Quintette

[redacted]

739

DENISON MINES LIMITED, MANAGER

QUINTETTE COAL LIMITED
1987 GEOLOGICAL REPORT
TRANSFER, GRIZZLY AND PERRY CREEK AREAS
APRIL, 1988
APPENDIX 1

Prepared by Technical Services Department
Quintette Coal Limited

Appendix 1

Section 1.1

Geology Maps

Appendix 1

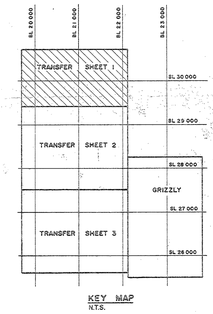
Section 1.1.1

Transfer Area

(3 sheets)

1987 GEOLOGICAL REPORT
TRANSFER, GRIZZLY AND PERRY CREEK AREAS

INDEX - APPENDICES



KEY MAP
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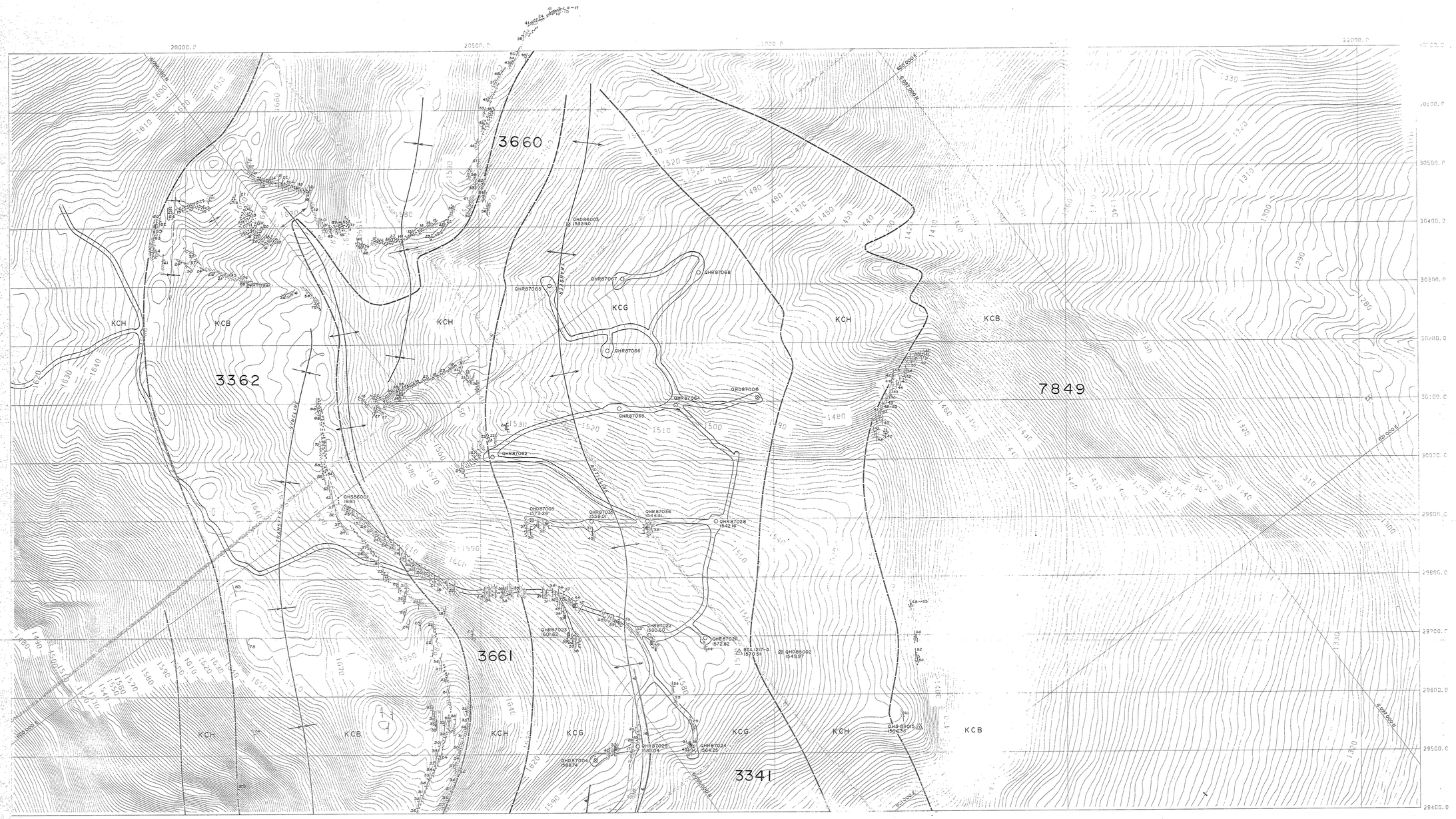


LEGEND

- ROADS
- TRENCH
- ROTARY DRILL HOLE
- DIAMOND DRILL HOLE
- THRUST FAULT
- ANTICLINE
- SYNCLINE
- GEOLOGIC CONTACT
- COAL SEAM OUTCROP
- CONTROL POINT w/ ELEVATION (e.g. QHR86 976.17)
- STRIKE & DIP - BEDDING (e.g. 132)
- STRIKE & DIP - COAL SEAM (e.g. 135)
- STRIKE & DIP - FAULT PLANE (e.g. 190)
- ADIT
- LICENCE BOUNDARY
- 7849 LICENCE NUMBER

LITHOLOGIC SYMBOLS

- CONGLOMERATE
- SANDSTONE
- SANDY SHALE (Siltstone)
- SHALE (Claystone)
- CARBONACEOUS SHALE
- COAL

GEOLOGIC FORMATIONS

- KS SHAFTSBURY
- KCB BOULDER CREEK
- KCH HULCROSS
- KCG GATES
- KM MOOSEBAR
- KCS CETKINO
- KCD CADOMIN

0 50 100 150 200 250
METRES

739

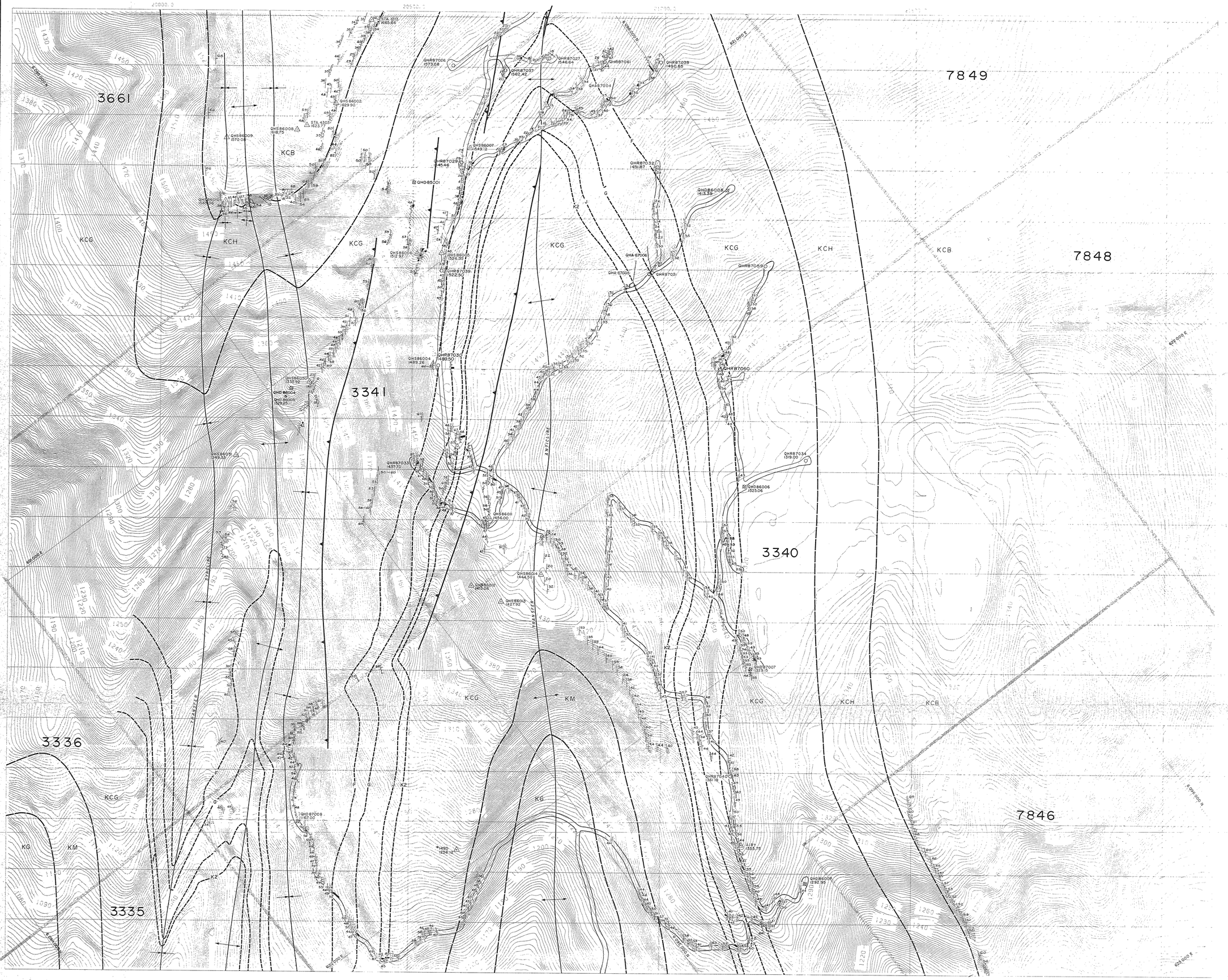
Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
1	22	07	88	LICENCE BOUNDARIES	D.L.	D.J.	D.J.
0	19	03	86	ORIGINAL DRAFT	R.J.	D.J.	D.J.

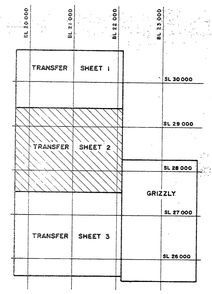
QUINTETTE COAL LIMITED
Project Manager
DENISON MINES LIMITED
COAL DIVISION

Area: TRANSFER | Category: GEOLOGY

Drawing Title:
TRANSFER AREA
GEOLOGY
SHEET 1

Scale	Drawing No.	Rev.
1:2500	88-903-20-001	1





KEY MAP
N.T.S.

LEGEND

- ROADS
- TRENCH
- ROTARY DRILL HOLE
- DIAMOND DRILL HOLE
- THRUST FAULT
- ANTICLINE
- SYNCLINE
- GEOLOGIC CONTACT
- COAL SEAM OUTCROP
- CONTROL POINT W/ ELEVATION (1486 / 975.17)
- STRIKE & DIP - BEDDING (135)
- STRIKE & DIP - COAL SEAM (135)
- STRIKE & DIP - FAULT PLANE (180)
- ADIT
- LICENCE BOUNDARY
- 3340 LICENCE NUMBER

LITHOLOGIC SYMBOLS

- CONGLOMERATE
- SANDSTONE
- SANDY SHALE (Siltstone)
- SHALE (Claystone)
- CARBONACEOUS SHALE
- COAL

GEOLOGIC FORMATIONS

- KS SHAFTSBURY
- KCB BOULDER CREEK
- KCH HULCROSS
- KCG GATES
- KM MOOSEBAR
- KG GETHING
- KCD CADOMIN

0 50 100 150 200 250
METRES

739

I	220786	LICENCE BOUNDARIES	D.L.	D.J. D.J.
O	210388	ORIGINAL DRAFT	R.J.	D.J. D.J.
Rev.	D M Y	Revision Description	Drn.	Des. App.

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Area: TRANSFER | Category: GEOLOGY

Drawing Title:
TRANSFER AREA
GEOLOGY
SHEET 2

Scale	Drawing No.	Rev.
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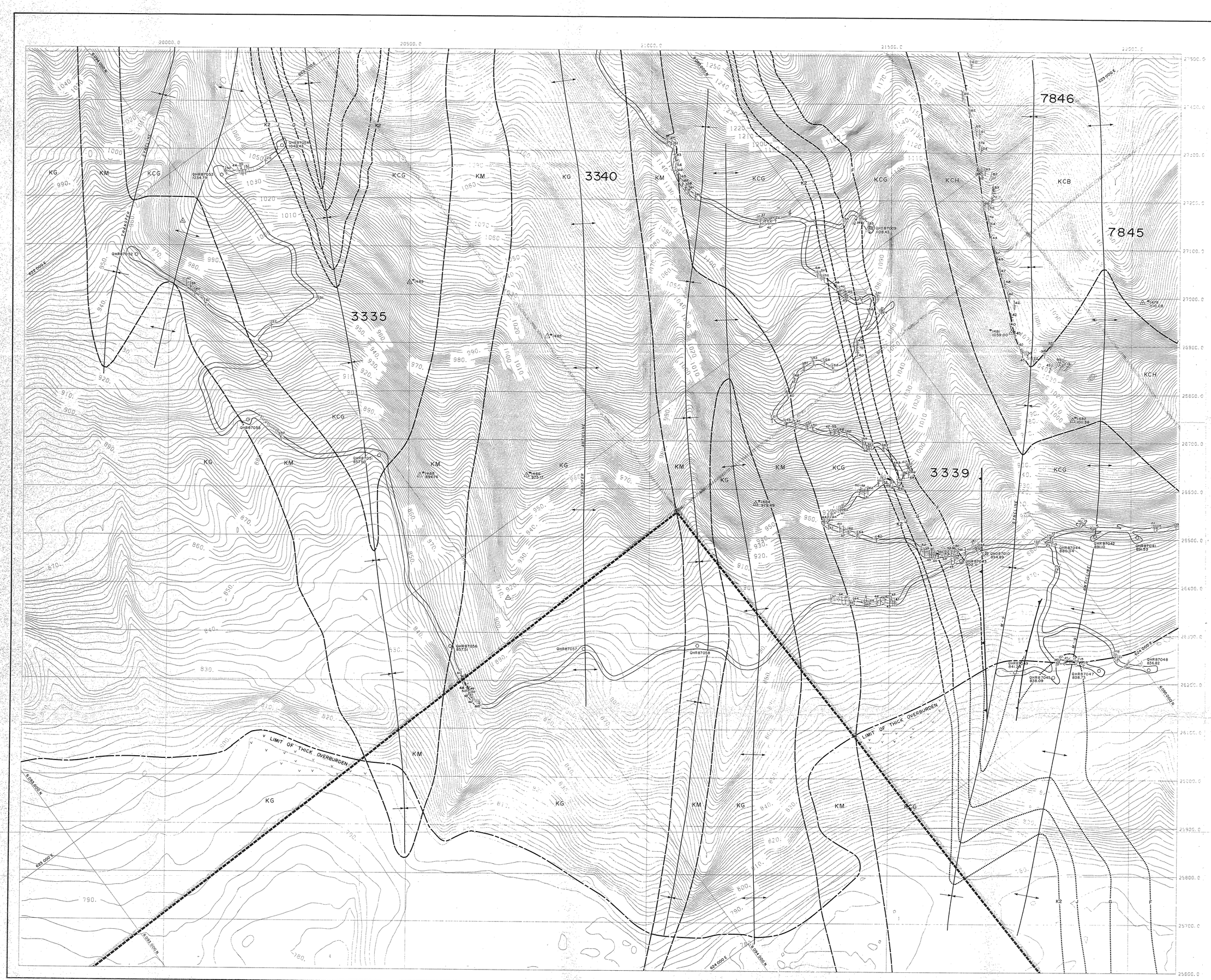

KEY MAP
N.T.S.

LEGEND

- ROADS
- TRENCH
- ROTARY DRILL HOLE
- DIAMOND DRILL HOLE
- THRUST FAULT
- ANTICLINE
- SYNCLINE
- GEOLOGIC CONTACT
- COAL SEAM OUTCROP / SUBCROP
- CONTROL POINT w/ ELEVATION (e.g. 1486 975.17)
- STRIKE & DIP - BEDDING (e.g. 135 / 35)
- STRIKE & DIP - COAL SEAM (e.g. 135 / 35)
- STRIKE & DIP - FAULT PLANE (e.g. 180 / 60)
- ADIT
- 3339 LICENCE BOUNDARY & NUMBER
- COAL LEASE #6 BOUNDARY

LITHOLOGIC SYMBOLS

- CONGLOMERATE
- SANDSTONE
- SANDY SHALE (Siltstone)
- SHALE (Claystone)
- CARBONACEOUS SHALE
- COAL

GEOLOGIC FORMATIONS

KS	SHAFTSBURY
KCB	BOULDER CREEK
KCH	HULCROSS
KCG	GATES
KM	MOOSEBAR
KG	GETHING
KCD	CADOMIN

0 50 100 150 200 250
METRES

739

Rev.	D M Y	Revision Description	Drn.	Des.	App.
1	22 07 88	LICENCE BOUNDARIES	D.L.	D.J.	D.J.
0	21 03 88	ORIGINAL DRAFT	R.J.	D.J.	D.J.

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Area: TRANSFER | Category: GEOLOGY

Drawing Title:
TRANSFER AREA
GEOLOGY
SHEET 3

Scale: 1:2500 | Drawing No.: 88-903-20-003 | Rev.: 1

Appendix 1

Section 1.1.2

Grizzly Area

22500.0 23000.0 23500.0

28200.0 28100.0 28000.0 27900.0 27800.0 27700.0 27600.0 27500.0 27400.0 27300.0 27200.0 27100.0 27000.0 26900.0 26800.0 26700.0 26600.0 26500.0 26400.0 26300.0 26200.0 26100.0 26000.0 25900.0 25800.0

U.T.M.

7848 7847 7846 7845 3339

KCB KCH KCG KM KG KS

OVERLAND CONVEYOR

SYNCLINE SHIKANO ANTICLINE

F G J KI

QHR87011 QHR87012 QHR87014 QHR87008 QHR87007 QHD87002 QHR87006 QHR87009 QHR87013 QHR87010 QHR87015 QHD87001 QHD86002 1095.53 QHR87005 QHR87016 QHR87017 QHR87004 QHR87003 QHR87018 QHR87019 QHR87002 QHR87001 QHR84028 879.24 QHR84029 QHR84030 QHR84027 QHR84018 857.66 QHR84017 877.05 QHD84004 875.06 QHR87020 QHD87012 QHR87050 QHA87002 QHA87001 QHA87003 QHD87011 QHD86001 933.93

GGG 1060.95 GGF 1029.75 GGE 1055.49 GGD 1021.04 GGC 895.84 GGB 877.74 GGA 1074.35 GG10 984.09 GG11 982.38 GG9 970.02 GG3 927.84

6 095 000 N 625 000 E 624 000 E 626 000 E 627 000 E 628 000 E

LIMIT OF THICK OVERBURDEN

SL 30 000 SL 29 000 SL 28 000 SL 27 000 SL 26 000

TRANSFER SHEET 1 TRANSFER SHEET 2 TRANSFER SHEET 3 GRIZZLY

KEY MAP
N.T.S.

LEGEND

- ROADS
- TRENCH
- ROTARY DRILL HOLE
- DIAMOND DRILL HOLE
- THRUST FAULT
- ANTICLINE
- SYNCLINE
- GEOLOGIC CONTACT
- COAL SEAM OUTCROP/SUB.
- 1486 975.17 — CONTROL POINT w/ ELEVATION
- 35 — STRIKE & DIP - BEDDING
- 35 — STRIKE & DIP - COAL SEAM
- 80 — STRIKE & DIP - FAULT PLANE
- ADIT
- LICENCE BOUNDARY
- 3339 — LICENCE NUMBER
- COAL LEASE # 6
- PROPERTY BOUNDARY

LITHOLOGIC SYMBOLS

- CONGLOMERATE
- SANDSTONE
- SANDY SHALE (Siltstone)
- SHALE (Claystone)
- CARBONACEOUS SHALE
- COAL

GEOLOGIC FORMATIONS

KS	SHAFTSBURY
KCB	BOULDER CREEK
KCH	HULCROSS
KCG	GATES
KM	MOOSEBAR
KG	GETHING
KCD	CADOMIN

0 50 100 150 200 250
METRES

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
I	22	07	88	LICENCE BOUNDARIES	D.L.	D.J.	D.J.
O	18	03	88	ORIGINAL DRAFT	R.J.	D.J.	D.J.

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COAL DIVISION

Area: GRIZZLY | Category: GEOLOGY

Drawing Title:
GRIZZLY AREA
GEOLOGY

739

Scale	Drawing No.	Rev.
1:2500	88-905-20-001	I

Appendix 1

Section 1.1.3

Perry Creek Area

22000.0 23000.0 24000.0 25000.0

6,106,000 N 610,000 E 611,000 E 6,108,000 N 612,000 E 614,000 E 6,105,000 N 6,104,000 N 6,103,000 N 6,107,000 N

44000.0 43500.0 43000.0 42500.0 42000.0 41800.0 41500.0 41000.0 40500.0

QWD 7118 QWD 7115 QWD 7119 QWD 7112 QWD 7111 QWD 7103

QPB87001 QPB87003 QPB87004 QPB87005 QPB87006

WDH-1

3601 3597 3596 3600 4534

KCG KM KG

PERRY CREEK

ANTICLINE

SYNCLINE

J3 SEAM

WOLVERINE RIVER

B.C. RAIL

GRID NORTH

MAGNETIC NORTH

LEGEND

- ROAD
- QNR ROTARY DRILL HOLE
- QND CORE DRILL HOLE
- THRUST FAULT
- SYNCLINE
- ANTICLINE
- STRIKE & DIP (ROCK - COAL)
- GEOLOGIC CONTACT
- COAL SEAM OUTCROP (SEAM TOP)
- 4534 LICENCE BOUNDARY & LICENCE NUMBER

LITHOLOGIC FORMATIONS

- CONGLOMERATE
- SANDSTONE
- SANDYSHALE (SILTSTONE)
- SHALE (CLAYSTONE)
- CARBONACEOUS SHALE
- COAL

GEOLOGIC FORMATIONS

KS	SHAFTSBURY
KCB	BOULDER CREEK
KCH	HULLCROSS
KCG	GATES
KM	MOOSEBAR
KG	GETHING
KCD	CADOMIN
JKM	MINNES

TOPOGRAPHY IS A COMPILATION USING
1:4800 MAP SHEETS J10 K10 (1971)
1:5000 MAP SHEETS 132.133.232.233 (1978)

0M 100M 200M 300M 400M 500M
METRE
1:5000

REV.	D	M	Y	REVISION DESCRIPTION	DRN.	DES.	APP.
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2	02	04	88	REVISED GEOLOGIC INTERPRETATION	TW	TW	DJ
1	24	02	88	INTERPRETIVE GEOLOGY	TW	DJ	DJ
0	22	02	88	COMPUTER DRAFT		DL	DJ

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PROJECT MANAGER
DENISON MINES LIMITED
COAL DIVISION

AREA PERRY CREEK | CATEGORY GEOLOGY

DRAWING TITLE
PERRY CREEK AREA
GEOLOGY

739

SCALE	DRAWING FILE	REV.
1:5000	88-906-20-001	3

Appendix 1

Section 1.1.4

Regional Geology Map

WOLVERINE AREA

PERRY CREEK AREA

PROPERTY BOUNDARY

TRANSFER AREA

MURRAY AREA

GRIZZLY AREA

MESA

WOLVERINE

SHIKANO

BABCOCK

BABCOCK AREA

FIVE CABIN AREA

COAL LEASE BOUNDARY #6

COAL LEASE BOUNDARY #6

F G C B K J G H

LOCATION MAP

BRITISH COLUMBIA

CONTOUR INTERVAL 20 METRES

CONTROL SURVEY NOTE

APPROXIMATE MEAN DECLINATION 1980 FOR CENTRE OF MAP Annual Change Increasing 4'

MESOZOIC

UPPER CRETACEOUS

KOu GUNYEGAH FORMATION: Marine and non-marine sandstone and shale

LOWER CRETACEOUS — FORT ST. JOHN GROUP —

KSh SHAFTESBURY FORMATION: Marine shale (North of the Wolverine River the Shaftesbury Fm. is differentiated into Hasler, Goodrich & Cruiser Formations)

KCr CRUISER FORMATION: Marine shale

KGo GOODRICH FORMATION: Fine grained sandstone

KHa HASLER FORMATION: Dark marine shale

KCm COMMOTION FORMATION Undifferentiated

KCmSs COMMOTION FORMATION, Boulder Creek Member: conglomerate, coarse to fine grained sandstone, shale, coal

KCmSh COMMOTION FORMATION: Hotnose Member: dark marine shale

KCmgl COMMOTION FORMATION: Gates Member: carbonaceous sandstone, shale, coal

KMb MOOSEBAR FORMATION: dark marine shale

— BULLHEAD GROUP —

KGl GETHING FORMATION: conglomerate, carbonaceous sandstone and shale, coal

KCd CADOMIN FORMATION: massive conglomerate

JURASSIC AND CRETACEOUS LOWER CRETACEOUS AND EARLIER

KNs NIKANASSIN FORMATION: fine grained sandstone and carbonaceous shale

GEOLOGICAL LEGEND

DRIFT COVERED AREA

GEOLOGICAL BOUNDARY (Defined, Approximate, Assumed, Overlapped)

STRIP OR GEOLOGICAL MARKING

BEDDING TOPS KNOWN (Horizontal, Inclined, Vertical, Overturned, Top Unknown)

BEDDING TOPS UNKNOWN (Inclined, Vertical, Old Unknown)

BEDDING TREND (Top Unknown, Tops Unknown, Top and Tops Known, Top Known, Top Unknown)

BEDDING ESTIMATED (Dip Gently, Moderate, Steep)

GRAD. FOLD (Anticl. Known, Plunge)

STRUCTURAL TREND (From Aerial Photographs)

FAULT (Defined, Approximate, Assumed)

FAULT (Inclined, Vertical)

FAULT (Downthrow Side, Relative Movement)

THRUST FAULT (Barbs on Direction of Dip, Defined)

THRUST FAULT (Approximate, Assumed)

JOINT (Inclined, Vertical, Horizontal)

ANTICLINE (Defined, Approximate)

SYNCLINE (Defined, Approximate)

MONOCLINE (Overturned, SYNCLINE (Overturned)

ANTICLINE OR SYNCLINE (Horse Indicates Plunge)

ESCARPMENT

FOSSIL LOCATION

COAL ZONES DEFINED, INFERRED, ASSUMED

TOPOGRAPHIC LEGEND

ACCESS ROAD ALL WEATHER, LIMITED WEATHER

ALL-USE TRAIL LIMITED WEATHER

RAILWAY

AIR STRIP

SEISMIC LINE CUT LINE

POWER TRANSMISSION LINE

TRENCH

ADIT OPEN CAVED

DIAMOND DRILL HOLE

DRY HOLE

DRILL HOLE ROTARY DIAMOND (SELECT HOLES NUMBERED FOR ORIENTATION)

CAMPSITE

CAMPGROUND, PUBLIC

FOREST SERVICE LOOKOUT/STATION

HORIZONTAL AND VERTICAL CONTROL

RIVER

STREAM

LAKE

SWAMP

CONTOURS

DEPRESSION CONTOUR

METRES 1000 0 1000 2000 3000 4000

739

QUINTETTE COAL LIMITED

PREPARED BY: DENISON MINES LIMITED, MITSUI MINING CO. LTD.

REGIONAL GEOLOGY MAP

DRAWN BY: E. TOTH	DATE: Feb. '77	SCALE: 1:50,000
PREP'D BY:	DATE:	DRAWING NUMBER: 77-002-20-02
APPR'D BY: A.P. C.M.	DATE: Feb. '78	

Appendix 1

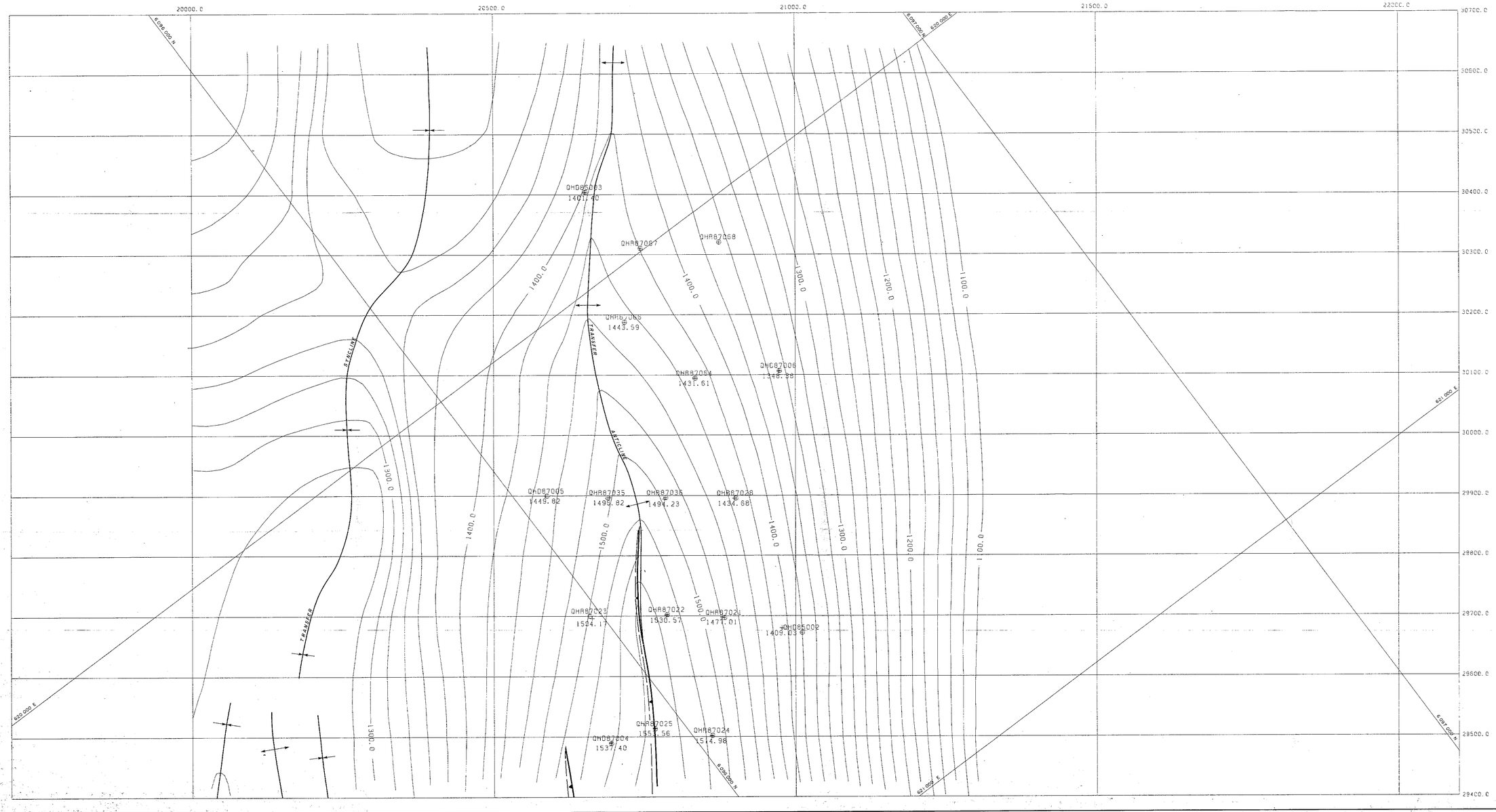
Section 1.2

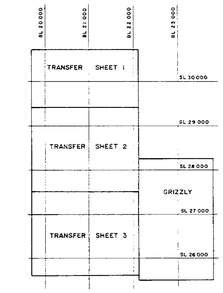
Structure Contours

Appendix 1

Section 1.2.1

Transfer Area





KEY MAP

LEGEND

- 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- + 715.96 ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
0	05	08	88	ORIGINAL DRAFT	DL	DJ	DJ

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Project Manager
DENISON MINES LIMITED
COAL DIVISION

Area TRANSFER | Category STRUCTURE CONT.

Drawing Title
TRANSFER AREA
STRUCTURE CONTOUR
TOP OF F SEAM SHEET 1

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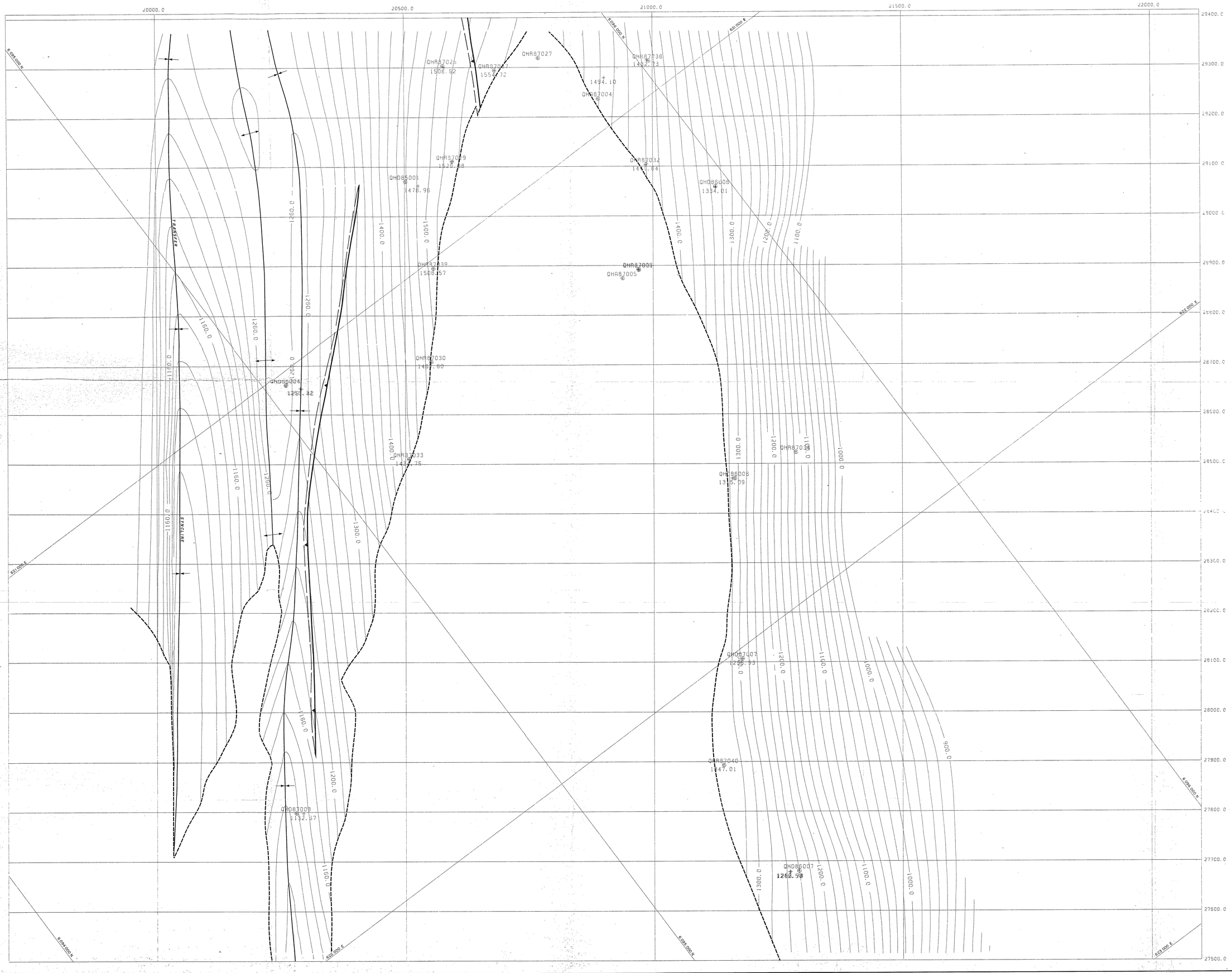

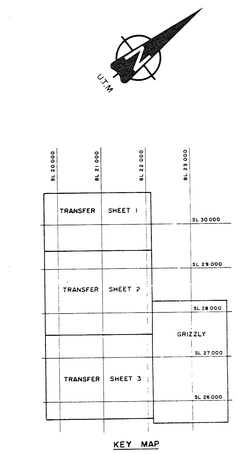

KEY MAP

LEGEND

- 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- 715.96 + ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
0	DEC	08	88	ORIGINAL DRAFT	D.L	D.J	D.J

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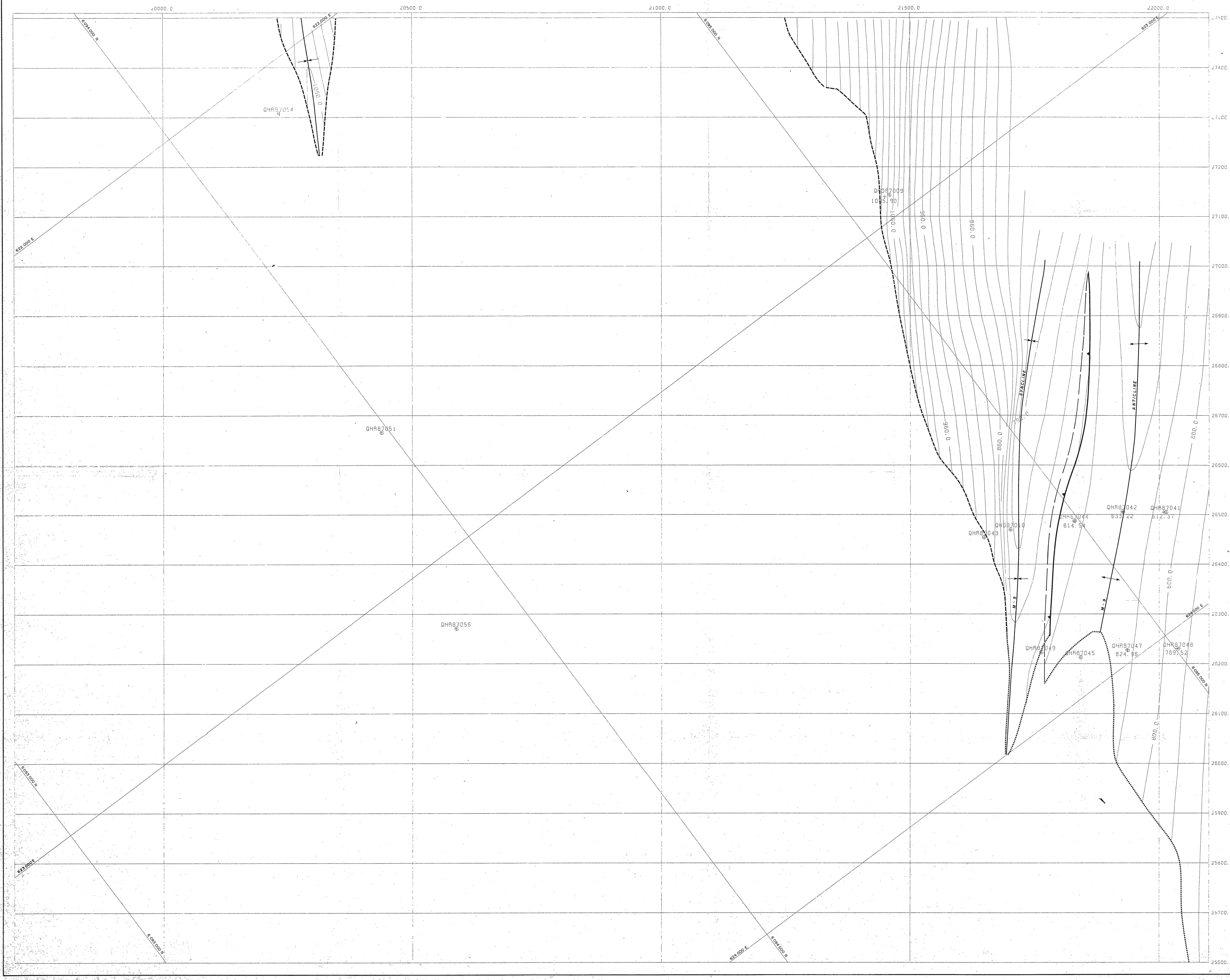
COAL DIVISION

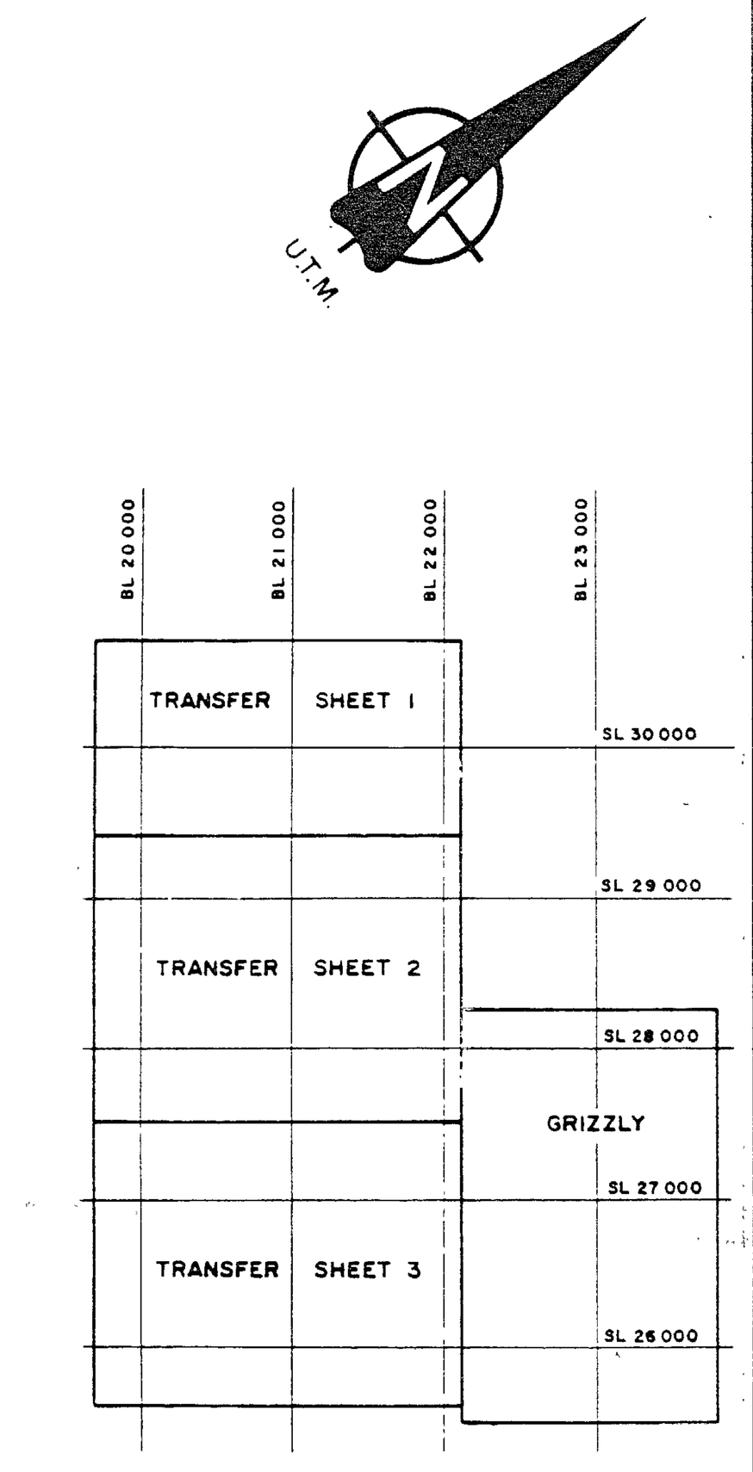
Area TRANSFER | Category STRUCTURE CONT.

Drawing Title
TRANSFER AREA
STRUCTURE CONTOUR
TOP OF F SEAM SHEET 2

Scale	Drawing No.	Rev.
1:2500	88-903-22-002	0

TRF SEAM TOP SHT 2





KEY MAP

LEGEND

- — 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- + 715.96 ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
0	06	04	88	ORIGINAL DRAFT	DL	DJ	DJ

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Project Manager

DENISON MINES LIMITED

COAL DIVISION

Area TRANSFER — Category STRUCTURE CONT.

Drawing Title

TRANSFER AREA
STRUCTURE CONTOUR
TOP OF F SEAM SHEET 3

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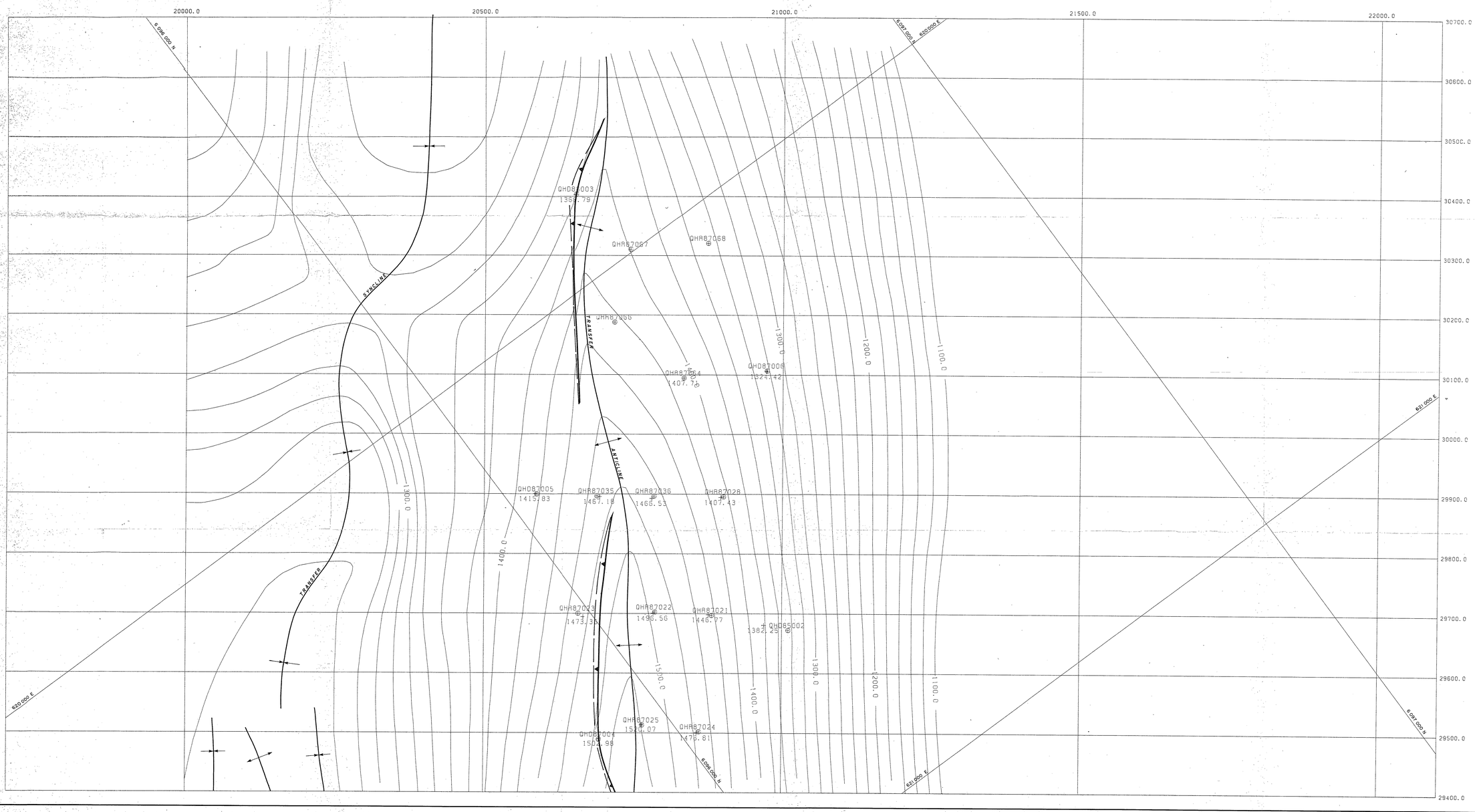

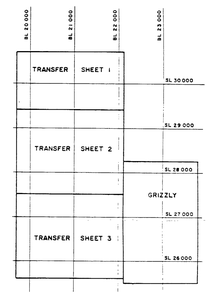

KEY MAP

LEGEND

- 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- + 715.96 ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

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0	06	08	88	ORIGINAL DRAFT	DL	DJ	DJ

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Project Manager
DENISON MINES LIMITED
COAL DIVISION

Area TRANSFER | Category STRUCTURE CONT.

Drawing Title
TRANSFER AREA
STRUCTURE CONTOUR
TOP OF G SEAM SHEET 1

Scale	Drawing No.	Rev.
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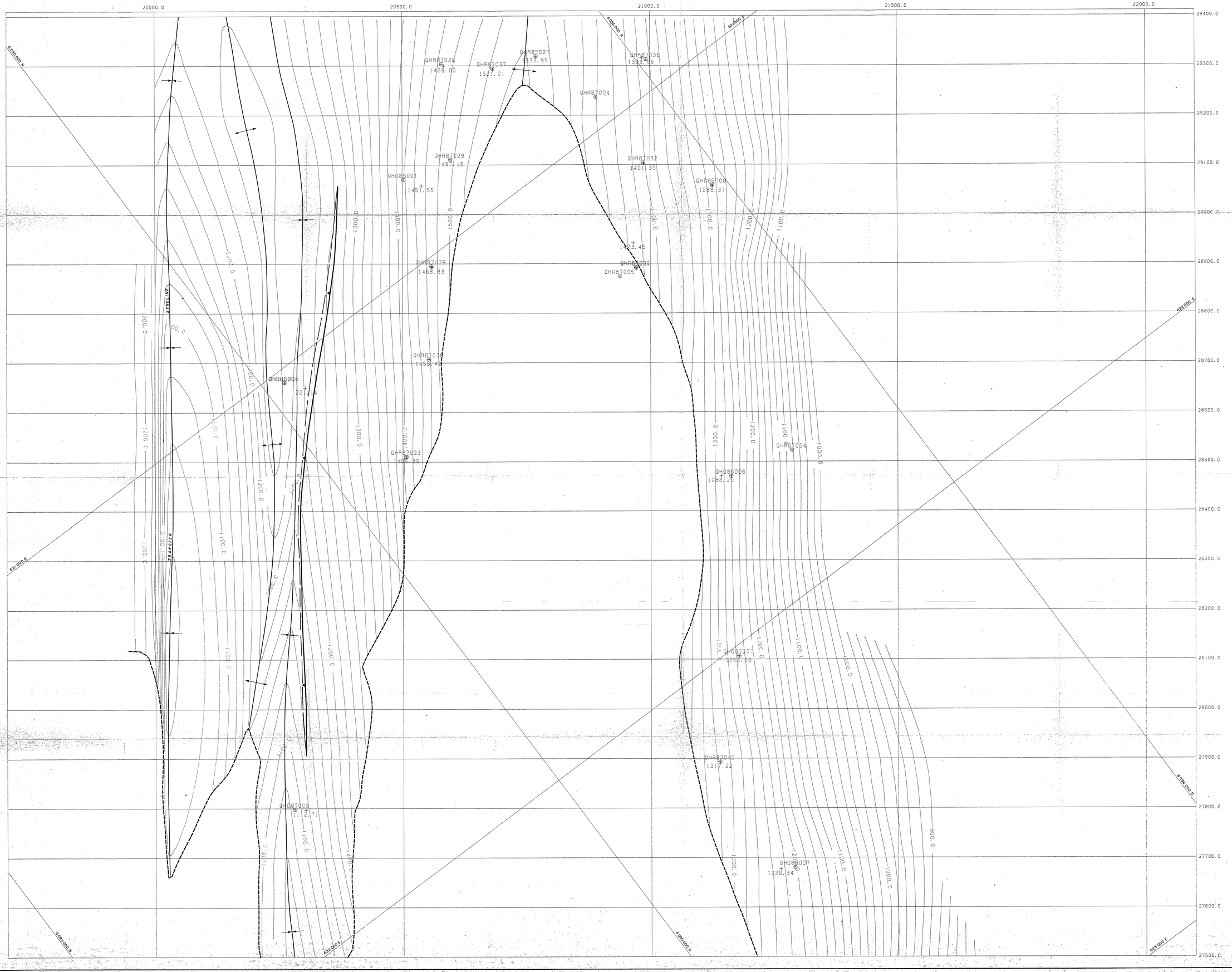
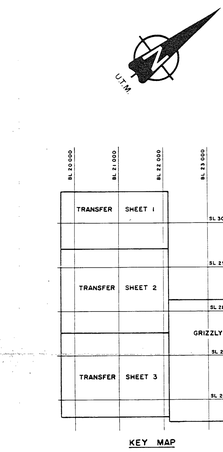
TR G Top Sheet 1





KEY MAP

LEGEND

- 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- + 715.96 ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
0	06	04	88	ORIGINAL DRAFT	D L	D J	D J

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Project Manager
DENISON MINES LIMITED
COAL DIVISION

Area: TRANSFER | Category: STRUCTURE CONT.

Drawing Title:
TRANSFER AREA
STRUCTURE CONTOUR
TOP OF G SEAM SHEET 2

Scale	Drawing No.	Rev.
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6 094 000 N
622 000 E
6 093 000 N
623 000 E
624 000 E
6 092 000 N

QHR87054
QHR87051
QHR87056
QHD87009
1052.74
QHD87010
QHR87044
788.03
QHR87042
806.54
QHR87041
767.32
QHR87043
865.22
QHR87049
791.53
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813.35
QHR87047
798.14
QHR87048
764.02

1100
900.0
800.0
SYNCLINE
ANTICLINE
M-9

UTM

EL 30 000	EL 29 000	EL 28 000	EL 27 000
TRANSFER SHEET 1			
TRANSFER SHEET 2		GRIZZLY	
TRANSFER SHEET 3			

EL 26 000

KEY MAP

LEGEND

- 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- + 715.96 ELEV OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
0	06	04	88	ORIGINAL DRAFT	D L	D J	D J

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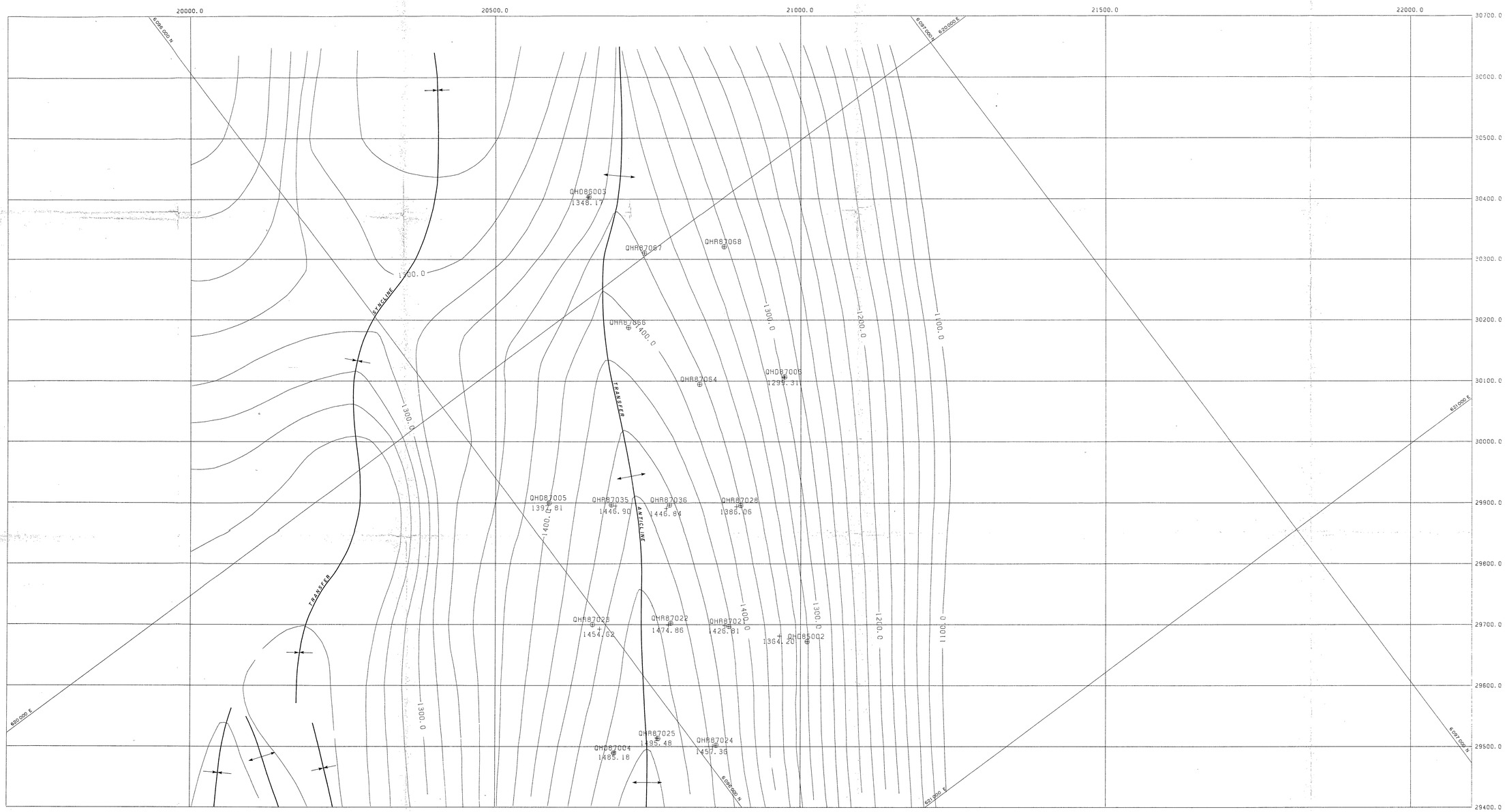
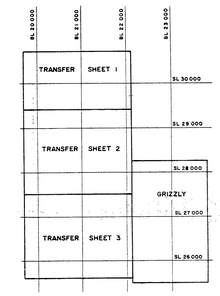
Area TRANSFER | Category STRUCTURE CONT.

Drawing Title
TRANSFER AREA
STRUCTURE CONTOUR
TOP OF G SEAM SHEET 3

Scale	Drawing No.	Rev.
1:2500	88-903-22-006	0

TOP G Seam Sheet 3





KEY MAP

LEGEND

- 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- 715.96 + ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
0	06	MAR		ORIGINAL DRAFT	DL	DJ	DJ

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Area TRANSFER | Category STRUCTURE CONT.

Drawing Title
TRANSFER AREA
STRUCTURE CONTOUR
TOP OF J SEAM SHEET 1

Scale	Drawing No.	Rev.
1:2500	88-903-22-007	0

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6,098,000 N 6,096,000 N 6,094,000 N 621,000 E 622,000 E 623,000 E

ANTICLINE
TRANSFER
SYNCLINE
TRANSFER

QHR87026 1450.11
QHR87037 1502.89
QHR87027 1507.60
QHR87038 1376.58
QHR87004
QHR87029 1478.93
QHD85001 1435.24
QHR87032 1380.84
QHD86008 1260.49
QHR87039 1449.28
QHR87003 1432.09
QHR87030 1450.64
QHD86008 1132.79
QHR87033 1377.00
QHR87034
QHD86006 1267.36
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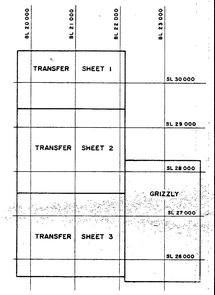
1100.0 1200.0 1300.0 1400.0

KEY MAP



LEGEND

- — 900 — STRUCTURE CONTOUR (20m interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- + 715.96 ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev	D M Y	Revision Description	Drn.	Des.	App.
0	000488	ORIGINAL DRAFT	D L	D J	D J

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Area TRANSFER | Category STRUCTURE CONT.

Drawing Title
TRANSFER AREA
STRUCTURE CONTOUR
TOP OF J SEAM SHEET 2

Scale	Drawing No.	Rev.
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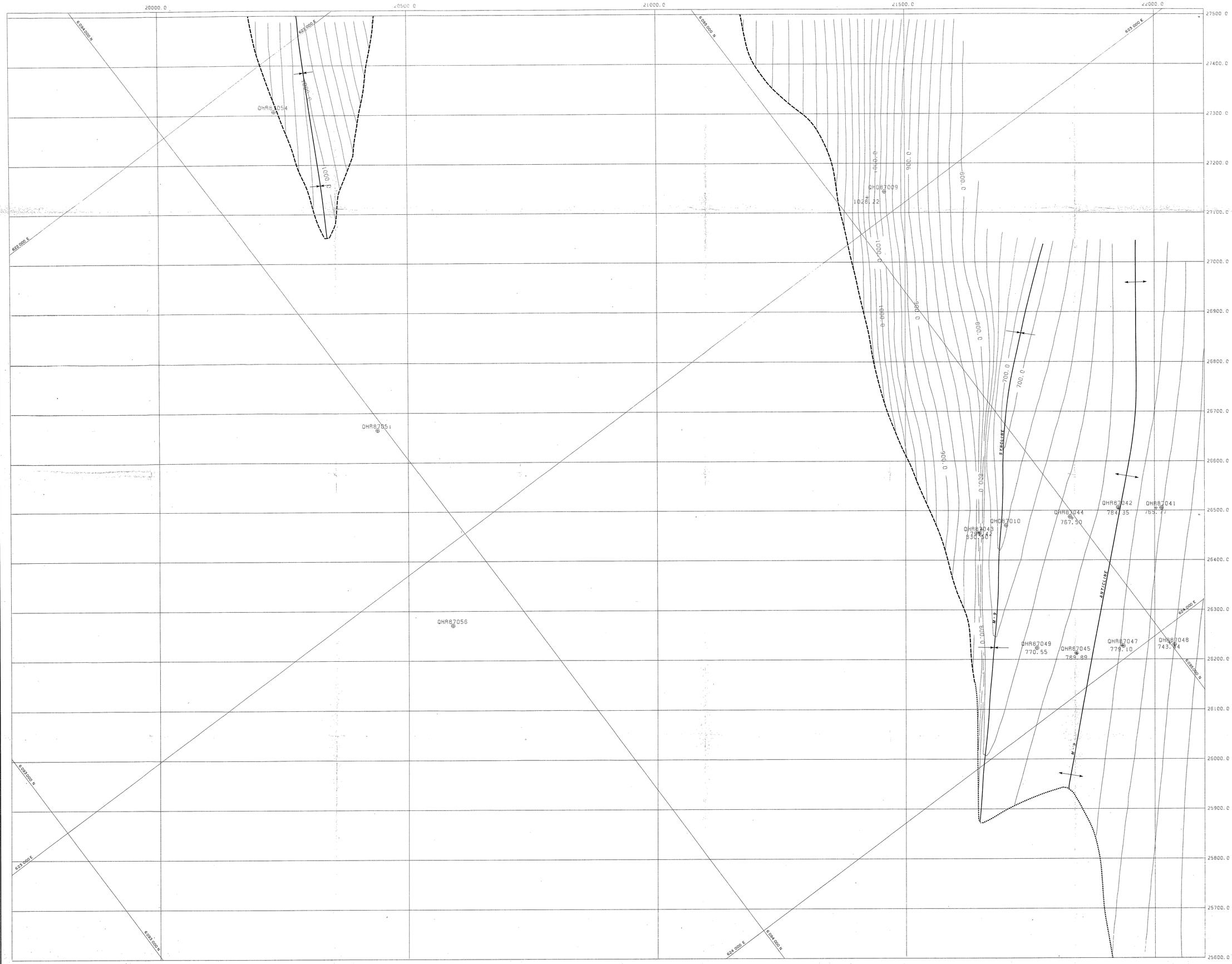

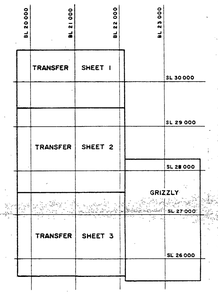

KEY MAP

LEGEND

- — 900 — STRUCTURE CONTOUR (20m interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- \+ 715.96 ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
0	00	04	88	ORIGINAL DRAFT	D L	O J	D J

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Area TRANSFER | Category STRUCTURE CONT.

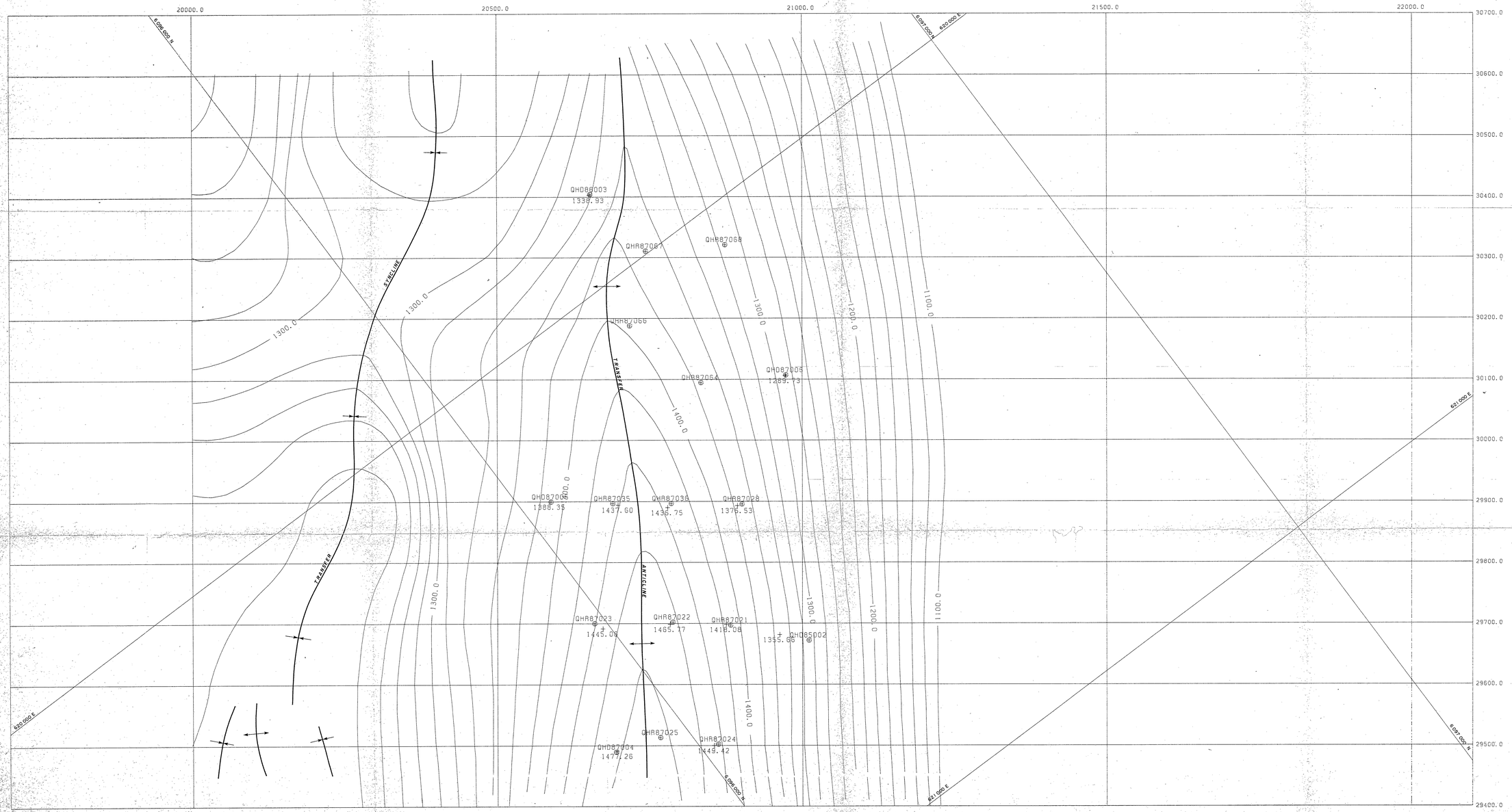
Drawing Title
TRANSFER AREA
STRUCTURE CONTOUR
TOP OF J SEAM SHEET 3

Scale	Drawing No.	Rev.
1:2500	88-903-22-009	0

UTM

EL 30 000	EL 31 000	EL 32 000	EL 33 000
TRANSFER	SHEET 1		EL 30 000
			EL 29 000
TRANSFER	SHEET 2		EL 28 000
		GRIZZLY	EL 27 000
TRANSFER	SHEET 3		EL 26 000

KEY MAP



LEGEND

- 900 — STRUCTURE CONTOUR (20m interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- 7 / 15.96 ELEV OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
0	00	08	88	ORIGINAL DRAFT	D L	D J	D J

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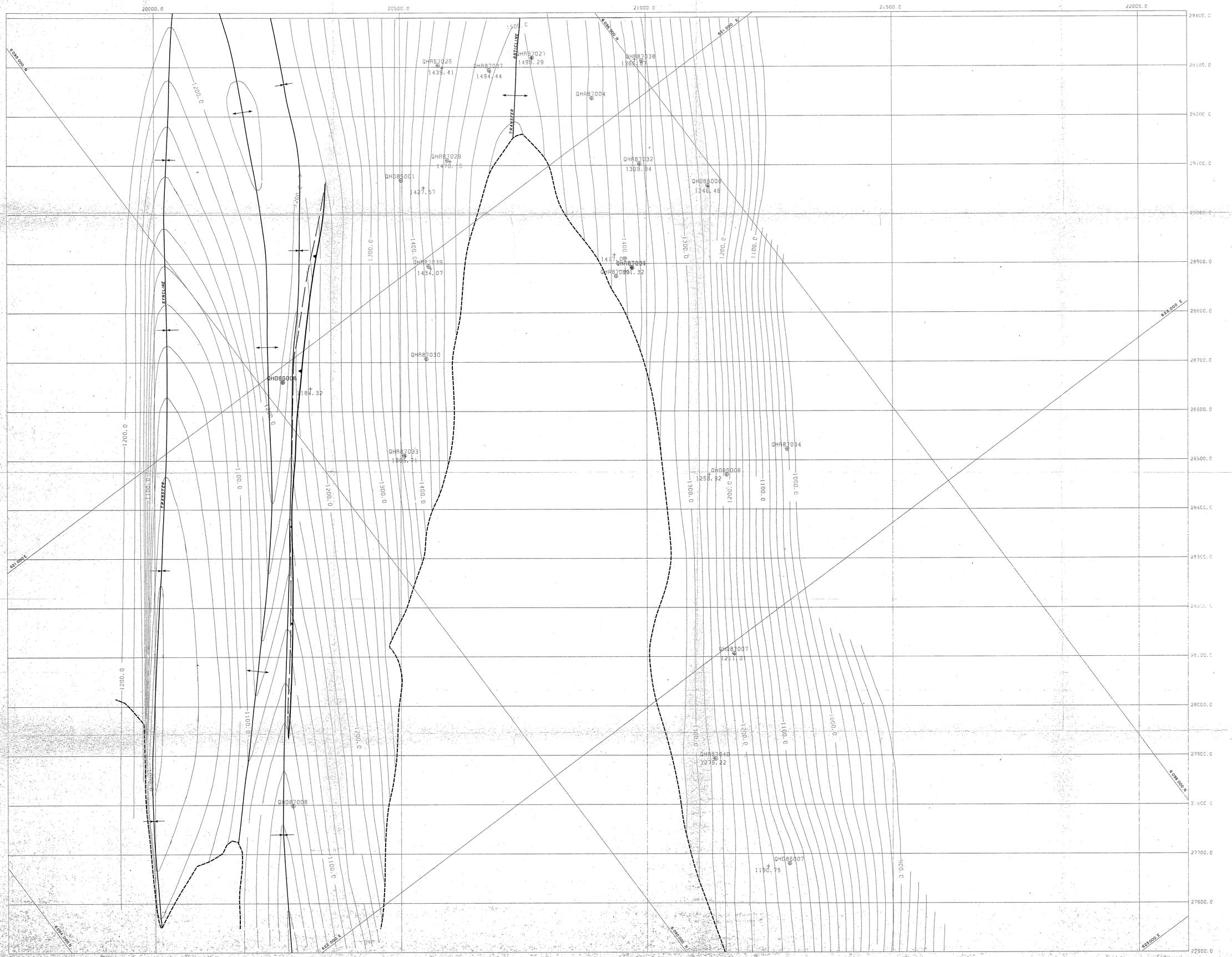
Area TRANSFER | Category STRUCTURE CONT.

Drawing Title
TRANSFER AREA
STRUCTURE CONTOUR
BOTTOM OF K2 SEAM SHEET 1

Scale	Drawing No.	Rev.
1:2500	88-903-22-010	0



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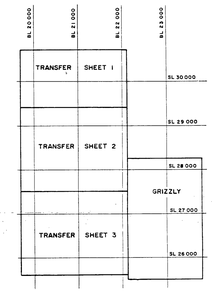

KEY MAP

LEGEND

- 900 — STRUCTURE CONTOUR (20m interval)
- QHR87017 — ROTARY DRILL HOLE (Collar Location)
- QHD87003 — DIAMOND DRILL HOLE (Collar Location)
- 715.96 — ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
0	06	04	88	ORIGINAL DRAFT	D L	D J	D J

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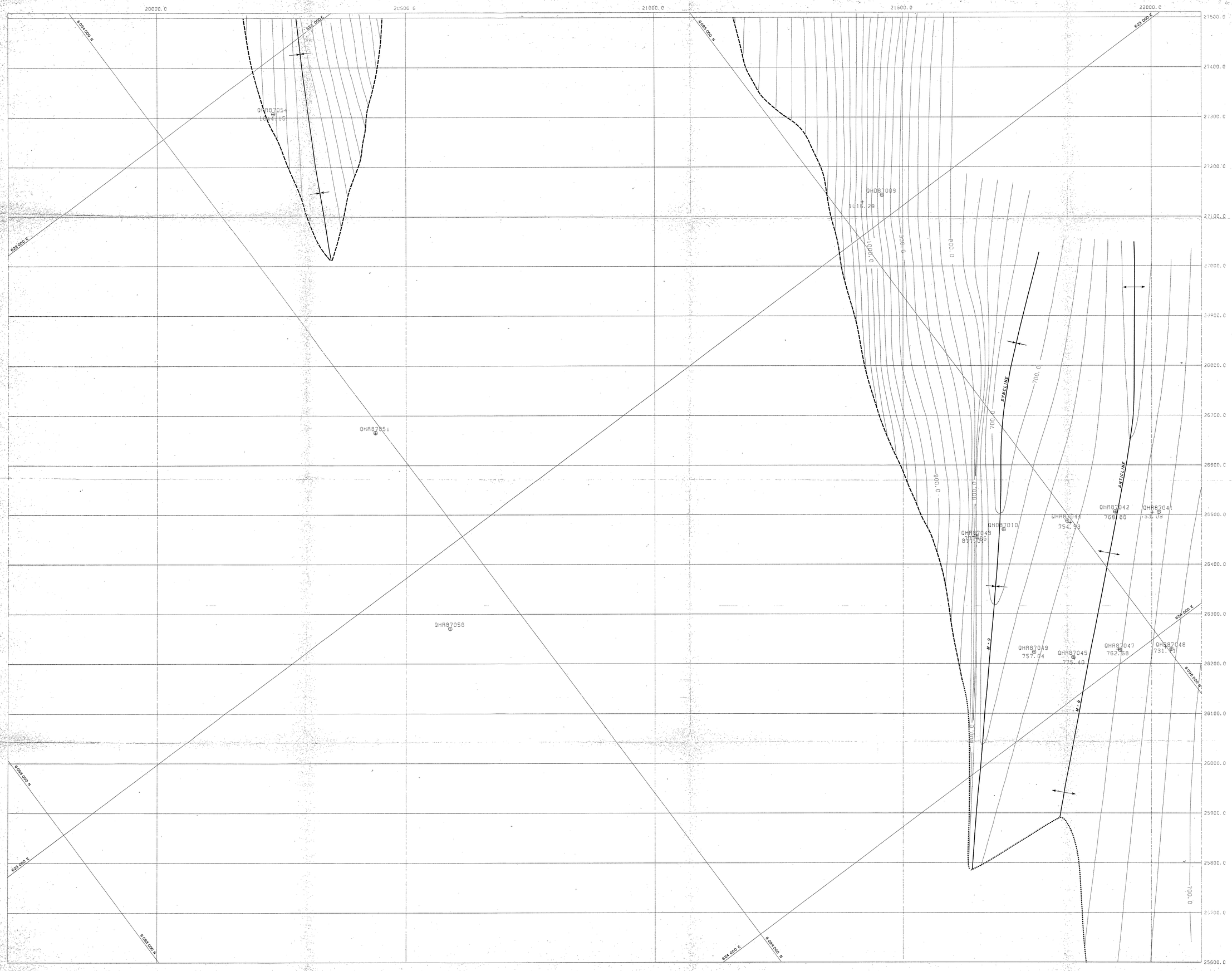
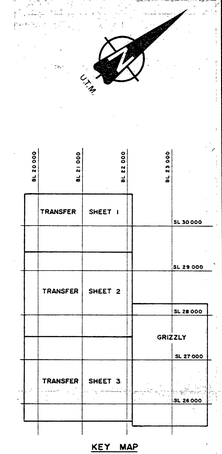
Area TRANSFER | Category STRUCTURE CONT.

Drawing Title
TRANSFER AREA
STRUCTURE CONTOUR
BOTTOM OF K2 SEAM SHEET 2

Scale	Drawing No.	Rev.
1:2500	88-903-22-011	0





KEY MAP

LEGEND

- 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- 715.96 ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
0	06	06	88	ORIGINAL DRAFT	D L	D J	D J

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Area TRANSFER | Category STRUCTURE CONT.

Drawing Title
TRANSFER AREA
STRUCTURE CONTOUR
BOTTOM OF K2 SEAM SHEET 3

Scale	Drawing No.	Rev.
1:2500	88 - 903 - 22 - 012	0

TR 2 Bot Sheet3

Appendix 1

Section 1.2.2

Grizzly Area

22500.0 23000.0 23500.0

28200. 28100. 28000. 27900. 27800. 27700.0 27600.0 27500.0 27400.0 27300.0 27200.0 27100.0 27000.0 26900.0 26800.0 26700.0 26600.0 26500.0 26400.0 26300.0 26200.0 26100.0 26000.0 25900.0 25800.0

623 000 E 624 000 E 625 000 E

6 096 000 N 6 095 000 N 6 097 000 N

SHIKANO

ANTICLINE

SYNCLINE

QHR87012 1010.85
QHR87011 1068.52
QHR87014 1059.40
QHR87007 1036.55
QHR87008 1086.99
QHR87002 1064.23
QHR87009 1089.19
QHR87013 952.43
QHR87010 1032.73
QHR87015
QHD87002 967.09
QHR87016 1011.20
QHR87017 941.61
QHD87003 920.68
QHR87001 932.75
QHD87001 915.98
QHR87004 931.66
QHR87006 912.10
QHR87005 916.98
QHR87003 880.00
QHR84028 768.70
QHR84018 732.78
QHD85004 847.17
QHR87002 845.04
QHR87001
QHR87020
QHR87021 752.64
QHR87022

KEY MAP

BL 20 000 BL 21 000 BL 22 000 BL 23 000

TRANSFER SHEET 1 — SL 30 000
SL 29 000
TRANSFER SHEET 2 — SL 28 000
GRIZZLY
SL 27 000
TRANSFER SHEET 3 — SL 26 000

UTM

LEGEND

- 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- \+ 715 96 ELEV OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev	D	M	Y	Revision Description	Drn.	Des	App
0	06	04	88	ORIGINAL DRAFT	D L	J P	D J

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Area GRIZZLY | Category STRUCTURE CONT.

Drawing Title
GRIZZLY AREA
STRUCTURE CONTOUR
TOP OF F SEAM

Scale	Drawing No	Rev
1:2500	88 - 905 - 22 - 001	0

22500.0

23000.0

23500.0

523 000 E

6097 000 N

6096 000 N

623 000 E

624 000 E

6095 000 N

625 000 E

SHIKANO

ANTICLINE

SYNCLINE

SYNCLINE

SHIKANO

QHR87012 958.05

QHR87011 1025.32

QHR87014 328.40

QHR87007 987.03

QHR87008 1047.59

QHR87002 1019.54

QHR87009 1026.81

QHR87010 998.95

QHR87006 1027.26

QHR87001 537.84

QHR87003 896.88

QHR87002 1023.75

QHR87005 976.69

QHR87017 804.73

QHR87018 911.10

QHR87001 731.62

QHR87016 840.58

QHR87020 735.63

QHR87019 859.75

QHR87012 907.53

QHR87004 821.55

QHR87001 1002.81

QHR87001 912.43

QHR87003 927.88

QHR87002 879.85

QHR87001 777.36

QHR87002 710.63

QHR87020

UTM

BL 20 000

BL 21 000

BL 22 000

BL 23 000

SL 30 000

SL 29 000

SL 28 000

SL 27 000

SL 26 000

TRANSFER SHEET 1

TRANSFER SHEET 2

GRIZZLY

TRANSFER SHEET 3

KEY MAP

LEGEND

- 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ DIAMOND DRILL HOLE (Collar Location)
- \+ 715.96 ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev	D	M	Y	Revision Description	Drn.	Des.	App.
0	06	09	88	ORIGINAL DRAFT	DL	JP	DJ

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Area GRIZZLY | Category STRUCTURE CONT.

Drawing Title

GRIZZLY AREA
STRUCTURE CONTOUR
TOP OF G SEAM

Scale	Drawing No.	Rev
1:2500	88 - 905 - 22 - 002	0

623 000 E

6 097 000 N

SHIKANO

QHR87012 95.63

QHR87011 1007.12

QHR87010 994.39

QHR87007 966.14

QHR87008 1022.89

QHR87002 995.15

ANTICLINE

QHR87009 1995.90

QHR87013 994.67

QHR87015 1953.89

QHR87014 990.57

QHR87016 929.01

QHR87001 850.90

QHR87004 945.20

QHR87005 900.39

QHR87006 769.45

QHR87003 678.50

QHR87018 995.13

QHR87017 977.99

QHR87019 64.07

QHR87011 707.63

QHR87010 649.99

QHR87014 715.96

QHR87001 778.56

QHR87004 797.18

QHR87002 QHR87003

QHR87005 QHR87006

QHR87007

800.0

900.0

1000.0

700.0

SYNCLINE

SHIKANO

6 096 000 N

624 000 E

625 000 E

6 095 000 N

UTM

BL 20 000 BL 21 000 BL 22 000 BL 23 000

TRANSFER SHEET 1

TRANSFER SHEET 2

TRANSFER SHEET 3

GRIZZLY

SL 30 000 SL 29 000 SL 28 000 SL 27 000 SL 26 000

KEY MAP

LEGEND

- 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ — ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ — DIAMOND DRILL HOLE (Collar Location)
- \+ 715.96 — ELEV. OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

Rev	D	M	Y	Revision Description	Drn.	Des	App
0	06	04	88	ORIGINAL DRAFT	DL	JP	DJ

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Area GRIZZLY | Category STRUCTURE CONT.

Drawing Title

GRIZZLY AREA

STRUCTURE CONTOUR

TOP OF J SEAM

Scale	Drawing No.	Rev
1:2500	88 - 905 - 22 - 003	0

739

2500 2

623 000 E

6097 000 N

6096 000 N

624 000 E

6095 000 N

625 000 E

SHIKANO ANTICLINE

SHIKANO SYNCLINE

UTM

SL 20 000 | SL 21 000 | SL 22 000 | SL 23 000

TRANSFER | SHEET 1 — SL 30 000

SL 29 000

TRANSFER | SHEET 2 — SL 28 000

GRIZZLY — SL 27 000

TRANSFER | SHEET 3 — SL 26 000

KEY MAP

LEGEND

- 900 — STRUCTURE CONTOUR (20m Interval)
- QHR87017 ⊕ — ROTARY DRILL HOLE (Collar Location)
- QHD87003 ⊕ — DIAMOND DRILL HOLE (Collar Location)
- + 715 96 — ELEV OF DRILL HOLE INTERSECTION AT TOP OF SEAM
- THRUST FAULT / LOWER THRUST PLATE
- ANTICLINE
- SYNCLINE
- COAL SEAM OUTCROP/SUBCROP

50 0 50 100 200
METRES

739

Rev	D	M	Y	Revision Description	Drn.	Des.	App.
0	05	04	88	ORIGINAL DRAFT	D L	J P	D J

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Area GRIZZLY | Category STRUCTURE CONT.

Drawing Title

GRIZZLY AREA
STRUCTURE CONTOUR
BOTTOM OF K I SEAM

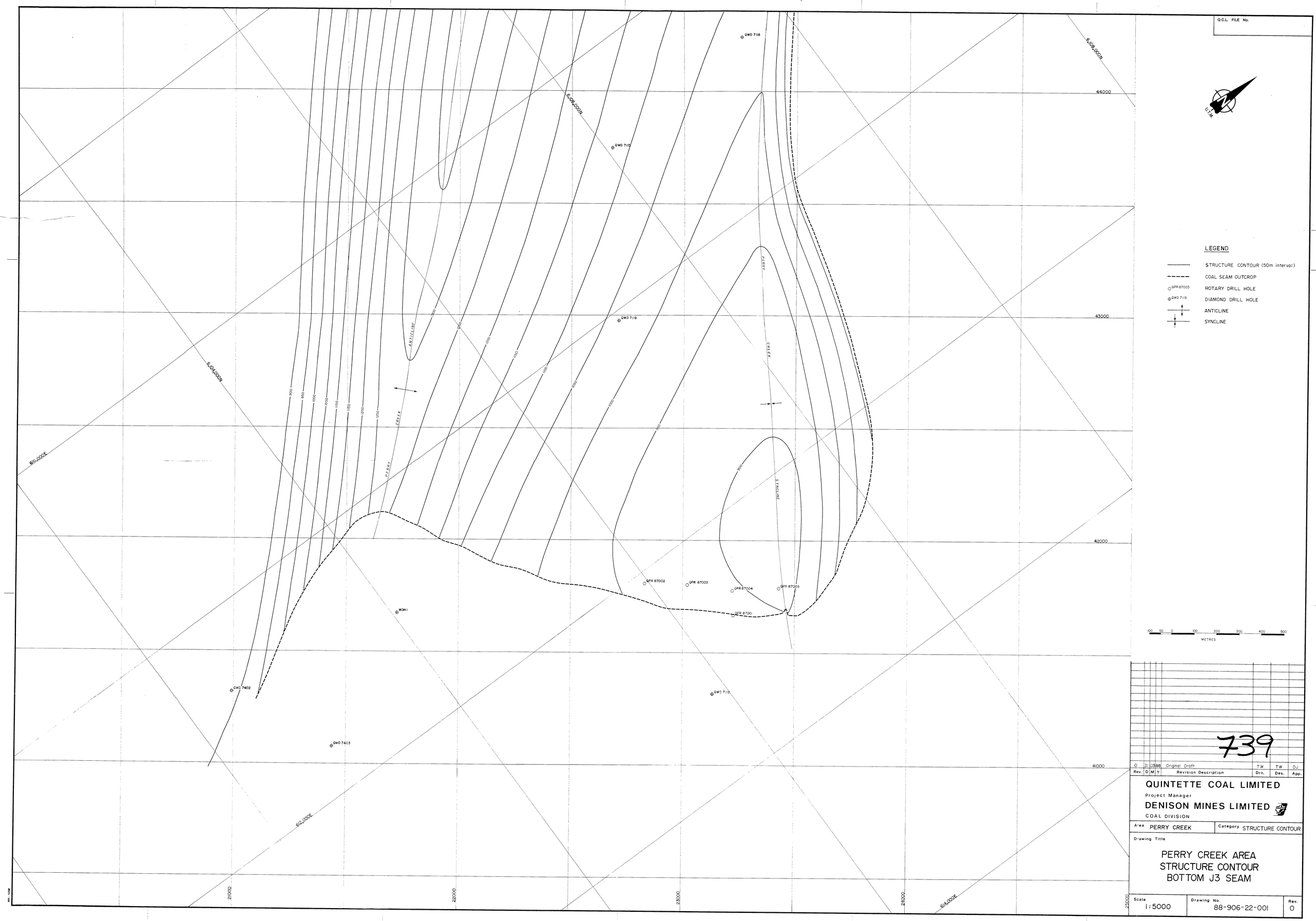
Scale	Drawing No.	Rev.
1 : 2500	88 - 905 - 22 - 004	0

Appendix 1

Section 1.2.3

Perry Creek Area

Q.C.L. FILE No.



LEGEND

- STRUCTURE CONTOUR (50m interval)
- COAL SEAM OUTCROP
- QPR 87003 — ROTARY DRILL HOLE
- QWD 7119 — DIAMOND DRILL HOLE
- ANTICLINE
- SYNCLINE

739

Rev.	D	M	Y	Revision Description	Drn.	Des.	App.
0	31	03	88	Original Draft	T.W	T.W	D.J

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COAL DIVISION

Area: PERRY CREEK | Category: STRUCTURE CONTOUR

Drawing Title

PERRY CREEK AREA STRUCTURE CONTOUR BOTTOM J3 SEAM

Scale	Drawing No.	Rev.
1:5000	88-906-22-001	0

WK-1384

QHD87001
GRIZZLY

COPY 1
QHD001-012
TRANSFER &
GRIZZLY

LOG DEPTH	0150.00	
TRUE DEPTH	0138.96	
TILT	22.88	DG
BEARING	215.62	DG
NORTHING	-043.42	
EASTING	-032.50	

LOG DEPTH	0140.00	
TRUE DEPTH	0129.75	
TILT	22.84	DG
BEARING	215.91	DG
NORTHING	-040.26	
EASTING	-030.24	

LOG DEPTH	0130.00	
TRUE DEPTH	0120.53	
TILT	22.83	DG
BEARING	215.22	DG
NORTHING	-037.11	
EASTING	-027.96	

LOG DEPTH	0120.00	
TRUE DEPTH	0111.31	
TILT	22.83	DG
BEARING	215.58	DG
NORTHING	-033.94	
EASTING	-025.72	

LOG DEPTH	0110.00	
TRUE DEPTH	0102.09	
TILT	22.67	DG
BEARING	213.66	DG
NORTHING	-030.79	
EASTING	-023.46	

LOG DEPTH	0100.00	
TRUE DEPTH	0092.86	
TILT	22.83	DG
BEARING	213.10	DG
NORTHING	-027.58	
EASTING	-021.33	

LOG DEPTH	0090.00	
TRUE DEPTH	0083.64	
TILT	22.84	DG
BEARING	214.16	DG
NORTHING	-024.33	
EASTING	-019.21	

LOG DEPTH	0080.00	
TRUE DEPTH	0074.42	
TILT	22.83	DG
BEARING	213.99	DG
NORTHING	-021.12	
EASTING	-017.03	

LOG DEPTH	0070.00	
TRUE DEPTH	0065.20	
TILT	23.03	DG
BEARING	214.81	DG
NORTHING	-017.90	
EASTING	-014.86	

LOG DEPTH	0060.00	
TRUE DEPTH	0056.00	
TILT	23.12	DG
BEARING	215.64	DG
NORTHING	-014.69	
EASTING	-012.62	

LOG DEPTH	0050.00	
TRUE DEPTH	0046.80	
TILT	23.07	DG
BEARING	215.58	DG
NORTHING	-011.49	
EASTING	-010.33	

LOG DEPTH	0040.00	
TRUE DEPTH	0037.60	
TILT	23.09	DG
BEARING	216.33	DG
NORTHING	-008.31	
EASTING	-008.05	

LOG DEPTH	0030.00	
TRUE DEPTH	0028.40	
TILT	23.15	DG
BEARING	218.28	DG
NORTHING	-005.15	
EASTING	-005.73	

LOG DEPTH	0020.00	
TRUE DEPTH	0019.21	
TILT	22.89	DG
BEARING	237.95	DG
NORTHING	-002.06	
EASTING	-003.29	

LOG DEPTH	0010.00	
TRUE DEPTH	0010.00	
TILT	22.65	DG
BEARING	256.48	DG
NORTHING	+000.00	
EASTING	+000.00	

DEPTH	=	0010.00
TILT	=	22.65 DG
BEARING	=	256.48 DG
DEPTH	=	0015.00
TILT	=	15.23 DG
BEARING	=	219.77 DG
DEPTH	=	0020.00
TILT	=	23.14 DG
BEARING	=	219.43 DG
DEPTH	=	0025.00
TILT	=	23.04 DG
BEARING	=	215.50 DG
DEPTH	=	0030.00
TILT	=	23.16 DG
BEARING	=	217.13 DG
DEPTH	=	0035.00
TILT	=	23.33 DG
BEARING	=	217.48 DG
DEPTH	=	0040.00
TILT	=	23.02 DG
BEARING	=	215.52 DG
DEPTH	=	0045.00
TILT	=	23.34 DG
BEARING	=	213.94 DG
DEPTH	=	0050.00
TILT	=	23.12 DG
BEARING	=	215.64 DG
DEPTH	=	0055.00
TILT	=	22.77 DG
BEARING	=	216.26 DG
DEPTH	=	0060.00
TILT	=	23.12 DG
BEARING	=	215.64 DG
DEPTH	=	0065.00
TILT	=	23.17 DG
BEARING	=	215.24 DG
DEPTH	=	0070.00
TILT	=	22.94 DG
BEARING	=	213.98 DG
DEPTH	=	0075.00
TILT	=	22.75 DG
BEARING	=	215.31 DG
DEPTH	=	0080.00
TILT	=	22.72 DG
BEARING	=	214.01 DG

DEPTH	=	0085.00
TILT	=	22.76 DG
BEARING	=	214.87 DG
DEPTH	=	0090.00
TILT	=	22.97 DG
BEARING	=	214.32 DG
DEPTH	=	0095.00
TILT	=	23.03 DG
BEARING	=	217.93 DG
DEPTH	=	0100.00
TILT	=	22.69 DG
BEARING	=	211.89 DG
DEPTH	=	0105.00
TILT	=	22.65 DG
BEARING	=	215.26 DG
DEPTH	=	0110.00
TILT	=	22.64 DG
BEARING	=	215.43 DG
DEPTH	=	0115.00
TILT	=	23.02 DG
BEARING	=	215.74 DG
DEPTH	=	0120.00
TILT	=	23.02 DG
BEARING	=	215.74 DG
DEPTH	=	0125.00
TILT	=	23.01 DG
BEARING	=	213.75 DG
DEPTH	=	0130.00
TILT	=	22.64 DG
BEARING	=	214.69 DG
DEPTH	=	0135.00
TILT	=	22.65 DG
BEARING	=	215.73 DG
DEPTH	=	0140.00
TILT	=	23.04 DG
BEARING	=	217.12 DG
DEPTH	=	0145.00
TILT	=	22.67 DG
BEARING	=	212.80 DG
DEPTH	=	0150.00
TILT	=	22.72 DG
BEARING	=	214.13 DG
DEPTH	=	0155.00
TILT	=	22.67 DG
BEARING	=	213.95 DG

DATE	280687
JOB NUMBER	0001
LOG LABEL	025.1
MAG 1 MAX	228
MAG 1 MIN	129
MAG 2 MAX	228
MAG 2 MIN	129
MAG 3 MAX	205
MAG 3 MIN	155
L. CELL 1 TILT 1	20
L. CELL 1 CPS 1	233
L. CELL 1 TILT 2	-20
L. CELL 1 CPS 2	126
L. CELL 2 TILT 1	20
L. CELL 2 CPS 1	232
L. CELL 2 TILT 2	-20
L. CELL 2 CPS 2	126
MAG 1 CENTRE	180
MAG 2 CENTRE	180
MAG 3 CENTRE	180
L. CELL 1 CENTRE	181
L. CELL 2 CENTRE	180
MAG DECL	024
JP DEPTH	0010

QHD87001
GRIZZLY

COAL LITHOLOGY LOG

BPB

L.S. DENSITY
GAMMA RAY
CALIPER

DUAL SPACED
L.S. DENSITY

COAL
BOREHOLE
SONDE

SONDE TYPE

SONDE	SONDE No.	CALIBRATION RECORD	LOGGING RECORD
GAMMA RAY	1838	1852	1852
L.S. DENSITY	362	362	362
CALIPER	0063	0063	0063

OPERATOR DATA

	CALIBRATION RECORD	LOGGING RECORD
OPERATOR	Eric	Eric
LOGGING UNIT No.	1	1
LOGGING TRUCK No.	1	1
DATE	07/07/87	07/07/87
TIME	10:00	10:00

739

CURVE DATA

CURVE	CURVE No.	CALIBRATION RECORD	LOGGING RECORD
GAMMA RAY	1	1	1
L.S. DENSITY	2	2	2
CALIPER	3	3	3
	4	4	4
	5	5	5
	6	6	6

SONDE DATA

SONDE	SONDE No.	CALIBRATION RECORD	LOGGING RECORD
GAMMA RAY	1838	1852	1852
L.S. DENSITY	362	362	362
CALIPER	0063	0063	0063

	CALIBRATION RECORD	LOGGING RECORD
DATE	07/07/87	07/07/87
TIME	10:00	10:00

	CALIBRATION RECORD	LOGGING RECORD
THICKNESS (FT.)	0.0	0.0
DENSITY (G/CC)	2.65	2.65
CALIPER (INCHES)	6.00	6.00

	CALIBRATION RECORD	LOGGING RECORD
ATTENUATION	4	4
SPEED	1	1

AREA
COUNTRY Canada

BOREHOLE
CLIENT Quintette Coal

SONDE/CABLE No. 1838/0063

DEPTH CONTROL
1:200

SKID

BOREHOLE DATA

	CALIBRATION RECORD	LOGGING RECORD
DRILLER'S DEPTH	0.00	0.00
LOGGER'S DEPTH	0.00	0.00
BIT SIZE	6.75	6.75
CASING DEPTH	0.00	0.00
CASING SIZE	0.00	0.00
MUD TYPE		
MUD DENSITY		
MUD VISCOSITY		
MUD PH		
MUD RESISTIVITY		
MUD TEMPERATURE		
MUD SOURCE		
RM @ MEAS. TEMP.		
RMF @ MEAS. TEMP.		
RMC @ MEAS. TEMP.		
SOURCE OF RMF & RMC		
RM @ BHT		
TIME SINCE CIRC.		
MAX. REC. TEMP.		
EQUIP. LOCATION		
RECORDED BY		
WITNESSED BY		

BOREHOLE
CLIENT Quintette Coal

@ 0 DEGREES

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT SONDE	EQUIPMENT SOURCE	CALIBRATION	TAPING LOG TAPED	TAPING REC/PRO SPEED	TAPING DIRECT PLAY/REPLAY	PANEL SPLICE	PANEL TC SECS.	PANEL NORM	LOG GOOD	DEPTH(S) FROM	DEPTH(S) TO	DEPTH(S) BOTTOM	SEAM LOG RUN
GAMMA RAY	1838	1852		Y	9	D	9	1			55	159.00	159	
L.S. DENSITY	362	362		Y	9	D	9	1			158	159.00	159	
CALIPER	0063	0063		Y	9	D	9	1			55	159.00	159	

COAL SEAM (TYZ) RAW THICKNESS LOG INTERVALS (refer to stratigraphy log)

FROM	150.0m	133.0m	72.0m	46.0m	
TO	135.0m	116.0m	65.0m	42.0m	
INTERVAL	15.0m	7.0m	10.0m	4.0m	39.0m

INTERVAL TOTAL

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE	DETAIL SCALE	TOG
215	B/R	1:200		
209	P/E	1:200		
231	Vert. COR			

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

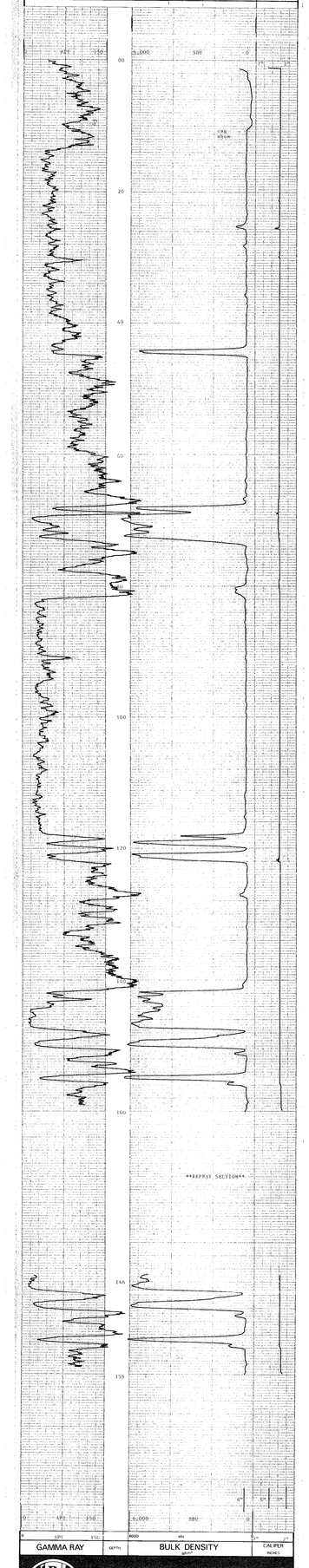
JIG No.	VALUE	@ 2 CHAM	JIG CAL DATE	JIG VALUE	SOU@	@DAT	ms
JIG MARK SHOWN AT ABOVE VALUE =			JIG No.	SPAN	NORM		ms

GAMMA RAY	DEPTH	BULK DENSITY	CALIPER
		g/cm³	INCHES

HOLE SIZE CORRECTION DATA

6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

6 API 150 | 6000 kilo | 0 | 24



6 API 150 | 6,000 500 0 | K* 5* 5*

GAMMA RAY	DEPTH	BULK DENSITY	CALIPER
		g/cm³	INCHES

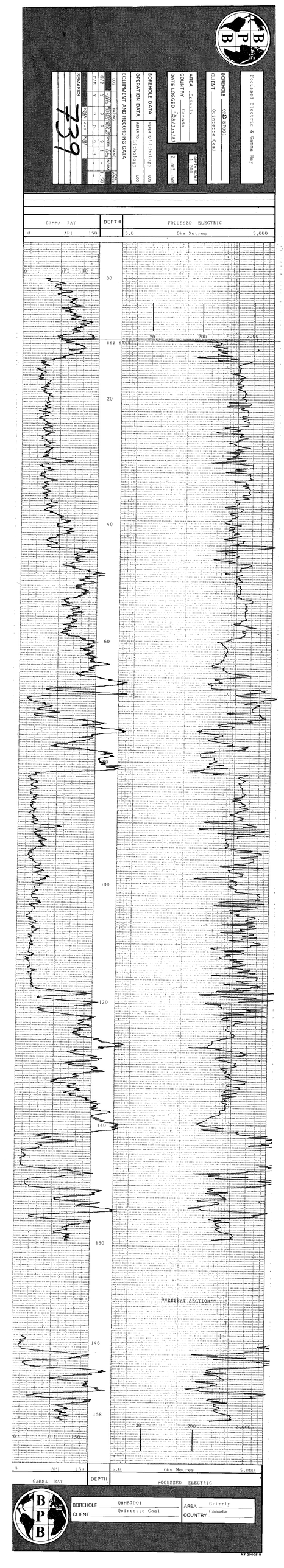
BPB

BOREHOLE QBN 87013 AREA Grizzly

CLIENT Quintette Coal COUNTRY Canada

COAL LITHOLOGY LOG

BP 4105A1 ●


BPB
Focussed Electric & Gamma Ray
BOREHOLE QHM87001
CLIENT Quintette Coal
AREA Grizzly
COUNTRY Canada
DATE LOGGED 25/Jun/87
RUN NUMBER 1
DEPTH-DRILLER 739
DEPTH-LOGGER 738
BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
REMARKS
739
GAMMA RAY
DEPTH
FOCUSSED ELECTRIC
0 API 150
5.0 Ohm Metres 5,000
csg shoe
REPEAT SECTION
20
200
2000
00
20
40
60
80
100
120
140
160
146
158

MY 2000818

Neutron/Neutron & Gamma Ray

BOREHOLE GRR7001
CLIENT Quintette Coal

AREA Grizzly
COUNTRY Canada
DATE LOGGED 28/Jan/82

SCALE 1:200

1 of 2 runs

BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA

	CCL	NEUTRON	GAMMA RAY
TAPING			
PANEL			
DETECTOR			
SOURCE			
HOUSING			
SIZE			
TYPE			

REMARKS

739

GAMMA RAY	DEPTH	NEUTRON/NEUTRON
0 API 150		0 SNU 800

SANDSTONE POROSITY

0 50% 40% 30% 25% 250 20% 15% 10% 500

4"
6"
8"

5%

MY (3) A58431 R

0 API 150 | 0 SNU 800

00
20
40
60
100
140
160
166

**SCALE CHANGE

**REPEAT SECTION*

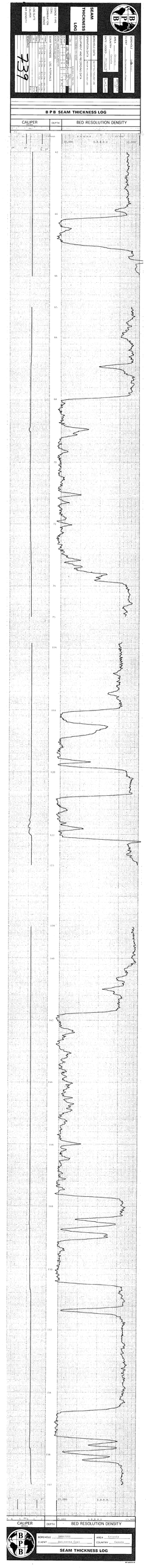
0 API 150 | 0 SNU 500

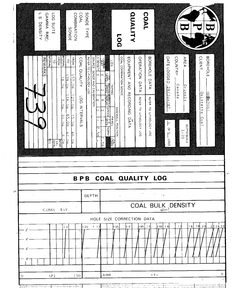
GAMMA RAY	DEPTH	NEUTRON/NEUTRON

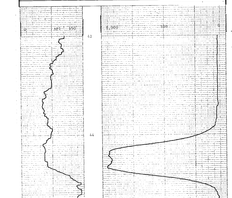
BOREHOLE GRR7001
CLIENT Quintette Coal

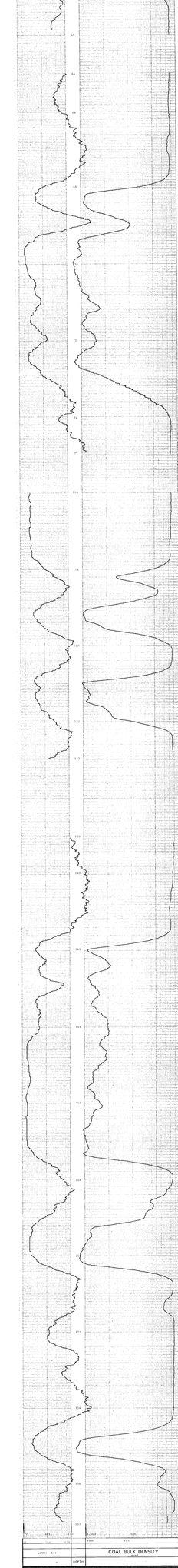
AREA Grizzly
COUNTRY Canada

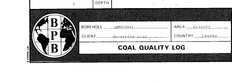
MY 3000818


B P B
SEAM THICKNESS LOG
CALIPER
DEPTH
BED RESOLUTION DENSITY
BOREHOLE
CLIENT
AREA
COUNTY
Toronto
SEAM THICKNESS LOG
239


BPB
COAL QUALITY LOG
COMPANY
WELL
FIELD
COUNTY
STATE
LOCATION
SECTION
TOWNSHIP
RANGE
PERMANENT DATUM
ELEV.
LOG MEASURED FROM
DRILLING MEASURED FROM
DATE
RUN NO.
DEPTH DRILLER
DEPTH LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
CASING DRILLER
CASING LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENS.
VISC.
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE OF RMF
SOURCE OF RMC
RM @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. NO. LOCATION
RECORDED BY
WITNESSED BY
739


BPB COAL QUALITY LOG
COAL BULK DENSITY
HOLE SIZE CORRECTION DATA
DEPTH
GAMMA RAY
SPONTANEOUS POTENTIAL
COAL BULK DENSITY


COAL BULK DENSITY
DEPTH


COAL BULK DENSITY
DEPTH
COMPANY
WELL
FIELD
COUNTY
STATE
LOCATION
SECTION
TOWNSHIP
RANGE
PERMANENT DATUM
ELEV.
LOG MEASURED FROM
DRILLING MEASURED FROM
COAL QUALITY LOG

QHD87002.
GRIZZLY

LOG DEPTH 0090.00
TRUE DEPTH 0089.97
TILT 2.04 DG
BEARING 170.99 DG
NORTHING -001.33
EASTING +000.51

LOG DEPTH 0080.00
TRUE DEPTH 0079.98
TILT 2.11 DG
BEARING 173.54 DG
NORTHING -000.97
EASTING +000.45

LOG DEPTH 0070.00
TRUE DEPTH 0069.99
TILT 1.87 DG
BEARING 158.99 DG
NORTHING -000.61
EASTING +000.41

LOG DEPTH 0060.00
TRUE DEPTH 0060.00
TILT 1.79 DG
BEARING 154.87 DG
NORTHING -000.30
EASTING +000.29

LOG DEPTH 0050.00
TRUE DEPTH 0050.00
TILT 1.55 DG
BEARING 144.77 DG
NORTHING -000.02
EASTING +000.16

LOG DEPTH 0040.00
TRUE DEPTH 0040.00
TILT 1.02 DG
BEARING 87.71 DG
NORTHING +000.19
EASTING +000.00

LOG DEPTH 0030.00
TRUE DEPTH 0030.00
TILT 1.39 DG
BEARING 326.62 DG
NORTHING +000.19
EASTING -000.16

LOG DEPTH 0020.00
TRUE DEPTH 0020.00
TILT 2.13 DG
BEARING 249.35 DG
NORTHING -000.01
EASTING -000.03

LOG DEPTH 0019.00
TRUE DEPTH 0019.00
TILT 2.13 DG
BEARING 242.94 DG
NORTHING +000.00
EASTING +000.00

DEPTH = 0020.00
TILT = 2.13 DG
BEARING = 255.76 DG

DEPTH = 0030.00
TILT = .65 DG
BEARING = 37.48 DG

DEPTH = 0040.00
TILT = 1.39 DG
BEARING = 137.94 DG

DEPTH = 0050.00
TILT = 1.71 DG
BEARING = 151.60 DG

DEPTH = 0060.00
TILT = 1.87 DG
BEARING = 158.14 DG

DEPTH = 0070.00
TILT = 1.87 DG
BEARING = 159.83 DG

DEPTH = 0080.00
TILT = 2.36 DG
BEARING = 187.24 DG

DEPTH = 0090.00
TILT = 1.71 DG
BEARING = 154.73 DG

DATE 010787
JOB NUMBER 0002
LOG LABEL 025.0
MAG 1 MAX 229
MAG 1 MIN 134
MAG 2 MAX 230
MAG 2 MIN 131
MAG 3 MAX 205
MAG 3 MIN 135
L. CELL 1 TILT 1 08
L. CELL 1 CPS 1 258
L. CELL 1 TILT 2 -08
L. CELL 1 CPS 2 181
L. CELL 2 TILT 1 08
L. CELL 2 CPS 1 258
L. CELL 2 TILT 2 -08
L. CELL 2 CPS 2 181

MAG 1 CENTRE 180
MAG 2 CENTRE 180
MAG 3 CENTRE 180
L. CELL 1 CENTRE 220
L. CELL 2 CENTRE 220

MAG DECL 024
STOP DEPTH 0019

QHD 87002
GRIZZLY

739

BPB

COAL LITHOLOGY LOG

LOG SUITE
GAMMA RAY
GAMMA RAY BACKSCATTER DENSITY
CALIPER

SONDE TYPE
COAL COMBINATION SONDE

BOREHOLE QBD 87002
CLIENT Quinsterre Coal Ltd.

AREA Grizzly
COUNTRY Canada
DATE LOGGED 01/Jul/87

DEPTH SCALE 1:200

WITNESS	
RECORDED BY	Cakmakoglu
RUN NO.	One
DEPTH DRILLER	98.0m
DEPTH LOGGER	97.6m
BTM LOG INTERVAL	97.6m
TOP LOG INTERVAL	83.0m
CASING TYPE	4"
CASING SIZE	10.6
CASING WGHT	
BIT SIZE	10.6
TYPE FLUID IN HOLE	Air
DENSITY	
VISCOSITY	
PH	
FLUID LOSS	
SOURCE OF SAMPLE	
RM @ MEAS TEMP	
RMF @ MEAS TEMP	
RMC @ MEAS TEMP	
SOURCE OF RMF & RMC	
RM @ BHT	
TIME SINCE CIRC.	
MAX REC. TEMP.	23.0hrs
EQUIP. LOCATION	Bhp Minerals Canada Ltd.
RECORDED BY	Cakmakoglu
WITNESS	

OPERATION DATA	
RIG TIME	23.0hrs
FIRST READING	97.6m
LAST READING	83.0m
MATRIX LOGGED	Coal/Shale
BULK DENSITY	1.40 gm/cc
GAMMA RAY	API units
NEUTRON	
CALIPER	23.0hrs Metres 9.C

BOREHOLE DATA	
PERMANENT DATUM	G.L.
ELEVATION OF P.D.	0.0m
LOG MEASURED FROM	G.L.
DEPTH DRILLER	98.0
DEPTH LOGGER	97.6
BTM LOG INTERVAL	97.6
TOP LOG INTERVAL	83.0
CASING SIZE	4"
CASING WGHT	10.6
CASING SHOE	97.6
BIT SIZE	10.6
DEPTH REACHED	98.0
RECORDED BY	Cakmakoglu
WITNESS	

739

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT: SONDE	EQUIPMENT: SOURCE	CALIBRATOR	TAPING: LOG TAPED	TAPING: RECORD SPEED	TAPING: DIRECT/REPLAY	PANEL: SPEED	PANEL: TC SECS	PANEL: NORM	CAL COEFF	DEPTHS: FROM	DEPTHS: TO	DEPTHS: INTERVAL	SEAM LOG RUN
GAMMA RAY	183B	5852												
BACKSCATTER DENSITY			367	Y	9	D	9	1	-		1.5	97	00	97
CALIPER	SIDEWALL POSITION		1041	Y	9	D	9	1.5	-		97	00	97	
			7"...4"	Y	9	D	9	3	-		97	00	97	

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

			INTERVAL TOTAL
FROM	95.0m	68.0m	23.0m
TO	81.0m	61.0m	15.0m
INTERVAL	6.0m	7.0m	8.0m
			21.0m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE	LOG SCALE	DETAIL LOG
200	FF	1:200		
215	N/N	1:200		
222	Vert			

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

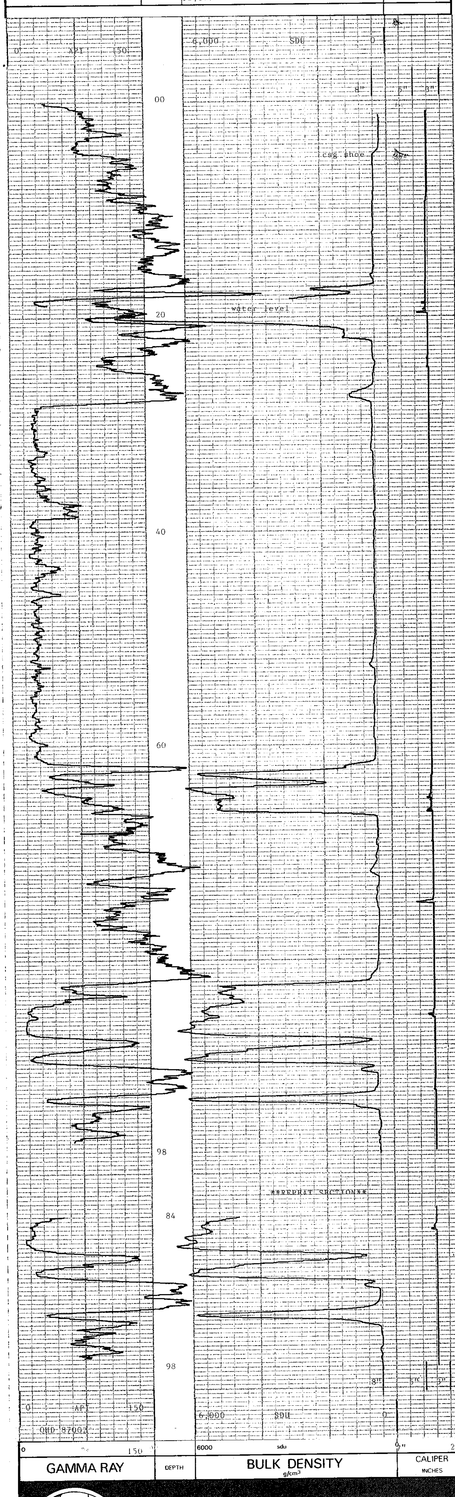
JIG No	VALUE @ 2 DIAM	JIG CAL DATE	JIG VALUE	SCALE	g/cm³	m/s	cps
JIG MARK SHOWN AT ABOVE VALUE -		JIG No	SPAN	NORM	SDU*	m/s	cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

HOLE SIZE CORRECTION DATA

1 1.25 1.3 1.35 1.4 1.45 1.5 1.55 1.6 1.7 1.8 1.9 2.0 2.2 2.5 3.0

0 MPI 150 | 6,000 sdu 0 | 0" 2"



GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

BPB

BOREHOLE QBD 87002 AREA Grizzly
CLIENT Quinsterre Coal Ltd. COUNTRY Canada

COAL LITHOLOGY LOG

MY A5028

BPB

BOREHOLE QHD 87002

CLIENT Quinterte Coal Ltd.

AREA Grizzly

COUNTRY Canada

DATE LOGGED 01/Jul/87

No. OF RUNS 1

SCALE 1:200

Neutron/neutron & Gamma Ray

BOREHOLE DATA

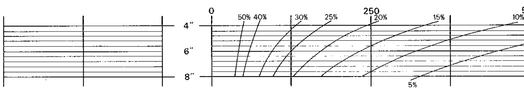
OPERATION DATA

EQUIPMENT AND RECORDING DATA

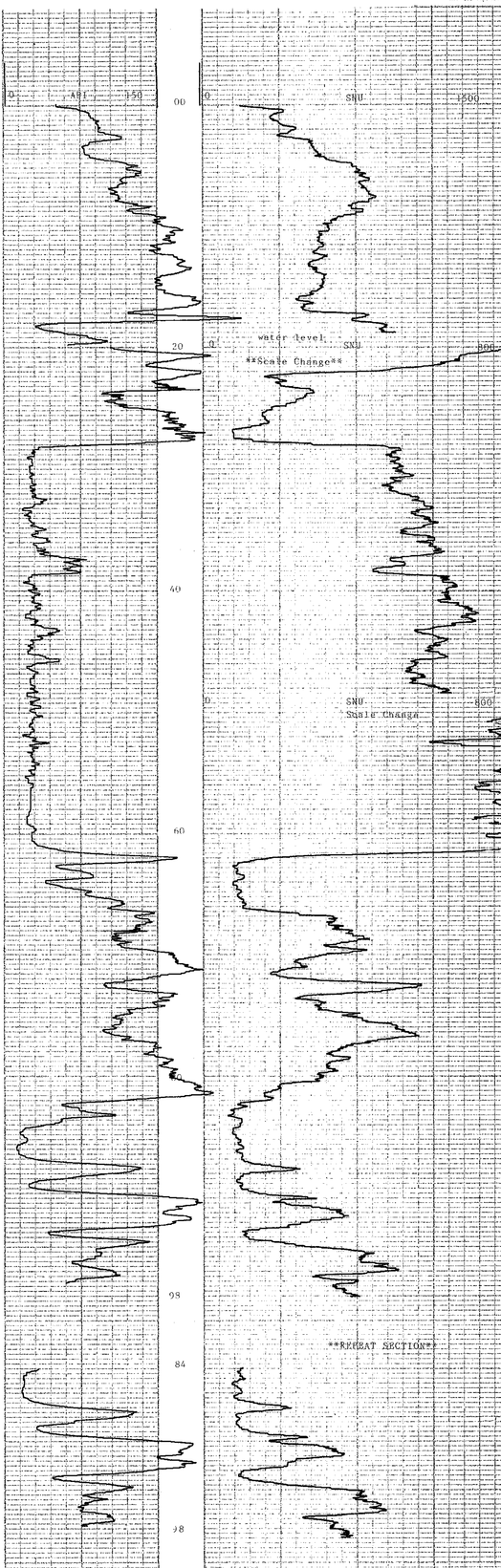
REMARKS

GAMMA RAY		DEPTH	NEUTRON/NEUTRON
0 API 150			0 SNU 1500

SANDSTONE POROSITY



MY (2) A58451 R



0 API 150	DEPTH	0 SNU 500

BPB

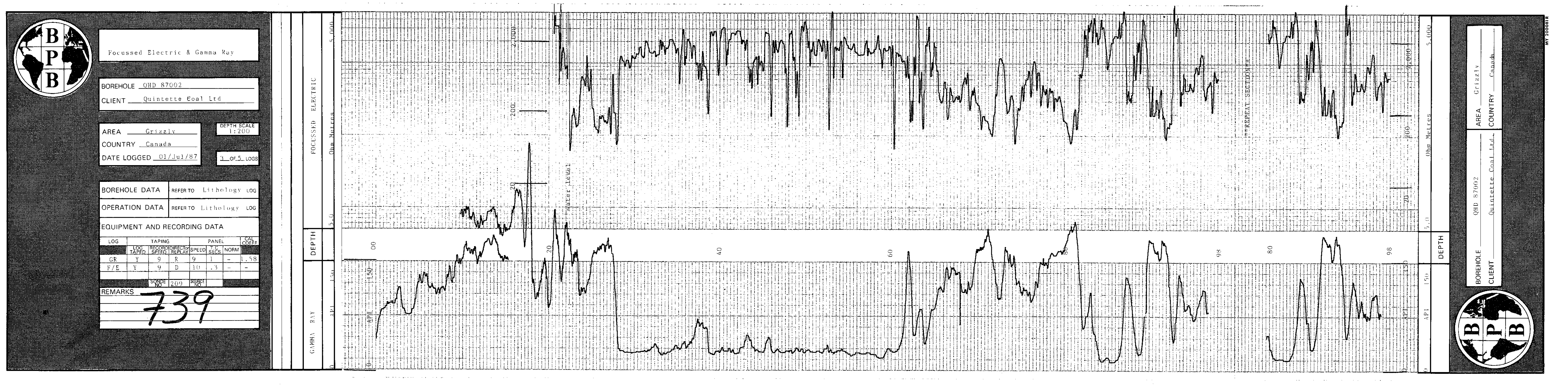
BOREHOLE QHD 87002

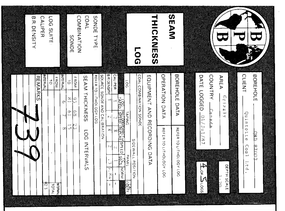
CLIENT Quinterte Coal Ltd.

AREA Grizzly

COUNTRY Canada

MY 200081R


Focussed Electric & Gamma Ray
BOREHOLE QHD 87002
CLIENT Quintette Coal Ltd
AREA Grizzly
COUNTRY Canada
DATE LOGGED 01/Jul/87
DEPTH SCALE 1:200
4 OF 5 LOGS
BOREHOLE DATA REFER TO Lithology LOG
OPERATION DATA REFER TO Lithology LOG
EQUIPMENT AND RECORDING DATA
LOG TAPING PANEL CAL COEFF
LOG TAPED RECORDING SPEED DIRECTION REPLAY SPEED SENS NORM
GR Y 9 R 9 1 - 1.58
F/E Y 9 D 10 .3 - -
SONDE NO 209 SHEET NO
REMARKS 739
DEPTH
FOCUSSED ELECTRIC
Ohm Metres
5,000
2,000
200
20
2
GAMMA RAY
API
150
0
DEPTH
Ohm Metres
5,000
2,000
200
20
2
API
150
0
REPEAT SECTION
BOREHOLE QHD 87002
CLIENT Quintette Coal Ltd.
AREA Grizzly
COUNTRY Canada
MT 200387E



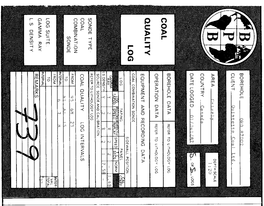
B P B SEAM THICKNESS LOG

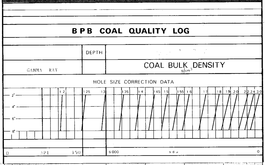
CALIPER (INCH)	DEPTH	BED RESOLUTION DENSITY
6 5 4 3		2.1 2.0 1.9 1.8
	14,900	14,900
	15	
	16	
	17	
	18	
	72	
	73	
	61	
	62	
	64	
	65	
	66	
	81	
	82	
	84	
	86	
	88	
	90	
	92	
	94	
	95	
	98	
	15,000	15,000

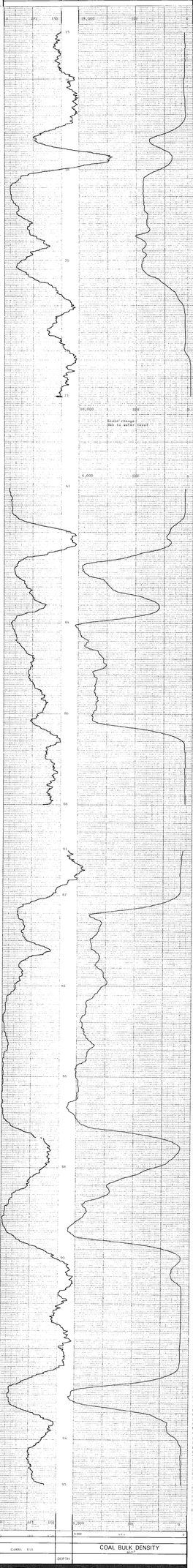
CALIPER (INCH) | DEPTH | BED RESOLUTION DENSITY

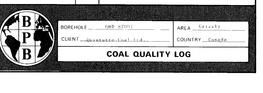
BOREHOLE GRD 17912 AREA Grizzly
CLIENT Oceanville Coal Ltd. COUNTRY Fantasy

SEAM THICKNESS LOG


BPB
COAL QUALITY LOG
GAMMA RAY
NEUTRON
DENSITY
SONIC
RESISTIVITY
OTHER TOOLS
COAL QUALITY LOG
BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
739


BPB COAL QUALITY LOG
DEPTH
COAL BULK DENSITY
GAMMA RAY
HOLE SIZE CORRECTION DATA


API
Scale change
due to water level


COAL BULK DENSITY
DEPTH
BOREHOLE
CLIENT
AREA
COUNTRY
COAL QUALITY LOG

DIPMETER ANALYSIS

7389

CLIENT___ QUINTETTE COAL LTD.
BOREHOLE_ QHD 87002
AREA_____ GRIZZLY PIT
COUNTRY__ CANADA

DATE LOGGED.....01-JUL-87
DATE PROCESSED..04-AUG-87

9377

COMMENTS.....

DEMONSTRATION LOG
××××××××××××××××
××××××××××××××××

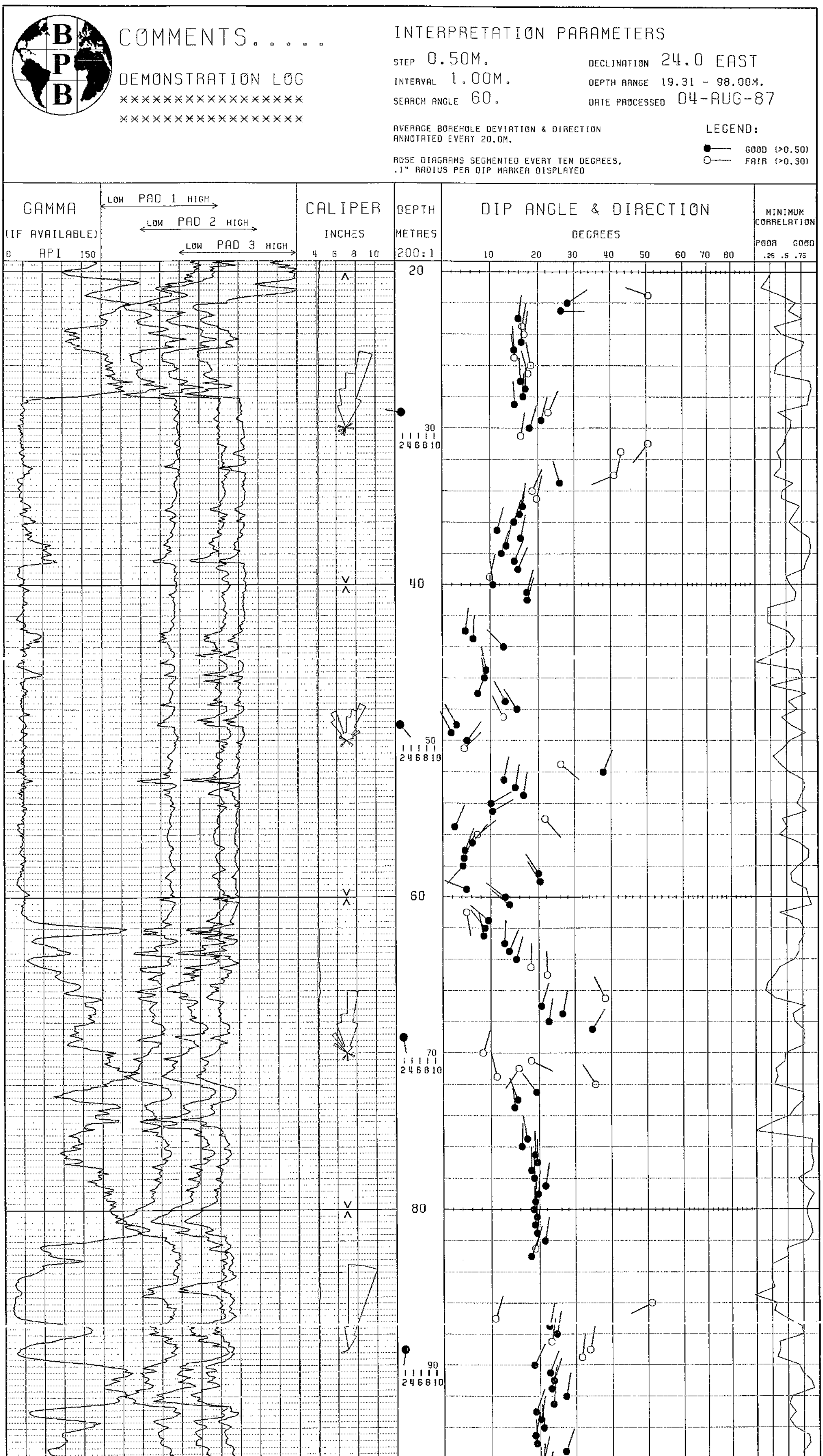
INTERPRETATION PARAMETERS

STEP 0.50M.
INTERVAL 1.00M.
SEARCH ANGLE 60.
DECLINATION 24.0 EAST
DEPTH RANGE 19.31 - 98.00M.
DATE PROCESSED 04-AUG-87

AVERAGE BOREHOLE DEVIATION & DIRECTION ANNOTATED EVERY 20.0M.

ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES, .1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:
GOOD (>0.50)
FAIR (>0.30)



9378

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739

BPB DIPMETER ANALYSIS
INTERPRETATION NOTES

1. All plots are correct to the resolution of the plotter used, ie. one hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background
Plots exceeding eight metres in length will be split into multiples thereof, however there is no data loss associated with this subdivision.

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

3. The borehole tilt and azimuth displayed on the plot are the average values over the whole major division.

4. The replay scale for pads 1, 2 & 3 are designed to give the maximum visual effect over the plotted interval. Replaying shorter sections of the curve will enhance this display.

5. The grid over which the computed dip information is displayed is locally linear. That is to say it is linear between Ø & 1Ø, degrees,1Ø & 2Ø,2Ø & 3Ø etc.

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

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

The following information is a listing of ALL the output from BPB's dipmeter analysis. The data is subdivided into three consecutive sets of data readings, being read from left to right. Below is a full description of each data item:

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

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

968

QHD 87ØØ2 Magnetic declination 24.ØØ degrees East of North Ø4-AUG-87
********* Correlation step Ø.5Ø metres ,interval 1.ØØ metres Search angle 6Ø. degrees PAGE 1

DEPTH metres	CAL. ins.	BOREHOLE TILT	BOREHOLE AZI	FORMATION DIP	FORMATION AZI	MIN. COR.	DEPTH metres	CAL. ins.	BOREHOLE TILT	BOREHOLE AZI	FORMATION DIP	FORMATION AZI	MIN. COR.	DEPTH metres	CAL. ins.	BOREHOLE TILT	BOREHOLE AZI	FORMATION DIP	FORMATION AZI	MIN. COR.
2Ø.ØØ	4.3	2.1	251.	19.4	11.	Ø.28	2Ø.5Ø	4.2	2.Ø	257.	16.Ø	11.	Ø.2Ø	21.ØØ	4.2	1.9	264.	17.4	325.	Ø.11
21.6Ø	4.2	1.8	271.	5Ø.6	289.	Ø.42	22.ØØ	4.2	1.6	278.	29.2	56.	Ø.66	22.5Ø	4.2	1.5	283.	27.2	92.	Ø.55
23.ØØ	4.2	1.4	288.	16.Ø	7.	Ø.76	23.5Ø	4.2	1.2	295.	16.7	9.	Ø.32	24.ØØ	4.2	1.1	3ØØ.	17.2	8.	Ø.43
24.5Ø	4.1	1.Ø	3Ø4.	16.6	359.	Ø.79	25.ØØ	4.1	Ø.9	31Ø.	15.1	355.	Ø.74	25.5Ø	4.2	Ø.8	314.	15.1	353.	Ø.47
26.ØØ	4.2	Ø.7	32Ø.	18.5	349.	Ø.34	26.5Ø	4.2	Ø.6	33Ø.	17.9	344.	Ø.32	27.ØØ	4.2	Ø.5	341.	16.4	357.	Ø.89
27.5Ø	4.2	Ø.4	352.	17.4	1.	Ø.91	28.ØØ	4.2	Ø.4	5.	16.9	1.	Ø.87	28.5Ø	4.1	Ø.3	19.	15.1	358.	Ø.85
29.ØØ	4.1	Ø.3	32.	23.2	24.	Ø.38	29.5Ø	4.1	Ø.3	45.	2Ø.9	15.	Ø.58	3Ø.ØØ	4.1	Ø.3	58.	18.2	17.	Ø.57
3Ø.5Ø	4.1	Ø.3	75.	16.4	9.	Ø.49	31.ØØ	4.1	Ø.4	85.	5Ø.5	218.	Ø.47	31.5Ø	4.1	Ø.4	91.	43.4	192.	Ø.36
33.ØØ	4.1	Ø.7	117.	41.1	247.	Ø.31	33.5Ø	4.1	Ø.8	121.	26.7	343.	Ø.62	34.ØØ	4.1	Ø.9	123.	18.7	24.	Ø.44
34.5Ø	4.1	Ø.9	127.	19.7	12.	Ø.43	35.ØØ	4.1	Ø.9	128.	16.8	7.	Ø.72	35.5Ø	4.1	1.Ø	13Ø.	16.1	11.	Ø.62
36.ØØ	4.1	1.Ø	133.	15.Ø	18.	Ø.55	36.5Ø	4.1	1.1	136.	11.4	16.	Ø.69	37.ØØ	4.1	1.1	137.	16.4	11.	Ø.87
37.5Ø	4.1	1.2	139.	13.3	13.	Ø.89	38.ØØ	4.1	1.2	14Ø.	12.3	17.	Ø.88	38.5Ø	4.1	1.2	14Ø.	15.Ø	23.	Ø.82
39.ØØ	4.1	1.3	141.	15.8	23.	Ø.79	39.5Ø	4.1	1.3	143.	9.9	13.	Ø.5Ø	4Ø.ØØ	4.1	1.3	143.	1Ø.6	354.	Ø.56
4Ø.5Ø	4.1	1.3	144.	17.6	15.	Ø.66	41.ØØ	4.1	1.3	145.	17.7	16.	Ø.64	41.5Ø	4.1	1.3	146.	5Ø.5	83.	Ø.21
43.ØØ	4.1	1.4	149.	4.8	7.	Ø.52	43.5Ø	4.1	1.4	149.	6.4	3.	Ø.63	44.ØØ	4.1	1.4	15Ø.	12.7	316.	Ø.56
44.5Ø	4.1	1.4	151.	13.9	3Ø9.	Ø.28	45.ØØ	4.1	1.5	153.	37.4	217.	Ø.ØZ	45.5Ø	4.1	1.5	154.	9.1	348.	Ø.7Ø
46.ØØ	4.1	1.5	154.	8.8	352.	Ø.76	46.5Ø	4.1	1.5	155.	7.3	83.	Ø.26	47.ØØ	4.1	1.5	157.	7.4	22.	Ø.81
47.5Ø	4.1	1.5	157.	13.1	331.	Ø.53	48.ØØ	4.1	1.5	157.	15.5	327.	Ø.68	48.5Ø	4.1	1.5	16Ø.	12.7	332.	Ø.43
49.ØØ	4.1	1.6	159.	2.9	33Ø.	Ø.57	49.5Ø	4.1	1.6	159.	1.9	332.	Ø.8Ø	5Ø.ØØ	4.1	1.6	16Ø.	5.1	37.	Ø.55
5Ø.5Ø	4.1	1.7	159.	4.6	46.	Ø.44	51.ØØ	4.1	1.7	16Ø.	28.4	125.	Ø.29	51.5Ø	4.1	1.7	161.	26.9	129.	Ø.4Ø
52.ØØ	4.1	1.7	162.	38.9	23.	Ø.54	52.5Ø	4.1	1.7	163.	12.7	12.	Ø.77	53.ØØ	4.1	1.8	163.	15.1	1Ø.	Ø.79
53.5Ø	4.1	1.8	164.	16.8	9.	Ø.72	54.ØØ	4.1	1.7	164.	1Ø.1	6Ø.	Ø.67	54.5Ø	4.1	1.8	165.	1Ø.4	6Ø.	Ø.81
55.ØØ	4.1	1.8	165.	21.9	14Ø.	Ø.43	55.5Ø	4.1	1.8	165.	2.5	24.	Ø.51	56.ØØ	4.1	1.8	166.	7.3	52.	Ø.38
56.5Ø	4.1	1.8	167.	6.2	39.	Ø.69	57.ØØ	4.1	1.8	167.	4.6	22.	Ø.85	57.5Ø	4.1	1.8	168.	4.5	23.	Ø.85
58.ØØ	4.1	1.8	168.	4.2	221.	Ø.68	58.5Ø	4.1	1.9	169.	19.9	326.	Ø.56	59.ØØ	4.1	1.8	17Ø.	2Ø.3	329.	Ø.58
59.5Ø	4.1	1.9	17Ø.	5.Ø	292.	Ø.82	6Ø.ØØ	4.1	1.9	171.	13.Ø	3Ø7.	Ø.84	6Ø.5Ø	4.1	1.9	172.	13.9	3Ø9.	Ø.89
61.ØØ	4.1	1.9	172.	5.Ø	17Ø.	Ø.38	61.5Ø	4.1	1.9	172.	9.5	31Ø.	Ø.7Ø	62.ØØ	4.1	1.9	172.	8.8	322.	Ø.77
62.5Ø	4.1	1.9	173.	8.5	348.	Ø.77	63.ØØ	4.1	1.9	172.	12.8	3.	Ø.69	63.5Ø	4.1	1.9	171.	13.8	22.	Ø.7Ø
64.ØØ	4.1	1.9	172.	15.3	16.	Ø.62	64.5Ø	4.1	1.9	171.	18.2	1.	Ø.39	65.ØØ	4.2	1.9	169.	22.5	358.	Ø.3Ø
65.5Ø	4.2	1.9	168.	17.6	29.	Ø.19	66.ØØ	4.2	1.9	168.	55.3	336.	Ø.15	66.5Ø	4.1	1.9	169.	39.3	332.	Ø.32
67.ØØ	4.1	1.9	169.	2Ø.7	17.	Ø.79	67.5Ø	4.1	1.9	168.	27.3	11.	Ø.59	68.ØØ	4.1	1.9	168.	23.1	9.	Ø.63
68.5Ø	4.1	1.9	169.	35.3	31.	Ø.77	7Ø.ØØ	4.1	1.9	17Ø.	8.3	17.	Ø.47	7Ø.5Ø	4.1	1.9	171.	18.3	114.	Ø.46
71.ØØ	4.1	1.9	172.	15.7	214.	Ø.32	71.5Ø	4.1	1.9	173.	11.2	345.	Ø.35	72.ØØ	4.1	2.Ø	174.	36.3	327.	Ø.3Ø
72.5Ø	4.1	2.Ø	174.	19.4	323.	Ø.76	73.ØØ	4.1	2.Ø	175.	15.5	34Ø.	Ø.76	73.5Ø	4.1	2.Ø	177.	14.9	353.	Ø.63
75.ØØ	4.1	2.1	183.	18.6	348.	-Ø.Ø1	75.5Ø	4.1	2.1	185.	17.4	35Ø.	Ø.9Ø	76.ØØ	4.1	2.1	186.	16.3	2.	Ø.89
76.5Ø	4.1	2.1	187.	19.1	36Ø.	Ø.89	77.ØØ	4.Ø	2.1	187.	19.5	Ø.	Ø.91	77.5Ø	4.1	2.1	188.	18.3	358.	Ø.88
78.ØØ	4.1	2.1	188.	18.8	359.	Ø.67	78.5Ø	4.1	2.1	188.	21.8	9.	Ø.77	79.ØØ	4.1	2.1	188.	19.7	4.	Ø.92
79.5Ø	4.1	2.1	188.	19.1	1.	Ø.84	8Ø.ØØ	4.1	2.1	188.	18.8	1.	Ø.8Ø	8Ø.5Ø	4.1	2.1	189.	19.4	359.	Ø.83
81.ØØ	4.1	2.1	188.	19.Ø	4.	Ø.87	81.5Ø	4.1	2.1	188.	19.4	6.	Ø.9Ø	82.ØØ	4.1	2.1	188.	21.6	9.	Ø.82
82.5Ø	4.1	2.1	186.	19.1	15.	Ø.49	83.ØØ	4.1	2.1	185.	18.2	2Ø.	Ø.51	83.5Ø	4.1	2.Ø	184.	2Ø.8	12.	Ø.25
84.ØØ	4.1	2.Ø	183.	18.7	347.	Ø.24	85.ØØ	4.1	2.Ø	181.	18.2	29.	Ø.29	85.5Ø	4.1	2.Ø	179.	1Ø.9	3.	-Ø.ØZ
86.ØØ	4.1	2.Ø	176.	51.1	243.	Ø.32	86.5Ø	4.Ø	2.Ø	175.	67.4	183.	Ø.28	87.ØØ	4.1	2.Ø	174.	1Ø.8	17.	Ø.48
87.5Ø	4.1	2.Ø	173.	23.Ø	11.	Ø.71	88.ØØ	4.1	1.9	171.	25.2	1Ø.	Ø.75	88.5Ø	4.1	1.9	169.	23.6	9.	Ø.37
89.ØØ	4.Ø	1.8	166.	34.4	11.	Ø.37	89.5Ø	4.Ø	1.8	162.	31.7	7.	Ø.33	9Ø.ØØ	4.Ø	1.7	16Ø.	18.8	26.	Ø.67
9Ø.5Ø	4.Ø	1.7	159.	23.Ø	21.	Ø.74	91.ØØ	4.Ø	1.6	157.	24.2	18.	Ø.87	91.5Ø	4.Ø	1.5	155.	23.5	13.	Ø.91
92.ØØ	4.Ø	1.5	151.	28.1	9.	Ø.56	92.5Ø	4.1	1.4	149.	24.1	5.	Ø.52	93.ØØ	4.1	1.2	149.	19.1	19.	Ø.62
93.5Ø	4.1	1.Ø	146.	2Ø.2	9.	Ø.52	94.ØØ	4.Ø	Ø.8	147.	21.Ø	356.	Ø.61	94.5Ø	4.Ø	Ø.7	155.	18.9	11.	Ø.83
95.ØØ	4.Ø	Ø.5	17Ø.	19.3	357.	Ø.85	95.5Ø	4.Ø	Ø.5	19Ø.	27.9	2Ø.	Ø.73	96.ØØ	4.Ø	Ø.6	2Ø7.	21.Ø	13.	Ø.75
96.5Ø	4.Ø	Ø.8	215.	21.Ø	2.	Ø.71	97.ØØ	4.Ø	Ø.9	218.	22.6	8.	Ø.83							

966

QHD87003
GRIZZLY

LOG DEPTH	0170.00	
TRUE DEPTH	0155.14	
TILT	25.30	DG
BEARING	34.79	DG
NORTHING	+056.59	
EASTING	+034.90	

LOG DEPTH	0160.00	
TRUE DEPTH	0146.10	
TILT	25.63	DG
BEARING	34.61	DG
NORTHING	+053.08	
EASTING	+032.46	

LOG DEPTH	0150.00	
TRUE DEPTH	0137.08	
TILT	25.69	DG
BEARING	34.55	DG
NORTHING	+049.52	
EASTING	+030.01	

LOG DEPTH	0140.00	
TRUE DEPTH	0128.07	
TILT	25.47	DG
BEARING	34.46	DG
NORTHING	+045.95	
EASTING	+027.55	

LOG DEPTH	0130.00	
TRUE DEPTH	0119.04	
TILT	25.25	DG
BEARING	35.00	DG
NORTHING	+042.40	
EASTING	+025.11	

LOG DEPTH	0120.00	
TRUE DEPTH	0110.00	
TILT	25.12	DG
BEARING	35.42	DG
NORTHING	+038.91	
EASTING	+022.66	

LOG DEPTH	0110.00	
TRUE DEPTH	0100.95	
TILT	24.73	DG
BEARING	34.31	DG
NORTHING	+035.45	
EASTING	+020.20	

LOG DEPTH	0100.00	
TRUE DEPTH	0091.87	
TILT	24.35	DG
BEARING	34.16	DG
NORTHING	+031.99	
EASTING	+017.84	

LOG DEPTH	0090.00	
TRUE DEPTH	0082.76	
TILT	24.15	DG
BEARING	33.54	DG
NORTHING	+028.58	
EASTING	+015.53	

LOG DEPTH	0080.00	
TRUE DEPTH	0073.64	
TILT	23.97	DG
BEARING	32.80	DG
NORTHING	+025.17	
EASTING	+013.27	

LOG DEPTH	0070.00	
TRUE DEPTH	0064.50	
TILT	23.79	DG
BEARING	32.56	DG
NORTHING	+021.75	
EASTING	+011.07	

LOG DEPTH	0060.00	
TRUE DEPTH	0055.35	
TILT	23.78	DG
BEARING	32.15	DG
NORTHING	+018.35	
EASTING	+008.89	

LOG DEPTH	0050.00	
TRUE DEPTH	0046.20	
TILT	23.96	DG
BEARING	31.88	DG
NORTHING	+014.94	
EASTING	+006.75	

LOG DEPTH	0040.00	
TRUE DEPTH	0037.06	
TILT	24.07	DG
BEARING	31.01	DG
NORTHING	+011.49	
EASTING	+004.60	

LOG DEPTH	0030.00	
TRUE DEPTH	0027.93	
TILT	23.78	DG
BEARING	30.79	DG
NORTHING	+007.99	
EASTING	+002.50	

LOG DEPTH	0020.00	
TRUE DEPTH	0018.78	
TILT	23.17	DG
BEARING	31.37	DG
NORTHING	+004.53	
EASTING	+000.44	

LOG DEPTH	0010.00	
TRUE DEPTH	0009.59	
TILT	23.46	DG
BEARING	306.11	DG
NORTHING	+001.17	
EASTING	-001.60	

LOG DEPTH	0005.00	
TRUE DEPTH	0005.00	
TILT	24.13	DG
BEARING	220.56	DG
NORTHING	+000.00	
EASTING	+000.00	

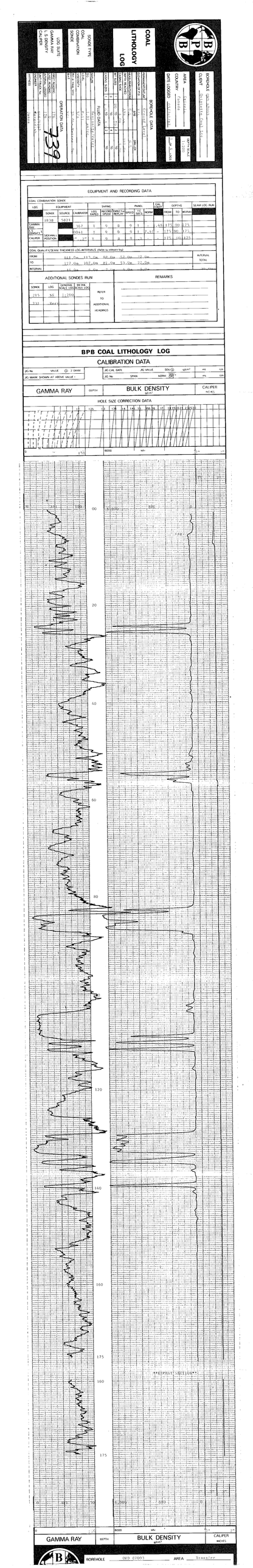
739

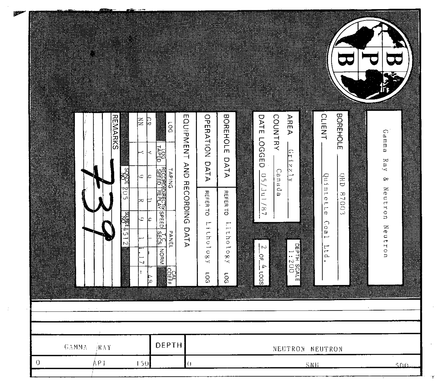
```
DEPTH    =  0010.00
TILT     =    22.78 DG
BEARING  =    31.66 DG

DEPTH    =  0020.00
TILT     =    23.56 DG
BEARING  =    31.09 DG

DEPTH    =  0030.00
TILT     =    23.99 DG
BEARING  =    30.49 DG

DEPTH    =  0040.00
TILT     =    24.15 DG
BEARING  =    31.53 DG

DEPTH    =  0050.00
TILT     =    23.77 DG
BEARING  =    32.23 DG

DEPTH    =  0060.00
TILT     =    23.78 DG
BEARING  =    32.06 DG

DEPTH    =  0070.00
TILT     =    23.80 DG
BEARING  =    33.06 DG

DEPTH    =  0080.00
TILT     =    24.15 DG
BEARING  =    32.54 DG

DEPTH    =  0090.00
TILT     =    24.16 DG
BEARING  =    34.53 DG
```

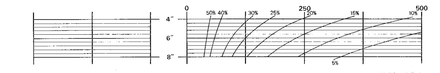
```
DEPTH    =  0100.00
TILT     =    24.54 DG
BEARING  =    33.79 DG

DEPTH    =  0110.00
TILT     =    24.93 DG
BEARING  =    34.83 DG

DEPTH    =  0120.00
TILT     =    25.32 DG
BEARING  =    36.01 DG

DEPTH    =  0130.00
TILT     =    25.19 DG
BEARING  =    34.00 DG

DEPTH    =  0140.00
TILT     =    25.76 DG
BEARING  =    34.91 DG

DEPTH    =  0150.00
TILT     =    25.63 DG
BEARING  =    34.19 DG

DEPTH    =  0160.00
TILT     =    25.63 DG
BEARING  =    35.03 DG

DEPTH    =  0170.00
TILT     =    24.98 DG
BEARING  =    34.55 DG
```

```
DATE              050787
JOB NUMBER.       0003
LOG LABEL         025
MAG 1 MAX         228
MAG 1 MIN         129
MAG 2 MAX         228
MAG 2 MIN         130
MAG 3 MAX         205
MAG 3 MIN         155
L. CELL 1 TILT 1   20
L. CELL 1 CPS 1   233
L. CELL 1 TILT 2  -20
L. CELL 1 CPS 2   126
L. CELL 2 TILT 1   20
L. CELL 2 CPS 1   232
L. CELL 2 TILT 2  -20
L. CELL 2 CPS 2   126

MAG 1 CENTRE      180
MAG 2 CENTRE      180
MAG 3 CENTRE      180
L. CELL 1 CENTRE  180
L. CELL 2 CENTRE  181

MAG DECL          024
STOP DEPTH        0005
```

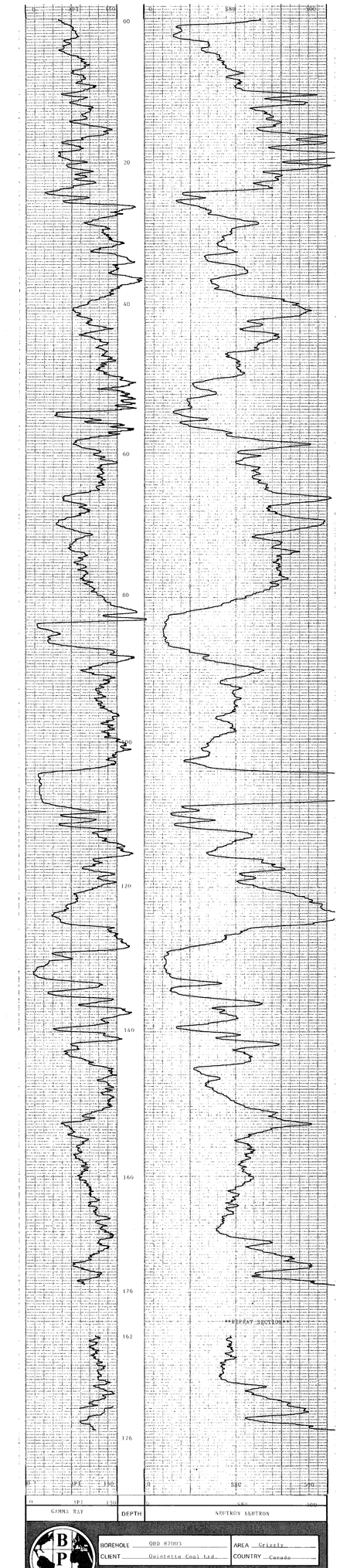
QHD87003
GRIZZLY


COAL LITHOLOGY LOG
BPB
SONDE TYPE
COMBINATION SONDE
LOG SUITE
GAMMA RAY
L.S. DENSITY
CALIPER
BOREHOLE
CLIENT
AREA
COUNTRY
DATE LOGGED
BOREHOLE DATA
FLUID DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
COAL COMBINATION SONDE
LOG
EQUIPMENT
SONDE
SOURCE
CALIBRATION
TAPING
LOG SPEED
RECORD/REPLAY
PANEL
TC SECS
GAIN
CAL CODES
DEPTHS
FROM
TO
SCALE
SEAM LOG RUN
GAMMA RAY
DENSITY
SIDEWALL
CALIPER
POSITION
COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)
FROM
TO
INTERVAL
TOTAL
RETURN
ADDITIONAL SONDES RUN
SONDE
LOG
GENERAL SCALE
LOG
DETAIL SCALE
LOG
REMARKS
REFER TO ADDITIONAL HEADINGS
BPB COAL LITHOLOGY LOG
CALIBRATION DATA
JIG No
VALUE @ 0 DIAM
JIG MARK SHOWN AT ABOVE VALUE =
JIG CAL DATE
JIG VALUE
SDU@
%/cm³
mS
cps
JIG No
SPAN
NORM
%/cm³
mS
cps
GAMMA RAY
DEPTH
BULK DENSITY
%/cm³
CALIPER
INCHES
HOLE SIZE CORRECTION DATA
6000
SDU
0
170
GAMMA RAY
DEPTH
6000
SDU
0
BULK DENSITY
%/cm³
CALIPER
INCHES
BOREHOLE
DED 27093
AREA
Tressider





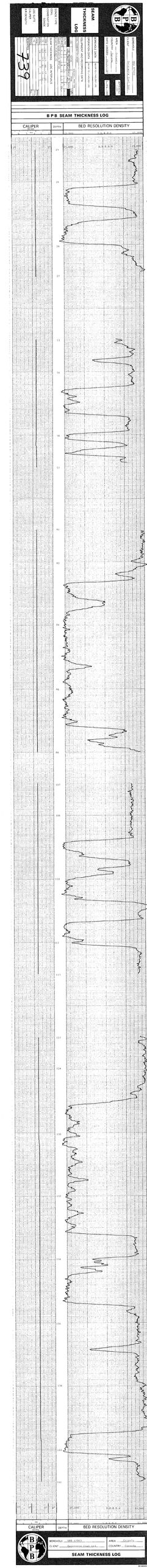
MY (3) AS6451 R

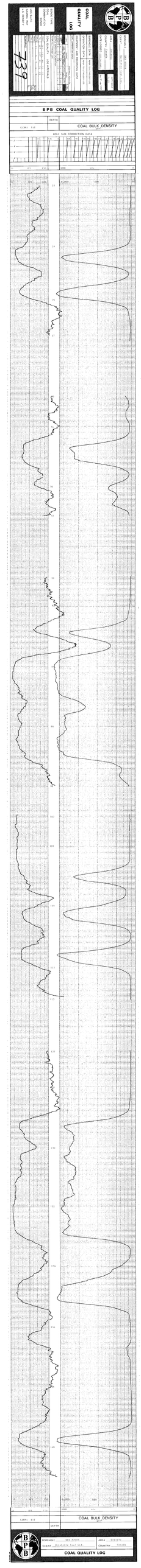


GAMMA RAY
DEPTH
NEUTRON NEUTRON
0 API 150
0 SNU 500

BOREHOLE QHD 87003
CLIENT Quintette Coal Ltd.
AREA Grizzly
COUNTRY Canada

MY 2000815


SEAM THICKNESS LOG
B P B
436
BPB SEAM THICKNESS LOG
CALIPER
DEPTH
BED RESOLUTION DENSITY
BOREHOLE SEE LOG
CLIENT Statoil
AREA Statoil
COUNTRY Canada
SEAM THICKNESS LOG


COAL QUALITY LOG
BPB
739
BPB COAL QUALITY LOG
DEPTH
COAL BULK DENSITY
HOLE SIZE CORRECTION DATA
COAL BULK DENSITY
COAL QUALITY LOG

QHD 87004

LOG DEPTH	0040.00	
TRUE DEPTH	0040.00	
TILT	1.59	DG
BEARING	327.52	DG
NORTHING	+000.40	
EASTING	-000.04	

LOG DEPTH	0030.00	
TRUE DEPTH	0030.00	
TILT	1.18	DG
BEARING	343.13	DG
NORTHING	+000.17	
EASTING	+000.10	

LOG DEPTH	0020.00	
TRUE DEPTH	0020.00	
TILT	1.27	DG
BEARING	85.67	DG
NORTHING	-000.02	
EASTING	+000.16	

LOG DEPTH	0010.00	
TRUE DEPTH	0010.00	
TILT	.86	DG
BEARING	234.10	DG
NORTHING	-000.04	
EASTING	-000.06	

LOG DEPTH	0005.00	
TRUE DEPTH	0005.00	
TILT	.37	DG
BEARING	317.37	DG
NORTHING	+000.00	
EASTING	+000.00	

LOG DEPTH	0100.00	
TRUE DEPTH	0099.98	
TILT	2.34	DG
BEARING	8.93	DG
NORTHING	+002.15	
EASTING	-000.03	

LOG DEPTH	0090.00	
TRUE DEPTH	0089.99	
TILT	1.81	DG
BEARING	19.47	DG
NORTHING	+001.74	
EASTING	-000.09	

LOG DEPTH	0080.00	
TRUE DEPTH	0080.00	
TILT	1.35	DG
BEARING	20.62	DG
NORTHING	+001.44	
EASTING	-000.20	

LOG DEPTH	0070.00	
TRUE DEPTH	0070.00	
TILT	1.51	DG
BEARING	344.00	DG
NORTHING	+001.22	
EASTING	-000.28	

LOG DEPTH	0060.00	
TRUE DEPTH	0060.00	
TILT	1.60	DG
BEARING	338.86	DG
NORTHING	+000.97	
EASTING	-000.21	

LOG DEPTH	0050.00	
TRUE DEPTH	0050.00	
TILT	1.77	DG
BEARING	348.26	DG
NORTHING	+000.71	
EASTING	-000.11	

LOG DEPTH	0150.00	
TRUE DEPTH	0149.93	
TILT	2.92	DG
BEARING	32.30	DG
NORTHING	+003.97	
EASTING	+001.26	

LOG DEPTH	0140.00	
TRUE DEPTH	0139.94	
TILT	2.48	DG
BEARING	42.02	DG
NORTHING	+003.54	
EASTING	+000.99	

LOG DEPTH	0130.00	
TRUE DEPTH	0129.95	
TILT	2.27	DG
BEARING	42.23	DG
NORTHING	+003.21	
EASTING	+000.70	

LOG DEPTH	0120.00	
TRUE DEPTH	0119.96	
TILT	2.56	DG
BEARING	35.82	DG
NORTHING	+002.92	
EASTING	+000.43	

LOG DEPTH	0110.00	
TRUE DEPTH	0109.97	
TILT	2.63	DG
BEARING	26.63	DG
NORTHING	+002.56	
EASTING	+000.17	

739

QHD 87004

DEPTH	=	0010.00
TILT	=	1.35 DG
BEARING	=	150.83 DG
DEPTH	=	0020.00
TILT	=	1.19 DG
BEARING	=	20.50 DG
DEPTH	=	0030.00
TILT	=	1.18 DG
BEARING	=	305.76 DG
DEPTH	=	0040.00
TILT	=	2.01 DG
BEARING	=	349.27 DG
DEPTH	=	0050.00
TILT	=	1.54 DG
BEARING	=	347.26 DG
DEPTH	=	0060.00
TILT	=	1.67 DG
BEARING	=	330.47 DG
DEPTH	=	0070.00
TILT	=	1.35 DG
BEARING	=	357.53 DG
DEPTH	=	0080.00
TILT	=	1.35 DG
BEARING	=	43.70 DG

DEPTH	=	0090.00
TILT	=	2.27 DG
BEARING	=	355.24 DG
DEPTH	=	0100.00
TILT	=	2.40 DG
BEARING	=	22.62 DG
DEPTH	=	0110.00
TILT	=	2.87 DG
BEARING	=	30.64 DG
DEPTH	=	0120.00
TILT	=	2.26 DG
BEARING	=	41.00 DG
DEPTH	=	0130.00
TILT	=	2.29 DG
BEARING	=	43.46 DG
DEPTH	=	0140.00
TILT	=	2.66 DG
BEARING	=	40.58 DG
DEPTH	=	0150.00
TILT	=	3.18 DG
BEARING	=	24.01 DG

DATE	090787
JOB NUMBER	0004
LOG LABEL	025.2
MAG 1 MAX	228
MAG 1 MIN	129
MAG 2 MAX	228
MAG 2 MIN	130
MAG 3 MAX	205
MAG 3 MIN	155
L. CELL 1 TILT 1	20
L. CELL 1 CPS 1	233
L. CELL 1 TILT 2	-20
L. CELL 1 CPS 2	126
L. CELL 2 TILT 1	20
L. CELL 2 CPS 1	232
L. CELL 2 TILT 2	-20
L. CELL 2 CPS 2	126
MAG 1 CENTRE	180
MAG 2 CENTRE	180
MAG 3 CENTRE	180
L. CELL 1 CENTRE	181
L. CELL 2 CENTRE	180
MAG DECL	024
STOP DEPTH	0005

COAL LITHOLOGY LOG

SONDE TYPE:	COAL COMBINATION SONDE
LOG SUITE:	GAMMA RAY, L.S. DENSITY, CALIPER
BOREHOLE	OHD 87004
CLIENT	Quintette Coal Ltd.
AREA	Transfer
COUNTRY	Canada
DATE LOGGED	09/Jul/'8
DEPTH SCALE	1:200
	1 OF 4 LOGS

BOREHOLE DATA

PERMANENT DATUM	Ground Level			
ELEVATION OF P.D.	N/A			
	BPB		DRILLER	
MEASUREMENTS FROM	G.L		G.L	
DEPTH REACHED	151		151	
CASING SHOE	5.1		5.1	
BIT SIZES	1	4.0 TO TD	2	TO
	3	TO	4	TO
CASING SIZES	1	4.0 TO 5.1	2	TO

FLUID DATA

NATURE	Bentonite/Water
S.G.	1.1 gm/cc.
LEVEL	18.0m
VISCOSITY	N/A
Rm at meas temp	N/A
BHT	N/A

OPERATION DATA

FIRST READING	149
LAST READING	0
INTERVAL LOGGED	149
UNIT-TRUCK No.	U46/V217
ENGINEER	Cavendish
WITNESS	Johnson

739

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT			TAPING			PANEL			CAL COEFF	DEPTHS			SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD SPEED	DIRECT or REPLAY	SPEED	TC SECS	NORM		FROM	TO	INTERVAL	
	183B	5852												
GAMMA RAY			367	Y	9	D	9	2	–	1.56	149	00	149	
L.S. DENSITY			0041	Y	9	D	9	1	7.54	–	149	00	149	
CALIPER	SIDEWALL POSITION		7"..2"	Y	9	D	9	.3	–	–	149	00	149	

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	113	91	59	36	13	INTERVAL TOTAL
TO	103	83	50	24	7	
INTERVAL	10	8	9	8	6	= 41.0m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
215	NN	1:200	
231	Vert	CDS	
231	Dip	1:200	

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No VALUE @ 2" DIAM	JIG CAL DATE JIG VALUE SDU @ g/cm³	ins cps
JIG MARK SHOWN AT ABOVE VALUE -	JIG No SPAN NORM SDU/CPS =	ins cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

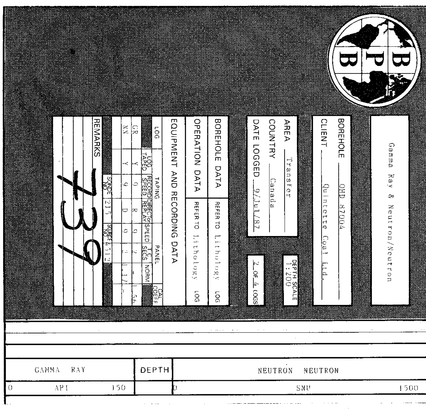
HOLE SIZE CORRECTION DATA

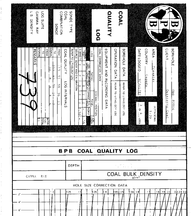
0 API 150		6000 sdu 0	7" 2"
GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

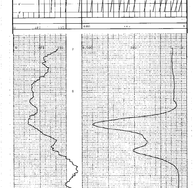
BOREHOLE	OHD 87004	AREA	Transfer
CLIENT	Quintette Coal Ltd.	COUNTRY	Canada

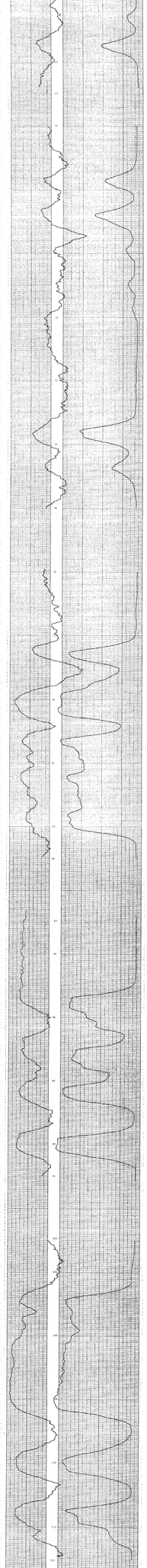
COAL LITHOLOGY LOG

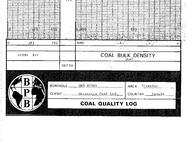
MY A50261.B

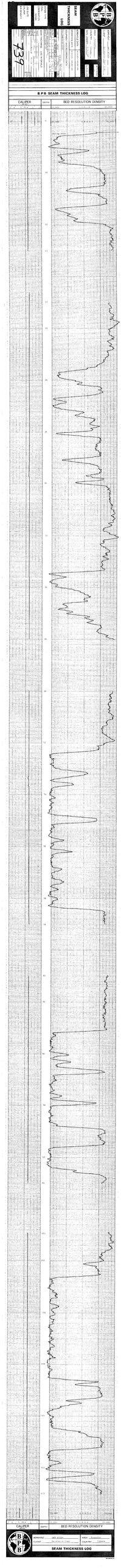

Gamma Ray & Neutron/Neutron
BOREHOLE OHD #7004
CLIENT Quintette Coal Ltd.
AREA Transfer
COUNTRY Canada
DATE LOGGED 9/10/1982
RUN ONE
DEPTH DRILLER 1500
DEPTH LOGGER 1500
BTM LOG INTERVAL 1500
TOP LOG INTERVAL 0
CASING DRILLER 0
CASING LOGGER 0
BIT SIZE 7 7/8
TYPE FLUID IN HOLE WATER
DENSITY 1.0
VISCOSITY 0
PH 0
FLUID LOSS 0
SOURCE OF SAMPLE FLOWLINE
RM @ MEAS TEMP 0
RMF @ MEAS TEMP 0
RMC @ MEAS TEMP 0
SOURCE OF RMF RMC
RM @ BHT 0
TIME SINCE CIRC 0
MAX REC TEMP 0
EQUIP LOCATION 0
RECORDED BY L.Chatterton
WITNESSED BY OPR
LOG TYPE RUN TOOL NO. DIA WEIGHT MAX TEMP
GAMMA RAY 1 9 0 1 3/8 0 0
NEUTRON NEUTRON 1 9 0 1 3/8 0 0
REMARKS
736
GAMMA RAY
DEPTH
NEUTRON NEUTRON
0 API 150
0 SNU 1500
SANDSTONE POROSITY
0 50% 40% 33% 25% 250 15% 5% 500
4"
6"
8"
MY (3) A50451 R
0 API 150
0 SNU 1500
00
20
40
60
80
100
120
140
150
"water level" scale change
0 SNU 500
REPEAT SECTION
140
150
0 API 150
0 SNU 500
GAMMA RAY
DEPTH
NEUTRON NEUTRON
BOREHOLE OHD #7004
CLIENT Quintette Coal Ltd.
AREA Transfer
COUNTRY Canada
MY 200081R


COAL QUALITY LOG
739


B.P.B COAL QUALITY LOG
DEPTH
COAL BULK DENSITY
HOLE SIZE CORRECTION DATA




COAL BULK DENSITY
B.P.B
BOREHOLE
AREA
CLIENT
COUNTY
COAL QUALITY LOG


BPB
739
DATE
DESCRIPTION
DRG
APP
BPB SEAM THICKNESS LOG
CALIPER
GAMMA
BED RESOLUTION DENSITY
CALIPER
GAMMA
BED RESOLUTION DENSITY
BPB
SEAM THICKNESS LOG

DIPMETER ANALYSIS

739

CLIENT___
BOREHOLE_
AREA_____
COUNTRY__

QUINTETTE COAL LTD.
QHD 87004
TRANSFER PIT
CANADA

DATE LOGGED.....09-JUL-87
DATE PROCESSED..04-AUG-87

COMMENTS.....

DEMONSTRATION LOG
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

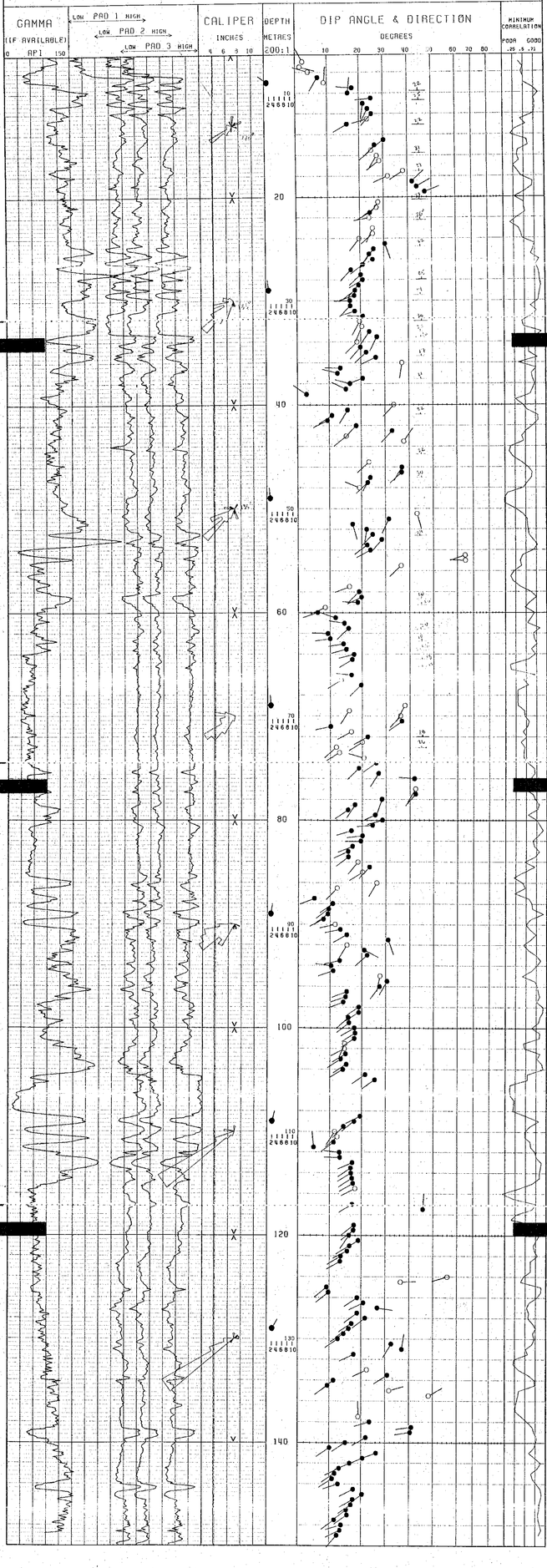
INTERPRETATION PARAMETERS

STEP 0.50M.
INTERVAL 1.00M.
SEARCH ANGLE 60.
DECLINATION 24.0 EAST
DEPTH RANGE 6.31 - 150.00M.
DATE PROCESSED 04-AUG-87

AVERAGE BOREHOLE DEVIATION & DIRECTION
ANNOTATED EVERY 20.0M.

DIPDIAGRAMS SEGMENTED EVERY TEN DEGREES.
.1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:
GOOD (>0.50)
FAIR (>0.30)



BPB DIPMETER ANALYSIS
INTERPRETATION NOTES

1. All plots are correct to the resolution of the plotter used, ie. one hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background
Plots exceeding eight metres in length will be split into multiples thereof, however there is no data loss associated with this subdivision.

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

3. The borehole tilt and azimuth displayed on the plot are the average values over the whole major division.

4. The replay scale for pads 1, 2 & 3 are designed to give the maximum visual effect over the plotted interval. Replaying shorter sections of the curve will enhance this display.

5. The grid over which the computed dip information is displayed is locally linear. That is to say it is linear between Ø & 1Ø, degrees,1Ø & 2Ø,2Ø & 3Ø etc.

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

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

The following information is a listing of ALL the output from BPB's dipmeter analysis. The data is subdivided into three consecutive sets of data readings, being read from left to right. Below is a full description of each data item:

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

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

QHD 87ØØ4
****

Magnetic declination 24.ØØ degrees East of North
Correlation step Ø.5Ø metres ,interval 1.ØØ metres Search angle 6Ø. degrees

Ø4-AUG-87
PAGE I

DEPTH metres	CAL. ins.	BOREHOLE TILT	BOREHOLE AZI	FORMATION DIP	FORMATION AZI	MIN. COR.
7.ØØ	4.1	1.2	94.	2.3	331.	Ø.38
8.5Ø	4.1	Ø.8	22.	7.Ø	21Ø.	Ø.51
1Ø.ØØ	4.Ø	Ø.9	68.	16.5	5.	Ø.86
11.5Ø	4.Ø	1.3	346.	24.Ø	2Ø7.	Ø.78
13.ØØ	3.9	1.1	6.	16.2	24Ø.	Ø.55
14.5Ø	3.9	Ø.8	352.	3Ø.2	234.	Ø.58
16.ØØ	3.9	1.Ø	334.	28.1	21Ø.	Ø.34
17.5Ø	3.9	1.3	342.	39.2	236.	Ø.35
19.ØØ	3.9	1.3	359.	44.3	6Ø.	Ø.69
2Ø.5Ø	3.9	Ø.9	5.	28.6	214.	Ø.49
22.ØØ	3.9	Ø.9	342.	24.3	26Ø.	Ø.33
23.5Ø	3.9	1.2	339.	25.9	228.	Ø.43
25.ØØ	3.9	1.3	35Ø.	26.3	215.	Ø.71
26.5Ø	3.9	1.2	7.	21.3	232.	Ø.77
28.ØØ	3.9	Ø.9	358.	21.Ø	239.	Ø.86
29.5Ø	3.9	1.Ø	34Ø.	18.1	251.	Ø.84
31.ØØ	3.9	1.3	341.	18.1	251.	Ø.79
32.5Ø	3.9	1.4	355.	2Ø.4	2Ø2.	Ø.47
34.ØØ	3.9	1.2	7.	18.8	226.	Ø.47
35.5Ø	3.9	Ø.9	359.	26.9	246.	Ø.79
37.ØØ	3.9	1.1	341.	12.6	285.	Ø.65
38.5Ø	3.9	1.3	342.	15.2	295.	Ø.67
4Ø.ØØ	3.9	1.5	349.	34.1	223.	Ø.44
41.5Ø	3.8	1.4	3.	9.4	244.	Ø.81
43.ØØ	3.8	1.1	9.	15.3	231.	Ø.41
44.5Ø	3.8	Ø.9	Ø.	51.6	13.	Ø.1Ø
46.ØØ	3.8	1.Ø	345.	37.7	21Ø.	Ø.55
47.5Ø	3.8	1.2	342.	22.9	227.	Ø.54
49.ØØ	3.8	1.4	344.	21.4	283.	-Ø.Ø1
51.ØØ	3.8	1.6	357.	31.5	2Ø5.	Ø.53
52.5Ø	3.9	1.4	7.	25.2	225.	Ø.58
54.ØØ	3.9	1.2	1Ø.	24.Ø	241.	Ø.69
55.5Ø	3.9	1.Ø	359.	37.2	227.	Ø.39
57.ØØ	3.9	1.2	346.	44.5	333.	Ø.2Ø
58.5Ø	3.8	1.4	346.	19.8	244.	Ø.75
6Ø.ØØ	3.8	1.6	351.	6.1	251.	Ø.7Ø
61.5Ø	3.8	1.6	359.	15.7	227.	Ø.83
63.ØØ	3.8	1.6	8.	14.1	261.	Ø.76
64.5Ø	3.8	1.3	13.	16.9	239.	Ø.56
66.ØØ	3.8	1.1	9.	16.7	276.	Ø.72
67.5Ø	3.8	1.1	356.	21.7	227.	Ø.29
7Ø.ØØ	3.8	1.4	349.	36.8	223.	Ø.46
71.5Ø	3.8	1.6	352.	16.6	242.	Ø.43
73.ØØ	3.8	1.7	357.	11.9	229.	Ø.46
74.5Ø	3.8	1.8	2.	26.5	235.	Ø.54
76.ØØ	3.8	1.7	9.	42.1	275.	Ø.61
77.5Ø	3.8	1.6	16.	42.6	221.	Ø.66
79.ØØ	3.8	1.4	17.	15.5	236.	Ø.77
8Ø.5Ø	3.8	1.3	14.	24.9	266.	Ø.83
82.ØØ	3.8	1.3	3.	19.6	27Ø.	Ø.66
7.5Ø	4.1	1.2	148.	1.5	1Ø5.	Ø.49
9.ØØ	4.1	Ø.8	275.	9.Ø	5.	Ø.5Ø
1Ø.5Ø	4.Ø	1.1	34.	25.5	264.	Ø.74
12.ØØ	3.9	1.3	353.	25.7	221.	Ø.75
13.5Ø	3.9	Ø.9	6.	29.2	353.	Ø.28
15.ØØ	3.9	Ø.8	342.	27.2	223.	Ø.61
16.5Ø	3.9	1.2	336.	29.3	233.	Ø.39
18.ØØ	3.9	1.4	347.	32.Ø	247.	Ø.44
19.5Ø	3.9	1.2	5.	48.Ø	69.	Ø.51
21.ØØ	3.9	Ø.8	359.	27.7	237.	Ø.5Ø
22.5Ø	3.9	1.Ø	338.	42.9	32.	Ø.16
24.ØØ	3.9	1.3	34Ø.	19.7	217.	Ø.45
25.5Ø	3.9	1.4	357.	24.3	215.	Ø.65
27.ØØ	3.9	1.Ø	7.	17.1	222.	Ø.83
28.5Ø	3.9	Ø.9	351.	19.4	22Ø.	Ø.89
3Ø.ØØ	3.9	1.1	339.	16.7	268.	Ø.83
31.5Ø	3.9	1.4	344.	21.1	272.	Ø.64
33.ØØ	3.9	1.4	Ø.	24.Ø	215.	Ø.9Ø
34.5Ø	3.9	1.1	8.	19.8	221.	Ø.59
36.ØØ	3.9	Ø.9	351.	38.Ø	189.	Ø.34
37.5Ø	3.9	1.1	34Ø.	2Ø.7	25Ø.	Ø.68
39.ØØ	3.9	1.4	343.	2.8	3Ø4.	Ø.62
4Ø.5Ø	3.9	1.5	353.	15.7	212.	Ø.54
42.ØØ	3.9	1.3	7.	18.4	223.	Ø.68
43.5Ø	3.9	1.1	9.	38.7	34.	Ø.46
45.ØØ	3.8	1.Ø	355.	25.6	24Ø.	Ø.2Ø
46.5Ø	3.8	1.1	343.	37.7	227.	Ø.65
48.ØØ	3.8	1.3	343.	19.3	292.	Ø.44
5Ø.ØØ	3.8	1.5	349.	42.4	148.	Ø.25
51.5Ø	3.8	1.5	1.	17.1	164.	Ø.54
53.ØØ	3.9	1.3	1Ø.	29.3	22Ø.	Ø.68
54.5Ø	3.9	1.1	9.	64.9	252.	Ø.42
56.ØØ	3.9	1.1	354.	51.9	124.	Ø.22
57.5Ø	3.9	1.3	345.	16.1	25Ø.	Ø.36
59.ØØ	3.8	1.5	347.	18.7	272.	Ø.59
6Ø.5Ø	3.8	1.6	353.	11.7	289.	Ø.63
62.ØØ	3.8	1.6	2.	9.3	272.	Ø.68
63.5Ø	3.8	1.5	11.	15.Ø	254.	Ø.63
65.ØØ	3.8	1.3	13.	11.2	27Ø.	Ø.12
66.5Ø	3.8	1.1	5.	13.4	237.	Ø.43
69.ØØ	3.8	1.3	351.	38.8	2Ø9.	Ø.3Ø
7Ø.5Ø	3.8	1.5	35Ø.	37.4	235.	Ø.57
72.ØØ	3.8	1.6	353.	22.5	242.	Ø.51
73.5Ø	3.8	1.7	358.	12.8	239.	Ø.45
75.ØØ	3.8	1.7	5.	18.9	225.	Ø.69
76.5Ø	3.8	1.7	12.	21.2	221.	Ø.23
78.ØØ	3.8	1.6	16.	29.2	199.	Ø.72
79.5Ø	3.8	1.4	17.	26.1	246.	Ø.54
81.ØØ	3.8	1.3	1Ø.	16.6	253.	Ø.91
82.5Ø	3.8	1.3	Ø.	17.Ø	248.	Ø.7Ø
8.ØØ	4.1	1.Ø	79.	4.Ø	288.	Ø.45
9.5Ø	4.1	Ø.8	357.	17.8	274.	Ø.72
11.ØØ	4.Ø	1.3	342.	21.8	188.	Ø.78
12.5Ø	3.9	1.2	Ø.	23.8	255.	Ø.43
14.ØØ	3.9	Ø.8	1.	44.1	246.	Ø.19
15.5Ø	3.9	Ø.9	336.	25.6	231.	Ø.37
17.ØØ	3.9	1.3	339.	46.8	247.	Ø.25
18.5Ø	3.9	1.3	353.	42.2	46.	Ø.71
2Ø.ØØ	3.9	1.Ø	8.	24.5	23Ø.	Ø.27
21.5Ø	3.9	Ø.8	35Ø.	24.7	24Ø.	Ø.53
23.ØØ	3.9	1.1	338.	26.Ø	2Ø4.	Ø.36
24.5Ø	3.9	1.3	344.	3Ø.5	161.	Ø.74
26.ØØ	3.9	1.3	3.	25.8	236.	Ø.85
27.5Ø	3.9	Ø.9	5.	2Ø.2	227.	Ø.86
29.ØØ	3.9	Ø.9	344.	18.3	233.	Ø.87
3Ø.5Ø	3.9	1.2	339.	16.7	225.	Ø.64
32.ØØ	3.9	1.4	349.	19.7	2Ø9.	Ø.43
33.5Ø	3.9	1.3	5.	27.5	2Ø6.	Ø.74
35.ØØ	3.9	1.Ø	5.	22.4	227.	Ø.59
36.5Ø	3.9	1.Ø	345.	13.5	271.	Ø.77
38.ØØ	3.9	1.2	341.	16.5	285.	Ø.73
39.5Ø	3.9	1.4	346.	4.1	88.	Ø.26
41.ØØ	3.8	1.4	358.	1Ø.8	237.	Ø.8Ø
42.5Ø	3.8	1.2	8.	33.2	223.	Ø.51
44.ØØ	3.9	1.Ø	5.	51.1	72.	Ø.14
45.5Ø	3.8	1.Ø	35Ø.	23.5	227.	Ø.4Ø
47.ØØ	3.8	1.2	343.	24.1	2Ø9.	Ø.64
48.5Ø	3.8	1.3	343.	17.6	268.	Ø.Ø7
5Ø.5Ø	3.8	1.5	353.	43.5	164.	Ø.43
52.ØØ	3.9	1.5	4.	22.3	189.	Ø.56
53.5Ø	3.9	1.3	1Ø.	22.6	233.	Ø.78
55.ØØ	3.9	1.1	4.	65.Ø	273.	Ø.36
56.5Ø	3.9	1.2	348.	4Ø.8	9Ø.	Ø.13
58.ØØ	3.9	1.4	345.	19.1	226.	Ø.62
59.5Ø	3.8	1.5	348.	8.5	246.	Ø.48
61.ØØ	3.8	1.6	355.	14.5	279.	Ø.53
62.5Ø	3.8	1.6	5.	1Ø.Ø	262.	Ø.7Ø
64.ØØ	3.8	1.4	12.	17.4	256.	Ø.73
65.5Ø	3.8	1.2	1Ø.	12.8	28Ø.	Ø.14
67.ØØ	3.8	1.1	Ø.	19.7	226.	Ø.55
69.5Ø	3.8	1.4	349.	15.9	214.	Ø.46
71.ØØ	3.8	1.6	351.	1Ø.1	258.	Ø.53
72.5Ø	3.8	1.7	354.	2Ø.Ø	238.	Ø.38
74.ØØ	3.8	1.8	36Ø.	2Ø.7	286.	Ø.44
75.5Ø	3.8	1.7	7.	27.7	213.	Ø.7Ø
77.ØØ	3.8	1.6	14.	42.6	211.	Ø.45
78.5Ø	3.8	1.5	17.	17.7	213.	Ø.81
8Ø.ØØ	3.8	1.3	17.	29.5	254.	Ø.75
81.5Ø	3.8	1.2	6.	2Ø.1	264.	Ø.8Ø
83.ØØ	3.8	1.4	358.	15.6	246.	Ø.82

DEPTH metres	CAL. ins.	BOREHOLE TILT	BOREHOLE AZI	FORMATION DIP	FORMATION AZI	MIN. COR.
83.5Ø	3.8	1.5	357.	15.7	232.	Ø.73
85.ØØ	3.8	1.6	356.	2Ø.2	239.	Ø.44
86.5Ø	3.8	1.8	357.	12.2	224.	Ø.48
88.ØØ	3.8	1.8	359.	1Ø.8	235.	Ø.64
89.5Ø	3.8	1.8	36Ø.	7.9	243.	Ø.62
91.ØØ	3.8	1.9	3.	15.2	241.	Ø.73
92.5Ø	3.8	2.Ø	6.	21.1	116.	Ø.56
94.ØØ	3.8	2.Ø	9.	1Ø.3	277.	Ø.76
95.5Ø	3.8	2.Ø	12.	3Ø.5	21Ø.	Ø.72
97.ØØ	3.8	2.Ø	15.	14.9	251.	Ø.83
98.5Ø	3.8	2.Ø	17.	19.Ø	237.	Ø.91
1ØØ.ØØ	3.8	2.Ø	19.	17.6	24Ø.	Ø.64
1Ø1.5Ø	3.8	2.1	21.	14.6	2Ø3.	Ø.44
1Ø3.ØØ	3.8	2.1	22.	13.4	237.	Ø.77
1Ø4.5Ø	3.8	2.1	23.	21.5	236.	Ø.54
1Ø6.ØØ	3.8	2.2	24.	6.5	335.	Ø.12
1Ø7.5Ø	3.8	2.2	24.	51.8	33.	Ø.21
1Ø9.ØØ	3.8	2.2	25.	17.6	231.	Ø.82
11Ø.5Ø	3.8	2.2	26.	12.4	23Ø.	Ø.48
112.ØØ	3.8	2.3	25.	13.Ø	276.	Ø.73
113.5Ø	3.8	2.2	27.	16.6	236.	Ø.86
115.ØØ	3.8	2.2	28.	17.3	24Ø.	Ø.67
117.ØØ	3.8	2.2	29.	17.1	238.	Ø.75
118.5Ø	3.8	2.2	3Ø.	36.1	281.	Ø.16
12Ø.ØØ	3.8	2.2	31.	16.1	214.	Ø.84
121.5Ø	3.8	2.2	32.	15.5	242.	Ø.72
124.ØØ	3.8	2.2	32.	56.6	254.	Ø.46
125.5Ø	3.8	2.2	32.	9.7	231.	Ø.87
127.ØØ	3.8	2.2	32.	27.6	98.	Ø.54
128.5Ø	3.8	2.2	32.	17.Ø	237.	Ø.68
13Ø.ØØ	3.8	2.2	32.	12.7	236.	Ø.72
131.5Ø	3.8	2.3	32.	17.6	245.	Ø.56
133.ØØ	3.8	2.2	33.	22.7	245.	Ø.35
134.5Ø	3.8	2.3	33.	9.5	234.	Ø.73
136.5Ø	3.8	2.2	33.	6Ø.6	24Ø.	Ø.26
138.5Ø	3.8	2.2	33.	41.1	262.	Ø.67
14Ø.ØØ	3.8	2.3	33.	15.Ø	237.	Ø.76
141.5Ø	3.8	2.3	33.	2Ø.7	247.	Ø.74
143.ØØ	3.8	2.3	34.	11.7	237.	Ø.64
144.5Ø	3.8	2.4	33.	17.6	243.	Ø.87
146.ØØ	3.8	2.4	32.	16.8	236.	Ø.84
147.5Ø	3.8	2.5	31.	11.5	233.	Ø.82
149.ØØ	3.8	2.5	28.	12.3	221.	Ø.83
84.ØØ	3.8	1.5	356.	18.7	219.	Ø.47
85.5Ø	3.8	1.6	356.	49.1	89.	Ø.21
87.ØØ	3.8	1.8	357.	25.5	89.	Ø.23
88.5Ø	3.8	1.9	Ø.	9.5	233.	Ø.65
9Ø.ØØ	3.8	1.9	1.	11.5	258.	Ø.5Ø
91.5Ø	3.8	1.9	4.	31.Ø	16Ø.	Ø.61
93.ØØ	3.8	2.Ø	7.	22.4	228.	Ø.74
94.5Ø	3.8	2.Ø	1Ø.	1Ø.9	252.	Ø.64
96.ØØ	3.8	2.Ø	13.	28.3	217.	Ø.78
97.5Ø	3.8	2.Ø	15.	14.1	248.	Ø.76
99.ØØ	3.8	2.Ø	18.	15.8	228.	Ø.84
1ØØ.5Ø	3.8	2.Ø	2Ø.	17.9	239.	Ø.83
1Ø2.ØØ	3.8	2.1	21.	14.6	243.	Ø.47
1Ø3.5Ø	3.8	2.1	22.	15.1	237.	Ø.89
1Ø5.ØØ	3.8	2.1	23.	26.1	235.	Ø.54
1Ø6.5Ø	3.8	2.2	24.	3.3	148.	Ø.13
1Ø8.ØØ	3.8	2.2	24.	43.7	262.	Ø.19
1Ø9.5Ø	3.8	2.2	25.	14.3	225.	Ø.6Ø
111.ØØ	3.8	2.2	26.	11.2	232.	Ø.61
112.5Ø	3.8	2.3	26.	13.1	272.	Ø.76
114.ØØ	3.8	2.2	27.	16.7	239.	Ø.84
115.5Ø	3.8	2.2	29.	18.Ø	244.	Ø.33
117.5Ø	3.8	2.2	3Ø.	46.4	4.	Ø.66
119.ØØ	3.8	2.2	3Ø.	17.7	232.	Ø.78
12Ø.5Ø	3.8	2.2	31.	19.Ø	239.	Ø.76
122.ØØ	3.8	2.2	31.	13.5	239.	Ø.79
124.5Ø	3.8	2.2	32.	37.2	88.	Ø.38
126.ØØ	3.8	2.2	33.	18.7	236.	Ø.78
127.5Ø	3.8	2.2	32.	18.7	233.	Ø.59
129.ØØ	3.8	2.2	32.	16.1	236.	Ø.75
13Ø.5Ø	3.8	2.2	32.	32.9	211.	Ø.67
132.ØØ	3.8	2.3	32.	38.7	8.	Ø.23
133.5Ø	3.8	2.3	32.	31.Ø	237.	Ø.57
135.ØØ	3.8	2.3	33.	31.9	74.	Ø.35
137.5Ø	3.8	2.2	35.	19.1	36Ø.	Ø.41
139.ØØ	3.8	2.3	31.	4Ø.5	262.	Ø.71
14Ø.5Ø	3.8	2.3	34.	1Ø.1	236.	Ø.72
142.ØØ	3.8	2.3	33.	16.4	246.	Ø.88
143.5Ø	3.8	2.3	33.	1Ø.9	237.	Ø.68
145.ØØ	3.8	2.4	33.	2Ø.4	233.	Ø.9Ø
146.5Ø	3.8	2.4	32.	15.4	232.	Ø.84
148.ØØ	3.8	2.5	3Ø.	13.7	254.	Ø.85
84.5Ø	3.8	1.5	356.	23.6	224.	Ø.7Ø
86.ØØ	3.8	1.7	356.	26.9	211.	Ø.42
87.5Ø	3.8	1.8	358.	5.Ø	249.	Ø.57
89.ØØ	3.8	1.8	36Ø.	9.3	233.	Ø.92
9Ø.5Ø	3.8	1.9	3.	13.2	259.	Ø.6Ø
92.ØØ	3.8	2.Ø	6.	15.3	211.	Ø.44
93.5Ø	3.8	2.Ø	8.	13.Ø	257.	Ø.86
95.ØØ	3.8	2.Ø	11.	28.5	193.	Ø.41
96.5Ø	3.8	2.Ø	14.	15.2	249.	Ø.79
98.ØØ	3.8	2.Ø	16.	19.Ø	236.	Ø.91
99.5Ø	3.8	2.Ø	19.	15.9	232.	Ø.81
1Ø1.ØØ	3.8	2.1	2Ø.	17.6	236.	Ø.82
1Ø2.5Ø	3.8	2.1	22.	14.9	238.	Ø.84
1Ø4.ØØ	3.8	2.1	22.	14.Ø	239.	Ø.91
1Ø5.5Ø	3.8	2.1	23.	39.3	179.	Ø.13
1Ø7.ØØ	3.8	2.1	24.	38.7	33.	Ø.22
1Ø8.5Ø	3.8	2.2	24.	19.5	243.	Ø.52
11Ø.ØØ	3.8	2.2	26.	11.6	213.	Ø.48
111.5Ø	3.8	2.2	25.	5.Ø	354.	Ø.63
113.ØØ	3.8	2.2	26.	17.Ø	247.	Ø.88
114.5Ø	3.8	2.2	28.	17.Ø	237.	Ø.84
116.5Ø	3.8	2.2	29.	34.1	239.	Ø.21
118.ØØ	3.8	2.2	3Ø.	36.9	283.	Ø.28
119.5Ø	3.8	2.2	3Ø.	17.5	232.	Ø.84
121.ØØ	3.8	2.2	31.	16.3	239.	Ø.69
122.5Ø	3.8	2.2	31.	13.3	24Ø.	Ø.62
125.ØØ	3.8	2.2	32.	9.1	231.	Ø.88
126.5Ø	3.8	2.2	32.	2Ø.9	244.	Ø.59
128.ØØ	3.8	2.2	32.	21.8	232.	Ø.57
129.5Ø	3.8	2.2	32.	14.5	238.	Ø.68
131.ØØ	3.8	2.2	33.	37.9	9.	Ø.51
132.5Ø	3.8	2.3	33.	37.8	9.	Ø.22
134.ØØ	3.8	2.3	33.	11.3	232.	Ø.72
135.5Ø	3.8	2.3	33.	49.3	59.	Ø.33
138.ØØ	3.8	2.2	35.	23.8	255.	Ø.56
139.5Ø	3.8	2.2	32.	22.2	24Ø.	Ø.78
141.ØØ	3.8	2.3	34.	27.1	25Ø.	Ø.6Ø
142.5Ø	3.8	2.3	33.	13.1	244.	Ø.8Ø
144.ØØ	3.8	2.3	33.	12.8	252.	Ø.77
145.5Ø	3.8	2.4	33.	17.4	24Ø.	Ø.88
147.ØØ	3.8	2.4	32.	15.6	233.	Ø.81
148.5Ø	3.8	2.5	29.	13.3	244.	Ø.89

QHD 87005

LOG DEPTH	0180.00	
TRUE DEPTH	0180.00	
TILT	1.39	DG
BEARING	113.75	DG
NORTHING	-000.92	
EASTING	-001.41	

LOG DEPTH	0170.00	
TRUE DEPTH	0170.00	
TILT	1.47	DG
BEARING	77.82	DG
NORTHING	-000.82	
EASTING	-001.63	

LOG DEPTH	0160.00	
TRUE DEPTH	0160.00	
TILT	1.09	DG
BEARING	354.84	DG
NORTHING	-000.88	
EASTING	-001.88	

LOG DEPTH	0150.00	
TRUE DEPTH	0150.00	
TILT	.94	DG
BEARING	356.38	DG
NORTHING	-001.07	
EASTING	-001.86	

LOG DEPTH	0140.00	
TRUE DEPTH	0140.00	
TILT	1.06	DG
BEARING	19.52	DG
NORTHING	-001.23	
EASTING	-001.85	

LOG DEPTH	0130.00	
TRUE DEPTH	0130.00	
TILT	.94	DG
BEARING	303.53	DG
NORTHING	-001.41	
EASTING	-001.92	

LOG DEPTH	0120.00	
TRUE DEPTH	0120.00	
TILT	.83	DG
BEARING	287.32	DG
NORTHING	-001.50	
EASTING	-001.78	

LOG DEPTH	0110.00	
TRUE DEPTH	0110.00	
TILT	.95	DG
BEARING	271.39	DG
NORTHING	-001.54	
EASTING	-001.64	

LOG DEPTH	0100.00	
TRUE DEPTH	0100.00	
TILT	1.06	DG
BEARING	228.26	DG
NORTHING	-001.55	
EASTING	-001.47	

LOG DEPTH	0090.00	
TRUE DEPTH	0090.00	
TILT	1.36	DG
BEARING	247.67	DG
NORTHING	-001.42	
EASTING	-001.33	

LOG DEPTH	0080.00	
TRUE DEPTH	0080.00	
TILT	1.63	DG
BEARING	239.98	DG
NORTHING	-001.33	
EASTING	-001.11	

LOG DEPTH	0070.00	
TRUE DEPTH	0070.00	
TILT	1.59	DG
BEARING	230.07	DG
NORTHING	-001.19	
EASTING	-000.86	

LOG DEPTH	0060.00	
TRUE DEPTH	0060.00	
TILT	1.63	DG
BEARING	237.64	DG
NORTHING	-001.01	
EASTING	-000.65	

LOG DEPTH	0050.00	
TRUE DEPTH	0050.00	
TILT	1.39	DG
BEARING	201.29	DG
NORTHING	-000.86	
EASTING	-000.41	

LOG DEPTH	0040.00	
TRUE DEPTH	0040.00	
TILT	1.23	DG
BEARING	219.49	DG
NORTHING	-000.63	
EASTING	-000.32	

LOG DEPTH	0030.00	
TRUE DEPTH	0030.00	
TILT	1.42	DG
BEARING	224.82	DG
NORTHING	-000.46	
EASTING	-000.18	

LOG DEPTH	0020.00	
TRUE DEPTH	0020.00	
TILT	1.68	DG
BEARING	182.74	DG
NORTHING	-000.29	
EASTING	-000.01	

LOG DEPTH	0010.00	
TRUE DEPTH	0010.00	
TILT	1.86	DG
BEARING	179.04	DG
NORTHING	+000.00	
EASTING	+000.00	

739

QHD87005

DEPTH	= 0010.00	
TILT	= 1.86	DG
BEARING	= 179.04	DG
DEPTH	= 0020.00	
TILT	= 1.49	DG
BEARING	= 186.45	DG
DEPTH	= 0030.00	
TILT	= 1.35	DG
BEARING	= 263.20	DG
DEPTH	= 0040.00	
TILT	= 1.12	DG
BEARING	= 175.78	DG
DEPTH	= 0050.00	
TILT	= 1.67	DG
BEARING	= 226.80	DG
DEPTH	= 0060.00	
TILT	= 1.59	DG
BEARING	= 248.48	DG
DEPTH	= 0070.00	
TILT	= 1.59	DG
BEARING	= 211.66	DG
DEPTH	= 0080.00	
TILT	= 1.67	DG
BEARING	= 268.30	DG
DEPTH	= 0090.00	
TILT	= 1.06	DG
BEARING	= 227.05	DG
DEPTH	= 0100.00	
TILT	= 1.06	DG
BEARING	= 229.46	DG
DEPTH	= 0110.00	
TILT	= .84	DG
BEARING	= 313.32	DG
DEPTH	= 0120.00	
TILT	= .83	DG
BEARING	= 261.33	DG
DEPTH	= 0130.00	
TILT	= 1.06	DG
BEARING	= 345.72	DG

DEPTH	= 0140.00	
TILT	= 1.06	DG
BEARING	= 53.32	DG
DEPTH	= 0150.00	
TILT	= .83	DG
BEARING	= 299.45	DG
DEPTH	= 0160.00	
TILT	= 1.35	DG
BEARING	= 50.23	DG
DEPTH	= 0170.00	
TILT	= 1.59	DG
BEARING	= 105.42	DG
DEPTH	= 0180.00	
TILT	= 1.19	DG
BEARING	= 122.09	DG

DATE	140787
JOB NUMBER	0005
LOG LABEL	025.2
MAG 1 MAX	228
MAG 1 MIN	129
MAG 2 MAX	228
MAG 2 MIN	130
MAG 3 MAX	205
MAG 3 MIN	155
L.CELL 1 TILT 1	20
L.CELL 1 CPS 1	233
L.CELL 1 TILT 2	-20
L.CELL 1 CPS 2	126
L.CELL 2 TILT 1	20
L.CELL 2 CPS 1	232
L.CELL 2 TILT 2	-20
L.CELL 2 CPS 2	126
MAG 1 CENTRE	180
MAG 2 CENTRE	181
MAG 3 CENTRE	180
L.CELL 1 CENTRE	182
L.CELL 2 CENTRE	180
MAG DECL	024
STOP DEPTH	010

BPB

COAL LITHOLOGY LOG

BOREHOLE	QHD 87-005
CLIENT	QUINTETTE
AREA	TRANSFER
COUNTRY	CANADA
DATE LOGGED	30.11.87
RUN NO.	1
DEPTH DRILLER	1190
DEPTH LOGGER	1190
CASING DRILLER	30.0
CASING LOGGER	30.0
BOTTOM LOGGED INTERVAL	1190
TOP LOGGED INTERVAL	30.0

REFERENCE DATA

CHAINAGE/DEPTH	0		
ELEVATION OF K.B.	1203.0		
DATUM	GROUND LEVEL		
DRILLER			
LOGGER			

BIT SIZE	311		
CASING BOTTOM	30.0		
TOP LOG INTERVAL	30.0		
BOTTOM LOG INTERVAL	1190		
TYPE FLUID IN HOLE	WATER		
DENSITY	1.0		
VISCOSITY	1.0		
PH	7.0		
FLUID LOSS	0		
SOURCE OF SAMPLE			
RM @ MEAS. TEMP.			
RMF @ MEAS. TEMP.			
RMC @ MEAS. TEMP.			
SOURCE OF RMF & RMC			
RM @ BHT			
TIME SINCE CIRC.			
MAX. REC. TEMP.			
EQUIP. LOCATION			
RECORDED BY			
WITNESSED BY			

OPERATION DATA

LOG SUITE	GAMMA RAY DENSITY CALIPER
LOG COMBINATION	
TOOL	
SONDE TYPE	
SONDE SERIAL NO.	
MATRIX DENSITY	2.71
HOLE DIAMETER	311
MATRIX/FLUID DT	55.5/189
MAX. RECORDED TEMP.	
EQUIPMENT NUMBER	
LOCATION	
RECORDED BY	M. ALEXANDER
WITNESSED BY	

739

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT			TAPING				PANEL		CAL. LOOP	DEPTHS			SEAM LOG RUN
	SONDE	SOURCE	CAB/BOOM	LOG SPEED	RECORD SPEED	DEPTH INTERVAL	SPEED	HT. SPEED	NORM		FROM	TO	MINIMUM	
GAMMA RAY	153		367	Y	9	9	9	1	—	-145	185	00	186	
DENSITY	5852		0051	Y	9	9	9	9.3	7.38	—	185	68	186	
CALIPER		VERTICAL POSITION		Y	9	9	9	1.3	—	-1.49	185	68	186	

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to schematic log)

FROM	184m	167m	127m	105m	83m	20m
TO	173m	154m	117m	99m	79m	14m
INTERVAL	11m	13m	07m	08m	04m	06m

INTERVAL TOTAL 53m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE	GEOL. SCALE
215	S-S	1:200	
231	VERT.		

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

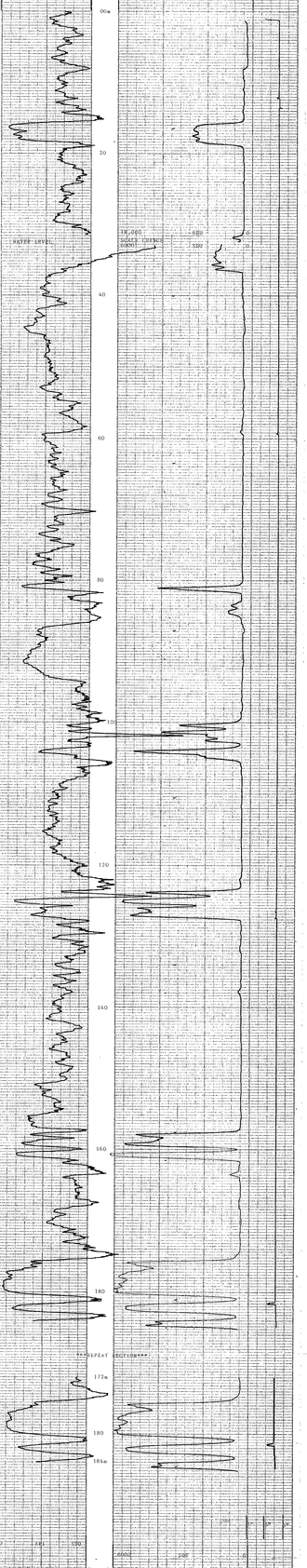
CALIBRATION DATA

JIG No.	VALUE @ 2 DIAM	JIG CAL DATE	JIG VALUE SG=@ g/cm³	m	cps
JIG MARK SHOWN AT ABOVE VALUE		JIG No.	SPAN NORM g/cm³	m	cps

GAMMA RAY | DEPTH | BULK DENSITY | CALIPER INCHES

HOLE SIZE CORRECTION DATA

0 API 150 | 2.0 g/cm³ 3.0 | 0 mm 1000 | 0 in 2



0 API 150 | 2.0 g/cm³ 3.0 | 0 mm 1000 | 0 in 2

GAMMA RAY | DEPTH | BULK DENSITY | CALIPER INCHES

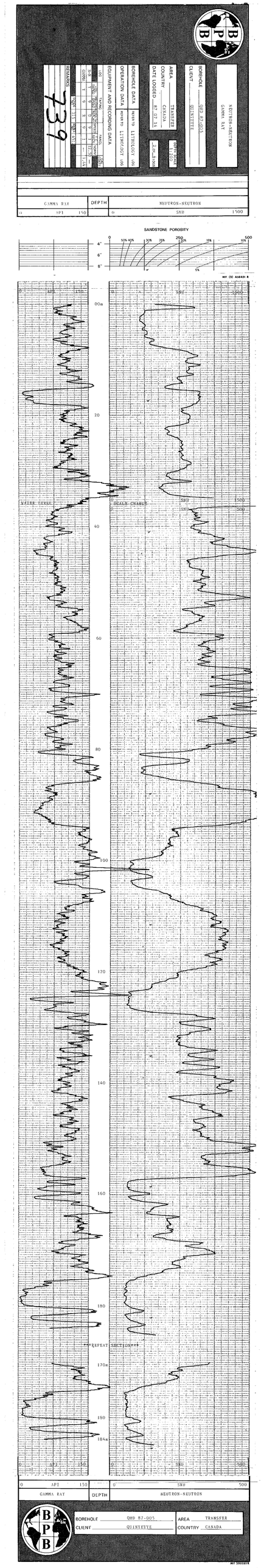
BPB

BOREHOLE QHD 87-005 | AREA TRANSFER

CLIENT QUINTETTE | COUNTRY CANADA

COAL LITHOLOGY LOG

REF: A30264-K

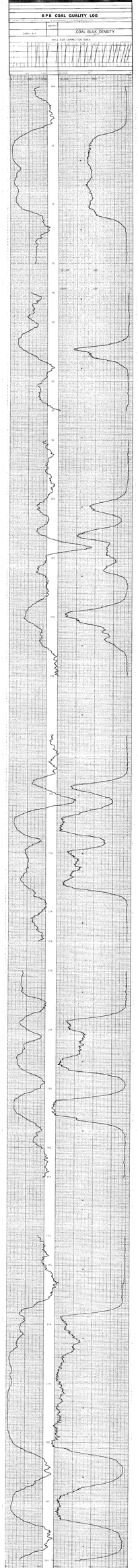

B P B
NEUTRON-NEUTRON
GAMMA RAY
BOREHOLE
QHD 87-005
CLIENT
QUINTETTE
AREA
TRANSFER
COUNTRY
CANADA
DATE LOGGED
87 07 14
RUN NO.
ONE
DEPTH DRILLER
DEPTH LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
CASING-DRILLER
CASING-LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE RMF RMC
RM @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
REMARKS
BOREHOLE DATA
REFER TO LITHOLOGY LOG
OPERATION DATA
EQUIPMENT AND RECORDING DATA
GAMMA RAY
API
0
150
DEPTH
NEUTRON-NEUTRON
SNU
0
1500
SANDSTONE POROSITY
0
50%
40%
30%
25%
20%
15%
10%
5%
250
500
4"
6"
8"
MY (3) A36431 R
00m
20
40
60
80
100
120
140
160
180
170m
180
184m
WATER LEVEL
SCALE CHANGE
150
500
REPEAT SECTION
BOREHOLE
QHD 87-005
CLIENT
QUINTETTE
AREA
TRANSFER
COUNTRY
CANADA
MY 5900815

BPB COAL QUALITY LOG

GAMMA RAY — COAL BULK_DENSITY

DEPTH

HOLE SIZE (CORRECTION DATA)



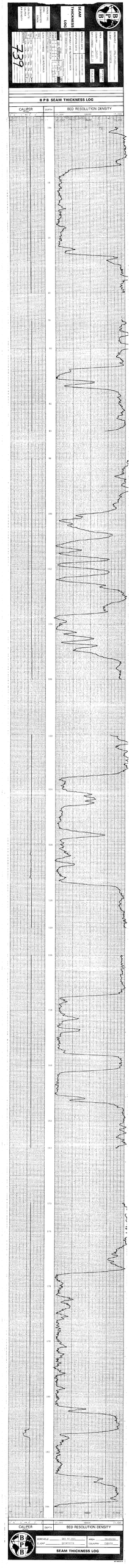
GAMMA RAY — COAL BULK_DENSITY

DEPTH

BPB

REFERENCE: GDS 97-1015 — AREA: SOUTH
DATE: 07/17/2018 — DRAWN: SAMS

COAL QUALITY LOG


BP
BPB
SEAM THICKNESS LOG
BOREHOLE
DATE
COUNTY
AREA
237
BPB SEAM THICKNESS LOG
CALIPER
DEPTH
BED RESOLUTION DENSITY
SEAM THICKNESS LOG

QHD87006

LOG DEPTH	0200.00	
TRUE DEPTH	0199.99	
TILT	1.43	DG
BEARING	345.64	DG
NORTHING	-001.71	
EASTING	+000.28	

LOG DEPTH	0190.00	
TRUE DEPTH	0189.99	
TILT	1.45	DG
BEARING	181.22	DG
NORTHING	-001.95	
EASTING	+000.34	

LOG DEPTH	0180.00	
TRUE DEPTH	0179.99	
TILT	1.51	DG
BEARING	156.15	DG
NORTHING	-001.70	
EASTING	+000.35	

LOG DEPTH	0170.00	
TRUE DEPTH	0169.99	
TILT	1.54	DG
BEARING	303.09	DG
NORTHING	-001.45	
EASTING	+000.24	

LOG DEPTH	0160.00	
TRUE DEPTH	0159.99	
TILT	1.44	DG
BEARING	108.34	DG
NORTHING	-001.60	
EASTING	+000.47	

LOG DEPTH	0150.00	
TRUE DEPTH	0149.99	
TILT	1.41	DG
BEARING	197.28	DG
NORTHING	-001.52	
EASTING	+000.23	

LOG DEPTH	0140.00	
TRUE DEPTH	0139.99	
TILT	1.41	DG
BEARING	171.68	DG
NORTHING	-001.29	
EASTING	+000.30	

LOG DEPTH	0130.00	
TRUE DEPTH	0129.99	
TILT	1.31	DG
BEARING	172.91	DG
NORTHING	-001.04	
EASTING	+000.27	

LOG DEPTH	0120.00	
TRUE DEPTH	0119.99	
TILT	1.26	DG
BEARING	177.04	DG
NORTHING	-000.81	
EASTING	+000.24	

LOG DEPTH	0110.00	
TRUE DEPTH	0109.99	
TILT	1.44	DG
BEARING	92.53	DG
NORTHING	-000.59	
EASTING	+000.23	

LOG DEPTH	0100.00	
TRUE DEPTH	0099.99	
TILT	1.46	DG
BEARING	122.06	DG
NORTHING	-000.58	
EASTING	-000.01	

LOG DEPTH	0090.00	
TRUE DEPTH	0089.99	
TILT	1.36	DG
BEARING	230.89	DG
NORTHING	-000.45	
EASTING	-000.23	

LOG DEPTH	0080.00	
TRUE DEPTH	0079.99	
TILT	1.25	DG
BEARING	232.99	DG
NORTHING	-000.30	
EASTING	-000.05	

LOG DEPTH	0070.00	
TRUE DEPTH	0069.99	
TILT	1.57	DG
BEARING	268.86	DG
NORTHING	-000.16	
EASTING	+000.12	

LOG DEPTH	0060.00	
TRUE DEPTH	0059.99	
TILT	1.72	DG
BEARING	27.32	DG
NORTHING	-000.16	
EASTING	+000.39	

LOG DEPTH	0050.00	
TRUE DEPTH	0049.99	
TILT	1.19	DG
BEARING	130.09	DG
NORTHING	-000.43	
EASTING	+000.25	

LOG DEPTH	0040.00	
TRUE DEPTH	0039.99	
TILT	1.51	DG
BEARING	113.23	DG
NORTHING	-000.29	
EASTING	+000.10	

LOG DEPTH	0030.00	
TRUE DEPTH	0029.99	
TILT	1.70	DG
BEARING	137.16	DG
NORTHING	-000.19	
EASTING	-000.14	

LOG DEPTH	0020.00	
TRUE DEPTH	0019.99	
TILT	1.97	DG
BEARING	274.12	DG
NORTHING	+000.02	
EASTING	-000.34	

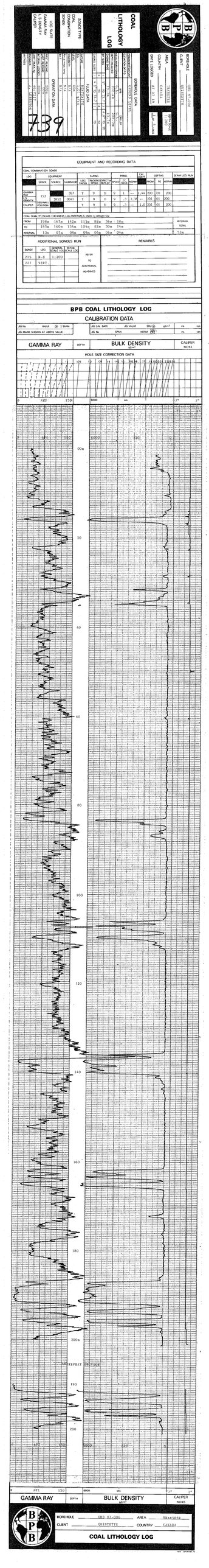
LOG DEPTH	0010.00	
TRUE DEPTH	0010.00	
TILT	2.50	DG
BEARING	322.37	DG
NORTHING	+000.00	
EASTING	+000.00	

739

QHD 87006

DEPTH	=	0010.00
TILT	=	2.50 DG
BEARING	=	322.37 DG
DEPTH	=	0020.00
TILT	=	1.45 DG
BEARING	=	225.88 DG
DEPTH	=	0030.00
TILT	=	1.96 DG
BEARING	=	48.45 DG
DEPTH	=	0040.00
TILT	=	1.05 DG
BEARING	=	178.02 DG
DEPTH	=	0050.00
TILT	=	1.33 DG
BEARING	=	82.15 DG
DEPTH	=	0060.00
TILT	=	2.11 DG
BEARING	=	332.48 DG
DEPTH	=	0070.00
TILT	=	1.03 DG
BEARING	=	205.25 DG
DEPTH	=	0080.00
TILT	=	1.46 DG
BEARING	=	260.74 DG
DEPTH	=	0090.00
TILT	=	1.26 DG
BEARING	=	201.05 DG
DEPTH	=	0100.00
TILT	=	1.67 DG
BEARING	=	43.07 DG
DEPTH	=	0110.00
TILT	=	1.21 DG
BEARING	=	141.99 DG
DEPTH	=	0120.00
TILT	=	1.31 DG
BEARING	=	212.09 DG
DEPTH	=	0130.00
TILT	=	1.31 DG
BEARING	=	133.74 DG
DEPTH	=	0140.00
TILT	=	1.51 DG
BEARING	=	209.61 DG
DEPTH	=	0150.00
TILT	=	1.31 DG
BEARING	=	184.94 DG
DEPTH	=	0160.00
TILT	=	1.58 DG
BEARING	=	31.75 DG
DEPTH	=	0170.00
TILT	=	1.51 DG
BEARING	=	214.43 DG
DEPTH	=	0180.00
TILT	=	1.51 DG
BEARING	=	97.86 DG
DEPTH	=	0190.00
TILT	=	1.39 DG
BEARING	=	264.58 DG
DEPTH	=	0200.00
TILT	=	1.46 DG
BEARING	=	66.70 DG

DATE	870719
JOB NUMBER	7006
LOG LABEL	026.1
MAG 1 MAX	229
MAG 1 MIN	131
MAG 2 MAX	230
MAG 2 MIN	131
MAG 3 MAX	205
MAG 3 MIN	155
L. CELL 1 TILT 1	8
L. CELL 1 CPS 1	258
L. CELL 1 TILT 2	-8
L. CELL 1 CPS 2	181
L. CELL 2 TILT 1	8
L. CELL 2 CPS 1	258
L. CELL 2 TILT 2	-8
L. CELL 2 CPS 2	181
MAG 1 CENTRE	181
MAG 2 CENTRE	180
MAG 3 CENTRE	180
L. CELL 1 CENTRE	221
L. CELL 2 CENTRE	222
MAG DECL	24
STOP DEPTH	10



EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT			TAPING		PANEL		CAL LOG	DEPTHS		SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG (MPS)	READING/DIRECTN SPEED	DIRECTN DELAY	SPEED	FS SCALE	NORM	FROM	TO	RETURN
GAMMA RAY	155		367	T	9	9	9	1	—	1.44	000	00	200
BULK DENSITY		59/5	0041	T	9	9	9	.3	7.38	001	00	000
CALIPER	SEE PANEL POSITION			T	9	9	9	.3	—	1.0	201	01	200

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	198m	167m	142m	113m	88m	36m	18m		INTERVAL TOTAL
TO	185m	146m	134m	104m	82m	30m	11m		
INTERVAL	13m	07m	08m	09m	06m	06m	07m	5.7m	

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL COAL LOGGING LOG	DETAIL COAL LOGGING LOG
215	8-9	1:200	
227	VERT.		

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No.	VALUE @ 1°/MIN	JIG CAL DATE	JIG VALUE	SOLID	kg/m³	ms	MS
JIG MARK SHOWN AT ABOVE VALUE		JIG No.	SPAN	NORM 2.65		ms	MS

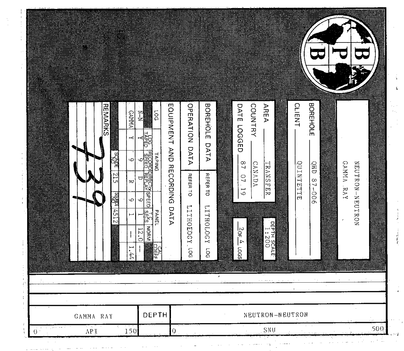
GAMMA RAY | DEPTH | BULK DENSITY | CALIPER INCHES

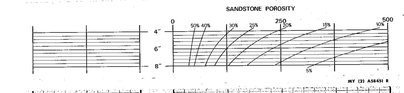
HOLE SIZE CORRECTION DATA

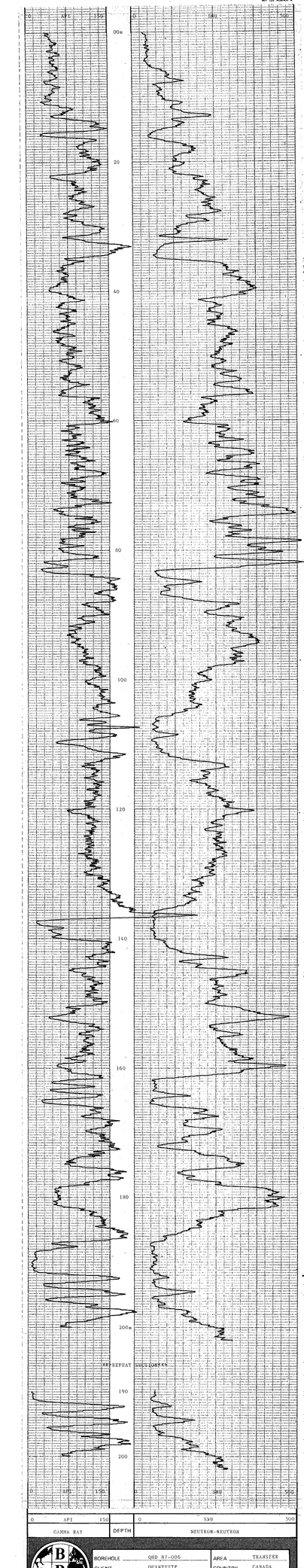
GAMMA RAY | DEPTH | BULK DENSITY | CALIPER INCHES

BOREHOLE OBD 82-006 | AREA TRANSFER
CLIENT QUINTETTE | COUNTRY CANADA

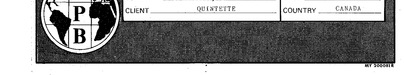
COAL LITHOLOGY LOG

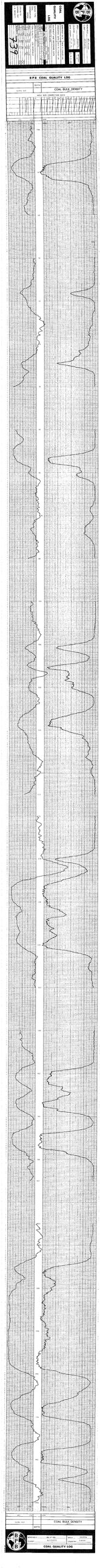






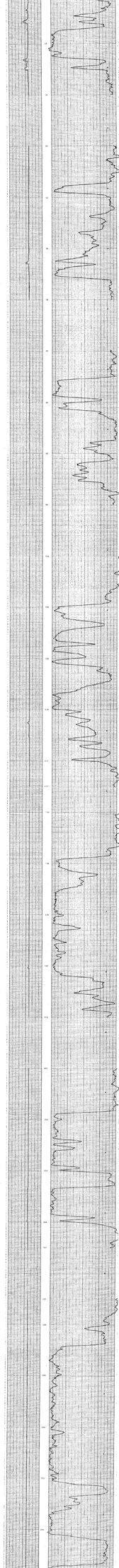
0 API 150
0 SNU 500
GAMMA RAY
DEPTH
NEUTRON-NEUTRON




437
COAL QUALITY LOG
BP2 COAL QUALITY LOG
COAL BULK DENSITY
COAL BULK DENSITY
COAL QUALITY LOG

B.P.B. SEAM THICKNESS LOG

CALIPER | DEPTH | BED RESOLUTION DENSITY



CALIPER | DEPTH | BED RESOLUTION DENSITY

BOREHOLE NO. SP1-87/89 | DATE 7/5/2016
PLANT SEAM/PIT | COUNTRY USA/GB

SEAM THICKNESS LOG

QHD 87-007
TRANSFER

LOG DEPTH	0110.00	
TRUE DEPTH	0110.00	
TILT	1.19	DG
BEARING	171.73	DG
NORTHING	-001.07	
EASTING	+001.40	
LOG DEPTH	0100.00	
TRUE DEPTH	0100.00	
TILT	1.59	DG
BEARING	152.60	DG
NORTHING	-000.86	
EASTING	+001.37	
LOG DEPTH	0090.00	
TRUE DEPTH	0090.00	
TILT	1.44	DG
BEARING	134.79	DG
NORTHING	-000.62	
EASTING	+001.25	
LOG DEPTH	0080.00	
TRUE DEPTH	0080.00	
TILT	1.04	DG
BEARING	131.71	DG
NORTHING	-000.44	
EASTING	+001.07	
LOG DEPTH	0070.00	
TRUE DEPTH	0070.00	
TILT	.78	DG
BEARING	129.93	DG
NORTHING	-000.32	
EASTING	+000.93	
LOG DEPTH	0060.00	
TRUE DEPTH	0060.00	
TILT	.92	DG
BEARING	115.58	DG
NORTHING	-000.23	
EASTING	+000.83	
LOG DEPTH	0050.00	
TRUE DEPTH	0050.00	
TILT	1.33	DG
BEARING	106.56	DG
NORTHING	-000.16	
EASTING	+000.68	
LOG DEPTH	0040.00	
TRUE DEPTH	0040.00	
TILT	1.08	DG
BEARING	77.77	DG
NORTHING	-000.09	
EASTING	+000.46	
LOG DEPTH	0030.00	
TRUE DEPTH	0030.00	
TILT	.59	DG
BEARING	128.39	DG
NORTHING	-000.13	
EASTING	+000.27	
LOG DEPTH	0020.00	
TRUE DEPTH	0020.00	
TILT	.44	DG
BEARING	154.98	DG
NORTHING	-000.07	
EASTING	+000.19	
LOG DEPTH	0010.00	
TRUE DEPTH	0010.00	
TILT	1.02	DG
BEARING	90.50	DG
NORTHING	-000.00	
EASTING	+000.16	
LOG DEPTH	0001.00	
TRUE DEPTH	0001.00	
TILT	1.52	DG
BEARING	80.44	DG
NORTHING	+000.00	
EASTING	+000.00	

739

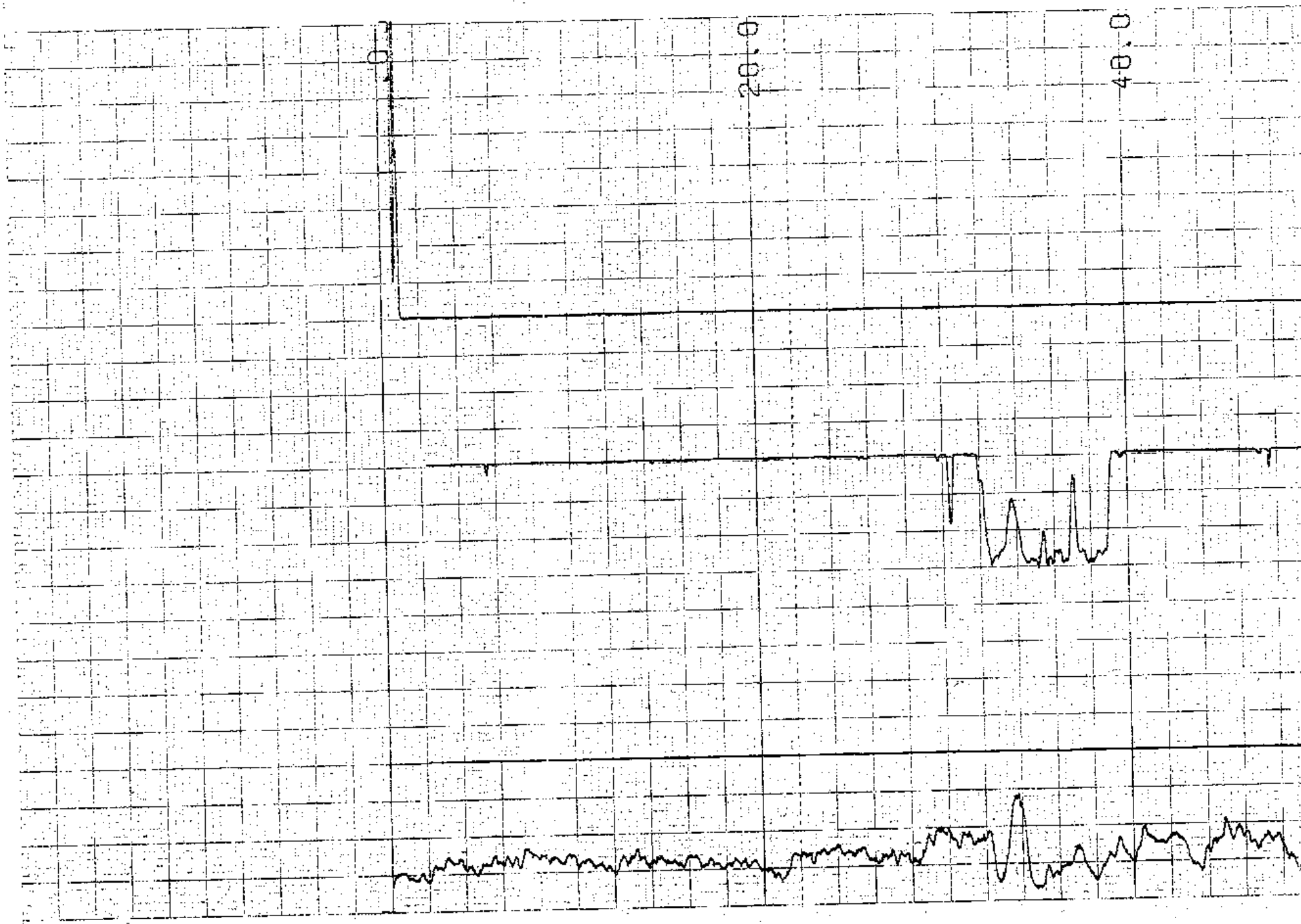
DEPTH	= 0010.00	
TILT	= .52	DG
BEARING	= 100.56	DG
DEPTH	= 0020.00	
TILT	= .37	DG
BEARING	= 209.40	DG
DEPTH	= 0030.00	
TILT	= .82	DG
BEARING	= 47.38	DG
DEPTH	= 0040.00	
TILT	= 1.33	DG
BEARING	= 108.16	DG
DEPTH	= 0050.00	
TILT	= 1.33	DG
BEARING	= 104.96	DG
DEPTH	= 0060.00	
TILT	= .52	DG
BEARING	= 126.20	DG
DEPTH	= 0070.00	
TILT	= 1.04	DG
BEARING	= 133.66	DG
DEPTH	= 0080.00	
TILT	= 1.04	DG
BEARING	= 129.76	DG
DEPTH	= 0090.00	
TILT	= 1.85	DG
BEARING	= 139.82	DG
DEPTH	= 0100.00	
TILT	= 1.33	DG
BEARING	= 165.38	DG
DEPTH	= 0110.00	
TILT	= 1.04	DG
BEARING	= 178.08	DG

DATE	870803
JOB NUMBER	0007
LOG LABEL	026.1
MAG 1 MAX	229
MAG 1 MIN	129
MAG 2 MAX	228
MAG 2 MIN	130
MAG 3 MAX	205
MAG 3 MIN	155
L. CELL 1 TILT 1	10
L. CELL 1 CPS 1	206
L. CELL 1 TILT 2	-10
L. CELL 1 CPS 2	152
L. CELL 2 TILT 1	10
L. CELL 2 CPS 1	207
L. CELL 2 TILT 2	-10
L. CELL 2 CPS 2	153
MAG 1 CENTRE	180
MAG 2 CENTRE	179
MAG 3 CENTRE	180
L. CELL 1 CENTRE	180
L. CELL 2 CENTRE	180
MAG DECL	24
STOP DEPTH	0001

QHD87007

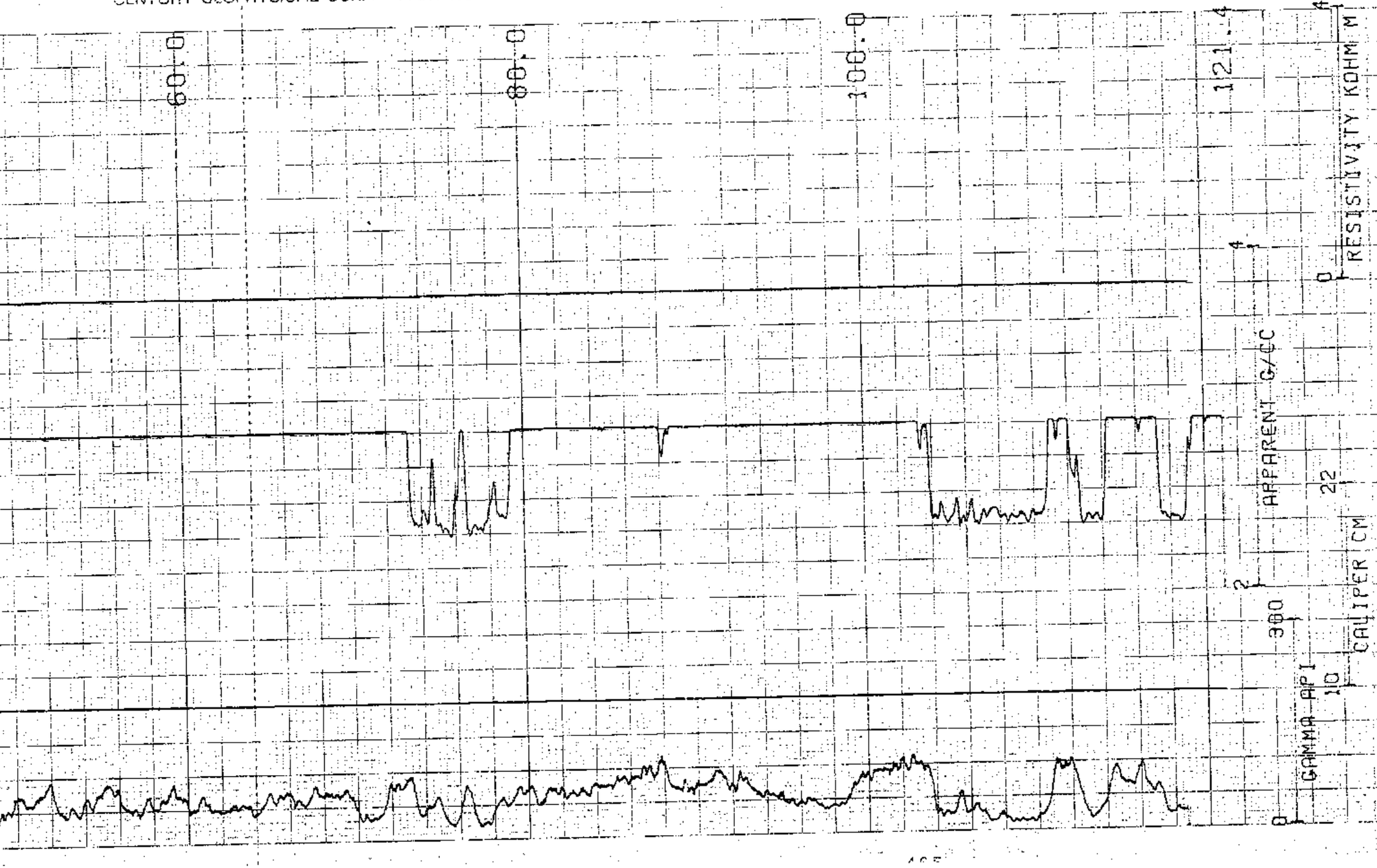
TRANSFER

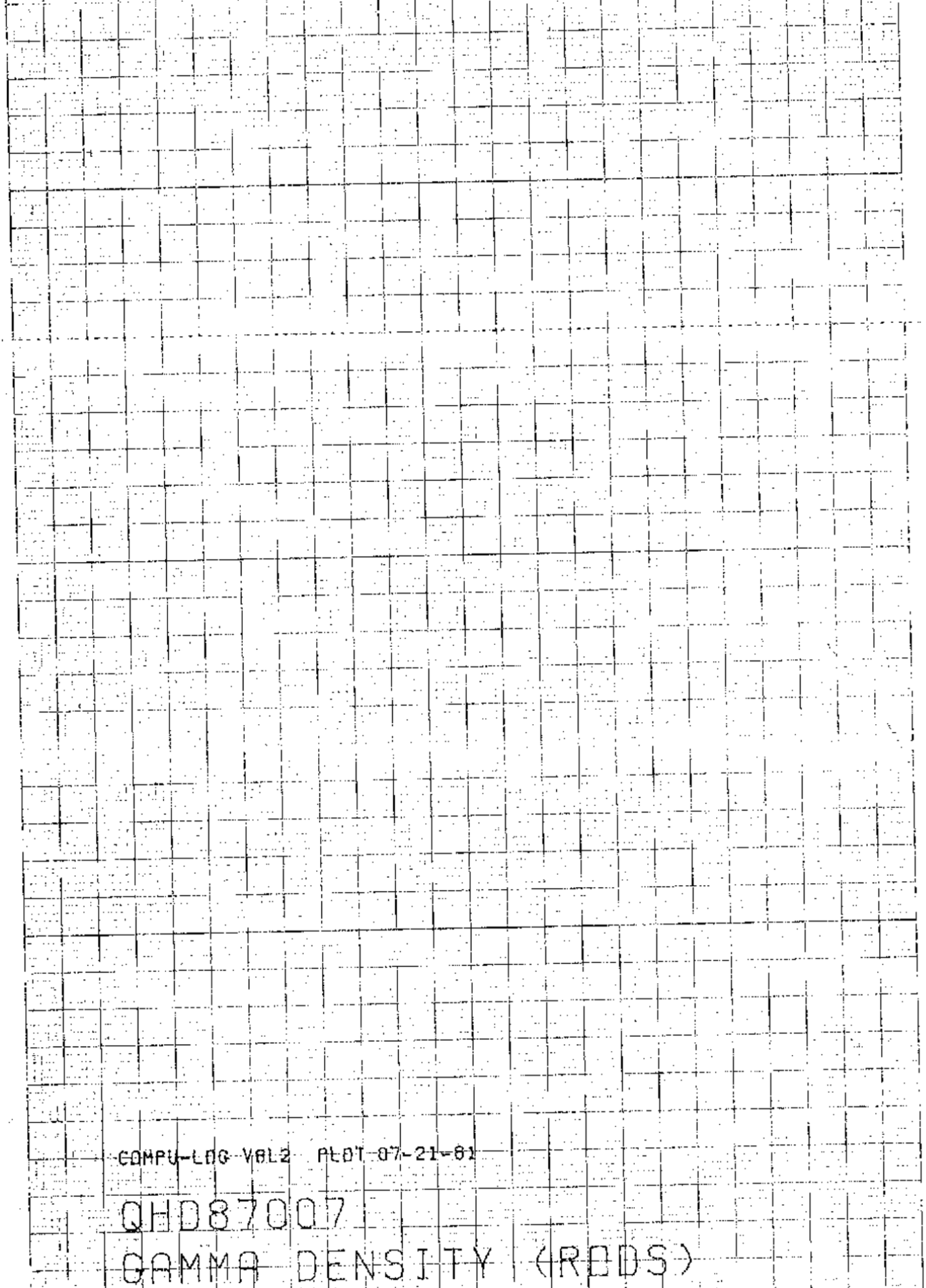
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

CENTURY GEOPHYSICAL CO




CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
COMPU-LOG V8L2 PLOT 07-21-81
QHD87007
GAMMA DENSITY (REDS)

TRANSFER

HOLE DIAMETER : 10.0

PROBE # 9030A1- 420

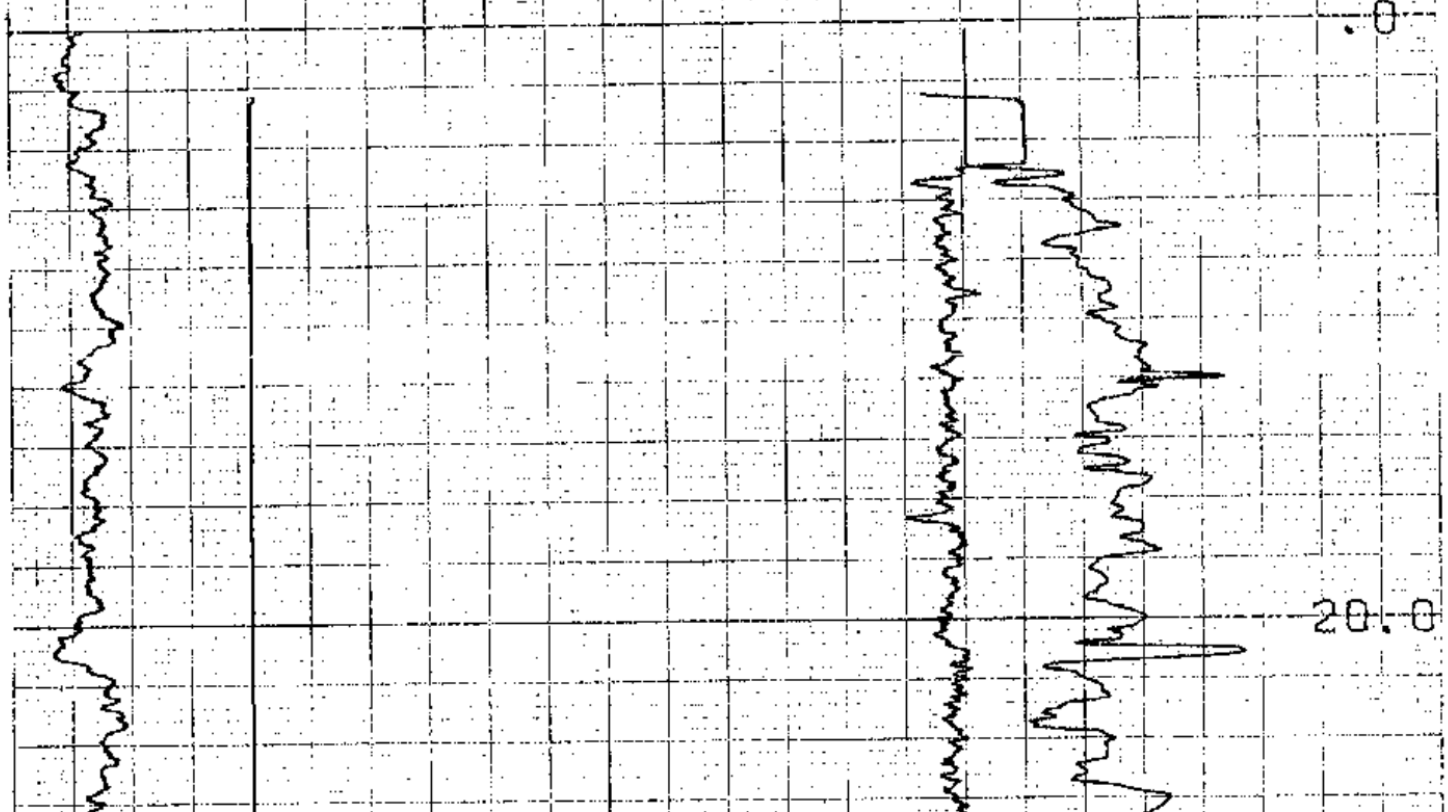
SENSOR #4 CAL STD CPS = 6588

SENSOR #4 CAL RUN CPS = 7500

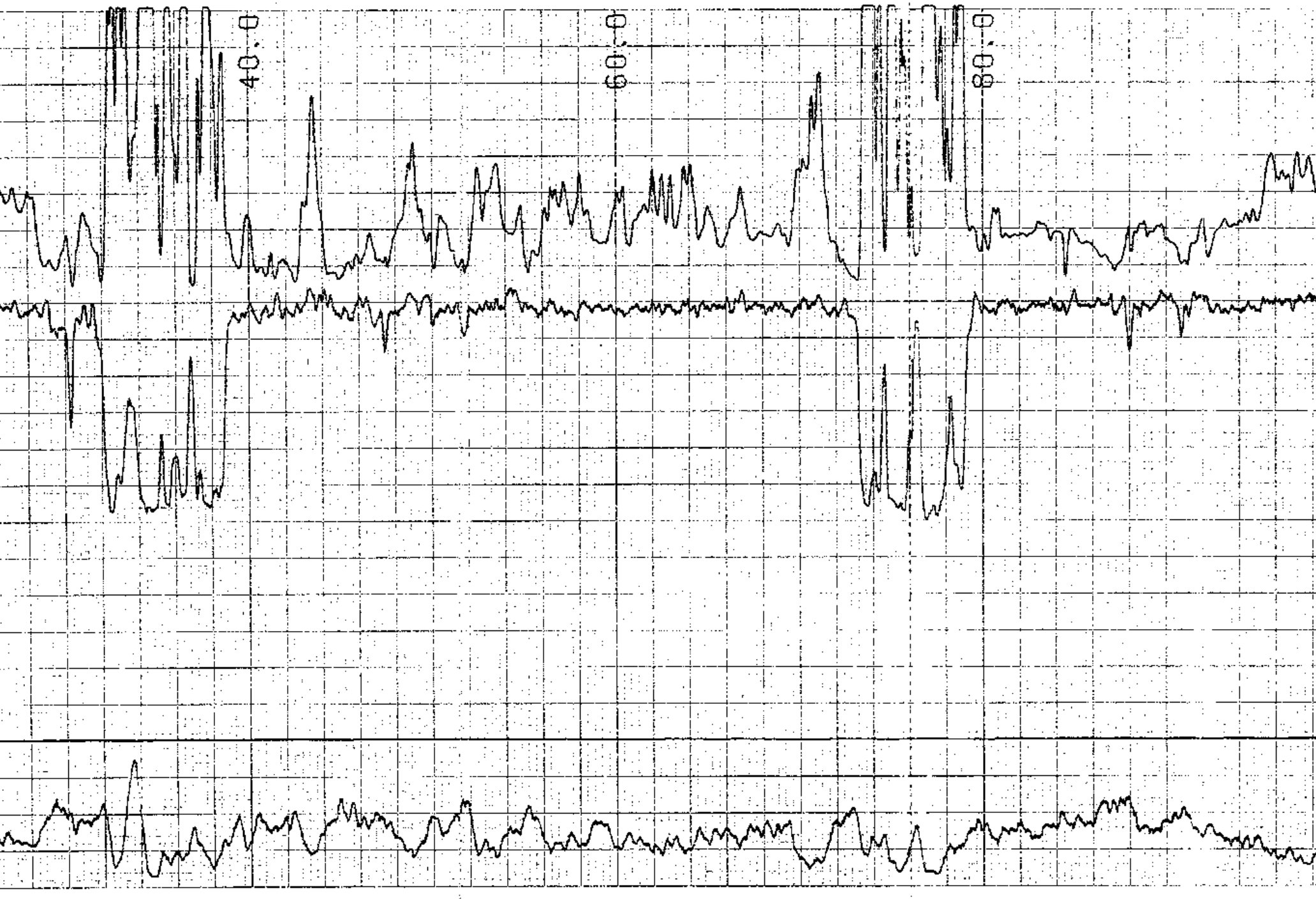
SENSOR #4 CAL BIAS = 31

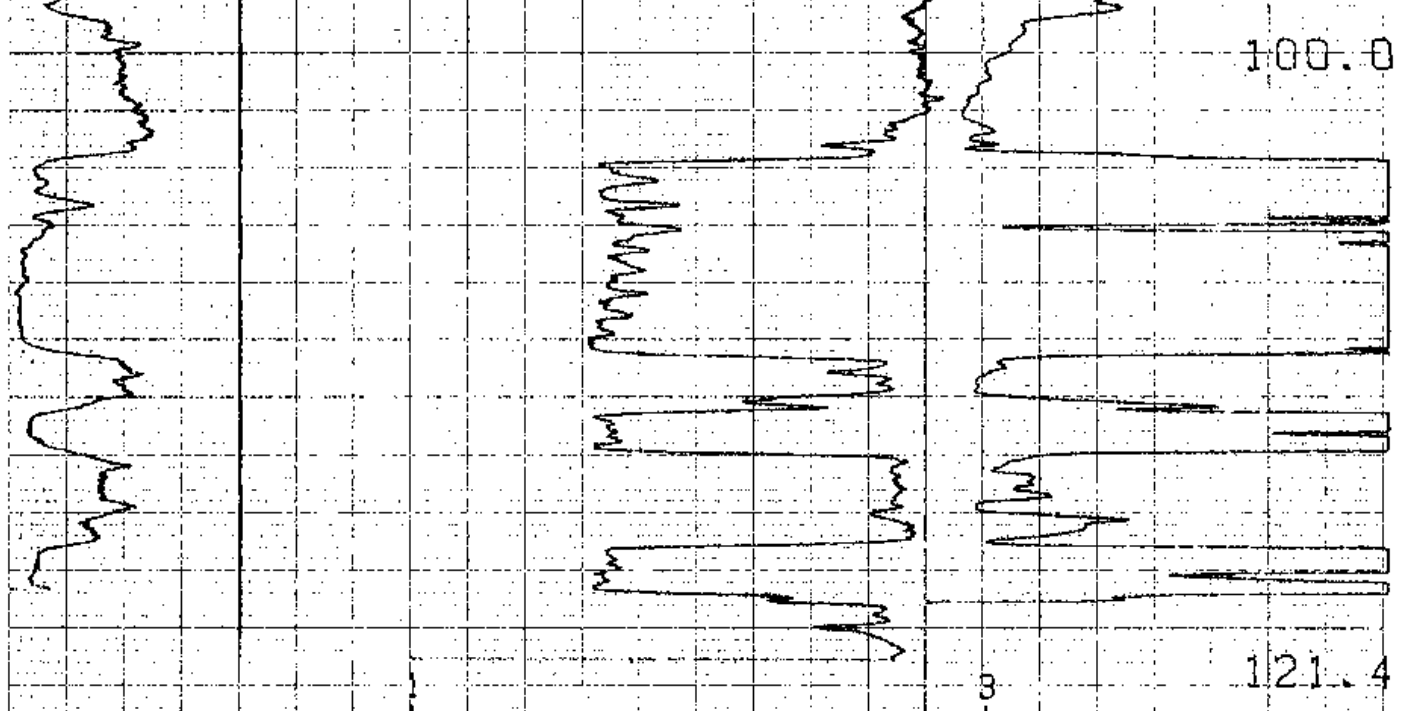
DATA V8L2WH TRUCK # 604

L PENDLETON APPL.#30 L1



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040


40.0
60.0
80.0



COMPU-LOG V8L2 PLOT 07-21-81

QHD87007

GAMMA DENSITY CALIPR

TRANSFER

HOLE DIAMETER : 10.0

PROBE # 9030A1- 420

SENSOR #4 CAL STD CPS = 6588

SENSOR #4 CAL RUN CPS = 7500

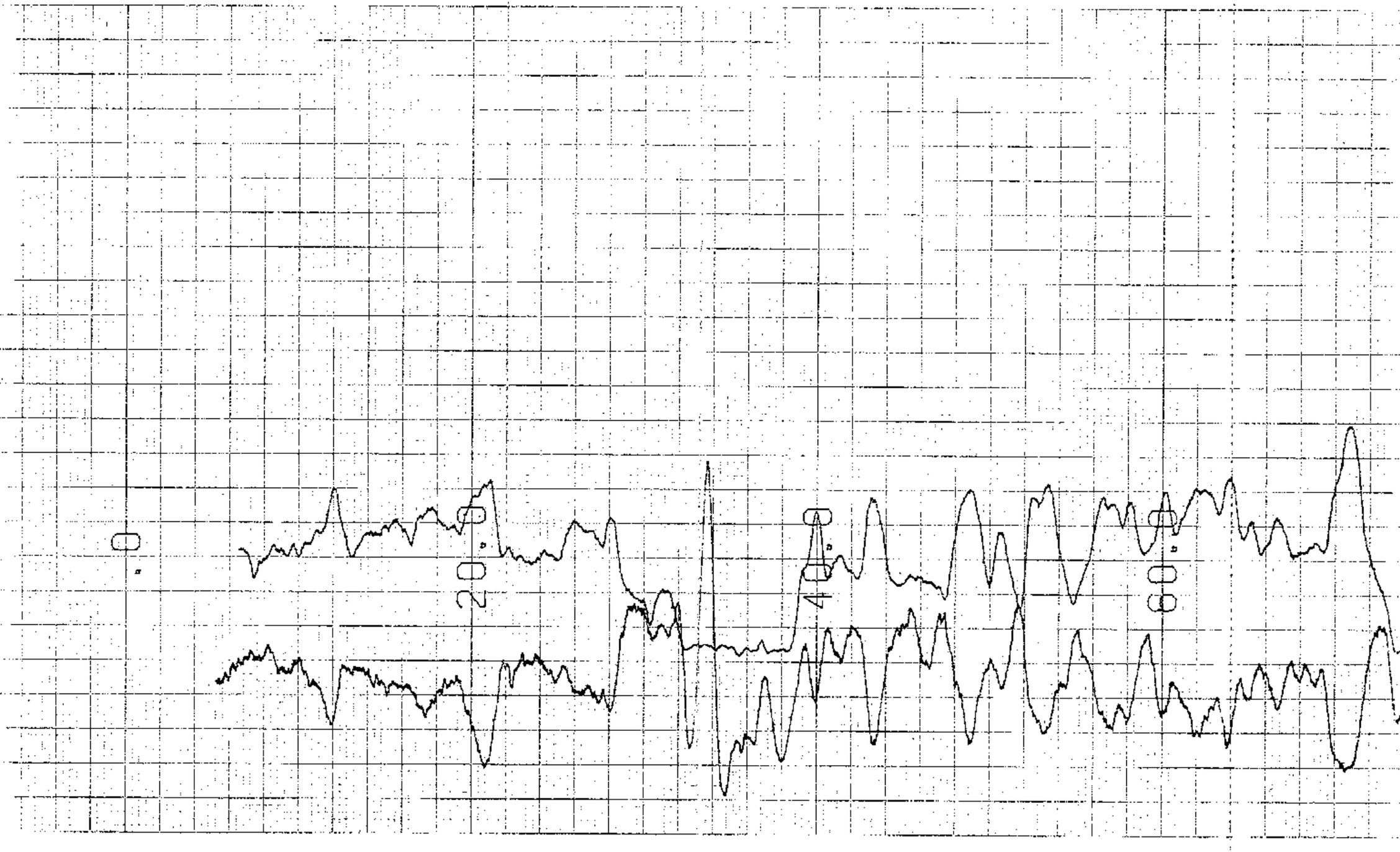
SENSOR #4 CAL BIAS = 31

DATA V8L2#A TRUCK # 604

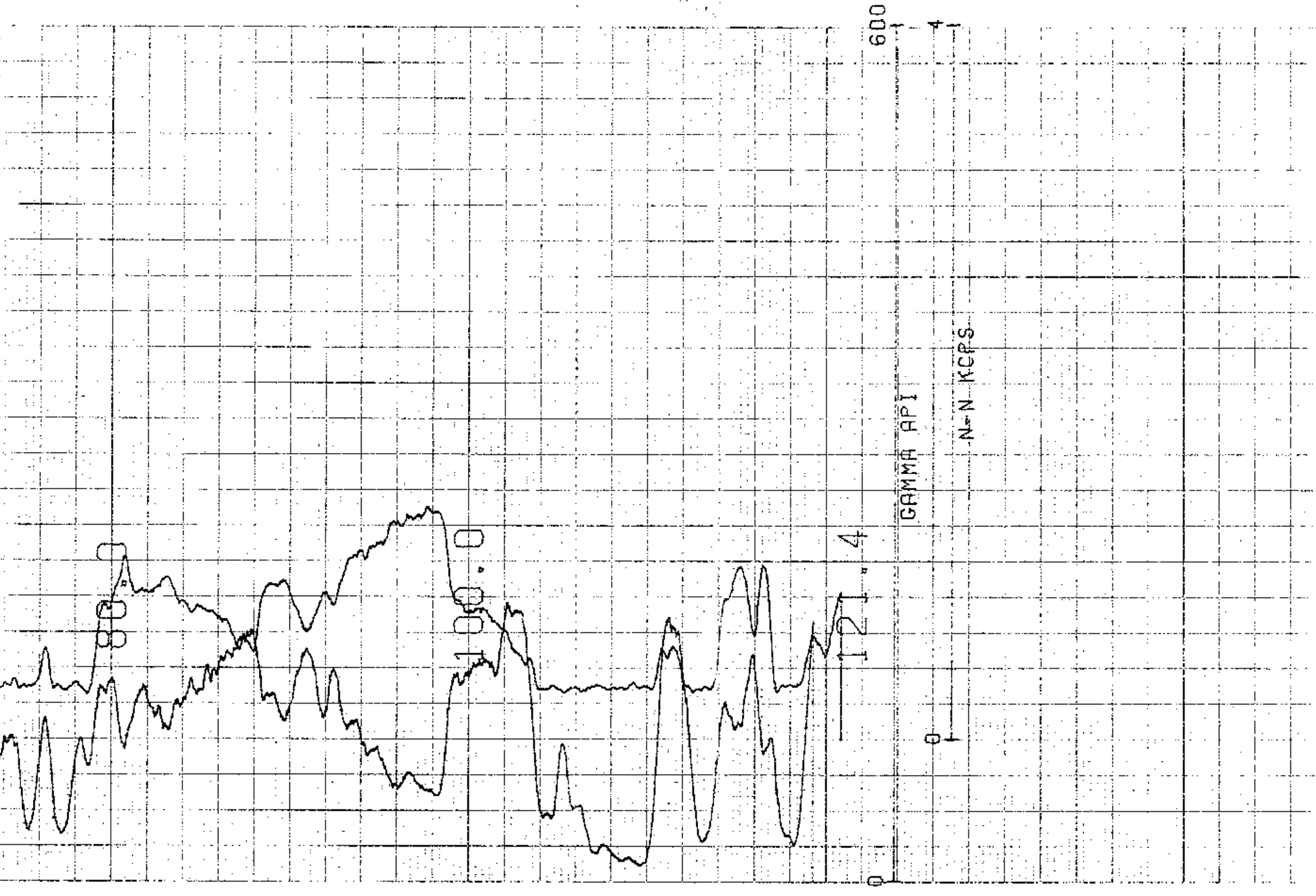
L PENDLETON APPL.#30 L1

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

CENTURY GEOPHYSICAL CORP.



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040



COMPU-LOG V8L2 PLOT 07-21-81

QHD87007

GAMMA NEUTRON DEV'N

TRANSFER

HOLE DIAMETER : 10.0

PROBE # 9055A - 058

SENSOR #4 CAL STD CPS = 152

SENSOR #4 CAL RUN CPS = 186

SENSOR #4 CAL BIAS = 0

DATA V8L2*A TRUCK # 604

L PENDLETON APPL. #7 L1

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

VERTICAL DEVIATION

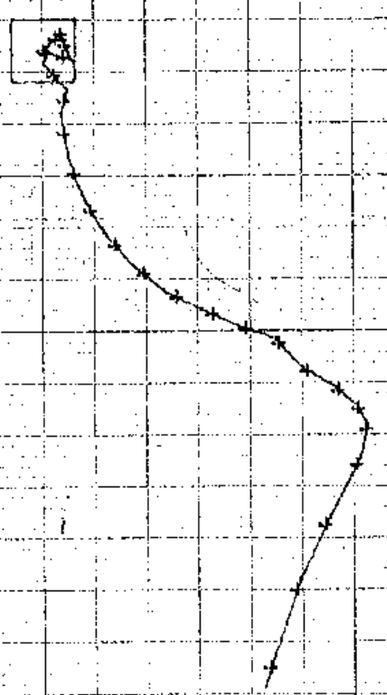
COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2*A

CLIENT : GAMMA NEUTRON DEV'N
LOCATION : TRANSFER
HOLE ID : QHD87007
DATE OF LOG : 07-21-81
PROBE : 9055A 0058

SCALE: .10 M/DIV
MAG DECL: 24.5
TRUE DEPTH: 121.3 M
AZIMUTH: 161.0
DISTANCE: 1.29 M

+ = 5.0 M INCR
△ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ↑



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

CENTURY GEOPHYSICAL CORP. PART

139

COMPU-LOG V8L2 PLOT 07-21-81

QHD87007
GAMMA DENSITY CALIPR
TRANSFER

HOLE DIAMETER : 10.0
PROBE # 9030A1- 420
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 7500
SENSOR #4 CAL BIAS = 31
DATA V8L2*A TRUCK # 604
L PENDLETON APPL #1708L1

739

SEAM THICKNESS LOG

BOREHOLE	QHD 87-007
CLIENT	QUINTETTE
AREA	TRANSFER
COUNTRY	CANADA
DATE LOGGED	87 08 03

DEPTH SCALE 1:20

4 OF 4 LOGS

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: CALIPER, B.R. DENSITY

BOREHOLE DATA: REFER TO LITHOLOGY LOG

OPERATION DATA: REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE — SIDEWALL POSITION

LOG	TAPING: LOG TAPED	TAPING: RECORD SPEED	PANEL: DIRECT/REPLAY	PANEL: SPL FD	PANEL: TC SECS	PANEL: NORM	CAL COEFF
CALIPER	Y	2	R	2	.3	—	1.0
B.R. DENSITY	Y	2	R	2	.3	7.39	—

SOURCE SONDE AND CALIBRATION: REFER TO LITHOLOGY LOG

SEAM THICKNESS LOG INTERVALS

FROM	114m	80m	40m	
TO	102m	71m	30m	
INTERVAL	12m	09m	10m	INTERVAL TOTAL 31m

REMARKS: 739

B P B SEAM THICKNESS LOG

CALIPER (INCHES)	DEPTH	BED RESOLUTION DENSITY
7" 6" 5" dia4" 3" 2"		25,000 SBRDU 15,000

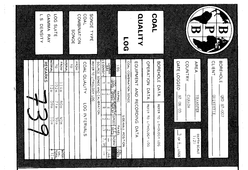
7" 6" 5" dia4" 3" 2"		25,000 SBRDU 15,000
CALIPER (INCHES)	DEPTH	BED RESOLUTION DENSITY

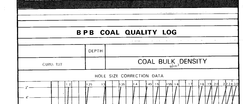
BOREHOLE QHD 87-007 AREA TRANSFER

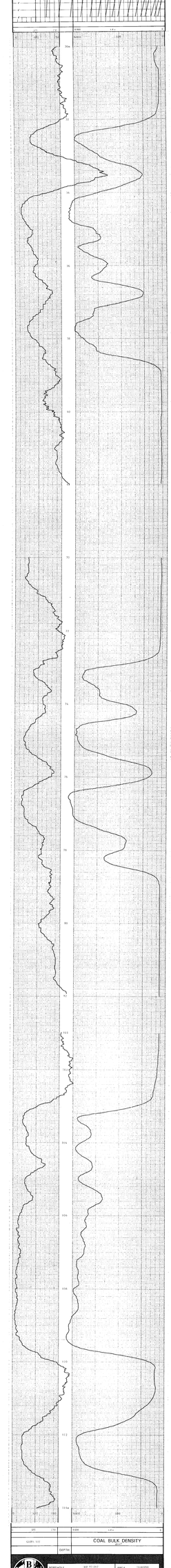
CLIENT QUINTETTE COUNTRY CANADA

SEAM THICKNESS LOG

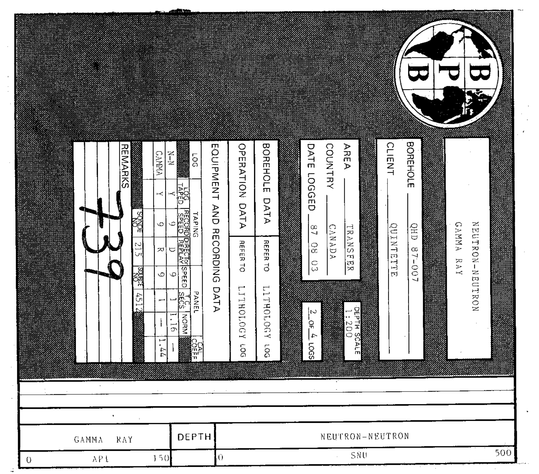
MY 88002 R

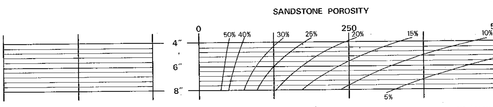

COAL QUALITY LOG
BPB
739


BPB COAL QUALITY LOG
DEPTH
COAL BULK DENSITY
HOLE SIZE CORRECTION DATA

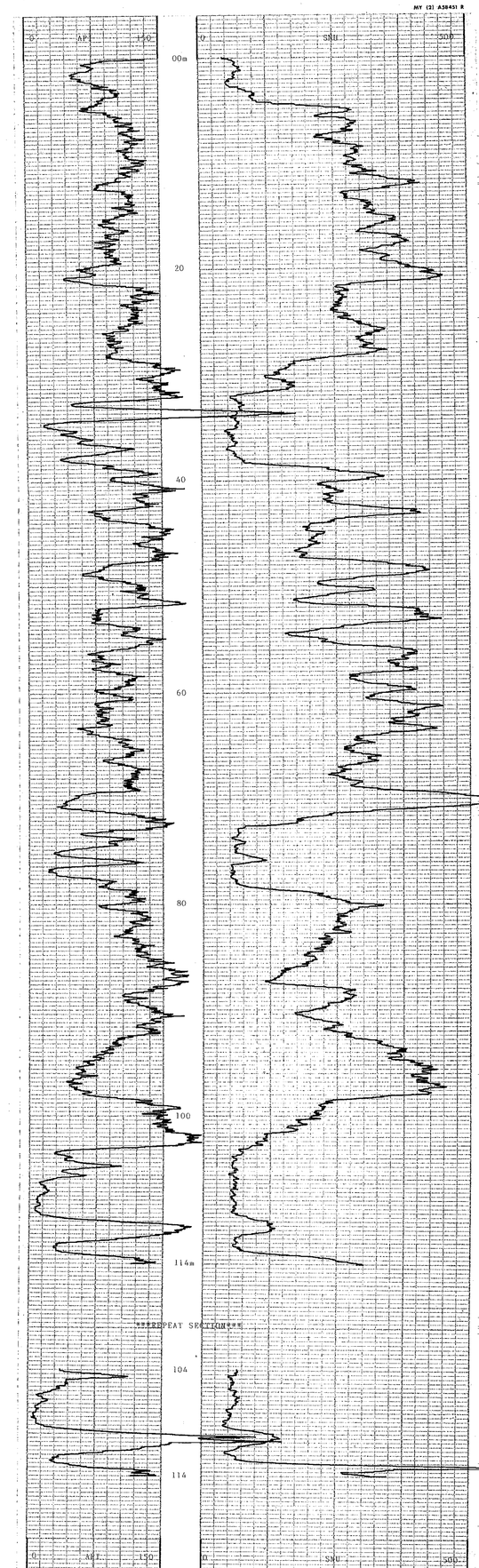

50m
60
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115

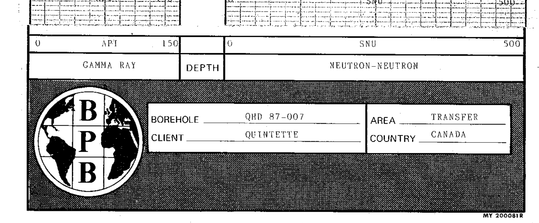

COAL BULK DENSITY
DEPTH
BPB
BOREHOLE
AREA
COUNTRY
COAL QUALITY LOG





MY (2) A38451 R





MY 2000818

BPB

COAL LITHOLOGY LOG

LOG SUITE: GAMMA RAY, L.S. DENSITY, CALIPER

COAL COMBINATION SONDE

SONDE TYPE

BOREHOLE: QHD 87-007
CLIENT: QUINTETTE

AREA: TRANSFER
COUNTRY: CANADA
DATE LOGGED: 87 08 01

DEPTH SCALE: 1:200
LOG PRESENTATION: 6000 SPD

ENGINEER: A. ROBINSON
WITNESS:

OPERATION DATA

	DEPTH RECORDED	MUD RESISTIVITY	MUD TEMPERATURE	MATRIX
	114m	N/A	10°c	LIMESTONE
	DEPTH LOGGED	MUD DENSITY	MUD VISCOSITY	FLUID DATA
	114m	N/A	N/A	BRACKISH/FRESHWATER
	CASING-THICK. SHOE	CASING-THICK. COLLAR	CASING-DIAM.	
	0.0m	0.0m	0.0m	

739

BOREHOLE DATA

PERMANENT DATUM: GROUND LEVEL
ELEVATION OF P.D.: 0.0m
LOG MEASURED FROM: P.D.
DEPTH REACHED: 115m
DRILLER: 115.2m
LOGGER: 115.2m

CASING SIZE		FROM	TO
1st	7"	0.0	12.2m
2nd	4½"	0.0	115.2m
3rd			

BIT SIZE		FROM	TO
1st	6.5/8"	12.2m	115.2m
2nd			
3rd			

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT: SONDE	SOURCE	CALIBRATOR	TAPING: LOG TAPED	RECORD SPEED	DIRECT REPLAY	PANEL: SPEED	SECS	NORM	CAL COEFF	DEPTHS: FROM	TO	INTERVAL	SEAM LOG RUN
GAMMA RAY	153		367	Y	9	D	9	1	—	.44	114.00	116		
DENSITY			5852	Y	9	D	9	.3	7.38	—	115.01	114		
CALIPER	SIDEWALL POSITION			Y	9	D	9	.3	—	1.0	115.01	114		

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	114m	80m	40m	INTERVAL TOTAL
TO	102m	71m	30m	
INTERVAL	12m	09m	10m	51m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOGS	DETAIL SCALE LOGS
215	X-N	1:200	
231	VERT.		

REFER TO ADDITIONAL HEADINGS

REMARKS

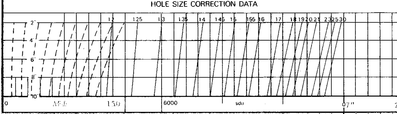
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

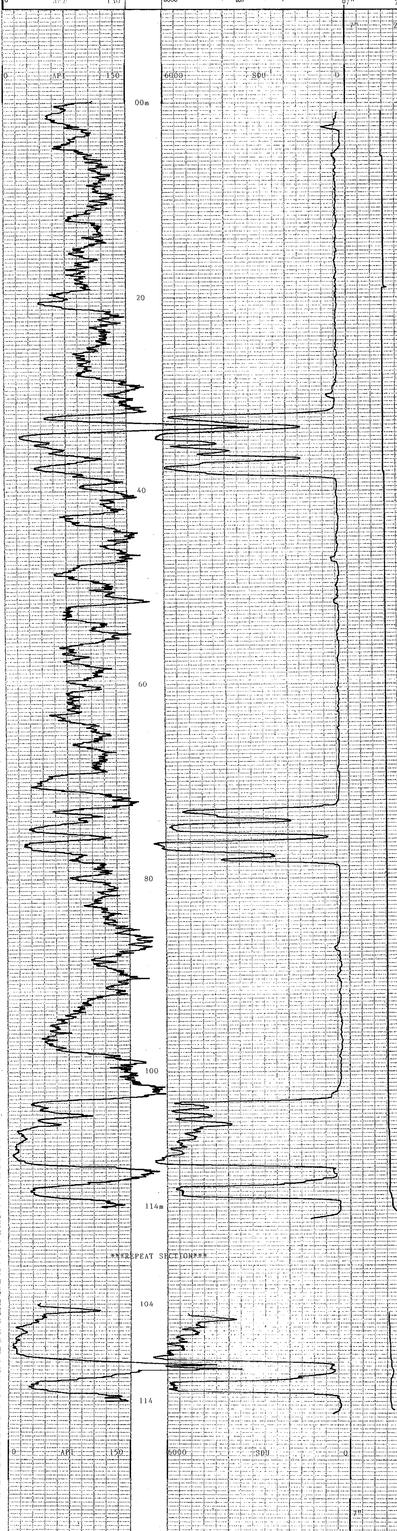
JIG No	VALUE @ 2" DIAM	JIG CAL DATE	JIG VALUE	SDU @ g/cm³	v/s cps
JIG MARK SHOWN AT ABOVE VALUE -		JIG No	SPAN	NORM SDU = cps	v/s cps

GAMMA RAY | DEPTH | BULK DENSITY g/cm³ | CALIPER INCHES

HOLE SIZE CORRECTION DATA



0 API 150 | 6000 sdu | 0 2"



0 API 150 | 6000 sdu 0 | 7" 2"

GAMMA RAY | DEPTH | BULK DENSITY g/cm³ | CALIPER INCHES

BPB

BOREHOLE: QHD 87-007 | AREA: TRANSFER
CLIENT: QUINTETTE | COUNTRY: CANADA

COAL LITHOLOGY LOG

MR A10241 E

QHD67008
TRANSFER

LOG DEPTH	0130.00	
TRUE DEPTH	0120.83	
TILT	22.08	DG
BEARING	39.15	DG
NORTHING	+035.22	
EASTING	+029.61	

LOG DEPTH	0120.00	
TRUE DEPTH	0111.56	
TILT	22.14	DG
BEARING	39.63	DG
NORTHING	+032.30	
EASTING	+027.24	

LOG DEPTH	0110.00	
TRUE DEPTH	0102.30	
TILT	22.35	DG
BEARING	39.42	DG
NORTHING	+029.40	
EASTING	+024.83	

LOG DEPTH	0100.00	
TRUE DEPTH	0093.05	
TILT	22.54	DG
BEARING	39.20	DG
NORTHING	+026.46	
EASTING	+022.42	

LOG DEPTH	0090.00	
TRUE DEPTH	0083.81	
TILT	22.59	DG
BEARING	39.89	DG
NORTHING	+023.49	
EASTING	+019.99	

LOG DEPTH	0080.00	
TRUE DEPTH	0074.58	
TILT	22.42	DG
BEARING	40.29	DG
NORTHING	+020.54	
EASTING	+017.53	

LOG DEPTH	0070.00	
TRUE DEPTH	0065.34	
TILT	22.68	DG
BEARING	39.48	DG
NORTHING	+017.63	
EASTING	+015.06	

LOG DEPTH	0060.00	
TRUE DEPTH	0056.11	
TILT	22.90	DG
BEARING	39.67	DG
NORTHING	+014.65	
EASTING	+012.61	

LOG DEPTH	0050.00	
TRUE DEPTH	0046.90	
TILT	22.75	DG
BEARING	40.35	DG
NORTHING	+011.66	
EASTING	+010.12	

LOG DEPTH	0040.00	
TRUE DEPTH	0037.68	
TILT	22.61	DG
BEARING	41.18	DG
NORTHING	+008.71	
EASTING	+007.62	

LOG DEPTH	0030.00	
TRUE DEPTH	0028.45	
TILT	22.70	DG
BEARING	41.14	DG
NORTHING	+005.82	
EASTING	+005.09	

LOG DEPTH	0020.00	
TRUE DEPTH	0019.22	
TILT	22.81	DG
BEARING	41.20	DG
NORTHING	+002.91	
EASTING	+002.55	

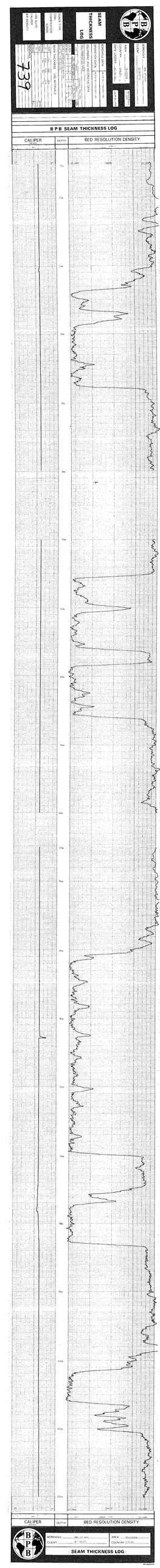
LOG DEPTH	0010.00	
TRUE DEPTH	0010.00	
TILT	22.81	DG
BEARING	41.89	DG
NORTHING	+000.00	
EASTING	+000.00	

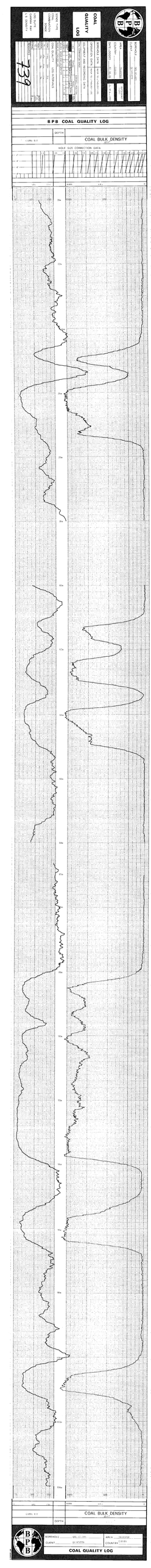
739

```
DEPTH   =  0010.00
TILT    =    22.81 DG
BEARING =    41.89 DG

DEPTH   =  0020.00
TILT    =    22.80 DG
BEARING =    40.51 DG

DEPTH   =  0030.00
TILT    =    22.59 DG
BEARING =    41.78 DG

DEPTH   =  0040.00
TILT    =    22.63 DG
BEARING =    40.58 DG

DEPTH   =  0050.00
TILT    =    22.86 DG
BEARING =    40.11 DG

DEPTH   =  0060.00
TILT    =    22.94 DG
BEARING =    39.23 DG

DEPTH   =  0070.00
TILT    =    22.42 DG
BEARING =    39.72 DG

DEPTH   =  0080.00
TILT    =    22.43 DG
BEARING =    40.86 DG

DEPTH   =  0090.00
TILT    =    22.76 DG
BEARING =    38.93 DG

DEPTH   =  0100.00
TILT    =    22.31 DG
BEARING =    39.48 DG

DEPTH   =  0110.00
TILT    =    22.38 DG
BEARING =    39.36 DG

DEPTH   =  0120.00
TILT    =    21.90 DG
BEARING =    39.90 DG

DEPTH   =  0130.00
TILT    =    22.26 DG
BEARING =    38.41 DG
```

```
DATE              870801
JOB NUMBER          0008
LOG LABEL          026.1
MAG 1 MAX            229
MAG 1 MIN            129
MAG 2 MAX            228
MAG 2 MIN            130
MAG 3 MAX            205
MAG 3 MIN            155
L.CELL 1 TILT 1       20
L.CELL 1 CPS 1       233
L.CELL 1 TILT 2      -20
L.CELL 1 CPS 2       126
L.CELL 2 TILT 1       20
L.CELL 2 CPS 1       232
L.CELL 2 TILT 2      -20
L.CELL 2 CPS 2       126

MAG 1 CENTRE         180
MAG 2 CENTRE         179
MAG 3 CENTRE         180
L.CELL 1 CENTRE      180
L.CELL 2 CENTRE      180

MAG DECL              24
STOP DEPTH            10
```

QHD87008
TRANSFER


SEAM THICKNESS LOG
BPB SEAM THICKNESS LOG
CALIPER
DEPTH
BED RESOLUTION DENSITY
SEAM THICKNESS LOG


COAL QUALITY LOG
BPB
239
BPB COAL QUALITY LOG
DEPTH
COAL BULK DENSITY
HOLE SIZE CORRECTION DATA
COAL BULK DENSITY
DEPTH
BPB
COAL QUALITY LOG

NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE CBD 87-009
CLIENT QUINTETTE

AREA TRANSVER
COUNTRY CANADA

DATE LOGGED 87 08 08

2.04 LOGS

DEPTH SCALE 1:200

BOREHOLE DATA
REFER TO LITHOLOGY LOG

OPERATION DATA
REFER TO LITHOLOGY LOG

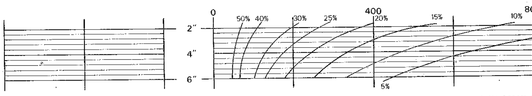
EQUIPMENT AND RECORDING DATA

LOG	TAPING	PANEL	CODE
GAMMA RAY	1500	NORM	44
NEUTRON-NEUTRON	1500	NORM	44

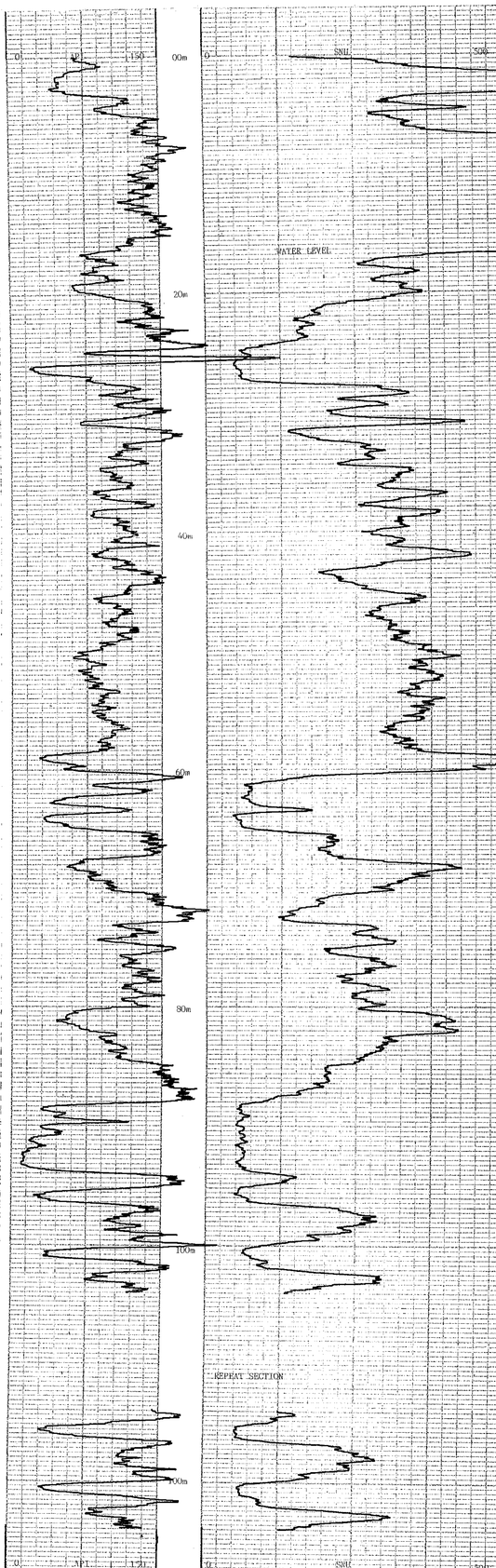
REMARKS
739

GAMMA RAY	DEPTH	NEUTRON-NEUTRON
0 API 150		0 SNU 500

SANDSTONE POROSITY



MY (1) A58451 R



0 API 150		0 SNU 500
	DEPTH	NEUTRON-NEUTRON

BOREHOLE CBD 87-009
CLIENT QUINTETTE

AREA TRANSVER
COUNTRY CANADA

MY 200081R

COAL LITHOLOGY LOG

LOG SUITE
GAMMA RAY
L.S. DENSITY
CALIPER

SONDE TYPE
COAL COMBINATION SONDE

BPB

BOREHOLE QHD 87-009
CLIENT QUESTERRE

AREA TRANSPERK
COUNTRY CANADA

DATE LOGGED 87 08 08

TOP LOGGED

DEPTH SCALE 1:200

BOREHOLE DATA

PERMANENT DATUM
ELEVATION OF PD
LOG MEASURED FROM
DRILLING MEASURED FROM
GROUND LEVEL
DRILLER
BPB
CASING SIZES 13 3/8" TO 6.4 m 9 5/8" TO 105.4 m 7" TO TD
BIT SIZES 12 1/4" TO 105.4 m 8 1/2" TO 106.6 m
MAX. REC. TEMP. 15.6 deg C @ 106.6 m
FLUID DATA
FLUID LEVEL 3.5 m
TYPE WATER
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE OF RMF
SOURCE OF RMC
RM @ BHT
RMF @ BHT
RMC @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESS

OPERATION DATA
RIG No.
FIRST READING
LAST READING
CASING DRILLER
CASING LOGGER
BOTTOM DRILLER
BOTTOM LOGGER
HOURS SINCE CIRC.
HOURS ON BOTTOM
UNIT NUMBER
M. CARR

106m
105m
105m
105m
45/93/17

739

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT SONDE	EQUIPMENT SOURCE	EQUIPMENT CALIBRATION	TAPING LOG TAPED	TAPING RECORD SPEED	TAPING DIRECTN REPLAY	PANEL SPEED	PANEL T.C. SECS	PANEL NORM	CAL. CORR.	DEPTHS FROM	DEPTHS TO	DEPTHS INTERVAL	SEAM LOG RUN
GAMMA RAY	153		367	Y	9	D	9	1	-	1.46	104	00	104	
BULK DENSITY		4852	3041	Y	9	D	9	3	17.38	-	105	01	104	
CALIPER	SIDEWALL POSITION			-	-	D	-	3	-	1.10	105	01	104	

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	104m	68m	30m	INTERVAL TOTAL
TO	85m	60m	21m	
INTERVAL	19m	8m	9m	36m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
215	NN	1:200	
231	VERT		

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

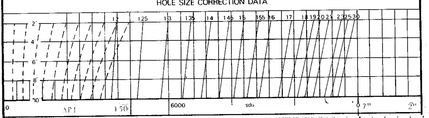
CALIBRATION DATA

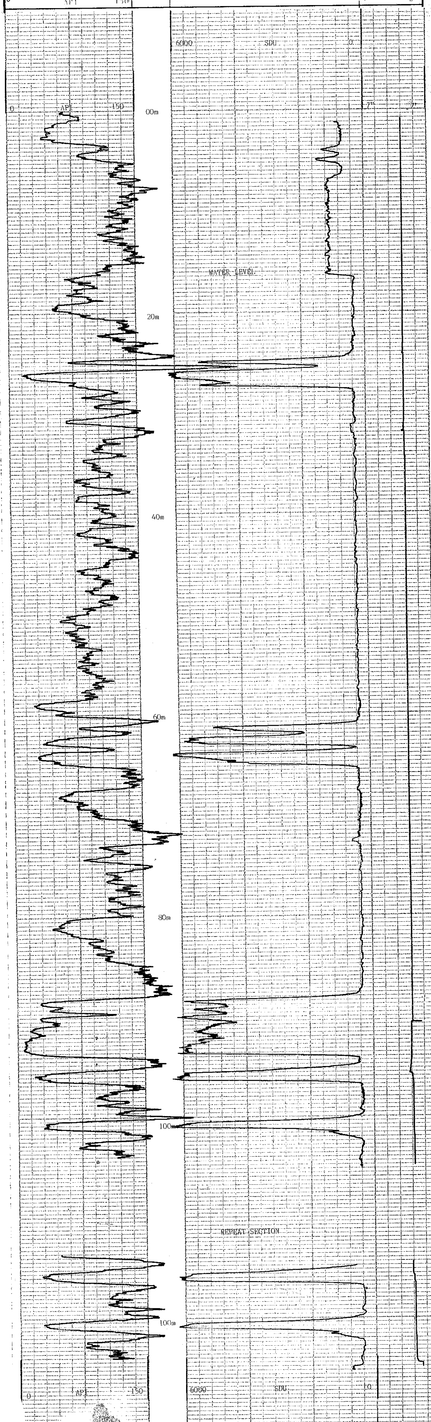
JG No VALUE @ 2 DIAM
JG MARK SHOWN AT ABOVE VALUE :

JG CAL DATE JG VALUE SDU@ g/cm³ ms cps
JG No SPAN NORM SDU* ms cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

HOLE SIZE CORRECTION DATA





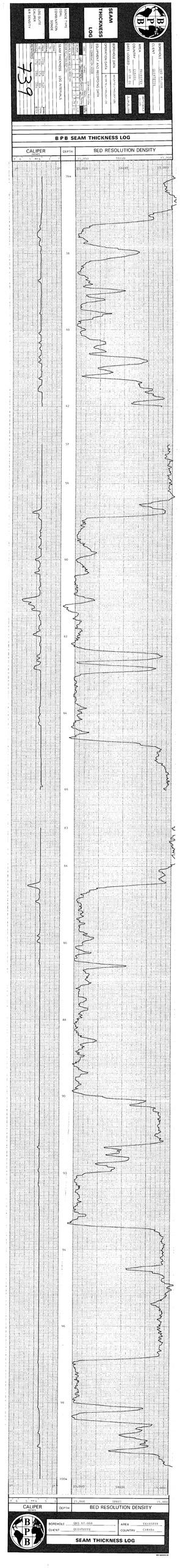
0	API	150	6000	SDU	6"	22"
GAMMA RAY	DEPTH	BULK DENSITY g/cm³			CALIPER INCHES	

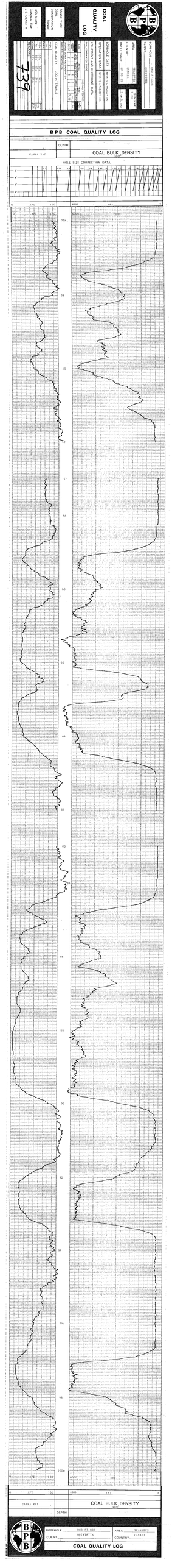
BPB

BOREHOLE QHD 87-009 AREA TRANSPERK
CLIENT QUESTERRE COUNTRY CANADA

COAL LITHOLOGY LOG

MX 4-97541


SEAM THICKNESS LOG
B P B
LOG SUITE
BOREHOLE
B.P. IDENTITY
DEPTH TYPE
COMBINATION
ADDED
RUN NUMBER
DEPTH DRILLER
DEPTH LOGGER
BTM LOG INTERVAL
TOP LOG INTERVAL
CASING
BIT SIZE
TYPE FLUID
DENSITY
LEVEL
SOURCE
RM @ MEAS TEMP
RMF @ MEAS TEMP
RMC @ MEAS TEMP
SOURCE
RM @ BHT
TIME CIRC
TIME LOGGER ON BTM
MAX REC TEMP
EQUIP LOCATION
RECORDED BY
WITNESSED BY
BOREHOLE
COUNTY
STATE
LOCATION
SEC
TWP
RGE
PERMANENT DATUM
ELEV
LOG MEASURED FROM
DRILLING MEASURED FROM
ELEV PERM DATUM
ELEV KB
ELEV DF
ELEV GL
DATE
RUN NO
DEPTH DRILLER
DEPTH LOGGER
BTM LOG INTERVAL
TOP LOG INTERVAL
CASING
BIT SIZE
TYPE FLUID
DENSITY
VISC
PH
FLUID LOSS
SOURCE
RM @ MEAS TEMP
RMF @ MEAS TEMP
RMC @ MEAS TEMP
SOURCE
RM @ BHT
TIME CIRC
TIME LOGGER ON BTM
MAX REC TEMP
EQUIP LOCATION
RECORDED BY
WITNESSED BY
RUN NO
DATE
TYPE LOG
DEPTH DRILLER
DEPTH LOGGER
BTM LOG INTERVAL
TOP LOG INTERVAL
CASING
BIT SIZE
TYPE FLUID
DENSITY
VISC
PH
FLUID LOSS
SOURCE
RM @ MEAS TEMP
RMF @ MEAS TEMP
RMC @ MEAS TEMP
SOURCE
RM @ BHT
TIME CIRC
TIME LOGGER ON BTM
MAX REC TEMP
EQUIP LOCATION
RECORDED BY
WITNESSED BY
OPERATING DATA
EQUIPMENT AND RECORDING DATA
BOREHOLE DATA
LOG MEASUREMENTS
REMARKS
RECORDED
739
B P B SEAM THICKNESS LOG
CALIPER
DEPTH
BED RESOLUTION DENSITY
2.5000
2.0000
1.5000
BED RESOLUTION DENSITY
CALIPER
DEPTH
BOREHOLE QIC 97-008
CLIENT QUESTERRE
AREA ALBERTA
COUNTRY CANADA
SEAM THICKNESS LOG



B P B COAL QUALITY LOG

DEPTH

CANAL EAST

COAL BULK DENSITY

HOLE SIZE CORRECTION DATA

NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHD 87-008
CLIENT QUINTETTE

AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 01

2 in. = 1 in.
SCALE 1:200

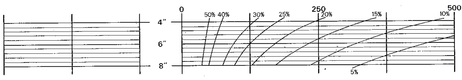
BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA

	REFER TO	LITHOLOGY LOG
LOG	1ST	2ND
RUN	1	1
DATE	87 08 01	
DEPTH DRILLER	136.0 m	
DEPTH LOGGER	136.1 m	
BOTTOM LOGGED INTERVAL	135.9 m	
TOP LOGGED INTERVAL	0.0 m	
CASING DRILLER	0.0 m	
CASING LOGGER	0.0 m	
BIT SIZE	15.24 cm	
TYPE FLUID IN HOLE	WATER	
DENSITY	1.0	
VISCOSITY	1.44	
PH	8	
FLUID LOSS	9	
SOURCE OF SAMPLE	FLOWLINE	
RM @ MEAS TEMP	0.15 @ 18°C	
RMF @ MEAS TEMP	0.13 @ 18°C	
RMC @ MEAS TEMP		
SOURCE RMF & RMC		
RM @ BHT		
TIME SINCE CIRC	9	
MAX REC TEMP	18°C	
EQUIP LOCATION	1	
RECORDED BY	WHITE	
WITNESSED BY		

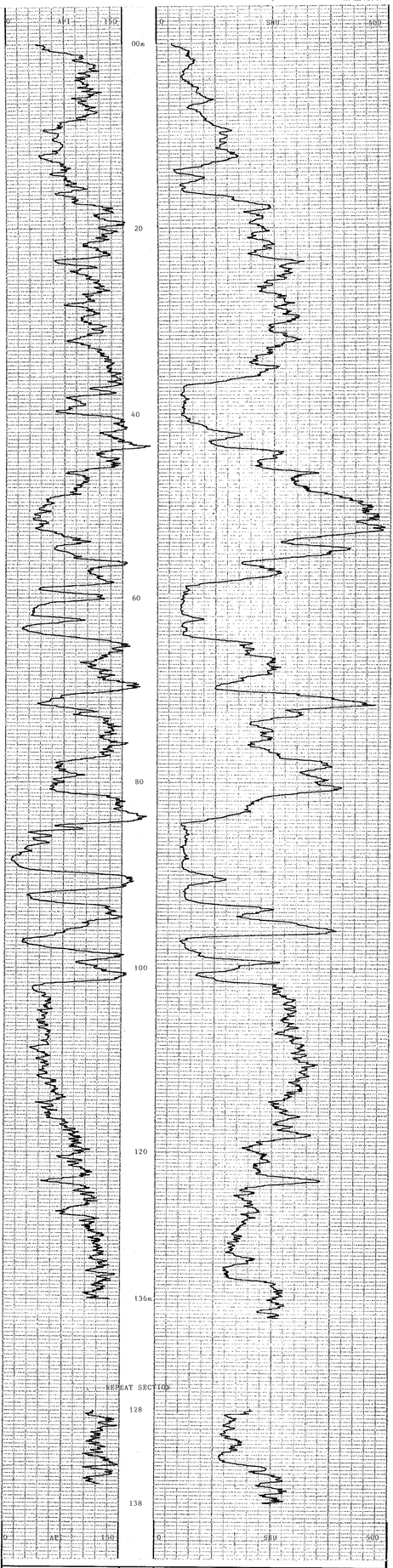
REMARKS
739

GAMMA RAY	DEPTH	NEUTRON-NEUTRON
0 API 150		0 SNU 500

SANDSTONE POROSITY



MY (3) A54451 R



0 API 150	DEPTH	0 SNU 500
GAMMA RAY		NEUTRON-NEUTRON

BOREHOLE QHD 87-008
CLIENT QUINTETTE
AREA TRANSFER
COUNTRY CANADA

MY 2000878

COAL LITHOLOGY LOG

SONDE TYPE
COAL CONSERVATION SONDE

LOG SUITE
GAMMA RAY
L.S. DENSITY
CALIPER

BOREHOLE
CLIENT QUINTETTE
QUD 87-00R

AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 01

ENGINEER
OPERATOR
RECORDED BY
WITNESS

BOREHOLE DATA
DRILLING CONTR. [illegible]
RIG No. 4
DRILLING FLUID AIR
MAX. TEMPERATURE
DEPTH DRILLED 139.5m
DEPTH LOGGED 139.5m
CASING SIZE 4 1/2" 3 1/2"
FROM 0 0
TO 39.6m 139.5m
BIT SIZE 5 7/8"
TOP OF HOLE DRY
BOTTOM OF HOLE DRY
GROUND LEVEL
DATUM

OPERATION DATA
TIME ON BOTTOM 1:30
TIME OFF BOTTOM 3:30
TIME RECORDING 2:00
TIME LOGGING 1:00
TIME TO SURFACE 0:30
RECORDED BY R. STEPHENSON
WITNESS

CLIENT DATA
TRUCK No. 647
SONDE No. 153
GAMMA SHIELD 3.5cm
DETECTOR No. 3852
CALIBRATOR No. 0041
VOLTAGE 1100
VELOCITY 3.5
TIME CONSTANT 1.0
RECORDED BY R. STEPHENSON
WITNESS

739

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT: SONDE	SOURCE	CALIBRATOR	TAPING: LOG RAPID	RECORD SPEED	DIRECT REPLAY	PANEL: TC SECS	NORM	CAL COEFF	DEPTHS: FROM	TO	NORM	SEAM LOG RUN
GAMMA RAY	153		367	Y	9	9	9	1	-- 1.4	00	136		Y
DENSITY		3852	0041	Y	9	0	9	.3	7.38 --	137	01	136	Y
CALIPER	SIDEWALL POSITION			Y	9	0	9	.3	-- 1.0	137	01	136	Y

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	100m	66m	42m	INTERVAL TOTAL
TO	83m	57m	36m	32m
INTERVAL	17m	09m	06m	

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
215	K-N	1:200	
231	VERT		

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

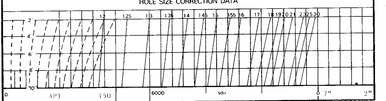
CALIBRATION DATA

JIG No. VALUE @ 2 EXAM
JIG MARK SHOWN AT ABOVE VALUE -

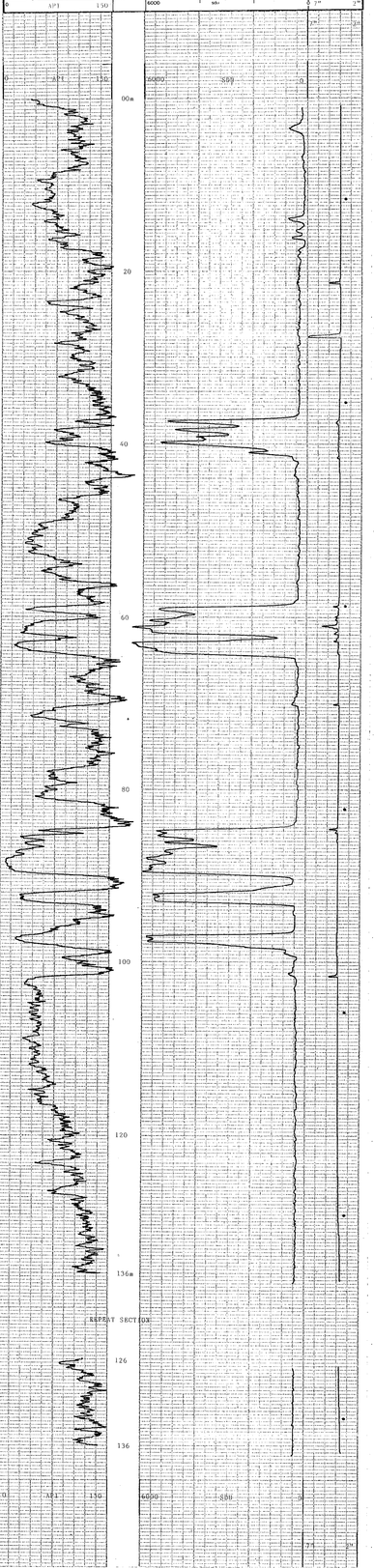
JIG CAL DATE JIG VALUE SDU@ g/cm³ cps
JIG No SPAN NORM cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

HOLE SIZE CORRECTION DATA



0 API 150 | 6000 kdu 0 | 2" 2½"



GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

BPB

BOREHOLE QUD 87-00R AREA TRANSFER
CLIENT QUINTETTE COUNTRY CANADA

COAL LITHOLOGY LOG

MF A50365 R

CONTINUOUS VERTICALITY ANALYSIS

CLIENT___ QUINTETTE

BOREHOLE_ QHD-87-009

AREA____ TRANSFER

COUNTRY__ CANADA

DATE LOGGED.....08-AUG-87
DATE PROCESSED..15-DEC-87
UPPER REFERENCE POINT....2.0
LOWER REFERENCE POINT....T.D.

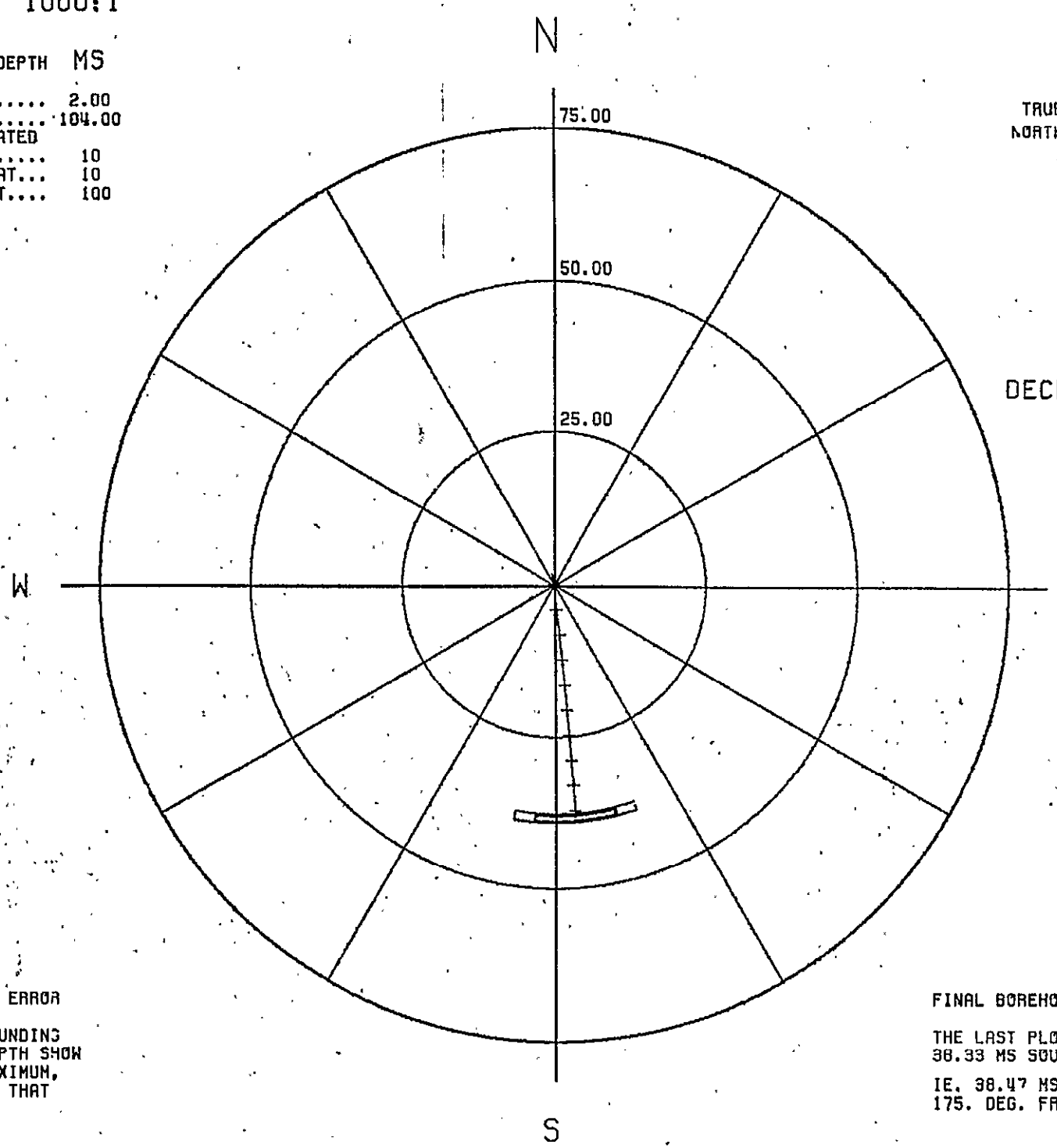
739

CROSS-SECTION

SCALE: 1000:1

ALL FIGURES IN LOG DEPTH MS

TARGET ORIGIN DEPTH.....	2.00
LAST PLOTTED DEPTH.....	104.00
DEPTH MARKERS ANNOTATED IN MULTIPLES OF.....	10
FIRST DEPTH MARKER AT...	10
LAST DEPTH MARKER AT....	100



MAGNETIC NORTH

TRUE NORTH

DECLINATION 24.0 DEG.

BOREHOLE POSITIONAL ERROR

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

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT
38.33 MS SOUTH, 3.28 MS EAST

IE. 38.47 MS FROM THE ORIGIN,
175. DEG. FROM MAGNETIC NORTH

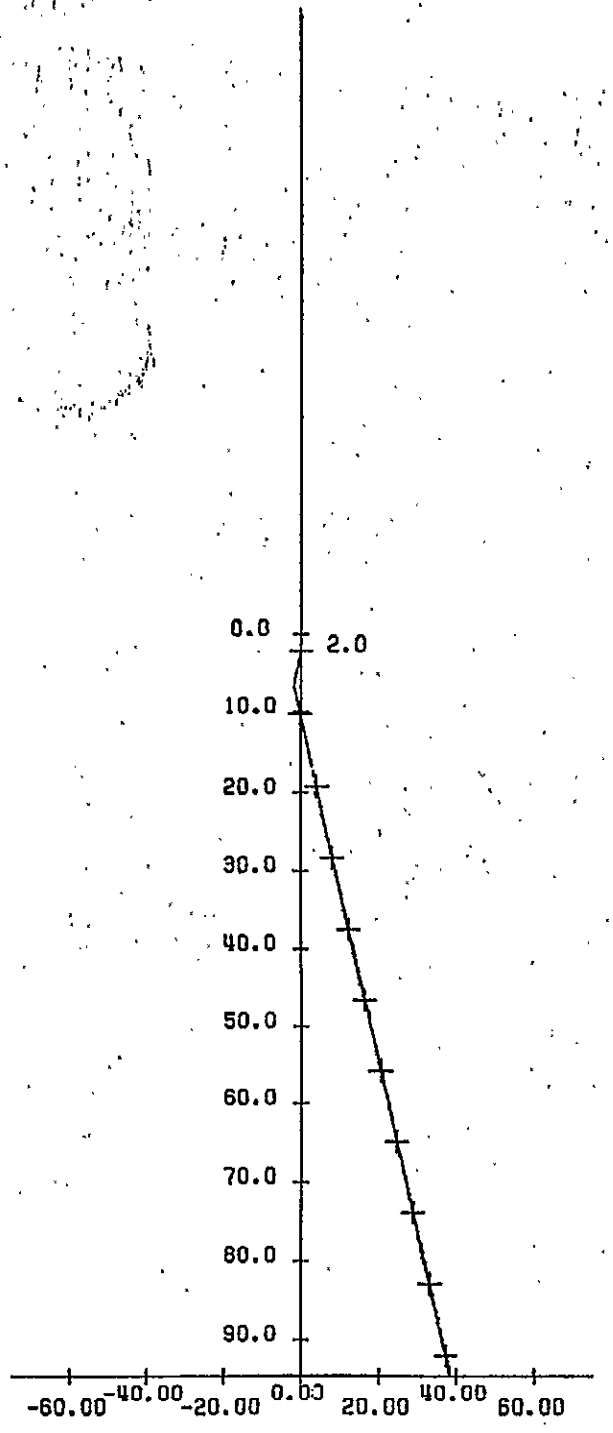
VERTICAL SECTIONS

(TRUE DEPTH VS. DISPLACEMENT)

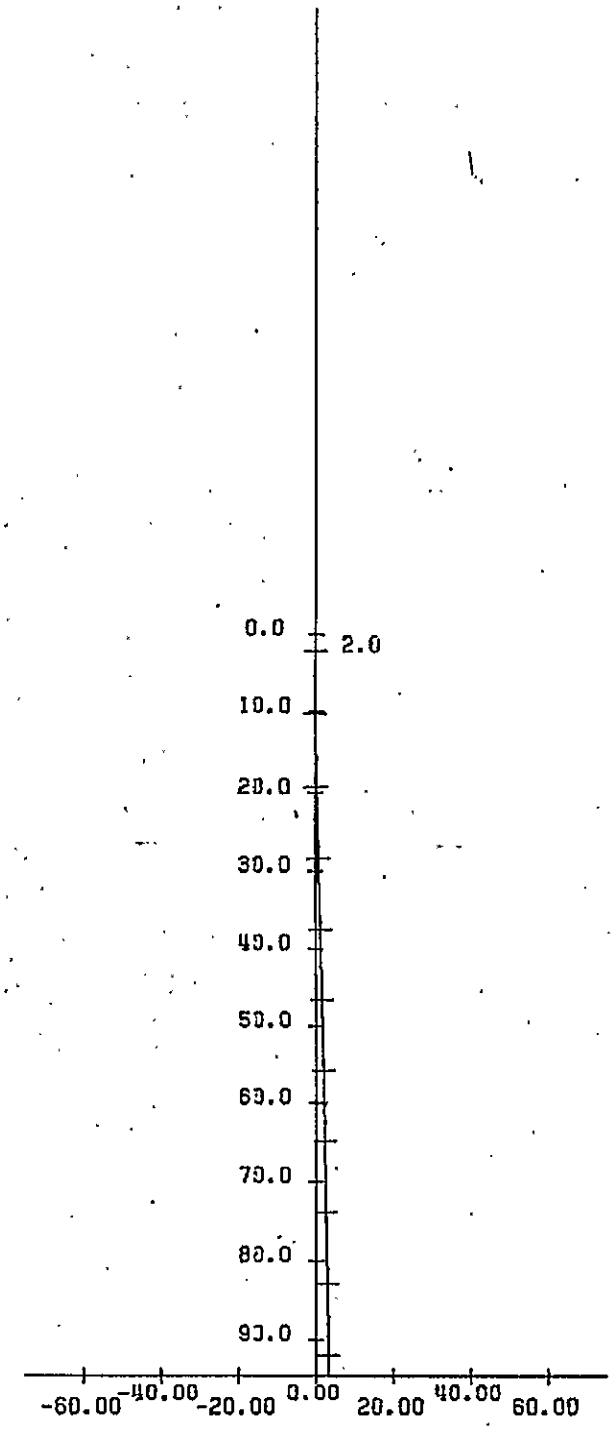
VERTICAL SCALE 1000 :1

MARKERS ANNOTATED AS ABOVE

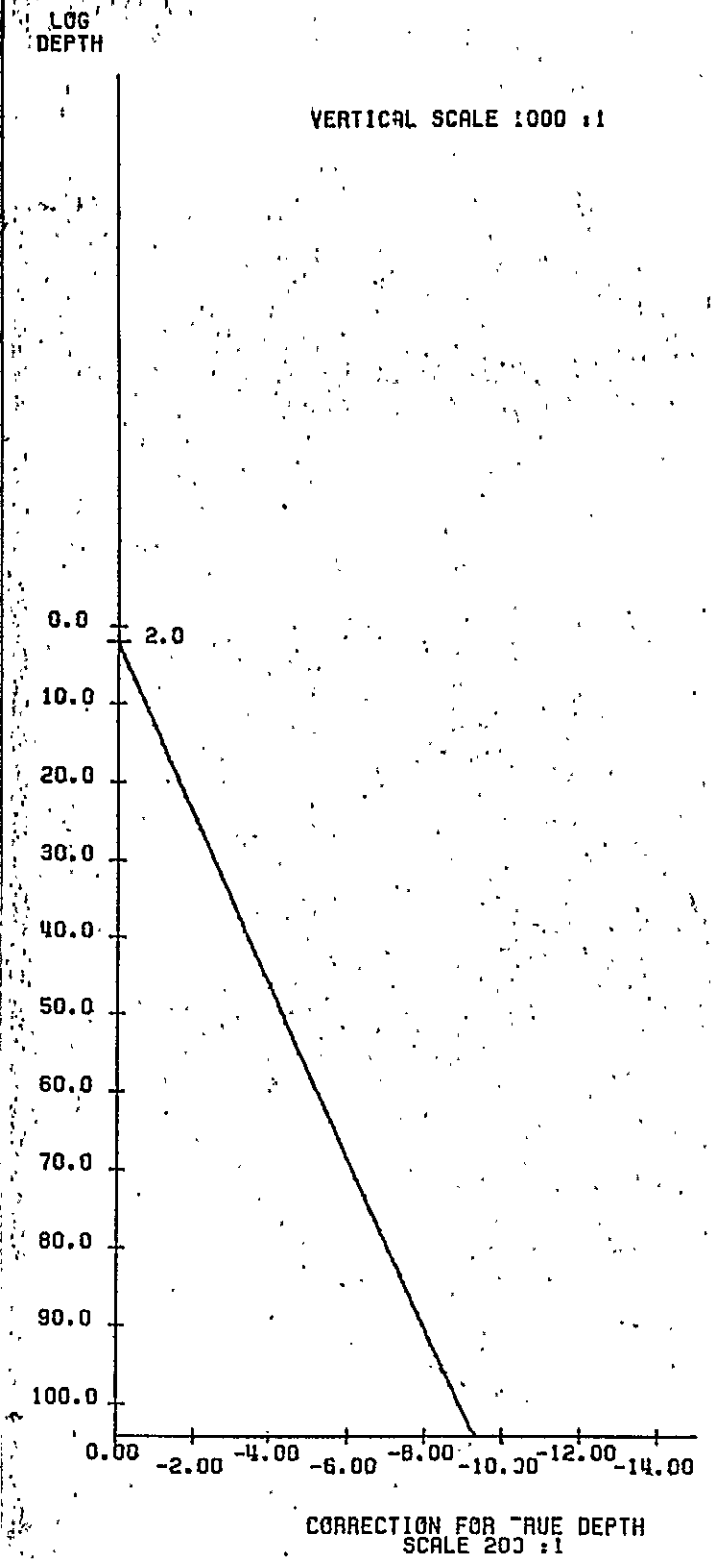
N-S SECTION



W-E SECTION



DEPTH CORRECTION ANALYSIS



DEPTHS: LOG	TRUE	DEPTHS: LOG	TRUE
3.00	2.91	73.00	66.61
4.00	3.83	74.00	67.52
5.00	4.74	75.00	68.43
6.00	5.65	76.00	69.33
7.00	6.56	77.00	70.24
8.00	7.47	78.00	71.15
9.00	8.38	79.00	72.06
10.00	9.29	80.00	72.96
11.00	10.20	81.00	73.87
12.00	11.11	82.00	74.78
13.00	12.02	83.00	75.69
14.00	12.93	84.00	76.59
15.00	13.84	85.00	77.50
16.00	14.75	86.00	78.41
17.00	15.66	87.00	79.31
18.00	16.57	88.00	80.22
19.00	17.48	89.00	81.13
20.00	18.39	90.00	82.03
21.00	19.30	91.00	82.94
22.00	20.21	92.00	83.84
23.00	21.12	93.00	84.75
24.00	22.03	94.00	85.66
25.00	22.94	95.00	86.57
26.00	23.85	96.00	87.47
27.00	24.76	97.00	88.38
28.00	25.67	98.00	89.29
29.00	26.58	99.00	90.19
30.00	27.49	100.00	91.10
31.00	28.41	101.00	92.01
32.00	29.32	102.00	92.91
33.00	30.23	103.00	93.82
34.00	31.14	104.00	94.63
35.00	32.05		
36.00	32.96		
37.00	33.87		
38.00	34.78		
39.00	35.69		
40.00	36.60		
41.00	37.51		
42.00	38.42		
43.00	39.33		
44.00	40.24		
45.00	41.15		
46.00	42.06		
47.00	42.97		
48.00	43.88		
49.00	44.79		
50.00	45.70		
51.00	46.61		
52.00	47.52		
53.00	48.43		
54.00	49.34		
55.00	50.25		
56.00	51.16		
57.00	52.07		
58.00	52.98		
59.00	53.89		
60.00	54.80		
61.00	55.71		
62.00	56.62		
63.00	57.53		
64.00	58.43		
65.00	59.34		
66.00	60.25		
67.00	61.16		
68.00	62.07		
69.00	62.98		
70.00	63.89		
71.00	64.79		
72.00	65.70		

QHD87009

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 5ØØØØ:1 (metric) & 48ØØØ:1 (imperial), and the minimum 1:1.

2. The analysis is derived by integrating 1Ø cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 2ØØ points in multiples of 1,2,5,1Ø,2Ø,25,5Ø, or 1ØØ metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.

3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.

4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).

5. Borehole positional error is derived assuming the following parameters:

	TILT(degrees)	AZIMUTH(degrees)
Typical Error	+/- Ø.33333	+/- 1Ø.Ø
Maximum Error	+/- Ø.5	+/- 15.Ø

6. Error analysis may be calculated and plotted from the data listing as follows:

   a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
   b) Describe arcs of +/- 1Ø degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
   c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.

7. Given below is a full description of the parameters displayed on the ensuing listing:

LOG DEPTH	the depth recorded on the field logs for the borehole
TRUE DEPTH	the true vertical depth corresponding to the above depth, corrected from the start of the analysis
HOLE TILT & AZIMUTH	the SAMPLED borehole orientation
AXIAL COORDINATES	the coordinates North & 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

QHD-87-009
****

Verticality Data Listing

All co-ordinates with respect to True North

Date processed: 15-DEC-87

DEPTHS log	DEPTHS true	BOREHOLE tilt	BOREHOLE AZI	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng	POLAR radius	POLAR ERROR CO-ORDINATES (maximum & typical) brng	radius	brng	radius	brng	radius	brng	radius
3.00	2.91	24.2	3.	0.37	0.08	11.	0.38	11.	0.39	11.	0.37	11.	0.38	11.	0.37
4.00	3.83	24.0	24.	0.76	0.16	12.	0.78	12.	0.79	12.	0.76	12.	0.79	12.	0.77
5.00	4.74	24.1	313.	1.13	0.20	10.	1.15	10.	1.17	10.	1.13	10.	1.17	10.	1.14
6.00	5.65	24.1	355.	1.52	0.28	10.	1.54	10.	1.57	10.	1.51	10.	1.56	10.	1.52
7.00	6.56	24.5	196.	1.78	0.42	13.	1.83	13.	1.86	13.	1.79	13.	1.85	13.	1.80
8.00	7.47	24.2	197.	1.38	0.30	12.	1.41	12.	1.44	12.	1.39	12.	1.43	12.	1.40
9.00	8.38	24.3	198.	0.99	0.18	10.	1.00	10.	1.02	10.	0.98	10.	1.01	10.	0.99
10.00	9.29	24.2	196.	0.59	0.06	6.	0.59	6.	0.61	6.	0.58	6.	0.60	6.	0.59
11.00	10.20	24.7	199.	0.19	-0.07	341.	0.20	341.	0.21	341.	0.20	341.	0.21	341.	0.20
12.00	11.11	24.7	199.	-0.20	-0.19	223.	0.28	224.	0.28	223.	0.27	223.	0.28	223.	0.28
13.00	12.02	24.2	199.	-0.60	-0.32	208.	0.68	208.	0.69	208.	0.66	208.	0.68	208.	0.67
14.00	12.93	24.3	198.	-0.99	-0.44	204.	1.09	204.	1.11	204.	1.07	204.	1.10	204.	1.07
15.00	13.84	24.3	198.	-1.39	-0.57	202.	1.50	202.	1.53	202.	1.47	202.	1.52	202.	1.48
16.00	14.75	24.6	198.	-1.78	-0.70	201.	1.91	201.	1.95	201.	1.87	201.	1.93	201.	1.89
17.00	15.66	24.5	199.	-2.17	-0.82	201.	2.32	201.	2.37	201.	2.28	201.	2.35	201.	2.29
18.00	16.57	24.4	198.	-2.57	-0.95	200.	2.74	200.	2.79	200.	2.69	200.	2.77	200.	2.70
19.00	17.48	24.4	198.	-2.96	-1.08	200.	3.15	200.	3.21	200.	3.09	200.	3.19	200.	3.11
20.00	18.39	24.6	198.	-3.36	-1.21	200.	3.57	200.	3.63	200.	3.50	200.	3.61	200.	3.52
21.00	19.30	24.6	197.	-3.75	-1.34	200.	3.98	200.	4.06	200.	3.90	200.	4.03	200.	3.93
22.00	20.21	24.3	198.	-4.14	-1.47	200.	4.39	200.	4.48	200.	4.31	200.	4.45	200.	4.34
23.00	21.12	24.5	198.	-4.53	-1.60	199.	4.81	199.	4.90	199.	4.72	199.	4.87	199.	4.75
24.00	22.03	24.9	199.	-4.93	-1.73	199.	5.22	199.	5.32	199.	5.12	199.	5.29	199.	5.16
25.00	22.94	24.4	197.	-5.32	-1.86	199.	5.64	199.	5.75	199.	5.53	199.	5.71	199.	5.57
26.00	23.85	24.6	200.	-5.72	-1.99	199.	6.05	199.	6.17	199.	5.94	199.	6.13	199.	5.98
27.00	24.76	24.5	199.	-6.11	-2.12	199.	6.47	199.	6.59	199.	6.34	199.	6.55	199.	6.38
28.00	25.67	24.7	199.	-6.50	-2.25	199.	6.88	199.	7.01	199.	6.75	199.	6.97	199.	6.79
29.00	26.58	24.2	197.	-6.90	-2.38	199.	7.30	199.	7.44	199.	7.16	199.	7.39	199.	7.20
30.00	27.49	24.3	197.	-7.29	-2.50	199.	7.71	199.	7.86	199.	7.56	199.	7.81	199.	7.61
31.00	28.41	24.1	200.	-7.68	-2.64	199.	8.12	199.	8.28	199.	7.97	199.	8.23	199.	8.02
32.00	29.32	24.3	197.	-8.08	-2.76	199.	8.54	199.	8.70	199.	8.37	199.	8.65	199.	8.43
33.00	30.23	24.5	200.	-8.47	-2.89	199.	8.95	199.	9.12	199.	8.78	199.	9.06	199.	8.84
34.00	31.14	24.5	197.	-8.86	-3.02	199.	9.36	199.	9.54	199.	9.18	199.	9.48	199.	9.24
35.00	32.05	24.4	198.	-9.25	-3.15	199.	9.78	199.	9.96	199.	9.59	199.	9.90	199.	9.65
36.00	32.96	24.6	198.	-9.65	-3.28	199.	10.19	199.	10.38	199.	9.99	199.	10.32	199.	10.06
37.00	33.87	24.2	198.	-10.04	-3.40	199.	10.60	199.	10.81	199.	10.40	199.	10.74	199.	10.47
38.00	34.78	24.5	198.	-10.44	-3.53	199.	11.02	199.	11.23	199.	10.80	199.	11.16	199.	10.88
39.00	35.69	24.3	200.	-10.83	-3.65	199.	11.43	199.	11.65	199.	11.21	199.	11.57	199.	11.28
40.00	36.60	24.5	200.	-11.22	-3.79	199.	11.84	199.	12.07	199.	11.62	199.	11.99	199.	11.69
41.00	37.51	24.6	198.	-11.61	-3.92	199.	12.26	199.	12.49	199.	12.02	199.	12.41	199.	12.10
42.00	38.42	24.3	199.	-12.00	-4.05	199.	12.67	199.	12.91	199.	12.43	199.	12.83	199.	12.51
43.00	39.33	24.6	197.	-12.40	-4.18	199.	13.08	199.	13.33	199.	12.83	199.	13.25	199.	12.92
44.00	40.24	24.2	197.	-12.79	-4.31	199.	13.50	199.	13.75	199.	13.24	199.	13.67	199.	13.32
45.00	41.15	24.4	198.	-13.18	-4.44	199.	13.91	199.	14.18	199.	13.64	199.	14.09	199.	13.73
46.00	42.06	24.6	200.	-13.58	-4.57	199.	14.33	199.	14.60	199.	14.05	199.	14.51	199.	14.14
47.00	42.97	24.5	200.	-13.97	-4.71	199.	14.74	199.	15.02	199.	14.46	199.	14.93	199.	14.55
48.00	43.88	24.8	198.	-14.36	-4.84	199.	15.15	199.	15.44	199.	14.86	199.	15.35	199.	14.96
49.00	44.79	24.4	199.	-14.75	-4.97	199.	15.57	199.	15.87	199.	15.27	199.	15.77	199.	15.37
50.00	45.70	24.5	199.	-15.15	-5.10	199.	15.98	199.	16.29	199.	15.68	199.	16.19	199.	15.78
51.00	46.61	24.5	197.	-15.54	-5.24	199.	16.40	199.	16.71	199.	16.08	199.	16.60	199.	16.19
52.00	47.52	24.7	200.	-15.93	-5.37	199.	16.81	199.	17.13	199.	16.49	199.	17.02	199.	16.59

DEPTHS log	DEPTHS true	BOREHOLE tilt	BOREHOLE AZI	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng	POLAR radius	POLAR ERROR CO-ORDINATES (maximum & typical) brng	radius	brng	radius	brng	radius	brng	radius
53.00	48.43	24.5	200.	-16.32	-5.50	199.	17.23	199.	17.55	199.	16.89	199.	17.44	199.	17.00
54.00	49.34	24.4	198.	-16.72	-5.64	199.	17.64	199.	17.98	199.	17.30	199.	17.87	199.	17.42
55.00	50.25	24.5	200.	-17.11	-5.77	199.	18.06	199.	18.40	199.	17.71	199.	18.29	199.	17.82
56.00	51.16	24.8	198.	-17.50	-5.91	199.	18.47	199.	18.82	199.	18.12	199.	18.71	199.	18.23
57.00	52.07	24.4	198.	-17.90	-6.04	199.	18.89	199.	19.25	199.	18.52	199.	19.13	199.	18.65
58.00	52.98	24.5	200.	-18.29	-6.18	199.	19.30	199.	19.67	199.	18.93	199.	19.55	199.	19.06
59.00	53.89	24.7	198.	-18.68	-6.31	199.	19.72	199.	20.10	199.	19.34	199.	19.97	199.	19.47
60.00	54.80	24.4	198.	-19.08	-6.44	199.	20.14	199.	20.52	199.	19.75	199.	20.39	199.	19.88
61.00	55.71	24.9	198.	-19.47	-6.58	199.	20.55	199.	20.94	199.	20.16	199.	20.81	199.	20.29
62.00	56.62	24.7	199.	-19.87	-6.71	199.	20.97	199.	21.37	199.	20.57	199.	21.24	199.	20.70
63.00	57.53	24.5	198.	-20.26	-6.85	199.	21.39	199.	21.79	199.	20.98	199.	21.66	199.	21.11
64.00	58.43	24.7	198.	-20.65	-6.99	199.	21.80	199.	22.22	199.	21.39	199.	22.08	199.	21.53
65.00	59.34	24.4	198.	-21.05	-7.12	199.	22.22	199.	22.64	199.	21.79	199.	22.50	199.	21.94
66.00	60.25	24.8	200.	-21.44	-7.26	199.	22.64	199.	23.07	199.	22.20	199.	22.93	199.	22.35
67.00	61.16	25.1	198.	-21.84	-7.40	199.	23.06	199.	23.50	199.	22.61	199.	23.35	199.	22.76
68.00	62.07	24.7	202.	-22.23	-7.53	199.	23.47	199.	23.92	199.	23.02	199.	23.77	199.	23.17
69.00	62.98	24.8	199.	-22.63	-7.67	199.	23.89	199.	24.35	199.	23.43	199.	24.20	199.	23.59
70.00	63.89	24.6	200.	-23.02	-7.81	199.	24.31	199.	24.77	199.	23.84	199.	24.62	199.	24.00
71.00	64.79	24.6	201.	-23.42	-7.94	199.	24.73	199.	25.20	199.	24.26	199.	25.04	199.	24.41
72.00	65.70	24.8	199.	-23.81	-8.08	199.	25.15	199.	25.63	199.	24.67	199.	25.47	199.	24.83
73.00	66.61	24.6	200.	-24.21	-8.22	199.	25.57	199.	26.05	199.	25.08	199.	25.89	199.	25.24
74.00	67.52	24.6	200.	-24.60	-8.36	199.	25.98	199.	26.48	199.	25.49	199.	26.32	199.	25.65
75.00	68.43	25.0	199.	-25.00	-8.50	199.	26.40	199.	26.91	199.	25.90	199.	26.74	199.	26.07
76.00	69.33	24.6	200.	-25.39	-8.64	199.	26.82	199.	27.33	199.	26.31	199.	27.16	199.	26.48
77.00	70.24	24.8	200.	-25.79	-8.77	199.	27.24	199.	27.76	199.	26.72	199.	27.59	199.	26.90
78.00	71.15	25.1	200.	-26.19	-8.92	199.	27.66	199.	28.19	199.	27.13	199.	28.01	199.	27.31
79.00	72.06	24.7	200.	-26.58	-9.06	199.	28.08	199.	28.62	199.	27.54	199.	28.44	199.	27.72
80.00	72.96	25.0	200.	-26.98	-9.20	199.	28.50	199.	29.04	199.	27.96	199.	28.86	199.	28.14
81.00	73.87	24.9	200.	-27.37	-9.34	199.	28.92	199.	29.47	199.	28.37	199.	29.29	199.	28.55
82.00	74.78	24.7	199.	-27.77	-9.48	199.	29.34	199.	29.90	199.	28.78	199.	29.72	199.	28.97
83.00	75.69	25.0	200.	-28.17	-9.62	199.	29.76	199.	30.33	199.	29.19	199.	30.14	199.	29.38
84.00	76.59	25.0	201.	-28.56	-9.76	199.	30.18	199.	30.76	199.	29.61	199.	30.57	199.	29.80
85.00	77.50	24.9	201.	-28.96	-9.90	199.	30.61	199.	31.19	199.	30.02	199.	30.99	199.	30.22
86.00	78.41	25.0	200.	-29.36	-10.04	199.	31.03	199.	31.62	199.	30.43	199.	31.42	199.	30.63
87.00	79.31	25.0	200.	-29.76	-10.18	199.	31.45	199.	32.05	199.	30.85	199.	31.85	199.	31.05
88.00	80.22	25.2	200.	-30.16	-10.32	199.	31.87	199.	32.48	199.	31.27	199.	32.28	199.	31.47
89.00	81.13	25.1	198.	-30.56	-10.46	199.	32.30	199.	32.91	199.	31.68	199.	32.71	199.	31.89
90.00	82.03	25.2	200.	-30.96	-10.59	199.	32.72	199.	33.34	199.	32.10	199.	33.14	199.	32.30
91.00	82.94	24.9	200.	-31.35	-10.73	199.	33.14	199.	33.77	199.	32.51	199.	33.56	199.	32.72
92.00	83.84	24.7	199.	-31.75	-10.87	199.	33.56	199.	34.20	199.	32.92	199.	33.99	199.	33.14
93.00	84.75	25.0	197.	-32.15	-11.01	199.	33.98	199.	34.63	199.	33.34	199.	34.42	199.	33.55
94.00	85.66	24.9	199.	-32.55	-11.15	199.	34.40	199.	35.06	199.	33.75	199.	34.84	199.	33.97
95.00	86.57	24.6	200.	-32.95	-11.28	199.	34.82	199.	35.49	199.	34.16	199.	35.27	199.	34.38
96.00	87.47	25.3	201.	-33.35	-11.42	199.	35.25	199.	35.92	199.	34.58	199.	35.69	199.	34.80
97.00	88.38	25.1	200.	-33.74	-11.56	199.	35.67	199.	36.35	199.	34.99	199.	36.12	199.	35.22
98.00	89.29	25.2	199.	-34.14	-11.70	199.	36.09	199.	36.77	199.	35.40	199.	36.55	199.	35.63
99.00	90.19	25.2	201.	-34.54	-11.84	199.	36.51	199.	37.20	199.	35.82	199.	36.97	199.	36.05
100.00	91.10	24.8	199.	-34.94	-11.98	199.	36.93	199.	37.63	199.	36.23	199.	37.40	199.	36.46
101.00	92.01	25.2	199.	-35.34	-12.12	199.	37.36	199.	38.07	199.	36.65	199.	37.83	199.	36.88
102.00	92.91	24.8	199.	-35.73	-12.26	199.	37.78	199.	38.50	199.	37.06	199.	38.26	199.	37.30

Vertically Data Listing
All co-ordinates with respect to True North

DEPTHS log	DEPTHS true	BOREHOLE tilt	BOREHOLE AZI	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng	POLAR radius	POLAR ERROR CO-ORDINATES (maximum & typical) brng	radius	brng	radius	brng	radius	brng	radius
103.00	93.82	26.3	205.	-36.13	-12.41	199.	38.21	199.	38.93	199.	37.40	199.	38.69	199.	37.72
104.00	94.63	24.9	198.	-36.36	-12.59	199.	38.47	199.	39.21	199.	37.74	199.	38.96	199.	37.99

BOREHOLE QHD 87-010
CLIENT QUINTETTE
AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 11
DEPTH SCALE 1:200
1 OF 4 LOGS

COAL LITHOLOGY LOG

BOREHOLE DATA

	BPB	DRILLER
PERMANENT DATUM	GROUND LEVEL	
ELEVATION OF P.D		
MEASUREMENTS FROM	G.L.	G.L.
DEPTH REACHED	158.00m	158.50m
CASING SHOE	3.05m	3.05m
BIT SIZES	1: 5" TO 3.05m; 3: TO	2: 4" TO 58.5m; 4: TO
CASING SIZES	1: 4½" TO 3.05m	2: TO

FLUID DATA

NATURE	WATER/BENTONITE
SG	1.02 g/cc
LEVEL	92.40m (See Remarks)
VISCOSITY	N/A
Rm at meas temp	N/A
BHT	N/A

OPERATION DATA

FIRST READING	156.00m
LAST READING	00m
INTERVAL LOGGED	156m
UNIT-TRUCK No	46/V 217
ENGINEER	M.COX
WITNESS	

739

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY, L.S DENSITY, CALIPER

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT			TAPING			PANEL			CAL COEFF	DEPTHS			SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD SPEED	DIRECT or REPLAY	SPEED	TC SECS	NORM		FROM	TO	INTERVAL	
GAMMA RAY	153		367	Y	9	D	9	1	-	1.44	156	0	156	Y
L.S DENSITY		5852	0041	Y	9	D	9	.3	7.48	-	157	1	156	Y
CALIPER	SIDEWALL POSITION			Y	9	D	9	.3	-	1.0	157	1	156	Y

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

						INTERVAL TOTAL
FROM	134m	121m	96m	51m	24m	
TO	126m	112m	88m	46m	21m	
INTERVAL	8m	9m	8m	5m	3m	33m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
215	N-N	1:200	
231	VERT		

REFER TO ADDITIONAL HEADINGS

REMARKS

1. Water level rises between N-N run and CCS run.
N-N Water level 110.00m
CCS water level 92.40m

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No VALUE @ 2 DIAM | JIG CAL DATE | JIG VALUE | SDU @ g/cm³ | ins | cps

JIG MARK SHOWN AT ABOVE VALUE - | JIG No | SPAN | NORM SDU/CPS = | ins | cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

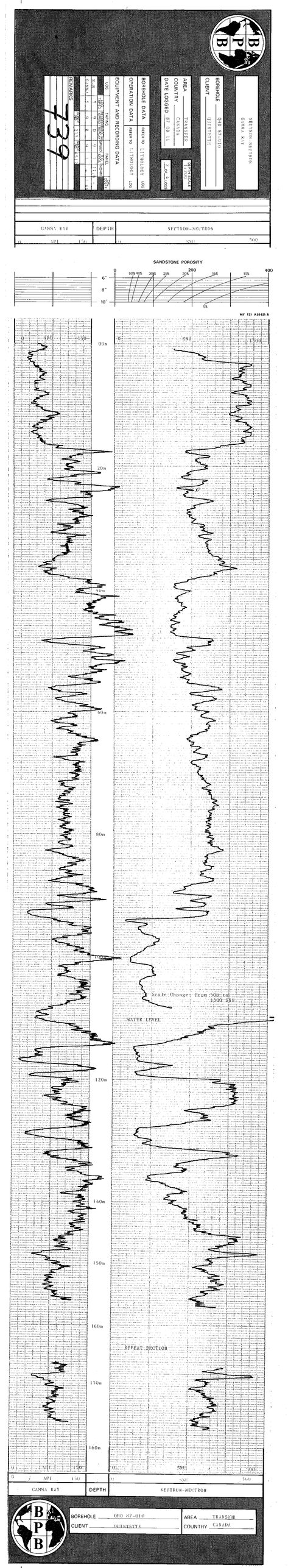
HOLE SIZE CORRECTION DATA

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

BOREHOLE QHD 87-010
CLIENT QUINTETTE
AREA TRANSFER
COUNTRY CANADA

COAL LITHOLOGY LOG

MY A50261 R


B P B
NEUTRON-NEUTRON
GAMMA RAY
BOREHOLE QHD 87-010
CLIENT QUINTETTE
AREA TRANSCAN
COUNTRY CANADA
DATE LOGGED 30 08 11
SCALE 1:200
BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
REMARKS
136
GAMMA RAY
DEPTH
NEUTRON-NEUTRON
0 API 150
0 SNU 500
SANDSTONE POROSITY
0 50% 30% 25% 20% 15% 10% 400
6"
8"
10"
MY 131 A56451 B
0 API 150
0 SNU 1500
00m
20m
40m
60m
80m
100m
120m
140m
150m
160m
Scale Change: From 500 to 1500 SNU
WATER LEVEL
REPEAT SECTION
0 API 150
0 SNU 500
GAMMA RAY
DEPTH
NEUTRON-NEUTRON
B P B
BOREHOLE QHD 87-010
CLIENT QUINTETTE
AREA TRANSCAN
COUNTRY CANADA

DETAIL LØGS

739

DEPTH SCALE 20

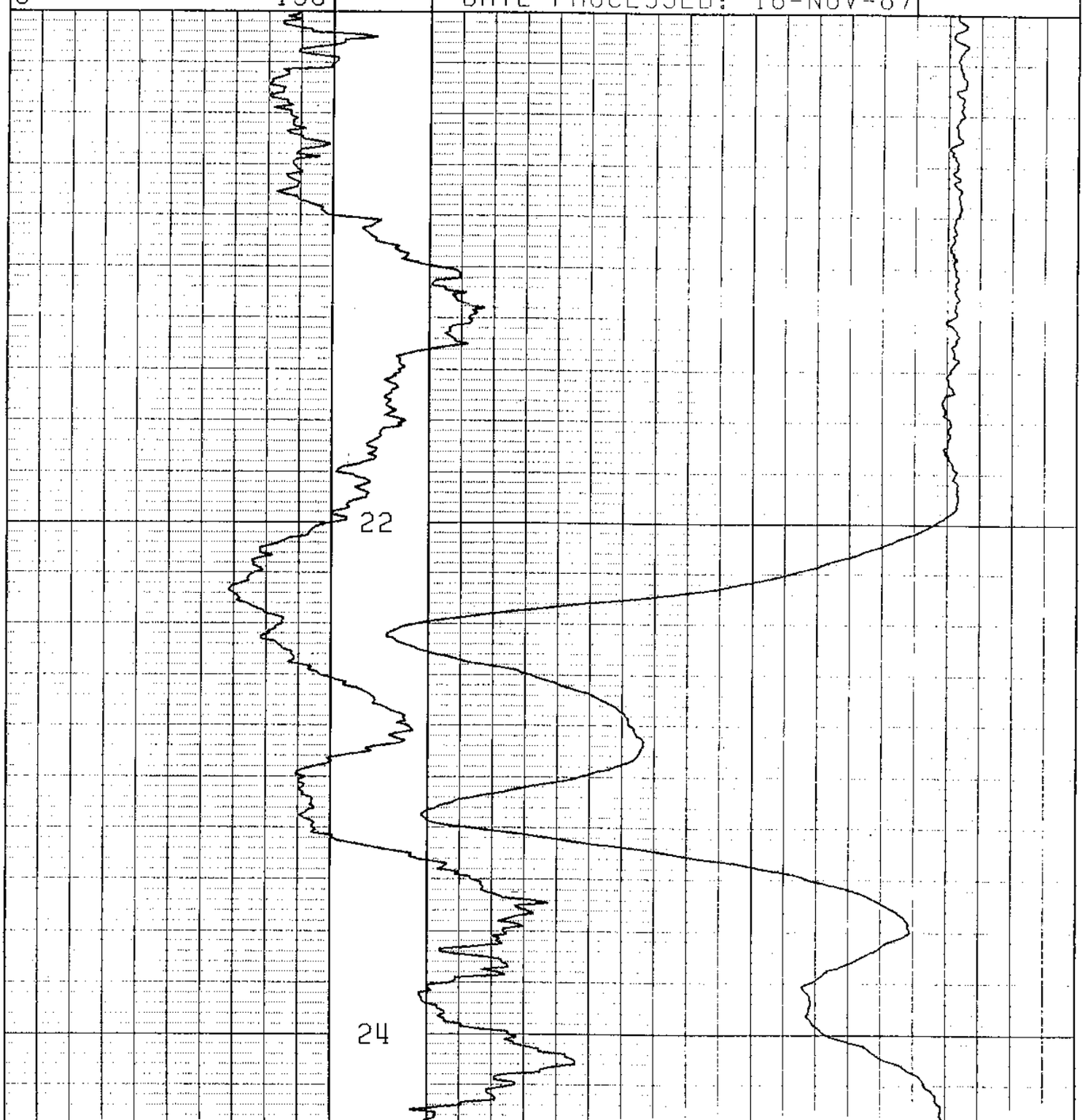
L.S.D (CCS)

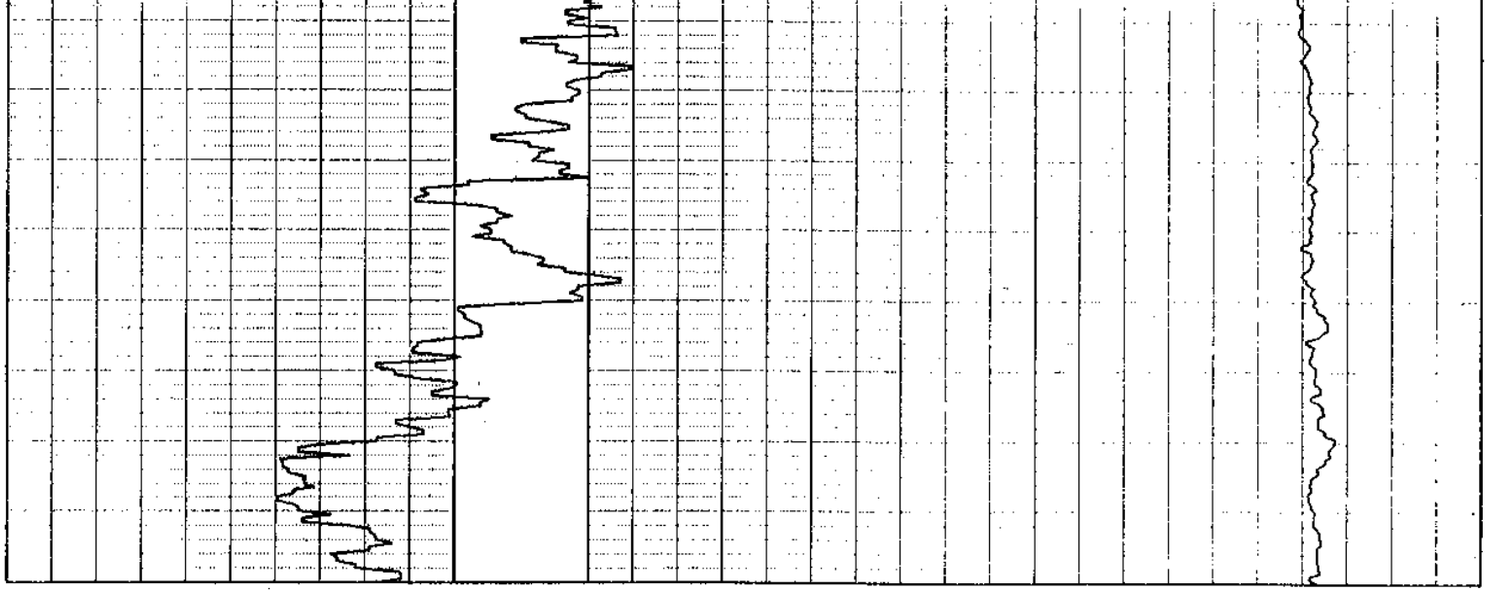
6000 0

CLIENT: QUINTETTE COAL LTD.
WELL NO: QHD 87010
AREA: TRANSFER PIT
CASING: 3.05M
WATER: 7.84M
DEPTH: 20.00-26.00
DATE PROCESSED: 18-NOV-87

GAMMA RAY

0 150





DETAIL LØGS

DEPTH SCALE 20

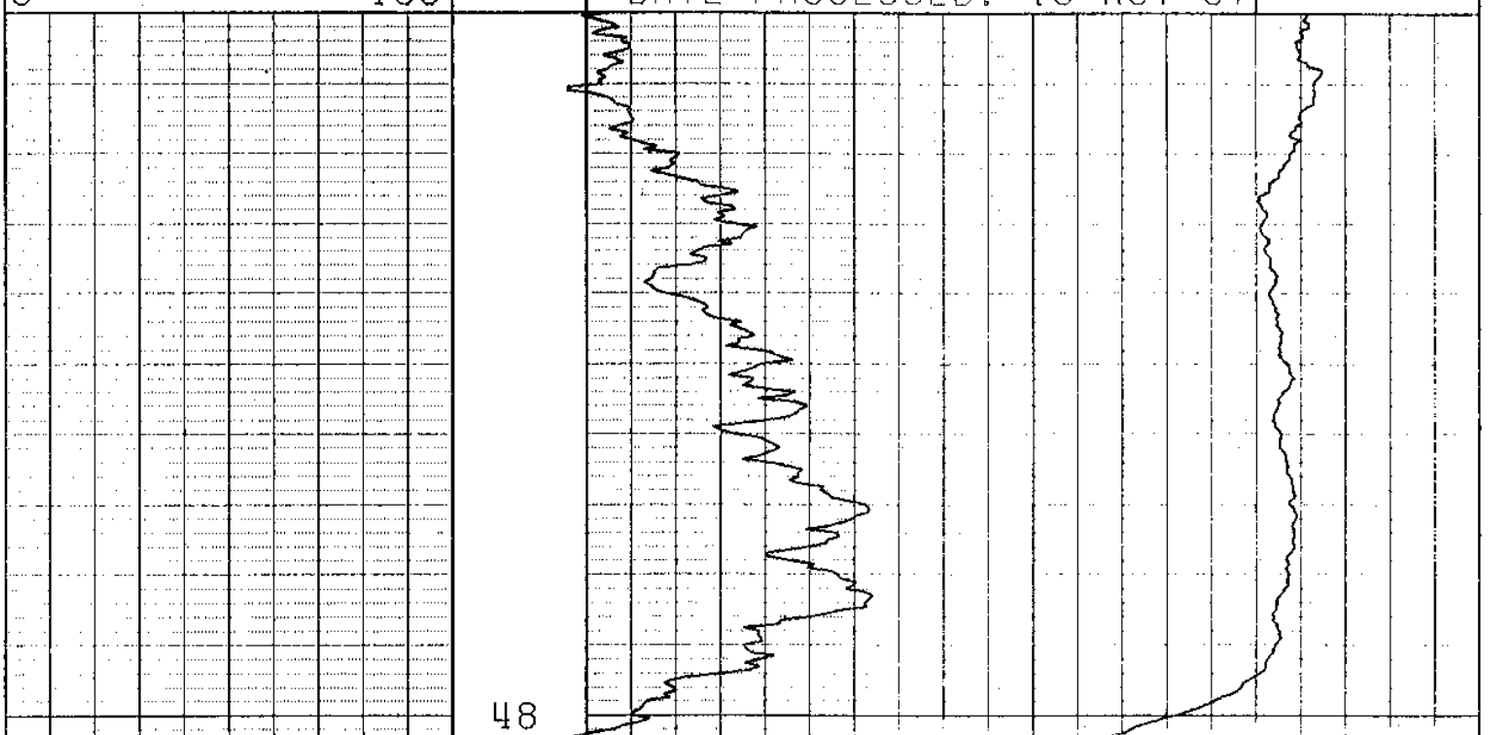
L.S.D (CCS)

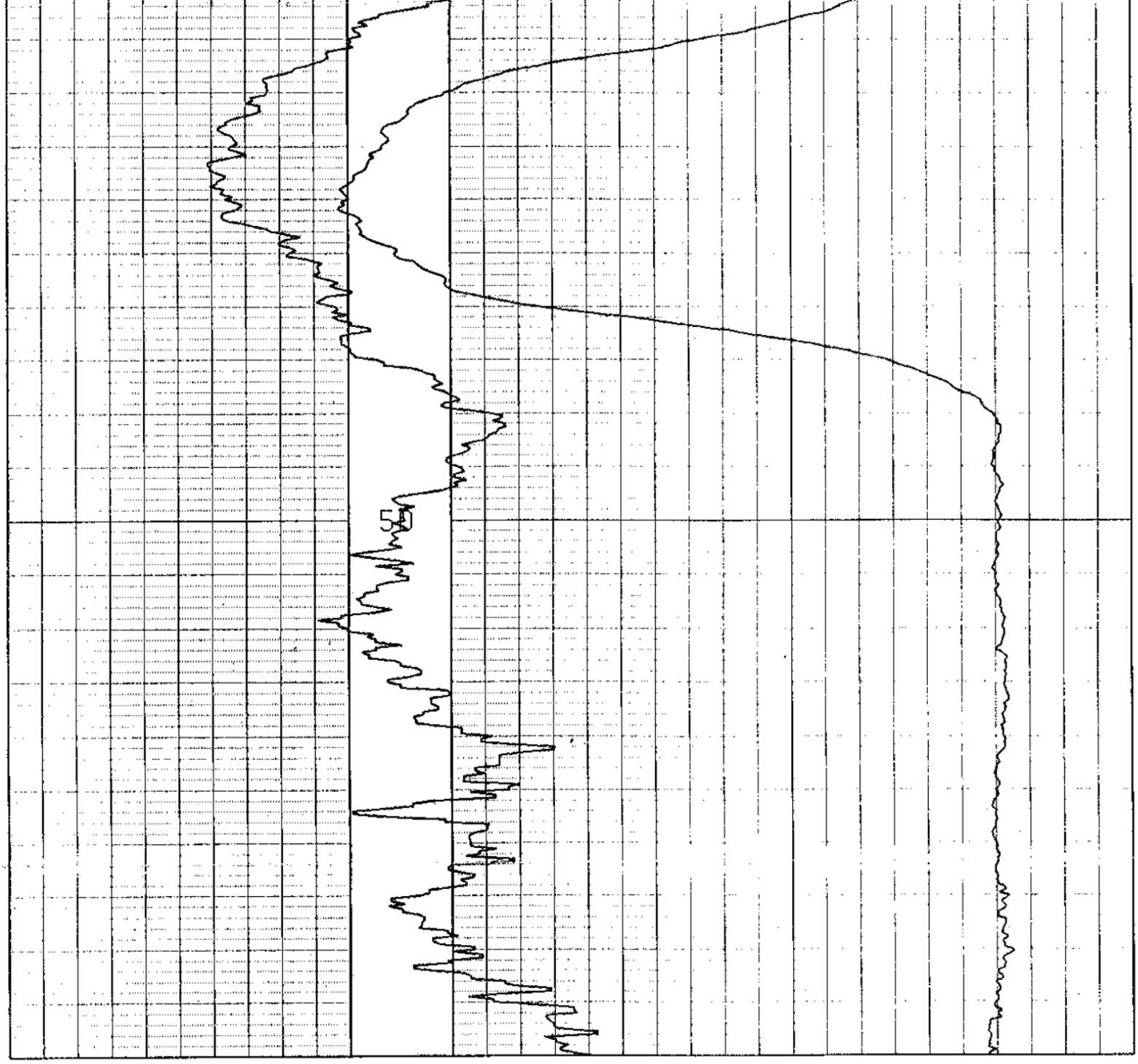
6000 0

CLIENT:
WELL NØ:
AREA:
CASING:
WATER:
DEPTH:46.00-52.00
DATE PRØCESSED: 18-NØV-87

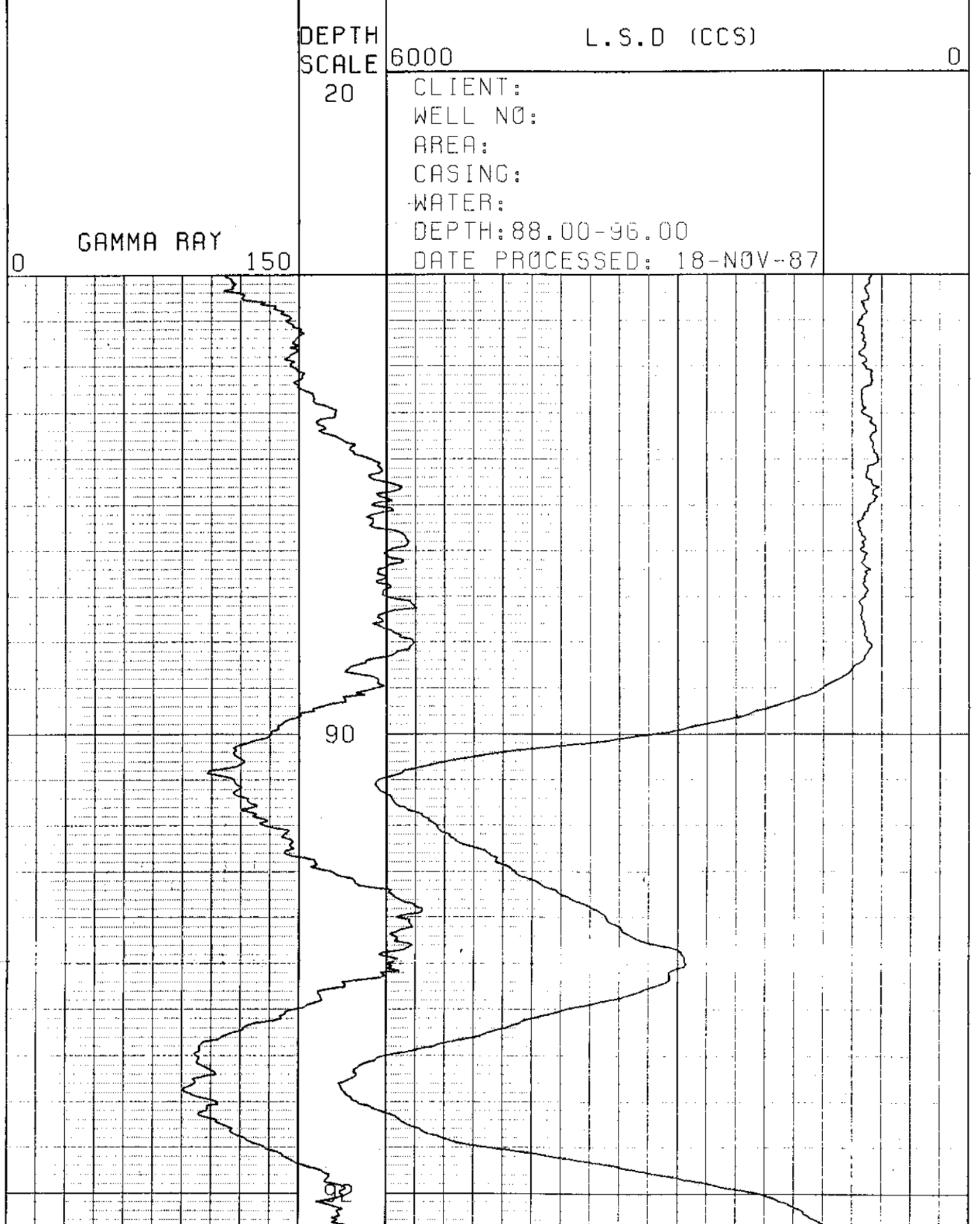
GAMMA RAY

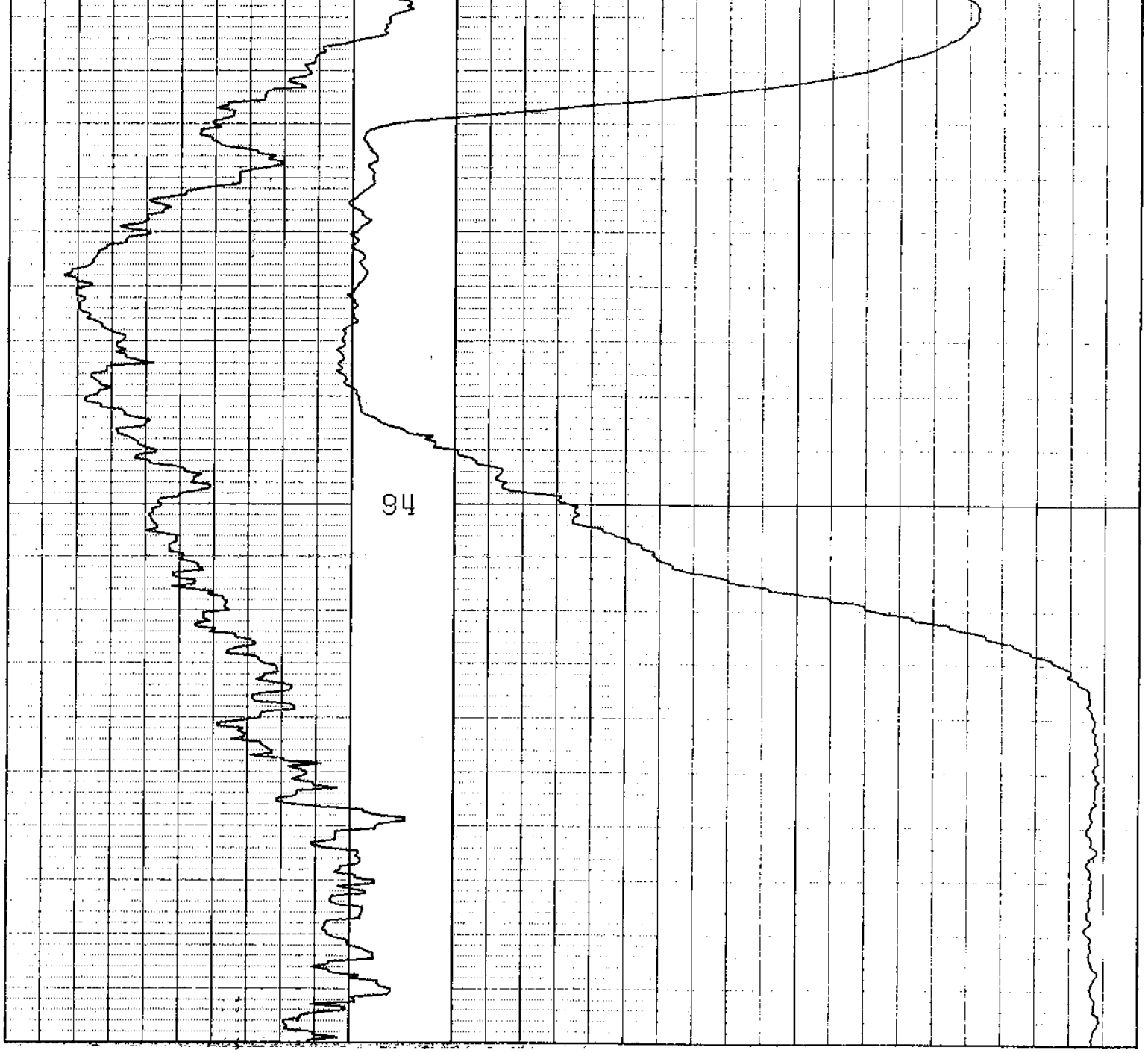
0 150



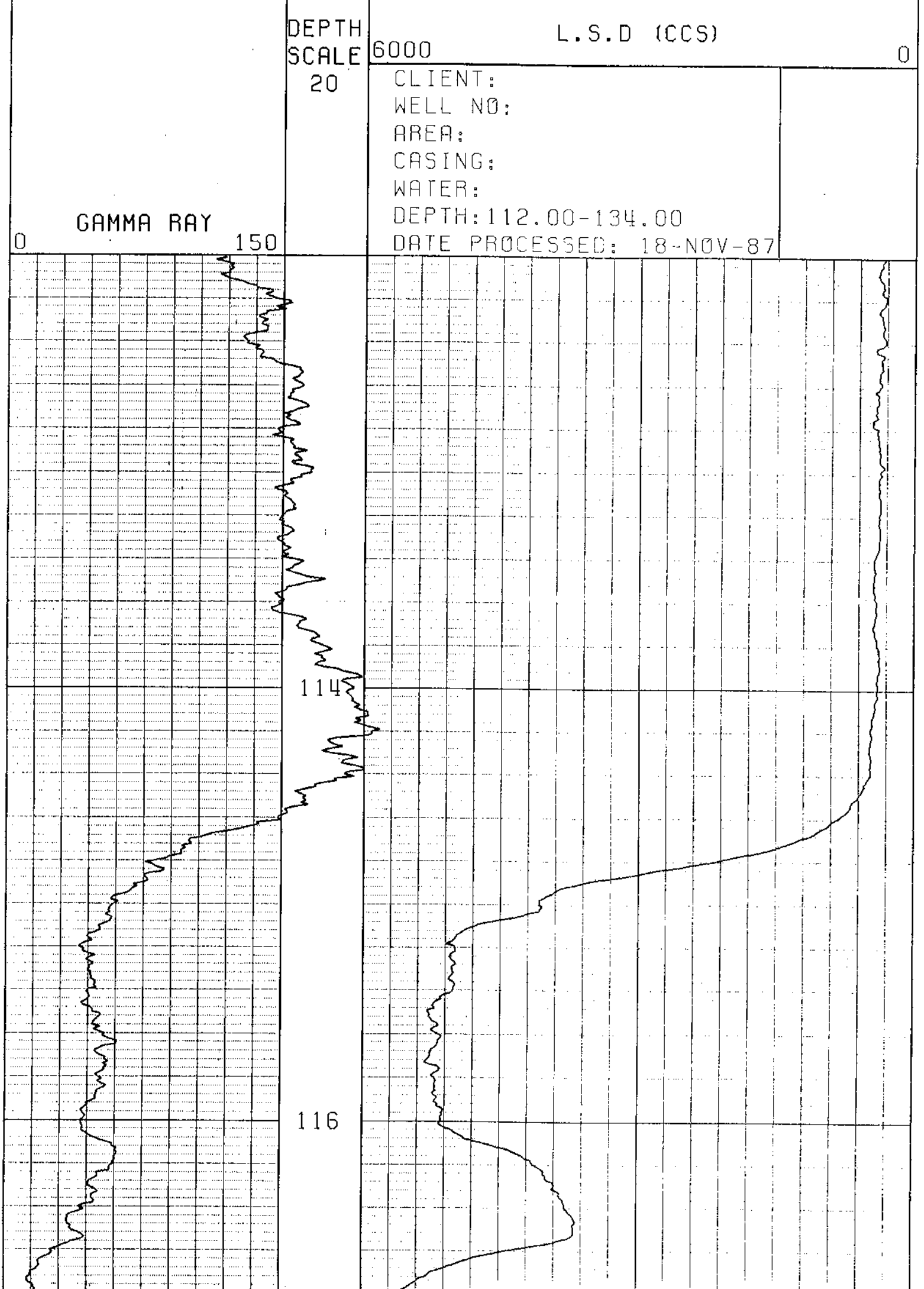


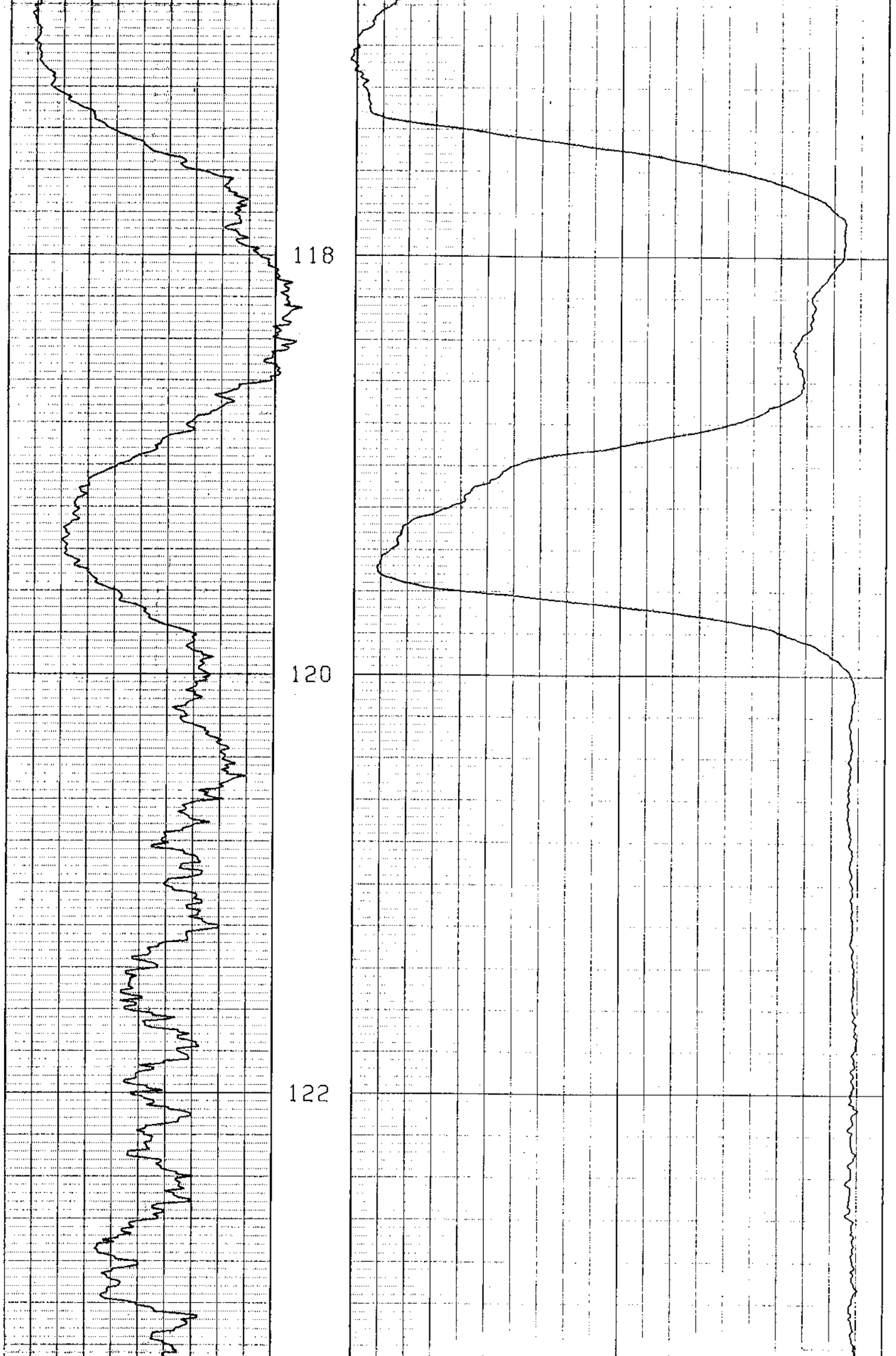
DETAIL LOGS

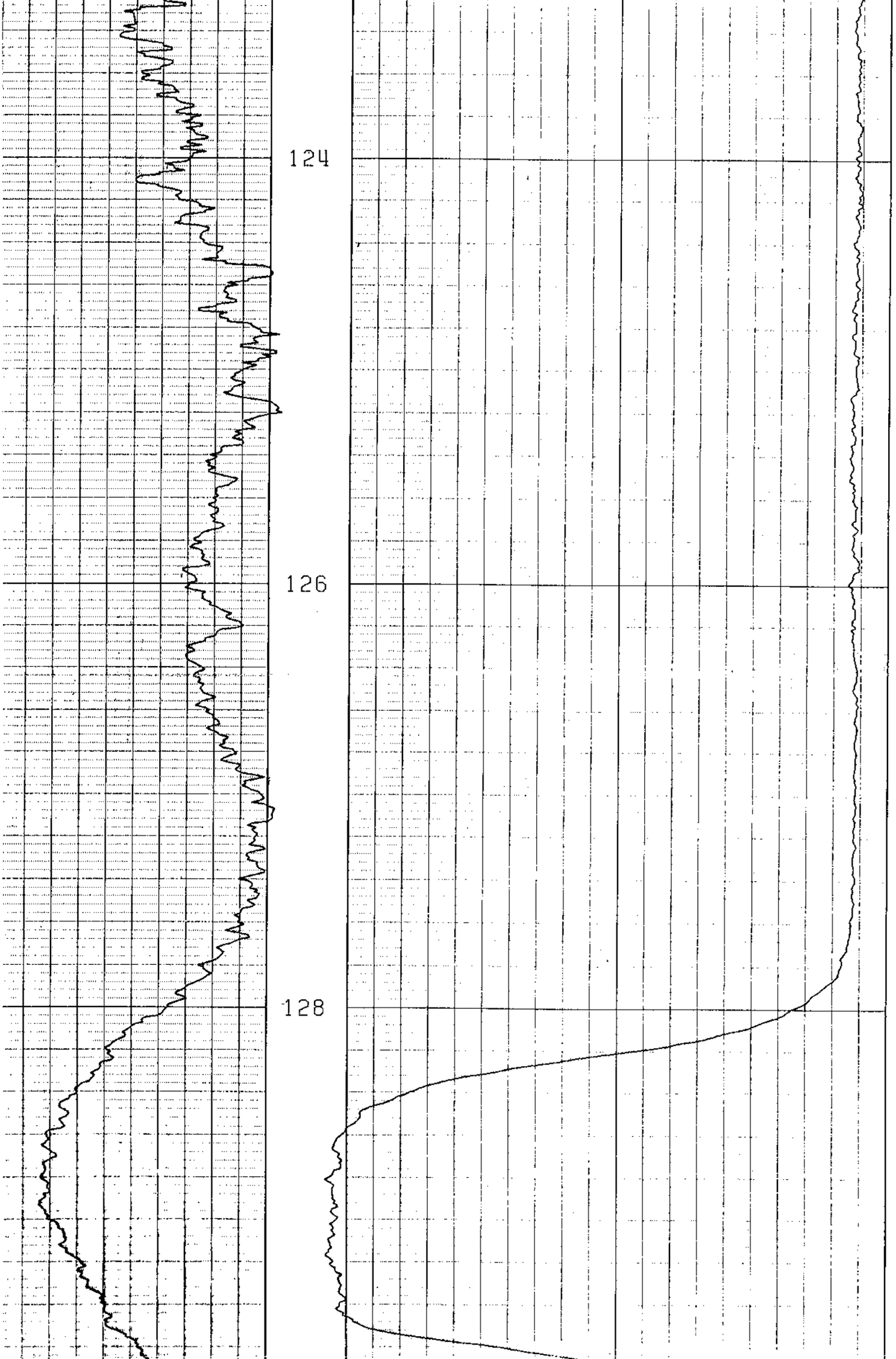

DEPTH
SCALE
20
L.S.D (CCS)
6000
0
CLIENT:
WELL NO:
AREA:
CASING:
WATER:
DEPTH:88.00-96.00
DATE PROCESSED: 18-NOV-87
GAMMA RAY
0
150
90
92

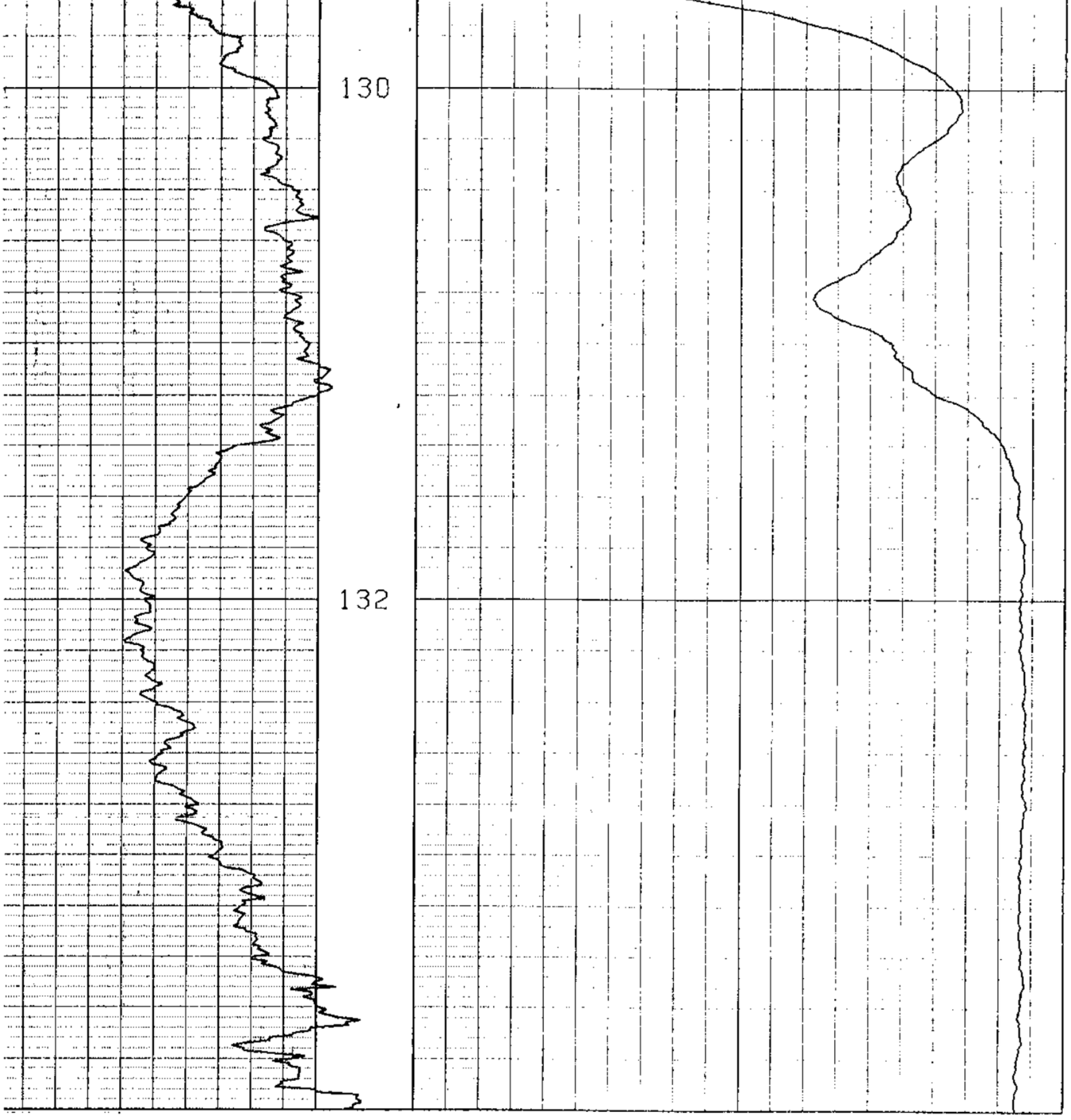


DETAIL LØGS


DEPTH
SCALE
20
L.S.D (CCS)
6000
0
CLIENT:
WELL NO:
AREA:
CASING:
WATER:
DEPTH:112.00-134.00
DATE PROCESSED: 18-NOV-87
GAMMA RAY
0
150
114
116


118
120
122


124
126
128


130
132

DETAIL LOGS

739

DEPTH SCALE 20

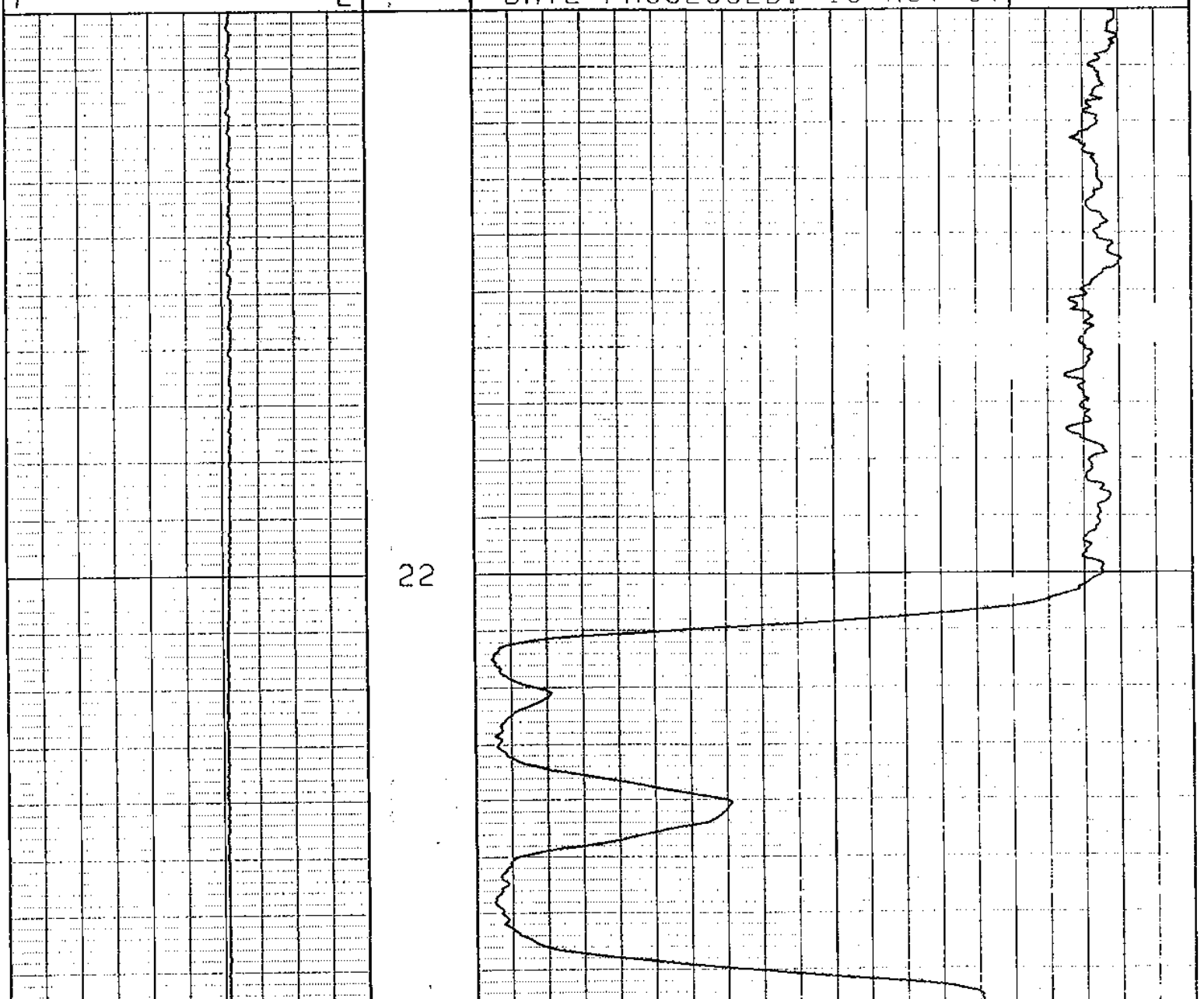
B.R.D (CCS)

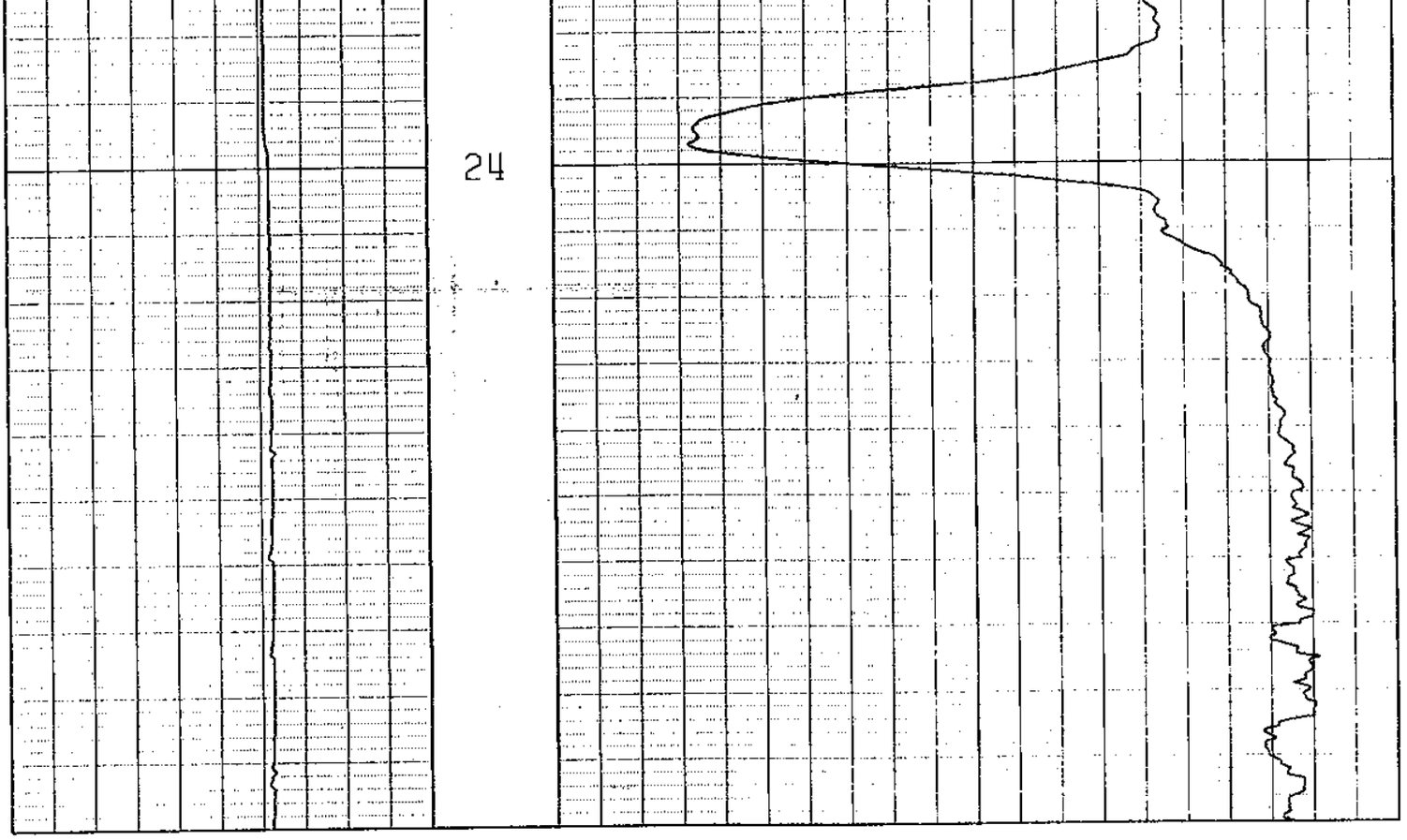
25000 14000

CLIENT: QUINTETTE COAL LTD.
WELL NO: QHD 87010
AREA: TRANSFER PIT
CASING: 3.05M
WATER: 78.40M
DEPTH: 20.00-26.00
DATE PROCESSED: 18-NOV-87

CALIPER

7 2





DETAIL LØGS

DEPTH SCALE 20

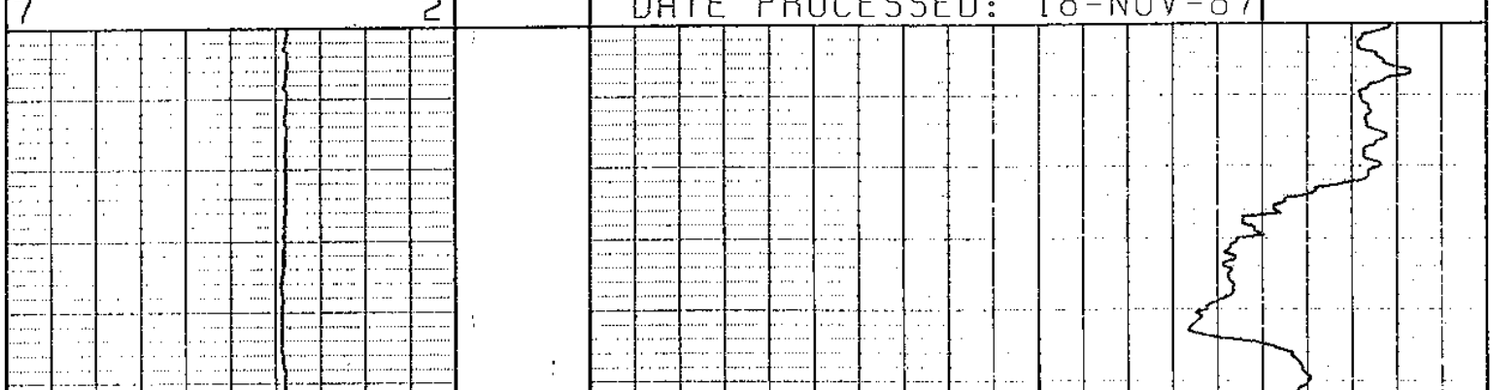
B.R.D (CCS)

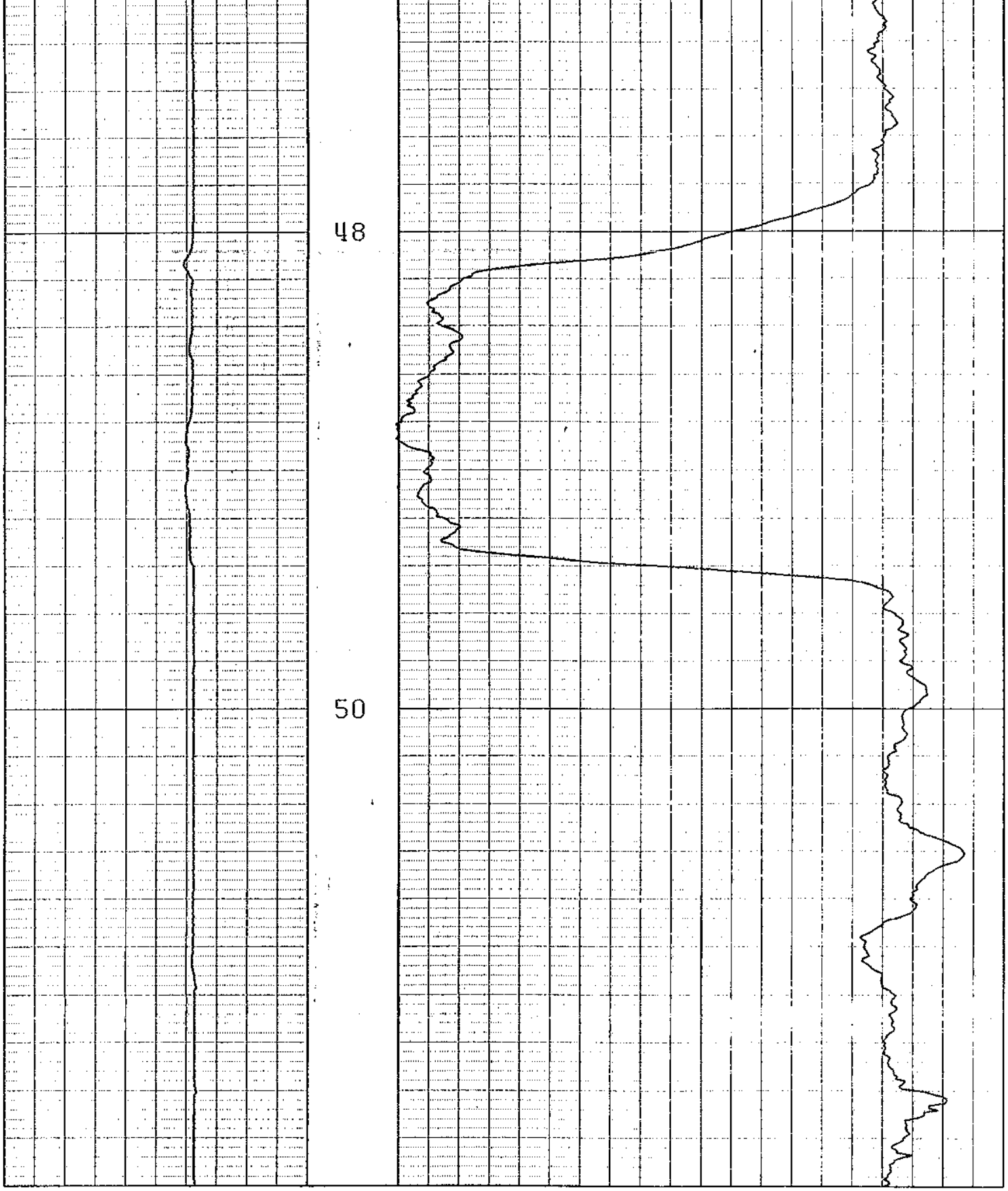
25000 14000

CLIENT:
WELL NØ:
AREA:
CASING:
WATER:
DEPTH:46.00-52.00
DATE PRØCESSED: 18-NØV-87

CALIPER

7 2




48
50

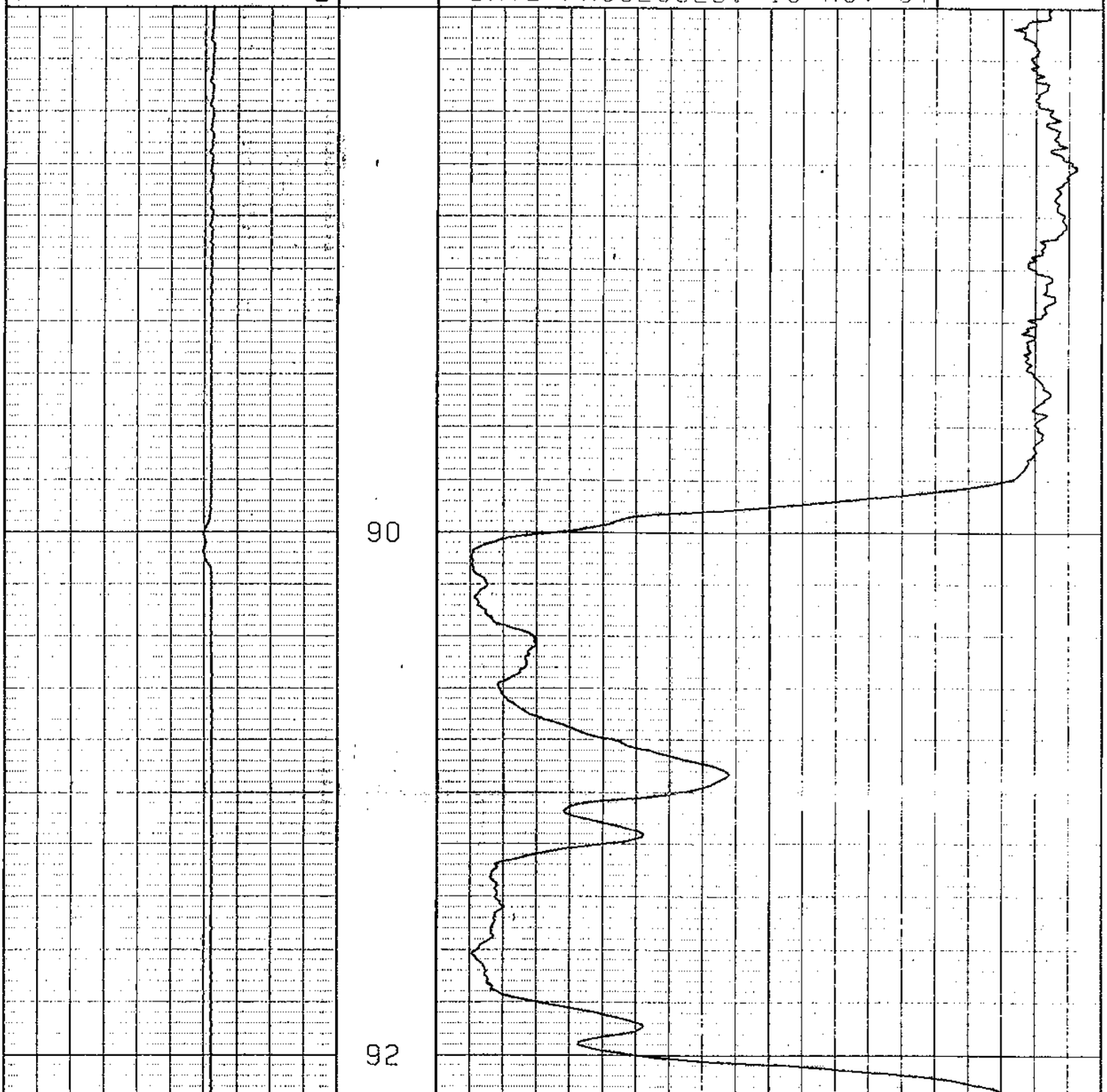
DETAIL LØGS

DEPTH SCALE 20

CALIPER 7 2

B.R.D (CCS) 25000 14000

CLIENT:
WELL NØ:
AREA:
CASING:
WATER:
DEPTH:88.00-96.00
DATE PRØCESSED: 18-NØV-87



94

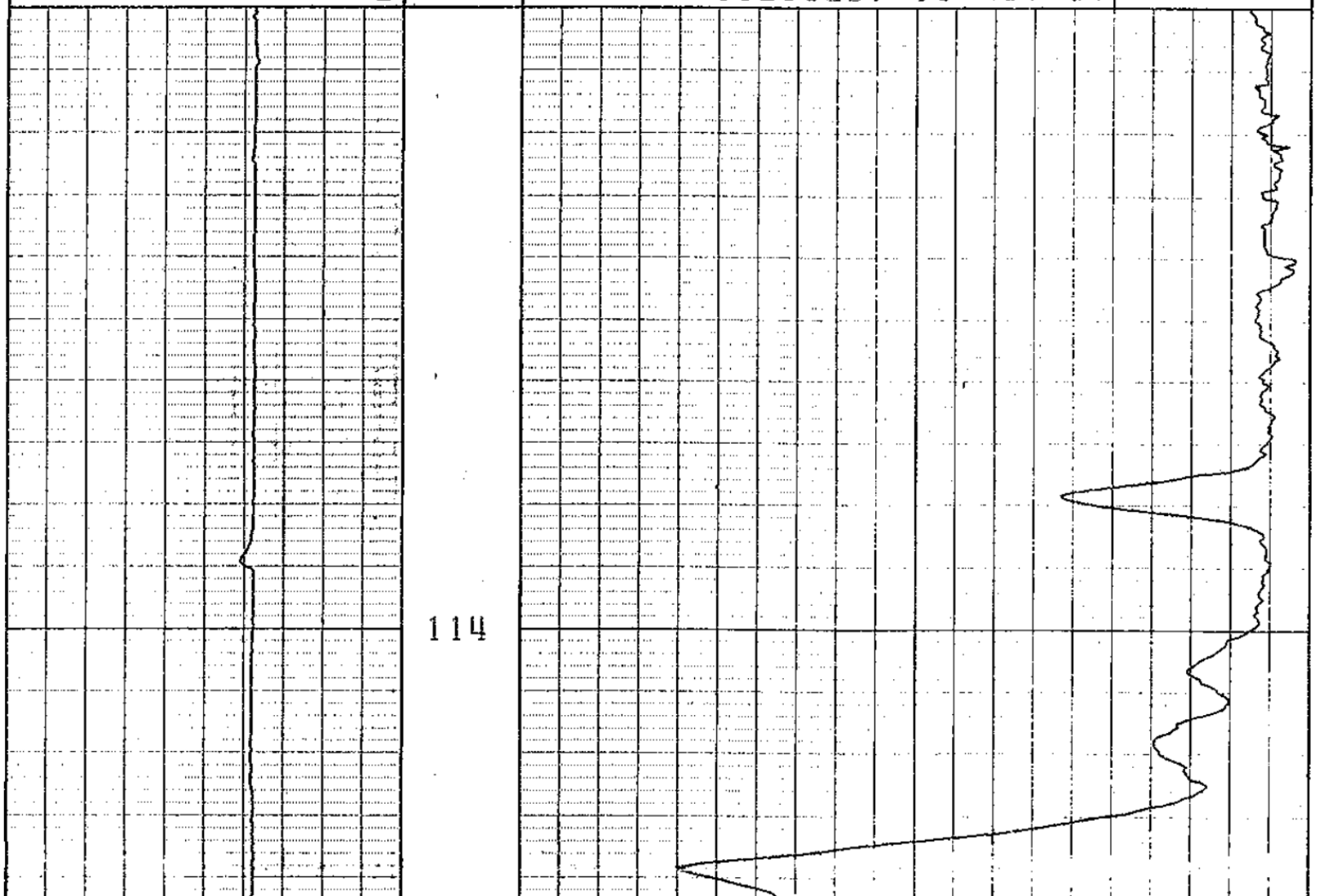
DETAIL LØGS

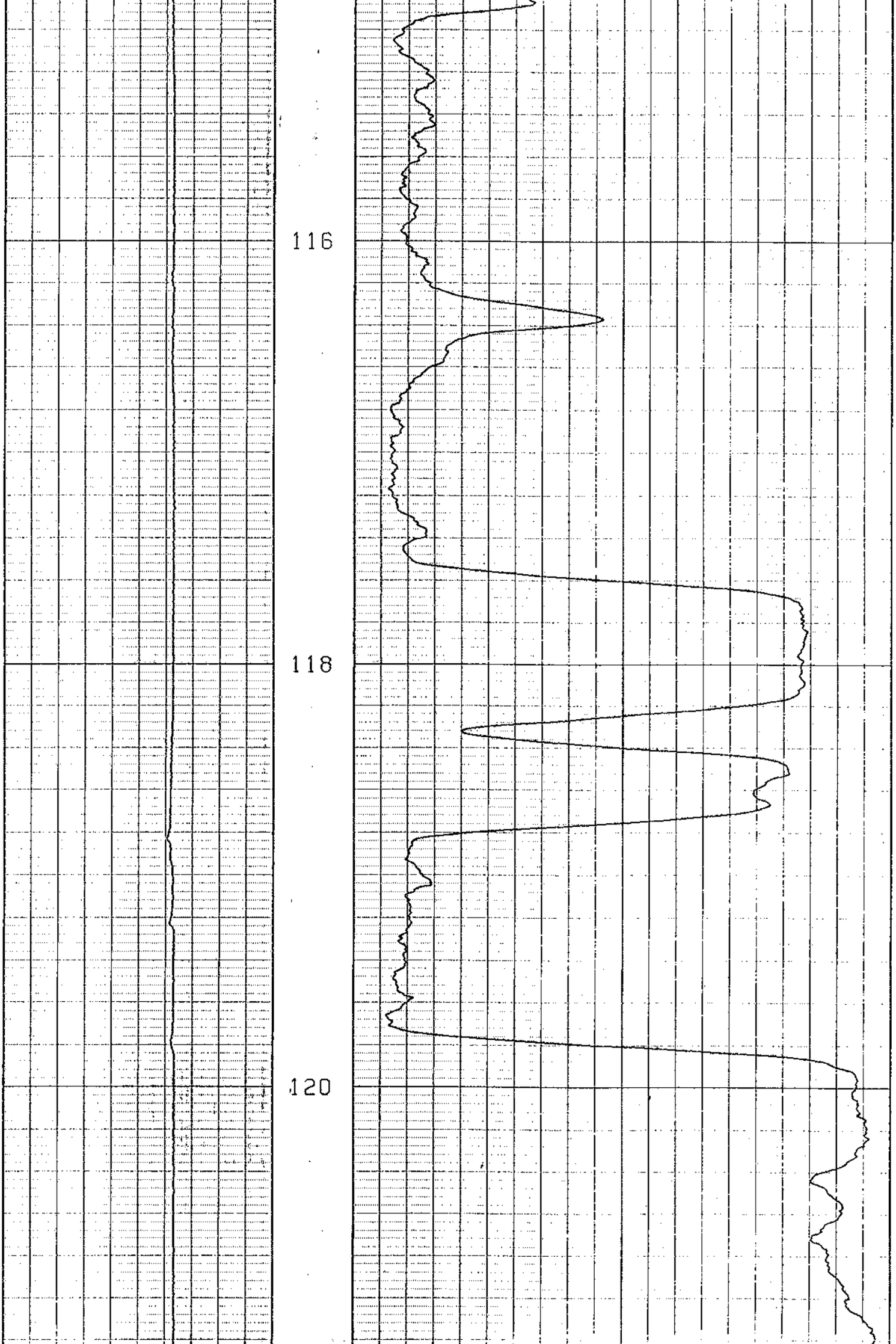
DEPTH SCALE 20

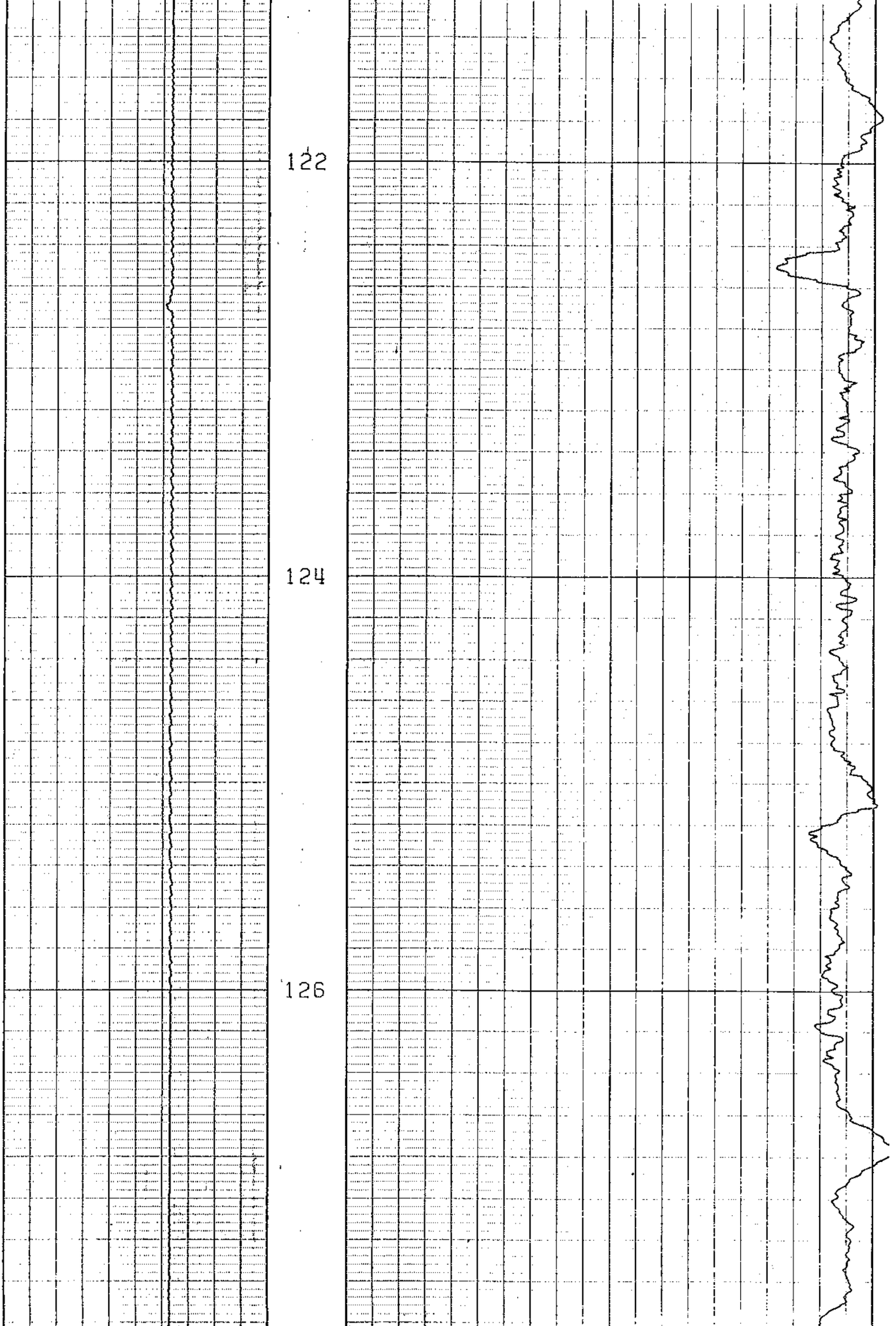
CALIPER 7 2

B.R.D (CCS) 25000 14000

CLIENT:
WELL NØ:
AREA:
CASING:
WATER:
DEPTH: 112.00-134.00
DATE PRØCESSED: 18-NØV-87




116
118
120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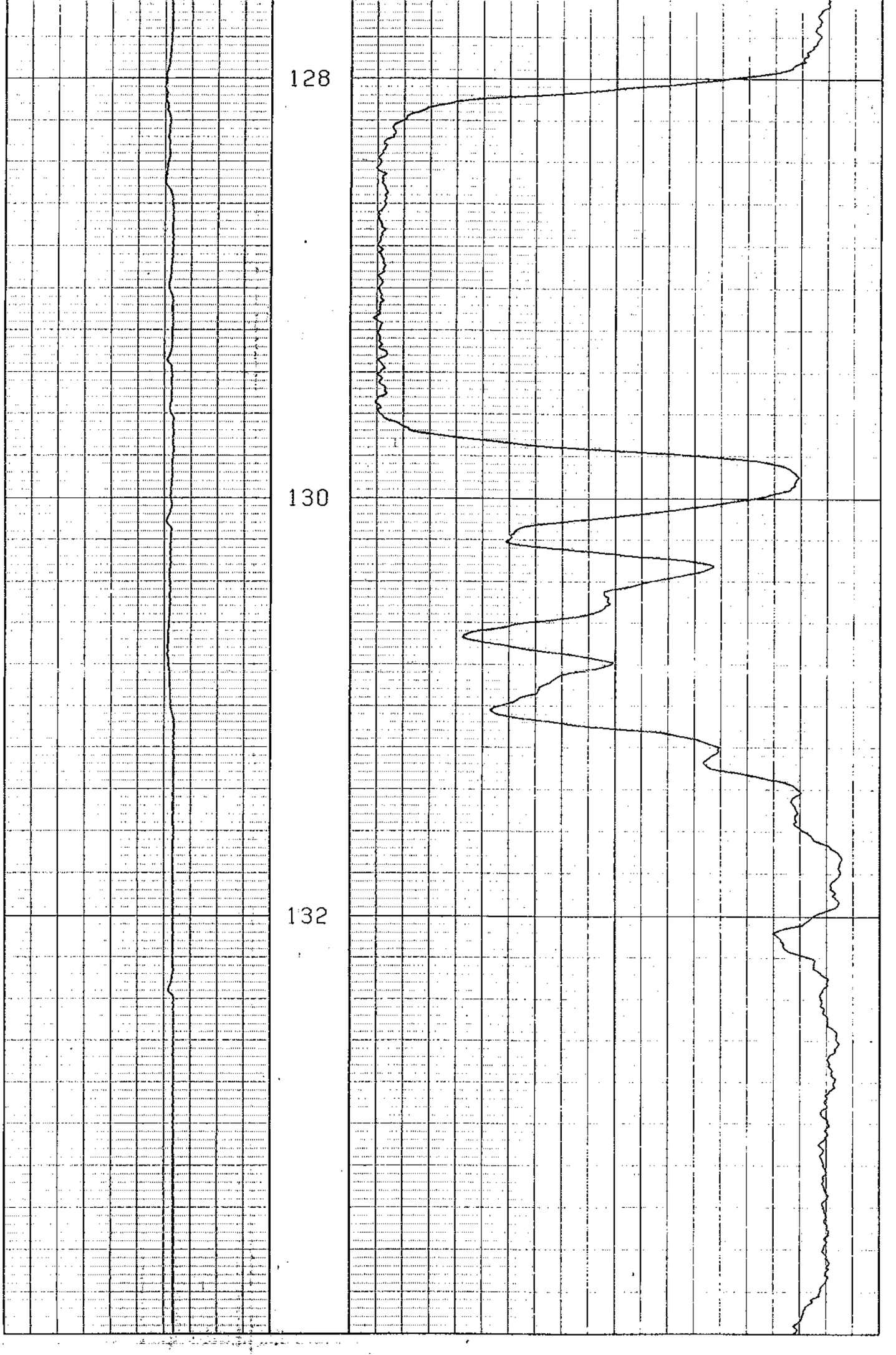
126


128
130
132

739

CONTINUOUS VERTICALITY ANALYSIS

CLIENT___ QUINTETTE

BOREHOLE_ QHD-87-010

AREA____ TRANSFER

COUNTRY__ CANADA

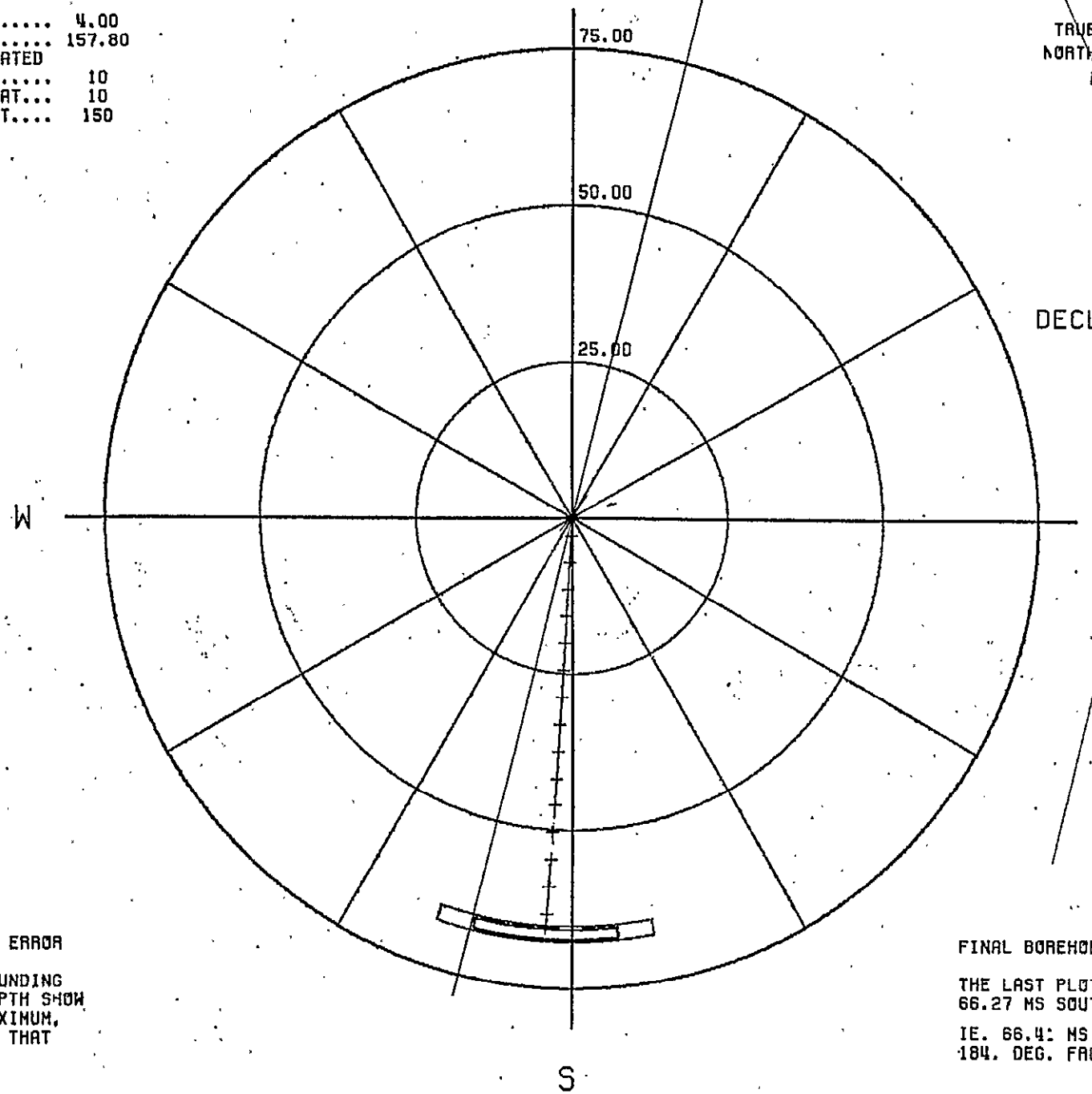
DATE LOGGED.....11-AUG-87
DATE PROCESSED..15-DEC-87
UPPER REFERENCE POINT....CASING SHOE
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 1000:1

ALL FIGURES IN LOG DEPTH MS

TARGET ORIGIN DEPTH.....	4.00
LAST PLOTTED DEPTH.....	157.80
DEPTH MARKERS ANNOTATED IN MULTIPLES OF.....	10
FIRST DEPTH MARKER AT...	10
LAST DEPTH MARKER AT....	150



MAGNETIC NORTH

TRUE NORTH

DECLINATION 24.0 DEG.

BOREHOLE POSITIONAL ERROR

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

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 66.27 MS SOUTH, 4.23 MS WEST

IE. 66.4: MS FROM THE ORIGIN, 184. DEG. FROM MAGNETIC NORTH

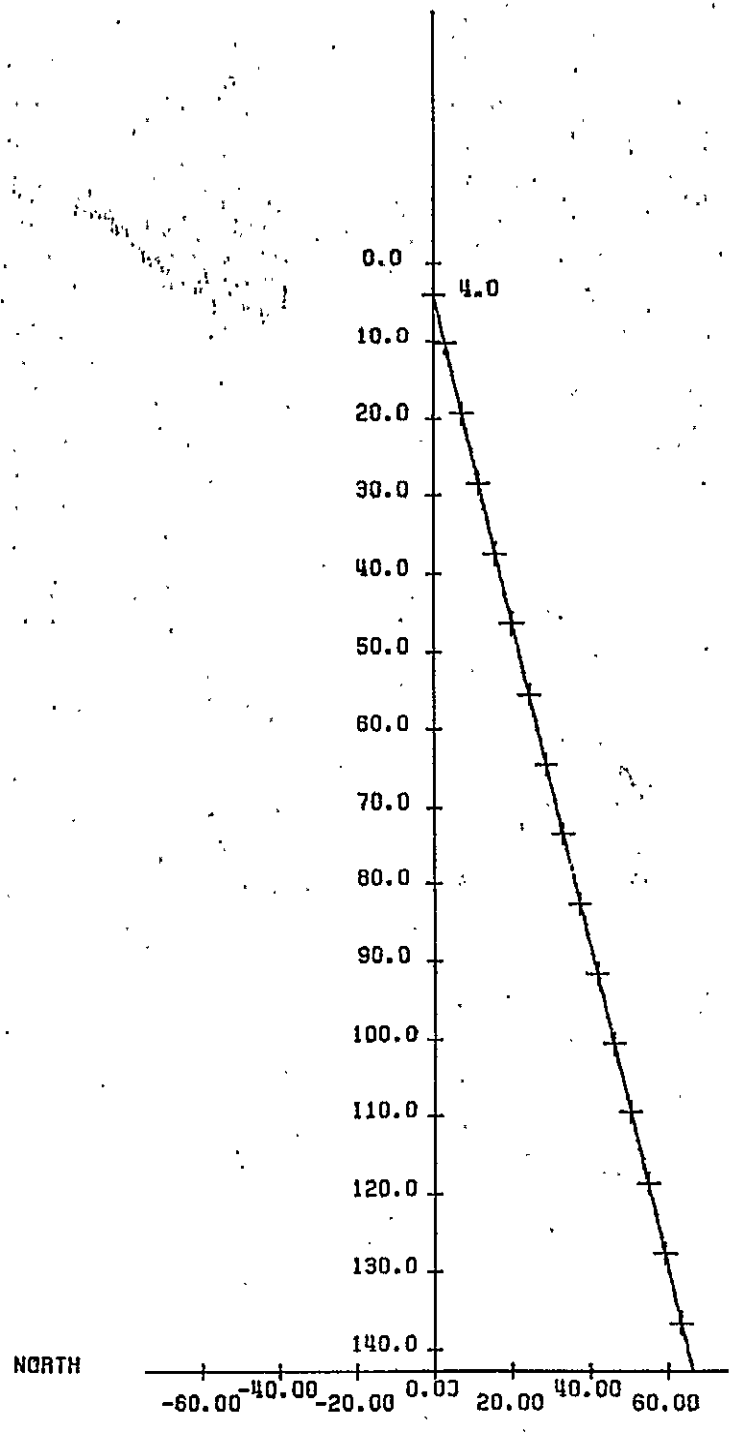
VERTICAL SECTIONS

(TRUE DEPTH VS. DISPLACEMENT)

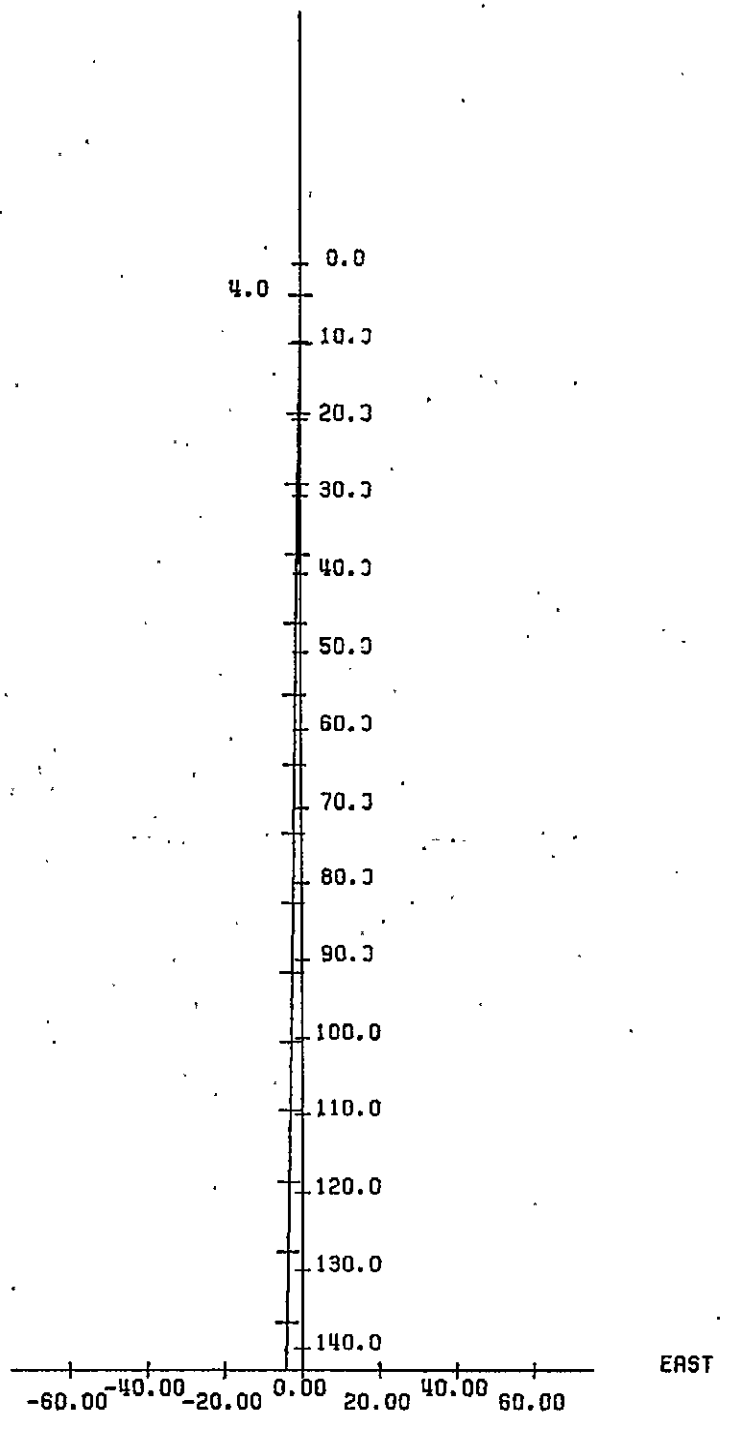
N-S SECTION

VERTICAL SCALE 1000 :1

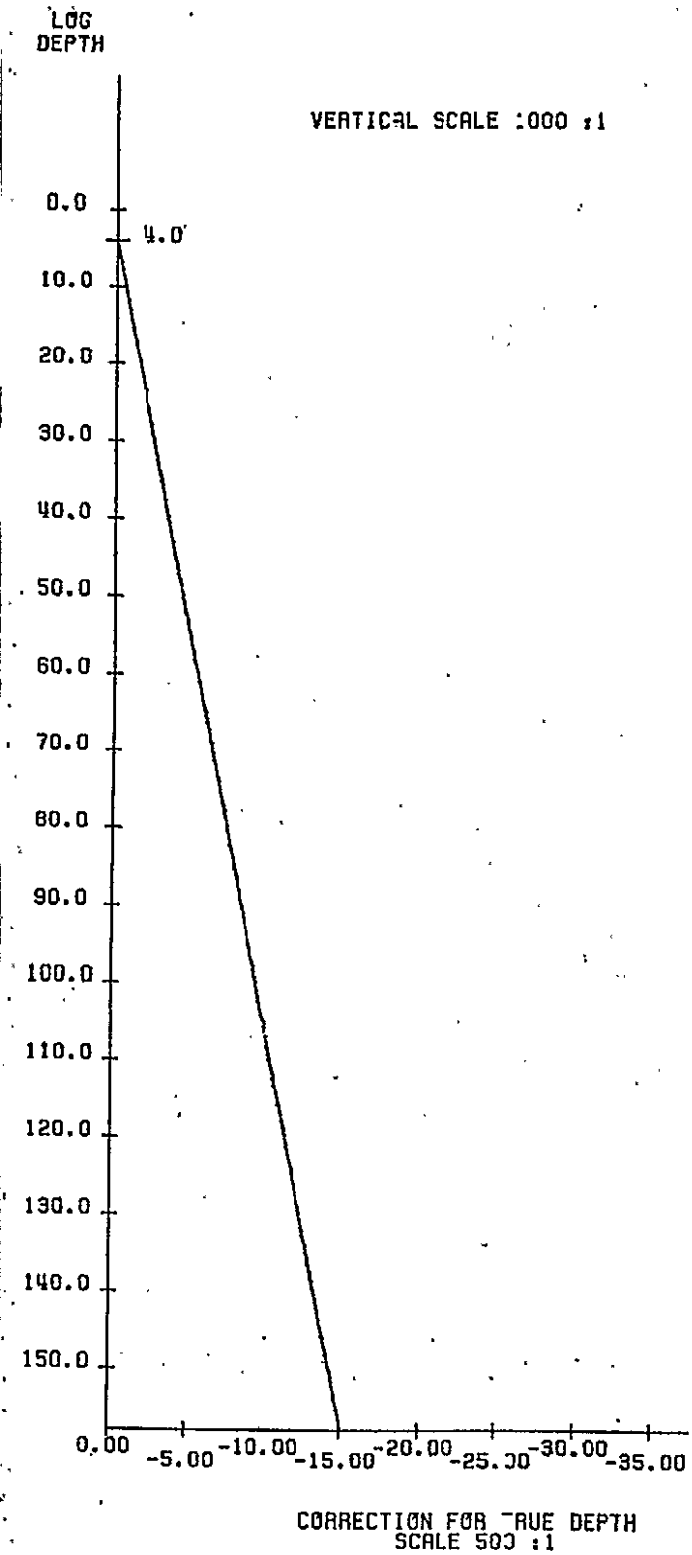
MARKERS ANNOTATED
AS ABOVE



W-E SECTION



DEPTH CORRECTION ANALYSIS



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
5.00	4.91	75.00	68.10	145.00	131.28
6.00	5.81	76.00	69.00	146.00	132.08
7.00	6.72	77.00	69.90	147.00	132.99
8.00	7.62	78.00	70.80	148.00	133.89
9.00	8.53	79.00	71.71	149.00	134.79
10.00	9.43	80.00	72.61	150.00	135.69
11.00	10.33	81.00	73.51	151.00	136.59
12.00	11.24	82.00	74.41	152.00	137.49
13.00	12.14	83.00	75.31	153.00	138.39
14.00	13.04	84.00	76.22	154.00	139.29
15.00	13.95	85.00	77.12	155.00	140.19
16.00	14.85	86.00	78.02	156.00	141.09
17.00	15.76	87.00	78.92	157.00	141.99
18.00	16.66	88.00	79.82	158.00	142.92
19.00	17.56	89.00	80.73		
20.00	18.47	90.00	81.63		
21.00	19.37	91.00	82.53		
22.00	20.28	92.00	83.43		
23.00	21.18	93.00	84.33		
24.00	22.08	94.00	85.23		
25.00	22.99	95.00	86.14		
26.00	23.89	96.00	87.04		
27.00	24.80	97.00	87.94		
28.00	25.70	98.00	88.84		
29.00	26.60	99.00	89.74		
30.00	27.51	100.00	90.64		
31.00	28.41	101.00	91.54		
32.00	29.32	102.00	92.45		
33.00	30.22	103.00	93.35		
34.00	31.12	104.00	94.25		
35.00	32.03	105.00	95.15		
36.00	32.93	106.00	96.05		
37.00	33.84	107.00	96.95		
38.00	34.74	108.00	97.85		
39.00	35.64	109.00	98.76		
40.00	36.55	110.00	99.66		
41.00	37.45	111.00	100.56		
42.00	38.35	112.00	101.46		
43.00	39.25	113.00	102.36		
44.00	40.16	114.00	103.26		
45.00	41.06	115.00	104.16		
46.00	41.96	116.00	105.07		
47.00	42.86	117.00	105.97		
48.00	43.77	118.00	106.87		
49.00	44.67	119.00	107.77		
50.00	45.57	120.00	108.67		
51.00	46.47	121.00	109.57		
52.00	47.37	122.00	110.47		
53.00	48.28	123.00	111.38		
54.00	49.18	124.00	112.27		
55.00	50.08	125.00	113.18		
56.00	50.98	126.00	114.08		
57.00	51.88	127.00	114.98		
58.00	52.78	128.00	115.88		
59.00	53.68	129.00	116.78		
60.00	54.58	130.00	117.68		
61.00	55.49	131.00	118.58		
62.00	56.39	132.00	119.48		
63.00	57.29	133.00	120.38		
64.00	58.19	134.00	121.28		
65.00	59.09	135.00	122.18		
66.00	59.99	136.00	123.08		
67.00	60.89	137.00	123.98		
68.00	61.79	138.00	124.88		
69.00	62.69	139.00	125.78		
70.00	63.59	140.00	126.68		
71.00	64.50	141.00	127.58		
72.00	65.40	142.00	128.48		
73.00	66.30	143.00	129.38		
74.00	67.20	144.00	130.28		

QHD 8701D

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 50000:1 (metric) & 48000:1 (imperial), and the minimum 1:1.

2. The analysis is derived by integrating 10 cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 200 points in multiples of 1,2,5,10,20,25,50, or 100 metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.

3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.

4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).

5. Borehole positional error is derived assuming the following parameters:

	TILT(degrees)	AZIMUTH(degrees)
Typical Error	+/- 0.33333	+/- 10.0
Maximum Error	+/- 0.5	+/- 15.0

6. Error analysis may be calculated and plotted from the data listing as follows:

   a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
   b) Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
   c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.

7. Given below is a full description of the parameters displayed on the ensuing listing:

LOG DEPTH	the depth recorded on the field logs for the borehole
TRUE DEPTH	the true vertical depth corresponding to the above depth, corrected from the start of the analysis
HOLE TILT & AZIMUTH	the SAMPLED borehole orientation
AXIAL COORDINATES	the coordinates North & 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

Verticality Data Listing

All co-ordinates with respect to True North

DEPTHS log	DEPTHS true	BOREHOLE tilt	BOREHOLE AZI	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng	POLAR radius	POLAR ERROR CO-ORDINATES (maximum & typical) brng	radius	brng	radius	brng	radius	brng	radius
5.ØØ	4.91	25.4	2Ø4.	-Ø.39	-Ø.15	2ØØ.	Ø.42	2ØØ.	Ø.43	2ØØ.	Ø.41	2ØØ.	Ø.42	2ØØ.	Ø.41
6.ØØ	5.81	25.6	2Ø7.	-Ø.77	-Ø.34	2Ø4.	Ø.84	2Ø4.	Ø.86	2Ø4.	Ø.83	2Ø4.	Ø.85	2Ø4.	Ø.83
7.ØØ	6.72	25.6	2Ø7.	-1.15	-Ø.54	2Ø5.	1.27	2Ø5.	1.29	2Ø5.	1.24	2Ø5.	1.28	2Ø5.	1.25
8.ØØ	7.62	25.7	2Ø8.	-1.53	-Ø.73	2Ø6.	1.7Ø	2Ø6.	1.73	2Ø6.	1.67	2Ø6.	1.72	2Ø6.	1.68
9.ØØ	8.53	25.2	2Ø7.	-1.91	-Ø.93	2Ø6.	2.12	2Ø6.	2.16	2Ø6.	2.Ø8	2Ø6.	2.15	2Ø6.	2.1Ø
1Ø.ØØ	9.43	25.4	2Ø7.	-2.29	-1.12	2Ø6.	2.55	2Ø6.	2.6Ø	2Ø6.	2.5Ø	2Ø6.	2.58	2Ø6.	2.52
11.ØØ	1Ø.33	25.3	2Ø7.	-2.67	-1.32	2Ø6.	2.98	2Ø6.	3.Ø3	2Ø6.	2.92	2Ø6.	3.Ø1	2Ø6.	2.94
12.ØØ	11.24	25.3	2Ø9.	-3.Ø5	-1.52	2Ø7.	3.41	2Ø7.	3.47	2Ø7.	3.34	2Ø7.	3.45	2Ø7.	3.36
13.ØØ	12.14	25.6	2Ø8.	-3.43	-1.72	2Ø7.	3.83	2Ø7.	3.9Ø	2Ø7.	3.76	2Ø7.	3.88	2Ø7.	3.79
14.ØØ	13.Ø4	25.4	2Ø6.	-3.81	-1.92	2Ø7.	4.26	2Ø7.	4.34	2Ø7.	4.18	2Ø7.	4.32	2Ø7.	4.21
15.ØØ	13.95	25.3	2Ø7.	-4.19	-2.11	2Ø7.	4.69	2Ø7.	4.78	2Ø7.	4.6Ø	2Ø7.	4.75	2Ø7.	4.63
16.ØØ	14.85	25.5	2Ø7.	-4.57	-2.31	2Ø7.	5.12	2Ø7.	5.21	2Ø7.	5.Ø2	2Ø7.	5.18	2Ø7.	5.Ø5
17.ØØ	15.76	25.3	2Ø6.	-4.94	-2.51	2Ø7.	5.54	2Ø7.	5.65	2Ø7.	5.44	2Ø7.	5.61	2Ø7.	5.48
18.ØØ	16.66	25.5	2Ø8.	-5.32	-2.71	2Ø7.	5.97	2Ø7.	6.Ø8	2Ø7.	5.86	2Ø7.	6.Ø5	2Ø7.	5.9Ø
19.ØØ	17.56	25.1	2Ø9.	-5.7Ø	-2.91	2Ø7.	6.4Ø	2Ø7.	6.52	2Ø7.	6.28	2Ø7.	6.48	2Ø7.	6.32
2Ø.ØØ	18.47	25.1	2Ø7.	-6.Ø8	-3.11	2Ø7.	6.83	2Ø7.	6.95	2Ø7.	6.7Ø	2Ø7.	6.91	2Ø7.	6.74
21.ØØ	19.37	25.5	2Ø5.	-6.46	-3.31	2Ø7.	7.26	2Ø7.	7.39	2Ø7.	7.12	2Ø7.	7.35	2Ø7.	7.17
22.ØØ	2Ø.28	25.2	2Ø9.	-6.84	-3.5Ø	2Ø7.	7.68	2Ø7.	7.82	2Ø7.	7.54	2Ø7.	7.78	2Ø7.	7.59
23.ØØ	21.18	25.5	2Ø8.	-7.22	-3.7Ø	2Ø7.	8.11	2Ø7.	8.26	2Ø7.	7.96	2Ø7.	8.21	2Ø7.	8.Ø1
24.ØØ	22.Ø8	25.2	2Ø6.	-7.6Ø	-3.89	2Ø7.	8.54	2Ø7.	8.7Ø	2Ø7.	8.38	2Ø7.	8.64	2Ø7.	8.43
25.ØØ	22.99	25.1	2Ø8.	-7.98	-4.Ø8	2Ø7.	8.97	2Ø7.	9.13	2Ø7.	8.8Ø	2Ø7.	9.Ø8	2Ø7.	8.86
26.ØØ	23.89	25.4	2Ø5.	-8.36	-4.28	2Ø7.	9.39	2Ø7.	9.57	2Ø7.	9.22	2Ø7.	9.51	2Ø7.	9.28
27.ØØ	24.8Ø	25.2	2Ø8.	-8.74	-4.48	2Ø7.	9.82	2Ø7.	1Ø.ØØ	2Ø7.	9.64	2Ø7.	9.94	2Ø7.	9.7Ø
28.ØØ	25.7Ø	25.1	2Ø8.	-9.12	-4.67	2Ø7.	1Ø.25	2Ø7.	1Ø.44	2Ø7.	1Ø.Ø6	2Ø7.	1Ø.37	2Ø7.	1Ø.12
29.ØØ	26.6Ø	25.2	2Ø9.	-9.5Ø	-4.87	2Ø7.	1Ø.67	2Ø7.	1Ø.87	2Ø7.	1Ø.48	2Ø7.	1Ø.8Ø	2Ø7.	1Ø.54
3Ø.ØØ	27.51	24.9	2Ø7.	-9.88	-5.Ø7	2Ø7.	11.1Ø	2Ø7.	11.3Ø	2Ø7.	1Ø.89	2Ø7.	11.24	2Ø7.	1Ø.96
31.ØØ	28.41	25.4	2Ø6.	-1Ø.26	-5.26	2Ø7.	11.53	2Ø7.	11.74	2Ø7.	11.31	2Ø7.	11.67	2Ø7.	11.38
32.ØØ	29.32	25.1	2Ø7.	-1Ø.64	-5.46	2Ø7.	11.95	2Ø7.	12.17	2Ø7.	11.73	2Ø7.	12.1Ø	2Ø7.	11.81
33.ØØ	3Ø.22	25.5	2Ø7.	-11.Ø2	-5.65	2Ø7.	12.38	2Ø7.	12.61	2Ø7.	12.15	2Ø7.	12.53	2Ø7.	12.23
34.ØØ	31.12	25.6	2Ø6.	-11.4Ø	-5.84	2Ø7.	12.81	2Ø7.	13.Ø5	2Ø7.	12.57	2Ø7.	12.97	2Ø7.	12.65
35.ØØ	32.Ø3	25.5	2Ø9.	-11.78	-6.Ø4	2Ø7.	13.24	2Ø7.	13.48	2Ø7.	12.99	2Ø7.	13.4Ø	2Ø7.	13.Ø7
36.ØØ	32.93	25.3	2Ø8.	-12.16	-6.23	2Ø7.	13.67	2Ø7.	13.92	2Ø7.	13.41	2Ø7.	13.83	2Ø7.	13.5Ø
37.ØØ	33.84	25.5	2Ø7.	-12.54	-6.43	2Ø7.	14.Ø9	2Ø7.	14.35	2Ø7.	13.83	2Ø7.	14.27	2Ø7.	13.92
38.ØØ	34.74	25.7	2Ø7.	-12.92	-6.63	2Ø7.	14.52	2Ø7.	14.79	2Ø7.	14.25	2Ø7.	14.7Ø	2Ø7.	14.34
39.ØØ	35.64	25.2	2Ø6.	-13.3Ø	-6.82	2Ø7.	14.95	2Ø7.	15.23	2Ø7.	14.67	2Ø7.	15.13	2Ø7.	14.77
4Ø.ØØ	36.55	25.3	2Ø7.	-13.68	-7.Ø2	2Ø7.	15.38	2Ø7.	15.66	2Ø7.	15.Ø9	2Ø7.	15.57	2Ø7.	15.19
41.ØØ	37.45	25.5	2Ø6.	-14.Ø7	-7.22	2Ø7.	15.81	2Ø7.	16.1Ø	2Ø7.	15.52	2Ø7.	16.ØØ	2Ø7.	15.61
42.ØØ	38.35	25.8	2Ø7.	-14.45	-7.42	2Ø7.	16.24	2Ø7.	16.54	2Ø7.	15.94	2Ø7.	16.44	2Ø7.	16.Ø4
43.ØØ	39.25	25.5	2Ø9.	-14.83	-7.62	2Ø7.	16.67	2Ø7.	16.98	2Ø7.	16.36	2Ø7.	16.87	2Ø7.	16.46
44.ØØ	4Ø.16	25.7	2Ø5.	-15.21	-7.82	2Ø7.	17.1Ø	2Ø7.	17.42	2Ø7.	16.78	2Ø7.	17.31	2Ø7.	16.89
45.ØØ	41.Ø6	25.5	21Ø.	-15.59	-8.Ø1	2Ø7.	17.53	2Ø7.	17.86	2Ø7.	17.21	2Ø7.	17.75	2Ø7.	17.32
46.ØØ	41.96	25.7	2Ø8.	-15.98	-8.21	2Ø7.	17.96	2Ø7.	18.29	2Ø7.	17.63	2Ø7.	18.18	2Ø7.	17.74
47.ØØ	42.86	25.6	2Ø6.	-16.36	-8.41	2Ø7.	18.39	2Ø7.	18.73	2Ø7.	18.Ø5	2Ø7.	18.62	2Ø7.	18.17
48.ØØ	43.77	25.5	2Ø6.	-16.74	-8.61	2Ø7.	18.82	2Ø7.	19.17	2Ø7.	18.48	2Ø7.	19.Ø6	2Ø7.	18.59
49.ØØ	44.67	25.3	2Ø7.	-17.12	-8.81	2Ø7.	19.26	2Ø7.	19.61	2Ø7.	18.9Ø	2Ø7.	19.49	2Ø7.	19.Ø2
5Ø.ØØ	45.57	25.6	2Ø9.	-17.51	-9.Ø1	2Ø7.	19.69	2Ø7.	2Ø.Ø5	2Ø7.	19.32	2Ø7.	19.93	2Ø7.	19.44
51.ØØ	46.47	25.4	2Ø5.	-17.89	-9.21	2Ø7.	2Ø.12	2Ø7.	2Ø.49	2Ø7.	19.75	2Ø7.	2Ø.37	2Ø7.	19.87
52.ØØ	47.37	25.4	2Ø7.	-18.27	-9.4Ø	2Ø7.	2Ø.55	2Ø7.	2Ø.93	2Ø7.	2Ø.17	2Ø7.	2Ø.8Ø	2Ø7.	2Ø.3Ø
53.ØØ	48.28	25.8	2Ø7.	-18.65	-9.6Ø	2Ø7.	2Ø.98	2Ø7.	21.37	2Ø7.	2Ø.59	2Ø7.	21.24	2Ø7.	2Ø.72
54.ØØ	49.18	26.Ø	2Ø6.	-19.Ø4	-9.8Ø	2Ø7.	21.42	2Ø7.	21.81	2Ø7.	21.Ø2	2Ø7.	21.68	2Ø7.	21.15

DEPTHS log	DEPTHS true	BOREHOLE tilt	BOREHOLE AZI	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng	POLAR radius	POLAR ERROR CO-ORDINATES (maximum & typical) brng	radius	brng	radius	brng	radius	brng	radius
55.ØØ	5Ø.Ø8	25.8	2Ø6.	-19.43	-1Ø.ØØ	2Ø7.	21.85	2Ø7.	22.25	2Ø7.	21.45	2Ø7.	22.12	2Ø7.	21.58
56.ØØ	5Ø.98	25.5	2Ø8.	-19.81	-1Ø.2Ø	2Ø7.	22.28	2Ø7.	22.69	2Ø7.	21.87	2Ø7.	22.56	2Ø7.	22.Ø1
57.ØØ	51.88	26.Ø	2Ø8.	-2Ø.2Ø	-1Ø.4Ø	2Ø7.	22.72	2Ø7.	23.13	2Ø7.	22.3Ø	2Ø7.	22.99	2Ø7.	22.44
58.ØØ	52.78	25.7	2Ø7.	-2Ø.58	-1Ø.6Ø	2Ø7.	23.15	2Ø7.	23.57	2Ø7.	22.72	2Ø7.	23.43	2Ø7.	22.86
59.ØØ	53.68	25.5	2Ø8.	-2Ø.97	-1Ø.79	2Ø7.	23.58	2Ø7.	24.Ø1	2Ø7.	23.15	2Ø7.	23.87	2Ø7.	23.29
6Ø.ØØ	54.58	25.5	2Ø8.	-21.35	-11.ØØ	2Ø7.	24.Ø2	2Ø7.	24.46	2Ø7.	23.57	2Ø7.	24.31	2Ø7.	23.72
61.ØØ	55.49	26.1	2Ø9.	-21.73	-11.2Ø	2Ø7.	24.45	2Ø7.	24.9Ø	2Ø7.	24.ØØ	2Ø7.	24.75	2Ø7.	24.15
62.ØØ	56.39	25.5	2Ø7.	-22.12	-11.4Ø	2Ø7.	24.88	2Ø7.	25.34	2Ø7.	24.43	2Ø7.	25.19	2Ø7.	24.58
63.ØØ	57.29	25.5	2Ø8.	-22.5Ø	-11.61	2Ø7.	25.32	2Ø7.	25.78	2Ø7.	24.85	2Ø7.	25.63	2Ø7.	25.Ø1
64.ØØ	58.19	26.Ø	2Ø8.	-22.88	-11.81	2Ø7.	25.75	2Ø7.	26.22	2Ø7.	25.28	2Ø7.	26.Ø7	2Ø7.	25.44
65.ØØ	59.Ø9	25.8	2Ø7.	-23.27	-12.Ø1	2Ø7.	26.18	2Ø7.	26.66	2Ø7.	25.7Ø	2Ø7.	26.5Ø	2Ø7.	25.86
66.ØØ	59.99	25.9	2Ø8.	-23.65	-12.22	2Ø7.	26.62	2Ø7.	27.11	2Ø7.	26.13	2Ø7.	26.94	2Ø7.	26.29
67.ØØ	6Ø.89	25.6	2Ø6.	-24.Ø3	-12.42	2Ø7.	27.Ø5	2Ø7.	27.55	2Ø7.	26.55	2Ø7.	27.38	2Ø7.	26.72
68.ØØ	61.79	25.6	2Ø6.	-24.42	-12.62	2Ø7.	27.48	2Ø7.	27.99	2Ø7.	26.98	2Ø7.	27.82	2Ø7.	27.15
69.ØØ	62.69	25.6	2Ø7.	-24.8Ø	-12.82	2Ø7.	27.92	2Ø7.	28.43	2Ø7.	27.41	2Ø7.	28.26	2Ø7.	27.58
7Ø.ØØ	63.59	25.9	2Ø7.	-25.19	-13.Ø2	2Ø7.	28.35	2Ø7.	28.87	2Ø7.	27.83	2Ø7.	28.7Ø	2Ø7.	28.Ø1
71.ØØ	64.5Ø	25.5	2Ø9.	-25.57	-13.22	2Ø7.	28.79	2Ø7.	29.31	2Ø7.	28.26	2Ø7.	29.14	2Ø7.	28.43
72.ØØ	65.4Ø	25.6	2Ø6.	-25.95	-13.43	2Ø7.	29.22	2Ø7.	29.75	2Ø7.	28.68	2Ø7.	29.58	2Ø7.	28.86
73.ØØ	66.3Ø	25.6	2Ø9.	-26.33	-13.63	2Ø7.	29.65	2Ø7.	3Ø.19	2Ø7.	29.11	2Ø7.	3Ø.Ø1	2Ø7.	29.29
74.ØØ	67.2Ø	25.7	2Ø8.	-26.72	-13.83	2Ø7.	3Ø.Ø9	2Ø7.	3Ø.64	2Ø7.	29.53	2Ø7.	3Ø.45	2Ø7.	29.72
75.ØØ	68.1Ø	25.6	2Ø9.	-27.1Ø	-14.Ø3	2Ø7.	3Ø.52	2Ø7.	31.Ø8	2Ø7.	29.96	2Ø7.	3Ø.89	2Ø7.	3Ø.14
76.ØØ	69.ØØ	25.7	2Ø5.	-27.49	-14.23	2Ø7.	3Ø.95	2Ø7.	31.52	2Ø7.	3Ø.38	2Ø7.	31.33	2Ø7.	3Ø.57
77.ØØ	69.9Ø	25.5	2Ø7.	-27.87	-14.43	2Ø7.	31.39	2Ø7.	31.96	2Ø7.	3Ø.81	2Ø7.	31.77	2Ø7.	31.ØØ
78.ØØ	7Ø.8Ø	25.7	2Ø7.	-28.25	-14.64	2Ø7.	31.82	2Ø7.	32.4Ø	2Ø7.	31.23	2Ø7.	32.21	2Ø7.	31.43
79.ØØ	71.71	25.7	2Ø7.	-28.64	-14.84	2Ø7.	32.25	2Ø7.	32.84	2Ø7.	31.66	2Ø7.	32.64	2Ø7.	31.86
8Ø.ØØ	72.61	25.7	2Ø9.	-29.Ø2	-15.Ø4	2Ø7.	32.68	2Ø7.	33.28	2Ø7.	32.Ø8	2Ø7.	33.Ø8	2Ø7.	32.28
81.ØØ	73.51	25.7	2Ø8.	-29.4Ø	-15.24	2Ø7.	33.11	2Ø7.	33.72	2Ø7.	32.51	2Ø7.	33.52	2Ø7.	32.71
82.ØØ	74.41	25.4	2Ø8.	-29.78	-15.44	2Ø7.	33.55	2Ø7.	34.16	2Ø7.	32.93	2Ø7.	33.96	2Ø7.	33.14
83.ØØ	75.31	25.6	2Ø7.	-3Ø.17	-15.64	2Ø7.	33.98	2Ø7.	34.6Ø	2Ø7.	33.36	2Ø7.	34.39	2Ø7.	33.56
84.ØØ	76.22	25.6	2Ø6.	-3Ø.55	-15.84	2Ø7.	34.41	2Ø7.	35.Ø4	2Ø7.	33.78	2Ø7.	34.83	2Ø7.	33.99
85.ØØ	77.12	25.6	2Ø7.	-3Ø.93	-16.Ø4	2Ø7.	34.84	2Ø7.	35.48	2Ø7.	34.2Ø	2Ø7.	35.27	2Ø7.	34.42
86.ØØ	78.Ø2	25.5	2Ø6.	-31.32	-16.24	2Ø7.	35.27	2Ø7.	35.92	2Ø7.	34.63	2Ø7.	35.7Ø	2Ø7.	34.84
87.ØØ	78.92	25.5	2Ø8.	-31.7Ø	-16.44	2Ø7.	35.71	2Ø7.	36.36	2Ø7.	35.Ø5	2Ø7.	36.14	2Ø7.	35.27
88.ØØ	79.82	25.5	21Ø.	-32.Ø8	-16.64	2Ø7.	36.14	2Ø7.	36.8Ø	2Ø7.	35.47	2Ø7.	36.58	2Ø7.	35.7Ø
89.ØØ	8Ø.73	25.8	2Ø8.	-32.46	-16.84	2Ø7.	36.57	2Ø7.	37.24	2Ø7.	35.9Ø	2Ø7.	37.Ø1	2Ø7.	36.12
9Ø.ØØ	81.63	25.5	2Ø8.	-32.84	-17.Ø4	2Ø7.	37.ØØ	2Ø7.	37.68	2Ø7.	36.32	2Ø7.	37.45	2Ø7.	36.55
91.ØØ	82.53	25.5	2Ø5.	-33.23	-17.24	2Ø7.	37.43	2Ø7.	38.12	2Ø7.	36.75	2Ø7.	37.89	2Ø7.	36.98
92.ØØ	83.43	25.7	2Ø6.	-33.61	-17.44	2Ø7.	37.87	2Ø7.	38.56	2Ø7.	37.17	2Ø7.	38.33	2Ø7.	37.41
93.ØØ	84.33	25.6	2Ø9.	-33.99	-17.64	2Ø7.	38.3Ø	2Ø7.	39.ØØ	2Ø7.	37.6Ø	2Ø7.	38.77	2Ø7.	37.83
94.ØØ	85.23	25.7	2Ø8.	-34.37	-17.85	2Ø7.	38.73	2Ø7.	39.44	2Ø7.	38.Ø2	2Ø7.	39.2Ø	2Ø7.	38.26
95.ØØ	86.14	25.6	21Ø.	-34.76	-18.Ø5	2Ø7.	39.16	2Ø7.	39.88	2Ø7.	38.44	2Ø7.	39.64	2Ø7.	38.68
96.ØØ	87.Ø4	25.8	2Ø9.	-35.14	-18.25	2Ø7.	39.59	2Ø7.	4Ø.32	2Ø7.	38.87	2Ø7.	4Ø.Ø8	2Ø7.	39.11
97.ØØ	87.94	25.5	2Ø8.	-35.52	-18.45	2Ø7.	4Ø.Ø3	2Ø7.	4Ø.76	2Ø7.	39.29	2Ø7.	4Ø.51	2Ø7.	39.54
98.ØØ	88.84	25.7	2Ø7.	-35.91	-18.65	2Ø7.	4Ø.46	2Ø7.	41.2Ø	2Ø7.	39.72	2Ø7.	4Ø.95	2Ø7.	39.97
99.ØØ	89.74	25.5	2Ø6.	-36.29	-18.85	2Ø7.	4Ø.89	2Ø7.	41.64	2Ø7.	4Ø.14	2Ø7.	41.39	2Ø7.	4Ø.39
1ØØ.ØØ	9Ø.64	25.8	2Ø7.	-36.67	-19.Ø5	2Ø7.	41.33	2Ø7.	42.Ø8	2Ø7.	4Ø.57	2Ø7.	41.83	2Ø7.	4Ø.82
1Ø1.ØØ	91.54	25.7	2Ø8.	-37.Ø6	-19.25	2Ø7.	41.76	2Ø7.	42.52	2Ø7.	41.ØØ	2Ø7.	42.27	2Ø7.	41.25
1Ø2.ØØ	92.45	25.4	2Ø8.	-37.44	-19.46	2Ø7.	42.19	2Ø7.	42.96	2Ø7.	41.42	2Ø7.	42.71	2Ø7.	41.68
1Ø3.ØØ	93.35	25.5	2Ø6.	-37.82	-19.66	2Ø7.	42.62	2Ø7.	43.4Ø	2Ø7.	41.84	2Ø7.	43.14	2Ø7.	42.1Ø
1Ø4.ØØ	94.25	25.3	2Ø8.	-38.2Ø	-19.86	2Ø7.	43.Ø6	2Ø7.	43.84	2Ø7.	42.27	2Ø7.	43.58	2Ø7.	42.53

All co-ordinates with respect to True North

DEPTHS log	DEPTHS true	BOREHOLE tilt	BOREHOLE AZI	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng	POLAR radius	POLAR ERROR CO-ORDINATES (maximum & typical) brng	radius	brng	radius	brng	radius	brng	radius
1Ø5.ØØ	95.15	25.8	2Ø8.	-38.59	-2Ø.Ø6	2Ø7.	43.49	2Ø7.	44.28	2Ø7.	42.69	2Ø7.	44.Ø2	2Ø7.	42.96
1Ø6.ØØ	96.Ø5	25.5	2Ø6.	-38.97	-2Ø.26	2Ø7.	43.92	2Ø7.	44.72	2Ø7.	43.12	2Ø7.	44.46	2Ø7.	43.39
1Ø7.ØØ	96.95	25.6	2Ø6.	-39.36	-2Ø.46	2Ø7.	44.36	2Ø7.	45.17	2Ø7.	43.54	2Ø7.	44.9Ø	2Ø7.	43.81
1Ø8.ØØ	97.85	25.4	2Ø7.	-39.74	-2Ø.66	2Ø7.	44.79	2Ø7.	45.6Ø	2Ø7.	43.97	2Ø7.	45.33	2Ø7.	44.24
1Ø9.ØØ	98.76	25.6	2Ø6.	-4Ø.12	-2Ø.86	2Ø7.	45.22	2Ø7.	46.Ø5	2Ø7.	44.39	2Ø7.	45.77	2Ø7.	44.67
11Ø.ØØ	99.66	25.8	2Ø6.	-4Ø.51	-21.Ø6	2Ø7.	45.66	2Ø7.	46.49	2Ø7.	44.82	2Ø7.	46.21	2Ø7.	45.1Ø
111.ØØ	1ØØ.56	25.6	2Ø8.	-4Ø.89	-21.26	2Ø7.	46.Ø9	2Ø7.	46.93	2Ø7.	45.24	2Ø7.	46.65	2Ø7.	45.53
112.ØØ	1Ø1.46	25.8	21Ø.	-41.27	-21.47	2Ø7.	46.52	2Ø7.	47.37	2Ø7.	45.67	2Ø7.	47.Ø9	2Ø7.	45.95
113.ØØ	1Ø2.36	25.7	2Ø8.	-41.66	-21.67	2Ø7.	46.96	2Ø7.	47.81	2Ø7.	46.1Ø	2Ø7.	47.53	2Ø7.	46.38
114.ØØ	1Ø3.26	25.7	2Ø7.	-42.Ø4	-21.87	2Ø7.	47.39	2Ø7.	48.25	2Ø7.	46.52	2Ø7.	47.96	2Ø7.	46.81
115.ØØ	1Ø4.16	26.Ø	2Ø7.	-42.42	-22.Ø8	2Ø7.	47.82	2Ø7.	48.69	2Ø7.	46.94	2Ø7.	48.4Ø	2Ø7.	47.24
116.ØØ	1Ø5.Ø7	25.7	2Ø8.	-42.8Ø	-22.28	2Ø7.	48.25	2Ø7.	49.13	2Ø7.	47.37	2Ø7.	48.84	2Ø7.	47.66
117.ØØ	1Ø5.97	26.Ø	2Ø8.	-43.18	-22.48	2Ø8.	48.68	2Ø8.	49.57	2Ø8.	47.79	2Ø8.	49.28	2Ø8.	48.Ø9
118.ØØ	1Ø6.87	25.6	21Ø.	-43.56	-22.68	2Ø8.	49.12	2Ø8.	5Ø.Ø1	2Ø8.	48.22	2Ø8.	49.71	2Ø8.	48.52
119.ØØ	1Ø7.77	25.5	21Ø.	-43.95	-22.89	2Ø8.	49.55	2Ø8.	5Ø.45	2Ø8.	48.64	2Ø8.	5Ø.15	2Ø8.	48.95
12Ø.ØØ	1Ø8.67	25.6	2Ø4.	-44.33	-23.Ø9	2Ø8.	49.98	2Ø8.	5Ø.89	2Ø8.	49.Ø6	2Ø8.	5Ø.59	2Ø8.	49.37
121.ØØ	1Ø9.57	25.7	2Ø6.	-44.71	-23.29	2Ø8.	5Ø.41	2Ø8.	51.33	2Ø8.	49.49	2Ø8.	51.Ø3	2Ø8.	49.8Ø
122.ØØ	11Ø.47	25.6	2Ø8.	-45.1Ø	-23.49	2Ø8.	5Ø.85	2Ø8.	51.77	2Ø8.	49.92	2Ø8.	51.47	2Ø8.	5Ø.23
123.ØØ	111.38	25.8	2Ø7.	-45.48	-23.7Ø	2Ø8.	51.28	2Ø8.	52.22	2Ø8.	5Ø.34	2Ø8.	51.91	2Ø8.	5Ø.66
124.ØØ	112.27	26.1	2Ø8.	-45.86	-23.9Ø	2Ø8.	51.72	2Ø8.	52.66	2Ø8.	5Ø.77	2Ø8.	52.35	2Ø8.	51.Ø9
125.ØØ	113.18	26.Ø	2Ø7.	-46.25	-24.1Ø	2Ø8.	52.15	2Ø8.	53.1Ø	2Ø8.	51.2Ø	2Ø8.	52.79	2Ø8.	51.52
126.ØØ	114.Ø8	25.8	2Ø9.	-46.63	-24.31	2Ø8.	52.59	2Ø8.	53.55	2Ø8.	51.63	2Ø8.	53.23	2Ø8.	51.95
127.ØØ	114.98	26.1	2Ø7.	-47.Ø2	-24.51	2Ø8.	53.Ø2	2Ø8.	53.99	2Ø8.	52.Ø5	2Ø8.	53.67	2Ø8.	52.38
128.ØØ	115.88	25.6	2Ø8.	-47.4Ø	-24.72	2Ø8.	53.46	2Ø8.	54.43	2Ø8.	52.48	2Ø8.	54.11	2Ø8.	52.81
129.ØØ	116.78	25.6	2Ø8.	-47.79	-24.93	2Ø8.	53.9Ø	2Ø8.	54.88	2Ø8.	52.91	2Ø8.	54.55	2Ø8.	53.24
13Ø.ØØ	117.68	26.Ø	21Ø.	-48.17	-25.13	2Ø8.	54.33	2Ø8.	55.32	2Ø8.	53.34	2Ø8.	54.99	2Ø8.	53.67
131.ØØ	118.58	25.4	2Ø8.	-48.55	-25.33	2Ø8.	54.77	2Ø8.	55.76	2Ø8.	53.76	2Ø8.	55.43	2Ø8.	54.1Ø
132.ØØ	119.48	25.9	21Ø.	-48.94	-25.53	2Ø8.	55.2Ø	2Ø8.	56.2Ø	2Ø8.	54.19	2Ø8.	55.87	2Ø8.	54.53
133.ØØ	12Ø.38	26.1	2Ø8.	-49.32	-25.74	2Ø8.	55.63	2Ø8.	56.65	2Ø8.	54.62	2Ø8.	56.31	2Ø8.	54.96
134.ØØ	121.28	25.6	2Ø8.	-49.71	-25.94	2Ø8.	56.Ø7	2Ø8.	57.Ø9	2Ø8.	55.Ø4	2Ø8.	56.75	2Ø8.	55.39
135.ØØ	122.18	25.5	2Ø7.	-5Ø.Ø9	-26.14	2Ø8.	56.5Ø	2Ø8.	57.53	2Ø8.	55.47	2Ø8.	57.19	2Ø8.	55.81
136.ØØ	123.Ø8	25.8	2Ø9.	-5Ø.47	-26.35	2Ø8.	56.94	2Ø8.	57.97	2Ø8.	55.9Ø	2Ø8.	57.63	2Ø8.	56.24
137.ØØ	123.98	25.8	2Ø9.	-5Ø.86	-26.55	2Ø8.	57.37	2Ø8.	58.42	2Ø8.	56.32	2Ø8.	58.Ø7	2Ø8.	56.67
138.ØØ	124.88	26.Ø	2Ø8.	-51.24	-26.76	2Ø8.	57.81	2Ø8.	58.86	2Ø8.	56.75	2Ø8.	58.51	2Ø8.	57.1Ø
139.ØØ	125.78	25.4	2Ø8.	-51.62	-26.96	2Ø8.	58.24	2Ø8.	59.3Ø	2Ø8.	57.18	2Ø8.	58.95	2Ø8.	57.53
14Ø.ØØ	126.68	26.1	2Ø9.	-52.Ø1	-27.17	2Ø8.	58.68	2Ø8.	59.74	2Ø8.	57.6Ø	2Ø8.	59.39	2Ø8.	57.96
141.ØØ	127.58	26.1	2Ø8.	-52.39	-27.37	2Ø8.	59.11	2Ø8.	6Ø.19	2Ø8.	58.Ø3	2Ø8.	59.83	2Ø8.	58.39
142.ØØ	128.48	26.Ø	2Ø7.	-52.78	-27.57	2Ø8.	59.55	2Ø8.	6Ø.63	2Ø8.	58.46	2Ø8.	6Ø.27	2Ø8.	58.82
143.ØØ	129.38	25.7	2Ø8.	-53.16	-27.77	2Ø8.	59.98	2Ø8.	61.Ø7	2Ø8.	58.89	2Ø8.	6Ø.71	2Ø8.	59.25
144.ØØ	13Ø.28	26.2	2Ø8.	-53.55	-27.98	2Ø8.	6Ø.42	2Ø8.	61.52	2Ø8.	59.31	2Ø8.	61.15	2Ø8.	59.68
145.ØØ	131.18	25.6	21Ø.	-53.93	-28.19	2Ø8.	6Ø.85	2Ø8.	61.96	2Ø8.	59.74	2Ø8.	61.59	2Ø8.	6Ø.11
146.ØØ	132.Ø8	25.7	2Ø9.	-54.31	-28.39	2Ø8.	61.29	2Ø8.	62.4Ø	2Ø8.	6Ø.17	2Ø8.	62.Ø3	2Ø8.	6Ø.54
147.ØØ	132.99	25.8	2Ø9.	-54.69	-28.6Ø	2Ø8.	61.72	2Ø8.	62.84	2Ø8.	6Ø.59	2Ø8.	62.47	2Ø8.	6Ø.97
148.ØØ	133.89	25.7	2Ø9.	-55.Ø8	-28.81	2Ø8.	62.16	2Ø8.	63.29	2Ø8.	61.Ø2	2Ø8.	62.91	2Ø8.	61.4Ø
149.ØØ	134.79	25.7	211.	-55.46	-29.Ø1	2Ø8.	62.59	2Ø8.	63.73	2Ø8.	61.45	2Ø8.	63.35	2Ø8.	61.83
15Ø.ØØ	135.69	25.8	2Ø7.	-55.84	-29.22	2Ø8.	63.Ø2	2Ø8.	64.17	2Ø8.	61.87	2Ø8.	63.79	2Ø8.	62.26
151.ØØ	136.59	25.8	2Ø8.	-56.23	-29.42	2Ø8.	63.46	2Ø8.	64.61	2Ø8.	62.3Ø	2Ø8.	64.23	2Ø8.	62.69
152.ØØ	137.49	25.8	2Ø9.	-56.61	-29.62	2Ø8.	63.89	2Ø8.	65.Ø5	2Ø8.	62.72	2Ø8.	64.67	2Ø8.	63.11
153.ØØ	138.39	25.5	2Ø9.	-56.99	-29.83	2Ø8.	64.33	2Ø8.	65.5Ø	2Ø8.	63.15	2Ø8.	65.11	2Ø8.	63.54
154.ØØ	139.29	25.6	2Ø7.	-57.37	-3Ø.Ø4	2Ø8.	64.76	2Ø8.	65.94	2Ø8.	63.58	2Ø8.	65.55	2Ø8.	63.97

Vertically Data Listing
All co-ordinates with respect to True North

DEPTHS log	DEPTHS true	BOREHOLE tilt	BOREHOLE AZI	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng	POLAR radius	POLAR ERROR CO-ORDINATES (maximum & typical) brng	radius	brng	radius	brng	radius
155.ØØ	14Ø.19	25.4	2Ø9.	-57.75	-3Ø.24	2Ø8.	65.19	2Ø8.	66.38	2Ø8.	64.ØØ	2Ø8.	65.98	2Ø8.	64.4Ø
156.ØØ	141.Ø9	25.8	2Ø7.	-58.13	-3Ø.45	2Ø8.	65.63	2Ø8.	66.82	2Ø8.	64.43	2Ø8.	66.42	2Ø8.	64.83
157.ØØ	141.99	25.5	2Ø9.	-58.52	-3Ø.65	2Ø8.	66.Ø6	2Ø8.	67.26	2Ø8.	64.85	2Ø8.	66.86	2Ø8.	65.26
157.8Ø	142.72	25.5	2Ø7.	-58.82	-3Ø.81	2Ø8.	66.41	2Ø8.	67.61	2Ø8.	65.19	2Ø8.	67.21	2Ø8.	65.6Ø

BPB

COAL LITHOLOGY LOG

SONIC TYPE
COAL COMBINATION SONDE
LOG SUITE & DENSITY CALIPER

BOREHOLE: QED-92-001
CLIENT: QUESTSTEEL
AREA: TRANSTER
COUNTRY: KASSIA
DATE: 1/09/89
DRILLER: [illegible]
LOGGER: [illegible]
CASING: [illegible]
BIT SIZE: [illegible]
MUD: [illegible]
REMARKS: [illegible]

739

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

HOLE	EQUIPMENT			TAPING			PANEL		CAL CHECK	DEPTHS		SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG NUMB	RECORD SPEED	DIRECT DEPTH	SPEED	TC SECS	NORM	FROM	TO	INTERVAL
GAMMA GAMMA DENSITY	153		67	Y	9	0	0	1		4.62m	187	Y
CALIPER		1652	1051	Y	9	10	9	3	7.36	105	187	Y
	SIDEWALL POSITION			Y	9	0	9	3	7.36	105	187	Y

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	187m	175m	152m	128m	100m	63m	INTERVAL NORM
TO	181m	165m	145m	127m	97m	60m	
INTERVAL	6m	11m	7m	1m	3m	3m	50m

ADDITIONAL SONDES RUN

SONDE	LOG	GAMMA SCALE	TOTAL LOG SCALE
215	X-5	8x200	
211	VERT		

REFER TO ADDITIONAL HEADINGS

REMARKS

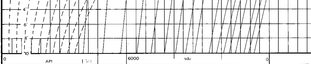
BPB COAL LITHOLOGY LOG

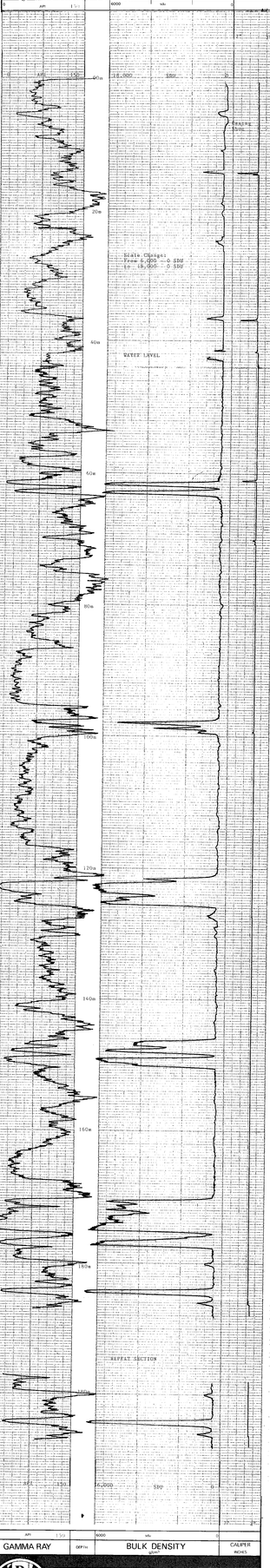
CALIBRATION DATA

JIG No	VALUE	@	% GAMMA	JIG CAL DATE	JIG VALUE	100 @	g/cm³	KHz	CPS
JIG MARK SHOWN AT ABOVE VALUE				JIG No	SPAN	NORM	750	KHz	CPS

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

HOLE SIZE CORRECTION DATA





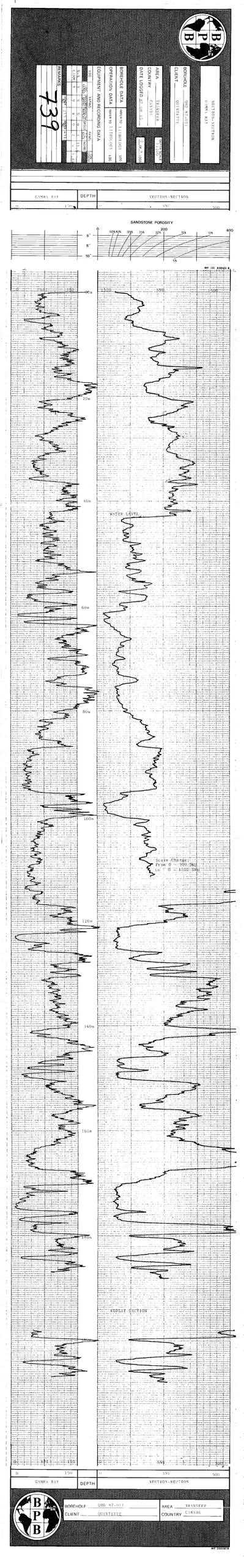
GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

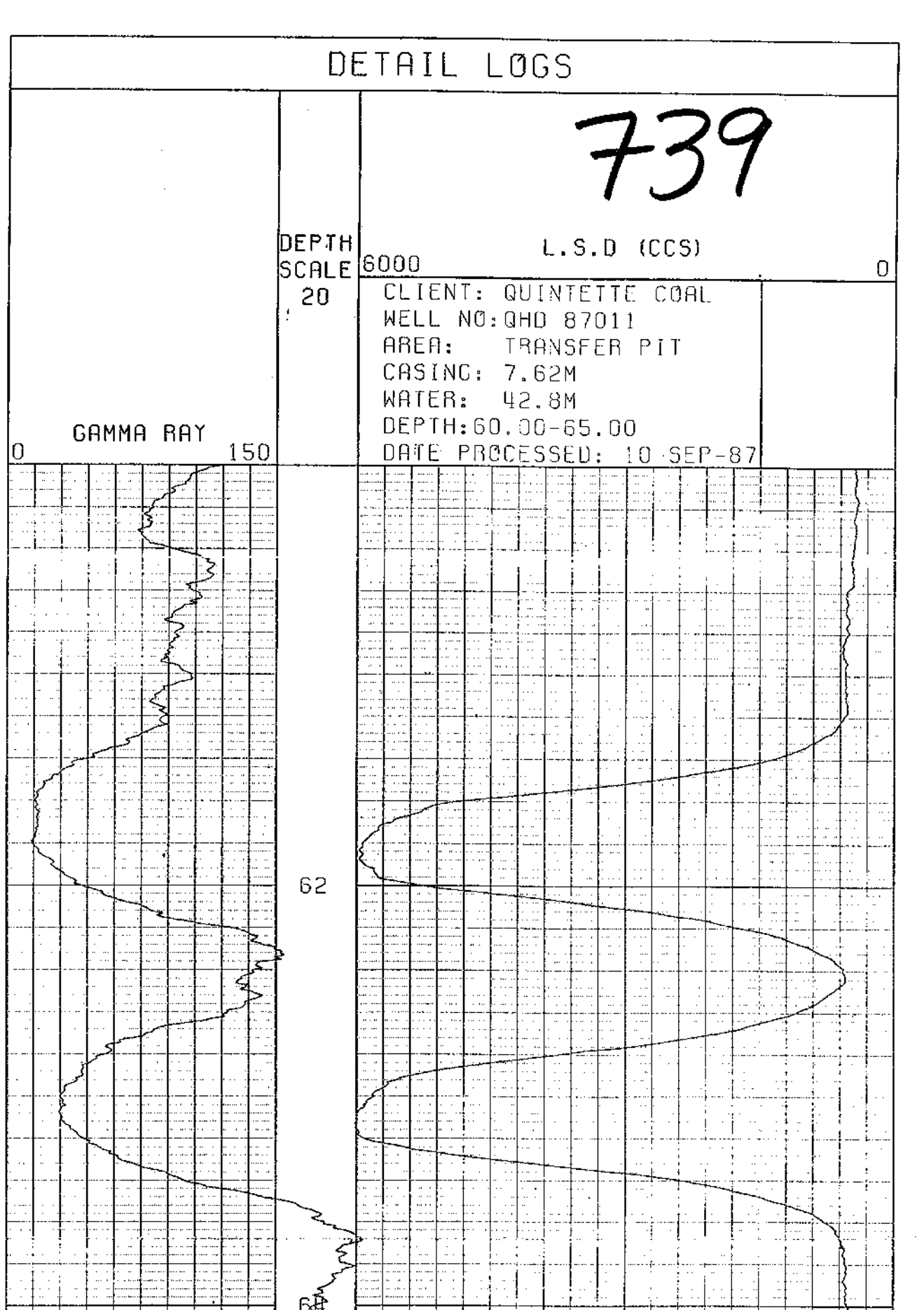
BPB

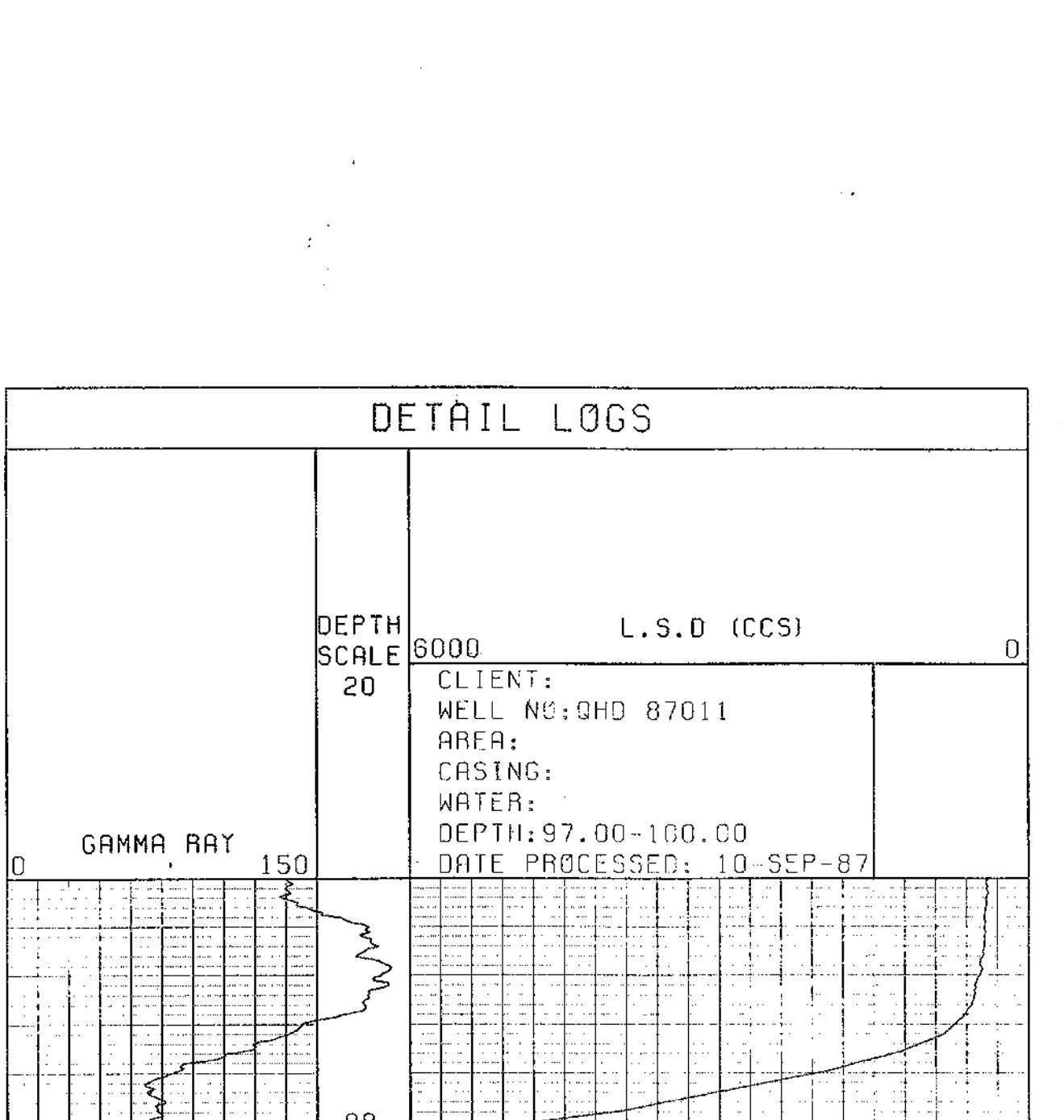
BOREHOLE: QED-92-001 AREA: TRANSTER
CLIENT: QUESTSTEEL COUNTRY: KASSIA

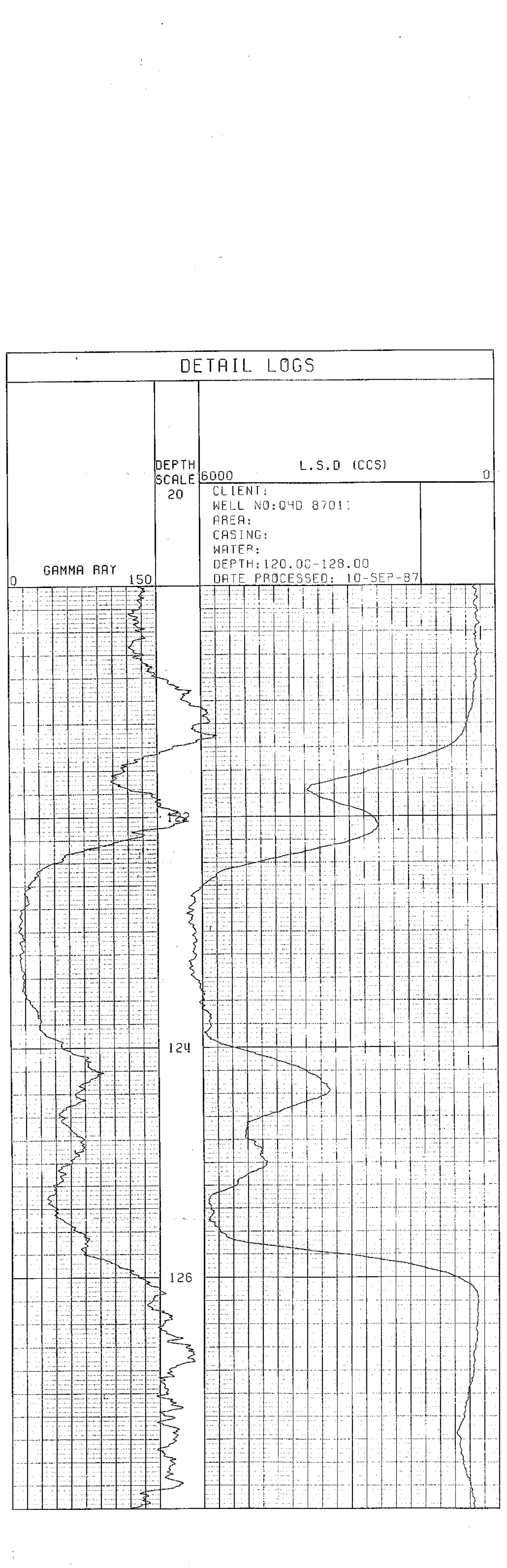
COAL LITHOLOGY LOG

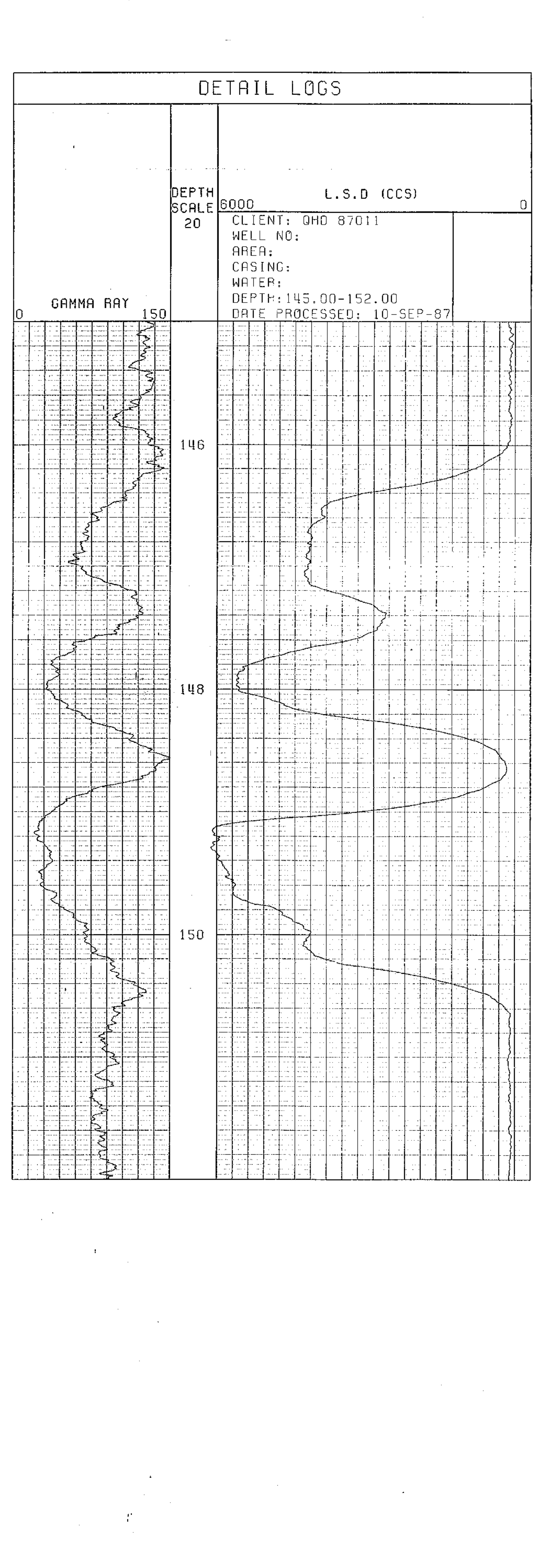
MF 1102/2982 A

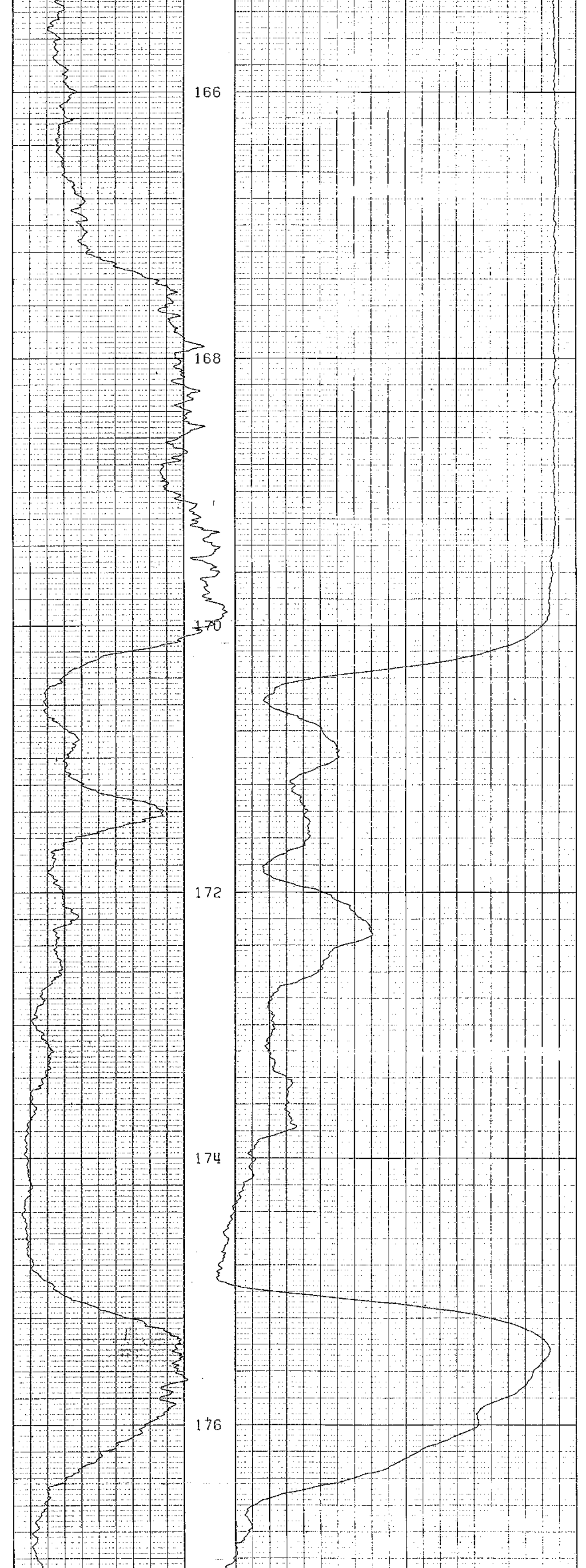

B P B
REMARKS
RUN
DATE
TYPING
PASS
DEPTH
BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 27 JUL 77
BOREHOLE QUE 77-111
CLIENT QUINTETTE
GAMMA RAY
NEUTRON-NEUTRON
SANDSTONE POROSITY
WATER LEVEL
Scale Change:
From 0 - 900 SNU
to 0 - 1500 SNU
REPEAT SECTION
API
SNU

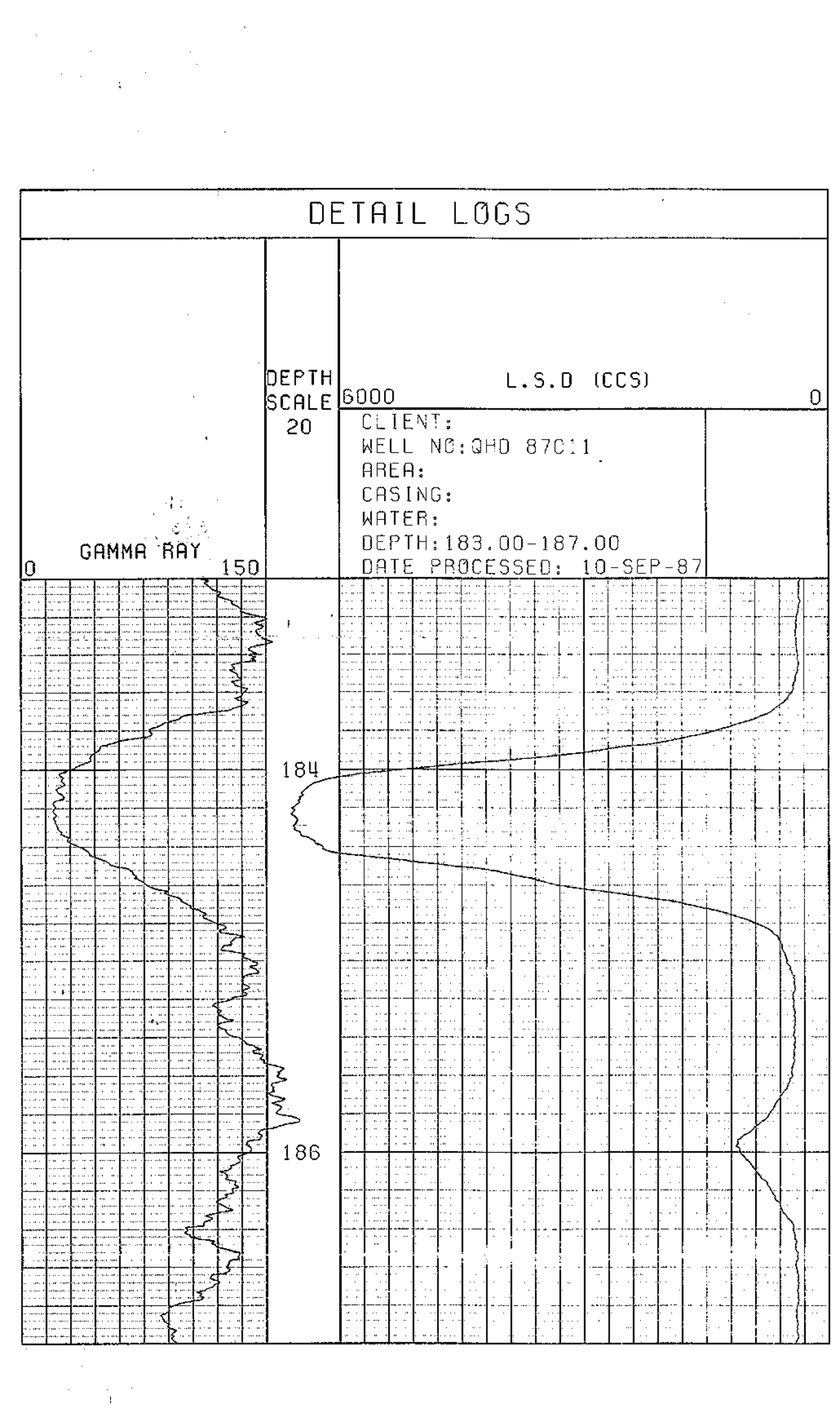

DETAIL LOGS
739
DEPTH SCALE 20
L.S.D (CCS)
6000
0
CLIENT: QUINTETTE COAL
WELL NO: QHD 87011
AREA: TRANSFER PIT
CASING: 7.62M
WATER: 42.8M
DEPTH: 60.00-65.00
DATE PROCESSED: 10-SEP-87
GAMMA RAY
0
150
62

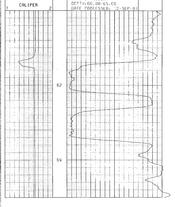

DETAIL LOGS
DEPTH SCALE 20
L.S.D (CCS)
6000
0
CLIENT:
WELL NO: QHD 87011
AREA:
CASING:
WATER:
DEPTH: 97.00-100.00
DATE PROCESSED: 10-SEP-87
GAMMA RAY
0
150
98

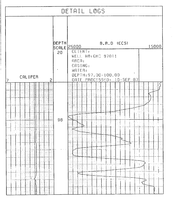

DETAIL LOGS
DEPTH SCALE 20
L.S.D (CCS)
6000
0
CLIENT:
WELL NO: QHD 87011
AREA:
CASING:
WATER:
DEPTH: 120.00-128.00
DATE PROCESSED: 10-SEP-87
GAMMA RAY
0
150
124
126

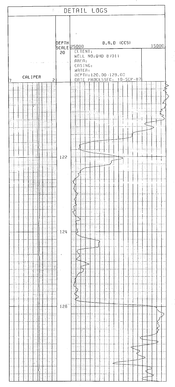

DETAIL LOGS
DEPTH SCALE 20
L.S.D (CCS)
6000
0
CLIENT: QHD 87011
WELL NO:
AREA:
CASING:
WATER:
DEPTH: 145.00-152.00
DATE PROCESSED: 10-SEP-87
GAMMA RAY
0
150
146
148
150

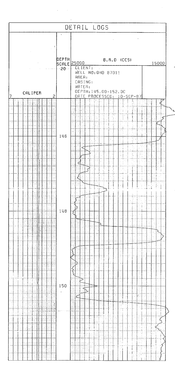

DETAIL LOGS
DEPTH SCALE 20
L.S.D (CCS)
6000
0
CLIENT:
WELL NO: QHD 87011
AREA:
CASING:
WATER:
DEPTH: 165.00-178.00
DATE PROCESSED: 10-SEP-87
GAMMA RAY
0
150
166
168
170
172
174
176

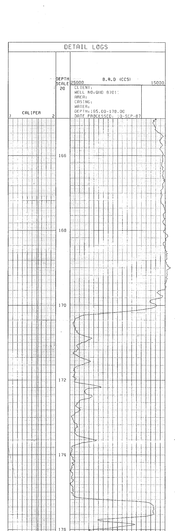

DETAIL LOGS
DEPTH SCALE 20
L.S.D (CCS)
6000
0
CLIENT:
WELL NO: QHD 87011
AREA:
CASING:
WATER:
DEPTH: 183.00-187.00
DATE PROCESSED: 10-SEP-87
GAMMA RAY
0
150
184
186

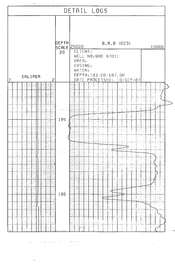












739

DETAIL LOGS

CLIENT: QUINTETTE COAL
WELL NO:QHD 87011
AREA: TRANSFER PIT
CASING: 7.62M
WATER: 42.8M
DEPTH:60.00-65.00
DATE PROCESSED: 10-SEP-87

DETAIL LOGS

CLIENT:
WELL NO:QHD 87011
AREA:
CASING:
WATER:
DEPTH:97.00-100.00
DATE PROCESSED: 10-SEP-87

DETAIL LOGS

CLIENT:
WELL NO:QHD 87011
AREA:
CASING:
WATER:
DEPTH:120.00-128.00
DATE PROCESSED: 10-SEP-87

DETAIL LOGS

CLIENT:
WELL NO:QHD 87011
AREA:
CASING:
WATER:
DEPTH:145.00-152.00
DATE PROCESSED: 10-SEP-87

DETAIL LOGS

CLIENT:
WELL NO:QHD 87011
AREA:
CASING:
WATER:
DEPTH:165.00-178.00
DATE PROCESSED: 10-SEP-87

DETAIL LOGS

CLIENT:
WELL NO:QHD 87011
AREA:
CASING:
WATER:
DEPTH:183.00-187.00
DATE PROCESSED: 10-SEP-87

739

CONTINUOUS VERTICALITY ANALYSIS

CLIENT___ QUINTETTE

BOREHOLE_ QHD-87-011

AREA_____ TRANSFER

COUNTRY__ CANADA

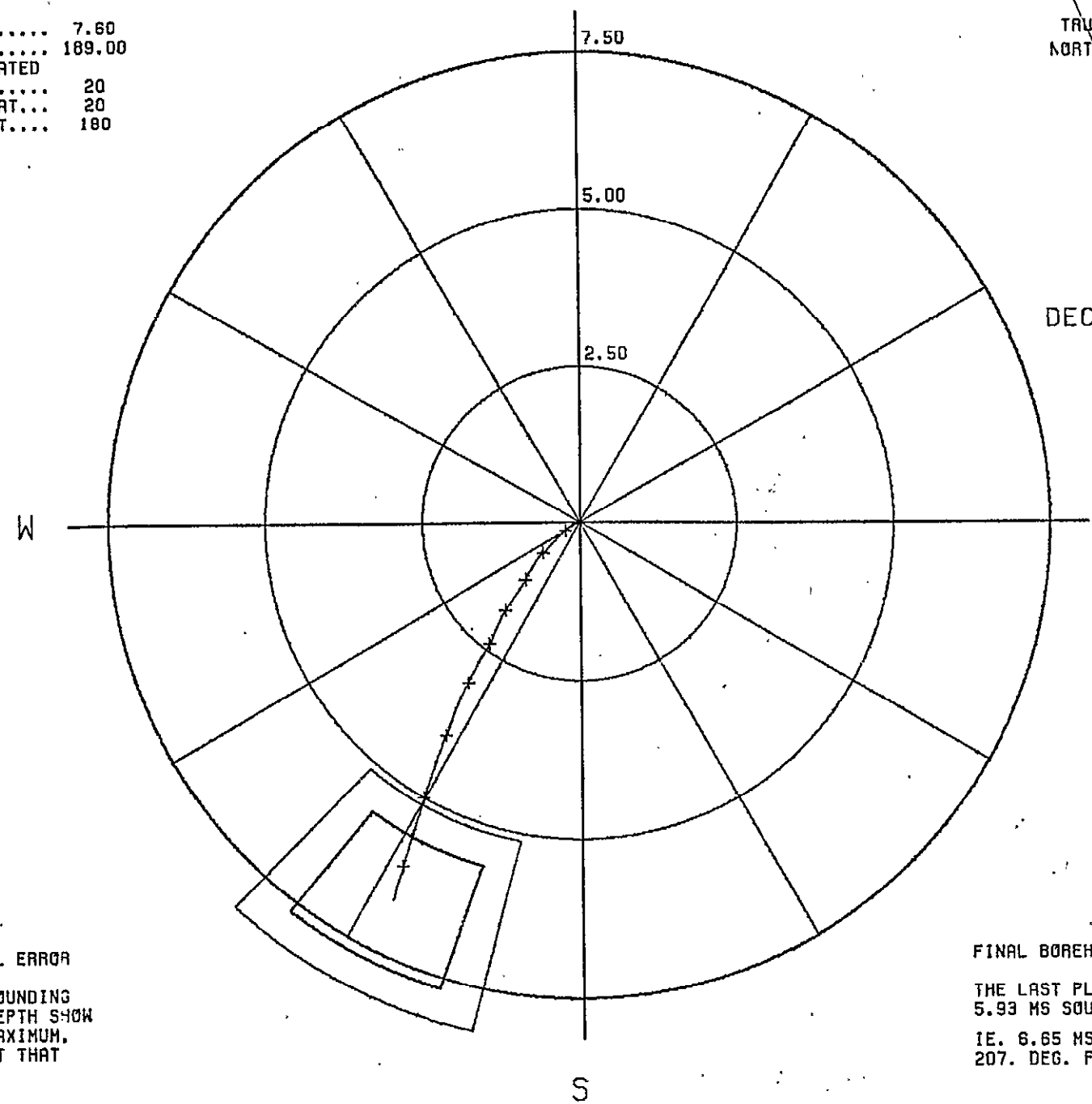
DATE LOGGED.....15-AUG-87
DATE PROCESSED..15-DEC-87
UPPER REFERENCE POINT....CASING SHOE
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 100:1

ALL FIGURES IN LOG DEPTH MS

TARGET ORIGIN DEPTH.....	7.60
LAST PLOTTED DEPTH.....	189.00
DEPTH MARKERS ANNOTATED IN MULTIPLES OF.....	20
FIRST DEPTH MARKER AT...	20
LAST DEPTH MARKER AT....	180



MAGNETIC NORTH

TRUE NORTH

DECLINATION 24.0 DEG.

BOREHOLE POSITIONAL ERROR

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

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 5.93 MS SOUTH, 3.01 MS WEST

IE. 6.65 MS FROM THE ORIGIN, 207. DEG. FROM MAGNETIC NORTH

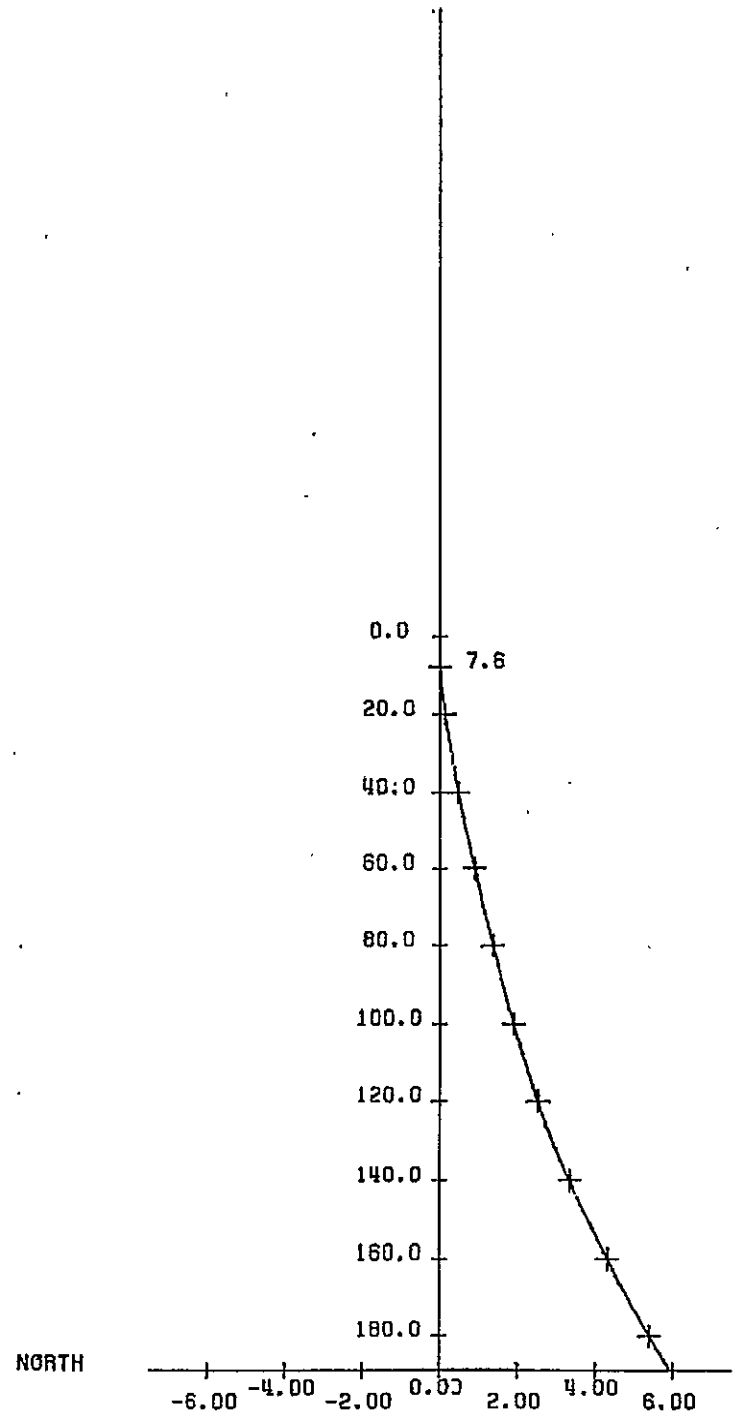
VERTICAL SECTIONS

(TRUE DEPTH VS. DISPLACEMENT)

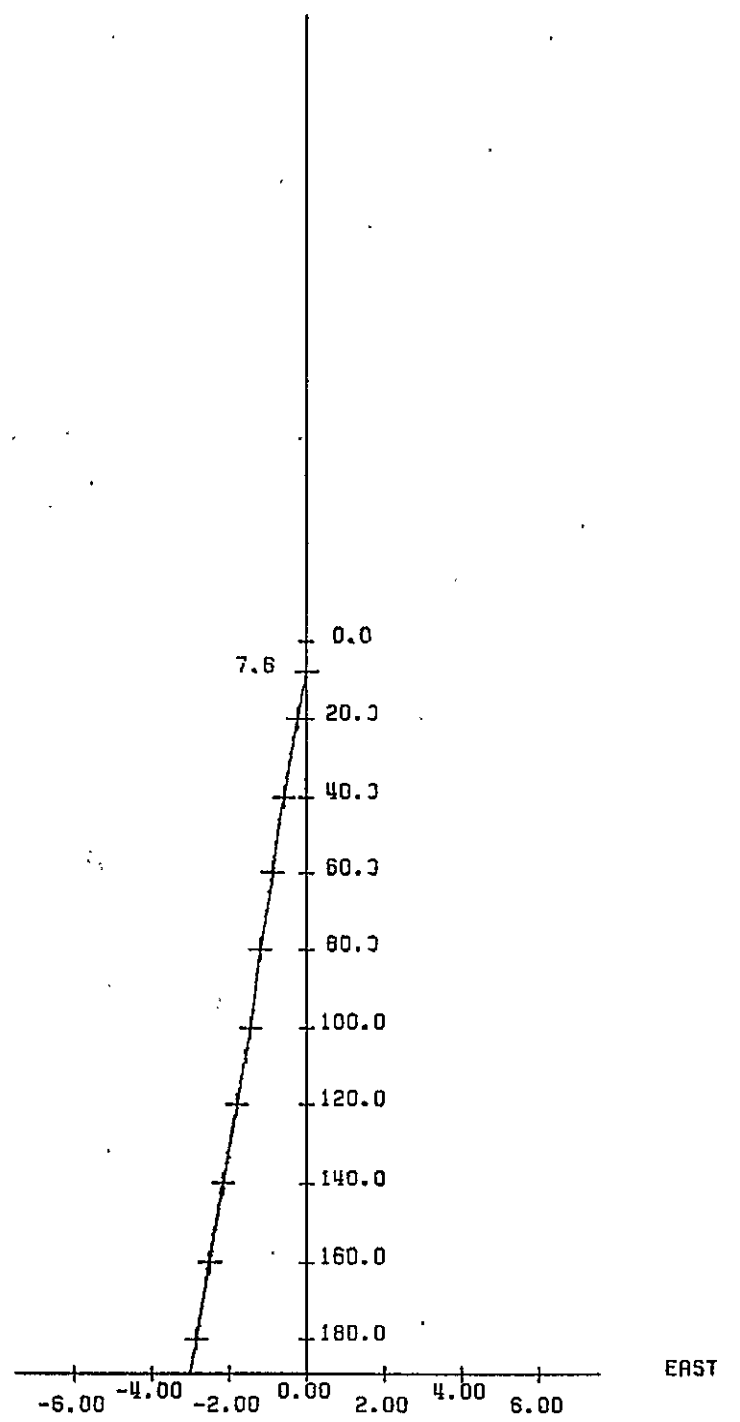
VERTICAL SCALE 2000 :1

MARKERS ANNOTATED
AS ABOVE

N-S SECTION



W-E SECTION



QHD87011

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 5ØØØØ:1 (metric) & 48ØØØ:1 (imperial), and the minimum 1:1.

2. The analysis is derived by integrating 1Ø cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 2ØØ points in multiples of 1,2,5,1Ø,2Ø,25,5Ø, or 1ØØ metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.

3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.

4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).

5. Borehole positional error is derived assuming the following parameters:

	TILT(degrees)	AZIMUTH(degrees)
Typical Error	+/- Ø.33333	+/- 1Ø.Ø
Maximum Error	+/- Ø.5	+/- 15.Ø

6. Error analysis may be calculated and plotted from the data listing as follows:

   a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
   b) Describe arcs of +/- 1Ø degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
   c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.

7. Given below is a full description of the parameters displayed on the ensuing listing:

LOG DEPTH	the depth recorded on the field logs for the borehole
TRUE DEPTH	the true vertical depth corresponding to the above depth, corrected from the start of the analysis
HOLE TILT & AZIMUTH	the SAMPLED borehole orientation
AXIAL COORDINATES	the coordinates North & 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

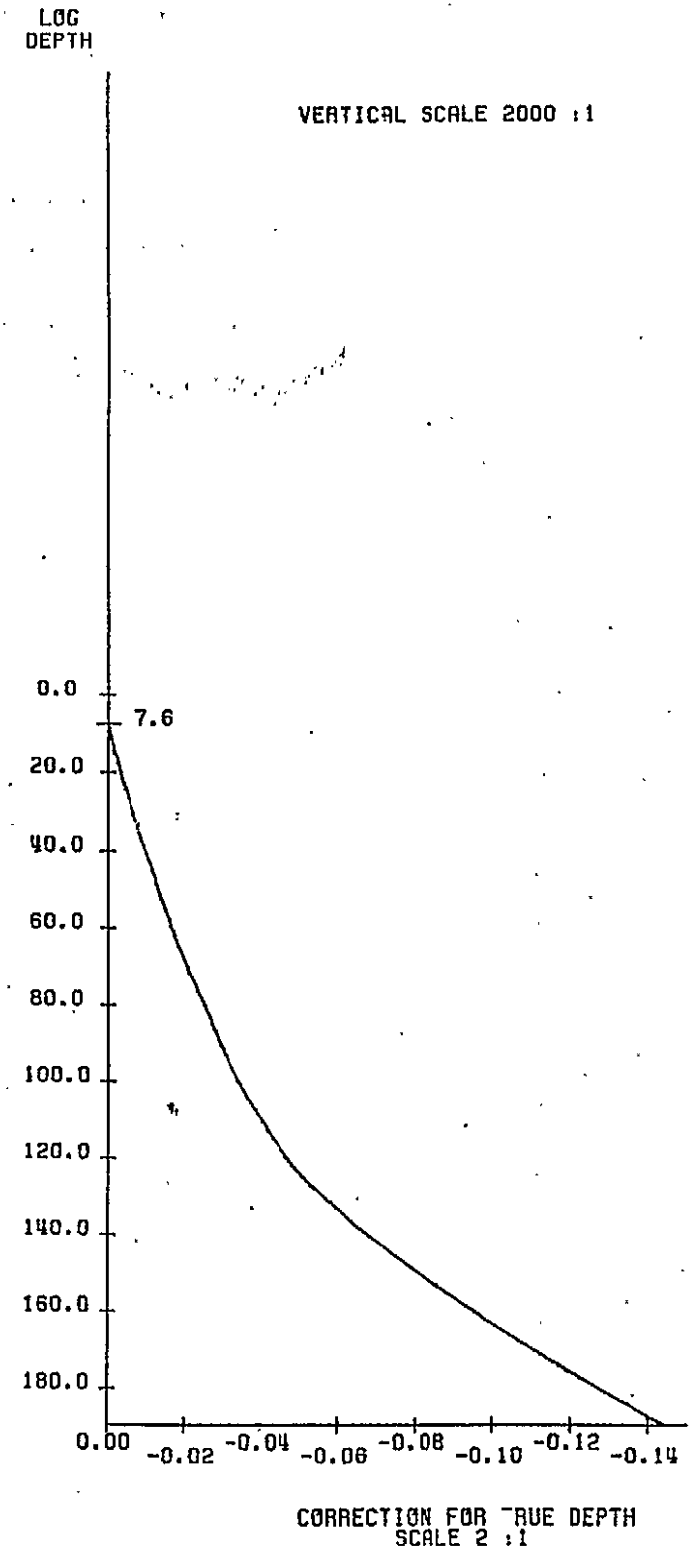
N.B. The reference point for All bearing angles on this listing is given at the top of each sheet

Verticality Data Listing

All co-ordinates with respect to True North

DEPTHS		BOREHOLE		AXIAL CO-ORDS.		POLAR		POLAR ERROR CO-ORDINATES (maximum & typical)							
log	true	tilt	AZI	North	East	brng	radius	brng	radius	brng	radius	brng	radius	brng	radius
8.ØØ	8.ØØ	1.5	228.	Ø.ØØ	Ø.ØØ	2ØØ.	Ø.ØØ	2Ø2.	Ø.Ø1	197.	Ø.ØØ	2Ø2.	Ø.ØØ	198.	Ø.ØØ
9.ØØ	9.ØØ	1.7	265.	-Ø.Ø1	-Ø.Ø2	256.	Ø.Ø2	257.	Ø.Ø3	255.	Ø.Ø1	257.	Ø.Ø3	256.	Ø.Ø2
1Ø.ØØ	1Ø.ØØ	1.2	294.	Ø.ØØ	-Ø.Ø4	265.	Ø.Ø4	265.	Ø.Ø6	264.	Ø.Ø2	265.	Ø.Ø5	264.	Ø.Ø3
11.ØØ	11.ØØ	Ø.7	266.	Ø.ØØ	-Ø.Ø6	268.	Ø.Ø6	268.	Ø.Ø9	268.	Ø.Ø4	268.	Ø.Ø8	268.	Ø.Ø4
12.ØØ	12.ØØ	1.2	291.	Ø.ØØ	-Ø.Ø8	269.	Ø.Ø8	269.	Ø.12	269.	Ø.Ø5	269.	Ø.11	269.	Ø.Ø6
13.ØØ	13.ØØ	1.5	262.	Ø.ØØ	-Ø.11	269.	Ø.11	269.	Ø.15	269.	Ø.Ø6	269.	Ø.13	269.	Ø.Ø8
14.ØØ	14.ØØ	1.6	275.	Ø.ØØ	-Ø.13	269.	Ø.13	269.	Ø.18	269.	Ø.Ø8	269.	Ø.16	269.	Ø.Ø9
15.ØØ	15.ØØ	1.1	255.	Ø.ØØ	-Ø.15	269.	Ø.15	269.	Ø.21	269.	Ø.Ø9	269.	Ø.19	269.	Ø.11
16.ØØ	16.ØØ	1.7	264.	-Ø.Ø1	-Ø.18	268.	Ø.18	268.	Ø.24	268.	Ø.11	268.	Ø.22	268.	Ø.13
17.ØØ	17.ØØ	1.5	255.	-Ø.Ø1	-Ø.2Ø	267.	Ø.2Ø	267.	Ø.28	267.	Ø.12	267.	Ø.25	267.	Ø.15
18.ØØ	18.ØØ	1.4	253.	-Ø.Ø2	-Ø.22	266.	Ø.22	266.	Ø.31	266.	Ø.14	266.	Ø.28	266.	Ø.16
19.ØØ	19.ØØ	1.3	251.	-Ø.Ø2	-Ø.24	265.	Ø.24	265.	Ø.34	265.	Ø.15	265.	Ø.31	265.	Ø.18
2Ø.ØØ	2Ø.ØØ	1.6	241.	-Ø.Ø3	-Ø.26	264.	Ø.27	264.	Ø.37	263.	Ø.16	264.	Ø.34	263.	Ø.2Ø
21.ØØ	21.ØØ	1.Ø	244.	-Ø.Ø4	-Ø.29	262.	Ø.29	262.	Ø.4Ø	262.	Ø.18	262.	Ø.36	262.	Ø.21
22.ØØ	22.ØØ	1.6	235.	-Ø.Ø5	-Ø.31	261.	Ø.31	261.	Ø.43	261.	Ø.19	261.	Ø.39	261.	Ø.23
23.ØØ	23.ØØ	1.4	26Ø.	-Ø.Ø5	-Ø.33	261.	Ø.34	261.	Ø.46	26Ø.	Ø.21	261.	Ø.42	261.	Ø.25
24.ØØ	24.ØØ	1.3	261.	-Ø.Ø6	-Ø.35	26Ø.	Ø.36	26Ø.	Ø.5Ø	26Ø.	Ø.22	26Ø.	Ø.45	26Ø.	Ø.27
25.ØØ	25.ØØ	1.5	253.	-Ø.Ø7	-Ø.38	259.	Ø.39	26Ø.	Ø.53	259.	Ø.24	26Ø.	Ø.48	259.	Ø.29
26.ØØ	25.99	1.4	25Ø.	-Ø.Ø8	-Ø.4Ø	259.	Ø.41	259.	Ø.56	259.	Ø.26	259.	Ø.51	259.	Ø.31
27.ØØ	26.99	1.4	262.	-Ø.Ø8	-Ø.43	259.	Ø.43	259.	Ø.6Ø	259.	Ø.27	259.	Ø.54	259.	Ø.33
28.ØØ	27.99	1.4	23Ø.	-Ø.Ø9	-Ø.45	258.	Ø.46	258.	Ø.63	258.	Ø.29	258.	Ø.57	258.	Ø.34
29.ØØ	28.99	1.5	248.	-Ø.1Ø	-Ø.47	258.	Ø.48	258.	Ø.66	258.	Ø.3Ø	258.	Ø.6Ø	258.	Ø.36
3Ø.ØØ	29.99	1.6	255.	-Ø.11	-Ø.5Ø	258.	Ø.51	258.	Ø.7Ø	257.	Ø.32	258.	Ø.63	257.	Ø.38
31.ØØ	3Ø.99	1.7	241.	-Ø.12	-Ø.52	257.	Ø.53	257.	Ø.73	257.	Ø.34	257.	Ø.67	257.	Ø.4Ø
32.ØØ	31.99	1.6	239.	-Ø.13	-Ø.54	257.	Ø.56	257.	Ø.76	257.	Ø.35	257.	Ø.69	257.	Ø.42
33.ØØ	32.99	1.4	239.	-Ø.14	-Ø.56	256.	Ø.58	256.	Ø.79	256.	Ø.37	256.	Ø.72	256.	Ø.44
34.ØØ	33.99	1.4	236.	-Ø.15	-Ø.59	256.	Ø.6Ø	256.	Ø.83	256.	Ø.38	256.	Ø.75	256.	Ø.46
35.ØØ	34.99	1.2	246.	-Ø.16	-Ø.61	256.	Ø.63	256.	Ø.86	255.	Ø.4Ø	256.	Ø.78	255.	Ø.47
36.ØØ	35.99	1.5	25Ø.	-Ø.17	-Ø.63	255.	Ø.65	255.	Ø.89	255.	Ø.41	255.	Ø.81	255.	Ø.49
37.ØØ	36.99	1.1	248.	-Ø.18	-Ø.65	255.	Ø.68	255.	Ø.92	254.	Ø.43	255.	Ø.84	254.	Ø.51
38.ØØ	37.99	1.2	253.	-Ø.19	-Ø.68	254.	Ø.7Ø	254.	Ø.96	254.	Ø.45	254.	Ø.87	254.	Ø.53
39.ØØ	38.99	1.8	245.	-Ø.2Ø	-Ø.7Ø	254.	Ø.73	254.	Ø.99	254.	Ø.47	254.	Ø.91	254.	Ø.56
4Ø.ØØ	39.99	1.5	254.	-Ø.21	-Ø.73	254.	Ø.76	254.	1.Ø3	254.	Ø.49	254.	Ø.94	254.	Ø.58
41.ØØ	4Ø.99	1.1	247.	-Ø.22	-Ø.75	254.	Ø.78	254.	1.Ø6	254.	Ø.5Ø	254.	Ø.97	254.	Ø.6Ø
42.ØØ	41.99	1.3	238.	-Ø.22	-Ø.78	254.	Ø.81	254.	1.1Ø	254.	Ø.52	254.	1.ØØ	254.	Ø.62
43.ØØ	42.99	1.2	249.	-Ø.23	-Ø.8Ø	254.	Ø.84	254.	1.13	254.	Ø.54	254.	1.Ø3	254.	Ø.64
44.ØØ	43.99	1.5	254.	-Ø.25	-Ø.83	253.	Ø.86	254.	1.17	253.	Ø.55	254.	1.Ø7	253.	Ø.66
45.ØØ	44.99	1.1	248.	-Ø.26	-Ø.85	253.	Ø.89	253.	1.2Ø	253.	Ø.57	253.	1.1Ø	253.	Ø.68
46.ØØ	45.99	1.Ø	238.	-Ø.27	-Ø.87	253.	Ø.91	253.	1.23	253.	Ø.59	253.	1.13	253.	Ø.7Ø
47.ØØ	46.99	1.6	233.	-Ø.28	-Ø.89	253.	Ø.93	253.	1.27	253.	Ø.6Ø	253.	1.16	253.	Ø.71
48.ØØ	47.99	1.6	234.	-Ø.29	-Ø.91	252.	Ø.96	252.	1.3Ø	252.	Ø.62	252.	1.18	252.	Ø.73
49.ØØ	48.99	1.2	217.	-Ø.3Ø	-Ø.93	252.	Ø.98	252.	1.33	252.	Ø.63	252.	1.21	252.	Ø.75
5Ø.ØØ	49.99	1.3	24Ø.	-Ø.32	-Ø.95	252.	1.ØØ	252.	1.36	251.	Ø.65	252.	1.24	251.	Ø.77
51.ØØ	5Ø.99	1.9	245.	-Ø.33	-Ø.97	251.	1.Ø3	251.	1.39	251.	Ø.66	251.	1.27	251.	Ø.79
52.ØØ	51.99	1.7	235.	-Ø.35	-Ø.99	251.	1.Ø5	251.	1.43	251.	Ø.68	251.	1.3Ø	251.	Ø.81
53.ØØ	52.99	1.1	229.	-Ø.36	-1.Ø1	25Ø.	1.Ø8	25Ø.	1.46	25Ø.	Ø.7Ø	25Ø.	1.33	25Ø.	Ø.82
54.ØØ	53.99	1.7	24Ø.	-Ø.38	-1.Ø4	25Ø.	1.1Ø	25Ø.	1.49	25Ø.	Ø.71	25Ø.	1.36	25Ø.	Ø.84
55.ØØ	54.99	1.4	237.	-Ø.39	-1.Ø6	25Ø.	1.13	25Ø.	1.53	25Ø.	Ø.73	25Ø.	1.39	25Ø.	Ø.86
56.ØØ	55.98	1.8	225.	-Ø.41	-1.Ø8	249.	1.15	249.	1.56	249.	Ø.75	249.	1.42	249.	Ø.88
57.ØØ	56.98	1.4	213.	-Ø.42	-1.1Ø	249.	1.18	249.	1.59	249.	Ø.76	249.	1.45	249.	Ø.9Ø

DEPTH CORRECTION ANALYSIS



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
8.00	8.00	78.00	77.98	148.00	147.92
9.00	9.00	79.00	78.98	149.00	148.92
10.00	10.00	80.00	79.97	150.00	149.92
11.00	11.00	81.00	80.97	151.00	150.92
12.00	12.00	82.00	81.97	152.00	151.92
13.00	13.00	83.00	82.97	153.00	152.92
14.00	14.00	84.00	83.97	154.00	153.91
15.00	15.00	85.00	84.97	155.00	154.91
16.00	16.00	86.00	85.97	156.00	155.91
17.00	17.00	87.00	86.97	157.00	156.91
18.00	18.00	88.00	87.97	158.00	157.91
19.00	19.00	89.00	88.97	159.00	158.91
20.00	20.00	90.00	89.97	160.00	159.90
21.00	21.00	91.00	90.97	161.00	160.90
22.00	22.00	92.00	91.97	162.00	161.90
23.00	23.00	93.00	92.97	163.00	162.90
24.00	24.00	94.00	93.97	164.00	163.90
25.00	25.00	95.00	94.97	165.00	164.90
26.00	25.99	96.00	95.97	166.00	165.90
27.00	26.99	97.00	96.97	167.00	166.89
28.00	27.99	98.00	97.97	168.00	167.89
29.00	28.99	99.00	98.97	169.00	168.89
30.00	29.99	100.00	99.97	170.00	169.89
31.00	30.99	101.00	100.97	171.00	170.89
32.00	31.99	102.00	101.96	172.00	171.89
33.00	32.99	103.00	102.96	173.00	172.88
34.00	33.99	104.00	103.96	174.00	173.88
35.00	34.99	105.00	104.96	175.00	174.88
36.00	35.99	106.00	105.96	176.00	175.88
37.00	36.99	107.00	106.96	177.00	176.88
38.00	37.99	108.00	107.96	178.00	177.88
39.00	38.99	109.00	108.96	179.00	178.87
40.00	39.99	110.00	109.96	180.00	179.87
41.00	40.99	111.00	110.96	181.00	180.87
42.00	41.99	112.00	111.96	182.00	181.87
43.00	42.99	113.00	112.96	183.00	182.87
44.00	43.99	114.00	113.96	184.00	183.87
45.00	44.99	115.00	114.96	185.00	184.86
46.00	45.99	116.00	115.96	186.00	185.86
47.00	46.99	117.00	116.96	187.00	186.86
48.00	47.99	118.00	117.95	188.00	187.86
49.00	48.99	119.00	118.95	189.00	188.86
50.00	49.99	120.00	119.95		
51.00	50.99	121.00	120.95		
52.00	51.99	122.00	121.95		
53.00	52.99	123.00	122.95		
54.00	53.99	124.00	123.95		
55.00	54.99	125.00	124.95		
56.00	55.98	126.00	125.95		
57.00	56.98	127.00	126.95		
58.00	57.98	128.00	127.95		
59.00	58.98	129.00	128.95		
60.00	59.98	130.00	129.94		
61.00	60.98	131.00	130.94		
62.00	61.98	132.00	131.94		
63.00	62.98	133.00	132.94		
64.00	63.98	134.00	133.94		
65.00	64.98	135.00	134.94		
66.00	65.98	136.00	135.94		
67.00	66.98	137.00	136.94		
68.00	67.98	138.00	137.94		
69.00	68.98	139.00	138.93		
70.00	69.98	140.00	139.93		
71.00	70.98	141.00	140.93		
72.00	71.98	142.00	141.93		
73.00	72.98	143.00	142.93		
74.00	73.98	144.00	143.93		
75.00	74.98	145.00	144.93		
76.00	75.98	146.00	145.92		
77.00	76.98	147.00	146.92		

All co-ordinates with respect to True North

DEPTHS		BOREHOLE		AXIAL CO-ORDS.		POLAR		POLAR ERROR CO-ORDINATES (maximum & typical)							
log	true	tilt	AZI	North	East	brng	radius	brng	radius	brng	radius	brng	radius	brng	radius
58.00	57.98	1.2	224.	-0.44	-1.12	249.	1.20	249.	1.63	248.	0.78	249.	1.48	248.	0.92
59.00	58.98	1.5	216.	-0.46	-1.14	248.	1.23	248.	1.66	248.	0.80	248.	1.52	248.	0.94
60.00	59.98	1.8	222.	-0.47	-1.16	248.	1.25	248.	1.69	248.	0.81	248.	1.54	248.	0.96
61.00	60.98	1.6	230.	-0.49	-1.18	248.	1.27	248.	1.72	247.	0.83	248.	1.57	247.	0.98
62.00	61.98	1.9	233.	-0.50	-1.20	247.	1.30	247.	1.76	247.	0.84	247.	1.61	247.	1.00
63.00	62.98	1.8	248.	-0.52	-1.22	247.	1.33	247.	1.79	247.	0.86	247.	1.64	247.	1.02
64.00	63.98	2.0	240.	-0.53	-1.25	247.	1.36	247.	1.83	247.	0.88	247.	1.67	247.	1.04
65.00	64.98	1.8	229.	-0.54	-1.27	247.	1.39	247.	1.87	247.	0.90	247.	1.71	247.	1.06
66.00	65.98	1.4	238.	-0.56	-1.30	247.	1.41	247.	1.90	246.	0.92	247.	1.74	247.	1.09
67.00	66.98	1.6	224.	-0.57	-1.32	247.	1.44	247.	1.94	246.	0.94	247.	1.77	246.	1.11
68.00	67.98	1.4	223.	-0.59	-1.34	246.	1.47	246.	1.98	246.	0.96	246.	1.81	246.	1.13
69.00	68.98	1.7	236.	-0.61	-1.37	246.	1.50	246.	2.01	246.	0.98	246.	1.84	246.	1.15
70.00	69.98	1.8	240.	-0.62	-1.40	246.	1.53	246.	2.05	246.	1.00	246.	1.88	246.	1.18
71.00	70.98	1.6	244.	-0.63	-1.42	246.	1.56	246.	2.09	246.	1.02	246.	1.91	246.	1.20
72.00	71.98	1.6	229.	-0.65	-1.45	246.	1.59	246.	2.13	246.	1.04	246.	1.95	246.	1.22
73.00	72.98	1.7	242.	-0.66	-1.47	246.	1.62	246.	2.17	245.	1.07	246.	1.98	246.	1.25
74.00	73.98	1.7	247.	-0.68	-1.50	246.	1.65	246.	2.20	245.	1.09	246.	2.02	245.	1.27
75.00	74.98	2.0	238.	-0.70	-1.52	245.	1.67	246.	2.24	245.	1.11	246.	2.05	245.	1.30
76.00	75.98	2.0	234.	-0.71	-1.55	245.	1.70	245.	2.28	245.	1.13	245.	2.09	245.	1.32
77.00	76.98	1.8	239.	-0.73	-1.57	245.	1.73	245.	2.32	245.	1.15	245.	2.12	245.	1.34
78.00	77.98	1.9	229.	-0.74	-1.60	245.	1.76	245.	2.35	245.	1.17	245.	2.16	245.	1.37
79.00	78.98	2.0	239.	-0.76	-1.62	245.	1.79	245.	2.39	245.	1.19	245.	2.19	245.	1.39
80.00	79.97	1.5	236.	-0.78	-1.65	245.	1.82	245.	2.43	244.	1.21	245.	2.23	245.	1.41
81.00	80.97	1.7	231.	-0.79	-1.67	245.	1.85	245.	2.47	244.	1.23	245.	2.26	245.	1.44
82.00	81.97	1.3	238.	-0.80	-1.70	245.	1.88	245.	2.51	244.	1.25	245.	2.30	244.	1.46
83.00	82.97	1.7	235.	-0.82	-1.72	245.	1.91	245.	2.54	244.	1.27	245.	2.33	244.	1.48
84.00	83.97	1.6	203.	-0.84	-1.74	244.	1.93	244.	2.58	244.	1.29	244.	2.36	244.	1.50
85.00	84.97	1.3	234.	-0.85	-1.76	244.	1.95	244.	2.61	244.	1.30	244.	2.39	244.	1.52
86.00	85.97	1.6	224.	-0.87	-1.78	244.	1.98	244.	2.64	244.	1.32	244.	2.42	244.	1.54
87.00	86.97	1.6	231.	-0.89	-1.80	244.	2.01	244.	2.68	243.	1.34	244.	2.46	244.	1.56
88.00	87.97	1.5	221.	-0.91	-1.82	244.	2.04	244.	2.72	243.	1.36	244.	2.49	243.	1.59
89.00	88.97	2.1	230.	-0.93	-1.85	243.	2.07	243.	2.75	243.	1.38	243.	2.52	243.	1.61
90.00	89.97	1.6	229.	-0.95	-1.87	243.	2.09	243.	2.79	243.	1.40	243.	2.56	243.	1.63
91.00	90.97	1.6	230.	-0.97	-1.89	243.	2.12	243.	2.82	243.	1.42	243.	2.59	243.	1.65
92.00	91.97	1.7	216.	-0.99	-1.91	243.	2.15	243.	2.86	242.	1.44	243.	2.62	243.	1.68
93.00	92.97	1.5	229.	-1.01	-1.93	243.	2.18	243.	2.90	242.	1.46	243.	2.66	242.	1.70
94.00	93.97	1.5	224.	-1.03	-1.96	242.	2.21	243.	2.94	242.	1.48	242.	2.70	242.	1.73
95.00	94.97	1.7	236.	-1.05	-1.98	242.	2.24	242.	2.97	242.	1.50	242.	2.73	242.	1.75
96.00	95.97	1.3	229.	-1.07	-2.00	242.	2.27	242.	3.01	242.	1.52	242.	2.76	242.	1.77
97.00	96.97	1.6	216.	-1.09	-2.02	242.	2.29	242.	3.05	241.	1.54	242.	2.80	242.	1.79
98.00	97.97	1.5	240.	-1.11	-2.04	242.	2.32	242.	3.08	241.	1.56	242.	2.83	241.	1.82
99.00	98.97	1.4	235.	-1.13	-2.07	241.	2.35	242.	3.12	241.	1.58	242.	2.87	241.	1.84
100.00	99.97	2.2	227.	-1.15	-2.09	241.	2.38	241.	3.16	241.	1.61	241.	2.90	241.	1.87
101.00	100.97	1.7	231.	-1.17	-2.12	241.	2.42	241.	3.21	241.	1.63	241.	2.94	241.	1.89
102.00	101.96	1.9	234.	-1.18	-2.15	241.	2.45	241.	3.25	241.	1.66	241.	2.98	241.	1.92
103.00	102.96	1.9	234.	-1.20	-2.18	241.	2.49	241.	3.29	241.	1.68	241.	3.02	241.	1.95
104.00	103.96	1.9	241.	-1.22	-2.20	241.	2.52	241.	3.33	241.	1.71	241.	3.06	241.	1.98
105.00	104.96	1.8	229.	-1.24	-2.23	241.	2.55	241.	3.37	241.	1.73	241.	3.10	241.	2.01
106.00	105.96	1.8	229.	-1.26	-2.26	241.	2.59	241.	3.42	240.	1.76	241.	3.14	241.	2.03
107.00	106.96	2.1	246.	-1.28	-2.29	241.	2.62	241.	3.46	240.	1.78	241.	3.18	241.	2.06

All co-ordinates with respect to True North

DEPTHS		BOREHOLE		AXIAL CO-ORDS.		POLAR		POLAR ERROR CO-ORDINATES (maximum & typical)							
log	true	tilt	AZI	North	East	brng	radius	brng	radius	brng	radius	brng	radius	brng	radius
108.00	107.96	2.0	240.	-1.30	-2.32	241.	2.66	241.	3.50	240.	1.81	241.	3.22	241.	2.09
109.00	108.96	2.0	216.	-1.32	-2.35	241.	2.69	241.	3.55	240.	1.84	241.	3.26	240.	2.12
110.00	109.96	2.1	227.	-1.34	-2.38	241.	2.73	241.	3.59	240.	1.86	241.	3.30	240.	2.15
111.00	110.96	1.9	235.	-1.36	-2.40	240.	2.76	241.	3.64	240.	1.89	241.	3.35	240.	2.18
112.00	111.96	2.1	225.	-1.38	-2.43	240.	2.80	241.	3.68	240.	1.92	241.	3.39	240.	2.21
113.00	112.96	2.3	232.	-1.41	-2.46	240.	2.83	240.	3.72	240.	1.94	240.	3.43	240.	2.24
114.00	113.96	1.8	231.	-1.43	-2.49	240.	2.87	240.	3.77	240.	1.97	240.	3.47	240.	2.27
115.00	114.96	1.9	234.	-1.45	-2.52	240.	2.91	240.	3.81	240.	2.00	240.	3.51	240.	2.30
116.00	115.96	1.8	235.	-1.47	-2.55	240.	2.94	240.	3.86	240.	2.03	240.	3.55	240.	2.33
117.00	116.96	2.4	230.	-1.50	-2.58	240.	2.98	240.	3.90	239.	2.05	240.	3.59	240.	2.36
118.00	117.95	2.0	238.	-1.52	-2.60	240.	3.01	240.	3.95	239.	2.08	240.	3.64	239.	2.39
119.00	118.95	2.2	230.	-1.54	-2.63	240.	3.05	240.	3.99	239.	2.11	240.	3.68	239.	2.42
120.00	119.95	2.4	236.	-1.57	-2.66	239.	3.09	240.	4.04	239.	2.14	240.	3.72	239.	2.46
121.00	120.95	2.0	232.	-1.59	-2.69	239.	3.12	240.	4.08	239.	2.17	240.	3.76	239.	2.49
122.00	121.95	2.5	236.	-1.62	-2.72	239.	3.16	240.	4.13	239.	2.20	239.	3.81	239.	2.52
123.00	122.95	2.5	231.	-1.64	-2.75	239.	3.20	239.	4.18	239.	2.23	239.	3.85	239.	2.55
124.00	123.95	2.3	232.	-1.67	-2.78	239.	3.25	239.	4.23	239.	2.26	239.	3.90	239.	2.59
125.00	124.95	2.5	232.	-1.70	-2.82	239.	3.29	239.	4.28	238.	2.30	239.	3.95	239.	2.63
126.00	125.95	2.6	237.	-1.72	-2.85	239.	3.33	239.	4.33	238.	2.33	239.	4.00	239.	2.66
127.00	126.95	2.3	232.	-1.75	-2.88	239.	3.37	239.	4.38	238.	2.36	239.	4.05	238.	2.70
128.00	127.95	2.5	225.	-1.78	-2.92	239.	3.42	239.	4.44	238.	2.40	239.	4.10	238.	2.74
129.00	128.95	2.7	230.	-1.81	-2.95	238.	3.46	239.	4.49	238.	2.44	239.	4.15	238.	2.78
130.00	129.94	2.7	218.	-1.84	-2.99	238.	3.51	239.	4.54	238.	2.47	239.	4.20	238.	2.82
131.00	130.94	2.8	222.	-1.87	-3.02	238.	3.55	238.	4.60	238.	2.51	238.	4.25	238.	2.86
132.00	131.94	2.8	229.	-1.91	-3.05	238.	3.60	238.	4.65	237.	2.55	238.	4.30	238.	2.90
133.00	132.94	2.6	222.	-1.94	-3.09	238.	3.65	238.	4.71	237.	2.59	238.	4.35	238.	2.94
134.00	133.94	2.9	230.	-1.97	-3.12	238.	3.69	238.	4.76	237.	2.62	238.	4.40	237.	2.98
135.00	134.94	2.6	223.	-2.01	-3.15	238.	3.74	238.	4.82	237.	2.66	238.	4.46	237.	3.02
136.00	135.94	2.5	233.	-2.04	-3.19	237.	3.78	238.	4.87	237.	2.70	238.	4.51	237.	3.06
137.00	136.94	3.0	221.	-2.07	-3.22	237.	3.83	238.	4.93	237.	2.74	238.	4.56	237.	3.10
138.00	137.94	3.0	230.	-2.11	-3.26	237.	3.88	237.	4.98	236.	2.77	237.	4.61	237.	3.14
139.00	138.93	3.1	230.	-2.14	-3.29	237.	3.93	237.	5.04	236.	2.82	237.	4.67	237.	3.19
140.00	139.93	2.7	227.	-2.18	-3.33	237.	3.98	237.	5.10	236.	2.86	237.	4.72	236.	3.23
141.00	140.93	2.9	229.	-2.21	-3.36	237.	4.03	237.	5.15	236.	2.90	237.	4.78	236.	3.27
142.00	141.93	3.0	231.	-2.24	-3.40	237.	4.08	237.	5.21	236.	2.94	237.	4.83	236.	3.32
143.00	142.93	2.9	237.	-2.28	-3.44	236.	4.13	237.	5.27	236.	2.98	237.	4.89	236.	3.36
144.00	143.93	2.8	224.	-2.32	-3.47	236.	4.17	237.	5.33	236.	3.02	237.	4.94	236.	3.41
145.00	144.93	3.0	225.	-2.35	-3.51	236.	4.22	237.	5.38	235.	3.06	236.	5.00	236.	3.45
146.00	145.92	3.0	224.	-2.39	-3.54	236.	4.27	236.	5.44	235.	3.10	236.	5.05	236.	3.49
147.00	146.92	3.3	218.	-2.43	-3.58	236.	4.32	236.	5.50	235.	3.15	236.	5.11	235.	3.54
148.00	147.92	2.9	222.	-2.46	-3.61	236.	4.37	236.	5.56	235.	3.19	236.	5.17	235.	3.58
149.00	148.92	2.9	218.	-2.50	-3.65	236.	4.43	236.	5.62	235.	3.23	236.	5.22	235.	3.63
150.00	149.92	2.8	228.	-2.54	-3.69	235.	4.48	236.	5.68	235.	3.27	236.	5.28	235.	3.67
151.00	150.92	3.3	220.	-2.57	-3.72	235.	4.53	236.	5.74	235.	3.31	236.	5.33	235.	3.72
152.00	151.92	2.9	222.	-2.61	-3.76	235.	4.58	236.	5.80	234.	3.36	236.	5.39	235.	3.76
153.00	152.92	3.1	222.	-2.65	-3.79	235.	4.63	236.	5.86	234.	3.40	235.	5.45	235.	3.81
154.00	153.91	3.0	221.	-2.69	-3.83	235.	4.68	235.	5.92	234.	3.45	235.	5.51	234.	3.86
155.00	154.91	3.1	220.	-2.73	-3.87	235.	4.73	235.	5.98	234.	3.49	235.	5.56	234.	3.90
156.00	155.91	3.3	222.	-2.77	-3.90	235.	4.79	235.	6.04	234.	3.53	235.	5.62	234.	3.95
157.00	156.91	3.0	222.	-2.81	-3.94	235.	4.84	235.	6.10	234.	3.58	235.	5.68	234.	4.00

Verticality Data Listing

All co-ordinates with respect to True North

DEPTHS		BOREHOLE		AXIAL CO-ORDS.		POLAR		POLAR ERROR CO-ORDINATES (maximum & typical)							
log	true	tilt	AZI	North	East	brng	radius	brng	radius	brng	radius	brng	radius	brng	radius
158.ØØ	157.91	3.5	222.	-2.85	-3.98	234.	4.89	235.	6.16	234.	3.62	235.	5.74	234.	4.Ø5
159.ØØ	158.91	3.Ø	21Ø.	-2.89	-4.Ø1	234.	4.94	235.	6.22	233.	3.66	235.	5.8Ø	234.	4.Ø9
16Ø.ØØ	159.9Ø	3.2	215.	-2.93	-4.Ø5	234.	5.ØØ	235.	6.28	233.	3.71	234.	5.85	234.	4.14
161.ØØ	16Ø.9Ø	2.8	222.	-2.97	-4.Ø8	234.	5.Ø5	234.	6.34	233.	3.75	234.	5.91	233.	4.18
162.ØØ	161.9Ø	3.1	223.	-3.Ø1	-4.12	234.	5.1Ø	234.	6.4Ø	233.	3.8Ø	234.	5.97	233.	4.23
163.ØØ	162.9Ø	3.3	213.	-3.Ø5	-4.15	234.	5.15	234.	6.47	233.	3.84	234.	6.Ø3	233.	4.28
164.ØØ	163.9Ø	3.2	227.	-3.Ø9	-4.19	234.	5.21	234.	6.53	233.	3.89	234.	6.Ø9	233.	4.33
165.ØØ	164.9Ø	2.9	221.	-3.13	-4.23	233.	5.26	234.	6.59	233.	3.93	234.	6.15	233.	4.37
166.ØØ	165.9Ø	2.9	225.	-3.17	-4.27	233.	5.31	234.	6.65	232.	3.98	234.	6.21	233.	4.42
167.ØØ	166.89	3.3	222.	-3.21	-4.3Ø	233.	5.37	234.	6.72	232.	4.Ø2	234.	6.27	233.	4.47
168.ØØ	167.89	3.Ø	219.	-3.25	-4.34	233.	5.43	234.	6.78	232.	4.Ø7	234.	6.33	233.	4.52
169.ØØ	168.89	3.Ø	217.	-3.3Ø	-4.38	233.	5.48	234.	6.84	232.	4.12	233.	6.39	232.	4.57
17Ø.ØØ	169.89	3.1	227.	-3.34	-4.42	233.	5.54	233.	6.91	232.	4.17	233.	6.45	232.	4.62
171.ØØ	17Ø.89	3.6	224.	-3.38	-4.46	233.	5.59	233.	6.97	232.	4.21	233.	6.51	232.	4.67
172.ØØ	171.89	3.4	222.	-3.42	-4.49	233.	5.65	233.	7.Ø4	232.	4.26	233.	6.57	232.	4.72
173.ØØ	172.88	3.3	224.	-3.46	-4.53	233.	5.7Ø	233.	7.1Ø	232.	4.31	233.	6.63	232.	4.77
174.ØØ	173.88	3.4	22Ø.	-3.51	-4.57	232.	5.76	233.	7.17	232.	4.36	233.	6.7Ø	232.	4.82
175.ØØ	174.88	3.6	221.	-3.55	-4.61	232.	5.82	233.	7.23	231.	4.4Ø	233.	6.76	232.	4.88
176.ØØ	175.88	3.4	218.	-3.6Ø	-4.64	232.	5.87	233.	7.3Ø	231.	4.45	233.	6.82	232.	4.93
177.ØØ	176.88	3.5	226.	-3.64	-4.68	232.	5.93	233.	7.36	231.	4.5Ø	233.	6.88	232.	4.98
178.ØØ	177.88	3.5	214.	-3.69	-4.72	232.	5.99	233.	7.43	231.	4.55	232.	6.95	231.	5.Ø3
179.ØØ	178.87	3.5	224.	-3.73	-4.76	232.	6.Ø5	232.	7.49	231.	4.6Ø	232.	7.Ø1	231.	5.Ø8
18Ø.ØØ	179.87	3.4	214.	-3.77	-4.8Ø	232.	6.11	232.	7.56	231.	4.65	232.	7.Ø8	231.	5.14
181.ØØ	18Ø.87	3.3	225.	-3.82	-4.84	232.	6.16	232.	7.63	231.	4.7Ø	232.	7.14	231.	5.19
182.ØØ	181.87	3.5	215.	-3.87	-4.87	232.	6.22	232.	7.69	231.	4.75	232.	7.2Ø	231.	5.24
183.ØØ	182.87	3.5	222.	-3.91	-4.91	231.	6.28	232.	7.76	231.	4.8Ø	232.	7.27	231.	5.29
184.ØØ	183.87	3.7	223.	-3.96	-4.96	231.	6.34	232.	7.83	23Ø.	4.85	232.	7.33	231.	5.35
185.ØØ	184.86	3.7	226.	-4.ØØ	-5.ØØ	231.	6.4Ø	232.	7.9Ø	23Ø.	4.9Ø	232.	7.4Ø	231.	5.4Ø
186.ØØ	185.86	3.5	222.	-4.Ø5	-5.Ø4	231.	6.46	232.	7.97	23Ø.	4.96	232.	7.47	231.	5.46
187.ØØ	186.86	3.3	225.	-4.Ø9	-5.Ø8	231.	6.52	232.	8.Ø4	23Ø.	5.Ø1	232.	7.53	231.	5.51
188.ØØ	187.86	3.6	219.	-4.14	-5.12	231.	6.59	232.	8.11	23Ø.	5.Ø6	231.	7.6Ø	23Ø.	5.57
189.ØØ	188.86	3.7	217.	-4.19	-5.16	231.	6.65	232.	8.18	23Ø.	5.12	231.	7.67	23Ø.	5.63

DETAIL LOGS

739

DEPTH SCALE 20

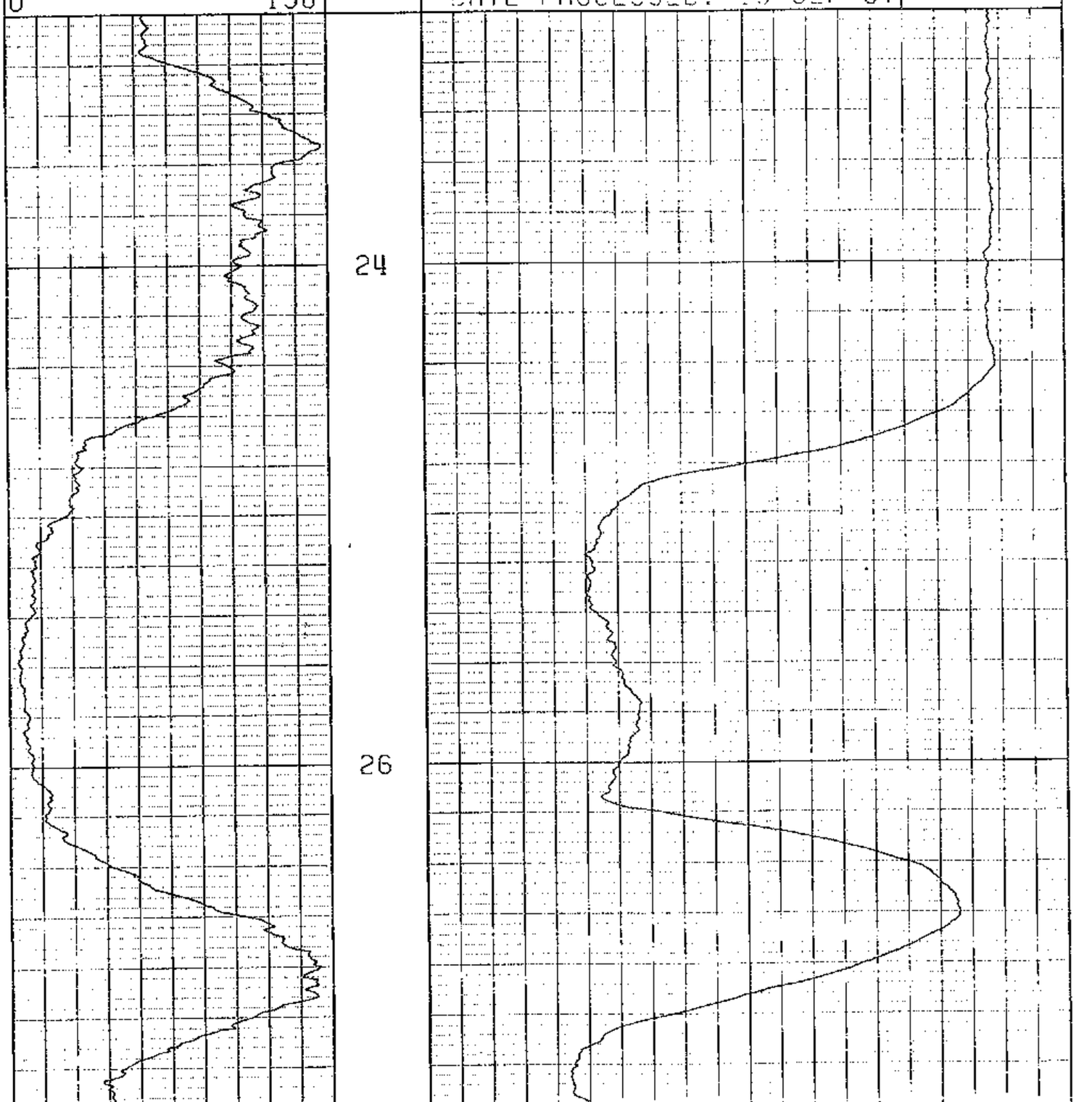
L.S.D (CCS)

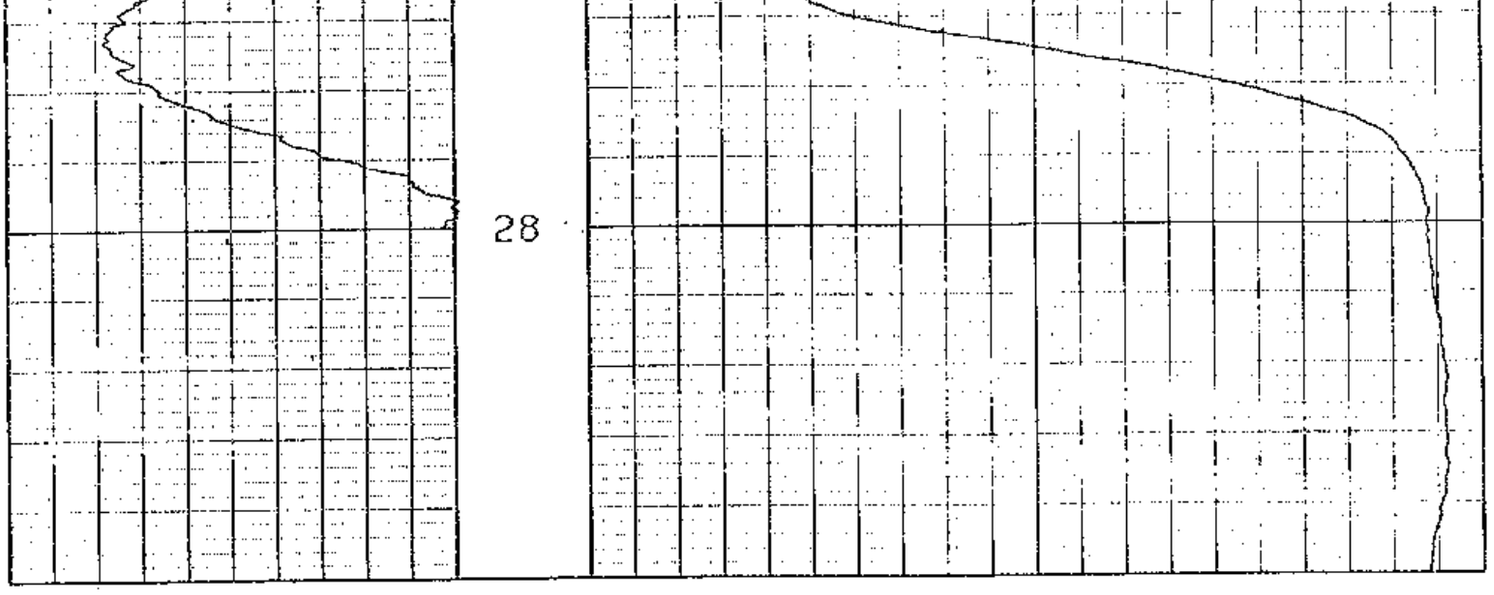
10000 0

CLIENT: QUINTETTE COAL
WELL NO: QHD 87012
AREA: TRANSFER PIT
CASING: 2.0M
WATER: 27.2M
DEPTH: 23.00-29.00
DATE PROCESSED: 10-SEP-87

GAMMA RAY

0 150





DETAIL LOGS

DEPTH SCALE 20

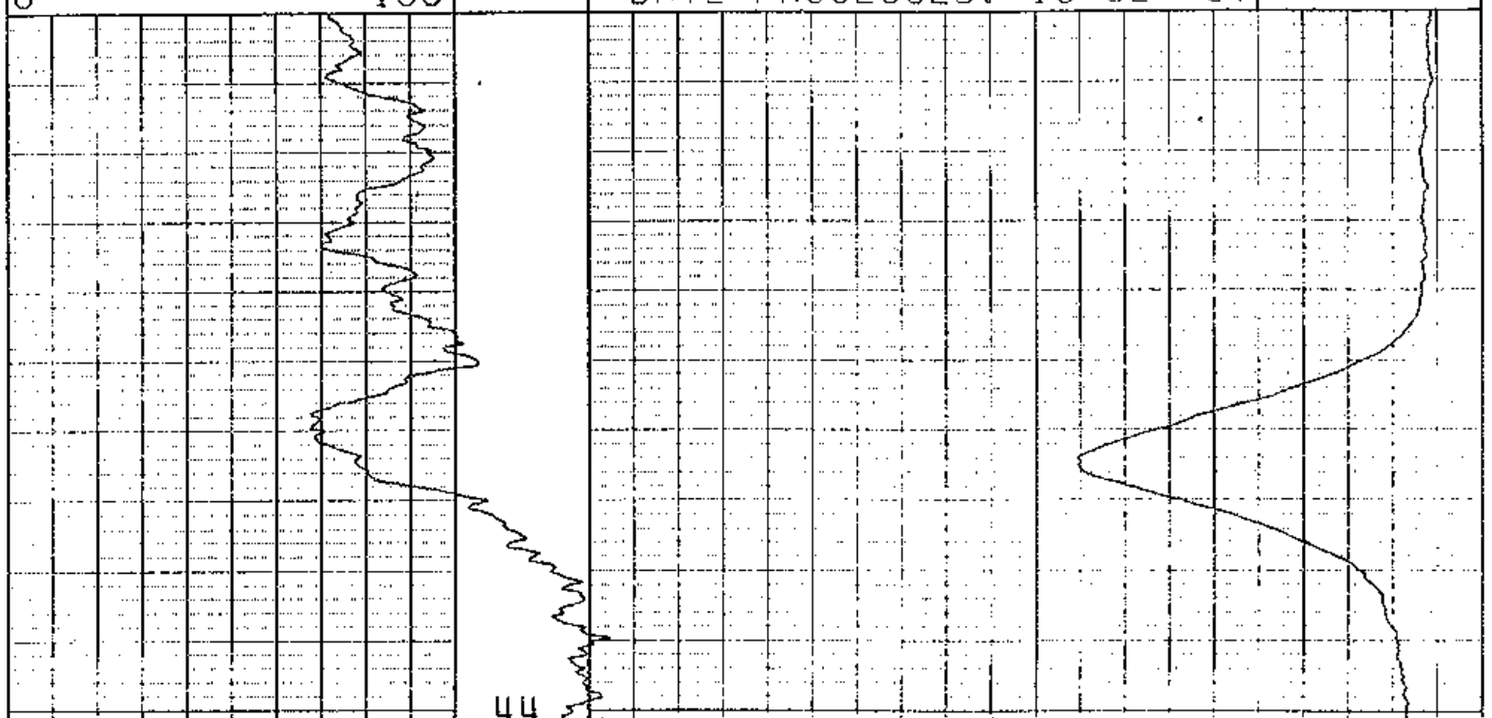
L.S.D (CCS)

6000 0

CLIENT:
WELL NO:OHO 87012
AREA:
CASING:
WATER:
DEPTH:42.00-50.00
DATE PROCESSED: 10-SEP-87

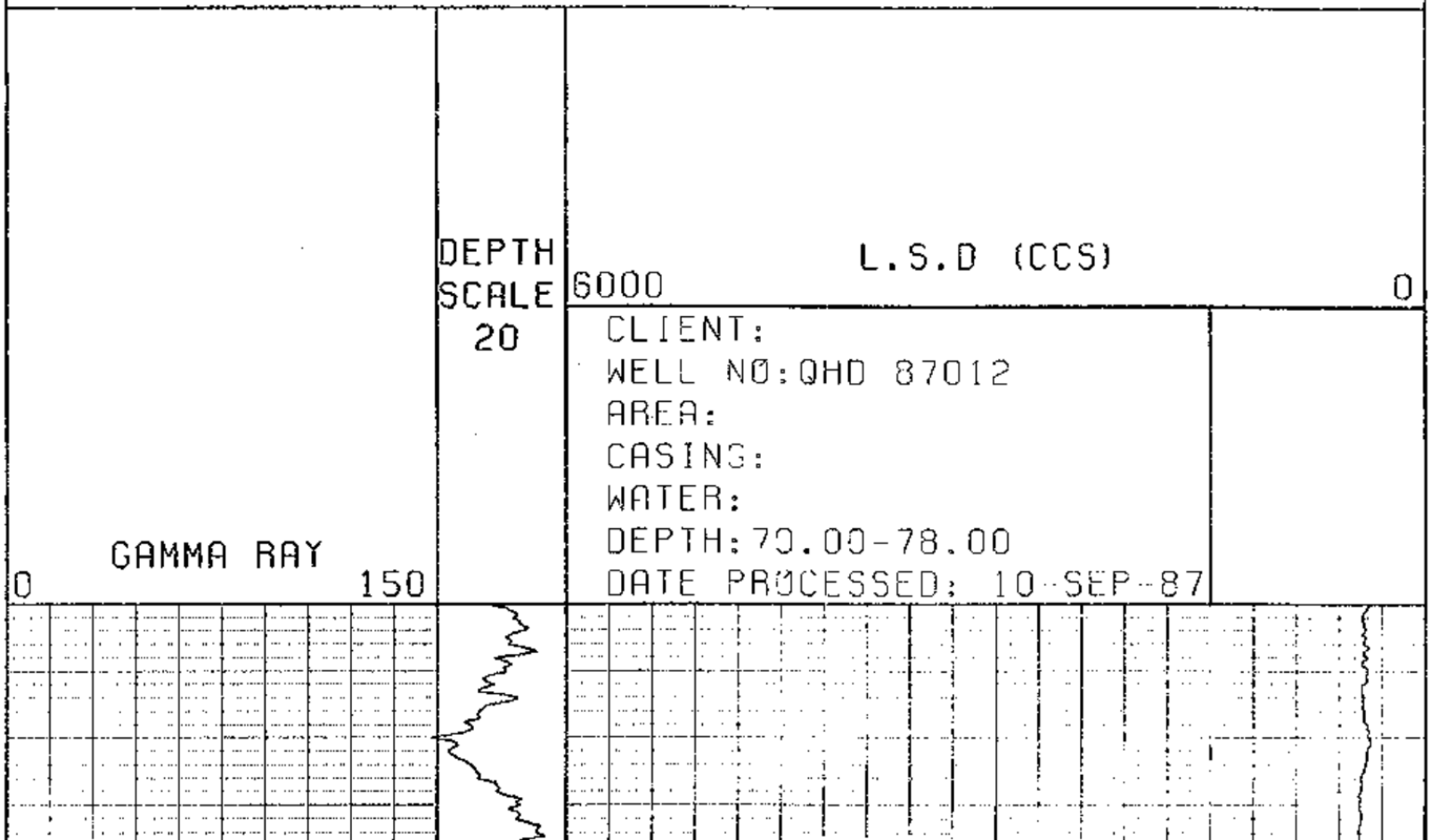
GAMMA RAY

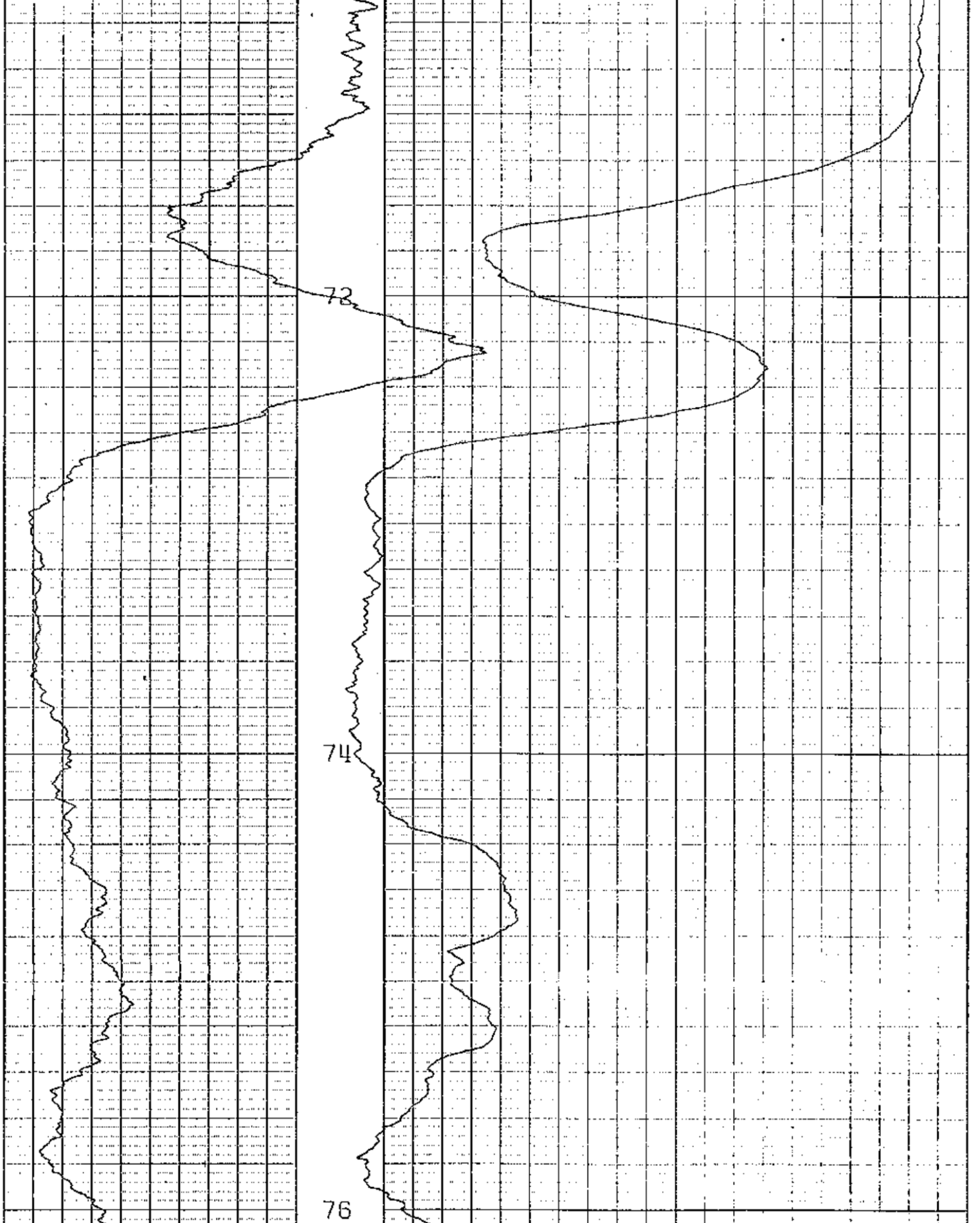
0 150

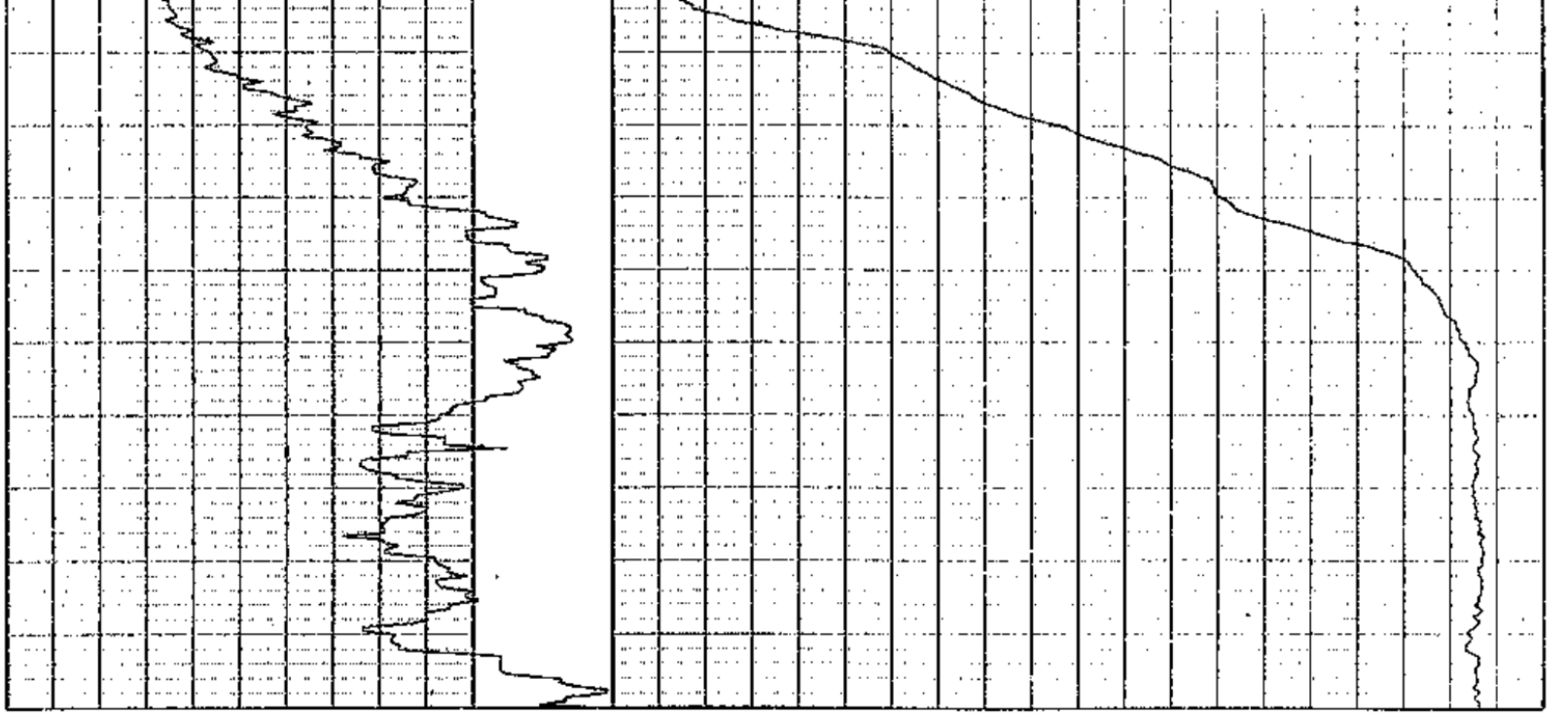


46
48

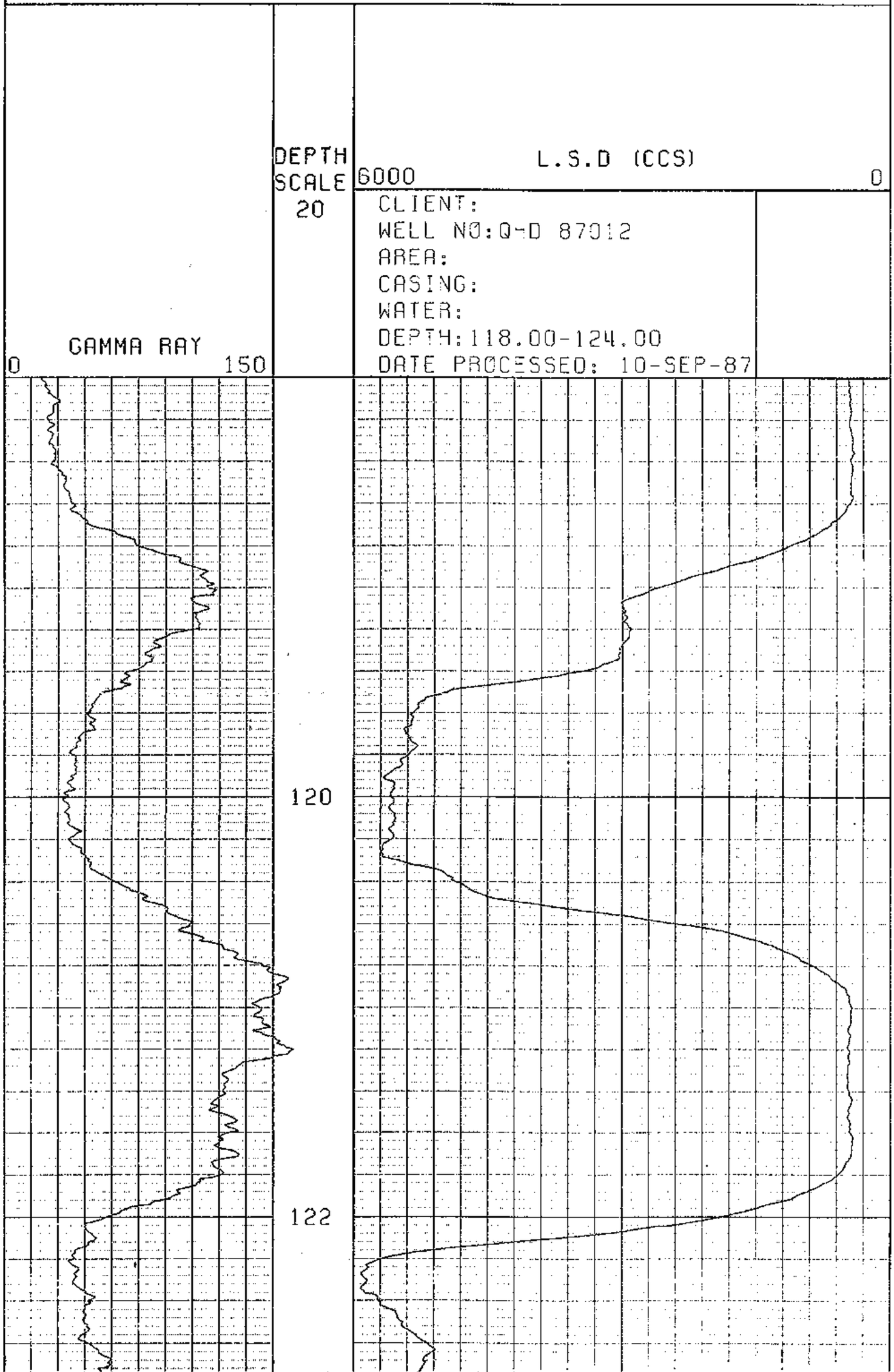
DETAIL LØGS

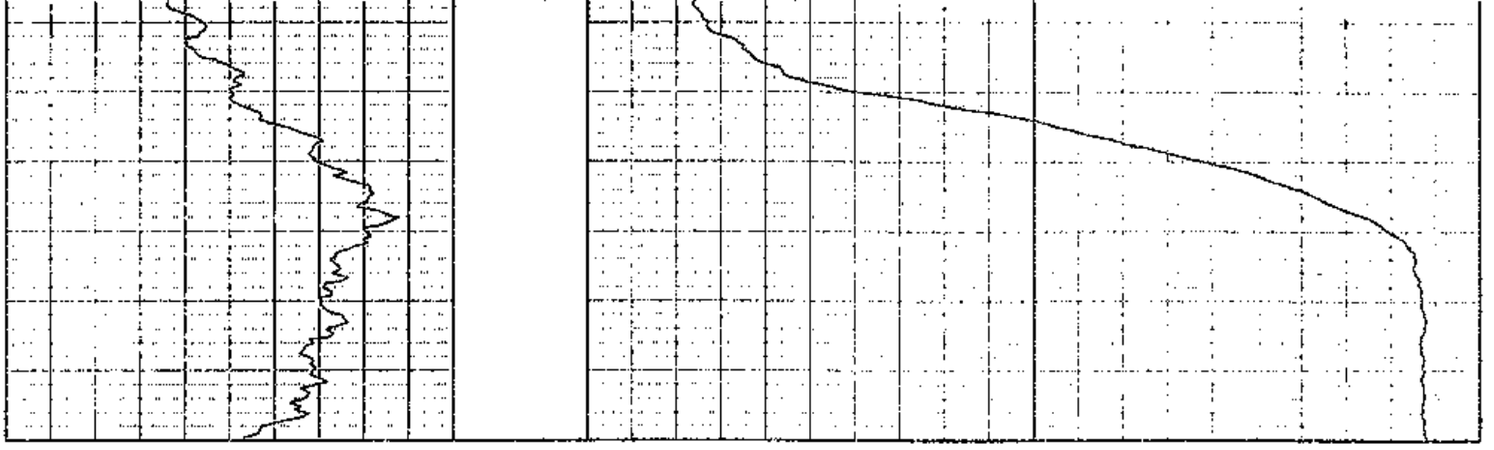

DEPTH
SCALE
20
L.S.D (CCS)
6000
0
CLIENT:
WELL NØ:QHD 87012
AREA:
CASING:
WATER:
DEPTH:70.00-78.00
DATE PRØCESSED: 10-SEP-87
GAMMA RAY
0
150


72
74
76

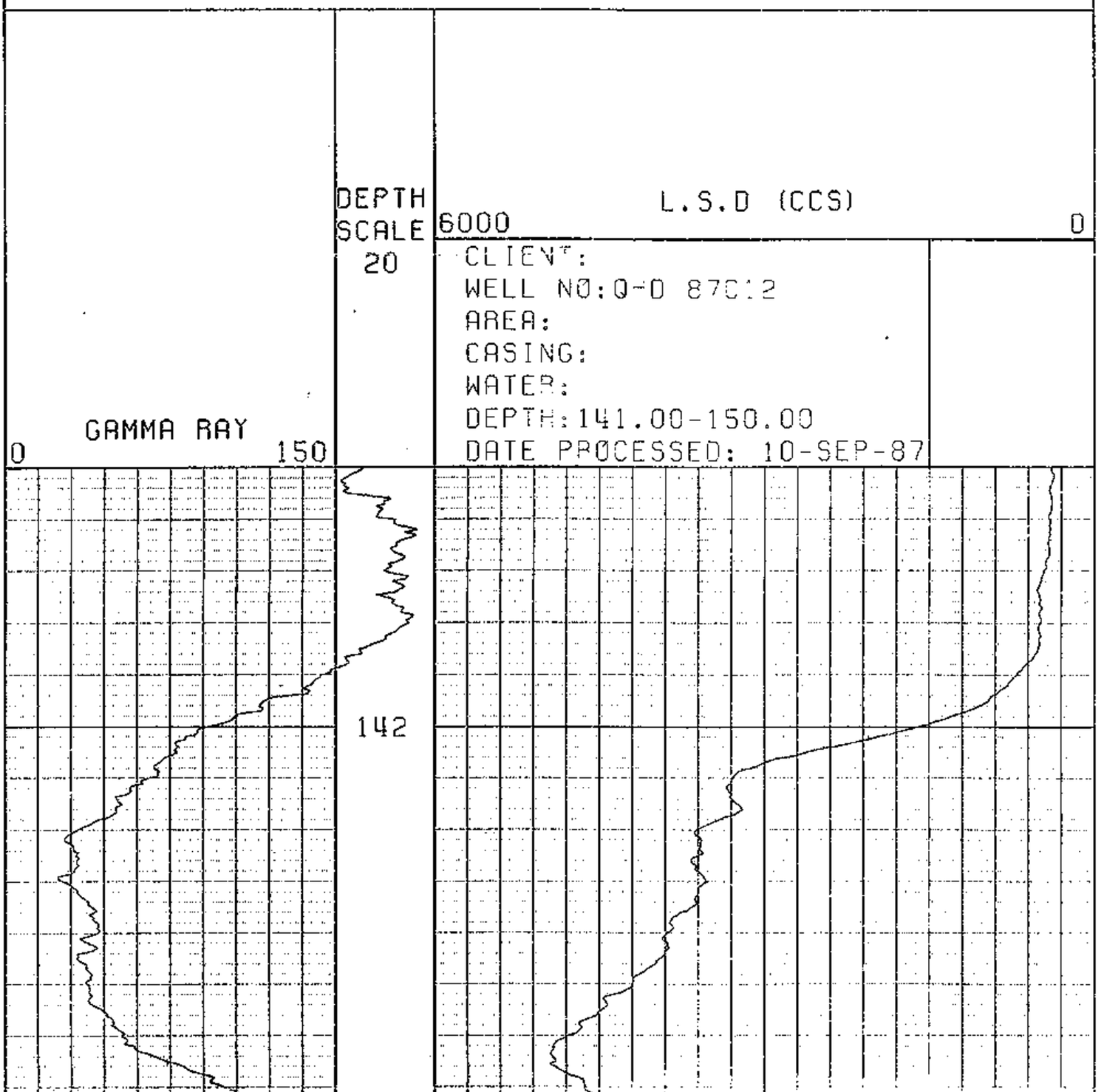


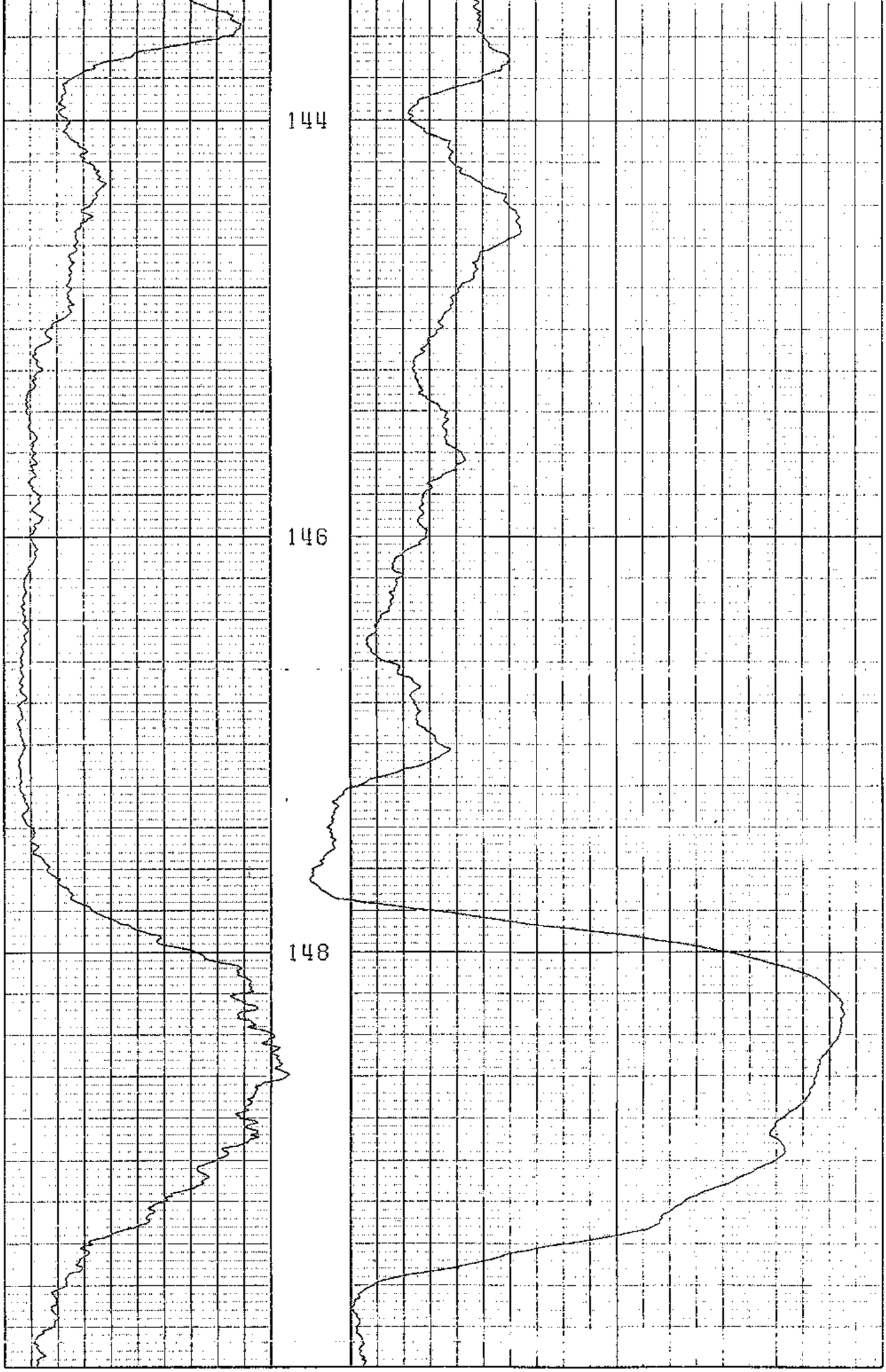
DETAIL LØGS


DEPTH
SCALE
20
L.S.D (CCS)
6000
0
CLIENT:
WELL NO:Q-D 87012
AREA:
CASING:
WATER:
DEPTH:118.00-124.00
DATE PROCESSED: 10-SEP-87
GAMMA RAY
0
150
120
122



DETAIL LØGS


DEPTH SCALE 20
L.S.D (CCS)
6000
0
CLIENT:
WELL NØ:Q-D 87012
AREA:
CASING:
WATER:
DEPTH:141.00-150.00
DATE PROCESSED: 10-SEP-87
GAMMA RAY
0
150
142


144
146
148

DETAIL LOGS

739

DEPTH SCALE 20

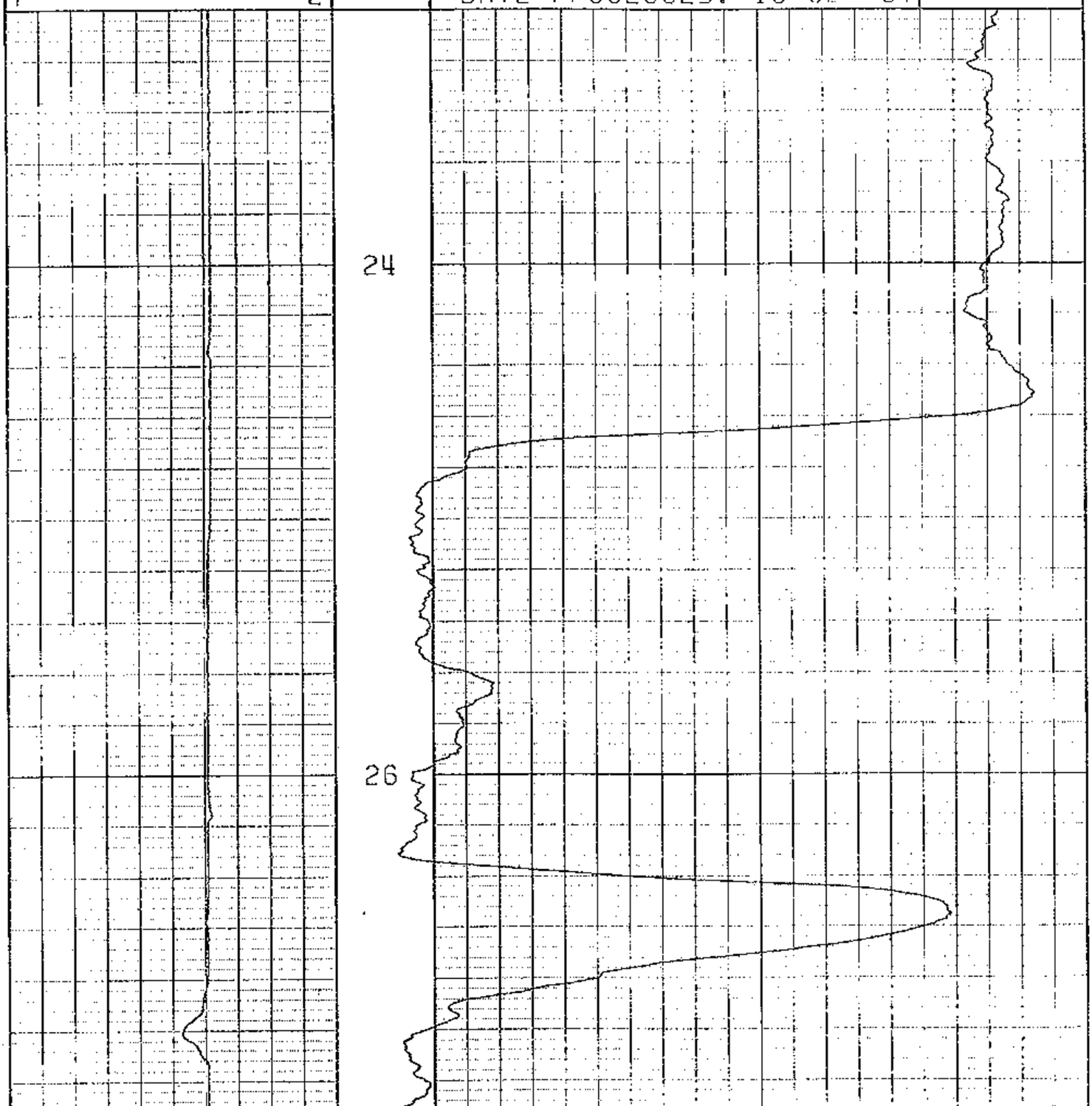
B.R.D (CCS)

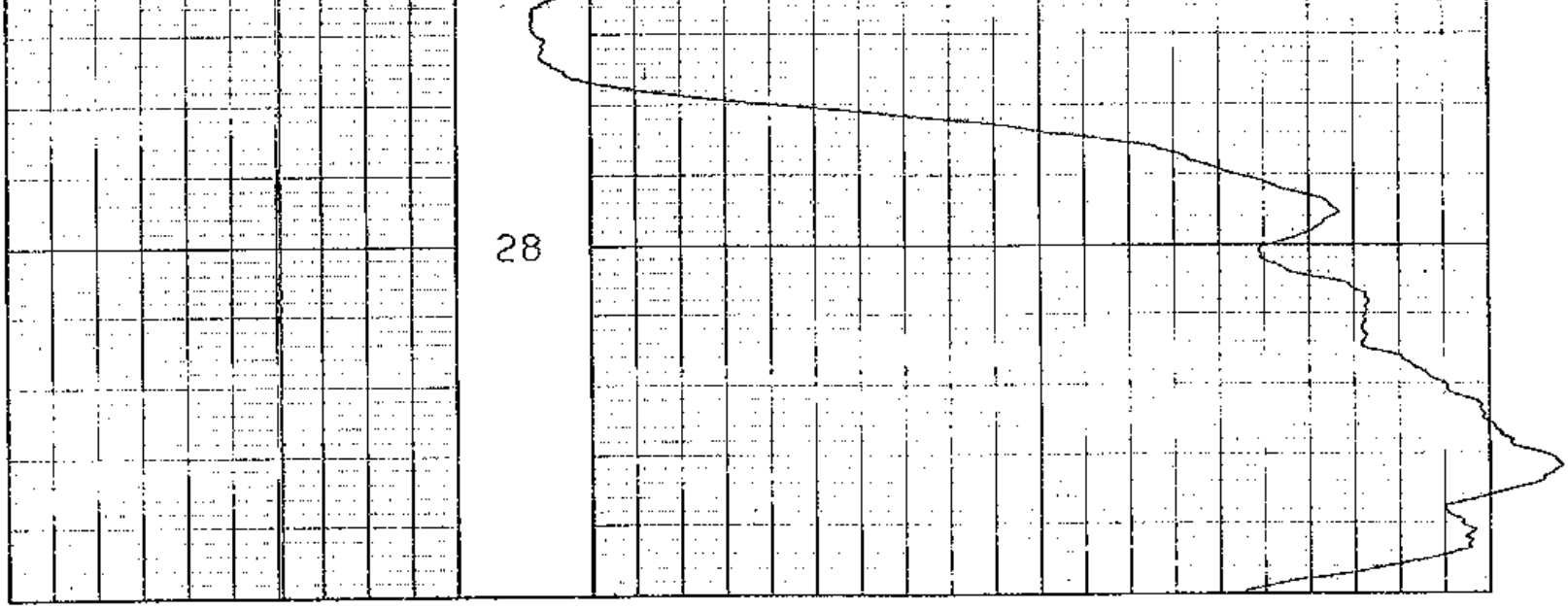
25000 15000

CLIENT: QUINTETTE COAL
WELL NO: QHD 87012
AREA: TRANSFER PIT
CASING: 2.0M
WATER: 27.2M
DEPTH: 23.00-29.00
DATE PROCESSED: 10-SEP-87

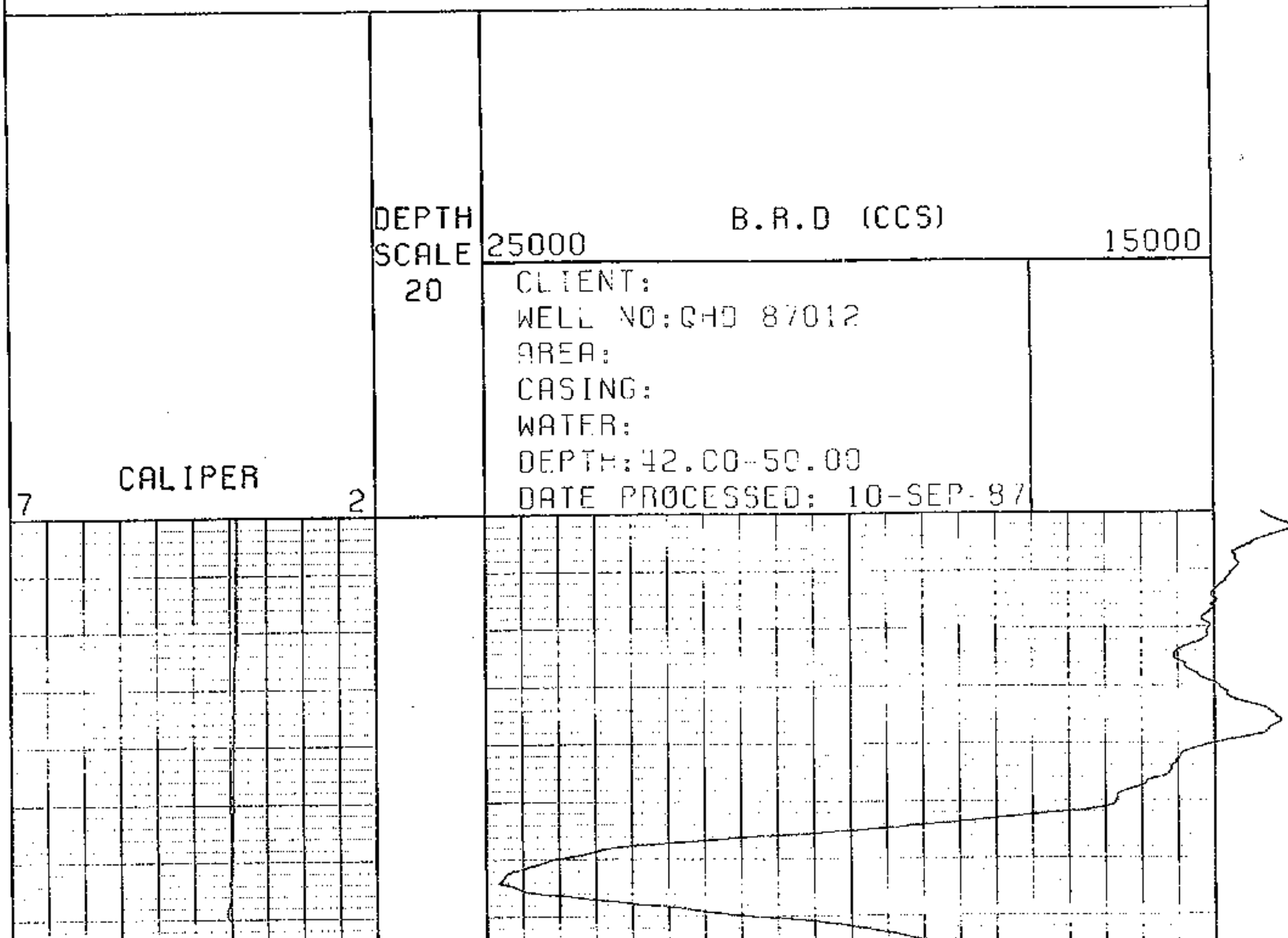
CALIPER

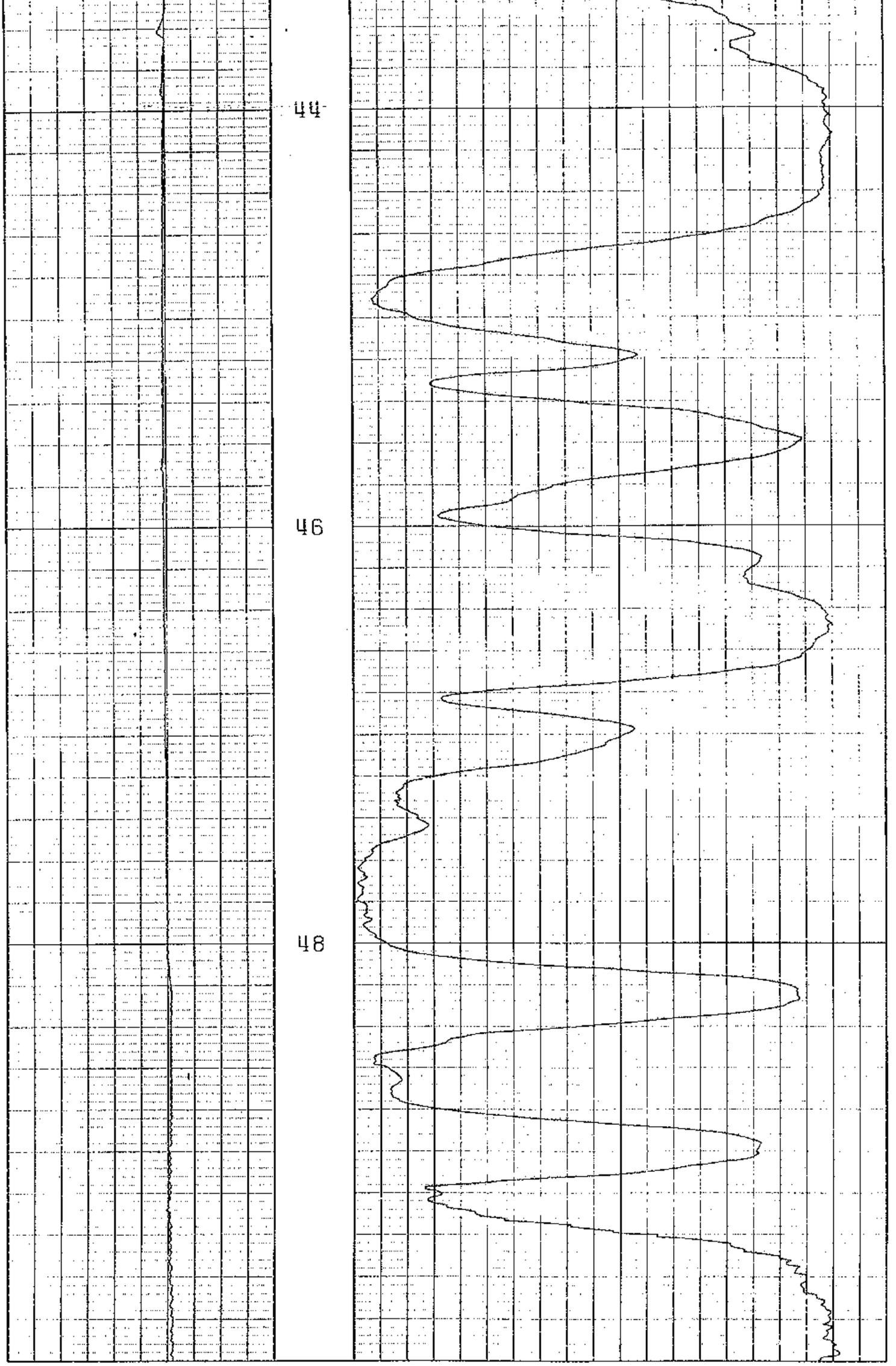
7 2




28

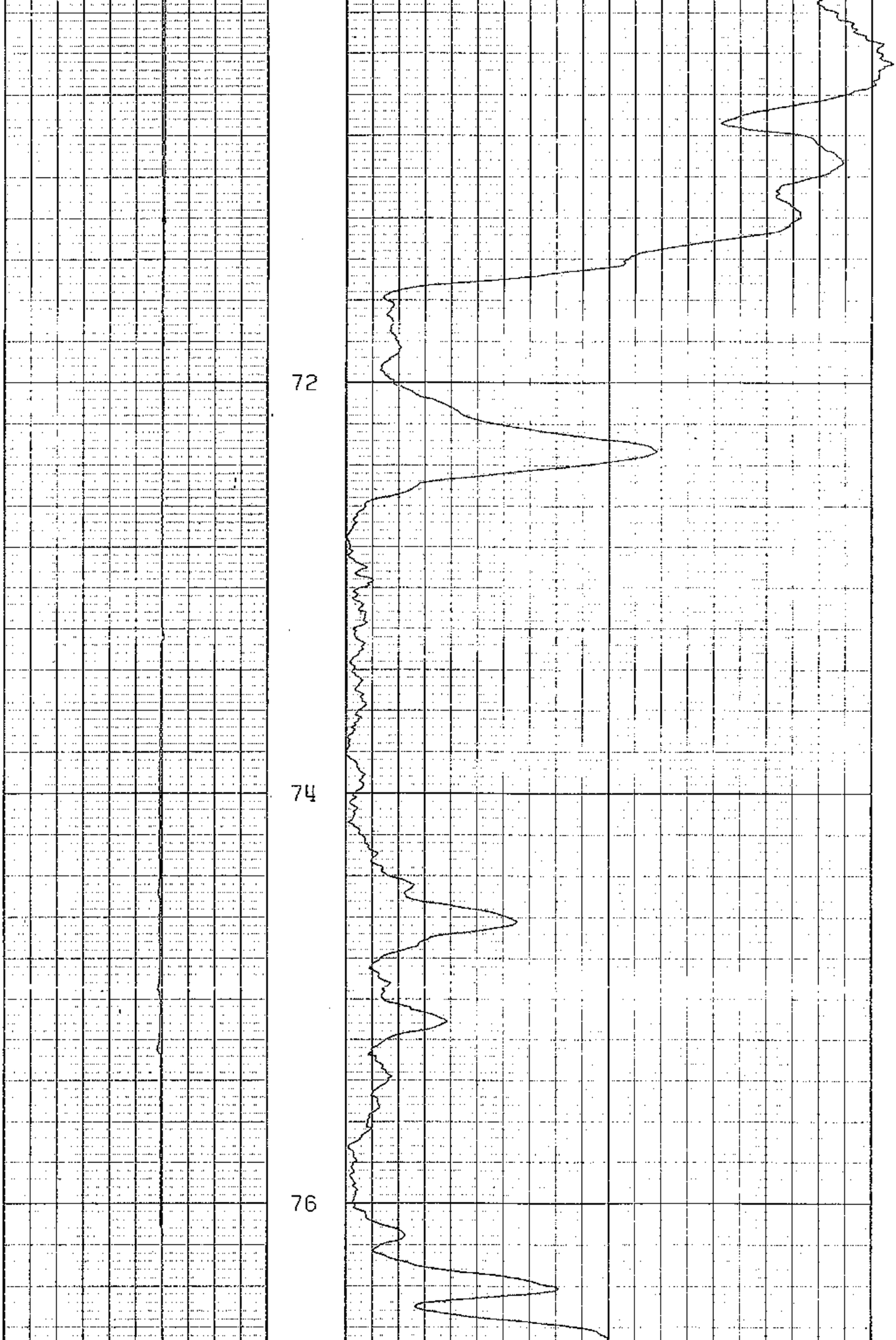
DETAIL LØGS

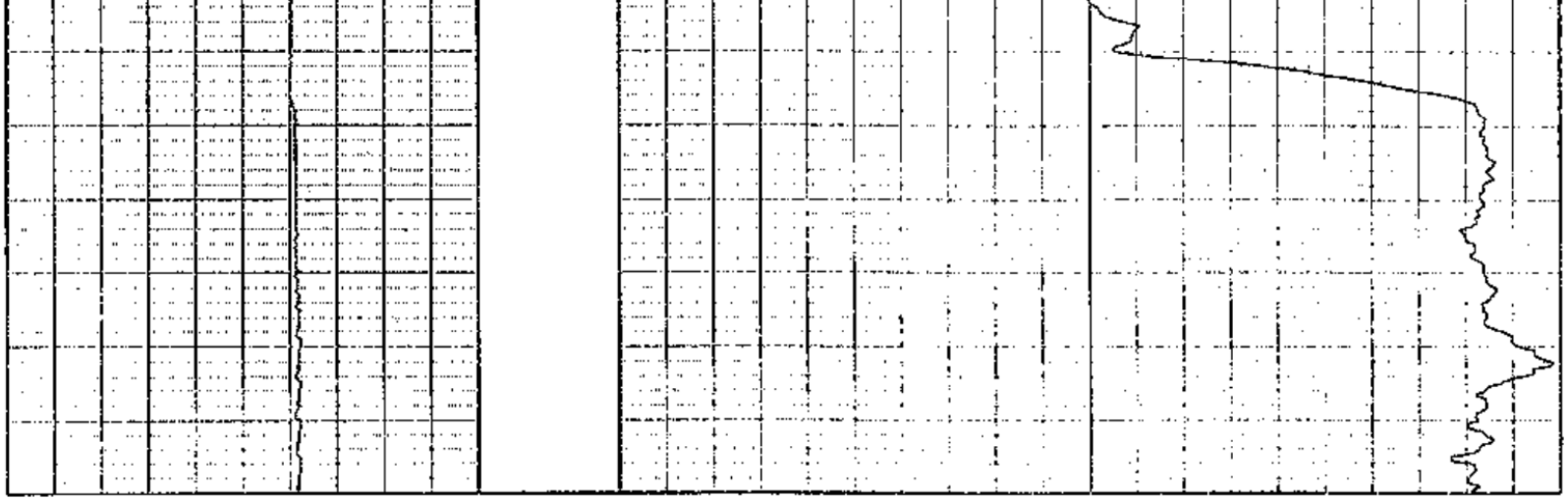

DEPTH
SCALE
20
B.R.D (CCS)
25000
15000
CLIENT:
WELL NO:GHD 87012
AREA:
CASING:
WATER:
DEPTH:42.00-50.00
DATE PROCESSED: 10-SEP-87
CALIPER
7
2


44
46
48

DETAIL LOGS

CALIPER 7 2	DEPTH SCALE 20	B.R.D (CCS) 25000 15000 CLIENT: WELL NO:QHD 87012 AREA: CASING: WATER: DEPTH:70.00-78.00 DATE PROCESSED: 10-SEP-87


72
74
76



DETAIL LOGS

DEPTH SCALE 20

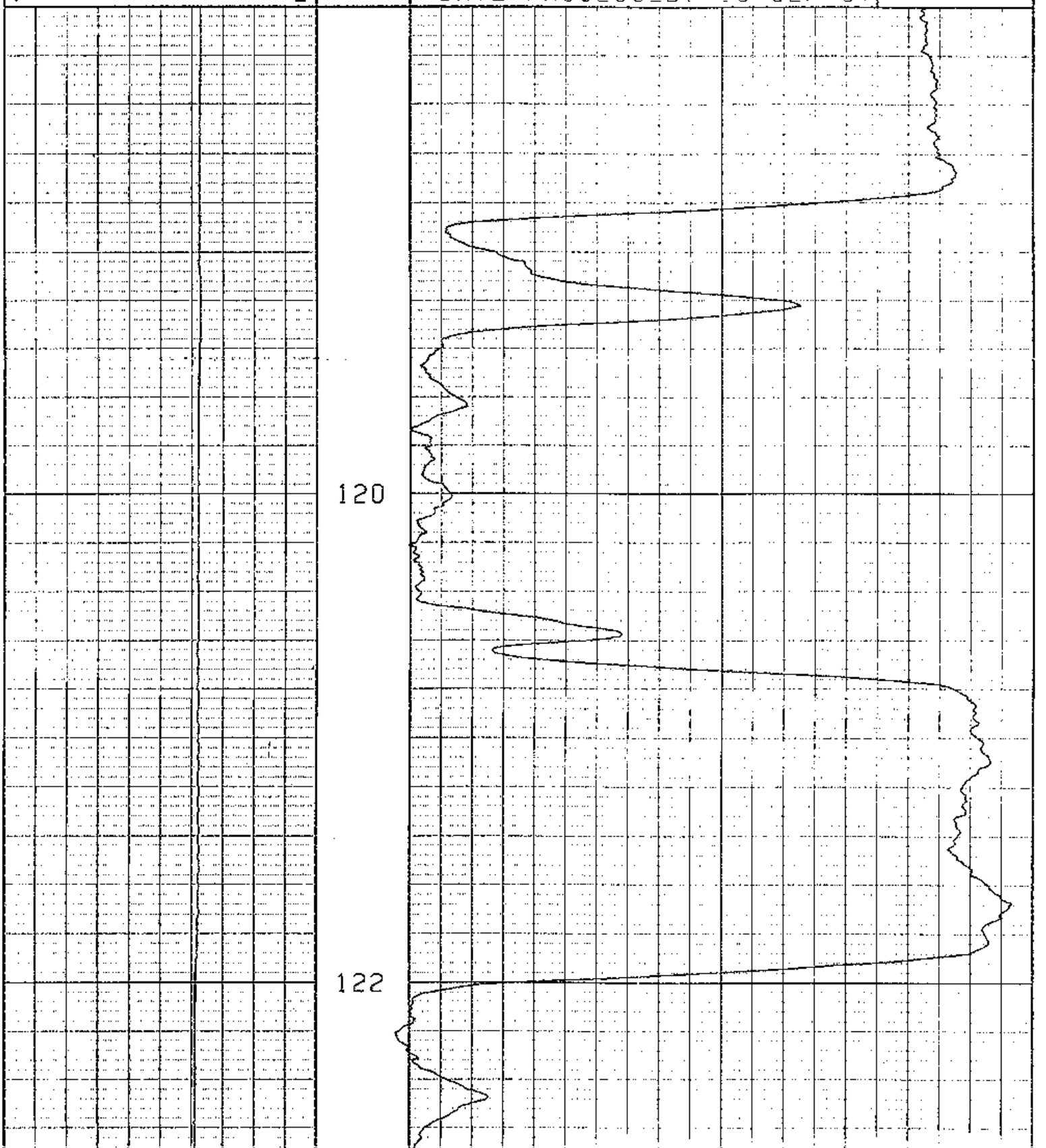
B.R.D (CCS)

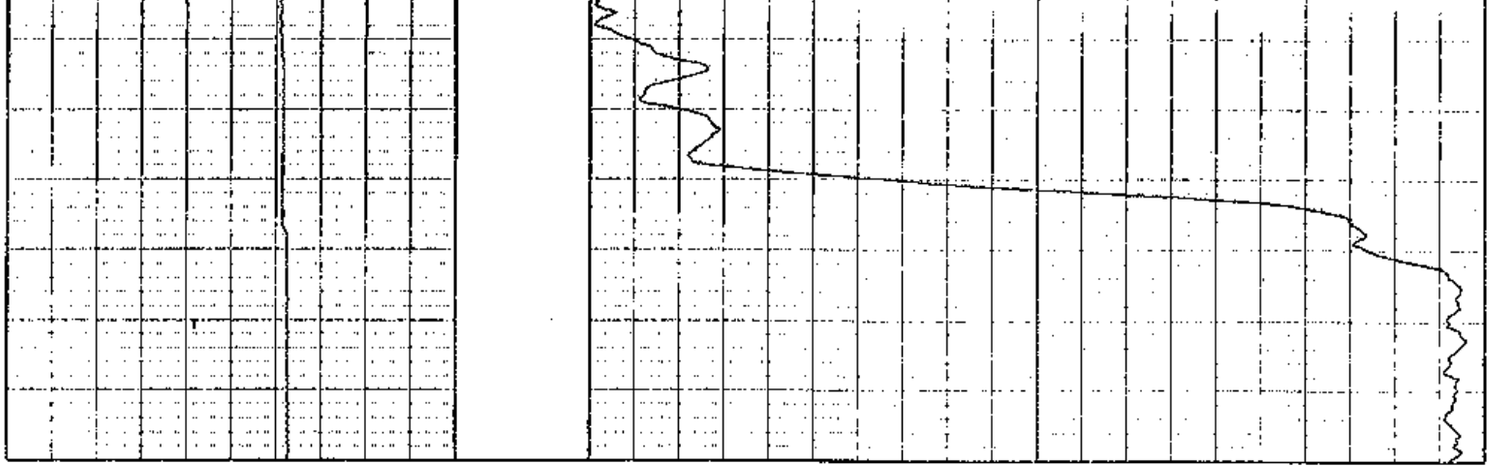
25000 15000

CLIENT:
WELL NO:QHD 87012
AREA:
CASING:
WATER:
DEPTH:118.00-124.00
DATE PROCESSED: 10-SEP-87

CALIPER

7 2





DETAIL LOGS

DEPTH SCALE 20

B.R.D (CCS)

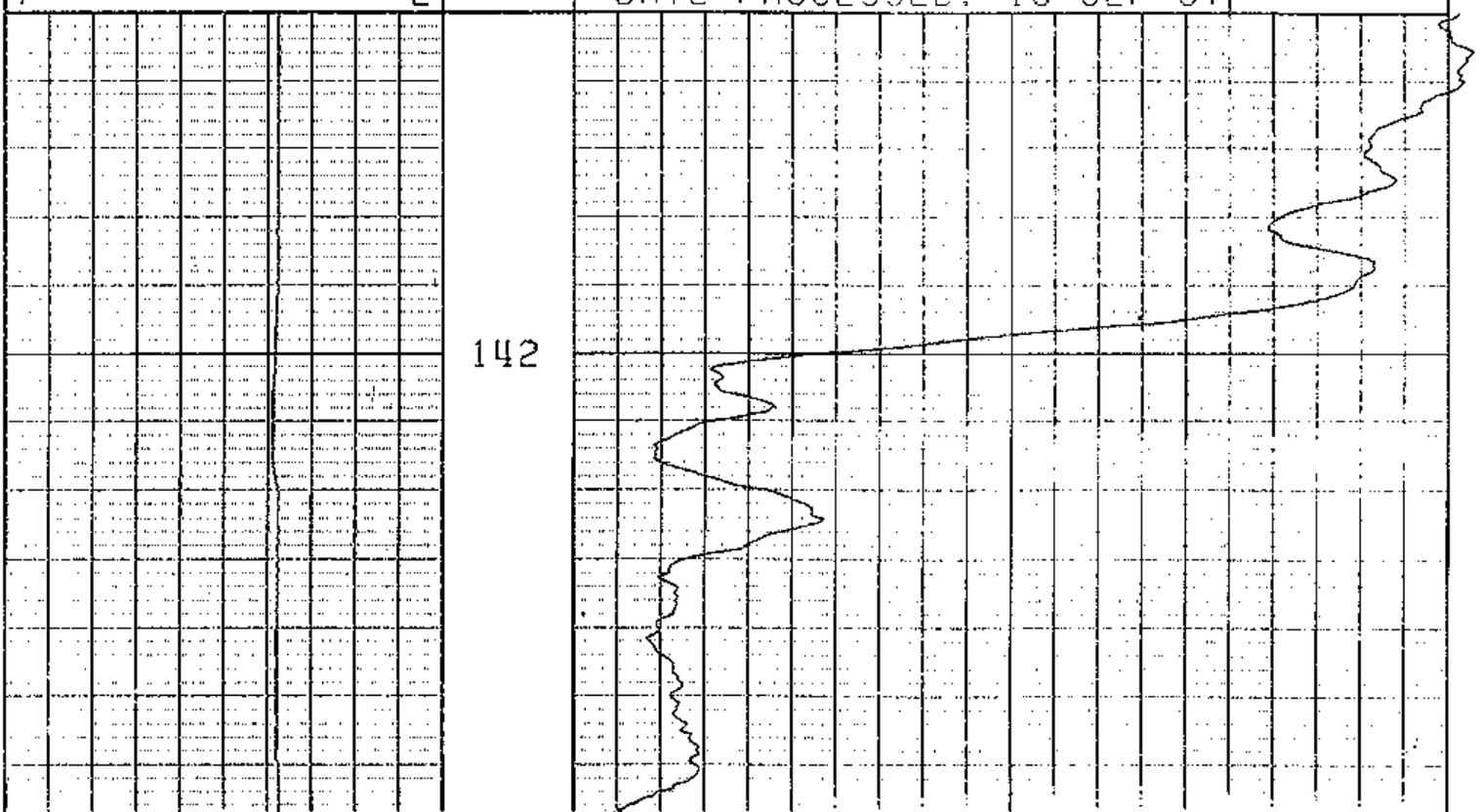
25000 15000

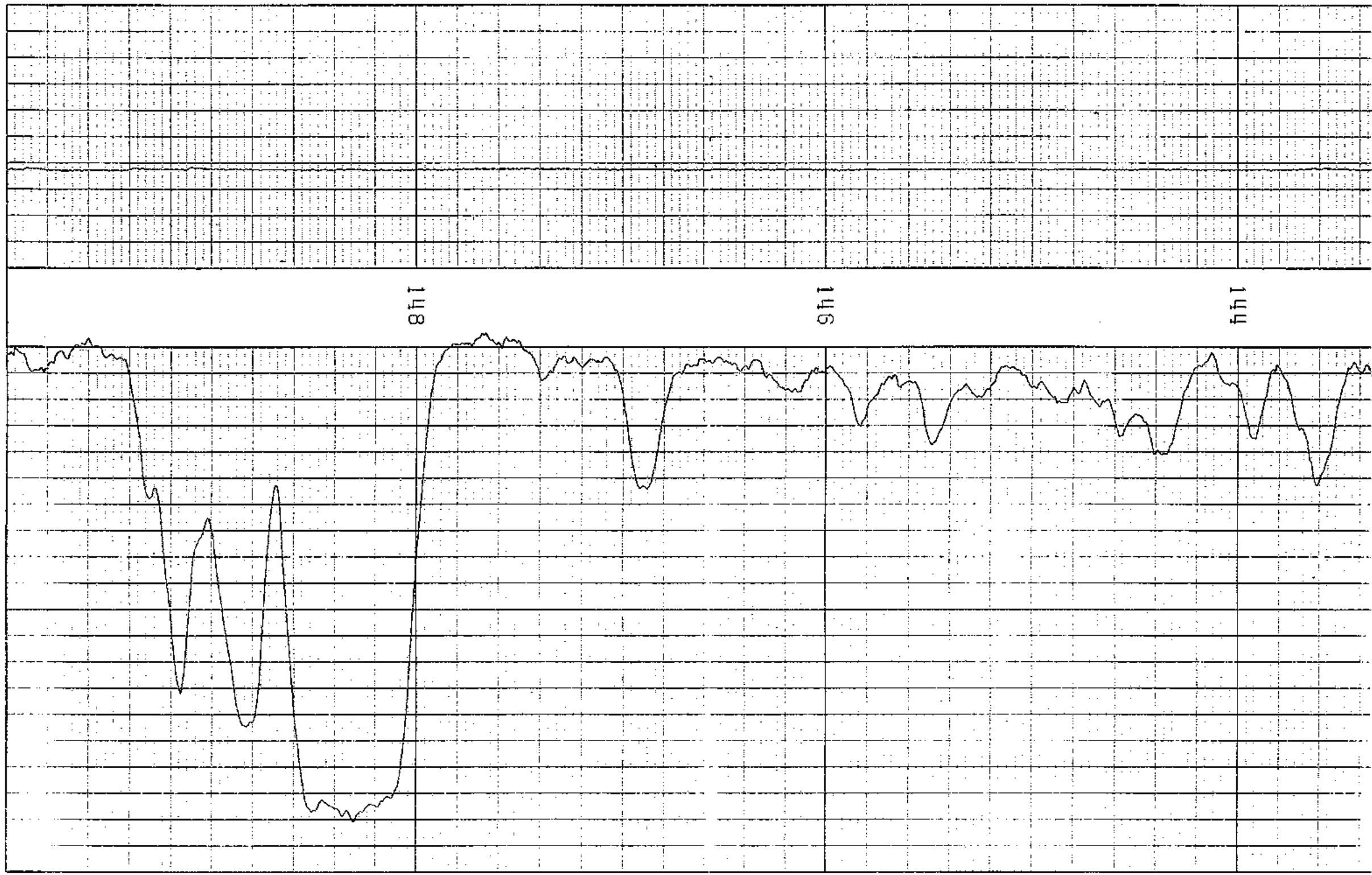
CLIENT:
WELL NO:QHD 87012
AREA:
CASING:
WATER:
DEPTH:141.00-150.00
DATE PROCESSED: 10-SEP-87

CALIPER

7 2

142




148
146
144

BPB

NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHD 87-012
CLIENT QUINTETTE

AREA TRANSPER
COUNTRY CANADA

DATE LOGGED 87-08-18
RUN No. ONE
DEPTH DRILLER 150m
DEPTH LOGGER 150m
BTM LOG INTERVAL 150m
TOP LOG INTERVAL 0m

CASING DRILLER 0 - 0m
CASING LOGGER 0 - 0m
BIT SIZE 0mm
TYPE FLUID AIR
DENSITY 0
LEVEL 0
MAX REC TEMP 0°C
EQUIP. LOCATION 0
RECORDED BY L.THIBODEAU
WITNESSED BY L.THIBODEAU

EQUIPMENT AND RECORDING DATA

	TOOL	MODEL	SERIAL NO.	DIAM.	WEIGHT	MAX. REC. TEMP.
SONDE	GAMMA	9	0	0	0	0
	N-N	9	0	0	0	0
CABLE	GAMMA	9	0	0	0	0
	N-N	9	0	0	0	0

OPERATION DATA

BOREHOLE DATA

REMARKS

739

GAMMA RAY	DEPTH	NEUTRON-NEUTRON
0 API 150		0 SNU 500

SANDSTONE POROSITY

0 50% 40% 30% 25% 20% 15% 10% 400

6" 8" 10"

5%

MY (3) A3481-A

0 API 150 | 0 SNU 500

00m

20m

WATER LEVEL

40m

60m

80m

100m

Scale Change:
From 0 - 500 SNU
To 0 - 1500 SNU

120m

140m

REPEAT SECTION

150m

0 API 150 | 0 SNU 1500

GAMMA RAY	DEPTH	NEUTRON-NEUTRON

BPB

BOREHOLE QHD 87-012
CLIENT QUINTETTE

AREA TRANSPER
COUNTRY CANADA

MY 3000818

COAL LITHOLOGY LOG

BOREHOLE: QHD 87-012
CLIENT: QUINTETTE
AREA: ~~TRANSFER~~ GRIZZLY
COUNTRY: CANADA
DATE LOGGED: 87 08 18
DEPTH SCALE: 1:200
1 OF 5 LOGS

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY, L.S. DENSITY, CALIPER

BOREHOLE DATA

PERMANENT DATUM	GROUND LEVEL			
ELEVATION OF P.D.				
		BPB		DRILLER
MEASUREMENTS FROM		G.L.		G.L.
DEPTH REACHED		155.30m		155.45m
CASING SHOE		5.00m		5.00m
BIT SIZES	1	5½" TO 5.0m	2	4½" TO 155.45m
	3	TO	4	TO
CASING SIZES	1	5" TO 5.0m	2	TO

FLUID DATA

NATURE	WATER/BENTONITE
S.G.	1.02 g/cc
LEVEL	27.20m
VISCOSITY	N/A
Rm at meas. temp	N/A
B.H.T.	N/A

OPERATION DATA

FIRST READING	153.00m
LAST READING	00m
INTERVAL LOGGED	153m
UNIT-TRUCK No	46/V217
ENGINEER	M.COX
WITNESS	

739

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT: SONDE	EQUIPMENT: SOURCE	EQUIPMENT: CALIBRATOR	TAPING: LOG TAPED	TAPING: RECORD SPEED	TAPING: DIRECT or REPLAY	PANEL: SPEED	PANEL: T.C. SECS	PANEL: NORM	CAL COEFF	DEPTHS: FROM	DEPTHS: TO	DEPTHS: INTERVAL	SEAM LOG RUN
GAMMA RAY	153		367	Y	9	D	9	1	–	1.44	153	0	153	Y
L.S. DENSITY			0041	Y	9	D	9	.3	7.38	–	154	1	153	Y
CALIPER	SIDEWALL POSITION			Y	9	D	9	.3	–	1.0	154	1	153	Y

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

						INTERVAL TOTAL
FROM	150m	124m	78m	50m	29m	
TO	141m	118m	70m	42m	23m	
INTERVAL	9m	6m	8m	8m	6m	37m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
215	N-N	1;200	
231	VERT		
204	DIP		

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No ___ VALUE ___ @ 5" DIAM
JIG MARK SHOWN AT ABOVE VALUE –
JIG CAL. DATE ___ JIG VALUE ___ SDU @ ___ g/cm³ ___ ins. ___ cps
JIG No ___ SPAN ___ NORM $\frac{SDU}{CPS}$ = ___ ins ___ cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES
0 API 150		6000 sdu 0	

HOLE SIZE CORRECTION DATA

0 API 150		6000 sdu 0	
GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

BOREHOLE: QHD 87-012 AREA: TRANSFER
CLIENT: QUINTETTE COUNTRY: CANADA

COAL LITHOLOGY LOG

MY (1)137463 R

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CONTINUOUS VERTICALITY ANALYSIS

CLIENT___ QUINTETTE COAL

BOREHOLE_ QHD-87-012

AREA_____ TRANSFER

COUNTRY__ CANADA

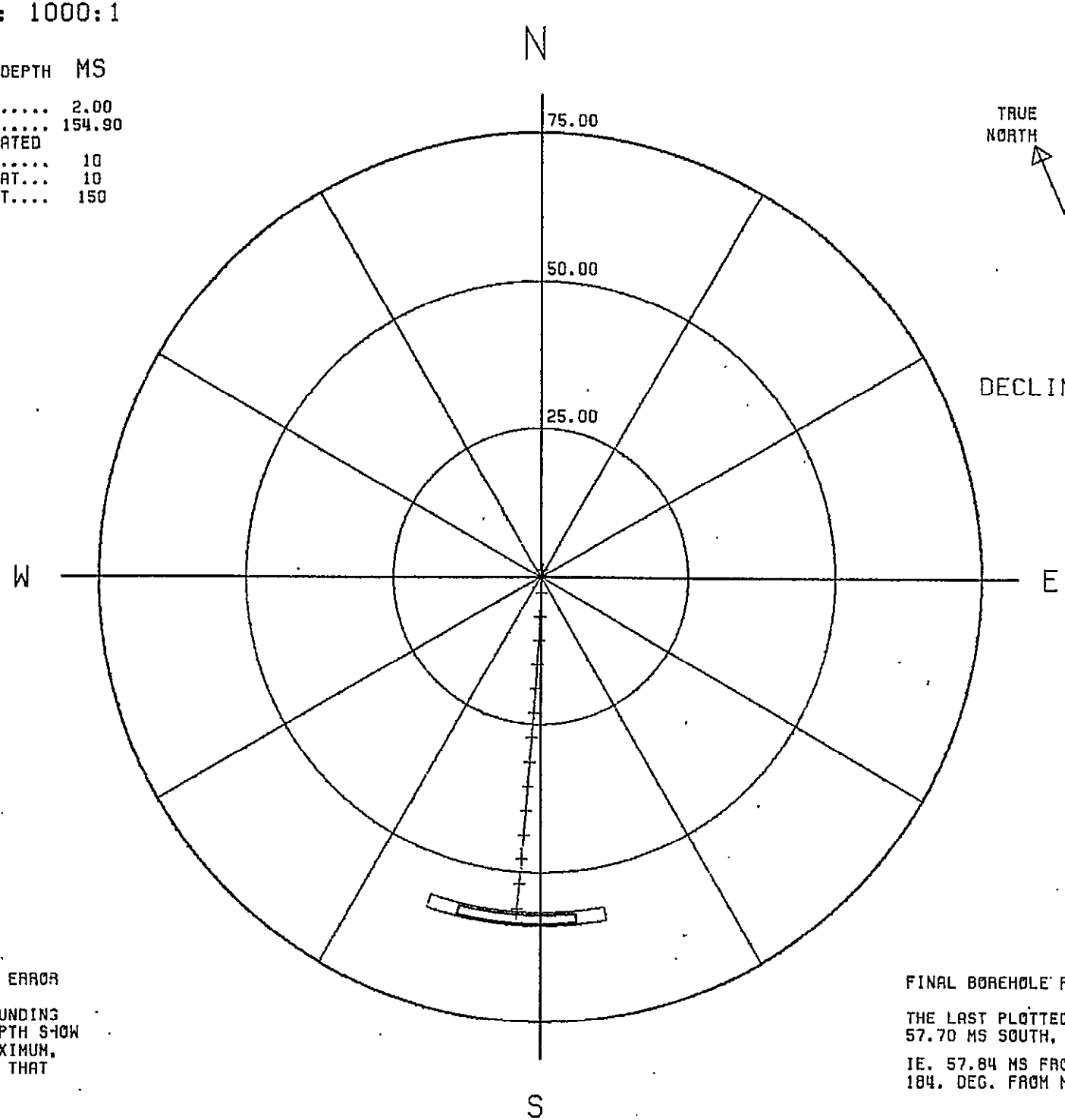
DATE LOGGED.....18-AUG-87
DATE PROCESSED..08-JAN-88
UPPER REFERENCE POINT....
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 1000:1

ALL FIGURES IN LOG DEPTH MS

TARGET ORIGIN DEPTH.....	2.00
LAST PLOTTED DEPTH.....	154.90
DEPTH MARKERS ANNOTATED IN MULTIPLES OF.....	10
FIRST DEPTH MARKER AT...	10
LAST DEPTH MARKER AT....	150



MAGNETIC NORTH

TRUE NORTH

DECLINATION 24.0 DEG.

BOREHOLE POSITIONAL ERROR

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

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT
57.70 MS SOUTH, 4.03 MS WEST

IE. 57.84 MS FROM THE ORIGIN,
184. DEG. FROM MAGNETIC NORTH

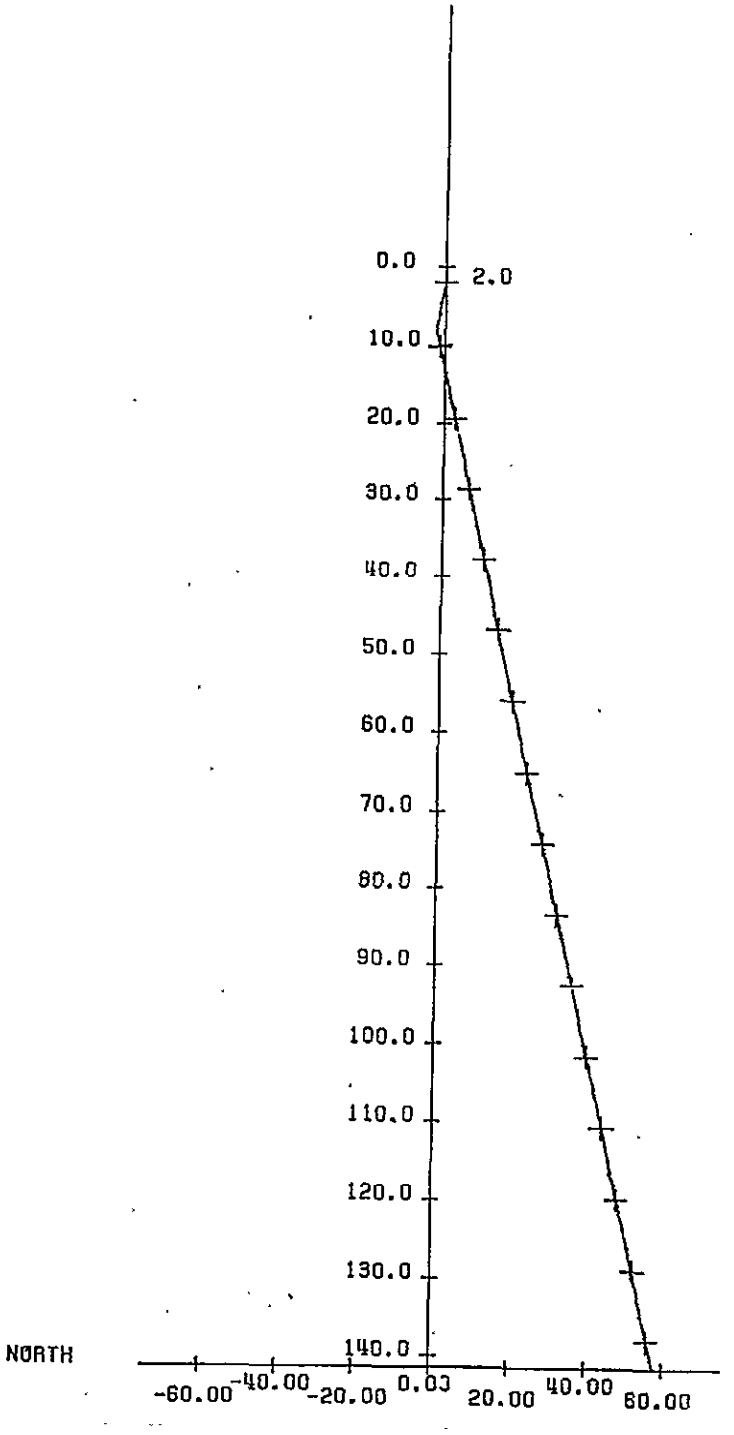
VERTICAL SECTIONS

(TRUE DEPTH VS. DISPLACEMENT)

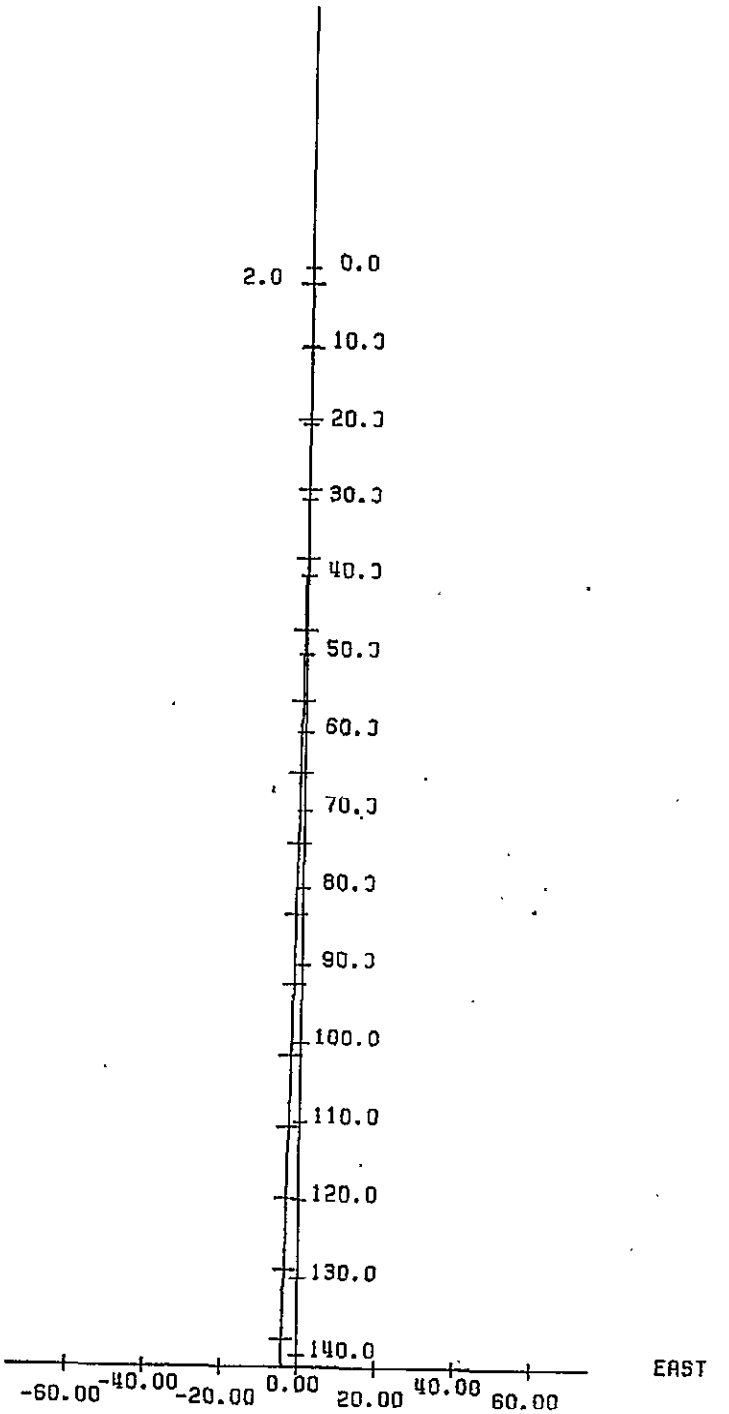
VERTICAL SCALE 1000 :1

MARKERS ANNOTATED AS ABOVE

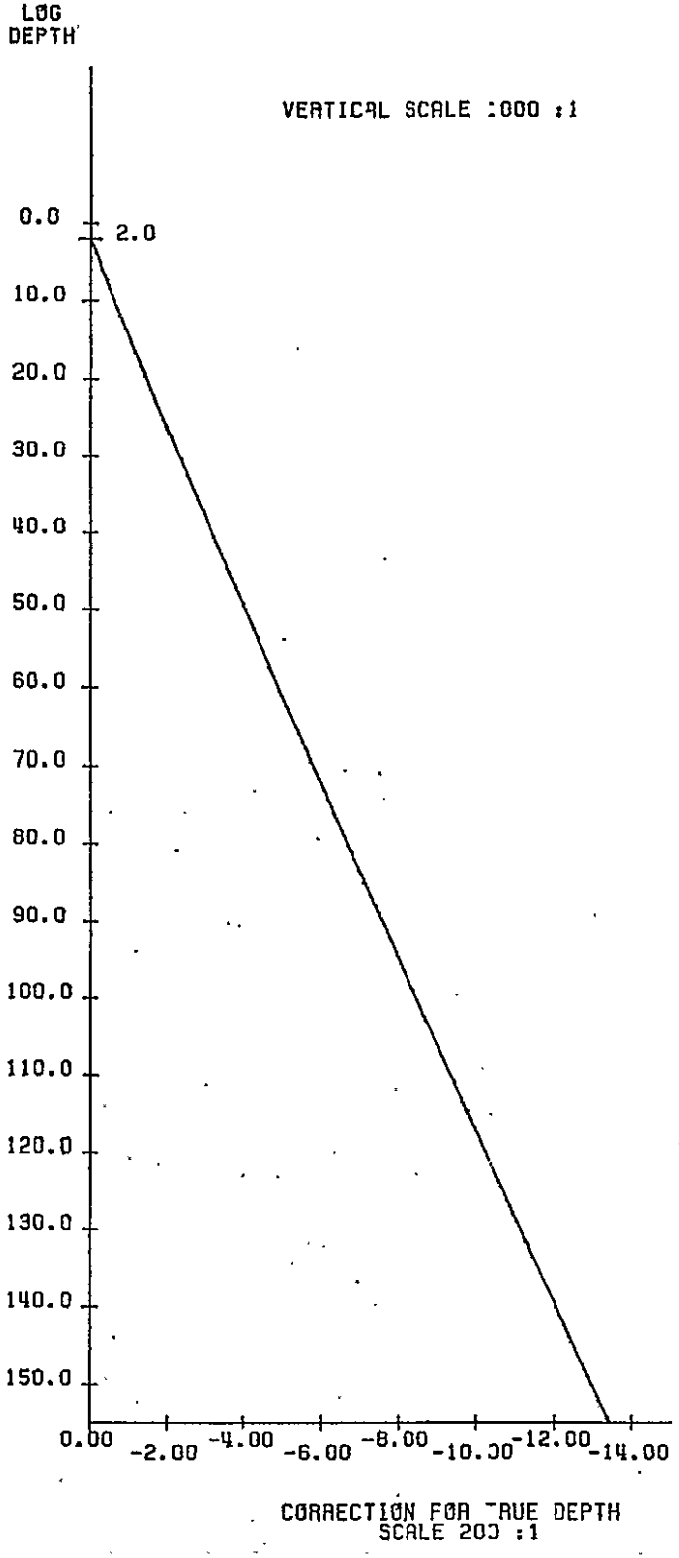
N-S SECTION



W-E SECTION



DEPTH CORRECTION ANALYSIS



DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
3.00	2.92	73.00	66.93	143.00	130.67
4.00	3.83	74.00	67.85	144.00	131.57
5.00	4.76	75.00	68.76	145.00	132.48
6.00	5.69	76.00	69.67	146.00	133.39
7.00	6.61	77.00	70.58	147.00	134.30
8.00	7.54	78.00	71.49	148.00	135.21
9.00	8.46	79.00	72.40	149.00	136.11
10.00	9.37	80.00	73.31	150.00	137.02
11.00	10.29	81.00	74.23	151.00	137.93
12.00	11.20	82.00	75.14	152.00	138.84
13.00	12.12	83.00	76.05	153.00	139.75
14.00	13.04	84.00	76.96	154.00	140.66
15.00	13.95	85.00	77.87	155.00	141.57
16.00	14.87	86.00	78.78		
17.00	15.78	87.00	79.69		
18.00	16.70	88.00	80.60		
19.00	17.61	89.00	81.51		
20.00	18.53	90.00	82.42		
21.00	19.44	91.00	83.34		
22.00	20.36	92.00	84.25		
23.00	21.27	93.00	85.16		
24.00	22.19	94.00	86.07		
25.00	23.11	95.00	86.98		
26.00	24.02	96.00	87.90		
27.00	24.94	97.00	88.81		
28.00	25.85	98.00	89.72		
29.00	26.77	99.00	90.63		
30.00	27.68	100.00	91.54		
31.00	28.60	101.00	92.45		
32.00	29.51	102.00	93.36		
33.00	30.43	103.00	94.28		
34.00	31.34	104.00	95.19		
35.00	32.26	105.00	96.10		
36.00	33.17	106.00	97.01		
37.00	34.09	107.00	97.92		
38.00	35.00	108.00	98.83		
39.00	35.91	109.00	99.74		
40.00	36.83	110.00	100.65		
41.00	37.74	111.00	101.56		
42.00	38.66	112.00	102.47		
43.00	39.57	113.00	103.38		
44.00	40.48	114.00	104.29		
45.00	41.40	115.00	105.20		
46.00	42.31	116.00	106.11		
47.00	43.23	117.00	107.02		
48.00	44.14	118.00	107.93		
49.00	45.06	119.00	108.84		
50.00	45.97	120.00	109.76		
51.00	46.88	121.00	110.67		
52.00	47.80	122.00	111.58		
53.00	48.71	123.00	112.49		
54.00	49.62	124.00	113.40		
55.00	50.53	125.00	114.31		
56.00	51.45	126.00	115.22		
57.00	52.36	127.00	116.13		
58.00	53.27	128.00	117.04		
59.00	54.18	129.00	117.95		
60.00	55.09	130.00	118.86		
61.00	56.01	131.00	119.77		
62.00	56.92	132.00	120.68		
63.00	57.83	133.00	121.59		
64.00	58.74	134.00	122.50		
65.00	59.65	135.00	123.40		
66.00	60.56	136.00	124.31		
67.00	61.47	137.00	125.22		
68.00	62.38	138.00	126.13		
69.00	63.29	139.00	127.04		
70.00	64.20	140.00	127.94		
71.00	65.11	141.00	128.85		
72.00	66.02	142.00	129.76		

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 5ØØØØ:1 (metric) & 48ØØØ:1 (imperial), and the minimum 1:1.

2. The analysis is derived by integrating 1Ø cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 2ØØ points in multiples of 1,2,5,1Ø,2Ø,25,5Ø, or 1ØØ metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.

3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.

4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).

5. Borehole positional error is derived assuming the following parameters:

	TILT(degrees)	AZIMUTH(degrees)
Typical Error	+/- Ø.33333	+/- 1Ø.Ø
Maximum Error	+/- Ø.5	+/- 15.Ø

6. Error analysis may be calculated and plotted from the data listing as follows:

   a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
   b) Describe arcs of +/- 1Ø degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
   c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.

7. Given below is a full description of the parameters displayed on the ensuing listing:

LOG DEPTH	the depth recorded on the field logs for the borehole
TRUE DEPTH	the true vertical depth corresponding to the above depth, corrected from the start of the analysis
HOLE TILT & AZIMUTH	the SAMPLED borehole orientation
AXIAL COORDINATES	the coordinates North & 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

QHD-87-Ø12
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Verticality Data Listing

All co-ordinates with respect to True North

Date processed: Ø8-JAN-88

DEPTHS log	DEPTHS true	BOREHOLE tilt	BOREHOLE AZI	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng	POLAR radius	POLAR ERROR CO-ORDINATES (maximum & typical) brng	radius	brng	radius	brng	radius	brng	radius
3.ØØ	2.92	23.5	24.	Ø.32	Ø.24	37.	Ø.39	37.	Ø.4Ø	37.	Ø.39	37.	Ø.4Ø	37.	Ø.39
4.ØØ	3.83	21.1	45.	Ø.64	Ø.45	35.	Ø.78	35.	Ø.8Ø	35.	Ø.77	35.	Ø.79	35.	Ø.77
5.ØØ	4.76	14.Ø	38.	Ø.97	Ø.62	33.	1.16	33.	1.18	33.	1.13	33.	1.17	33.	1.14
6.ØØ	5.69	24.1	37.	1.21	Ø.82	34.	1.46	34.	1.49	34.	1.43	34.	1.48	34.	1.44
7.ØØ	6.61	21.2	3Ø.	1.58	Ø.97	32.	1.85	32.	1.89	32.	1.82	32.	1.88	32.	1.83
8.ØØ	7.54	22.9	22.	1.86	1.18	32.	2.21	32.	2.25	32.	2.16	32.	2.24	32.	2.18
9.ØØ	8.46	18.5	213.	1.75	1.12	33.	2.Ø8	33.	2.12	33.	2.Ø4	33.	2.11	33.	2.Ø5
1Ø.ØØ	9.37	23.7	2Ø7.	1.39	Ø.94	34.	1.68	34.	1.72	34.	1.65	34.	1.7Ø	34.	1.66
11.ØØ	1Ø.29	23.7	2Ø5.	1.Ø3	Ø.76	36.	1.28	36.	1.31	36.	1.25	36.	1.3Ø	36.	1.26
12.ØØ	11.2Ø	24.3	2Ø8.	Ø.67	Ø.58	41.	Ø.89	41.	Ø.91	41.	Ø.87	41.	Ø.9Ø	41.	Ø.87
13.ØØ	12.12	23.8	2Ø8.	Ø.31	Ø.4Ø	53.	Ø.51	52.	Ø.52	53.	Ø.49	53.	Ø.51	53.	Ø.5Ø
14.ØØ	13.Ø4	24.1	2Ø7.	-Ø.Ø5	Ø.23	1Ø3.	Ø.23	1Ø3.	Ø.24	1Ø4.	Ø.23	1Ø3.	Ø.23	1Ø3.	Ø.23
15.ØØ	13.95	23.5	2Ø7.	-Ø.41	Ø.Ø4	174.	Ø.41	174.	Ø.42	174.	Ø.41	174.	Ø.42	174.	Ø.41
16.ØØ	14.87	23.6	2Ø6.	-Ø.77	-Ø.14	19Ø.	Ø.78	19Ø.	Ø.8Ø	19Ø.	Ø.77	19Ø.	Ø.79	19Ø.	Ø.77
17.ØØ	15.78	23.5	2Ø8.	-1.13	-Ø.32	196.	1.17	196.	1.2Ø	196.	1.15	196.	1.19	196.	1.16
18.ØØ	16.7Ø	23.6	2Ø7.	-1.49	-Ø.5Ø	198.	1.57	198.	1.6Ø	198.	1.55	198.	1.59	198.	1.56
19.ØØ	17.61	23.4	2Ø6.	-1.85	-Ø.68	2ØØ.	1.97	2ØØ.	2.Ø1	2ØØ.	1.94	2ØØ.	2.ØØ	2ØØ.	1.95
2Ø.ØØ	18.53	23.6	2Ø8.	-2.21	-Ø.86	2Ø1.	2.37	2Ø1.	2.42	2Ø1.	2.33	2Ø1.	2.4Ø	2Ø1.	2.34
21.ØØ	19.44	23.9	2Ø4.	-2.57	-1.Ø4	2Ø2.	2.77	2Ø2.	2.83	2Ø2.	2.72	2Ø2.	2.81	2Ø2.	2.74
22.ØØ	2Ø.36	23.7	2Ø7.	-2.93	-1.22	2Ø3.	3.18	2Ø3.	3.24	2Ø3.	3.11	2Ø3.	3.22	2Ø3.	3.13
23.ØØ	21.27	23.5	2Ø5.	-3.29	-1.39	2Ø3.	3.58	2Ø3.	3.65	2Ø3.	3.51	2Ø3.	3.62	2Ø3.	3.53
24.ØØ	22.19	23.4	2Ø6.	-3.65	-1.57	2Ø3.	3.97	2Ø3.	4.Ø5	2Ø3.	3.9Ø	2Ø3.	4.Ø3	2Ø3.	3.92
25.ØØ	23.11	23.6	2Ø5.	-4.Ø1	-1.75	2Ø4.	4.38	2Ø4.	4.46	2Ø4.	4.29	2Ø4.	4.43	2Ø4.	4.32
26.ØØ	24.Ø2	23.4	2Ø8.	-4.37	-1.93	2Ø4.	4.78	2Ø4.	4.87	2Ø4.	4.69	2Ø4.	4.84	2Ø4.	4.72
27.ØØ	24.94	23.9	2Ø7.	-4.73	-2.11	2Ø4.	5.18	2Ø4.	5.28	2Ø4.	5.Ø8	2Ø4.	5.25	2Ø4.	5.11
28.ØØ	25.85	24.Ø	2Ø6.	-5.Ø9	-2.29	2Ø4.	5.58	2Ø4.	5.69	2Ø4.	5.48	2Ø4.	5.66	2Ø4.	5.51
29.ØØ	26.77	23.5	2Ø4.	-5.45	-2.48	2Ø4.	5.98	2Ø4.	6.1Ø	2Ø4.	5.87	2Ø4.	6.Ø6	2Ø4.	5.91
3Ø.ØØ	27.68	23.8	2Ø7.	-5.8Ø	-2.66	2Ø5.	6.39	2Ø5.	6.51	2Ø5.	6.26	2Ø5.	6.47	2Ø5.	6.3Ø
31.ØØ	28.6Ø	24.Ø	2Ø7.	-6.16	-2.85	2Ø5.	6.79	2Ø5.	6.92	2Ø5.	6.66	2Ø5.	6.88	2Ø5.	6.7Ø
32.ØØ	29.51	23.5	2Ø6.	-6.52	-3.Ø3	2Ø5.	7.19	2Ø5.	7.33	2Ø5.	7.Ø5	2Ø5.	7.29	2Ø5.	7.1Ø
33.ØØ	3Ø.43	24.Ø	2Ø9.	-6.88	-3.22	2Ø5.	7.6Ø	2Ø5.	7.75	2Ø5.	7.45	2Ø5.	7.7Ø	2Ø5.	7.5Ø
34.ØØ	31.34	23.5	2Ø6.	-7.24	-3.4Ø	2Ø5.	8.ØØ	2Ø5.	8.16	2Ø5.	7.84	2Ø5.	8.1Ø	2Ø5.	7.9Ø
35.ØØ	32.26	23.8	2Ø7.	-7.6Ø	-3.58	2Ø5.	8.4Ø	2Ø5.	8.57	2Ø5.	8.24	2Ø5.	8.51	2Ø5.	8.29
36.ØØ	33.17	24.1	2Ø7.	-7.96	-3.76	2Ø5.	8.81	2Ø5.	8.98	2Ø5.	8.64	2Ø5.	8.92	2Ø5.	8.69
37.ØØ	34.Ø9	23.8	2Ø6.	-8.32	-3.95	2Ø5.	9.21	2Ø5.	9.39	2Ø5.	9.Ø3	2Ø5.	9.33	2Ø5.	9.Ø9
38.ØØ	35.ØØ	24.1	2Ø7.	-8.68	-4.13	2Ø5.	9.62	2Ø5.	9.81	2Ø5.	9.43	2Ø5.	9.74	2Ø5.	9.49
39.ØØ	35.91	23.7	2Ø7.	-9.Ø5	-4.32	2Ø6.	1Ø.Ø2	2Ø6.	1Ø.22	2Ø6.	9.83	2Ø6.	1Ø.15	2Ø6.	9.89
4Ø.ØØ	36.83	24.Ø	2Ø7.	-9.4Ø	-4.5Ø	2Ø6.	1Ø.43	2Ø6.	1Ø.63	2Ø6.	1Ø.22	2Ø6.	1Ø.56	2Ø6.	1Ø.29
41.ØØ	37.74	24.2	2Ø6.	-9.77	-4.69	2Ø6.	1Ø.83	2Ø6.	11.Ø4	2Ø6.	1Ø.62	2Ø6.	1Ø.97	2Ø6.	1Ø.69
42.ØØ	38.66	23.7	2Ø7.	-1Ø.13	-4.87	2Ø6.	11.24	2Ø6.	11.46	2Ø6.	11.Ø2	2Ø6.	11.39	2Ø6.	11.Ø9
43.ØØ	39.57	23.9	2Ø9.	-1Ø.49	-5.Ø6	2Ø6.	11.64	2Ø6.	11.87	2Ø6.	11.41	2Ø6.	11.8Ø	2Ø6.	11.49
44.ØØ	4Ø.48	24.1	21Ø.	-1Ø.85	-5.24	2Ø6.	12.Ø5	2Ø6.	12.28	2Ø6.	11.81	2Ø6.	12.21	2Ø6.	11.89
45.ØØ	41.4Ø	23.7	2Ø7.	-11.21	-5.42	2Ø6.	12.45	2Ø6.	12.69	2Ø6.	12.21	2Ø6.	12.61	2Ø6.	12.29
46.ØØ	42.31	24.2	2Ø6.	-11.57	-5.61	2Ø6.	12.86	2Ø6.	13.11	2Ø6.	12.6Ø	2Ø6.	13.Ø2	2Ø6.	12.69
47.ØØ	43.23	24.2	2Ø7.	-11.93	-5.79	2Ø6.	13.26	2Ø6.	13.52	2Ø6.	13.ØØ	2Ø6.	13.43	2Ø6.	13.Ø9
48.ØØ	44.14	23.9	2Ø6.	-12.29	-5.97	2Ø6.	13.67	2Ø6.	13.93	2Ø6.	13.4Ø	2Ø6.	13.85	2Ø6.	13.49
49.ØØ	45.Ø6	24.3	2Ø9.	-12.65	-6.16	2Ø6.	14.Ø7	2Ø6.	14.35	2Ø6.	13.8Ø	2Ø6.	14.26	2Ø6.	13.89
5Ø.ØØ	45.97	24.1	2Ø7.	-13.Ø1	-6.35	2Ø6.	14.48	2Ø6.	14.76	2Ø6.	14.2Ø	2Ø6.	14.67	2Ø6.	14.29
51.ØØ	46.88	23.8	2Ø7.	-13.37	-6.54	2Ø6.	14.89	2Ø6.	15.18	2Ø6.	14.6Ø	2Ø6.	15.Ø8	2Ø6.	14.69
52.ØØ	47.8Ø	24.4	2Ø8.	-13.74	-6.73	2Ø6.	15.3Ø	2Ø6.	15.59	2Ø6.	14.99	2Ø6.	15.49	2Ø6.	15.Ø9

DEPTHS log	DEPTHS true	BOREHOLE tilt	BOREHOLE AZI	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng	POLAR radius	POLAR ERROR CO-ORDINATES (maximum & typical) brng	radius	brng	radius	brng	radius	brng	radius
53.ØØ	48.71	24.5	2Ø6.	-14.1Ø	-6.92	2Ø6.	15.7Ø	2Ø6.	16.Ø1	2Ø6.	15.39	2Ø6.	15.91	2Ø6.	15.5Ø
54.ØØ	49.62	23.9	2Ø6.	-14.46	-7.11	2Ø6.	16.11	2Ø6.	16.42	2Ø6.	15.79	2Ø6.	16.32	2Ø6.	15.9Ø
55.ØØ	5Ø.53	24.Ø	2Ø6.	-14.82	-7.3Ø	2Ø6.	16.52	2Ø6.	16.84	2Ø6.	16.19	2Ø6.	16.73	2Ø6.	16.3Ø
56.ØØ	51.45	24.1	2Ø8.	-15.18	-7.49	2Ø6.	16.93	2Ø6.	17.26	2Ø6.	16.6Ø	2Ø6.	17.15	2Ø6.	16.71
57.ØØ	52.36	24.2	2Ø9.	-15.55	-7.68	2Ø6.	17.34	2Ø6.	17.68	2Ø6.	17.ØØ	2Ø6.	17.56	2Ø6.	17.11
58.ØØ	53.27	24.Ø	2Ø8.	-15.91	-7.87	2Ø6.	17.75	2Ø6.	18.1Ø	2Ø6.	17.4Ø	2Ø6.	17.98	2Ø6.	17.52
59.ØØ	54.18	24.Ø	2Ø6.	-16.28	-8.Ø5	2Ø6.	18.16	2Ø6.	18.51	2Ø6.	17.8Ø	2Ø6.	18.4Ø	2Ø6.	17.92
6Ø.ØØ	55.Ø9	24.4	2Ø7.	-16.64	-8.24	2Ø6.	18.57	2Ø6.	18.93	2Ø6.	18.2Ø	2Ø6.	18.81	2Ø6.	18.32
61.ØØ	56.Ø1	24.4	21Ø.	-17.ØØ	-8.44	2Ø6.	18.98	2Ø6.	19.35	2Ø6.	18.61	2Ø6.	19.23	2Ø6.	18.73
62.ØØ	56.92	24.4	2Ø6.	-17.36	-8.64	2Ø6.	19.39	2Ø6.	19.77	2Ø6.	19.Ø1	2Ø6.	19.64	2Ø6.	19.14
63.ØØ	57.83	24.Ø	2Ø4.	-17.73	-8.83	2Ø6.	19.8Ø	2Ø6.	2Ø.19	2Ø6.	19.41	2Ø6.	2Ø.Ø6	2Ø6.	19.54
64.ØØ	58.74	24.6	2Ø8.	-18.Ø9	-9.Ø2	2Ø6.	2Ø.21	2Ø6.	2Ø.61	2Ø6.	19.82	2Ø6.	2Ø.48	2Ø6.	19.95
65.ØØ	59.65	24.6	2Ø9.	-18.46	-9.21	2Ø7.	2Ø.63	2Ø7.	21.Ø3	2Ø7.	2Ø.22	2Ø7.	2Ø.9Ø	2Ø7.	2Ø.36
66.ØØ	6Ø.56	24.4	2Ø5.	-18.82	-9.41	2Ø7.	21.Ø4	2Ø7.	21.45	2Ø7.	2Ø.63	2Ø7.	21.31	2Ø7.	2Ø.77
67.ØØ	61.47	24.7	2Ø7.	-19.18	-9.6Ø	2Ø7.	21.45	2Ø7.	21.87	2Ø7.	21.Ø3	2Ø7.	21.73	2Ø7.	21.17
68.ØØ	62.38	24.8	2Ø8.	-19.55	-9.8Ø	2Ø7.	21.87	2Ø7.	22.29	2Ø7.	21.44	2Ø7.	22.15	2Ø7.	21.58
69.ØØ	63.29	24.3	2Ø5.	-19.91	-1Ø.ØØ	2Ø7.	22.28	2Ø7.	22.71	2Ø7.	21.84	2Ø7.	22.57	2Ø7.	21.99
7Ø.ØØ	64.2Ø	24.2	2Ø9.	-2Ø.27	-1Ø.19	2Ø7.	22.69	2Ø7.	23.13	2Ø7.	22.25	2Ø7.	22.99	2Ø7.	22.4Ø
71.ØØ	65.11	24.5	2Ø6.	-2Ø.64	-1Ø.39	2Ø7.	23.1Ø	2Ø7.	23.55	2Ø7.	22.65	2Ø7.	23.4Ø	2Ø7.	22.8Ø
72.ØØ	66.Ø2	24.4	2Ø9.	-21.ØØ	-1Ø.59	2Ø7.	23.52	2Ø7.	23.98	2Ø7.	23.Ø6	2Ø7.	23.82	2Ø7.	23.21
73.ØØ	66.93	24.6	2Ø8.	-21.36	-1Ø.79	2Ø7.	23.93	2Ø7.	24.4Ø	2Ø7.	23.46	2Ø7.	24.24	2Ø7.	23.62
74.ØØ	67.85	24.7	211.	-21.72	-1Ø.99	2Ø7.	24.34	2Ø7.	24.82	2Ø7.	23.87	2Ø7.	24.66	2Ø7.	24.Ø3
75.ØØ	68.76	24.3	2Ø9.	-22.Ø8	-11.18	2Ø7.	24.75	2Ø7.	25.24	2Ø7.	24.27	2Ø7.	25.Ø8	2Ø7.	24.43
76.ØØ	69.67	24.4	2Ø9.	-22.44	-11.38	2Ø7.	25.17	2Ø7.	25.66	2Ø7.	24.67	2Ø7.	25.49	2Ø7.	24.84
77.ØØ	7Ø.58	24.6	2Ø9.	-22.81	-11.58	2Ø7.	25.58	2Ø7.	26.Ø7	2Ø7.	25.Ø8	2Ø7.	25.91	2Ø7.	25.24
78.ØØ	71.49	24.4	21Ø.	-23.17	-11.78	2Ø7.	25.99	2Ø7.	26.49	2Ø7.	25.48	2Ø7.	26.32	2Ø7.	25.65
79.ØØ	72.4Ø	24.2	212.	-23.53	-11.97	2Ø7.	26.4Ø	2Ø7.	26.91	2Ø7.	25.88	2Ø7.	26.74	2Ø7.	26.Ø5
8Ø.ØØ	73.31	24.1	2Ø9.	-23.89	-12.17	2Ø7.	26.81	2Ø7.	27.33	2Ø7.	26.29	2Ø7.	27.16	2Ø7.	26.46
81.ØØ	74.23	24.4	2Ø8.	-24.25	-12.36	2Ø7.	27.22	2Ø7.	27.75	2Ø7.	26.69	2Ø7.	27.57	2Ø7.	26.87
82.ØØ	75.14	24.Ø	2Ø9.	-24.61	-12.56	2Ø7.	27.63	2Ø7.	28.17	2Ø7.	27.Ø9	2Ø7.	27.99	2Ø7.	27.27
83.ØØ	76.Ø5	24.1	2Ø9.	-24.98	-12.75	2Ø7.	28.Ø4	2Ø7.	28.59	2Ø7.	27.5Ø	2Ø7.	28.41	2Ø7.	27.68
84.ØØ	76.96	24.Ø	211.	-25.34	-12.94	2Ø7.	28.45	2Ø7.	29.Ø1	2Ø7.	27.9Ø	2Ø7.	28.82	2Ø7.	28.Ø8
85.ØØ	77.87	24.5	2Ø8.	-25.7Ø	-13.13	2Ø7.	28.86	2Ø7.	29.43	2Ø7.	28.3Ø	2Ø7.	29.24	2Ø7.	28.49
86.ØØ	78.78	24.3	2Ø8.	-26.Ø7	-13.33	2Ø7.	29.28	2Ø7.	29.85	2Ø7.	28.71	2Ø7.	29.66	2Ø7.	28.9Ø
87.ØØ	79.69	24.5	21Ø.	-26.43	-13.52	2Ø7.	29.69	2Ø7.	3Ø.27	2Ø7.	29.11	2Ø7.	3Ø.Ø7	2Ø7.	29.3Ø
88.ØØ	8Ø.6Ø	24.1	2Ø9.	-26.8Ø	-13.72	2Ø7.	3Ø.1Ø	2Ø7.	3Ø.69	2Ø7.	29.52	2Ø7.	3Ø.49	2Ø7.	29.71
89.ØØ	81.51	24.4	2Ø8.	-27.16	-13.92	2Ø7.	3Ø.52	2Ø7.	31.11	2Ø7.	29.92	2Ø7.	3Ø.91	2Ø7.	3Ø.12
9Ø.ØØ	82.42	24.5	2Ø7.	-27.52	-14.12	2Ø7.	3Ø.93	2Ø7.	31.53	2Ø7.	3Ø.33	2Ø7.	31.33	2Ø7.	3Ø.53
91.ØØ	83.34	24.2	2Ø9.	-27.88	-14.31	2Ø7.	31.34	2Ø7.	31.95	2Ø7.	3Ø.73	2Ø7.	31.75	2Ø7.	3Ø.93
92.ØØ	84.25	24.5	2Ø9.	-28.24	-14.51	2Ø7.	31.75	2Ø7.	32.37	2Ø7.	31.13	2Ø7.	32.16	2Ø7.	31.34
93.ØØ	85.16	24.3	211.	-28.6Ø	-14.71	2Ø7.	32.16	2Ø7.	32.79	2Ø7.	31.54	2Ø7.	32.58	2Ø7.	31.74
94.ØØ	86.Ø7	24.1	2Ø9.	-28.96	-14.91	2Ø7.	32.57	2Ø7.	33.21	2Ø7.	31.94	2Ø7.	32.99	2Ø7.	32.15
95.ØØ	86.98	24.2	2Ø8.	-29.32	-15.1Ø	2Ø7.	32.98	2Ø7.	33.62	2Ø7.	32.34	2Ø7.	33.41	2Ø7.	32.55
96.ØØ	87.9Ø	24.5	2Ø8.	-29.68	-15.3Ø	2Ø7.	33.39	2Ø7.	34.Ø4	2Ø7.	32.74	2Ø7.	33.83	2Ø7.	32.96
97.ØØ	88.81	24.5	2Ø9.	-3Ø.Ø4	-15.5Ø	2Ø7.	33.8Ø	2Ø7.	34.46	2Ø7.	33.15	2Ø7.	34.24	2Ø7.	33.37
98.ØØ	89.72	24.2	2Ø6.	-3Ø.4Ø	-15.69	2Ø7.	34.21	2Ø7.	34.88	2Ø7.	33.55	2Ø7.	34.66	2Ø7.	33.77
99.ØØ	9Ø.63	24.3	2Ø7.	-3Ø.77	-15.89	2Ø7.	34.63	2Ø7.	35.3Ø	2Ø7.	33.95	2Ø7.	35.Ø8	2Ø7.	34.18
1ØØ.ØØ	91.54	24.3	2Ø8.	-31.13	-16.Ø8	2Ø7.	35.Ø4	2Ø7.	35.72	2Ø7.	34.35	2Ø7.	35.49	2Ø7.	34.58
1Ø1.ØØ	92.45	24.2	2Ø6.	-31.49	-16.28	2Ø7.	35.45	2Ø7.	36.14	2Ø7.	34.76	2Ø7.	35.91	2Ø7.	34.99
1Ø2.ØØ	93.36	24.7	2Ø7.	-31.85	-16.48	2Ø7.	35.86	2Ø7.	36.55	2Ø7.	35.16	2Ø7.	36.32	2Ø7.	35.39

Verticality Data Listing

All co-ordinates with respect to True North

DEPTHS log	DEPTHS true	BOREHOLE tilt	BOREHOLE AZI	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng	POLAR radius	POLAR ERROR CO-ORDINATES (maximum & typical) brng	radius	brng	radius	brng	radius	brng	radius
103.00	94.28	24.5	209.	-32.21	-16.67	207.	36.27	207.	36.97	207.	35.56	207.	36.74	207.	35.80
104.00	95.19	24.3	209.	-32.57	-16.87	207.	36.68	207.	37.39	207.	35.97	207.	37.16	207.	36.21
105.00	96.10	24.4	207.	-32.94	-17.07	207.	37.09	207.	37.81	207.	36.37	207.	37.57	207.	36.61
106.00	97.01	24.2	211.	-33.30	-17.26	207.	37.51	207.	38.24	207.	36.78	207.	37.99	207.	37.02
107.00	97.92	24.4	210.	-33.66	-17.46	207.	37.92	207.	38.66	207.	37.18	207.	38.41	207.	37.43
108.00	98.83	24.4	207.	-34.03	-17.65	207.	38.33	207.	39.08	207.	37.59	207.	38.83	207.	37.84
109.00	99.74	24.3	208.	-34.39	-17.85	207.	38.75	207.	39.50	207.	37.99	207.	39.25	207.	38.24
110.00	100.65	24.6	208.	-34.75	-18.05	207.	39.16	207.	39.92	207.	38.40	207.	39.67	207.	38.65
111.00	101.56	24.1	211.	-35.11	-18.26	207.	39.57	207.	40.34	207.	38.80	207.	40.09	207.	39.06
112.00	102.47	24.0	210.	-35.47	-18.46	207.	39.99	207.	40.76	207.	39.21	207.	40.50	207.	39.47
113.00	103.38	24.4	208.	-35.83	-18.66	208.	40.40	208.	41.18	208.	39.61	208.	40.92	208.	39.88
114.00	104.29	24.6	209.	-36.20	-18.86	208.	40.82	208.	41.61	208.	40.02	208.	41.34	208.	40.29
115.00	105.20	24.2	210.	-36.56	-19.06	208.	41.23	208.	42.03	208.	40.43	208.	41.76	208.	40.69
116.00	106.11	24.4	209.	-36.92	-19.26	208.	41.64	208.	42.45	208.	40.83	208.	42.18	208.	41.10
117.00	107.02	24.1	210.	-37.28	-19.46	208.	42.05	208.	42.87	208.	41.23	208.	42.60	208.	41.51
118.00	107.93	25.0	209.	-37.64	-19.66	208.	42.47	208.	43.29	208.	41.64	208.	43.02	208.	41.92
119.00	108.84	24.5	209.	-38.00	-19.87	208.	42.88	208.	43.71	208.	42.05	208.	43.43	208.	42.33
120.00	109.76	24.3	211.	-38.36	-20.07	208.	43.29	208.	44.13	208.	42.45	208.	43.85	208.	42.73
121.00	110.67	24.5	212.	-38.72	-20.27	208.	43.70	208.	44.55	208.	42.85	208.	44.27	208.	43.14
122.00	111.58	24.1	210.	-39.08	-20.47	208.	44.12	208.	44.97	208.	43.26	208.	44.69	208.	43.55
123.00	112.49	24.5	208.	-39.44	-20.67	208.	44.53	208.	45.39	208.	43.66	208.	45.10	208.	43.95
124.00	113.40	24.4	206.	-39.80	-20.87	208.	44.94	208.	45.81	208.	44.07	208.	45.52	208.	44.36
125.00	114.31	24.4	209.	-40.17	-21.07	208.	45.36	208.	46.23	208.	44.47	208.	45.94	208.	44.77
126.00	115.22	24.4	209.	-40.53	-21.27	208.	45.77	208.	46.66	208.	44.88	208.	46.36	208.	45.18
127.00	116.13	24.5	208.	-40.89	-21.47	208.	46.18	208.	47.08	208.	45.29	208.	46.78	208.	45.59
128.00	117.04	24.3	208.	-41.25	-21.67	208.	46.60	208.	47.50	208.	45.69	208.	47.20	208.	45.99
129.00	117.95	24.7	210.	-41.61	-21.87	208.	47.01	208.	47.92	208.	46.10	208.	47.62	208.	46.40
130.00	118.86	24.9	208.	-41.98	-22.07	208.	47.43	208.	48.34	208.	46.50	208.	48.04	208.	46.81
131.00	119.77	24.5	208.	-42.34	-22.27	208.	47.84	208.	48.77	208.	46.91	208.	48.46	208.	47.22
132.00	120.68	24.4	208.	-42.71	-22.47	208.	48.26	208.	49.19	208.	47.32	208.	48.88	208.	47.63
133.00	121.59	24.8	210.	-43.07	-22.67	208.	48.67	208.	49.62	208.	47.73	208.	49.30	208.	48.04
134.00	122.50	25.1	209.	-43.44	-22.88	208.	49.09	208.	50.04	208.	48.14	208.	49.73	208.	48.46
135.00	123.40	24.7	208.	-43.80	-23.08	208.	49.51	208.	50.47	208.	48.55	208.	50.15	208.	48.87
136.00	124.31	24.9	210.	-44.17	-23.29	208.	49.93	208.	50.89	208.	48.96	208.	50.57	208.	49.28
137.00	125.22	25.0	209.	-44.53	-23.50	208.	50.35	208.	51.32	208.	49.37	208.	51.00	208.	49.70
138.00	126.13	24.7	210.	-44.89	-23.70	208.	50.76	208.	51.75	208.	49.78	208.	51.42	208.	50.11
139.00	127.04	24.6	207.	-45.26	-23.90	208.	51.19	208.	52.17	208.	50.19	208.	51.85	208.	50.52
140.00	127.94	24.6	209.	-45.63	-24.11	208.	51.61	208.	52.60	208.	50.60	208.	52.27	208.	50.94
141.00	128.85	24.9	208.	-45.99	-24.32	208.	52.02	208.	53.03	208.	51.02	208.	52.70	208.	51.35
142.00	129.76	24.6	209.	-46.36	-24.52	208.	52.44	208.	53.46	208.	51.43	208.	53.12	208.	51.77
143.00	130.67	24.8	208.	-46.72	-24.73	208.	52.86	208.	53.88	208.	51.84	208.	53.54	208.	52.18
144.00	131.57	24.9	211.	-47.09	-24.94	208.	53.28	208.	54.31	208.	52.25	208.	53.97	208.	52.59
145.00	132.48	25.0	210.	-47.45	-25.14	208.	53.70	208.	54.74	208.	52.66	208.	54.39	208.	53.01
146.00	133.39	24.9	211.	-47.82	-25.34	208.	54.12	208.	55.17	208.	53.07	208.	54.82	208.	53.42
147.00	134.30	24.7	209.	-48.18	-25.55	208.	54.54	208.	55.59	208.	53.48	208.	55.24	208.	53.83
148.00	135.21	24.4	210.	-48.55	-25.75	208.	54.96	208.	56.02	208.	53.89	208.	55.67	208.	54.25
149.00	136.11	24.6	211.	-48.92	-25.96	208.	55.38	208.	56.44	208.	54.30	208.	56.09	208.	54.66
150.00	137.02	24.9	210.	-49.28	-26.16	208.	55.79	208.	56.87	208.	54.71	208.	56.51	208.	55.07
151.00	137.93	24.9	212.	-49.65	-26.36	208.	56.21	208.	57.30	208.	55.12	208.	56.94	208.	55.49
152.00	138.84	24.7	206.	-50.01	-26.57	208.	56.63	208.	57.72	208.	55.53	208.	57.36	208.	55.90

All co-ordinates with respect to True North

DEPTHS log	DEPTHS true	BOREHOLE tilt	BOREHOLE AZI	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng	POLAR radius	POLAR ERROR CO-ORDINATES (maximum & typical) brng	radius	brng	radius	brng	radius	brng	radius
153.ØØ	139.75	25.1	21Ø.	-5Ø.38	-26.76	2Ø8.	57.Ø5	2Ø8.	58.15	2Ø8.	55.94	2Ø8.	57.78	2Ø8.	56.31
154.ØØ	14Ø.66	24.8	2Ø9.	-5Ø.75	-26.96	2Ø8.	57.47	2Ø8.	58.57	2Ø8.	56.35	2Ø8.	58.21	2Ø8.	56.73
154.9Ø	141.47	24.9	2Ø9.	-51.Ø8	-27.15	2Ø8.	57.84	2Ø8.	58.96	2Ø8.	56.72	2Ø8.	58.59	2Ø8.	57.1Ø