



THE ANALYSTS

Schlumberger

END OF WELL REPORT

STATOIL

WELL: 6610/7-2

INTRODUCTION

A OBJECTIVES

- 1 12 1/4" Pilot Hole for 20" Casing
 - a) Provision of Directional Data
 - b) Detection of Potential Shallow Hole Gas Zones

- 2 17 1/2" Hole (Opened later to 22")
 - a) Provision of Gamma Ray and Resistivity logs for Stratigraphic Interpretation
 - b) Provision of Directional Data
 - c) Aid to Pore Pressure Interpretation

- 3 12 1/4" Hole (Opened later to 17 1/2")
 - a) Detection of Primary Target
 - b) Provision of Directional Data
 - c) Provision of Gamma Ray and Resistivity logs for Stratigraphic Interpretation

B EQUIPMENT

Two 9" MWD Collars were provided for the 17 1/2" Section.

Three 8" MWD Collars were provided for the 20" Pilot Hole and the 12 1/4" Hole.

Four sets of Tools were provided.

An Analysts Unit was provided with full facilities to perform complete repair and maintenance on the Down Hole Tools.

C ANALYSTS PERSONNEL

S Frank	MWD Field Systems Manager
P Byrne	MWD Field Systems Manager
G Bacon	Chief MWD Technician
C Weatherley	MWD Field Systems Manager
J Netland	MWD Field Systems Operator
A Palin	MWD Field Systems Operator

MWD RUN SUMMARY

Run # 1

Interval Drilled:	323m-715m
Footage:	382m
Footage Logged:	35m
Operating Hours:	3.75hrs

The objectives of this run were to provide Survey Data as required by the NPD, and Lithologic Data to identify possible Shallow Hole Gas Zones.

The Tool stopped sending MWD Data after 3.75 hours but most of the Survey Data was transmitted for this section. The Tool was not replaced as it would necessitate pulling the String out of the hole.

After extensive testing on the surface, the fault was traced to the Gamma Ray Cartridge, where a short circuit to ground had occurred on the high voltage multiplier, shutting down the Tool. It was possible to obtain Survey Data but once the String was rotated, the short circuit shut down the Tool.

This failure resulted in 6 components requiring to be replaced, but these items are not normally stocked in a Remote Location Unit. A failure of this nature is extremely rare and does not warrant holding these specialised items.

Run # 2

Interval Drilled:	733m-1066m
Footage:	333m
Footage Logged:	333m
Operating Hours:	46.5 hrs

This section was drilled to 17 1/2" and later opened to 22" to take 16" casing.

The Analysts 9" MWD Collar was used with a 17 1/2" Clamp-On Stabiliser in its middle, with a 10 metre Monel Collar above and a 17 1/2" Non Magnetic Stabiliser above that.

Data from the MWD Log indicated a formation change at 864m. There was a shift to the left on the Gamma Ray Log and a corresponding shift on the Resistivity Log.

From the ISF-BHC-GR Wire Line Log, shifts in Resistivity Shale Base Line and Shale Transit Time would seem to ratify the MWD Log Interpretation (864m-970m) (see diagram # 1). — ?

At 971m the Gamma Ray Log indicated a formation change to a more sandy interval, with a corresponding change on the Resistivity Log.

At 992.5m the dramatic shift in the Resistivity Log defined the Base of the Pliocene and the Hordaland Unconformity.

From 992.5m to 1000m there was a Transitional Interval into the Eocene, which was terminated at 1039m by the top of the Palaeocene.

During this run the following Temperature Anomalies were observed:

<u>DEPTH</u>	<u>CAUSE</u>
867m	Pumping high viscosity pill
887m	Pumping high viscosity pill
915m	Change out pump liner (1.5 hrs)
971m	Wiper trip to shoe (2.0 hrs)
1027m	Pumping high viscosity pill

Run # 3

Interval Drilled:	1066m-1465m
Footage:	399m
Footage Logged:	399m
Operating Hours:	65 hrs

This Section was logged using the MWD Collar and Tool from Run # 2.

During this run, the Regression observed on the Resistivity Log indicated a Pore Pressure increase, confirming 'D' Exponent Plots and other Pore Pressure indicators.

Between 1100m and 1350m the MWD Weight was gradually raised from 1.12 SG to 1.43 SG, using the MWD Resistivity Log as a major indicator of further Pore Pressure increases.

The top of the Cretaceous was picked at 1262m using the MWD Log and Mud Logging samples.

Again, during this run Temperature Anomalies were observed.

<u>DEPTH</u>	<u>CAUSE</u>
1063m	Beginning of run # 3
1091m	Circulate to raise mud weight
1212m	Pump high viscosity pill
1258m	Circulate to raise mud weight
1301m	Circulate to raise mud weight
1305m	Wiper trip to shoe
1365m	Pump high viscosity pill

Just prior to the Wiper Trip logged at 1305m, the separation of SWOB and DWOB indicated 'hanging up' of the String Stabiliser on the Formation change (1285m) from Limestone Stringers to a Shale Interval. (Distance from Measure Point to String Stabiliser was 20m.)

After the Wiper Trip, 'hanging up' was still evident.

Stabilisers 'hanging up' was also evident at 1185m to 1200m, again related to a Formation change (1167m).

Due to lack of 'Riser Margin', it was decided to set Casing at 1495m.

Run # 4

Interval Drilled:	1472m-1478m
Footage:	6m
Footage Logged:	6m
Operating Hours:	8.5 hrs

The Casing Shoe was drilled out with a 14 3/4" bit, and new hole drilled to ensure the MWD Collar was below the Casing Shoe. Previous experience has shown that rotation of the MWD Collar whilst drilling through the Shoe can cause damage and possible failure of the Resistivity Sensor.

The Systems Engineers converted the 9" Tool from the previous runs to an 8" Tool. The Modulator and Turbine were stripped and rebuilt to conform to the new flow rate and hydraulic regime.

The positions of the full gauge Stabilisers and 8" Collar were as previously run.

Due to poor drilling response the bit was pulled at 1478m.

There is a Log gap of 6m below the 16" Casing Shoe because the request to wash down the missing interval was deemed unnecessary.

Run # 5

Interval Drilled:	1478m-1495.5m
Footage:	17.5m
Footage Logged:	17.5m
Operating Hours:	11.5 hrs

The Objective of this Run was to pick the high Gamma Ray kick indicating possible Kimmeridgian and close proximity of the Jurassic Sand - the Primary Objective of the well.

The top of the Jurassic was picked at 1479m and the Jurassic Sands were picked at 1487m where bottoms up was circulated up and the string pulled to pick up the Core Barrel.

Run # 6

Interval Drilled:	1505m-1582m
Footage:	75m
Footage Logged:	75m
Operating Hours:	23.5 hrs

The Cored Section 1487m-1505m was washed down to collect missing Data.

Throughout this Section the Stabiliser 'hung up' on the thin Coal Beds and severe torque was observed, both factors leading to poor rate of penetration.

The String was pulled and the Clamp-On Stabiliser was 1/2" under gauge and was changed out. Similarly the bit was 1/4" under gauge and also changed out.

The first Coal interval was picked at 1523m.

Run # 7

Interval Drilled:	1582m-1739m
Footage:	157m
Footage Logged:	157m
Operating Hours:	54.5 hrs

The same Tools and Collar were run as the previous 2 Runs.

Observations from the Log

Depth

1679m-1681m	High Gamma Ray response*
1687m-1690m	As above.
1706m-1708m	As above.
1721m-1729m	As above

* Denoted by asterisk in left hand column - wrap around (back-up scale).

1637m-1732m	Separation of SWOB and DWOB shows Stabilisers 'hanging-up'.
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Run # 8

Interval Drilled:	1739m-1981m
Footage:	242m
Footage Logged:	242m
Operating Hours:	77 hrs

A new Collar and Tool were run, as the previous Tool had exceeded 200 operating hours, and therefore required inspection.

The top of the Triassic Red Beds was picked at 1751m from the MWD Log and Mud Logging samples.

Observations from the Log

High Gamma Ray response was encountered in thin stringers throughout this section.

At 1886m-1888m a significant drop in temperature was observed due to a decrease in Rotary RPM (100 RPM to 50 RPM). This course of action was taken in an attempt to improve drilling response. At 1888m the Rotary RPM was returned to its original value. This drop in temperature was indicative of the bit generating less friction.

From 1900m to 1960m a negative trend in the Temperature Log was noticeable, due to poor drilling response of the insert bit (F2) in what became softer formation.

From 1960m to 1978m an improvement of drilling response was indicated by the positive change in the Temperature Log.

When this bit was pulled both the Stabilisers and the bit were balled.

Run # 9

Interval Drilled:	1981m-2131m
Footage:	150m
Footage Logged:	150m
Operating Hours:	46 hrs

Observations from the Log

1985m-1990m	Separation of SWOB and DWOB indicated Stabilisers 'hanging up'.
2016m-2020m	Separation of SWOB and DWOB indicated Stabilisers 'hanging up'.
2115m-2126m	Sharp increase in Temperature gradient coupled with increase in Torque justified pulling the bit. The bit came out with one bearing locked.

Run #10

Interval Drilled:	2131m-2180m
Footage:	49m
Footage Logged:	49m
Operating Hours:	295 hrs

The intention was to drill to about 2400m and then set 13 3/8" Casing. However, due to poor drilling rate, it was decided to set Casing early.

At this depth, The Analysts and their equipment were released.

Our thanks to the Statoil and Smedvik Personnel for their co-operation in making this a successful operation.

Simon Frank
Patrick Byrne

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***** THE ANALYSTS, INC *****
***** SCHLUMBERGER *****
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COMPANY STATOIL
LOCATION TRAENABANKEN
RIG WEST VANGUARD
TYPE OF SURVEY MWD
DATE: 25 OCT 1983
WELL INDEX NUMBER 1

AZIMUTH FROM ROTARY TABLE TO TARGET IS 0.00

TIE IN POINT(TIP) :
MEASURED DEPTH 0.00
TRUE VERT DEPTH 0.00
INCLINATION 0.00
AZIMUTH 0.00
DEPARTURE(E/-W) 0.00
LATITUDE(N/-S) 0.00

MAG. DECLINATION -2.00

*****THE ANALYSTS*****
 *****SURVEY CALCULATIONS AND ANALYSIS****
 ***** RADIUS OF CURVATURE METHOD*****

MEASURED DEPTH	VERTICAL DEPTH	TARGET SECTION	STATION INCL.	AZIMUTH deg	RECTANGULAR N/-S	CO-ORDS E/-W	DISTANCE	at AZIMUTH deg	DJGLEG SEVERITY
0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330.2	330.20	0.06	0.40	170.30	0.06	0.77	0.77	85.40	0.04
340.7	340.70	-0.02	0.50	193.80	-0.02	0.77	0.77	91.50	0.59
346.1	346.10	-0.02	0.10	399.00	-0.02	0.74	0.74	91.21	2.83
357.4	357.40	-0.05	0.30	173.50	-0.05	0.74	0.74	94.22	0.92
367.6	367.30	-0.05	0.20	399.00	-0.05	0.70	0.70	93.91	1.18
396.6	396.60	-0.04	0.10	399.00	-0.04	0.62	0.62	93.30	0.11
453.6	453.60	-0.02	0.10	999.00	-0.02	0.52	0.53	92.22	0.01
502.5	502.50	-0.19	0.40	141.10	-0.19	0.66	0.68	105.79	0.30
548.7	548.69	-0.52	0.60	153.00	-0.52	0.88	1.02	120.84	0.15
576.8	576.79	-0.76	0.60	136.10	-0.76	1.05	1.30	126.06	0.19
588.3	588.29	-0.86	0.70	139.80	-0.86	1.13	1.42	127.14	0.29
729.9	729.98	-2.25	0.70	147.50	-2.25	2.16	3.12	136.20	0.02
738.8	738.78	-2.33	0.40	153.10	-2.33	2.20	3.20	136.57	1.04
748.8	748.78	-2.41	0.70	149.00	-2.41	2.25	3.30	136.99	0.92
758.0	757.98	-2.50	0.50	158.80	-2.50	2.29	3.39	137.46	0.74
765.4	765.38	-2.55	0.40	140.00	-2.55	2.32	3.44	137.66	0.73
774.6	774.58	-2.61	0.60	155.60	-2.61	2.36	3.52	137.89	0.80
776.7	776.68	-2.63	0.90	126.20	-2.63	2.38	3.55	137.91	6.95
785.7	785.68	-2.69	0.50	109.70	-2.69	2.48	3.65	137.33	1.50
794.3	794.28	-2.73	0.40	147.50	-2.73	2.53	3.72	137.17	1.09
803.9	803.88	-2.80	0.70	143.50	-2.80	2.58	3.81	137.37	0.96
813.0	812.98	-2.90	0.80	145.80	-2.90	2.65	3.93	137.59	0.35
823.3	823.28	-2.98	0.50	125.00	-2.98	2.73	4.04	137.53	1.12
832.7	832.68	-3.05	0.60	144.20	-3.05	2.80	4.13	137.46	0.68
842.8	842.78	-3.14	0.70	143.60	-3.14	2.86	4.25	137.64	0.30
852.9	852.87	-3.24	0.80	130.80	-3.24	2.95	4.38	137.62	0.58
862.1	862.07	-3.30	0.50	126.30	-3.30	3.03	4.48	137.41	1.01
872.4	872.37	-3.36	0.40	149.50	-3.36	3.09	4.56	137.42	0.61
880.2	880.17	-3.40	0.50	113.50	-3.40	3.14	4.63	137.34	1.42
891.4	891.37	-3.45	0.70	106.10	-3.45	3.26	4.74	136.63	0.36
899.0	898.97	-3.48	0.60	119.10	-3.48	3.34	4.82	136.21	0.71
902.5	902.47	-3.50	0.70	115.90	-3.50	3.37	4.86	136.06	0.93
916.9	916.87	-3.57	0.50	124.60	-3.57	3.50	5.00	135.59	0.46
938.1	938.07	-3.77	0.70	196.30	-3.77	3.57	5.19	136.56	1.04
957.3	957.27	-3.93	0.50	105.30	-3.93	3.66	5.37	137.03	1.38
975.0	974.97	-3.93	0.40	74.60	-3.93	3.80	5.46	135.97	0.44
977.2	977.17	-3.92	0.40	76.90	-3.92	3.81	5.47	135.83	0.27
983.7	983.67	-3.91	0.30	65.70	-3.91	3.85	5.49	135.46	0.56
987.7	987.67	-3.90	0.30	2.10	-3.90	3.86	5.48	135.26	2.41
1000.1	1000.07	-3.89	0.10	999.00	-3.89	3.82	5.45	135.53	0.75
1012.4	1012.37	-3.88	0.30	83.20	-3.88	3.86	5.48	135.17	0.99
1015.9	1015.87	-3.88	0.20	399.00	-3.88	3.84	5.46	135.27	4.31
1023.2	1023.17	-3.86	0.50	62.10	-3.86	3.88	5.48	134.82	2.80
1032.9	1032.87	-3.80	0.40	21.10	-3.80	3.93	5.47	134.04	1.03
1042.7	1042.67	-3.72	0.60	3.50	-3.72	3.95	5.43	133.27	0.78
1052.9	1052.87	-3.62	0.50	345.10	-3.62	3.94	5.35	132.59	0.60
1072.5	1072.47	-3.43	0.70	330.70	-3.43	3.87	5.17	131.62	0.39
1081.9	1081.86	-3.34	0.50	2.70	-3.34	3.84	5.09	130.99	1.24
1091.4	1091.36	-3.23	0.90	339.00	-3.23	3.83	5.01	130.21	1.27
1109.8	1109.76	-2.99	0.80	343.30	-2.99	3.74	4.79	128.63	0.10
1119.3	1119.26	-2.86	0.90	337.40	-2.86	3.70	4.67	127.72	0.43
1128.7	1128.66	-2.72	0.80	356.60	-2.72	3.66	4.57	126.62	0.97

1138.1	1138.06	-2.60	0.80	336.30	-2.60	3.63	4.47	125.54	0.91
1146.6	1146.56	-2.49	0.70	343.10	-2.49	3.60	4.37	124.73	0.48
1156.7	1156.66	-2.36	0.80	351.80	-2.36	3.57	4.28	123.53	0.45
1164.4	1164.36	-2.25	0.90	349.30	-2.25	3.55	4.20	122.38	0.42
1176.7	1176.66	-2.08	0.70	354.40	-2.08	3.52	4.09	120.56	0.53
1196.1	1196.05	-1.82	0.90	342.50	-1.82	3.47	3.92	117.62	0.41
1205.6	1205.55	-1.68	0.80	343.40	-1.68	3.43	3.82	116.11	0.32
1215.0	1214.95	-1.56	0.70	346.50	-1.56	3.40	3.74	114.69	0.35
1224.2	1224.15	-1.44	0.80	346.50	-1.44	3.37	3.66	113.21	0.33
1234.0	1233.95	-1.31	0.80	353.70	-1.31	3.34	3.59	111.39	0.31
1243.5	1243.45	-1.19	1.50	353.70	-1.19	3.33	3.54	109.72	0.64
1270.9	1270.85	-0.86	0.80	2.90	-0.86	3.32	3.43	104.52	0.25
1280.4	1280.35	-0.76	0.50	332.90	-0.76	3.30	3.38	102.91	1.43
1290.2	1290.15	-0.68	0.60	322.60	-0.68	3.25	3.32	101.77	0.44
1299.5	1299.45	-0.61	0.50	313.70	-0.61	3.19	3.25	100.84	0.43
1306.9	1306.85	-0.56	0.60	317.10	-0.56	3.14	3.19	100.11	0.44
1309.1	1309.05	-0.55	0.60	288.00	-0.55	3.12	3.17	99.96	4.17
1327.8	1327.74	-0.48	0.70	288.10	-0.48	2.92	2.96	99.38	0.16
1336.8	1336.74	-0.46	0.60	273.20	-0.46	2.82	2.86	99.33	0.66
1346.5	1346.44	-0.47	0.70	263.50	-0.47	2.71	2.75	99.77	0.47
1356.1	1356.04	-0.48	0.70	259.40	-0.48	2.59	2.64	100.57	0.15
1365.7	1365.64	-0.49	0.60	278.90	-0.49	2.48	2.53	101.05	0.77
1375.8	1375.74	-0.48	0.50	270.80	-0.48	2.39	2.44	101.30	0.38
1384.3	1384.24	-0.48	0.70	267.40	-0.48	2.30	2.35	101.76	0.73
1396.3	1396.24	-0.49	0.90	265.70	-0.49	2.13	2.19	102.91	0.51
1402.3	1402.24	-0.55	0.70	97.70	-0.55	2.13	2.20	104.36	8.08
1411.1	1411.04	-0.62	0.80	265.40	-0.62	2.13	2.22	106.33	5.17
1413.5	1413.44	-0.63	1.00	266.90	-0.63	2.09	2.18	106.67	2.55
1422.2	1422.14	-0.63	0.90	267.30	-0.63	1.95	2.05	108.03	0.35
1431.5	1431.43	-0.66	1.10	253.10	-0.66	1.79	1.91	110.30	1.04
1441.0	1440.93	-0.70	0.80	256.50	-0.70	1.64	1.78	113.25	0.98
1450.5	1450.43	-0.75	0.90	242.30	-0.75	1.50	1.68	116.57	0.75
1465.2	1465.13	-0.83	0.70	252.00	-0.83	1.31	1.56	122.32	0.50
1467.6	1467.53	-0.84	0.80	256.60	-0.84	1.28	1.53	123.19	1.46
1477.4	1477.33	-0.88	0.90	248.40	-0.88	1.15	1.45	127.65	0.49
1494.4	1494.33	-1.01	1.00	237.00	-1.01	0.90	1.35	138.51	0.38
1508.4	1508.32	-1.19	1.20	79.30	-1.19	0.97	1.53	140.92	4.70
1524.2	1524.12	-1.40	1.10	215.00	-1.40	1.10	1.78	141.78	4.11
1545.0	1544.92	-1.74	1.10	209.80	-1.74	0.89	1.95	152.92	0.14
1555.6	1555.52	-1.89	0.90	216.00	-1.89	0.79	2.05	157.40	0.66
1571.4	1571.31	-2.11	1.00	211.10	-2.11	0.64	2.21	163.05	0.25
1576.0	1575.91	-2.18	1.00	128.80	-2.18	0.66	2.28	163.27	8.72
1584.6	1584.51	-2.32	1.10	209.20	-2.32	0.68	2.42	163.62	4.81
1598.0	1597.91	-2.53	1.00	213.10	-2.53	0.55	2.59	167.79	0.44
1601.9	1601.81	-2.59	1.10	217.30	-2.59	0.50	2.63	168.98	0.79
1612.3	1612.21	-2.75	1.10	211.40	-2.75	0.39	2.78	171.91	0.33
1620.1	1620.01	-2.85	0.90	230.40	-2.85	0.30	2.87	173.95	1.50
1630.8	1630.70	-2.98	1.20	226.40	-2.98	0.16	2.99	177.01	0.88
1641.4	1641.30	-3.12	1.20	237.70	-3.12	-0.02	3.12	180.35	0.68
1648.8	1648.70	-3.18	1.40	259.00	-3.18	-0.17	3.19	183.13	2.14
1658.7	1658.60	-3.18	0.90	278.70	-3.18	-0.37	3.21	186.66	1.94
1666.4	1666.30	-3.18	0.90	269.50	-3.18	-0.49	3.21	188.81	0.58
1678.1	1678.00	-3.13	0.90	299.50	-3.13	-0.67	3.20	192.05	1.21
1689.1	1688.99	-3.02	1.00	313.70	-3.02	-0.81	3.13	195.08	0.71
1698.0	1697.89	-2.91	0.90	320.50	-2.91	-0.91	3.05	197.42	0.52
1707.3	1707.19	-2.91	0.60	335.10	-2.81	-0.98	2.98	199.20	1.16
1715.7	1715.59	-2.73	0.70	321.60	-2.73	-1.03	2.92	200.65	0.66
1721.2	1721.09	-2.67	0.70	355.00	-2.67	-1.05	2.87	201.54	2.23
1745.0	1744.39	-2.42	0.50	354.50	-2.42	-1.08	2.65	203.97	0.26
1751.9	1751.79	-2.30	0.40	37.90	-2.30	-1.04	2.52	204.32	0.65
								205.44	1.47

1732.5	1782.39	-2.24	0.40	24.60	-2.24	-1.07	2.48	205.48	1.42
1732.4	1792.29	-2.20	0.50	87.80	-2.20	-1.01	2.42	204.59	1.48
1797.7	1797.59	-2.19	0.50	75.50	-2.19	-0.96	2.39	203.66	0.62
1801.1	1800.99	-2.18	0.80	74.40	-2.18	-0.92	2.37	202.93	2.69
1810.5	1810.39	-2.15	0.50	70.80	-2.15	-0.82	2.30	200.91	0.93
1819.6	1819.49	-2.10	0.60	35.80	-2.10	-0.75	2.23	199.72	1.15
1830.6	1830.49	-2.00	0.70	44.10	-2.00	-0.67	2.11	198.55	0.33
1842.3	1842.19	-1.88	0.70	21.30	-1.88	-0.60	1.97	197.55	0.72
1868.3	1868.18	-1.59	0.70	20.80	-1.59	-0.48	1.66	196.87	0.00
1878.5	1878.38	-1.47	0.70	326.30	-1.47	-0.49	1.55	198.63	1.92
1890.9	1890.78	-1.36	0.50	325.70	-1.36	-0.57	1.47	202.65	0.49
1899.6	1899.48	-1.31	0.40	318.10	-1.31	-0.61	1.44	205.02	0.41
1907.4	1907.28	-1.24	0.60	2.20	-1.24	-0.63	1.39	206.94	1.64
1916.5	1916.38	-1.13	0.90	15.00	-1.13	-0.61	1.28	208.62	1.15
1927.0	1926.88	-0.99	0.70	323.90	-0.99	-0.64	1.18	212.99	2.07
1944.4	1944.28	-0.81	0.80	80.80	-0.81	-0.57	0.99	215.02	2.24
1955.7	1955.58	-0.74	1.00	54.70	-0.74	-0.40	0.85	208.57	1.22
1960.4	1960.28	-0.67	0.90	347.40	-0.67	-0.38	0.77	209.28	6.85
1966.9	1966.78	-0.56	1.10	344.40	-0.56	-0.41	0.70	215.71	0.97
1983.8	1983.67	-0.26	1.10	332.00	-0.26	-0.53	0.59	243.34	0.43
1990.9	1990.77	-0.15	1.00	329.90	-0.15	-0.59	0.61	255.68	0.47
2000.7	2000.57	-0.01	0.70	349.80	-0.01	-0.64	0.64	268.68	1.30
2010.7	2010.57	0.13	1.00	343.40	0.13	-0.67	0.69	280.88	0.96
2021.4	2021.27	0.27	0.70	57.30	0.27	-0.62	0.68	293.32	2.99
2031.3	2031.17	0.38	0.80	334.50	0.38	-0.59	0.70	302.94	3.06
2050.6	2050.47	0.58	0.40	30.40	0.58	-0.58	0.82	314.73	1.05
2058.4	2058.27	0.62	0.30	328.80	0.62	-0.58	0.85	316.89	1.44
2066.6	2066.47	0.67	0.40	347.80	0.67	-0.60	0.90	318.05	0.56
2088.3	2088.16	0.87	0.70	339.00	0.87	-0.66	1.09	322.74	0.44
2096.7	2096.56	0.96	0.60	44.90	0.96	-0.64	1.15	326.14	2.58
2103.8	2103.66	1.03	0.90	25.10	1.03	-0.59	1.19	330.31	1.69
2114.7	2114.56	1.19	1.10	44.40	1.19	-0.48	1.28	337.97	1.09
2117.8	2117.66	1.22	0.90	52.20	1.22	-0.44	1.30	340.22	2.38
2124.6	2124.46	1.28	0.80	53.00	1.28	-0.36	1.33	344.36	0.45
2136.0	2135.86	1.40	1.00	44.60	1.40	-0.22	1.42	350.89	0.64
2143.7	2143.56	1.50	1.10	42.20	1.50	-0.13	1.51	355.14	0.44
2151.7	2151.56	1.60	0.80	40.80	1.60	-0.04	1.60	358.57	1.15
2163.3	2163.16	1.64	0.50	101.80	1.64	0.08	1.65	2.75	1.86

#	MD	MD-CHG	TVD	INC-CHG	CUMINC-CHG	BUILC-RATE	AZM-CHG	CUMAZM-CHG	TURN-RATE	CLOSURE	TOOL-FACE	DLS
1	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	330.2	330.20	330.20	0.40	0.40	0.12	170.30	170.30	51.73	-0.77	90.00	0.04
3	340.7	10.50	340.70	0.10	0.50	0.95	23.00	193.80	219.05	-0.77	72.90	0.59
4	346.1	5.40	346.10	-0.40	0.10	-7.41	805.20	999.00	14911.36	-0.74	168.49	2.83
5	357.4	11.30	357.40	0.20	0.30	1.77	-825.50	173.50	-7305.37	-0.74	122.26	0.92
6	367.8	10.40	367.80	-0.10	0.20	-0.96	825.50	999.00	7937.58	-0.70	151.43	1.18
7	396.6	28.80	396.60	-0.10	0.10	-0.35	0.00	999.00	0.00	-0.62	171.51	0.11
8	453.6	57.00	453.60	0.00	0.10	0.00	0.00	999.00	0.00	-0.52	95.68	0.01
9	502.5	48.90	502.50	0.30	0.40	0.61	-857.90	141.10	-1754.42	-0.56	146.39	0.30
10	548.7	46.20	548.69	0.20	0.60	0.43	11.90	153.00	25.76	-0.88	33.73	0.15
11	576.8	28.10	576.79	0.00	0.60	0.00	-16.90	136.10	-60.15	-1.05	93.48	0.19
12	588.3	11.50	588.29	0.10	0.70	0.87	3.70	139.80	32.18	-1.13	24.64	0.29
13	729.9	141.60	729.88	0.00	0.70	0.00	7.70	147.50	5.44	-2.16	93.80	0.02
14	736.8	8.90	736.78	-0.30	0.40	-3.37	5.60	153.10	62.92	-2.20	172.44	1.04
15	748.8	10.00	748.78	0.30	0.70	3.00	-4.10	149.00	-41.00	-2.25	10.11	0.92
16	758.0	9.20	757.98	-0.20	0.50	-2.17	9.80	158.80	106.53	-2.29	157.74	0.74
17	765.4	7.40	765.38	-0.10	0.40	-1.35	-18.80	140.00	-254.06	-2.32	133.29	0.73
18	774.6	9.20	774.58	0.20	0.60	2.17	15.60	155.60	169.57	-2.36	42.45	0.80
19	776.7	2.10	776.68	0.30	0.90	14.29	-23.40	125.20	-1400.10	-2.38	67.41	6.95
20	785.7	9.00	785.68	-0.40	0.50	-4.44	-16.50	109.70	-183.35	-2.48	161.32	1.50
21	794.3	8.60	794.28	-0.10	0.40	-1.16	37.80	147.50	439.55	-2.53	126.88	1.09
22	803.9	9.60	803.88	0.30	0.70	3.12	-4.00	143.50	-41.67	-2.58	10.11	0.96
23	813.0	9.10	812.98	0.10	0.80	1.10	2.30	145.80	25.28	-2.65	18.56	0.35
24	823.3	10.30	823.28	-0.30	0.50	-2.91	-20.80	125.00	-201.36	-2.73	151.88	1.12
25	832.7	9.40	832.68	0.10	0.60	1.06	19.20	144.20	204.26	-2.80	71.39	0.68
26	842.8	10.10	842.78	0.10	0.70	0.99	-0.60	143.60	-5.94	-2.86	8.38	0.30
27	852.9	10.10	852.87	0.10	0.80	0.99	-12.80	130.80	-126.74	-2.95	65.55	0.58
28	862.1	9.20	862.07	-0.30	0.50	-3.26	-4.50	126.30	-48.92	-3.03	172.56	1.01
29	872.4	10.30	872.37	-0.10	0.40	-0.97	23.20	149.50	225.25	-3.09	129.97	0.61
30	880.2	7.80	880.17	0.20	0.60	2.56	-36.00	113.50	-461.56	-3.14	76.44	1.42
31	891.4	11.20	891.37	0.10	0.70	0.89	-7.40	106.10	-66.08	-3.26	44.29	0.36
32	899.0	7.60	898.97	-0.10	0.60	-1.32	13.00	119.10	171.06	-3.34	130.42	0.71
33	902.5	3.50	902.47	0.10	0.70	2.86	-3.20	115.90	-91.43	-3.37	21.94	0.93
34	916.9	14.40	916.87	-0.20	0.50	-1.39	8.70	124.60	60.42	-3.50	159.68	0.46
35	938.1	21.20	938.07	0.20	0.70	0.94	71.70	196.30	338.23	-3.57	112.86	1.04
36	957.3	19.20	957.27	-0.20	0.50	-1.04	-91.00	105.30	-473.98	-3.66	144.80	1.38
37	975.0	17.70	974.97	-0.10	0.40	-0.56	-30.70	74.60	-173.45	-3.80	127.39	0.44
38	977.2	2.20	977.17	0.00	0.40	0.00	2.30	76.90	104.55	-3.81	91.42	0.27
39	983.7	5.50	983.67	-0.10	0.30	-1.54	-11.20	65.70	-172.31	-3.85	151.41	0.56
40	987.7	4.00	987.67	0.00	0.30	0.00	-63.50	2.10	-1590.02	-3.86	121.77	2.41
41	1000.1	12.40	1000.07	-0.20	0.10	-1.61	996.90	999.00	8039.59	-3.82	160.85	0.75
42	1012.4	12.30	1012.37	0.20	0.30	1.63	-915.80	83.20	-7445.55	-3.86	169.81	0.99
43	1015.9	3.50	1015.87	-0.10	0.20	-2.86	915.80	999.00	26165.97	-3.84	173.79	4.31
44	1023.2	7.30	1023.17	0.30	0.50	4.11	-936.90	62.10	-12834.52	-3.88	153.38	2.80
45	1032.9	9.70	1032.87	-0.10	0.40	-1.03	-41.00	21.10	-422.69	-3.93	127.06	1.03
46	1042.7	9.80	1042.67	0.20	0.60	2.04	-17.60	3.50	-179.60	-3.95	46.67	0.78
47	1052.9	10.20	1052.87	-0.10	0.50	-0.98	341.60	345.10	3349.15	-3.94	128.49	0.60
48	1072.5	19.60	1072.47	0.20	0.70	1.02	-14.40	330.70	-73.47	-3.87	44.58	0.39
49	1081.9	9.40	1081.86	-0.20	0.50	-2.13	-323.00	2.70	-3489.55	-3.84	136.15	1.24

52	1119.3	9.50	1119.26	0.10	0.90	1.05	-5.90	337.40	-62.11	-3.70	44.04	0.43
53	1128.7	9.40	1128.66	-0.10	0.80	-1.06	19.20	356.60	204.28	-3.66	118.81	0.97
54	1138.1	9.40	1138.06	0.00	0.80	0.00	-20.30	336.30	-215.98	-3.63	100.15	0.91
55	1146.6	8.50	1146.56	-0.10	0.70	-1.18	6.80	343.10	80.01	-3.60	142.08	0.48
56	1156.7	10.10	1156.66	0.10	0.80	0.99	8.70	351.80	86.15	-3.57	52.91	0.45
57	1164.4	7.70	1164.36	0.10	0.90	1.30	-2.50	349.30	-32.47	-3.55	21.22	0.42
58	1176.7	12.30	1176.66	-0.20	0.70	-1.63	5.10	354.40	41.47	-3.52	162.98	0.53
59	1196.1	19.40	1196.05	0.20	0.90	1.03	-11.90	342.50	-61.35	-3.47	45.89	0.41
60	1205.6	9.50	1205.55	-0.10	0.80	-1.05	0.90	343.40	9.47	-3.43	173.54	0.32
61	1215.0	9.40	1214.95	-0.10	0.70	-1.06	3.10	346.50	32.98	-3.40	161.08	0.35
62	1224.2	9.20	1224.15	0.10	0.80	1.09	0.00	346.50	0.00	-3.37	0.00	0.33
63	1234.0	9.80	1233.95	0.00	0.80	0.00	7.20	353.70	73.48	-3.34	93.54	0.31
64	1243.5	9.50	1243.45	-0.20	0.60	-2.11	0.00	353.70	0.00	-3.33	180.00	0.64
65	1270.9	27.40	1270.85	0.20	0.80	0.73	-350.80	2.90	-1280.39	-3.32	34.16	0.25
66	1280.4	9.50	1280.35	-0.30	0.50	-3.16	329.90	332.80	3472.86	-3.30	145.68	1.43
67	1290.2	9.80	1290.15	0.10	0.60	1.02	-10.20	322.60	-104.09	-3.25	49.74	0.44
68	1299.5	9.30	1299.45	-0.10	0.50	-1.08	-8.90	313.70	-95.70	-3.19	143.87	0.43
69	1306.9	7.40	1306.85	0.10	0.60	1.35	3.40	317.10	45.95	-3.14	22.22	0.44
70	1309.1	2.20	1309.05	0.00	0.60	0.00	-29.10	288.00	-1322.83	-3.12	104.54	4.17
71	1327.8	18.70	1327.74	0.10	0.70	0.53	0.10	288.10	0.53	-2.92	8.38	0.16
72	1336.8	9.00	1336.74	-0.10	0.60	-1.11	-14.90	273.20	-165.57	-2.82	127.86	0.66
73	1346.5	9.70	1346.44	0.10	0.70	1.03	-9.70	263.50	-100.01	-2.71	52.55	0.47
74	1356.1	9.60	1356.04	0.00	0.70	0.00	-4.10	259.40	-42.71	-2.59	91.98	0.15
75	1365.7	9.60	1365.64	-0.10	0.60	-1.04	19.50	278.90	203.14	-2.48	123.84	0.77
76	1375.8	10.10	1375.74	-0.10	0.50	-0.99	-9.10	270.80	-80.20	-2.39	146.00	0.38
77	1384.3	8.50	1384.24	0.20	0.70	2.35	-3.40	267.40	-40.00	-2.30	11.26	0.73
78	1396.3	12.00	1396.24	0.20	0.90	1.67	-1.70	265.70	-14.17	-2.13	8.38	0.51
79	1402.3	6.00	1402.24	-0.20	0.70	-3.33	-168.00	97.70	-2800.28	-2.13	174.77	8.08
80	1411.1	8.80	1411.04	0.10	0.80	1.14	167.70	265.40	1905.86	-2.13	173.48	5.17
81	1413.5	2.40	1413.44	0.20	1.00	8.33	1.50	266.90	62.51	-2.09	5.53	2.55
82	1422.2	8.70	1422.14	-0.10	0.90	-1.15	0.40	267.30	4.60	-1.95	172.44	0.35
83	1431.5	9.30	1431.43	0.20	1.10	2.15	-14.20	253.10	-152.71	-1.79	58.48	1.04
84	1441.0	9.50	1440.93	-0.30	0.80	-3.16	3.40	256.50	35.79	-1.64	171.12	0.98
85	1450.5	9.50	1450.43	0.10	0.90	1.05	-14.20	242.30	-149.49	-1.50	71.78	0.75
86	1465.2	14.70	1465.13	-0.20	0.70	-1.36	9.70	252.00	65.99	-1.31	150.54	0.50
87	1467.6	2.40	1467.53	0.10	0.80	4.17	4.60	256.60	191.68	-1.28	32.25	1.46
88	1477.4	9.90	1477.33	0.10	0.90	1.02	-8.20	248.40	-83.68	-1.15	54.59	0.49
89	1494.4	17.00	1494.33	0.10	1.00	0.59	-11.40	237.00	-67.07	-0.90	68.04	0.38
90	1508.4	14.00	1508.32	0.20	1.20	1.43	-157.70	79.30	-1126.64	-0.97	167.79	4.70
91	1524.2	15.80	1524.12	-0.10	1.10	-0.63	135.70	215.00	859.04	-1.10	158.86	4.11
92	1545.0	29.80	1544.92	0.00	1.10	0.00	-5.20	209.80	-25.00	-0.89	92.58	0.14
93	1555.6	10.60	1555.52	-0.20	0.90	-1.89	6.20	216.00	58.50	-0.79	154.24	0.66
94	1571.4	15.80	1571.31	0.10	1.00	0.63	-4.90	211.10	-31.02	-0.64	42.20	0.25
95	1576.0	4.60	1575.91	0.00	1.00	0.00	-82.30	128.80	-1789.41	-0.66	131.14	8.72
96	1584.6	8.60	1584.51	0.10	1.10	1.16	80.40	209.20	935.04	-0.68	126.97	4.81
97	1598.0	13.40	1597.91	-0.10	1.00	-0.75	8.90	218.10	66.43	-0.55	125.82	0.44
98	1601.9	3.90	1601.81	0.10	1.10	2.56	-0.80	217.30	-20.52	-0.50	7.56	0.79
99	1612.3	10.40	1612.21	0.00	1.10	0.00	-5.90	211.40	-56.74	-0.39	92.96	0.33
100	1620.1	7.80	1620.01	-0.20	0.90	-2.56	19.00	230.40	243.63	-0.30	130.33	1.50
101	1630.8	10.70	1630.70	0.30	1.20	2.80	-4.00	226.40	-37.39	-0.16	16.57	0.88

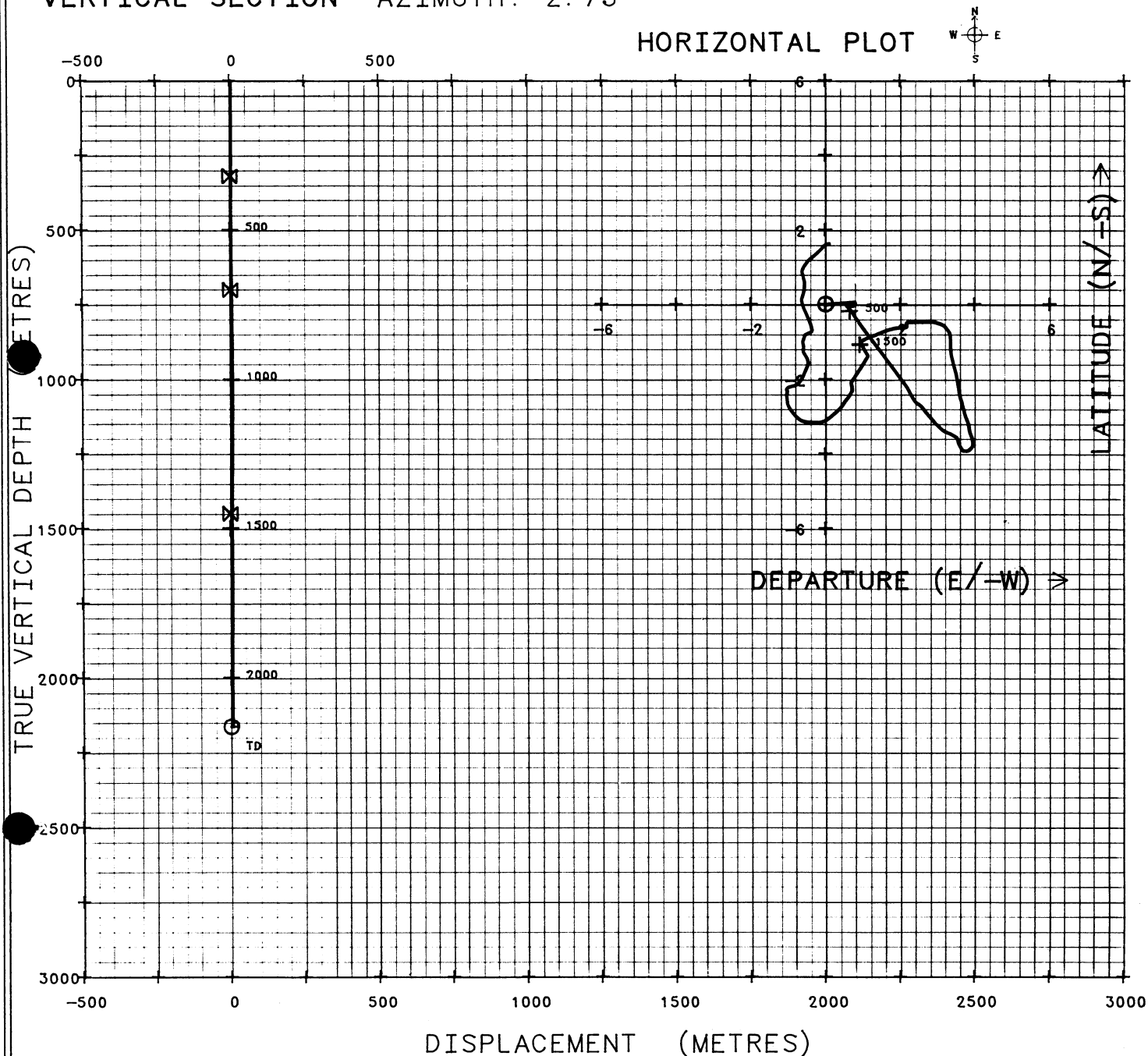
104	1658.7	9.30	1658.60	-0.50	0.90	-5.05	19.70	278.70	199.03	0.37	151.25	1.94
105	1666.4	7.70	1666.30	0.00	0.90	0.00	-9.20	269.50	-119.49	0.49	94.63	0.58
106	1676.1	11.70	1673.00	0.00	0.90	0.00	30.00	299.50	256.44	0.67	105.01	1.21
107	1689.1	11.00	1688.99	0.10	1.00	0.91	14.20	313.70	129.11	0.81	74.21	0.71
108	1698.0	8.90	1697.89	-0.10	0.90	-1.12	6.80	320.50	76.41	0.91	134.85	0.52
109	1707.3	9.30	1707.19	-0.30	0.60	-3.23	14.60	335.10	157.00	0.98	154.58	1.16
110	1715.7	8.40	1715.59	0.10	0.70	1.19	-13.50	321.60	-160.73	1.03	63.79	0.66
111	1721.2	5.50	1721.09	0.00	0.70	0.00	33.40	355.00	607.32	1.05	106.69	2.23
112	1745.0	23.80	1744.89	-0.20	0.50	-0.84	-0.50	354.50	-2.10	1.08	180.00	0.26
113	1761.9	16.90	1761.79	-0.10	0.40	-0.59	-314.70	39.80	-1862.19	1.04	127.57	0.65
114	1771.9	10.00	1771.79	-0.20	0.20	-2.00	959.20	999.00	9592.14	1.09	161.17	1.62
115	1782.5	10.60	1782.39	0.20	0.40	1.39	-974.40	24.60	-9192.60	1.07	128.55	1.42
116	1792.4	9.90	1792.29	0.10	0.50	1.01	63.20	87.80	638.40	1.01	111.37	1.48
117	1797.7	5.30	1797.59	0.00	0.50	0.00	-12.30	75.50	-232.09	0.96	96.22	0.62
118	1801.1	3.40	1800.99	0.30	0.80	8.82	-1.10	74.40	-32.35	0.92	2.30	2.69
119	1810.5	9.40	1810.39	-0.30	0.50	-3.19	-3.60	70.80	-38.30	0.82	173.82	0.98
120	1819.6	9.10	1819.49	0.10	0.60	1.10	-35.00	35.80	-384.63	0.75	91.43	1.15
121	1830.6	11.00	1830.49	0.10	0.70	0.91	8.30	44.10	75.46	0.67	47.49	0.38
122	1842.3	11.70	1842.19	0.00	0.70	0.00	-22.80	21.30	-194.89	0.60	101.41	0.72
123	1868.3	26.00	1868.18	0.00	0.70	0.00	-0.50	20.80	-1.92	0.48	90.00	0.00
124	1878.5	10.20	1878.38	0.00	0.70	0.00	305.50	326.30	2995.34	0.49	117.25	1.92
125	1898.9	12.40	1890.78	-0.20	0.50	-1.61	-0.60	325.70	-4.84	0.57	180.00	0.49
126	1899.6	8.70	1899.48	-0.10	0.40	-1.15	-7.60	318.10	-87.36	0.61	152.39	0.41
127	1907.4	7.80	1907.28	0.20	0.60	2.56	-315.90	2.20	-4050.13	0.63	85.78	1.64
128	1916.5	9.10	1916.38	0.30	0.90	3.30	12.80	15.00	140.67	0.61	35.77	1.15
129	1927.0	10.50	1926.88	-0.20	0.70	-1.90	308.90	323.90	2942.19	0.64	130.21	2.07
130	1944.4	17.40	1944.28	0.10	0.80	0.57	-243.10	80.80	-1397.24	0.57	146.12	2.24
131	1955.7	11.30	1955.58	0.20	1.00	1.77	-26.10	54.70	-231.00	0.40	77.43	1.22
132	1960.4	4.70	1960.28	-0.10	0.90	-2.13	292.70	347.40	6228.42	0.38	128.17	6.85
133	1966.9	6.50	1966.78	0.20	1.10	3.08	-3.00	344.40	-46.16	0.41	17.12	0.97
134	1983.8	16.90	1983.67	0.00	1.10	0.00	-12.40	332.00	-73.39	0.53	96.19	0.43
135	1990.9	7.10	1990.77	-0.10	1.00	-1.41	-2.10	329.90	-29.58	0.59	158.58	0.47
136	2000.7	9.80	2000.57	-0.30	0.70	-3.06	19.90	349.80	203.09	0.64	145.14	1.30
137	2010.7	10.00	2010.57	0.30	1.00	3.00	-6.40	343.40	-64.01	0.67	20.68	0.96
138	2021.4	10.70	2021.27	-0.30	0.70	-2.80	-286.10	57.30	-2674.11	0.62	140.15	2.99
139	2031.3	9.90	2031.17	0.10	0.80	1.01	277.20	334.50	2800.23	0.59	127.07	3.06
140	2050.6	19.30	2050.47	-0.40	0.40	-2.07	-304.10	30.40	-1575.73	0.58	150.07	1.05
141	2058.4	7.80	2058.27	-0.10	0.30	-1.28	298.40	328.80	3825.81	0.58	134.29	1.44
142	2066.6	8.20	2066.47	0.10	0.40	1.22	19.00	347.80	231.71	0.60	59.00	0.56
143	2088.3	21.70	2088.16	0.30	0.70	1.38	-8.80	339.00	-40.55	0.66	20.32	0.44
144	2096.7	8.40	2096.56	-0.10	0.60	-1.19	-294.10	44.90	-3501.46	0.64	129.72	2.58
145	2103.8	7.10	2103.66	0.30	0.90	4.23	-19.80	25.10	-278.89	0.59	51.11	1.69
146	2114.7	10.90	2114.56	0.20	1.10	1.83	19.30	44.40	177.09	0.48	69.22	1.09
147	2117.8	3.10	2117.66	-0.20	0.90	-6.45	7.80	52.20	251.64	0.44	149.38	2.38
148	2124.6	6.80	2124.46	-0.10	0.80	-1.47	0.80	53.00	11.77	0.36	173.54	0.45
149	2136.0	11.40	2135.86	0.20	1.00	1.75	-8.40	44.60	-73.69	0.22	37.63	0.64
150	2143.7	7.70	2143.56	0.10	1.10	1.30	-2.40	42.20	-31.17	0.13	25.98	0.44
151	2151.7	3.00	2151.56	-0.30	0.80	-3.75	-1.40	40.80	-17.50	0.04	177.12	1.15
152	2163.3	11.60	2163.16	-0.30	0.50	-2.59	61.00	101.80	525.89	-0.08	141.88	1.86



THE ANALYSTS
MWD
 DIRECTIONAL SERVICES

STATOIL
 TRAENABANKEN
 WEST VANGUARD
 6610/7-2

VERTICAL SECTION AZIMUTH: 2.75



REFERENCE: WELL

LOCATION: N66 27 49.5

E10 10 11.5

WELL LOCATION INFORMATION				CASING	
LOCATION FROM REFERENCE POINT		LAST SURVEY		DIAMETER	MEASURED DEPTH
LAT= 0.00	N	TVD= 2163.06		30.00	320.00
DEP= 0.00	E	LAT= 1.64	N	20.00	701.00
		DEP= 0.08	E	16.00	1449.50

WELL SURVEY INFORMATION

TYPE OF SURVEY: MWD
 METHOD OF CALCULATION: RADIUS OF CURVATURE
 NUMBER OF STATIONS= 152.
 TD MEASURED DEPTH (LAST SURVEY)= 2163.3

AZIMUTH FROM WELL HEAD TO TD= 2.75
 MAXIMUM INCLINATION (DEGREES)= 1.40
 PLOT MADE BY: FRANK
 DATE PLOTTED: 26-OCT-83