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REPORT OF GEOPHYSICAL SURVEY
REPORT OF SEISMOGRAPH REFLECTION AND REFRACTION SURVEYS

Conducted by
Western Geophysical Company of Canada Ltd.

for
Amoco Canada Petroleum Company Ltd.

January 15th, 1970 to March 16th, 1970

Abstracted for
Geo-Science Data Index

Date _____

On and off Federal Permits (N.W.T.) 4164, 4165, 4166, 4167,
4168, 4174; N.W.T. Topographic Grids 85 L and 85 K

Prepared By
C. W. Allison
District Geophysicist

November 27th, 1970



Submitted in support of application for credit; see affidavit made by
Northern Explorers Ltd., July 27th, 1970 and in accordance with work
obligations under Section 54, Sub-section 1(f) of the Regulations.

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Enclosures in Pocket: Surface Elevations Spread Diagram	
Middle Devonian Carbonate Time Structure Maps: Registration Nos: BC-70-1895, 1896, 1897, 1898 and 1899 are attached.	

Introduction

During the winter of 1969-1970 a seismic survey was conducted by Western Geophysical Party F-63 for Amoco Canada Petroleum Company Ltd.

The area covered was on and off Federal Permits (N.W.T.) 4164, 4165, 4166, 4167, 4168 and 4174 held by Northern Explorers Ltd.

A total of 40 days (February 4th, 1970 to March 16th, 1970) were spent by the crew in the area gathering the data that was interpreted in Calgary over an estimated period of 5 months.

Western Geophysical Party F-63 was operating under the supervision of Mr. C. M. Larson, party manager.

Conventional wheel mounted equipment was used throughout the operation both for technical vehicles and for camp moving trucks and trailer facilities. Due to the remoteness of the prospect a Bell 47-J helicopter was stationed with the crew.

No major difficulties or unforeseen problems were encountered in the course of the survey.



AMOCO CANADA

DATE: 10/10/88
BY: J. L. B. / J. L. B.
PROJECT: 100-100-100
SHEET: 100-100-100
SCALE: 1:100,000
UNIT: METERS
PROJ: UTM
ZON: 18N
DATUM: NAD 83
ELEV: 100.00
SOUNDING: 100-100-100
REVISION: 1.0
DRAWN BY: J. L. B.
CHECKED BY: J. L. B.
APPROVED BY: J. L. B.
DATE: 10/10/88

Statistical Data

A. Production

The survey consisted of 17 seismic lines (CLM-001 to CLM-013 and CLM-015 to CLM-018). 2114 shotpoints were drilled.

The survey began February 4th, 1970 and ended March 16th, 1970 including 5 weather days. The total number of productive days equalled 35, thus giving an average daily production of 5.4 miles.

B. Personnel

1) Recording

1 Observer
1 Junior Observer
1 Shooter
1 Shooter's Helper
2 Cable Truck Drivers
7 Helpers
2 Surveyors
2 Rodman/Chainman

TOTAL 17 men

2) Drilling

6 Drillers
6 Helpers
2 Spare Watertruck Drivers

TOTAL 14 men

3) Line Cutting

10 Bulldozer Operators

TOTAL 10 men

4) Helicopter (Alpine)

1 Pilot
1 Mechanic

TOTAL 2 men

5) Camp

1 Party Manager
 1 Clerk
 1 Mechanic
 1 Supply Man
 1 Cook
 1 Cook's Helper
 1 Camp Attendant

TOTAL 7 men

GRAND TOTAL = 50 men

C. Equipment

1 Recording Truck
 1 Shooting Truck
 2 Cable Trucks
 1 Party Manager's Truck
 1 Supply Truck
 3 Conventional Shothole Drills
 1 Sewell Auger
 1 Conventional Drill Mounted on Tracks
 8 Water Trucks
 1 Foldout Kitchen-Sleeper Trailer
 1 Foldout Utility-Sleeper Trailer
 1 Foldout Power Supply-Shop Trailer
 2 Trailers for Bulldozer Operators
 1 Gas Trailer
 2 D-6C (wide pad) Bulldozers
 3 D-7 Bulldozers
 1 Bell 47-J Helicopter

The DDS Model 620 digital instruments manufactured for Pan American Petroleum Corporation were used for recording the information on tape.

D. Mobilization and Recording Dates

Line cutting operations started on December 10th, 1969 and recording on February 4th, 1970. The program was completed on March 16th, 1970.

E. Navigation

The horizontal and vertical survey ran from triangulation station "Will" (Lat. 62°01'32", Long. 118°53'44"). Azimuth control was obtained from celestial observations. Wild T1A theodolites were used for surveying.

F. Conditions

No major or unforeseen problems were encountered in the area. The operation was hampered somewhat by the numerous creeks and steep slopes of the Horn Plateau, as well as some days of bad weather.

Field Procedure

The area was surveyed by conventional reflection method, 600% CDP, apart from Line CLM-107 and the eastern portion of Line CLM-005 (from SP 55 to 139) where the inline refraction method was also employed (see spread diagram in pocket) using 300% multifold coverage.

Single shot holes were drilled with a normal charge size of 2.5 pounds at 40 feet.

The data that appear on the subsurface maps are vertical reflection times from a +2000 foot datum plane.

Data Processing

Elevation corrections were applied to a +2000 plane using a 7000 foot per second replacement velocity. Trace muting, dynamic corrections (NMO), maximum amplitude scaling (window: .500 to .900 seconds) and frequency filtering (15-25-40-80) were also applied before trace sorting, compositing and displaying the data. All processing was performed by Amoco Canada Petroleum Company Ltd. in Calgary.

Results and Interpretation

Objectives: To evaluate the area for the presence of Keg River patch reef on the Middle Devonian Carbonate platform (Lonely Bay Limestone), Rainbow type pinnacle reefs grown through the salt on the Ernestina dolomite, and structural traps involving the Chinchaga dolomite.

Results: The detailed seismic survey confirmed that anomaly 26-C-69 is located in a salt collapse channel running NE-SW. The period of salt solution apparently extends from Devonian to Lower Cretaceous times as shown by the decreasing amount of collapse with younger age. The evaluation of anomaly 26-C-69 pictures a reef-like relief on the Lonely Bay Limestone platform with only 100 feet of vertical and 270 acres of areal closures. The lack of isopaching in the drape over the anomaly and the absence of a basement reflection appears to dispute its reef nature.


While some of the structural reliefs and depressions recorded can be shown to coincide with topographic features or near surface velocity anomalies, others may have similar origin. However due to localized permafrost cover near surface anomalies are not always detectable.

Conclusions: The results of the survey are negative, inasmuch as hydrocarbon traps have not been found in dimensions large enough to justify further exploration.

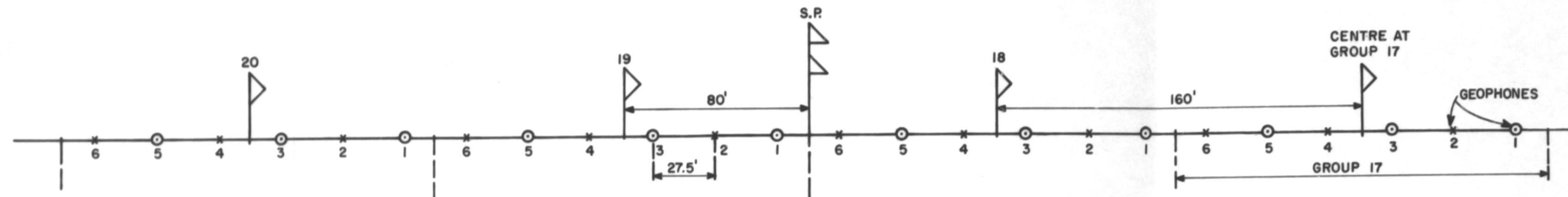
Respectfully submitted,

AMOCO CANADA PETROLEUM COMPANY LTD.

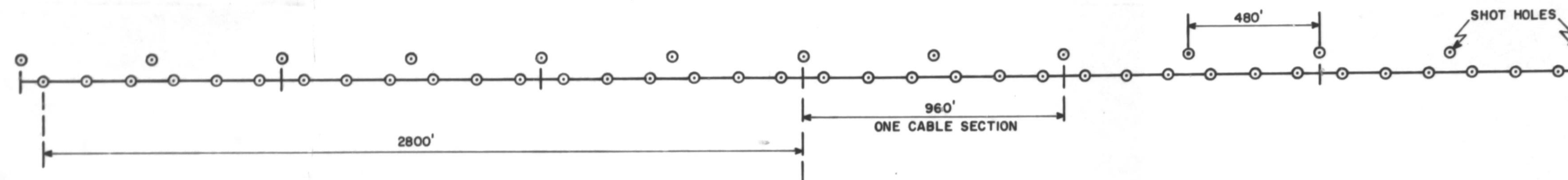
By:


C. W. Allison
District Geophysicist

AREA: HORNE LL LAKE
G E O P H O N E T Y P E : L - 1 2 , 8 C P S
S P R E A D D I A G R A M
Scale: 1" = 50'

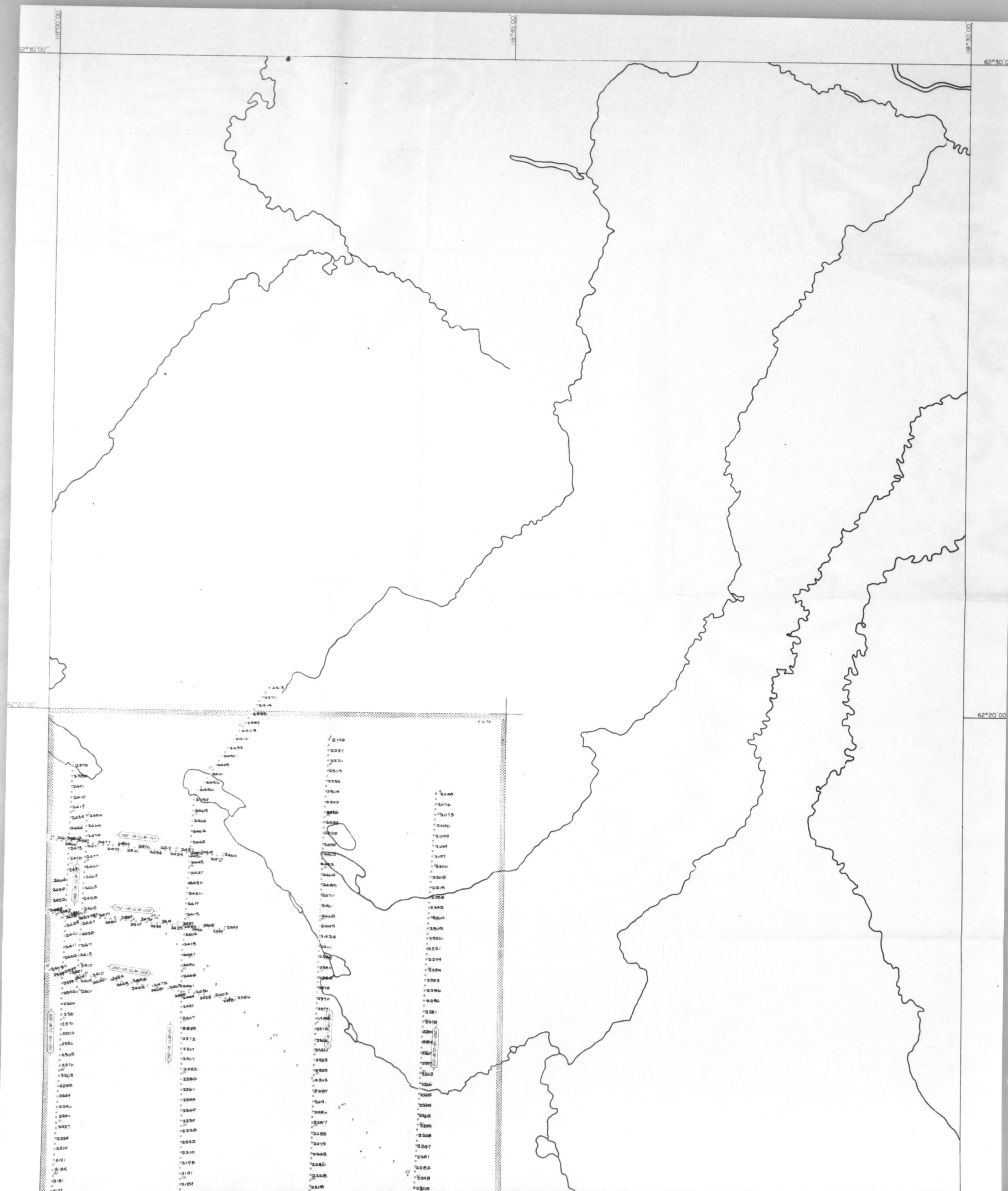


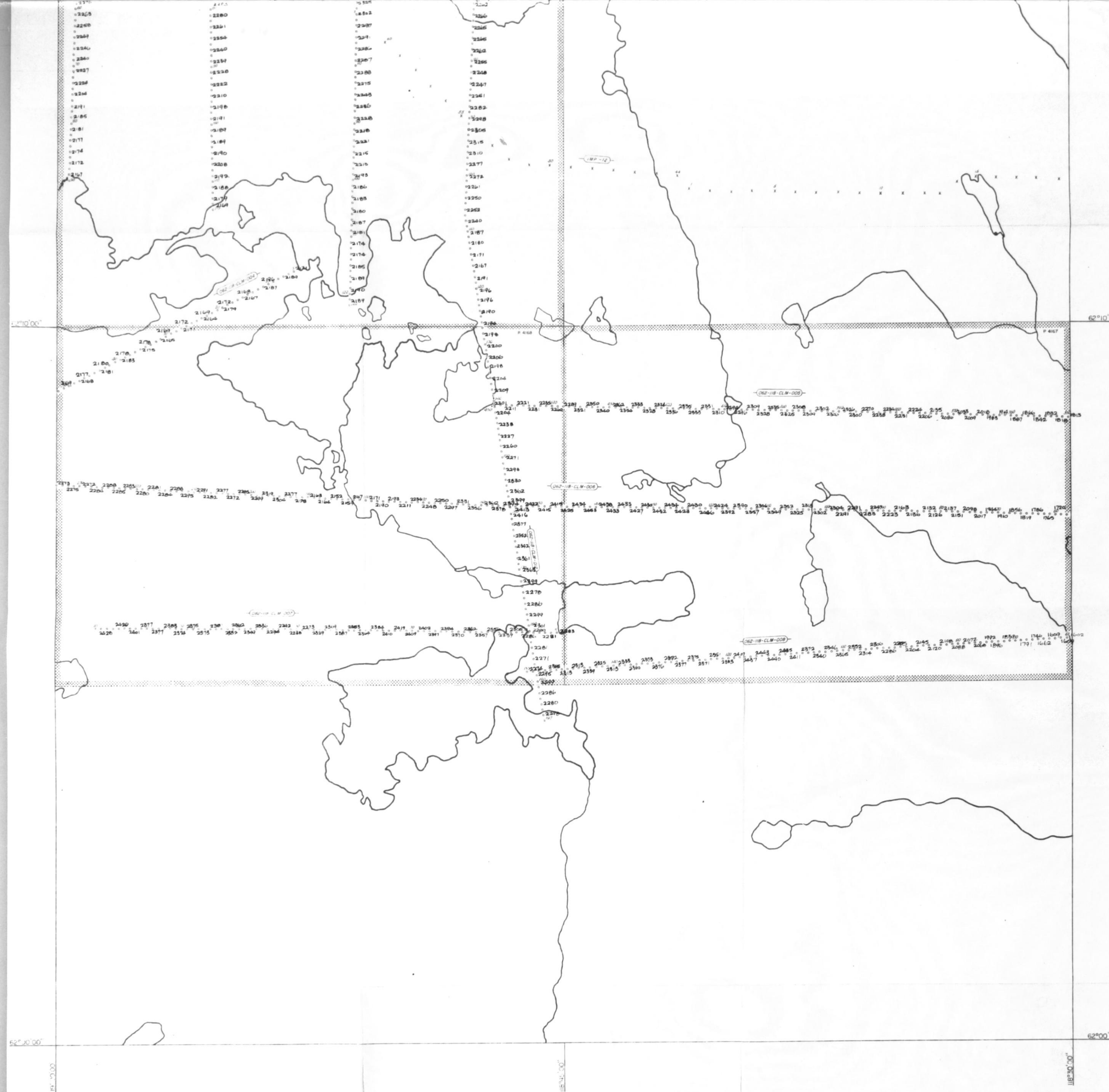
600 % CDP, 160 FT. GROUP INTERVAL
Scale: 1" = 400'



NOTE: 110' GROUP INTERVAL SIMILIAR
 TO ABOVE: SP SPACING: 330'
 SPREAD LENGTH: 1925'
 GEOPHONE SPACING 18.4'

INLINE REFRACTION LAYOUT:
 FROM EVERY THIRD REFLECTION SP. A 36 TRACE
 SINGLE ENDER IS SHOT IN BOTH DIRECTIONS
 SPREAD LENGTH: 2905'; GROUP INTERVAL: 110'

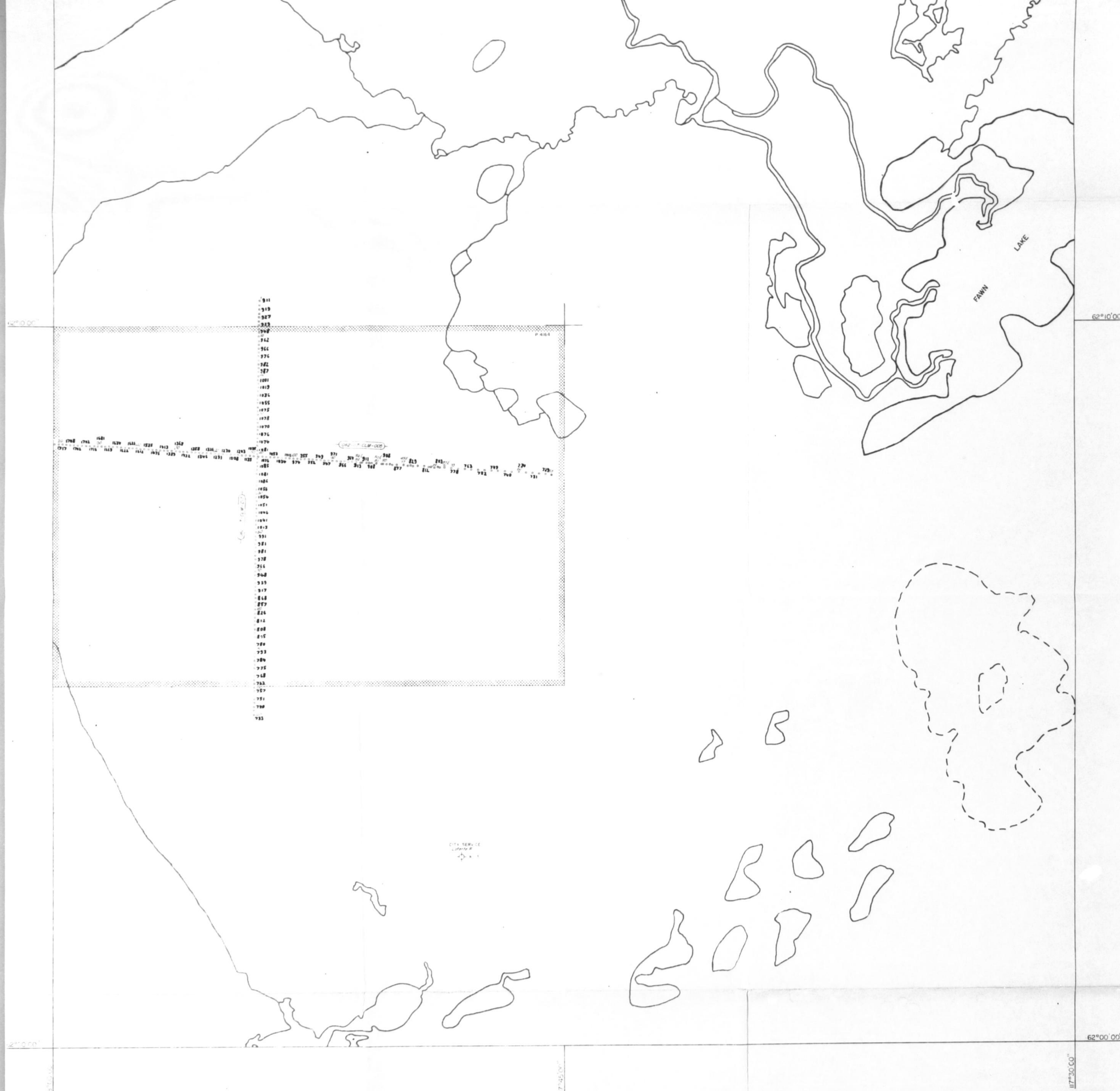


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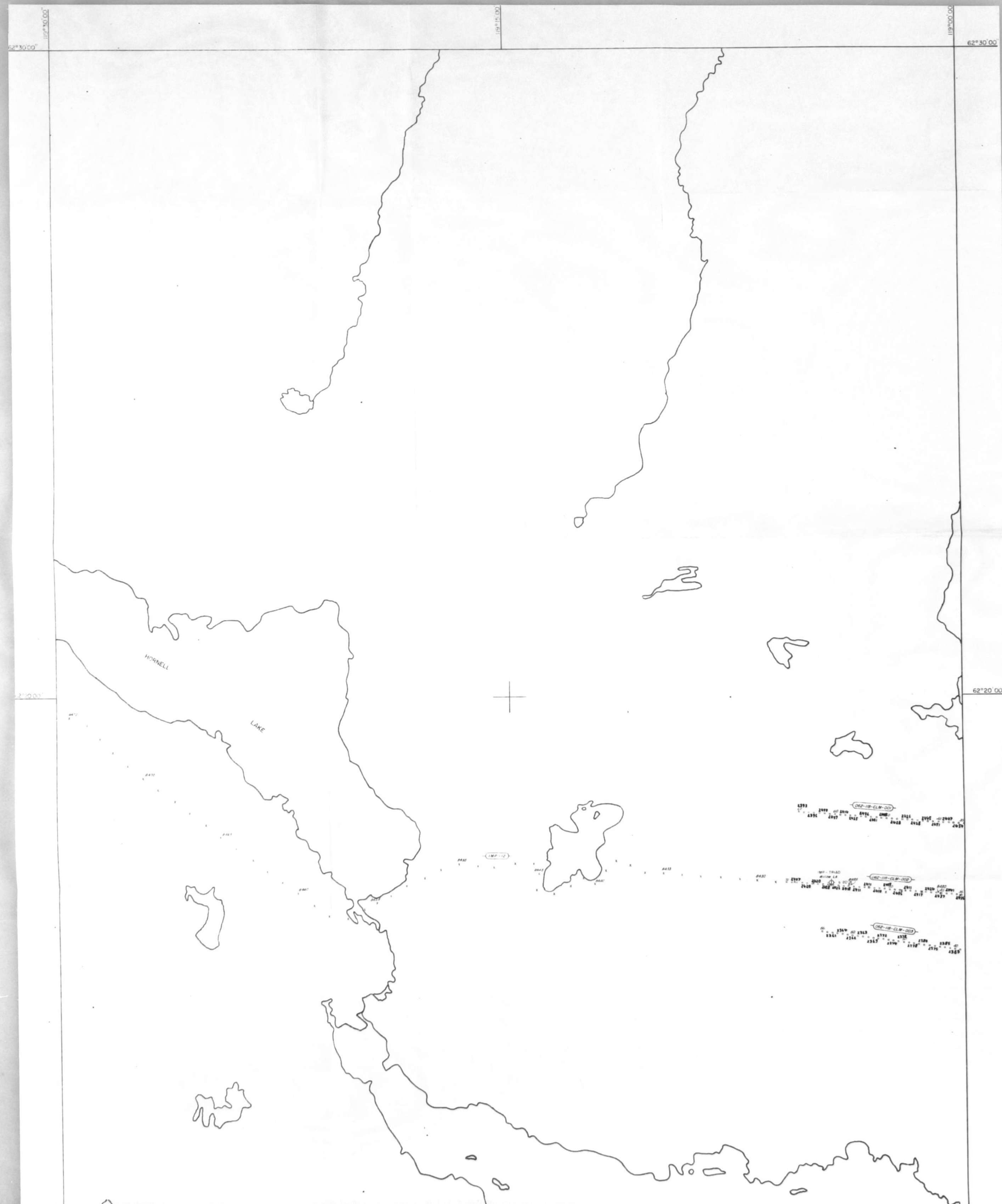
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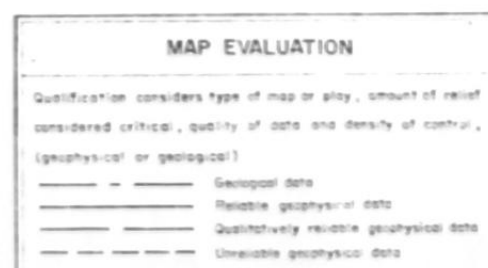




MAP EVALUATION		SHOOTING HISTORY (Not in detail)				INTERPRETIVE HISTORY				AMOCO CANADA PETROLEUM COMPANY LTD.		
Qualification considers type of map or plot, amount of relief considered critical, quality of data and density of control (geophysical or geological). _____ Geological data _____ Reliable geophysical data _____ Qualitatively reliable geophysical data _____ Unreliable geophysical data		INCL. DATES	SHOT BY	SHOT FOR	SP AND/OR LINE No's	FINAL REPORT No.	DATE	INTERR	CO. AFFIL.	APPROX. LOC. ON MAP	This map replaces/supersedes Reg. No. _____ which is for or destroyed/kept (delete transmitter dated) _____ Map distribution <input type="checkbox"/> Division <input type="checkbox"/> General Office Maps prepared this report <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	AREA Fawn Lk. GRID 05-K-4W-05-14826W PROVINCE N.W.T. SCALE 1"=4000' HORIZON TYPE OF MAP SURFACE ELEV. CONTOUR INT. SHOT BY FOR INCL. DATES INTERP BY CO. AFFIL. REPORT No. DATE REMARKS
		MAY 1962, 1971	ALSTERN, R.S.	AMOCO	CLM 000,017						*This map checked by AMOCO Geophysicist/Geologist All geophysical and geologic data, including the interpretation thereof, appearing on this map is the property and confidential property of Amoco Canada Petroleum Company Ltd. The publication or reproduction thereof without the written permission of said company is strictly prohibited. VELOCITY PLAT AND EFFECT OF REF PLANE AND OR VELOCITY ON TIME MAP	FROM GEOPH. REPORT No(s) DATED REMARKS

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This map requires Supplemental Map No. _____ area

which is to be destroyed kept
(After destruction dated _____)

Map distribution ☐ Division ☐ Special Office

Maps prepared this report

	\$4	\$6
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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This map checked by _____
Amos, Georgetown/Denver

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VELOCITY PLAT AND EFFECT OF REE PLANE AND ON VELOCITY ON TIME

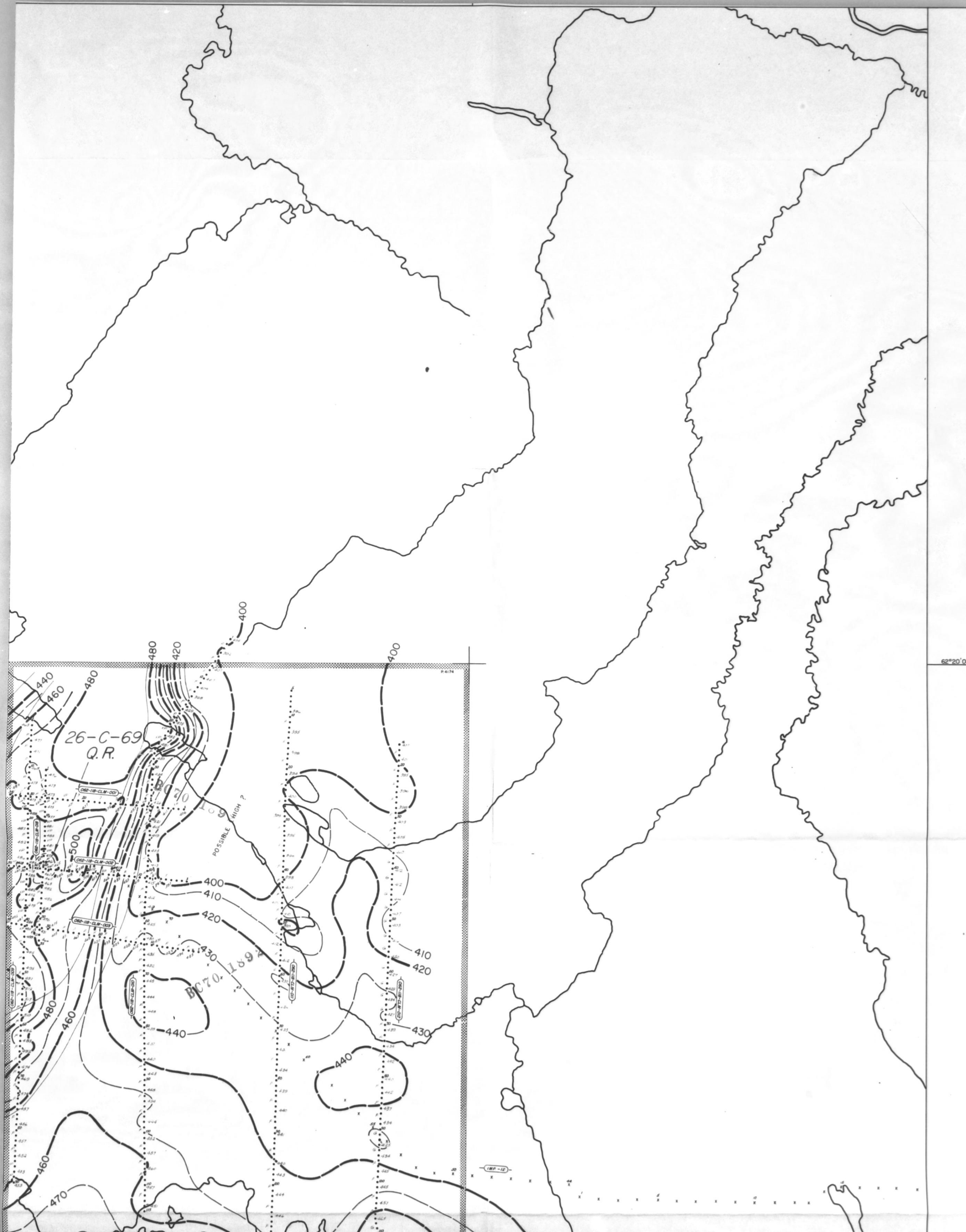


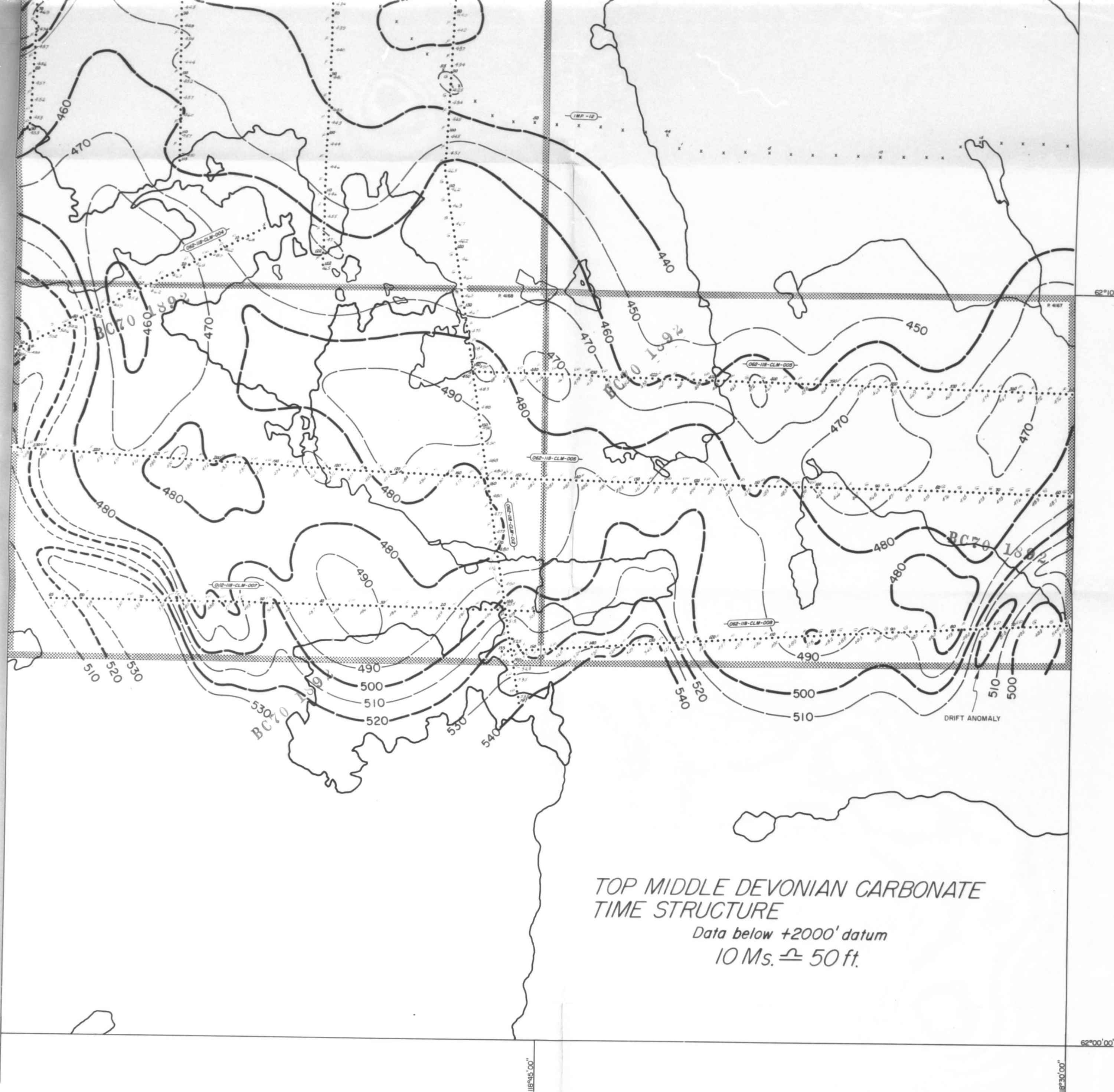
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