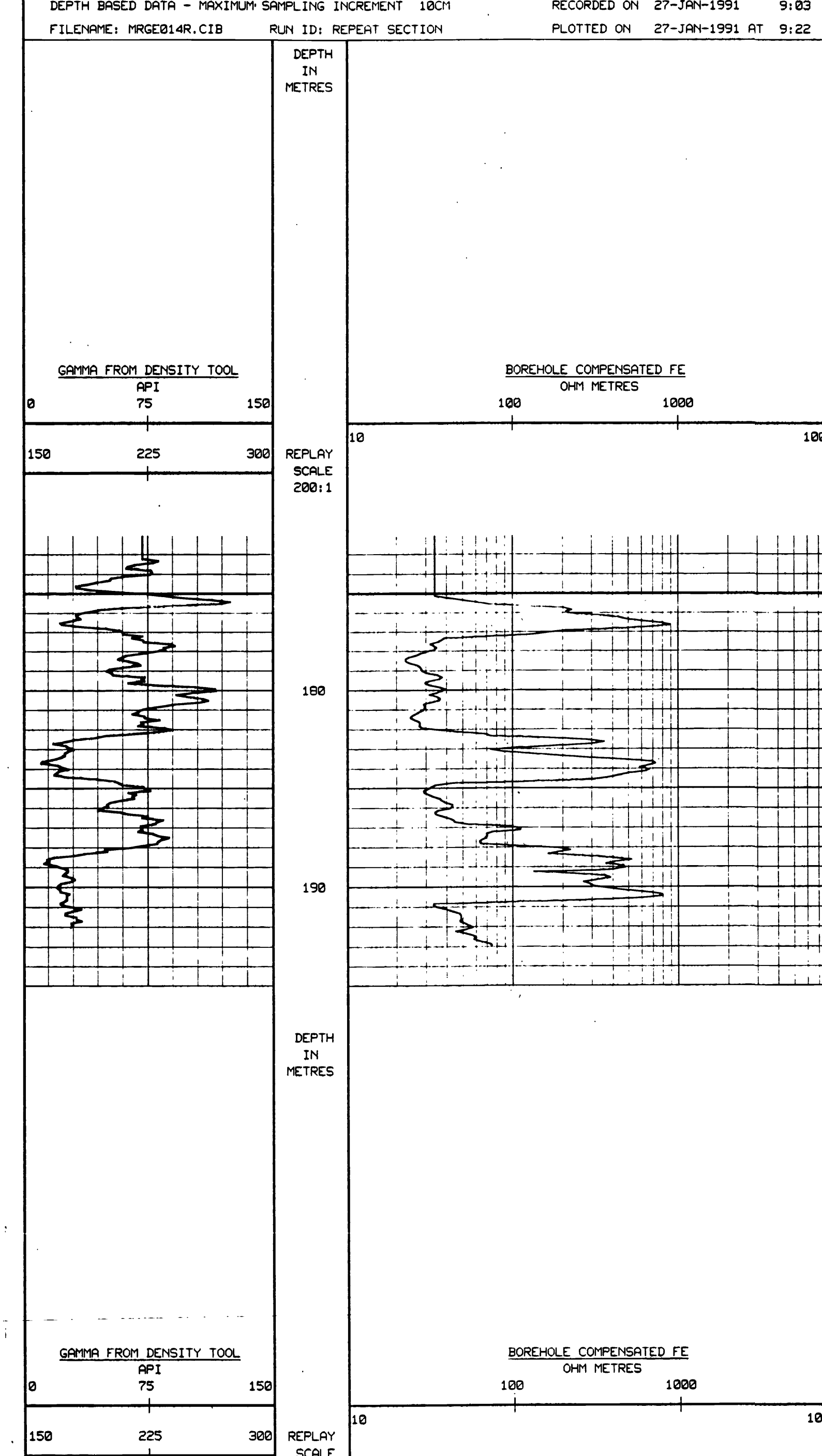
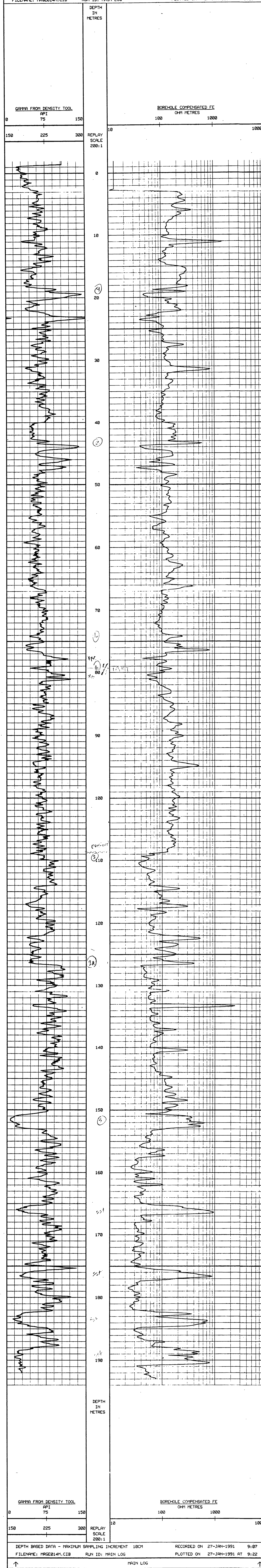
FOCUSED ELECTRIC  
 GAMMA RAY

**SLIMLINE GRAPHICS UNIT**

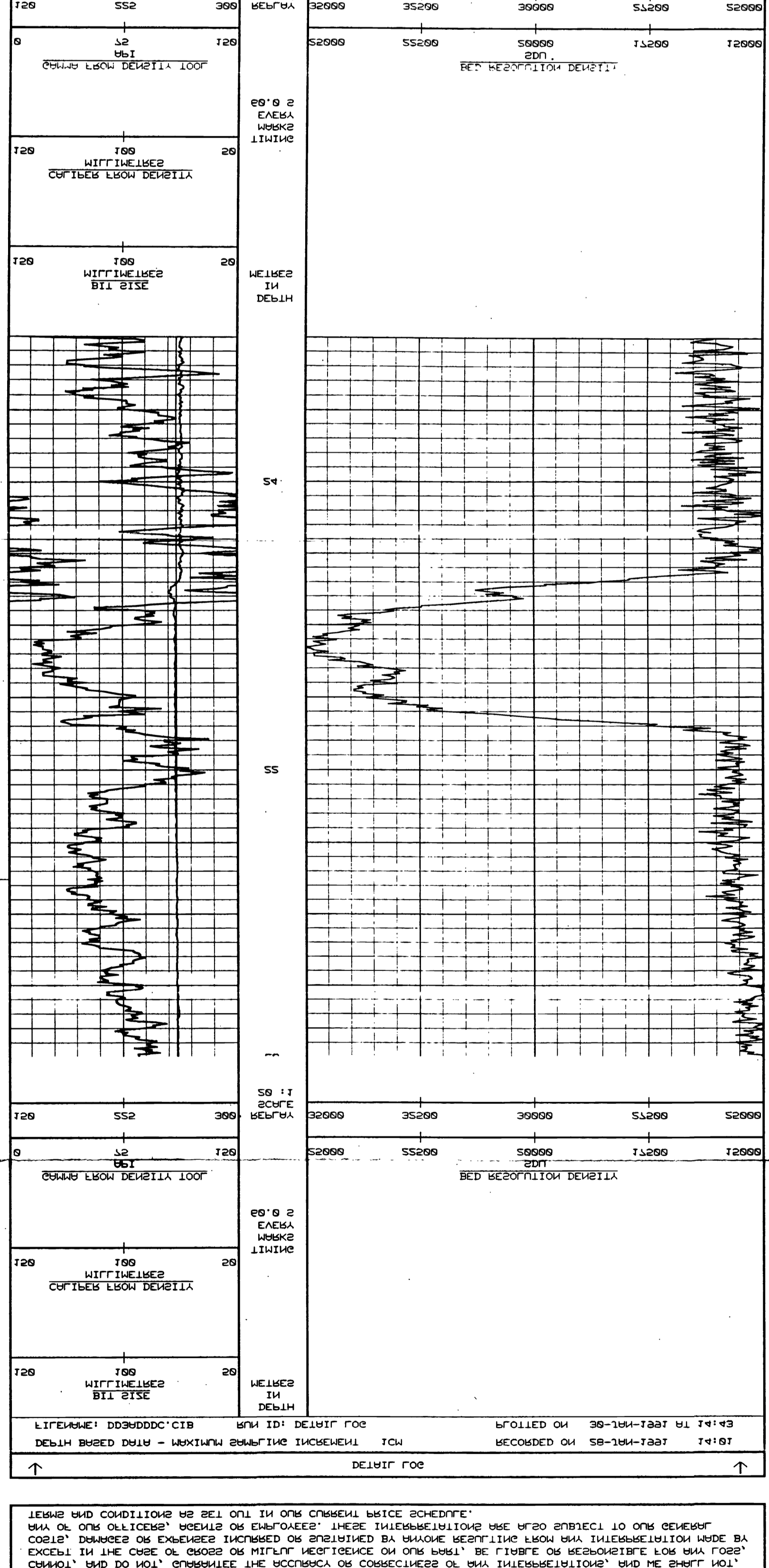
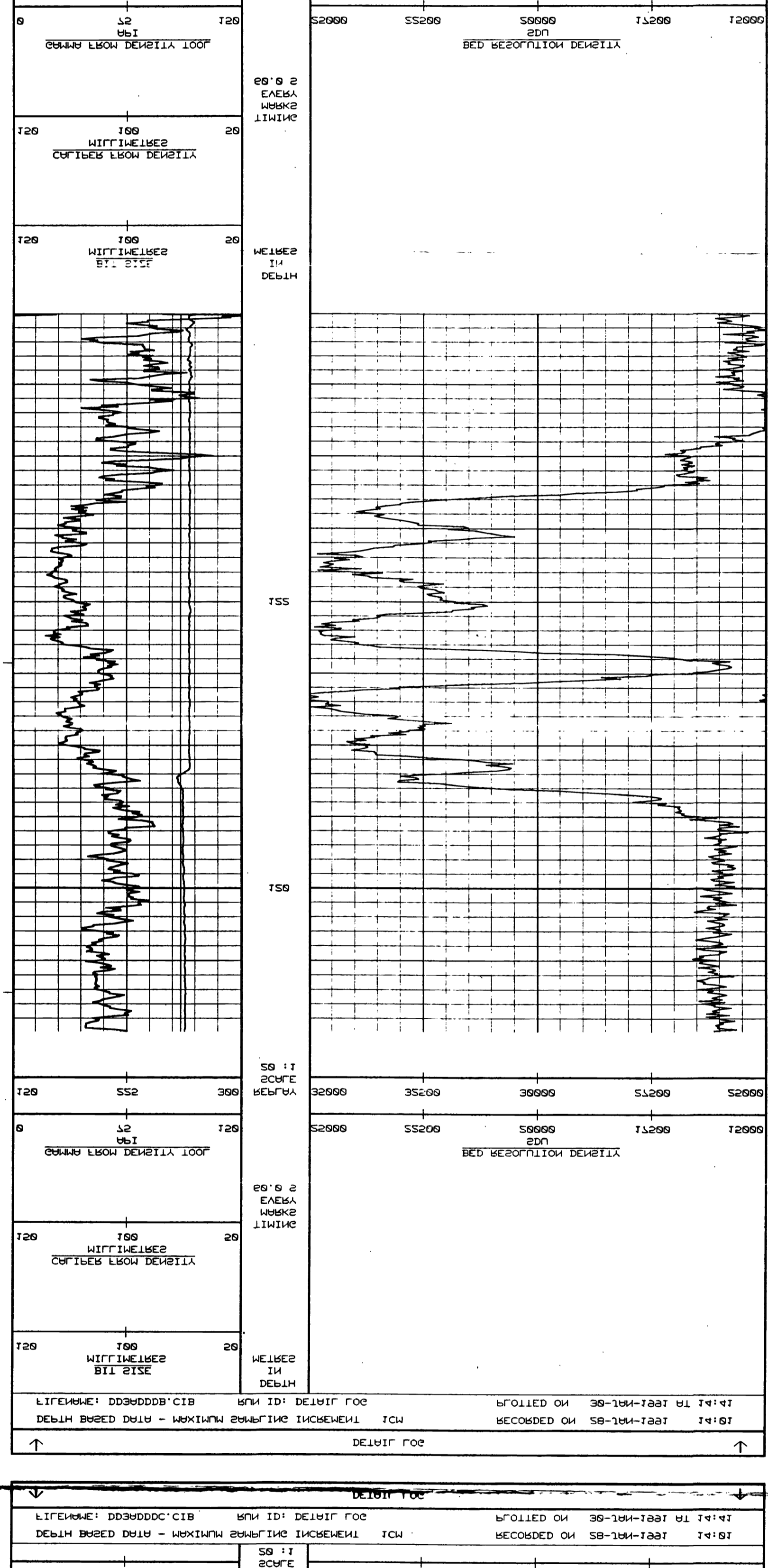
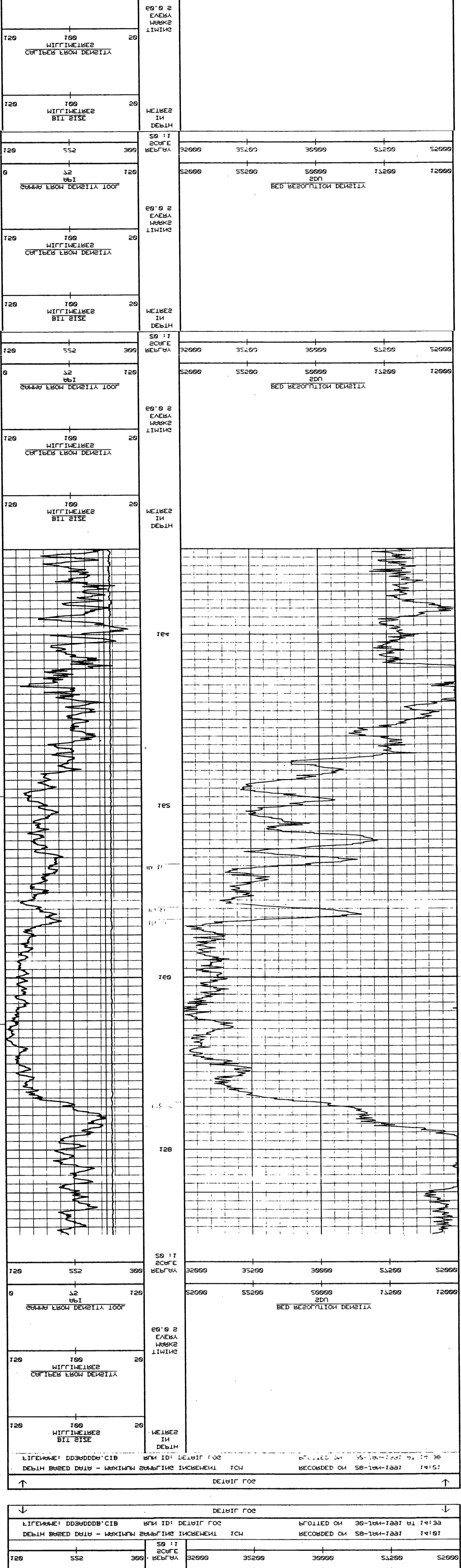
Permanent Datum	GROUND LEVEL, Elevation N/A	KB N/A	Location
Log measured from	GROUND LEVEL above permanent datum	DF N/A	COURTENAY
Drilling measured from	GROUND LEVEL above permanent datum	GL N/A	
Date	27-JAN-1991		LSD N/A
Run Number	ONE		SEC
Depth-Driller	193.5m		TWP
Depth-Logger	193.7m		RGE
First Reading	193.0m		OTHER SERVICES
Last Reading	0.0m		CDL, CNL
Casing-Driller	3.0m		MCS, BRD
Casing-Logger	3.0m		
Bit Size	Nº 2		
Hole Fluid Type	WATER		
Dens./Visc.	1.02GM N/A		
PH/Fluid Loss	N/A NIL		
Sample Source	PIT		
Rm @ Meas Temp	N/A		
Rm @ Meas Temp	N/A		
Rm @ Meas Temp	N/A		
Source: RMF/RMC	N/A N/A		
Rm @ BHT	5.3 @ 9c		
Time Since Circ	1 HR		
Max Rec Temp			
Equipment Base	V809 TRD		
Recorded by	J.C. WISNER		
Witnessed by	S. CASSELLMAN		

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RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	Nº 2	3.0m	TD	Nº	N/A	SURFACE	3.0m
EQUIPMENT							
R64/CCS		RUN 1	RUN 2	RUN 3	RUN 4		
104/110							
REMARKS:							
FOCUSED ELECTRIC                      GAMMA RAY							
SYSTEM CONFIGURATION DATES: LOGGED 1-FEB-1990 PROCESSED 1-FEB-1990 PLOTTED 11-JAN-1991							
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CLIENT	WESTERN CANADIAN MINING CORP.
BOREHOLE	DD91-14
FIELD	WELWOOD COAL PROJ.
AREA	BRITISH COLUMBIA
COUNTRY	CANADA



MEMBERS:

CC2	170				
MEMBER	BIT	LOG	LOG	LOG	LOG
		LOG	LOG	LOG	LOG

DEPTH BASED DATA - MAXIMUM SURFACING INCREMENT 1CM

DEPTH LOG

MEMBERS:

CC2	170				
MEMBER	BIT	LOG	LOG	LOG	LOG
		LOG	LOG	LOG	LOG

DEPTH BASED DATA - MAXIMUM SURFACING INCREMENT 1CM

DEPTH LOG

MEMBERS:

CC2	170				
MEMBER	BIT	LOG	LOG	LOG	LOG
		LOG	LOG	LOG	LOG

DEPTH BASED DATA - MAXIMUM SURFACING INCREMENT 1CM

DEPTH LOG

MEMBERS:

CC2	170				
MEMBER	BIT	LOG	LOG	LOG	LOG
		LOG	LOG	LOG	LOG

DEPTH BASED DATA - MAXIMUM SURFACING INCREMENT 1CM

DEPTH LOG



Borehole: DD91-11  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

BED RESOLUTION DENSITY (20:1)  
 GAMMA RAY  
 CALIPER

**SLIMLINE GRAPHICS UNIT**

Permanent Datum GROUND LEVEL, Elevation N/A		KB N/A	Location
Log measured from GROUND LEVEL above permanent datum		DF N/A	COURTENAY
Drilling measured from GROUND LEVEL above permanent datum		GL N/A	
Date	20-JAN-1991		LSD N/A
Run Number	ONE		SEC
Depth-Driller	155.1m		TWP
Depth-Logger	155.0m		RGE
First Reading	154.7m		OTHER SERVICES
Last Reading	0.0m		CNL, MCS
Casing-Driller	3.0m		FE, CCS
Casing-Logger	3.0m		
Bit Size	NQ 2		
Hole Fluid Type	WATER		
Dens./Visc.	1.02GM N/A		
PH/Fluid Loss	N/A NIL		
Sample Source	PIT		
Rm @ Meas Temp	N/A		
Rmf @ Meas Temp	N/A		
Rmc @ Meas Temp	N/A		
Source: Rmf/Rmc	N/A N/A		
Rm @ BHT	6.3 @ 9c		
Time Since Circ	30 MIN		
Max Rec Temp	9c		
Equipment/Base	VB29 RDR		
Recorded by	J.C. WISNER		
Witnessed by	S. CASSELMAN		

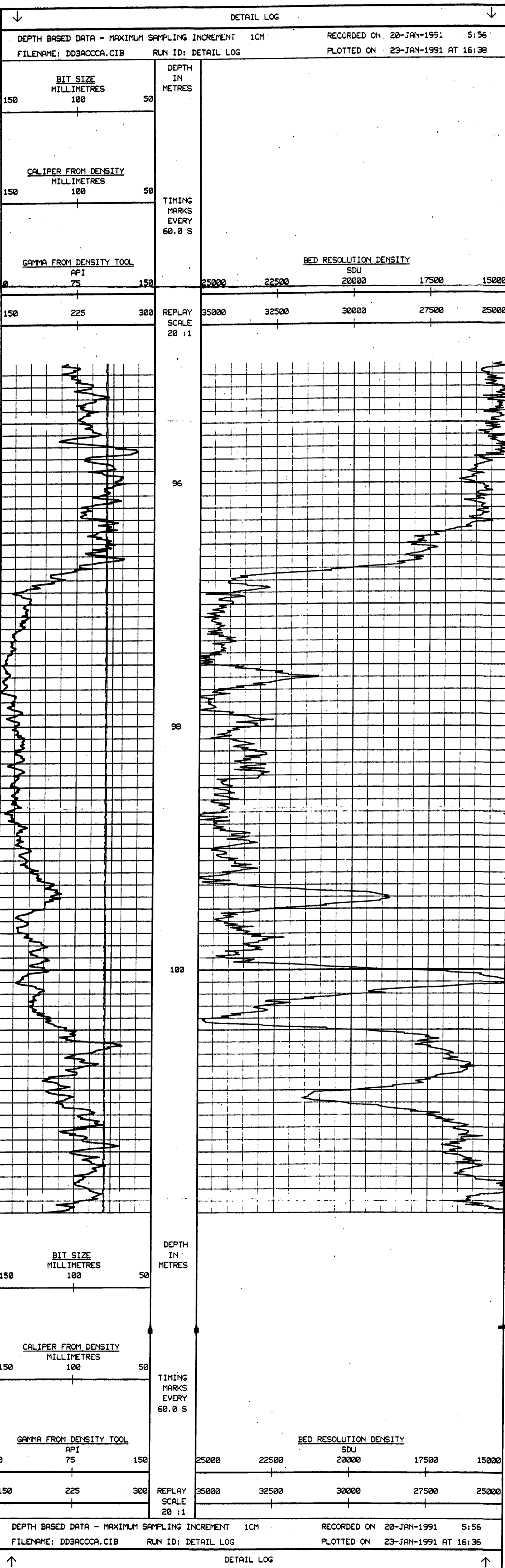
866

RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NQ 2	3.0m	TD	NQ	N/A	SURFACE	3.0m
EQUIPMENT		RUN 1	RUN 2	RUN 3	RUN 4		
CCS		110					

REMARKS:  
 BED RESOLUTION DENSITY (20:1) GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 11-JAN-1991 PROCESSED 11-JAN-1991 PLOTTED 11-JAN-1991

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LOGGING/CALIBRATION CONSTANTS

LOGGING CONSTANTS

Sonde Type (DD3, CCS)	CCS	Sonde Mode (WET, DRY, STD)	WET
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 scalar for processing	CAL
Bit size 1	80.00	Bit depth 1	.00
Bit size 2	76.23	Bit depth 2	3.00
Bit size 3	.00	Bit depth 3	155.10
Bit size 4	.00	Bit depth 4	.00
Bit size 5	.00	Bit depth 5	.00

CALIBRATION CONSTANTS

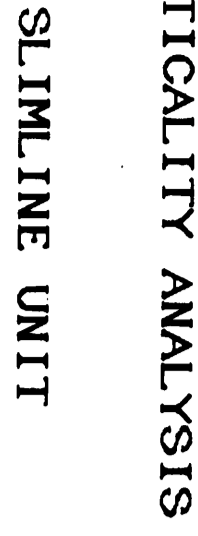
Gamma calibrator value 1	494.00	Gamma count rate 1	304.00
Brd calibrator value 1	25000.00	Brd count rate 1	2973.00
Brd calibrator value 2	.00	Brd count rate 2	.00
Lsd calibrator value 1	10300.00	Lsd count rate 1	1503.30
Caliper ring size 1	76.20	Caliper count for ring 1	522.00
Caliper ring size 2	101.60	Caliper count for ring 2	576.00
Caliper ring size 3	127.00	Caliper count for ring 3	629.00
Caliper ring size 4	152.40	Caliper count for ring 4	687.00
Caliper ring size 5	203.20	Caliper count for ring 5	740.00
Caliper ring size 6	254.00	Caliper count for ring 6	795.00

CLIENT	WESTERN CANADIAN MINING CORP.
BOREHOLE	DD91-11
FIELD	WELWOOD COAL PROJ.
AREA	BRITISH COLUMBIA
COUNTRY	CANADA





LOCATION		COURTENAY		PRVNC/CO. BRITISH COLUMBIA		FIELD WELWOOD COAL PROJ.		DATE		DD91-19	
WELL		VELL.		COMPANY		WESTERN CANADIAN MINING CORP.		COUNTRY/STATE		CANADA	
ELEVATIONS:		KBS		N/A		N/A		N/A		N/A	
LOC MEASURED FROM	GROUND LEVEL	ELEVATION	N/A	DATE	DD91-19	DATE	DD91-19	LOC MEASURED FROM	GROUND LEVEL	ELEVATION	N/A
DRILLING MEASURED FROM	GROUND LEVEL	ELEVATION	N/A	DATE	DD91-19	DATE	DD91-19	DRILLING MEASURED FROM	GROUND LEVEL	ELEVATION	N/A



VERTICALITY ANALYSIS  
SLIMLINE UNIT

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

- 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.
- 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.
- 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.
- 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).
- BOREHOLE POSITIONAL ERROR IS DERIVED ASSUMING THE FOLLOWING PARAMETERS.
 

TYPICAL ERROR	TILT(DEGREES)	AZIMUTH(DEGREES)
MAXIMUM ERROR	+/- 0.3333	+/- 10
	+/- 0.5	+/- 15
- ERROR ANALYSIS MAY BE CALCULATED AND PLOTTED FROM THE DATA LISTING AS FOLLOWS.
  - PLOT THE FOUR COORDINATES FROM THE ERROR LISTING (BASED UPON ZERO AZIMUTH ERROR) ON A TARGET PLOT. ORIGIN AT THE START OF THE ANALYSIS.
  - DESCRIBE ARCS OF +/- 10 DEGREES AND +/- 15 DEGREES (CENTRE AT THE ORIGIN) THROUGH THE INNER AND OUTER POINTS RESPECTIVELY.
  - CONNECT THE RESPECTIVE ARCS TOGETHER WITH STRAIGHT LINES TO GIVE THE TYPICAL AND MAXIMUM BOREHOLE POSITIONAL ERROR.
- GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING.
 

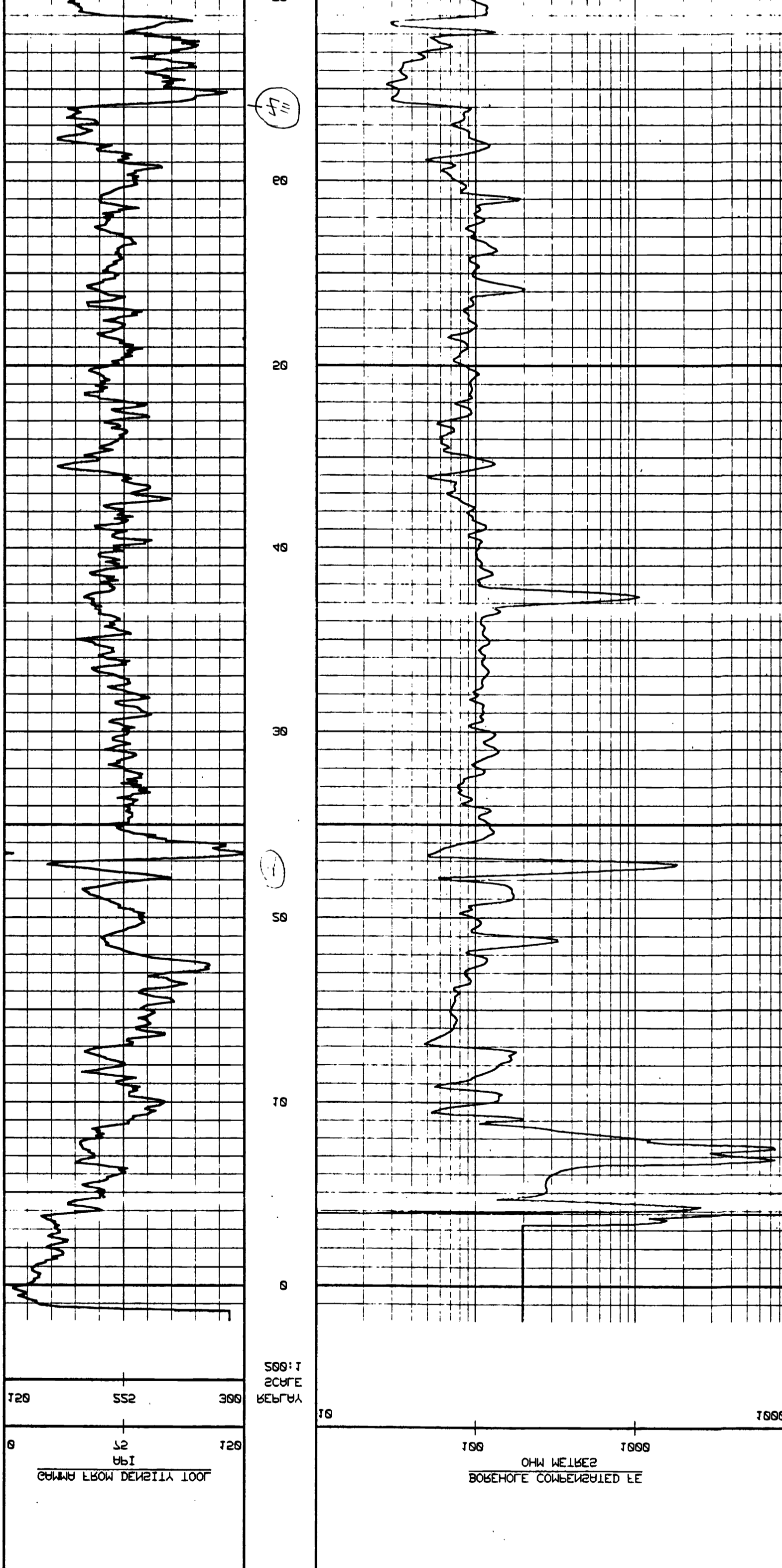
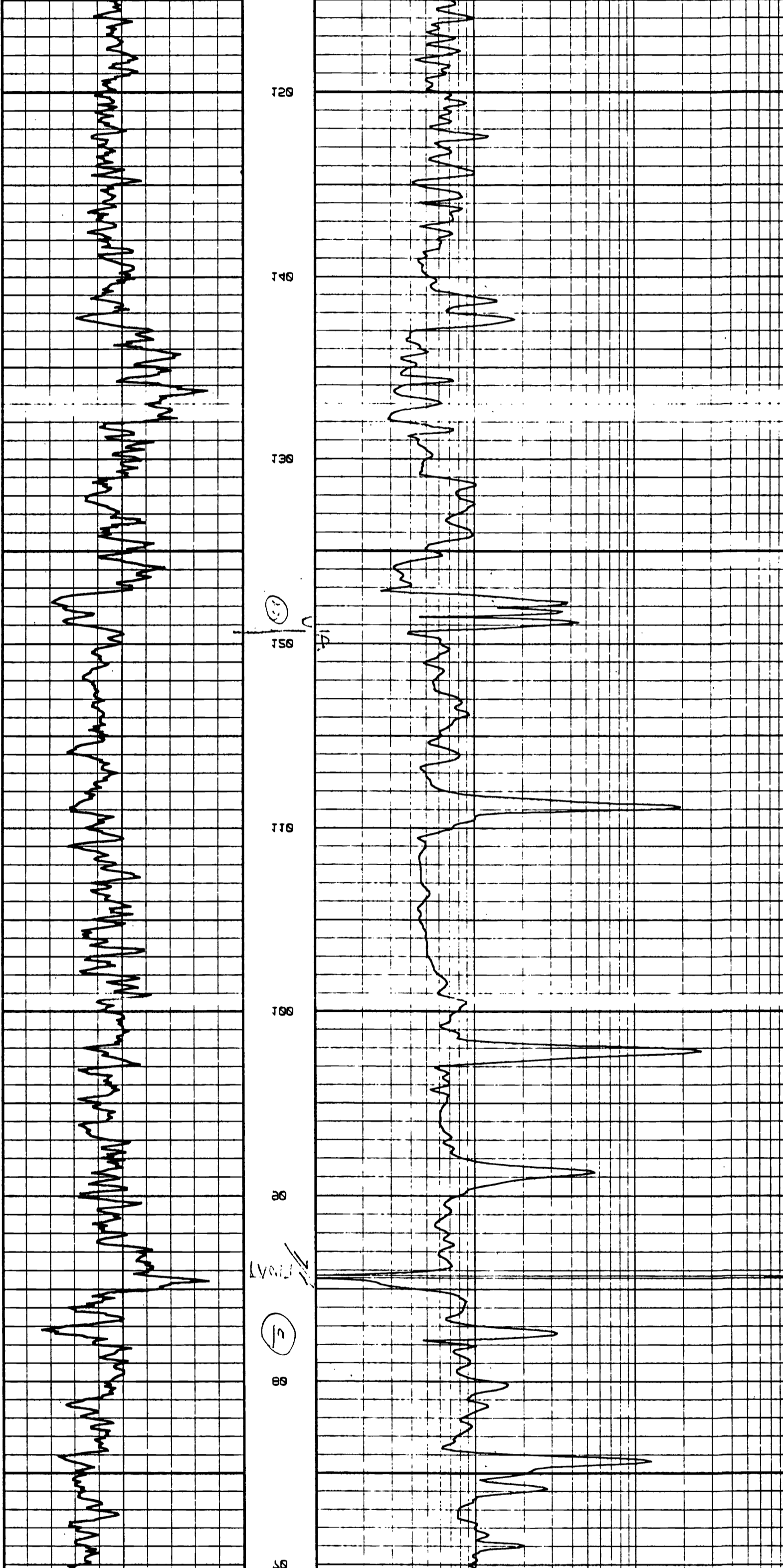
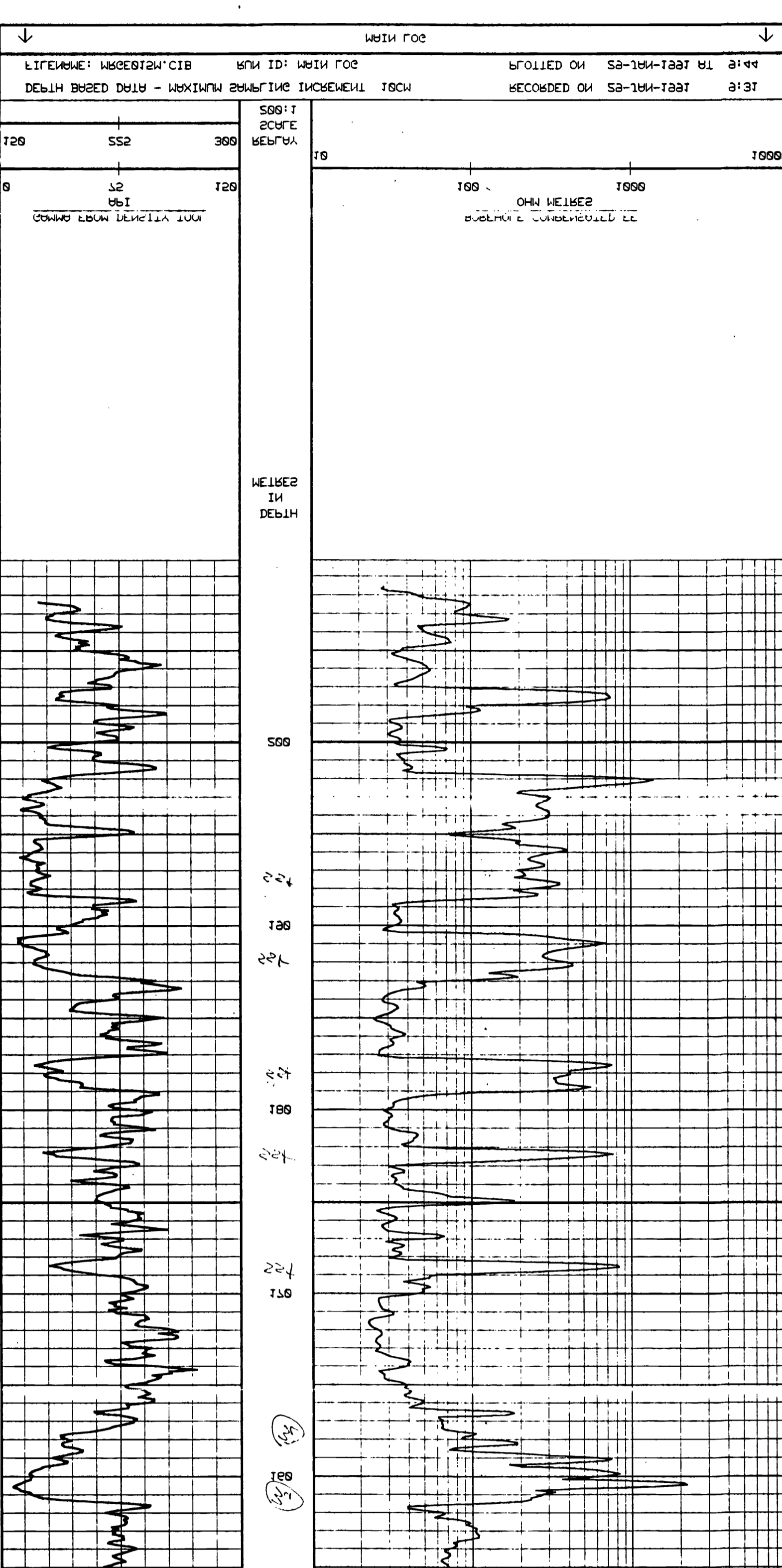
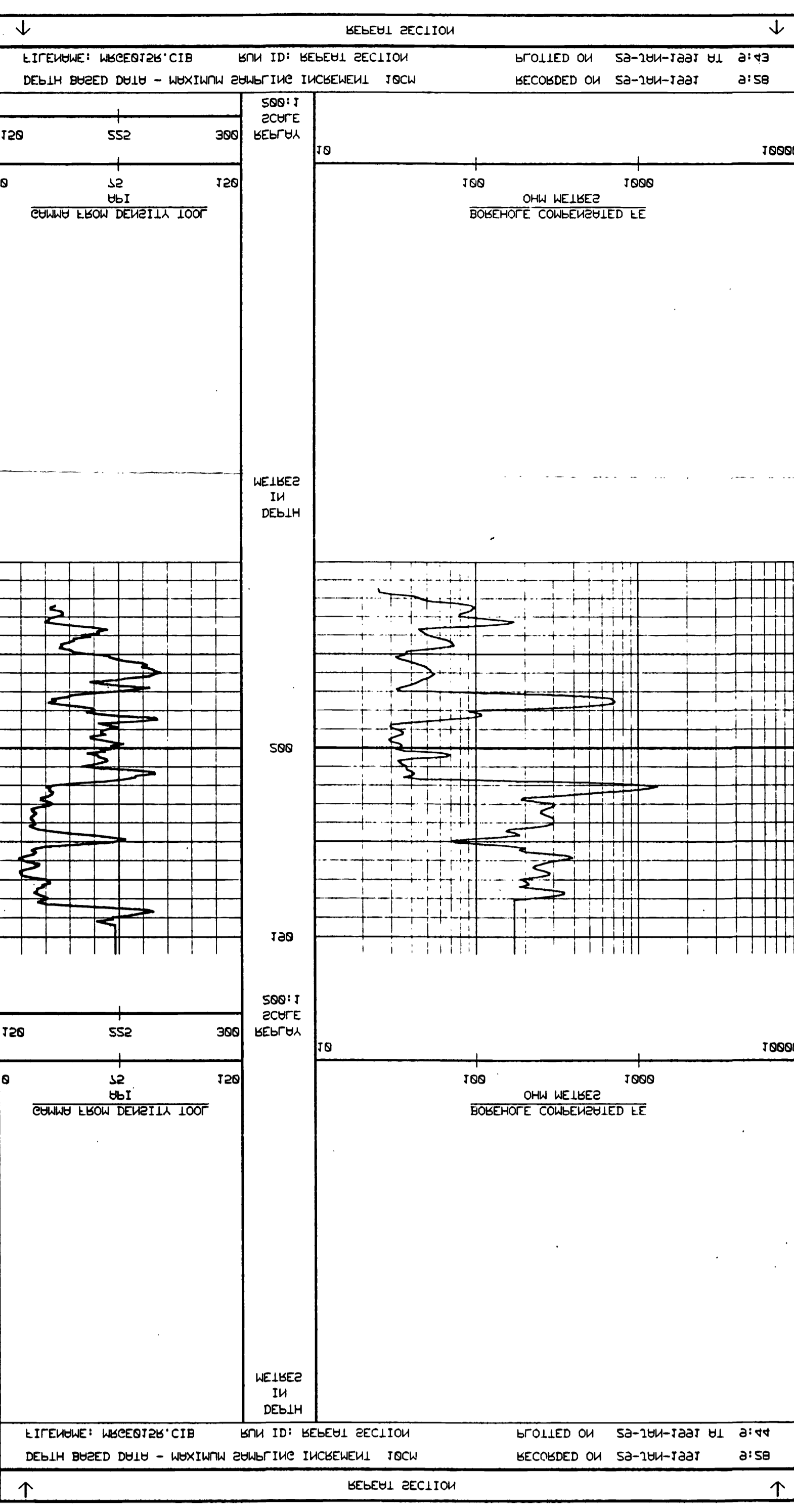
LOG DEPTH	THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
TRUE DEPTH	THE TRUE VERTICAL DEPTH CORRESPONDING TO THE ABOVE DEPTH. CORRECTED FROM THE START OF THE ANALYSIS.
HOLE TILT AND AZIMUTH	THE SAMPLER BOREHOLE ORIENTATION.
AXIAL COORDINATES	THE COORDINATES NORTH AND EAST FROM THE TARGET ORIGIN.
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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DD91-19	VERTICALITY DATA LISTING												DATE PROCESSED			
	DEPTHS	LOG	TRUE	BOREHOLE TILT AZI	ALL CO-ORDINATES WITH RESPECT TO TRUE NORTH	AXIAL CO-ORDS	POLAR ERROR	POLAR RADIUS	POLAR BRG	POLAR RADIUS	POLAR BRG	CO-ORDINATES (MAXIMUM & TYPICAL)	MAXIMUM BRD	TYPICAL RADIUS	DATE LOCATED	5-FEB-1991
15.00	15.00	15.00	1.3 141	-0.02	0.00 174	0.02 175	0.02 174	0.01 175	0.02 174	0.02 174	0.01 175	0.02 174	0.02 174	0.02 174	0.02	0.02
16.00	16.00	16.00	1.3 99	-0.03	0.02 142	0.03 143	0.04 142	0.03 143	0.04 142	0.03 143	0.04 142	0.03 143	0.04 142	0.03 143	0.04	0.03
17.00	17.00	17.00	1.5 126	-0.04	0.04 134	0.06 135	0.07 134	0.05 134	0.06 135	0.07 134	0.05 134	0.06 135	0.07 134	0.06 135	0.07	0.06
18.00	18.00	18.00	1.4 172	-0.06	0.05 139	0.08 139	0.09 138	0.07 139	0.08 139	0.09 138	0.07 139	0.08 139	0.09 138	0.08 139	0.09	0.07
19.00	19.00	19.00	1.5 176	-0.06	0.06 142	0.10 142	0.11 142	0.08 142	0.09 142	0.10 142	0.08 142	0.09 142	0.10 142	0.11 142	0.09	0.09
20.00	20.00	20.00	1.4 186	-0.10	0.06 149	0.12 149	0.14 149	0.10 149	0.11 149	0.12 149	0.10 149	0.11 149	0.12 149	0.13 149	0.11	0.11
21.00	21.00	21.00	1.4 182	-0.13	0.06 154	0.14 154	0.16 154	0.12 154	0.13 154	0.14 154	0.12 154	0.13 154	0.14 154	0.15 154	0.13	0.13
22.00	22.00	22.00	1.4 175	-0.15	0.06 157	0.16 157	0.18 157	0.14 157	0.15 157	0.16 157	0.14 157	0.15 157	0.16 157	0.17 157	0.15	0.15
23.00	23.00	23.00	1.3 177	-0.17	0.06 159	0.18 159	0.21 159	0.15 159	0.16 159	0.18 159	0.15 159	0.16 159	0.17 159	0.18 159	0.17	0.17
24.00	24.00	24.00	1.1 157	-0.19	0.07 161	0.20 161	0.23 161	0.17 161	0.18 161	0.20 161	0.17 161	0.18 161	0.19 161	0.20 161	0.19	0.19
25.00	25.00	25.00	1.2 174	-0.21	0.07 162	0.22 162	0.26 162	0.19 162	0.20 162	0.22 162	0.19 162	0.20 162	0.21 162	0.22 162	0.21	0.21
26.00	26.00	26.00	1.3 165	-0.23	0.07 163	0.24 163	0.28 163	0.21 163	0.22 163	0.24 163	0.21 163	0.22 163	0.23 163	0.24 163	0.22	0.22
27.00	27.00	27.00	1.2 170	-0.25	0.08 163	0.26 163	0.31 163	0.22 163	0.23 163	0.26 163	0.22 163	0.23 163	0.24 163	0.25 163	0.24	0.24
28.00	28.00	28.00	1.0 173	-0.27	0.08 164	0.28 164	0.33 164	0.24 164	0.25 164	0.28 164	0.24 164	0.25 164	0.26 164	0.27 164	0.26	0.26
29.00	29.00	29.00	1.2 172	-0.29	0.08 164	0.31 164	0.36 164	0.25 164	0.26 164	0.29 164	0.25 164	0.26 164	0.27 164	0.28 164	0.27	0.27
30.00	30.00	30.00	1.4 161	-0.31	0.09 165	0.33 165	0.38 165	0.26 165	0.27 165	0.30 165	0.26 165	0.27 165	0.28 165	0.29 165	0.28	0.28
31.00	31.00	31.00	1.2 175	-0.34	0.09 165	0.36 165	0.40 165	0.29 165	0.30 165	0.33 165	0.29 165	0.30 165	0.31 165	0.32 165	0.31	0.31
32.00	32.00	32.00	1.0 173	-0.35	0.10 165	0.37 165	0.43 165	0.31 165	0.32 165	0.35 165	0.31 165	0.32 165	0.33 165	0.34 165	0.33	0.33
33.00	33.00	33.00	1.2 169	-0.37	0.10 165	0.39 165	0.45 165	0.33 165	0.34 165	0.37 165	0.33 165	0.34 165	0.35 165	0.36 165	0.35	0.35
34.00	34.00	34.00	1.2 164	-0.39	0.11 165	0.41 165	0.47 165	0.34 165	0.35 165	0.38 165	0.34 165	0.35 165	0.36 165	0.37 165	0.36	0.36
35.00	35.00	35.00	1.2 161	-0.41	0.11 165	0.43 165	0.50 165	0.36 165	0.37 165	0.40 165	0.36 165	0.37 165	0.38 165	0.39 165	0.38	0.38
36.00	36.00	36.00	1.2 166	-0.43	0.12 165	0.45 165	0.52 165	0.37 165	0.38 165	0.41 165	0.37 165	0.38 165	0.39 165	0.40 165	0.41	0.41
37.00	37.00	37.00	1.0 164	-0.45	0.12 165	0.47 165	0.54 165	0.39 165	0.40 165	0.43 165	0.39 165	0.40 165	0.41 165	0.42 165	0.42	0.42
38.00	38.00	38.00	1.0 163	-0.47	0.13 165	0.48 165	0.56 165	0.40 165	0.41 165	0.44 165	0.40 165	0.41 165	0.42 165	0.43 165	0.43	0.43
39.00	39.00	39.00	1.0 164	-0.49	0.13 165	0.50 165	0.58 165	0.42 165	0.43 165	0.46 165	0.42 165	0.43 165	0.44 165	0.45 165	0.44	0.44
40.00	39.99	39.99	1.1 172	-0.50	0.13 165	0.52 165	0.61 165	0.43 165	0.44 165	0.47 165	0.43 165	0.44 165	0.45 165	0.46 165	0.46	0.46
41.00	40.99	40.99	1.1 171	-0.52	0.14 165	0.54 165	0.63 165	0.45 165	0.46 165	0.49 165	0.45 165	0.46 165	0.47 165	0.48 165	0.48	0.48
42.00	41.99	41.99	1.0 161	-0.54	0.14 165	0.56 165	0.65 165	0.46 165	0.47 165	0.50 165	0.46 165	0.47 165	0.48 165	0.49 165	0.49	0.49
43.00	42.99	42.99	1.2 165	-0.56	0.15 165	0.58 165	0.67 165	0.48 165	0.49 165	0.52 165	0.48 165	0.49 165	0.50 165	0.51 165	0.50	0.50
44.00	43.99	43.99	1.2 174	-0.57	0.15 165	0.59 165	0.69 165	0.49 165	0.50 165	0.53 165	0.49 165	0.50 165	0.51 165	0.52 165	0.51	0.51
45.00	44.99	44.99	1.1 164	-0.59	0.16 165	0.61 165	0.72 165	0.51 165	0.52 165	0.55 165	0.51 165	0.52 165	0.53 165	0.54 165	0.53	0.53
46.00	45.99	45.99	1.1 172	-0.61	0.16 165	0.63 165	0.74 165	0.52 165	0.53 165	0.56 165	0.52 165	0.53 165	0.54 165	0.55 165	0.54	0.54
47.00	46.99	46.99	0.9 165	-0.63	0.16 165	0.65 165	0.76 165	0.53 165	0.54 165	0.57 165	0.53 165	0.54 165	0.55 165	0.56 165	0.55	0.55
48.00	47.99	47.99	1.0 178	-0.64	0.17 165	0.67 165	0.78 165	0.54 165	0.55 165	0.58 165	0.54 165	0.55 165	0.56 165	0.57 165	0.56	0.56
49.00	48.99	48.99	1.1 166	-0.66	0.17 166	0.69 166	0.80 166	0.55 166	0.56 166	0.59 166	0.55 166	0.56 166	0.57 166	0.58 166	0.57	0.57
50.00	49.99	49.99	1.0 169	-0.68	0.17 166	0.70 166	0.82 166	0.56 166	0.57 166	0.60 166	0.56 166	0.57 166	0.58 166	0.59 166	0.58	0.58
51.00	50.99	50.99	1.0 167	-0.70	0.18 166	0.72 166	0.84 166	0.57 166	0.58 166	0.61 166	0.57 166	0.58 166	0.59 166	0.60 166	0.59	0.59
52.00	51.99	51.99	0.9 171	-0.71	0.18 166	0.74 166	0.86 166	0.58 166	0.59 166	0.62 166	0.58 166	0.59 166	0.60 166	0.61 166	0.60	0.60
53.00	52.99	52.99	1.0 171	-0.73	0.18 166	0.75 166	0.88 166	0.59 166	0.60 166	0.63 166	0.59 166	0.60 166	0.61 166	0.62 166	0.61	0.61
54.00	53.99	53.99	1.1 170	-0.75	0.18 166	0.77 166	0.91 166	0.60 166	0.61 166	0.64 166	0.60 166	0.61 166	0.62 166	0.63 166	0.62	0.62
55.00	54.99	54.99	1.1 181	-0.77	0.19 166	0.79 166	0.93 166	0.61 166	0.62 166	0.65 166	0.61 166	0.62 166	0.63 166	0.64 166	0.63	0.63
56.00	55.99	55.99	1.1 180	-0.78	0.19 167	0.81 167	0.95 167	0.62 167	0.63 167	0.66 167	0.62 167	0.63 167	0.64 167	0.65 167	0.64	0.64
57.00	56.99	56.99	1.0 184	-0.80	0.19 167	0.83 167	0.97 167	0.63 167	0.64 167	0.67 167	0.63 167	0.64 167	0.65 167	0.66 167	0.65	0.65
58.00	57.99	57.99	1.0 175	-0.82	0.19 167	0.84 167	0.99 167	0.64 167	0.65 167	0.68 167	0.64 167	0.65 167	0.66 167	0.67 167	0.66	0.66
59.00	58.99	58.99	1.0 181	-0.84	0.19 167	0.86 167	1.01 167	0.65 167	0.66 167	0.69 167	0.65 167	0.66 167	0.67 167	0.68 167	0.67	0.67
60.00	59.99	59.99	1.2 184	-0.86	0.18 168	0.88 168	1.03 168	0.66 168	0.67 168	0.70 168	0.66 168	0.67 168	0.68 168	0.69 168	0.68	0.68
61.00	60.99	60.99	1.2 186	-0.88	0.18 168	0.90 168	1.06 168	0.67 168	0.68 168	0.71 168	0.67 168	0.68 168	0.69 168	0.70 168	0.69	0.69
62.00	61.99	61.99	1.2 188	-0.90	0.18 168	0.92 168	1.08 168	0.68 168	0.69 168	0.72 168	0.68 168	0.69 168	0.70 168	0.71 168	0.70	0.70
63.00	62.99	62.99	1.3 181	-0.92	0.18 169	0.94 169	1.10 169	0.69 169	0.70 169	0.73 169	0.69 169	0.70 169	0.71 169	0.72 169	0.71	0.71
64.00	63.99	63.99	1.0 186	-0.94	0.18 169	0.96 169	1.13 169	0.70 169	0.71 169	0.74 169	0.70 169	0.71 169	0.72 169	0.73 169	0.72	0.72

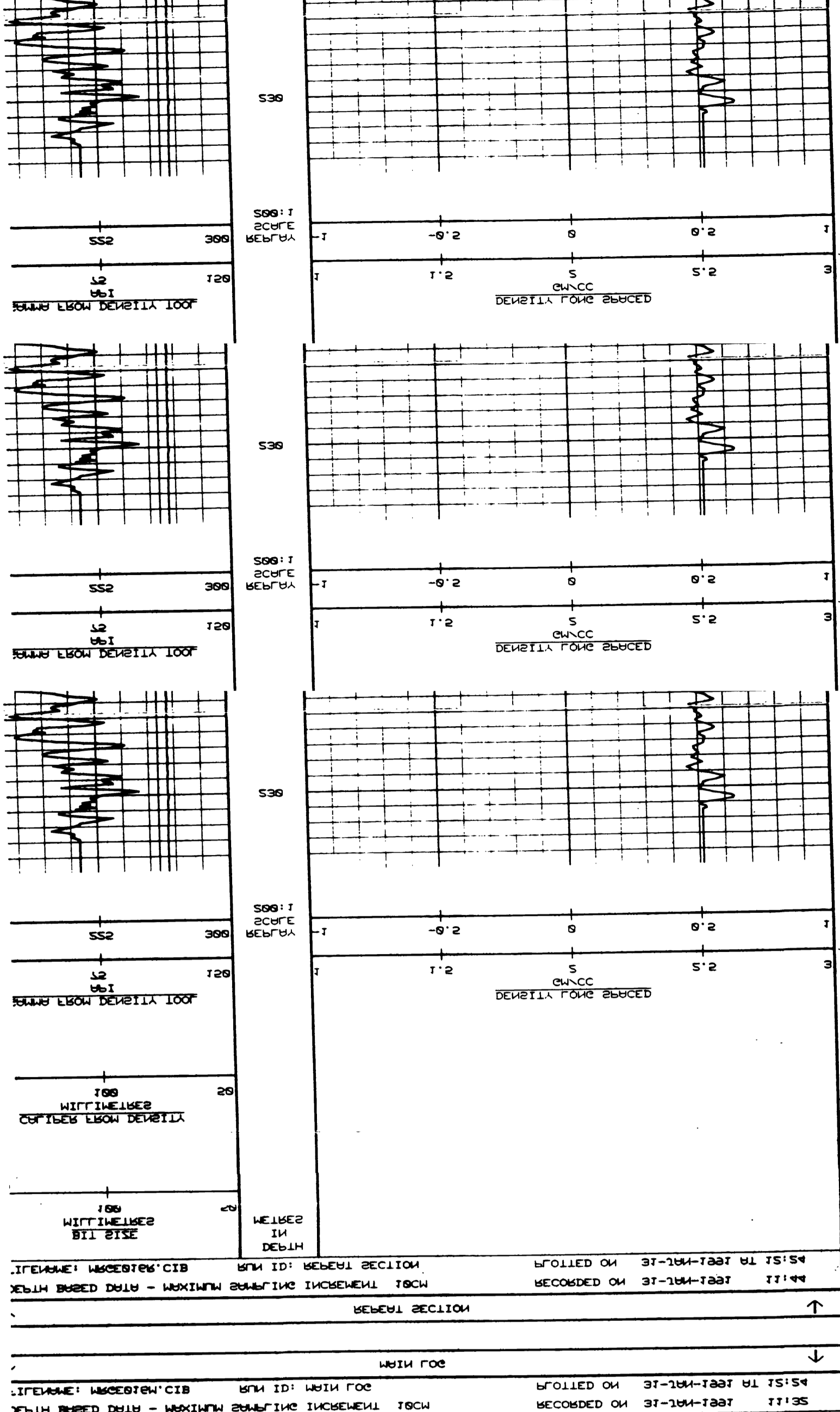
COMPANY: BOYD  
 PROJECT: WESTERN COAST  
 CLIENT: WESTERN COAST MINING CORP.  
 DATE: 11-14-1981



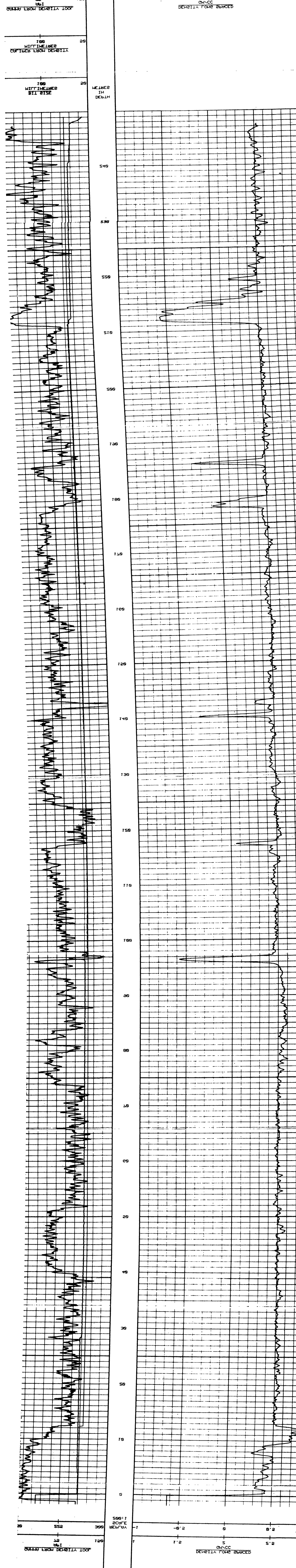
TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.  
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 CONDITIONS OF EMPLOYMENT INCORPORATED BY REFERENCE BEING THE TERMS AND CONDITIONS OF EMPLOYMENT MADE BY  
 EXCEPT IN THE CASE OF CROSS OR MUTUAL INTERESTS ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS,  
 DAMAGE AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS AND WE SHALL NOT  
 BE INTERPRETATIONS ARE OPINIONS BASED ON INFERENCE FROM ELECTRIC OR OTHER MEASUREMENTS AND WE

DATE	NO. 5	NO. 4	ID	NO. 3	NO. 2	NO. 1
11-14-1981	1	1	1	1	1	1

BOYD RECORDING CORPORATION  
 11111 11th Street, San Diego, CA 92121  
 TEL: (619) 591-1111  
 FAX: (619) 591-1111  
 BOYD RECORDING CORPORATION  
 11111 11th Street, San Diego, CA 92121  
 TEL: (619) 591-1111  
 FAX: (619) 591-1111



DEPTH BASED DATA - MAXIMUM SEISMIC INCREMENT 70CM



DEPTH BASED DATA - MAXIMUM SEISMIC INCREMENT 70CM

NOTE: THE CONDITIONS WE SET OUT IN OUR STANDARD BRIDGE SCHEDULE ARE ALL OF THE ORDER OF 1000 TO 20000. THESE FIGURES INCLUDE THE 1000 SUBJECT TO OUR STANDARD CODES. DAMAGE OR DEFERENCE INCREASED OR DECREASED BY MAKE REFERENCE TO THE INTERPRETATION MADE BY ENGINEER IN THE CASE OF BRIDGE OR HIGHWAY STRUCTURE ON ONE HAND. BE TYPIC OF BRIDGE OR HIGHWAY STRUCTURE. ON THE OTHER HAND DO NOT OVERSTATE THE IMPORTANCE OF ANY INTERPRETATION AND BE SURE THAT INTERPRETATIONS ARE ONLY BASED ON EVIDENCE FROM ELECTRICAL OR OTHER MEASUREMENTS AND NOT SENSITIVE COMPARISON DATA. FORCED 7-LEB-7006 RECORDED 7-LEB-7006 PLOTTED 7-7-7007

BOREHOLE	CCB	COPIES	COPIES	COPIES
52	776			
53				
54				

NO	NO	IS	IS	NO	NO	IS
52	5	15	10	5	15	10
53						
54						

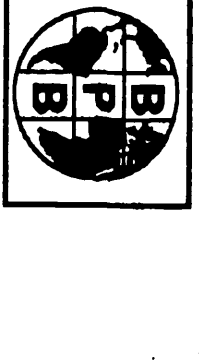
NO	NO	IS	IS	NO	NO	IS
52	5	15	10	5	15	10
53						
54						

STANDARD BRIDGE SCHEDULE

NOTE: THE CONDITIONS WE SET OUT IN OUR STANDARD BRIDGE SCHEDULE ARE ALL OF THE ORDER OF 1000 TO 20000. THESE FIGURES INCLUDE THE 1000 SUBJECT TO OUR STANDARD CODES. DAMAGE OR DEFERENCE INCREASED OR DECREASED BY MAKE REFERENCE TO THE INTERPRETATION MADE BY ENGINEER IN THE CASE OF BRIDGE OR HIGHWAY STRUCTURE ON ONE HAND. BE TYPIC OF BRIDGE OR HIGHWAY STRUCTURE. ON THE OTHER HAND DO NOT OVERSTATE THE IMPORTANCE OF ANY INTERPRETATION AND BE SURE THAT INTERPRETATIONS ARE ONLY BASED ON EVIDENCE FROM ELECTRICAL OR OTHER MEASUREMENTS AND NOT SENSITIVE COMPARISON DATA. FORCED 7-LEB-7006 RECORDED 7-LEB-7006 PLOTTED 7-7-7007



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		<b>DIPMETER ANALYSIS</b> <b>SLIMLINE UNIT</b>	
COMPANY: WESTERN CANADIAN MINING CORP. WELL: DD91-14 FIELD: WELDWOOD COAL PROJ. PROVINCE/COUNTY: BRITISH COLUMBIA COUNTRY/STATE: CANADA		LOCATION: COURTENAY PRVNC/CO.: BRITISH COLUMBIA FIELD: WELDWOOD COAL PROJ. WELL: DD91-14 COMPANY: WESTERN CANADIAN MINING CORP.	
LOG MEASURED FROM: GROUND LEVEL ABOVE PERMANENT DATUM DRILLING MEASURED FROM: GROUND LEVEL		OTHER SERVICES: CCS ONL-FE BRD-MCS	
DEPTH-DRILLER: 193.0M DEPTH-LOGGER: 193.0M FIRST READING: 0.0M LAST READING: 3.0M CASING-INNER: 3.0M CASING-OUTER: 3.0M BIT SIZE: NO 2	HOLE FLUID TYPE: WATER DENS./VISC.: N/A PH/FLUID LOSS: N/A SAMPLE SOURCE: PIT RH @ MEAS TEMP: N/A RH @ MEAS TEMP: N/A RH @ MEAS TEMP: N/A SOURCE: RH/TEMP: N/A RH @ BIT: 6.3 @ 9C TIME SINCE CIRC: 9C EQUIPMENT/BASE: VESZ RBR RECORDED BY: J.C. WISMER WITNESSED BY: S. COSSERMAN	ELEVATIONS: GROUND LEVEL: N/A GROUND LEVEL: N/A GROUND LEVEL: N/A GROUND LEVEL: N/A	

BOREHOLE RECORD				CASING RECORD			
RUN NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NO 2	3.0M	TD	NO	N/A	SURFACE	3.0M
EQUIPMENT		RUN 1	RUN 2	RUN 3	RUN 4		
DIP/VERT		221/226					

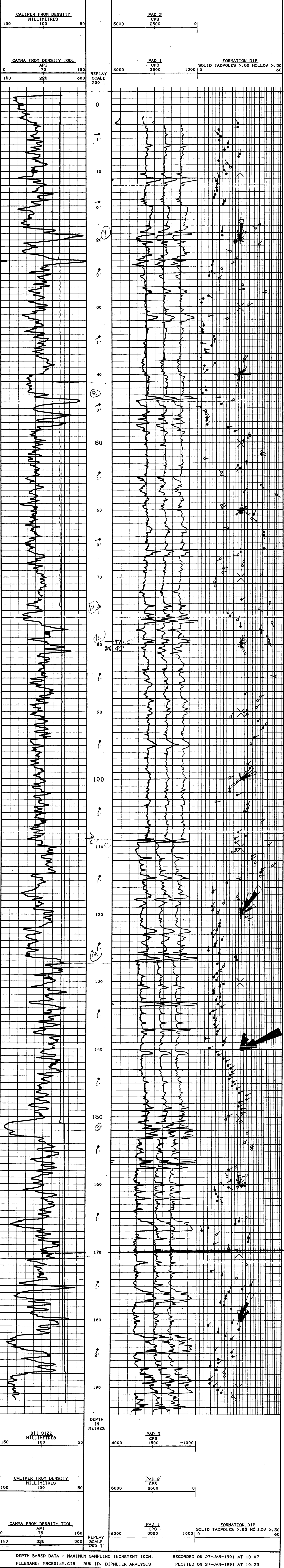
REMARKS

DIPMETER ANALYSIS SLIMLINE UNIT

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**DIPMETER ANALYSIS**

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 27-JAN-1991 AT 10.07  
 FILENAME: MRGE014M.CIB RUN ID: DIPMETER ANALYSIS PLOTTED ON 27-JAN-1991 AT 10.25



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 27-JAN-1991 AT 10.07  
 FILENAME: MRGE014M.CIB RUN ID: DIPMETER ANALYSIS PLOTTED ON 27-JAN-1991 AT 10.25

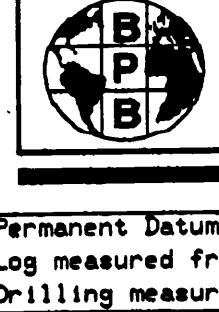
**DIPMETER ANALYSIS**

COMPANY	WESTERN CANADIAN MINING CORP.
WELL	DD91-14
FIELD	WELDWOOD COAL PROJ.
PROVINCE/COUNTY	BRITISH COLUMBIA
COUNTRY/STATE	CANADA









Borehole: DDS1-12  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

FOCUSSED ELECTRIC  
 GAMMA RAY

**SLIMLINE GRAPHICS UNIT**

Permanent Datum	GROUND LEVEL, Elevation N/A	KB N/A	Location
Log measured from	GROUND LEVEL above permanent datum	DF N/A	COURTENAY
Drilling measured from	GROUND LEVEL above permanent datum	GL N/A	
Date	22-JAN-1991		LSD N/A
Run Number	ONE		SEC
Depth-Driller	182.9m		TIP
Depth-Logger	182.0m		AGE
First Reading	181.5m		OTHER SERVICES
Last Reading	0.0m		CDL, ONL
Casing-Driller	0.1m		MCS, BRD
Casing-Logger	0.1m		
Bit Size	NQ 2		
Hole Fluid Type	WATER		
Dens./Visc.	1.02GR N/A		
PH/Fluid Loss	N/A NIL		
Sample Source	PIT		
Rm @ Meas Temp	N/A		
Rmf @ Meas Temp	N/A		
Rmc @ Meas Temp	N/A		
Source: Rmf/Rmc	N/A N/A		
Rm @ BHT	6.3 @ 9c		
Time Since Circ	30 MIN		
Max Rec Temp	9c		
Equipment/Base	VB29 RDR		
Recorded by	J.C. WISNER		
Witnessed by	S. CASSELMAN		

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RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NQ 2	9.1m	TD	NQ	N/A	SURFACE	9.1m
EQUIPMENT		RUN 1	RUN 2	RUN 3	RUN 4		
R04/CCS		104/110					

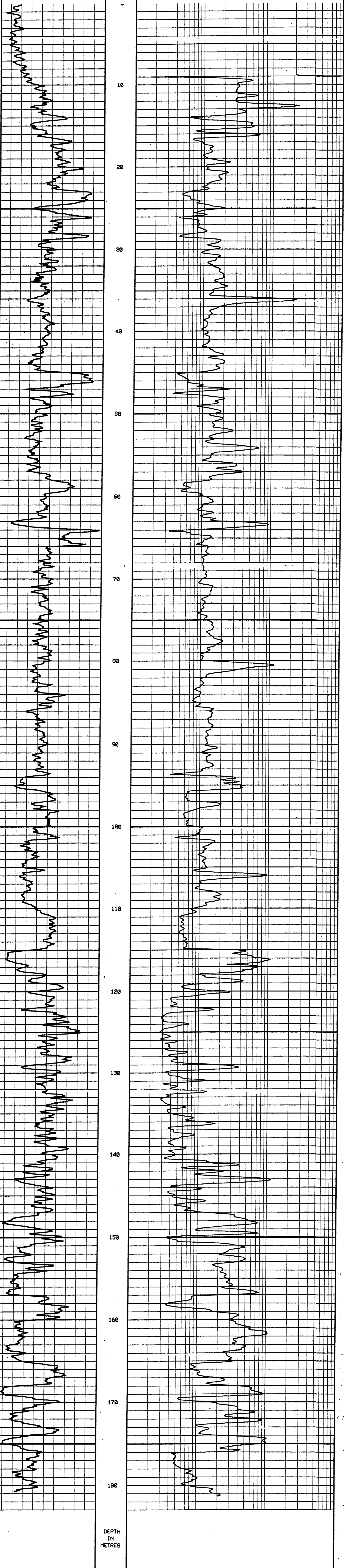
REMARKS: FOCUSSED ELECTRIC GAMMA RAY

SYSTEM CONFIGURATION DATES: LOGGED 1-FEB-1990 PROCESSED 1-FEB-1990 PLOTTED 11-JAN-1991

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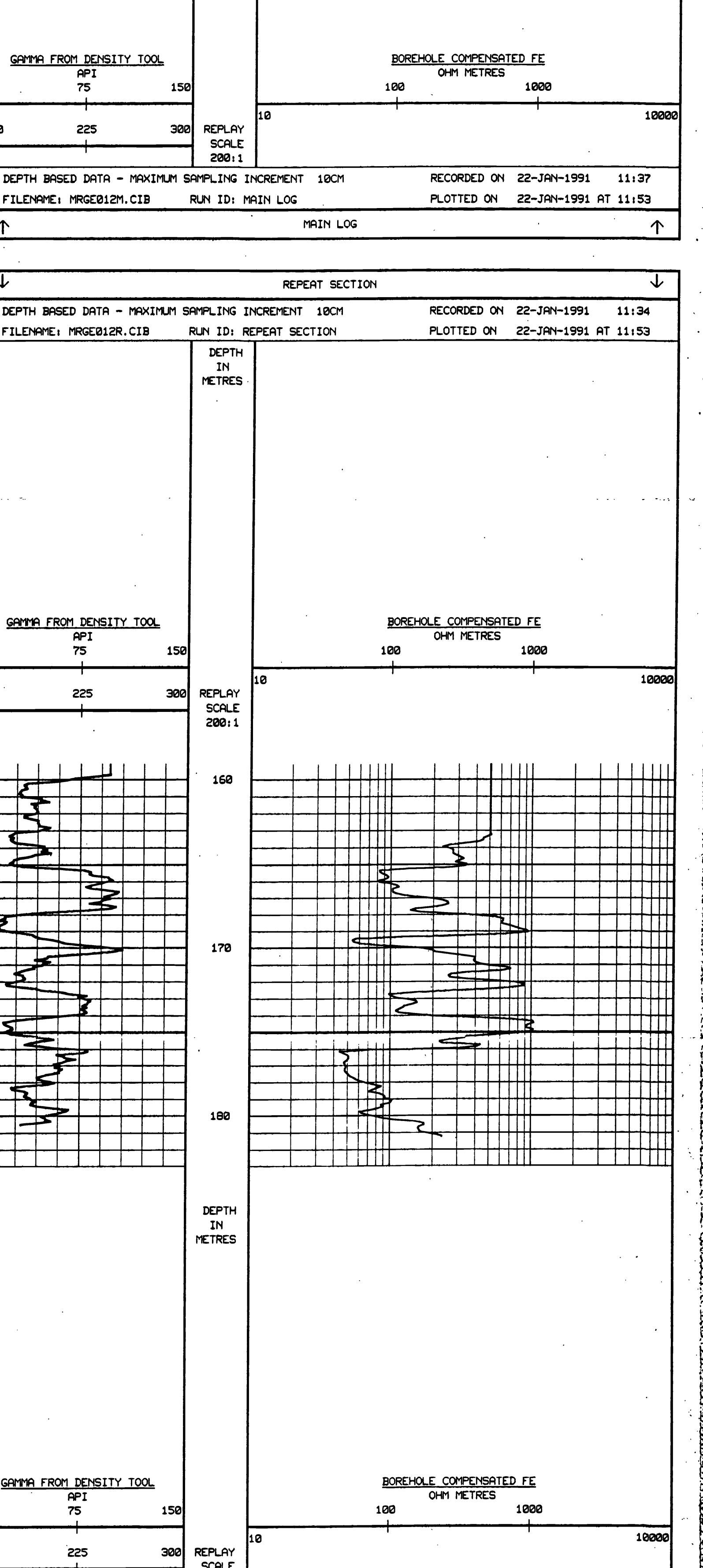
MAIN LOG

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 22-JAN-1991 11:37  
 FILENAME: MRGE012M.CIB RUN ID: MAIN LOG PLOTTED ON 22-JAN-1991 AT 11:55



REPEAT SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 22-JAN-1991 11:34  
 FILENAME: MRGE012R.CIB RUN ID: REPEAT SECTION PLOTTED ON 22-JAN-1991 AT 11:53



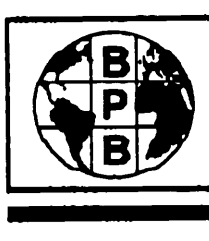
REPEAT SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM RECORDED ON 22-JAN-1991 11:34  
 FILENAME: MRGE012R.CIB RUN ID: REPEAT SECTION PLOTTED ON 22-JAN-1991 AT 11:53

CLIENT WESTERN CANADIAN MINING CORP.  
 BOREHOLE DDS1-12  
 FIELD WELWOOD COAL PROJ.  
 AREA BRITISH COLUMBIA  
 COUNTRY CANADA

DEPTH BASED





Borehole: DD91-16  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

BED RESOLUTION DENSITY (20:1)  
 GAMMA RAY  
 CALIPER

**SLIMLINE GRAPHICS UNIT**

Permanent Datum	GROUND LEVEL, Elevation N/A	KB N/A	Location
Log measured from	GROUND LEVEL above permanent datum	DF N/A	COURTENAY
Drilling measured from	GROUND LEVEL above permanent datum	GL N/A	
Date	31-JAN-1991		LSD N/A
Run Number	ONE		SEC
Depth-Driller	250.0m		TWP
Depth-Logger	249.4m		RGE
First Reading	248.9m		OTHER SERVICES
Last Reading	0.0m		CNL, MCS
Casing-Driller	12.1m		FE, BRD
Casing-Logger	12.8m		
Bit Size	NO 2		
Hole Fluid Type	WATER		
Dens./Visc.	1.02GM N/A		
PH/Fluid Loss	N/A NIL		
Sample Source	PIT		
Rm @ Meas Temp	N/A		
Rmc @ Meas Temp	N/A		
Source: Rmf/Rmc	N/A N/A		
Rm @ BHT	6.3 @ 9c		
Yim @ BHT	30 MIN		
Max Rec Temp	3C		
Equipment/Base	VB29 RDR		
Recorded by	J.C. WISNER		
Witnessed by	S. CASSELLMAN		

866

RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NO 2	12.1m	TD	NO	N/A	SURFACE	12.1m
EQUIPMENT		RUN 1	RUN 2	RUN 3	RUN 4		
CCS		110					

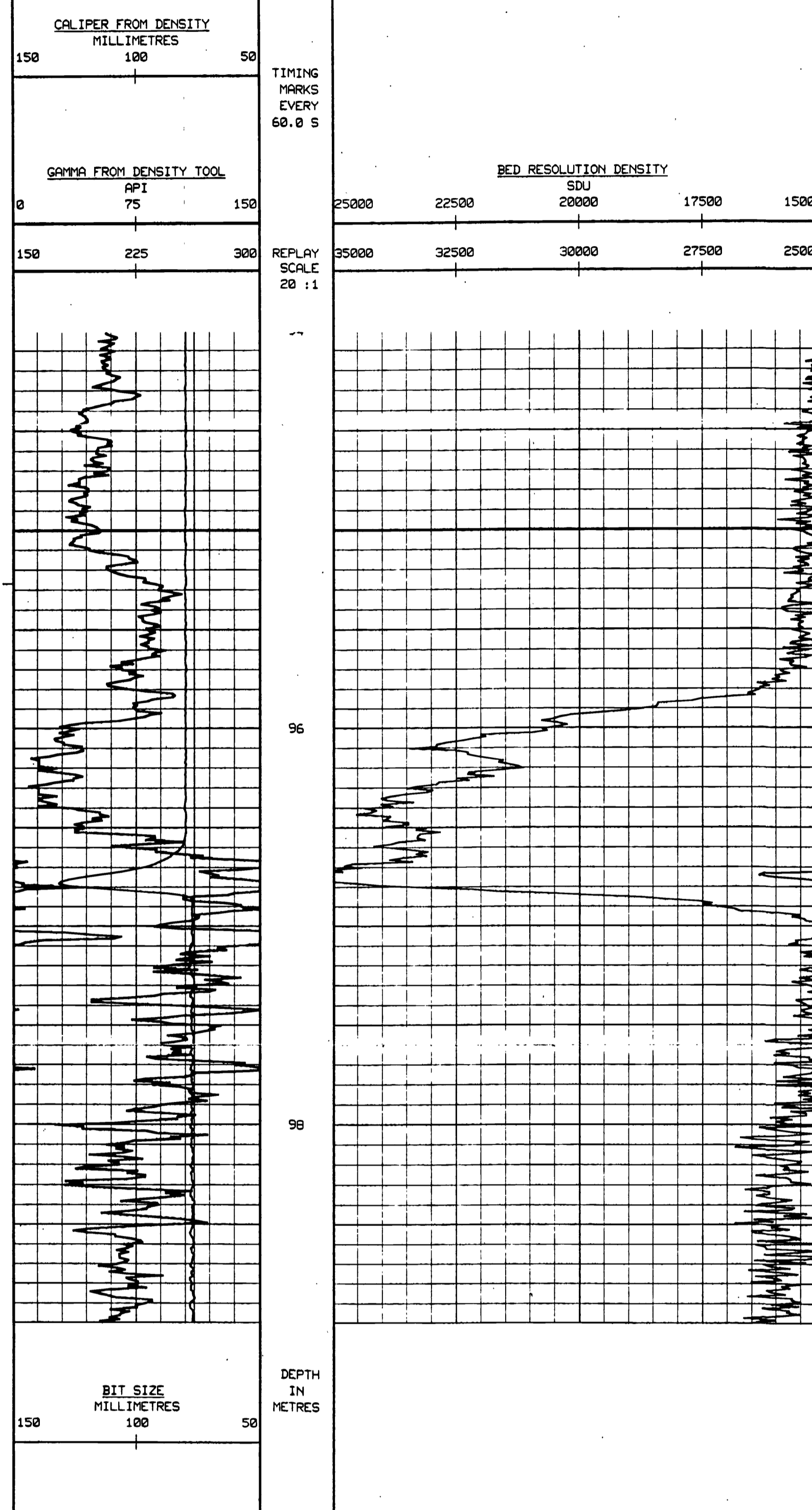
REMARKS: BED RESOLUTION DENSITY (20:1) GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 11-JAN-1991 PROCESSED 11-JAN-1991 PLOTTED 11-JAN-1991

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DETAIL LOG

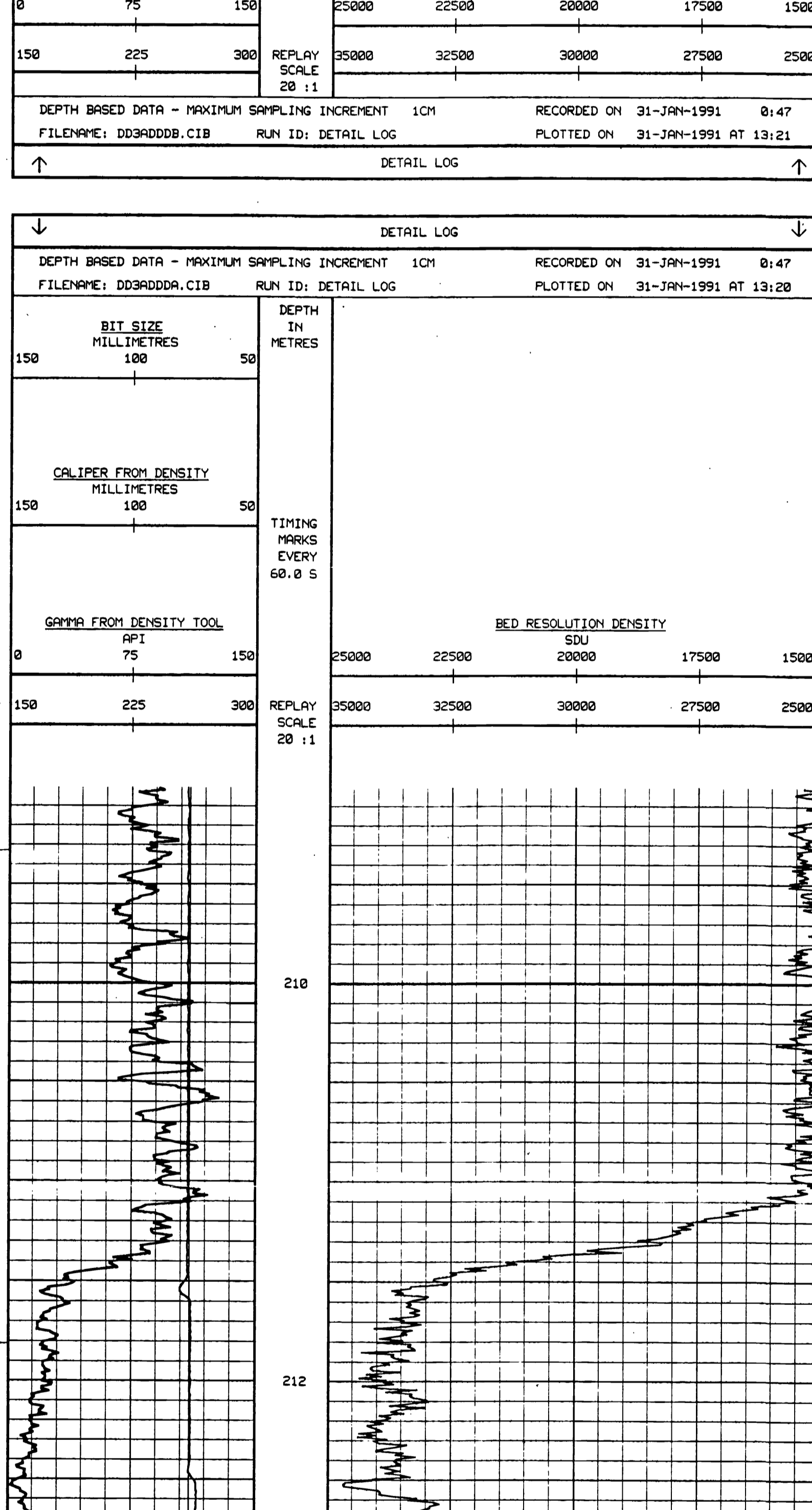
DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM RECORDED ON 31-JAN-1991 0:47  
 FILENAME: DD3ADDDDB.CIB RUN ID: DETAIL LOG PLOTTED ON 31-JAN-1991 AT 13:23



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM RECORDED ON 31-JAN-1991 0:47  
 FILENAME: DD3ADDDDB.CIB RUN ID: DETAIL LOG PLOTTED ON 31-JAN-1991 AT 13:21

DETAIL LOG

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM RECORDED ON 31-JAN-1991 0:47  
 FILENAME: DD3ADDDA.CIB RUN ID: DETAIL LOG PLOTTED ON 31-JAN-1991 AT 13:20



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM RECORDED ON 31-JAN-1991 0:47  
 FILENAME: DD3ADDDA.CIB RUN ID: DETAIL LOG PLOTTED ON 31-JAN-1991 AT 13:18

DETAIL LOG

LOGGING/CALIBRATION CONSTANTS

LOGGING CONSTANTS			
Sonde Type (DD3, CCS)	CCS	Sonde Mode (WET, DRY, STD)	WET
Mud Weight	1.01	Strip Coefficient	0.50
Annular Volume Diameter	127.00	Water Level	0.00
Caliper Ann Length (CMS)	29.60	Matrix Density	2.71
Caliper Units (INS, MMS)	MILLIMETER	Density of Mud Filtrate	1.00
Brd point one	1.00	Brd point two	3.00
Density point one	1.40	Brd scalar	-1.40
Density scalar	1.40	Caliper source for processing	CAL
Bit depths & water level (FT, M)	METRES	Bit depth 1	.00
Bit size 1	80.00	Bit depth 2	12.10
Bit size 2	76.23	Bit depth 3	250.00
Bit size 3	.00	Bit depth 4	.00
Bit size 4	.00	Bit depth 5	.00
Bit size 5	.00		

CALIBRATION CONSTANTS			
Gamma calibrator value 1	494.00	Gamma count rate 1	384.00
Brd calibrator value 1	25000.00	Brd count rate 1	2973.00
Lsd calibrator value 1	.00	Brd count rate 2	.00
Caliper ring size 1	10300.00	Lsd count rate 1	1503.30
Caliper ring size 2	76.20	Caliper count for ring 1	520.00
Caliper ring size 3	101.60	Caliper count for ring 2	573.00
Caliper ring size 4	127.00	Caliper count for ring 3	627.00
Caliper ring size 5	152.40	Caliper count for ring 4	680.00
Caliper ring size 6	203.20	Caliper count for ring 5	737.00
	254.00	Caliper count for ring 6	797.00

CLIENT

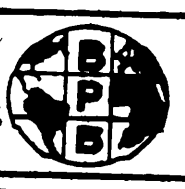
WESTERN CANADIAN MINING CORP.

BOREHOLE DD91-16

FIELD WELWOOD COAL PROJ.

AREA BRITISH COLUMBIA

COUNTRY CANADA



Borehole: DD91-20  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELDWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

BED RESOLUTION DENSITY (20:1)  
 GAMMA RAY  
 CALIPER

### SLIMLINE GRAPHICS UNIT

Permanent Datum GROUND LEVEL, Elevation N/A	KB N/A	Location
Measured from GROUND LEVEL above permanent datum	DF N/A	COURTENAY
Logging measured from GROUND LEVEL above permanent datum	GL N/A	
Date 6-FEB-1991		LSD N/A
Run Number ONE		SEC
Drill-Driller 99.6m		TIP
Drill-Logger 99.3m		RGE
Net Reading 99.2m		OTHER SERVICES
Bit Reading 0.0m		CNL, MCS
String-Driller 17.9m		FE, CCS
String-Logger 17.9m		
Bit Size NO 2		
Fluid Type WATER		
Visc. 1.82GM N/A		
Fluid Loss N/A NIL		
Spillage Source PIT		
Flow Meas Temp N/A		
Temp Meas Temp N/A		
Pressure Meas Temp N/A		
Flow Rate Rm/Rmc N/A N/A		
Flow Rate BHT 6.3 @ 9c		
Flow Since Circ 30 MIN		
Flow Rec Temp 9c		
Equipment/Base VB29 RDR		
Ordered by J.C. WISNER		
Processed by S. CASSELLMAN		

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RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
1	NO 2	17.9m	TD	NO	N/A	SURFACE	17.9m

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
CCS	110			

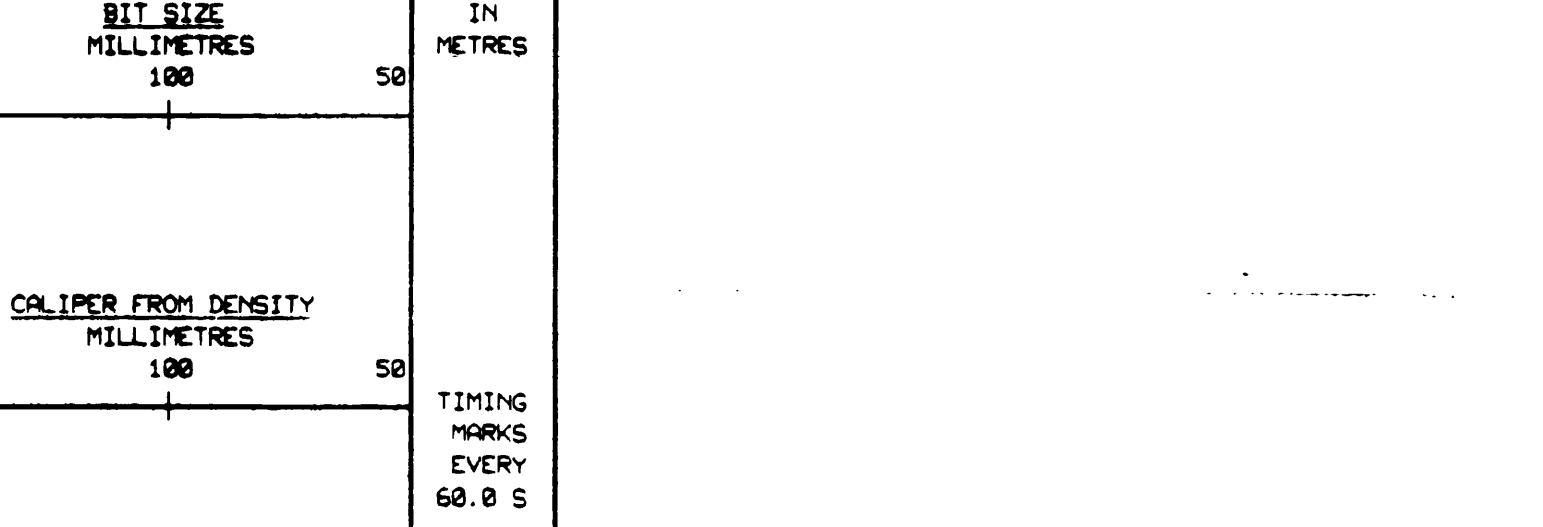
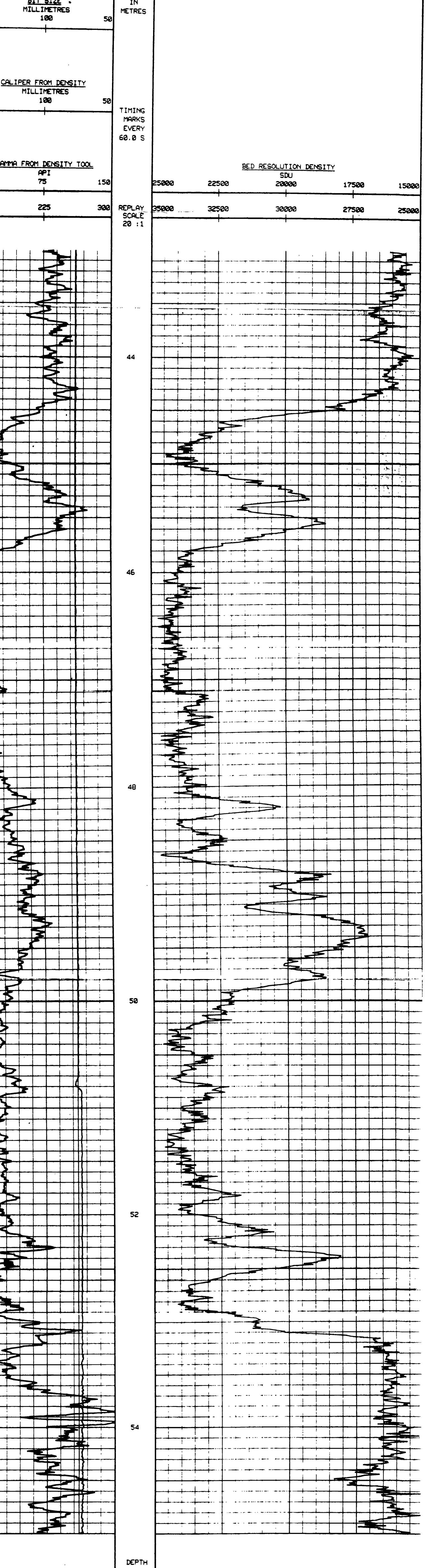
REMARKS:  
 BED RESOLUTION DENSITY (20:1) GAMMA RAY CALIPER

SYSTEM CONFIGURATION DATES: LOGGED 11-JAN-1991 PROCESSED 11-JAN-1991 PLOTTED 11-JAN-1991

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### DETAIL LOG

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM  
 FILENAME: DD3ACCCA.CIB RUN ID: DETAIL LOG  
 RECORDED ON 6-FEB-1991 AT 23:28  
 PLOTTED ON 7-FEB-1991 AT 11:37



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 1CM  
 FILENAME: DD3ACCCA.CIB RUN ID: DETAIL LOG  
 RECORDED ON 6-FEB-1991 AT 23:28  
 PLOTTED ON 7-FEB-1991 AT 11:34

### LOGGING/CALIBRATION CONSTANTS

LOGGING CONSTANTS			
Sonde Type (DD3, CCS)	CCS	Sonde Mode (WET, DRY, STD)	WET
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	80.00	Bit depth 1	.00
Bit size 2	76.23	Bit depth 2	17.90
Bit size 3	.00	Bit depth 3	99.60
Bit size 4	.00	Bit depth 4	.00
Bit size 5	.00	Bit depth 5	.00

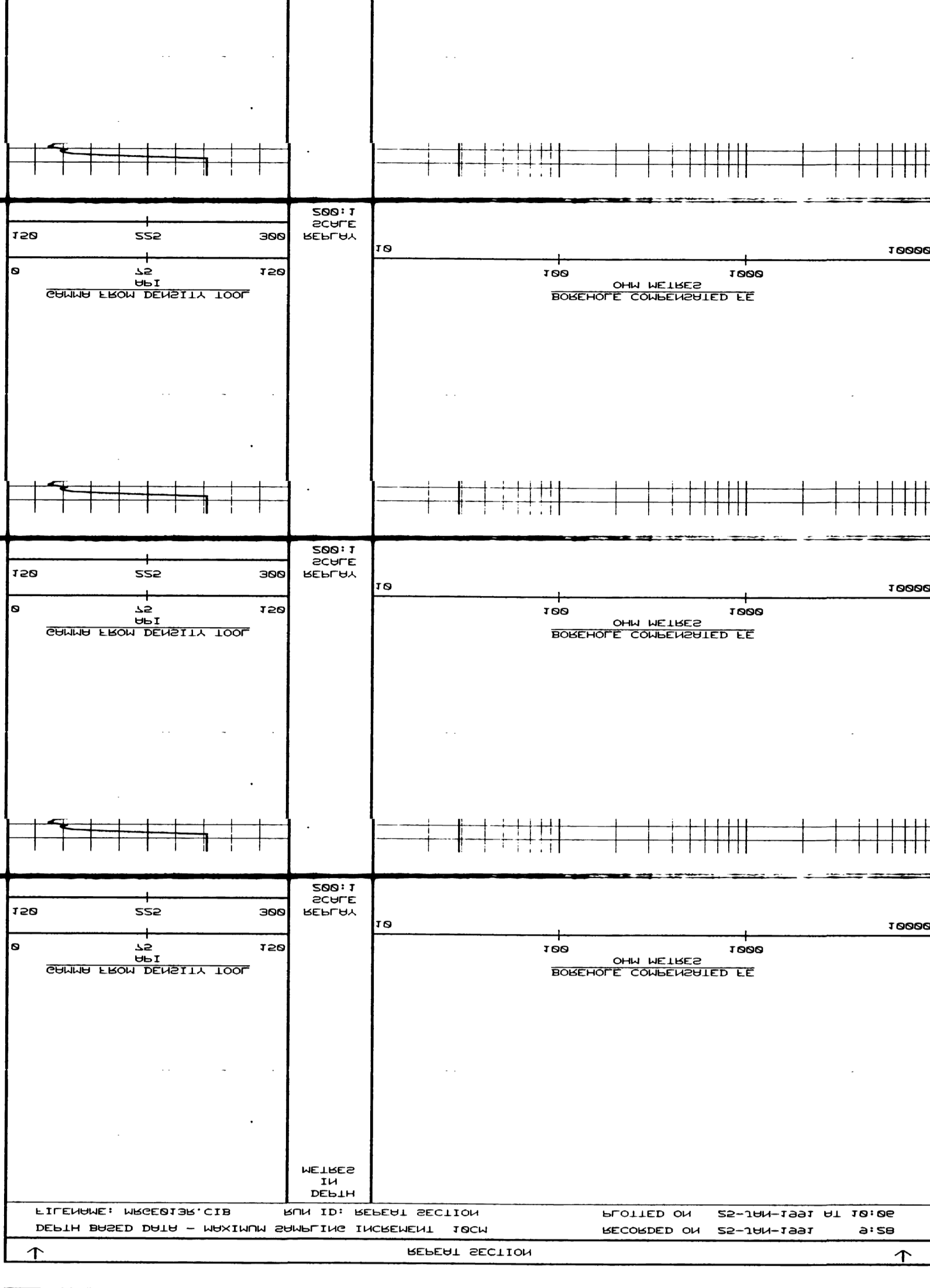
  

CALIBRATION CONSTANTS			
Gamma calibrator value 1	494.00	Gamma count rate 1	304.00
Brd calibrator value 1	25000.00	Brd count rate 1	2973.00
Brd calibrator value 2	.00	Brd count rate 2	.00
Lsd calibrator value 1	10300.00	Lsd count rate 1	1503.00
Caliper ring size 1	76.20	Caliper count for ring 1	518.00
Caliper ring size 2	101.60	Caliper count for ring 2	573.00
Caliper ring size 3	127.00	Caliper count for ring 3	627.00
Caliper ring size 4	152.40	Caliper count for ring 4	680.00
Caliper ring size 5	203.20	Caliper count for ring 5	737.00
Caliper ring size 6	254.00	Caliper count for ring 6	797.00

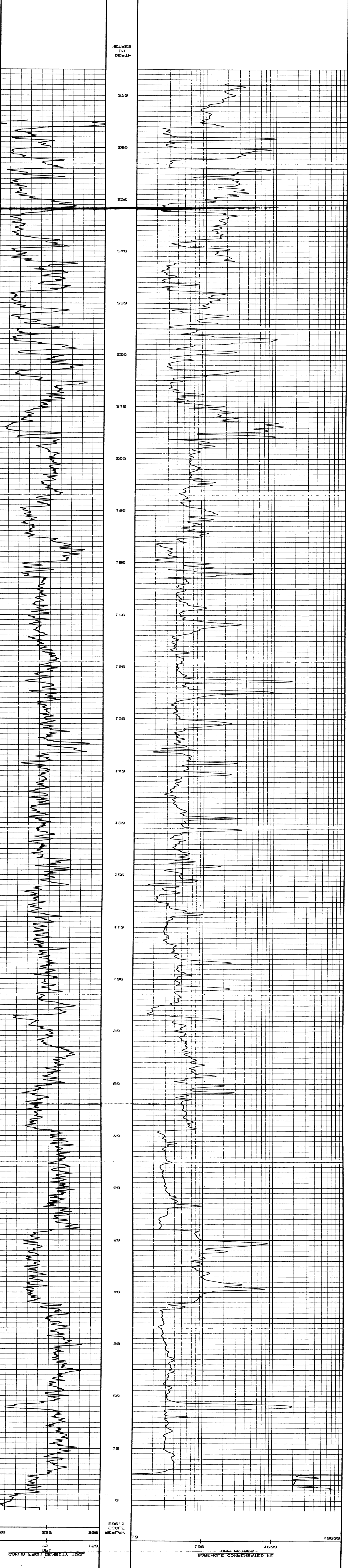
CLIENT: WESTERN CANADIAN MINING CORP.  
 BOREHOLE: DD91-20  
 FIELD: WELDWOOD COAL PROJ.  
 AREA: BRITISH COLUMBIA  
 COUNTRY: CANADA







↑ LIFE-LINE: MAGNETIC CIB W/IN ID: W/IN FOC ↓ FOLLOWED ON 52-144-7387 W/ 79156  
 BELGUA BASED DATA - BELGUA BASED DATA INCREMENT: 76CM RECORDED ON 52-144-7387 8133



↑ LIFE-LINE: MAGNETIC CIB W/IN ID: W/IN FOC ↓ FOLLOWED ON 52-144-7387 W/ 79176  
 BELGUA BASED DATA - BELGUA BASED DATA INCREMENT: 76CM RECORDED ON 52-144-7387 8133

↑ BATHY AND CONDITIONS WE SET ON IN ONE SPINNING SCHEDULE. THESE INTERMEDIATE USE W/20 SUBJECT TO ONE REVIEW. ONLY ON ONE OFFICER'S REVIEW ON EMPLOYEE. THESE INTERMEDIATE USE W/20 SUBJECT TO ONE REVIEW. ONLY ON ONE OFFICER'S REVIEW ON EMPLOYEE. THESE INTERMEDIATE USE W/20 SUBJECT TO ONE REVIEW. ONLY ON ONE OFFICER'S REVIEW ON EMPLOYEE.

CORRECTED ELECTRIC		CORRECTED			
W/IN 1	W/IN 2	W/IN 3	W/IN 4	W/IN 5	W/IN 6
0.5	1.0	1.5	2.0	2.5	3.0
W/IN 1	W/IN 2	W/IN 3	W/IN 4	W/IN 5	W/IN 6

W/IN 1	W/IN 2	W/IN 3	W/IN 4	W/IN 5	W/IN 6
0.5	1.0	1.5	2.0	2.5	3.0
W/IN 1	W/IN 2	W/IN 3	W/IN 4	W/IN 5	W/IN 6

W/IN 1	W/IN 2	W/IN 3	W/IN 4	W/IN 5	W/IN 6
0.5	1.0	1.5	2.0	2.5	3.0
W/IN 1	W/IN 2	W/IN 3	W/IN 4	W/IN 5	W/IN 6

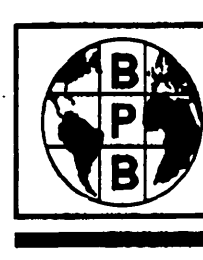
**STATIONARY GRAPHICS UNIT**

CONTROL: STATIONARY GRAPHICS UNIT  
 OPERATOR: STATIONARY GRAPHICS UNIT  
 ADDRESS: STATIONARY GRAPHICS UNIT  
 PHONE: STATIONARY GRAPHICS UNIT

SEE







Borehole: DD91-07  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

FOCUSSED ELECTRIC  
 GAMMA RAY

**SLIMLINE GRAPHICS UNIT**

Permanent Datum GROUND LEVEL, Elevation N/A		KB N/A	Location
Log measured from GROUND LEVEL above permanent datum		DF N/A	COURTENAY
Drilling measured from GROUND LEVEL above permanent datum		GL N/A	
Date	13-JAN-1991		LSD N/A
Run Number	ONE		SEC
Depth-Driller	185.9 m		TWP
Depth-Logger	184m		RGE
First Reading	183m		OTHER SERVICES
Last Reading	00m		CDL, MCS
Casing-Driller	10.6 m		BRD
Casing-Logger	10m		
Bit Size	NQ 2		
Hole Fluid Type	WATER		
Dens./Visc.	1.01GM N/A		
PH/Fluid Loss	N/A NIL		
Sample Source	PIT		
Rm @ Meas Temp	N/A		
Max Rec Temp	30		
Rmc @ Meas Temp	N/A		
Source: Rmf/Rmc	N/A N/A		
Rm @ BHT	6.3 @ 9 C		
Time Since Circ	15 MIN.		
Equipment/Base	VB29 RDR		
Recorded by	J.C. WISNER		
Witnessed by	S CASSELMAN		

866

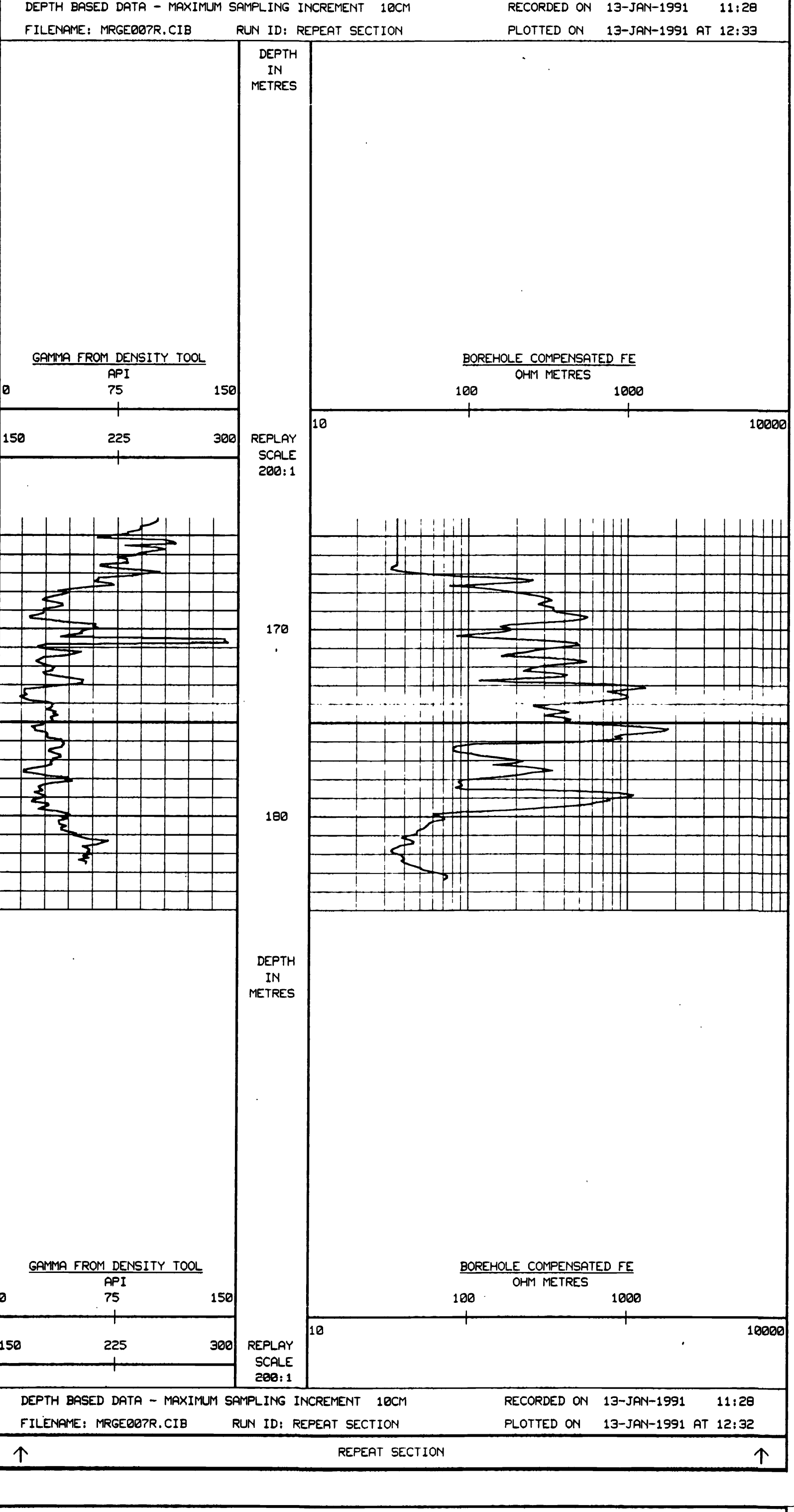
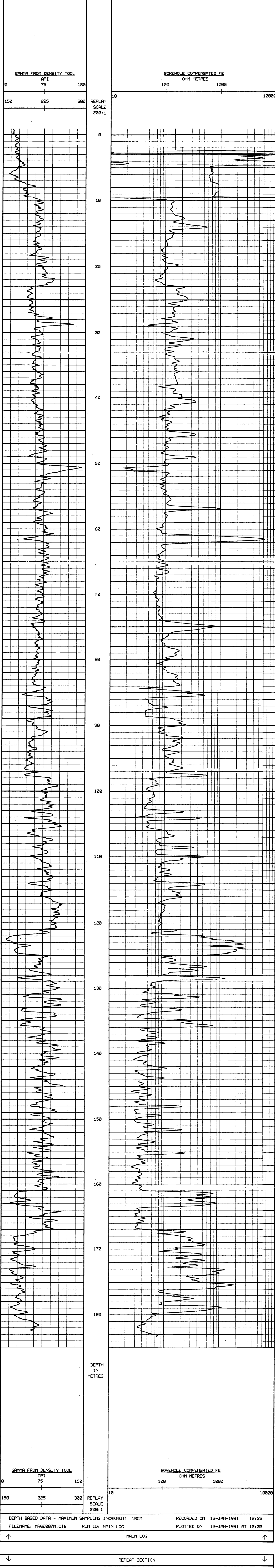
RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NQ 2	10.6 m	TD	3.5"	N/A	SURFACE	10.6 m

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
RO4	104			

REMARKS:  
 FOCUSSED ELECTRIC      GAMMA RAY

SYSTEM CONFIGURATION DATES: LOGGED 1-FEB-1990 PROCESSED 1-FEB-1990 PLOTTED 24-AUG-1990

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CLIENT: WESTERN CANADIAN MINING CORP.  
 BOREHOLE: DD91-07  
 FIELD: WELWOOD COAL PROJ.  
 AREA: BRITISH COLUMBIA  
 COUNTRY: CANADA





Borehole: DD90-02  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

FOCUSSED ELECTRIC  
 GAMMA RAY

MAKFO

**SLIMLINE GRAPHICS UNIT**

Permanent Datum GROUND LEVEL, Elevation N/A	KB N/A	Location
Log measured from GROUND LEVEL above permanent datum	DF N/A	COURTENAY
Drilling measured from GROUND LEVEL above permanent datum	GL N/A	
Date: 5-DEC-1990		LSD
Run Number: 1		SEC
Depth-Driller: 168.0m		TIP
Depth-Logger: 164.0m		RGE
First Reading: 164.0m		OTHER SERVICES
Last Reading: 00.0m		CDL, CNL, MCS
Casing-Driller: 4.6m		BRD
Casing-Logger: 4.6m		
Bit Size: NO 2		
Hole Fluid Type: MUD		
Dens. Visc: 1.02 N/A		
PH/Fluid Loss: N/A N/A		
Sample Source: PIT		
Rm @ Meas Temp: 21.3 @ 9.2C		
Rmf @ Meas Temp: N/A		
Rmc @ Meas Temp: N/A		
Source: Rmf/Rmc: N/A N/A		
Rm @ BHT: 21.3 @ 9.2C		
Time Since Circ: 1.0 hrs.		
Max Rec Temp: 9.2C		
Equipment/Base: V222 RDR		
Recorded by: B PICHE		
Witnessed by: S CASSELMAN		

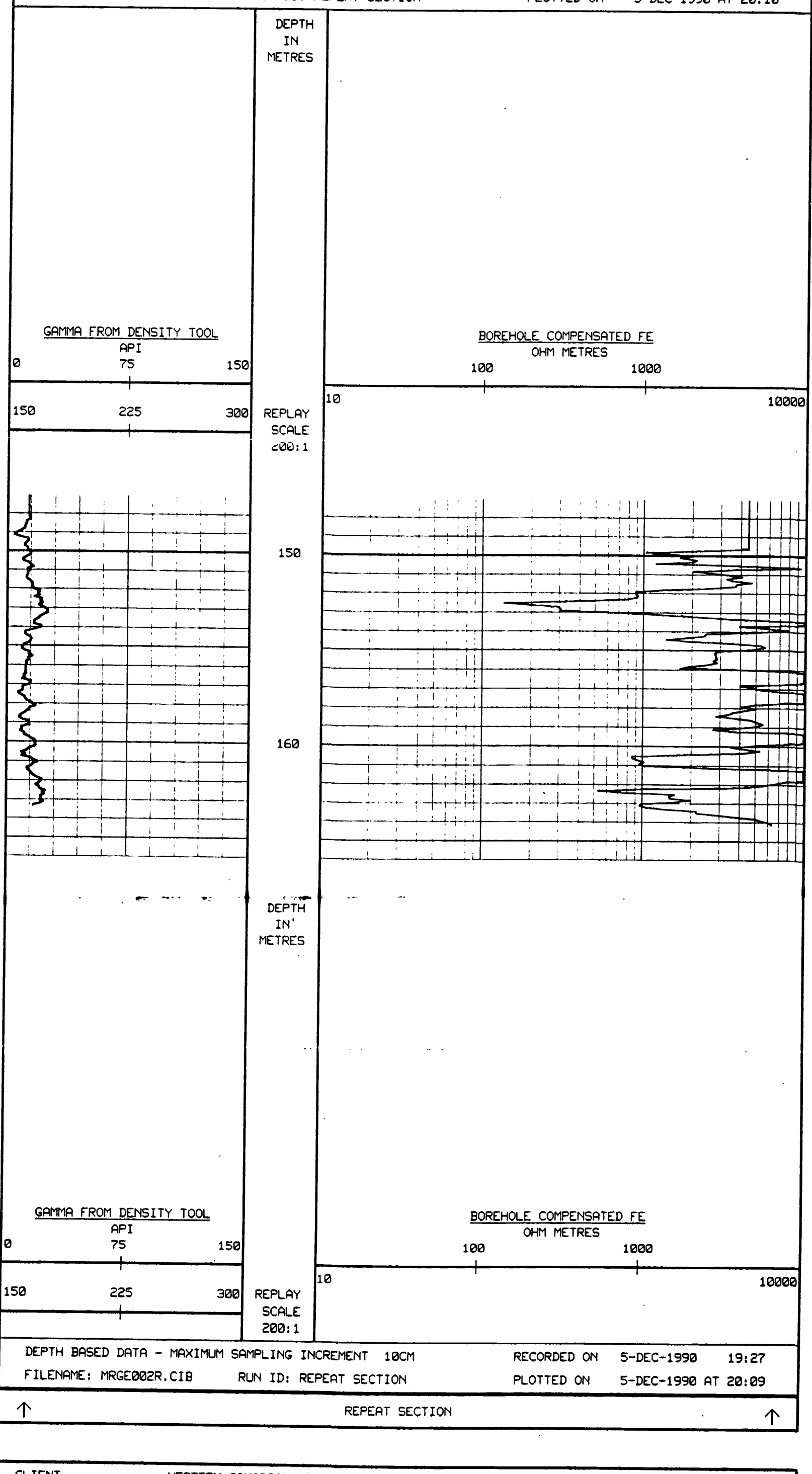
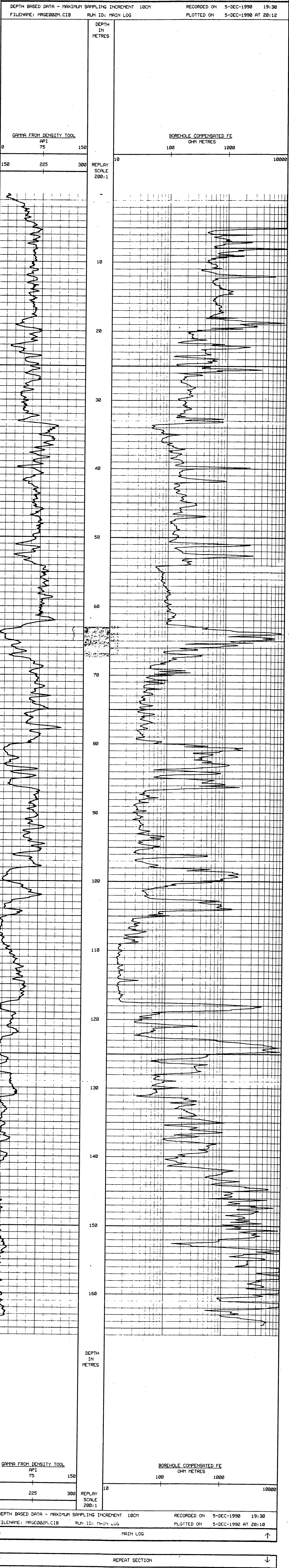
866

RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
1	NO 2	4.6m	TD	76.2mm	N/A	00.0m	4.6m
EQUIPMENT		RUN 1	RUN 2	RUN 3	RUN 4		
FE, DD3		104, 110					

REMARKS:  
 FOCUSSED ELECTRIC      GAMMA RAY  
 FLUID LEVEL @ 27.5m

SYSTEM CONFIGURATION DATES: LOGGED 1-FEB-1990 PROCESSED 1-FEB-1990 PLOTTED 24-AUG-1990

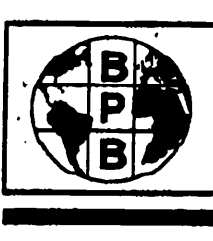
ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY 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.



CLIENT	WESTERN CANADIAN MINING CORP.
BOREHOLE	DD90-02
FIELD	WELWOOD COAL PROJ.
AREA	BRITISH COLUMBIA
COUNTRY	CANADA







Borehole: DDS1-08  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELDMOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

FOCUSSED ELECTRIC  
 GAMMA RAY

**SLIMLINE GRAPHICS UNIT**

Permanent Datum GROUND LEVEL, Elevation N/A	KB N/A	Location N/A
Log measured from GROUND LEVEL above permanent datum	DF N/A	COURTENAY
Drilling measured from GROUND LEVEL above permanent datum	GL N/A	
Date 14-JAN-1991		LSD N/A
Run Number ONE		SEC
Depth-Driller 104.2m		TIP
Depth-Logger 103.2m		RGE
First Reading 102.0m		OTHER SERVICES
Last Reading 00m		CDL, MCS, BRD
Casing-Driller 6.0m		DIPMETER
Casing-Logger 5.0m		
Bit Size NQ 2		
Hole Fluid Type WATER		
Dens./Visc. 1.01gM N/A		
PH/Fluid Loss N/A NIL		
Sample Source PIT		
Rm # Meas Temp N/A		
Rmf # Meas Temp N/A		
Rmc # Meas Temp N/A		
Source: Rmf/Rmc N/A N/A		
Rm # BRT 6.3 @ 9 C		
Time Since Circ 1 HOUR		
Max Rec Temp 9C		
Equipment/Base VB29 RDR		
Recorded by J.C. WISNER		
Witnessed by S. CASSELLMAN		

866

RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NQ 2	6.0m	TD	NQ	N/A	SURFACE	6.0m

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
RO4	104			

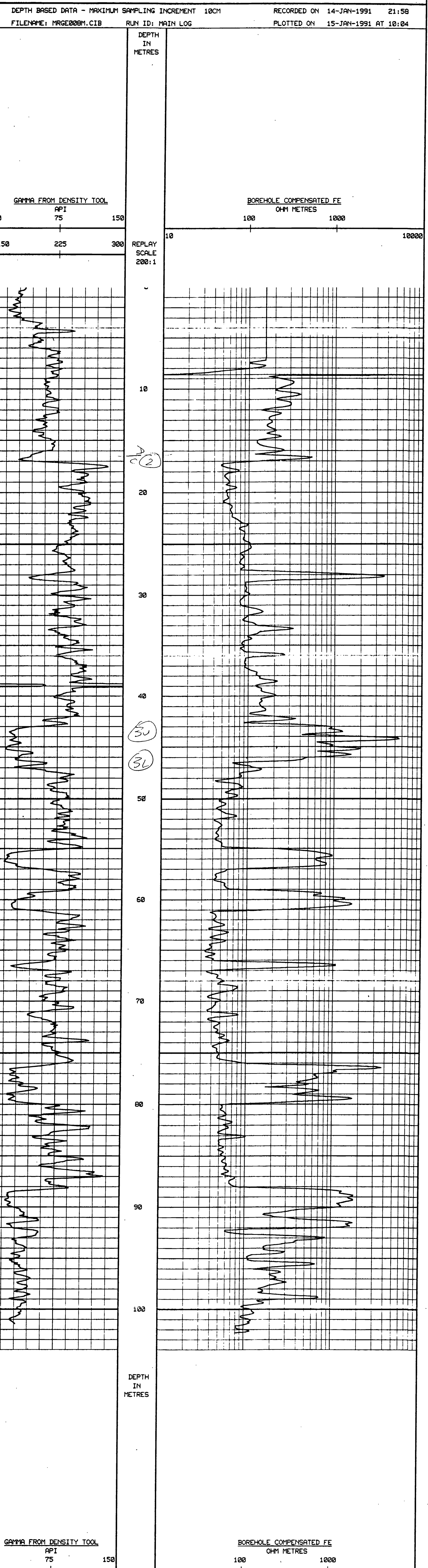
REMARKS:  
 FOCUSSED ELECTRIC                      GAMMA RAY

SYSTEM CONFIGURATION DATES: LOGGED 1-FEB-1990    PROCESSED 1-FEB-1990    PLOTTED 24-AUG-1990

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MAIN LOG

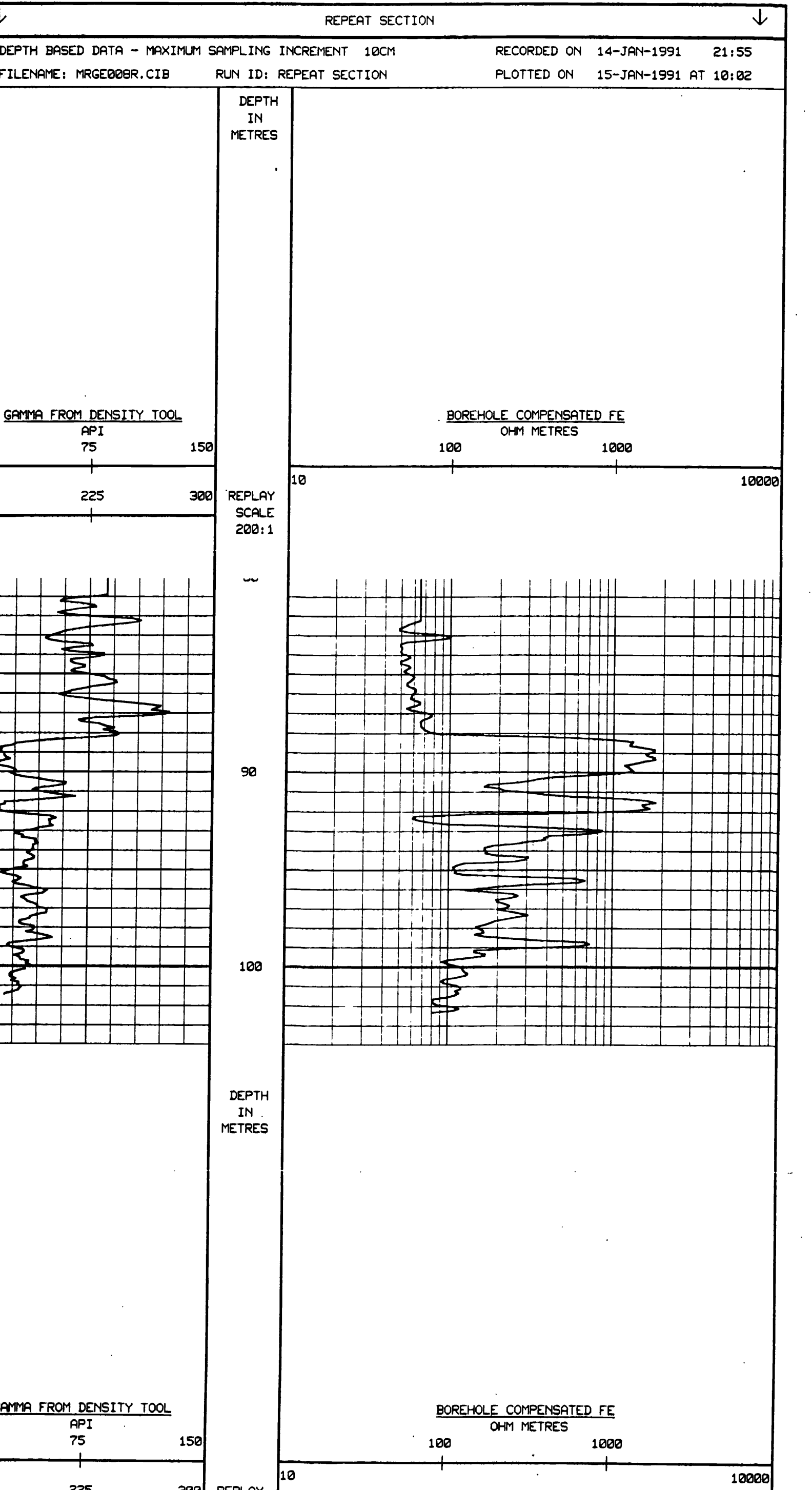
DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM    RECORDED ON 14-JAN-1991 21:58  
 FILENAME: MRGE008M.CIB    RUN ID: MAIN LOG    PLOTTED ON 15-JAN-1991 AT 10:04



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM    RECORDED ON 14-JAN-1991 21:58  
 FILENAME: MRGE008M.CIB    RUN ID: MAIN LOG    PLOTTED ON 15-JAN-1991 AT 10:02

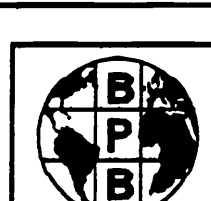
REPEAT SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM    RECORDED ON 14-JAN-1991 21:55  
 FILENAME: MRGE008R.CIB    RUN ID: REPEAT SECTION    PLOTTED ON 15-JAN-1991 AT 10:02



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM    RECORDED ON 14-JAN-1991 21:55  
 FILENAME: MRGE008R.CIB    RUN ID: REPEAT SECTION    PLOTTED ON 15-JAN-1991 AT 10:02

CLIENT	WESTERN CANADIAN MINING CORP.
BOREHOLE	DDS1-08
FIELD	WELDMOOD COAL PROJ.
AREA	BRITISH COLUMBIA
COUNTRY	CANADA



Borehole: DD91-08  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

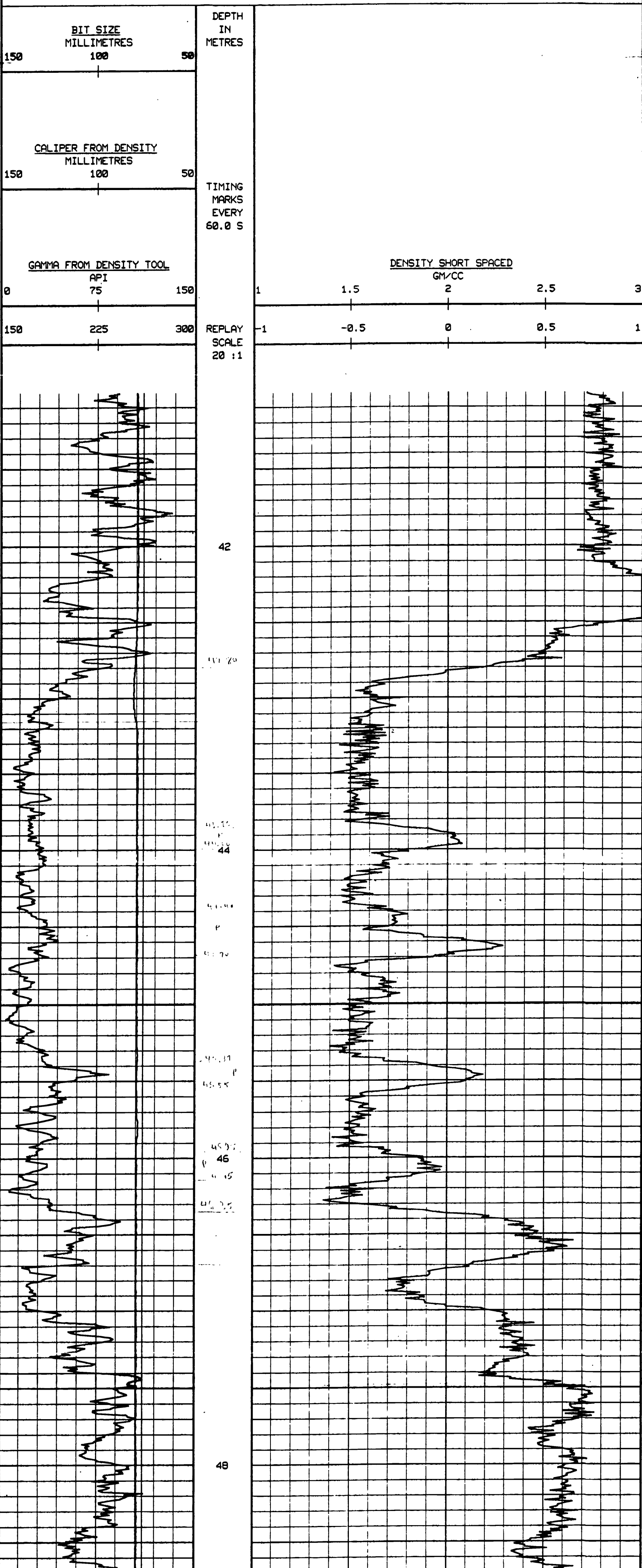
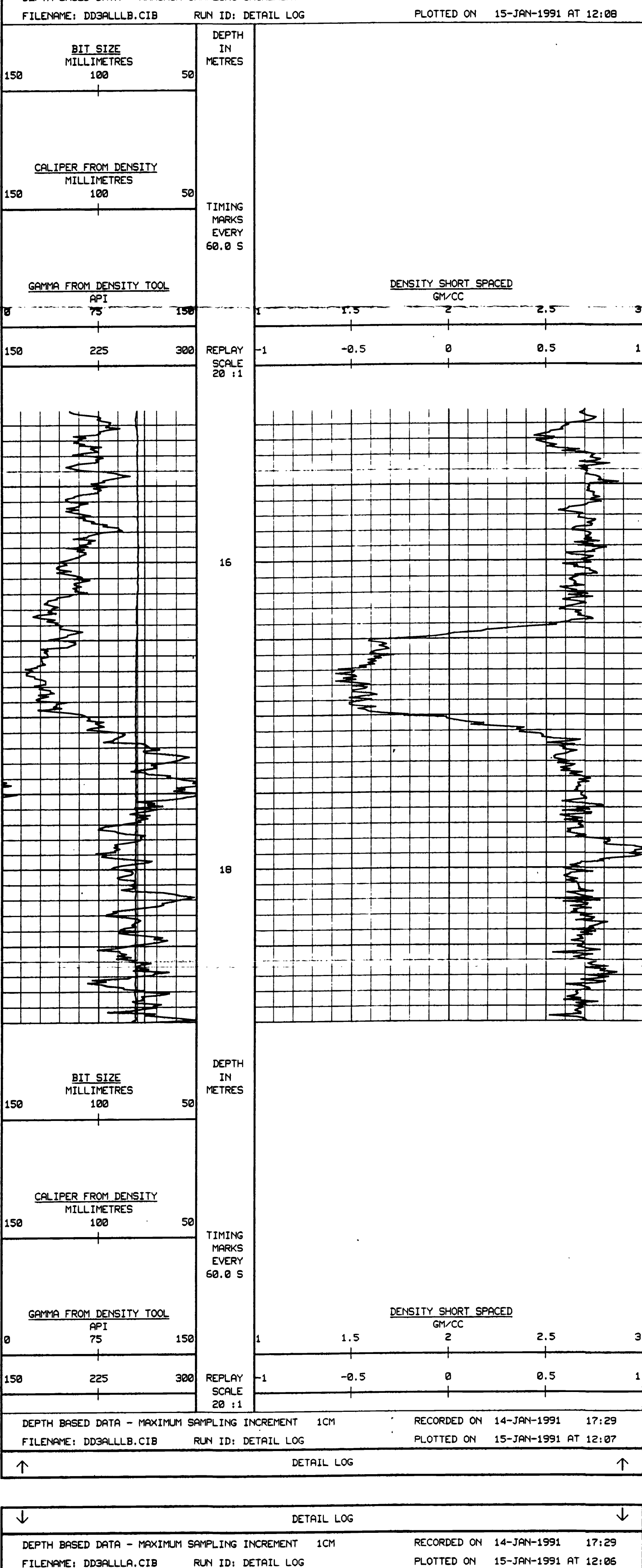
BED RESOLUTION DENSITY (20:1)  
 GAMMA RAY  
 CALIPER

**SLIMLINE GRAPHICS UNIT**

Permanent Datum GROUND LEVEL, Elevation N/A		KB N/A	Location
Log measured from GROUND LEVEL above permanent datum		DF N/A	COURTENAY
Drilling measured from GROUND LEVEL above permanent datum		GL N/A	
Date	14-JAN-1991		LSD N/A
Run Number	ONE		SEC
Depth-Driller	104.2m		TWP
Depth-Logger	103.2m		RGE
First Reading	102.0m		OTHER SERVICES
Last Reading	00m		FE, MCS, CDL
Casing-Driller	6.0m		DIPMETER
Casing-Logger	5.0m		
Bit Size	NO 2		
Hole Fluid Type	WATER		
Dens./Visc.	1.01 N/A		
PH/Fluid Loss	N/A NIL		
Sample Source	PIT		
Rm @ Meas Temp	6.3 @ 9 C		
Rmf @ Meas Temp	N/A		
Rmc @ Meas Temp	N/A		
Source: Rmf/Rmc	N/A N/A		
Rm @ BHT	6.3 @ 9C		
Time Since Circ	1 HR.		
Max Rec Temp	9C		
Equipment/Base	V829 RDR		
Recorded by	J.C. WISNER		
Witnessed by	S. CASSELLMAN		

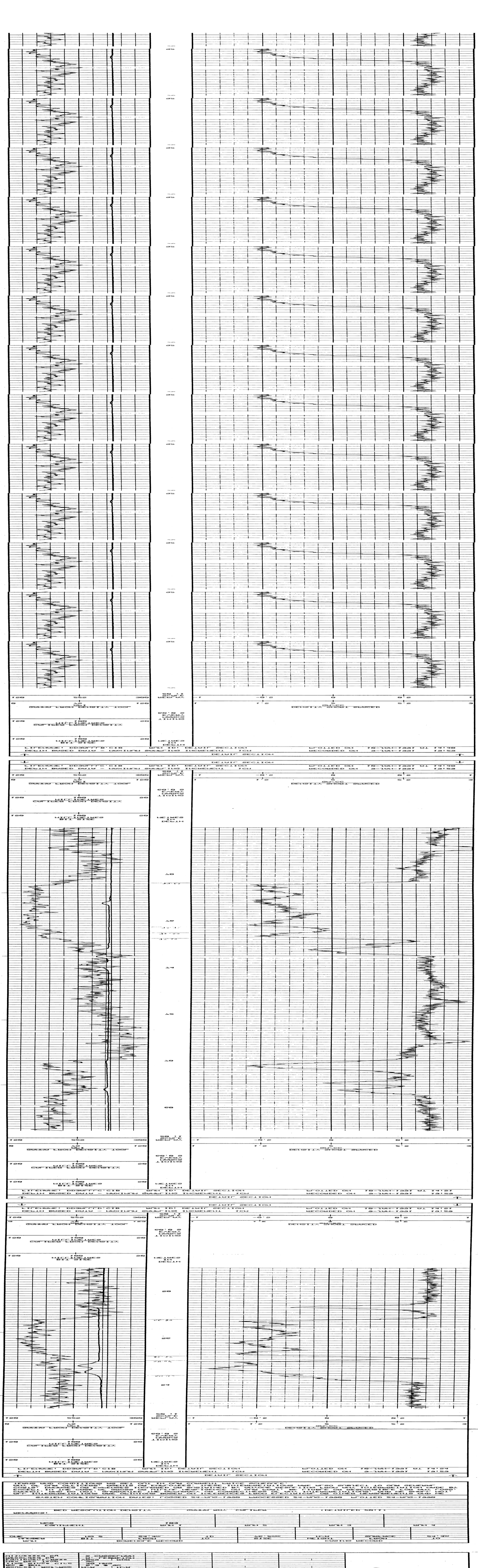
866

RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NO 2	6.0m	TD	NO	N/A	SURFACE	6.0m
EQUIPMENT		RUN 1		RUN 2		RUN 3	
DD3A		183					
REMARKS:							
BED RESOLUTION DENSITY (20:1) GAMMA RAY CALIPER							
SYSTEM CONFIGURATION DATES: LOGGED 24-AUG-1990 PROCESSED 24-AUG-1990 PLOTTED 24-AUG-1990							
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.							



LOGGING/CALIBRATION CONSTANTS			
LOGGING CONSTANTS			
Sonde Type (DD3, CCS)	DD3	Sonde Mode (WET, DRY, STD)	STD
Mud Weight	1.01	Strip Coefficient	0.50
Annular Volume Diameter	127.00	Water Level	.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	1.50	Brd scalar	-5.00
Bit depths & water level (FT, M)	METRES	Caliper source for processing	CAL
Bit size 1	80.00	Bit depth 1	.00
Bit size 2	76.20	Bit depth 2	6.00
Bit size 3	.00	Bit depth 3	104.20
Bit size 4	.00	Bit depth 4	.00
Bit size 5	.00	Bit depth 5	.00
CALIBRATION CONSTANTS			
Gamma calibrator value 1	494.00	Gamma count rate 1	293.60
Brd calibrator value 1	36843.00	Brd count rate 1	1896.40
Brd calibrator value 2	13900.00	Brd count rate 2	734.00
Lsd calibrator value 1	17425.00	Lsd count rate 1	916.00
Caliper ring size 1	76.20	Caliper count for ring 1	548.00
Caliper ring size 2	101.60	Caliper count for ring 2	598.00
Caliper ring size 3	127.00	Caliper count for ring 3	639.00
Caliper ring size 4	152.40	Caliper count for ring 4	697.00
Caliper ring size 5	203.20	Caliper count for ring 5	820.00
Caliper ring size 6	254.00	Caliper count for ring 6	932.00

CLIENT	WESTERN CANADIAN MINING CORP.
BOREHOLE	DD91-08
FIELD	WELWOOD COAL PROJ.
AREA	BRITISH COLUMBIA
COUNTRY	CANADA



Station	Time	Amplitude	Frequency	Phase
1	0.0	0.0	0.0	0.0
1	0.1	0.5	1.0	0.0
1	0.2	1.0	2.0	0.0
1	0.3	0.5	1.0	0.0
1	0.4	0.0	0.0	0.0
1	0.5	0.0	0.0	0.0
1	0.6	0.0	0.0	0.0
1	0.7	0.0	0.0	0.0
1	0.8	0.0	0.0	0.0
1	0.9	0.0	0.0	0.0
1	1.0	0.0	0.0	0.0

1. Station: 1  
 2. Time: 0.0  
 3. Amplitude: 0.0  
 4. Frequency: 0.0  
 5. Phase: 0.0

6. Station: 1  
 7. Time: 0.1  
 8. Amplitude: 0.5  
 9. Frequency: 1.0  
 10. Phase: 0.0

11. Station: 1  
 12. Time: 0.2  
 13. Amplitude: 1.0  
 14. Frequency: 2.0  
 15. Phase: 0.0

16. Station: 1  
 17. Time: 0.3  
 18. Amplitude: 0.5  
 19. Frequency: 1.0  
 20. Phase: 0.0

21. Station: 1  
 22. Time: 0.4  
 23. Amplitude: 0.0  
 24. Frequency: 0.0  
 25. Phase: 0.0

26. Station: 1  
 27. Time: 0.5  
 28. Amplitude: 0.0  
 29. Frequency: 0.0  
 30. Phase: 0.0

31. Station: 1  
 32. Time: 0.6  
 33. Amplitude: 0.0  
 34. Frequency: 0.0  
 35. Phase: 0.0

36. Station: 1  
 37. Time: 0.7  
 38. Amplitude: 0.0  
 39. Frequency: 0.0  
 40. Phase: 0.0

41. Station: 1  
 42. Time: 0.8  
 43. Amplitude: 0.0  
 44. Frequency: 0.0  
 45. Phase: 0.0

46. Station: 1  
 47. Time: 0.9  
 48. Amplitude: 0.0  
 49. Frequency: 0.0  
 50. Phase: 0.0

51. Station: 1  
 52. Time: 1.0  
 53. Amplitude: 0.0  
 54. Frequency: 0.0  
 55. Phase: 0.0

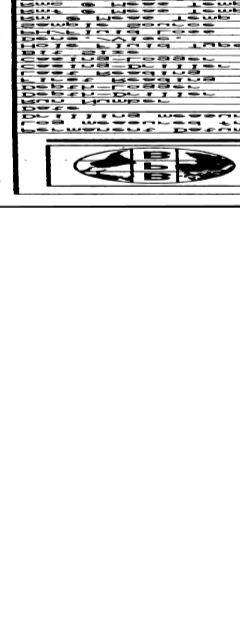
56. Station: 1  
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 58. Amplitude: 0.0  
 59. Frequency: 0.0  
 60. Phase: 0.0

61. Station: 1  
 62. Time: 0.1  
 63. Amplitude: 0.5  
 64. Frequency: 1.0  
 65. Phase: 0.0

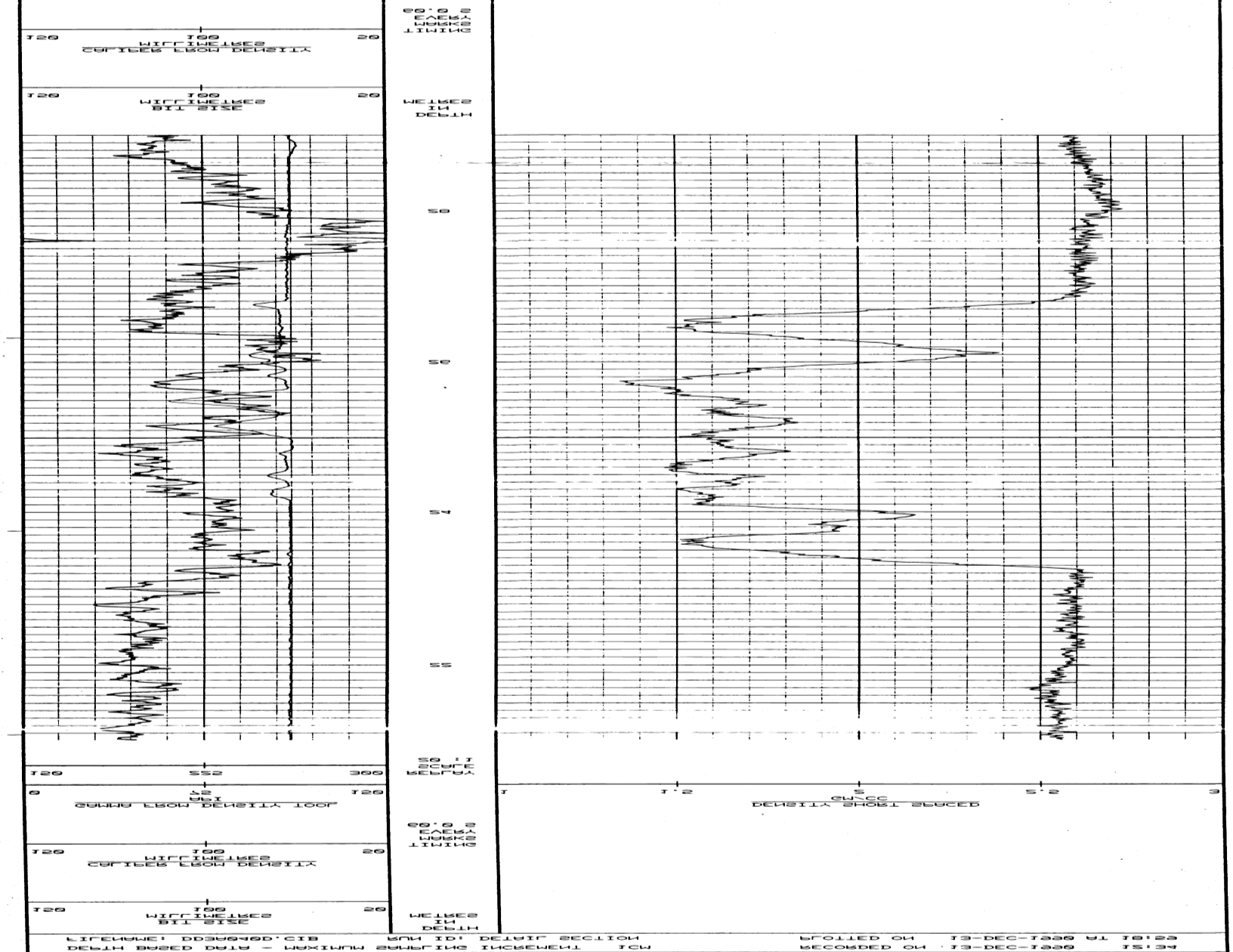
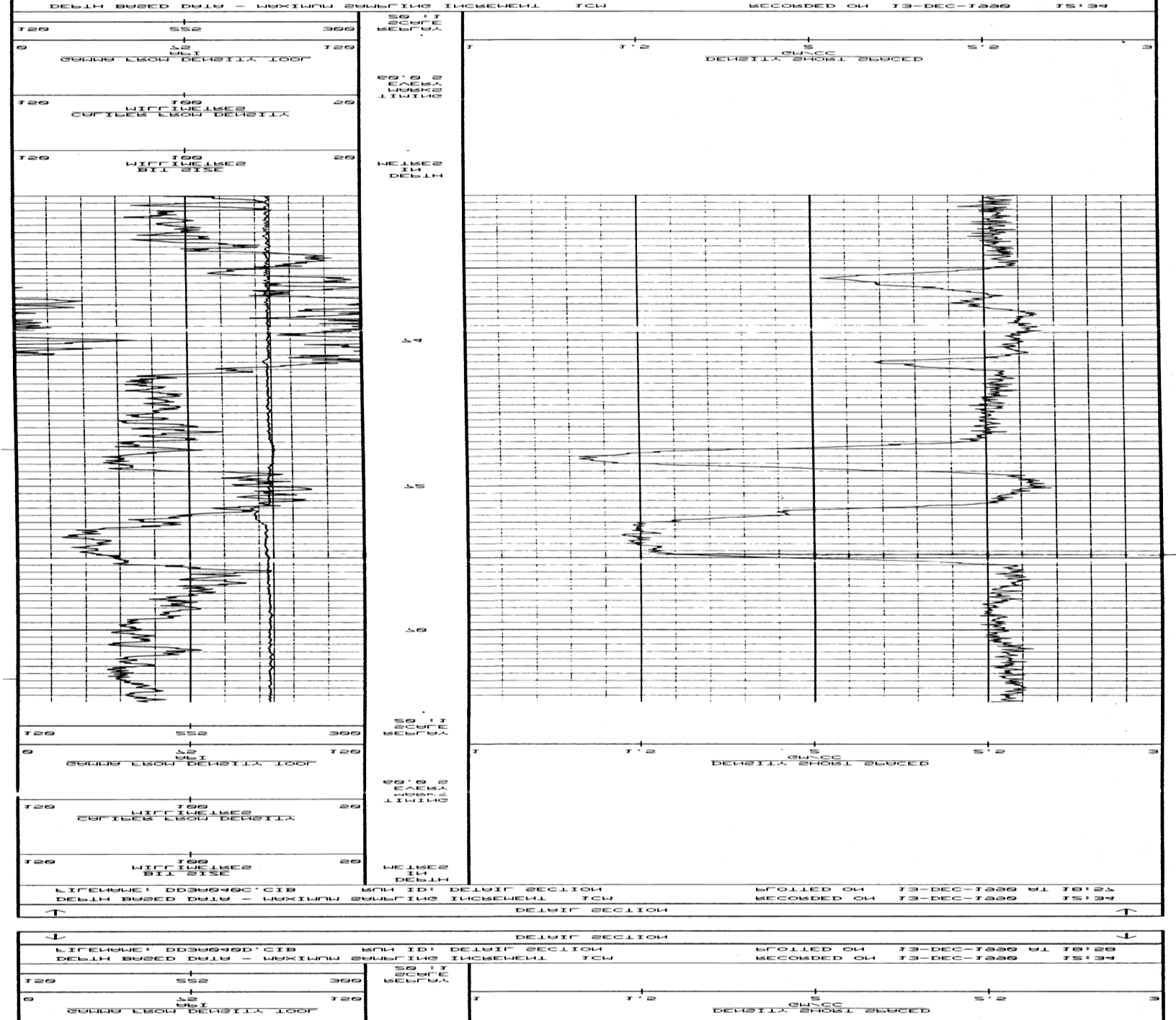
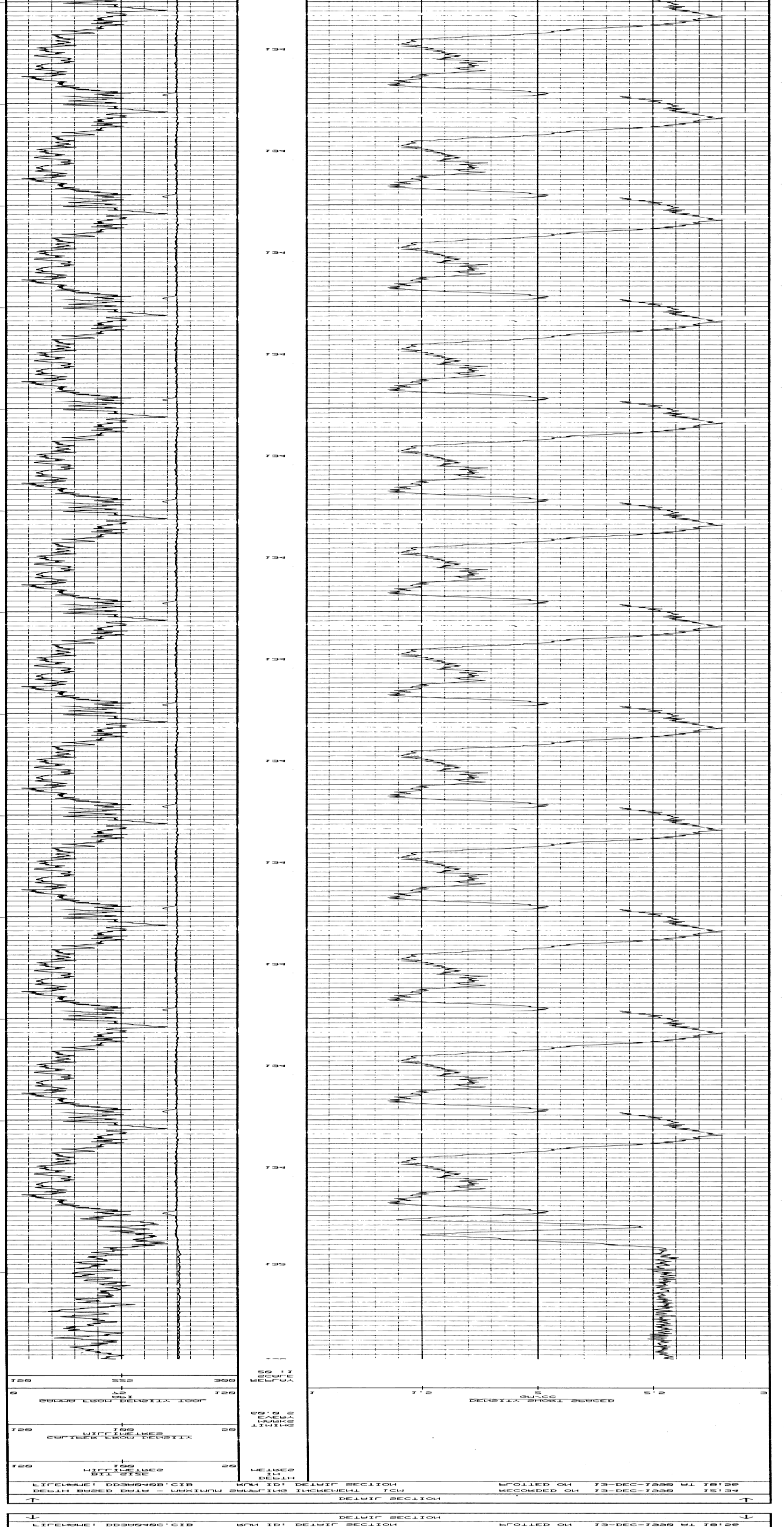
66. Station: 1  
 67. Time: 0.2  
 68. Amplitude: 1.0  
 69. Frequency: 2.0  
 70. Phase: 0.0

71. Station: 1  
 72. Time: 0.3  
 73. Amplitude: 0.5  
 74. Frequency: 1.0  
 75. Phase: 0.0

76. Station: 1  
 77. Time: 0.4  
 78. Amplitude: 0.0  
 79. Frequency: 0.0  
 80. Phase: 0.0



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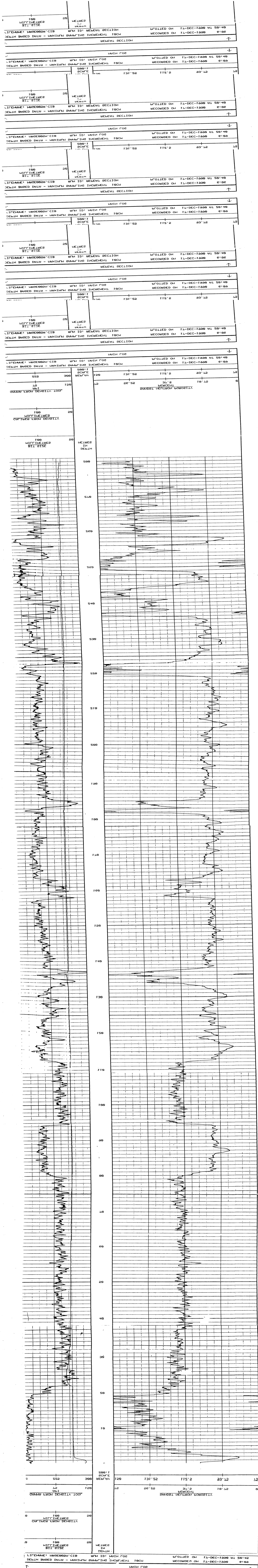


PATIENT INFORMATION		ECG INFORMATION	
NAME		DATE	
AGE		TIME	
SEX		LEAD	
WEIGHT		HEAVY	
HGT		STANDARD	
HT		STANDARD	
HT		STANDARD	
HT		STANDARD	
HT		STANDARD	
HT		STANDARD	

ECG RECORDING MADE BY \_\_\_\_\_ ON \_\_\_\_\_ AT \_\_\_\_\_

ECG INTERPRETED BY \_\_\_\_\_ ON \_\_\_\_\_ AT \_\_\_\_\_

ECG PRINTED BY \_\_\_\_\_ ON \_\_\_\_\_ AT \_\_\_\_\_



LEAVE AND CONDITIONS WE SET OUT IN OUR STANDARD WASTE SCHEDULE.  
 ALL ON OUR OFFICERS' MEMOS ON EMPLOYERS' THESE INFORMATION USE WFO SUBJECT TO OUR GENERAL  
 POLICY. DRIVERS ON COURSES INCREASED ON DRIVERS BY WASTE WASTING THE LOW WASTE INFORMATION MADE BY  
 DEARLY AND DO NOT OBTAIN THE WASTING ON COURSES OR WASTE INFORMATION AND THE WASTING WASTING  
 IT INFORMATION USE OURS BASED ON INFORMATION FROM EFFECTIVE ON OTHER INFORMATION AND WE  
 TABLE CONTAINING DATA: FOOD 1-LEB-1989 PROCESSED 1-LEB-1989 WFOLED 1-DEC-1989

LIVID FEAT & TBW				
RELATION	WASTING	WASTING	WASTING	WASTING
WASTING	WASTING	WASTING	WASTING	WASTING
WASTING	WASTING	WASTING	WASTING	WASTING

WASTING	WASTING	WASTING	WASTING	WASTING
WASTING	WASTING	WASTING	WASTING	WASTING
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WASTING	WASTING	WASTING	WASTING	WASTING

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WASTING	WASTING	WASTING	WASTING	WASTING
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WASTING	WASTING	WASTING	WASTING	WASTING
WASTING	WASTING	WASTING	WASTING	WASTING
WASTING	WASTING	WASTING	WASTING	WASTING

See



BRITISH BROADCASTING CORPORATION  
 BRITISH BROADCASTING CORPORATION  
 BRITISH BROADCASTING CORPORATION  
 BRITISH BROADCASTING CORPORATION

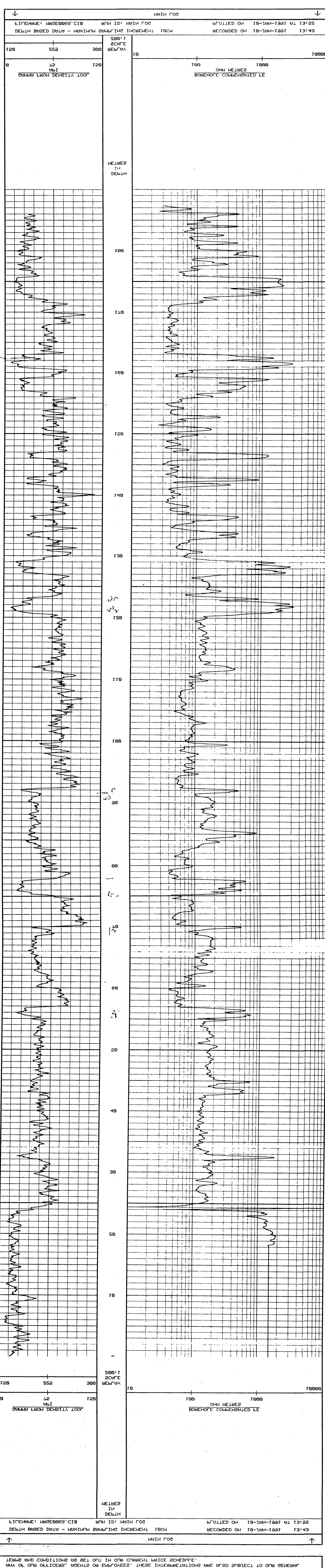
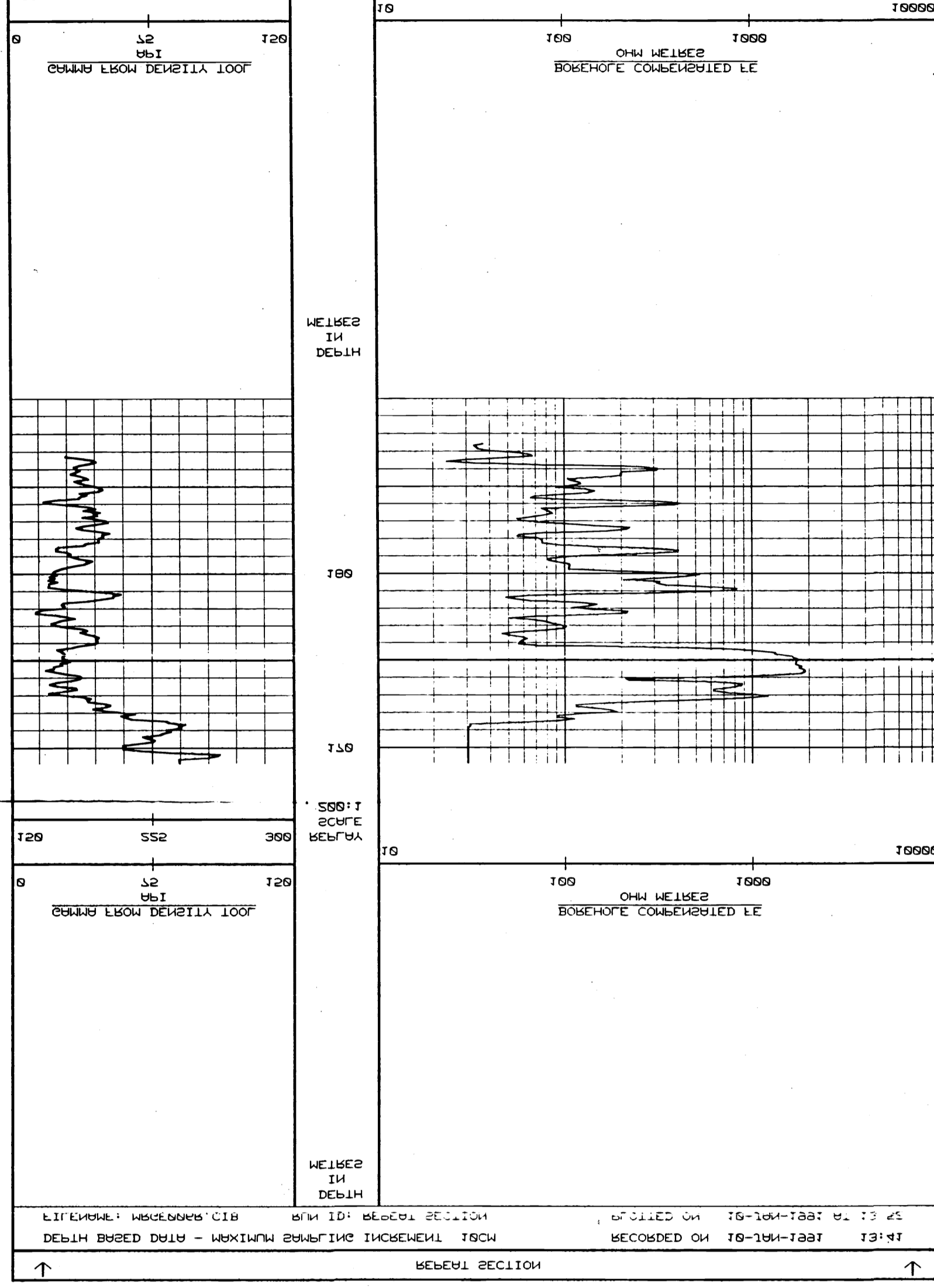




СОСТАВ: СМЕРЬ  
 ВЕР: БРИТЕН СОГЛАСИ  
 ЛЕГД: МЕТОД СОБ' ВКОТ'  
 БОКЕНОФЕ: ДДАТ-98  
 СТИМЛ: МЕДИЕН СКАРДИМ ИЛИНС СОБ'

СОСТАВ: СМЕРЬ  
 ВЕР: БРИТЕН СОГЛАСИ  
 ЛЕГД: МЕТОД СОБ' ВКОТ'  
 БОКЕНОФЕ: ДДАТ-98  
 СТИМЛ: МЕДИЕН СКАРДИМ ИЛИНС СОБ'

СОСТАВ: СМЕРЬ  
 ВЕР: БРИТЕН СОГЛАСИ  
 ЛЕГД: МЕТОД СОБ' ВКОТ'  
 БОКЕНОФЕ: ДДАТ-98  
 СТИМЛ: МЕДИЕН СКАРДИМ ИЛИНС СОБ'



УМОВИ ТА ОБ'ЄКТИ ВІСЛІДЖЕННЯ: ЦІЛІ ТА ОБ'ЄКТИ ВІСЛІДЖЕННЯ ПІДЛЯГАЮТЬ ОБ'ЄКТИВНОМУ ВИВЧЕННЮ ТА ДОСЛІДЖЕННЯМ. ЦІЛІ ТА ОБ'ЄКТИ ВІСЛІДЖЕННЯ ПІДЛЯГАЮТЬ ОБ'ЄКТИВНОМУ ВИВЧЕННЮ ТА ДОСЛІДЖЕННЯМ.

НАЗВА	ВІД	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ
ОБ'ЄКТИ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ

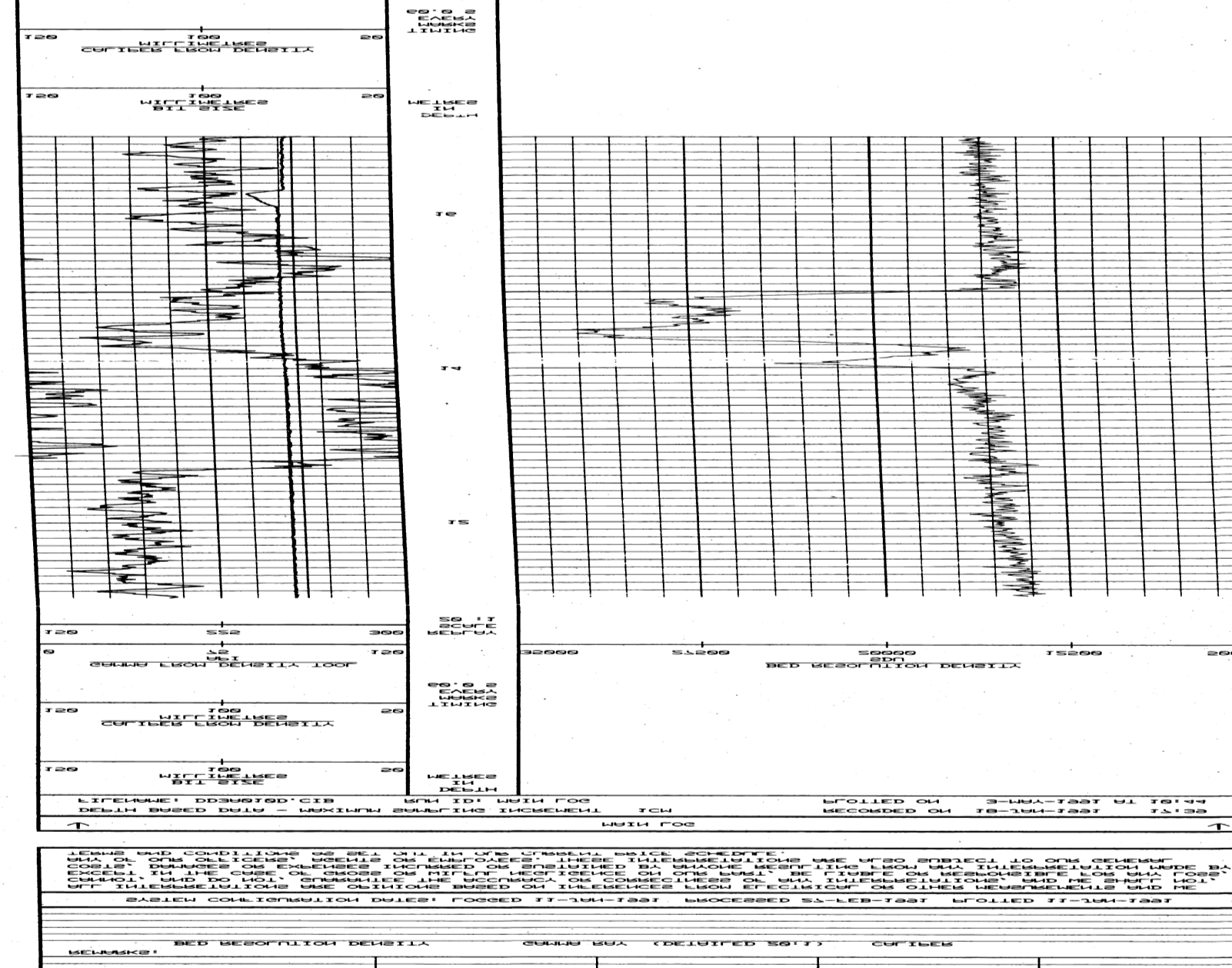
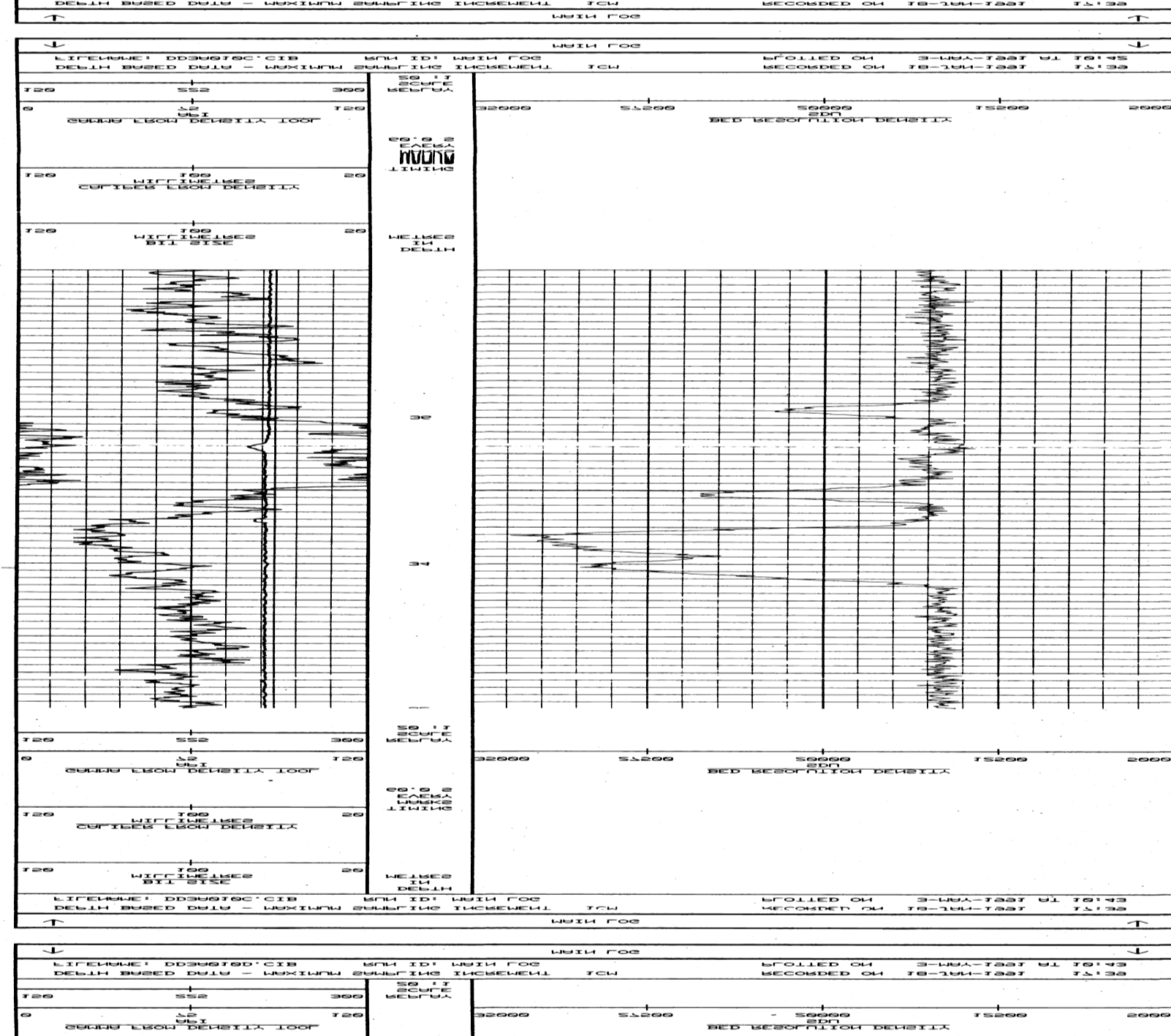
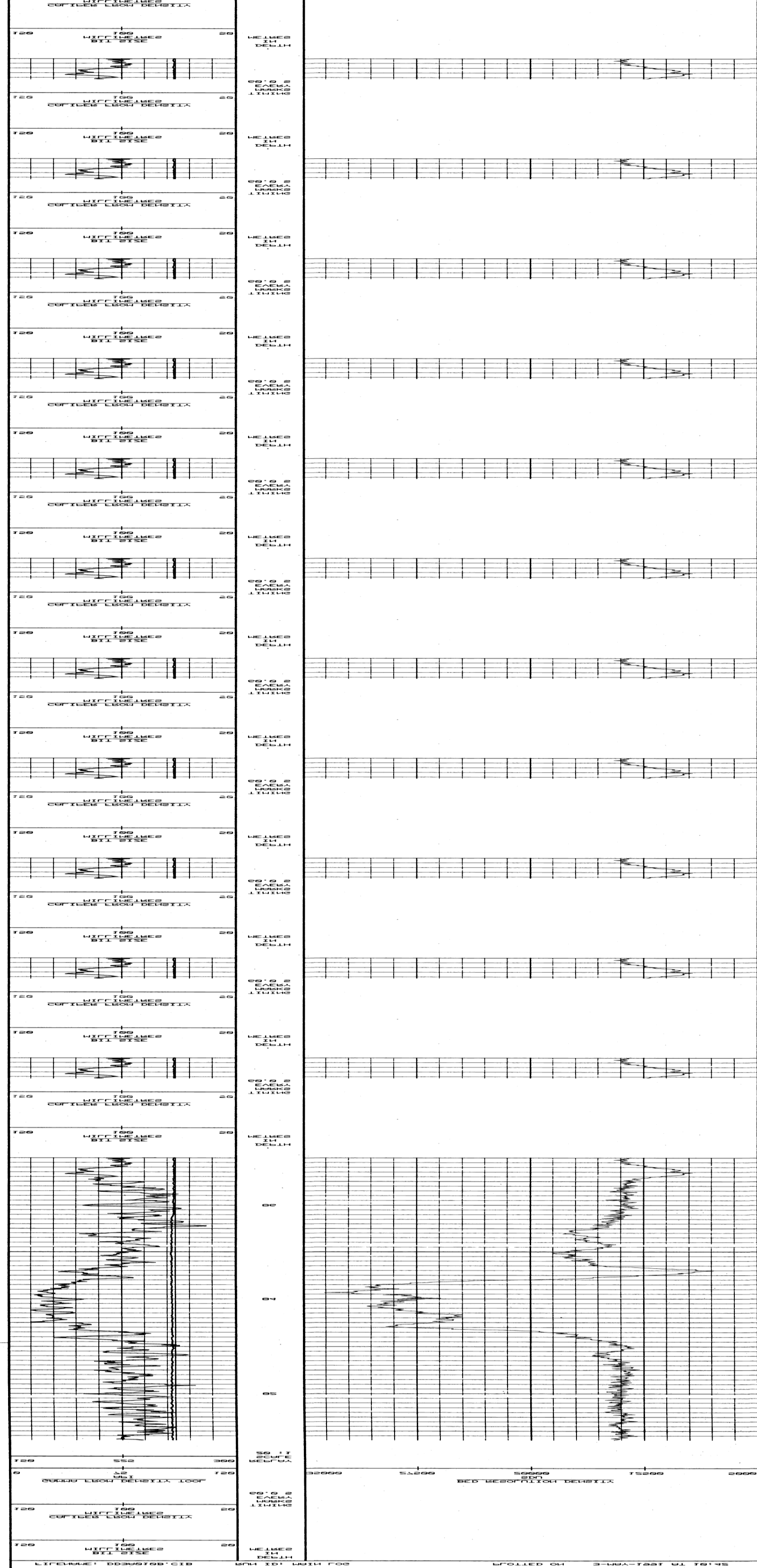
НАЗВА	ВІД	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ
ОБ'ЄКТИ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ	ВІСЛІДЖЕННЯ

ВІСЛІДЖЕННЯ ТА ДОСЛІДЖЕННЯ: ЦІЛІ ТА ОБ'ЄКТИ ВІСЛІДЖЕННЯ ПІДЛЯГАЮТЬ ОБ'ЄКТИВНОМУ ВИВЧЕННЮ ТА ДОСЛІДЖЕННЯМ.

ВІСЛІДЖЕННЯ ТА ДОСЛІДЖЕННЯ: ЦІЛІ ТА ОБ'ЄКТИ ВІСЛІДЖЕННЯ ПІДЛЯГАЮТЬ ОБ'ЄКТИВНОМУ ВИВЧЕННЮ ТА ДОСЛІДЖЕННЯМ.

ВІСЛІДЖЕННЯ ТА ДОСЛІДЖЕННЯ: ЦІЛІ ТА ОБ'ЄКТИ ВІСЛІДЖЕННЯ ПІДЛЯГАЮТЬ ОБ'ЄКТИВНОМУ ВИВЧЕННЮ ТА ДОСЛІДЖЕННЯМ.

ВІСЛІДЖЕННЯ ТА ДОСЛІДЖЕННЯ: ЦІЛІ ТА ОБ'ЄКТИ ВІСЛІДЖЕННЯ ПІДЛЯГАЮТЬ ОБ'ЄКТИВНОМУ ВИВЧЕННЮ ТА ДОСЛІДЖЕННЯМ.



STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME

STATION	INSTRUMENT	GAIN	SCALE	DATE	TIME



**DIPMETER ANALYSIS**  
**SLIMLINE UNIT**

COURTENAY  
 BRITISH COLUMBIA  
 WELWOOD COAL PROJ.

WESTERN CANADIAN MINING CORP.  
 DD90-03  
 WELWOOD COAL PROJ.  
 BRITISH COLUMBIA  
 CANADA

LOCATION: COURTENAY  
 PROV/CO: BRITISH COLUMBIA  
 WELL: WELWOOD COAL PROJ.

COMPANY: WESTERN CANADIAN MINING CORP.  
 WELL: DD90-03  
 FIELD: WELWOOD COAL PROJ.  
 PROVINCE/COUNTY: BRITISH COLUMBIA  
 COUNTRY/STATE: CANADA

LOCATION: COURTENAY  
 PROV/CO: BRITISH COLUMBIA  
 WELL: WELWOOD COAL PROJ.

COMPANY: WESTERN CANADIAN MINING CORP.  
 WELL: DD90-03  
 FIELD: WELWOOD COAL PROJ.  
 PROVINCE/COUNTY: BRITISH COLUMBIA  
 COUNTRY/STATE: CANADA

RUN NUMBER	BOREHOLE RECORD	TO	SIZE	WEIGHT	CASING RECORD	FROM	TO
1	NO 2	16.0M	TD	76.2MM	N/A	00.0M	16.6M

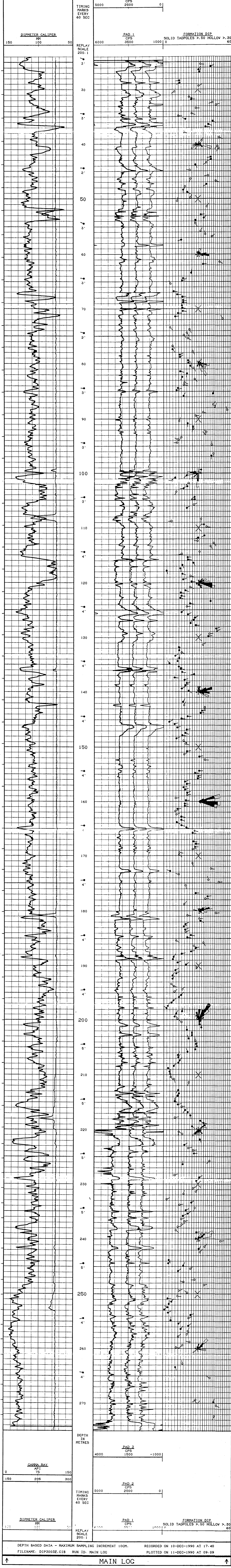
EQUIPMENT: DD3. DIP

REMARKS: DIPMETER ANALYSIS SLIMLINE UNIT

FLUID LEVEL @ 16.0M

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DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 10-DEC-1990 AT 17:40  
 FILENAME: DIP3003Z.C1B RUN ID: MAIN LOC PLOTTED ON 11-DEC-1990 AT 09:09



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM. RECORDED ON 10-DEC-1990 AT 17:40  
 FILENAME: DIP3003Z.C1B RUN ID: MAIN LOC PLOTTED ON 11-DEC-1990 AT 09:09

COMPANY: WESTERN CANADIAN MINING CORP.  
 WELL: DD90-03  
 FIELD: WELWOOD COAL PROJ.  
 PROVINCE/COUNTY: BRITISH COLUMBIA  
 COUNTRY/STATE: CANADA

866



Borehole: DD91-09  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

FOCUSSED ELECTRIC  
 GAMMA RAY

**SLIMLINE GRAPHICS UNIT**

Permanent Datum	GROUND LEVEL, Elevation N/A	KB N/A	Location
Log measured from	GROUND LEVEL above permanent datum	DF N/A	COURTENAY
Drilling measured from	GROUND LEVEL above permanent datum	GL N/A	
Date	17-JAN-1991		LSD N/A
Run Number	ONE		SEC
Depth-Driller	146.9m		TUP
Depth-Logger	145.2m		RGE
First Reading	144.5m		OTHER SERVICES
Last Reading	00m		CDL, MCS
Casing-Driller	5.0m		BRD
Casing-Logger	5.0m		
Bit Size	NQ 2		
Hole Fluid Type	WATER		
Dens. Visc.	1.01gfl N/A		
Rx Fluid Loss	N/A		
Sample Source	PIT		
Rn @ Meas Temp	N/A		
Rnc @ Meas Temp	N/A		
Rvc @ Meas Temp	N/A		
Source: Rm/Rnc	N/A		
Rn @ Bit	6.3 @ 9 C		
Time Since C/Fc	30 MIN.		
Max Rec Temp	9C		
Equipment/Base	VB29 RDR		
Recorded by	J.C. CHISLER		
Witnessed by	S. CASSELLMAN		

866

RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	NQ 2	0.2m	TD	NQ	N/A	SURFACE	0.2m

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
R84/DD3	104/1B3			

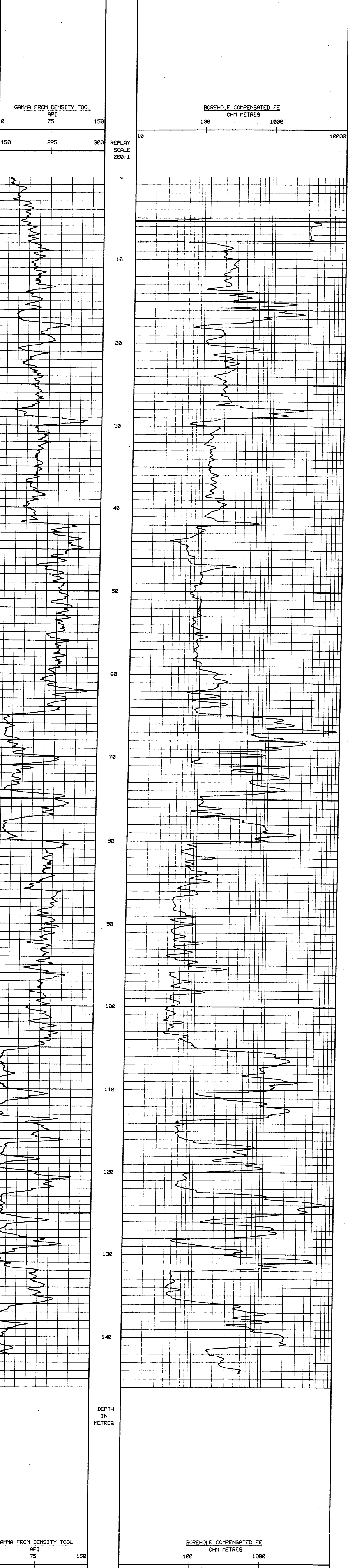
REMARKS:  
 FOCUSSED ELECTRIC                      GAMMA RAY

SYSTEM CONFIGURATION DATES: LOGGED 1-FEB-1990 PROCESSED 1-FEB-1990 PLOTTED 24-AUG-1990

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.

MAIN LOG

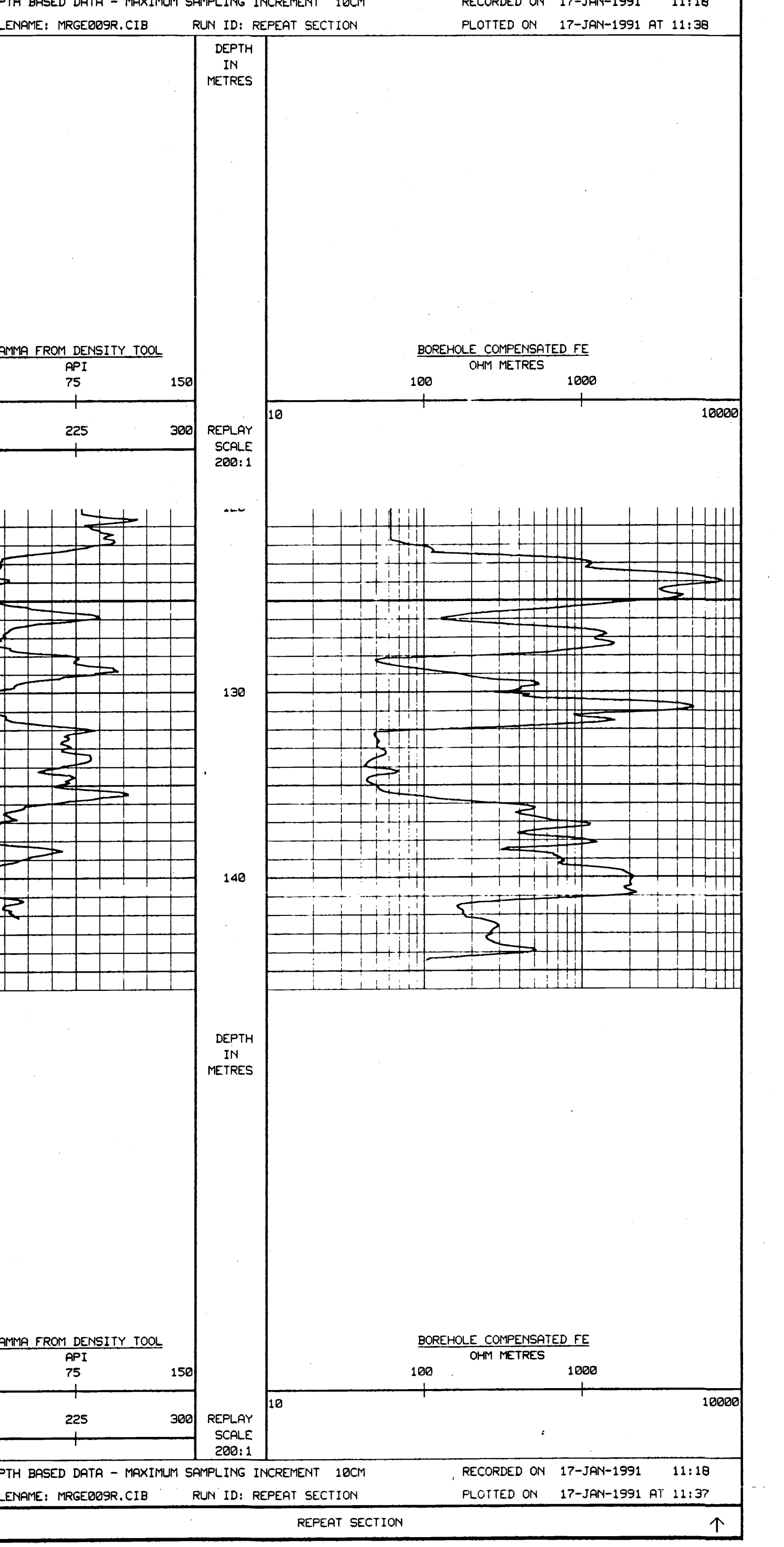
DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM      RECORDED ON 17-JAN-1991 11:21  
 FILENAME: MRGE009M.CIB      RUN ID: MAIN LOG      PLOTTED ON 17-JAN-1991 AT 11:40



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM      RECORDED ON 17-JAN-1991 11:21  
 FILENAME: MRGE009M.CIB      RUN ID: MAIN LOG      PLOTTED ON 17-JAN-1991 AT 11:38

REPEAT SECTION

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM      RECORDED ON 17-JAN-1991 11:18  
 FILENAME: MRGE009R.CIB      RUN ID: REPEAT SECTION      PLOTTED ON 17-JAN-1991 AT 11:38



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10CM      RECORDED ON 17-JAN-1991 11:18  
 FILENAME: MRGE009R.CIB      RUN ID: REPEAT SECTION      PLOTTED ON 17-JAN-1991 AT 11:37

CLIENT	WESTERN CANADIAN MINING CORP.
BOREHOLE	DD91-09
FIELD	WELWOOD COAL PROJ.
AREA	BRITISH COLUMBIA
COUNTRY	CANADA



700 WITTLINGER BTI SITE WEIBER IN DELIN

LITFAHNEI WAGNERGEM/CIB WFM IDI WEIBEL SECTION WFOILED OM 13-DEC-1989 WL 50178 RECORDED OM 13-DEC-1989 0160

DELIN BASED DRAIN - MARKING SHALING INCREMENTAL TROU WEIBEL SECTION

WITH FOO

WFOILED OM 13-DEC-1989 WL 50178 RECORDED OM 13-DEC-1989 0160

WITTLINGER BTI SITE WITTLINGER BTI SITE

LITFAHNEI WAGNERGEM/CIB WFM IDI WEIBEL SECTION WFOILED OM 13-DEC-1989 WL 50178 RECORDED OM 13-DEC-1989 0160

DELIN BASED DRAIN - MARKING SHALING INCREMENTAL TROU WEIBEL SECTION

WITH FOO

WFOILED OM 13-DEC-1989 WL 50178 RECORDED OM 13-DEC-1989 0160

WITTLINGER BTI SITE WITTLINGER BTI SITE

LITFAHNEI WAGNERGEM/CIB WFM IDI WEIBEL SECTION WFOILED OM 13-DEC-1989 WL 50178 RECORDED OM 13-DEC-1989 0160

DELIN BASED DRAIN - MARKING SHALING INCREMENTAL TROU WEIBEL SECTION

WITH FOO

WFOILED OM 13-DEC-1989 WL 50178 RECORDED OM 13-DEC-1989 0160

WITTLINGER BTI SITE WITTLINGER BTI SITE

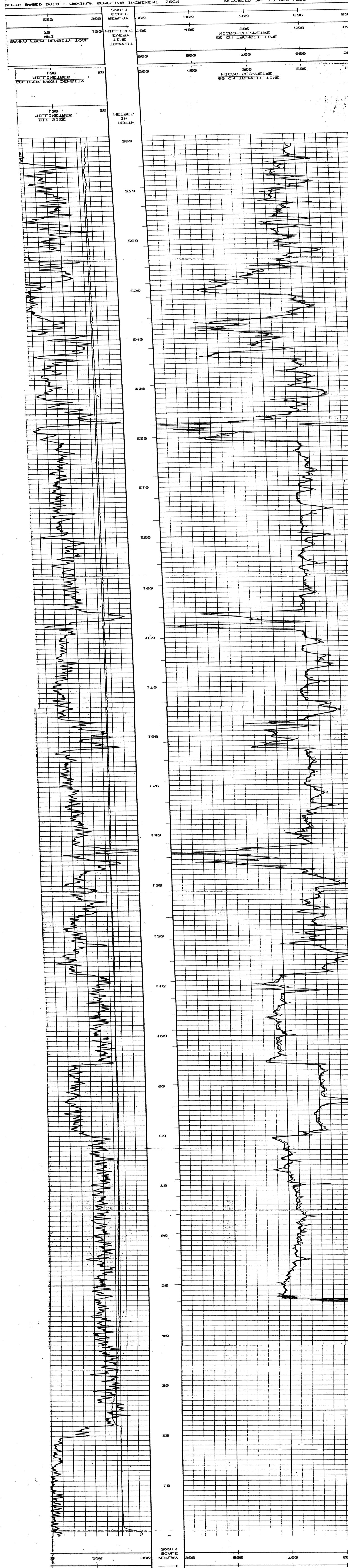
LITFAHNEI WAGNERGEM/CIB WFM IDI WEIBEL SECTION WFOILED OM 13-DEC-1989 WL 50178 RECORDED OM 13-DEC-1989 0160

DELIN BASED DRAIN - MARKING SHALING INCREMENTAL TROU WEIBEL SECTION

WITH FOO

WFOILED OM 13-DEC-1989 WL 50178 RECORDED OM 13-DEC-1989 0160

WITTLINGER BTI SITE WITTLINGER BTI SITE



700	WITTLINGER BTI SITE	WEIBER IN DELIN	200	300	400	500	600	700	800
700	WITTLINGER BTI SITE	WEIBER IN DELIN	200	300	400	500	600	700	800
700	WITTLINGER BTI SITE	WEIBER IN DELIN	200	300	400	500	600	700	800
700	WITTLINGER BTI SITE	WEIBER IN DELIN	200	300	400	500	600	700	800
700	WITTLINGER BTI SITE	WEIBER IN DELIN	200	300	400	500	600	700	800
700	WITTLINGER BTI SITE	WEIBER IN DELIN	200	300	400	500	600	700	800
700	WITTLINGER BTI SITE	WEIBER IN DELIN	200	300	400	500	600	700	800
700	WITTLINGER BTI SITE	WEIBER IN DELIN	200	300	400	500	600	700	800
700	WITTLINGER BTI SITE	WEIBER IN DELIN	200	300	400	500	600	700	800
700	WITTLINGER BTI SITE	WEIBER IN DELIN	200	300	400	500	600	700	800

LITFAHNEI WAGNERGEM/CIB WFM IDI WEIBEL SECTION WFOILED OM 13-DEC-1989 WL 50178 RECORDED OM 13-DEC-1989 0160

DELIN BASED DRAIN - MARKING SHALING INCREMENTAL TROU WEIBEL SECTION

WITH FOO

WFOILED OM 13-DEC-1989 WL 50178 RECORDED OM 13-DEC-1989 0160

LEHNE AND CONDITONER WEIBEL IN ONE CURRENT WICE SCHEDULE

DELIN BASED DRAIN - MARKING SHALING INCREMENTAL TROU WEIBEL SECTION

WITH FOO

WFOILED OM 13-DEC-1989 WL 50178 RECORDED OM 13-DEC-1989 0160

W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM

W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM
W' C' 201C - 55 F 000W	COILED USA	COPY/DEM

BR

W' C' 201C - 55 F 000W

COILED USA

COPY/DEM



Borehole: DD91-11  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

FOCUSSED ELECTRIC  
 GAMMA RAY

**SLIMLINE GRAPHICS UNIT**

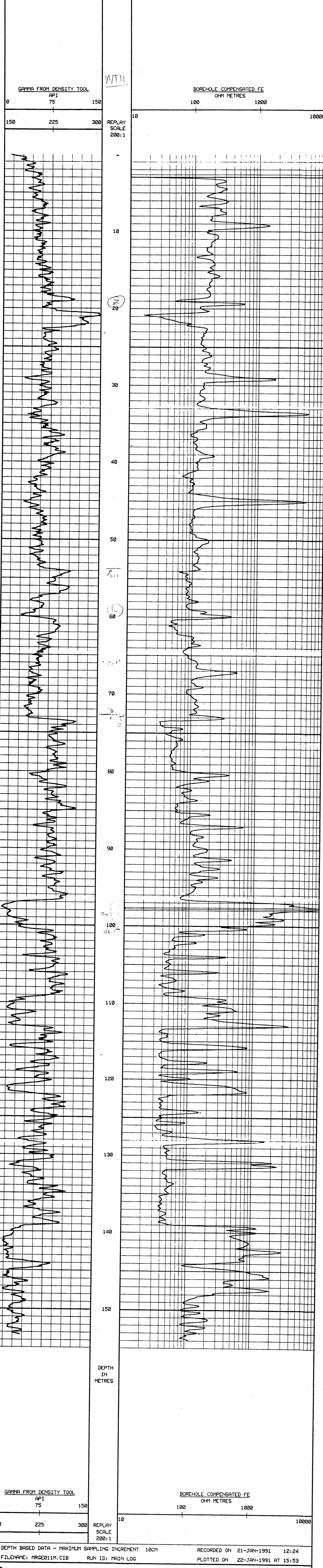
Permanent Datum GROUND LEVEL, Elevation N/A	KB N/A	Location COURTENAY
Log measured from GROUND LEVEL above permanent datum	DF N/A	
Drilling measured from GROUND LEVEL above permanent datum	GL N/A	
Date 21-JAN-1991		LSD N/A
Run Number ONE		SEC
Depth-Driller 155.1m		TWP
Depth-Logger 155.0m		RGE
First Reading 153.9m		OTHER SERVICES
Last Reading 0.0m		CDL, CNL
Casing-Driller 3.0m		MCS, BRD
Casing-Logger 3.0m		
Bit Size NG 2		
Hole Fluid Type WATER		
Dens./Visc. 1.022g/ N/A		
Flow Fluid Loss N/A NIL		
Sample Source PIT		
Rm @ Meas Temp N/A		
Rmc @ Meas Temp N/A		
Source: Rmf/Rmc N/A		
Rm @ BHT 5.3 @ 9m		
Time Since Circ 30 MIN		
Max Rec Temp 9C		
Equipment/Base VB29 RDR		
Recorded by J.C. WISNER		
Witnessed by S. CHASSELMAN		

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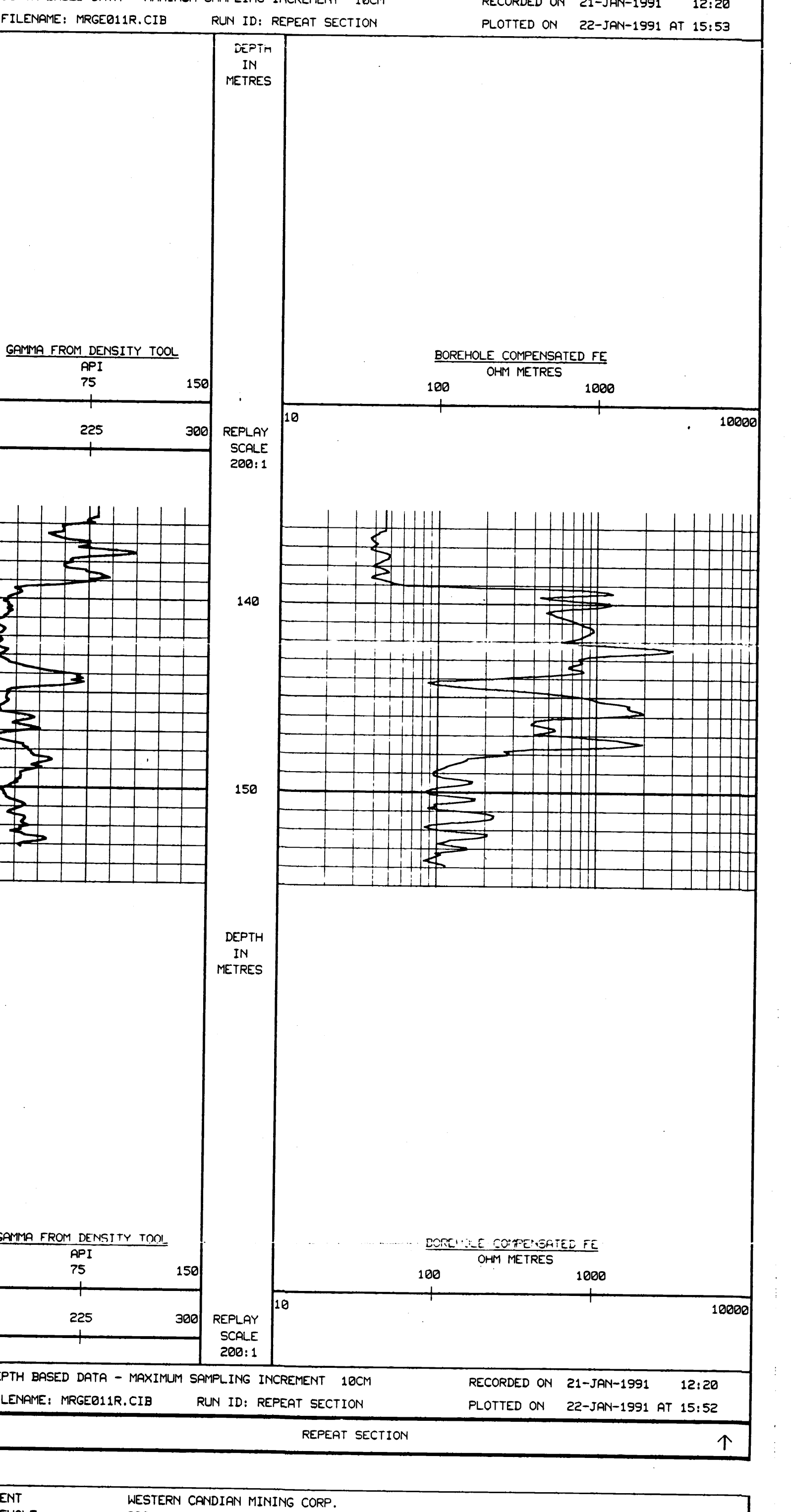
RUN NUMBER	BOREHOLE RECORD			CASING RECORD		
	BIT	FROM	TO	SIZE	WEIGHT	FROM TO
ONE	NG 2	3.0m	TD	NG	N/A	SURFACE 3.0m
EQUIPMENT						
RB4/CCS		RUN 1	RUN 2	RUN 3	RUN 4	
		104/110				
REMARKS:						
FOCUSSED ELECTRIC GAMMA RAY						
SYSTEM CONFIGURATION DATES: LOGGED 1-FEB-1990 PROCESSED 1-FEB-1990 PLOTTED 11-JAN-1991						

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**MAIN LOG**



**REPEAT SECTION**



CLIENT	WESTERN CANADIAN MINING CORP.
BOREHOLE	DD91-11
FIELD	WELWOOD COAL PROJ.
AREA	BRITISH COLUMBIA
COUNTRY	CANADA



Borehole: DD90-03  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: WELWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

VERTICALITY ANALYSIS

**SLIMLINE GRAPHICS UNIT**

Permanent Datum GROUND LEVEL, Elevation N/A		KB N/A	Location
Log measured from GROUND LEVEL above permanent datum		DF N/A	COURTENAY
Drilling measured from GROUND LEVEL above permanent datum		GL N/A	
Date	10-DEC-1990		LSD
Run Number	1		SEC
Depth-Driller	276.7m		TRF
Depth-Logger	276.5m		RGE
First Reading	276.0m		OTHER SERVICES
Last Reading	160.0m		CDL, CNL, FE
Casing-Driller	18.3m		MCS, BRD
Casing-Logger	18.0m		
Bit Size	NQ 2		
Hole Fluid Type	MUD		
Dens./Visc.	1.03 N/A		
PH/Fluid Loss	N/A N/A		
Sample Source	RIT		
Rm @ Meas Temp	21.3 @ 7.8C		
Rmf @ Meas Temp	N/A		
Rmc @ Meas Temp	N/A		
Source: Rmf/Rmc	N/A N/A		
Rm @ BHT	21.3 @ 7.8C		
Time Since Circ	9.0 hrs.		
Max Rec Temp	7.8C		
Equipment/Base	V222 RDR		
Recorded by	B PICHE		
Witnessed by	S ASSELMAN		

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BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

- 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 40000:1 (IMPERIAL), AND THE MINIMUM 1:1.
- 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.
- 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.
- 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).
- GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING.
  - LOC DEPTH: THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.
  - TRUE DEPTH: THE TRUE VERTICAL DEPTH CORRESPONDING 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.

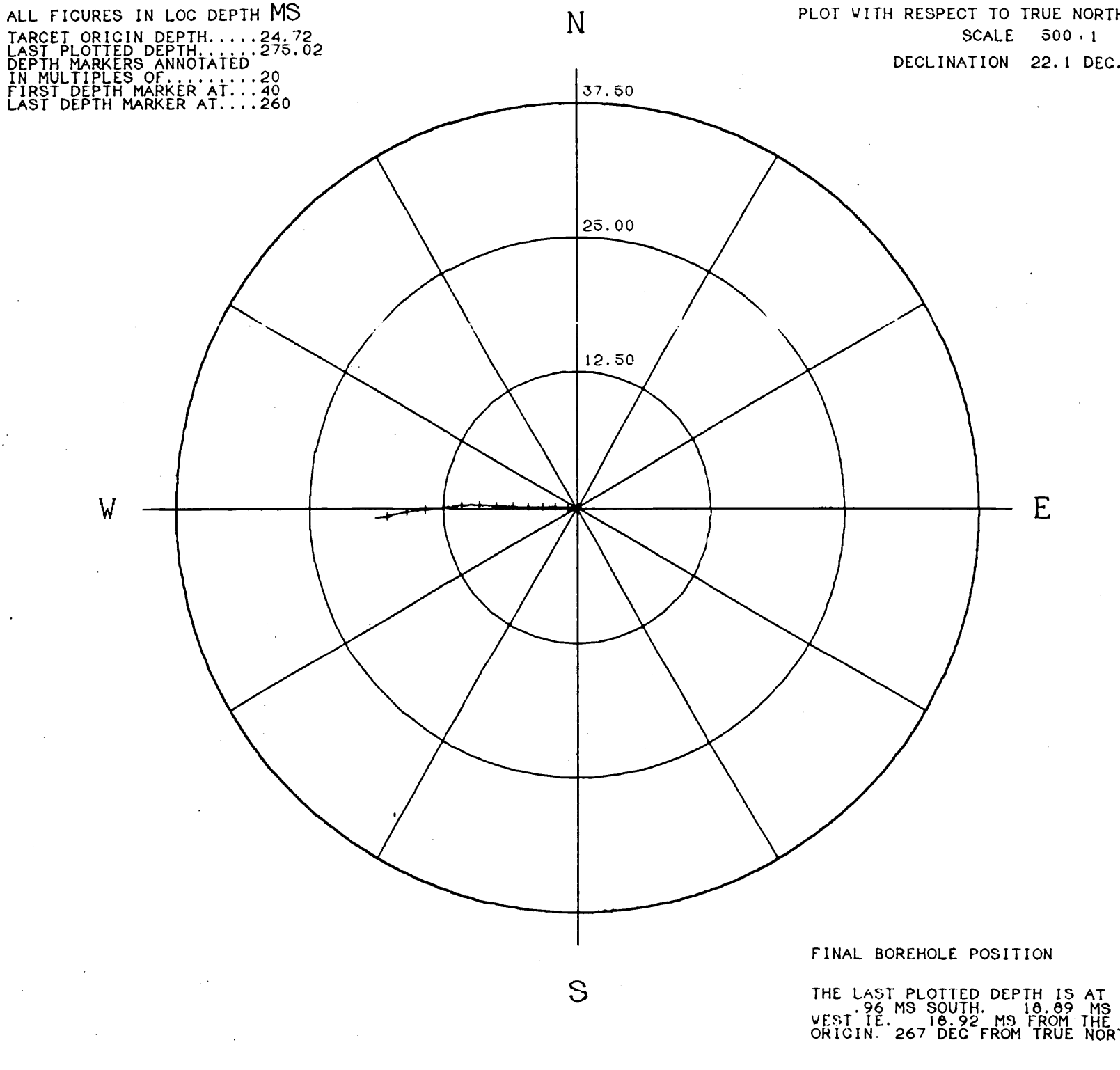
N.B. THE REFERENCE POINT FOR ALL BEARING ANGLES ON THIS LISTING IS GIVEN AT THE TOP OF EACH SHEET.

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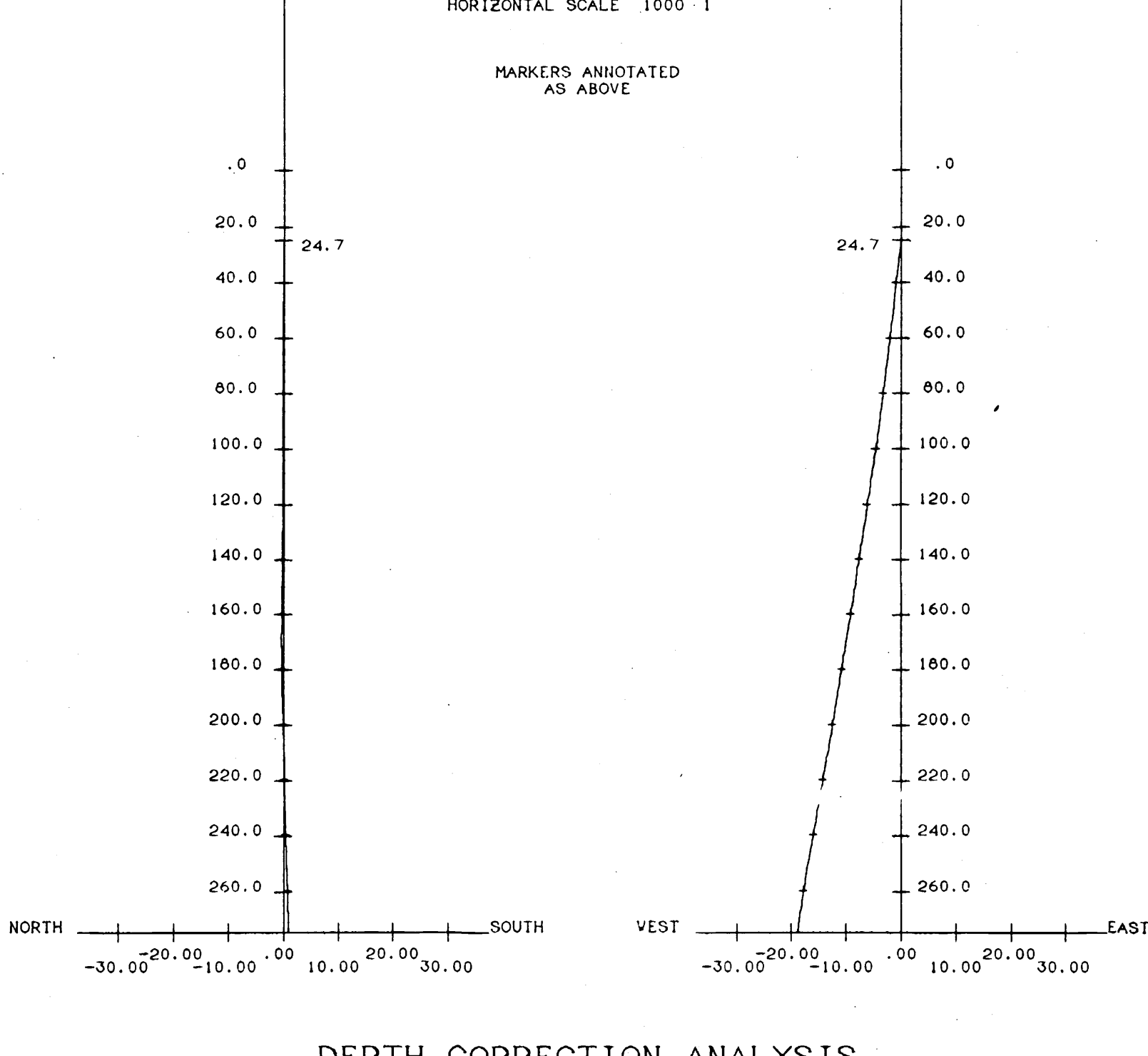
DD90-03 VERTICALITY DATA LISTING DATE PROCESSED: 11-DEC-1990  
 DATE LOGGED: 10-DEC-1990

LOC	TRUF	ROR/FOL TILT AZI	AXIAL COORDINATES NORTH EAST	POLAR RADIUS
26.00	26.00	4.0 287	0.02 -0.07 290	0.07
28.00	27.99	3.0 268	0.03 -0.20 279	0.20
30.00	29.99	3.0 268	0.04 -0.31 277	0.32
32.00	31.99	3.7 289	0.05 -0.41 277	0.42
34.00	33.98	3.5 266	0.07 -0.55 277	0.55
36.00	35.98	3.0 275	0.07 -0.65 276	0.65
38.00	37.98	2.4 283	0.06 -0.77 275	0.77
40.00	39.97	4.0 278	0.10 -0.89 276	0.89
42.00	41.97	3.2 265	0.09 -1.01 275	1.02
44.00	43.97	3.6 273	0.10 -1.13 275	1.13
46.00	45.96	2.8 288	0.10 -1.23 275	1.23
48.00	47.96	4.1 276	0.13 -1.36 276	1.36
50.00	49.95	3.0 275	0.15 -1.48 275	1.49
52.00	51.95	3.3 275	0.13 -1.59 275	1.60
54.00	53.95	2.7 265	0.13 -1.71 274	1.72
56.00	55.94	4.2 282	0.15 -1.82 275	1.83
58.00	57.94	3.4 263	0.15 -1.96 274	1.96
60.00	59.94	3.3 271	0.14 -2.06 274	2.07
62.00	61.93	3.2 260	0.14 -2.19 274	2.19
64.00	63.93	3.0 287	0.15 -2.28 274	2.29
66.00	65.93	3.9 271	0.17 -2.42 274	2.42
68.00	67.92	3.3 264	0.16 -2.54 274	2.55
70.00	69.92	3.0 275	0.17 -2.66 273	2.66
72.00	71.92	3.9 274	0.15 -2.77 273	2.78
74.00	73.91	3.8 261	0.15 -2.91 273	2.91
76.00	75.91	3.8 268	0.25 -3.01 273	3.02
78.00	77.90	4.2 270	0.18 -3.16 273	3.17
80.00	79.90	4.0 266	0.17 -3.30 273	3.30
82.00	81.89	3.4 263	0.15 -3.42 273	3.43
84.00	83.89	3.0 263	0.14 -3.55 272	3.55
86.00	85.89	3.7 266	0.13 -3.67 272	3.68
88.00	87.88	3.6 270	0.13 -3.80 272	3.80
90.00	89.88	3.0 275	0.13 -3.93 272	3.93
92.00	91.87	3.6 270	0.13 -4.06 272	4.06
94.00	93.87	3.9 272	0.14 -4.19 272	4.20
96.00	95.86	4.0 274	0.33 -4.31 275	4.32
98.00	97.86	4.0 274	0.16 -4.47 272	4.48
100.00	99.85	4.0 276	0.17 -4.61 272	4.62
102.00	101.85	3.6 268	0.17 -4.75 272	4.76
104.00	103.84	3.0 270	0.17 -4.88 272	4.89
106.00	105.84	3.6 264	0.16 -5.02 272	5.02
108.00	107.84	3.6 264	0.14 -5.15 272	5.15
110.00	109.84	4.0 272	0.15 -5.28 272	5.29
112.00	111.83	4.3 273	0.16 -5.44 272	5.44
114.00	113.82	4.3 273	0.17 -5.60 272	5.60
116.00	115.81	4.0 272	0.15 -5.74 272	5.74
118.00	117.81	4.3 274	0.19 -5.89 272	5.89
120.00	119.80	4.3 272	0.20 -6.04 272	6.04
122.00	121.80	4.3 274	0.21 -6.19 272	6.20
124.00	123.79	4.3 273	0.22 -6.33 272	6.34
126.00	125.78	4.3 273	0.23 -6.47 272	6.48
128.00	127.78	4.4 275	0.24 -6.64 272	6.63
130.00	129.77	4.2 272	0.25 -6.80 272	6.80
132.00	131.77	4.5 277	0.27 -6.95 272	6.95
134.00	133.76	4.5 274	0.28 -7.10 272	7.11
136.00	135.76	4.4 272	0.28 -7.25 272	7.26
138.00	137.75	4.8 270	0.29 -7.42 272	7.42
140.00	139.74	4.4 271	0.30 -7.58 272	7.58
142.00	141.74	4.1 270	0.30 -7.74 272	7.74
144.00	143.73	4.6 272	0.31 -7.90 272	7.90
146.00	145.72	4.5 273	0.32 -8.05 272	8.06
148.00	147.72	4.7 273	0.32 -8.21 272	8.22
150.00	149.71	4.7 272	0.33 -8.37 272	8.38
152.00	151.70	4.5 272	0.34 -8.53 272	8.54
154.00	153.70	4.6 274	0.35 -8.70 272	8.70
156.00	155.69	4.6 271	0.35 -8.86 272	8.87
158.00	157.68	4.6 270	0.36 -9.03 272	9.03
160.00	159.68	4.5 272	0.36 -9.19 272	9.19
162.00	161.67	4.6 272	0.37 -9.35 272	9.36
164.00	163.66	4.6 272	0.37 -9.51 272	9.52
166.00	165.66	4.6 269	0.37 -9.68 272	9.68
168.00	167.65	4.7 271	0.38 -9.84 272	9.85
170.00	169.64	4.6 269	0.38 -10.01 272	10.01
172.00	171.64	4.9 272	0.37 -10.17 272	10.18
174.00	173.63	4.9 267	0.36 -10.34 272	10.35
176.00	175.62	5.1 266	0.35 -10.51 272	10.52
178.00	177.61	5.0 269	0.34 -10.69 272	10.70
180.00	179.61	4.6 274	0.35 -10.86 272	10.87
182.00	181.60	4.9 262	0.34 -11.03 272	11.04
184.00	183.59	4.9 260	0.33 -11.20 272	11.20
186.00	185.59	4.6 261	0.28 -11.36 271	11.37
188.00	187.58	4.6 260	0.26 -11.53 271	11.53
190.00	189.57	4.6 259	0.22 -11.69 271	11.70
192.00	191.56	5.0 259	0.19 -11.86 271	11.86
194.00	193.56	4.6 258	0.15 -12.02 271	12.02
196.00	195.55	4.6 257	0.12 -12.18 271	12.18
198.00	197.54	4.6 259	0.08 -12.35 270	12.35
200.00	199.54	4.6 258	0.05 -12.51 270	12.51
202.00	201.53	4.6 258	0.02 -12.67 270	12.67
204.00	203.52	5.0 260	0.02 -12.84 270	12.84
206.00	205.51	5.0 261	-0.04 -13.01 270	13.01
208.00	207.51	5.0 258	-0.07 -13.18 270	13.18
210.00	209.50	4.6 258	-0.11 -13.35 270	13.35
212.00	211.49	4.6 258	-0.14 -13.52 269	13.52
214.00	213.49	5.1 259	-0.18 -13.69 269	13.69
216.00	215.48	4.6 264	-0.20 -13.85 269	13.85
218.00	217.47	4.9 264	-0.22 -14.03 269	14.03
220.00	219.46	4.9 269	-0.24 -14.20 269	14.20
222.00	221.46	5.1 268	-0.24 -14.37 269	14.38
224.00	223.45	5.1 268	-0.24 -14.54 269	14.55
226.00	225.44	5.1 263	-0.27 -14.73 269	14.73
228.00	227.43	5.3 267	-0.28 -14.91 269	14.91
230.00	229.42	5.3 263	-0.31 -15.09 269	15.09
232.00	231.42	5.2 262	-0.32 -15.26 269	15.27
234.00	233.41	5.3 263	-0.35 -15.44 269	15.45
236.00	235.40	5.0 259	-0.38 -15.62 269	15.63
238.00	237.39	5.2 259	-0.41 -15.80 269	15.81
240.00	239.38	5.3 260	-0.44 -15.98 268	15.99
242.00	241.37	5.4 258	-0.47 -16.16 268	16.17
244.00	243.36	5.6 260	-0.51 -16.35 268	16.36
246.00	245.35	5.6 259	-0.55 -16.55 268	16.56
248.00	247.34	5.6 260	-0.59 -16.74 268	16.75
250.00	249.33	5.7 260	-0.62 -16.94 268	16.95
252.00	251.32	5.6 259	-0.66 -17.13 268	17.14
254.00	253.32	4.6 255	-0.70 -17.30 268	17.32
256.00	255.31	4.7 253	-0.74 -17.46 268	17.48
258.00	257.30	4.7 253	-0.78 -17.62 267	17.64
260.00	259.30	4.6 255	-0.83 -17.78 267	17.80
262.00	261.29	4.6 265	-0.86 -17.93 267	17.95
264.00	263.28	4.6 276	-0.11 -18.08 267	18.10
266.00	265.28	4.5 266	-0.86 -18.23 267	18.26
268.00	267.27	4.4 267	-0.88 -18.38 267	18.40
270.00	269.27	4.6 265	-0.91 -18.53 267	18.55
272.00	271.26	4.3 256	-0.94 -18.67 267	18.70
274.00	273.26	4.2 258	-0.94 -18.82 267	18.84
276.00	274.25	4.1 261	-0.96 -18.89 267	18.92

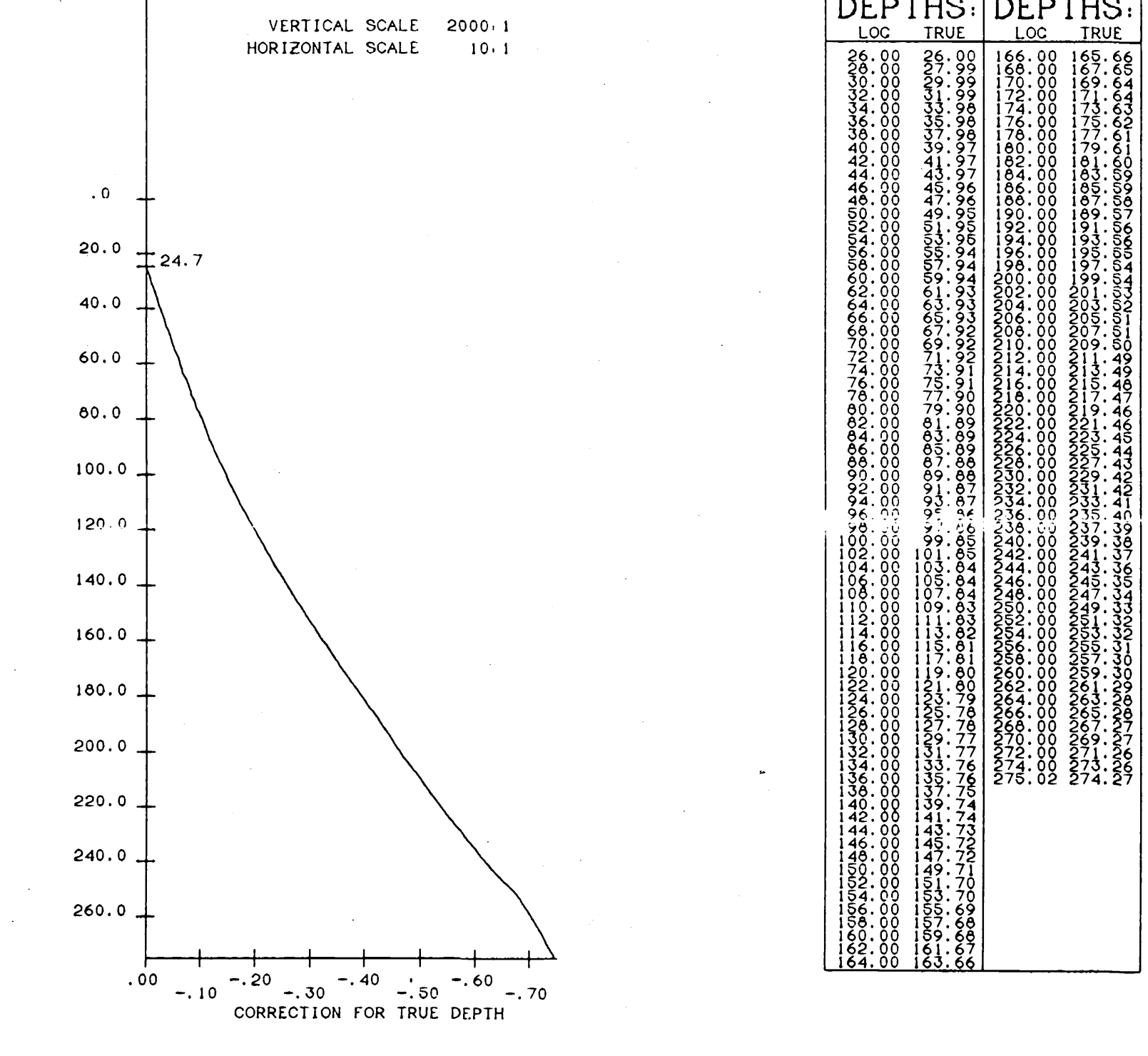
CROSS SECTION



N-S SECTION VERTICAL SECTIONS E-W SECTION



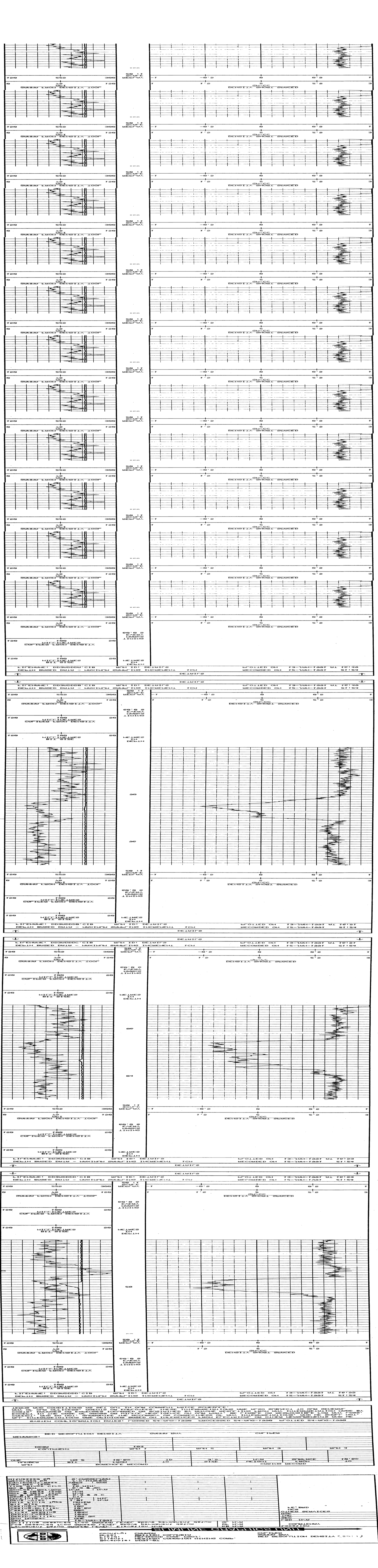
DEPTH CORRECTION ANALYSIS





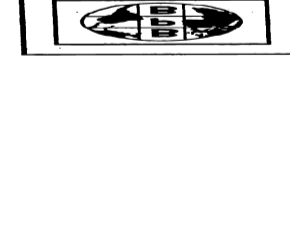






07c

STATION	DEPTH	TIME	AMPLITUDE	PHASE	REMARKS
1	10	10:00	100	90	Normal
2	20	10:05	150	135	Normal
3	30	10:10	200	180	Normal
4	40	10:15	250	225	Normal
5	50	10:20	300	270	Normal
6	60	10:25	350	315	Normal
7	70	10:30	400	0	Normal
8	80	10:35	450	45	Normal
9	90	10:40	500	90	Normal
10	100	10:45	550	135	Normal
11	110	10:50	600	180	Normal
12	120	10:55	650	225	Normal



UNITED STATES GEOLOGICAL SURVEY  
 WASHINGTON, D. C. 20541









Borehole: DD91-19  
 Client: WESTERN CANADIAN MINING CORP.  
 Field: HELLWOOD COAL PROJ.  
 Area: BRITISH COLUMBIA  
 Country: CANADA

FOCUSSED ELECTRIC  
 GAMMA RAY

**SLIMLINE GRAPHICS UNIT**

Permanent Datum	GROUND LEVEL, Elevation N/A	KB N/A	Location
Log measured from	GROUND LEVEL, above permanent datum	OF N/A	COURTENAY
Drilling measured from	GROUND LEVEL above permanent datum	GL N/A	
Date	6-FEB-1991		LSD N/A
Run Number	ONE		SEC
Depth-Driller	121.9m		T&P
Depth-Logger	121.5m		RGE
First Reading	120.3m		OTHER SERVICES
Last Reading	07.9m		CCS, CH
Casing-Driller	16.7m		MCS, BRD
Casing-Logger	16.7m		
Bit Size	NO 2		
Hole Fluid Type	WATER		
Dens. Visc.	1.0200 N/A		
PPV Fluid Loss	N/A NIL		
Sample Source	PIT		
Rm # Meas Temp	N/A		
Rmc # Meas Temp	N/A		
Source: Rm/Rmc	N/A N/A		
Rm # BHT	6.3 @ 9C		
Time Since Circ	30 MIN		
Max Rec Temp	9C		
Equipment/Base	VB29 RDR		
Recorded by	J.C. WISNER		
Witnessed by	S. CHSELWAN		

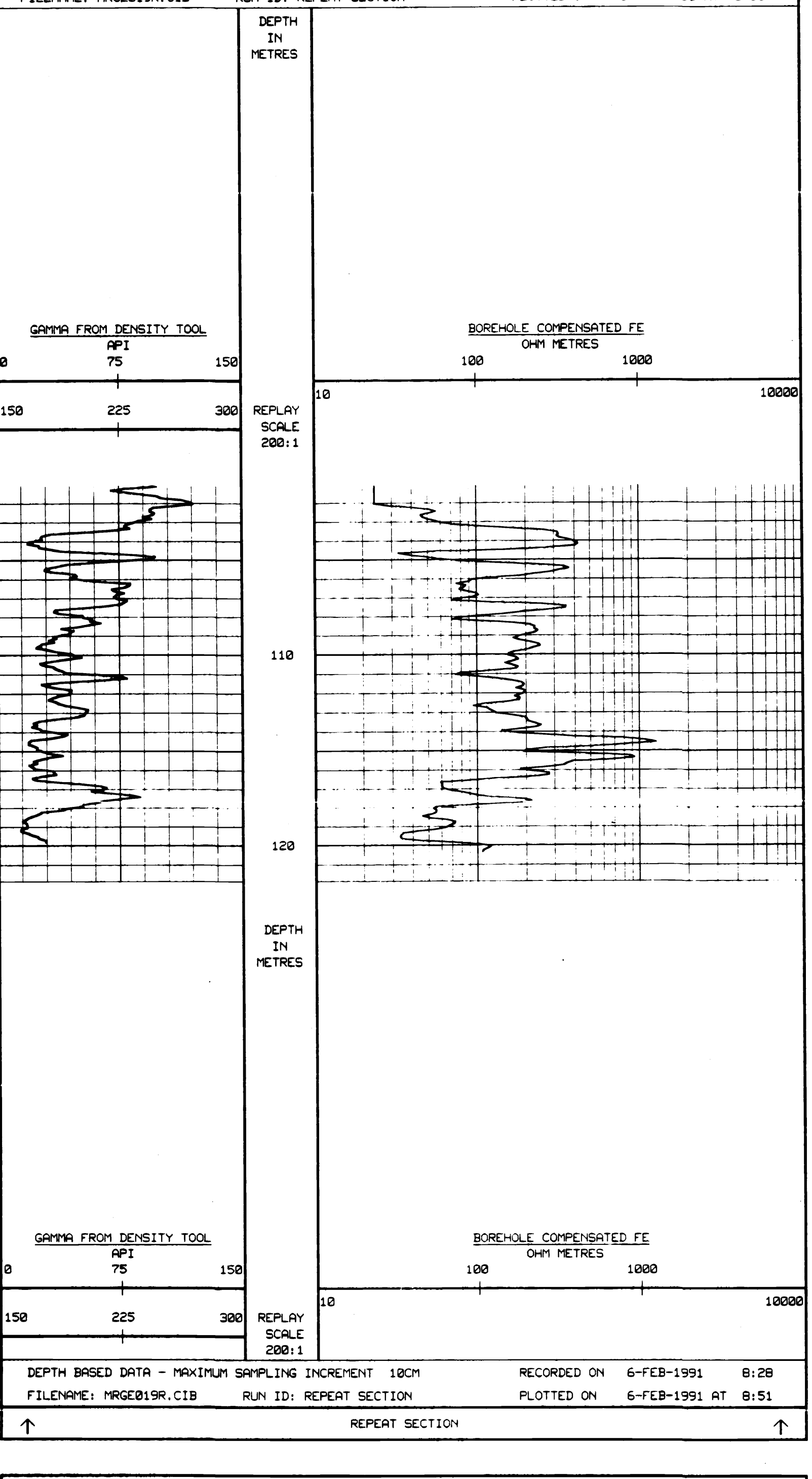
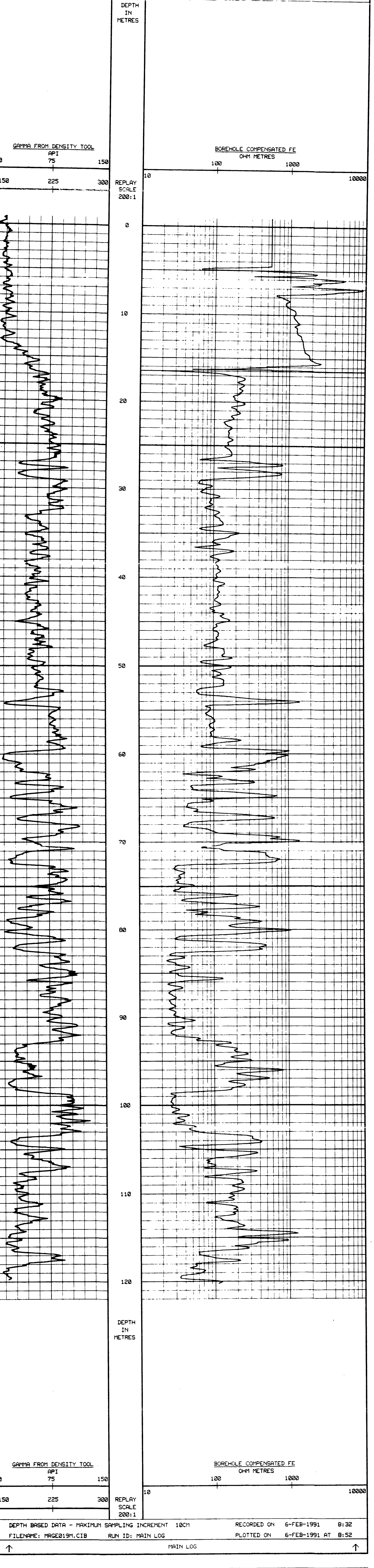
866

RUN NUMBER	BOREHOLE RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	HEIGHT	FROM	TO
ONE	NO 2	16.7m	TD	NO	N/A	SURFACE	16.7m
EQUIPMENT		RUN 1	RUN 2	RUN 3	RUN 4		
R04/CCS		104/110					


REMARKS:  
 FOCUSSED ELECTRIC                      GAMMA RAY

SYSTEM CONFIGURATION DATES: LOGGED 1-FEB-1990 PROCESSED 1-FEB-1990 PLOTTED 11-JAN-1991

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.



CLIENT	WESTERN CANADIAN MINING CORP.
BOREHOLE	DD91-19
FIELD	HELLWOOD COAL PROJ.
AREA	BRITISH COLUMBIA
COUNTRY	CANADA

LOCATION COURTENAY PRVNC/CO. BRITISH COLUMBIA FIELD WELLDWOOD COAL PROJ. WELL DD90-05 DD90-05 COMPANY WESTERN CANADIAN MINING CORP.		 <b>VERTICALITY ANALYSIS</b>
LOCATION COURTENAY SEC TWP RCE OTHER SERVICES CDL, CNL, FE BRD, MCS		
PERMANENT DATUM GROUND LEVEL, ELEVATION N/A ORILLIANG MEASURED LEVEL, ABOVE PERMANENT DATUM DRILLING MEASURED LEVEL, ABOVE PERMANENT DATUM		COMPANY WESTERN CANADIAN MINING CORP. WELL DD90-05 FIELD WELLDWOOD COAL PROJ. PROVINCE/COUNTY BRITISH COLUMBIA COUNTRY/STATE CANADA
DATE RUM NUMBER DEPTH-BRILLER DEPTH-COOPER LISTED READING CASING-LOGGING CASING-COOPER BIT SIZE HOLE FLUID TYPE DENS./VISC.	200.4M 200.4M 279.5M 21.5M 2.0 MUD N/A	ELEVATIONS: KR N/A DR N/A CL N/A

BPB VERTICALITY ANALYSIS INTERPRETATION NOTES

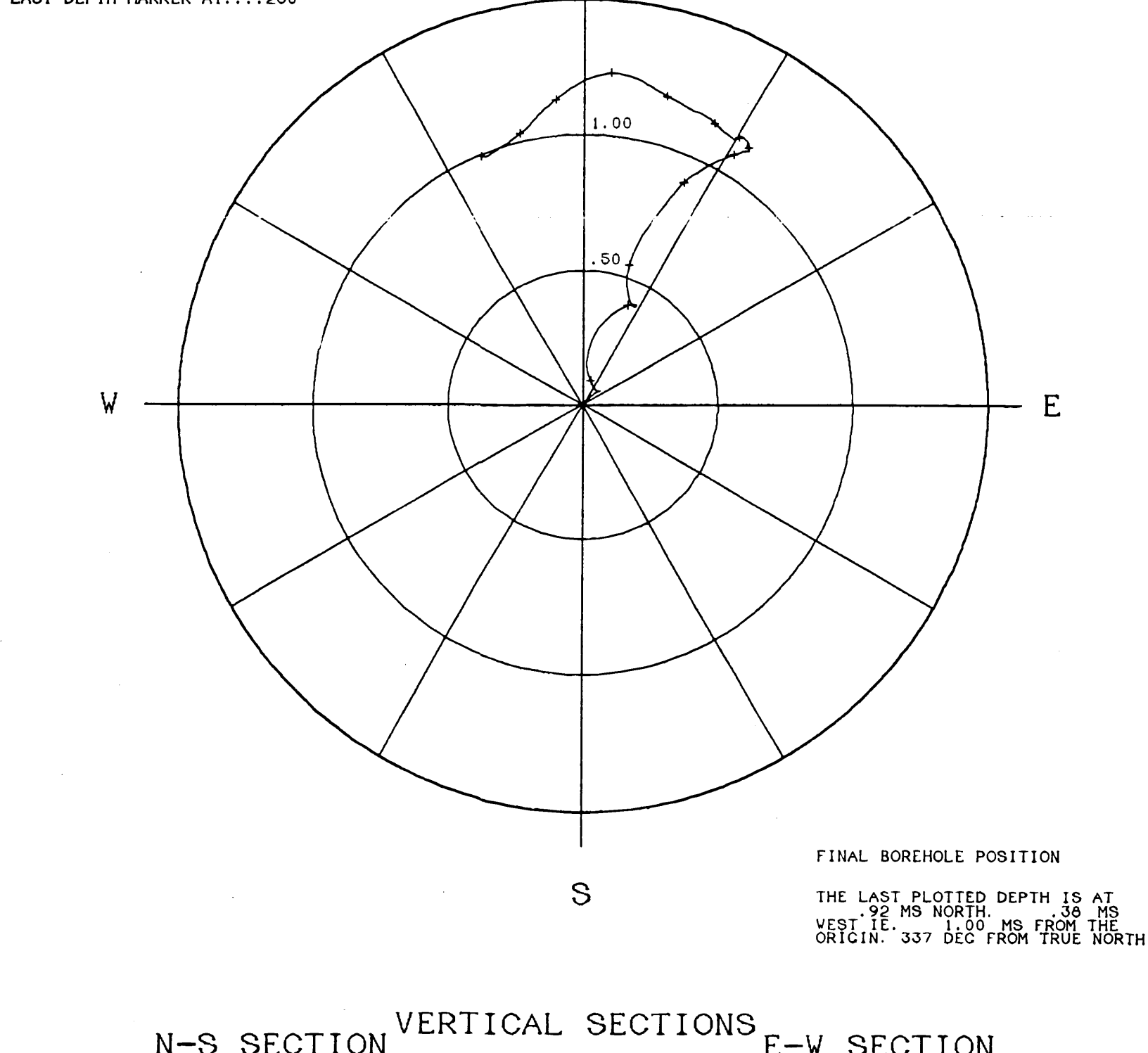
- ALL PLOTTED OUTPUT IS AUTOMATICALLY SCALED TO OBTAIN THE BEST VISUAL EFFECT WITHIN THE PHYSICAL SPACE AVAILABLE. THE MAXIMUM SCALES BEING 50000:1 (METRIC) AND 40000:1 (IMPERIAL). AND THE MINIMUM 1:1.
- THE ANALYSIS IS DERIVED BY INTEGRATING 10CM. SAMPLED DATA DOWN THE BOREHOLE. THE LISTING SUPPLIED 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.
- 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.
- 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).
- GIVEN BELOW IS A FULL DESCRIPTION OF THE PARAMETERS DISPLAYED ON THE ENSUING LISTING.  
 LOC DEPTH THE DEPTH RECORDED ON THE FIELD LOGS FOR THE BOREHOLE.  
 TRUE DEPTH THE TRUE VERTICAL DEPTH CORRESPONDING TO THE ABOVE DEPTH. CORRECTED  
 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.  
 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 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.

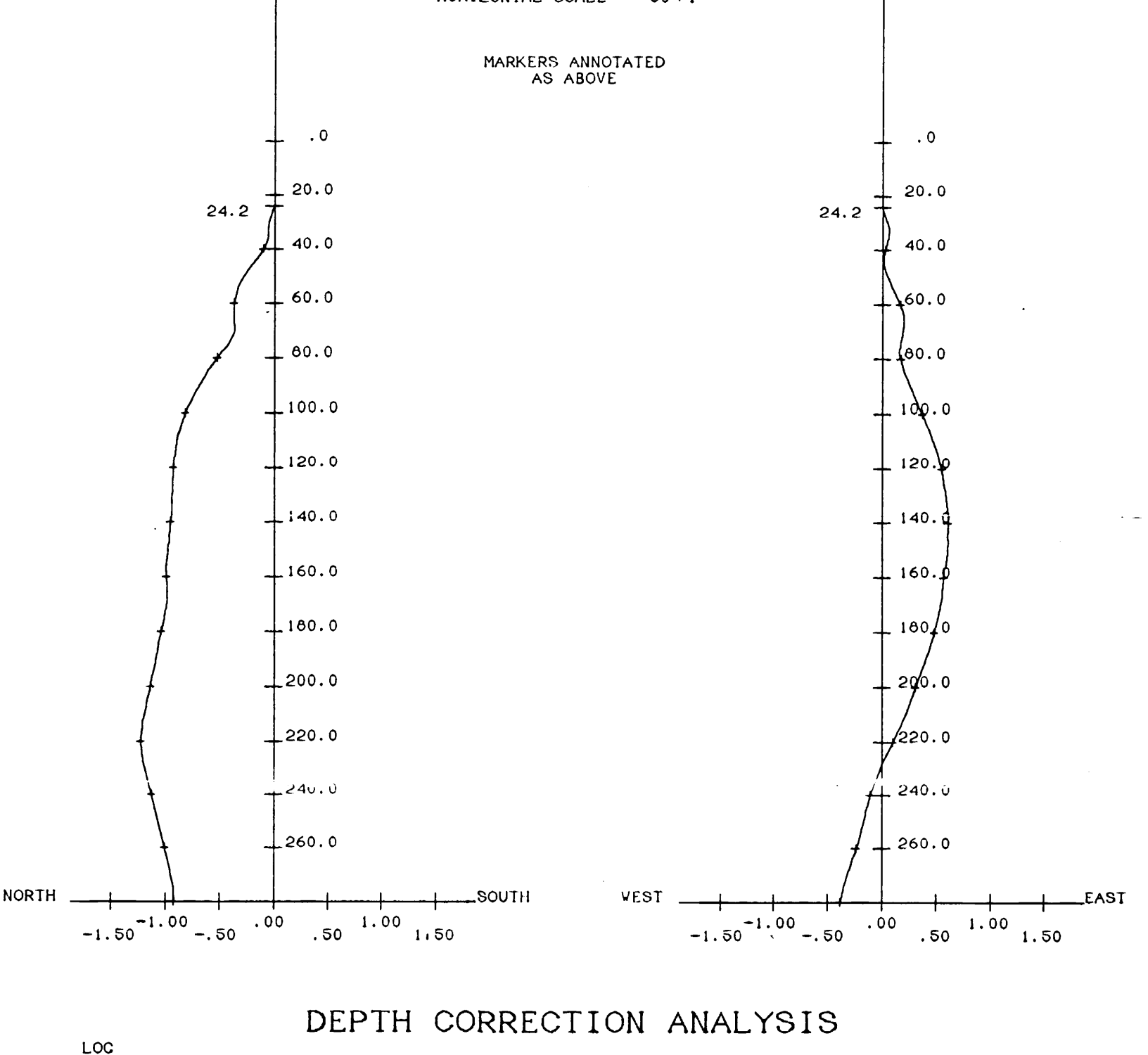
DD90-05 VERTICALITY DATA LISTING DATE PROCESSED: 18-DEC-1990  
 DATE LOGGED: 17-DEC-1990

LOC	DEPTH	TRUE	AXIAL CO-ORDS	POLAR	RADIUS		
LOC	DEPTH	TRUE	AXIAL CO-ORDS	POLAR	RADIUS		
26.00	26.00	0.7	30	0.02	0.02	36	0.03
28.00	28.00	0.7	44	0.04	0.03	43	0.05
30.00	30.00	0.5	84	0.06	0.05	47	0.07
32.00	32.00	0.2	111	0.05	0.06	50	0.08
34.00	34.00	0.2	232	0.05	0.06	50	0.08
36.00	36.00	0.4	299	0.05	0.05	44	0.08
38.00	38.00	0.6	328	0.07	0.04	29	0.08
40.00	40.00	0.7	330	0.05	0.03	16	0.10
42.00	42.00	1.0	346	0.13	0.05	6	0.13
44.00	44.00	1.1	354	0.16	0.01	4	0.17
46.00	46.00	1.1	36	0.16	0.02	6	0.21
48.00	48.00	1.3	53	0.25	0.03	7	0.25
50.00	50.00	1.1	37	0.28	0.05	11	0.29
52.00	52.00	1.0	30	0.27	0.05	14	0.31
54.00	54.00	0.6	49	0.33	0.10	17	0.35
56.00	56.00	0.9	63	0.35	0.12	20	0.37
58.00	58.00	0.7	79	0.37	0.15	27	0.39
60.00	60.00	0.5	67	0.37	0.17	24	0.41
62.00	62.00	0.3	105	0.37	0.18	26	0.42
64.00	64.00	0.4	88	0.37	0.19	27	0.41
66.00	66.00	0.2	229	0.37	0.20	28	0.42
68.00	68.00	0.2	207	0.36	0.19	28	0.41
70.00	70.00	0.4	307	0.37	0.19	27	0.41
72.00	72.00	0.6	332	0.36	0.18	25	0.42
74.00	74.00	0.9	347	0.41	0.17	22	0.44
76.00	76.00	1.0	1	0.44	0.16	20	0.47
78.00	77.99	1.0	5	0.48	0.16	18	0.51
80.00	79.99	1.1	16	0.52	0.17	18	0.55
82.00	81.99	1.0	21	0.56	0.18	18	0.59
84.00	83.99	1.1	26	0.60	0.20	18	0.63
86.00	85.99	1.1	30	0.63	0.22	19	0.67
88.00	87.99	1.0	34	0.66	0.23	20	0.71
90.00	89.99	1.1	40	0.69	0.26	21	0.74
92.00	91.99	1.1	42	0.72	0.26	21	0.77
94.00	93.99	1.0	45	0.75	0.25	21	0.80
96.00	95.99	1.0	41	0.77	0.33	23	0.84
98.00	97.99	1.0	46	0.80	0.35	24	0.87
100.00	99.99	0.8	50	0.82	0.37	24	0.90
102.00	101.99	0.8	50	0.84	0.39	25	0.93
104.00	103.99	0.8	55	0.86	0.42	26	0.96
106.00	105.99	0.7	77	0.87	0.45	27	0.99
108.00	107.99	0.7	69	0.89	0.46	27	1.00
110.00	109.99	0.5	54	0.90	0.48	28	1.02
112.00	111.99	0.4	59	0.90	0.50	29	1.03
114.00	113.99	0.6	62	0.91	0.51	29	1.04
116.00	115.99	0.3	87	0.92	0.53	30	1.06
118.00	117.99	0.3	89	0.92	0.53	30	1.07
120.00	119.99	0.4	61	0.93	0.55	31	1.08
122.00	121.99	0.4	65	0.93	0.56	31	1.09
124.00	123.99	0.6	68	0.93	0.57	32	1.10
126.00	125.99	0.2	101	0.93	0.58	32	1.10
128.00	127.99	0.2	52	0.94	0.57	32	1.11
130.00	129.99	0.2	51	0.94	0.57	32	1.11
132.00	131.99	0.2	104	0.94	0.60	33	1.11
134.00	133.99	0.2	106	0.94	0.61	33	1.12
136.00	135.99	0.2	77	0.94	0.61	33	1.12
138.00	137.99	0.3	343	0.95	0.61	33	1.12
140.00	139.99	0.2	33	0.95	0.61	33	1.13
142.00	141.99	0.2	30	0.96	0.61	32	1.13
144.00	143.99	0.2	35	0.96	0.60	32	1.14
146.00	145.99	0.2	38	0.97	0.61	32	1.14
148.00	147.99	0.2	310	0.97	0.62	32	1.14
150.00	149.99	0.2	310	0.98	0.60	32	1.15
152.00	151.99	0.2	313	0.98	0.60	31	1.15
154.00	153.99	0.2	316	0.99	0.59	31	1.15
156.00	155.99	0.2	318	0.99	0.58	30	1.14
158.00	157.99	0.2	331	0.99	0.58	30	1.15
160.00	159.99	0.2	331	0.99	0.57	30	1.13
162.00	161.99	0.2	237	0.99	0.57	30	1.14
164.00	163.99	0.2	240	0.98	0.56	30	1.13
166.00	165.99	0.2	248	0.98	0.56	30	1.13
168.00	167.99	0.3	300	0.98	0.55	29	1.13
170.00	169.99	0.3	306	0.98	0.54	29	1.13
172.00	171.99	0.3	309	0.98	0.54	29	1.13
174.00	173.99	0.6	316	1.01	0.52	27	1.13
176.00	175.99	0.6	306	1.03	0.51	26	1.14
178.00	177.99	0.6	306	1.03	0.50	26	1.14
180.00	179.99	0.4	310	1.04	0.48	25	1.15
182.00	181.99	0.4	304	1.06	0.47	24	1.15
184.00	183.99	0.6	310	1.06	0.45	23	1.16
186.00	185.99	0.5	293	1.07	0.44	22	1.16
188.00	187.99	0.5	295	1.08	0.42	21	1.16
190.00	189.99	0.5	297	1.09	0.40	20	1.16
192.00	191.99	0.5	299	1.10	0.38	19	1.16
194.00	193.99	0.7	303	1.11	0.37	18	1.17
196.00	195.99	0.6	288	1.12	0.35	17	1.17
198.00	197.99	0.5	308	1.13	0.33	16	1.18
200.00	199.99	0.6	310	1.14	0.31	14	1.18
202.00	201.99	0.7	301	1.15	0.29	14	1.19
204.00	203.99	0.7	303	1.16	0.27	13	1.20
206.00	205.99	0.7	302	1.18	0.25	12	1.20
208.00	207.99	0.7	305	1.19	0.23	11	1.21
210.00	209.99	0.6	302	1.20	0.21	10	1.22
212.00	211.99	0.6	288	1.21	0.19	9	1.22
214.00	213.99	0.6	285	1.22	0.17	8	1.23
216.00	215.99	0.6	282	1.22	0.15	7	1.23
218.00	217.99	0.6	278	1.23	0.13	6	1.23
220.00	219.99	0.7	262	1.23	0.10	5	1.23
222.00	221.99	0.7	255	1.22	0.08	4	1.23
224.00	223.99	0.7	249	1.22	0.05	2	1.23
226.00	225.99	0.6	263	1.21	0.03	1	1.21
228.00	227.99	0.7	239	1.20	0.00	0	1.20
230.00	229.99	0.7	234	1.19	-0.02	358	1.19
232.00	231.99	0.6	241	1.18	-0.04	358	1.18
234.00	233.99	0.6	235	1.17	-0.06	357	1.17
236.00	235.99	0.6	228	1.14	-0.07	356	1.16
238.00	237.99	0.6	223	1.14	-0.09	355	1.15
240.00	239.99	0.6	231	1.13	-0.11	355	1.13
242.00	241.99	0.6	240	1.12	-0.12	354	1.12
244.00	243.99	0.6	216	1.10	-0.14	353	1.11
246.00	245.99	0.5	229	1.09	-0.15	352	1.10
248.00	247.99	0.5	226	1.08	-0.16	351	1.09
250.00	249.99	0.5	223	1.07	-0.17	351	1.08
252.00	251.99	0.5	222	1.05	-0.19	350	1.07
254.00	253.99	0.5	240	1.04	-0.20	349	1.06
256.00	255.99	0.5	215	1.03	-0.21	348	1.05
258.00	257.99	0.5	215	1.01	-0.22	348	1.04
260.00	259.99	0.5	233	1.00	-0.24	347	1.03
262.00	261.99	0.6	231	0.99	-0.25	346	1.02
264.00	263.99	0.6	227	0.98	-0.27	345	1.01
266.00	265.99	0.6	230	0.97	-0.29	345	1.01
268.00	267.99	0.6	239	0.96	-0.30	342	1.00
270.00	269.99	0.6	229	0.94	-0.32	341	1.00
272.00	271.99	0.6	230	0.92	-0.34	340	0.99
274.00	273.99	0.4	240	0.92	-0.35	339	0.99
276.00	275.99	0.3	265	0.92	-0.36	338	0.99
278.00	277.99	0.3	237	0.92	-0.37	338	0.99
280.00	279.99	0.3	239	0.92	-0.38	337	1.00

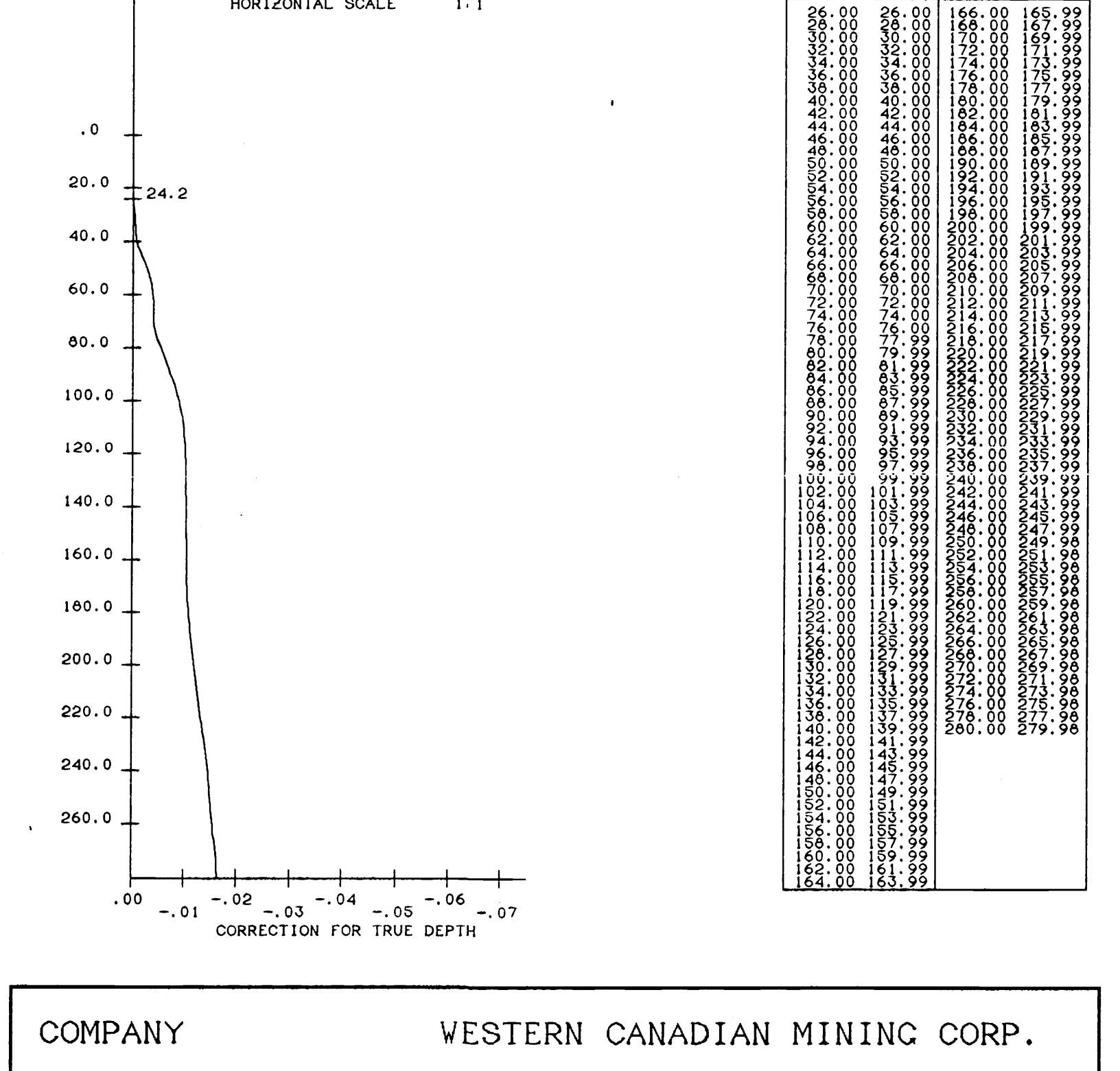
CROSS SECTION



N-S SECTION VERTICAL SECTIONS E-W SECTION



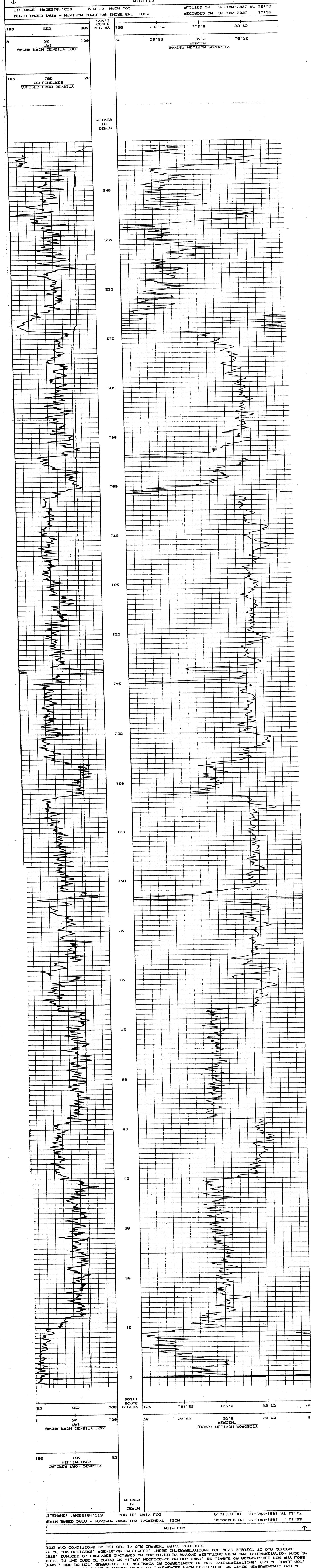
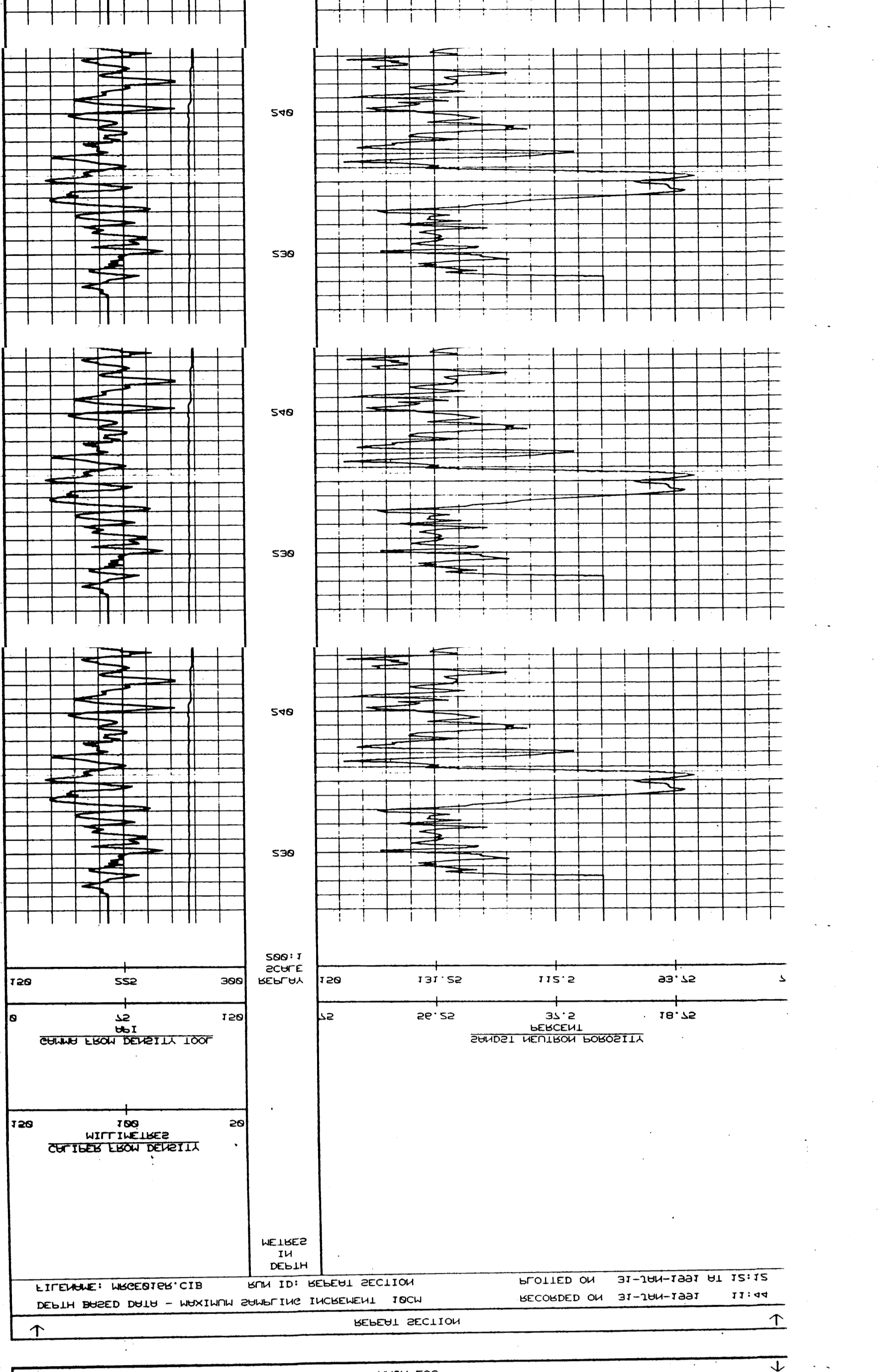
DEPTH CORRECTION ANALYSIS











50917 SCHEMATIC 720 131' 52 115' 2 83' 12' 12 28' 52 31' 2 78' 12' 50917 SCHEMATIC 720 131' 52 115' 2 83' 12' 12 28' 52 31' 2 78' 12' 50917 SCHEMATIC 720 131' 52 115' 2 83' 12' 12 28' 52 31' 2 78' 12'

THIS AND OTHER LOGS ARE SET OUT IN ONE SYSTEMATIC ORDER. THESE INTERFERENCES ARE OF THE ORDER OF ONE OR TWO PERCENT OF THE ORIGINAL SIGNAL. THESE INTERFERENCES ARE CAUSED BY THE REFLECTION OF THE SIGNAL FROM THE SURFACE OF THE LOGS. THESE INTERFERENCES ARE CAUSED BY THE REFLECTION OF THE SIGNAL FROM THE SURFACE OF THE LOGS. THESE INTERFERENCES ARE CAUSED BY THE REFLECTION OF THE SIGNAL FROM THE SURFACE OF THE LOGS.

LOG NO.	DATE	TIME	DEPTH	REMARKS
50917	31-10-1951	11:15	546	WITTLINGER
50917	31-10-1951	11:15	546	COTTER

LOG NO.	DATE	TIME	DEPTH	REMARKS
50917	31-10-1951	11:15	546	WITTLINGER
50917	31-10-1951	11:15	546	COTTER

LOG NO.	DATE	TIME	DEPTH	REMARKS
50917	31-10-1951	11:15	546	WITTLINGER
50917	31-10-1951	11:15	546	COTTER

LOG NO.	DATE	TIME	DEPTH	REMARKS
50917	31-10-1951	11:15	546	WITTLINGER
50917	31-10-1951	11:15	546	COTTER

LOG NO.	DATE	TIME	DEPTH	REMARKS
50917	31-10-1951	11:15	546	WITTLINGER
50917	31-10-1951	11:15	546	COTTER

LOG NO.	DATE	TIME	DEPTH	REMARKS
50917	31-10-1951	11:15	546	WITTLINGER
50917	31-10-1951	11:15	546	COTTER