

Report Name : HORN MOUNTAIN AREA ; N.W.T.

Type of Survey : GEOPHYSICAL
Surv

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Type of Survey : GEOPHYSICAL

Survey Area: Approx. $61^{\circ}50' - 61^{\circ}55'$;
 $119^{\circ}48' - 120^{\circ}00'$

Date of Field Work : March, 1970

Name of Operator : JEFFERSON LAKE PETROCHEMICALS OF CAN. LTD.

Name of Contractor : CANWEST GEOPHYSICAL LTD.

Permits or Leases: 4450, 4451, 4452, 4453, 4454, 4455, and 4456

Name of Author : M. Hayduk (Canwest Geophysical Ltd.)
J.K. Morrison (Jeff Lake Petrochemicals Ltd.)

Date of Interpret Maps : May, 1970

Project Number : 687-6-4-70-1

071

FINAL REPORT
of the
HORN MOUNTAIN AREA
NORTHWEST TERRITORIES

(1) Field Procedures and Computing by
CANWEST GEOPHYSICAL LIMITED

(2) Discussion of Interpretive results by
J.K. Morrison
of

JEFFERSON LAKE PETROCHEMICALS OF CANADA LIMITED



INTRODUCTION

A seismic reflection survey was conducted by Canwest Geophysical Limited, Party # 23, in the Horn Mountain Area for Jefferson Lake Petrochemicals of Canada Ltd. A total of sixteen and one-half (16.5) miles were recorded during the period from March 16, 1970 through to March 21, 1970. (See Figure # 1, Location Map).

SUMMARY

The data recorded by Canwest Geophysical had a correction of +0.009 seconds applied to each final stacked section. This enabled a tie to previous work conducted by Teledyne Exploration Co. The various tie-points were checked and proved to be satisfactory.

OPERATIONS

A. Accessibility

The prospect is accessible by the utilization of the Winter Tractor Trail which extends north-east from Fort Nelson. The crew travelled 200 miles north on the Winter Tractor Trail, then 50 miles south-east via the Calex Road. The center of the prospect is approximately 12 miles north of the Calex Road.

B. Surveying

Horizontal and vertical control was maintained with a T-16 Theodolite.

Vertical ties were within plus or minus three feet and no problems were encountered with horizontal closures.

C. Recording

The recording equipment utilized on Party # 23 consisted of 24 D.F.S. III Binary Gain amplifiers, and a TI-508 tape transport. A filter setting of 18 - 124 and final gain setting of 90 db. was used throughout the area.

The receptors used were Mark Model L-10 geophones 14 cps.

Originally, the field parameters consisted of 1430 foot bi-lateral spreads with 110 foot station intervals which were utilized on Line 10.

The recording parameters for Line 10 were as follows:

a) Type recording	400% C.D.P.
b) Geophone group centre	110 feet
c) Shot point interval	330 feet
d) Geophones per trace	9
e) Geophone spacing	14 feet
f) Geophone pattern length	110 feet
g) Spread Length	1430 feet bi-lateral
h) Single holes	

(See Figure # 3)

Upon subsequent analysis of the data, the following parameters were used on Lines 11, 12, and 13:

a) Type recording	400% C.D.P.
b) Geophone group centre	150 feet
c) Shot point interval	450 feet
d) Geophones per trace	9
e) Geophone spacing	19 feet
f) Geophone pattern length	150 feet
g) Spread length	1950 feet bi-lateral
h) Single holes	

(See Figure # 4)

D. Drilling

One conventional, two top-drives and two sewells were used to drill the shot holes. The holes were drilled to a depth of 45 feet which penetrated clay, shale and rock strata. Drilling conditions in the Horn Mountain area are considered fair.

Two water trucks provided the drill units with water.

E. Computations

The field data was corrected to a horizontal reference plane of 900 feet using a datum velocity of 10,000 ft./sec. A normal uphole correction was used where the dynamite charge

penetrated the 10,000 ft./sec refractor. However, when the 10,000 ft./sec. layer was not penetrated by the charge, the following formulae were utilized to correct for the additional amount of LVL between the hole depth and the 10,000 ft./sec. layer.

$$f = \frac{V_r - V_o}{\cos \sin} - 1 \frac{V_o}{V_1} V_r \quad Dt = f (T_1 - T_{uh})$$

where:

- Dt = delay time beneath shot
- f = factor
- Vr = replacement velocity (10,000 ft./sec.)
- Vo = (4,500 - 8,000)ft./sec
- V1 = 10,000 ft./sec.
- T1 = V1 intercept

F. Processing

The various normal moveout curves applied were computed from the field records. The curves were checked and proved to be satisfactory.

Paper variable area-galvanometer sections with normal moveout removed, were prepared for each shot point. From the weathering section, a correction was derived and applied to the playouts to yield a final 400% stacked section of a structural nature.

Processing parameters were pre-determined from

previous work done in the area.

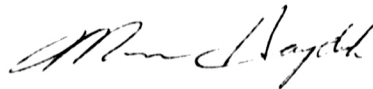
The complete processing of the area was performed by Canadian Magnetic Reduction.

The processing parameters which were utilized are as follows:

1. N.M.O.
2. Filter 0.0 - 2.0 20 - 26/60 - 66 HZ
3. Trace gather
4. Fully corrected
5. Stack

Respectfully submitted by

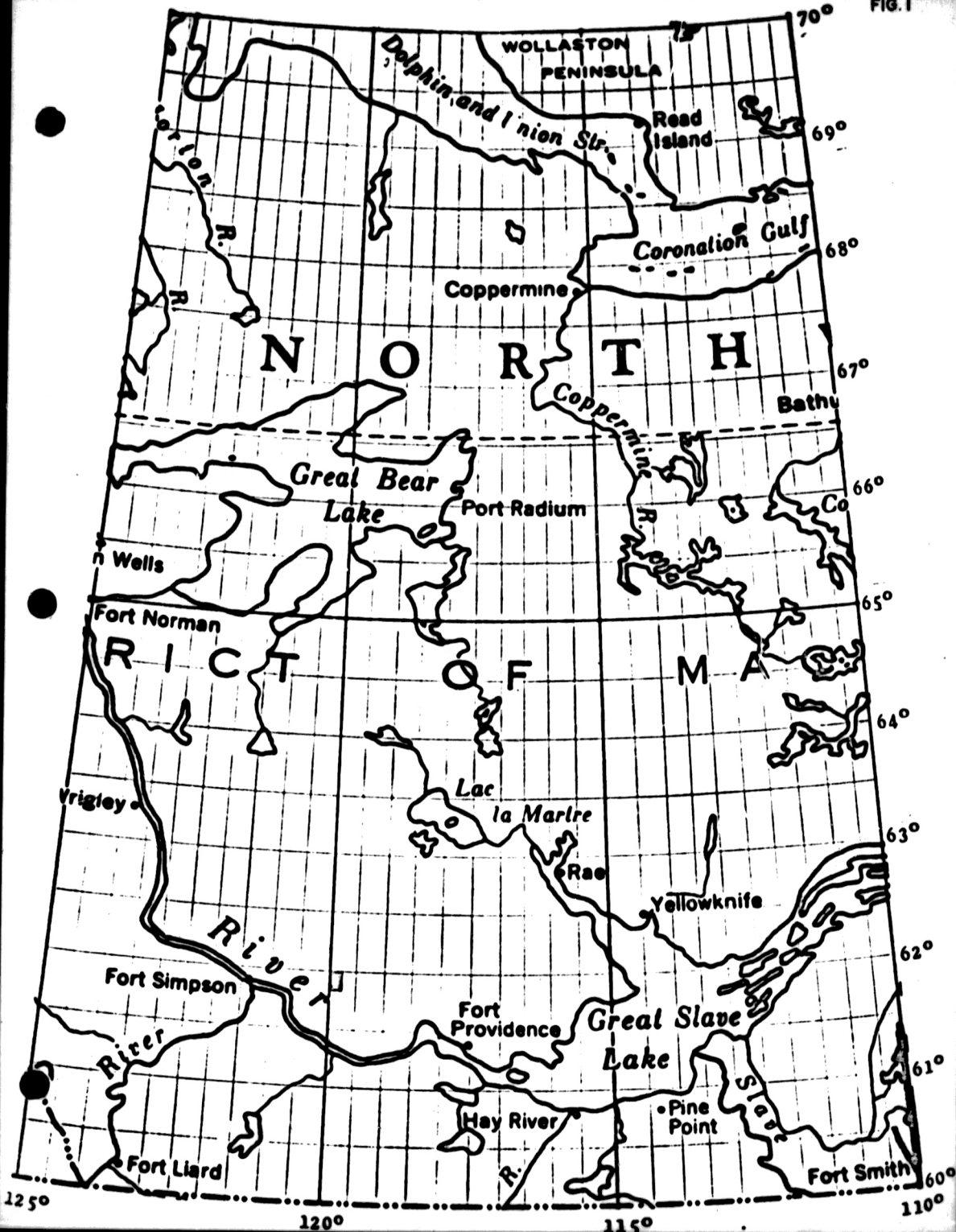
CANWEST GEOPHYSICAL LIMITED

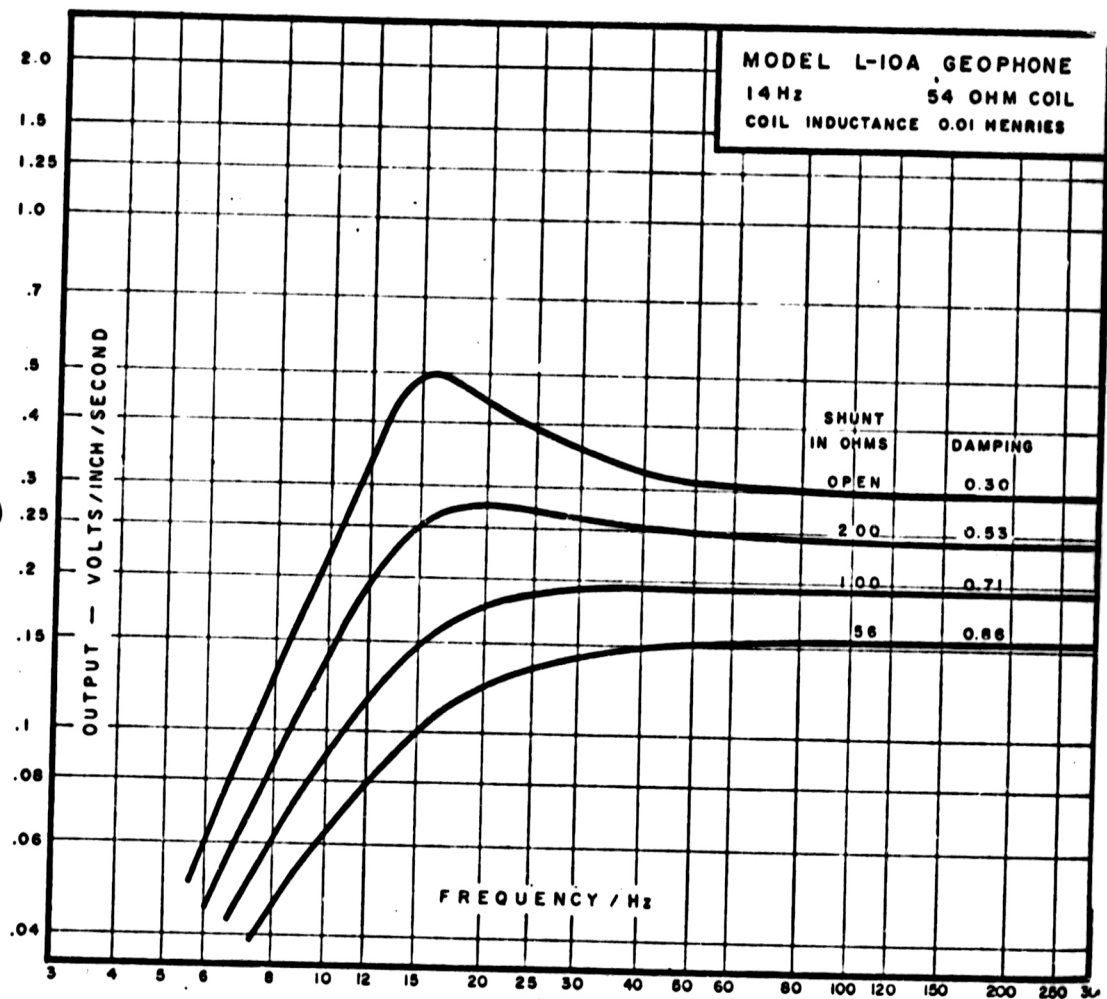
A handwritten signature in dark ink, appearing to read 'M. Hayduk', is written over the typed name.

M. Hayduk

APPENDIX I
STATISTICS

1. Date commenced	February 16, 1970
2. Date completed	February 21, 1970
3. Total No. of miles shot	16.5
4. Total No. of profiles shot	205
5. Total No. of shots	209
6. Total recording hours (field)	33.5 hrs.
7. Total recording hours (driving)	24.0 hrs.
8. Total recording hours	57.5 hrs.
9. Dynamite used	214 lbs.
10. Dynamite per shot	1.0 lbs.
11. Dynamite per profile	1.0 lbs.
12. Total caps used	248
13. Caps per profile	1.2
14. Caps per shot	1.2
15. Total holes drilled	235
16. Total footage drilled	9141
17. Total drill hours (field)	202.0 hrs.
18. Total drill hours (driving)	158.0 hrs.
19. Total drill hours	360.0 hrs.
20. Average holes per 10 hr. day	11.6
21. Average footage per hour	45.3 ft.
22. Rock bits used	3
23. Insert bits used	82
24. Footage per bit	111.5 ft.
25. Water Truck hours	170.5 hrs.
26. Bulldozing hours	371.0 hrs.





3-3-3 IN SERIES PARALLEL
9 PHONES PER STRING
1 STRING PER NEST

FIG. 2

SPREAD LAYOUT DIAGRAM

HORN MOUNTAIN

NORTH OR EAST →

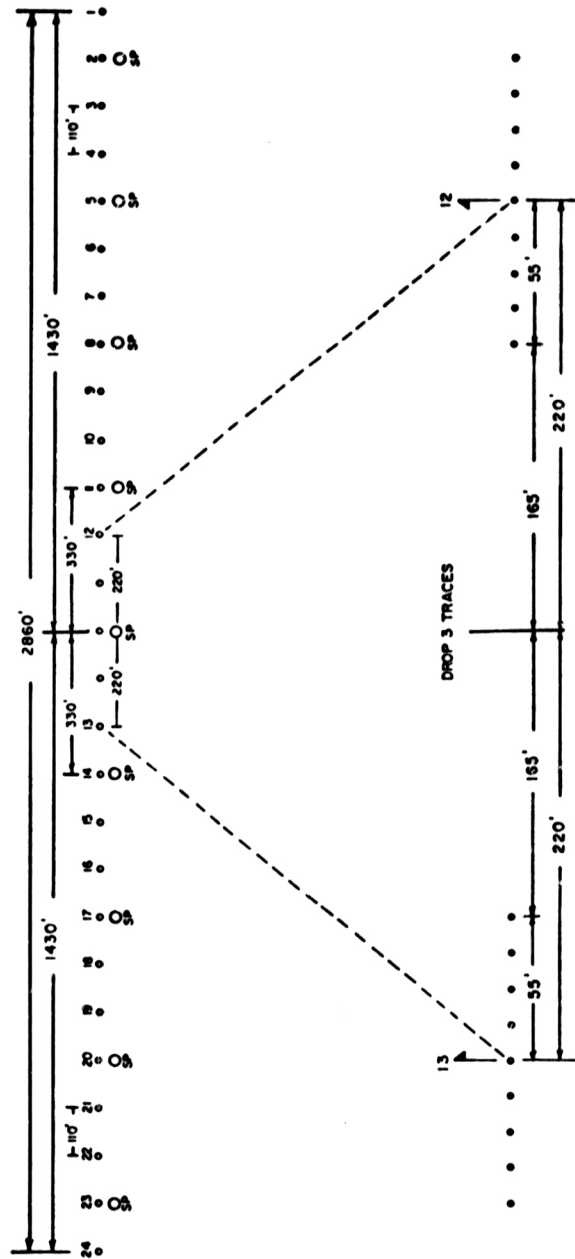
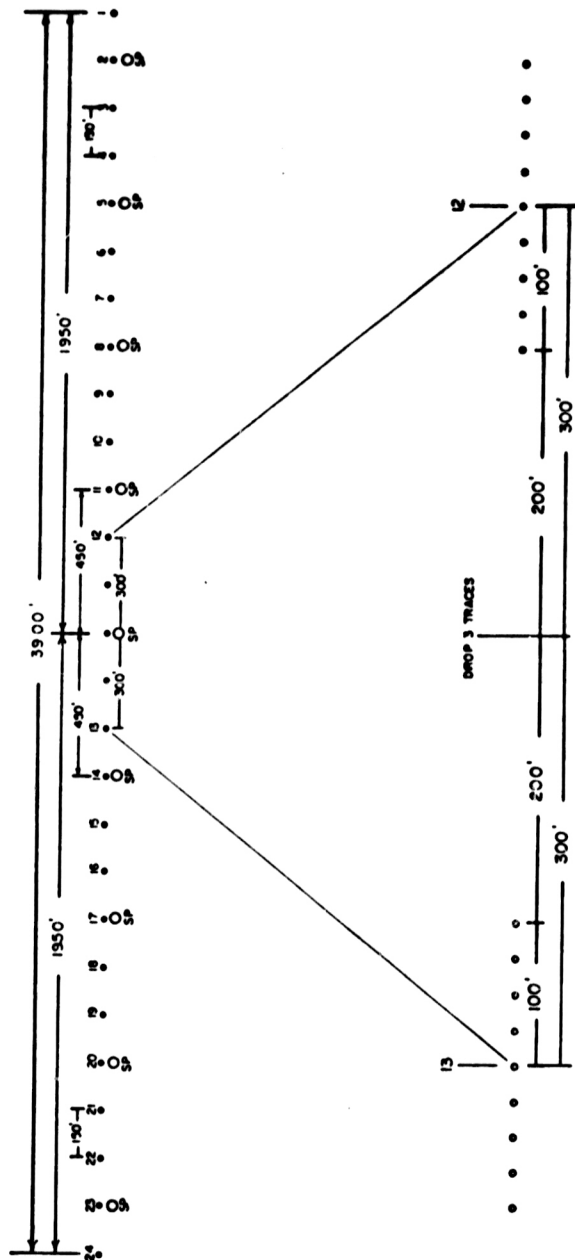


FIG. 3

SPREAD LAYOUT DIAGRAM

HORN MOUNTAIN

NORTH OR EAST



SHOT POINT INTERVAL
SHOT HOLE PATTERN
HOLE DEPTH
ENERGY SOURCE
GEOPHONE GROUP CENTRES
GEOPHONES

FIG. 4

LIST OF EMPLOYEES

Prospect: Horne Mountain

Date: Nov. 12 - 24

Client: Jefferson Lake Petrochemicals

Supervisor	E. Bluestone
Party Manager	P.J. McNamee , B. Munroe
Observer	G. Stafford
Junior Observer	G. Hewitt
Shooter	D. Heppner
Supply Man	W. Simpson
Mechanic	W. Althouse
Helpers	R. Beres
	R. Stephenson
	D. Richards
	G. Logan
	D. Kohler
	K. Althouse
	N. Althouse

INTERPRETIVE RESULTS - CANWEST SHOOTING

HORN MOUNTAIN AREA - MARCH 1970

The 16.5 miles of new control were placed to check out possible reef leads on the west end of old line L3 and the north end of old line L2 and to complete a reconnaissance grid on that portion of our acreage which falls south of the plateau.

Three maps were constructed and are included with this report. The Upper Carbonate structure, the Lower Carbonate structure and the isochron of the Upper to Lower Carbonate.

There is no evidence of reef growth on this southern portion of our acreage and most isopaching in the Upper to Lower Carbonate interval is due to minor salt solution. There are no significant salt solution anomalies as had been observed in our previous work up on the plateau.


J.K. Morrison