

FINAL REPORT

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on the  
REFLECTION SURVEY  
ROND LAKE PROSPECT, N.W.T.  
1974 - 1975

by  
Dome Petroleum Limited  
on

PERMITS #6463-6466

R.G. Millice  
July 18, 1975

Project #5-6-6-75-1

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D.I.A.N.D.  
OTTAWA  
COPY

Project Number 5-6-6-75-1

005-06-06-044

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## ABSTRACT

The following report represents the results of a land reflection survey that was carried out under Federal Project Number 5-6-6-75-1 during the winter shooting season of 1974 - 1975. The field work was undertaken by Dresser Olympic of Canada, Party 270, on behalf of Dome Petroleum Limited. It forms part of a large reconnaissance program covering Permits 6463--6466 (see Figure 1) under seismic option to Dome Petroleum Limited.

This new seismic program was laid out after a review had been made of approximately one hundred (100) miles of existing 400% dynamite and vibrated Sigma Explorations Ltd. data. Two leads had been mapped and it was felt that new seismic would possibly delineate a drillable location. Subsequent interpretation has not supported this concept.

All interpretation and processing was done under the direction of Dome Petroleum Limited.

## GENERAL INFORMATION

### Field Procedures

Recording equipment employed during the survey consisted of a 9-track Floating Point DFS IV with 48-channel input, and an ERC-10 camera with an Add-Itt Correlator. Four Vibro-Trac units were utilized for an energy source.

Field Procedures Cont'd

1200% coverage was obtained, using a symmetrical split of 6600-1320-0-1320-6600. 220' station intervals were used with a vibrator station position of 440'. A drag of 330' with sixteen sweeps was utilized for optimum results. Sweep length was 7 seconds.

Recording was done on an out-62 filter with a floating point gain.

The crew was mobilized from Norman Wells and access to the Rond Lake area was on an existing seismic line that paralleled the Loon River. The crew worked out of several camps that were established throughout the prospect area. All lines that were surveyed were bulldozed new lines.

The topography consisted of terrain characterized by rolling hills with numerous muskeg areas, creeks and occasional steep cliffs.

Surveying was accomplished using two crews, one surveyor running horizontal control and the second crew ran the vertical survey. The instruments used were T1A and T16 Theodolites.

Vertical control was established using previous seismic work. Horizontal control was obtained from previous work and astronomical bearings.

Field Procedures    Cont'd

Refraction information for weathering control was obtained by utilizing a Garrity & Baker conventional drill which drilled 40' holes, which were loaded with five (5) pounds, every one-half ( $\frac{1}{2}$ ) mile.

Strata encountered included clay, gravel and shale and some ice.

Dozing was done with three D-6 and two D-7 Caterpillar tractors. One D-7 and two D-6 Cats were provided by Caribou Construction and one D-7 and one D-6 were provided by PeBen Construction.

Data Processing

The processing of the field data was performed by Geodigit of Canada, under the direction of one of Dome's geophysicists assigned to the project. All of the 1st arrivals or 1st breaks were timed and plotted for drift control and structural statics computed from this data. Plotting of this data indicated that the area of the survey has extremely thick pockets of low velocity drift material and that surface elevation correction would possibly lead to the interpretation of pseudo-velocity anomalies.

A structural datum of sea level with a replacement velocity of 18,000'/s was utilized in applying structural statics.



Data Processing Cont'd

Extreme care was taken in applying correct velocities as there were strong lateral changes due in most parts to lithologic changes. Velocity scans were run every two miles so that a correct NMO function was maintained.

The following processing sequence was followed: the field reels were reformatted and demultiplexed, amplitude recovery, cross correlation with recorded sweep, trace scaling, time variant deconvolution, NMO structure statics, residual statics, mutes, stack, digital filter, dynamic equalization, film display.

Interpretation

The permit area (see Figure 1) is situated in the southern portion of the Anderson Plain and is bounded on the east by the Coleville Uplift and by the Cordilleran Belt on the west. The Anderson Plain is largely an area of muskeg and permafrost, with very little geologic outcrops. Bedrock is mantled by a variable thickness of glacial drift.

A total of 24.47 miles of reflection seismic data were vibrated during the winter season of 1975. This total mileage represents two (2) separate lines; neither of these lines were shot off the permits.

Initially a review was undertaken of approximately 100 miles of varying stacked CDP shooting that had been done on a participatory basis. The quality of this data varied from very poor to good.

Identifications of the reflecting events were made from two sonigrams, one on the north end of the prospect and one on

Interpretation Cont'd

the south end. The locations are NCO-Sun Manuel Lake J-42, 67°11'40" N and 129°23'15" W, and Mobil Inc NCO Sun Ontadek Lake N-39, 66°18'45" N and 128°21'39" W.

Two horizons were mapped (see Figures 2 and 3). The Base of Salt horizon is a continuous event that is mappable over the whole prospect, the Upper Proterozoic (Hydrynian) horizon is mapped on a "phantom horizon" constructed from discontinuous dip segments.

The Base of Salt map illustrates two large low relief structures separated by a shallow saddle. No structural trend can be contoured as there is not enough control.

The Upper Proterozoic map is a "form" map and illustrates a very large anticlinal feature that has been deeply eroded. Faulting is strongly evident but again, as control is so sparse, no structural trend can be developed.

Although there is no map enclosure there appears to be an event on the sections that could represent a Basal Pre-Cambrian Sand onlapping on to the Proterozoic high which might contain hydro-carbons. As this event is confined to a rather small area, no attempt was made to map it.

Although two low relief structures have been mapped, the economics that have been run for evaluation indicate that the area cannot support a wildcat well and, therefore, no further work is contemplated on these permits.

Respectfully submitted,  
DOME PETROLEUM LIMITED,



R. G. Millice,  
Chief Geophysicist.



### STATISTICS

1. Commencement Date - 1st Vibration	March 22, 1975
2. Completion Date - last Vibration	April 1, 1975
3. Total Miles Vibrated	24.47
4. Number of Vibrator Positions Vibrated	295
5. Total Recording Hours - Field	100.5
6. Total Standby Hours	18.0
7. Total Hours	118.5
8. Dynamite Used - Refraction Shots	290
9. Total Caps Used - Refraction Shots	56
10. Total Number Holes Drilled	50
11. Total Footage Drilled	1,760
12. Total Drill Hours - Field	85.5
13. Total Drill Hours - Standby	20.0
14. Dozing Hours - Field	1,047
15. Dozing Hours - Standby	130
16. Total Dozing Hours	1,177



Figure 1

FINAL REPORT  
on the  
REFLECTION SURVEY  
ROND LAKE PROSPECT, N.W.T.  
1974 - 1975

by  
Dome Petroleum Limited

on  
PERMITS #4794-4812

R.G. Millice

Project #5-6-6-75-1

July 18, 1975

FINAL REPORT

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REFLECTION SURVEY

ROND LAKE PROSPECT, N.W.T.

1974 - 1975

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DOME PETROLEUM LIMITED

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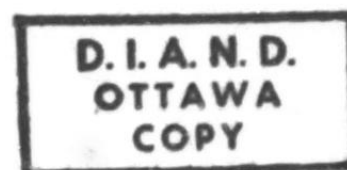
PERMITS #4794 - 4812

Roy G. Millice

July 18, 1975



Project Number 5-6-6-75-1



005-06-06-044

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APPENDIX: Figure 1

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Figure 3



## ABSTRACT

The following report represents the results of a land reflection survey that was carried out under Federal Project Number 5-6-6-75-1 during the winter shooting season of 1974 - 1975. The field work was undertaken by Dresser Olympic of Canada, Party 270, on behalf of Dome Petroleum Limited. It forms part of a large reconnaissance program covering Permits 4794 - 4812 (see Figure 1) under seismic option to Dome Petroleum Limited.

This new seismic program was laid out after a review had been made of approximately one hundred (100) miles of existing 400I dynamite and vibrated Sigma Explorations Ltd. data. Two leads had been mapped and it was felt that new seismic would possibly delineate a drillable location. Subsequent interpretation has not supported this concept.

All interpretation and processing was done under the direction of Dome Petroleum Limited.

## GENERAL INFORMATION

### Field Procedures

Recording equipment employed during the survey consisted of a 9-track Floating Point DFS IV with 48-channel input, and an ERC-10 camera with an Add-It Correlator. Four Vibro-Trac units were utilized for an energy source.

Field Procedures Cont'd

1200% coverage was obtained, using a symmetrical split of 6600-1320-0-1320-6600. 220' station intervals were used with a vibrator station position of 440'. A drag of 330' with sixteen sweeps was utilized for optimum results. Sweep length was 7 seconds.

Recording was done on an out-62 filter with a floating point gain.

The crew was mobilized from Norman Wells and access to the Rond Lake area was on an existing seismic line that paralleled the Loon River. The crew worked out of several camps that were established throughout the prospect area. All lines that were surveyed were bulldozed new lines.

The topography consisted of terrain characterized by rolling hills with numerous muskeg areas, creeks and occasional steep cliffs.

Surveying was accomplished using two crews, one surveyor running horizontal control and the second crew ran the vertical survey. The instruments used were T1A and T16 Theodolites.

Vertical control was established using previous seismic work. Horizontal control was obtained from previous work and astronomical bearings.

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Refraction information for weathering control was obtained by utilizing a Garrity & Baker conventional drill which drilled 40' holes, which were loaded with five (5) pounds, every one-half ( $\frac{1}{2}$ ) mile.

Strata encountered included clay, gravel and shale and some ice.

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The processing of the field data was performed by Geodigit of Canada, under the direction of one of Dome's geophysicists assigned to the project. All of the 1st arrivals or 1st breaks were timed and plotted for drift control and structural statics computed from this data. Plotting of this data indicated that the area of the survey has extremely thick pockets of low velocity drift material and that surface elevation correction would possibly lead to the interpretation of pseudo-velocity anomalies.

A structural datum of sea level with a replacement velocity of 18,000'/s was utilized in applying structural statics.

### Data Processing Cont'd

Extreme care was taken in applying correct velocities as there were strong lateral changes due in most parts to lithologic changes. Velocity scans were run every two miles so that a correct NMO function was maintained.

The following processing sequence was followed: the field reels were reformatted and demultiplexed, amplitude recovery, cross correlation with recorded sweep, trace scaling, time variant deconvolution, NMO structure statics, residual statics, mutes, stack, digital filter, dynamic equalization, film display.

### Interpretation

The permit area (see Figure 1) is situated in the southern portion of the Anderson Plain and is bounded on the east by the Coleville Uplift and by the Cordilleran Belt on the west. The Anderson Plain is largely an area of muskeg and permafrost, with very little geologic outcrops. Bedrock is mantled by a variable thickness of glacial drift.

A total of 155.37 miles of reflection seismic data were vibrated during the winter season of 1975. This total mileage represents eleven (11) separate lines; of these eleven, only a very minor portion were shot off the permits.

Initially a review was undertaken of approximately 100 miles of varying stacked CDP shooting that had been done on a participatory basis. The quality of this data varied from very poor to good.

Identifications of the reflecting events were made from two sonigrams, one on the north end of the prospect and one on

Interpretation Cont'd

the south end. The locations are NCO-Sun Manuel Lake J-42, 67°11'40" N and 129°23'15" W, and Mobil Inc NCO Sun Ontadek Lake N-39, 66°18'45" N and 128°21'39" W.

Two horizons were mapped (see Figures 2 and 3). The Base of Salt horizon is a continuous event that is mappable over the whole prospect, the Upper Proterozoic (Hydrynian) horizon is mapped on a "phantom horizon" constructed from discontinuous dip segments.

The Base of Salt map illustrates two large low relief structures separated by a shallow saddle. No structural trend can be contoured as there is not enough control.

The Upper Proterozoic map is a "form" map and illustrates a very large anticlinal feature that has been deeply eroded. Faulting is strongly evident but again, as control is so sparse, no structural trend can be developed.

Although there is no map enclosure there appears to be an event on the sections that could represent a Basal Pre-Cambrian Sand onlapping on to the Proterozoic high which might contain hydro-carbons. As this event is confined to a rather small area, no attempt was made to map it.

Although two low relief structures have been mapped, the economics that have been run for evaluation indicate that the area cannot support a wildcat well and therefore, no further work is contemplated on these permits.

Respectfully submitted,  
DOME PETROLEUM LIMITED,

*R. G. Millice*

R. G. Millice,  
Chief Geophysicist.



### STATISTICS

1. Commencement Date - 1st Vibration	January 23, 1975
2. Completion Date - last Vibration	March 21, 1975
3. Total Miles Vibrated	155.37
4. Number of Vibrator Positions Vibrated	1,775
5. Total Recording Hours - Field	818.5
6. Total Standby Hours	138.0
7. Total Hours	956.5
8. Dynamite Used - Refraction Shots	2,261.5
9. Total Caps Used - Refraction Shots	489
10. Total Number Holes Drilled	344
11. Total Footage Drilled	13,490
12. Total Drill Hours - Field	784.5
13. Total Drill Hours - Standby	220
14. Dozing Hours - Field	5,081
15. Dozing Hours - Standby	779
16. Total Dozing Hours	5,860

