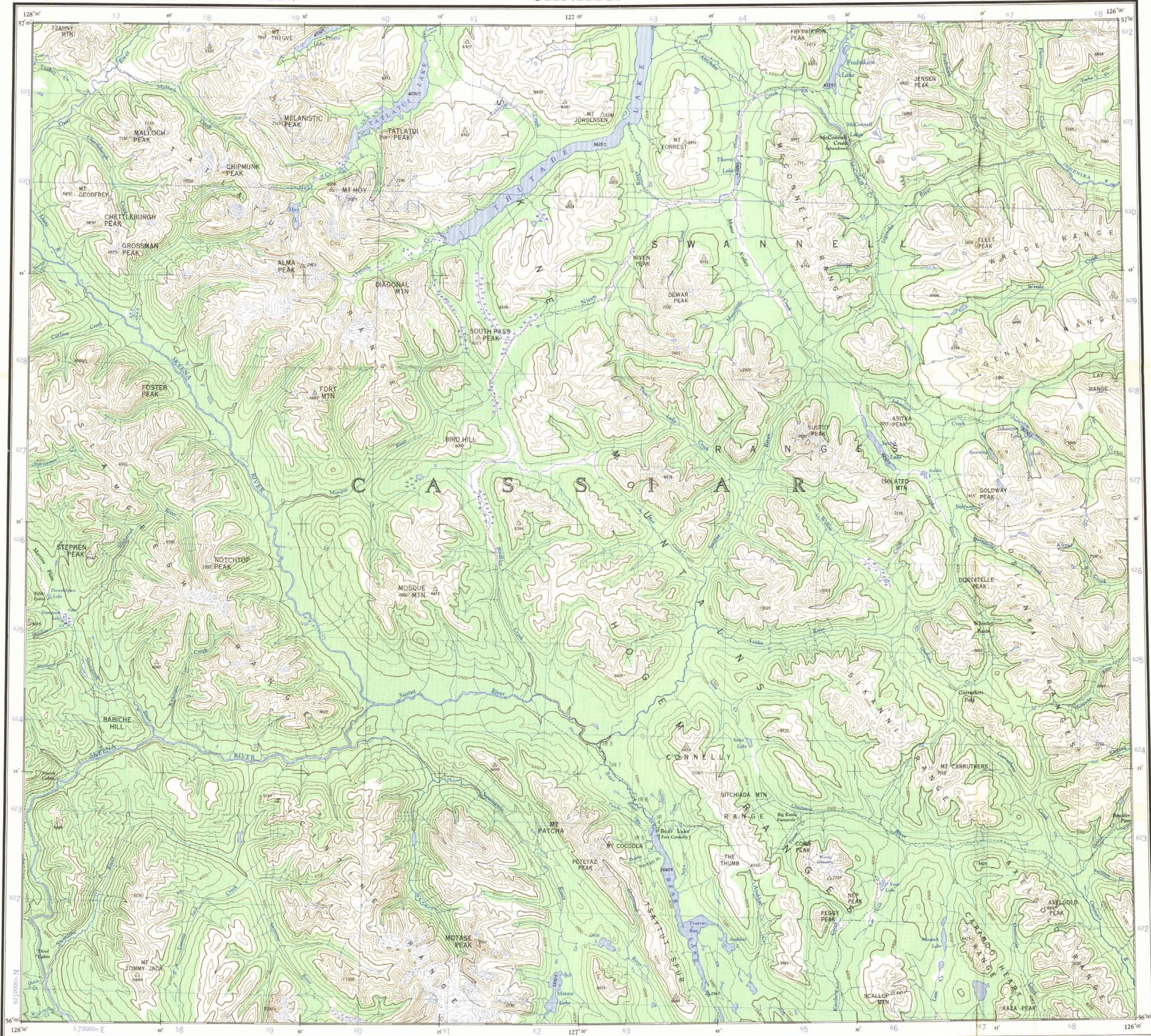


Military users refer to this map as: Réference de la carte pour usage militaire.

SERIES A 502 SÉRIE MAP 94 D CARTE EDITION 3 MCE ÉDITION



THE DECLINATION OF THE COMPASS NEEDLE, 1953



The declination of the compass needle at any place along a red line is the declination given on that red line. At other places the declination is between those given on the neighboring red lines, and the place marked A, the declination is between N. 27° E. and N. 27° 30' E. The westerly declination of the compass needle are decreasing 4.3 minutes annually.

Base map by the Topographical Survey Dept. of Mines and Technical Surveys, 1941 Revised, drawn and printed by the Army Survey Establishment, R.C.E. 1952-53

Transverse Mercator Projection North American Datum 1927 Preliminary 1952

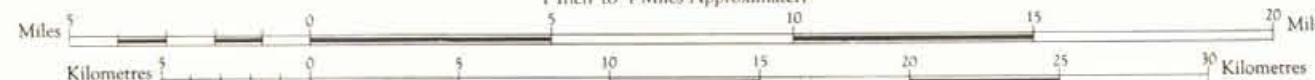
REFERENCE

Road, Hard Surface, All Weather	More than 2 Lanes	2 Lanes
Low Surface, All Weather	More than 2 Lanes	2 Lanes
Low Surface, Less than 2 Lanes	All Weather	2 Lanes
Cart Track, Trail	Cart Track	Trail
Railway, Multiple Track	Single Track	
Boundary, International		
Province or State		
County or District		
Reservation, Indian, Military, etc.		

McCONNELL CREEK
BRITISH COLUMBIA

Scale 1 : 250,000

1 Inch to 4 Miles Approximately



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Contour interval 500 Feet
All Elevations in Feet above Mean Sea Level.

REFERENCE

Horizontal Control Point	Spot Elevation, in feet	124
Contour, Elevation	Forest, unclassified	
Depression	Sewage or Marsh	
Approximate		
Glacier or Snowfield	W. L. 125	
Stream, Intermittent	Mal	
Dam	Lighthouse	
Field	Landing Ground	Anchor
Airfield, on Land	Water	Power Transmission Line



Index to adjoining Maps of the National Topographic System
Tableau d'assemblage du Système national de référence cartographique

GRID ZONE DESIGNATION: 9V

100,000 M. SQUARE IDENTIFICATION: WXPX 63

EXAMPLE: CABIN

SQUARE: Read letters of 100,000 m square: XN

EASTING: Read number on grid line immediately to left of point. Estimate tenths of a square from this line eastward to point.

NORTHING: Read number on grid line immediately below point. Estimate tenths of a square from this line northward to point.

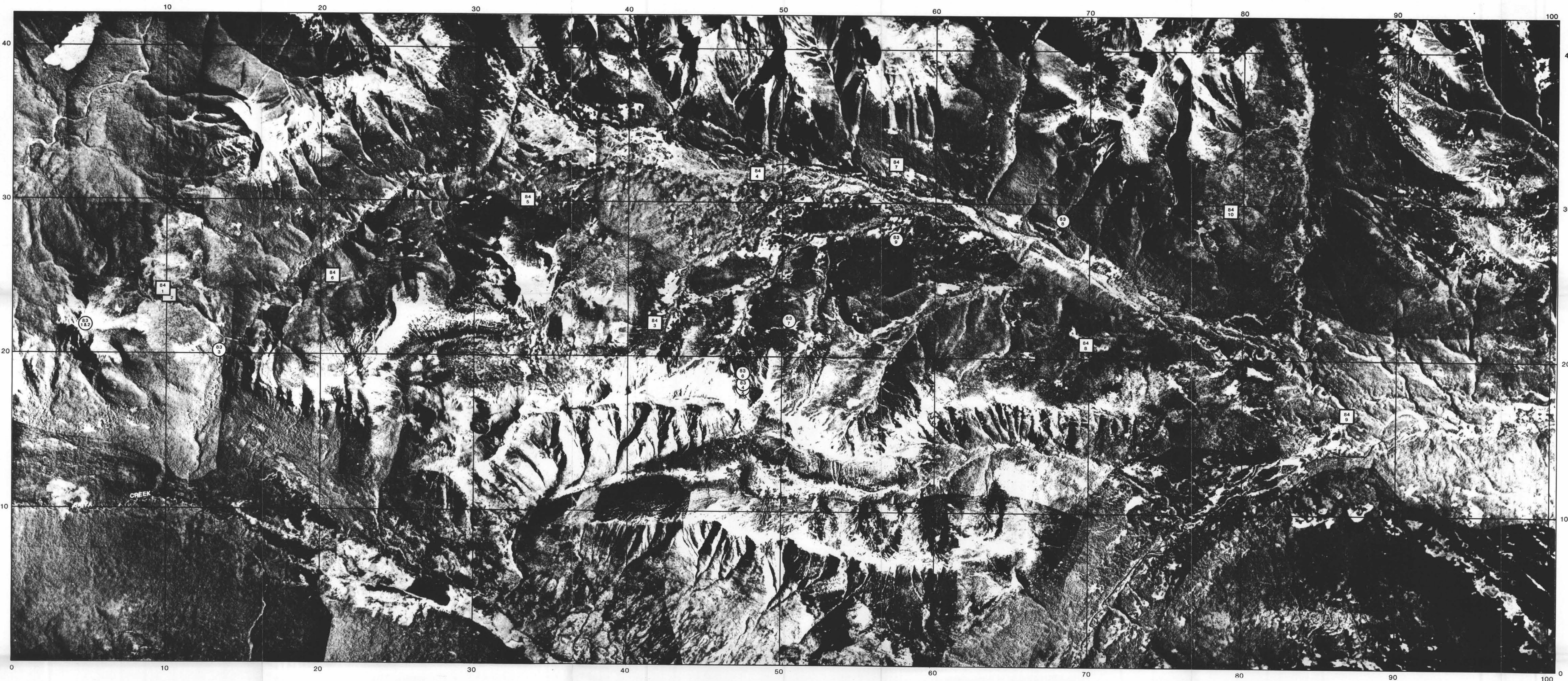
MILITARY GRID REFERENCE (in second 1:50,000 series): XN6547

If reporting beyond 10' in any direction prefix Grid Zone Designation as: 9VXN6547

TEN THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 9

CARTER MAPPING (1975) LTD.
1036 - 7th AVENUE S.W.
CALGARY, ALBERTA T2P 3E8
(403) 264-2618

McCONNELL CREEK
94 D
EDITION 3



UNCONTROLLED MOSAIC
PREPARED BY
THE ORTHOSHOP

704

- 1984 D H COMPLETED
- 1983 D H

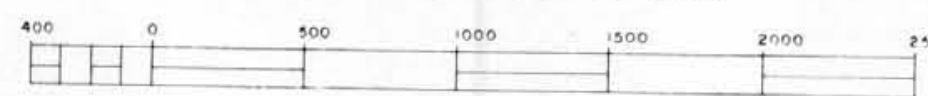
DRILL HOLE LOCATIONS

1983		1984	
Hole No.	Coordinates	Hole No.	Coordinates
1	4.7 21.8	1	24.2 9.7
2	4.7 21.8	2	24.2 9.7
3	13.4 20.1	3	41.7 22.1
4	47.5 18.0	4	48.4 31.9
5	47.5 18.0	5	33.4 30.3
6	47.5 19.0	6	20.7 20.5
7	50.5 22.3	7	57.4 32.5
8	68.3 29.0	8	69.7 20.9
9	57.5 27.7	9	86.8 16.5
		10	79.2 29.7

DRILL HOLE LOCATION MAP

SUSTUT PROJECT
1983 AND 1984
BEAR LAKE AREA

SCALE 1:25000 (APPROX)



STATION	DESCRIPTION	STATION ELEVATION	GROUND ELEVATION	NORTHING	EASTING
DODWELL (3386)	2cm Iron Post & Cairn			6,225,336.975	650,818.494
GOATRIDGE (1029)	Brass Plug & Cairn	2078.348	2078.3	6,238,875.324	635,798.270
ASITKA (3385)	2cm Iron Post & Cairn	1861.44	1861.2	6,246,595.076	648,274.899
D.E.D. (3004)	2cm Rebar	1964.74	1964.6	6,238,983.62	648,679.61
SHEEP (3014)	2cm Rebar	1920.20	1920.0	6,242,331.28	652,886.82
3001	2cm Rebar	1674.37	1674.1	6,246,662.28	641,209.82
3002	Wood Hub in Drill Hole	1671.56	1671.6	6,246,731.66	641,178.48
3003	Tag in 10cm Fir	1673.92	1671.5	6,246,698.33	641,140.41
3005	Spike in 7cm Casings	1683.41	1683.1	6,238,845.47	649,207.12
3006	Tag in 7cm Fir	1686.75	1685.3	6,238,822.85	649,204.07
3007	Nail & Tag in 7cm Casings	1683.78	1683.5	6,238,781.54	649,159.71
3008	Nail & Tag in Stump	1519.88	1519.5	6,239,115.86	650,441.99
3009	Nail & Tag in 5cm Fir	1521.02	1519.8	6,239,127.72	650,432.17
3010	Nail & Tag	1518.73	1518.7	6,239,123.09	650,450.05
3011	Nail & Tag in 30cm Stump	1231.44	1231.7	6,237,374.35	655,096.78
3012	Nail & Tag in 25cm Stump	1231.05	1230.4	6,237,393.43	655,089.42
3013	Nail & Tag in Ground	1229.62	1229.6	6,237,381.85	655,081.49
3015	2cm Rebar	1289.69	1289.6	6,239,125.51	651,669.52
3016	Nail & Tag in Stump	1290.90	1290.5	6,239,111.72	652,672.13
3017	Nail & Tag in Stump	1293.07	1292.9	6,239,107.59	652,654.21
3018	Nail & Tag in 5cm Stump	1055.38	1055.2	6,244,976.74	641,440.20
3019	Nail & Tag in Hub	1061.08	1059.7	6,244,994.94	642,583.73
3020	Nail & Tag in 5cm Stump	1054.37	1053.9	6,244,937.97	642,597.64

STATION	DESCRIPTION	STATION ELEVATION	GROUND ELEVATION	NORTHING	EASTING
DDH 1	Tag 3002	1671.56	1671.6	6,246,731.7	641,178.5
DDH 2	Tag 3019	1061.08	1059.7	6,244,994.9	642,583.7
DDH 3		1683.78	1683.5	6,238,781.9	649,160.8
DDH 4		1683.41	1683.1	6,238,845.0	649,205.9
DDH 5	Tag 3010	1518.73	1518.7	6,239,123.1	650,450.1
DDH 6	Tag 3017	1293.07	1292.9	6,239,107.6	652,654.2
DDH 8	Tag 3013	1229.62	1229.6	6,237,381.9	655,081.5

STATION # DESCRIPTION	GROUND ELEV.	NORTHING	EASTING
TAG # 4011 - D.D.H. 84-5	1581.6	6,243,621.716	648,374.935
# 11 - CONTROL HUB	1793.15	6,246,677.802	646,299.691
TAG # 4015 - D.D.H. 84-2	1466.7	6,246,402.889	642,486.053
# 14 - AUX. PT. TAG # 4014	1400.38	6,244,452.901	644,972.749
TAG # 4012 - D.D.H. 84-6	1400.3	6,244,452.347	644,971.214
# 20 - AUXILIARY PT.	1889.32	6,226,267.551	654,186.562
# 30 - D.D.H. 84-7	1036.2	6,231,258.622	656,413.008
# 26 - AUXILIARY PT.	1431.06	6,235,776.945	656,907.738
TAG # 4016 - D.D.H. 84-10	1429.8	6,235,794.450	656,884.621
TAG # 4023 - D.D.H. 84-7	1251.0	6,239,763.075	653,577.211
TAG # 4020 - D.D.H. 84-8	1280.5	6,235,423.456	654,045.203
TAG # 4017 - AUXILIARY PT.	1617.35	6,241,437.752	651,692.694
TAG # 4018 - D.D.H. 84-4	1617.2	6,241,437.284	651,693.262
TAG # 4019 - D.D.H. 84-3	1510.4	6,240,526.480	648,724.812

SUNCOR BEAR LAKE

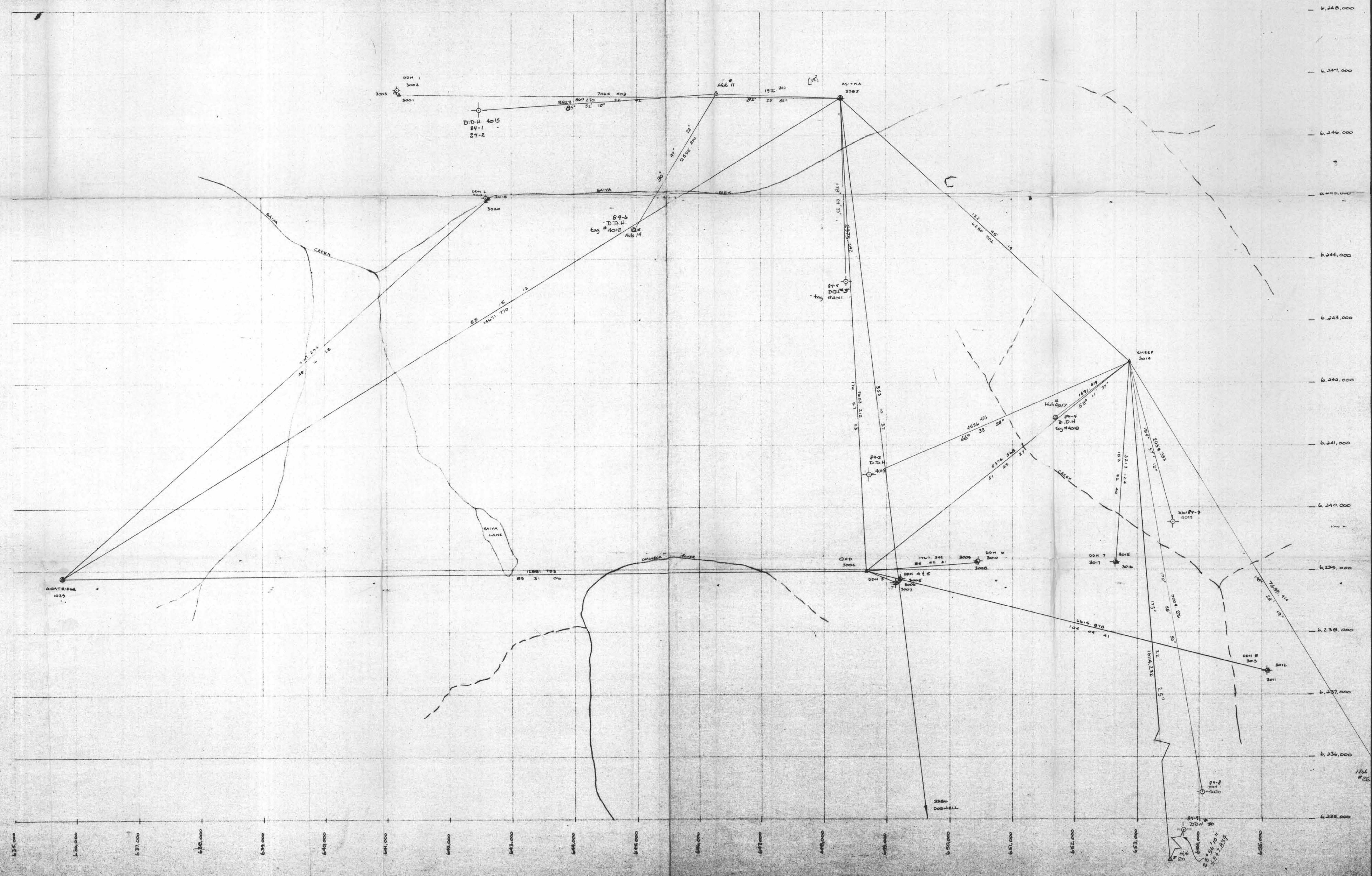
SKETCH SHOWING SURVEY CONTROL
AND DRILL HOLES.

NOTE: DISTANCES SHOWN ARE METRIC
ELEVATIONS ARE ON GEODETIC DATUM AND ARE DERIVED BY
RECIPROCAL TRIGONOMETRIC LEVELLING FROM GOVERNMENT
STATION "GOATRIDGE" = 2078.348 m.
COORDINATES ARE ON UTM (ZONE 9) GRID AND ARE DERIVED
FROM GOVERNMENT STATIONS DODWELL, ASITKA AND GOATRIDGE.

SURVEYED: JULY 25-30, 1983

DONALD E. WATSON B.C.L.S.

SURVEYED AND UPDATED, JULY 1984
MCWILLIAM, WHITE, GOBLE & ASSOC.
SMITHERS, B.C.



1. All plots are correct to the resolution of the plotter used, i.e. one hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself. If the plotted data being dynamically merged with its gridded background should be desirable to plot these less frequently; this option is available on request.

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. This is to say it is linear between 8 & 18, degrees 18 & 28 & 38 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 (in metres)
- magnetic declination (ie. the difference between true and magnetic North)
- search angle(s)
- replay scale(s)
- the frequency for rose diagrams
- the interval for correlation interval used, alternatively all correlations may be displayed on request.

The following information is a listing of ALL the output from BBP'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
 CAL PER the average borehole azimuth 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 East from the horizontal plane
 DIP AZIMUTH 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 correlations 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.

STDM-84-03

Magnetic declination 27.88 degrees East of North
 Correlation step 0.25 metres interval 1.00 metres Search angle 85. degrees

DEPTH	CAL.	BOREHOLE	FORMATION	MIN.	DEPTH	CAL.	BOREHOLE	FORMATION	MIN.	DEPTH	CAL.	BOREHOLE	FORMATION	MIN.							
metres	ins.	TILT	INS.	DIP	AZI	COR.	metres	ins.	TILT	INS.	DIP	AZI	COR.	metres	ins.	TILT	INS.	DIP	AZI	COR.	
52.89	3.6	1.4	253.	8.0	37.	0.33	52.25	3.6	1.4	253.	22.1	3.88	0.48	52.58	3.6	1.4	253.	75.9	32.	0.28	
52.75	3.6	1.4	252.	8.1	219.	0.38	53.00	3.6	1.4	252.	76.1	26.	0.32	53.25	3.6	1.4	252.	81.1	252.	0.38	
52.61	3.6	1.4	251.	8.2	131.	0.38	53.75	3.6	1.4	251.	81.2	37.	0.32	54.00	3.6	1.4	251.	81.3	54.	0.43	
54.25	3.6	1.5	249.	4.4	194.	0.41	54.50	3.6	1.5	247.	82.5	35.7	0.39	54.75	3.6	1.5	247.	72.2	226.	0.48	
54.11	3.6	1.5	248.	4.5	231.	0.45	55.25	3.7	1.5	247.	74.2	22.8	0.38	55.50	3.6	1.5	248.	78.5	112.	0.32	
55.75	4.0	1.5	248.	24.8	187.	0.38	56.00	4.0	1.5	247.	77.4	20.	0.39	56.25	3.9	1.5	248.	74.5	112.	0.32	
56.50	3.9	1.6	245.	14.8	135.	0.46	56.75	3.7	1.5	245.	127.	1.88	0.46	57.00	3.6	1.5	245.	78.6	112.	0.32	
56.36	3.9	1.6	244.	15.8	345.	0.48	57.50	3.5	1.5	244.	172.	35.1	0.46	57.75	3.6	1.5	244.	78.6	112.	0.32	
58.00	3.5	1.6	243.	8.7	186.	0.45	58.25	3.5	1.5	243.	82.5	32.	0.45	58.50	3.6	1.6	243.	75.9	32.	0.28	
57.86	3.5	1.6	242.	8.8	231.	0.49	59.00	3.4	1.6	241.	82.2	11.4	0.26	59.25	3.6	1.6	242.	82.2	11.4	0.26	
59.50	3.4	1.6	241.	8.9	352.	0.22	59.75	3.4	1.6	241.	82.2	11.4	0.26	60.00	3.4	1.6	242.	82.2	11.4	0.26	
60.25	3.4	1.6	240.	7.4	168.	0.41	60.50	3.4	1.6	239.	32.5	34.3	0.44	60.75	3.4	1.6	239.	27.2	26.	0.64	
60.36	3.4	1.6	239.	7.5	219.	0.45	61.25	3.4	1.6	238.	22.5	29.	0.65	61.50	3.4	1.6	238.	22.5	29.	0.65	
61.75	3.3	1.6	238.	28.4	274.	0.61	62.00	3.3	1.6	238.	22.8	14.	0.56	62.25	3.3	1.6	238.	27.2	31.	1.19	0.41
61.61	3.3	1.6	237.	28.5	324.	0.64	62.75	3.3	1.6	237.	82.5	32.	0.45	63.00	3.3	1.6	237.	82.5	32.	0.45	
63.25	3.3	1.6	235.	81.2	325.	0.54	63.50	3.3	1.6	235.	82.5	32.	0.45	63.75	3.3	1.6	235.	81.2	325.	0.54	
63.11	3.3	1.6	234.	81.3	325.	0.57	64.25	3.3	1.6	234.	82.5	32.	0.45	64.50	3.3	1.6	234.	81.2	325.	0.54	
64.75	3.3	1.6	233.	79.1	326.	0.34	64.50	3.3	1.6	233.	82.5	32.	0.45	64.75	3.3	1.6	233.	79.1	326.	0.34	
65.50	3.3	1.6	232.	81.4	293.	0.34	65.25	3.3	1.6	232.	82.5	32.	0.45	65.50	3.3	1.6	232.	81.4	293.	0.34	
65.36	3.3	1.6	231.	81.5	329.	0.38	66.00	3.3	1.6	231.	82.5	32.	0.45	66.25	3.3	1.6	231.	81.4	293.	0.34	
67.00	3.3	1.6	230.	75.8	282.	0.38	66.75	3.3	1.6	230.	76.6	18.8	0.48	67.00	3.4	1.6	230.	75.8	282.	0.38	
66.86	3.3	1.6	229.	75.9	329.	0.42	67.50	3.4	1.6	229.	82.5	32.	0.45	67.75	3.4	1.6	229.	75.8	282.	0.38	
68.50	3.4	1.6	234.	75.1	129.	0.48	68.25	3.4	1.6	234.	75.1	129.	0.48	68.50	3.4	1.6	234.	75.1	129.	0.48	
68.36	3.4	1.6	233.	75.2	180.	0.48	69.00	3.4	1.6	233.	75.1	129.	0.48	69.25	3.4	1.6	233.	75.1	129.	0.48	
70.00	3.4	1.6	234.	28.8	2.	0.62	70.25	3.4	1.6	233.	84.8	175.	0.61	70.50	3.4	1.6	233.	28.8	2.	0.62	
69.86	3.4	1.6	232.	29.1	8.	0.78	71.00	3.3	1.6	232.	84.8	175.	0.61	71.25	3.3	1.6	232.	29.1	8.	0.78	
71.75	3.2	1.6	232.	29.1	8.	0.78	71.75	3.2	1.6	232.	84.8	175.	0.61	72.00	3.2	1.6	232.	29.1	8.	0.78	
73.00	3.1	1.6	232.	29.1	8.	0.78	72.50	3.1	1.6	231.	83.4	214.	0.41	72.75	3.1	1.6	231.	29.1	8.	0.78	
72.86	3.1	1.6	231.	29.2	14.	0.78	73.25	3.1	1.6	231.	83.4	214.	0.41	73.50	3.1	1.6	231.	29.1	8.	0.78	
74.50	3.1	1.6	232.	29.1	8.	0.78	74.00	3.1	1.6	231.	83.4	214.	0.41	74.25	3.1	1.6	231.	29.1	8.	0.78	
75.25	3.1	1.6	232.	29.1	8.	0.78	74.75	3.1	1.6	231.	83.4	214.	0.41	75.00	3.1	1.6	231.	29.1	8.	0.78	
76.00	3.0	1.6	231.	81.4	195.	0.63	75.25	2.9	1.6	231.	81.5	192.	0.57	75.50	2.9	1.6	231.	81.4	195.	0.63	
75.86	3.0	1.6	230.	81.5	246.	0.63	76.00	2.9	1.6	230.	81.5	192.	0.57	76.25	2.9	1.6	230.	81.4	195.	0.63	
77.50	2.9	1.6	231.	81.5	246.	0.63	76.75	2.9	1.6	230.	81.5	192.	0.57	77.00	2.9	1.6	230.	81.4	195.	0.63	
77.36	2.9	1.6	229.	81.6	293.	0.48	77.50	2.9	1.6	229.	81.5	192.	0.57	77.75	2.9	1.6	229.	81.5	192.	0.57	
79.00	2.9	1.6	230.	81.6	293.	0.48	78.25	2.9	1.6	229.	81.5	192.	0.57	78.50	2.9	1.6	229.	81.5	192.	0.57	
78.86	2.9	1.6	228.	81.7	344.	0.71	79.00	2.9	1.6	228.	81.5	192.	0.57	79.25	2.9	1.6	228.	81.6	293.	0.48	
80.50	2.9	1.6	229.	81.7	344.	0.71	79.75	2.9	1.6	228.	81.5	192.	0.57	80.00	2.9	1.6	228.	81.6	293.	0.48	
80.36	2.9	1.6	227.	81.8	395.	0.94	80.50	2.9	1.6	227.	81.5	192.	0.57	80.75	2.9	1.6	227.	81.7	344.	0.71	
82.15	2.8	1.6	228.	81.8	395.	0.94	81.25	2.8	1.6	227.	81.5	192.	0.57	81.50	2.8	1.6	227.	81.7	344.	0.71	
82.01	2.8	1.6	226.	81.9	445.	1.25	82.00	2.8	1.6	226.	81.5	192.	0.57	82.25	2.8	1.6	226.	81.8	395.	0.94	
83.75	2.8	1.6	227.	81.9	445.	1.25	82.75	2.8	1.6	225.	81.5	192.	0.57	83.00	2.8	1.6	225.	81.8	395.	0.94	
83.61	2.8	1.6	225.	82.0	495.	1.56	83.50	2.8	1.6	224.	81.5	192.	0.57	83.75	2.8	1.6	224.	81.8	395.	0.94	
85.39	2.8	1.6	226.	82.0	495.	1.56	84.25	2.8	1.6	223.	81.5	192.	0.57	84.50	2.8	1.6	223.	81.8	395.	0.94	
85.25	2.8	1.6	225.	82.1	546.	1.87	85.00	2.8	1.6	222.	81.5	192.	0.57	85.25	2.8	1.6	222.	81.8	395.	0.94	
87.00	2.8	1.6	226.	82.1	546.	1.87	85.75	2.8	1.6	221.	81.5	192.	0.57	86.00	2.8	1.6	221.	81.8	395.	0.94	
86.86	2.8	1.6	224.	82.2	597.	2.18	86.50	2.8	1.6	220.	81.5	192.	0.57	86.75	2.8	1.6	220.	81.8	395.	0.94	
88.50	2.8	1.6	225.	82.2	597.	2.18	87.25	2.8	1.6	219.	81.5	192.	0.57	87.50	2.8	1.6	219.	81.8	395.	0.94	
88.36	2.8	1.6	217.	82.3	648.	2.49	88.00	2.8	1.6	218.	81.5	192.	0.57	88.25	2.8	1.6	218.	81.8	395.	0.94	
90.00	2.8	1.6	218.	82.3	648.	2.49	88.75	2.8	1.6	217.	81.5	192.	0.57	89.00	2.8	1.6	217.	81.8	395.	0.94	
89.86	2.8	1.6	216.	82.4	699.	2.80	89.50	2.8	1.6	216.	81.5	192.	0.57	89.75	2.8	1.6	216.	81.8	395.	0.94	
91.50	2.8	1.6	217.	82.4	699.	2.80	90.25	2.8	1.6	215.	81.5	192.	0.57	90.50	2.8	1.6	215.	81.8	395.	0.94	
91.36	2.8	1.6	214.	82.5	750.	3.11	91.00	2.8	1.6	214.	81.5	192.	0.57	91.25	2.8	1.6	214.	81.8	395.	0.94	
92.75	2.8	1.6	215.	82.5	750.	3.11	91.75	2.8	1.6	213.	81.5	192.	0.57	92.00	2.8	1.6	213.	81.8	395.	0.94	
92.61	2.8	1.6	212.	82.6	801.	3.42	92.50	2.8	1.6	212.	81.5	192.	0.57	92.75	2.8	1.6	212.	81.8	395.	0.94	
94.25	2.8	1.6	213.	82.6	801.	3.42	93.25	2.8	1.6	211.	81.5	192.	0.57	93.50	2.8	1.6	211.	81.8	395.	0.94	
94.11	2.8	1.6	210.	82.7	852.	3.73	94.00	2.8	1.6	210.	81.5	192.	0.57	94.25	2.8	1.6	210.	81.8	395.	0.94	
95.75	3.3	1.5	249.	81.3	42.	0.58	94.75	3.3	1.5	249.	81.4	47.	0.49	95.00	3.3	1.5	249.	81.3	42.	0.58	
95.61	3.3	1.5	248.	81.4	93.	0.65	95.50	3.3	1.5	248.	81.4	47.	0.49	95.75	3.3	1.5	248.	81.3	42.	0.58	
97.00	3.3	1.5	249.	81.4	93.	0.65	96.25	3.3	1.5	247.	81.4	47.	0.49	96.50	3.3	1.5	247.	81.3	42.	0.58	
96.86	3.3	1.5	247.	81.5	144.	0.58	97.00	3.3	1.5	246.	81.4	47.	0.49	97.25	3.3	1.5	246.	81.3	42.	0.58	
98.50	3.3	1.5	248.	81.5	144.	0.58	97.75	3.3	1.5	245.	81										

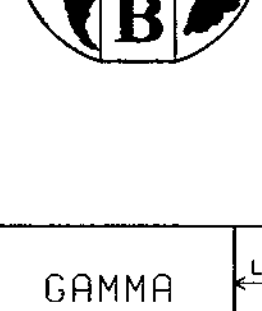


DIPMETER ANALYSIS

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CLIENT _____ SUNCOR INC.
 BOREHOLE _____ STDH-84-03
 AREA _____ SUSTUT, B.C.
 COUNTRY _____ CANADA

DATE LOGGED....12-JUL-84
 DATE PROCESSED..16-JUL-84



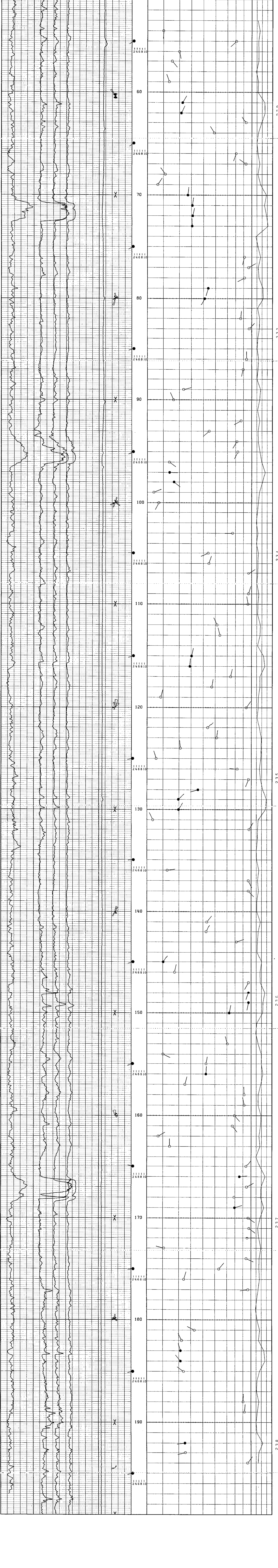
COMMENTS.....

INTERPRETATION PARAMETERS

STEP 1.00M. DECLINATION 27.0 EAST
 INTERVAL 2.00M. DEPTH RANGE 50.77 - 199.00M.
 SEARCH ANGLE 89. DATE PROCESSED 16-JUL-84

AVERAGE BOREHOLE DEVIATION & DIRECTION ANNOTATED EVERY 10.0M.
 ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES.
 .1" RADIUS PER DIP MARKER DISPLAYED

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



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BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

704

- 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.
- The analysis is derived by integrating 10 cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 250 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.
- 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.
- Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).
- Borehole positional error is derived assuming the following parameters:

	TILT(degrees)	AZIMUTH(degrees)
Typical Error	+/- 0.33333	+/- 10.0
Maximum Error	+/- 0.5	+/- 15.0
- Error analysis may be calculated and plotted from the data listing as follows:
 - Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
 - Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
 - Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.
- Given below is a full description of the parameters displayed on the ensuing listing:

LOG DEPTH	the depth recorded on the field logs for the borehole
TRUE DEPTH	the true vertical depth corresponding to the above depth, corrected from the start of the analysis
HOLE TILT & 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

STDH-84-#3

Date processed: 16-JUL-84 Page 1

DEPTHS log	true	All co-ordinates with respect to True North				POLAR ERROR CO-ORDINATES (maximum & typical)							
		BOREHOLE tilt	AZI	AXIAL North	CO-ORDS. East	POLAR brng radius	POLAR brng radius	CO-ORDINATES brng radius	CO-ORDINATES brng radius				
50.00	50.00	1.4	259.	0.00	0.00	259.	0.00	259.	0.00	259.	0.00	259.	0.00
51.00	51.00	1.3	253.	-0.01	-0.02	256.	0.02	256.	0.02	256.	0.02	256.	0.02
52.00	52.00	1.3	253.	-0.01	-0.05	255.	0.05	255.	0.07	255.	0.07	255.	0.06
53.00	53.00	1.4	251.	-0.02	-0.07	255.	0.07	255.	0.10	255.	0.10	255.	0.09
54.00	54.00	1.4	250.	-0.03	-0.09	253.	0.10	253.	0.13	253.	0.13	253.	0.12
55.00	55.00	1.5	243.	-0.04	-0.12	252.	0.12	252.	0.17	252.	0.17	252.	0.15
56.00	56.00	1.7	245.	-0.05	-0.14	251.	0.15	251.	0.20	251.	0.20	251.	0.19
57.00	57.00	1.5	244.	-0.06	-0.17	250.	0.18	250.	0.24	250.	0.24	250.	0.22
58.00	58.00	1.5	244.	-0.07	-0.19	249.	0.21	249.	0.28	249.	0.28	249.	0.25
59.00	59.00	1.5	244.	-0.08	-0.22	249.	0.23	249.	0.31	249.	0.31	249.	0.28
60.00	60.00	1.6	239.	-0.10	-0.24	248.	0.26	248.	0.35	248.	0.35	248.	0.32
61.00	61.00	1.5	241.	-0.11	-0.26	247.	0.29	247.	0.38	247.	0.38	247.	0.35
62.00	62.00	1.7	234.	-0.13	-0.29	246.	0.31	246.	0.42	246.	0.42	246.	0.38
63.00	63.00	1.6	239.	-0.14	-0.31	246.	0.34	246.	0.46	246.	0.46	246.	0.42
64.00	64.00	1.6	235.	-0.15	-0.33	245.	0.37	245.	0.49	245.	0.49	245.	0.45
65.00	64.99	1.6	235.	-0.17	-0.35	244.	0.40	244.	0.53	244.	0.53	244.	0.48
66.00	65.99	1.5	235.	-0.19	-0.38	244.	0.42	244.	0.56	244.	0.56	244.	0.52
67.00	66.99	1.6	233.	-0.20	-0.40	243.	0.45	243.	0.60	243.	0.60	243.	0.55
68.00	67.99	1.6	234.	-0.22	-0.42	243.	0.48	243.	0.63	243.	0.63	243.	0.58
69.00	68.99	1.5	235.	-0.24	-0.45	242.	0.50	242.	0.67	242.	0.67	242.	0.61
70.00	69.99	1.6	235.	-0.25	-0.47	242.	0.53	242.	0.70	242.	0.70	242.	0.65
71.00	70.99	1.5	229.	-0.27	-0.49	241.	0.56	241.	0.74	241.	0.74	241.	0.68
72.00	71.99	1.5	232.	-0.28	-0.51	241.	0.58	241.	0.77	241.	0.77	241.	0.71
73.00	72.99	1.3	231.	-0.30	-0.53	241.	0.61	241.	0.81	241.	0.81	241.	0.74
74.00	73.99	1.4	232.	-0.31	-0.55	240.	0.63	240.	0.84	240.	0.84	240.	0.77
75.00	74.99	1.3	233.	-0.33	-0.57	240.	0.66	240.	0.87	240.	0.87	240.	0.80
76.00	75.99	1.2	230.	-0.34	-0.59	240.	0.68	240.	0.90	240.	0.90	240.	0.83
77.00	76.99	1.1	235.	-0.35	-0.60	240.	0.70	240.	0.93	240.	0.93	240.	0.85
78.00	77.99	1.1	234.	-0.37	-0.62	239.	0.72	239.	0.96	239.	0.96	239.	0.88
79.00	78.99	1.1	234.	-0.38	-0.63	239.	0.74	239.	0.99	239.	0.99	239.	0.90
80.00	79.99	1.1	241.	-0.39	-0.65	239.	0.75	239.	1.02	239.	1.02	239.	0.93
81.00	80.99	1.1	244.	-0.40	-0.67	239.	0.77	239.	1.04	239.	1.04	239.	0.95
82.00	81.99	1.2	245.	-0.40	-0.68	239.	0.79	239.	1.07	239.	1.07	239.	0.98
83.00	82.99	1.1	249.	-0.41	-0.70	239.	0.81	239.	1.10	239.	1.10	239.	1.00
84.00	83.99	1.1	250.	-0.42	-0.72	240.	0.83	240.	1.13	240.	1.13	240.	1.03
85.00	84.99	1.2	254.	-0.42	-0.74	240.	0.85	240.	1.15	240.	1.15	240.	1.05
86.00	85.99	1.4	260.	-0.43	-0.76	240.	0.87	241.	1.18	240.	1.18	240.	1.08
87.00	86.99	1.5	259.	-0.43	-0.78	241.	0.89	241.	1.22	241.	1.22	241.	1.11
88.00	87.99	1.6	259.	-0.44	-0.81	242.	0.92	242.	1.25	242.	1.25	242.	1.14
89.00	88.99	1.6	257.	-0.44	-0.84	242.	0.95	242.	1.28	242.	1.28	242.	1.17
90.00	89.99	1.7	254.	-0.45	-0.87	243.	0.98	243.	1.32	243.	1.32	243.	1.21
91.00	90.99	1.7	254.	-0.46	-0.89	243.	1.00	243.	1.36	243.	1.36	243.	1.24
92.00	91.99	1.7	251.	-0.47	-0.92	243.	1.03	243.	1.40	243.	1.40	243.	1.28
93.00	92.99	1.6	252.	-0.47	-0.95	244.	1.06	244.	1.43	244.	1.43	244.	1.31
94.00	93.99	1.6	251.	-0.48	-0.98	244.	1.09	244.	1.47	244.	1.47	244.	1.34
95.00	94.99	1.5	253.	-0.49	-1.00	244.	1.12	244.	1.51	244.	1.51	244.	1.38
96.00	95.99	1.5	252.	-0.50	-1.03	244.	1.15	244.	1.54	244.	1.54	244.	1.41
97.00	96.98	1.5	254.	-0.51	-1.05	244.	1.17	244.	1.58	244.	1.58	244.	1.44
98.00	97.98	1.4	248.	-0.52	-1.08	244.	1.20	244.	1.61	244.	1.61	244.	1.47
99.00	98.98	1.4	247.	-0.53	-1.10	244.	1.22	244.	1.64	244.	1.64	244.	1.50

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Date processed: 16-JUL-84 Page 2

DEPTHS log	true	All co-ordinates with respect to True North				POLAR ERROR CO-ORDINATES (maximum & typical)							
		BOREHOLE tilt	AZI	AXIAL North	CO-ORDS. East	POLAR brng radius	POLAR brng radius	CO-ORDINATES brng radius	CO-ORDINATES brng radius				
100.00	99.98	1.3	246.	-0.54	-1.12	244.	1.24	244.	1.68	244.	1.68	244.	1.53
101.00	100.98	1.3	241.	-0.55	-1.14	244.	1.27	244.	1.71	244.	1.71	244.	1.56
102.00	101.98	1.3	241.	-0.56	-1.16	244.	1.29	244.	1.74	244.	1.74	244.	1.59
103.00	102.98	1.1	240.	-0.57	-1.18	244.	1.31	244.	1.77	244.	1.77	244.	1.62
104.00	103.98	1.1	249.	-0.58	-1.20	244.	1.33	244.	1.80	244.	1.80	244.	1.64
105.00	104.98	1.1	249.	-0.59	-1.21	244.	1.35	244.	1.82	244.	1.82	244.	1.66
106.00	105.98	1.1	257.	-0.59	-1.23	244.	1.37	244.	1.85	244.	1.85	244.	1.69
107.00	106.98	1.0	261.	-0.59	-1.25	245.	1.38	245.	1.87	245.	1.87	245.	1.71
108.00	107.98	1.0	260.	-0.60	-1.27	245.	1.40	245.	1.90	245.	1.90	245.	1.73
109.00	108.98	1.1	273.	-0.60	-1.29	245.	1.42	245.	1.93	245.	1.93	245.	1.76
110.00	109.98	1.3	272.	-0.60	-1.31	246.	1.44	246.	1.95	246.	1.95	246.	1.78
111.00	110.98	1.4	276.	-0.59	-1.33	246.	1.46	246.	1.98	246.	1.98	246.	1.81
112.00	111.98	1.6	270.	-0.59	-1.36	246.	1.48	246.	2.01	246.	2.01	246.	1.84
113.00	112.98	1.6	270.	-0.59	-1.38	247.	1.51	247.	2.05	247.	2.05	247.	1.87
114.00	113.98	1.6	264.	-0.59	-1.41	247.	1.53	247.	2.08	247.	2.08	247.	1.90
115.00	114.98	1.7	264.	-0.60	-1.44	248.	1.56	248.	2.12	248.	2.12	248.	1.93
116.00	115.98	1.6	261.	-0.60	-1.47	248.	1.59	248.	2.15	248.	2.15	248.	1.97
117.00	116.98	1.6	258.	-0.61	-1.50	248.	1.62	248.	2.19	248.	2.19	248.	2.00
118.00	117.98	1.7	256.	-0.61	-1.53	248.	1.65	248.	2.23	248.	2.23	248.	2.04
119.00	118.98	1.6	254.	-0.62	-1.56	248.	1.68	248.	2.27	248.	2.27	248.	2.07
120.00	119.98	1.6	257.	-0.63	-1.58	248.	1.70	248.	2.30	248.	2.30	248.	2.10
121.00	120.98	1.6	255.	-0.63	-1.61	249.	1.73	249.	2.34	249.	2.34	249.	2.14
122.00	121.98	1.5	254.	-0.64	-1.64	249.	1.76	249.	2.37	249.	2.37	249.	2.17
123.00	122.98	1.4	252.	-0.65	-1.66	249.	1.78	249.	2.41	249.	2.41	249.	2.20
124.00	123.98	1.4	248.	-0.66	-1.68	249.	1.81	249.	2.44	249.	2.44	249.	2.23
125.00	124.98	1.3	255.	-0.67	-1.71	249.	1.83	249.	2.47	249.	2.47	249.	2.26
126.00	125.98	1.3	249.	-0.68	-1.73	249.	1.85	249.	2.51	249.	2.51	249.	2.29
127.00	126.98	1.2	248.	-0.68	-1.75	249.	1.88	249.	2.54	249.	2.54	249.	2.32
128.00	127.98	1.1	246.	-0.69	-1.77	249.	1.90	249.	2.56	249.	2.56	249.	2.34
129.00	128.98	1.1	253.	-0.70	-1.78	249.	1.91	249.	2.59	249.	2.59	249.	2.37
130.00	129.98	1.0	251.	-0.70	-1.80	249.	1.93	249.	2.62	249.	2.62	249.	2.39
131.00	130.98	1.0	258.	-0.71	-1.82	249.	1.95	249.	2.64	249.	2.64	249.	2.41
132.00	131.97	0.9	263.	-0.71	-1.83	249.	1.97	249.	2.67	249.	2.67	249.	2.43
133.00	132.97	1.0	267.	-0.71	-1.85	249.	1.98	249.	2.69	249.	2.69	249.	2.46
134.00	133.97	1.1	273.	-0.71	-1.87	249.	2.00	249.	2.72	249.	2.72	249	



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CONTINUOUS VERTICALITY ANALYSIS

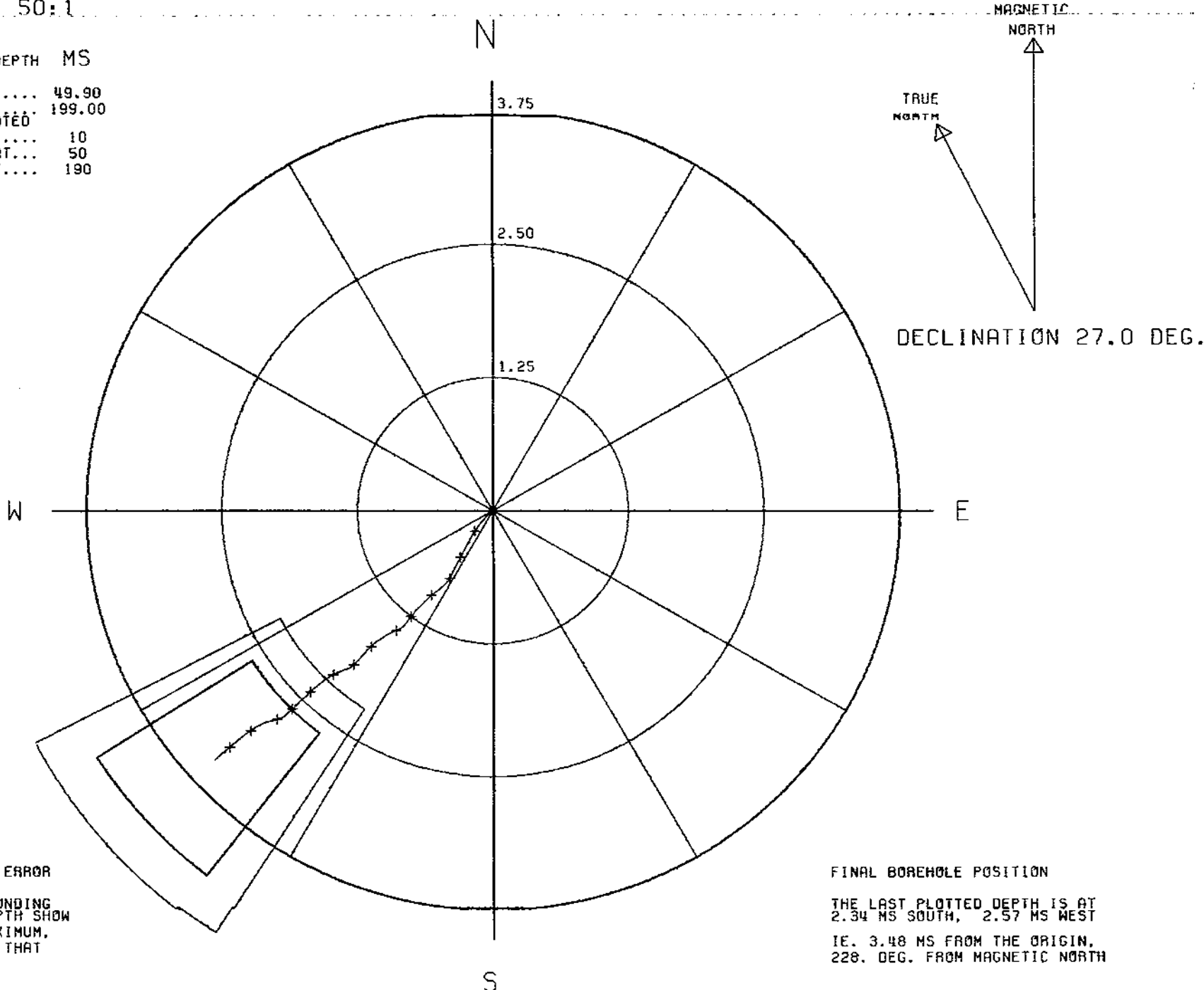
CLIENT _____ SUNCOR INC.
 BOREHOLE _____ STDH-84-03
 AREA _____ SUSTUT, B.C.
 COUNTRY _____ CANADA

DATE LOGGED.....12-JUL-84
 DATE PROCESSED..16-JUL-84
 UPPER REFERENCE POINT....C.S.
 LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 50:1

ALL FIGURES IN LOG DEPTH MS
 TARGET ORIGIN DEPTH..... 49.90
 LAST PLOTTED DEPTH..... 199.00
 DEPTH MARKERS ANNOTATED
 IN MULTIPLES OF..... 10
 FIRST DEPTH MARKER AT..... 50
 LAST DEPTH MARKER AT..... 190



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

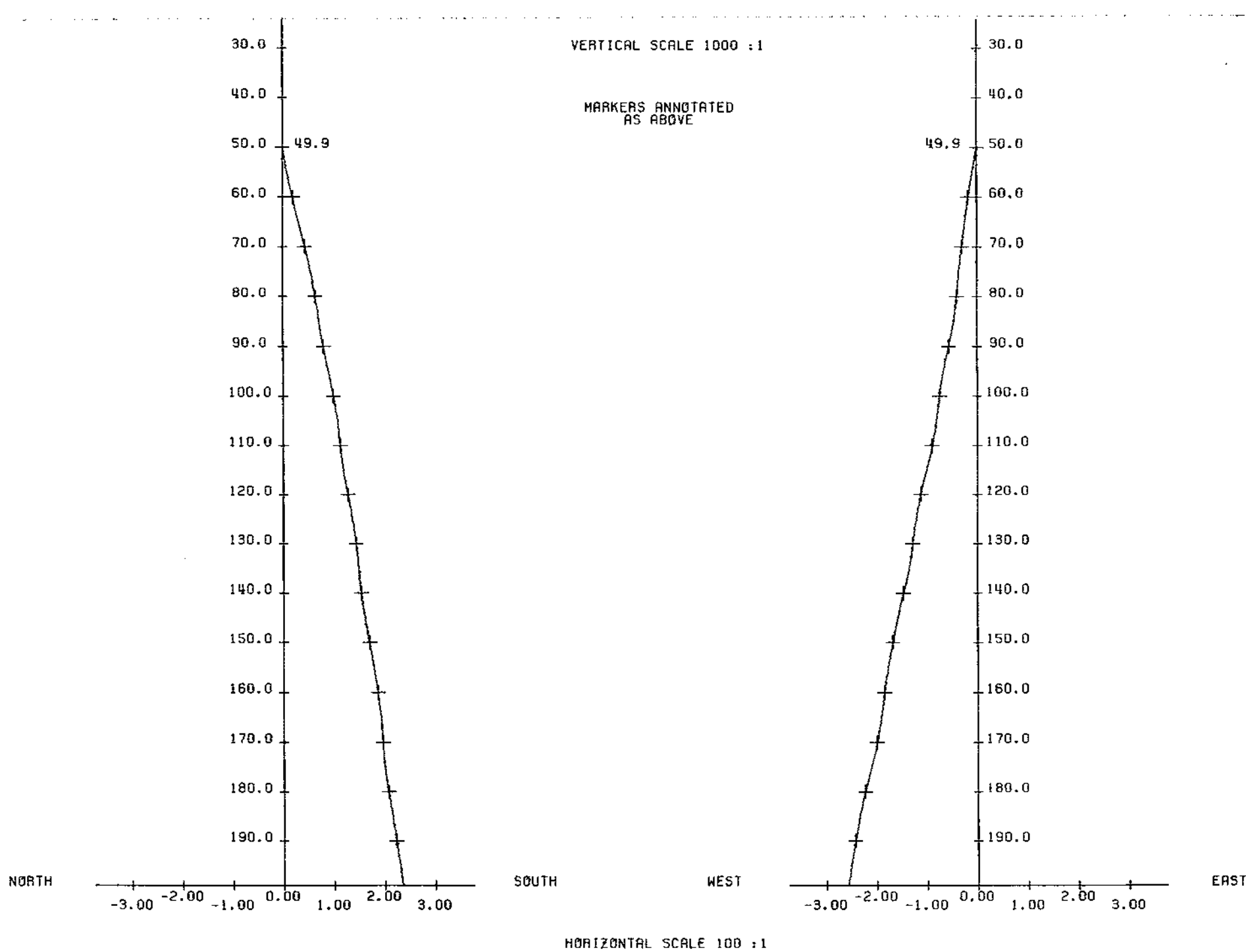
FINAL BOREHOLE POSITION
 THE LAST PLOTTED DEPTH IS AT
 2.34 MS SOUTH, 2.57 MS WEST
 IE. 3.48 MS FROM THE ORIGIN,
 228. DEG. FROM MAGNETIC NORTH

VERTICAL SECTIONS

N-S SECTION

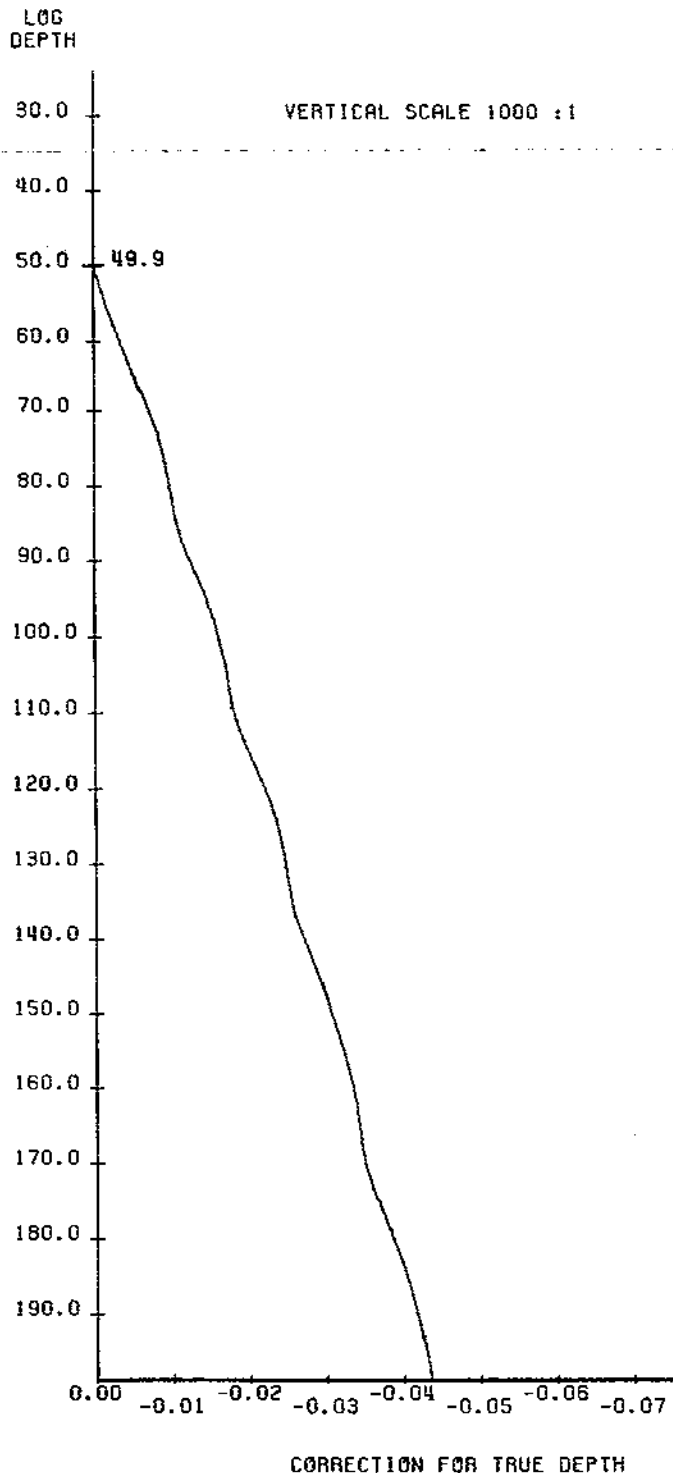
(TRUE DEPTH VS. DISPLACEMENT)

W-E SECTION



HORIZONTAL SCALE 100 : 1

DEPTH CORRECTION ANALYSIS



CORRECTION FOR TRUE DEPTH
 SCALE 1 : 1

DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
50.00	50.00	120.00	119.98	190.00	189.96
51.00	51.00	121.00	120.98	191.00	190.96
52.00	52.00	122.00	121.98	192.00	191.96
53.00	53.00	123.00	122.98	193.00	192.96
54.00	54.00	124.00	123.98	194.00	193.96
55.00	55.00	125.00	124.98	195.00	194.96
56.00	56.00	126.00	125.98	196.00	195.96
57.00	57.00	127.00	126.98	197.00	196.96
58.00	58.00	128.00	127.98	198.00	197.96
59.00	59.00	129.00	128.98	199.00	198.96
60.00	60.00	130.00	129.98		
61.00	61.00	131.00	130.98		
62.00	62.00	132.00	131.97		
63.00	63.00	133.00	132.97		
64.00	64.00	134.00	133.97		
65.00	64.99	135.00	134.97		
66.00	65.98	136.00	135.97		
67.00	66.97	137.00	136.97		
68.00	67.96	138.00	137.97		
69.00	68.95	139.00	138.97		
70.00	69.94	140.00	139.97		
71.00	70.93	141.00	140.97		
72.00	71.92	142.00	141.97		
73.00	72.91	143.00	142.97		
74.00	73.90	144.00	143.97		
75.00	74.89	145.00	144.97		
76.00	75.88	146.00	145.97		
77.00	76.87	147.00	146.97		
78.00	77.86	148.00	147.97		
79.00	78.85	149.00	148.97		
80.00	79.84	150.00	149.97		
81.00	80.83	151.00	150.97		
82.00	81.82	152.00	151.97		
83.00	82.81	153.00	152.97		
84.00	83.80	154.00	153.97		
85.00	84.79	155.00	154.97		
86.00	85.78	156.00	155.97		
87.00	86.77	157.00	156.97		
88.00	87.76	158.00	157.97		
89.00	88.75	159.00	158.97		
90.00	89.74	160.00	159.97		
91.00	90.73	161.00	160.97		
92.00	91.72	162.00	161.97		
93.00	92.71	163.00	162.97		
94.00	93.70	164.00	163.97		
95.00	94.69	165.00	164.97		
96.00	95.68	166.00	165.97		
97.00	96.67	167.00	166.97		
98.00	97.66	168.00	167.97		
99.00	98.65	169.00	168.97		
100.00	99.64	170.00	169.96		
101.00	100.63	171.00	170.96		
102.00	101.62	172.00	171.96		
103.00	102.61	173.00	172.96		
104.00	103.60	174.00	173.96		
105.00	104.59	175.00	174.96		
106.00	105.58	176.00	175.96		
107.00	106.57	177.00	176.96		
108.00	107.56	178.00	177.96		
109.00	108.55	179.00	178.96		
110.00	109.54	180.00	179.96		
111.00	110.53	181.00	180.96		
112.00	111.52	182.00	181.96		
113.00	112.51	183.00	182.96		
114.00	113.50	184.00	183.96		
115.00	114.49	185.00	184.96		
116.00	115.48	186.00	185.96		
117.00	116.47	187.00	186.96		
118.00	117.46	188.00	187.96		
119.00	118.45	189.00	188.96		

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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 0 & 10, degrees, 10 & 20, 20 & 30 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.

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Magnetic declination 27.00 degrees East of North
Correlation step 1.00 metres , interval 2.00 metres Search angle 89. degrees

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DEPTH metres	CAL. ins.	BOREHOLE TILT	FORMATION AZI	FORMATION DIP	MIN. AZI	MIN. COR.	DEPTH metres	CAL. ins.	BOREHOLE TILT	FORMATION AZI	FORMATION DIP	MIN. AZI	MIN. COR.	DEPTH metres	CAL. ins.	BOREHOLE TILT	FORMATION AZI	FORMATION DIP	MIN. AZI	MIN. COR.
9.00	3.3	1.5	5.	86.1	352.	0.50	10.00	3.3	1.5	359.	86.8	7.	0.44	11.00	3.3	1.5	358.	85.4	182.	0.51
12.00	3.3	1.4	358.	87.6	14.	0.26	13.00	3.3	1.4	6.	86.7	32.	0.37	14.00	3.3	1.4	12.	79.6	298.	0.74
15.00	3.3	1.3	357.	22.3	228.	0.43	16.00	3.3	1.2	349.	23.1	212.	0.45	17.00	3.3	1.2	359.	12.0	322.	0.62
18.00	3.3	1.1	4.	22.9	354.	0.50	19.00	3.3	1.1	355.	74.6	214.	0.61	20.00	3.3	1.0	344.	10.9	137.	0.59
21.00	3.3	1.0	346.	10.7	119.	0.65	22.00	3.3	1.1	21.	74.9	42.	0.30	23.00	3.3	1.2	57.	81.8	14.	0.88
24.00	3.3	1.3	53.	81.8	345.	0.87	25.00	3.3	1.5	24.	10.0	166.	0.89	26.00	3.3	1.7	346.	10.0	99.	0.89
27.00	3.3	1.7	333.	82.8	51.	0.41	28.00	3.3	1.8	353.	3.0	136.	0.80	29.00	3.3	1.8	9.	3.0	136.	0.82
30.00	3.3	1.8	3.	86.0	95.	0.33	31.00	3.3	1.8	352.	83.5	247.	0.61	32.00	3.3	1.8	344.	55.2	208.	0.54
33.00	3.3	1.8	342.	58.4	235.	0.36	34.00	3.3	1.7	339.	18.3	305.	0.73	35.00	3.6	1.6	330.	19.8	41.	0.64
36.00	4.0	1.5	331.	45.1	183.	0.48	37.00	4.2	1.5	355.	85.0	53.	0.30	38.00	4.2	1.3	17.	85.4	46.	0.31
39.00	4.0	1.0	21.	15.9	225.	0.34	40.00	3.6	0.9	26.	27.2	172.	0.61	41.00	3.3	0.9	32.	3.2	22.	0.38
42.00	3.3	1.0	34.	82.4	19.	0.22	43.00	3.4	1.0	32.	84.0	148.	0.25	44.00	3.6	0.9	32.	77.3	318.	0.23
45.00	4.0	0.9	36.	85.4	235.	0.26	46.00	4.6	0.9	31.	58.9	84.	0.30	47.00	4.7	1.0	21.	83.2	217.	0.41
48.00	4.3	1.1	13.	34.4	8.	0.34	49.00	4.3	1.2	9.	37.9	46.	0.39	50.00	4.0	1.2	11.	82.4	126.	0.39
51.00	3.8	1.2	13.	7.7	36.	0.47	52.00	3.6	1.2	11.	10.8	338.	0.44	53.00	3.3	1.2	10.	10.8	6.	0.51
54.00	3.3	1.1	13.	23.6	94.	0.67	55.00	3.3	1.0	17.	78.8	213.	0.43	56.00	3.5	1.0	20.	78.3	206.	0.35
57.00	3.7	1.2	14.	15.9	339.	0.41	58.00	3.5	1.4	7.	85.5	143.	0.42	59.00	3.3	1.4	6.	18.7	80.	0.44
60.00	3.3	1.4	6.	16.5	104.	0.49	61.00	3.3	1.4	6.	19.1	114.	0.38	62.00	3.3	1.4	5.	84.8	201.	0.30
63.00	3.3	1.4	5.	84.8	196.	0.37	64.00	3.3	1.3	5.	11.5	82.	0.49	65.00	3.4	1.4	5.	11.0	79.	0.79
66.00	3.4	1.4	4.	10.0	38.	0.70	67.00	3.3	1.4	4.	11.5	74.	0.74	68.00	3.3	1.3	4.	11.5	59.	0.64
69.00	3.3	1.3	5.	24.1	18.	0.60	70.00	3.3	1.2	7.	18.3	38.	0.68	71.00	3.3	1.1	10.	10.8	55.	0.78
72.00	3.3	1.1	15.	9.2	27.	0.57	73.00	3.3	1.2	21.	11.1	42.	0.51	74.00	3.3	1.3	24.	8.2	28.	0.64
75.00	3.3	1.5	24.	12.7	47.	0.64	76.00	3.3	1.7	22.	11.9	53.	0.83	77.00	3.3	1.8	19.	12.5	36.	0.85
78.00	3.3	1.9	15.	12.2	38.	0.85	79.00	3.3	1.9	12.	16.3	48.	0.84	80.00	3.3	1.8	9.	18.9	36.	0.77
81.00	3.3	1.8	6.	17.9	40.	0.84	82.00	3.3	1.7	3.	16.1	34.	0.86	83.00	3.3	1.7	1.	14.3	31.	0.78
84.00	3.3	1.6	360.	17.0	34.	0.77	85.00	3.3	1.5	358.	16.9	36.	0.78	86.00	3.3	1.4	358.	11.8	53.	0.75
87.00	3.3	1.2	2.	11.5	40.	0.68	88.00	3.3	1.2	10.	17.0	49.	0.82	89.00	3.3	1.2	17.	16.8	30.	0.69
90.00	3.3	1.4	20.	16.7	49.	0.61	91.00	3.3	1.6	18.	14.4	38.	0.52	92.00	3.3	1.7	15.	16.5	54.	0.82
93.00	3.3	1.8	12.	16.7	34.	0.67	94.00	3.3	1.8	9.	10.5	26.	0.79	95.00	3.3	1.8	5.	12.4	17.	0.80
96.00	3.3	1.7	2.	14.9	7.	0.79	97.00	3.3	1.7	1.	14.2	15.	0.85	98.00	3.3	1.6	360.	16.0	8.	0.83
99.00	3.3	1.5	0.	12.7	23.	0.75	100.00	3.3	1.4	2.	13.3	31.	0.84	101.00	3.3	1.3	6.	18.3	35.	0.89
102.00	3.3	1.2	12.	18.8	17.	0.89	103.00	3.3	1.2	20.	14.7	45.	0.72	104.00	3.3	1.3	24.	15.3	41.	0.68
105.00	3.3	1.5	23.	13.1	64.	0.68	106.00	3.3	1.6	20.	12.8	43.	0.73	107.00	3.3	1.7	15.	16.1	41.	0.88
108.00	3.3	1.7	11.	15.2	29.	0.78	109.00	3.3	1.7	7.	13.4	30.	0.81	110.00	3.3	1.6	4.	12.5	23.	0.67
111.00	3.3	1.5	1.	7.5	20.	0.56	112.00	3.3	1.4	0.	11.1	40.	0.52	113.00	3.3	1.2	1.	17.3	39.	0.54
114.00	3.3	1.1	6.	22.6	37.	0.69	115.00	3.3	1.1	15.	23.7	14.	0.55	116.00	3.3	1.2	22.	17.7	77.	0.64
117.00	3.3	1.3	23.	12.7	63.	0.82	118.00	3.3	1.5	20.	11.2	45.	0.71	119.00	3.3	1.6	15.	15.7	77.	0.55
120.00	3.3	1.7	10.	18.0	70.	0.59	121.00	3.3	1.6	5.	16.7	87.	0.72	122.00	3.3	1.6	1.	20.4	70.	0.72
123.00	3.3	1.4	358.	23.3	57.	0.70	124.00	3.3	1.3	357.	22.7	65.	0.78	125.00	3.3	1.1	0.	21.2	56.	0.77
126.00	3.3	1.0	10.	19.8	58.	0.66	127.00	3.3	1.1	18.	22.5	78.	0.77	128.00	3.3	1.3	19.	21.1	34.	0.40
129.00	3.3	1.5	17.	85.7	100.	0.20	130.00	3.3	1.6	12.	18.0	35.	0.46	131.00	3.3	1.6	7.	77.9	87.	0.37
132.00	3.3	1.6	2.	15.5	40.	0.50	133.00	3.3	1.5	358.	10.2	24.	0.48	134.00	3.3	1.3	356.	12.4	70.	0.38
135.00	3.3	1.1	0.	16.3	46.	0.54	136.00	3.3	1.0	10.	16.7	42.	0.54	137.00	3.3	1.1	17.	21.5	42.	0.62
138.00	3.3	1.3	19.	21.2	22.	0.61	139.00	3.3	1.5	16.	17.5	13.	0.50	140.00	3.3	1.7	12.	17.2	56.	0.59
141.00	3.3	1.7	7.	20.5	39.	0.69	142.00	3.3	1.7	3.	24.9	17.	0.52	143.00	3.3	1.6	0.	85.4	175.	0.34

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BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

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- 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.
- 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.
- 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.
- Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).
- Borehole positional error is derived assuming the following parameters:

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

- Error analysis may be calculated and plotted from the data listing as follows:
 - Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
 - Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
 - Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.
 - Given below is a full description of the parameters displayed on the ensuing listing:

LOG DEPTH	the depth recorded on the field logs for the borehole
TRUE DEPTH	the true vertical depth corresponding to the above depth, corrected from the start of the analysis
HOLE TILT & 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

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DEPTHS		Verticality Data Listing					POLAR ERROR CO-ORDINATES (maximum & typical)						
log	true	BOREHOLE tilt	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng radius	brng radius	brng radius	brng radius	brng radius	brng radius			
6.00	6.00	1.6	78.0	0.00	0.03	79.0	0.03	79.0	0.02	79.0	0.03	79.0	0.02
7.00	7.00	1.4	43.0	0.02	0.05	70.0	0.05	70.0	0.03	70.0	0.06	70.0	0.04
8.00	8.00	1.5	371.0	0.04	0.06	54.0	0.07	54.0	0.10	54.0	0.09	54.0	0.06
9.00	9.00	1.5	359.0	0.07	0.06	42.0	0.09	42.0	0.12	42.0	0.05	42.0	0.07
10.00	10.00	1.6	358.0	0.09	0.06	34.0	0.11	34.0	0.15	34.0	0.07	34.0	0.09
11.00	11.00	1.4	360.0	0.12	0.06	27.0	0.13	27.0	0.18	27.0	0.09	27.0	0.10
12.00	12.00	1.5	352.0	0.14	0.06	23.0	0.16	23.0	0.21	23.0	0.10	23.0	0.12
13.00	13.00	1.4	384.0	0.17	0.06	19.0	0.18	19.0	0.24	19.0	0.12	19.0	0.14
14.00	14.00	1.3	382.0	0.19	0.07	19.0	0.20	19.0	0.27	19.0	0.13	19.0	0.16
15.00	15.00	1.3	355.0	0.21	0.07	18.0	0.23	18.0	0.30	18.0	0.15	18.0	0.17
16.00	16.00	1.3	338.0	0.24	0.06	15.0	0.24	15.0	0.33	15.0	0.16	15.0	0.19
17.00	17.00	1.1	364.0	0.26	0.06	13.0	0.26	13.0	0.36	14.0	0.17	13.0	0.20
18.00	18.00	1.1	370.0	0.28	0.06	13.0	0.28	13.0	0.39	13.0	0.18	13.0	0.22
19.00	19.00	1.0	358.0	0.30	0.06	12.0	0.30	12.0	0.41	13.0	0.19	12.0	0.23
20.00	20.00	1.0	336.0	0.31	0.06	11.0	0.32	10.0	0.44	11.0	0.20	10.0	0.24
21.00	21.00	0.9	321.0	0.33	0.05	9.0	0.33	9.0	0.46	10.0	0.21	9.0	0.25
22.00	22.00	1.1	48.0	0.34	0.05	9.0	0.35	8.0	0.48	10.0	0.21	9.0	0.26
23.00	23.00	1.2	61.0	0.36	0.07	11.0	0.36	11.0	0.50	12.0	0.22	11.0	0.27
24.00	23.99	1.3	49.0	0.37	0.09	14.0	0.38	13.0	0.52	15.0	0.23	13.0	0.28
25.00	24.99	1.5	375.0	0.39	0.10	15.0	0.40	15.0	0.55	16.0	0.25	15.0	0.30
26.00	25.99	1.7	334.0	0.41	0.11	14.0	0.43	14.0	0.59	15.0	0.27	14.0	0.32
27.00	26.99	1.6	329.0	0.44	0.09	11.0	0.45	11.0	0.61	12.0	0.28	11.0	0.34
28.00	27.99	1.8	375.0	0.47	0.08	10.0	0.47	10.0	0.65	10.0	0.30	10.0	0.36
29.00	28.99	1.9	365.0	0.50	0.08	10.0	0.50	10.0	0.69	10.0	0.32	10.0	0.38
30.00	29.99	1.8	359.0	0.53	0.09	10.0	0.54	9.0	0.73	10.0	0.34	10.0	0.41
31.00	30.99	1.8	353.0	0.56	0.09	9.0	0.57	9.0	0.77	9.0	0.37	9.0	0.43
32.00	31.99	1.8	347.0	0.59	0.08	8.0	0.60	8.0	0.80	8.0	0.39	8.0	0.46
33.00	32.99	1.8	337.0	0.62	0.07	6.0	0.62	6.0	0.84	6.0	0.41	6.0	0.48
34.00	33.99	1.6	341.0	0.65	0.06	5.0	0.65	5.0	0.87	5.0	0.43	5.0	0.50
35.00	34.99	1.6	340.0	0.67	0.05	4.0	0.68	4.0	0.91	4.0	0.44	4.0	0.52
36.00	35.99	1.5	288.0	0.69	0.03	3.0	0.69	3.0	0.93	2.0	0.46	3.0	0.54
37.00	36.99	1.4	363.0	0.72	0.02	2.0	0.72	2.0	0.96	2.0	0.47	2.0	0.55
38.00	37.99	1.4	375.0	0.74	0.03	2.0	0.74	3.0	0.99	2.0	0.49	3.0	0.57
39.00	38.99	0.9	383.0	0.76	0.04	3.0	0.76	3.0	1.02	2.0	0.50	3.0	0.59
40.00	39.99	1.0	381.0	0.77	0.04	3.0	0.78	4.0	1.05	3.0	0.51	3.0	0.60
41.00	40.99	0.9	380.0	0.79	0.05	4.0	0.79	4.0	1.07	3.0	0.51	4.0	0.61
42.00	41.99	1.0	37.0	0.80	0.05	4.0	0.80	5.0	1.09	4.0	0.52	5.0	0.61
43.00	42.99	0.9	28.0	0.82	0.07	5.0	0.82	5.0	1.11	4.0	0.53	5.0	0.62
44.00	43.99	0.9	31.0	0.83	0.08	6.0	0.83	6.0	1.13	4.0	0.53	6.0	0.63
45.00	44.99	1.0	44.0	0.84	0.09	6.0	0.85	7.0	1.16	5.0	0.54	7.0	0.64
46.00	45.99	1.0	37.0	0.86	0.10	7.0	0.86	7.0	1.18	5.0	0.55	7.0	0.65
47.00	46.99	1.0	378.0	0.87	0.11	7.0	0.88	8.0	1.20	6.0	0.55	7.0	0.66
48.00	47.99	1.1	370.0	0.89	0.11	7.0	0.90	8.0	1.23	6.0	0.56	8.0	0.67
49.00	48.99	1.2	371.0	0.91	0.11	7.0	0.92	8.0	1.26	6.0	0.57	8.0	0.69
50.00	49.99	1.2	372.0	0.93	0.12	7.0	0.94	8.0	1.29	6.0	0.59	8.0	0.70
51.00	50.99	1.1	382.0	0.95	0.12	7.0	0.96	8.0	1.32	6.0	0.60	8.0	0.72
52.00	51.99	1.3	368.0	0.97	0.13	7.0	0.98	8.0	1.35	6.0	0.61	8.0	0.73
53.00	52.99	1.1	372.0	0.99	0.13	7.0	1.00	8.0	1.38	6.0	0.62	8.0	0.75
54.00	53.99	1.1	371.0	1.01	0.13	8.0	1.02	8.0	1.40	6.0	0.63	8.0	0.76
55.00	54.99	1.0	375.0	1.03	0.14	8.0	1.04	8.0	1.43	6.0	0.64	8.0	0.78

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Date processed: 07-AUG-84 Page 2

DEPTHS		Verticality Data Listing					POLAR ERROR CO-ORDINATES (maximum & typical)						
log	true	BOREHOLE tilt	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng radius	brng radius	brng radius	brng radius	brng radius	brng radius			
56.00	55.99	1.1	379.0	1.05	0.14	8.0	1.05	8.0	1.46	7.0	0.65	8.0	0.79
57.00	56.99	1.5	370.0	1.06	0.15	8.0	1.07	9.0	1.48	7.0	0.66	8.0	0.80
58.00	57.99	1.3	365.0	1.09	0.15	8.0	1.10	9.0	1.52	7.0	0.68	8.0	0.82
59.00	58.99	1.4	367.0	1.11	0.16	8.0	1.12	9.0	1.55	7.0	0.69	8.0	0.83
60.00	59.98	1.4	369.0	1.13	0.16	8.0	1.14	9.0	1.58	7.0	0.71	8.0	0.85
61.00	60.98	1.4	367.0	1.16	0.16	8.0	1.17	8.0	1.61	7.0	0.72	8.0	0.87
62.00	61.98	1.4	365.0	1.18	0.16	8.0	1.19	8.0	1.65	7.0	0.74	8.0	0.89
63.00	62.98	1.3	363.0	1.21	0.16	8.0	1.22	8.0	1.68	7.0	0.75	8.0	0.91
64.00	63.98	1.3	365.0	1.23	0.17	8.0	1.24	8.0	1.71	7.0	0.77	8.0	0.93
65.00	64.98	1.3	362.0	1.25	0.17	8.0	1.26	8.0	1.74	7.0	0.78	8.0	0.94
66.00	65.98	1.4	364.0	1.28	0.17	8.0	1.29	8.0	1.78	7.0	0.80	8.0	0.96
67.00	66.98	1.4	363.0	1.30	0.17	8.0	1.31	8.0	1.81	6.0	0.81	8.0	0.98
68.00	67.98	1.3	368.0	1.32	0.17	7.0	1.34	8.0	1.84	6.0	0.83	8.0	1.00
69.00	68.98	1.3	367.0	1.35	0.18	7.0	1.36	8.0	1.87	6.0	0.84	8.0	1.01
70.00	69.98	1.2	369.0	1.37	0.18	7.0	1.38	8.0	1.90	6.0	0.85	8.0	1.03
71.00	70.98	1.1	370.0	1.39	0.18	7.0	1.40	8.0	1.93	6.0	0.87	8.0	1.04
72.00	71.98	1.1	377.0	1.41	0.18	7.0	1.42	8.0	1.96	6.0	0.88	8.0	1.06
73.00	72.98	1.2	380.0	1.42	0.19	8.0	1.44	8.0	1.99	7.0	0.89	8.0	1.07
74.00	73.98	1.4	384.0	1.44	0.20	8.0	1.46	8.0	2.02	7.0	0.90	8.0	1.09
75.00	74.98	1.5	384.0	1.47	0.21	8.0	1.48	9.0	2.05	7.0	0.91	8.0	1.10
76.00	75.98	1.7	383.0	1.49	0.22	8.0	1.51	9.0	2.08	8.0	0.93	9.0	1.13
77.00	76.98	1.8	378.0	1.52	0.23	9.0	1.54	9.0	2.12	8.0	0.95	9.0	1.15
78.00	77.98	1.9	373.0	1.55	0.24	9.0	1.57	9.0	2.16	8.0	0.98	9.0	1.18
79.00	78.98	1.9	371.0	1.58	0.25	9.0	1.60	9.0	2.20	8.0	1.00	9.0	1.20
80.00	79.98	1.8	370.0	1.62	0.25	9.0	1.64	9.0	2.25	8.0	1.03	9.0	1.23
81.00	80.98	1.7	367.0	1.65	0.26	9.0	1.67	9.0	2.29	8.0	1.05	9.0	1.25
82.00	81.98	1.8	365.0	1.68	0.26	9.0	1.70	9.0	2.33	8.0	1.07	9.0	1.28
83.00	82.98	1.7	363.0	1.71	0.26	9.0	1.73	9.0	2.36	8.0	1.09	9.0	1.30
84.00	83.98	1.6	360.0	1.74	0.26	9.0	1.76	9.0	2.40	8.0	1.11	9.0	1.33
85.00	84.98	1.5	360.0	1.76	0.26	8.0	1.78	9.0	2.44	8.0	1.13	9.0	1.35
86.00	85.98	1.3	357.0	1.79	0.26	8.0	1.81	9.0	2.47	8.0	1.15	9.0	1.37
87.00	86.98	1.2	361.0	1.81	0.26	8.0	1.83	8.0	2.50	7.0	1.16	8.0	1.38
88.00	87.98	1.2	370.0	1.83	0.26	8.0	1.85	8.0	2.53	7.0	1.17	8.0	1.40
89.00	88.98	1.2	38										



DIPMETER ANALYSIS

704

CLIENT _____
 BOREHOLE _____
 AREA _____
 COUNTRY _____

SUNCOR INC.
 ST-DH-84-04
 SUSTUT B.C
 CANADA

DATE LOGGED...15-JUL-84
 DATE PROCESSED...07-AUG-84



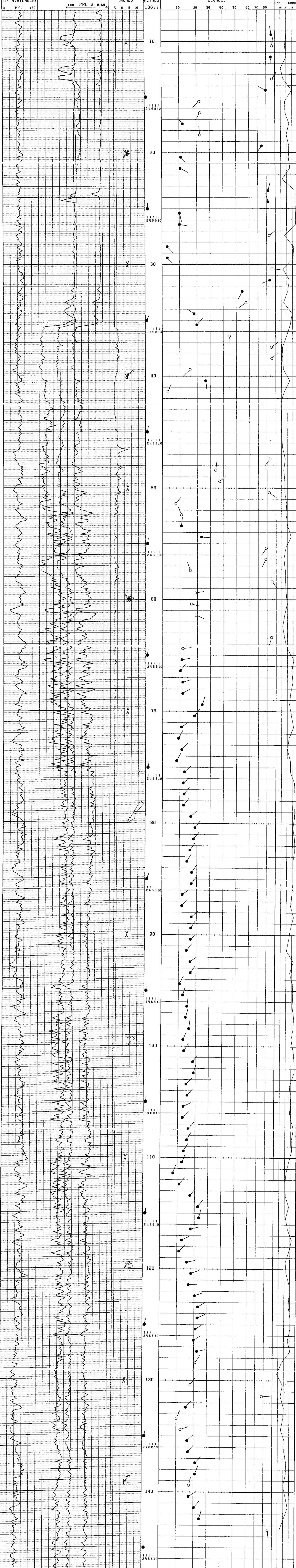
COMMENTS.....

INTERPRETATION PARAMETERS

STEP 1.00M.
 INTERVAL 2.00M.
 SEARCH ANGLE 89.
 DECLINATION 27.0 EAST
 DEPTH RANGE 7.16 - 148.20M.
 DATE PROCESSED 07-AUG-84

AVERAGE BOREHOLE DEVIATION & DIRECTION
 ANNOTATED EVERY 10.0M.
 ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES.
 .1" RADIUS PER DIP MARKER DISPLAYED

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



0.53
0.54
0.55
0.56
0.57
0.58
0.59
0.60



CONTINUOUS VERTICALITY ANALYSIS

CLIENT _____
 BOREHOLE _____
 AREA _____
 COUNTRY _____

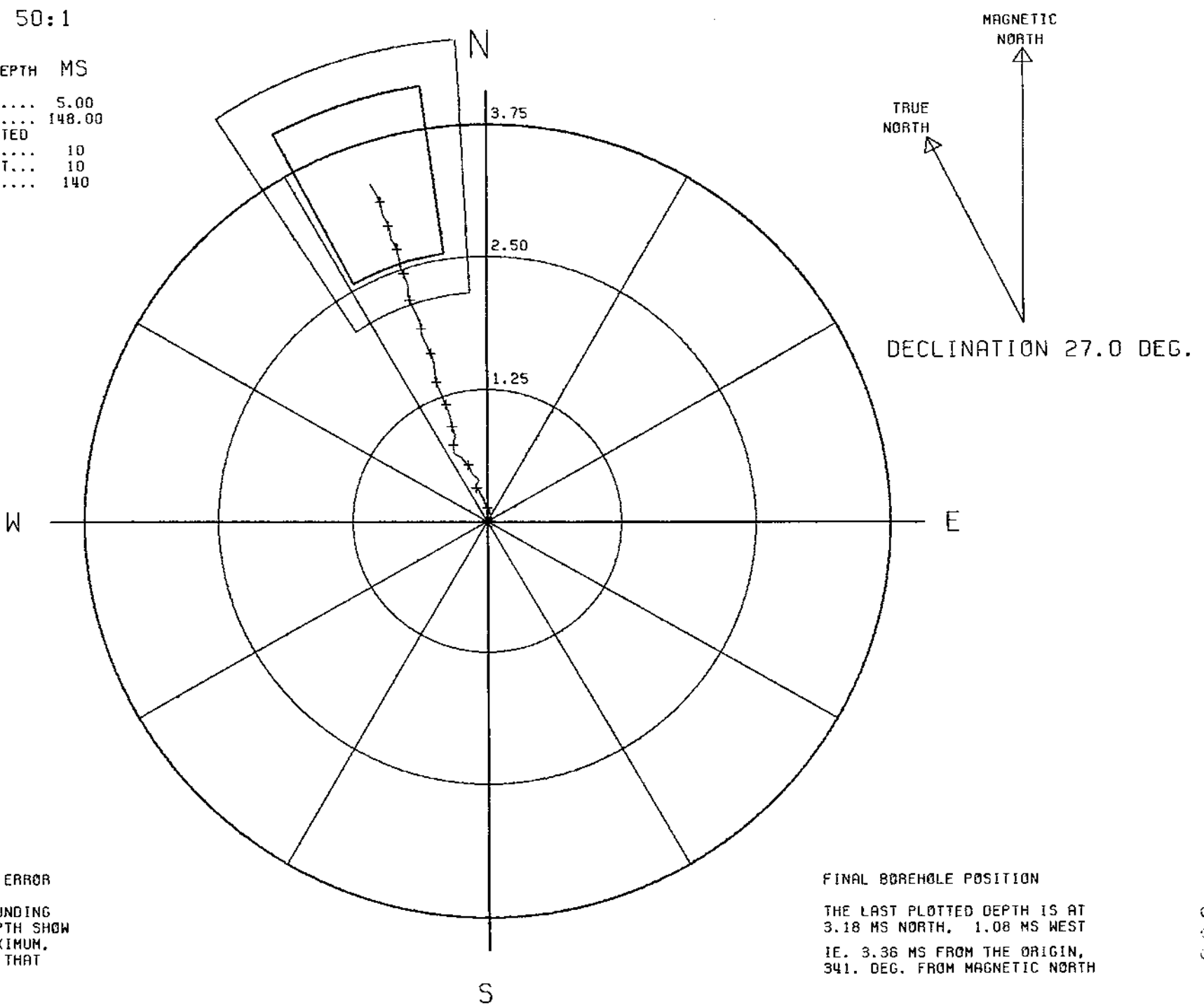
SUNCOR INC.
 ST-DH-84-04
 SUSTUT B.C
 CANADA

DATE LOGGED.....15-JUL-84
 DATE PROCESSED..07-AUG-84
 UPPER REFERENCE POINT....5.00M
 LOWER REFERENCE POINT....148.00M

CROSS-SECTION

SCALE: 50:1

ALL FIGURES IN LOG DEPTH MS
 TARGET ORIGIN DEPTH..... 5.00
 LAST PLOTTED DEPTH..... 148.00
 DEPTH MARKERS ANNOTATED
 IN MULTIPLES OF..... 10
 FIRST DEPTH MARKER AT.... 10
 LAST DEPTH MARKER AT.... 140



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

FINAL BOREHOLE POSITION
 THE LAST PLOTTED DEPTH IS AT
 3.18 MS NORTH, 1.08 MS WEST
 IE. 3.36 MS FROM THE ORIGIN,
 341. DEG. FROM MAGNETIC NORTH

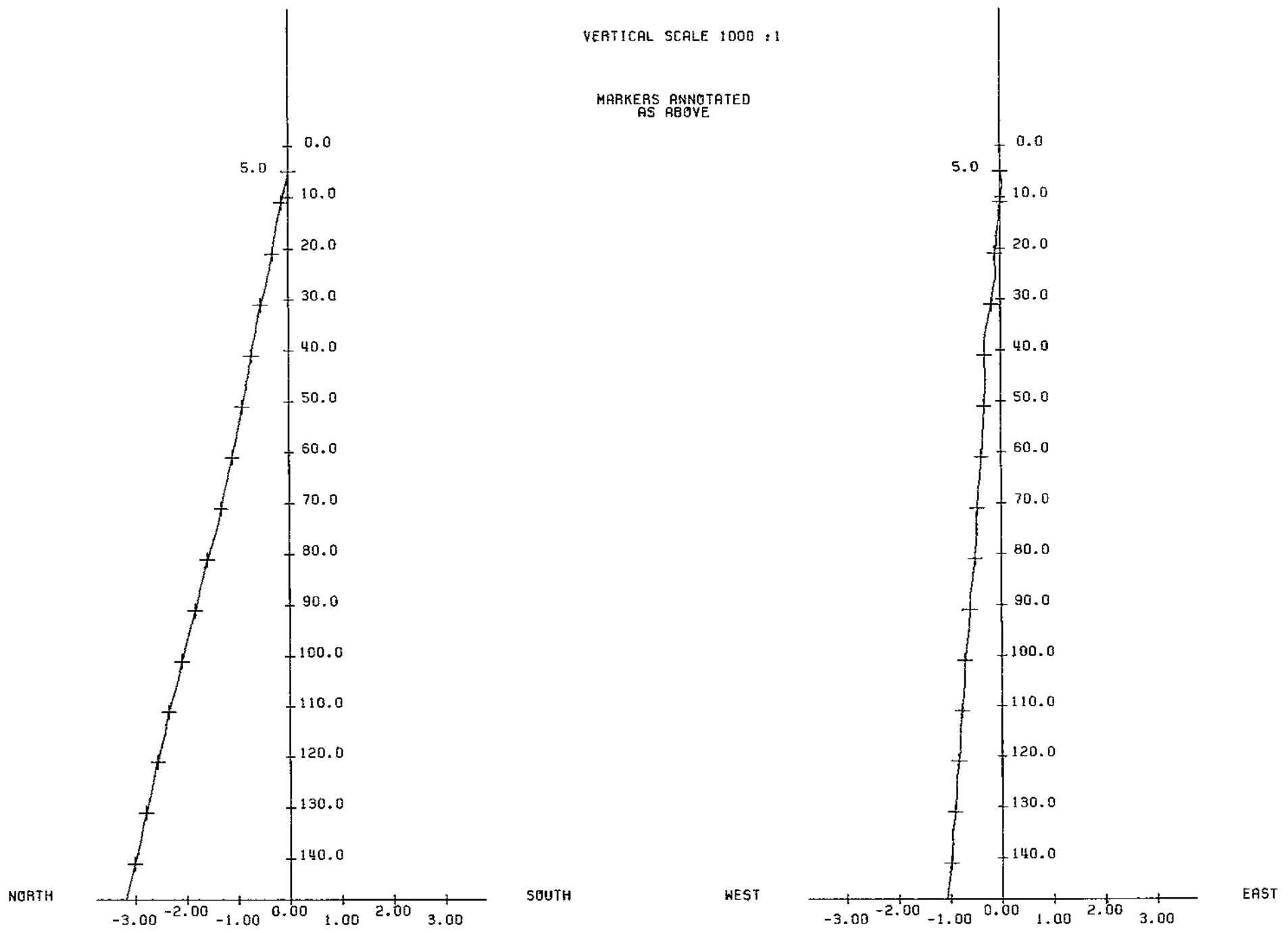
VERTICAL SECTIONS
 (TRUE DEPTH VS. DISPLACEMENT)

N-S SECTION

W-E SECTION

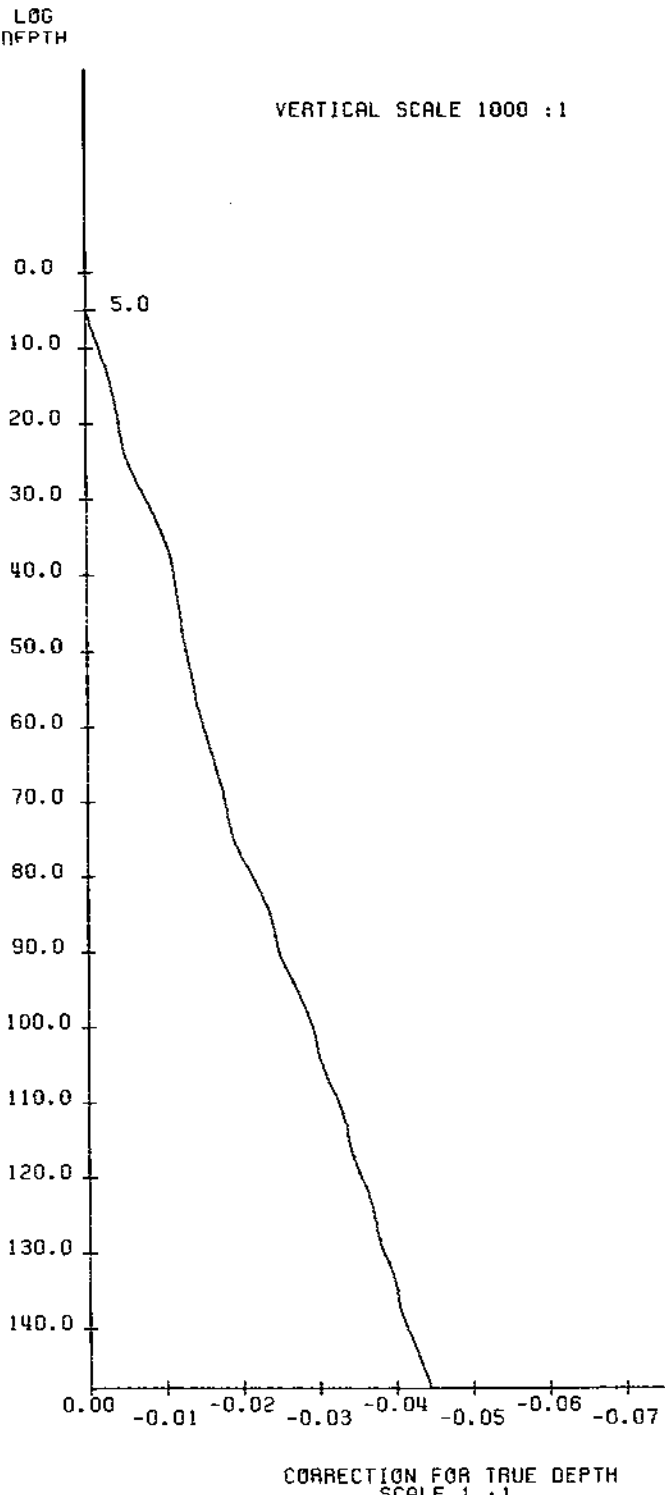
VERTICAL SCALE 1000 : 1

MARKERS ANNOTATED
 AS ABOVE



HORIZONTAL SCALE 100 : 1

DEPTH CORRECTION ANALYSIS



VERTICAL SCALE 1000 : 1

CORRECTION FOR TRUE DEPTH
 SCALE 1 : 1

DEPTHS:		DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE	LOG	TRUE
6.00	6.00	76.00	75.98	146.00	145.96
7.00	7.00	77.00	76.98	147.00	146.96
8.00	8.00	78.00	77.98	148.00	147.96
9.00	9.00	79.00	78.98		
10.00	10.00	80.00	79.98		
11.00	11.00	81.00	80.98		
12.00	12.00	82.00	81.98		
13.00	13.00	83.00	82.98		
14.00	14.00	84.00	83.98		
15.00	15.00	85.00	84.98		
16.00	16.00	86.00	85.98		
17.00	17.00	87.00	86.98		
18.00	18.00	88.00	87.98		
19.00	19.00	89.00	88.98		
20.00	20.00	90.00	89.98		
21.00	21.00	91.00	90.98		
22.00	22.00	92.00	91.97		
23.00	23.00	93.00	92.97		
24.00	23.99	94.00	93.97		
25.00	24.99	95.00	94.97		
26.00	25.99	96.00	95.97		
27.00	26.99	97.00	96.97		
28.00	27.99	98.00	97.97		
29.00	28.99	99.00	98.97		
30.00	29.99	100.00	99.97		
31.00	30.99	101.00	100.97		
32.00	31.99	102.00	101.97		
33.00	32.99	103.00	102.97		
34.00	33.99	104.00	103.97		
35.00	34.99	105.00	104.97		
36.00	35.99	106.00	105.97		
37.00	36.99	107.00	106.97		
38.00	37.99	108.00	107.97		
39.00	38.99	109.00	108.97		
40.00	39.99	110.00	109.97		
41.00	40.99	111.00	110.97		
42.00	41.99	112.00	111.97		
43.00	42.99	113.00	112.97		
44.00	43.99	114.00	113.97		
45.00	44.99	115.00	114.97		
46.00	45.99	116.00	115.97		
47.00	46.99	117.00	116.97		
48.00	47.99	118.00	117.97		
49.00	48.99	119.00	118.96		
50.00	49.99	120.00	119.96		
51.00	50.99	121.00	120.96		
52.00	51.99	122.00	121.96		
53.00	52.99	123.00	122.96		
54.00	53.99	124.00	123.96		
55.00	54.99	125.00	124.96		
56.00	55.99	126.00	125.96		
57.00	56.99	127.00	126.96		
58.00	57.99	128.00	127.96		
59.00	58.99	129.00	128.96		
60.00	59.98	130.00	129.96		
61.00	60.98	131.00	130.96		
62.00	61.98	132.00	131.96		
63.00	62.98	133.00	132.96		
64.00	63.98	134.00	133.96		
65.00	64.98	135.00	134.96		
66.00	65.98	136.00	135.96		
67.00	66.98	137.00	136.96		
68.00	67.98	138.00	137.96		
69.00	68.98	139.00	138.96		
70.00	69.98	140.00	139.96		
71.00	70.98	141.00	140.96		
72.00	71.98	142.00	141.96		
73.00	72.98	143.00	142.96		
74.00	73.98	144.00	143.96		
75.00	74.98	145.00	144.96		

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

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- All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 50000:1 (metric) & 40000:1 (imperial), and the minimum 1:1.
- 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.
- 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.
- Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).
- Borehole positional error is derived assuming the following parameters:

	TILT(degrees)	AZIMUTH(degrees)
Typical Error	+/- 0.33333	+/- 10.0
Maximum Error	+/- 0.5	+/- 15.0
- Error analysis may be calculated and plotted from the data listing as follows:
 - Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
 - Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
 - Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.
- Given below is a full description of the parameters displayed on the ensuing listing:

LOG DEPTH	the depth recorded on the field logs for the borehole
TRUE DEPTH	the true vertical depth corresponding to the above depth, corrected from the start of the analysis
HOLE TILT & 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

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Date processed: 07-AUG-84 Page 1

DEPTHS		All co-ordinates with respect to True North					POLAR ERROR CO-ORDINATES (maximum & typical)								
log	true	BOREHOLE tilt	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng radius	brng radius	brng radius	brng radius	brng radius	brng radius					
19.00	19.00	1.9	169.	-0.03	-0.01	199.	0.03	199.	0.04	199.	0.02	199.	0.03	199.	0.02
20.00	20.00	1.8	174.	-0.06	-0.01	185.	0.06	185.	0.07	185.	0.04	185.	0.07	185.	0.05
21.00	21.00	1.7	167.	-0.09	0.00	180.	0.09	180.	0.11	181.	0.06	180.	0.10	180.	0.07
22.00	22.00	1.7	163.	-0.11	0.01	177.	0.11	177.	0.15	177.	0.08	177.	0.14	177.	0.09
23.00	23.00	1.5	156.	-0.14	0.02	174.	0.14	174.	0.18	174.	0.10	174.	0.17	174.	0.11
24.00	24.00	1.8	152.	-0.17	0.03	171.	0.17	171.	0.22	171.	0.12	171.	0.20	171.	0.14
25.00	25.00	1.7	155.	-0.19	0.04	169.	0.19	169.	0.26	169.	0.14	169.	0.24	169.	0.16
26.00	26.00	1.7	154.	-0.22	0.05	167.	0.22	167.	0.29	167.	0.16	167.	0.27	167.	0.18
27.00	27.00	1.6	153.	-0.25	0.07	165.	0.25	165.	0.33	165.	0.18	165.	0.31	165.	0.21
28.00	28.00	1.6	154.	-0.27	0.08	164.	0.27	164.	0.37	164.	0.20	164.	0.34	164.	0.23
29.00	29.00	1.0	156.	-0.29	0.09	163.	0.29	163.	0.40	163.	0.21	163.	0.37	163.	0.24
30.00	30.00	0.3	175.	-0.30	0.09	163.	0.30	163.	0.42	163.	0.22	163.	0.38	163.	0.25
31.00	31.00	0.6	165.	-0.31	0.09	164.	0.31	164.	0.43	163.	0.21	164.	0.40	163.	0.25
32.00	32.00	1.3	155.	-0.33	0.10	163.	0.33	163.	0.46	163.	0.22	163.	0.42	163.	0.26
33.00	32.99	2.1	153.	-0.35	0.11	162.	0.35	162.	0.50	162.	0.24	163.	0.46	162.	0.29
34.00	33.99	2.3	160.	-0.39	0.13	162.	0.41	162.	0.54	162.	0.27	162.	0.50	162.	0.32
35.00	34.99	2.3	162.	-0.43	0.14	162.	0.45	162.	0.59	161.	0.30	162.	0.54	162.	0.35
36.00	35.99	2.3	162.	-0.46	0.15	162.	0.49	162.	0.64	161.	0.34	162.	0.59	162.	0.39
37.00	36.99	2.3	160.	-0.50	0.17	162.	0.53	162.	0.69	161.	0.37	162.	0.64	162.	0.42
38.00	37.99	2.1	166.	-0.54	0.18	162.	0.57	162.	0.74	161.	0.40	162.	0.68	162.	0.45
39.00	38.99	2.0	162.	-0.57	0.19	162.	0.60	162.	0.77	162.	0.42	162.	0.72	162.	0.48
40.00	39.99	2.0	164.	-0.61	0.20	162.	0.64	162.	0.83	162.	0.45	162.	0.76	162.	0.51
41.00	40.99	2.0	163.	-0.64	0.21	162.	0.67	162.	0.87	162.	0.48	162.	0.80	162.	0.54
42.00	41.99	2.0	162.	-0.67	0.22	162.	0.71	162.	0.91	162.	0.50	162.	0.85	162.	0.57
43.00	42.99	2.0	165.	-0.71	0.23	162.	0.74	162.	0.96	162.	0.53	162.	0.89	162.	0.60
44.00	43.99	2.0	164.	-0.74	0.23	162.	0.78	163.	1.00	162.	0.56	162.	0.93	162.	0.63
45.00	44.99	2.0	163.	-0.77	0.24	163.	0.81	163.	1.04	162.	0.58	163.	0.97	162.	0.66
46.00	45.99	1.9	165.	-0.81	0.25	163.	0.85	163.	1.09	162.	0.61	163.	1.01	163.	0.69
47.00	46.99	2.0	165.	-0.84	0.26	163.	0.88	163.	1.13	163.	0.63	163.	1.05	163.	0.72
48.00	47.98	1.9	164.	-0.87	0.27	163.	0.91	163.	1.17	163.	0.66	163.	1.09	163.	0.74
49.00	48.98	2.0	165.	-0.91	0.28	163.	0.95	163.	1.21	163.	0.68	163.	1.13	163.	0.77
50.00	49.98	1.9	167.	-0.94	0.29	163.	0.98	163.	1.26	163.	0.71	163.	1.16	163.	0.80
51.00	50.98	1.9	164.	-0.97	0.30	163.	1.02	163.	1.30	163.	0.73	163.	1.20	163.	0.83
52.00	51.98	2.0	161.	-1.00	0.31	163.	1.06	163.	1.34	163.	0.76	163.	1.24	163.	0.85
53.00	52.98	1.8	163.	-1.03	0.32	163.	1.08	163.	1.38	163.	0.78	163.	1.28	163.	0.88
54.00	53.98	1.8	161.	-1.06	0.33	163.	1.11	163.	1.42	163.	0.80	163.	1.32	163.	0.91
55.00	54.98	1.8	162.	-1.09	0.34	163.	1.15	163.	1.46	163.	0.83	163.	1.36	163.	0.93
56.00	55.98	1.8	163.	-1.13	0.35	163.	1.18	163.	1.50	163.	0.85	163.	1.40	163.	0.96
57.00	56.98	1.8	162.	-1.16	0.36	163.	1.21	163.	1.54	163.	0.87	163.	1.43	163.	0.99
58.00	57.98	1.7	163.	-1.18	0.37	163.	1.24	163.	1.58	163.	0.90	163.	1.47	163.	1.01
59.00	58.98	1.7	166.	-1.21	0.38	163.	1.27	163.	1.62	163.	0.92	163.	1.51	163.	1.04
60.00	59.98	1.7	163.	-1.24	0.39	163.	1.30	163.	1.66	163.	0.94	163.	1.54	163.	1.06
61.00	60.98	1.8	160.	-1.27	0.40	163.	1.33	163.	1.70	163.	0.96	163.	1.58	163.	1.09
62.00	61.98	2.0	158.	-1.30	0.41	163.	1.37	163.	1.74	163.	0.99	163.	1.62	163.	1.11
63.00	62.98	1.8	159.	-1.33	0.42	163.	1.40	163.	1.79	162.	1.01	163.	1.66	162.	1.14
64.00	63.98	1.7	157.	-1.36	0.43	162.	1.43	162.	1.82	162.	1.03	162.	1.69	162.	1.16
65.00	64.98	1.7	156.	-1.39	0.44	162.	1.46	162.	1.86	162.	1.05	162.	1.73	162.	1.19
66.00	65.98	1.7	158.	-1.42	0.45	162.	1.49	162.	1.90	162.	1.07	162.	1.76	162.	1.21
67.00	66.98	1.6	157.	-1.44	0.47	162.	1.52	162.	1.94	162.	1.09	162.	1.80	162.	1.24
68.00	67.97	1.7	156.	-1.47	0.48	162.	1.55	162.	1.98	162.	1.11	162.	1.83	162.	1.26

ST-DH-84-05

Date processed: 07-AUG-84 Page 2

DEPTHS		All co-ordinates with respect to True North					POLAR ERROR CO-ORDINATES (maximum & typical)								
log	true	BOREHOLE tilt	AXIAL CO-ORDS. North	AXIAL CO-ORDS. East	POLAR brng radius	brng radius	brng radius	brng radius	brng radius	brng radius					
69.00	68.97	1.8	154.	-1.50	0.49	162.	1.58	162.	2.02	162.	1.14	162.	1.87	162.	1.28
70.00	69.97	1.7	158.	-1.53	0.50	162.	1.61	162.	2.05	162.	1.16	162.	1.90	162.	1.31
71.00	70.97	1.7	159.	-1.55	0.51	162.	1.64	162.	2.08	162.	1.18	162.	1.94	162.	1.33
72.00	71.97	1.7	158.	-1.58	0.53	162.	1.67	162.	2.13	162.	1.20	162.	1.98	162.	1.35
73.00	72.97	1.6	153.	-1.61	0.54	161.	1.69	161.	2.17	161.	1.22	161.	2.01	161.	1.38
74.00	73.97	1.8	156.	-1.63	0.55	161.	1.72	161.	2.21	161.	1.24	161.	2.05	161.	1.40
75.00	74.97	1.7	157.	-1.66	0.56	161.	1.75	161.	2.25	161.	1.26	161.	2.08	161.	1.43
76.00	75.97	1.8	155.	-1.69	0.58	161.	1.79	161.	2.29	161.	1.28	161.	2.12	161.	1.45
77.00	76.97	1.7	155.	-1.72	0.59	161.	1.82	161.	2.32	161.	1.31	161.	2.15	161.	1.48
78.00	77.97	1.8	150.	-1.74	0.60	161.	1.85	161.	2.36	161.	1.33	161.	2.19	161.	1.50
79.00	78.97	1.7	155.	-1.77	0.62	161.	1.88	161.	2.40	161.	1.35	161.	2.23	161.	1.52
80.00	79.97	1.8	152.	-1.80	0.63	161.	1.91	161.	2.44	161.	1.37	161.	2.26	161.	1.55
81.00	80.97	1.7	153.	-1.82	0.65	161.	1.94	161.	2.48	160.	1.39	161.	2.30	160.	1.57
82.00	81.97	1.8	151.	-1.85	0.66	160.	1.97	160.	2.52	160.	1.41	160.	2.33	160.	1.60
83.00	82.97	1.8	149.	-1.88	0.67	160.	2.00	160.	2.56	160.	1.43	160.	2.37	160.	1.62
84.00	83.97	1.8	149.	-1.90	0.69	160.	2.03	160.	2.59	160.	1.46	160.	2.40	160.	1.65
85.00	84.97	1.7	149.	-1.93	0.70	160.	2.06	160.	2.63	160.	1.48	160.	2.44	160.	1.67
86.00	85.97	1.7	148.	-1.96	0.72	160.	2.08	160.	2.67	160.	1.50	160.	2.48	160.	1.69
87.00	86.97	1.8	148.	-1.98	0.74	160.	2.11	160.	2.71	160.	1.52	160.	2.51	160.	1.72
88.00	87.97	1.8	147.	-2.01	0.75	159.	2.14	159.	2.75	159.	1.54	159.	2.55	159.	1.74
89.00	88.97	1.8	144.	-2.03	0.77	159.	2.17	159.	2.79	159.	1.56	159.	2.58	159.	1.77
90.00	89.96	1.8	146.	-2.06	0.79	159.	2.20	159.	2.82	159.	1.58	159.	2.62	159.	1.79
91.00	90.96	1.8	142.	-2.09	0.80	159.	2.23	159.	2.86	159.	1.61	159.	2.65	159.	1.82
92.00	91.96	1.8	145.	-2.11	0.82	159.	2.27	159.	2.90	159.	1.63	159.	2.69	159.	1.84
93.00	92.96	1.8	146.	-2.14	0.84	159.	2.30	159.	2.94	159.	1.65	159.	2.73	159.	1.86
94.00	93.96	1.9	143.	-2.16	0.86	158.	2.33	158.	2.						



DIPMETER ANALYSIS

CLIENT _____
 BOREHOLE _____
 AREA _____
 COUNTRY _____

SUNCOR INC.
 ST-DH-84-05
 SUSTUT B.C
 CANADA

DATE LOGGED.....17-JUL-84
 DATE PROCESSED..03-AUG-84



COMMENTS.....

TOOL STUCK @ 33 M.
 DATA LOSS BETWEEN
 33 M & 28 M.

INTERPRETATION PARAMETERS

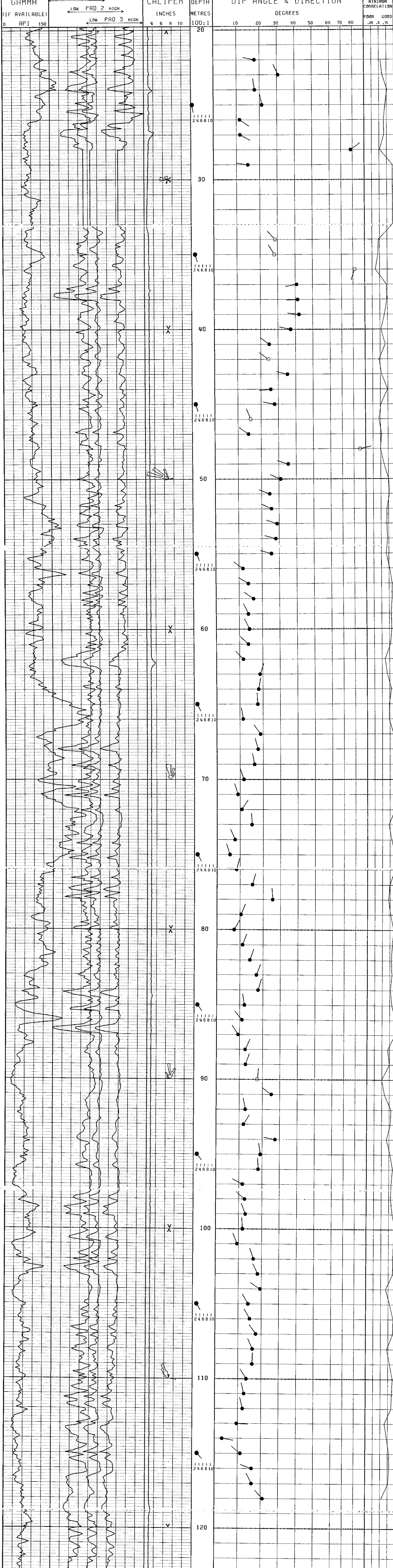
STEP 1.00M. DECLINATION 27.0 EAST
 INTERVAL 2.00M. DEPTH RANGE 19.76 - 123.00M.
 SEARCH ANGLE 89. DATE PROCESSED 03-AUG-84

AVERAGE BOREHOLE DEVIATION & DIRECTION
 ANNOTATED EVERY 10.0M.

LEGEND:

● GOOD (>0.50)
 ○ FAIR (>0.30)

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



704

BPB DIPMETER ANALYSIS
INTERPRETATION NOTES

- 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.
- 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.
- The borehole tilt and azimuth displayed on the plot are the average values over the whole major division.
- 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.
- The grid over which the computed dip information is displayed is locally linear. That is to say it is linear between 0 & 10, degrees, 10 & 20, 20 & 30 etc.
- 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.
- 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.

ST-DH-84-05

Magnetic declination 27.00 degrees East of North
Correlation step 1.00 metres, interval 2.00 metres Search angle 89. degrees

07-AUG-84
PAGE 1

DEPTH metres	CAL. ins.	BOREHOLE TILT	FORMATION AZI	MIN. COR.	DEPTH metres	CAL. ins.	BOREHOLE TILT	FORMATION AZI	MIN. COR.	DEPTH metres	CAL. ins.	BOREHOLE TILT	FORMATION AZI	MIN. COR.						
22.00	3.0	1.6	164.	17.8	282.	0.55	23.00	3.0	1.6	160.	30.7	336.	0.60	24.00	3.1	1.6	156.	17.8	352.	0.77
25.00	3.1	1.7	154.	21.5	348.	0.70	26.00	3.1	1.7	153.	11.4	123.	0.65	27.00	3.2	1.7	154.	11.6	118.	0.65
28.00	3.0	1.5	155.	78.5	53.	0.52	29.00	2.8	1.0	157.	14.9	279.	0.94	34.00	2.8	2.2	158.	29.6	318.	0.46
35.00	2.9	2.3	160.	29.2	327.	0.44	36.00	2.9	2.3	161.	81.4	198.	0.36	37.00	2.9	2.2	162.	40.8	260.	0.72
38.00	2.9	2.1	163.	41.5	267.	0.73	39.00	2.9	2.1	164.	42.3	277.	0.65	40.00	2.9	2.0	164.	38.1	283.	0.53
41.00	2.9	2.0	165.	25.5	308.	0.67	42.00	2.9	2.0	165.	24.9	307.	0.46	43.00	2.9	2.0	164.	35.9	283.	0.54
44.00	2.9	2.0	165.	26.4	264.	0.74	45.00	2.9	2.0	165.	28.7	282.	0.51	46.00	2.9	2.0	165.	15.4	338.	0.45
47.00	2.9	2.0	165.	14.5	306.	0.53	48.00	2.9	1.9	165.	85.2	77.	0.49	49.00	2.9	1.9	164.	36.0	287.	0.61
50.00	2.9	1.9	164.	31.0	294.	0.75	51.00	2.9	1.9	164.	25.2	292.	0.78	52.00	2.9	1.9	164.	26.4	295.	0.70
53.00	2.9	1.9	163.	29.9	289.	0.69	54.00	2.9	1.9	162.	29.0	286.	0.70	55.00	2.9	1.8	162.	26.1	286.	0.66
56.00	2.9	1.8	162.	11.7	306.	0.77	57.00	2.9	1.8	162.	14.0	302.	0.85	58.00	2.9	1.8	162.	16.2	304.	0.84
59.00	2.9	1.8	161.	13.9	334.	0.81	60.00	2.9	1.8	161.	14.3	334.	0.83	61.00	2.9	1.8	160.	13.8	314.	0.78
62.00	3.0	1.8	159.	11.6	315.	0.60	63.00	3.0	1.8	159.	18.8	18.	0.67	64.00	2.9	1.8	158.	18.1	10.	0.81
65.00	2.9	1.7	158.	17.7	356.	0.73	66.00	2.9	1.7	156.	11.4	350.	0.73	67.00	2.9	1.7	156.	18.8	325.	0.87
68.00	2.9	1.7	156.	17.8	344.	0.90	69.00	2.9	1.7	156.	16.3	349.	0.91	70.00	2.8	1.7	156.	11.6	341.	0.93
71.00	2.9	1.7	156.	9.1	342.	0.94	72.00	2.9	1.7	155.	10.7	33.	0.91	73.00	2.9	1.7	155.	15.1	356.	0.71
74.00	2.9	1.7	155.	7.8	337.	0.81	75.00	2.9	1.7	156.	5.6	342.	0.91	76.00	2.9	1.8	155.	8.4	16.	0.91
77.00	2.9	1.8	154.	15.3	15.	0.75	78.00	2.9	1.7	153.	26.1	356.	0.70	79.00	2.9	1.7	152.	10.4	22.	0.77
80.00	2.9	1.7	152.	7.5	30.	0.88	81.00	2.9	1.7	152.	11.1	21.	0.83	82.00	2.9	1.7	152.	14.3	19.	0.80
83.00	2.9	1.7	151.	17.2	20.	0.82	84.00	2.9	1.7	150.	17.9	17.	0.77	85.00	2.9	1.7	149.	12.0	351.	0.82
86.00	2.9	1.7	149.	11.0	321.	0.94	87.00	2.9	1.7	148.	9.3	327.	0.93	88.00	2.9	1.8	147.	12.5	25.	0.69
89.00	2.9	1.8	147.	12.6	20.	0.75	90.00	2.9	1.8	146.	17.7	6.	0.49	91.00	2.9	1.8	146.	25.6	307.	0.59
92.00	2.9	1.8	145.	12.6	349.	0.81	93.00	2.9	1.8	145.	11.9	32.	0.79	94.00	2.9	1.8	145.	28.3	281.	0.66
95.00	2.9	1.8	145.	19.2	352.	0.78	96.00	2.9	1.9	146.	18.3	357.	0.87	97.00	2.9	1.9	146.	11.5	298.	0.83
98.00	2.9	1.9	145.	12.5	312.	0.81	99.00	2.9	1.9	144.	12.9	340.	0.86	100.00	2.9	1.9	143.	11.7	356.	0.96
101.00	2.9	1.9	144.	9.4	338.	0.91	102.00	2.9	2.0	144.	16.4	342.	0.89	103.00	2.9	2.0	143.	18.3	335.	0.90
104.00	2.9	2.0	143.	19.4	303.	0.66	105.00	2.9	2.0	144.	14.2	330.	0.80	106.00	2.9	2.0	145.	15.0	330.	0.91
107.00	2.9	2.0	145.	17.6	325.	0.90	108.00	2.9	2.0	146.	16.2	336.	0.71	109.00	2.9	2.0	147.	16.1	2.	0.81
110.00	2.9	2.1	149.	13.5	328.	0.90	111.00	2.9	2.1	150.	12.6	347.	0.87	112.00	2.9	2.2	150.	12.0	346.	0.86
113.00	2.9	2.3	151.	9.5	92.	0.64	114.00	2.9	2.5	150.	3.2	99.	0.72	115.00	2.9	2.6	148.	11.2	310.	0.79
116.00	2.9	2.7	145.	16.0	290.	0.80	117.00	2.9	2.7	142.	16.0	334.	0.76	118.00	2.9	2.7	139.	21.2	319.	0.54



CONTINUOUS VERTICALITY ANALYSIS

CLIENT _____ SUNCOR INC.
 BOREHOLE _____ ST-DH-84-05
 AREA _____ SUSTUT B.C
 COUNTRY _____ CANADA

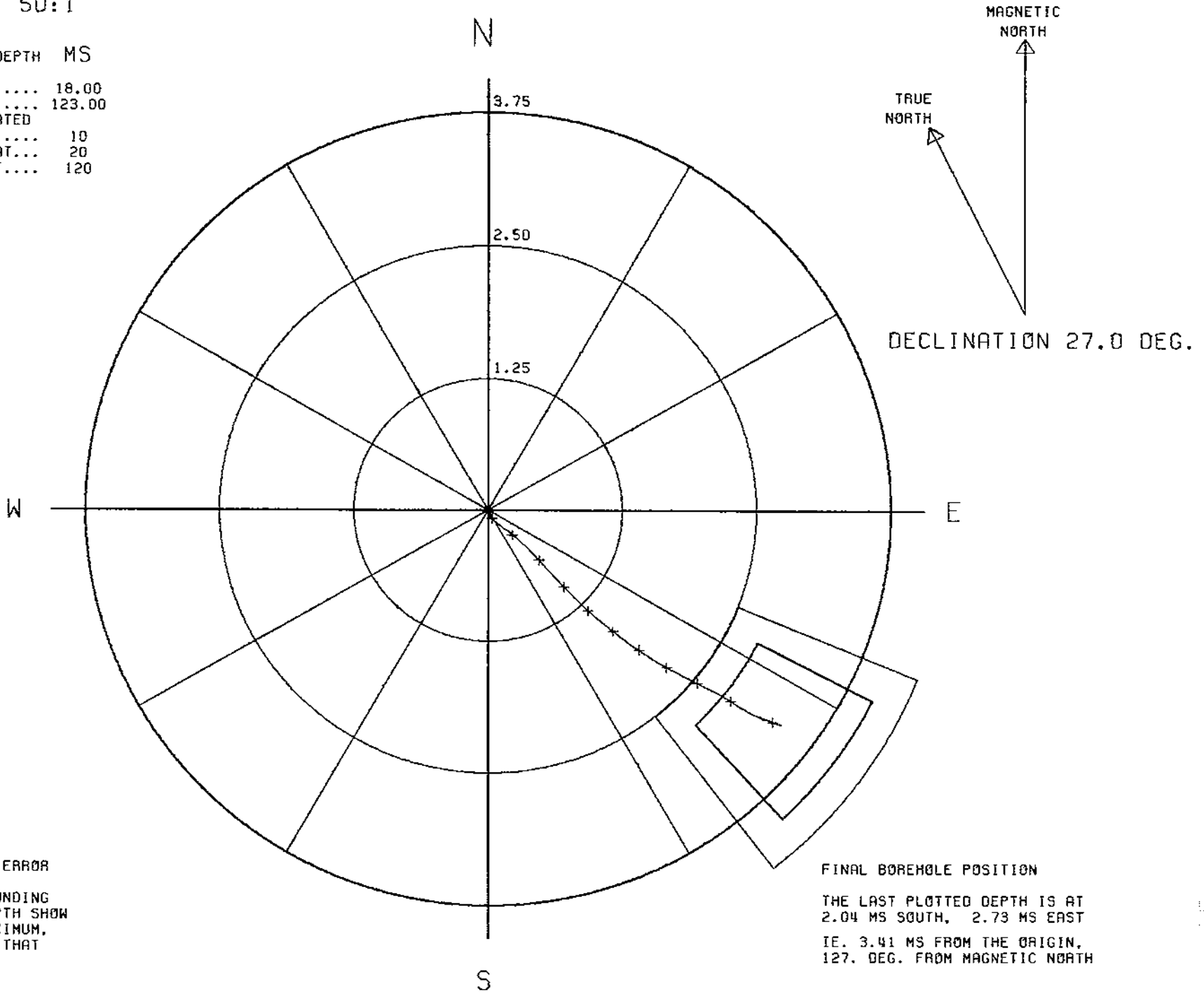
DATE LOGGED.....17-JUL-84
 DATE PROCESSED..07-AUG-84
 UPPER REFERENCE POINT....18.00M
 LOWER REFERENCE POINT....123.00M

154

CROSS-SECTION

SCALE: 50:1

ALL FIGURES IN LOG DEPTH MS
 TARGET ORIGIN DEPTH..... 18.00
 LAST PLOTTED DEPTH..... 123.00
 DEPTH MARKERS ANNOTATED
 IN MULTIPLES OF..... 10
 FIRST DEPTH MARKER AT... 20
 LAST DEPTH MARKER AT... 120



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

FINAL BOREHOLE POSITION
 THE LAST PLOTTED DEPTH IS AT
 2.04 MS SOUTH, 2.73 MS EAST
 IE. 3.41 MS FROM THE ORIGIN,
 127. DEG. FROM MAGNETIC NORTH

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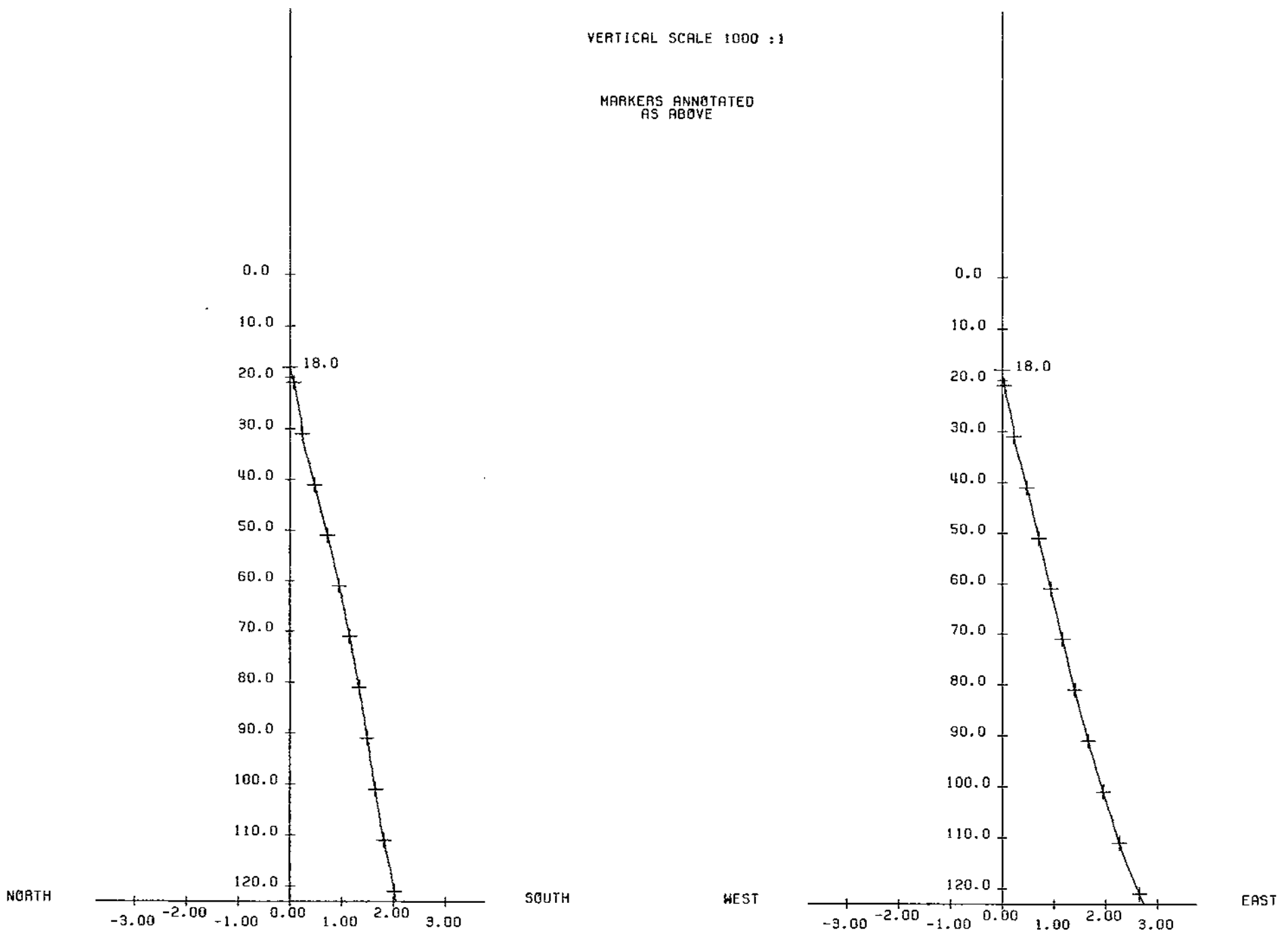
VERTICAL SECTIONS

N-S SECTION

(TRUE DEPTH VS. DISPLACEMENT)

W-E SECTION

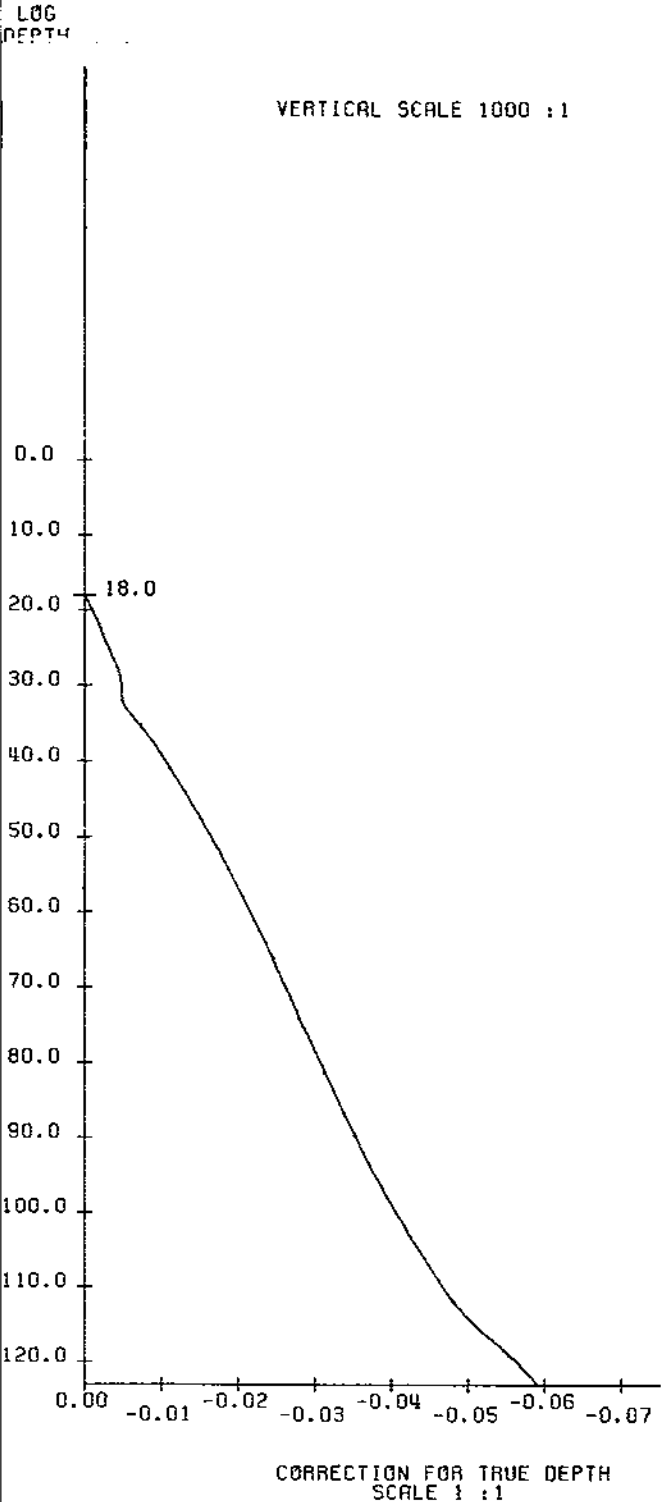
VERTICAL SCALE 1000 :1
 MARKERS ANNOTATED
 AS ABOVE



HORIZONTAL SCALE 100 :1

156

DEPTH CORRECTION ANALYSIS



VERTICAL SCALE 1000 :1

CORRECTION FOR TRUE DEPTH
 SCALE 1 :1

DEPTHS:		DEPTHS:	
LOG	TRUE	LOG	TRUE
19.00	19.00	89.00	88.97
20.00	20.00	90.00	89.96
21.00	21.00	91.00	90.96
22.00	22.00	92.00	91.96
23.00	23.00	93.00	92.96
24.00	24.00	94.00	93.96
25.00	25.00	95.00	94.96
26.00	26.00	96.00	95.96
27.00	27.00	97.00	96.96
28.00	28.00	98.00	97.96
29.00	29.00	99.00	98.96
30.00	30.00	100.00	99.96
31.00	31.00	101.00	100.96
32.00	32.00	102.00	101.96
33.00	32.99	103.00	102.96
34.00	33.99	104.00	103.96
35.00	34.99	105.00	104.96
36.00	35.99	106.00	105.96
37.00	36.99	107.00	106.96
38.00	37.99	108.00	107.95
39.00	38.99	109.00	108.95
40.00	39.99	110.00	109.95
41.00	40.99	111.00	110.95
42.00	41.99	112.00	111.95
43.00	42.99	113.00	112.95
44.00	43.99	114.00	113.95
45.00	44.99	115.00	114.95
46.00	45.99	116.00	115.95
47.00	46.99	117.00	116.95
48.00	47.99	118.00	117.95
49.00	48.99	119.00	118.94
50.00	49.99	120.00	119.94
51.00	50.99	121.00	120.94
52.00	51.99	122.00	121.94
53.00	52.99	123.00	122.94
54.00	53.99		
55.00	54.99		
56.00	55.99		
57.00	56.99		
58.00	57.99		
59.00	58.99		
60.00	59.99		
61.00	60.99		
62.00	61.99		
63.00	62.99		
64.00	63.99		
65.00	64.99		
66.00	65.99		
67.00	66.99		
68.00	67.97		
69.00	68.97		
70.00	69.97		
71.00	70.97		
72.00	71.97		
73.00	72.97		
74.00	73.97		
75.00	74.97		
76.00	75.97		
77.00	76.97		
78.00	77.97		
79.00	78.97		
80.00	79.97		
81.00	80.97		
82.00	81.97		
83.00	82.97		
84.00	83.97		
85.00	84.97		
86.00	85.97		
87.00	86.97		
88.00	87.97		

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BPB DIPMETER ANALYSIS
INTERPRETATION NOTES

704

1. All plots are correct to the resolution of the plotter used, i.e. 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.
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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 0 & 10, degrees, 10 & 20, 20 & 30 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 (i.e. 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:

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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.

ST-DH-84-08

Magnetic declination 27.00 degrees East of North
Correlation step 1.00 metres, interval 2.00 metres Search angle 89. degrees

03-AUG-84
PAGE 1

DEPTH metres	CAL. ins.	BOREHOLE TILT	FORMATION AZI	MIN. COR.	DEPTH metres	CAL. ins.	BOREHOLE TILT	FORMATION AZI	MIN. COR.	DEPTH metres	CAL. ins.	BOREHOLE TILT	FORMATION AZI	MIN. COR.						
19.00	2.9	2.5	237.	83.4	198.	0.37	20.00	2.9	2.5	237.	86.9	53.	0.31	21.00	2.9	2.5	237.	57.7	238.	0.53
22.00	2.9	2.6	237.	55.5	250.	0.64	23.00	2.9	2.6	236.	33.8	215.	0.69	24.00	2.9	2.6	236.	37.7	205.	0.54
25.00	2.9	2.6	235.	83.3	184.	0.43	26.00	2.9	2.6	234.	88.1	21.	0.23	27.00	2.9	2.6	234.	59.2	193.	0.48
28.00	2.9	2.6	233.	14.5	195.	0.71	29.00	2.9	2.6	231.	17.8	179.	0.87	30.00	2.9	2.6	230.	16.4	187.	0.93
31.00	2.9	2.6	230.	16.7	188.	0.92	32.00	2.9	2.6	229.	13.7	173.	0.81	33.00	2.9	2.6	228.	12.0	160.	0.82
34.00	2.9	2.6	228.	13.5	155.	0.89	35.00	2.9	2.6	227.	10.8	174.	0.90	36.00	2.9	2.6	226.	13.2	160.	0.92
37.00	2.9	2.6	224.	12.3	142.	0.85	38.00	2.9	2.6	223.	9.0	167.	0.86	39.00	2.9	2.6	221.	11.0	113.	0.87
40.00	2.9	2.5	218.	12.6	93.	0.89	41.00	2.9	2.5	215.	10.2	100.	0.79	42.00	2.9	2.4	212.	23.5	180.	0.79
43.00	2.9	2.2	209.	18.4	150.	0.88	44.00	2.9	1.8	207.	12.1	162.	0.88	45.00	2.9	1.4	214.	21.3	172.	0.87
46.00	2.9	1.3	233.	20.6	156.	0.65	47.00	2.9	1.5	251.	15.0	175.	0.60	48.00	2.9	1.9	255.	17.9	164.	0.87
49.00	2.9	2.2	254.	23.0	146.	0.80	50.00	2.9	2.4	251.	27.1	153.	0.64	51.00	2.9	2.5	248.	20.0	135.	0.69
52.00	2.9	2.6	245.	21.3	234.	0.66	53.00	2.9	2.7	243.	23.7	193.	0.70	54.00	2.9	2.7	241.	26.4	148.	0.76
55.00	2.9	2.8	239.	2.2	245.	0.61	56.00	2.9	2.8	237.	8.1	224.	0.48	57.00	2.9	2.8	235.	10.8	249.	0.60
58.00	2.9	2.8	233.	3.3	313.	0.77	59.00	2.9	2.8	231.	4.2	36.	0.84	60.00	2.9	2.7	228.	15.3	175.	0.80
61.00	2.9	2.7	225.	15.2	156.	0.63	62.00	2.9	2.5	220.	55.6	69.	0.43	63.00	2.9	2.2	215.	29.6	150.	0.48
64.00	2.9	1.7	216.	25.5	270.	0.55	65.00	2.9	1.4	230.	24.7	222.	0.51	66.00	2.9	1.5	248.	4.5	166.	0.71
67.00	2.9	1.9	255.	19.3	201.	0.57	68.00	2.9	2.3	254.	33.1	281.	0.40	69.00	2.9	2.5	250.	37.5	264.	0.37
70.00	2.9	2.6	245.	87.7	102.	0.29	71.00	2.9	2.7	241.	44.7	323.	0.54	72.00	2.9	2.7	237.	15.9	312.	0.50
73.00	2.9	2.6	232.	29.8	101.	0.40	74.00	2.9	2.5	227.	26.8	321.	0.46	75.00	2.9	2.2	222.	25.6	290.	0.54
76.00	2.9	1.8	222.	87.2	153.	0.42	77.00	2.8	1.5	234.	21.0	310.	0.30	78.00	2.8	1.7	250.	78.9	102.	0.35



DIPMETER ANALYSIS

704

CLIENT _____
BOREHOLE _____
AREA _____
COUNTRY _____

SUNCOR INC.
ST-DH-84-08
SUSTUT B.C
CANADA

DATE LOGGED.....22-JUL-84
DATE PROCESSED..03-AUG-84



COMMENTS.....

INTERPRETATION PARAMETERS

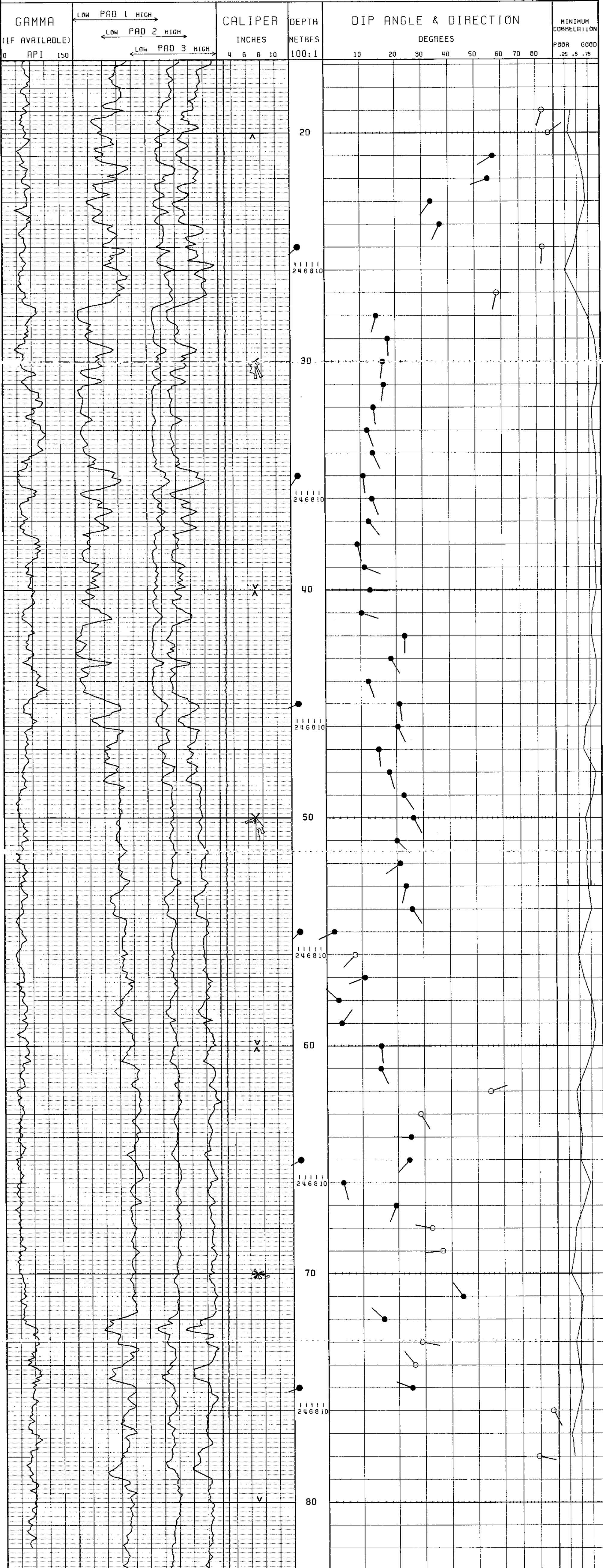
STEP 1.00M.
INTERVAL 2.00M.
SEARCH ANGLE 89.
DECLINATION 27.0 EAST
DEPTH RANGE 16.76 - 83.00M.
DATE PROCESSED 03-AUG-84

AVERAGE BOREHOLE DEVIATION & DIRECTION
ANNOTATED EVERY 10.0M.

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

LEGEND:

● GOOD (>0.50)
○ FAIR (>0.30)



BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

704

- 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.
- The analysis is derived by integrating 10 cm./5" 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.
- 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.
- Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).
- Borehole positional error is derived assuming the following parameters:

	TILT(degrees)	AZIMUTH(degrees)
Typical Error	+/- 0.33333	+/- 10.0
Maximum Error	+/- 0.5	+/- 15.0
- Error analysis may be calculated and plotted from the data listing as follows:
 - Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
 - Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
 - Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.
- Given below is a full description of the parameters displayed on the ensuing listing:

LOG DEPTH	the depth recorded on the field logs for the borehole
TRUE DEPTH	the true vertical depth corresponding to the above depth, corrected from the start of the analysis
SOLE 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

ST-DH-84-08

Verticality Data Listing

Date processed: 07-AUG-84

Page 1

DEPTHS		All co-ordinates with respect to True North						POLAR ERROR CO-ORDINATES (maximum & typical)							
log	true	BOREHOLE tilt	AZI	AXIAL CO-ORDS. North	East	POLAR brng radius	brng radius	brng radius	brng radius	brng radius	brng radius				
16.00	16.00	2.4	243.	-0.02	-0.04	243.	0.04	243.	0.05	243.	0.03	243.	0.05	243.	0.04
17.00	17.00	2.5	239.	-0.04	-0.07	241.	0.08	241.	0.10	241.	0.07	241.	0.09	241.	0.07
18.00	18.00	2.6	237.	-0.06	-0.11	240.	0.13	240.	0.15	240.	0.10	240.	0.14	240.	0.11
19.00	19.00	2.5	236.	-0.09	-0.15	239.	0.17	239.	0.21	239.	0.14	239.	0.19	239.	0.15
20.00	20.00	2.5	236.	-0.11	-0.18	239.	0.21	239.	0.26	239.	0.17	239.	0.24	239.	0.19
21.00	20.99	2.5	238.	-0.13	-0.22	239.	0.26	239.	0.31	239.	0.21	239.	0.29	239.	0.22
22.00	21.99	2.6	235.	-0.16	-0.26	238.	0.30	238.	0.36	238.	0.24	238.	0.34	238.	0.26
23.00	22.99	2.6	237.	-0.18	-0.30	238.	0.35	238.	0.42	238.	0.28	238.	0.39	238.	0.30
24.00	23.99	2.6	236.	-0.21	-0.33	238.	0.39	238.	0.47	238.	0.31	238.	0.45	238.	0.34
25.00	24.99	2.6	234.	-0.23	-0.37	238.	0.44	238.	0.53	238.	0.35	238.	0.50	238.	0.38
26.00	25.99	2.7	235.	-0.26	-0.41	237.	0.48	237.	0.58	237.	0.39	237.	0.55	237.	0.42
27.00	26.99	2.6	234.	-0.29	-0.44	237.	0.53	237.	0.63	237.	0.42	237.	0.60	237.	0.46
28.00	27.99	2.6	233.	-0.31	-0.48	237.	0.57	237.	0.69	237.	0.46	237.	0.65	237.	0.50
29.00	28.99	2.7	230.	-0.34	-0.52	236.	0.62	236.	0.74	236.	0.50	236.	0.70	236.	0.54
30.00	29.99	2.6	229.	-0.37	-0.55	236.	0.66	236.	0.80	236.	0.53	236.	0.75	236.	0.58
31.00	30.98	2.6	231.	-0.40	-0.59	236.	0.71	236.	0.85	236.	0.57	236.	0.80	236.	0.62
32.00	31.98	2.7	231.	-0.43	-0.62	235.	0.76	235.	0.90	235.	0.61	235.	0.85	235.	0.66
33.00	32.98	2.6	228.	-0.46	-0.66	235.	0.80	235.	0.96	235.	0.65	235.	0.91	235.	0.70
34.00	33.98	2.6	227.	-0.49	-0.69	234.	0.85	234.	1.01	234.	0.68	234.	0.96	234.	0.74
35.00	34.98	2.6	226.	-0.52	-0.72	234.	0.89	234.	1.07	234.	0.72	234.	1.01	234.	0.78
36.00	35.98	2.7	225.	-0.56	-0.76	234.	0.94	234.	1.12	234.	0.76	234.	1.06	234.	0.82
37.00	36.98	2.7	223.	-0.59	-0.79	233.	0.98	233.	1.18	233.	0.79	233.	1.11	233.	0.86
38.00	37.98	2.6	223.	-0.62	-0.82	233.	1.03	233.	1.23	233.	0.83	233.	1.16	233.	0.90
39.00	38.98	2.6	221.	-0.66	-0.85	232.	1.07	232.	1.28	232.	0.87	232.	1.21	232.	0.94
40.00	39.97	2.6	214.	-0.69	-0.88	232.	1.12	232.	1.33	232.	0.90	232.	1.26	232.	0.97
41.00	40.97	2.4	217.	-0.73	-0.90	231.	1.16	231.	1.38	231.	0.93	231.	1.31	231.	1.01
42.00	41.97	2.4	212.	-0.76	-0.93	231.	1.20	231.	1.43	231.	0.97	231.	1.36	231.	1.04
43.00	42.97	2.2	208.	-0.80	-0.95	230.	1.24	230.	1.48	230.	1.00	230.	1.40	230.	1.08
44.00	43.97	1.8	206.	-0.83	-0.96	229.	1.27	229.	1.52	229.	1.02	229.	1.44	229.	1.10
45.00	44.97	1.4	211.	-0.85	-0.98	229.	1.29	229.	1.55	229.	1.04	229.	1.47	229.	1.12
46.00	45.97	1.2	235.	-0.87	-0.99	229.	1.31	229.	1.58	229.	1.05	229.	1.49	229.	1.14
47.00	46.97	1.5	251.	-0.87	-1.01	229.	1.34	229.	1.61	229.	1.06	229.	1.52	229.	1.15
48.00	47.97	1.9	254.	-0.88	-1.04	230.	1.36	230.	1.65	230.	1.08	230.	1.55	230.	1.18
49.00	48.97	2.3	253.	-0.89	-1.08	230.	1.40	230.	1.69	230.	1.11	230.	1.59	230.	1.20
50.00	49.97	2.5	250.	-0.90	-1.11	231.	1.44	231.	1.73	231.	1.14	231.	1.63	231.	1.24
51.00	50.97	2.5	246.	-0.92	-1.16	231.	1.48	231.	1.78	231.	1.17	231.	1.68	231.	1.27
52.00	51.97	2.6	246.	-0.94	-1.20	232.	1.52	232.	1.84	232.	1.21	232.	1.73	232.	1.31
53.00	52.97	2.7	242.	-0.96	-1.24	232.	1.57	232.	1.89	232.	1.24	232.	1.78	232.	1.35
54.00	53.96	2.7	241.	-0.98	-1.28	233.	1.61	233.	1.95	233.	1.28	233.	1.83	233.	1.39
55.00	54.96	2.8	241.	-1.01	-1.32	233.	1.66	233.	2.00	233.	1.32	233.	1.89	233.	1.43
56.00	55.96	2.8	236.	-1.03	-1.36	233.	1.71	233.	2.06	233.	1.36	233.	1.94	233.	1.48
57.00	56.96	2.8	234.	-1.06	-1.40	233.	1.76	233.	2.12	233.	1.40	233.	2.00	233.	1.52
58.00	57.96	2.8	234.	-1.09	-1.44	233.	1.81	233.	2.17	233.	1.44	233.	2.05	233.	1.56
59.00	58.96	2.7	231.	-1.12	-1.48	233.	1.85	233.	2.23	233.	1.48	233.	2.10	233.	1.60
60.00	59.96	2.7	227.	-1.15	-1.52	233.	1.90	233.	2.29	233.	1.52	233.	2.16	233.	1.65
61.00	60.96	2.6	225.	-1.18	-1.55	233.	1.95	233.	2.34	233.	1.55	233.	2.21	233.	1.69
62.00	61.96	2.5	220.	-1.21	-1.58	232.	1.99	232.	2.39	232.	1.59	232.	2.26	232.	1.72
63.00	62.95	2.2	215.	-1.25	-1.60	232.	2.03	232.	2.44	232.	1.62	232.	2.31	232.	1.76
64.00	63.95	1.8	216.	-1.28	-1.62	232.	2.06	232.	2.48	232.	1.65	232.	2.34	232.	1.79
65.00	64.95	1.3	226.	-1.29	-1.64	232.	2.09	232.	2.52	232.	1.66	232.	2.37	232.	1.80

ST-DH-84-08

Verticality Data Listing

Date processed: 07-AUG-84

Page 2

DEPTHS		All co-ordinates with respect to True North						POLAR ERROR CO-ORDINATES (maximum & typical)							
log	true	BOREHOLE tilt	AZI	AXIAL CO-ORDS. North	East	POLAR brng radius	brng radius	brng radius	brng radius	brng radius	brng radius				
66.00	65.95	1.5	251.	-1.31	-1.66	232.	2.11	232.	2.55	232.	1.68	232.	2.40	232.	1.82
67.00	66.95	1.9	259.	-1.31	-1.69	232.	2.14	232.	2.58	232.	1.70	232.	2.44	232.	1.84
68.00	67.95	2.2	255.	-1.32	-1.73	233.	2.17	233.	2.63	233.	1.72	233.	2.48	233.	1.87
69.00	68.95	2.5	251.	-1.34	-1.77	233.	2.21	233.	2.67	233.	1.76	233.	2.52	233.	1.91
70.00	69.95	2.6	244.	-1.35	-1.81	233.	2.26	233.	2.73	233.	1.79	233.	2.57	233.	1.95
71.00	70.95	2.6	240.	-1.37	-1.85	233.	2.30	233.	2.78	233.	1.83	233.	2.62	233.	1.99
72.00	71.95	2.7	237.	-1.40	-1.89	233.	2.35	233.	2.84	233.	1.87	233.	2.67	233.	2.03
73.00	72.95	2.7	232.	-1.43	-1.93	233.	2.40	233.	2.89	234.	1.90	233.	2.73	234.	2.07
74.00	73.95	2.6	225.	-1.46	-1.96	233.	2.44	233.	2.95	233.	1.94	233.	2.78	233.	2.11
75.00	74.95	2.2	223.	-1.49	-1.99	233.	2.48	233.	3.00	233.	1.97	233.	2.83	233.	2.14
76.00	75.94	1.8	218.	-1.51	-2.01	233.	2.52	233.	3.04	233.	2.00	233.	2.86	233.	2.17
77.00	76.94	1.4	238.	-1.53	-2.03	233.	2.54	233.	3.07	233.	2.02	233.	2.90	233.	2.19
78.00	77.94	1.7	255.	-1.54	-2.06	233.	2.57	233.	3.11	233.	2.03	233.	2.93	233.	2.21
79.00	78.94	2.0	255.	-1.55	-2.09	233.	2.60	233.	3.15	233.	2.06	233.	2.96	233.	2.24
80.00	79.94	2.4	251.	-1.56	-2.12	234.	2.64	234.	3.19	234.	2.08	234.	3.01	234.	2.27
81.00	80.94	2.3	247.	-1.58	-2.16	234.	2.68	234.	3.24	234.	2.12	234.	3.05	234.	2.30
82.00	81.94	2.6	240.	-1.60	-2.20	234.	2.72	234.	3.29	234.	2.15	234.	3.10	234.	2.34
83.00	82.94	2.4	242.	-1.62	-2.24	234.	2.76	234.	3.34	234.	2.18	234.	3.15	234.	2.38

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CONTINUOUS VERTICALITY ANALYSIS

CLIENT _____ SUNCOR INC.
 BOREHOLE _____ ST-DH-84-08
 AREA _____ SUSTUT B.C.
 COUNTRY _____ CANADA

DATE LOGGED.....22-JUL-84
 DATE PROCESSED..07-AUG-84
 UPPER REFERENCE POINT....15.00M
 LOWER REFERENCE POINT....83.00M

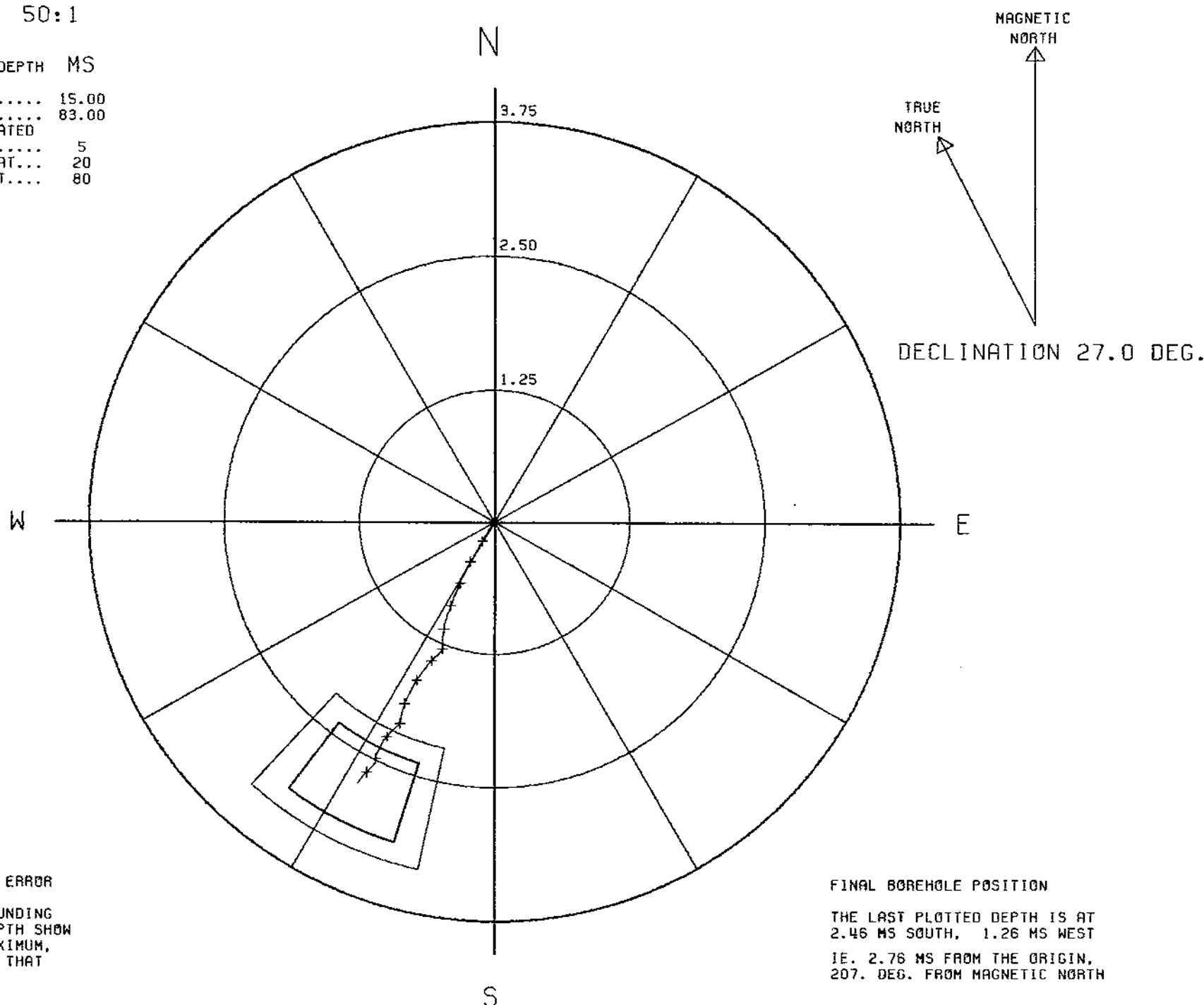
243

CROSS-SECTION

SCALE: 50:1

ALL FIGURES IN LOG DEPTH MS

TARGET ORIGIN DEPTH..... 15.00
 LAST PLOTTED DEPTH..... 83.00
 DEPTH MARKERS ANNOTATED
 IN MULTIPLES OF..... 5
 FIRST DEPTH MARKER AT... 20
 LAST DEPTH MARKER AT... 80



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

FINAL BOREHOLE POSITION
 THE LAST PLOTTED DEPTH IS AT
 2.46 MS SOUTH, 1.26 MS WEST
 I.E. 2.76 MS FROM THE ORIGIN,
 207. DEG. FROM MAGNETIC NORTH

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VERTICAL SECTIONS

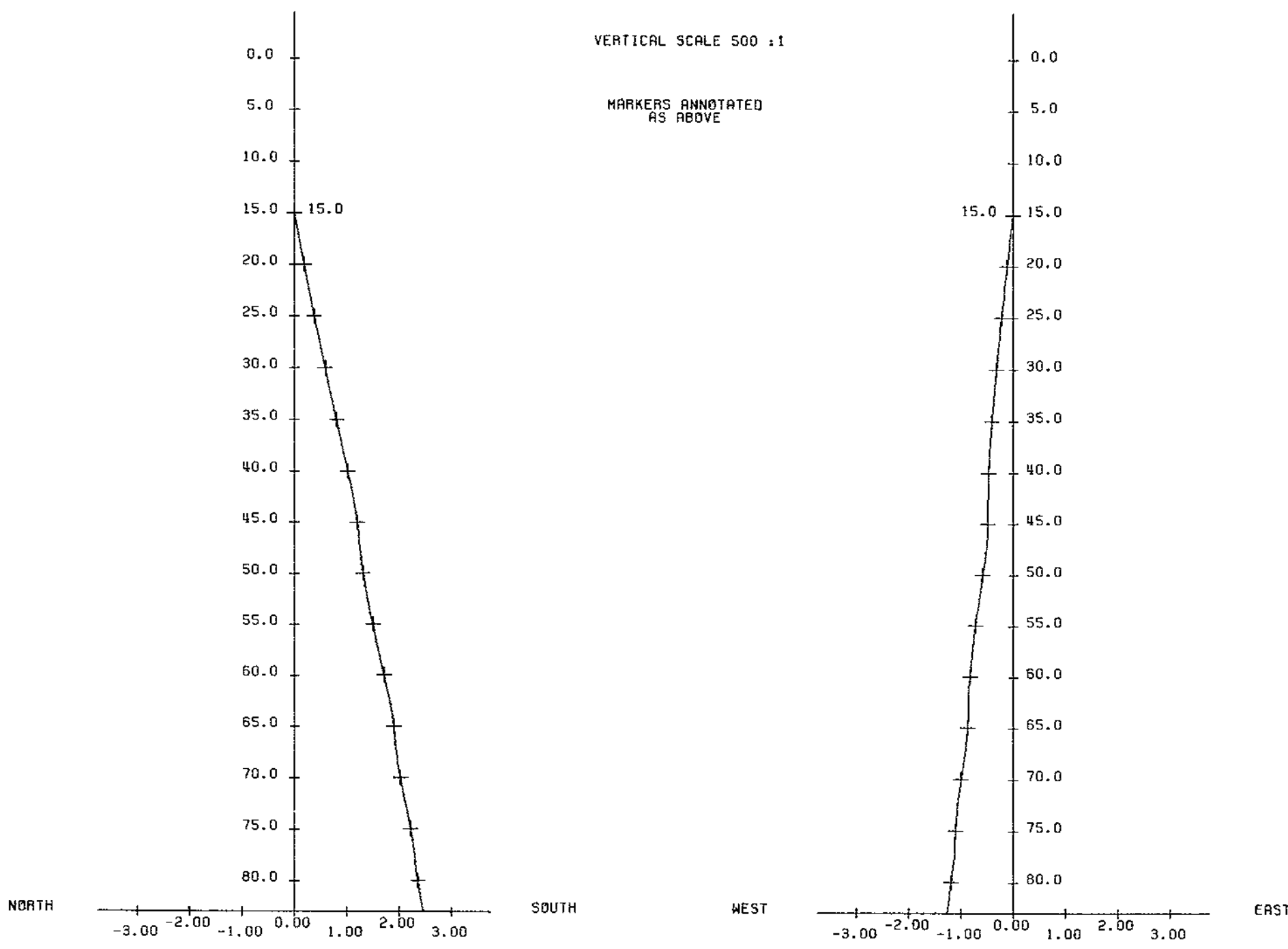
(TRUE DEPTH VS. DISPLACEMENT)

N-S SECTION

W-E SECTION

VERTICAL SCALE 500 : 1

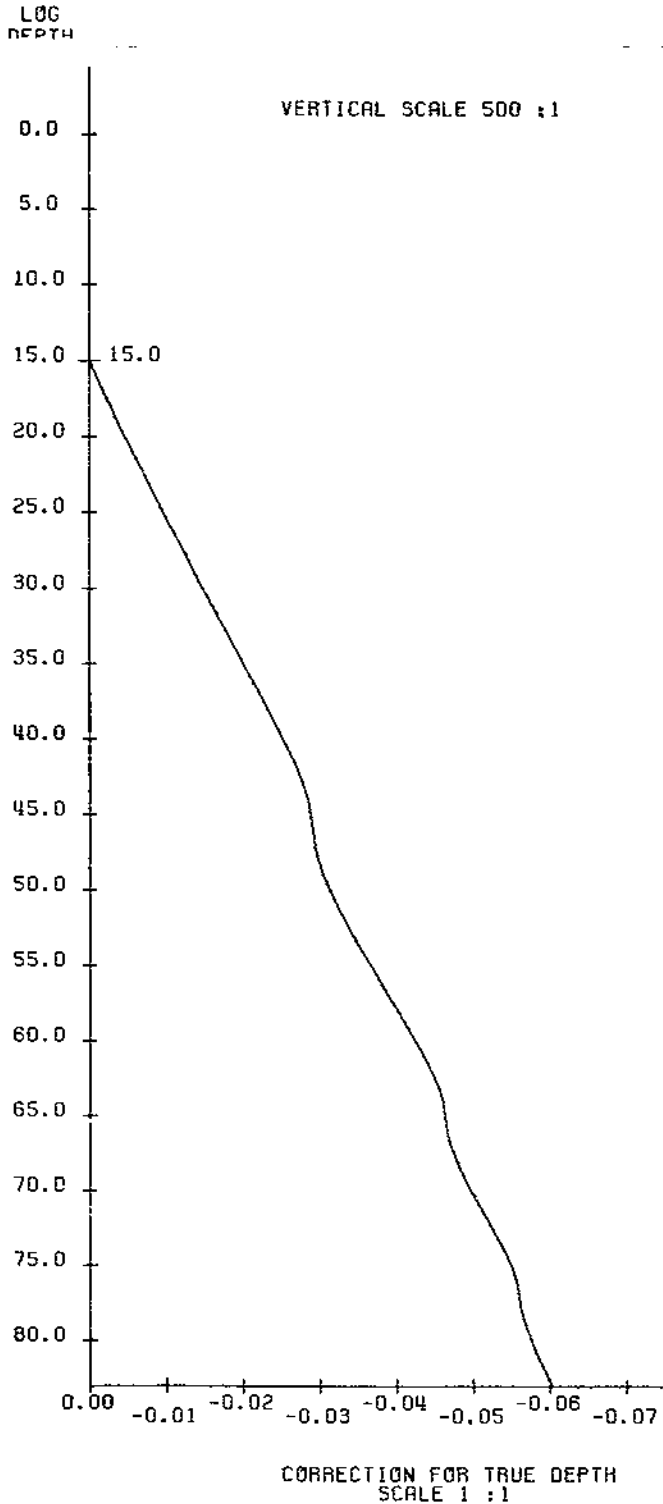
MARKERS ANNOTATED
 AS ABOVE



HORIZONTAL SCALE 100 : 1

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DEPTH CORRECTION ANALYSIS



CORRECTION FOR TRUE DEPTH
 SCALE 1 : 1

DEPTHS:

LOG	TRUE
16.00	16.00
17.00	17.00
18.00	18.00
19.00	19.00
20.00	20.00
21.00	20.99
22.00	21.99
23.00	22.99
24.00	23.99
25.00	24.98
26.00	25.98
27.00	26.99
28.00	27.99
29.00	28.99
30.00	29.99
31.00	30.98
32.00	31.98
33.00	32.98
34.00	33.98
35.00	34.98
36.00	35.98
37.00	36.98
38.00	37.98
39.00	38.98
40.00	39.97
41.00	40.97
42.00	41.97
43.00	42.97
44.00	43.97
45.00	44.97
46.00	45.97
47.00	46.97
48.00	47.97
49.00	48.97
50.00	49.97
51.00	50.97
52.00	51.97
53.00	52.97
54.00	53.96
55.00	54.96
56.00	55.96
57.00	56.96
58.00	57.96
59.00	58.96
60.00	59.96
61.00	60.96
62.00	61.95
63.00	62.95
64.00	63.95
65.00	64.95
66.00	65.95
67.00	66.95
68.00	67.95
69.00	68.95
70.00	69.95
71.00	70.95
72.00	71.95
73.00	72.95
74.00	73.95
75.00	74.94
76.00	75.94
77.00	76.94
78.00	77.94
79.00	78.94
80.00	79.94
81.00	80.94
82.00	81.94
83.00	82.94

246



Gamma Ray & Long Spaced Density Logs
(Through Drill Bores)

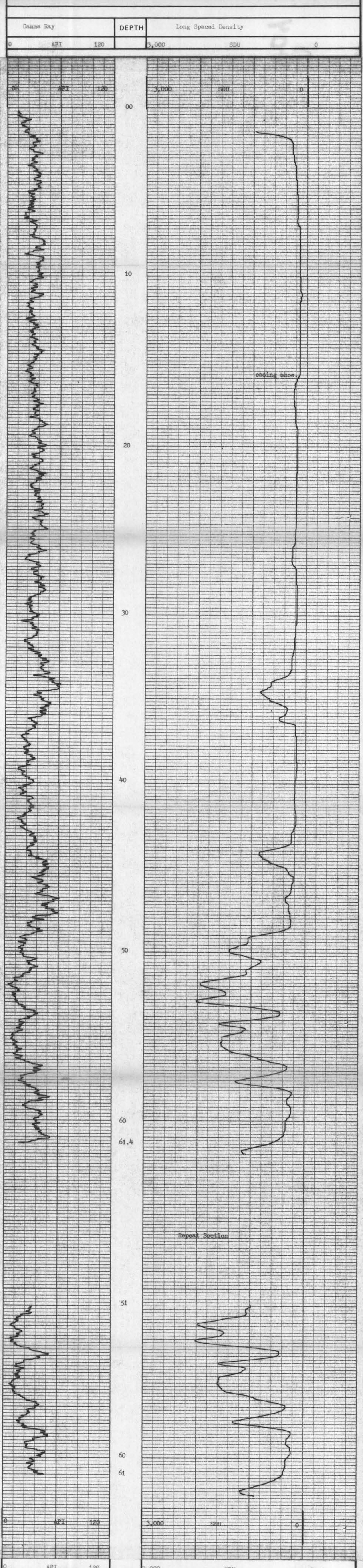
BOREHOLE ST-94-01
CLIENT Suncor Inc. **704**

AREA Sustut B.S. DEPTH SCALE 1:100
COUNTRY Canada
DATE LOGGED 07/Apr/94 1 OF 3 LOGS

BOREHOLE DATA REFER TO This Log. LOG
OPERATION DATA REFER TO This Log. LOG
EQUIPMENT AND RECORDING DATA

LOG	TAPING	PANEL	CAL
	LOG RECORDING SPEED	NO. OF LOGS	COEFF.
C/R	Y 9m/m	D 9m/m	1 - 1.41
LSD	Y 9m/m	D 9m/m	.3 7.12 -

REMARKS
RFB TR=61.4m
RFB TD=61.3m
Mod = DS550/LR 0, S.G. 0.98 gm/cc.
Site Stamp 1.0 to TD. Station 1.4 to 1.52m.



0	API	120	0	SDU	0
Gamma Ray	DEPTH		Long Spaced Density		

BOREHOLE ST-94-01 AREA Sustut B.S.
CLIENT Suncor Inc. COUNTRY Canada





BOREHOLE ST-94-01
 CLIENT Suncor Inc.

AREA Sustut B.C.
 COUNTRY Canada

DATE LOGGED 07/Jul/94
 DEPTH SCALE 200 3 LOGS

BOREHOLE DATA REFER TO Q/R & LSP-1049.
 OPERATION DATA REFER TO Q/R & LSP-1049.

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

SEAM THICKNESS LOG

LOG TAPPING PANEL COEF.
 LOG RECORDING SPEED 10 MGR
 TAPED SPEED HEADY SPEED SECS MGR
 CALIPER Y 2m/m R 2m/m 3 8.29 -
 BR DENSITY Y 2m/m R 2m/m 3 8.29 -
 SOURCE SONDE AND CALIBRATION
 REFER TO LITHOLOGY LOG

SONDE TYPE:
 COAL COMBINATION SONDE

SEAM THICKNESS LOG INTERVALS

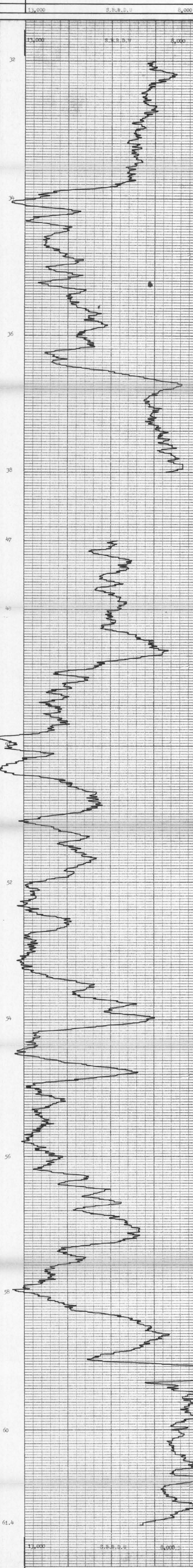
FROM	61.4m	38.0m
TO	47.0m	32.0m
INTERVAL	13.5m	6.0m
FROM		
TO		
INTERVAL		
TOTAL		17.5

LOG SUITE:
 CALIPER
 BR DENSITY

704

REMARKS
 Hole was logged through drill rods, the
 scales have been adjusted accordingly.
 Caliper log has not been displayed.

B P B SEAM THICKNESS LOG



DEPTH 32 34 36 38 47 48 50 52 54 56 58 60 61.4

13,000 S.B.R.D.U 8,000

DEPTH 32 34 36 38 47 48 50 52 54 56 58 60 61.4

13,000 S.B.R.D.U 8,000

BOREHOLE ST-94-01 AREA Sustut B.C.
 CLIENT Suncor Inc. COUNTRY Canada

SEAM THICKNESS LOG





BOREHOLE ST-84-01
 CLIENT Suncor Inc.

AREA Sustut B.C.
 COUNTRY Canada

DATE LOGGED 07/11/94
 1 of 3 LOGS

BOREHOLE DATA REFER TO LITHOLOGY LOG

OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL QUALITY LOG

LOG	TAPING	PANEL	COAL
LOG	RECORD	SPEED	NOISE
APPD	SPEED	SECS	
GAMMA	Y	2m/m	2
US DENSITY	Y	2m/m	1
			7.12

SOURCE SONDE AND CALIBRATION
 REFER TO LITHOLOGY LOG

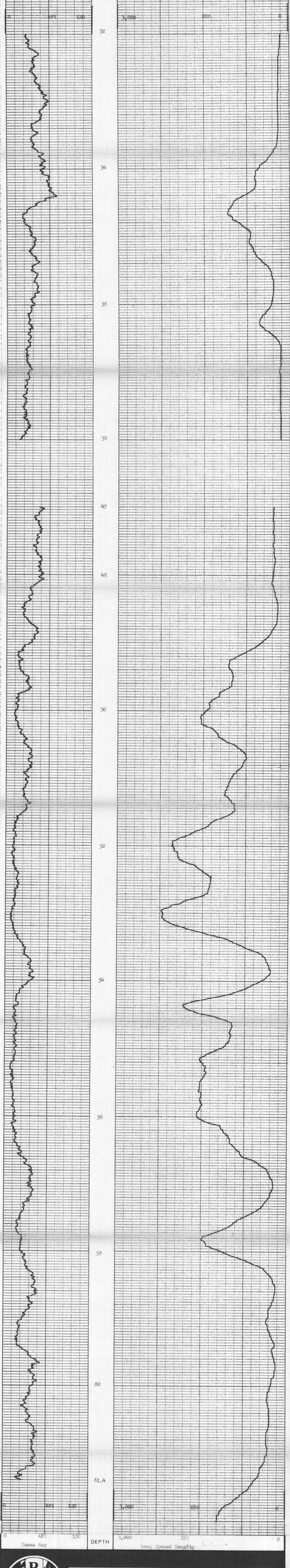
SONDE TYPE
 COAL COMBINATION
 SONDE

LOG SUITE
 GAMMA RAY
 L S DENSITY

REMARKS
 Hole was logged through drill rods, the scales have been adjusted accordingly.

704

B P B COAL QUALITY LOG



AREA Sustut B.C.
 COUNTRY Canada

BOREHOLE ST-84-01
 CLIENT Suncor Inc.

COAL QUALITY LOG





Gamma Ray & Long Spaced Density Logs.
(Through Drill Rods.)

BOREHOLE ST-DH-B4-02
CLIENT Suncor Inc.

704

AREA Sustut B.C.
COUNTRY Canada

DEPTH SCALE
1:100

DATE LOGGED 09/10/84

1 OF 2 LOGS

BOREHOLE DATA REFER TO THIS LOG. LOG

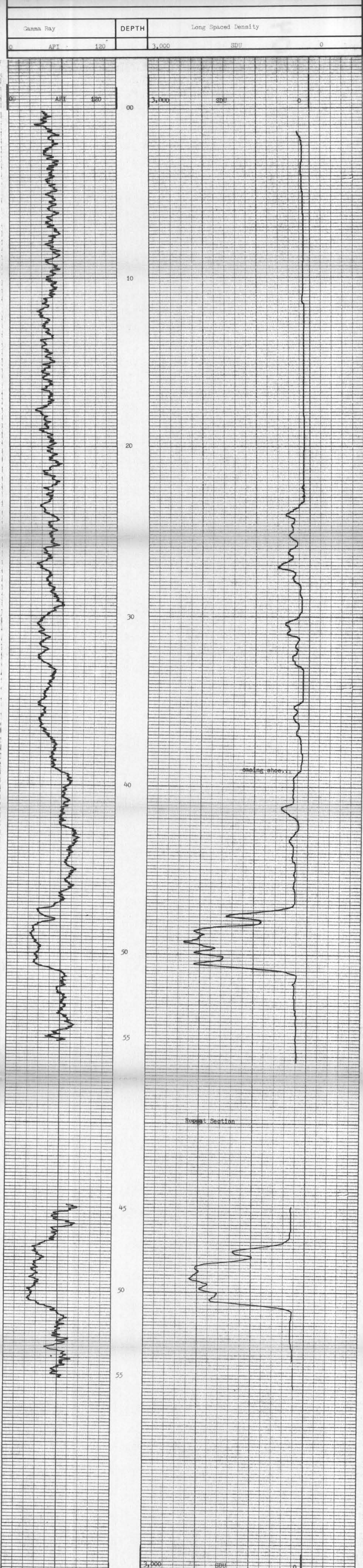
OPERATION DATA REFER TO THIS LOG. LOG

EQUIPMENT AND RECORDING DATA

LOG	TAPING	PANEL	CAL				
LOG	RECORD	DIRECTOR	SPEED				
TAPER	SECTION	RELATION	SCALE				
			NORM.				
G/R	Y	9m/m	D	9m/m	1	-	1.65
ISD	Y	9m/m	D	9m/m	1	2.12	-
RPD	Y	9m/m	D	9m/m	1	3.8.29	-
	SCALE	1:500	NO	NO	NO	NO	NO

REMARKS Logged through drill rods, scales have been adjusted accordingly.

DW TIME: 5.2m. Dist: 3.5" to 39.6m
Mud Type: Kwik-Thick Material, 3.0-1.1 gms/cc.



Gamma Ray	DEPTH	Long Spaced Density
0 APT 120	3,000 SDU	0

Gamma Ray	DEPTH	Long Spaced Density
0 APT 120	3,000 SDU	0

BOREHOLE ST-DH-B4-02 AREA Sustut B.C.
 CLIENT Suncor Inc. COUNTRY Canada





BOREHOLE ST-DH-84-02
 CLIENT Suncor Inc. **704**

AREA Sustut B.C.
 COUNTRY Canada
 DATE LOGGED 09/JUL/94 2 of 3 LOGS

DEPTH SCALE 1:20

BOREHOLE DATA REFER TO CR & ISD LOGS
 OPERATION DATA REFER TO CR & ISD LOGS
 EQUIPMENT AND RECORDING DATA

SEAM THICKNESS LOG

LOG	TAPPING	SIDEWALL POSITION	PANEL	COEFF
LOG	RECORDING SPEED	LOG	NORM	
CALIPER	Y 2m/m	R		
BR DENSITY	Y 2m/m	R		

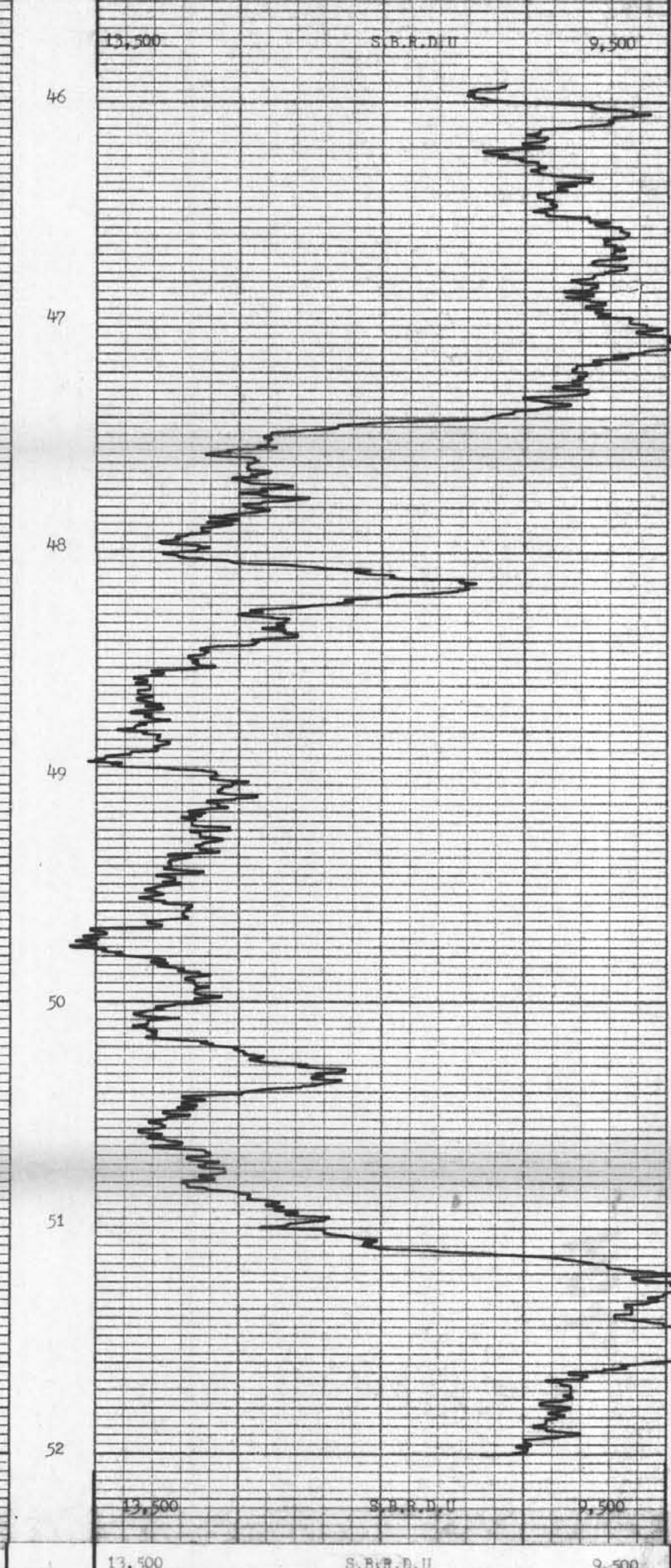
SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: CALIPER BR DENSITY

REMARKS: Logged through drill rods, scales have been adjusted accordingly. Caliper log not displayed.

B P B SEAM THICKNESS LOG

DEPTH	BED RESOLUTION DENSITY
13,500	S.B.R.D.U 9,500



DEPTH	BED RESOLUTION DENSITY
13,500	S.B.R.D.U 9,500

CALIPER INCHES



BOREHOLE ST-DH-84-02 AREA Sustut B.C.
 CLIENT Suncor Inc. COUNTRY Canada

SEAM THICKNESS LOG

MY 88002 R



BOREHOLE ST-DH-84-02
 CLIENT Suncor Inc. **704**

AREA Sustut B.C.
 COUNTRY Canada
 DATE LOGGED 09/JUL/94 3 of 3 LOGS

DEPTH SCALE 1:20

BOREHOLE DATA REFER TO LITHOLOGY LOG
 OPERATION DATA REFER TO LITHOLOGY LOG
 EQUIPMENT AND RECORDING DATA

COAL QUALITY LOG

LOG	TAPPING	SIDEWALL POSITION	PANEL	COEFF
LOG	RECORDING SPEED	LOG	NORM	
GAMMA RAY	Y 2m/m	R		
LS DENSITY	Y 2m/m	R		

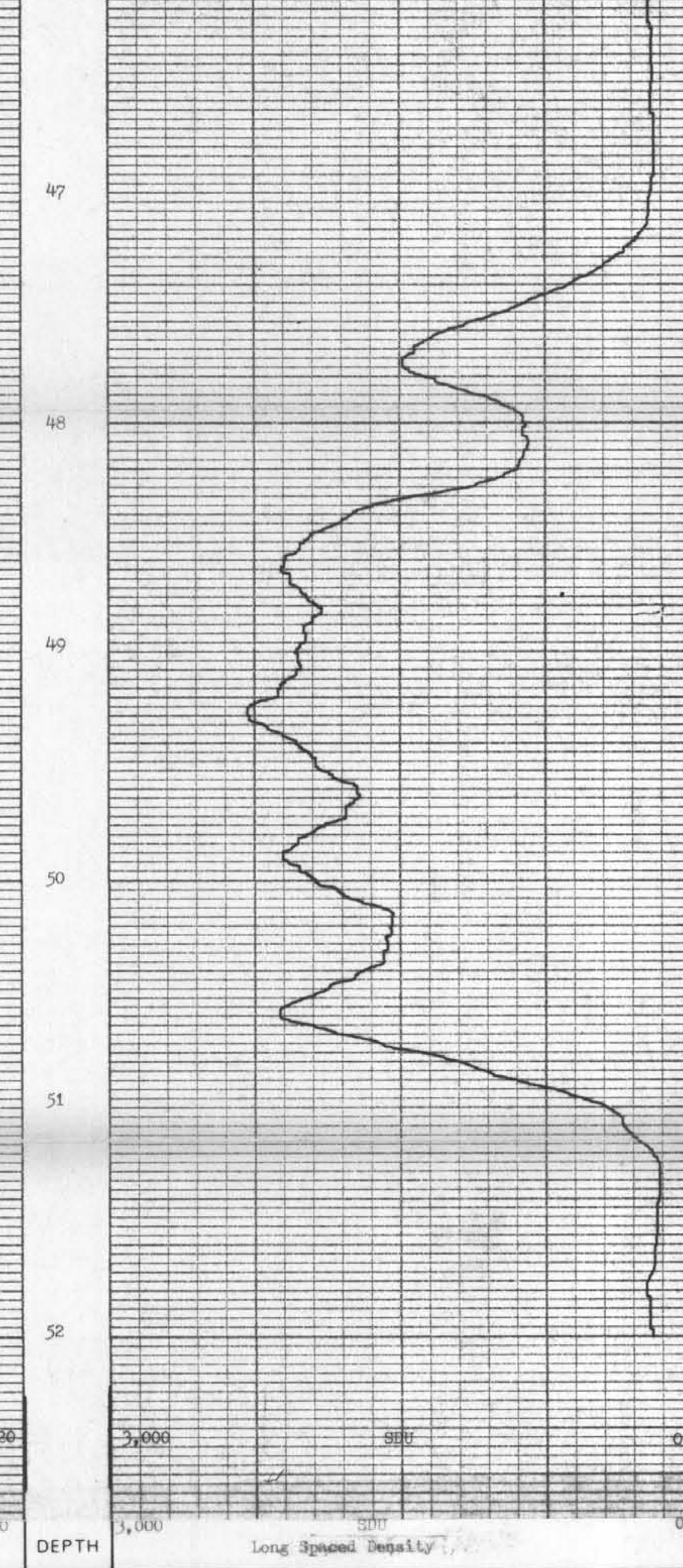
SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY LS DENSITY

REMARKS: Logged through drill rods, scales have been adjusted accordingly.

B P B COAL QUALITY LOG

DEPTH	Gamma Ray	Long Spaced Density
3,000	API 120	SDU 0



DEPTH	Gamma Ray	Long Spaced Density
3,000	API 120	SDU 0

Gamma Ray



BOREHOLE ST-DH-84-02 AREA Sustut B.C.
 CLIENT Suncor Inc. COUNTRY Canada

COAL QUALITY LOG

MY 88003 R



BOREHOLE ST-116-03
 CLIENT Suncor Inc. **704**

AREA Susluut B.C. DEPTH SCALE 1:100
 COUNTRY Canada
 DATE LOGGED 12/10/99 1 OF 2 LOGS

COAL

LITHOLOGY LOG

PERMANENT ID 200001-0001
 ELEVATION OF # 0 N/A
 MGS/ADMINISTRATIVE 5.0
 DEPTH RECORDED 1.23
 CALIPER SIZE 1 3" TO 3"
 CALIPER SIZE 2 3" TO 3"
 CALIPER SIZE 3 3" TO 3"
 CALIPER SIZE 4 3" TO 3"
 CALIPER SIZE 5 3" TO 3"
 FLUID DATA

SONDE TYPE 52550/41100
 COAL COMBINATION N/A
 SONDE N/A
 LOG SUITE N/A
 GAMMA RAY N/A
 L.S. DENSITY N/A
 CALIPER N/A
 WITNESSES

OPERATION DATA
 FIRST READING 1:22:00
 INTERVAL LOGGED 1:17:00
 UNIT "LOG" NO. 11611001
 ENGINEER ADJUNA
 WITNESSES

BOREHOLE DATA
 PERMANENT ID 200001-0001
 ELEVATION OF # 0 N/A
 MGS/ADMINISTRATIVE 5.0
 DEPTH RECORDED 1.23
 CALIPER SIZE 1 3" TO 3"
 CALIPER SIZE 2 3" TO 3"
 CALIPER SIZE 3 3" TO 3"
 CALIPER SIZE 4 3" TO 3"
 CALIPER SIZE 5 3" TO 3"
 FLUID DATA

OPERATION DATA
 FIRST READING 1:22:00
 INTERVAL LOGGED 1:17:00
 UNIT "LOG" NO. 11611001
 ENGINEER ADJUNA
 WITNESSES

EQUIPMENT AND RECORDING DATA

LOG	EQUIPMENT		TAPING		PANEL		CAL COEFF	DEPTHS		SEAM LOG RUN			
	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD SPEED	DIRECT REPLAY		SPEED	TC SECS		NORM	FROM	TO
GAMMA RAY	113B	0692	296	Y	9m/m	D	9m/m	1	11.49	1.77	00	1.77	
DENSITY			0042	Y	9m/m	D	9m/m	1.2	3.0	-	1.77	00	1.77
CALIPER	SEKIMALL POSITION		2" - 1.2"	Y	9m/m	D	9m/m	1.3	-	-	1.77	00	1.77

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

FROM	TO	INTERVAL

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
232	F/S	1:100	
212	Part. MS		
221	M/p/0	1:100	

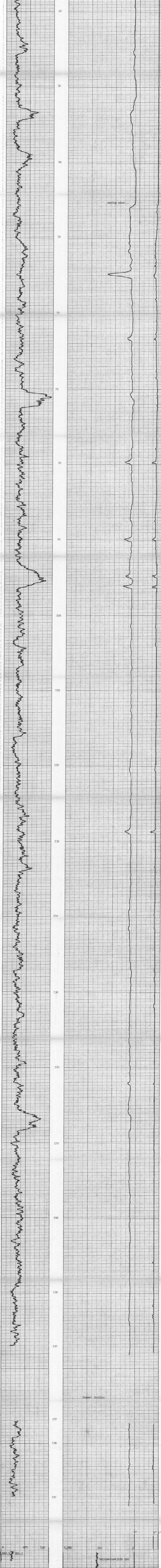
REMARKS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No	VALUE @ 5" DIAM	JIG CAL DATE	SPAN	NORM	SDU @ CPS	g/cm ³	gms/cps
296	170	29/Jan/99	4,000		7.305	1.99	1.99
0042	10.3				7.305	1.99	1.99

GAMMA RAY	DEPTH	BULK DENSITY (g/cm ³)	CALIPER INCHES
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GAMMA RAY	DEPTH	BULK DENSITY (g/cm ³)	CALIPER INCHES
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Gamma Ray & Focused Electric Log.

BOREHOLE ST-DH-04-05

CLIENT Suncor Inc. **FDV**

AREA Sustut B.C.

COUNTRY Canada

DATE LOGGED 17/JUL/94

DEPTH SCALE 1:100

BOREHOLE DATA REFER TO Lithology LOG

OPERATION DATA REFER TO Lithology LOG

EQUIPMENT AND RECORDING DATA

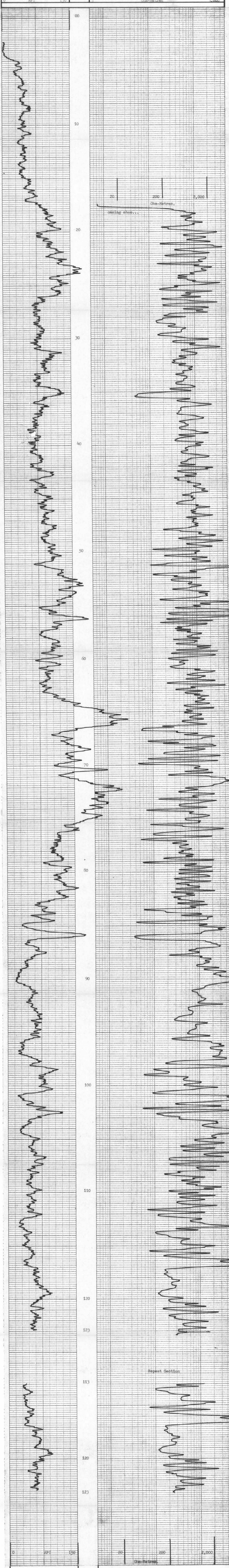
LOG TAPING PANEL 21

LOG RECORDING SPEED 4500

LOG RECORDING SCALE 1.45

LOG RECORDING SCALE 2.32

REMARKS RH=17.5 Ohm-Metres @ 40'



Gamma Ray	DEPTH	Focused Electric Log.
0 API 150	0 5 10 20 30 40 50 60 70 80 90 100 110 120 123	20 200 2,000 Ohm-Metres 5,000



BOREHOLE ST-DH-04-05
 CLIENT Suncor Inc.

AREA Sustut B.C.
 COUNTRY Canada



COAL

LITHOLOGY

LOG

SONDE TYPE

COAL COMBINATION

SONDE

LOG SUITE

GAMMA RAY

L.S. DENSITY

CALIPER

BOREHOLE ST-DL-84-06
CLIENT Suncor Inc.
704

AREA Sustrut B.C.
COUNTRY Canada
DATE LOGGED 10/13/74
DEPTH SCALE 1:100
1 OF 2 LOGS

PERMANENT DATUM
ELEVATION OF P.O.
METER
METER

MEASUREMENTS
DEPTH REACHED 151.0m
CASING SIZE 1 3/4" TO 6.7" TO

FLUID DATA
NATURE
LEVEL
VISCOSITY
BHT

OPERATION DATA
FIRST READING
LAST READING
INITIAL LOGGED
DATE-TRUCK NO.
ENGINEER
WITNESS

EQUIPMENT AND RECORDING DATA

Table with columns: LOG, EQUIPMENT, TAPING, PANEL, CAL COEFF, DEPTHS, SEAM LOG RUN. Includes rows for Gamma Ray and LS Density logs.

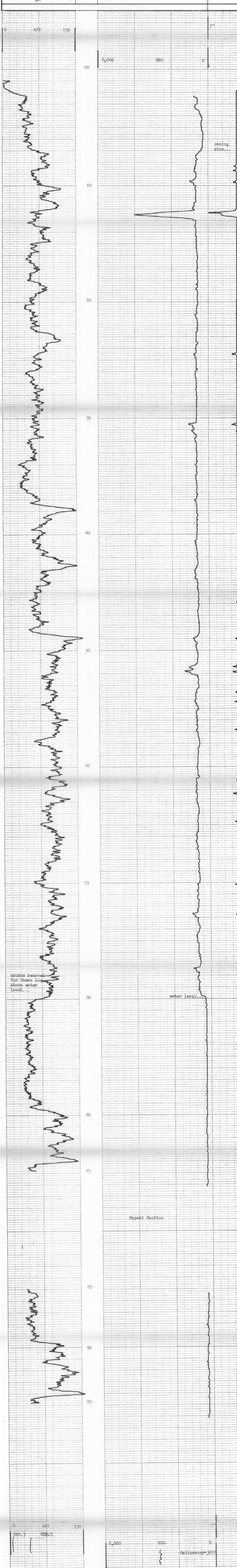
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

Table with columns: JIG No, VALU, JIG CAL DATE, JIG VALUE, SDU, NORM, CPS.

Table with columns: GAMMA RAY, DEPTH, BULK DENSITY, CALIPER.

Table with columns: HOLE SIZE CORRECTION DATA.



Summary table with columns: GAMMA RAY, DEPTH, BULK DENSITY, CALIPER.



BOREHOLE ST-DL-84-06 AREA Sustrut B.C.
CLIENT Suncor Inc. COUNTRY Canada

COAL LITHOLOGY LOG



Gamma Ray & Long Spaced Density Logs.
(through Drill Rods.)

BOREHOLE ST-DH-06
CLIENT Buncor Inc.



AREA Sussex E.C.
COUNTRY Canada
DATE LOGGED 19/01/79

DEPTH SCALE
1:1000
2 OF 3 LOGS

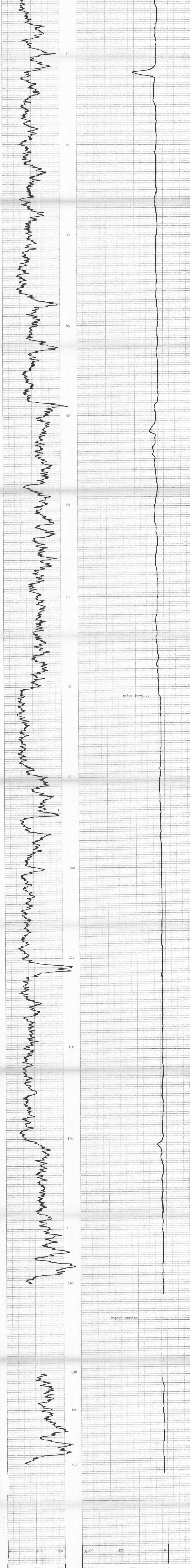
BOREHOLE DATA refer to Lithology LOG
OPERATION DATA refer to Lithology LOG

EQUIPMENT AND RECORDING DATA

LOG	TAPING	PANEL	COEFF.
LOG SPEED	ft/min	SEC	NORM
d/r	Y	ft/min	1 - 1.60
LOG SPEED	ft/min	SEC	NORM
d/r	Y	ft/min	3.2 - 1.3

REMARKS
Log for 3000 scale gamma ray, scale gamma ray data obtained by computer for 1000 and 2000.

Gamma Ray	DEPTH	Long Spaced Density
0	APF 120	3,000 SDU 0



Gamma Ray	DEPTH	Long Spaced Density
0	APF 120	3,000 SDU 0



BOREHOLE ST-DH-06
CLIENT Buncor Inc.

AREA Sussex E.C.
COUNTRY Canada



Gamma Ray & Focussed Electric Log.

BOREHOLE ST-DH-84-06

CLIENT Suncor Inc.

704

AREA Susut B.C.

COUNTRY Canada

DATE LOGGED 19/Jan/84

DEPTH SCALE
1:100

30F-3 LOSS

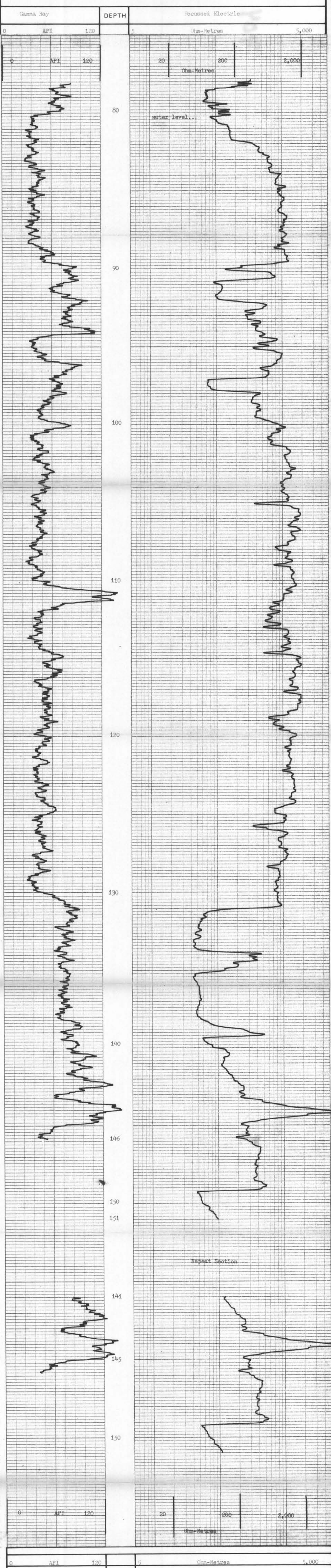
BOREHOLE DATA REFER TO Lithology LOG

OPERATION DATA REFER TO Lithology LOG

EQUIPMENT AND RECORDING DATA

LOG	TAPPING	RECORDING	PANEL	DATE
LOG	TAPED	RECORDED	T.C.	NORM
C/R	Y	9m/m	R	9m/m
F/E	Y	9m/m	D	9m/m
		SCALE 232	SCALE	

REMARKS
Gamma played out for correlation purposes
has logged through drill rods. Seals
have been changed to compensate for drill
rod effect. See Lithology log.



BOREHOLE ST-DH-84-06 AREA Susut B.C.
CLIENT Suncor Inc. COUNTRY Canada



BOREHOLE ST-DH-B4-02
 CLIENT Suncor Inc. **704**

AREA Surtut B.C. DEPTH SCALE
 COUNTRY Canada 1:100
 DATE LOGGED 20/Jan/94 1 OF 2 LOGS

BOREHOLE DATA

PERMANENT DATUM Ground Level
 ELEVATION OF P.D. N/A
 MASS BURNING FROM 9m/m 9m/m
 DEPTH REACHED 63.4m
 CASING SHOE 22.0m
 BIT SIZES 1 3" TO 1 1/2"
 CASING SIZES 1 3 1/2" TO 2 1/2"

FLUID DATA

NATURE SS550/740
 SG 1.01 #m/25°
 LEVEL 0.0m
 VISCOSITY N/A
 Run at mesa temp 20.0 (9m-Hydrogen @ 3.0°)
 BH-1 N/A

LOG SUITE
 GAMMA RAY
 L.S. DENSITY
 CALIPER

EQUIPMENT AND RECORDING DATA

LOG	EQUIPMENT			TAPING			PANEL		CAL COEFF	DEPTHS			SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD SPEED	DIRECT REPLAY	SPEED	T.C SECS		NORM	FROM	TO	
GAMMA RAY			246	Y	9m/m	D	9m/m	1	-	1.74	63	00	63
L.S. DENSITY			0042	Y	9m/m	D	9m/m	.3	7.15	-	63	00	63
CALIPER	SIDEWALL POSITION		7" .2"	Y	9m/m	D	9m/m	.3	-	-	63	00	63

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

FROM	TO	INTERVAL TOTAL

ADDITIONAL SONDES RUN				REMARKS
SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG	
232	F/E	1:100		Due to unstable borehole conditions no Dipmeter logging was attempted.

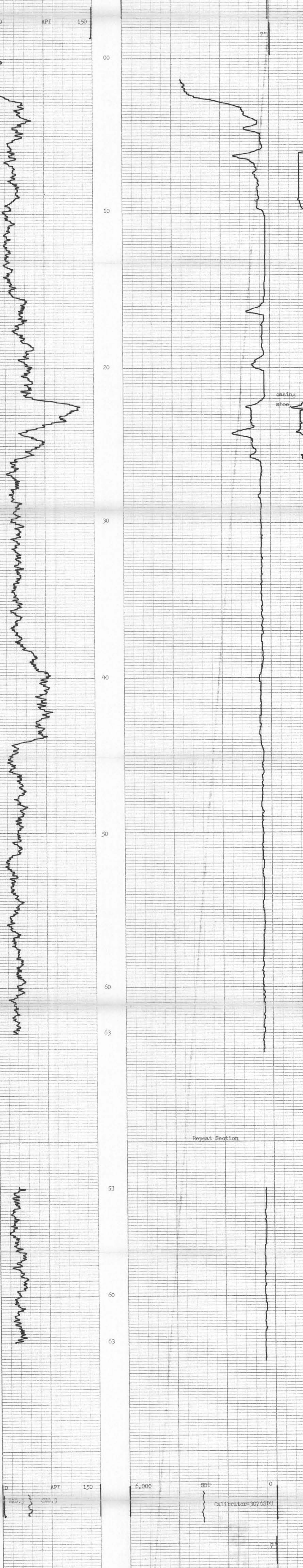
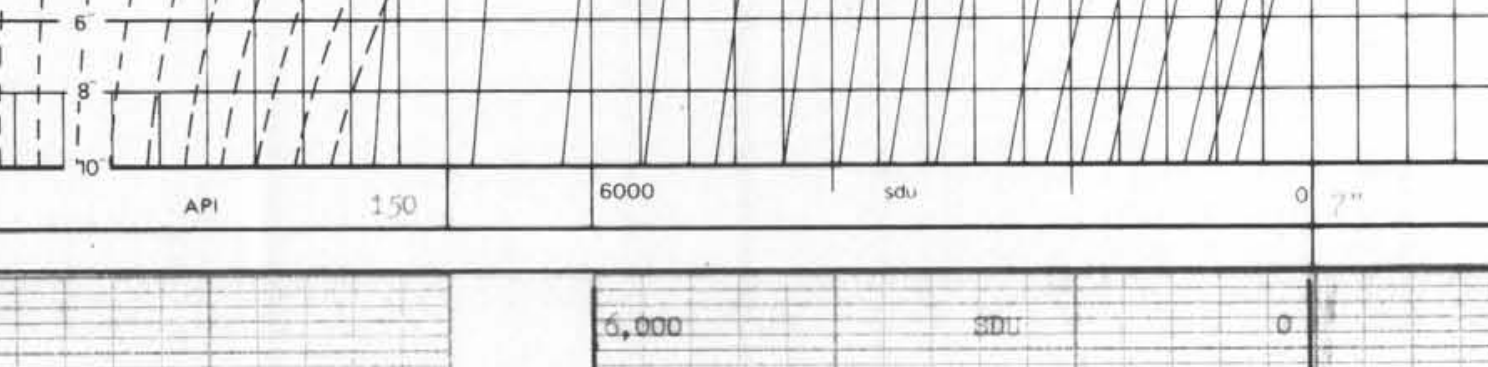
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No 2946 VALUE 770 @ 5" DIAM JIG CAL DATE 29/Jan/94 JIG VALUE 3076 SDU @ 1.5 g/cm³ 2" ms 501 cps
 JIG MARK SHOWN AT ABOVE VALUE -70.3 JIG No 0042 SPAN 6,000 NORM SDU CPS 7.15 2" ms 500 cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm ³	CALIPER INCHES
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HOLE SIZE CORRECTION DATA



GAMMA RAY	DEPTH	BULK DENSITY g/cm ³	CALIPER INCHES
-----------	-------	--------------------------------	----------------

BOREHOLE ST-DH-B4-02 AREA Surtut B.C.
 CLIENT Suncor Inc. COUNTRY Canada

COAL LITHOLOGY LOG



BOREHOLE SI-DH-04-08
 CLIENT Suncor Inc.

904

AREA Sussex B.C.
 COUNTRY Canada
 DATE LOGGED 22/Jul/94

DEPTH SCALE
 1:100
 1.0' = 2.00'S

COAL

LITHOLOGY LOG

PERMANENT DATUM Ground level
 ELEVATION OF P.D. N/A
 MASURMENT FROM 0.1m
 DEPTH REACHED 83.5m
 CASING SHOE 12.2m
 BIT SIZES 1 3/4" TO 1 1/2"
 CASING SIZES 1 3/4" TO 1 1/2"

BOREHOLE DATA

SONDE TYPE COAL
 COMBINATION SONDE
 LOG SUITE GAMMA RAY
 L.S DENSITY
 CALIPER

FIRST READING 82.0m
 LAST READING 00.0m
 INTERNAL LOGGED 82.0m
 UNIT TRACK NO. 1611404-04
 ENGINEER M.ODD
 WITNESS Dave Peeters (J.T. Thomas)

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE 113B													
LOG	EQUIPMENT		TAPING			PANEL		CAL COEFF	DEPTHS		SEAM LOG RUN		
	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD SPEED	DIRECT OF REPLAY	SPEED		T.C SECS	FROM		TO	INTERVAL
GAMMA RAY			371	Y	9m/m	D	9m/m	1	-	1.47	82	00	82
			0042	Y	9m/m	D	9m/m	3	7.5	-	82	00	82
L.S DENSITY			7" x 2"	Y	9m/m	D	9m/m	3	-	-	82	00	82
CALIPER	SIDEWALL POSITION												

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

FROM	TO	INTERVAL TOTAL

ADDITIONAL SONDES RUN				REMARKS
SONDE	LOG	GENERAL SCALE	DETAIL SCALE	
232	γ/E	1:100		REFER TO ADDITIONAL HEADINGS
212	Vert.	CDS		
221	Dip/G	1:100		

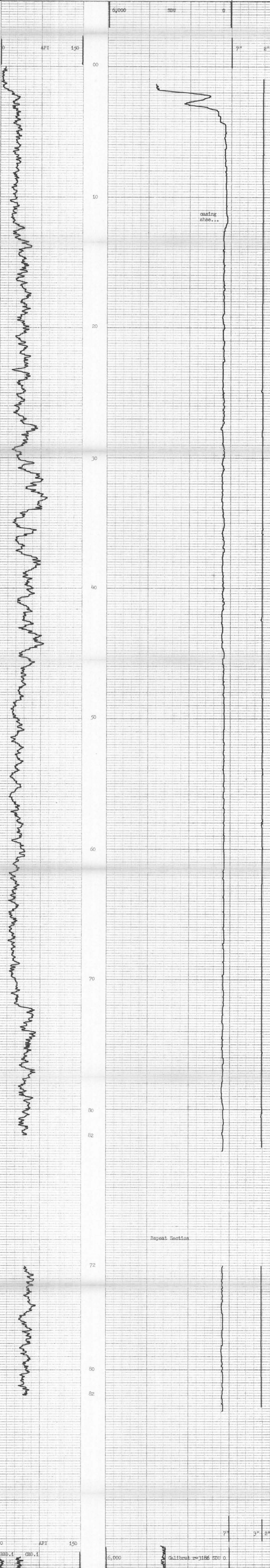
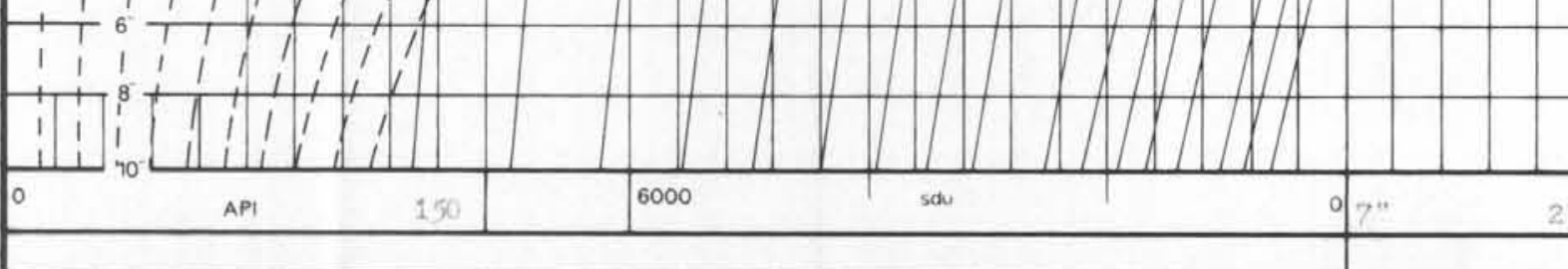
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No 246 VALUE 376 @ 5' DIAM JIG CAL DATE 29/Jan/94 JIG VALUE 3186 SDU @ 1.5 g/cm³ 2" ins 198 cps
 JIG MARK SHOWN AT ABOVE VALUE 30.1 JIG No 0042 SPAN 6,000 NORM PPS = 7.5 6" ins 330 cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm ³	CALIPER INCHES
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HOLE SIZE CORRECTION DATA



GAMMA RAY	DEPTH	BULK DENSITY g/cm ³	CALIPER INCHES
-----------	-------	--------------------------------	----------------



BOREHOLE SI-DH-04-08 AREA Sussex B.C.
 CLIENT Suncor Inc. COUNTRY Canada

COAL LITHOLOGY LOG



Gamma Ray & Focused Electric Logs.

BOREHOLE ST-DH-84-08
CLIENT Suncor Inc. **704**

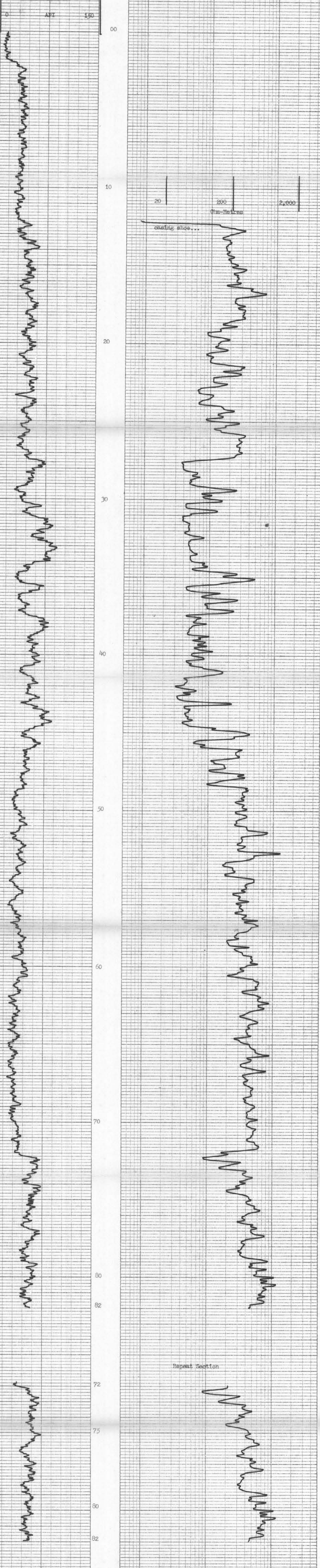
AREA Sustut H.C.
COUNTRY Canada
DATE LOGGED 22/Jul/94 2 OF 2 LOGS

BOREHOLE DATA REFER TO Lithology LOG
OPERATION DATA REFER TO Lithology LOG
EQUIPMENT AND RECORDING DATA

LOG TAPPING PANEL
LOG RECORDING SPEED 1% NORM
TAPED SPEED HEADS 1
G/R Y cm/m R cm/m 1 1.47
F/R Y cm/m D cm/m .3
SCALE 232 3000

REMARKS
Rite 18.5 Ohm-Metres @ 5°C.

Gamma Ray	DEPTH	5	Focused Electric
0	API	150	Ohm-Metres
			5,000



0	API	150	5	Ohm-Metres	5,000
Gamma Ray	DEPTH			Focused Electric	

BOREHOLE	ST-DH-84-08	AREA	Sustut H.C.
CLIENT	Suncor Inc.	COUNTRY	Canada





COAL LITHOLOGY LOG

SONDE TYPE
COAL COMBINATION
SONDE

LOG SUITE
GAMMA RAY
L.S DENSITY
CALIPER

BOREHOLE DATA

PERMANENT ID: ST-DI-94-09 DOLLER

ELEVATION OF P.D: 11.8

MEASUREMENT FROM: 11.1

DEPTH REACHED: 73.40m

CASING SHOE: 9.10m

BIT SIZES: 1 3" TO 2 2" TO 3 1 1/2" TO 4 1 1/4" TO

CASING SIZES: 1 3 1/2" TO 2 2 1/2" TO

FLUID DATA

NATURE: 3970/20

SG: 1.00

LEVEL: 0.0m

VISCOSITY: 5.75

Rim of mass temp: 2.3

BH1: 1.4

OPERATION DATA

FAST READING: 1.0m

LAST READING: 00.0m

INTERVAL LOGGED: 20.0m

UNIT TRUCK No: 61103

ENGINEER: WADOC

WITNESS:

EQUIPMENT AND RECORDING DATA

LOG	EQUIPMENT			TAPING		PANEL		CAL COEFF	DEPTHS			SEAM LOG RUN	
	SONDE	SOURCE	CALIBRAIOR	LOG TAPED	RECORD SPEED	DIRECT OF REPLAY	SPEED		T.C SECS	NORM	FROM		TO
GAMMA RAY		0592		Y	9m/m	D	9m/m	1	-	1.43	73	00	73
L.S DENSITY			0042	Y	9m/m	D	9m/m	2	7.24	-	73	00	73
CALIPER	SIDEWALL POSITION		7" . 2"	Y	9m/m	D	9m/m	3	-	-	73	00	73

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

FROM	TO	INTERVAL	TOTAL

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG	REFER TO ADDITIONAL HEADINGS
232	B/E	1:100		

REMARKS

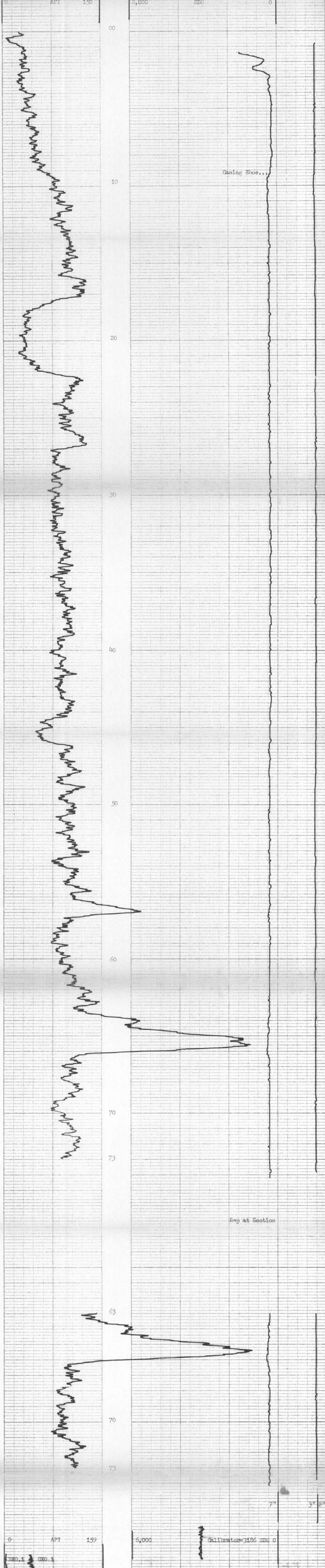
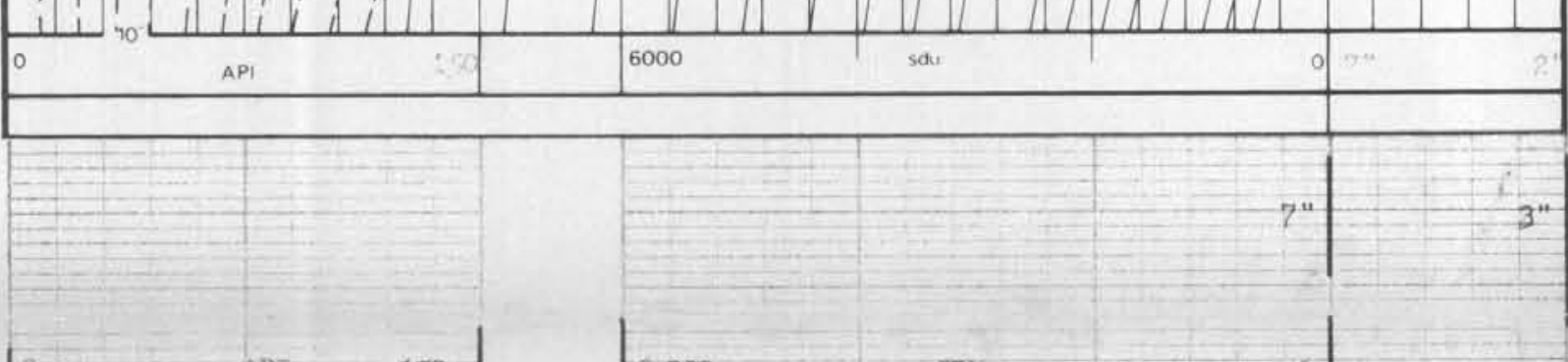
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No <u>246</u>	VALUE <u>770</u> @ 5" DIAM	JIG CAL DATE <u>29/10/94</u>	JIG VALUE <u>3236</u>	SDU @ <u>1.5</u> g/cm ³	<u>2"</u> INS <u>123</u> CPS
JIG MARK SHOWN AT ABOVE VALUE <u>10.4</u>		JIG No <u>0042</u>	SPAN <u>1.000</u>	NORM <u>2.34</u>	<u>2"</u> INS <u>132</u> CPS

GAMMA RAY	DEPTH	BULK DENSITY g/cm ³	CALIPER INCHES
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HOLE SIZE CORRECTION DATA



GAMMA RAY	DEPTH	BULK DENSITY g/cm ³	CALIPER INCHES
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BOREHOLE ST-DI-94-09 AREA Suntit, B.C

CLIENT Suncor Inc. COUNTRY Canada

COAL LITHOLOGY LOG



LOG SUITE:
GAMMA RAY
L.S. DENSITY
CALIPER

SONDE TYPE
COAL
COMBINATION
SONDE

COAL
LITHOLOGY
LOG

BOREHOLE ST-DI-84-10
CLIENT Suncor Inc. **204**
AREA Sustut B.C.
COUNTRY Canada
DATE LOGGED 24/Jun/84
DEPTH SCALE 1:100
1 of 3 LOGS

PERMANENT DATUM (Ground Level)
ELEVATION OF P.D. N/A
MKS. FROM FROM 9.1m
DEPTH REACHED 34.0m
CASING SHOES 9.1m
BIT SIZES 1 3" TO 1D 2 TO
3 TO 4 TO
CASING SIZES 1 3.5" TO 9.1m 2 TO

FLUID DATA
NATURE G3550/400
SG 1.0 gms/cc
LEVEL 0.0m
VISCOSITY N/A
Run at meas temp 20.0m-Pressure @ 6°C.
BHT N/A

OPERATION DATA
FIRST READING 34.0m
LAST READING 00.0m
INTERVAL LOGGED 34.0m
UNIT-TRUCK No 1111
ENGINEER WADCO
WITNESS

EQUIPMENT AND RECORDING DATA

LOG	EQUIPMENT			TAPING		PANEL		CAL COEFF	DEPTHS			SEAM LOG RUN	
	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD SPEED	DIRECT REPLAY	SPEED		TC SECS	NORM	FROM		TO
		0592											
GAMMA RAY			246	Y	9m/m	D	9m/m	1	-	1.40	34	00	34
L.S. DENSITY			0042	Y	9m/m	D	9m/m	.3	7.42	-	34	00	34
CALIPER	SIDEWALL POSITION		7" ± .2"	Y	9m/m	D	9m/m	.3	-	-	34	00	34

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

FROM	TO	INTERVAL	TOTAL

ADDITIONAL SONDES RUN				REFER TO ADDITIONAL HEADINGS	REMARKS
SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG		
232	P/E	1:100			Hole was blocked @ 34.0m See Gamma & LSD Log through drill rods.

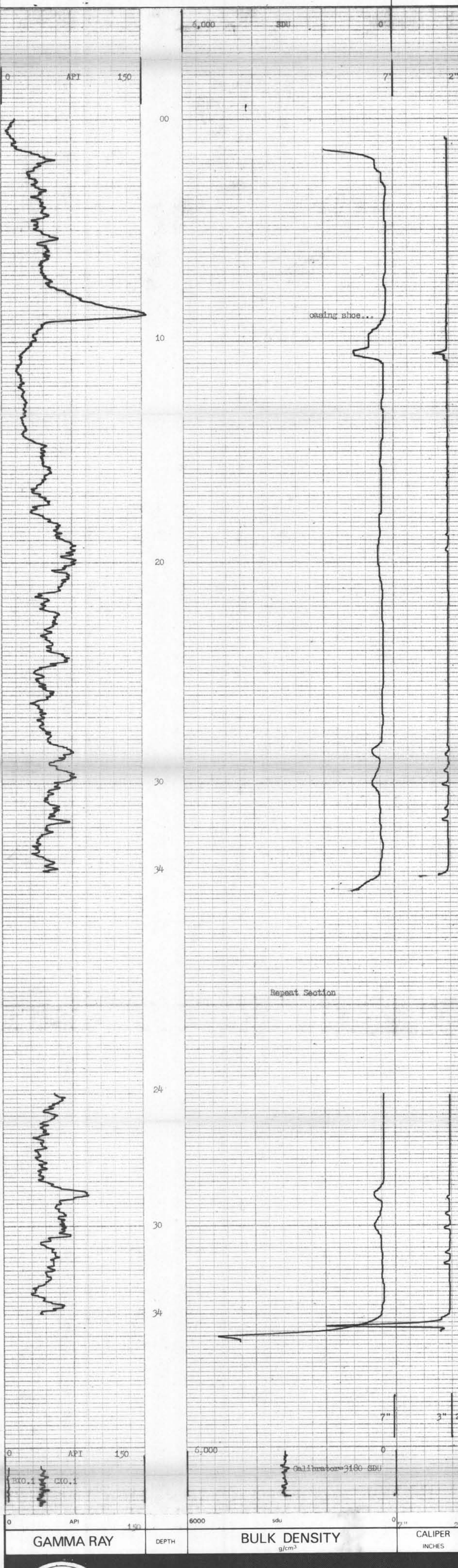
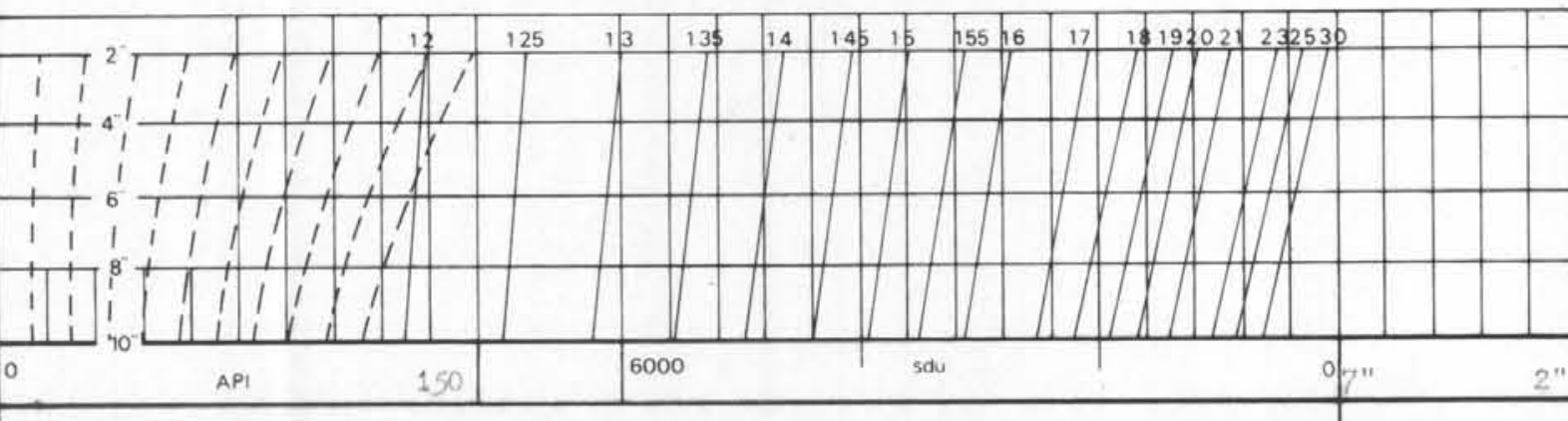
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No 246	VALUE 37 @ 5" DIAM	JIG CAL DATE 29/Jun/84	JIG VALUE 3180	SDU @ 1.5 g/cm ³	2" ms 198	cps
JIG MARK SHOWN AT ABOVE VALUE 70.1		JIG No 0042	SPAN 6,000	NORM SDU = 7.42	7" ms 330	cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm ³	CALIPER INCHES
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HOLE SIZE CORRECTION DATA



GAMMA RAY	DEPTH	BULK DENSITY g/cm ³	CALIPER INCHES
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BOREHOLE ST-DI-84-10 AREA Sustut B.C.
CLIENT Suncor Inc. COUNTRY Canada

COAL LITHOLOGY LOG



Gamma Ray & Long Spaced Density Logs.
(Through Drill Rods.)

BOREHOLE ST-DI-04-10

CLIENT Suncor Inc.

204

AREA Sustut B.C.

COUNTRY Canada

DATE LOGGED 24/Jan/94

DEPTH SCALE
1:100

3 OF 3 LOGS

BOREHOLE DATA

REFER TO Lithology LOG

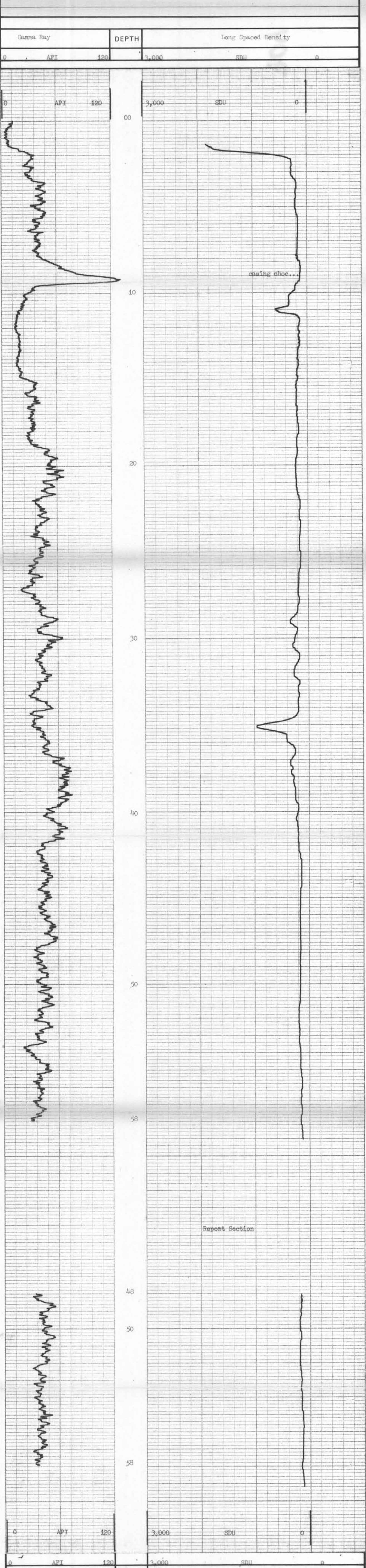
OPERATION DATA

REFER TO Lithology LOG

EQUIPMENT AND RECORDING DATA

LOG	TAPING	PANEL	DATE
LOG RECORDING	REFLECT	T.C.	CONF.
TABO	SPEED	RECORD	SECS
		NORM	
C/R	Y 9m/m	D 9m/m	1 1.4d
ISD	Y 9m/m	D 9m/m	1 7.4d
	SONE 113B	SONE 0592	

REMARKS
Lowered through drill rods scales
have been changed to compensate for drill
rod effect.



Gamma Ray	DEPTH	Long Spaced Density
0 API 120	3,000 SDU	0



BOREHOLE	ST-DI-04-10	AREA	Sustut B.C.
CLIENT	Suncor Inc.	COUNTRY	Canada

N^o 84 0512

Property: SUSTUT

Location: ST-84-1

Date: July 8/84

Hole No.:

From: To:

Remarks: Coaly Shale

Assay for: Coal

N^o 84 0513

Property: Sustut

Location: ST-84-2

Date: July 8, 1984

Hole No.:

From: 1.2 m To: 1.7 m

Remarks:

Assay for: coal

N^o 84 0514

Property: Sustut

Location: ST-84-2

Date: July 8, 1984

Hole No.:

From: 3.05 m To: 3.45

Remarks:

Assay for: coal

N^o 84 0607

Property: SUSTUT

Location:

Date: July 24/84

Hole No.: ST-84-DH 1

From: 34.0 To: 34.84

Remarks:

Mainly Carbonaceous
shale

Assay for: Coal

N^o 84 0608

Property: SUSTUT

Location:

Date: July 24/84

Hole No.: ST-84 DH 1

From: 49.84 To: 50.48

Remarks: Coal clean
- d.s.t.g.

Assay for: Coal

N^o 84 0609

Property: SUSTUT

Location:

Date: July 24/84

Hole No.: ST-84 DH 1

From: 50.25 To: 50.48

Remarks: 51.0 51.2

Assay for: Coal

N^o 84 0610

Property: sustut

Location:

Date: July 24, 84

Hole No.: ST-84 DH 1

From: 51.96 To: 52.5

Remarks: 53.42

Muddy slt split
20cm thick
@ 52.5-52.7

Assay for: Coal

N^o 84 0611

Property: SUSTUT

Location:

Date: July 24, 84

Hole No.: ST-84 DH 1

From: 54.08 To: 54.69

Remarks:

Assay for: Coal

N^o 84 0612

Property: Sustut

Location:

Date: July 24, 84

Hole No.: ST-84 DH-1

From: 57.4 To: 58.28

Remarks:

Assay for: Coal

N^o 84 0613

Property: Sustut

Location:

Date: July 24, 84

Hole No.: ST-84 DH 1

From: 58.84 To: 59.32

Remarks: contains
mudstone split

Assay for: Coal

Nº 84 0614

Property: *Susht*

Location:

Date: *July 24*

Hole No.: *ST84DH1*

From: *61.09* To: *62.8*

Remarks:

Assay for: *Coal*

Nº 84 0615

Property: *Susht*

Location:

Date: *July 24*

Hole No.: *ST84DH1*

From: *63.2* To: *64.2*

Remarks:

Assay for: *Coal*

Nº 84 0616

Property: *SUSHT*

Location:

Date: *July 24*

Hole No.: *ST84DH2*

From: *23.8* To: *27.5*

Remarks: *contains*

20 cm quadrat
split

Assay for: *Coal*

Nº 84 0617

Property: *SUSHT*

Location:

Date: *July 24*

Hole No.: *ST84DH2*

From: *32.2* To: *32.95*

Remarks:

Assay for: *Coal*

Nº 84 0618

Property: *Susht*

Location:

Date: *July 24*

Hole No.: *ST84DH2*

From: *35.1* To: *35.4*

Remarks:

Assay for: *Coal*

Nº 84 0619

Property: *Susht*

Location:

Date: *July 24, 84*

Hole No.: *ST84DH2*

From: *36.1* To: *36.2*

Remarks:

Assay for: *Coal*