OP 184

RELINQUISHMENT REPORT

JANUARY 1985

ACH PETROLEUM N.L.

(Incorporated in South Australia)

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CONTENTS

ENCLOSURE

Sepia of enclosure, available in part B of PR 85/37.

1. AREA RELINQUISHED

(a) Block Nos.

In the Northern Territory Oodnadatta Sheet SG53 prepared and published by the Department of Mines and Energy for the purposes of the Petroleum Act.

928, 929, 930, 931, 932, 933, 934, 935, 936,
1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008,
1072, 1073, 1074, 1075, 1078, 1079, 1080,
1144, 1145, 1146, 1147,
1216, 1217, 1218, 1219,
1290, 1296,
1362, 1368,
1438, 1439, 1440,
1511, 1512,
1579, 1582, 1583, 1584,
1651, 1653, 1654, 1655,
1723, 1725, 1726, 1727.

(b) Total Area

4175 sq. km.

2. WORK COMPLETED WITHIN RELINQUISHED AREA

(a) Seismic

(i) When Shot & Operator

125.5 km as part of the 501.5 km 1979 Simpson Desert Seismic Survey operated by Beach Petroleum N.L.

27 km as part of the 70.65 km 1980 Simpson Desert Seismic Survey operated by Beach Petroleum N.L.

(Cont'd.)

2. WORK COMPLETED WITHIN RELINQUISHED AREA (CONT'D.)

(a) Seismic (Cont'd.)

(ii) Acquisition and Processing Parameters

1979 SIMPSON DESERT SEISMIC SURVEY

BEACH PETROLEUM N.L.
AREA: SIMPSON DESERT
LINE: SD79-
SHOTPOINTS: FINAL STACK

FIELD DATA:

CREW:	Austral United Party (297)
DATE:	August 1979
RECORDING:	
Instruments:	Sercel SN 338
Sample Rate:	2 ms
Record Length:	4.0 sec.
Filters:	0-125 Hz
Gain:	IFP
Geophones:	G.S.C. 33 28Hz
Polarity:	Normal
LAYOUT:	
Spread:	1820-210-0-210-1820
Group Interval:	70 m
Geo Pattern:	10 in line
SP Interval:	280 m
Charge Depth:	0 m
Aver. Charge:	2 x 140 m Geoflex

PROCESSING:

1. Binary Gain Recovery. Exponential Rate 3 db/sec Gate 0 - 40 sec.
2. Trace Equalization. Gate Length 500 ms.
3. Datum Statics, Datum = 92 m, Vw = 900 m/s VR = 2100 to 2300 m/s. Editing and Common Depth Point Gather.

Cont'd.

2. WORK COMPLETED WITHIN RELINQUISHED AREA (CONT'D.)

(a) Seismic (Cont'd.)

(ii) Acquisition and Processing Parameters (Cont'd.)

4. Deconvolution Before Stack
No. of Filters 2, Gap 24 ms. Filter Length 220 ms. Design Gates Near Offset 500 ms - 2500 ms, 2300ms - 3950 ms. Design Gates Far Offset 1200 ms - 3200 ms, 2600 ms - 3950 ms.
5. Normal Moveout Initial Function from Line Ties.
6. 6 Fold Initial Stack, Filter.
7. Velocity Analysis Before Residual Statics.
8. Residual Statics 8 6 Fold Autostatics Stack.
9. Velocity Analysis After Residual Statics.
10. N.M.O. Corrected C.D.P. Gather Display.
11. 6 Fold Final Stack.
12. Digital Filter.

Band Pass/Slope (db/cycle)	Time 100%
15 - 60	0 msec.
15 - 60	1.0 msec.
10 - 60	2.0 msec.
10 - 45	4.0 msec.

13. Time Varying Equalization, Gate Length 500 ms. Display Horizontal Scale - 12 Trace/In, Vertical Scale - 10 cm/Sec, Polarity - Negative Number as White Trough.

DATE: 28th December 1979.

1980 SIMPSON DESERT SEISMIC SURVEY

BEACH PETROLEUM N.L.

AREA: WELLS AREA

LINE: SD-80

SHOTPOINTS: FINAL STACK

Cont'd.

2. WORK COMPLETED WITHIN RELINQUISHED AREA (CONT'D.)

(a) Seismic (Cont'd.)

(ii) Acquisition and Processing Parameters (Cont'd.)

FIELD DATA:

CREW:	GES Pty. Ltd. (Party No. 4)
DATE:	17th November 1980
RECORDING:	
Instruments:	D.F.S. - V
Sample Rate:	2 ms.
Record Length:	4.0 sec.
Filters	8 - 128 Hz.
Gain:	IFP
Geophones:	G.S.C. 12, 8 Hz
Polarity:	Normal
LAYOUT:	
Spread:	1987.5-262.5-0-262.5-1987.5 m
Group Interval:	75 m
Geo Pattern:	9 m in line
S.P. Interval:	150 m
Charge Depth:	0 m
Aver. Charge:	1 x 150 m Geoflex

PROCESSING:

1. Binary Gain Recovery. Exponential Rate 3 db/sec. Gate 0 - 40 sec.
2. Trace Equalization. Gate Length 500 ms.
3. Datum Statics, Datum = m, Vw = 900 m/s, VR = 900 m/s, VR = 2003 to 2315 m/s. Editing and Common Depth Point Gather.
4. Deconvolution Before Stack
   No. of Filters 2, Gap 24 ms. Filter Length 220 ms. Design Gates Near Offset 500 ms - 2500 ms, 2300 ms - 3950 ms. Design Gates Far Offset 1200 ms - 3200 ms, 2600 ms - 3950 ms.
5. Normal Moveout Initial Function from Line Ties.

Cont'd.

2. WORK COMPLETED WITHIN RELINQUISHED AREA (CONT'D.).

(a) Seismic (Cont'd.)

(ii) Acquisition and Processing Parameters (Cont'd.)

6. 12 Fold Initial Stack, Filter.
7. Velocity Analysis Before Residual Stacks.
8. Residual Statics 8 12 Fold Autostatics Stack.
9. Velocity Analysis After Residual Statics.
10. N.M.O. Corrected C.D.P. Gather Display.
11. 12 Fold Final Stack.
12. Digital Filter.

Band/Pass/Slope (db/cycle)	Time 100%
15/3 - 60/1	0 sec.
15/3 - 60/1	1.000 sec.
10/6 - 60/1	2.000 sec.
10/6 - 45/1	4.000 sec.

13. Time Varying Equalization, Gate Length 500 ms.
Display Horizontal Scale - 4.72 Trace/CM.
Spacing - 20 m. Vertical Scale - 10 CM/sec.
Polarity - Negative Number as White Trough.

DATE: 12th February 1981

(iii) Very Brief Reason for Shooting

The 1979 Simpson Desert Seismic Survey was designed to provide sufficient control for the selection of drilling locations in the most prospective portions of the permit. Considering the encouraging hydrocarbon shows in Poolowanna -1, much of the survey was concentrated in the area immediately to the north of the Delhi concession. It was also hoped that it would be possible to define the limit of the Triassic section found at Poolowanna but not at the Colson well.

Cont'd.

2. WORK COMPLETED WITHIN RELINQUISHED AREA (CONT'D.)

(a) Seismic (Cont'd.)

(iii) Very Brief Reason for Shooting (Cont'd.)

The Poeppels Corner Structure was the only promising anticlinal feature located by the 1979 seismic survey which displayed evidence of a northern roll-over. Further work was required however to tie this structure down so that a firm location for drilling could be obtained. To achieve this goal several additional traverses were obtained over the structure and these formed the 1980 Simpson Desert Seismic Survey.

(b) Drilling

(i) Location (including Line No. & S.P. No.)

The Poeppels Corner No. 1 well was drilled at SP 160 on Line SD80-29.

Latitude:	25° 47' 36"
Longitude:	137° 57' 47"
Ground Level:	22 m A.S.L.

(ii) Very Brief Reason for Drilling

The Poeppels Corner Structure was mapped as a large growth NNW/SSE trending dip closed anticlinal feature. It was mapped as having well developed closure to the north and at Top Poolowanna level was mapped as having approximately 58 square kilometres of areal closure and 76 metres of vertical closure. Since closure was reliant on dip alone (no faulting involved) the prospective reservoir sequences were believed to be protected from regional flushing, as the SW trending hydrodynamic flow was not expected to migrate hydrocarbons out of the feature.

Cont'd.

2. WORK COMPLETED WITHIN RELINQUISHED AREA (CONT'D.)

(b) Drilling (Cont'd.)

(ii) Very Brief Reason for Drilling (Cont'd.)

Furthermore, the position of the structure on the northern flank of the basin was regarded as an ideal position to entrap hydrocarbons migrating out of the geothermally mature sediments deeper in the basin.

3. GENERAL PETROLEUM GEOLOGY

The Simpson Desert Region of the southern Northern Territory and northern South Australia roughly coincides with a major depo-centre, known as the Poolowanna Trough, with Paleozoic, Mesozoic and Cainozoic sediments.

Within this trough, four sedimentary basins are superimposed:-

(a) Pedirka Basin (Permo - Carboniferous),
(b) Simpson Desert Basin (Triassic),
(c) Eromanga Basin (Jurassic-Cretaceous), and
(d) Lake Eyre Basin (Tertiary).

The Pedirka Basin is restricted to the western portion of the Poolowanna Trough and extends north-westwards from there. It contains the Crown Point and Purni Formations, which are latest Carboniferous to Early Permian in age.

The Simpson Desert Basin contains the Walkandi and Peera Peera Formations and is of Triassic age. It is separated from the underlying Pedirka Basin by an unconformity representing the late Early Permian and Late Permian. Whereas the Walkandi Formation is confined to the central, deepest portion of the Poolowanna Trough, the overlying Peera Peera Formation extends eastwards onto the Birdsville Track Ridge, passing laterally into the upper part of the Nappamerri Formation.

Cont'd.

3. GENERAL PETROLEUM GEOLOGY (CONT'D.)

The hydrocarbon potential of the Walkandi Formation (red-bed sequence) is considered to be low, mainly due to the oxidized nature of the sediments. Coals are extremely rare, and dispersed organic matter (DOM) is sparse, being mainly represented by inertinite. The Peera Peera Formation on the other hand is regarded as a fair source for gaseous hydrocarbons with a modest oil yield. The sequence is dark and rich in organic matter with a total organic carbon (TOC) content as high as 5%. Dispersed organic matter (DOM) increases up the section and is largely cutinite. Vitrinite reflectance studies indicate that the unit should be mature. Unfortunately the formation contains few porous, permeable sandstones.

A relatively short break representing the latest Triassic and earliest Jurassic separates the Simpson Desert Basin from the overlying Eromanga Basin. Jurassic sediments are interpreted as mostly braided fluviatile sandstones, however several facies changes occur from west to east across the area. The basal unit, known as the Poolowanna Formation, consists of interbedded sandstone, siltstone, shale and thin coal beds, deposited in a moderate energy, meandering fluviabile environment with associated floodplains and swamps.

The Poolowanna Formation is regarded as the major source for hydrocarbons in the Simpson Desert region. It is over 200 m thick in the central part of the trough and contains up to 15% TOC. Macerals conducive to significant oil generation are present and maturation studies indicate that generation is occurring in the deeper parts of the basin. The reservoir properties of the unit are variable with the majority of the sandstones being fine to very fine grained with low porosity and permeability. Towards the margins of the basin the Poolowanna Formation passes laterally into the lowermost Algebuckina Sandstone and in most other areas appears to be conformably overlain by the Algebuckina Sandstone.

Cont'd.

3. GENERAL PETROLEUM GEOLOGY (CONT'D.)

Towards the east and north-east, the Algebuckina Sandstone becomes shaly and silty at two other, higher horizons, which, in the region of the Birdsville Track Ridge are recognized as the Westbourne and Birkhead Formations. Thus major changes in facies and stratigraphic nomenclature are recognized across the area.

The Algebuckina Sandstone is the major artesian aquifer in the region, consisting of fine to coarse grained sandstone with fair to good porosity. Shales of the overlying Cadna-Owie Formation are regarded as forming an adequate seal to the unit, while the underlying Poolowanna Formation has proven source potential.

The Jurassic-Cretaceous boundary lies within the upper part of the Algebuckina Sandstone in the subsurface. The remaining Cretaceous sequence overlying the Cadna-Owie Formation shows only minor lateral facies variation, consisting of marine mudstone (Wallumbilla Formation, Toolebuc Formation and Allaru Formation) overlain by a paralic sandy unit (Mackunda Formation) and capped by the coally, fluviatile and paludal Winton Formation.

Mesozoic and older units of the Simpson Desert and region are typically overlain by up to 200 m of Cainozoic, Lake Eyre Basin strata, which in turn are capped by a veneer of recent aeolian sandstones.

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NORTHERN TERRITORY

QUEENSLAND

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NORTHERN TERRITORY

SOUTH AUSTRALIA

OP 184

QLD.

S.A.

Line K1

Line P6

Line P5

Line P1

Line P3

Line P2 ext

P-1 Ext

POEPPELS CORNER-1

THOMAS-1

NOTE :- THIS MAP IS A BEST FIT ADJUSTMENT OF SP LOCATIONS OF ALL EARLIER SEISMIC SURVEYS IN THE AREA ADJUSTED TO FIT TO THE SD79 SURVEY.

SURVEY	COMPANY	CONT.	YEAR	Example of line No
Simpson Desert '80	Beach	GES	1980	SD 80-31
Simpson Desert '79	Beach	Austral United	1979	SD79/16
Poeppel Chr	Reef	G.S.I.	1972	72-4
Three Cnrs	Beach	GEOSURVEYS	1971	B.11
Perlanna	Aquitaine	C.G.G.	1966	P9
Simpson Desert A.	Amerada	AUSTRAL GEO-PROSPECTORS	1965-66	2H
Poolowanna	F.P.C.	C.G.G.	1965-66	BF
Kilpatha	Aquitaine	C.G.G.	1964	K2
Pedirka	F.P.C.	C.G.G.	1963	B

LEGEND

SCALE 1 : 100,000

2 1 0 2 4 6 8 MILES

2 1 0 2 4 6 8 10 KILOMETRES

AREA RELINGQUISHED

BEACH PETROLEUM N.L.

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SHOTPOINT LOCATION MAP

NORTHERN TERRITORY

INDICATING AREA RELINGQUISHED AS AT THE END OF 1984

SCALE : 1 : 100,000	AUTHOR : I. BUCKINGHAM.
DATE : APRIL, 1985.	ENCLOSURE :
DRAFTSMAN : S. Clark	DRG. No. : P. 1552 (R)

BASE MAP. PI501(R)

Sepia of plan available in part "B".

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