

2. WELL HISTORY2.1 GENERAL DATA

Well Name: Murphy 1

CRAE Number: RD90AB1

Well Type: Rank Wildcat

Interest Holders: Pacific Oil & Gas Pty Limited 100%

Permit: EP26 (Curtin Springs), Northern Territory

Operator: Pacific Oil & Gas Pty Limited
826 Whitehorse Road
BOX HILL VIC 3128

Map References: Kulgera (SG53-5) 1:250 000 sheet
Ebenezer (5447) 1:100 000 sheet

Surveyed Loc: Lat: 25° 19' 42.12" S
(AGD 66) Long: 132° 37' 50.03" E

AMG Co-ordinates: 261 496 East
(AMG 66) 7 196 572 North

Seismic Loc: Line M89-107, SP531

Surveyed Elevation: Ground Level: 450.0m
(AHD) Kelly Bushing: 455.6m

Total Depth: Driller: 2882.4m
(KB) Logger: 2884.5m
True Vertical Depth: 2851.2m

Primary Objective: Heavitree Quartzite

Status: Plugged and Abandoned

Well Cost: \$1 834 575

2.2 DRILLING DATA

Well Spudded: 9 November 1990 at 0800 hours

At total Depth: 26 January 1991 at 0545 hours

Rig Released: 28 January 1991 at 2359 hours

Drilling Contractor: Rockdril Contractors P/L
 1 Jijaws Street
 SUMNER PARK QLD 4074

Drilling Rig: Rockdril Rig 22

Rig Details: Cooper 350
 Complete specifications for
 Rockdril Rig 22 can be found
 in Appendix VI(a)

Hole size: 15 inch to 12m
 12½ inch to 201m
 8½ inch to 1626m
 6 inch to 2882m

Casing: 13 3/8 inch at 12m
 9 5/8 inch at 198m
 7 inch at 1624m

2.3 DRILLING SUMMARY

Drilling commenced at 0800 hours 9 November 1990. 15 inch hole was drilled to 12m and 13 3/8 inch conductor was set at this depth and cemented to the cellar floor.

12½ inch hole was air-hammer drilled to 201m. 9 5/8 inch surface casing was set at 198m and cemented to surface. The BOP stack was installed and satisfactorily tested. A leak-off test indicated a high strength shoe (equivalent mud weight in excess of SG. 1.93).

8½ inch hole was air-hammer drilled to 576m. Below 576m water influx necessitated air-rotary drilling. At 714m, because of continued water influx, air drilling was discontinued and the 8½ inch hole was conventionally drilled to 1626m. Logs were recorded and 7 inch intermediate casing was run to 1624m and cemented to approximately 1300m. After adjusting the well head, the BOP stack was reinstalled and satisfactorily tested. A leak-off test indicated a high strength shoe (equivalent mud weight in excess of SG 1.84).

The 8½ inch hole deviated to a maximum of 7° at 814m and the resultant dog leg caused minor problems later in the program.

The 6 inch hole was conventionally drilled to 2311m; Core No.1 was cut from 2311 to 2320m, and then 6 inch hole was drilled to 2882m. The 6 inch hole deviated to 14° at 2060m and remained at +/- 14° to total depth.

There were no major hole problems although penetration rates were low.

Final logs were recorded and a velocity survey was carried out.

No formation tests were carried out and the hole was plugged at the 7 inch casing shoe and at the surface.

The drilling operation at Murphy No. 1 lasted for 80 days and 16 hours. The rig was released at 2359 hours 28 January 1991. (Refer to Appendix VII - Summary of Operations).

2.4 FORMATION EVALUATION

2.4.1 Mudlogging

Mudlogging services were provided by Halliburton Geodata. Instruments monitored the rate of penetration (ROP), total gas/ chromatography and H₂S from surface to TD.

Samples were caught, washed and described at 10m intervals from surface to 200m, 5m intervals from 200m to 905m, and 3m intervals from 905m to TD. All cuttings samples were examined under ultraviolet light for the presence of hydrocarbons.

Cuttings descriptions are presented in Appendix I(a).

ROP, mud gas, calcimetry and lithology are summarised graphically on 1:500 scale mudlog charts (Enclosure II).

Splits of the cuttings have been retained for Pacific Oil & Gas Pty Limited and the Northern Territory Department of Mines and Energy (NTDME).

2.4.2 Testing and Coring

No DST's were run.

One 2 5/8" diameter core was cut from 2310.9m to 2319.9m and 8.9m of core was recovered (99% recovery).

Detailed lithological descriptions are given in Appendix I(b).

All core is stored at the Pacific Oil & Gas office in Alice Springs and will be dispatched to the

NTDME core store at a later date.

2.4.3 Electric Logging

Electric Logging services were provided by Schlumberger Seaco Inc. using logging unit 8386.

A complete set of petrophysical data was acquired from Murphy 1, comprising Dual Laterolog (DLL), Micro Spherically Focussed Log (MSFL), Gamma Ray (GR), Caliper (Cal), Borehole Compensated Sonic (BHC), Litho Density (LDL) and Compensated Neutron (CNL).

Logs are included as Enclosure III.

The following logging suites were run:-

<u>Type of Log</u>	<u>Interval</u>	<u>BHT/Time</u>
Suite 1 - Intermediate Logs		
DLL - MSFL - GR	1622.5m-198.0m	67°C/5½ Hrs
BHC - GR	1622.5m-Surface	70°C/10¼ Hrs
Suite 2 - Final Logs		
DLL - MSFL - GR	2880.0m-1622.5m	76°C/7¾ Hrs
BHC - GR	2882.0m-1622.5m	77°C/11½ Hrs
LDL - CNL - GR	2883.5m-1622.5m	77°C/14¼ Hrs

2.4.4 Geothermal Gradient

A geothermal gradient of 19°C per km has been calculated using extrapolated bottomhole temperatures recorded during the two logging suites.

A discussion of the method used, a table of temperature data and plots are given in Appendix V.

2.4.5 Vertical Seismic Profile and Synthetic Seismogram

Well seismic data were acquired by Schlumberger on the 27 January 1991, using a well seismic tool (WST). A total of 63 levels were recorded using dynamite as the energy source.

The vertical seismic data were processed using the conventional zero offset vertical incidence processing chain. The transit times have been

used to drift correct the sonic and produce synthetic seismograms at 5 in/sec.

The match of seismic data at SP531 line M89-107 to the VSP is poor. The match to a zero phase, normal polarity synthetic seismogram is poor to fair using a static shift of 15 ms.

Results are attached as Enclosure IV.

2.4.6 Geochemical Analyses

Murphy 1 was percussion and rotary air/mud drilled from surface to 2882m with a cored interval between 2310.9m and 2319.9m.

Chip samples were collected for description and geochemical analyses throughout the hole; initially at 10m intervals to 200m, followed by 5m intervals to 905m and finally 3m intervals to TD.

Geochemical analyses included elemental geochemistry (Appendix XII) and calcimetry (Appendix XVI).

A total of 830 samples were submitted to Australian Laboratory Services Pty Ltd (Brisbane) for ICP analyses of Cu, Pb, Zn, Ag, As, Sb, Ba, S, Na, K, Ca, Mg, Al, Li, Cs, Rb, Sr and P and FA analyses of Au, Pt and Pd.

In several instances there was insufficient sample (IS) to complete all the analyses and Na, K, Ca, Mg, Al, Li, Cs, Rb, Sr and P were not requested (NR) for the top 2044m of the hole.

Pipe dope Pb/Zn contamination produced numerous spurious anomalies particularly evident in the Bitter Springs Formation.

A total of 811 calcimetry samples were processed by Halliburton Geodata whilst undertaking mudlogging services at the Murphy 1 rig site.

Calcimetry was determined by an acid digest gasimetric method.