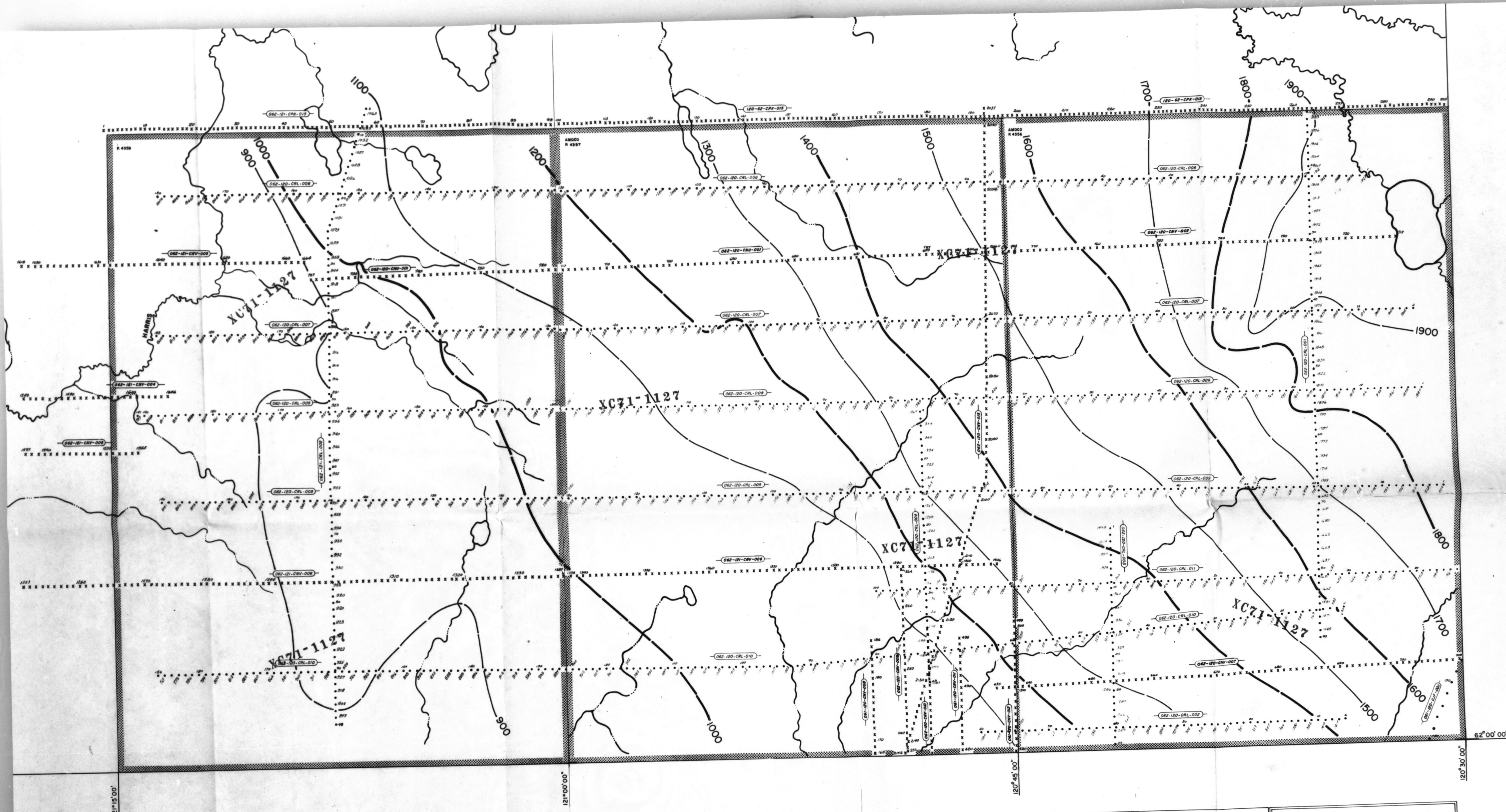




INTERPRETIVE HISTORY				
FINAL REPORT No.	DATE	INTERP.	CO. AFFIL.	APPROX. LOC. ON MAP
7145	JULY 27, 1971	M. MITCHELL	AMOCO	S. HALF

SHOOTING HISTORY (Not in detail)				
INCL. DATES	SHOT BY	SHOT FOR	S.P. AND/OR LINE No.	APPROX. LOC. ON MAP
FEB. 1969	IMPERIAL 270	IMPERIAL OIL	CNV-001	
JAN. 1969	IMPERIAL 270	IMPERIAL OIL	CNV-002	
MAR. 1967	IMPERIAL 270	IMPERIAL OIL	CNV-003, 019	
JAN. 1969	IMPERIAL 270	IMPERIAL OIL	CNV-007 - 012	
JAN. 1969	TELETYPE	HURRY OIL	CNV-05	
MAR. 1969	HURRY	HURRY OIL	CNV-05	
JAN. FEB. 1971	UNITED 545	AMOCO	CNV-00-004, 006-011	

INTERPRETIVE HISTORY				
FINAL REPORT No.	DATE	INTERP.	CO. AFFIL.	APPROX. LOC. ON MAP
7145	JULY 27, 1971	M. MITCHELL	AMOCO	S. HALF

AMOCO CANADA	
PETROLEUM COMPANY LTD.	
AREA: Harris River	GRID: CO-20/S
PROVINCE: N.W.T.	SCALE: 1" = 4,000'
HORIZON: SURFACE	
TYPE OF MAP: ELEVATION	CONTOUR INT: 10'
SHOT BY:	
INCL. DATES:	
INTERP. BY: M. MITCHELL	CO. AFFIL.: AMOCO
REPORT No.:	DATE: SEPT. 1971
REMARKS:	
LEGEND - Geophysical Survey - CNV - Geophysical Record - Geophysical Velocity	

AMOCO CANADA	
PETROLEUM COMPANY LTD.	
AREA: No Name River	GRID: CO-21/SW
PROVINCE: N.W.T.	SCALE: 1" = 4,000'
HORIZON: SURFACE	
TYPE OF MAP: ELEVATION	CONTOUR INT: 100 ft.
SHOT BY:	
INCL. DATES:	
INTERP. BY: M. MITCHELL	CO. AFFIL.: AMOCO
REPORT No.:	DATE: SEPT. 1971
REMARKS:	
LEGEND - Geophysical Survey - CNV - Geophysical Record - Geophysical Velocity	

CLASS I

REPORT OF SEISMOGRAPH REFLECTION
GEOPHYSICAL SURVEY

On Northwest Territories Permits
4356, 4357 and 4358
January and February 1971

Prepared by: C.W. Allison
District Geophysicist

REPORT OF SEISMOGRAPH REFLECTION
GEOPHYSICAL SURVEY



Conducted By

United Geophysical Company of Canada Limited

for

Amoco Canada Petroleum Company Ltd.

In 1971

On Northwest Territories Permits
4356, 4357 and 4358

Prepared By:

C.W. Allison
District Geophysicist



Submitted in support of application for credit; see affidavit made by
_____ 1971 and in accordance with work
obligations under Section _____, Sub Section _____ of the
Regulations.

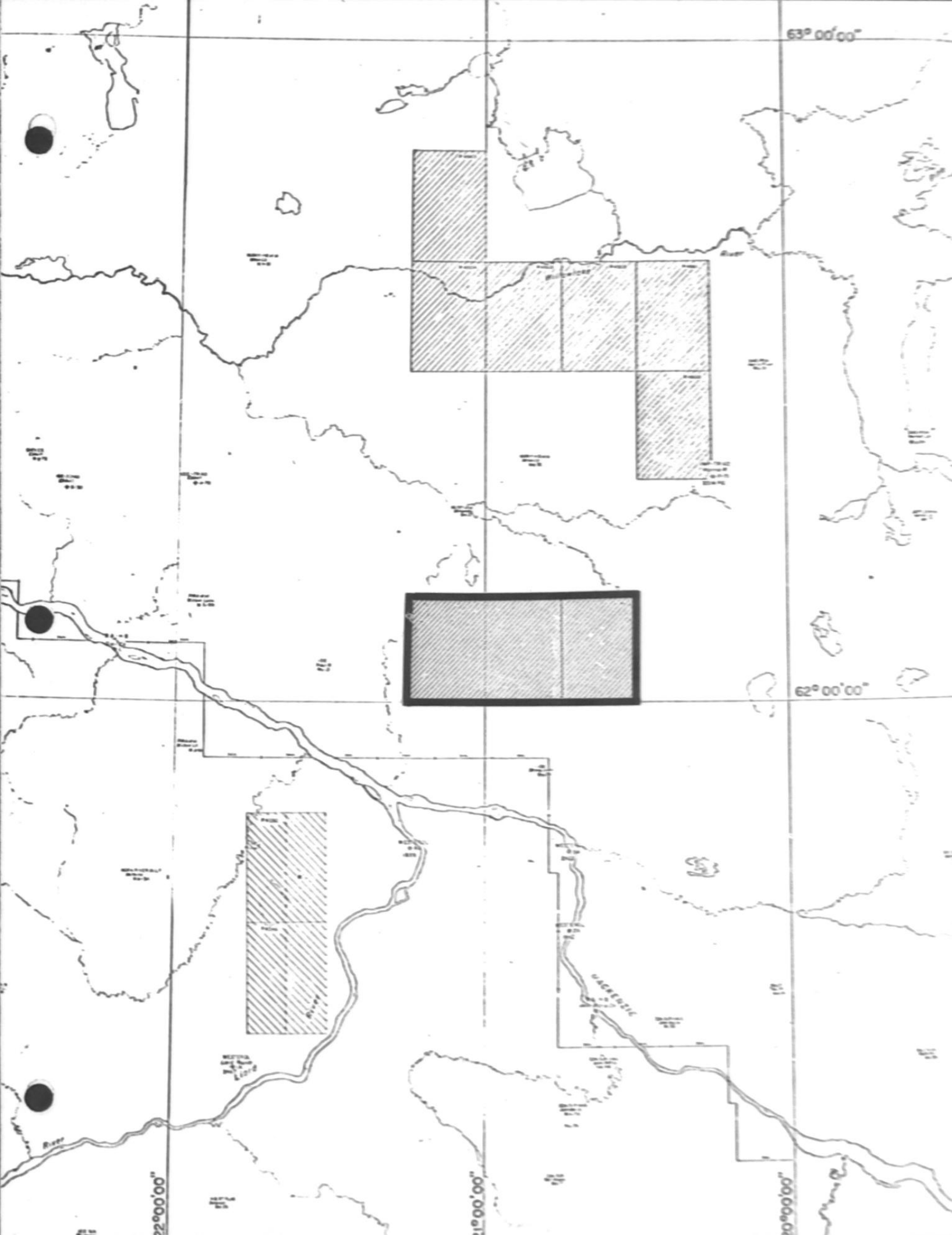
TABLE OF CONTENTS

	Page
Introduction	1
Locality Map	2
Statistical Data	3
Field Procedures	4
Data Processing	5
Results of Interpretation	6

Enclosures: Mid Devonian Carbonate Structure Map
Mid Devonian Carbonate -- Pre-Devonian
Isochron Map
Surface Elevation Map
Spread Diagram

I N T R O D U C T I O N

During January and February 1971, United Geophysical Company of Canada on behalf of Amoco Canada Petroleum Company Ltd. carried out a conventional seismic reflection survey on Northwest Territories Permits 4356, 4357 and 4358.



STATISTICAL DATA

A. Mobilization and Recording Dates

The crew moved from the Antoine Lake area to the report area on January 13, shooting commencing on the 14th of January and finishing on the 14th of February.

B. Production

The survey consisted of eleven lines (CRL 1-11) covering one hundred and sixty-six miles and requiring one thousand three hundred and eighteen shots. Thirty-two days were spent conducting the survey thus giving an average production rate of 5.18 miles per day.

C. Equipment

1	Recording Truck (DDS 620 Instruments 36 Channel)
1	Shooting Truck
2	Cable Trucks
1	Party Managers Truck
2	Survey Trucks
1	Supply Truck
3	Conventional Shot Hole Drills
2	Sewell Auger Drills
3	Water Trucks
1	Fold-Out Kitchen-Sleeper Trailer
1	Fold-Out Utility-Sleeper Trailer
1	Power Supply-Mechanical Shop Trailer
1	Gas Trailer
1	Bulldozer

D. Personnel

1	Party Manager
1	Computer-Clerk
1	Observer
1	Assistant Observer
4	Recording Helpers
2	Surveyors
2	Rodmen
1	Shooter
1	Shooter's Helper
2	Cable Truck Drivers
1	Mechanic
1	Mechanic's Helper
1	Supply Man
1	Bulldozer Operator
5	Drillers
5	Driller's Helpers
3	Water Truck Drivers
1	Cook
1	Cook's Helper
<u>1</u>	Camp Attendant

Total: 36 Men

E. Surveying

The surveying was conducted using Wilde Model T16-E theodolites and steel tapes and was based upon Government controlled monument "Harris" located south of the report area.

F. Conditions

Normal winter conditions.

FIELD PROCEDURES

As the enclosed spread diagram shows, a station interval of 110 feet was used together with a shotpoint interval of 660 feet to yield 300% coverage. Symmetric shots resulting in maximum distances of 1980 feet were made with the exception of every sixth shotpoint. At these shotpoints 36 trace single end shots were made in both directions resulting in maximum distances of 3960 feet.

Single holes to a depth of fifty feet loaded with 1 1/4 pounds of dynamite were generally used. Multiple hole patterns, lighter and heavier charges, and deeper holes were tested but did not significantly improve the quality of the data.

DATA PROCESSING

The data was processed by Amoco Canada Petroleum Company Ltd. in Calgary. Correction of the data to a 1,000 foot datum was carried out. Normal moveout corrections, trace muting, frequency filtering, and amplitude scaling were also applied to the data.

RESULTS AND INTERPRETATION

Over the whole area a sub weathering layer of velocity 7,000 ft./sec. exists. In places this reaches a depth in excess of 800 feet below surface. However, good data was obtained from the area and the Mid Devonian Carbonate (Nahanni), Salt and Basement picks could always be recognized.

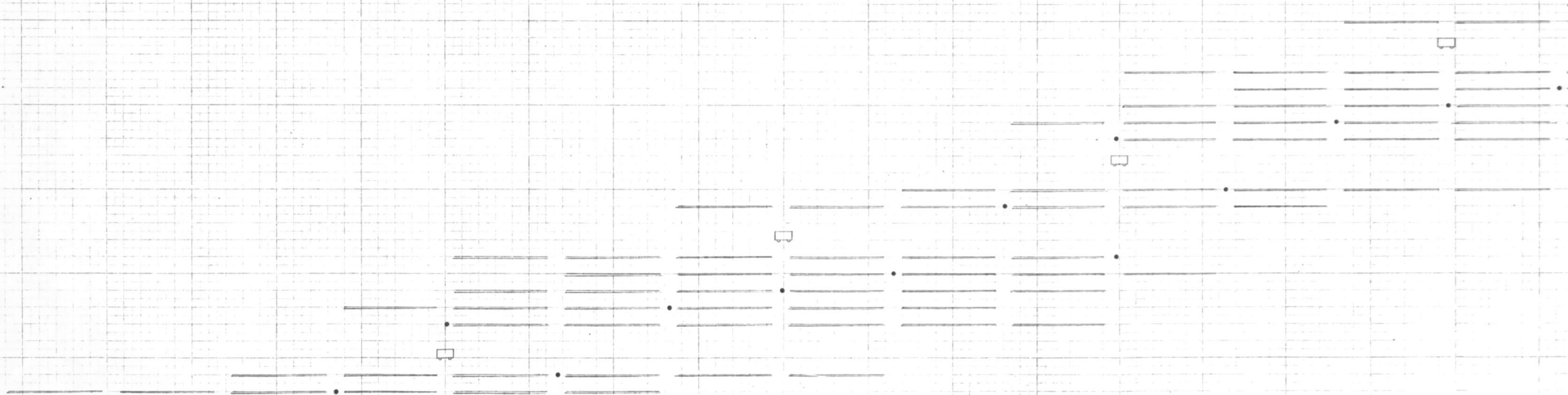
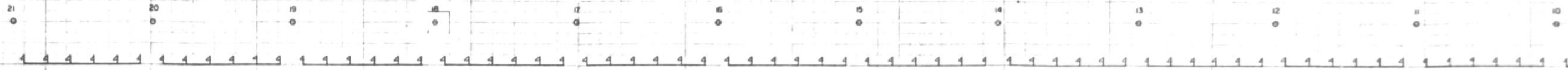
The isochron and structural maps both show a salt collapse in the south east portion of the area while in the north west an anomaly occurs which may be a smaller collapse or some form of build up into the salt.

Respectfully submitted by:

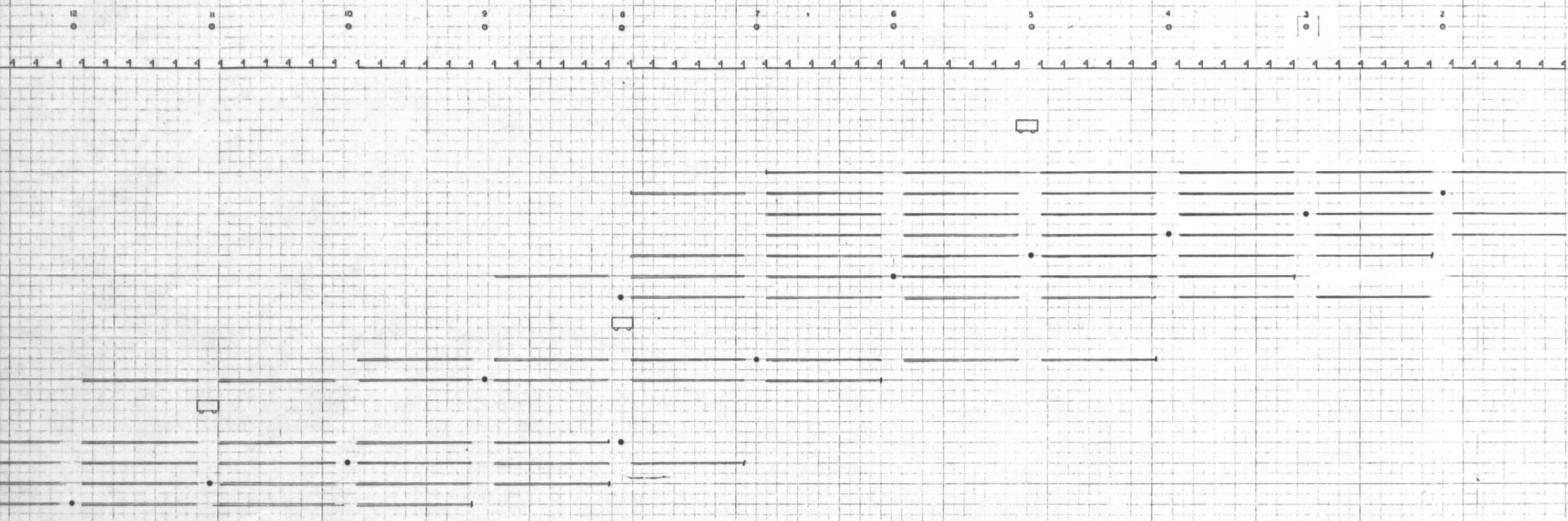
AMOCO CANADA PETROLEUM COMPANY LTD.



C.W. Allison
District Geophysicist



HARRIS RIVER
UNITED 545
300% shooting with 110' group interval cables
JANUARY 1971



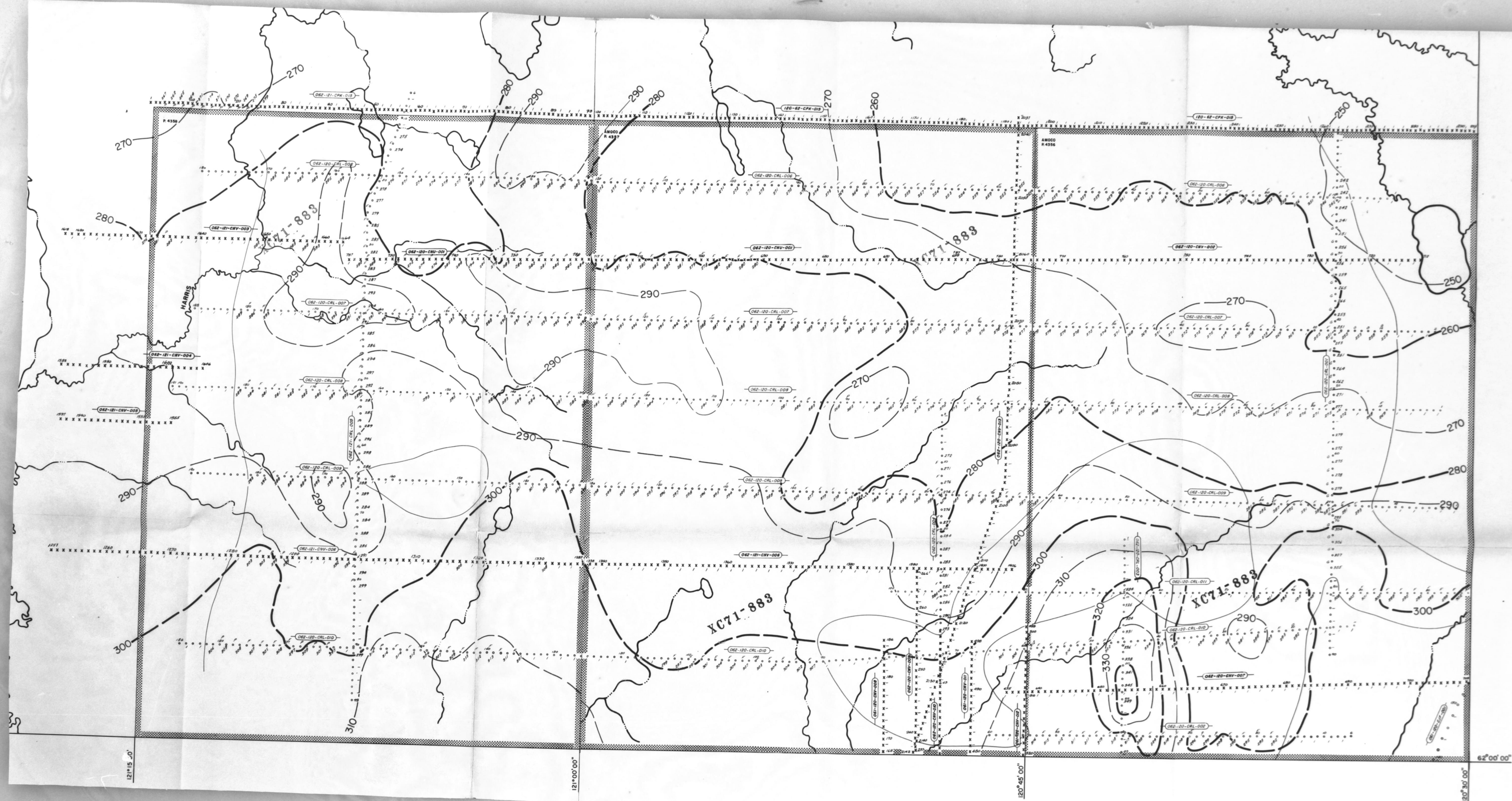
1 GROUP CENTER
1 1 1 1 1 1 ONE CABLE
• SOURCE POINT
RECORDER SET UP

—SHOTPOINT SEQ. NO'S 8, 14, 20, 26, ETC. ARE SHOT TWICE ONCE WITH 36 GROUPS BACK AND ONCE WITH 36 GROUPS AHEAD.

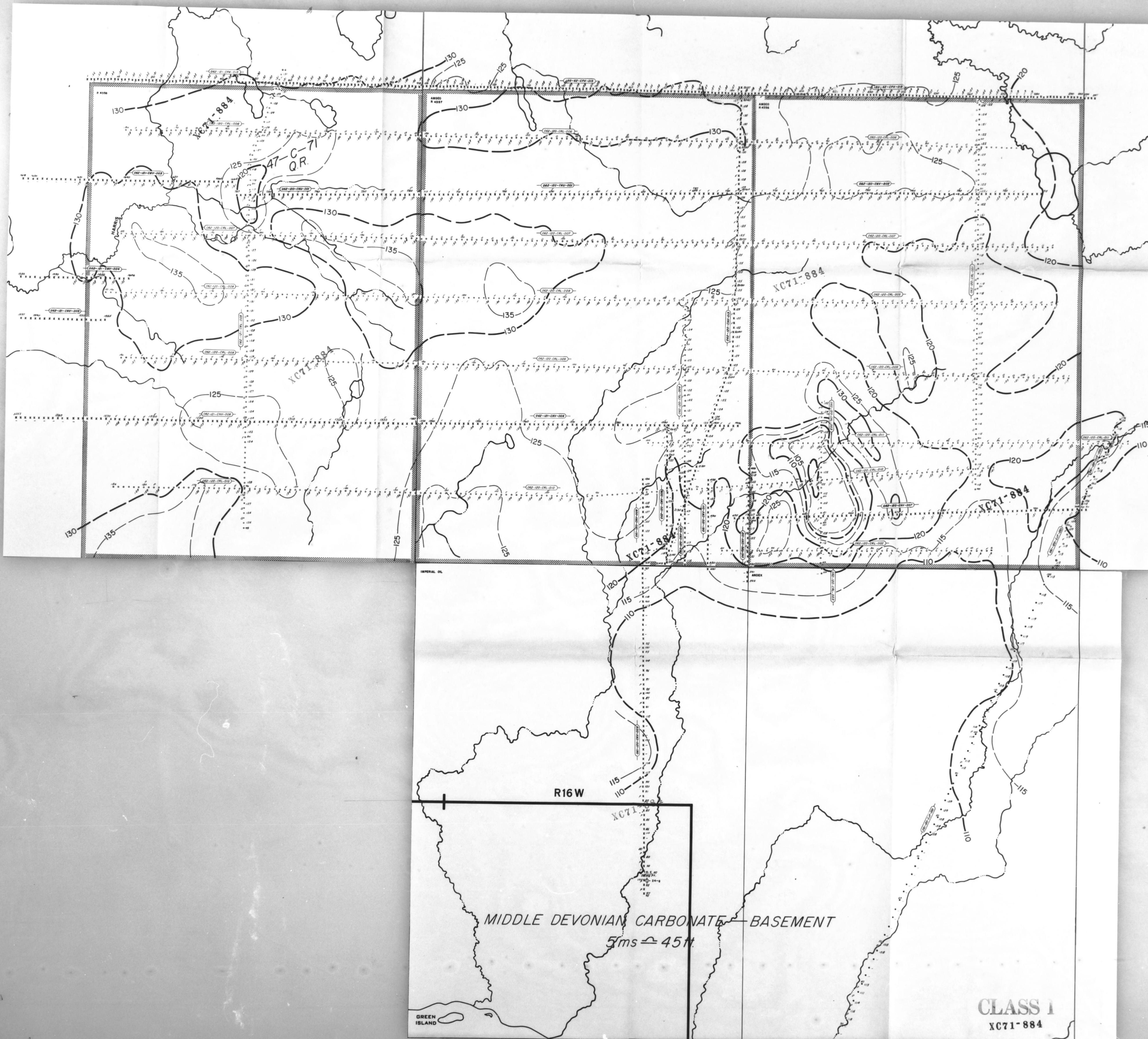
—INTERVAL BETWEEN S.P.'S IS 660 ft.

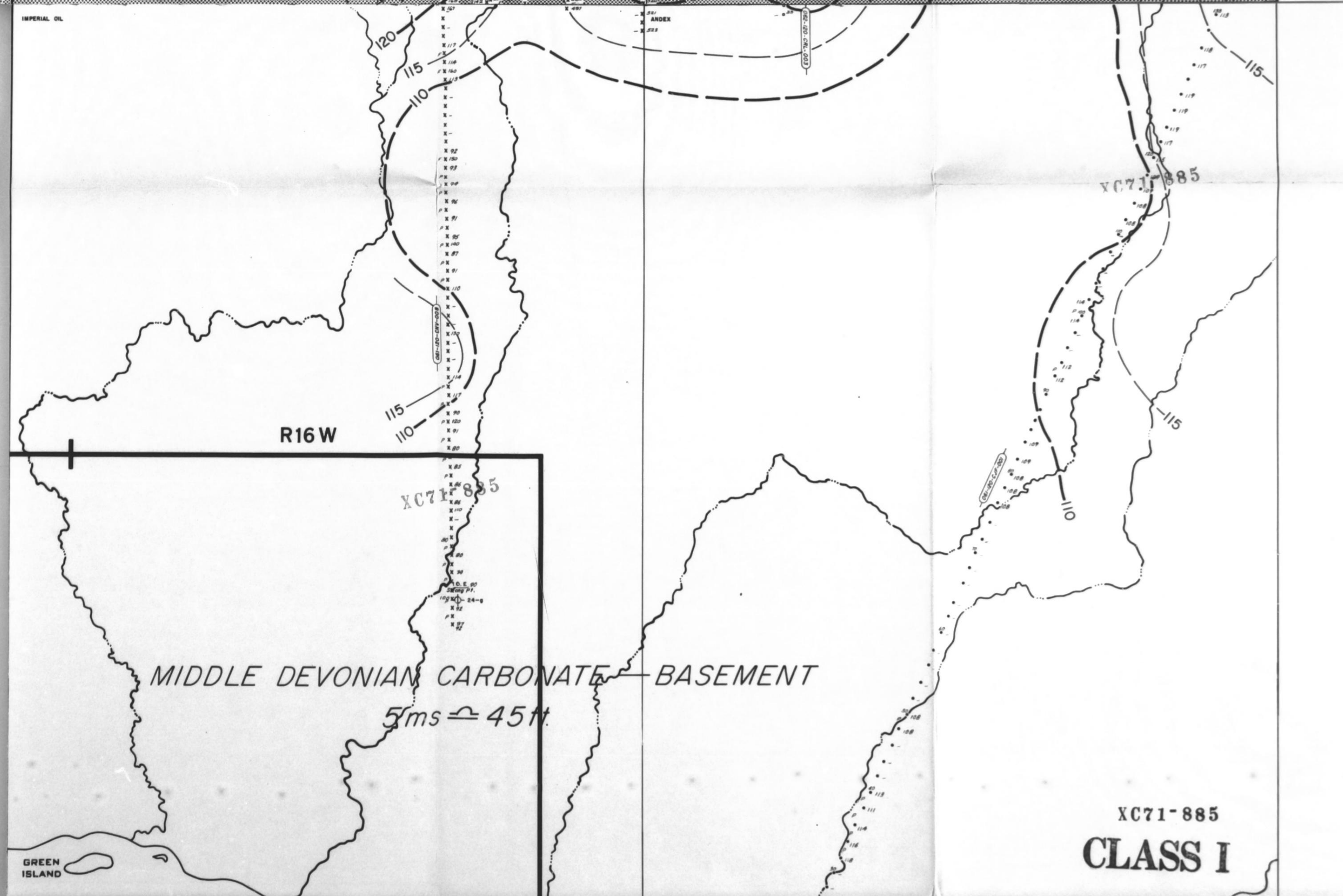
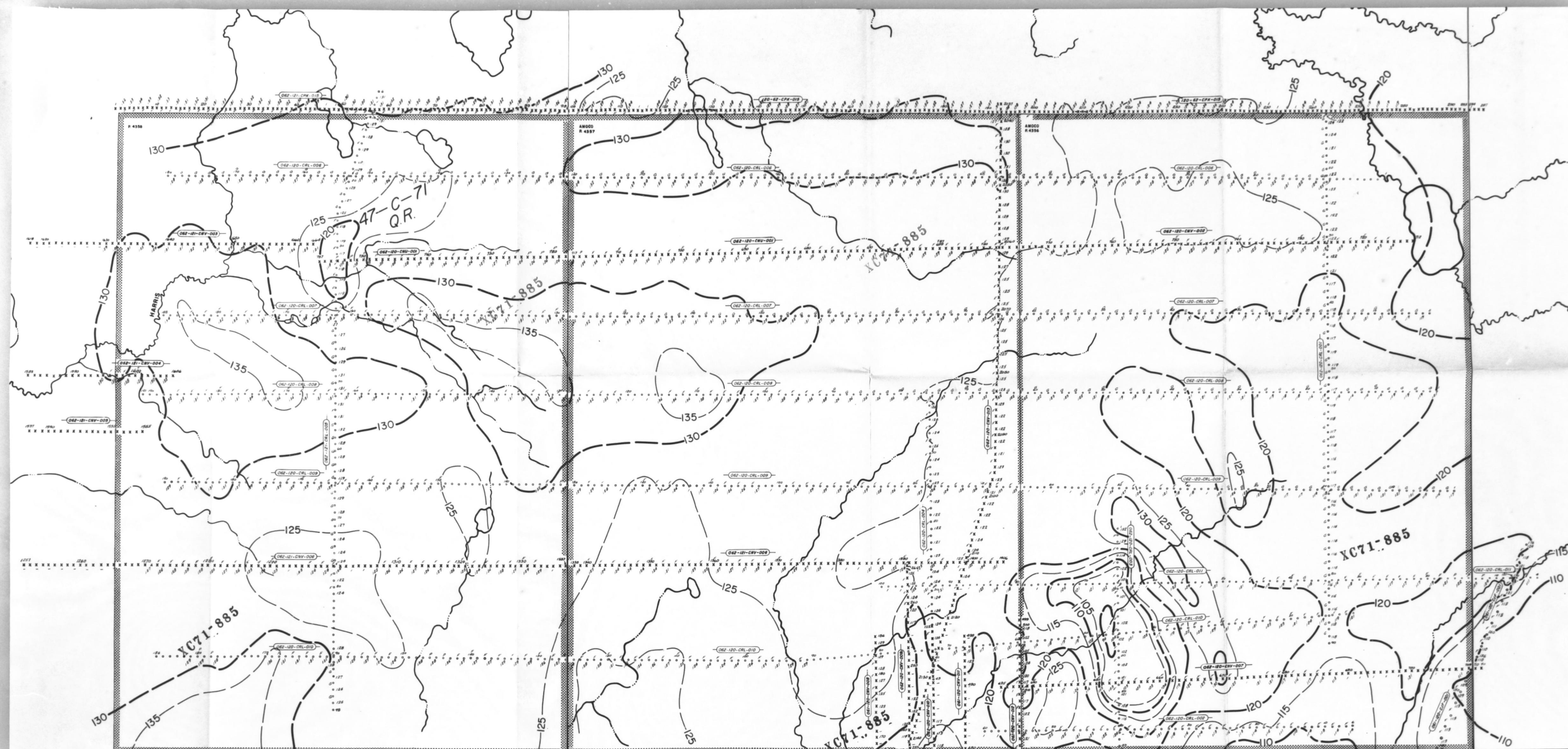
—RECORDER SET UP MOVES 3 SHOTPOINTS

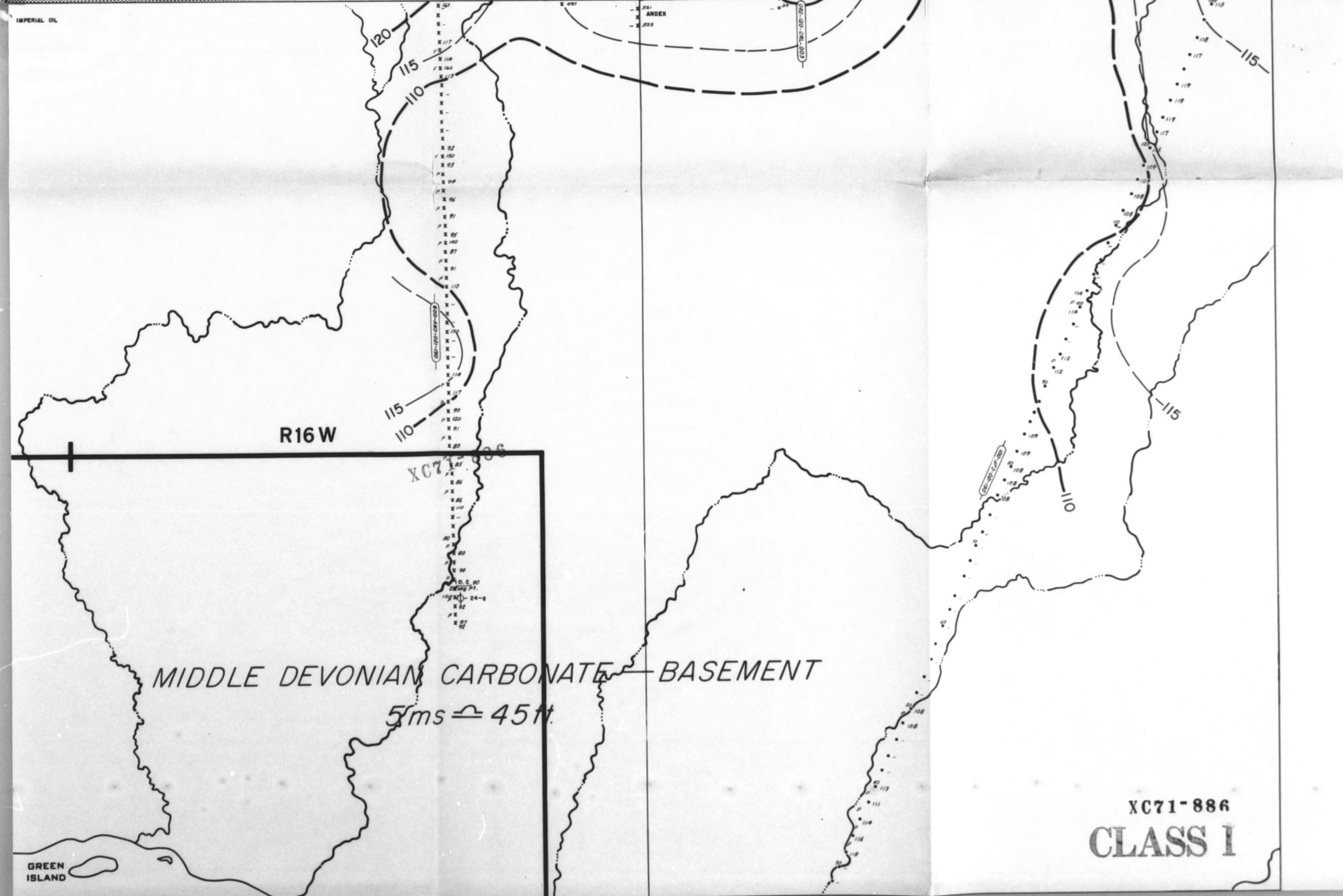
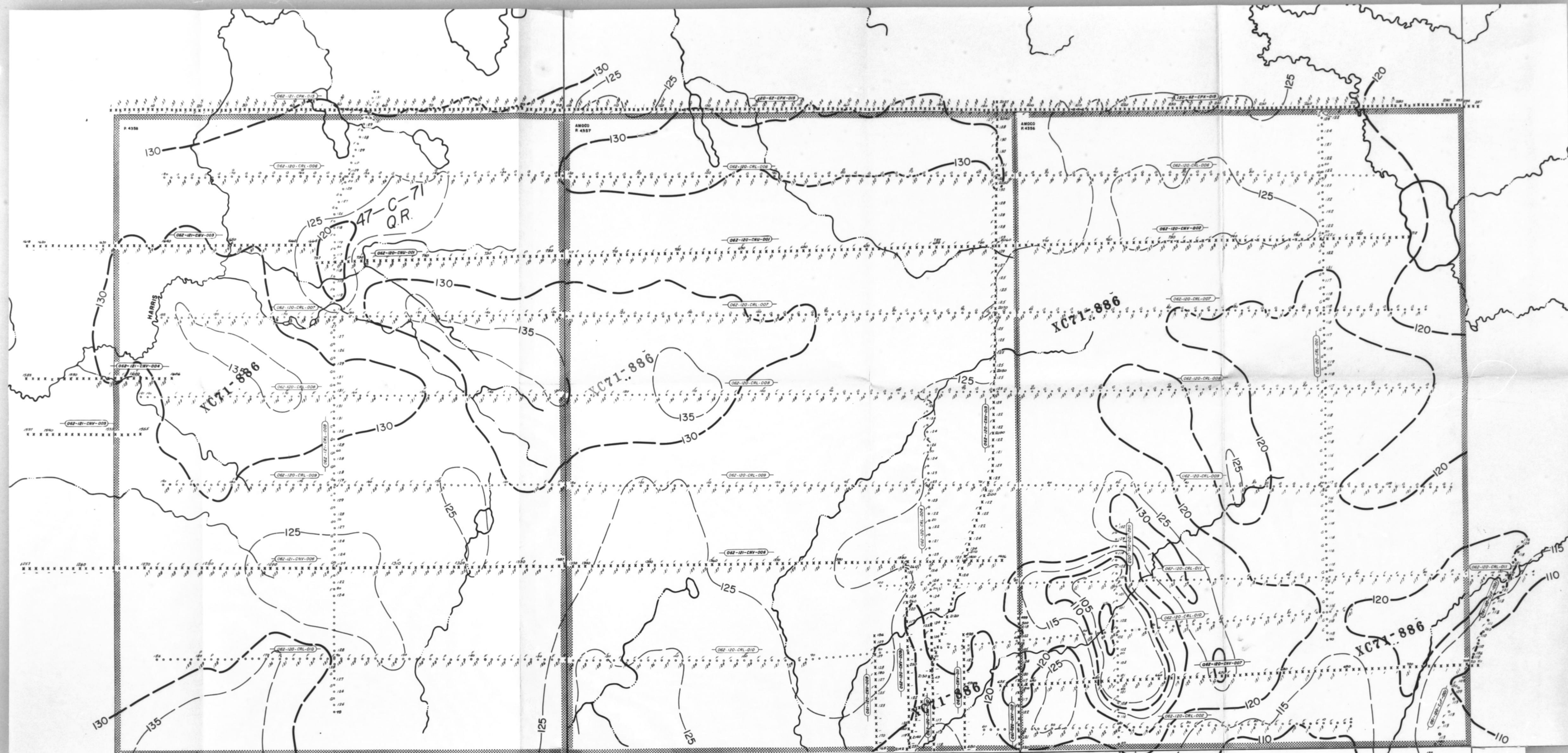
RECORDER POSITION	SHOTS
5	1, 2, 3, 4, 5, 6, 8
8	7, 9
11	8, 10, 11, 12, 14
14	13, 15
17	14, 16, 17, 18, 20
20	19, 21

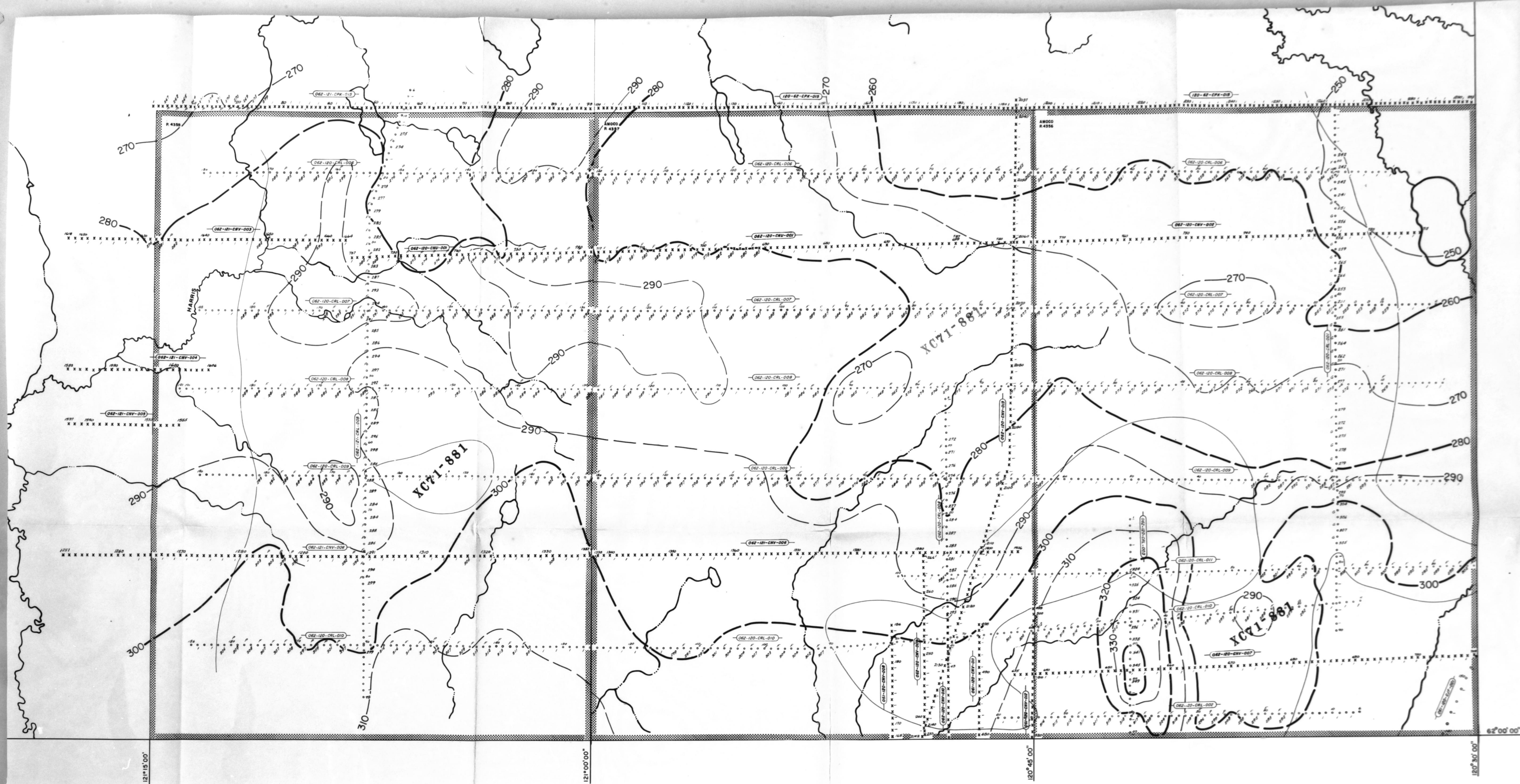


AMOCO CANADA PETROLEUM COMPANY LTD.	
AREA: No Name River	GRID: CO-21/SW
PROVINCE: N.W.T.	SCALE: 1" = 4,000'
HORIZON: MID DEVONIAN CARBONATE	
TYPE OF MAP: STRUCTURE	CONTOUR INT. 10 MS
SHOT BY: UNITED 545	FOR: AMOCO
INCL. DATES: JAN, FEB, 1971	
INTERP BY: M. MITCHELL	CO. AFFIL: AMOCO
REPORT NO: 7145	DATE: JULY 27, 1971
REMARKS: XC71-883	
GEOLOGICAL INT: DATE: JULY 27/71	
FROM GEOPH. REPORT No (s): DATED:	
REMARKS:	
CLASS 1	

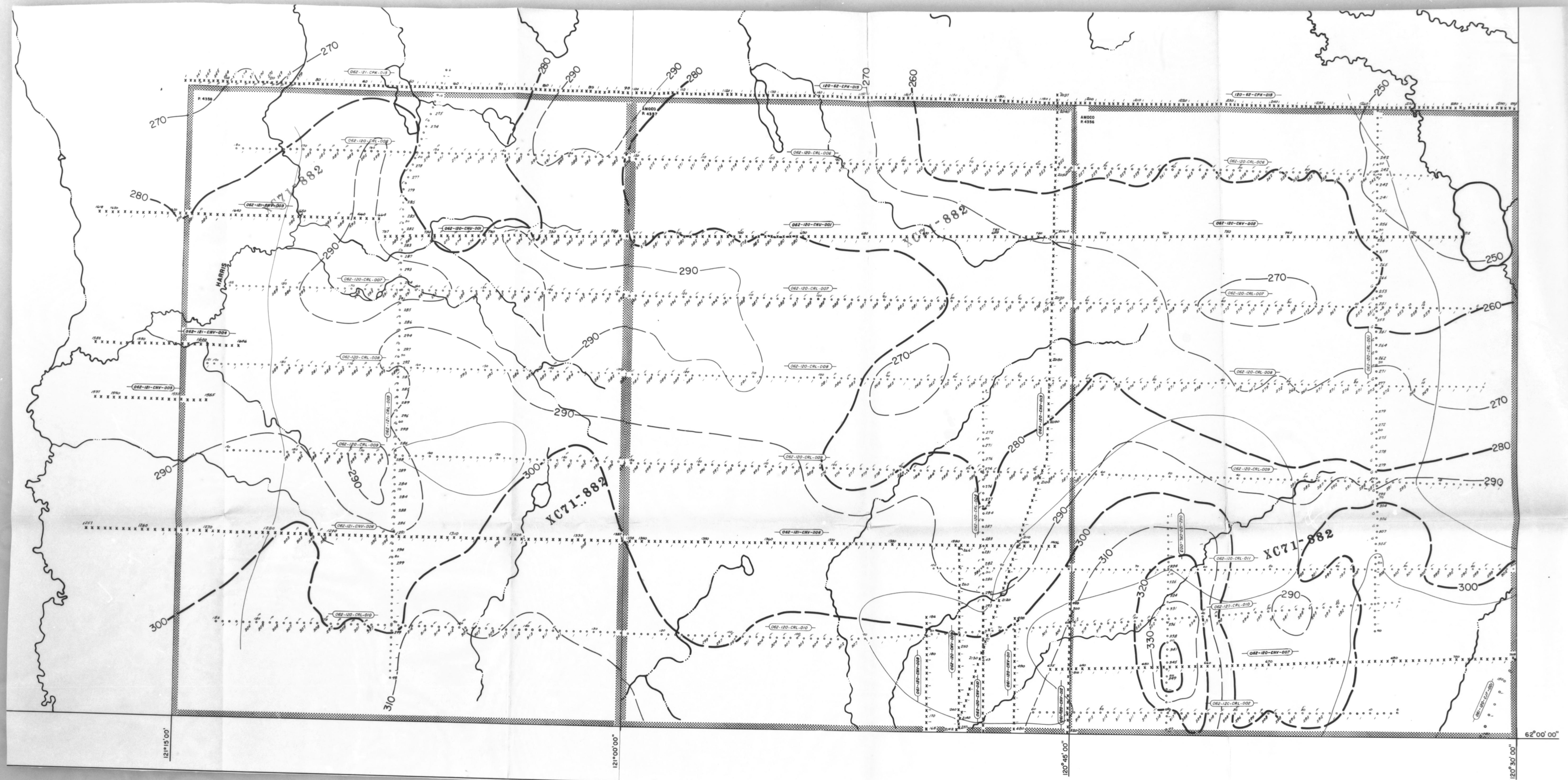








AMOCO CANADA PETROLEUM COMPANY LTD.	
AREA: No Name River	GRID: CO-21/SW
PROVINCE: N.W.T.	SCALE: 1" = 4,000'
HORIZON: MID DEVONIAN CARBONATE	TYPE OF MAP: STRUCTURE
SHOT BY: UNITED 545	FOR: AMOCO
INCL DATES: JAN, FEB, 1971	CO. AFFIL: AMOCO
INTERP BY: M. MITCHELL	REPORT No: 7145
DATE: JULY 27, 1971	
REMARKS:	
XC71-881	
GEOLOGICAL INT:	DATE: JULY 27/71
FROM GEOPH REPORT No(s)	DATED
REMARKS:	
CLASS I	



AMOCO CANADA PETROLEUM COMPANY LTD.	
AREA: No Name River	GRID: CO-21/SW
PROVINCE: N.W.T.	SCALE: 1" = 4,000'
HORIZON: MID DEVONIAN CARBONATE	
TYPE OF MAP: STRUCTURE	CONTOUR INT: 10 MS.
SHOT BY: UNITED 545 FOR: AMOCO	
INCL DATES: JAN, FEB, 1971	
INTERP BY: M. MITCHELL	CO AFFIL: AMOCO
REPORT No: 7145	DATE: JULY 27, 1971
REMARKS:	
XC71-882	
GEOLOGICAL INT:	DATE JULY 27/71
FROM GEOPH REPORT No (s)	DATED
REMARKS:	
CLASS I	

60-6-4-90

Abstracted for
Geo-Science Data Index

Date _____

REPORT OF SEISMOGRAPH REFLECTION GEOPHYSICAL SURVEY

CONDUCTED BY

UNITED GEOPHYSICAL COMPANY OF CANADA LIMITED

FOR

AMOCO CANADA PETROLEUM COMPANY LTD.

IN 1971

ON

NORTHWEST TERRITORIES PERMITS

4346 and 4350



Prepared by:



C. W. Allison
District Geophysicist

Submitted in support of application for credit; see affidavit made by
_____ 1971 and in accordance with work obligations
under Section _____, Sub-section _____ of the Regulations.

TABLE OF CONTENTS

	Page
Introduction	1
Locality Map	2
Statistical Data	3
Field Procedures	6
Data Processing	7
Results and Interpretation	8

Enclosures: Nahanni Structure Map
Surface Elevation Map
Spread Diagram

INTRODUCTION

During January of 1971 a conventional seismic reflection survey was carried out by United Geophysical Company of Canada Limited on behalf of Amoco Canada Petroleum Company Ltd. The survey was conducted on Northwest Territories Permits 4346 and 4350.

62° 00' 00"

122°00'00"

121°00'00"

120°00'00"

STATISTICAL DATA

A. Mobilization and Recording Dates

The crew arrived in the permit area on the 5th of January, 1971 viz existing seismic trails and the Mackenzie highway. Shooting commenced on the 6th of January and was completed the 12th of January.

B. Production

The survey consisted of one line (CRK-001) covering twenty miles and requiring four hundred shots and nine hundred-sixty stations. Seven days were spent conducting the survey thus giving an average production rate of 2.86 miles per day.

C. Equipment

- 1 Recording Truck (D.D.S. 620 Instruments 36 channel)
- 1 Shooting Truck
- 2 Cable Trucks
- 1 Party Manager's Truck
- 2 Survey Trucks
- 1 Supply Truck
- 3 Conventional Shot hole drills
- 2 Sewell Auger drills
- 3 Water Trucks
- 1 Fold-out kitchen-sleeper trailer
- 1 Fold-out utility-sleeper trailer
- 1 Power supply-mechanical shop trailer
- 1 Gas trailer
- 1 Bulldozer

D. Personnel

1 Party Manager
1 Computer-clerk
1 Observer
1 Asst. Observer
4 Recording Helpers
2 Surveyors
2 Rodmen
1 Shooter
1 Shooter's helper
2 Cable Truck drivers
1 Mechanic
1 Mechanic's helper
1 Supply man
1 Bulldozer operator
5 drillers
5 driller's helpers
3 Water Truck drivers
1 Cook
1 Cook's helper
1 Camp attendant

TOTAL: 36 men

E. Surveying

The surveying was conducted using Wilde Model T16-E theodolites and steel tapes and was based upon Government controlled monument 'Simpson' located near the Fort Simpson airport. In addition, celestial observations were taken for azimuth control.

F. Conditions

The operation was normal.

FIELD PROCEDURES

As the enclosed spread diagram shows, a station interval of 110 feet was used together with a shotpoint interval of 330 feet to yield 600% coverage. Symmetric shots resulting in maximum distances of 1980 feet were made with the exception of every eighth shot point (i.e. every half mile). At these shotpoints a 36 trace single end shot was made to the north, and another to the south resulting in maximum distances of 3910 feet.

Single holes to a depth of fifty feet, loaded with $1\frac{1}{4}$ pounds of dynamite were generally used. Some multiple hole patterns, lighter charges, and deeper holes were tested but did not significantly affect the quality of the data.

DATA PROCESSING

The data processing was performed by CDP Computer Data Processors in Calgary.

New surface and elevation corrections to a six hundred foot datum were applied.

Normal movement corrections, trace muting, frequency filtering, and amplitude level equalization were applied to the data.

RESULTS AND INTERPRETATION

It was found that a subweathering, low velocity layer of unconsolidated sands and clays occurred in varying thicknesses over the majority of the area. The layer was usually, approximately 6500 feet per second in velocity and at times was in excess of one thousand feet in depth. Shale of approximately 11,000 feet per second velocity was found to exist below the above-mentioned low velocity layer. The frequency of the data was extremely variable. Over the portion of the area where the subweathering, low velocity layer was present low frequency, low resolution data was obtained. Where this layer was absent, high frequency, high resolution data was obtained. The top of the Nahanni carbonate could almost always be recognized, no matter what the frequency of the data was.

The Nahanni Structure Map shows two anomalous areas:

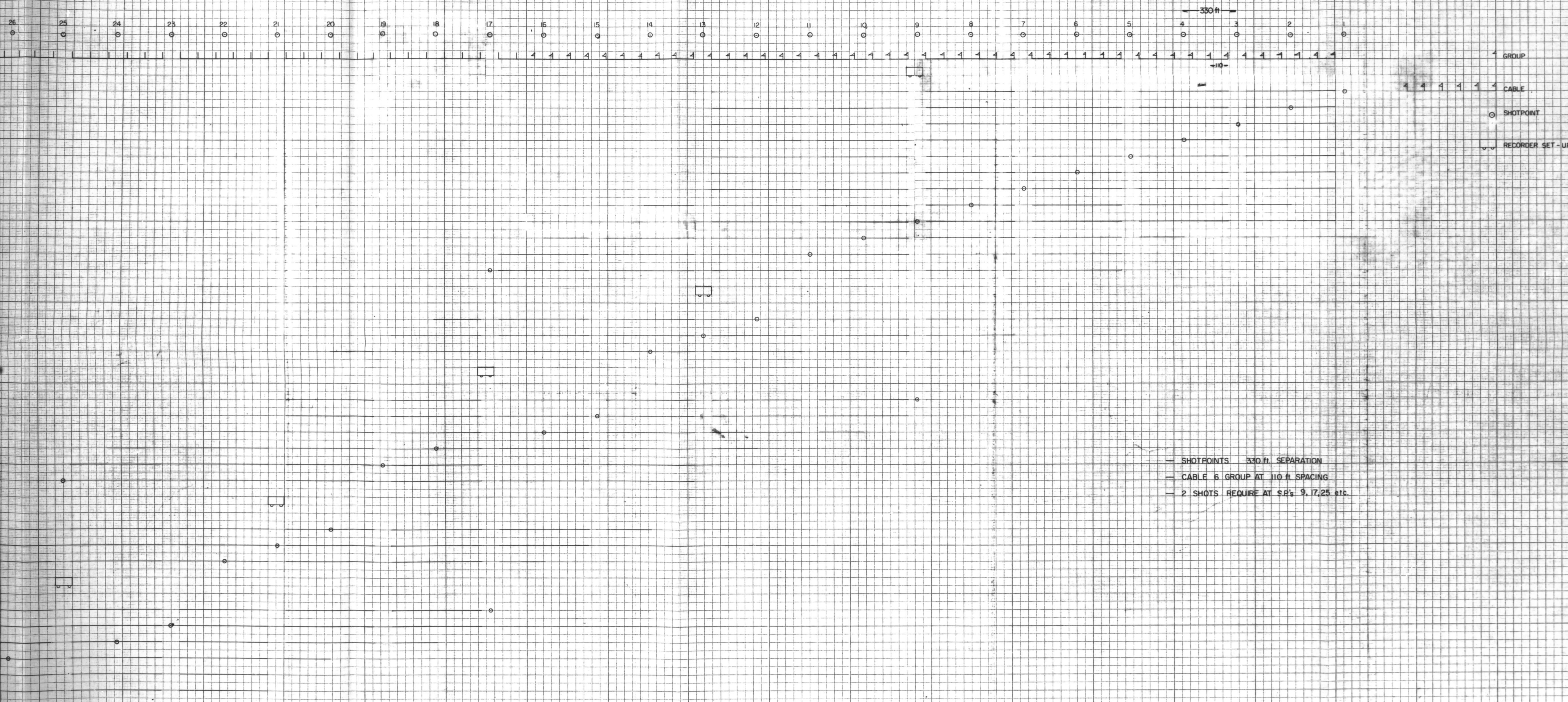
- (i) On line CNV-014 at approximately shot point 976 there appears to be a buildup on the carbonate.
- (ii) On line CRK-001 at approximately shot point 239 there appears to be a buildup on the carbonate.

ANTOINE LAKE
JANUARY 1970

33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5

5/10/68 D. H. 600m

ANTOINE LAKE
JANUARY 1970



- SHOTPOINTS 330 ft. SEPARATION
- CABLE & GROUP AT 110 ft. SPACING
- 2 SHOTS REQUIRE AT S.P.'s 9, 17, 25 etc.