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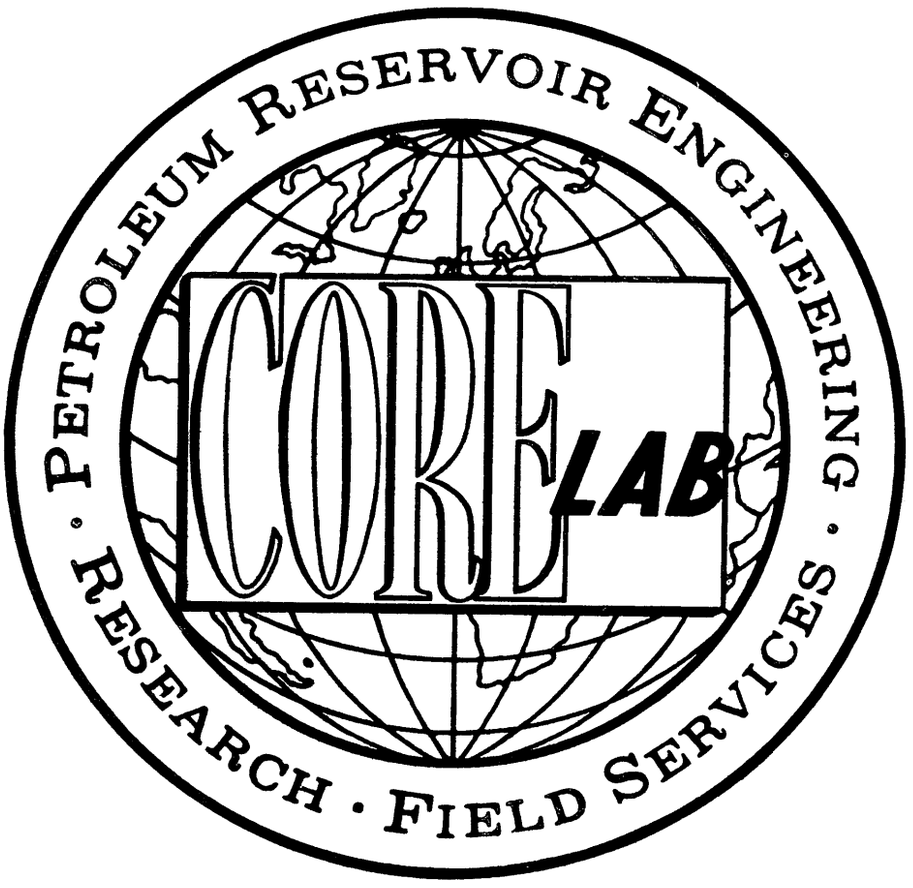
ATTACHMENT TO
WCR VOL 2
PERCH-2 (W898)



FINAL WELL REPORT

ESSO AUSTRALIA LIMITED

PERCH #2

# INDEX

## INTRODUCTION

Perch #2 was drilled by ESSO AUSTRALIA LIMITED, in the Bass Strait, Ausrtralia.

Well co-ordinates were :

Latitude : 38°34' 23.11"S
Longitude : 147°19' 57.61"E

The well was drilled by South Seas Drilling Company's semi-submersible rig "Southern Cross", and monitored by Core Laboratories Extended Service Field Laboratory 2007.

Perch #2 was spudded on 11th February 1985 and reached a total depth of 1321 metres on 28th February 1985, a total drilling time of 18days. The main objective of the well was to confirm platform development of the Perch field by evaluating the updip extent of the N1 oil sand intersected on Perch #1. To test the updip hydrocarbon potential of the N2 sand which was water wet on Perch #1 was the secondary subjective.

Elevations were :

| | |
|---|---|
| Kelly bushings to mean sea level | 21 metres |
| Water depth | 43 metres |
| Kelly bushibngs to mean sea bed | 64 metres |

All depths used in this report and accompanying logs refer to depth below rotary kelly bushings (RKB).

Core Laboratories personnel involved in the logging of Perch #2 were as follows :

| | | |
|---|---|---|
| B Paulet | - | Unit Supervisor |
| T Wyeth | - | Pressure Engineer |
| B Giftson | - | Logging Crew Chief |
| P Landry | - | Well Logger |
| D Mackay | - | Well Logger |
| P Gribben | - | Well Logger |

# 2. RIG SPECIFICATIONS

RIG INFORMATION SHEET

COMPANY ESSO AUSTRALIA LIMITED

WELL PERCH #2

---

| | |
|---|---|
| OWNER | SOUTH SEAS DRILLING COMPANY |
| NAME AND NUMBER | SOUTHERN CROSS (N° 107) |
| TYPE | SEMI-SUBMERSIBLE, TWIN HULLED |
| DERRICK, DRILL FLOOR & SUBSTRUCTURE | DERRICK: LEE C MOORE, 152' HIGH X 40' AT BASE.<br>LOAD CAPICITY OF 1,000,000 lbs |
| DRAWWORKS | OILWELL E-2000 DRIVEN BY 2 GE 752 ELECTRIC MOTORS |
| CROWN BLOCK | LEE C MOORE 27458 C. CAPACITY 500 SHORT TONS |
| TRAVELING BLOCK | OILWELL A 500 |
| SWIVEL | OILWELL PC 425 |
| ELEVATORS | BYRON JACKSON MODEL GG CAPACITY 350 TON |
| KELLY & KELLY SPINNER | DRILLCO 5¼" x 50' HEX KELLY |
| ROTARY TABLE | OILWELL A 37½ SINGLE ELECTRIC MOTOR |
| ROTARY SLIPS | VARCO DCS-L |
| MUD PUMPS | TWO OILWELL A 1700PT. RATED AT 1600HP |
| MUD SYSTEM | FOUR MUD TANKS HAVING A TOTAL CAPACITY OF 1200 BBL, AND ONE PILL TANK HAVING A CAPAICTY OF 105 BBL.<br>TWO MUD HOPPERS POWERED BY 2 MISSION 6 x 8" CENTRIFUGAL BY TWO 100HP ELECTRIC MOTORS.<br>DESANDER: 1 DEMCO 4 CONE 12" MODEL N° 124<br>DESILTER: 1 DEMCO 4"-16H 16 CONE<br>DEGASSER: 1 SWACO MODEL N° 36<br>SHALE SHAKERS: 2 BRANDT DUAL UNIT TANDEM - GHI DUAL UNIT |
| BLOW OUT PREVENTORS | THREE SHAFFER L.W.S. 18 3/4" - 10,000 psi<br>TWO HYDRIL G.L. 18 3/4" - 5,000 psi |
| WELL CONTROL EQUIP. | FOUR VALV CON ACCUMULATORS<br>CHOKES:2 C.I.W. ABJ H2 2 1/16" - 10,000 psi, 1 SWACO SUPER CHOKE 2" - 10,000 psi |
| TUBULAR DRILLING EQUIPMENT | DC: 6¼" x 2 13/16" (4" IF TJ)<br>8" x 2 13/16" (6 5/8" H90 TJ)<br>9 3/4" x 3" (7 5/8" H90 YJ)<br>HWDP: 5" 50lb/ft GRADE G (6½" )) 4½" IF TJ)<br>DP : 5" 19½lb/ft GRADE G & E (6 3/8" OO 4½" IF TJ) |
| CEMENTING UNIT | HALLIBURTON HT-400 UNIT |
| MONITORING EQUIPMENT | MARTIN DECKER: MUD VOLUME TOTALIZER<br>6 CHANNEL DRILLING RECORDER<br>4 PRESSURE GAUGES<br>FLOWSHOW INDICATOR |
| POWER SUPPLY | 2 EMD MD 18 DIESEL ENGINES RATED AT 1950 HP EACH<br>1 EMD MD 13 DIESEL ENGINE RATED AT 1500 HP |
| DIRECTIONAL EQUIP. | - |

MISCELLANEOUS (E.G. RISER, COMPENSATION SYSTEM, PIPE RACKER, DP EQUIPMENT)

RISER:REGAN FC-7 TELESCOPIC 21" ID. PLUS FLOW DIVERTOR.
CASING POWER TONGS:ECKEL 13 3/8" (20,000 ft lbs), 20" (35,000 ft lbs)
CMT BULK TANKS:3 x 1570cu ft. RISER TENSIONER: 6 WESTERN GEAR, 50' STROKE, 80,000 lbs.
MUD BULK TANKS: 3 x 1570 cu ft. GUIDE LINE TENSIONERS: 4 WESTERN GEAR 16,000 lbs, 40' STROKE

# 3. WELL INFORMATION, PROGRESS AND HISTORY

WELL NAME Perch #2
OPERATOR Esso Australia Limited
PARTNERS BHP Petroleum

| | | | | |
|---|---|---|---|---|
| RIG | OWNER | South Seas Drilling Company | | |
| | NAME OR NUMBER | Southern Cross | | |
| | TYPE | Semi Submersible | | |
| LOCATION | LATITUDE (X) | 38° 34' 23.09" S | LONGITUDE (Y) | 147° 19' 57.61" E |
| | FIELD | Gippsland Basin | AREA | Bass Strait |
| | COUNTY | | STATE | Victoria |
| | COUNTRY | Australia | | |
| | DESCRIPTION | Evaluation of Perch field. | | |
| | Mean Water Depth | 43 metres | RKB to Water Level | 21 metres |
| DATES | SPUD | 11 February 1985 | TOTAL DEPTH | 28 February 1985 |

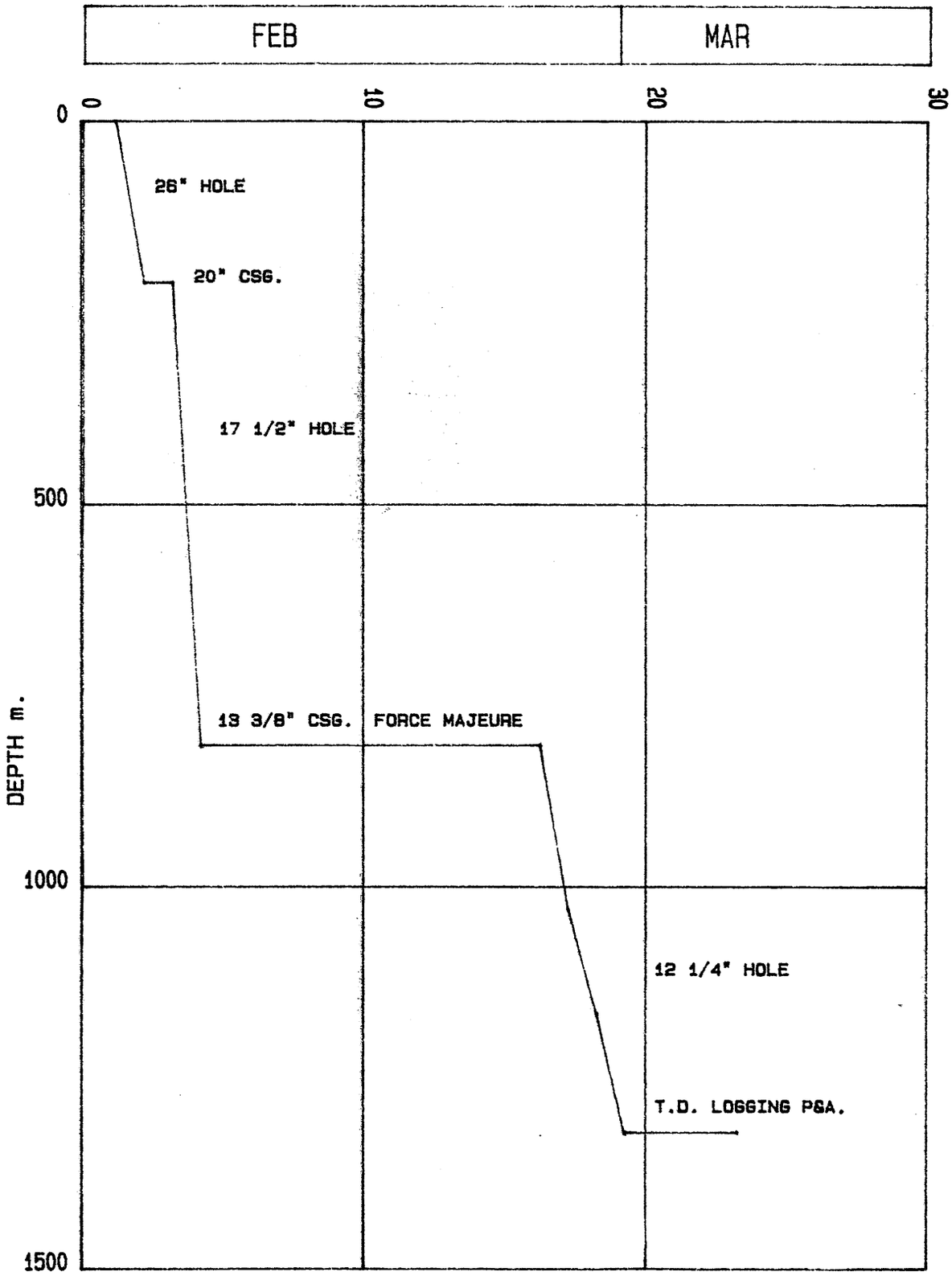
| HOLE SIZES | Dpth Fm | Dpth To | Bit Sze" | No of Bits | No Reamers | Date From | Date To | Cased | Logged |
|---|---|---|---|---|---|---|---|---|---|
| | 64 m | 211 m | 26 | 1 | - | 11/2/85 | 11/2/85 | Y | N |
| | 211 m | 815 m | 17½ | 1 | - | 13/2/85 | 13/2/85 | Y | Y |
| | 815 m | 1,321 m | 12¼ | 2 | - | 26/2/85 | 28/2/85 | N | Y |

| DRILLING FLUIDS | Depth From | Depth To | Weights | | | Type |
|---|---|---|---|---|---|---|
| | 64 m | 211 m | 8.7 | TO | 8.8 | Seawater (Gel slugs) |
| | 211 m | 815 m | 8.8 | TO | 9.0 | Seawater drill solids |
| | 815 m | 1,321 m | 8.8 | TO | 10.1 | Seawater gel polymer |

| WIRELINE LOGGING | Depth From | Depth To | Hole Size | Date Run | Logs Run |
|---|---|---|---|---|---|
| | 814 m | 50 m | 17½" | 14/2/85 | SONIC-GR |
| | 1,320 m | 804 m | 12¼" | 28/2/85 | DLL-MSFL-GR |
| | 1,320 m | 804 m | 12¼" | 28/2/85 | BHC-GR-SP |
| | 1,320 m | 1,080 m | 12¼" | 28/2/85 | BHC-DIL-GR |
| | 1,320 m | 1,080 m | 12¼" | 28/2/85 | SP-GR |
| | 1,322 m | 1,100 m | 12¼" | 1/3/85 | LDTC-CNTH-GR |
| | 1,320 m | 950 m | 12¼" | 1/3/85 | HDT |
| | - | - | 12¼" | 2/3/85 | RFT No's 1-7 |

| RISER CASING & LINER | Depth Fm | Depth To | OD " | ID " | Weight | Grade | Thread | Date Run | Cement | Stages | Excess |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 m | 64 m | 22 | 21 | ----------Riser---------- | | | | | | |
| | 64 m | 196 m | 20 | 19.124 | 94.4 | X52 | JV Box | 12/2/85 | "G" | 1 | - |
| | 64 m | 800 m | 13 3/8 | 12.615 | 54.5 | K55 | BVTT | 14/2/85 | "G" | 1 | - |

PROGRESS LOG
ESSO AUSTRALIA LTD.
PERCH No.2



# WELL HISTORY
## PERCH #1

| | |
|---|---|
| 10TH FEB 1985 | Towed to the location of Perch #2. |
| 11TH FEB 1985 | Arrived on location, ran the anchors; ballasted down the rig, then spudded in, drilling 26" hole down to 211 metres. |
| 12TH FEB 1985 | Ran and cemented the 20" casing. Ran the BOP stack. |
| 13TH FEB 1985 | Completely drilled the 17½"section of the hole (211 - 815 metres). |
| 14TH FEB 1985 | Ran logs. The day's work was disrupted by an industrial dispute (AWU meeting in Sale). Ran the 13 3/8" casing. |
| 15TH FEB 1985 | Cemented the casing, and then secured the well. The rig was placed on stand-by until 26th February, owing to an industrial dispute. |
| 26TH FEB 1985 | R.I.H. with a Hughes bit (No.2, J1); drilled out the cement, and reamed the rat-hole down to 815 metres. Drilled 12¼" hole down to 1029 metres. A pressure integrity test at the casing shoe did not leak-off at 16.2 ppg E.M.W. |
| 27TH FEB 1985 | Drilled 12¼" hole to 1146 metres. Cut two nine-metre cores between 1146 and 1164 metres. |
| 28TH FEB 1985 | R.I.H. with a Hughes J22 bit and drilled down to 1321 metres, which was T.D. for the well. Made a wiper trip to the shoe, then P.O.O.H. Logged the hole. |
| 1ST MAR 1985 | Continued to run logs. Made another wiper trip. |
| 2ND MAR 1985 | Ran R.F.T's. Plugged and abandoned the well. |

# 4. LITHOLOGY AND CORE-O-GRAPHS

## LITHOLOGY SUMMARY

Three formations were observed during the drilling of Perch #2, and the depths quoted below for their tops are based entirely on the examination of cuttings (All depths were measured from the R.K.B.).

Gippsland Limestone (211 metres - 995 metres)

211 - 430 metres — Predominantly Limestone, with rare Siltstones.

Limestone: Calcisiltite, dark to medium grey, soft, friable, well sorted siltstone matrix, common fossils (including Bryozoa, Formas and Cephalopods).

Siltstone: Tan to white, sub-round to rounded quartz aggregates, soft.

430 - 740 metres — Thick interbeds of Sandstone and Limestone.

Sandstone: Translucent to white, medium to coarse grained, sub-angular to well rounded, moderately well sorted quartz grains, occasional calcite-cemented aggregates, good visual porosity, but no shows.

Limestone: Light grey, friable to hard, Calcarenite and Calcisiltite, common fossil fragments, poorly cemented, 30% loose fossiliferous fragments (including Bryozoa, Brachiopods and Pelecypods).

740 - 995 metres — Limestone: Calcarenite and Calcisiltite, light grey to white, medium to coarse-grained, silty matrix in part, common sub-angular to sub-rounded glauconitic specks, occasional Bryozoan and Foram fragments, trace pyrite.

Gas in the Gippsland Limestone was generally less than 2 units. $C_1$ to $C_3$ were recorded for most of the interval with $C_4$ occurring below 965 metres.

Lakes Entrance Formation (995 metres - 1110 metres)

995 - 1110 metres — Limestone, predominantly the same as the lower section of the Gippsland Limestone but more arenaceous in texture.

Gas averaged 2 - 4 units ($C_1$ to $C_4$) in this section of the hole.

Latrobe Group (1110 metres - 1321 metres)

Sandstones with minor interbeds of Coal and rare Siltstones, below 30 metres of Limestone.

1110 - 1140 metres — Limestone: Same as Lakes Entrance formation, but with abundant glauconite.

1140 - 1170 metres — Sandstone: Translucent to milky, medium to coarse grained, sub-rounded to rounded, poorly sorted, predominantly coarse grained and loose but with an occasional silt or clay matrix, moderate porosity, 10-100% blue-white fluorescence, mainly instantaneous cut (sometimes slow), and a thin residual ring.

Coal: Black to brown, argillaceous in part, brittle, grading to carbonaceous siltstone.

1170 - 1321 metres — Sandstone: Translucent to milky, coarse to very coarse grained, mostly loose and unconsolidated, dominantly sub-rounded and occasionally sub-angular quartz grains, good visual porosity, but no shows.

Coal: Black to brown, brittle, silty and argillaceous.

Siltstone: Grey to grey-brown-red, carbonaceous, argillaceous, soft and poorly indurated.

Gas increased to 47 units immediately the Coarse Clastics were penetrated, with $C_1$ to $C_6$ being recorded. Below this member the gas decreased to a background level of 2 - 6 units, with occasional peaks approaching 40 units. Heavy hydrocarbons were detected over the entire interval ($C_1$ to $C_6$).

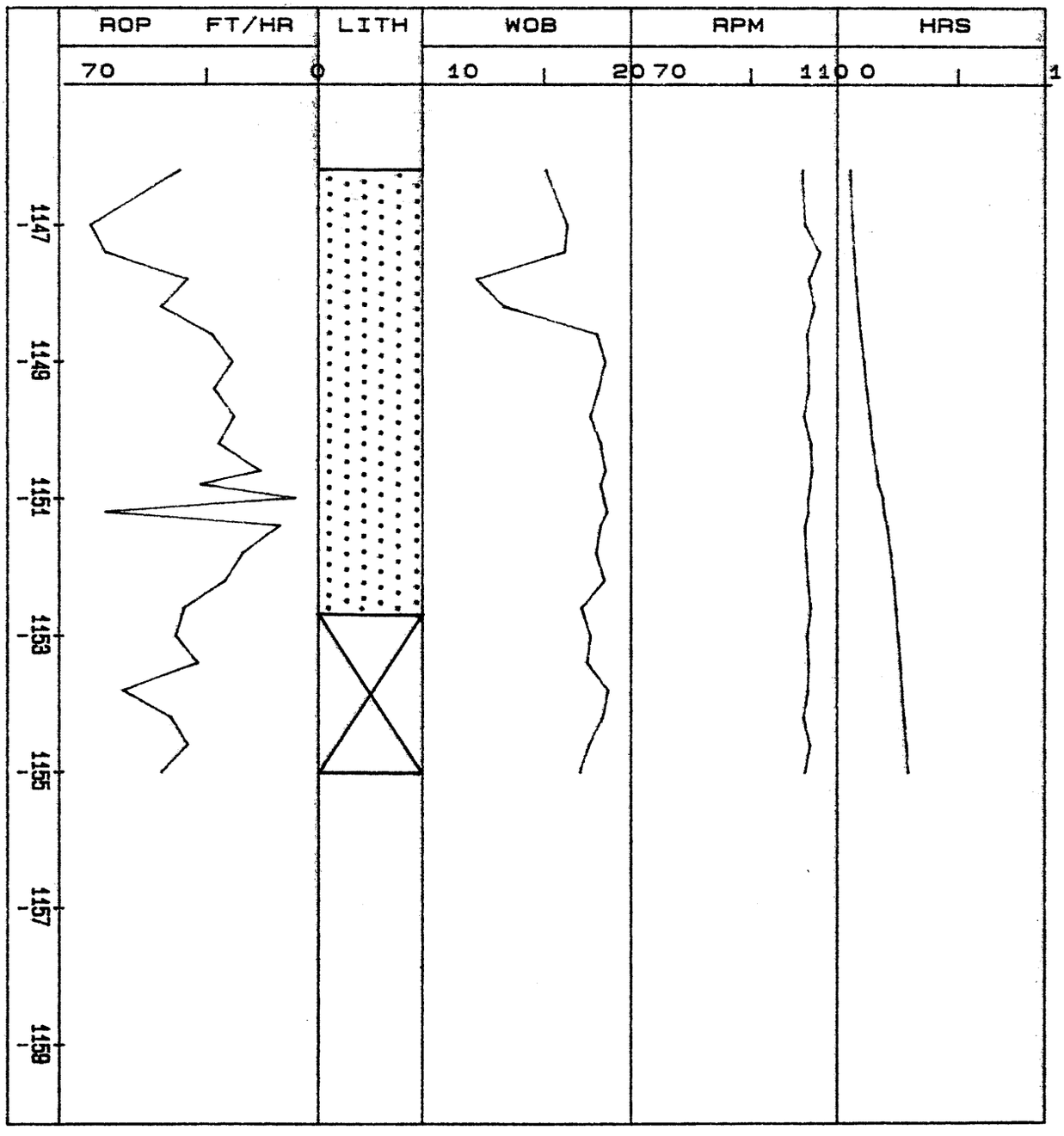
Two cores were cut back to back in this section from 1146 metres to 1164 metres. The associated lithology was sandstone at the top of the cored interval with mudstone/claystone and argillaceous coal at the base. The sandstone consisted of two types: a translucent, loose grained, medium to very coarse, predominantly coarse grained, sub-angular to sub-rounded, poorly sorted type with good visual porosity and an even blue white fluorescence with a moderate, consistent slow streaming white cut.

The second type consisted of fine to medium, predominantly fine grained aggregates, strongly cemented with poor to good but predominantly poor visual porosity, with a dull white fluorescence and slow diffuse milky white cut. The mudstone/claystone was even brown with occasional sub-vertical cleavage partings, grading in part to argillaceous sub-fissile mudstone. It contained trace pyrite clusters and occasional clear, coarse grained, angular, embedded quartz grains, no shows.

The coal was predominantly argillaceous with discrete pyrite clusters and common thin pyrite laminea and trace scattered coarse grained, angular quartz grains.

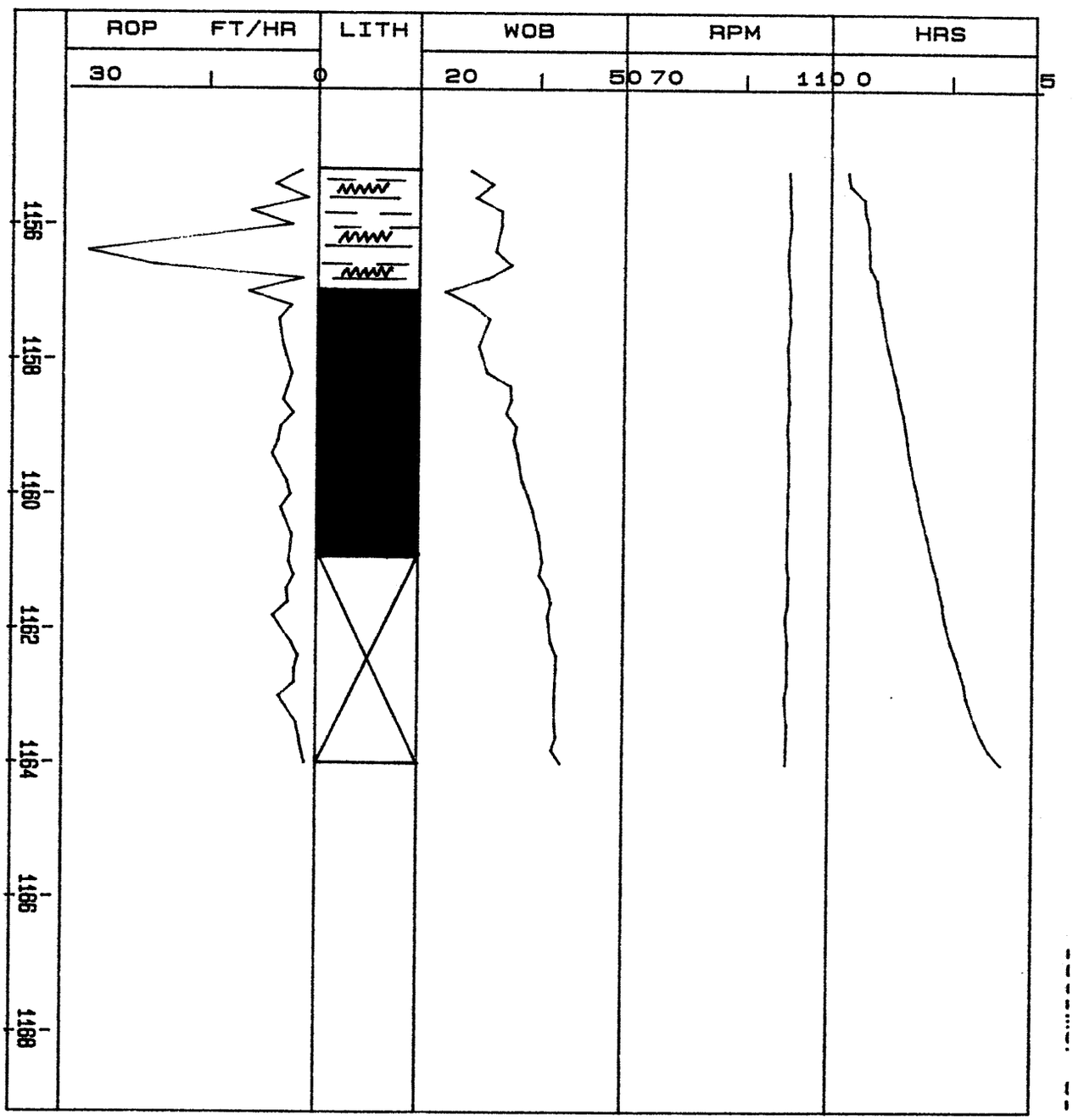
# CORE-O-GRAPH

| | |
|---|---|
| CLIENT: | ESSO AUSTRALIA LTD. |
| WELL: | PERCH No.2 |
| CORE NO.: | 1 |
| INTERVAL CORED FROM | 1148.0m. TO 1155.0m. |
| CUT: 9.0 . | RECOVERED: 6.8m. ( 75.1% ) |
| FORMATION: | LATROBE GROUP |
| BIT MAKE & TYPE: | CHRIS C24 |
| CORE BARREL SIZE: | 7.00in.x 5.00in.x 10.77m. |
| BIT SIZE: 9.88 | MUD WT.: 10.1 |



# CORE-O-GRAPH

| | |
|---|---|
| CLIENT: | ESSO AUSTRALIA LTD. |
| WELL: | PERCH No.2 |
| CORE NO.: | 2 |
| INTERVAL CORED FROM | 1155.0m. TO 1164.0m. |
| CUT: 9.0 . | RECOVERED: 6.0m. ( 66.7% ) |
| FORMATION: | LATROBE GROUP |
| BIT MAKE & TYPE: | CHRIS C24 |
| CORE BARREL SIZE: | 7.00in.x 5.00in.x 10.77m. |
| BIT SIZE: 9.88 | MUD WT.: 10.1 |



# 5. EXTENDED SERVICE PACKAGE

## EXTENDED SERVICE INTRODUCTION

The Core Laboratories Extended Service Package includes sensors, recorders and computer facilities useful in the drilling operation, for the detection of abnormal formation pressure, and the optimization of drilling.

Presented graphically on Core Laboratories E.S. logs (discussed individually in the following section of this report) are the various functions necessary for well control, abnormal formation pressure detection and drilling optimization.

Other available services include electric log interpretation programs for the wellsite geologist, hydraulics (synthesis and analysis), well kill, cost per foot, bit nozzle selection, swab and surge created by pipe movement, and bit performance programs for the drilling engineer.

Core Laboratories E.S. logs include the following :

E.S. PRESSURE LOG

Information plotted on this log includes formation pore pressure, mud weight in and formation fracture pressure. This is plotted on linear graph paper at a vertical scale of 1:5000. The formation pore pressure and fracture pressure gradients are based on all available information. This is the conclusion log, therefore the information may be modified by results from formation drill stem tests, data from adjacent wells, kicks, R.F.T.'s, and formation breakdown tests.

CORE LAB DRILL DATA PLOT

This plot, which is drawn while drilling is in progress, is the primary tool by which formation overpressure is detected. Drawn on a 1:5000 scale it is particularly useful in that five plots are drawn side by side, and thus any trend can be readily recognised.

The main plot is that of the corrected "d"exponent, which is presented on a logarithmic scale. The "d" exponent was first developed by Jorden and Shirley in 1966 to assist in interpreting rate of penetration data by normalizing for rotary speed and weight-on-bit per inch of bit diameter.

The modified "dc" exponent was proposed by Rhem and McClendon to compensate for increases in mud weight. This involves multiplying the standard "d" exponent value by the inverse ratio of the mud weight. A multiple of 9 ppg was used for convenience to return the magnitude of the "dc" to a comparable value of it's uncorrected state. In this case, a multiplier of 10 ppg was used. The equation for "dc" is therefore :

$$'dc' = \frac{\text{Log}\left(\frac{ROP}{(RPM \times 60)}\right)}{\text{Log}\left(\frac{WOB \times 12}{\quad}\right)} \times \frac{10}{MDI}$$

Deviations from the normal "dc"s trend may be interpreted as being due to a change in formation pore pressure. An equation derived by Eaton is used in an attempt to evaluate pore pressure from deviations in the "dc"s plot. This method of overpressure detection can be fairly accurate for homogeneous shales, but where the sand/silt/shale ratio varies a great deal, inaccuracies often occur.

The other main plots are a logarithmic rate of penetration, which complements the "dc"s plot and a linear plot of total mud gas.

Shale densities are also plotted on a linear scale in order to show up a decreasing density trend, and hence a possible transition into abnormally pressured shales. The points are determined by measuring the density of air-dried shale samples in an accurately calibrated liquid density column.

An interpreted lithology column is also included on the log, as is a plot of mud density in , to assist in interpretation. All relevant information, such as casing points, bit runs, etc. are also included.

E.S. GEO-PLOT LOG

This is plotted by the computer while drilling is in progress. At a later date this plot can be re-run on different scales to suit the client. The data is stored on magnetic tape during the drilling operations. Functions plotted on this log are : rate of penetration, corrected "d" exponent, break-even analysis, formation pore pressure, mud density in and formation fracture pressure.
A Geo-plot is included in this report, at a scale of 1:5000.

E.S. FLOWLINE TEMPERATURE, FLOWLINE TEMPERATURE END-TO-END PLOTS

Flowline temperature and end-to-end plot of flowline temperature are the two main plots relating to the temperature of the returning drilling fluid. These are plotted on a vertical scale of 1:5000. The use of these plots as an indicator of the presence of over-pressure takes secondary role to the E.S. drill log. Continuous observation of flowline temperature may indicate an increase in geothermal gradient. Factors affecting temperature are noted on the log, such as new bit runs, changes in the circulation rates, circulating cuttings out and the addition of water and chemicals to the active mud system. Since the goal of the end-to-end plot is to provide a representation of the geothermal gradient, all surface changes which would cause artificial changes in ths flowline temperature are disregarded.

ELECTRIC LOG PLOT

A plot of shale resistivity (ohm-metres squared/metre), sonic travel time (microseconds per foot), bulk density (gm/cc) and neutron porosity (%), may be made using data supplied by Schlumberger. Two-cycle semi-log paper is used, with a vertical scale of 1:10000. As far as possibl only clean shale points are selected and plotted. The relatively compressed vertical scale makes deviations from the normal compaction trend easier to identify.

## PROGRESS LOG

This is the traditional presentation of footage against elapsed time in days. It shows actual drilling time from spud to total depth.

## DATA RECORDING

Data is recorded on tape while drilling, both as raw input numbers and computer calculated numbers. This data can be accessed later for use in interpretative programs or to review data. Comprehensive data lists are included in this report.

## MUD DATA SHEETS

These are a record of the mud properties while drilling, and are derived from the mud engineer's daily report.

## DRILLING PARAMETER PLOT

The drilling parameter plot shows : rate of penetration, weight-on-bit, rotary speed, pump pressure, hydraulic horsepower, impact force and jet velocity. This plot is drawn by the computer and is designed to aid the drilling engineer in drilling optimization. The scale chosen here is 1:5000.

## HYDRAULIC ANALYSES

During drilling, routine hydraulic analyses are calculated by the computer, and these are made available to the drilling engineer. This repor includes a sample hydraulics for each 100 metres.

## GAS COMPOSITION ANALYSIS

For each significant gas show the chromatograph results are analysed using two techniques :-

1. Log plot

2. Triangulation plot

Both plots are included in this report.

## GRAPHOLOG

This is plotted on the industry-standard form on a vertical scale of 1:500. Rate of penetration is plotted in metres per hour, together with mud gas chromatography results. Total gas is also plotted, and a percentage lithology log is drawn. A lithology description is presented in an abbreviated form. All relevant drilling data is included, as is bit and mud data.

## MISCELLANEOUS

Various data collected from this well are also included in this report for reference. These include formation leak-off test data, R.F.T. and well test data where appropriate.

# CORE LABORATORIES EQUIPMENT

Core Laboratories Field Laboratory 2007 monitoring equipment includes the following :

## A. MUD LOGGING

1. T.H.M. total gas detector and recorder.
2. F.I.D. (Flame Ionization Detector) chromatograph and recorder.
3. Cuttings gas detector.
4. Gas trap and support equipment for the above.
5. Pit volume totalizer and recorder.
6. Digital depth counter.
7. Two integrated pump stroke counters.
8. Ultra-violet fluoroscope.
9. Binocular microscope.
10. Calcimeter.
11. Steam-still gas analyzer.

## B. EXTENDED SERVICE PACKAGE

1. HEWLETT PACKARD 9825B desktop computer.
2. HEWLETT PACKARD 9872B plotter
3. HEWLETT PACKARD 2631A printer.
4. Two HEWLETT PACKARD 2621P visual display units, (one located in the client's office).
5. Hookload/weight-on-bit transducer and recorder.
6. Rotary speed sensor and recorder.
7. Stand-pipe pump pressure transducer and recorder.
8. Mud flow out sensor and recorder.
9. Mud temperature sensors and recorders (in and out).
10. Mud conductivity sensors and recorders (in and out).
11. Mud density sensors (in and out) and recorders.
12. Rotary torque sensor and recorder.
13. Shale density apparatus.
14. Hydrogen sulphide gas detector.
15. Carbon dioxide gas detector.
16. DATALOGGER computer, monitor and impact printer.
17. DIGITAL remote paging display (located in the client's office).
18. Casing pressure transducer and recorder.

All the above sensors and gas detectors have displays on the DATALOGGER monitors except the Cuttings gas detector and steam-still.

# CORE LABORATORIES MONITORING EQUIPMENT

## DEPTH

Depth registered every 0.1 metres and rate of penetration calculated each metre (or every 0.2m while coring); ROP displayed on the computer monitor and chart.

## WEIGHT-ON-BIT

A DeLaval 0-5000 psi, solid state pressure transducer is connected to the rig's deadline anchor. The weight-on-bit is calculated in the Datalogger, and displayed (with hookload) on the computer monitor and recorder chart.

## ROTARY SPEED

This is a proximity limit switch which pulses once for every revolution of the rotary drive shaft. The value is displayed on the computer monitor and a recorder chart.

## PUMP PRESSURE

This is a DeLaval 0-5000 psi transducer mounted on the stand-pipe manifold. The pressure is displayed on the computer monitor and recorder chart.

## CASING PRESSURE

This is a DeLaval 0-5000 psi transducer mounted on the choke manifold. The signal is displayed on the computer monitor and on a recorder chart.

## PIT VOLUME

Four individual pits are displayed on the monitor. The pit volume total is calculated by the Datalogger and displayed on the monitor. The sensors are vertical floats triggering magnetic switches accurate to +/- 1 barrel.
In addition, a sensor is fitted to the rig's trip tank, so that hole fill-up during trips may be closely monitored. A recorder chart displays the levels of the active pits, the pit volume total, and the trip tank.

## PUMP STROKES

These are the limit switch type, counting individual strokes. The pump rates per minute are displayed on the monitor.

## ROTARY TORQUE

An American Aerospace Controls bi-directional current sensor is clamped over the power cable of the rotary table motor. Torque is displayed on the computer monitor and recorder chart.

## MUD TEMPERATURE

This is a platinum probe resistance thermometer, and an electronics module calibrated 0-100 deg.C. Temperature in and out is displayed on the monitor and recorder.

## MUD CONDUCTIVITY

A Balsbaugh electrode-less conductivity sensor contains two toroidally-wound coils and a thermistor enclosed in a donut-shaped housing. Current is induced into the mud by the primary coil and is sampled by the secondary coil, the amplitude of the current being directly proportional to the conductivity of the mud.

## MUD DENSITY

Two density sensors (in and out) located in the possum belly and in the pit room, operate on a system of differential pressure. This function is displayed on both chart and monitor.

All the sensors are 12 to 36V DC powered with the exception of the air driven gas trap. Along with monitoring and maintaining the above equipment, Core Lab performed other duties...

## CUTTINGS

Microscopic and ultra-violet inspection of cuttings samples at predetermined intervals. Samples were washed, dried, sacked and boxed where necessary. Geochemical samples were canned and boxed.

## GAS

1. Flame Ionization Total Hydrocarbon gas detector.
   The T.H.M. accurately determines hydrocarbon concentrations up to 100% saturation.

2. Flame Ionization Detector chromatograph.
   The F.I.D. is capable of accurate determination of hydrocarbon concentration from C1 to C6+.

3. Cuttings gas detector (Wheatstone Bridge type).
   An auxiliary system for total gas detection.

4. Hydrogen Sulphide detector.
   Two sensors are located at the shale-shakers and in the pit room, linked to a TAC 404B H2S monitor, to detect H2S emanating from the drilling fluid.

5. Carbon Dioxide detector.
   An Infra-red gas analyzer determines the percentage of CO2 present in gas samples broken out of the mud by the gas trap.

## SHALE DENSITY

Manual determination of shale density in an accurately calibrated variable density liquid column.

# 6. ESP PLOT DISCUSSIONS AND CONCLUSIONS

## ESP PLOT DISCUSSION AND CONCLUSIONS
(with particular reference to Pore Pressure)

A prime aim during the drilling of Perch #2 was utilization of data collected by Core Laboratories DL2007 to provide an estimation of formation pressures. This is described in detail below.

The main pressure indicators that were used while drilling the well were those of Rates of Penetration, gas levels, 'd'c exponent, mud weight, flowline temperature, and lithology.

The "Drill Data Plot" (see attached plots inside back cover) shows the rate of penetration, corrected 'd' exponent and mud density plotted against lithology. This plot indicates a normal pressure profile throughout the well, with any irregularities in rate of penetration, corrected 'd' exponent and gas levels being due to lithology changes. No connection gas was detected. Shale densities were not performed during the drilling of the well as no large beds of shale were encountered.

The "Temperature Plot" displays the flowline temperature in and out and their differential plotted against depth. The temperature plot of Perch #2 shows a temperature gradient of 2.24°F/100 feet. It shows a normal trend with depth only differing from the expected gradient at points where the mud system was being treated to maintain specifications. The bottom hole temperature was extrapolated to 68.7°C (156°F) at 1321 metres from wireline logging data.

The "Pressure Plot" is a summary of the pressures found in the drilling of Perch #2. On this plot estimated pore pressure is plotted along with mud weight and the fracture gradient. The pore pressure of the well was estimated to be 8.4 - 8.5 ppg (E.M.W.) throughout. The fracture gradient curve was based on information obtained from a pressure integrity test performed after drilling out the 13-3/8" casing shoe (800 metres, 16.2 ppg). As there is no available Overburden Gradient curve for the Gippsland Basin the shape of the curve is based on that of the U.S. Gulf Coast Basin curve and offset to match local data.

# 7. B.H.T. ESTIMATION

CORE LAB
========

STRAIGHT LINE LEAST SQUARES BEST FIT

1/(TIME) ON A LINEAR SCALE AGAINST
TEMP. ON A LINEAR SCALE

ENTERED DATA:

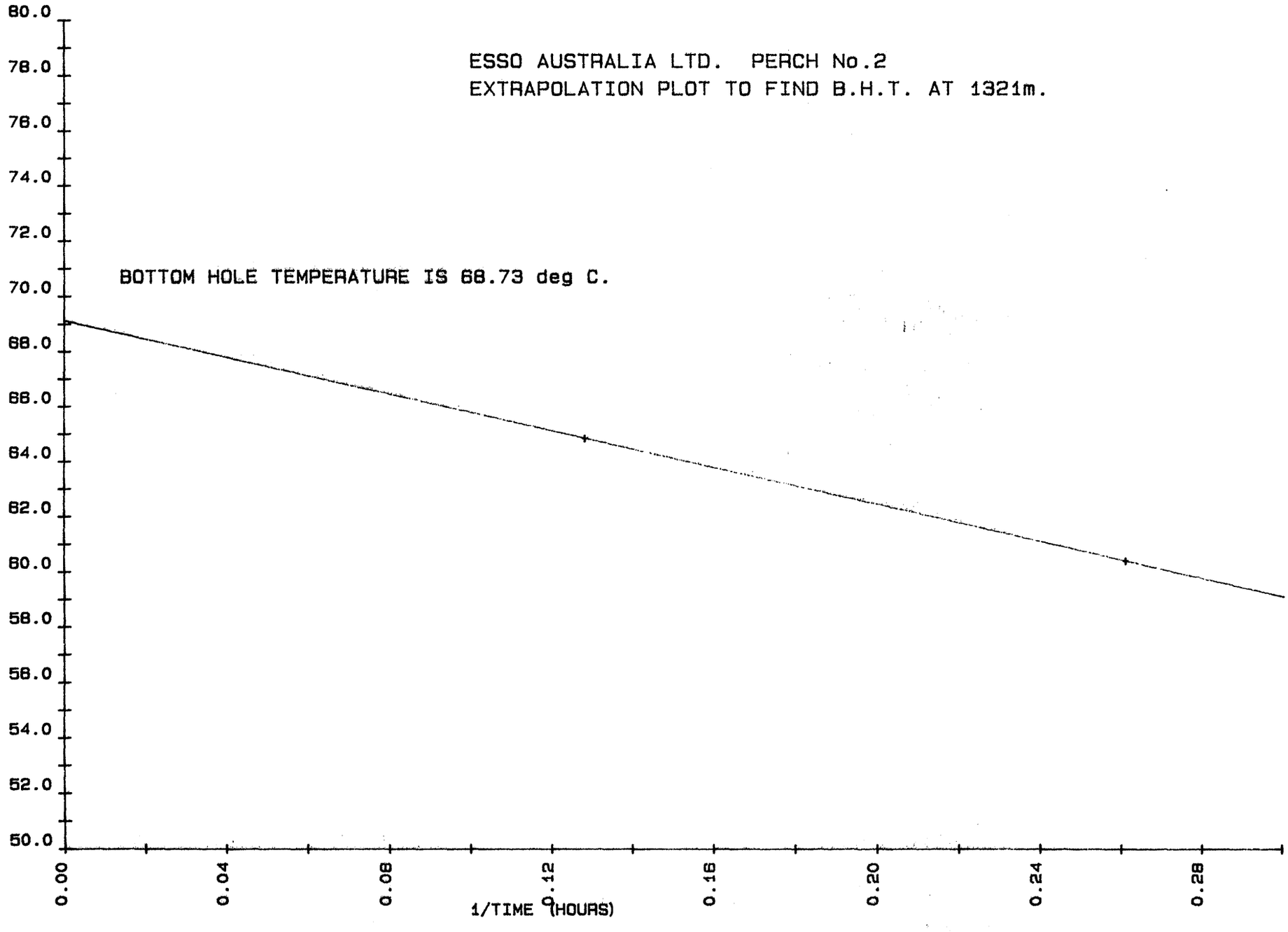
| DATA SET # | 1/(TIME) | TEMP. |
|---|---|---|
| 1 | 0.26 | 60.00 |
| 2 | 0.13 | 64.45 |

COEFFICIENT & CONSTANT:

Y = m.X + c where m = -3.3458647E 01 and c = 6.8732707E 01

INTERPOLATED DATA:

| 1/(TIME) | TEMP. |
|---|---|
| 0.00 | 68.73 |


ESSO AUSTRALIA LTD. PERCH No.2
EXTRAPOLATION PLOT TO FIND B.H.T. AT 1321m.
BOTTOM HOLE TEMPERATURE IS 68.73 deg C.
80.0
78.0
76.0
74.0
72.0
70.0
68.0
66.0
64.0
62.0
60.0
58.0
56.0
54.0
52.0
50.0
0.00
0.04
0.08
0.12
0.16
0.20
0.24
0.28
1/TIME (HOURS)

# 8. OVERBURDEN GRADIENT CALCULATIONS AND PLOT

## OVERBURDEN PLOT DESCRIPTION AND CONCLUSIONS

An Overburden Plot for Perch #2 could not be plotted due to there being insufficient data. This was due to density logs being run only over the interval 1100 - 1322 metres.

# 9. GAS ANALYSES

# GAS COMPOSITION ANALYSIS

The composition of entrained reservoir gas in the mud is significant in determining the origin and the value of a show. Two graphical methods are employed for processing the mud gas chromatography results. These techniques however are empirical and by no means definitive.

## LOG PLOT

The ratios of C1/C2, C1/C3, C1/C4, C1/C5, and C1/C6 are plotted on three-cycle log paper for each hydrocarbon show. The plots can be evaluated by the following criteria :

1. Productive dry gas zones may show only C1, but abnormally high shows of C1 are usually indicative of saltwater.

2. A ratio of C1/C2 between approximately 2 and 15 indicates oil and between 15 and 65, gas. If the C1/C2 ratio is below about 2, or above about 65, the zone is probably non-productive.

   The actual values of the gas/oil/water limits will vary from area to area.

3. If the C1/C2 ratio is low in the oil section and the C1/C4 ratio is high in the gas section, the zone is probably non-productive.

4. If any ratio (with the exception of C1/C5, if oil is used in the mud) is lower than the preceding ratio, the zone is probably non-productive.

5. The ratios may not be definitive for low permeability zones; however, steep ratio plots may indicate a tight zone.

## TRIANGULATION PLOT

The triangulation diagram is obtained by tracing lines on three scales at 120 degrees to each other, corresponding respectively to the ratios of C2, C3 and normal C4 to the total gas (C1 to C4). The scales are arranged in such a way that if the apex of the triangle is upward, a gas zone is indicated, while if the apex points downward, an oil zone is suggested.

A large triangle plot represents dry gas or low GOR oil, while small triangles represent wet gases or high GOR oils. The homothetic centre of the plot should fall inside the top part of the triangle, otherwise the heavier hydrocarbon is abnormal and may indicate a dead show, (or coal gas).

## GAS COMPOSITIONS

No gas composition analyses were made on Perch #2 due to the lack of shows encountered whilst drilling.

# SIDEWALL CORE GAS ANALYSIS DATA SHEET



COMPANY ESSO AUSTRALIA LIMITED
WELL PERCH #2

LOGGING SUITE NO. 2

| No. | DEPTH (M) | C1 | C2 | C3 | C4 | C5 | C6 | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| | | PPM | PPM | PPM | PPM | PPM | PPM | |
| 1 | 1304 | 42 | TR | | | | | |
| 2 | 1299.5 | 18 | | | | | | |
| 3 | 1299 | 20 | | | | | | |
| 4 | 1295 | 14 | | | | | | |
| 5 | 1288 | 225 | 87 | 102 | 49 | TR | | |
| 6 | 1278 | 235 | 82 | 90 | 37 | TR | | |
| 7 | 1259.5 | 820 | 296 | 170 | 296 | 178 | 47 | |
| 8 | 1256.2 | 286 | 41 | 34 | 18 | 11 | TR | |
| 9 | 1250.2 | 656 | 82 | 34 | 55 | 38 | TR | |
| 10 | 1240.7 | 1010 | 204 | 68 | 111 | 63 | 42 | |
| 11 | 1228.5 | 1136 | 209 | 72 | 196 | 72 | 46 | |
| 12 | 1212 | 1785 | 836 | 431 | 167 | 51 | 47 | |
| 13 | 1201.8 | 1684 | 235 | 145 | 37 | 25 | 13 | |
| 14 | 1199 | 202 | 76 | 56 | 41 | 16 | | |
| 15 | 1178 | 1019 | 236 | 76 | 130 | 56 | 46 | |
| 16 | 1175 | 1526 | 296 | 135 | 32 | 26 | 11 | |
| 17 | 1168.3 | 2121 | 1020 | 579 | 593 | 210 | 105 | |
| 18 | 1159 | 3906 | 612 | 272 | 631 | 559 | 162 | |
| 19 | 1156.5 | 3368 | 163 | 51 | 93 | 76 | 21 | |
| 20 | 1155 | 3907 | 571 | 247 | 668 | 560 | 126 | |
| 21 | 1154 | 84.2 | 51 | 358 | 1132 | 509 | 252 | |
| 22 | 1154 | 219 | 20.4 | 34 | 79 | 191 | 115 | |
| 23 | 1142 | 1852 | 224 | 119 | 566 | 928 | 378 | |
| 24 | 1131.5 | MISFIRE | | | | | | |
| 25 | 1126.2 | 1886 | 255 | 136 | 658 | 1068 | 420 | |
| 26 | 1119.2 | 1044 | 41 | 25 | 56 | 25 | 11 | |
| 27 | 1111.5 | 2020 | 102 | 34 | 32 | 6.3 | TR | |
| 28 | 1102 | 2222 | 102 | 43 | 92 | 38 | 21 | |
| 29 | 1088 | 968 | 82 | 36 | 14 | 8 | 10.5 | |
| 30 | 1075 | 1852 | 92 | 38 | 14 | 13 | TR | |

# 10. CORELAB DATA SHEETS

## BIT RECORD

BIT SIZE . . . . . Inches

BIT COST . . . . . Australian dollars

JET SIZE . . . . . Thirty-seconds of an inch

DEPTHS . . . . . Metres

HOLE MADE. . . . . Metres

DRILLING TIME. . . . . Hours

AVERAGE ROP. . . . . Metres/hour

AVERAGE COST/METRE . . Australian dollars

BIT CONDITION. . . . . Teeth

Bearings

Gauge . . . . Inches

BIT RECORD

COMPANY ESSO AUSTRALIA LIMITED
WELL PERCH #2

Sheet No. 1

| Ser No. | Bit No. | Make | Type | IADC Code | Size " | Cost A$ | Jets | Depth In (m) | Depth Out (m) | Hole Made m | Drill Time | On Bottom Hours | On Bottom TurnsK | Avg ROP | Avg Cost/m | Condition T B G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LJ 321 | RR1 | HTC | OS3AJ | 111 | 26" | | 20/20/20 | 64 | 211 | 147 | | | | | | 22I |
| 117 TR | 1 | HTC | R1 | 111 | 17½ | | 18/18/18 | 211 | 815 | 604 | 14.1 | 8.61 | 51.6 | 70.2 | 65.4 | 21I |
| 961-LS | 2 | HTC | J1 | 116 | 12¼" | 2566 | 18/18/18 | 815 | 1146 | 331 | 16.2 | 11.81 | 71.5 | 28.0 | 187.7 | 33 1/8 |
| 82B0801 | CB1 | CHRIS | C24 | 4 | 9 7/8 | | 14/14/15 | 1146 | 1155 | 9 | 0.28 | 0.28 | 1.75 | 32.1 | 1941 | 60% |
| 82B0801 | RRCB1 | CHRIS | C24 | 4 | 9 7/8 | | 14/14/15 | 1155 | 1164 | 9 | 4.25 | 4.25 | 26.02 | 2.1 | 1776 | 70% |
| ZK 714 | NB3 | HTC | J22 | 517 | 12¼ | 8520 | 18/18/18 | 1164 | 1321 | 157 | 8.20 | 5.32 | 32.56 | 29.5 | 282.6 | 21I |

COMPANY ESSO AUSTRALIA LIMITED
WELL PERCH #2

BIT RECORD

Sheet No.

| Ser No. | Bit No. | Make | Type | IADC Code | Size " | Jets | Depth In Metres | Hole Made (m) | Drill Time | On Bottom Hours | On Bottom Turns K | Condition T B G | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LJ 321 | RR1 | HTC | OSC3AJ | 111 | 26" | 20/20/20 | 64 | 147 | | | | 22I | Pulled to run 20" CSG |
| 117 TR | 1 | HTC | R1 | 111 | 17½" | 18/18/18 | 211 | 604 | 14.1 | 8.61 | 51.6 | 21I | Pulled to run 13 3/8" CSG |
| 961 LS | 2 | HTC | J1 | 116 | 12¼" | 18/18/18 | 815 | 331 | 16.2 | 11.81 | 71.5 | 33 1/8 | Pulled to cut core #1 |
| 82B0801 | CB1 | CHRIS | C24 | 4 | 9 7/8 | 14/14/15 | 1146 | 9 | 0.28 | 0.28 | 1.75 | 60% | Pulled to recover core #1 |
| 82B0801 | RRCB1 | CHRIS | C24 | 4 | 9 7/8 | 14/14/15 | 1155 | 9 | 4.25 | 4.25 | 26.02 | 70% | Pulled to recover core #2 |
| ZK 714 | 3 | HTC | J22 | 517 | 12¼ | 18/18/18 | 1164 | 157 | 8.20 | 5.32 | 32.56 | 21I | Pulled at T.D. |

# MUD INFORMATION SHEETS

DEPTH . . . . . Metres

MUD WEIGHT . . . . . Pounds per gallon

FUNNEL VISCOSITY . . . A.P.I.seconds

PLASTIC VISCOSITY. . . Centipoise

YIELD POINT. . . . . Pounds/100 square feet

GEL : INITIAL/10 min . Pounds/100 square feet

FILTRATE . . . . . A.P.I. c.c.

CAKE THICKNESS . . . . Thirty-seconds of an inch

SALINITY : Ca/Cl . . . ppm

SOLIDS/SAND/OIL. . . . Percentage

MUD INFORMATION SHEET

COMPANY ESSO AUSTRALIA LIMITED
WELL PERCH #2

Sheet No. 1

| | | | | | | |
|---|---|---|---|---|---|---|
| DEPTH | 196 | 783 | 815 | 963 | 1162 | 1321 |
| DATE | 11/2/85 | 13/2/85 | 14/2/85 | 26/2/85 | 27/2/85 | 1/3/85 |
| TIME | 21:00 | 21:00 | 17:00 | 21:00 | 22:00 | 13:30 |
| WEIGHT | 8.8 | 8.9 | 9.0 | 10.5 | 10.0 | 10.1 |
| FUNNEL VISCOSITY | 100+ | 33 | 38 | 38 | 42 | 48 |
| PV/YP | 8/44 | 4/12 | 4/22 | 7/18 | 8/18 | 8/28 |
| N/K | | 0.32/2.15 | 0.12/7.18 | 0.36/2.72 | 0.39/2.33 | 0.29/5.08 |
| GEL: INITIAL/10 MIN | 18/40 | 8/12 | 8/21 | 8/24 | 14/25 | 26/40 |
| pH | 10.4 | 9.3 | 9.4 | 10.5 | 10.6 | 10.5 |
| FILTRATE:API/API HTHP | | | | 21/24 | 11.5/13 | 15.5/14 |
| CAKE | | | | 1 | 1 | 1 |
| SALINITY (PPM) | | 19,000 | 18,000 | 19,000 | 18,000 | 17,000 |
| SAND | | TR | TR | TR | TR | TR |
| SOLIDS | | 5 | 6 | 7 | 8 | 8 |
| OIL | | 0 | 0 | 0 | 0 | 0 |
| NITRATES (PPM) | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| REMARKS: | Spud | 17½" hole | 13 3/8" Casing | 12¼" hole | | |
| | Seawater Gel Slugs | Seawater Drill Solids | Seawater P/H Gel | Seawater Gel Polymer | | |

| | |
|---|---|
| DEPTH | 1321 |
| DATE | 1/3/85 |
| TIME | 03:00 |
| WEIGHT | 10.1 |
| FUNNEL VISCOSITY | 48 |
| PV/YP | 8/26 |
| N/K | 0.30/5.08 |
| GEL: INITIAL/10 MIN | 22/41 |
| pH | 10.5 |
| FILTRATE:API/API HTHP | 16/17 |
| CAKE | 1 |
| SALINITY (PPM) | 17,000 |
| SAND | TR |
| SOLIDS | 8 |
| OIL | 0 |
| NITRATES (PPM) | |

REMARKS: Logging

Seawater Gel Polymer

# R.F.T. DATA SHEETS

# PORE PRESSURE DATA SHEET

COMPANY : ESSO AUSTRALIA LTD. DATA FROM RFT'S

WELL : PERCH No.2

| DEPTH (FROM RKB) | DEPTH (FROM MSL) | PORE PRESS | PORE PRESS GRADIENT E.M.W.(MSL) | PORE PRESS GRADIENT |
|---|---|---|---|---|
| METRES | TVD. METRES | PSIA | PPG | PSI/M |
| 1261.5 | 1240.5 | 1789.00 | 8.453 | 1.442 |
| 1180.0 | 1159.0 | 1674.00 | 8.466 | 1.444 |
| 1155.0 | 1134.0 | 1641.00 | 8.482 | 1.447 |
| 1152.5 | 1131.5 | 1635.00 | 8.470 | 1.445 |
| 1146.0 | 1125.0 | 1628.00 | 8.482 | 1.447 |
| 1145.0 | 1124.0 | 1627.00 | 8.485 | 1.448 |

R.F.T. SAMPLING DATA SHEET

COMPANY ESSO AUSTRALIA LIMITED
WELL PERCH #2

Sheet No. 1

| | | |
|---|---|---|
| RUN No. | 2 | 2 |
| SEAT No. | 7 | 7 |
| CHAMBER CAPACITY (gal) | 6 | 2 3/4 |
| DEPTH (metres) | 1151 | 1151 |

RECOVERY VOLUMES

| | | |
|---|---|---|
| GAS (Cu Ft) | 6.2 | |
| OIL (cc) | 20,400 | Sample |
| WATER/FILTRATE (cc) | 500 | preserved |
| OTHER (cc) Emulsion | 2,000 | |
| SURFACE PRESSURE (PSI) | 200 | |

GAS COMPOSITION

| | |
|---|---|
| C1 (PPM) | 336,261 |
| C2 (PPM) | 16,973 |
| C3 (PPM) | 5,452 |
| C4 (PPM) | 26,726 |
| C5 (PPM) | 18,316 |
| C6 (PPM) | 546 |
| CO2 (%) | 4 |
| H2S (PPM) | Trace |

OIL PROPERTIES

| | |
|---|---|
| DENSITY (°API at 25°C) | 42 |
| COLOUR | Dk brn |
| FLUORESCENCE | White |
| POUR POINT (°C) | |

WATER PROPERTIES

| | |
|---|---|
| RESISTIVITY (Ωm) | 0.318 @ 70°C |
| Cl (frm resis) (PPM) | |
| Cl (frm titrat) (PPM) | 11,000 |
| NITRATES (PPM) | |
| pH | 7.6 |
| TRITIUM (DPM) | 2052 |

COMMENTS

# APPENDICES

## COMPUTER DATA LISTINGS

Data is fed to the computer while drilling is in progress, using the DRILL program and is stored on a tape at 10, 5, 1, or 0.2m intervals. This data is then available at a later date for use in other programs (for example KICK, SURGE, COST, OPTBIT, and HYDRL).

The data can also be accessed by the REPORT program, which allows the operator to list both raw and calculated data in various formats. Either detailed data or data averaged over any particular depth interval, may be listed.

In addition, the data may be plotted in various formats, at any scale the operator desires.

the following data lists have been made for this well :

(a). Bit record and bit initialization data

(b). Hydraulic analyses

(c). Data list A

(d). Data list B

(e). Data list C

(f). Data list D

## COMPUTER PLOTS

Using the REPORT program, hte following plots have been drawn for this well :

GEOPLOT - 1:5000 SCALE - 2m averages

Since all the data is stored on tape, further data lists or plots are available at any time on request.

## (a). BIT RECORD AND BIT INITIALIZATION DATA

BIT SIZE . . . . . Inches

BIT COST . . . . . Australian dollars

JET SIZE . . . . . Thirty-seconds of an inch

DEPTHS . . . . . Metres

HOLE MADE. . . . . Metres

DRILLING TIME. . . . . Hours

AVERAGE ROP. . . . . Metres/hour

AVERAGE COST/METRE . . Australian dollars

BIT CONDITION. . . . . Teeth

Bearings

Gauge . . . . Inches

WELL: PERCH No.2

BIT RECORD

| BIT No. | IADC CODE | MAKE & TYPE | SIZE | COST | NOZZLES | DEPTH IN | DEPTH OUT | BIT RUN | TOTAL HOURS | AROP | TRIP TIME | CCOST | TOTAL TURNS | CONDITION T | B | G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 111 | R1 | 17.500 | 0.00 | 18 18 18 | 211.0 | 815.0 | 604.0 | 8.61 | 70.1 | 2.2 | 65.37 | 51664 | 2 | 1 | 0.000 |
| 2 | 116 | HTC J1 | 12.250 | 2566.00 | 18 18 18 | 815.0 | 1146.0 | 331.0 | 11.81 | 28.0 | 4.5 | 187.70 | 71526 | 3 | 3 | 0.125 |
| 2 | 4 | CHRIS C24 | 9.875 | 0.00 | 14 14 15 | 1146.0 | 1155.0 | 9.0 | 0.28 | 32.1 | 4.5 | 1939.62 | 1748 | 0 | 0 | 0.600 |
| 2 | 4 | CHRIS C24 | 9.875 | 0.00 | 14 14 15 | 1155.0 | 1164.0 | 9.0 | 4.25 | 2.3 | 4.5 | 1775.28 | 26015 | 0 | 0 | 0.700 |
| 3 | 517 | HTC J22 | 12.250 | 8520.00 | 18 18 18 | 1164.0 | 1321.0 | 157.0 | 5.32 | 29.5 | 4.5 | 282.69 | 32579 | 2 | 1 | 0.000 |

BIT NUMBER: 1 IADC CODE 111 R1

| | | | |
|---|---|---|---|
| STARTING DEPTH..... | 211.0 | | |
| BIT COST, RIG COST/HOUR..... | 0.00 | 3652.00 | |
| TRIP TIME..... | 2.2 | | |
| BIT DIAMETER..... | 17.500 | | |
| NOZZLES..... | 18 | 18 | 18 |
| HW DRILL COLLAR LENGTH, OD, ID.... | 19.20 | 9.750 | 2.813 |
| DRILL COLLAR LENGTH, OD, ID..... | 94.60 | 8.000 | 2.813 |
| HW DRILL PIPE LENGTH, OD, ID..... | 83.40 | 5.000 | 3.125 |
| DRILL PIPE OD, ID..... | | 5.000 | 4.276 |
| CASING DEPTH, ID..... | 196.00 | 19.124 | |
| RISER LENGTH, ID..... | 64.60 | 21.000 | |
| PUMP VOLUMES 1 AND 2..... | 0.119 | 0.119 | |
| PORE PRESSURE CALC EXPONENT..... | 1.20 | | |
| NORMAL PORE PRESSURE..... | 8.4 | | |
| OVERBURDEN GRADIENT MODIFIER..... | 0.00 | | |
| STRESS RATIO MODIFIER..... | 0.40 | | |
| "d" EXPONENT CORRECTION FACTOR.... | 10.0 | | |
| CUTTINGS DIAMETER, DENSITY..... | 2.0 | 2.00 | |
| FINISHING DEPTH..... | 815.0 | | |
| CUMULATIVE HOURS, TURNS..... | 8.61 | 51664 | |
| BIT CONDITION OUT..... | T 2 | B 1 | G 0.000 |

BIT NUMBER: 2 IADC CODE 116 HTC J1

| | | | |
|---|---|---|---|
| STARTING DEPTH..... | 815.0 | | |
| BIT COST, RIG COST/HOUR..... | 2566.00 | 3652.00 | |
| TRIP TIME..... | 4.5 | | |
| BIT DIAMETER..... | 12.250 | | |
| NOZZLES..... | 18 | 18 | 18 |
| DRILL COLLAR LENGTH, OD, ID..... | 145.06 | 8.000 | 2.813 |
| HW DRILL PIPE LENGTH, OD, ID..... | 83.25 | 5.000 | 3.125 |
| DRILL PIPE OD, ID..... | | 5.000 | 4.276 |
| CASING DEPTH, ID..... | 800.00 | 12.415 | |
| RISER LENGTH, ID..... | 64.60 | 21.000 | |
| PUMP VOLUMES 1 AND 2..... | 0.119 | 0.119 | |
| PORE PRESSURE CALC EXPONENT..... | 1.20 | | |
| NORMAL PORE PRESSURE..... | 8.4 | | |
| OVERBURDEN GRADIENT MODIFIER..... | 0.00 | | |
| STRESS RATIO MODIFIER..... | 0.40 | | |
| "d" EXPONENT CORRECTION FACTOR.... | 10.0 | | |
| CUTTINGS DIAMETER, DENSITY..... | 2.0 | 2.10 | |
| FINISHING DEPTH..... | 1146.0 | | |
| CUMULATIVE HOURS, TURNS..... | 11.81 | 71526 | |
| BIT CONDITION OUT..... | T 3 | B 3 | G 0.125 |

BIT NUMBER: 2 IADC CODE 4 CHRIS C24

| | | | |
|---|---|---|---|
| STARTING DEPTH..... | 1146.0 | | |
| BIT COST, RIG COST/HOUR..... | 0.00 | 3652.00 | |
| TRIP TIME..... | 4.5 | | |
| BIT DIAMETER..... | 9.875 | | |
| NOZZLES..... | 14 | 14 | 15 |
| DRILL COLLAR LENGTH, OD, ID..... | 125.40 | 8.000 | 2.813 |
| HW DRILL PIPE LENGTH, OD, ID..... | 83.25 | 5.000 | 3.125 |
| DRILL PIPE OD, ID..... | | 5.000 | 4.276 |
| LINER DEPTH, TOP, ID..... | 1146.00 | 800.00 | 12.250 |
| CASING ID..... | 12.415 | | |
| RISER LENGTH, ID..... | 64.00 | 21.000 | |
| PUMP VOLUMES 1 AND 2..... | 0.119 | 0.119 | |
| PORE PRESSURE CALC EXPONENT..... | 1.20 | | |
| NORMAL PORE PRESSURE..... | 8.4 | | |
| OVERBURDEN GRADIENT MODIFIER..... | 0.00 | | |
| STRESS RATIO MODIFIER..... | 0.40 | | |
| "d" EXPONENT CORRECTION FACTOR.... | 10.0 | | |
| CUTTINGS DIAMETER, DENSITY..... | 1.0 | 2.10 | |
| FINISHING DEPTH..... | 1155.0 | | |
| CUMULATIVE HOURS, TURNS..... | 0.28 | 1748 | |
| BIT CONDITION OUT..... | T 0 | B 0 | G 0.600 |

BIT NUMBER: 2 IADC CODE 4 CHRIS C24

| | | | |
|---|---|---|---|
| STARTING DEPTH..... | 1155.0 | | |
| BIT COST, RIG COST/HOUR..... | 0.00 | 3652.00 | |
| TRIP TIME..... | 4.5 | | |
| PREVIOUS HOLE MADE..... | 9.0 | | |
| PREVIOUS HOURS, TURNS..... | 0.30 | 1720 | |
| BIT DIAMETER..... | 9.875 | | |
| NOZZLES..... | 14 | 14 | 15 |
| DRILL COLLAR LENGTH, OD, ID..... | 125.40 | 8.000 | 2.813 |
| HW DRILL PIPE LENGTH, OD, ID..... | 83.25 | 5.000 | 3.125 |
| DRILL PIPE OD, ID..... | | 5.000 | 4.276 |
| LINER DEPTH, TOP, ID..... | 1146.00 | 800.00 | 12.250 |
| CASING ID..... | 12.415 | | |
| RISER LENGTH, ID..... | 64.00 | 21.000 | |
| PUMP VOLUMES 1 AND 2..... | 0.119 | 0.119 | |
| PORE PRESSURE CALC EXPONENT..... | 1.20 | | |
| NORMAL PORE PRESSURE..... | 8.4 | | |
| OVERBURDEN GRADIENT MODIFIER..... | 0.00 | | |
| STRESS RATIO MODIFIER..... | 0.40 | | |
| "d" EXPONENT CORRECTION FACTOR.... | 10.0 | | |
| CUTTINGS DIAMETER, DENSITY..... | 1.0 | 2.10 | |
| FINISHING DEPTH..... | 1164.0 | | |
| CUMULATIVE HOURS, TURNS..... | 4.25 | 26015 | |
| BIT CONDITION OUT..... | T 0 | B 0 | G 0.700 |

| BIT NUMBER: 3 IADC CODE 517 HTC J22 | | | |
|---|---|---|---|
| STARTING DEPTH..... | 1164.0 | | |
| BIT COST, RIG COST/HOUR..... | 8520.00 | 3652.00 | |
| TRIP TIME..... | 4.5 | | |
| BIT DIAMETER..... | 12.250 | | |
| NOZZLES..... | 18 | 18 | 18 |
| DRILL COLLAR LENGTH, OD, ID..... | 144.90 | 8.000 | 2.813 |
| HW DRILL PIPE LENGTH, OD, ID..... | 83.25 | 5.000 | 3.125 |
| DRILL PIPE OD, ID..... | | 5.000 | 4.276 |
| CASING DEPTH, ID..... | 800.00 | 12.415 | |
| RISER LENGTH, ID..... | 64.00 | 21.000 | |
| PUMP VOLUMES 1 AND 2..... | 0.119 | 0.119 | |
| PORE PRESSURE CALC EXPONENT..... | 1.20 | | |
| NORMAL PORE PRESSURE..... | 8.4 | | |
| OVERBURDEN GRADIENT MODIFIER..... | 0.00 | | |
| STRESS RATIO MODIFIER..... | 0.40 | | |
| "d" EXPONENT CORRECTION FACTOR.... | 10.0 | | |
| CUTTINGS DIAMETER, DENSITY..... | 2.0 | 2.20 | |
| FINISHING DEPTH..... | 1321.0 | | |
| CUMULATIVE HOURS, TURNS..... | 5.32 | 32579 | |
| BIT CONDITION OUT..... | T 2 | B 1 | G 0.000 |

## (b). HYDRAULIC ANALYSIS

Data listed from the tape every 100m for each bit run.

| | |
|---|---|
| DEPTH. . . . . | Metres |
| FLOW RATE. . . . . | Rate of mud flow into the well, in gallons per minute. |
| ANNULAR VOLUMES. . . . | Barrels, Barrels/metre |
| ANNULAR VELOCITIES . . | Metres/minute |
| CRITICAL VELOCITIES. . | The annular velocity above which the flow becomes turbulent |
| SLIP VELOCITY. . . . . | The rate of slip of cuttings in the annulus under laminar flow |
| ASCENT VELOCITY. . . . | The rate of ascent of cuttings in the annulus under laminar flow |
| PRESSURE UNITS . . . . | Pounds per square inch |
| IMPACT FORCE . . . . . | The impact force at the bit, in foot-pounds per second squared. |
| H.H.P. . . . . | Hydraulic horsepower at the bit |
| JET VELOCITY . . . . . | The velocity of mud through the bit nozzles, in metres per second. |
| DENSITY UNITS. . . . . | Pounds per gallon |

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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 220.0 AND TVD 220.0

SPM 1 70 SPM 2 70 FLOW RATE 700

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| HWDC/OH | 0.673 | 13 | 25 | 215 | LAMINAR | 0 | 25 | 0.9 |
| DC/OH | 0.772 | 4 | 22 | 215 | LAMINAR | 0 | 22 | 0.2 |
| DC/CSG | 0.961 | 86 | 17 | 214 | LAMINAR | 0 | 17 | 2.5 |
| HWDP/CSG | 1.085 | 45 | 15 | 214 | LAMINAR | 0 | 15 | 0.9 |
| HWDP/RIS | 1.325 | 55 | 13 | 214 | LAMINAR | 0 | 13 | 0.7 |
| DP/RIS | 1.325 | 30 | 13 | 214 | LAMINAR | 0 | 13 | 0.4 |
| TOTAL VOLUME | | 234 | | | TOTAL PRESSURE DROP | | | 5.5 |

LAG: 14.0 MINUTES 982 STROKES #1 AND 982 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 705.8 | HHP | 288 | IMPACT FORCE | 949 |
| % SURFACE PRESSURE | 47.1 | HHP/sqin | 1.20 | JET VELOCITY | 92 |

PRESSURE BREAKDOWN:

| | |
|---|---|
| SURFACE | 46.3 |
| STRING | 333.3 |
| BIT | 705.8 |
| ANNULUS | 5.5 |
| TOTAL | 1091.0 |

PUMP PRESSURE 1500.0 % DIFFERENCE 27.3

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 8.70 | HYDROSTATIC PRESSURE | 326.5 |
| CIRCULATING: | ECD | 8.85 | CIRCULATING PRESSURE | 332.1 |
| PULLING OUT: | TRIP MARGIN | 0.30 | ESTIMATED SWAB | 11.1 |
| | EFFECTIVE MUD WEIGHT | 8.40 | BOTTOM HOLE PRESSURE | 315.5 |

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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 336.0 AND TVD 336.0

SPM 1 70 SPM 2 70 FLOW RATE 700

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL. | ASCEND VEL. | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| HWDC/OH | 0.673 | 13 | 25 | 215 | LAMINAR | 0 | 25 | 0.9 |
| DC/OH | 0.772 | 73 | 22 | 215 | LAMINAR | 0 | 22 | 3.4 |
| HWDP/OH | 0.896 | 23 | 19 | 214 | LAMINAR | 0 | 19 | 0.6 |
| HWDP/CSG | 1.085 | 62 | 15 | 214 | LAMINAR | 0 | 15 | 1.2 |
| DP/CSG | 1.085 | 81 | 15 | 214 | LAMINAR | 0 | 15 | 1.5 |
| DP/RIS | 1.325 | 86 | 13 | 214 | LAMINAR | 0 | 13 | 1.1 |
| TOTAL VOLUME | | 338 | | | | TOTAL PRESSURE DROP | | 8.7 |

LAG: 20.3 MINUTES 1419 STROKES #1 AND 1419 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 705.8 | HHP | 288 | IMPACT FORCE | 949 |
| % SURFACE PRESSURE | 47.1 | HHP/sqin | 1.20 | JET VELOCITY | 92 |

PRESSURE BREAKDOWN:

| | | | |
|---|---|---|---|
| SURFACE | 46.3 | | |
| STRING | 364.2 | | |
| BIT | 705.8 | | |
| ANNULUS | 8.7 | | |
| TOTAL | 1125.1 | PUMP PRESSURE 1500.0 | % DIFFERENCE 25.0 |

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 8.70 | HYDROSTATIC PRESSURE | 498.7 |
| CIRCULATING: | ECD | 8.85 | CIRCULATING PRESSURE | 507.4 |
| PULLING OUT: | TRIP MARGIN | 0.30 | ESTIMATED SWAB | 17.4 |
| | EFFECTIVE MUD WEIGHT | 8.40 | BOTTOM HOLE PRESSURE | 481.3 |

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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 420.0 AND TVD 420.0

SPM 1 70 SPM 2 70 FLOW RATE 700

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| HWDC/OH | 0.673 | 13 | 25 | 215 | LAMINAR | 0 | 25 | 0.9 |
| DC/OH | 0.772 | 73 | 22 | 215 | LAMINAR | 0 | 22 | 3.4 |
| HWDP/OH | 0.896 | 75 | 19 | 214 | LAMINAR | 0 | 19 | 2.1 |
| DP/OH | 0.896 | 24 | 19 | 214 | LAMINAR | 0 | 19 | 0.7 |
| DP/CSG | 1.085 | 143 | 15 | 214 | LAMINAR | 0 | 15 | 2.7 |
| DP/RIS | 1.325 | 86 | 13 | 214 | LAMINAR | 0 | 13 | 1.1 |
| TOTAL VOLUME | | 413 | | | | TOTAL PRESSURE DROP | | 10.8 |

LAG: 24.8 MINUTES 1735 STROKES #1 AND 1735 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 705.8 | HHP | 288 | IMPACT FORCE | 949 |
| % SURFACE PRESSURE | 47.1 | HHP/sqin | 1.20 | JET VELOCITY | 92 |

PRESSURE BREAKDOWN:

| | | | | | |
|---|---|---|---|---|---|
| SURFACE | 46.3 | | | | |
| STRING | 386.7 | | | | |
| BIT | 705.8 | | | | |
| ANNULUS | 10.8 | | | | |
| TOTAL | 1149.6 | PUMP PRESSURE | 1500.0 | % DIFFERENCE | 23.4 |

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 8.70 | HYDROSTATIC PRESSURE | 623.4 |
| CIRCULATING: | ECD | 8.85 | CIRCULATING PRESSURE | 634.2 |
| PULLING OUT: | TRIP MARGIN | 0.30 | ESTIMATED SWAB | 21.6 |
| | EFFECTIVE MUD WEIGHT | 8.40 | BOTTOM HOLE PRESSURE | 601.8 |

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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 501.0 AND TVD 501.0

SPM 1 70 SPM 2 70 FLOW RATE 700

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| HWDC/OH | 0.673 | 13 | 25 | 215 | LAMINAR | 0 | 25 | 0.9 |
| DC/OH | 0.772 | 73 | 22 | 215 | LAMINAR | 0 | 22 | 3.4 |
| HWDP/OH | 0.896 | 75 | 19 | 214 | LAMINAR | 0 | 19 | 2.1 |
| DP/OH | 0.896 | 97 | 19 | 214 | LAMINAR | 0 | 19 | 2.7 |
| DP/CSG | 1.085 | 143 | 15 | 214 | LAMINAR | 0 | 15 | 2.7 |
| DP/RIS | 1.325 | 86 | 13 | 214 | LAMINAR | 0 | 13 | 1.1 |
| TOTAL VOLUME | | 485 | | | TOTAL PRESSURE DROP | | | 12.8 |

LAG: 29.1 MINUTES 2040 STROKES #1 AND 2040 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 705.8 | HHP | 288 | IMPACT FORCE | 949 |
| % SURFACE PRESSURE | 47.1 | HHP/sqin | 1.20 | JET VELOCITY | 92 |

PRESSURE BREAKDOWN:

| | | | | | |
|---|---|---|---|---|---|
| SURFACE | 46.3 | | | | |
| STRING | 408.3 | | | | |
| BIT | 705.8 | | | | |
| ANNULUS | 12.8 | | | | |
| TOTAL | 1173.3 | PUMP PRESSURE | 1500.0 | % DIFFERENCE | 21.8 |

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 8.70 | HYDROSTATIC PRESSURE | 743.6 |
| CIRCULATING: | ECD | 8.85 | CIRCULATING PRESSURE | 756.4 |
| PULLING OUT: | TRIP MARGIN | 0.30 | ESTIMATED SWAB | 25.6 |
| | EFFECTIVE MUD WEIGHT | 8.40 | BOTTOM HOLE PRESSURE | 718.0 |

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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 625.0 AND TVD 625.0

SPM 1 70 SPM 2 70 FLOW RATE 700

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| HWDC/OH | 0.673 | 13 | 25 | 215 | LAMINAR | 0 | 25 | 0.9 |
| DC/OH | 0.772 | 73 | 22 | 215 | LAMINAR | 0 | 22 | 3.4 |
| HWDP/OH | 0.896 | 75 | 19 | 214 | LAMINAR | 0 | 19 | 2.1 |
| DP/OH | 0.896 | 208 | 19 | 214 | LAMINAR | 0 | 19 | 5.7 |
| DP/CSG | 1.085 | 143 | 15 | 214 | LAMINAR | 0 | 15 | 2.7 |
| DP/RIS | 1.325 | 86 | 13 | 214 | LAMINAR | 0 | 13 | 1.1 |
| TOTAL VOLUME | | 597 | | | TOTAL PRESSURE DROP | | | 15.9 |

LAG: 35.8 MINUTES 2507 STROKES #1 AND 2507 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 705.8 | HHP | 288 | IMPACT FORCE | 949 |
| % SURFACE PRESSURE | 47.1 | HHP/sqin | 1.20 | JET VELOCITY | 92 |

PRESSURE BREAKDOWN:

| | | | |
|---|---|---|---|
| SURFACE | 46.3 | | |
| STRING | 441.4 | | |
| BIT | 705.8 | | |
| ANNULUS | 15.9 | | |
| TOTAL | 1209.4 | PUMP PRESSURE 1500.0 | % DIFFERENCE 19.4 |

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 8.70 | HYDROSTATIC PRESSURE | 927.7 |
| CIRCULATING: | ECD | 8.85 | CIRCULATING PRESSURE | 943.5 |
| PULLING OUT: | TRIP MARGIN | 0.30 | ESTIMATED SWAB | 31.7 |
| | EFFECTIVE MUD WEIGHT | 8.40 | BOTTOM HOLE PRESSURE | 895.9 |

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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 700.0 AND TVD 700.0

SPM 1 70 SPM 2 70 FLOW RATE 700

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| HWDC/OH | 0.673 | 13 | 25 | 215 | LAMINAR | 0 | 25 | 0.9 |
| DC/OH | 0.772 | 73 | 22 | 215 | LAMINAR | 0 | 22 | 3.4 |
| HWDP/OH | 0.896 | 75 | 19 | 214 | LAMINAR | 0 | 19 | 2.1 |
| DP/OH | 0.896 | 275 | 19 | 214 | LAMINAR | 0 | 19 | 7.6 |
| DP/CSG | 1.085 | 143 | 15 | 214 | LAMINAR | 0 | 15 | 2.7 |
| DP/RIS | 1.325 | 86 | 13 | 214 | LAMINAR | 0 | 13 | 1.1 |
| TOTAL VOLUME | | 664 | | | TOTAL PRESSURE DROP | | | 17.7 |

LAG: 39.8 MINUTES 2789 STROKES #1 AND 2789 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 705.8 | HHP | 288 | IMPACT FORCE | 949 |
| % SURFACE PRESSURE | 47.1 | HHP/sqin | 1.20 | JET VELOCITY | 92 |

PRESSURE BREAKDOWN:

| | | | |
|---|---|---|---|
| SURFACE | 46.3 | | |
| STRING | 461.4 | | |
| BIT | 705.8 | | |
| ANNULUS | 17.7 | | |
| TOTAL | 1231.3 | PUMP PRESSURE 1500.0 | % DIFFERENCE 17.9 |

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 8.70 | HYDROSTATIC PRESSURE | 1039.0 |
| CIRCULATING: | ECD | 8.85 | CIRCULATING PRESSURE | 1056.7 |
| PULLING OUT: | TRIP MARGIN | 0.30 | ESTIMATED SWAB | 35.4 |
| | EFFECTIVE MUD WEIGHT | 8.40 | BOTTOM HOLE PRESSURE | 1003.6 |

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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 800.0 AND TVD 800.0

SPM 1 70 SPM 2 70 FLOW RATE 700

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| HWDC/OH | 0.673 | 13 | 25 | 211 | LAMINAR | 0 | 25 | 0.9 |
| DC/OH | 0.772 | 73 | 22 | 211 | LAMINAR | 0 | 22 | 3.4 |
| HWDP/OH | 0.896 | 75 | 19 | 211 | LAMINAR | 0 | 19 | 2.1 |
| DP/OH | 0.896 | 364 | 19 | 211 | LAMINAR | 0 | 19 | 10.1 |
| DP/CSG | 1.085 | 143 | 15 | 211 | LAMINAR | 0 | 15 | 2.7 |
| DP/RIS | 1.325 | 86 | 13 | 210 | LAMINAR | 0 | 13 | 1.1 |
| TOTAL VOLUME | | 753 | | | | TOTAL PRESSURE DROP | | 20.2 |

LAG: 45.2 MINUTES 3165 STROKES #1 AND 3165 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 730.2 | HHP | 298 | IMPACT FORCE | 982 |
| % SURFACE PRESSURE | 48.7 | HHP/sqin | 1.24 | JET VELOCITY | 92 |

PRESSURE BREAKDOWN:

| | |
|---|---|
| SURFACE | 47.6 |
| STRING | 501.6 |
| BIT | 730.2 |
| ANNULUS | 20.2 |
| TOTAL | 1299.5 |

PUMP PRESSURE 1500.0 % DIFFERENCE 13.4

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 9.00 | HYDROSTATIC PRESSURE | 1228.3 |
| CIRCULATING: | ECD | 9.15 | CIRCULATING PRESSURE | 1248.5 |
| PULLING OUT: | TRIP MARGIN | 0.30 | ESTIMATED SWAB | 40.4 |
| | EFFECTIVE MUD WEIGHT | 8.70 | BOTTOM HOLE PRESSURE | 1188.0 |

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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 917.0 AND TVD 917.0

SPM 1 77 SPM 2 77 FLOW RATE 770

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| DC/OH | 0.274 | 32 | 67 | 112 | LAMINAR | 0 | 66 | 4.4 |
| DC/CSG | 0.287 | 8 | 64 | 111 | LAMINAR | 0 | 63 | 1.1 |
| HWDP/CSG | 0.411 | 34 | 45 | 102 | LAMINAR | 0 | 44 | 1.2 |
| DP/CSG | 0.411 | 257 | 45 | 102 | LAMINAR | 0 | 44 | 8.9 |
| DP/RIS | 1.325 | 86 | 14 | 90 | LAMINAR | 0 | 14 | 0.2 |
| TOTAL VOLUME | | 417 | | | | TOTAL PRESSURE DROP | | 15.7 |

LAG: 22.7 MINUTES 1751 STROKES #1 AND 1751 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 863.9 | HHP | 388 | IMPACT FORCE | 1162 |
| % SURFACE PRESSURE | 28.8 | HHP/sqin | 3.29 | JET VELOCITY | 101 |

PRESSURE BREAKDOWN:

| | |
|---|---|
| SURFACE | 55.5 |
| STRING | 686.7 |
| BIT | 863.9 |
| ANNULUS | 15.7 |
| TOTAL | 1621.8 |

PUMP PRESSURE 3000.0 % DIFFERENCE 45.9

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 8.80 | HYDROSTATIC PRESSURE | 1376.7 |
| CIRCULATING: | ECD | 8.90 | CIRCULATING PRESSURE | 1392.4 |
| PULLING OUT: | TRIP MARGIN | 0.20 | ESTIMATED SWAB | 31.3 |
| | EFFECTIVE MUD WEIGHT | 8.60 | BOTTOM HOLE PRESSURE | 1345.4 |

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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 1000.0 AND TVD 1000.0

SPM 1 75 SPM 2 74 FLOW RATE 746

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| DC/OH | 0.274 | 40 | 65 | 106 | LAMINAR | 0 | 64 | 5.7 |
| HWDP/OH | 0.398 | 22 | 45 | 93 | LAMINAR | 0 | 44 | 0.8 |
| HWDP/CSG | 0.411 | 12 | 43 | 93 | LAMINAR | 0 | 43 | 0.4 |
| DP/CSG | 0.411 | 291 | 43 | 93 | LAMINAR | 0 | 43 | 9.7 |
| DP/RIS | 1.325 | 86 | 13 | 77 | LAMINAR | 0 | 13 | 0.2 |
| TOTAL VOLUME | | 450 | | | | TOTAL PRESSURE DROP | | 16.8 |

LAG: 25.3 MINUTES 1898 STROKES #1 AND 1882 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 913.4 | HHP | 398 | IMPACT FORCE | 1228 |
| % SURFACE PRESSURE | 30.4 | HHP/sqin | 3.37 | JET VELOCITY | 98 |

PRESSURE BREAKDOWN:

| | | | |
|---|---|---|---|
| SURFACE | 62.6 | | |
| STRING | 803.8 | | |
| BIT | 913.4 | | |
| ANNULUS | 16.8 | | |
| TOTAL | 1796.5 | PUMP PRESSURE 3000.0 | % DIFFERENCE 40.1 |

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 9.90 | HYDROSTATIC PRESSURE | 1689.0 |
| CIRCULATING: | ECD | 10.00 | CIRCULATING PRESSURE | 1705.7 |
| PULLING OUT: | TRIP MARGIN | 0.20 | ESTIMATED SWAB | 33.6 |
| | EFFECTIVE MUD WEIGHT | 9.70 | BOTTOM HOLE PRESSURE | 1655.4 |

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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 1100.0 AND TVD 1100.0

SPM 1 71 SPM 2 72 FLOW RATE 717

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| DC/OH | 0.274 | 40 | 62 | 105 | LAMINAR | 0 | 62 | 5.6 |
| HWDP/OH | 0.398 | 33 | 43 | 92 | LAMINAR | 0 | 43 | 1.2 |
| DP/OH | 0.398 | 29 | 43 | 92 | LAMINAR | 0 | 43 | 1.0 |
| DP/CSG | 0.411 | 303 | 41 | 91 | LAMINAR | 0 | 41 | 9.9 |
| DP/RIS | 1.325 | 86 | 13 | 76 | LAMINAR | 0 | 13 | 0.1 |
| TOTAL VOLUME | | 490 | | | | TOTAL PRESSURE DROP | | 17.9 |

LAG: 28.7 MINUTES 2051 STROKES #1 AND 2064 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 860.0 | HHP | 360 | IMPACT FORCE | 1156 |
| % SURFACE PRESSURE | 28.7 | HHP/sqin | 3.05 | JET VELOCITY | 94 |

PRESSURE BREAKDOWN:

| | | | | | |
|---|---|---|---|---|---|
| SURFACE | 59.1 | | | | |
| STRING | 793.9 | | | | |
| BIT | 860.0 | | | | |
| ANNULUS | 17.9 | | | | |
| TOTAL | 1730.9 | PUMP PRESSURE | 3000.0 | % DIFFERENCE | 42.3 |

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 10.10 | HYDROSTATIC PRESSURE | 1895.4 |
| CIRCULATING: | ECD | 10.20 | CIRCULATING PRESSURE | 1913.3 |
| PULLING OUT: | TRIP MARGIN | 0.19 | ESTIMATED SWAB | 35.7 |
| | EFFECTIVE MUD WEIGHT | 9.91 | BOTTOM HOLE PRESSURE | 1859.7 |

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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 1153.0 AND TVD 1153.0

SPM 1 29 SPM 2 0 FLOW RATE 144

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| DC/OH | 0.107 | 1 | 32 | 123 | LAMINAR | 0 | 32 | 0.7 |
| DC/LIN | 0.274 | 32 | 13 | 108 | LAMINAR | 0 | 13 | 2.4 |
| HWDP/LIN | 0.398 | 33 | 9 | 99 | LAMINAR | 0 | 9 | 0.7 |
| DP/LIN | 0.398 | 58 | 9 | 99 | LAMINAR | 0 | 9 | 1.2 |
| DP/CSG | 0.411 | 303 | 8 | 99 | LAMINAR | 0 | 8 | 5.7 |
| DP/RIS | 1.325 | 85 | 3 | 88 | LAMINAR | 0 | 3 | 0.1 |
| TOTAL VOLUME | | 511 | | | TOTAL PRESSURE DROP | | | 10.7 |

LAG: 148.8 MINUTES 4298 STROKES #1 AND 0 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 86.5 | HHP | 7 | IMPACT FORCE | 74 |
| % SURFACE PRESSURE | 14.4 | HHP/sqin | 0.10 | JET VELOCITY | 30 |

PRESSURE BREAKDOWN:

| | | | |
|---|---|---|---|
| SURFACE | 3.0 | | |
| STRING | 39.6 | | |
| BIT | 86.5 | | |
| ANNULUS | 10.7 | | |
| TOTAL | 139.8 | PUMP PRESSURE 599.3 | % DIFFERENCE 76.7 |

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 10.10 | HYDROSTATIC PRESSURE | 1986.7 |
| CIRCULATING: | ECD | 10.15 | CIRCULATING PRESSURE | 1997.4 |
| PULLING OUT: | TRIP MARGIN | 0.11 | ESTIMATED SWAB | 21.3 |
| | EFFECTIVE MUD WEIGHT | 9.99 | BOTTOM HOLE PRESSURE | 1965.4 |

CORE LAB
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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 1160.0 AND TVD 1160.0

SPM 1 44 SPM 2 0 FLOW RATE 222

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| DC/OH | 0.107 | 1 | 49 | 130 | LAMINAR | 0 | 49 | 1.8 |
| DC/LIN | 0.274 | 31 | 19 | 117 | LAMINAR | 0 | 19 | 3.1 |
| HWDP/LIN | 0.398 | 33 | 13 | 109 | LAMINAR | 0 | 13 | 1.0 |
| DP/LIN | 0.398 | 60 | 13 | 109 | LAMINAR | 0 | 13 | 1.8 |
| DP/CSG | 0.411 | 303 | 13 | 109 | LAMINAR | 0 | 13 | 8.2 |
| DP/RIS | 1.325 | 85 | 4 | 98 | LAMINAR | 0 | 4 | 0.2 |
| TOTAL VOLUME | | 513 | | | | TOTAL PRESSURE DROP | | 16.0 |

LAG: 97.2 MINUTES 4312 STROKES #1 AND 0 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 204.4 | HHP | 26 | IMPACT FORCE | 174 |
| % SURFACE PRESSURE | 34.1 | HHP/sqin | 0.35 | JET VELOCITY | 46 |

PRESSURE BREAKDOWN:

| | | | |
|---|---|---|---|
| SURFACE | 6.6 | | |
| STRING | 86.1 | | |
| BIT | 204.4 | | |
| ANNULUS | 16.0 | | |
| TOTAL | 313.0 | PUMP PRESSURE | 600.0 |

% DIFFERENCE 47.8

BOTTOM HOLE PRESSURES:

| | | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 10.10 | HYDROSTATIC PRESSURE | 1998.8 |
| CIRCULATING: | ECD | 10.18 | CIRCULATING PRESSURE | 2014.8 |
| PULLING OUT: | TRIP MARGIN | 0.16 | ESTIMATED SWAB | 31.9 |
| | EFFECTIVE MUD WEIGHT | 9.94 | BOTTOM HOLE PRESSURE | 1966.8 |

CORE LAB
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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 1200.0 AND TVD 1200.0

SPM 1 89 SPM 2 86 FLOW RATE 875

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| DC/OH | 0.274 | 40 | 76 | 117 | LAMINAR | 0 | 76 | 6.9 |
| HWDP/OH | 0.398 | 33 | 52 | 109 | LAMINAR | 0 | 52 | 1.6 |
| DP/OH | 0.398 | 68 | 52 | 109 | LAMINAR | 0 | 52 | 3.4 |
| DP/CSG | 0.411 | 303 | 51 | 109 | LAMINAR | 0 | 50 | 13.9 |
| DP/RIS | 1.325 | 85 | 16 | 98 | LAMINAR | 0 | 16 | 0.3 |
| TOTAL VOLUME | | 529 | | | | TOTAL PRESSURE DROP | | 26.2 |

LAG: 25.4 MINUTES 2267 STROKES #1 AND 2178 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 1280.2 | HHP | 653 | IMPACT FORCE | 1721 |
| % SURFACE PRESSURE | 42.7 | HHP/sqin | 5.54 | JET VELOCITY | 114 |

PRESSURE BREAKDOWN:

| | |
|---|---|
| SURFACE | 78.0 |
| STRING | 1091.8 |
| BIT | 1280.2 |
| ANNULUS | 26.2 |
| TOTAL | 2476.1 |

PUMP PRESSURE 3000.0 % DIFFERENCE 17.5

BOTTOM HOLE PRESSURES:

| | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 10.10 | HYDROSTATIC PRESSURE 2067.7 |
| CIRCULATING: | ECD | 10.23 | CIRCULATING PRESSURE 2093.9 |
| PULLING OUT: | TRIP MARGIN | 0.26 | ESTIMATED SWAB 52.3 |
| | EFFECTIVE MUD WEIGHT | 9.84 | BOTTOM HOLE PRESSURE 2015.4 |

CORE LAB
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HYDRAULICS ANALYSIS PROGRAM

HYDRAULICS CALCULATIONS AT DEPTH 1300.0 AND TVD 1300.0

SPM 1 80 SPM 2 87 FLOW RATE 875

ANNULAR HYDRAULICS:

| ANNULUS TYPE | VOL/ UNIT | VOL | ANN VEL | CRIT VEL | TYPE OF FLOW | SLIP VEL | ASCEND VEL | PRESSURE DROP |
|---|---|---|---|---|---|---|---|---|
| DC/OH | 0.274 | 40 | 76 | 117 | LAMINAR | 0 | 76 | 6.9 |
| HWDP/OH | 0.398 | 33 | 52 | 109 | LAMINAR | 0 | 52 | 1.6 |
| DP/OH | 0.398 | 108 | 52 | 109 | LAMINAR | 0 | 52 | 5.4 |
| DP/CSG | 0.411 | 303 | 51 | 109 | LAMINAR | 0 | 50 | 13.9 |
| DP/RIS | 1.325 | 85 | 16 | 98 | LAMINAR | 0 | 16 | 0.3 |

TOTAL VOLUME 569 TOTAL PRESSURE DROP 28.1

LAG: 27.3 MINUTES 2404 STROKES #1 AND 2376 STROKES #2

BIT HYDRAULICS:

| | | | | | |
|---|---|---|---|---|---|
| PRESSURE DROP | 1280.3 | HHP | 653 | IMPACT FORCE | 1722 |
| % SURFACE PRESSURE | 42.7 | HHP/sqin | 5.54 | JET VELOCITY | 114 |

PRESSURE BREAKDOWN:

| | |
|---|---|
| SURFACE | 78.0 |
| STRING | 1136.9 |
| BIT | 1280.3 |
| ANNULUS | 28.1 |
| TOTAL | 2523.4 |

PUMP PRESSURE 3000.0 % DIFFERENCE 15.9

BOTTOM HOLE PRESSURES:

| | DENSITY UNITS | | PRESSURE UNITS |
|---|---|---|---|
| NOT CIRCULATING: | MUD WEIGHT | 10.10 | HYDROSTATIC PRESSURE 2240.0 |
| CIRCULATING: | ECD | 10.23 | CIRCULATING PRESSURE 2268.2 |
| PULLING OUT: | TRIP MARGIN | 0.25 | ESTIMATED SWAB 56.3 |
| | EFFECTIVE MUD WEIGHT | 9.85 | BOTTOM HOLE PRESSURE 2183.8 |

## (c). COMPUTER DATA LISTING : LIST A

INTERVAL . . . . . All depth records (data not averaged)

DEPTH. . . . . Well depth, in metres

ROP. . . . . Rate of penetration, in metres/hour

WOB. . . . . Weight-on-bit, in thousands of pounds

RPM. . . . . Rotary speed, in revolutions per minute

MW . . . . . Mud weight in, in pounds per gallon

'dc' . . . . . Calculated 'd' exponent, corrected for variations in mud weight in, using a correction factor of 10 ppg.

HOURS. . . . . Cumulative bit hours. The number of hours that the bit has actually been on bottom, recorded in decimal hours.

TURNS. . . . . Cumulative bit turns. The number of turns made by the bit, while actually on bottom

ICOST. . . . . Incremental cost per metre, calculated from the rate of penetration, in Australian dollars.

CCOST. . . . . Cumulative cost per metre, calculated from the drilling time, in A dollars.

PP . . . . . Pore pressure gradient, in equivalent pounds per gallon. The pressure exerted by the fluid in the pore spaces of the formation.

FG . . . . . Fracture gradient, in equivalent pounds per gallon. The pressure required to fracture the formation, calculated by the DRILL program using Eaton's equation.

It is dependent on the pore pressure, the overburden gradient and the matrix stress. this value may be modified by leak-off information.

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 1 | IADC CODE | 111 | INTERVAL | 211.0- 815.0 |
| R1 | | SIZE | 17.500 | NOZZLES | 18 18 18 |
| COST | 0.00 | TRIP TIME | 2.2 | BIT RUN | 604.0 |
| TOTAL HOURS | 8.61 | TOTAL TURNS | 51664 | CONDITION | T2 B1 G0.000 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 220.0 | 110.0 | 10.0 | 100 | 8.7 | 0.65 | 0.08 | 491 | 33.20 | 925.91 | 8.4 | 14.5 |
| 231.0 | 115.0 | 10.0 | 100 | 8.7 | 0.64 | 0.18 | 1065 | 31.76 | 434.13 | 8.4 | 14.6 |
| 242.0 | 110.0 | 11.0 | 100 | 8.7 | 0.66 | 0.28 | 1665 | 33.20 | 291.86 | 8.4 | 14.6 |
| 250.0 | 110.0 | 9.7 | 100 | 8.7 | 0.64 | 0.35 | 2101 | 33.20 | 238.80 | 8.4 | 14.7 |
| 259.2 | 112.0 | 9.7 | 100 | 8.7 | 0.64 | 0.43 | 2594 | 32.61 | 199.45 | 8.4 | 14.7 |
| 268.8 | 122.0 | 9.7 | 100 | 8.7 | 0.62 | 0.51 | 3066 | 29.93 | 171.29 | 8.4 | 14.7 |
| 270.0 | 122.0 | 9.7 | 100 | 8.7 | 0.62 | 0.52 | 3125 | 29.93 | 168.42 | 8.4 | 14.7 |
| 271.6 | 93.0 | 11.0 | 100 | 8.7 | 0.70 | 0.54 | 3228 | 39.27 | 165.01 | 8.4 | 14.8 |
| 281.3 | 110.0 | 11.0 | 100 | 8.7 | 0.66 | 0.63 | 3758 | 33.20 | 146.82 | 8.4 | 14.8 |
| 291.0 | 110.0 | 11.1 | 100 | 8.7 | 0.66 | 0.71 | 4287 | 33.20 | 133.04 | 8.4 | 14.8 |
| 300.7 | 145.0 | 11.1 | 100 | 8.7 | 0.60 | 0.78 | 4688 | 25.19 | 121.38 | 8.4 | 14.9 |
| 307.2 | 142.0 | 11.1 | 100 | 8.7 | 0.60 | 0.83 | 4963 | 25.72 | 114.92 | 8.4 | 14.9 |
| 316.8 | 105.0 | 10.0 | 100 | 8.7 | 0.66 | 0.92 | 5511 | 34.78 | 107.65 | 8.4 | 14.9 |
| 326.4 | 145.0 | 14.0 | 100 | 8.7 | 0.63 | 0.98 | 5908 | 25.19 | 100.79 | 8.4 | 15.0 |
| 336.0 | 140.0 | 15.0 | 100 | 8.7 | 0.65 | 1.05 | 6320 | 26.09 | 95.05 | 8.4 | 15.0 |
| 343.0 | 151.0 | 15.0 | 100 | 8.7 | 0.63 | 1.10 | 6598 | 24.19 | 91.29 | 8.4 | 15.0 |
| 348.0 | 151.0 | 15.0 | 100 | 8.7 | 0.63 | 1.13 | 6797 | 24.19 | 88.84 | 8.4 | 15.0 |
| 354.0 | 142.0 | 15.0 | 100 | 8.7 | 0.64 | 1.18 | 7050 | 25.72 | 86.19 | 8.4 | 15.1 |
| 355.2 | 142.0 | 15.0 | 100 | 8.7 | 0.64 | 1.18 | 7101 | 25.72 | 85.69 | 8.4 | 15.1 |
| 360.0 | 142.0 | 15.0 | 100 | 8.7 | 0.64 | 1.22 | 7304 | 25.72 | 83.76 | 8.4 | 15.1 |
| 367.5 | 145.0 | 14.5 | 100 | 8.7 | 0.63 | 1.27 | 7614 | 25.19 | 80.95 | 8.4 | 15.1 |
| 377.0 | 142.0 | 12.0 | 100 | 8.7 | 0.61 | 1.34 | 8015 | 25.72 | 77.79 | 8.4 | 15.2 |
| 387.5 | 142.0 | 12.0 | 100 | 8.7 | 0.61 | 1.41 | 8459 | 25.72 | 74.69 | 8.4 | 15.2 |
| 393.6 | 132.0 | 11.0 | 100 | 8.7 | 0.62 | 1.46 | 8736 | 27.67 | 73.12 | 8.4 | 15.2 |
| 403.2 | 172.0 | 14.0 | 100 | 8.7 | 0.58 | 1.51 | 9071 | 21.23 | 70.53 | 8.4 | 15.3 |
| 409.5 | 172.0 | 14.0 | 100 | 8.7 | 0.58 | 1.55 | 9291 | 21.23 | 68.97 | 8.4 | 15.3 |
| 420.0 | 87.0 | 12.0 | 100 | 8.7 | 0.73 | 1.67 | 10015 | 41.98 | 67.61 | 8.4 | 15.3 |
| 430.5 | 145.0 | 12.0 | 100 | 8.7 | 0.61 | 1.74 | 10450 | 25.19 | 65.58 | 8.4 | 15.4 |
| 433.8 | 145.0 | 12.0 | 100 | 8.7 | 0.61 | 1.76 | 10584 | 25.19 | 64.99 | 8.4 | 15.4 |
| 443.0 | 137.0 | 12.0 | 100 | 8.7 | 0.62 | 1.83 | 10989 | 26.66 | 63.46 | 8.4 | 15.4 |
| 453.1 | 112.0 | 12.0 | 100 | 8.7 | 0.67 | 1.92 | 11530 | 32.61 | 62.17 | 8.4 | 15.4 |
| 462.7 | 104.0 | 14.0 | 100 | 8.7 | 0.71 | 2.01 | 12084 | 35.12 | 61.14 | 8.4 | 15.5 |
| 472.3 | 120.0 | 14.0 | 100 | 8.7 | 0.67 | 2.09 | 12564 | 30.43 | 60.01 | 8.4 | 15.5 |
| 481.9 | 61.0 | 14.0 | 100 | 8.7 | 0.84 | 2.25 | 13508 | 59.87 | 60.01 | 8.4 | 15.5 |
| 491.7 | 89.0 | 14.2 | 100 | 8.7 | 0.75 | 2.36 | 14167 | 41.03 | 59.35 | 8.4 | 15.6 |
| 501.0 | 168.0 | 12.0 | 100 | 8.7 | 0.57 | 2.42 | 14500 | 21.74 | 58.14 | 8.4 | 15.6 |
| 511.0 | 205.0 | 14.0 | 100 | 8.7 | 0.54 | 2.47 | 14792 | 17.81 | 56.80 | 8.4 | 15.6 |
| 518.4 | 206.0 | 12.0 | 100 | 8.7 | 0.52 | 2.50 | 15009 | 17.73 | 55.85 | 8.4 | 15.7 |
| 530.4 | 193.0 | 12.0 | 100 | 8.7 | 0.54 | 2.56 | 15382 | 18.92 | 54.47 | 8.4 | 15.7 |
| 540.1 | 190.0 | 13.0 | 100 | 8.7 | 0.55 | 2.61 | 15688 | 19.22 | 53.43 | 8.4 | 15.7 |
| 549.7 | 205.0 | 14.0 | 100 | 8.7 | 0.54 | 2.66 | 15969 | 17.81 | 52.42 | 8.4 | 15.8 |
| 559.4 | 193.0 | 14.0 | 100 | 8.7 | 0.56 | 2.71 | 16270 | 18.92 | 51.49 | 8.4 | 15.8 |
| 569.1 | 152.0 | 14.0 | 100 | 8.7 | 0.62 | 2.78 | 16653 | 24.03 | 50.74 | 8.4 | 15.8 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 578.7 | 129.0 | 14.0 | 100 | 8.7 | 0.66 | 2.85 | 17100 | 28.31 | 50.16 | 8.4 | 15.9 |
| 588.2 | 94.0 | 14.0 | 100 | 8.7 | 0.73 | 2.95 | 17706 | 38.85 | 49.87 | 8.4 | 15.9 |
| 597.5 | 78.0 | 14.0 | 100 | 8.7 | 0.78 | 3.07 | 18422 | 46.82 | 49.80 | 8.4 | 15.9 |
| 607.2 | 58.0 | 14.0 | 100 | 8.7 | 0.85 | 3.24 | 19426 | 62.97 | 50.12 | 8.4 | 16.0 |
| 616.9 | 29.0 | 14.0 | 100 | 8.7 | 1.03 | 3.57 | 21431 | 125.93 | 51.93 | 8.4 | 16.0 |
| 625.0 | 48.0 | 14.0 | 100 | 8.7 | 0.90 | 3.74 | 22443 | 76.08 | 52.40 | 8.4 | 16.0 |
| 630.0 | 160.0 | 14.0 | 100 | 8.7 | 0.60 | 3.77 | 22631 | 22.83 | 52.05 | 8.4 | 16.0 |
| 635.0 | 176.0 | 14.0 | 100 | 8.7 | 0.58 | 3.80 | 22801 | 20.75 | 51.68 | 8.4 | 16.0 |
| 640.0 | 278.0 | 14.0 | 100 | 8.7 | 0.47 | 3.82 | 22909 | 13.14 | 51.23 | 8.4 | 16.1 |
| 645.0 | 82.0 | 14.0 | 100 | 8.7 | 0.77 | 3.88 | 23275 | 44.54 | 51.15 | 8.4 | 16.1 |
| 650.0 | 150.0 | 14.0 | 100 | 8.7 | 0.62 | 3.91 | 23475 | 24.35 | 50.85 | 8.4 | 16.1 |
| 655.0 | 58.0 | 14.0 | 100 | 8.7 | 0.85 | 4.00 | 23992 | 62.97 | 50.99 | 8.4 | 16.1 |
| 660.0 | 102.0 | 14.0 | 100 | 8.7 | 0.71 | 4.05 | 24286 | 35.80 | 50.82 | 8.4 | 16.1 |
| 665.0 | 38.0 | 14.0 | 100 | 8.7 | 0.96 | 4.18 | 25076 | 96.11 | 51.32 | 8.4 | 16.1 |
| 670.0 | 26.8 | 14.0 | 100 | 8.7 | 1.04 | 4.37 | 26195 | 136.27 | 52.24 | 8.4 | 16.2 |
| 675.0 | 42.2 | 14.0 | 100 | 8.7 | 0.93 | 4.48 | 26906 | 86.54 | 52.61 | 8.4 | 16.2 |
| 680.0 | 89.8 | 14.0 | 100 | 8.7 | 0.75 | 4.54 | 27240 | 40.67 | 52.48 | 8.4 | 16.2 |
| 685.0 | 101.4 | 14.0 | 100 | 8.7 | 0.72 | 4.59 | 27536 | 36.02 | 52.31 | 8.4 | 16.2 |
| 690.0 | 79.2 | 14.0 | 100 | 8.7 | 0.78 | 4.65 | 27915 | 46.11 | 52.24 | 8.4 | 16.2 |
| 695.0 | 40.0 | 14.0 | 100 | 8.7 | 0.95 | 4.78 | 28665 | 91.30 | 52.65 | 8.4 | 16.2 |
| 700.0 | 30.6 | 14.0 | 100 | 8.7 | 1.01 | 4.94 | 29645 | 119.35 | 53.33 | 8.4 | 16.2 |
| 705.0 | 39.0 | 14.0 | 100 | 8.7 | 0.95 | 5.07 | 30415 | 93.64 | 53.74 | 8.4 | 16.3 |
| 710.0 | 24.6 | 14.0 | 100 | 8.7 | 1.07 | 5.27 | 31634 | 148.46 | 54.69 | 8.4 | 16.3 |
| 715.0 | 44.8 | 14.0 | 100 | 8.7 | 0.92 | 5.38 | 32304 | 81.52 | 54.95 | 8.4 | 16.3 |
| 720.0 | 47.3 | 14.0 | 100 | 8.7 | 0.90 | 5.49 | 32938 | 77.21 | 55.17 | 8.4 | 16.3 |
| 725.0 | 66.4 | 14.0 | 100 | 8.7 | 0.82 | 5.56 | 33390 | 55.00 | 55.17 | 8.4 | 16.3 |
| 730.0 | 30.8 | 14.0 | 100 | 8.7 | 1.01 | 5.73 | 34364 | 118.57 | 55.78 | 8.4 | 16.3 |
| 735.0 | 52.4 | 14.0 | 100 | 8.7 | 0.88 | 5.82 | 34936 | 69.69 | 55.91 | 8.4 | 16.4 |
| 740.0 | 44.4 | 14.0 | 100 | 8.7 | 0.92 | 5.94 | 35612 | 82.25 | 56.16 | 8.4 | 16.4 |
| 745.0 | 44.0 | 14.0 | 100 | 8.7 | 0.92 | 6.05 | 36294 | 83.00 | 56.41 | 8.4 | 16.4 |
| 750.0 | 34.8 | 14.0 | 100 | 8.7 | 0.98 | 6.19 | 37156 | 104.94 | 56.86 | 8.4 | 16.4 |
| 755.0 | 34.2 | 14.0 | 100 | 8.7 | 0.98 | 6.34 | 38033 | 106.78 | 57.32 | 8.4 | 16.4 |
| 760.0 | 28.0 | 14.0 | 100 | 8.7 | 1.03 | 6.52 | 39105 | 130.43 | 57.99 | 8.4 | 16.4 |
| 765.0 | 25.8 | 14.0 | 100 | 8.7 | 1.05 | 6.71 | 40267 | 141.55 | 58.74 | 8.4 | 16.4 |
| 770.0 | 26.6 | 14.0 | 100 | 8.7 | 1.05 | 6.90 | 41395 | 137.29 | 59.45 | 8.4 | 16.5 |
| 775.0 | 26.6 | 14.0 | 100 | 9.0 | 1.01 | 7.09 | 42523 | 137.29 | 60.14 | 8.4 | 16.5 |
| 780.0 | 24.6 | 14.0 | 100 | 9.0 | 1.03 | 7.29 | 43742 | 148.46 | 60.91 | 8.4 | 16.5 |
| 785.0 | 30.0 | 14.0 | 100 | 9.0 | 0.98 | 7.46 | 44742 | 121.73 | 61.44 | 8.4 | 16.5 |
| 790.0 | 27.9 | 14.0 | 100 | 9.0 | 1.00 | 7.64 | 45818 | 130.90 | 62.04 | 8.4 | 16.5 |
| 795.0 | 30.6 | 14.0 | 100 | 9.0 | 0.98 | 7.80 | 46798 | 119.35 | 62.53 | 8.4 | 16.5 |
| 800.0 | 19.9 | 14.0 | 100 | 9.0 | 1.08 | 8.05 | 48306 | 183.52 | 63.56 | 8.4 | 16.5 |
| 805.0 | 28.2 | 14.0 | 100 | 9.0 | 1.00 | 8.23 | 49370 | 129.50 | 64.11 | 8.4 | 16.6 |
| 810.0 | 25.0 | 14.0 | 100 | 9.0 | 1.03 | 8.43 | 50570 | 146.08 | 64.80 | 8.4 | 16.6 |
| 815.0 | 27.4 | 14.0 | 100 | 9.0 | 1.00 | 8.61 | 51664 | 133.28 | 65.37 | 8.4 | 16.6 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 116 | INTERVAL | 815.0- 1146.0 |
| STC J1 | | SIZE | 12.250 | NOZZLES | 18 18 18 |
| COST | 2566.00 | TRIP TIME | 4.5 | BIT RUN | 331.0 |
| TOTAL HOURS | 11.81 | TOTAL TURNS | 71526 | CONDITION | T3 B3 G0.125 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 846.0 | 39.0 | 35.0 | 100 | 8.8 | 1.30 | 0.79 | 4769 | 93.64 | 706.54 | 8.4 | 16.7 |
| 848.0 | 38.7 | 35.0 | 100 | 8.8 | 1.30 | 0.85 | 5079 | 94.37 | 669.44 | 8.4 | 16.7 |
| 850.0 | 29.3 | 35.0 | 100 | 8.8 | 1.39 | 0.91 | 5489 | 124.64 | 638.31 | 8.4 | 16.7 |
| 852.0 | 19.7 | 35.0 | 100 | 8.8 | 1.53 | 1.02 | 6098 | 185.38 | 613.83 | 8.4 | 16.7 |
| 854.0 | 25.3 | 35.0 | 100 | 8.8 | 1.44 | 1.10 | 6572 | 144.35 | 589.75 | 8.4 | 16.7 |
| 856.0 | 34.3 | 35.0 | 100 | 8.8 | 1.34 | 1.15 | 6922 | 106.47 | 566.18 | 8.4 | 16.7 |
| 858.0 | 44.0 | 35.0 | 100 | 8.8 | 1.26 | 1.20 | 7195 | 83.00 | 543.70 | 8.4 | 16.7 |
| 860.0 | 24.0 | 35.0 | 100 | 8.8 | 1.46 | 1.28 | 7695 | 152.17 | 526.30 | 8.4 | 16.7 |
| 862.0 | 45.0 | 35.0 | 100 | 8.8 | 1.25 | 1.33 | 7962 | 81.16 | 507.36 | 8.4 | 16.7 |
| 864.0 | 45.0 | 35.0 | 100 | 8.8 | 1.25 | 1.37 | 8228 | 81.16 | 489.96 | 8.4 | 16.7 |
| 866.0 | 32.0 | 35.0 | 100 | 8.8 | 1.36 | 1.43 | 8603 | 114.13 | 475.23 | 8.4 | 16.7 |
| 868.0 | 25.3 | 35.0 | 100 | 8.8 | 1.44 | 1.51 | 9078 | 144.35 | 462.74 | 8.4 | 16.7 |
| 870.0 | 22.2 | 35.0 | 100 | 8.8 | 1.49 | 1.60 | 9618 | 164.50 | 451.89 | 8.4 | 16.7 |
| 872.0 | 20.0 | 35.0 | 100 | 8.8 | 1.52 | 1.70 | 10218 | 182.60 | 442.45 | 8.4 | 16.7 |
| 874.0 | 20.0 | 35.0 | 100 | 8.8 | 1.52 | 1.80 | 10818 | 182.60 | 433.64 | 8.4 | 16.7 |
| 876.0 | 26.0 | 35.0 | 100 | 8.8 | 1.43 | 1.88 | 11280 | 140.46 | 424.02 | 8.4 | 16.8 |
| 878.0 | 25.6 | 35.0 | 100 | 8.8 | 1.44 | 1.96 | 11748 | 142.66 | 415.09 | 8.4 | 16.8 |
| 880.0 | 30.0 | 35.0 | 100 | 8.8 | 1.38 | 2.02 | 12148 | 121.73 | 406.07 | 8.4 | 16.8 |
| 882.0 | 20.5 | 35.0 | 100 | 8.8 | 1.51 | 2.12 | 12734 | 178.15 | 399.26 | 8.4 | 16.8 |
| 884.0 | 25.3 | 35.0 | 100 | 8.8 | 1.44 | 2.20 | 13208 | 144.35 | 391.87 | 8.4 | 16.8 |
| 886.0 | 18.0 | 35.0 | 100 | 8.8 | 1.56 | 2.31 | 13875 | 202.89 | 386.55 | 8.4 | 16.8 |
| 888.0 | 18.0 | 35.0 | 100 | 8.8 | 1.56 | 2.42 | 14541 | 202.89 | 381.52 | 8.4 | 16.8 |
| 890.0 | 30.0 | 35.0 | 100 | 8.8 | 1.38 | 2.49 | 14941 | 121.73 | 374.59 | 8.4 | 16.8 |
| 892.0 | 21.0 | 35.0 | 100 | 8.8 | 1.50 | 2.59 | 15513 | 173.90 | 369.38 | 8.4 | 16.8 |
| 894.0 | 40.0 | 35.0 | 100 | 8.8 | 1.29 | 2.64 | 15813 | 91.30 | 362.34 | 8.4 | 16.8 |
| 898.0 | 29.3 | 35.0 | 100 | 8.8 | 1.39 | 2.77 | 16632 | 124.64 | 350.88 | 8.4 | 16.8 |
| 917.0 | 24.8 | 35.0 | 100 | 8.8 | 1.45 | 3.54 | 21224 | 147.09 | 312.92 | 8.4 | 16.9 |
| 918.0 | 21.2 | 35.0 | 100 | 8.8 | 1.50 | 3.58 | 21507 | 172.46 | 311.56 | 8.4 | 16.9 |
| 919.0 | 16.4 | 34.0 | 92 | 8.8 | 1.55 | 3.65 | 21844 | 223.18 | 310.71 | 8.4 | 16.9 |
| 924.0 | 41.5 | 33.2 | 92 | 8.8 | 1.23 | 3.77 | 22507 | 87.92 | 300.49 | 8.4 | 16.9 |
| 925.0 | 16.7 | 32.1 | 88 | 8.8 | 1.50 | 3.83 | 22823 | 219.12 | 299.75 | 8.4 | 16.9 |
| 926.0 | 27.5 | 34.1 | 92 | 8.8 | 1.38 | 3.86 | 23024 | 132.89 | 298.25 | 8.4 | 16.9 |
| 927.0 | 19.7 | 33.0 | 92 | 8.8 | 1.47 | 3.91 | 23304 | 185.64 | 297.24 | 8.4 | 16.9 |
| 928.0 | 30.5 | 33.4 | 92 | 8.8 | 1.33 | 3.95 | 23485 | 119.70 | 295.67 | 8.4 | 16.9 |
| 929.0 | 12.8 | 34.1 | 98 | 8.8 | 1.65 | 4.02 | 23945 | 285.06 | 295.58 | 8.4 | 16.9 |
| 930.0 | 16.8 | 33.2 | 103 | 8.8 | 1.56 | 4.08 | 24312 | 217.09 | 294.89 | 8.4 | 16.9 |
| 931.0 | 23.8 | 33.0 | 102 | 8.8 | 1.44 | 4.13 | 24570 | 153.18 | 293.67 | 8.4 | 16.9 |
| 932.0 | 36.0 | 33.7 | 102 | 8.8 | 1.32 | 4.15 | 24740 | 101.44 | 292.03 | 8.4 | 16.9 |
| 933.0 | 20.1 | 34.0 | 102 | 8.8 | 1.51 | 4.20 | 25044 | 181.59 | 291.09 | 8.4 | 16.9 |
| 934.0 | 39.1 | 31.5 | 95 | 8.8 | 1.24 | 4.23 | 25190 | 93.33 | 289.43 | 8.4 | 16.9 |
| 935.0 | 43.4 | 28.6 | 102 | 8.8 | 1.20 | 4.25 | 25332 | 84.20 | 287.72 | 8.4 | 16.9 |
| 936.0 | 19.8 | 30.0 | 102 | 8.8 | 1.47 | 4.30 | 25643 | 184.63 | 286.87 | 8.4 | 16.9 |
| 937.0 | 37.9 | 32.8 | 102 | 8.8 | 1.29 | 4.33 | 25805 | 96.37 | 285.31 | 8.4 | 16.9 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 938.0 | 26.7 | 33.4 | 102 | 8.8 | 1.41 | 4.37 | 26035 | 136.95 | 284.10 | 8.4 | 16.9 |
| 939.0 | 34.0 | 32.4 | 102 | 8.8 | 1.32 | 4.40 | 26216 | 107.53 | 282.68 | 8.4 | 16.9 |
| 940.0 | 29.0 | 30.2 | 102 | 8.8 | 1.35 | 4.43 | 26428 | 125.79 | 281.42 | 8.4 | 16.9 |
| 941.0 | 33.0 | 32.8 | 102 | 8.8 | 1.34 | 4.46 | 26614 | 110.57 | 280.07 | 8.4 | 16.9 |
| 942.0 | 26.3 | 32.2 | 102 | 8.8 | 1.40 | 4.50 | 26848 | 138.98 | 278.96 | 8.4 | 16.9 |
| 943.0 | 18.5 | 32.0 | 97 | 8.8 | 1.50 | 4.55 | 27164 | 197.82 | 278.32 | 8.4 | 16.9 |
| 944.0 | 12.7 | 27.7 | 103 | 8.8 | 1.57 | 4.63 | 27648 | 287.09 | 278.39 | 8.4 | 16.9 |
| 945.0 | 36.7 | 32.8 | 103 | 8.8 | 1.30 | 4.66 | 27816 | 99.42 | 277.01 | 8.4 | 16.9 |
| 946.0 | 42.9 | 30.9 | 103 | 8.8 | 1.23 | 4.68 | 27959 | 85.21 | 275.55 | 8.4 | 16.9 |
| 947.0 | 22.1 | 32.2 | 102 | 8.8 | 1.46 | 4.73 | 28237 | 165.35 | 274.71 | 8.4 | 16.9 |
| 948.0 | 21.2 | 32.2 | 103 | 8.8 | 1.47 | 4.77 | 28528 | 172.46 | 273.95 | 8.4 | 16.9 |
| 949.0 | 17.5 | 34.2 | 102 | 8.8 | 1.56 | 4.83 | 28879 | 208.98 | 273.46 | 8.4 | 16.9 |
| 951.0 | 31.6 | 34.9 | 103 | 8.8 | 1.37 | 4.89 | 29269 | 115.65 | 271.14 | 8.4 | 17.0 |
| 954.0 | 22.3 | 35.3 | 102 | 8.8 | 1.49 | 5.03 | 30091 | 163.44 | 268.82 | 8.4 | 17.0 |
| 955.0 | 46.2 | 35.2 | 102 | 8.8 | 1.25 | 5.05 | 30224 | 79.13 | 267.46 | 8.4 | 17.0 |
| 956.0 | 32.4 | 30.4 | 102 | 9.5 | 1.22 | 5.08 | 30413 | 112.60 | 266.36 | 8.4 | 17.0 |
| 957.0 | 33.6 | 33.3 | 102 | 9.9 | 1.19 | 5.11 | 30596 | 108.55 | 265.25 | 8.4 | 17.0 |
| 958.0 | 24.3 | 34.2 | 103 | 9.9 | 1.29 | 5.15 | 30850 | 150.14 | 264.45 | 8.4 | 17.0 |
| 959.0 | 40.0 | 35.0 | 103 | 9.9 | 1.15 | 5.18 | 31003 | 91.30 | 263.24 | 8.4 | 17.0 |
| 960.0 | 34.0 | 34.3 | 103 | 9.9 | 1.20 | 5.21 | 31185 | 107.53 | 262.17 | 8.4 | 17.0 |
| 962.0 | 37.3 | 34.4 | 102 | 9.9 | 1.17 | 5.26 | 31514 | 97.89 | 259.93 | 8.4 | 17.0 |
| 963.0 | 55.4 | 31.6 | 88 | 9.9 | 0.98 | 5.28 | 31609 | 65.94 | 258.62 | 8.4 | 17.0 |
| 965.0 | 35.5 | 33.5 | 102 | 9.9 | 1.17 | 5.33 | 31955 | 102.97 | 256.55 | 8.4 | 17.0 |
| 966.0 | 29.3 | 35.7 | 102 | 9.9 | 1.25 | 5.37 | 32165 | 124.78 | 255.68 | 8.4 | 17.0 |
| 967.0 | 43.4 | 35.0 | 102 | 9.9 | 1.13 | 5.39 | 32306 | 84.20 | 254.55 | 8.4 | 17.0 |
| 968.0 | 32.1 | 34.7 | 103 | 9.9 | 1.21 | 5.42 | 32498 | 113.62 | 253.63 | 8.4 | 17.0 |
| 969.0 | 50.7 | 33.4 | 102 | 9.9 | 1.07 | 5.44 | 32619 | 72.03 | 252.45 | 8.4 | 17.0 |
| 970.0 | 32.4 | 33.6 | 103 | 9.9 | 1.20 | 5.47 | 32809 | 112.60 | 251.54 | 8.4 | 17.0 |
| 971.0 | 37.9 | 35.7 | 102 | 9.9 | 1.17 | 5.50 | 32971 | 96.37 | 250.55 | 8.4 | 17.0 |
| 972.0 | 26.9 | 35.2 | 103 | 9.9 | 1.28 | 5.54 | 33201 | 135.94 | 249.82 | 8.4 | 17.0 |
| 973.0 | 36.4 | 30.2 | 95 | 9.9 | 1.11 | 5.56 | 33358 | 100.43 | 248.87 | 8.4 | 17.0 |
| 974.0 | 53.7 | 35.1 | 102 | 9.9 | 1.07 | 5.58 | 33473 | 67.97 | 247.74 | 8.4 | 17.0 |
| 975.0 | 35.0 | 34.9 | 103 | 9.9 | 1.19 | 5.61 | 33649 | 104.49 | 246.84 | 8.4 | 17.0 |
| 976.0 | 35.6 | 34.4 | 103 | 9.9 | 1.18 | 5.64 | 33822 | 102.46 | 245.94 | 8.4 | 17.0 |
| 977.0 | 20.9 | 35.4 | 103 | 9.9 | 1.35 | 5.69 | 34116 | 174.48 | 245.50 | 8.4 | 17.0 |
| 978.0 | 43.4 | 37.3 | 102 | 9.9 | 1.15 | 5.71 | 34258 | 84.20 | 244.51 | 8.4 | 17.0 |
| 979.0 | 32.7 | 36.0 | 103 | 9.9 | 1.22 | 5.74 | 34446 | 111.59 | 243.70 | 8.4 | 17.0 |
| 980.0 | 22.0 | 35.1 | 103 | 9.9 | 1.33 | 5.79 | 34727 | 166.37 | 243.23 | 8.4 | 17.0 |
| 981.0 | 33.3 | 34.9 | 103 | 9.9 | 1.21 | 5.82 | 34912 | 109.56 | 242.43 | 8.4 | 17.0 |
| 982.0 | 38.3 | 32.8 | 92 | 9.9 | 1.11 | 5.84 | 35055 | 95.36 | 241.55 | 8.4 | 17.0 |
| 983.0 | 42.9 | 32.4 | 102 | 9.9 | 1.11 | 5.87 | 35198 | 85.21 | 240.62 | 8.4 | 17.0 |
| 985.0 | 22.0 | 35.9 | 103 | 9.9 | 1.34 | 5.96 | 35759 | 166.37 | 239.74 | 8.4 | 17.0 |
| 986.0 | 20.6 | 36.5 | 102 | 9.9 | 1.37 | 6.01 | 36058 | 177.53 | 239.38 | 8.4 | 17.0 |
| 987.0 | 25.2 | 36.2 | 103 | 9.9 | 1.30 | 6.05 | 36302 | 145.07 | 238.83 | 8.4 | 17.0 |
| 988.0 | 16.1 | 35.3 | 103 | 9.9 | 1.43 | 6.11 | 36685 | 227.24 | 238.77 | 8.4 | 17.0 |
| 989.0 | 25.7 | 35.9 | 103 | 9.9 | 1.29 | 6.15 | 36925 | 142.02 | 238.21 | 8.4 | 17.1 |
| 990.0 | 16.1 | 35.9 | 102 | 9.9 | 1.43 | 6.21 | 37306 | 226.22 | 238.14 | 8.4 | 17.1 |
| 991.0 | 14.3 | 35.4 | 103 | 9.9 | 1.46 | 6.28 | 37735 | 254.63 | 238.23 | 8.4 | 17.1 |
| 992.0 | 21.2 | 33.6 | 98 | 9.9 | 1.31 | 6.33 | 38012 | 172.46 | 237.86 | 8.4 | 17.1 |
| 993.0 | 30.5 | 37.0 | 102 | 9.9 | 1.25 | 6.36 | 38213 | 119.70 | 237.20 | 8.4 | 17.1 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 994.0 | 50.7 | 36.9 | 102 | 9.9 | 1.10 | 6.38 | 38334 | 72.03 | 236.28 | 8.4 | 17.1 |
| 995.0 | 32.1 | 36.6 | 103 | 9.9 | 1.23 | 6.41 | 38525 | 113.62 | 235.60 | 8.4 | 17.1 |
| 996.0 | 31.3 | 35.1 | 103 | 9.9 | 1.23 | 6.44 | 38722 | 116.66 | 234.94 | 8.4 | 17.1 |
| 997.0 | 30.3 | 34.7 | 102 | 9.9 | 1.23 | 6.47 | 38925 | 120.72 | 234.31 | 8.4 | 17.1 |
| 998.0 | 67.9 | 31.7 | 102 | 9.9 | 0.96 | 6.49 | 39015 | 53.77 | 233.32 | 8.4 | 17.1 |
| 999.0 | 39.6 | 31.3 | 103 | 9.9 | 1.12 | 6.51 | 39171 | 92.31 | 232.56 | 8.4 | 17.1 |
| 1000.0 | 40.0 | 33.5 | 103 | 9.9 | 1.14 | 6.54 | 39324 | 91.30 | 231.79 | 8.4 | 17.1 |
| 1001.0 | 24.7 | 34.4 | 103 | 9.9 | 1.29 | 6.58 | 39574 | 148.11 | 231.34 | 8.4 | 17.1 |
| 1002.0 | 26.3 | 37.8 | 102 | 9.9 | 1.31 | 6.62 | 39808 | 139.12 | 230.85 | 8.4 | 17.1 |
| 1003.0 | 13.5 | 34.2 | 103 | 9.9 | 1.47 | 6.69 | 40263 | 269.84 | 231.06 | 8.4 | 17.1 |
| 1004.0 | 18.4 | 34.5 | 103 | 9.9 | 1.38 | 6.75 | 40599 | 198.83 | 230.89 | 8.4 | 17.1 |
| 1005.0 | 20.7 | 35.1 | 102 | 9.9 | 1.35 | 6.79 | 40895 | 176.51 | 230.60 | 8.4 | 17.1 |
| 1006.0 | 27.5 | 33.5 | 103 | 9.9 | 1.25 | 6.83 | 41120 | 132.89 | 230.09 | 8.4 | 17.1 |
| 1007.0 | 23.8 | 34.0 | 103 | 9.9 | 1.30 | 6.87 | 41378 | 153.18 | 229.69 | 8.4 | 17.1 |
| 1009.0 | 19.2 | 36.6 | 103 | 9.9 | 1.39 | 6.98 | 42019 | 190.21 | 229.28 | 8.4 | 17.1 |
| 1010.0 | 48.6 | 36.5 | 102 | 9.9 | 1.11 | 7.00 | 42145 | 75.07 | 228.49 | 8.4 | 17.1 |
| 1011.0 | 21.1 | 31.4 | 96 | 9.9 | 1.28 | 7.05 | 42420 | 173.47 | 228.21 | 8.4 | 17.1 |
| 1012.0 | 14.2 | 36.4 | 103 | 9.9 | 1.48 | 7.12 | 42852 | 256.65 | 228.36 | 8.4 | 17.1 |
| 1013.0 | 19.8 | 34.5 | 103 | 9.9 | 1.36 | 7.17 | 43164 | 184.63 | 228.13 | 8.4 | 17.1 |
| 1014.0 | 25.0 | 33.1 | 102 | 9.9 | 1.27 | 7.21 | 43410 | 146.08 | 227.72 | 8.4 | 17.1 |
| 1015.0 | 37.1 | 35.2 | 102 | 9.9 | 1.18 | 7.23 | 43575 | 98.40 | 227.08 | 8.4 | 17.1 |
| 1016.0 | 31.9 | 35.6 | 103 | 9.9 | 1.23 | 7.26 | 43768 | 114.63 | 226.52 | 8.4 | 17.1 |
| 1017.0 | 50.0 | 34.7 | 103 | 9.9 | 1.08 | 7.28 | 43892 | 73.04 | 225.76 | 8.4 | 17.1 |
| 1018.0 | 38.7 | 36.6 | 102 | 9.9 | 1.18 | 7.31 | 44050 | 94.34 | 225.11 | 8.4 | 17.1 |
| 1019.0 | 46.2 | 36.9 | 103 | 9.9 | 1.13 | 7.33 | 44184 | 79.13 | 224.39 | 8.4 | 17.1 |
| 1020.0 | 31.9 | 36.3 | 103 | 9.9 | 1.23 | 7.36 | 44377 | 114.63 | 223.86 | 8.4 | 17.1 |
| 1021.0 | 44.4 | 34.4 | 87 | 9.9 | 1.06 | 7.39 | 44494 | 82.17 | 223.17 | 8.4 | 17.1 |
| 1022.0 | 24.5 | 35.6 | 102 | 9.9 | 1.31 | 7.43 | 44745 | 149.12 | 222.81 | 8.4 | 17.1 |
| 1023.0 | 33.6 | 37.4 | 103 | 9.9 | 1.23 | 7.46 | 44928 | 108.55 | 222.26 | 8.4 | 17.1 |
| 1024.0 | 33.6 | 36.4 | 102 | 9.9 | 1.22 | 7.49 | 45110 | 108.55 | 221.72 | 8.4 | 17.1 |
| 1025.0 | 33.0 | 36.4 | 102 | 9.9 | 1.22 | 7.52 | 45297 | 110.57 | 221.19 | 8.4 | 17.1 |
| 1026.0 | 48.6 | 35.9 | 103 | 9.9 | 1.10 | 7.54 | 45423 | 75.07 | 220.50 | 8.4 | 17.1 |
| 1027.0 | 40.0 | 36.3 | 103 | 9.9 | 1.17 | 7.56 | 45577 | 91.30 | 219.89 | 8.4 | 17.1 |
| 1028.0 | 35.6 | 36.7 | 103 | 9.9 | 1.20 | 7.59 | 45750 | 102.46 | 219.34 | 8.4 | 17.1 |
| 1029.0 | 52.9 | 36.3 | 102 | 9.9 | 1.08 | 7.61 | 45866 | 68.98 | 218.63 | 8.4 | 17.2 |
| 1030.0 | 31.9 | 35.6 | 103 | 9.9 | 1.23 | 7.64 | 46059 | 114.63 | 218.15 | 8.4 | 17.2 |
| 1031.0 | 49.3 | 33.5 | 103 | 9.9 | 1.08 | 7.66 | 46185 | 74.05 | 217.48 | 8.4 | 17.2 |
| 1032.0 | 57.1 | 34.9 | 103 | 9.9 | 1.04 | 7.68 | 46292 | 63.91 | 216.78 | 8.4 | 17.2 |
| 1033.0 | 34.0 | 35.9 | 102 | 9.9 | 1.21 | 7.71 | 46473 | 107.53 | 216.27 | 8.4 | 17.2 |
| 1034.0 | 48.0 | 36.8 | 102 | 9.9 | 1.11 | 7.73 | 46602 | 76.08 | 215.63 | 8.4 | 17.2 |
| 1035.0 | 43.4 | 36.5 | 102 | 9.9 | 1.14 | 7.75 | 46743 | 84.20 | 215.04 | 8.4 | 17.2 |
| 1036.0 | 40.0 | 36.8 | 103 | 9.9 | 1.17 | 7.78 | 46897 | 91.30 | 214.48 | 8.4 | 17.2 |
| 1037.0 | 26.9 | 38.1 | 103 | 9.9 | 1.30 | 7.81 | 47126 | 135.94 | 214.12 | 8.4 | 17.2 |
| 1038.0 | 41.4 | 38.3 | 102 | 9.9 | 1.17 | 7.84 | 47275 | 88.26 | 213.56 | 8.4 | 17.2 |
| 1039.0 | 32.1 | 35.6 | 102 | 9.9 | 1.22 | 7.87 | 47466 | 113.62 | 213.11 | 8.4 | 17.2 |
| 1040.0 | 25.5 | 33.5 | 95 | 9.9 | 1.25 | 7.91 | 47690 | 143.04 | 212.80 | 8.4 | 17.2 |
| 1041.0 | 27.3 | 36.6 | 103 | 9.9 | 1.28 | 7.94 | 47915 | 133.91 | 212.45 | 8.4 | 17.2 |
| 1042.0 | 46.8 | 37.6 | 102 | 9.9 | 1.13 | 7.97 | 48047 | 78.11 | 211.86 | 8.4 | 17.2 |
| 1043.0 | 31.6 | 37.7 | 102 | 9.9 | 1.25 | 8.00 | 48241 | 115.65 | 211.44 | 8.4 | 17.2 |
| 1044.0 | 32.7 | 38.8 | 102 | 9.9 | 1.25 | 8.03 | 48429 | 111.59 | 211.00 | 8.4 | 17.2 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1045.0 | 32.4 | 38.6 | 102 | 9.9 | 1.25 | 8.06 | 48618 | 112.60 | 210.57 | 8.4 | 17.2 |
| 1046.0 | 35.3 | 38.7 | 103 | 9.9 | 1.23 | 8.09 | 48793 | 103.47 | 210.11 | 8.4 | 17.2 |
| 1047.0 | 40.0 | 38.2 | 102 | 9.9 | 1.18 | 8.11 | 48946 | 91.30 | 209.60 | 8.4 | 17.2 |
| 1048.0 | 46.2 | 37.2 | 102 | 9.9 | 1.13 | 8.13 | 49079 | 79.13 | 209.04 | 8.4 | 17.2 |
| 1049.0 | 33.3 | 37.4 | 102 | 9.9 | 1.23 | 8.16 | 49263 | 109.56 | 208.61 | 8.4 | 17.2 |
| 1050.0 | 40.9 | 30.4 | 86 | 9.9 | 1.05 | 8.19 | 49390 | 89.27 | 208.11 | 8.4 | 17.2 |
| 1051.0 | 42.9 | 33.5 | 103 | 9.9 | 1.12 | 8.21 | 49533 | 85.21 | 207.58 | 8.4 | 17.2 |
| 1052.0 | 38.7 | 36.7 | 103 | 9.9 | 1.18 | 8.24 | 49692 | 94.34 | 207.11 | 8.4 | 17.2 |
| 1053.0 | 58.1 | 36.7 | 103 | 9.9 | 1.06 | 8.25 | 49798 | 62.90 | 206.50 | 8.4 | 17.2 |
| 1054.0 | 30.8 | 38.0 | 103 | 9.9 | 1.26 | 8.29 | 49998 | 118.69 | 206.13 | 8.4 | 17.2 |
| 1055.0 | 58.1 | 37.4 | 103 | 9.9 | 1.06 | 8.30 | 50104 | 62.90 | 205.54 | 8.4 | 17.2 |
| 1056.0 | 36.4 | 37.8 | 103 | 9.9 | 1.21 | 8.33 | 50274 | 100.43 | 205.10 | 8.4 | 17.2 |
| 1057.0 | 54.5 | 37.4 | 102 | 9.9 | 1.08 | 8.35 | 50387 | 66.95 | 204.53 | 8.4 | 17.2 |
| 1058.0 | 36.7 | 37.6 | 102 | 9.9 | 1.20 | 8.38 | 50554 | 99.42 | 204.10 | 8.4 | 17.2 |
| 1059.0 | 50.0 | 38.1 | 102 | 9.9 | 1.11 | 8.40 | 50677 | 73.04 | 203.56 | 8.4 | 17.2 |
| 1060.0 | 24.5 | 37.2 | 100 | 9.9 | 1.32 | 8.44 | 50923 | 149.12 | 203.34 | 8.4 | 17.2 |
| 1061.0 | 35.6 | 38.4 | 103 | 9.9 | 1.22 | 8.47 | 51096 | 102.46 | 202.93 | 8.4 | 17.2 |
| 1062.0 | 23.2 | 39.6 | 103 | 9.9 | 1.37 | 8.51 | 51362 | 157.24 | 202.74 | 8.4 | 17.2 |
| 1063.0 | 21.6 | 40.4 | 103 | 9.9 | 1.40 | 8.56 | 51647 | 169.41 | 202.61 | 8.4 | 17.2 |
| 1064.0 | 23.8 | 39.6 | 103 | 9.9 | 1.35 | 8.60 | 51906 | 153.18 | 202.41 | 8.4 | 17.2 |
| 1066.0 | 20.3 | 39.0 | 103 | 10.1 | 1.37 | 8.70 | 52514 | 180.06 | 202.23 | 8.4 | 17.2 |
| 1067.0 | 33.0 | 38.9 | 102 | 10.1 | 1.22 | 8.73 | 52700 | 110.57 | 201.87 | 8.4 | 17.2 |
| 1068.0 | 27.3 | 38.1 | 102 | 10.1 | 1.27 | 8.76 | 52925 | 133.91 | 201.60 | 8.4 | 17.2 |
| 1069.0 | 72.0 | 35.5 | 97 | 10.1 | 0.95 | 8.78 | 53006 | 50.72 | 201.01 | 8.4 | 17.2 |
| 1070.0 | 27.5 | 36.6 | 102 | 10.1 | 1.26 | 8.81 | 53230 | 132.89 | 200.74 | 8.4 | 17.3 |
| 1071.0 | 37.9 | 38.2 | 102 | 10.1 | 1.18 | 8.84 | 53392 | 96.37 | 200.33 | 8.4 | 17.3 |
| 1072.0 | 20.5 | 39.1 | 103 | 10.1 | 1.37 | 8.89 | 53693 | 178.54 | 200.25 | 8.4 | 17.3 |
| 1073.0 | 22.9 | 40.1 | 102 | 10.1 | 1.35 | 8.93 | 53960 | 159.27 | 200.09 | 8.4 | 17.3 |
| 1074.0 | 19.3 | 37.6 | 103 | 10.1 | 1.37 | 8.98 | 54280 | 189.70 | 200.05 | 8.4 | 17.3 |
| 1075.0 | 34.6 | 37.0 | 102 | 10.1 | 1.19 | 9.01 | 54457 | 105.50 | 199.68 | 8.4 | 17.3 |
| 1076.0 | 22.8 | 36.3 | 102 | 10.1 | 1.31 | 9.06 | 54727 | 160.28 | 199.53 | 8.4 | 17.3 |
| 1077.0 | 30.8 | 36.5 | 103 | 10.1 | 1.22 | 9.09 | 54927 | 118.69 | 199.22 | 8.4 | 17.3 |
| 1078.0 | 22.1 | 37.4 | 103 | 10.1 | 1.33 | 9.14 | 55206 | 165.35 | 199.10 | 8.4 | 17.3 |
| 1079.0 | 22.2 | 34.4 | 102 | 10.1 | 1.29 | 9.18 | 55482 | 164.34 | 198.96 | 8.4 | 17.3 |
| 1080.0 | 24.5 | 35.1 | 102 | 10.1 | 1.27 | 9.22 | 55733 | 149.12 | 198.78 | 8.4 | 17.3 |
| 1081.0 | 31.6 | 36.3 | 102 | 10.1 | 1.21 | 9.25 | 55927 | 115.65 | 198.46 | 8.4 | 17.3 |
| 1082.0 | 23.4 | 36.4 | 102 | 10.1 | 1.30 | 9.30 | 56190 | 156.22 | 198.30 | 8.4 | 17.3 |
| 1083.0 | 26.3 | 37.0 | 103 | 10.1 | 1.27 | 9.33 | 56425 | 138.98 | 198.08 | 8.4 | 17.3 |
| 1084.0 | 22.1 | 36.7 | 103 | 10.1 | 1.32 | 9.38 | 56703 | 165.35 | 197.96 | 8.4 | 17.3 |
| 1086.0 | 28.6 | 36.2 | 103 | 10.1 | 1.24 | 9.45 | 57134 | 127.82 | 197.44 | 8.4 | 17.3 |
| 1087.0 | 31.0 | 36.2 | 102 | 10.1 | 1.21 | 9.48 | 57331 | 117.68 | 197.15 | 8.4 | 17.3 |
| 1089.0 | 49.1 | 37.2 | 102 | 10.1 | 1.09 | 9.52 | 57580 | 74.39 | 196.25 | 8.4 | 17.3 |
| 1090.0 | 27.1 | 36.8 | 102 | 10.1 | 1.26 | 9.56 | 57808 | 134.92 | 196.03 | 8.4 | 17.3 |
| 1091.0 | 27.7 | 36.4 | 103 | 10.1 | 1.25 | 9.59 | 58030 | 131.88 | 195.80 | 8.4 | 17.3 |
| 1092.0 | 30.0 | 36.8 | 103 | 10.1 | 1.23 | 9.63 | 58235 | 121.73 | 195.53 | 8.4 | 17.3 |
| 1093.0 | 32.7 | 36.6 | 102 | 10.1 | 1.20 | 9.66 | 58423 | 111.59 | 195.23 | 8.4 | 17.3 |
| 1094.0 | 23.4 | 36.3 | 102 | 10.1 | 1.30 | 9.70 | 58686 | 156.22 | 195.09 | 8.4 | 17.3 |
| 1095.0 | 25.7 | 37.1 | 103 | 10.1 | 1.28 | 9.74 | 58925 | 142.02 | 194.90 | 8.4 | 17.3 |
| 1096.0 | 20.3 | 37.4 | 102 | 10.1 | 1.35 | 9.79 | 59228 | 179.56 | 194.85 | 8.4 | 17.3 |
| 1097.0 | 35.3 | 36.7 | 103 | 10.1 | 1.18 | 9.82 | 59402 | 103.47 | 194.52 | 8.4 | 17.3 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1098.0 | 24.8 | 35.4 | 98 | 10.1 | 1.26 | 9.86 | 59639 | 147.09 | 194.35 | 8.4 | 17.3 |
| 1099.0 | 45.0 | 36.0 | 103 | 10.1 | 1.10 | 9.88 | 59776 | 81.16 | 193.96 | 8.4 | 17.3 |
| 1100.0 | 32.7 | 35.3 | 102 | 10.1 | 1.19 | 9.91 | 59964 | 111.59 | 193.67 | 8.4 | 17.3 |
| 1101.0 | 43.9 | 34.9 | 102 | 10.1 | 1.10 | 9.93 | 60104 | 83.18 | 193.28 | 8.4 | 17.3 |
| 1102.0 | 30.5 | 35.7 | 103 | 10.1 | 1.22 | 9.97 | 60306 | 119.70 | 193.02 | 8.4 | 17.3 |
| 1103.0 | 44.4 | 35.6 | 102 | 10.1 | 1.10 | 9.99 | 60444 | 82.17 | 192.64 | 8.4 | 17.3 |
| 1104.0 | 32.1 | 35.5 | 103 | 10.1 | 1.20 | 10.02 | 60635 | 113.62 | 192.37 | 8.4 | 17.3 |
| 1105.0 | 33.6 | 36.0 | 103 | 10.1 | 1.19 | 10.05 | 60818 | 108.55 | 192.08 | 8.4 | 17.3 |
| 1106.0 | 24.3 | 36.9 | 102 | 10.1 | 1.30 | 10.09 | 61071 | 150.14 | 191.93 | 8.4 | 17.3 |
| 1107.0 | 37.1 | 37.3 | 103 | 10.1 | 1.17 | 10.12 | 61237 | 98.40 | 191.61 | 8.4 | 17.3 |
| 1108.0 | 31.0 | 33.6 | 79 | 10.1 | 1.11 | 10.15 | 61389 | 117.68 | 191.36 | 8.4 | 17.3 |
| 1109.0 | 36.4 | 36.5 | 102 | 10.1 | 1.17 | 10.18 | 61558 | 100.43 | 191.05 | 8.4 | 17.3 |
| 1110.0 | 29.8 | 37.3 | 102 | 10.1 | 1.24 | 10.21 | 61765 | 122.75 | 190.82 | 8.4 | 17.3 |
| 1111.0 | 40.4 | 38.2 | 103 | 10.1 | 1.16 | 10.24 | 61917 | 90.29 | 190.48 | 8.4 | 17.4 |
| 1112.0 | 26.3 | 38.7 | 103 | 10.1 | 1.29 | 10.27 | 62151 | 138.98 | 190.31 | 8.4 | 17.4 |
| 1114.0 | 25.0 | 38.8 | 102 | 10.1 | 1.31 | 10.35 | 62643 | 146.08 | 190.01 | 8.4 | 17.4 |
| 1115.0 | 36.0 | 38.5 | 102 | 10.1 | 1.19 | 10.38 | 62813 | 101.44 | 189.71 | 8.4 | 17.4 |
| 1116.0 | 36.7 | 38.1 | 103 | 10.1 | 1.18 | 10.41 | 62981 | 99.42 | 189.41 | 8.4 | 17.4 |
| 1117.0 | 43.4 | 38.2 | 103 | 10.1 | 1.14 | 10.43 | 63123 | 84.20 | 189.07 | 8.4 | 17.4 |
| 1118.0 | 28.8 | 38.0 | 101 | 10.1 | 1.25 | 10.47 | 63333 | 126.81 | 188.86 | 8.4 | 17.4 |
| 1119.0 | 25.2 | 39.4 | 103 | 10.1 | 1.31 | 10.51 | 63577 | 145.07 | 188.72 | 8.4 | 17.4 |
| 1120.0 | 41.9 | 38.9 | 103 | 10.1 | 1.15 | 10.53 | 63725 | 87.24 | 188.38 | 8.4 | 17.4 |
| 1121.0 | 22.9 | 39.4 | 103 | 10.1 | 1.34 | 10.57 | 63993 | 159.27 | 188.29 | 8.4 | 17.4 |
| 1123.0 | 22.3 | 40.1 | 103 | 10.1 | 1.36 | 10.66 | 64544 | 163.44 | 188.13 | 8.4 | 17.4 |
| 1124.0 | 24.2 | 40.8 | 102 | 10.1 | 1.34 | 10.70 | 64799 | 151.15 | 188.01 | 8.4 | 17.4 |
| 1125.0 | 16.5 | 41.4 | 102 | 10.1 | 1.46 | 10.77 | 65171 | 221.15 | 188.12 | 8.4 | 17.4 |
| 1126.0 | 19.0 | 41.3 | 102 | 10.1 | 1.42 | 10.82 | 65493 | 191.73 | 188.13 | 8.4 | 17.4 |
| 1126.8 | 17.5 | 40.9 | 78 | 10.1 | 1.35 | 10.86 | 65707 | 209.23 | 188.18 | 8.4 | 17.4 |
| 1127.0 | 18.0 | 39.7 | 99 | 10.1 | 1.41 | 10.87 | 65774 | 202.89 | 188.19 | 8.4 | 17.4 |
| 1128.0 | 8.1 | 37.6 | 102 | 10.1 | 1.63 | 11.00 | 66532 | 450.41 | 189.03 | 8.4 | 17.4 |
| 1129.0 | 14.8 | 35.4 | 102 | 10.1 | 1.43 | 11.07 | 66949 | 247.52 | 189.21 | 8.4 | 17.4 |
| 1130.0 | 9.0 | 35.5 | 102 | 10.1 | 1.57 | 11.18 | 67630 | 404.76 | 189.90 | 8.4 | 17.4 |
| 1131.0 | 12.1 | 35.7 | 102 | 10.1 | 1.49 | 11.26 | 68139 | 302.30 | 190.25 | 8.4 | 17.4 |
| 1132.0 | 16.9 | 34.4 | 103 | 10.1 | 1.37 | 11.32 | 68503 | 216.08 | 190.34 | 8.4 | 17.4 |
| 1133.0 | 20.1 | 34.5 | 103 | 10.1 | 1.33 | 11.37 | 68809 | 181.59 | 190.31 | 8.4 | 17.4 |
| 1134.0 | 18.8 | 34.4 | 103 | 10.1 | 1.35 | 11.42 | 69137 | 194.77 | 190.32 | 8.4 | 17.4 |
| 1135.0 | 22.8 | 34.5 | 103 | 10.1 | 1.29 | 11.47 | 69407 | 160.28 | 190.23 | 8.4 | 17.4 |
| 1136.0 | 15.9 | 33.7 | 101 | 10.1 | 1.38 | 11.53 | 69790 | 230.28 | 190.35 | 8.4 | 17.4 |
| 1137.0 | 28.1 | 34.5 | 103 | 10.1 | 1.23 | 11.56 | 70010 | 129.85 | 190.17 | 8.4 | 17.4 |
| 1138.0 | 17.3 | 38.4 | 102 | 10.1 | 1.41 | 11.62 | 70365 | 211.00 | 190.23 | 8.4 | 17.4 |
| 1139.0 | 33.6 | 38.0 | 103 | 10.1 | 1.21 | 11.65 | 70548 | 108.55 | 189.98 | 8.4 | 17.4 |
| 1140.0 | 19.8 | 37.6 | 102 | 10.1 | 1.37 | 11.70 | 70859 | 184.63 | 189.96 | 8.4 | 17.4 |
| 1141.0 | 27.7 | 37.8 | 103 | 10.1 | 1.27 | 11.74 | 71081 | 131.88 | 189.78 | 8.4 | 17.4 |
| 1142.0 | 24.0 | 37.8 | 102 | 10.1 | 1.31 | 11.78 | 71337 | 152.17 | 189.67 | 8.4 | 17.4 |
| 1143.0 | 54.5 | 36.6 | 103 | 10.1 | 1.05 | 11.80 | 71450 | 66.95 | 189.29 | 8.4 | 17.4 |
| 1144.0 | 360.0 | 32.6 | 105 | 10.1 | 0.48 | 11.80 | 71468 | 10.14 | 188.75 | 8.5 | 17.4 |
| 1146.0 | 189.5 | 17.7 | 92 | 10.1 | 0.53 | 11.81 | 71526 | 19.27 | 187.73 | 8.5 | 17.4 |
| 1146.1 | 3.3 | 31.6 | 10 | 10.1 | 1.15 | 11.84 | 71544 | 1106 | 188 | 8.5 | 17.4 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 4 | INTERVAL | 1146.0- 1155.0 |
| CHRIS C24 | | SIZE | 9.875 | NOZZLES | 14 14 15 |
| COST | 0.00 | TRIP TIME | 4.5 | BIT RUN | 9.0 |
| TOTAL HOURS | 0.28 | TOTAL TURNS | 1748 | CONDITION | T0 B0 G0.600 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1146.2 | 40.0 | 15.4 | 101 | 10.1 | 0.96 | 0.01 | 30 | 91 | 82261 | 8.5 | 17.4 |
| 1147.0 | 64.0 | 16.4 | 102 | 10.1 | 0.85 | 0.02 | 107 | 57 | 16498 | 8.5 | 17.4 |
| 1147.4 | 60.0 | 16.3 | 105 | 10.1 | 0.87 | 0.02 | 149 | 61 | 11802 | 8.5 | 17.4 |
| 1147.8 | 37.9 | 12.1 | 103 | 10.1 | 0.92 | 0.03 | 214 | 96 | 9200 | 8.5 | 17.4 |
| 1148.2 | 45.0 | 13.4 | 104 | 10.1 | 0.90 | 0.04 | 269 | 81 | 7542 | 8.5 | 17.4 |
| 1148.6 | 31.3 | 17.9 | 102 | 10.1 | 1.06 | 0.06 | 347 | 117 | 6400 | 8.5 | 17.4 |
| 1149.0 | 25.7 | 18.3 | 103 | 10.1 | 1.12 | 0.07 | 443 | 142 | 5566 | 8.5 | 17.4 |
| 1149.4 | 30.6 | 18.0 | 103 | 10.1 | 1.06 | 0.09 | 523 | 119 | 4925 | 8.5 | 17.4 |
| 1149.8 | 25.3 | 17.6 | 102 | 10.1 | 1.11 | 0.10 | 620 | 145 | 4422 | 8.5 | 17.4 |
| 1150.2 | 29.4 | 18.0 | 103 | 10.1 | 1.08 | 0.11 | 704 | 124 | 4012 | 8.5 | 17.4 |
| 1150.6 | 18.0 | 18.3 | 103 | 10.1 | 1.21 | 0.14 | 841 | 203 | 3681 | 8.5 | 17.4 |
| 1150.8 | 34.3 | 18.0 | 103 | 10.1 | 1.04 | 0.14 | 877 | 107 | 3532 | 8.5 | 17.4 |
| 1151.0 | 8.6 | 18.2 | 102 | 10.1 | 1.40 | 0.17 | 1021 | 426 | 3408 | 8.5 | 17.4 |
| 1151.2 | 60.0 | 18.4 | 102 | 10.1 | 0.90 | 0.17 | 1041 | 61 | 3279 | 8.5 | 17.4 |
| 1151.4 | 12.6 | 18.0 | 102 | 10.1 | 1.29 | 0.18 | 1138 | 289 | 3168 | 8.5 | 17.4 |
| 1151.8 | 22.9 | 17.8 | 102 | 10.1 | 1.14 | 0.20 | 1245 | 160 | 2961 | 8.5 | 17.4 |
| 1152.2 | 27.7 | 18.2 | 102 | 10.1 | 1.10 | 0.22 | 1334 | 132 | 2778 | 8.5 | 17.4 |
| 1152.6 | 38.9 | 17.1 | 103 | 10.1 | 0.99 | 0.23 | 1397 | 94 | 2616 | 8.5 | 17.4 |
| 1153.0 | 41.1 | 17.6 | 102 | 10.1 | 0.98 | 0.24 | 1457 | 89 | 2471 | 8.5 | 17.4 |
| 1153.4 | 35.1 | 17.4 | 103 | 10.1 | 1.02 | 0.25 | 1527 | 104 | 2343 | 8.5 | 17.4 |
| 1153.8 | 55.4 | 18.4 | 102 | 10.1 | 0.92 | 0.26 | 1572 | 66 | 2227 | 8.5 | 17.4 |
| 1154.2 | 42.4 | 18.1 | 102 | 10.1 | 0.98 | 0.26 | 1629 | 86 | 2122 | 8.5 | 17.4 |
| 1154.6 | 37.9 | 17.5 | 103 | 10.1 | 1.00 | 0.28 | 1694 | 96 | 2028 | 8.5 | 17.4 |
| 1155.0 | 45.0 | 17.1 | 102 | 10.1 | 0.95 | 0.28 | 1748 | 81 | 1941 | 8.5 | 17.4 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 4 | INTERVAL | 1155.0- 1164.0 |
| CHRIS C24 | | SIZE | 9.875 | NOZZLES | 14 14 15 |
| COST | 0.00 | TRIP TIME | 4.5 | BIT RUN | 9.0 |
| TOTAL HOURS | 4.25 | TOTAL TURNS | 26015 | CONDITION | T0 B0 G0.700 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1155.2 | 1.4 | 27.9 | 102 | 10.1 | 2.11 | 0.44 | 2605 | 2627 | 1963 | 8.5 | 17.4 |
| 1155.4 | 4.4 | 31.2 | 103 | 10.1 | 1.83 | 0.49 | 2885 | 832 | 1938 | 8.5 | 17.5 |
| 1155.6 | 0.6 | 28.7 | 103 | 10.1 | 2.39 | 0.84 | 5022 | 6340 | 2030 | 8.5 | 17.5 |
| 1155.8 | 7.3 | 32.4 | 103 | 10.1 | 1.70 | 0.86 | 5191 | 502 | 1999 | 8.5 | 17.5 |
| 1156.0 | 2.4 | 32.4 | 103 | 10.1 | 2.04 | 0.95 | 5705 | 1522 | 1989 | 8.5 | 17.5 |
| 1156.4 | 26.7 | 31.6 | 102 | 10.1 | 1.29 | 0.96 | 5797 | 137 | 1918 | 8.5 | 17.5 |
| 1156.6 | 18.9 | 34.0 | 102 | 10.1 | 1.43 | 0.97 | 5862 | 193 | 1886 | 8.5 | 17.5 |
| 1156.8 | 1.1 | 30.5 | 103 | 10.1 | 2.23 | 1.15 | 6940 | 3201 | 1910 | 8.5 | 17.5 |
| 1157.0 | 7.6 | 24.2 | 103 | 10.1 | 1.55 | 1.17 | 7103 | 482 | 1884 | 8.5 | 17.5 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1157.2 | 2.5 | 28.3 | 103 | 10.1 | 1.95 | 1.26 | 7604 | 1486 | 1877 | 8.5 | 17.5 |
| 1157.4 | 3.9 | 30.7 | 103 | 10.1 | 1.86 | 1.31 | 7917 | 928 | 1860 | 8.5 | 17.5 |
| 1157.8 | 3.4 | 29.2 | 102 | 10.1 | 1.87 | 1.42 | 8640 | 1075 | 1834 | 8.5 | 17.5 |
| 1158.2 | 2.4 | 30.5 | 103 | 10.1 | 2.00 | 1.59 | 9676 | 1537 | 1824 | 8.5 | 17.5 |
| 1158.4 | 2.9 | 33.9 | 102 | 10.1 | 2.01 | 1.66 | 10101 | 1263 | 1815 | 8.5 | 17.5 |
| 1158.6 | 3.4 | 34.0 | 103 | 10.1 | 1.96 | 1.72 | 10462 | 1070 | 1803 | 8.5 | 17.5 |
| 1158.8 | 2.2 | 33.3 | 102 | 10.1 | 2.08 | 1.81 | 11024 | 1669 | 1801 | 8.5 | 17.5 |
| 1159.0 | 3.7 | 34.8 | 102 | 10.1 | 1.95 | 1.87 | 11353 | 979 | 1788 | 8.5 | 17.5 |
| 1159.2 | 4.0 | 34.4 | 103 | 10.1 | 1.92 | 1.92 | 11663 | 918 | 1775 | 8.5 | 17.5 |
| 1159.4 | 4.7 | 34.9 | 103 | 10.1 | 1.87 | 1.96 | 11923 | 771 | 1760 | 8.5 | 17.5 |
| 1159.8 | 3.0 | 35.6 | 103 | 10.1 | 2.03 | 2.09 | 12755 | 1235 | 1745 | 8.5 | 17.5 |
| 1160.0 | 2.5 | 36.4 | 102 | 10.1 | 2.10 | 2.17 | 13242 | 1446 | 1741 | 8.5 | 17.5 |
| 1160.2 | 3.7 | 37.1 | 102 | 10.1 | 1.99 | 2.23 | 13577 | 994 | 1730 | 8.5 | 17.5 |
| 1160.6 | 2.3 | 38.1 | 102 | 10.1 | 2.15 | 2.40 | 14624 | 1557 | 1725 | 8.5 | 17.5 |
| 1161.0 | 2.7 | 38.6 | 102 | 10.1 | 2.12 | 2.55 | 15538 | 1359 | 1716 | 8.5 | 17.5 |
| 1161.2 | 2.1 | 38.2 | 103 | 10.1 | 2.19 | 2.64 | 16130 | 1755 | 1716 | 8.5 | 17.5 |
| 1161.4 | 2.9 | 39.5 | 103 | 10.1 | 2.11 | 2.71 | 16554 | 1258 | 1710 | 8.5 | 17.5 |
| 1161.6 | 2.7 | 39.9 | 103 | 10.1 | 2.14 | 2.78 | 17004 | 1334 | 1705 | 8.5 | 17.5 |
| 1161.8 | 4.6 | 39.5 | 102 | 10.1 | 1.96 | 2.83 | 17272 | 801 | 1694 | 8.5 | 17.5 |
| 1162.2 | 2.4 | 39.9 | 103 | 10.1 | 2.19 | 3.00 | 18318 | 1552 | 1690 | 8.5 | 17.5 |
| 1162.4 | 1.5 | 40.8 | 102 | 10.1 | 2.34 | 3.13 | 19122 | 2389 | 1699 | 8.5 | 17.5 |
| 1162.6 | 2.0 | 40.7 | 103 | 10.1 | 2.26 | 3.23 | 19741 | 1836 | 1701 | 8.5 | 17.5 |
| 1162.8 | 2.0 | 40.6 | 103 | 10.1 | 2.26 | 3.33 | 20370 | 1867 | 1703 | 8.5 | 17.5 |
| 1163.0 | 3.8 | 40.5 | 102 | 10.1 | 2.04 | 3.38 | 20691 | 959 | 1694 | 8.5 | 17.5 |
| 1163.4 | 1.7 | 40.6 | 103 | 10.1 | 2.31 | 3.62 | 22154 | 2171 | 1705 | 8.5 | 17.5 |
| 1163.6 | 1.4 | 40.8 | 102 | 10.1 | 2.38 | 3.77 | 23040 | 2632 | 1715 | 8.5 | 17.5 |
| 1163.8 | 1.1 | 40.1 | 102 | 10.1 | 2.45 | 3.96 | 24209 | 3474 | 1735 | 8.5 | 17.5 |
| 1164.0 | 0.7 | 41.5 | 102 | 10.1 | 2.62 | 4.25 | 26015 | 5371 | 1776 | 8.5 | 17.5 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 3 | IADC CODE | 517 | INTERVAL | 1164.0- 1321.0 |
| HTC J22 | | SIZE | 12.250 | NOZZLES | 18 18 18 |
| COST | 8520.00 | TRIP TIME | 4.5 | BIT RUN | 157.0 |
| TOTAL HOURS | 5.32 | TOTAL TURNS | 32579 | CONDITION | T2 B1 G0.000 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1165.0 | 7.7 | 7.8 | 103 | 10.1 | 1.12 | 0.13 | 803 | 472 | 25426 | 8.5 | 17.5 |
| 1166.0 | 11.7 | 11.1 | 103 | 10.1 | 1.11 | 0.22 | 1334 | 313 | 12870 | 8.5 | 17.5 |
| 1167.0 | 14.0 | 28.9 | 103 | 10.1 | 1.36 | 0.29 | 1773 | 261 | 8667 | 8.5 | 17.5 |
| 1168.0 | 22.0 | 30.7 | 102 | 10.1 | 1.26 | 0.33 | 2053 | 166 | 6542 | 8.5 | 17.5 |
| 1169.0 | 14.8 | 29.7 | 102 | 10.1 | 1.35 | 0.40 | 2468 | 247 | 5283 | 8.5 | 17.5 |
| 1170.0 | 38.3 | 33.9 | 102 | 10.1 | 1.13 | 0.43 | 2628 | 95 | 4418 | 8.5 | 17.5 |
| 1171.0 | 67.9 | 32.8 | 102 | 10.1 | 0.95 | 0.44 | 2718 | 54 | 3795 | 8.5 | 17.5 |
| 1172.0 | 76.6 | 32.6 | 103 | 10.1 | 0.92 | 0.45 | 2799 | 48 | 3326 | 8.5 | 17.5 |
| 1173.0 | 17.1 | 35.8 | 103 | 10.1 | 1.39 | 0.51 | 3158 | 213 | 2980 | 8.5 | 17.5 |
| 1174.0 | 32.4 | 34.4 | 103 | 10.1 | 1.19 | 0.54 | 3348 | 113 | 2694 | 8.5 | 17.5 |
| 1176.0 | 19.1 | 31.2 | 102 | 10.1 | 1.30 | 0.65 | 3992 | 191 | 2277 | 8.5 | 17.5 |
| 1177.0 | 17.9 | 33.9 | 103 | 10.1 | 1.35 | 0.70 | 4336 | 204 | 2117 | 8.5 | 17.5 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1178.0 | 52.9 | 30.8 | 103 | 10.1 | 1.01 | 0.72 | 4452 | 69 | 1971 | 8.5 | 17.5 |
| 1179.0 | 144.0 | 24.2 | 102 | 10.1 | 0.68 | 0.73 | 4495 | 25 | 1841 | 8.5 | 17.5 |
| 1180.0 | 34.3 | 29.6 | 87 | 10.1 | 1.07 | 0.76 | 4648 | 107 | 1733 | 8.5 | 17.5 |
| 1181.0 | 57.1 | 28.9 | 102 | 10.1 | 0.97 | 0.78 | 4755 | 64 | 1635 | 8.5 | 17.5 |
| 1182.0 | 49.3 | 26.0 | 102 | 10.1 | 0.98 | 0.80 | 4879 | 74 | 1548 | 8.5 | 17.5 |
| 1183.0 | 69.2 | 19.8 | 103 | 10.1 | 0.83 | 0.81 | 4968 | 53 | 1469 | 8.5 | 17.5 |
| 1185.0 | 64.3 | 21.3 | 98 | 10.1 | 0.85 | 0.84 | 5151 | 57 | 1335 | 8.5 | 17.5 |
| 1186.0 | 124.1 | 32.5 | 98 | 10.1 | 0.77 | 0.85 | 5199 | 29 | 1275 | 8.5 | 17.5 |
| 1187.0 | 80.0 | 34.9 | 96 | 10.1 | 0.91 | 0.86 | 5270 | 46 | 1222 | 8.5 | 17.5 |
| 1190.0 | 118.0 | 30.9 | 102 | 10.1 | 0.78 | 0.89 | 5426 | 31 | 1084 | 8.5 | 17.5 |
| 1192.0 | 158.8 | 28.2 | 104 | 10.1 | 0.68 | 0.90 | 5505 | 23 | 1009 | 8.5 | 17.5 |
| 1193.0 | 720.0 | 30.1 | 98 | 10.1 | 0.26 | 0.90 | 5513 | 5.07 | 974.01 | 8.5 | 17.5 |
| 1195.0 | 66.3 | 25.4 | 102 | 10.1 | 0.89 | 0.93 | 5698 | 55.07 | 914.73 | 8.5 | 17.5 |
| 1196.0 | 64.3 | 30.7 | 103 | 10.1 | 0.95 | 0.95 | 5794 | 56.81 | 887.92 | 8.5 | 17.5 |
| 1197.0 | 94.7 | 29.3 | 103 | 10.1 | 0.83 | 0.96 | 5859 | 38.55 | 862.18 | 8.5 | 17.5 |
| 1198.0 | 41.9 | 32.2 | 103 | 10.1 | 1.09 | 0.98 | 6007 | 87.24 | 839.39 | 8.5 | 17.5 |
| 1199.0 | 35.6 | 34.4 | 103 | 10.1 | 1.16 | 1.01 | 6179 | 102.46 | 818.33 | 8.5 | 17.5 |
| 1200.0 | 14.4 | 34.8 | 103 | 10.1 | 1.43 | 1.08 | 6607 | 253.61 | 802.65 | 8.5 | 17.6 |
| 1201.0 | 22.2 | 34.6 | 103 | 10.1 | 1.30 | 1.12 | 6884 | 164.34 | 785.39 | 8.5 | 17.6 |
| 1202.0 | 31.0 | 33.3 | 103 | 10.1 | 1.19 | 1.16 | 7082 | 117.68 | 767.82 | 8.5 | 17.6 |
| 1203.0 | 37.9 | 32.6 | 103 | 10.1 | 1.12 | 1.18 | 7245 | 96.37 | 750.61 | 8.5 | 17.6 |
| 1204.0 | 41.4 | 31.4 | 102 | 10.1 | 1.08 | 1.21 | 7392 | 88.26 | 734.05 | 8.5 | 17.6 |
| 1205.0 | 46.2 | 32.8 | 102 | 10.1 | 1.07 | 1.23 | 7525 | 79.13 | 718.07 | 8.5 | 17.6 |
| 1206.0 | 19.6 | 31.1 | 79 | 10.1 | 1.22 | 1.28 | 7769 | 186.66 | 705.42 | 8.5 | 17.6 |
| 1207.0 | 156.5 | 29.3 | 103 | 10.1 | 0.69 | 1.29 | 7809 | 23.33 | 689.56 | 8.5 | 17.6 |
| 1208.0 | 22.0 | 33.6 | 102 | 10.1 | 1.29 | 1.33 | 8089 | 166.37 | 677.67 | 8.5 | 17.6 |
| 1209.0 | 80.0 | 32.6 | 102 | 10.1 | 0.91 | 1.34 | 8165 | 45.65 | 663.62 | 8.5 | 17.6 |
| 1210.0 | 33.0 | 33.9 | 103 | 10.1 | 1.18 | 1.37 | 8352 | 110.57 | 651.60 | 8.5 | 17.6 |
| 1211.0 | 18.0 | 33.9 | 103 | 10.1 | 1.35 | 1.43 | 8695 | 202.89 | 642.05 | 8.5 | 17.6 |
| 1212.0 | 30.8 | 30.1 | 103 | 10.1 | 1.16 | 1.46 | 8895 | 118.69 | 631.15 | 8.5 | 17.6 |
| 1213.0 | 87.8 | 23.3 | 103 | 10.1 | 0.80 | 1.47 | 8966 | 41.59 | 619.12 | 8.5 | 17.6 |
| 1214.0 | 120.0 | 22.6 | 103 | 10.1 | 0.72 | 1.48 | 9017 | 30.43 | 607.34 | 8.5 | 17.6 |
| 1216.0 | 103.8 | 33.7 | 103 | 10.1 | 0.84 | 1.50 | 9136 | 35.17 | 585.34 | 8.5 | 17.6 |
| 1217.0 | 112.5 | 32.9 | 103 | 10.1 | 0.81 | 1.51 | 9191 | 32.46 | 574.91 | 8.5 | 17.6 |
| 1218.0 | 87.8 | 14.4 | 103 | 10.1 | 0.71 | 1.52 | 9262 | 41.59 | 565.03 | 8.5 | 17.6 |
| 1219.0 | 135.0 | 34.3 | 103 | 10.1 | 0.77 | 1.53 | 9308 | 27.05 | 555.25 | 8.5 | 17.6 |
| 1220.0 | 62.6 | 32.7 | 104 | 10.1 | 0.98 | 1.55 | 9408 | 58.33 | 546.37 | 8.5 | 17.6 |
| 1224.0 | 76.6 | 32.8 | 102 | 10.1 | 0.92 | 1.60 | 9726 | 47.68 | 513.13 | 8.5 | 17.6 |
| 1225.0 | 138.5 | 28.2 | 103 | 10.1 | 0.72 | 1.60 | 9770 | 26.38 | 505.15 | 8.5 | 17.6 |
| 1226.0 | 61.7 | 32.6 | 103 | 10.1 | 0.98 | 1.62 | 9870 | 59.18 | 497.96 | 8.5 | 17.6 |
| 1227.0 | 30.3 | 34.8 | 103 | 10.1 | 1.21 | 1.65 | 10074 | 120.72 | 491.97 | 8.5 | 17.6 |
| 1228.0 | 22.1 | 35.2 | 103 | 10.1 | 1.31 | 1.70 | 10353 | 165.35 | 486.86 | 8.5 | 17.6 |
| 1229.0 | 36.0 | 32.5 | 102 | 10.1 | 1.13 | 1.73 | 10523 | 101.44 | 480.93 | 8.5 | 17.6 |
| 1230.0 | 26.9 | 32.4 | 103 | 10.1 | 1.22 | 1.76 | 10752 | 135.94 | 475.71 | 8.5 | 17.6 |
| 1231.0 | 40.4 | 32.1 | 103 | 10.1 | 1.10 | 1.79 | 10905 | 90.29 | 469.95 | 8.5 | 17.6 |
| 1233.0 | 85.7 | 27.6 | 102 | 10.1 | 0.84 | 1.81 | 11048 | 42.61 | 457.57 | 8.5 | 17.6 |
| 1234.0 | 50.0 | 34.9 | 102 | 10.1 | 1.06 | 1.83 | 11171 | 73.04 | 452.07 | 8.5 | 17.6 |
| 1235.0 | 56.2 | 33.6 | 102 | 10.1 | 1.01 | 1.85 | 11279 | 64.92 | 446.62 | 8.5 | 17.6 |
| 1236.0 | 52.9 | 31.0 | 104 | 10.1 | 1.01 | 1.87 | 11397 | 68.98 | 441.38 | 8.5 | 17.6 |
| 1237.0 | 46.8 | 31.2 | 103 | 10.1 | 1.05 | 1.89 | 11530 | 78.11 | 436.40 | 8.5 | 17.6 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1238.0 | 31.3 | 32.0 | 102 | 10.1 | 1.17 | 1.92 | 11725 | 116.66 | 432.08 | 8.5 | 17.6 |
| 1239.0 | 12.1 | 36.3 | 103 | 10.1 | 1.50 | 2.00 | 12235 | 302.30 | 430.35 | 8.5 | 17.6 |
| 1242.0 | 90.0 | 28.5 | 102 | 10.1 | 0.84 | 2.04 | 12440 | 40.58 | 415.36 | 8.5 | 17.6 |
| 1246.0 | 14.0 | 34.4 | 103 | 10.1 | 1.43 | 2.32 | 14207 | 261.73 | 407.86 | 8.5 | 17.7 |
| 1247.0 | 7.5 | 36.8 | 103 | 10.1 | 1.65 | 2.46 | 15032 | 489.98 | 408.85 | 8.5 | 17.7 |
| 1248.0 | 14.6 | 36.3 | 102 | 10.1 | 1.44 | 2.53 | 15453 | 249.55 | 406.96 | 8.5 | 17.7 |
| 1249.0 | 7.7 | 36.9 | 100 | 10.1 | 1.63 | 2.66 | 16229 | 473.75 | 407.74 | 8.5 | 17.7 |
| 1250.0 | 62.1 | 32.7 | 103 | 10.1 | 0.98 | 2.67 | 16329 | 58.84 | 403.69 | 8.5 | 17.7 |
| 1251.0 | 57.1 | 30.6 | 102 | 10.1 | 0.98 | 2.69 | 16436 | 63.91 | 399.78 | 8.5 | 17.7 |
| 1252.0 | 80.0 | 29.7 | 103 | 10.1 | 0.88 | 2.70 | 16513 | 45.65 | 395.76 | 8.5 | 17.7 |
| 1253.0 | 40.0 | 32.2 | 74 | 10.1 | 1.01 | 2.73 | 16624 | 91.30 | 392.33 | 8.5 | 17.7 |
| 1254.0 | 56.2 | 28.4 | 103 | 10.1 | 0.97 | 2.75 | 16734 | 64.92 | 388.70 | 8.5 | 17.7 |
| 1255.0 | 94.7 | 34.9 | 102 | 10.1 | 0.88 | 2.76 | 16798 | 38.55 | 384.85 | 8.5 | 17.7 |
| 1256.0 | 26.5 | 34.7 | 103 | 10.1 | 1.25 | 2.79 | 17031 | 137.96 | 382.17 | 8.5 | 17.7 |
| 1257.0 | 27.5 | 35.9 | 103 | 10.1 | 1.25 | 2.83 | 17255 | 132.89 | 379.49 | 8.5 | 17.7 |
| 1258.0 | 9.7 | 37.1 | 103 | 10.1 | 1.58 | 2.93 | 17895 | 378.39 | 379.47 | 8.5 | 17.7 |
| 1259.0 | 120.0 | 34.3 | 102 | 10.1 | 0.80 | 2.94 | 17946 | 30.43 | 375.80 | 8.5 | 17.7 |
| 1260.0 | 87.8 | 29.2 | 102 | 10.1 | 0.85 | 2.95 | 18016 | 41.59 | 372.32 | 8.5 | 17.7 |
| 1261.0 | 144.0 | 38.4 | 103 | 10.1 | 0.77 | 2.96 | 18059 | 25.36 | 368.74 | 8.5 | 17.7 |
| 1262.0 | 54.5 | 34.8 | 103 | 10.1 | 1.04 | 2.98 | 18172 | 66.95 | 365.66 | 8.5 | 17.7 |
| 1263.0 | 73.5 | 31.6 | 103 | 10.1 | 0.93 | 2.99 | 18257 | 49.71 | 362.47 | 8.5 | 17.7 |
| 1265.0 | 61.0 | 31.1 | 103 | 10.1 | 0.97 | 3.03 | 18459 | 59.85 | 356.48 | 8.5 | 17.7 |
| 1266.0 | 35.3 | 33.2 | 103 | 10.1 | 1.15 | 3.05 | 18634 | 103.47 | 354.00 | 8.5 | 17.7 |
| 1267.0 | 51.4 | 33.5 | 102 | 10.1 | 1.04 | 3.07 | 18753 | 71.01 | 351.25 | 8.5 | 17.7 |
| 1268.0 | 63.2 | 31.7 | 103 | 10.1 | 0.97 | 3.09 | 18850 | 57.82 | 348.43 | 8.5 | 17.7 |
| 1269.0 | 36.0 | 33.8 | 103 | 10.1 | 1.15 | 3.12 | 19022 | 101.44 | 346.08 | 8.5 | 17.7 |
| 1270.0 | 44.4 | 33.7 | 102 | 10.1 | 1.08 | 3.14 | 19160 | 82.17 | 343.59 | 8.5 | 17.7 |
| 1271.0 | 43.9 | 32.5 | 100 | 10.1 | 1.07 | 3.16 | 19296 | 83.18 | 341.15 | 8.5 | 17.7 |
| 1272.0 | 56.2 | 35.2 | 103 | 10.1 | 1.03 | 3.18 | 19406 | 64.92 | 338.60 | 8.5 | 17.7 |
| 1273.0 | 75.0 | 32.2 | 103 | 10.1 | 0.92 | 3.19 | 19488 | 48.69 | 335.94 | 8.5 | 17.7 |
| 1276.0 | 8.2 | 32.3 | 103 | 10.1 | 1.56 | 3.56 | 21732 | 444.10 | 338.83 | 8.5 | 17.7 |
| 1277.0 | 13.3 | 30.1 | 103 | 10.1 | 1.39 | 3.63 | 22195 | 274.91 | 338.27 | 8.5 | 17.7 |
| 1278.0 | 23.7 | 23.5 | 103 | 10.1 | 1.15 | 3.68 | 22455 | 154.20 | 336.65 | 8.5 | 17.7 |
| 1279.0 | 16.4 | 33.5 | 103 | 10.1 | 1.37 | 3.74 | 22831 | 223.18 | 335.67 | 8.5 | 17.7 |
| 1282.0 | 11.6 | 30.8 | 102 | 10.1 | 1.44 | 4.00 | 24418 | 315.15 | 335.14 | 8.5 | 17.7 |
| 1283.0 | 13.6 | 37.1 | 103 | 10.1 | 1.47 | 4.07 | 24870 | 267.81 | 334.58 | 8.5 | 17.7 |
| 1284.0 | 9.2 | 35.6 | 103 | 10.1 | 1.57 | 4.18 | 25543 | 398.68 | 335.11 | 8.5 | 17.7 |
| 1285.0 | 10.9 | 33.3 | 103 | 10.1 | 1.49 | 4.27 | 26110 | 334.77 | 335.11 | 8.5 | 17.7 |
| 1286.0 | 9.7 | 32.9 | 103 | 10.1 | 1.52 | 4.37 | 26753 | 378.39 | 335.46 | 8.5 | 17.7 |
| 1288.0 | 40.9 | 30.3 | 103 | 10.1 | 1.08 | 4.42 | 27056 | 89.40 | 331.50 | 8.5 | 17.7 |
| 1289.0 | 6.2 | 30.0 | 103 | 10.1 | 1.60 | 4.58 | 28050 | 587.36 | 333.54 | 8.5 | 17.7 |
| 1290.0 | 27.7 | 32.4 | 103 | 10.1 | 1.21 | 4.62 | 28274 | 131.88 | 331.94 | 8.5 | 17.7 |
| 1292.0 | 30.0 | 30.0 | 103 | 10.1 | 1.16 | 4.69 | 28686 | 121.73 | 328.66 | 8.5 | 17.7 |
| 1294.0 | 26.7 | 30.0 | 103 | 10.1 | 1.19 | 4.76 | 29149 | 136.78 | 325.71 | 8.5 | 17.8 |
| 1295.0 | 30.0 | 30.0 | 103 | 10.1 | 1.16 | 4.79 | 29355 | 121.73 | 324.15 | 8.5 | 17.8 |
| 1296.0 | 15.0 | 30.0 | 103 | 10.1 | 1.36 | 4.86 | 29767 | 243.47 | 323.54 | 8.5 | 17.8 |
| 1297.0 | 30.0 | 30.0 | 103 | 10.1 | 1.16 | 4.89 | 29973 | 121.73 | 322.02 | 8.5 | 17.8 |
| 1298.0 | 20.0 | 30.0 | 103 | 10.1 | 1.28 | 4.94 | 30282 | 182.60 | 320.98 | 8.5 | 17.8 |
| 1299.0 | 30.0 | 30.0 | 103 | 10.1 | 1.16 | 4.98 | 30488 | 121.73 | 319.50 | 8.5 | 17.8 |
| 1300.0 | 30.0 | 30.0 | 103 | 10.1 | 1.16 | 5.01 | 30694 | 121.73 | 318.05 | 8.5 | 17.8 |

| DEPTH | ROP | WOB | RPM | MW | "d"c | HOURS | TURNS | ICOST | CCOST | PP | FG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1301.0 | 30.0 | 30.0 | 103 | 10.1 | 1.16 | 5.04 | 30900 | 121.73 | 316.62 | 8.5 | 17.8 |
| 1302.0 | 60.0 | 30.0 | 103 | 10.1 | 0.97 | 5.06 | 31003 | 60.87 | 314.76 | 8.5 | 17.8 |
| 1303.0 | 40.0 | 30.0 | 103 | 10.1 | 1.08 | 5.09 | 31157 | 91.30 | 313.16 | 8.5 | 17.8 |
| 1304.0 | 60.0 | 30.0 | 103 | 10.1 | 0.97 | 5.10 | 31260 | 60.87 | 311.35 | 8.5 | 17.8 |
| 1305.0 | 60.0 | 30.0 | 103 | 10.1 | 0.97 | 5.12 | 31363 | 60.87 | 309.58 | 8.5 | 17.8 |
| 1306.0 | 40.0 | 30.0 | 103 | 10.1 | 1.08 | 5.14 | 31518 | 91.30 | 308.04 | 8.5 | 17.8 |
| 1307.0 | 85.0 | 30.0 | 103 | 10.1 | 0.87 | 5.16 | 31590 | 42.96 | 306.19 | 8.5 | 17.8 |
| 1308.0 | 100.0 | 30.0 | 103 | 10.1 | 0.82 | 5.17 | 31652 | 36.52 | 304.31 | 8.5 | 17.8 |
| 1309.0 | 85.0 | 30.0 | 103 | 10.1 | 0.87 | 5.18 | 31725 | 42.96 | 302.51 | 8.5 | 17.8 |
| 1310.0 | 120.0 | 30.0 | 103 | 10.1 | 0.77 | 5.19 | 31776 | 30.43 | 300.65 | 8.5 | 17.8 |
| 1311.0 | 150.0 | 30.0 | 103 | 10.1 | 0.71 | 5.19 | 31817 | 24.35 | 298.77 | 8.5 | 17.8 |
| 1312.0 | 100.0 | 30.0 | 103 | 10.1 | 0.82 | 5.20 | 31879 | 36.52 | 297.00 | 8.5 | 17.8 |
| 1313.0 | 120.0 | 30.0 | 103 | 10.1 | 0.77 | 5.21 | 31931 | 30.43 | 295.21 | 8.5 | 17.8 |
| 1314.0 | 75.0 | 30.0 | 103 | 10.1 | 0.90 | 5.22 | 32013 | 48.69 | 293.56 | 8.5 | 17.8 |
| 1315.0 | 50.0 | 30.0 | 103 | 10.1 | 1.02 | 5.24 | 32137 | 73.04 | 292.10 | 8.5 | 17.8 |
| 1316.0 | 120.0 | 30.0 | 103 | 10.1 | 0.77 | 5.25 | 32188 | 30.43 | 290.38 | 8.5 | 17.8 |
| 1317.0 | 120.0 | 30.0 | 103 | 10.1 | 0.77 | 5.26 | 32240 | 30.43 | 288.68 | 8.5 | 17.8 |
| 1318.0 | 60.0 | 30.0 | 103 | 10.1 | 0.97 | 5.28 | 32343 | 60.87 | 287.20 | 8.5 | 17.8 |
| 1319.0 | 67.0 | 30.0 | 103 | 10.1 | 0.94 | 5.29 | 32435 | 54.51 | 285.70 | 8.5 | 17.8 |
| 1320.0 | 75.0 | 30.0 | 103 | 10.1 | 0.90 | 5.31 | 32517 | 48.69 | 284.18 | 8.5 | 17.8 |
| 1321.0 | 100.0 | 30.0 | 103 | 10.1 | 0.82 | 5.32 | 32579 | 36.52 | 282.61 | 8.5 | 17.8 |

## (d). COMPUTER DATA LISTING : LIST B

| | |
|---|---|
| INTERVAL . . . . . | 10m averages. |
| DEPTH. . . . . | Well depth, in metres. |
| ROP. . . . . | Rate of penetration, in metres per hour. |
| BIT RUN. . . . . | Depth interval drilled by the bit, in metres. |
| HOURS. . . . . | Cumulative bit hours. The number of hours that the bit has actually been 'on bottom', recorded in decimal hours. |
| TURNS. . . . . | Cumulative bit turns. The number of turns made by the bit, while actually 'on bottom'. |
| TOTAL COST . . . . . | Cumulative bit cost, in A dollars. |
| ICOST. . . . . | Incremental cost per metre, calculated from the drilling time, in A dollars. |
| CCOST. . . . . | Cumulative cost per metre, calculated from the drilling time, in A dollars. |
| IC . . . . . | ICOST minus CCOST, expressed as a positive or negative sign. When the bit becomes worn, (and therefore uneconomic), this should change from negative to positive. |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 1 | IADC CODE | 111 | INTERVAL | 211.0- 815.0 |
| R1 | | SIZE | 17.500 | NOZZLES | 18 18 18 |
| COST | 0.00 | TRIP TIME | 2.2 | BIT RUN | 604.0 |
| TOTAL HOURS | 8.61 | TOTAL TURNS | 51664 | CONDITION | T2 B1 G0.000 |

| DEPTH | ROP | BIT RUN | HOURS | TURNS | TOTAL COST | ICOST | CCOST | I-C |
|---|---|---|---|---|---|---|---|---|
| 220.0 | 110.0 | 9.0 | 0.08 | 491 | 8333.20 | 33.20 | 925.91 | - |
| 250.0 | 111.8 | 39.0 | 0.35 | 2101 | 9313.32 | 32.67 | 238.80 | - |
| 270.0 | 117.2 | 59.0 | 0.52 | 3125 | 9936.60 | 31.16 | 168.42 | - |
| 360.0 | 129.2 | 149.0 | 1.22 | 7304 | 12479.94 | 28.26 | 83.76 | - |
| 420.0 | 132.8 | 209.0 | 1.67 | 10015 | 14130.32 | 27.51 | 67.61 | - |
| 630.0 | 99.9 | 419.0 | 3.77 | 22631 | 21809.08 | 36.57 | 52.05 | - |
| 640.0 | 215.5 | 429.0 | 3.82 | 22909 | 21978.51 | 16.94 | 51.23 | - |
| 650.0 | 106.0 | 439.0 | 3.91 | 23475 | 22322.93 | 34.44 | 50.85 | - |
| 660.0 | 73.9 | 449.0 | 4.05 | 24286 | 22816.78 | 49.38 | 50.82 | - |
| 670.0 | 31.4 | 459.0 | 4.37 | 26195 | 23978.65 | 116.19 | 52.24 | + |
| 680.0 | 57.4 | 469.0 | 4.54 | 27240 | 24614.69 | 63.60 | 52.48 | + |
| 690.0 | 88.9 | 479.0 | 4.65 | 27915 | 25025.32 | 41.06 | 52.24 | - |
| 700.0 | 34.7 | 489.0 | 4.94 | 29645 | 26078.56 | 105.32 | 53.33 | + |
| 710.0 | 30.2 | 499.0 | 5.27 | 31634 | 27289.04 | 121.05 | 54.69 | + |
| 720.0 | 46.0 | 509.0 | 5.49 | 32938 | 28082.67 | 79.36 | 55.17 | + |
| 730.0 | 42.1 | 519.0 | 5.73 | 34364 | 28950.53 | 86.79 | 55.78 | + |
| 740.0 | 48.1 | 529.0 | 5.94 | 35612 | 29710.27 | 75.97 | 56.16 | + |
| 750.0 | 38.9 | 539.0 | 6.19 | 37156 | 30649.98 | 93.97 | 56.86 | + |
| 760.0 | 30.8 | 549.0 | 6.52 | 39105 | 31836.04 | 118.61 | 57.99 | + |
| 770.0 | 26.2 | 559.0 | 6.90 | 41395 | 33230.26 | 139.42 | 59.45 | + |
| 780.0 | 25.6 | 569.0 | 7.29 | 43742 | 34659.00 | 142.87 | 60.91 | + |
| 790.0 | 28.9 | 579.0 | 7.64 | 45818 | 35922.15 | 126.31 | 62.04 | + |
| 800.0 | 24.1 | 589.0 | 8.05 | 48306 | 37436.47 | 151.43 | 63.56 | + |
| 810.0 | 26.5 | 599.0 | 8.43 | 50570 | 38814.38 | 137.79 | 64.80 | + |
| 815.0 | 27.4 | 604.0 | 8.61 | 51664 | 39480.81 | 133.28 | 65.37 | + |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 116 | INTERVAL | 815.0- 1146.0 |
| HTC J1 | | SIZE | 12.250 | NOZZLES | 18 18 18 |
| COST | 2566.00 | TRIP TIME | 4.5 | BIT RUN | 331.0 |
| TOTAL HOURS | 11.81 | TOTAL TURNS | 71526 | CONDITION | T3 B3 G0.125 |

| DEPTH | ROP | BIT RUN | HOURS | TURNS | TOTAL COST | ICOST | CCOST | I-C |
|---|---|---|---|---|---|---|---|---|
| 850.0 | 38.3 | 35.0 | 0.91 | 5489 | 22340.89 | 95.45 | 638.31 | - |
| 860.0 | 27.2 | 45.0 | 1.28 | 7695 | 23683.62 | 134.27 | 526.30 | - |
| 870.0 | 31.2 | 55.0 | 1.60 | 9618 | 24854.20 | 117.06 | 451.89 | - |
| 880.0 | 23.7 | 65.0 | 2.02 | 12148 | 26394.30 | 154.01 | 406.07 | - |
| 890.0 | 21.5 | 75.0 | 2.49 | 14941 | 28094.31 | 170.00 | 374.59 | - |
| 930.0 | 25.1 | 115.0 | 4.08 | 24312 | 33912.82 | 145.46 | 294.89 | - |
| 940.0 | 28.9 | 125.0 | 4.43 | 26428 | 35177.83 | 126.50 | 281.42 | - |
| 960.0 | 25.7 | 145.0 | 5.21 | 31185 | 38014.56 | 141.84 | 262.17 | - |

| DEPTH | ROP | BIT RUN | HOURS | TURNS | TOTAL COST | ICOST | CCOST | I-C |
|---|---|---|---|---|---|---|---|---|
| 970.0 | 37.5 | 155.0 | 5.47 | 32809 | 38989.44 | 97.49 | 251.54 | - |
| 980.0 | 31.9 | 165.0 | 5.79 | 34727 | 40133.73 | 114.43 | 243.23 | - |
| 990.0 | 23.7 | 175.0 | 6.21 | 37306 | 41674.67 | 154.09 | 238.14 | - |
| 1000.0 | 30.3 | 185.0 | 6.54 | 39324 | 42881.86 | 120.72 | 231.79 | - |
| 1010.0 | 21.8 | 195.0 | 7.00 | 42145 | 44555.84 | 167.40 | 228.49 | - |
| 1020.0 | 27.4 | 205.0 | 7.36 | 44377 | 45890.85 | 133.50 | 223.86 | - |
| 1030.0 | 36.1 | 215.0 | 7.64 | 46059 | 46902.25 | 101.14 | 218.15 | - |
| 1040.0 | 37.3 | 225.0 | 7.91 | 47690 | 47880.17 | 97.79 | 212.80 | - |
| 1050.0 | 35.6 | 235.0 | 8.19 | 49390 | 48904.76 | 102.46 | 208.11 | - |
| 1060.0 | 40.0 | 245.0 | 8.44 | 50923 | 49817.76 | 91.30 | 203.34 | - |
| 1070.0 | 26.6 | 255.0 | 8.81 | 53230 | 51188.28 | 137.05 | 200.74 | - |
| 1080.0 | 24.6 | 265.0 | 9.22 | 55733 | 52675.45 | 148.72 | 198.78 | - |
| 1090.0 | 29.6 | 275.0 | 9.56 | 57808 | 53908.68 | 123.32 | 196.03 | - |
| 1100.0 | 28.4 | 285.0 | 9.91 | 59964 | 55194.99 | 128.63 | 193.67 | - |
| 1110.0 | 33.3 | 295.0 | 10.21 | 61765 | 56291.61 | 109.66 | 190.82 | |
| 1120.0 | 31.3 | 305.0 | 10.53 | 63725 | 57457.21 | 116.56 | 188.38 | - |
| 1130.0 | 15.5 | 315.0 | 11.18 | 67630 | 59818.04 | 236.08 | 189.90 | + |
| 1140.0 | 19.0 | 325.0 | 11.70 | 70859 | 61737.37 | 191.93 | 189.96 | + |
| 1146.0 | 54.8 | 331.0 | 11.81 | 71526 | 62137.06 | 66.62 | 187.73 | - |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 4 | INTERVAL | 1146.0- 1155.0 |
| CHRIS C24 | | SIZE | 9.875 | NOZZLES | 14 14 15 |
| COST | 0.00 | TRIP TIME | 4.5 | BIT RUN | 9.0 |
| TOTAL HOURS | 0.28 | TOTAL TURNS | 1748 | CONDITION | T0 B0 G0.600 |

| DEPTH | ROP | BIT RUN | HOURS | TURNS | TOTAL COST | ICOST | CCOST | I-C |
|---|---|---|---|---|---|---|---|---|
| 1155.0 | 28.9 | 9.0 | 0.28 | 1748 | 17583.37 | 126 | 1954 | - |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 4 | INTERVAL | 1155.0- 1164.0 |
| CHRIS C24 | | SIZE | 9.875 | NOZZLES | 14 14 15 |
| COST | 0.00 | TRIP TIME | 4.5 | BIT RUN | 9.0 |
| TOTAL HOURS | 4.25 | TOTAL TURNS | 26015 | CONDITION | T0 B0 G0.700 |

| DEPTH | ROP | BIT RUN | HOURS | TURNS | TOTAL COST | ICOST | CCOST | I-C |
|---|---|---|---|---|---|---|---|---|
| 1160.0 | 2.7 | 14.0 | 2.17 | 13242 | 24368.98 | 1368 | 1741 | - |
| 1164.0 | 1.9 | 18.0 | 4.25 | 26015 | 31959.06 | 1898 | 1776 | + |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 3 | IADC CODE | 517 | INTERVAL | 1164.0- 1321.0 |
| HTC J22 | | SIZE | 12.250 | NOZZLES | 18 18 18 |
| COST | 8520.00 | TRIP TIME | 4.5 | BIT RUN | 157.0 |
| TOTAL HOURS | 5.32 | TOTAL TURNS | 32579 | CONDITION | T2 B1 G0.000 |

| DEPTH | ROP | BIT RUN | HOURS | TURNS | TOTAL COST | ICOST | CCOST | I-C |
|---|---|---|---|---|---|---|---|---|
| 1170.0 | 14.1 | 6.0 | 0.43 | 2628 | 26508.69 | 259 | 4418 | - |
| 1180.0 | 30.1 | 16.0 | 0.76 | 4648 | 27723.13 | 121 | 1733 | - |
| 1190.0 | 77.3 | 26.0 | 0.89 | 5426 | 28195.35 | 47 | 1084 | - |
| 1200.0 | 52.2 | 36.0 | 1.08 | 6607 | 28895.22 | 69.99 | 802.65 | - |
| 1210.0 | 33.9 | 46.0 | 1.37 | 8352 | 29973.58 | 107.84 | 651.60 | - |
| 1220.0 | 58.6 | 56.0 | 1.55 | 9408 | 30596.95 | 62.34 | 546.37 | - |
| 1230.0 | 45.7 | 66.0 | 1.76 | 10752 | 31396.67 | 79.97 | 475.71 | - |
| 1250.0 | 22.0 | 86.0 | 2.67 | 16329 | 34716.95 | 166.01 | 403.69 | - |
| 1260.0 | 35.6 | 96.0 | 2.95 | 18016 | 35742.55 | 102.56 | 372.32 | - |
| 1270.0 | 53.9 | 106.0 | 3.14 | 19160 | 36420.20 | 67.76 | 343.59 | - |
| 1290.0 | 13.5 | 126.0 | 4.62 | 28274 | 41824.74 | 270.23 | 331.94 | - |
| 1300.0 | 25.5 | 136.0 | 5.01 | 30694 | 43254.76 | 143.00 | 318.05 | - |
| 1310.0 | 57.1 | 146.0 | 5.19 | 31776 | 43894.58 | 63.98 | 300.65 | - |
| 1320.0 | 83.4 | 156.0 | 5.31 | 32517 | 44332.55 | 43.80 | 284.18 | - |
| 1321.0 | 100.0 | 157.0 | 5.32 | 32579 | 44369.07 | 36.52 | 282.61 | - |

## (e). COMPUTER DATA LISTING : LIST C

| | |
|---|---|
| INTERVAL . . . . . | 10m averages. |
| DEPTH. . . . . | Well depth, in metres. |
| FLOW RATE. . . . . | Mud flow into the well, in gallons per minute. |
| PSP. . . . . | Pump pressure, in pounds per square inch. |
| PBIT . . . . . | Bit pressure drop, in pounds per square inch. |
| %PSP . . . . . | Percentage of surface pressure dropped at the bit. |
| H.H.P. . . . . | Bit hydraulic horsepower. |
| HHP/SQ IN. . . . . | Bit hydraulic horsepower per square inch of bit diameter. |
| IMPACT FORCE . . . . . | Bit impact force, in foot-pounds per second squared. |
| JET VELOCITY . . . . . | Mud velocity through the bit nozzles, in metres per second. |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 1 | IADC CODE | 111 | INTERVAL | 211.0- 815.0 |
| R1 | | SIZE | 17.500 | NOZZLES | 18 18 18 |
| COST | 0.00 | TRIP TIME | 2.2 | BIT RUN | 604.0 |
| TOTAL HOURS | 8.61 | TOTAL TURNS | 51664 | CONDITION | T2 B1 G0.000 |

| DEPTH | FLOW RATE | PSP | PBIT | %PSP | HHP | HHP/ sqin | IMPACT FORCE | JET VELOCITY |
|---|---|---|---|---|---|---|---|---|
| 220.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 250.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 270.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 360.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 420.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 630.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 640.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 650.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 660.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 670.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 680.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 690.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 700.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 710.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 720.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 730.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 740.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 750.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 760.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 770.0 | 700 | 1500.0 | 705.8 | 47.1 | 288 | 1.20 | 949 | 92 |
| 780.0 | 700 | 1500.0 | 730.2 | 48.7 | 298 | 1.24 | 982 | 92 |
| 790.0 | 700 | 1500.0 | 730.2 | 48.7 | 298 | 1.24 | 982 | 92 |
| 800.0 | 700 | 1500.0 | 730.2 | 48.7 | 298 | 1.24 | 982 | 92 |
| 810.0 | 700 | 1500.0 | 730.2 | 48.7 | 298 | 1.24 | 982 | 92 |
| 815.0 | 700 | 1500.0 | 730.2 | 48.7 | 298 | 1.24 | 982 | 92 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 116 | INTERVAL | 815.0- 1146.0 |
| HTC J1 | | SIZE | 12.250 | NOZZLES | 18 18 18 |
| COST | 2566.00 | TRIP TIME | 4.5 | BIT RUN | 331.0 |
| TOTAL HOURS | 11.81 | TOTAL TURNS | 71526 | CONDITION | T3 B3 G0.125 |

| DEPTH | FLOW RATE | PSP | PBIT | %PSP | HHP | HHP/ sqin | IMPACT FORCE | JET VELOCITY |
|---|---|---|---|---|---|---|---|---|
| 850.0 | 770 | 3000.0 | 863.9 | 28.8 | 388 | 3.29 | 1162 | 101 |
| 860.0 | 770 | 3000.0 | 863.9 | 28.8 | 388 | 3.29 | 1162 | 101 |
| 870.0 | 770 | 3000.0 | 863.9 | 28.8 | 388 | 3.29 | 1162 | 101 |
| 880.0 | 770 | 3000.0 | 863.9 | 28.8 | 388 | 3.29 | 1162 | 101 |
| 890.0 | 770 | 3000.0 | 863.9 | 28.8 | 388 | 3.29 | 1162 | 101 |
| 930.0 | 765 | 3000.0 | 854.0 | 28.5 | 381 | 3.24 | 1148 | 100 |
| 940.0 | 757 | 3000.0 | 834.9 | 27.8 | 369 | 3.13 | 1123 | 99 |
| 960.0 | 744 | 3000.0 | 907.4 | 30.2 | 394 | 3.34 | 1220 | 97 |

| DEPTH | FLOW RATE | PSP | PBIT | %PSP | HHP | HHP/ sqin | IMPACT FORCE | JET VELOCITY |
|---|---|---|---|---|---|---|---|---|
| 970.0 | 746 | 3000.0 | 912.1 | 30.4 | 397 | 3.37 | 1227 | 98 |
| 980.0 | 747 | 3000.0 | 915.1 | 30.5 | 399 | 3.38 | 1231 | 98 |
| 990.0 | 743 | 3000.0 | 906.2 | 30.2 | 393 | 3.33 | 1219 | 97 |
| 1000.0 | 746 | 3000.0 | 913.4 | 30.4 | 398 | 3.37 | 1228 | 98 |
| 1010.0 | 748 | 3000.0 | 917.8 | 30.6 | 401 | 3.40 | 1234 | 98 |
| 1020.0 | 739 | 3000.0 | 896.0 | 29.9 | 386 | 3.28 | 1205 | 97 |
| 1030.0 | 731 | 3000.0 | 876.2 | 29.2 | 374 | 3.17 | 1178 | 96 |
| 1040.0 | 720 | 3000.0 | 850.9 | 28.4 | 358 | 3.03 | 1144 | 94 |
| 1050.0 | 674 | 3000.0 | 745.0 | 24.8 | 293 | 2.49 | 1002 | 88 |
| 1060.0 | 727 | 3000.0 | 867.7 | 28.9 | 368 | 3.12 | 1167 | 95 |
| 1070.0 | 721 | 3000.0 | 871.2 | 29.0 | 367 | 3.11 | 1172 | 94 |
| 1080.0 | 742 | 3000.0 | 922.5 | 30.8 | 400 | 3.39 | 1241 | 97 |
| 1090.0 | 737 | 3000.0 | 908.5 | 30.3 | 391 | 3.31 | 1222 | 96 |
| 1100.0 | 717 | 3000.0 | 860.0 | 28.7 | 360 | 3.05 | 1156 | 94 |
| 1110.0 | 718 | 3000.0 | 863.0 | 28.8 | 362 | 3.07 | 1160 | 94 |
| 1120.0 | 722 | 3000.0 | 871.8 | 29.1 | 367 | 3.11 | 1172 | 94 |
| 1130.0 | 725 | 3000.0 | 879.0 | 29.3 | 372 | 3.15 | 1182 | 95 |
| 1140.0 | 716 | 3000.0 | 857.7 | 28.6 | 358 | 3.04 | 1153 | 94 |
| 1146.0 | 697 | 3000.0 | 813.2 | 27.1 | 331 | 2.81 | 1093 | 91 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 4 | INTERVAL | 1146.0- 1155.0 |
| CHRIS C24 | | SIZE | 9.875 | NOZZLES | 14 14 15 |
| COST | 0.00 | TRIP TIME | 4.5 | BIT RUN | 9.0 |
| TOTAL HOURS | 0.28 | TOTAL TURNS | 1748 | CONDITION | T0 B0 G0.600 |

| DEPTH | FLOW RATE | PSP | PBIT | %PSP | HHP | HHP/ sqin | IMPACT FORCE | JET VELOCITY |
|---|---|---|---|---|---|---|---|---|
| 1155.0 | 145 | 609.7 | 86.9 | 14.3 | 7 | 0.10 | 74 | 30 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 4 | INTERVAL | 1155.0- 1164.0 |
| CHRIS C24 | | SIZE | 9.875 | NOZZLES | 14 14 15 |
| COST | 0.00 | TRIP TIME | 4.5 | BIT RUN | 9.0 |
| TOTAL HOURS | 4.25 | TOTAL TURNS | 26015 | CONDITION | T0 B0 G0.700 |

| DEPTH | FLOW RATE | PSP | PBIT | %PSP | HHP | HHP/ sqin | IMPACT FORCE | JET VELOCITY |
|---|---|---|---|---|---|---|---|---|
| 1160.0 | 222 | 600.0 | 204.4 | 34.1 | 26 | 0.35 | 174 | 46 |
| 1164.0 | 225 | 600.0 | 209.4 | 34.9 | 27 | 0.36 | 179 | 46 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 3 | IADC CODE | 517 | INTERVAL | 1164.0- 1321.0 |
| HTC J22 | | SIZE | 12.250 | NOZZLES | 18 18 18 |
| COST | 8520.00 | TRIP TIME | 4.5 | BIT RUN | 157.0 |
| TOTAL HOURS | 5.32 | TOTAL TURNS | 32579 | CONDITION | T2 B1 G0.000 |

| DEPTH | FLOW RATE | PSP | PBIT | %PSP | HHP | HHP/ sqin | IMPACT FORCE | JET VELOCITY |
|---|---|---|---|---|---|---|---|---|
| 1170.0 | 874 | 3000.0 | 1277.1 | 42.6 | 651 | 5.52 | 1717 | 114 |
| 1180.0 | 819 | 3000.0 | 1122.6 | 37.4 | 536 | 4.55 | 1510 | 107 |
| 1190.0 | 899 | 3000.0 | 1353.6 | 45.1 | 710 | 6.03 | 1820 | 118 |
| 1200.0 | 875 | 3000.0 | 1280.2 | 42.7 | 653 | 5.54 | 1721 | 114 |
| 1210.0 | 876 | 3000.0 | 1283.7 | 42.8 | 656 | 5.57 | 1726 | 115 |
| 1220.0 | 878 | 3000.0 | 1291.6 | 43.1 | 662 | 5.62 | 1737 | 115 |
| 1230.0 | 872 | 3000.0 | 1272.4 | 42.4 | 647 | 5.49 | 1711 | 114 |
| 1250.0 | 874 | 3000.0 | 1278.1 | 42.6 | 652 | 5.53 | 1719 | 114 |
| 1260.0 | 869 | 3000.0 | 1263.2 | 42.1 | 640 | 5.43 | 1699 | 114 |
| 1270.0 | 862 | 3000.0 | 1244.0 | 41.5 | 626 | 5.31 | 1673 | 113 |
| 1290.0 | 862 | 3000.0 | 1244.7 | 41.5 | 626 | 5.31 | 1674 | 113 |
| 1300.0 | 875 | 3000.0 | 1280.3 | 42.7 | 653 | 5.54 | 1722 | 114 |
| 1310.0 | 875 | 3000.0 | 1280.3 | 42.7 | 653 | 5.54 | 1722 | 114 |
| 1320.0 | 875 | 3000.0 | 1280.3 | 42.7 | 653 | 5.54 | 1722 | 114 |
| 1321.0 | 875 | 3000.0 | 1280.3 | 42.7 | 653 | 5.54 | 1722 | 114 |

## (f). COMPUTER DATA LISTING : LIST D

INTERVAL . . . . . 10m averages.

DEPTH . . . . . Well depth, in metres.

SPM1 . . . . . Stroke rate per minute, for Pump no.1

SPM2 . . . . . Stroke rate per minute, for Pump no.2.

FLOW RATE . . . . . Mud flow rate into the well, in gallons per minute.

ANNULAR VELOCITIES : (in metres per minute)

DC/OH - Between drill collars and the open hole.

DC/CSG - Between drill collars and casing.

HW/OH - Between heavyweight drill pipe and the open hole.

HW/CSG - Between heavyweight drill pipe and casing.

DP/OH - Between drill pipe and open hole.

DP/CSG - Between drill pipe and casing.

DP/RIS - Between drill pipe and riser.

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 1 | IADC CODE | 111 | INTERVAL | 211.0- 815.0 |
| R1 | | SIZE | 17.500 | NOZZLES | 18 18 18 |
| COST | 0.00 | TRIP TIME | 2.2 | BIT RUN | 604.0 |
| TOTAL HOURS | 8.61 | TOTAL TURNS | 51664 | CONDITION | T2 B1 G0.000 |

| DEPTH | SPM1 | SPM2 | FLOW RATE | DC/ OH | DC/ CSG | HW/ OH | HW/ CSG | DP/ OH | DP/ CSG | DP/ RIS |
|---|---|---|---|---|---|---|---|---|---|---|
| 220.0 | 70 | 70 | 700 | 22 | 17 | | 15 | | | 13 |
| 250.0 | 70 | 70 | 700 | 22 | 17 | | 15 | | | 13 |
| 270.0 | 70 | 70 | 700 | 22 | 17 | | 15 | | 15 | 13 |
| 360.0 | 70 | 70 | 700 | 22 | | 19 | 15 | | 15 | 13 |
| 420.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 630.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 640.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 650.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 660.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 670.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 680.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 690.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 700.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 710.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 720.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 730.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 740.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 750.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 760.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 770.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 780.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 790.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 800.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 810.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |
| 815.0 | 70 | 70 | 700 | 22 | | 19 | | 19 | 15 | 13 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 116 | INTERVAL | 815.0- 1146.0 |
| HTC J1 | | SIZE | 12.250 | NOZZLES | 18 18 18 |
| COST | 2566.00 | TRIP TIME | 4.5 | BIT RUN | 331.0 |
| TOTAL HOURS | 11.81 | TOTAL TURNS | 71526 | CONDITION | T3 B3 G0.125 |

| DEPTH | SPM1 | SPM2 | FLOW RATE | DC/ OH | DC/ CSG | HW/ OH | HW/ CSG | DP/ OH | DP/ CSG | DP/ RIS |
|---|---|---|---|---|---|---|---|---|---|---|
| 850.0 | 77 | 77 | 770 | 67 | 64 | | 45 | | 45 | 14 |
| 860.0 | 77 | 77 | 770 | 67 | 64 | | 45 | | 45 | 14 |
| 870.0 | 77 | 77 | 770 | 67 | 64 | | 45 | | 45 | 14 |
| 880.0 | 77 | 77 | 770 | 67 | 64 | | 45 | | 45 | 14 |
| 890.0 | 77 | 77 | 770 | 67 | 64 | | 45 | | 45 | 14 |
| 930.0 | 77 | 76 | 765 | 66 | 63 | | 44 | | 44 | 14 |
| 940.0 | 76 | 76 | 757 | 66 | 63 | | 44 | | 44 | 14 |
| 960.0 | 73 | 76 | 744 | 65 | | 44 | 43 | | 43 | 13 |

| DEPTH | SPM1 | SPM2 | FLOW RATE | DC/ OH | DC/ CSG | HW/ OH | HW/ CSG | DP/ OH | DP/ CSG | DP/ RIS |
|---|---|---|---|---|---|---|---|---|---|---|
| 970.0 | 76 | 73 | 746 | 65 | | 45 | 43 | | 43 | 13 |
| 980.0 | 75 | 74 | 747 | 65 | | 45 | 43 | | 43 | 13 |
| 990.0 | 76 | 73 | 743 | 65 | | 44 | 43 | | 43 | 13 |
| 1000.0 | 75 | 74 | 746 | 65 | | 45 | 43 | | 43 | 13 |
| 1010.0 | 74 | 75 | 748 | 65 | | 45 | 43 | | 43 | 13 |
| 1020.0 | 74 | 74 | 739 | 64 | | 44 | 43 | | 43 | 13 |
| 1030.0 | 73 | 73 | 731 | 63 | | 44 | | 44 | 42 | 13 |
| 1040.0 | 76 | 68 | 720 | 63 | | 43 | | 43 | 42 | 13 |
| 1050.0 | 69 | 66 | 674 | 59 | | 40 | | 40 | 39 | 12 |
| 1060.0 | 73 | 73 | 727 | 63 | | 43 | | 43 | 42 | 13 |
| 1070.0 | 77 | 67 | 721 | 63 | | 43 | | 43 | 42 | 13 |
| 1080.0 | 76 | 73 | 742 | 64 | | 44 | | 44 | 43 | 13 |
| 1090.0 | 73 | 74 | 737 | 64 | | 44 | | 44 | 43 | 13 |
| 1100.0 | 71 | 72 | 717 | 62 | | 43 | | 43 | 41 | 13 |
| 1110.0 | 71 | 72 | 718 | 62 | | 43 | | 43 | 42 | 13 |
| 1120.0 | 72 | 73 | 722 | 63 | | 43 | | 43 | 42 | 13 |
| 1130.0 | 73 | 72 | 725 | 63 | | 43 | | 43 | 42 | 13 |
| 1140.0 | 73 | 70 | 716 | 62 | | 43 | | 43 | 41 | 13 |
| 1146.0 | 72 | 68 | 697 | 61 | | 42 | | 42 | 40 | 13 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 4 | INTERVAL | 1146.0- 1155.0 |
| CHRIS C24 | | SIZE | 9.875 | NOZZLES | 14 14 15 |
| COST | 0.00 | TRIP TIME | 4.5 | BIT RUN | 9.0 |
| TOTAL HOURS | 0.28 | TOTAL TURNS | 1748 | CONDITION | T0 B0 G0.600 |

| DEPTH | SPM1 | SPM2 | FLOW RATE | DC/ OH | DC/ CSG | HW/ OH | HW/ CSG | DP/ OH | DP/ CSG | DP/ RIS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1155.0 | 29 | 0 | 145 | 32 | | | | | 8 | 3 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 2 | IADC CODE | 4 | INTERVAL | 1155.0- 1164.0 |
| CHRIS C24 | | SIZE | 9.875 | NOZZLES | 14 14 15 |
| COST | 0.00 | TRIP TIME | 4.5 | BIT RUN | 9.0 |
| TOTAL HOURS | 4.25 | TOTAL TURNS | 26015 | CONDITION | T0 B0 G0.700 |

| DEPTH | SPM1 | SPM2 | FLOW RATE | DC/ OH | DC/ CSG | HW/ OH | HW/ CSG | DP/ OH | DP/ CSG | DP/ RIS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1160.0 | 44 | 0 | 222 | 49 | | | | | 13 | 4 |
| 1164.0 | 45 | 0 | 225 | 50 | | | | | 13 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| BIT NUMBER | 3 | IADC CODE | 517 | INTERVAL | 1164.0- 1321.0 |
| HTC J22 | | SIZE | 12.250 | NOZZLES | 18 18 18 |
| COST | 8520.00 | TRIP TIME | 4.5 | BIT RUN | 157.0 |
| TOTAL HOURS | 5.32 | TOTAL TURNS | 32579 | CONDITION | T2 B1 G0.000 |

| DEPTH | SPM1 | SPM2 | FLOW RATE | DC/ OH | DC/ CSG | HW/ OH | HW/ CSG | DP/ OH | DP/ CSG | DP/ RIS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1170.0 | 87 | 88 | 874 | 76 | | 52 | | 52 | 51 | 16 |
| 1180.0 | 80 | 84 | 819 | 71 | | 49 | | 49 | 47 | 15 |
| 1190.0 | 92 | 88 | 899 | 78 | | 54 | | 54 | 52 | 16 |
| 1200.0 | 89 | 86 | 875 | 76 | | 52 | | 52 | 51 | 16 |
| 1210.0 | 88 | 87 | 876 | 76 | | 52 | | 52 | 51 | 16 |
| 1220.0 | 88 | 88 | 878 | 76 | | 53 | | 53 | 51 | 16 |
| 1230.0 | 88 | 86 | 872 | 76 | | 52 | | 52 | 50 | 16 |
| 1250.0 | 89 | 86 | 874 | 76 | | 52 | | 52 | 51 | 16 |
| 1260.0 | 88 | 86 | 869 | 75 | | 52 | | 52 | 50 | 16 |
| 1270.0 | 87 | 85 | 862 | 75 | | 52 | | 52 | 50 | 15 |
| 1290.0 | 87 | 86 | 862 | 75 | | 52 | | 52 | 50 | 15 |
| 1300.0 | 88 | 87 | 875 | 76 | | 52 | | 52 | 51 | 16 |
| 1310.0 | 88 | 87 | 875 | 76 | | 52 | | 52 | 51 | 16 |
| 1320.0 | 88 | 87 | 875 | 76 | | 52 | | 52 | 51 | 16 |
| 1321.0 | 88 | 87 | 875 | 76 | | 52 | | 52 | 51 | 16 |

PE603595

This is an enclosure indicator page.
The enclosure PE603595 is enclosed within the container PE906248 at this location in this document.

The enclosure PE603595 has the following characteristics:

| | |
|---|---|
| ITEM_BARCODE | = PE603595 |
| CONTAINER_BARCODE | = PE906248 |
| NAME | = Drill Data Log |
| BASIN | = GIPPSLAND |
| PERMIT | = VIC/P1 |
| TYPE | = WELL |
| SUBTYPE | = MUD_LOG |
| DESCRIPTION | = Drill Data Log for Perch-2 containing Rate of Penetration, Mud Gas, Corrected 'd' Exponent |
| REMARKS | = |
| DATE_CREATED | = 28/02/85 |
| DATE_RECEIVED | = 2/04/82 |
| W_NO | = W898 |
| WELL_NAME | = PERCH-2 |
| CONTRACTOR | = CORE LABORATORIES AUSTRALIA LTD |
| CLIENT_OP_CO | = ESSO AUSTRALIA LIMITED |

(Inserted by DNRE - Vic Govt Mines Dept)

PE 603595

# DRILL DATA PLOT

PE603596

This is an enclosure indicator page.
The enclosure PE603596 is enclosed within the container PE906248 at this location in this document.

The enclosure PE603596 has the following characteristics:

| | |
|---|---|
| ITEM_BARCODE | = PE603596 |
| CONTAINER_BARCODE | = PE906248 |
| NAME | = Temperature Log |
| BASIN | = GIPPSLAND |
| PERMIT | = VIC/P1 |
| TYPE | = WELL |
| SUBTYPE | = WELL_LOG |
| DESCRIPTION | = Temperature Log for Perch-2 |
| REMARKS | = |
| DATE_CREATED | = 28/02/85 |
| DATE_RECEIVED | = 2/04/82 |
| W_NO | = W898 |
| WELL_NAME | = PERCH-2 |
| CONTRACTOR | = CORE LABORATORIES AUSTRALIA LTD |
| CLIENT_OP_CO | = ESSO AUSTRALIA LIMITED |

(Inserted by DNRE - Vic Govt Mines Dept)

PE603596

# TEMPERATURE PLOT

PE603597

This is an enclosure indicator page.
The enclosure PE603597 is enclosed within the container PE906248 at this location in this document.

The enclosure PE603597 has the following characteristics:

| | |
|---|---|
| ITEM_BARCODE | = PE603597 |
| CONTAINER_BARCODE | = PE906248 |
| NAME | = Pressure Log |
| BASIN | = GIPPSLAND |
| PERMIT | = VIC/P1 |
| TYPE | = WELL |
| SUBTYPE | = WELL_LOG |
| DESCRIPTION | = Pressure Log for Perch-2 |
| REMARKS | = |
| DATE_CREATED | = 28/02/85 |
| DATE_RECEIVED | = 2/04/82 |
| W_NO | = W898 |
| WELL_NAME | = PERCH-2 |
| CONTRACTOR | = CORE LABORATORIES AUSTRALIA LTD |
| CLIENT_OP_CO | = ESSO AUSTRALIA LIMITED |

(Inserted by DNRE - Vic Govt Mines Dept)

PE603597

# PRESSURE PLOT

PE603598

This is an enclosure indicator page.
The enclosure PE603598 is enclosed within the container PE906248 at this location in this document.

The enclosure PE603598 has the following characteristics:

| | |
|---|---|
| ITEM_BARCODE | = PE603598 |
| CONTAINER_BARCODE | = PE906248 |
| NAME | = Geoplot Log |
| BASIN | = GIPPSLAND |
| PERMIT | = VIC/P1 |
| TYPE | = WELL |
| SUBTYPE | = WELL_LOG |
| DESCRIPTION | = Geoplot Log for Perch-2 containing incremental and cumulative cost data |
| REMARKS | = |
| DATE_CREATED | = 28/02/85 |
| DATE_RECEIVED | = 2/04/82 |
| W_NO | = W898 |
| WELL_NAME | = PERCH-2 |
| CONTRACTOR | = CORE LABORATORIES AUSTRALIA LTD |
| CLIENT_OP_CO | = ESSO AUSTRALIA LIMITED |

(Inserted by DNRE - Vic Govt Mines Dept)

PE603598

# GEOPLOT

PE603599

This is an enclosure indicator page.
The enclosure PE603599 is enclosed within the container PE906248 at this location in this document.

The enclosure PE603599 has the following characteristics:

| | |
|---|---|
| ITEM_BARCODE | = PE603599 |
| CONTAINER_BARCODE | = PE906248 |
| NAME | = Mud Log (Grapholog) |
| BASIN | = GIPPSLAND |
| PERMIT | = VIC/P1 |
| TYPE | = WELL |
| SUBTYPE | = MUD_LOG |
| DESCRIPTION | = Mud Log (Grapholog) for Perch-2 |
| REMARKS | = |
| DATE_CREATED | = 28/02/85 |
| DATE_RECEIVED | = 2/04/82 |
| W_NO | = W898 |
| WELL_NAME | = PERCH-2 |
| CONTRACTOR | = CORE LABORATORIES AUSTRALIA LTD |
| CLIENT_OP_CO | = ESSO AUSTRALIA LIMITED |

(Inserted by DNRE - Vic Govt Mines Dept)

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