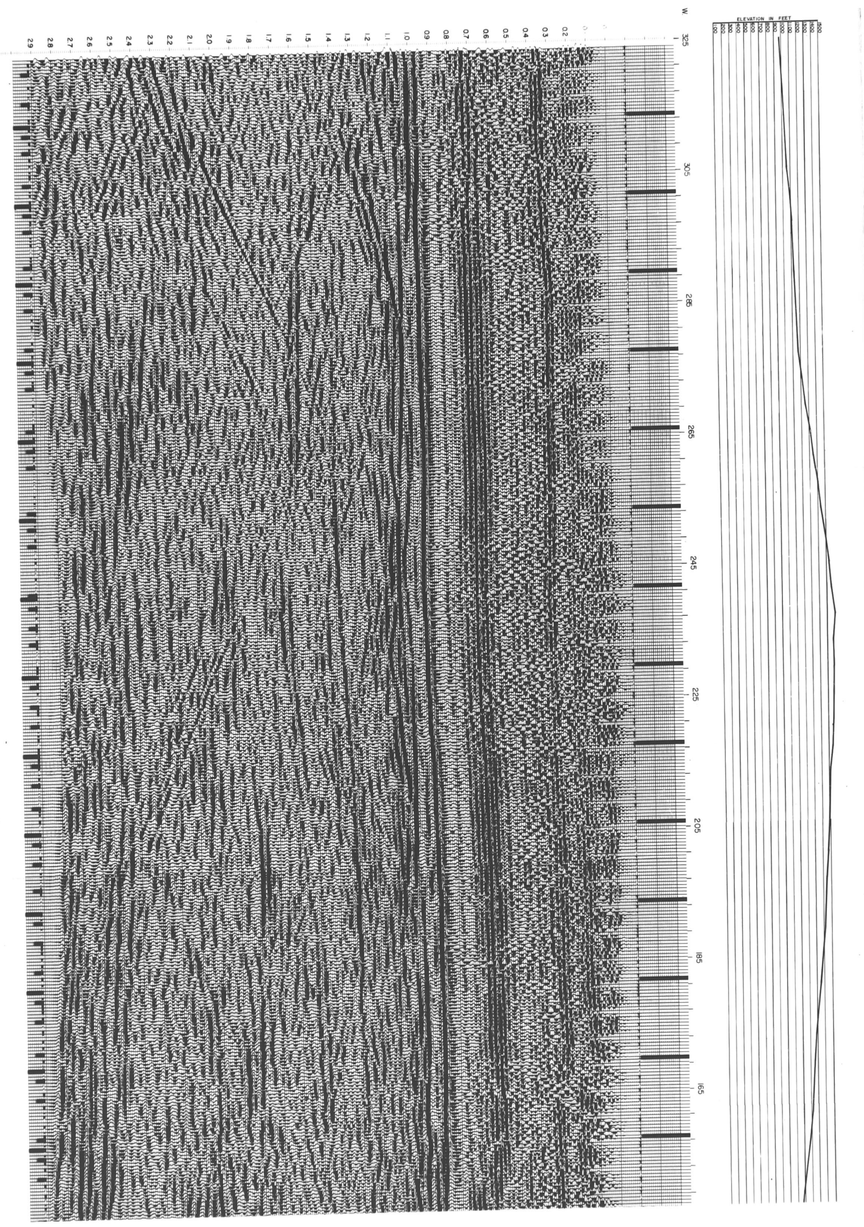

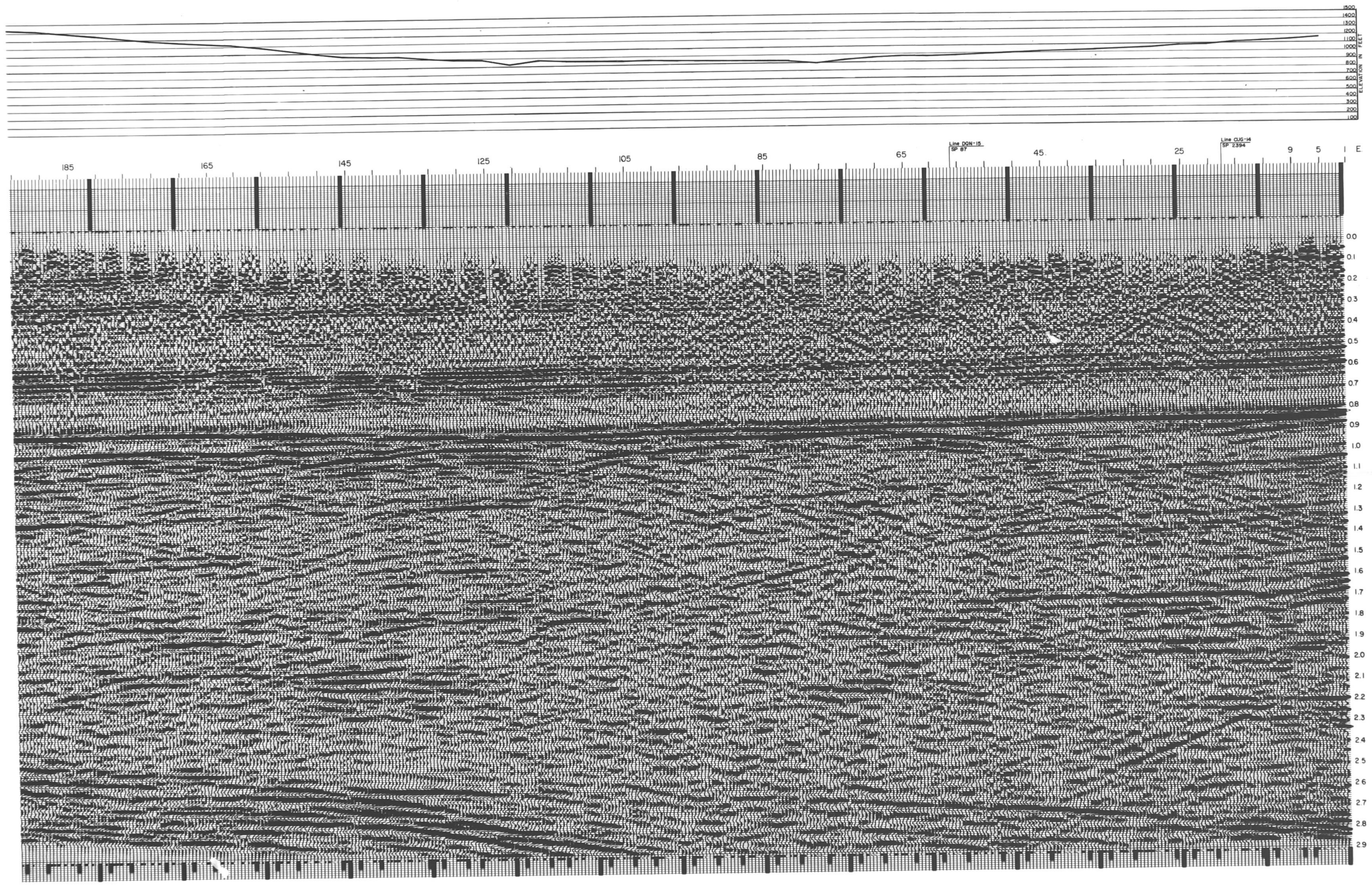

060-06-06-143

GEODIGIT

GEOPHYSICAL DIGITAL PROCESSING CENTRE OF CANADA

CALGARY ALBERTA

AMOCO CANADA LTD.
COMPANY

KEELE RIVER
AREA

DQN - 16
LINE

W. 325 SHOT POINTS 1 E

DATE JUNE, 1974

REFERENCE NUMBER 6155

OFFICER

FIELD RECORDING

RECORDED BY NORTHERN GEOPHYSICAL

ENERGY SOURCE DYNAMITE

RECORDER TI AMPLIFIER DFS IV FORMAT SEG B

GAIN CONTROL ☐ AGC ☐ PGC ■ BINARY ☐ CONSTANT

GEOPHONES GROUP & INTERVAL 9 AT 13.5' GEOPHONE TYPE L-10

No. OF GROUPS 48 INTERVAL 105'

FILTER Hz COVERAGE 600%

SWEEP RANGE Hz SWEEP LENGTH Sec

SWEEP STAT VIB No. OF VIBRATORS

48 — 25 210' sp 210' 24 — 1

COMPUTING

COMPUTED BY GEODIGIT

STRUCTURAL X DATUM 1000 Feet DATUM VELOCITY 10,000' Sec

FLATTENED AT Sec

DIGITAL PROCESSING

A TO D CONVERSION

1 EDIT - DEMULTIPLEXING

2 TRUE AMPLITUDE RECOVERY FROM BINARY GAIN

TRACE EQUALIZATION

TRACE SCALING

10 TIME VARYING DECONVOLUTION

OPERATOR LENGTH 100 ms 1 GATES

PREDICTIVE DECONVOLUTION

OPERATOR LENGTH ms

GAP ms

8 VELOCITY SCAN

12 N M O INTERPOLATION FILTER 1/4 ms

TRACE GATHER

11 MUTES

17 BAND PASS FILTER 10/15-55/60

3 HIGH PASS FILTER 10/15 HZ

CROSS CORRELATION WITH SWEEP

13 STATICS

14 AUTOMATIC STATICS

16 STACK 600 %

OPTIMUM STACK

STACK WITH MULTI-CHANNEL FILTERING

OPTIMUM DEGHOSTING

VELOCITY FILTERING

OPTIMUM MULTIPLE REJECTION

AUTOMATIC FLATTENING

9 POLARITY REVERSAL

15,18 DYNAMIC EQUALIZATION

AUTO / CROSS / RETRO — CORRELOGRAM

D TO A CONVERSION

* SPECIAL PROCESSING

4 AMPLITUDE ANALYSIS NO. 1

5 COMPENSATION NO. 1

6 AMPLITUDE ANALYSIS NO. 2

7 COMPENSATION NO. 2

PAPER DISPLAY

19 FILM DISPLAY

DISPLAY

PLOTTER DIGITAL TNB 90 [X]

ANALOG SIE MS600 [ ]

SCALE 12 TRACES

REMARKS

- AMPLITUDE ANALYSIS NO. 1 STATISTICAL ANALYSIS OF ENERGY DECAY DUE TO GEOMETRICAL AND GEOLOGICAL FACTORS
- COMPENSATION NO. 1 APPLICATION OF MASTER GAIN FUNCTION COMPENSATING FOR ABOVE EFFECTS
- AMPLITUDE ANALYSIS NO. 2 STATISTICAL ANALYSIS OF ENERGY VARIATION DUE TO SURFACE AND SHOT CONDITIONS
- COMPENSATION NO. 2 APPLICATION OF SHOT POINT AND GEOPHONE FACTORS COMPENSATING FOR ABOVE EFFECTS

060-06-06-143

PROJECT 60-6-6-74-2

REPORT OF GEOPHYSICAL SURVEY

Report of Seismograph Reflection Survey
On and Off Federal Leases
Nos. 1572-72 to 1596-72, 1606-72 to 1608-72
Inclusive
Land Use Permit N73B633
December, 1974

Prepared by: N. E. Pullin, District Geoph.

060-06-06-143

REPORT OF GEOPHYSICAL SURVEY

Report of Seismograph Reflection Survey

Conducted by

Northern Geophysical Ltd.

for

Amoco Canada Petroleum Company Ltd.

During the Period February 22, 1974 to March 26, 1974

On and Off Federal Lease Nos. 1572-72 to 1596-72,
1606-72 to 1608-72 inclusive

Land Use Permit N73B633

Prepared by

N. E. Pullin
District Geophysicist

December, 1974

Submitted in support of application for credit; see Affidavit made by

— NONE SUBMITTED TO DATE (JAN 14/75) of ———,

1974 and in accordance with work obligations under Section 54, Subsection 1(f) of the Regulations.

TABLE OF CONTENTS

Enclosures in Pocket

Surface elevation map

2- SubCretaceous Unconformity Time Structure Maps
XC 74-1674 & XC 74-1678

Spread Diagram (600%)

Spread Diagram (800%)

One complete set of seismic record sections

included under separate cover.

INTRODUCTION

During February and March, 1974, a conventional dynamite seismic survey was conducted by Northern Geophysical, Party N-3 for Amoco Canada Petroleum Company Ltd., as operator in the Keele River Area, Northwest Territories, Topographic Grid 96C.

The area covered was on and off Federal Leases (N.W.T.) 1572-72 to 1596-72, 1606-72 to 1608-72 inclusive.

A total of 33 days (February 22, 1974 to March 26, 1974) was spent by the crew gathering data that was processed and interpreted in Calgary over a period of approximately 6 months.

Northern Geophysical Party N-3 was operating under the supervision of Mr. D. G. Propp and Mr. R. Mattson, party manager.

Track mounted equipment was used in the field operations, supported by 4-wheel drive trucks as supply and service vehicles. Camp equipment was a combination track and sleigh camp. Fixed wing aircraft support was provided utilizing lake and river airstrips.

126° 00' 00"

125° 00' 00"

Great Bear R.

IMP Bluefish O-1A

FT. NORMAN

Mackay Mine

SHELL

R 5922

Keele River

KEELE RIVER AREA

SCALE 1" = 32000'

STATISTICAL DATA

Production:

Surveying took place from February 3 to March 26, 1974

Drilling from February 9 to March 26, 1974

Recording from February 22 to March 26, 1974

Dozing from January 23 to March 26, 1974

Total number of miles shot	=	104.82
(13 lines - DQN 002-010, DQN 013 - 016 inclusive)		
Total number of profiles shot	=	1564
Total dynamite used	=	21,605 lbs.
Total number holes drilled	=	1716
Total number of days recording	=	33

Equipment:

1 Kitchen foldout on Nodwell FN110

1 Utility foldout on Nodwell FN110

3 Sleepers - sleigh mounted

1 Power/Shop - sleigh mounted

3 Fuel sloops - sleigh mounted.

1 Recorder - track, (48 trace DFS IV)

2 Reel Units - track

1 Shooter's unit - track

1 Survey unit - track

1 Party Manager's truck (4x4)

1 Supply truck (4x4)

1 Service truck (4x4)

1 Yard unit - Nodwell FN110

1 Drill shift unit - track

3 Drills - Nodwell FN110

1 Water Unit - Nodwell RN110

1 Cat camp

1 Fuel sloop/power plant

1 D6C cat

1 D7E cat

1 3/4 truck (4x4)

Personnel:

Recording:

1 Observer

1 Shooter

1 Shooter's helper

6 helpers

1 Surveyor

1 Rodman

1 Chainman

Total 12 Men

Drilling:

6 Drillers

6 Drillers' helpers

Total 12 Men

Camp:

1 Party Manager

1 Clerk

1 Mechanic

1 Mechanic's helper

1 Cook

1 Cook's helper

1 Camp attendant

Total 7 Men

Line Cutting and Dozing:

4 Cat operators

1 Foreman

Total 5 Men

Grand Total 36 Men

Surveying:

Felix Seismic Surveys Ltd. ran both horizontal and vertical survey control, using a Wild T1AE Theodolite and a steel tape. All location coordinates and elevations are relative to the legal survey of the wellsite - Western Decalta FPC et al Keele River I-1, with checks made to prior seismic control and uncontrolled wellsites in the area.

FIELD PROCEDURES

Recording Equipment:

DFS IV - 48 channel floating point system

- 9 track (SEG-B format)

- Input-Output INc. Remote firing

25 Sections cables - 6 stations per section @ 110'

160 strings Mark L-2 (14 Hz) geophones - 9 grp. @ 13' spacing.

Parameters:

CDP	=	600% and 800%
Station Interval	=	105'
Shotpoint Spacing	=	420' for 600%
	=	315' for 800%
Shotpoint Patterns	=	single holes (except 3 hole patterns at gravel locations).
Hole Depth	=	55'
Charge Size	=	10-20 lbs.
No. of Groups Dropped	=	3
Record Filter	=	out/124
Sample Rate	=	2ms.

DATA PROCESSING

All the original processing was performed by Geodigit in Calgary.

Structure sections were produced from a +1000' datum using a replacement velocity of 10,000 feet/second and also time delay sections, using corrections from first arrival plots, for a near surface low velocity layer.

Tracer muting, dynamic corrections, editing, true amplitude recovery, deconvolution, filtering and stacking were applied.

Some in house test processing and reprocessing was performed on critical lines.

RESULTS AND INTERPRETATION

Objective:

To map structure in the Mid Devonian and older Carbonates.

Results:

Two anomalous areas are mapped on the SubCretaceous Unconformity. Anomaly 100-C-74 displays approximately 150 ms. of closure and is adequately controlled. Some Hume Carbonates are possibly present at this feature.

Anomaly 101-C-74 shows a simple rollover. It displays approximately 50 ms. of closure, with probably a good shale cover at the unconformity.

In the southern part of the area, the Top of Hume carbonate and Base of Carbonates subcrop are mapped against the Unconformity.

Record quality is generally fair to good, with the strongest reflection identified as the SubCretaceous Unconformity. Other reflections present are from within the Cretaceous, Top of Carbonate, Base of Carbonate and within the basement complex.

Seismic sections were made using a datum of +1,000 feet and a replacement velocity of 10,000 feet/second, as well as drift corrected sections. Drift corrections range from 0 to -60 ms. (2 way time) in the area.

Respectfully Submitted,

AMOCO CANADA PETROLEUM COMPANY LTD.

N.E. Pullin
District Geophysicist

R11W

R10W

R9W

R8W

19

R10W

R9W

R8W

Amoco Canada Petroleum Company Ltd.

AREA	Kotaneelee River	GRID	CO-1647
PROVINCE	N.W.T.	SCALE	1" = 8000' Hydro
1ST HORIZON	Surface Elevation		
TYPE OF MAP	Topo	CONTOUR INT.	
SHOT BY	Arc	FOR	Amoco
INCL. DATES	Feb. - March, 1974		
INTERP. BY		CO. AFFIL.	
REPORT No.		DATE	
REMARKS	For Gulf Petrex		

060-06-06-143

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SPREAD DIAGRAM

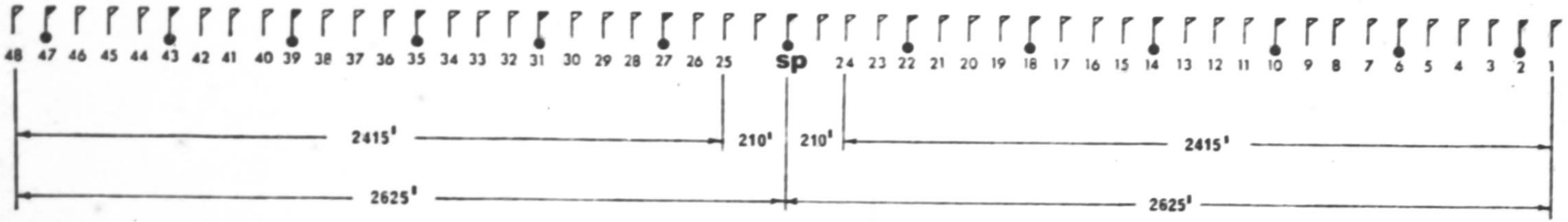
(600%)

MINIMUM OFFSET: 210'

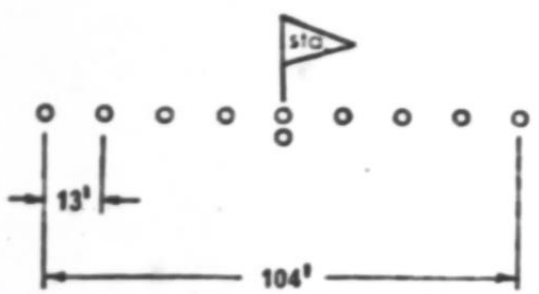
S.P. INTERVAL: 420'

SPREAD DISTANCE: 2625'

GROUP INTERVAL: 105'



TYPICAL ARRAY



HOLE PATTERN

SINGLE HOLES

060-06-06-143

SPREAD DIAGRAM

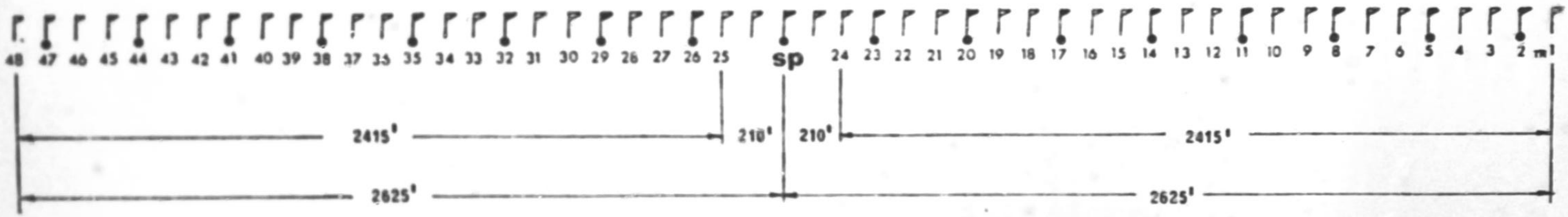
(800%)

MINIMUM OFFSET: 210'

S.P. INTERVAL: 315'

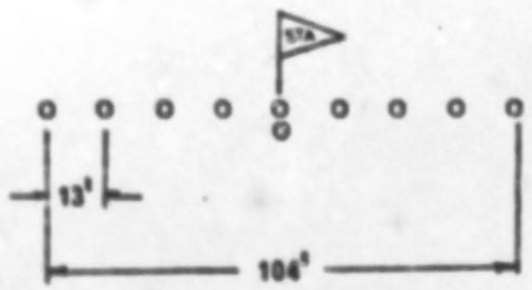
SPREAD DISTANCE: 2625'

GROUP INTERVAL: 105'



TYPICAL ARRAY

(9 GEOPHONES)



HOLE PATTERN

SINGLE HOLES