

TOP CARBONATE (HUME) S.C.M.  
50 ms = 300 ft  
(Av Vel below RRS = 12,000 ft/s)  
(XAZIO - Structure Sections  
RRS = 2000' VR = 10,000' / sec)

TOP CARBONATE (HUME) S.C.M.  
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**AMOCO CANADA**  
PETROLEUM COMPANY LTD.

AREA: Snake River  
PROVINCE: Yukon, N.W.T.  
HORIZON: TOP CARBONATE (HUME)  
TYPE OF MAP: STRUCTURE  
SHOT BY: 875 Q.S.M.T.H.  
INCL. DATES: 1969-70 & 1961  
INTERPRETER: R.S. RYAN  
REPORT NO.: 71/6  
DATE: MARCH 2/71  
CO. AFFIL.: AMOCO

**XC71-352**

CLASS I

REMARKS:



60-6-5-91

Abstracted for  
Geo-Science Data Index

Date ~~\_\_\_\_\_~~

REPORT OF GEOPHYSICAL AND SEISMOGRAPH  
REFLECTION SURVEY

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On and Off Northwest Territories & Yukon  
Permit Nos. 6194 - 6209 and 2447 - 2449.  
Cranswick River Area. Nov./69 to April /70

Prepared by: J. L. Hudson  
District Geophysicist

October 1970

Abstracted for  
Geo-Science Data Index

REPORT OF GEOPHYSICAL SURVEY AND  
REPORT OF SEISMOGRAPH REFLECTION SURVEY

Date \_\_\_\_\_

Conducted By

Western Geophysical Company of Canada

for

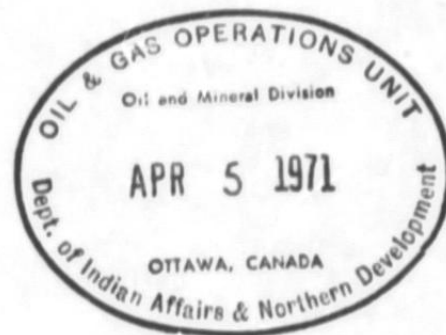
Amoco Canada Petroleum Company Ltd.

During the Period of November 27, 1969 to April 21, 1970

On and Off Cranswick River N.W.T. and Yukon Permit  
No.'s 6194 to 6209, and 2447 to 2449

Prepared By:

J. L. Hudson  
District Geophysicist



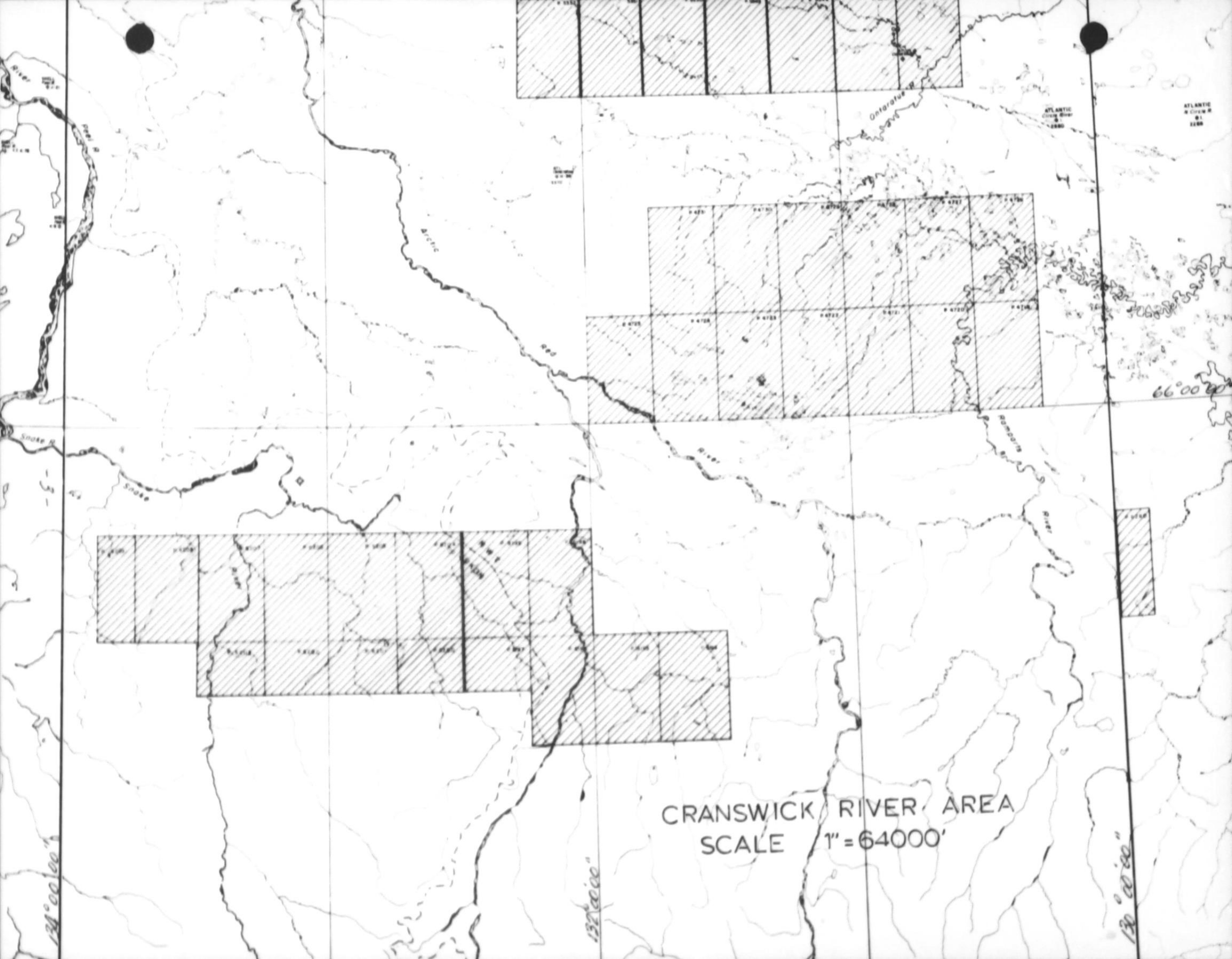
Submitted in support of application for credit, see affidavit made by \_\_\_\_\_  
of \_\_\_\_\_ and in accordance with work obligations under Section  
54(F) of the Territorial Lands Act.



## TABLE OF CONTENT

	Page
TITLE PAGE .....	1
TABLE OF CONTENT .....	2
LOCALITY MAP .....	3
 TEXT	
Introduction .....	4
Statistical Data .....	4
-- Production .....	4
-- Crew .....	5,6,7
-- Field Procedures .....	8
-- Data Processing .....	9
-- Results & Interpretation .....	10
 Seismic Spread Diagrams .....	In Pocket
Location and Surface Contour Map .....	In Pocket
Subsurface Maps .....	In Pocket





CRANSWICK RIVER AREA  
SCALE 1" = 64000'



## INTRODUCTION

During the period of November 27, 1969 to April 21, 1970 a "Vibroseis" reflection seismograph survey was conducted on and off Cranswick River, N.W.T., and Yukon Permit No.'s 6194 to 6209 and 2447 to 2449. The survey was conducted by Western Geophysical Company of Canada (Party V-12) for Amoco Canada Petroleum Company Ltd. In conjunction with the "Vibroseis" survey, a velocity survey utilizing deep shot holes was conducted by the same crew.

## STATISTICAL DATA

### Production

Party V-12 spent 115 calendar days working on seismic lines cut and cleared at the same time as the seismic work was being done. Party V-12 surveyed 335 miles of multifold coverage (4 fold and 6 fold). Of this 335 miles, 4.25 miles was shot conventionally obtaining 3 fold coverage. Spread diagrams included in the pocket of this report show the geophone, station and vibrator arrangements for the above coverage.

The average daily production was approximated 3 miles per day. Weather day down time was insignificant, but days lost through equipment failure were numerous.

At the same time Party V-12 ran an uphole velocity survey on 93 shot holes varying in depth from 100 to 800 feet.



## WESTERN PARTY V-12

The contract crew was under the supervision of J. T. Coull, and party managed by K. Dobson.

Track mounted equipment consisted of a digital recorder, two dual vibrator units, two cable trucks, a supply unit, a survey unit, a shot hole drill, a water unit and a party manager's unit.

The track mounted camp consisted of three expandable trailer units and a power work shop.

The seismic line cutting and clearings and the fuel run from Road River to the Cranswick Area was done by Macmillan Construction of Peace River, Alberta and involved a portable camp, fuel sleighs and three bulldozers.

The operation was supported by a Twin Otter aircraft out of Inuvik and a helicopter stationed on the crew.



## CREW PERSONNEL

1	Party Manager
1	Computer Clerk
1	Observer
1	Assistant Observer
1	Surveyor
1	Assistant Surveyor
2	Surveyor's Helpers
1	Mechanic
1	Driller
1	Driller's Helper
3	Vibrator Operators
2	Cable Truck Drivers
4	Recorder Helpers
1	Shooter
1	Cook
1	Cook's Helper
1	Camp Attendant
1	Mechanic's Helper
1	Supply Man

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Total 26 Men



## SURVEYING

The survey was conducted using a Wilde theodolite T16 and steel tapes and was based on government controlled triangulation stations in the area.

A tellurometer survey was conducted by Dabbs Control Surveys of Calgary over the area to increase the density of control points. The seismic survey was tied into all the available control.



## FIELD PROCEDURES

With the exception of Line CKR-032, all other CKR lines have been surveyed using the "Vibroseis" technique. Line CKR-032 was shot conventionally using one shot hole to an average depth of 60 feet, every 1300 feet. Enclosed spread diagrams show the cable and seismometer layout.

The vibrator energy source at each shot point consisted of two vibrator units, with each unit consisting of a front and back mounted Wabco vibrator. The two vibrator units were separated by 162.5 feet and moved 325 feet in 16 sweeps (total vibrator pattern 487.5 feet). After considerable testing in the area, a 56-14 cps pilot signal was used of a 7 second duration.

The 24 channel data was digitally recorded on 9 track magnetic tapes in the Western format, using binary gain through SDS-1010 amplifiers and summed in a Western summer. Random analogue correlations were made in the field for quality control.

The velocity survey was carried out at various shot points (as shown by a red circle on the location map). Shot holes varied in depth from 100 to 800 feet, with mostly 100 feet holes being drilled. An average charge size of  $1\frac{1}{4}$  lbs. was set off at various depths in the hole, and recorded from a seismometer at the top of the hole on a portable interval timer using polaroid film.



## DATA PROCESSING

The data processing was performed by Amoco Canada in Calgary.

The digital field tapes had to be reformatted from the Western format to SEGA, and cross correlated.

Elevation corrections were applied to a +2000 datum using a 10,000 feet / second replacement velocity.

Normal moveout, trace muting, frequency filtering, trace equalization and stacking were applied to the data.

## RESULTS AND INTERPRETATION

The uphole velocity survey showed varying velocities (lithology) at the near surface. Very little muskeg (0-5 feet) cover was found in the area. Clay was generally observed at the near surface, followed by shales, and in some cases hard sandstones and limestone. Patches of permafrost were encountered but the depths recorded are inconclusive.

Record quality in the area is fairly good. The Mid Devonian Carbonate (Hume) map shows a fairly continuous reflection. The Base of Ordovician has also been mapped and although a much weaker reflection is fairly continuous. Shallow Cretaceous, Mississippian and Upper Devonian reflections are present.

The data that appears on the subsurface maps are vertical two way structural times between the datum and the horizon mapped.

The object geological zone in the area is the Top of Carbonate (Hume) to Top Silurian (Ronning). No continuous reflection occurs at the Ronning (all within a thick carbonate section), thereby making the Top of Carbonate (Hume) map the main mappable horizon.

The Top of Carbonate map shows a regional dip to the south, with an east-west trending anomalous high towards the southern half of the acreage.

Faulting is present over much of the area, especially to the southeast where a high Carbonate is mapped to the south of some major faulting.



The Base of Ordovician shows similar trends, with a slight thickening of the Carbonate interval to the southwest.

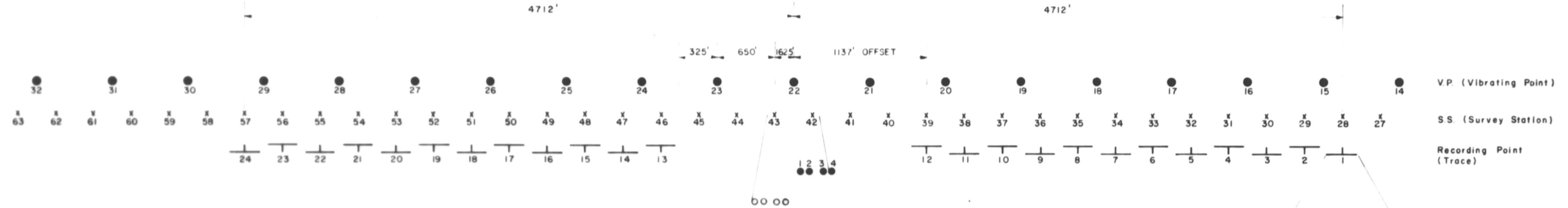
Respectfully submitted by:

AMOCO CANADA PETROLEUM COMPANY LTD.

A handwritten signature in cursive script, appearing to read "J. L. Hudson".

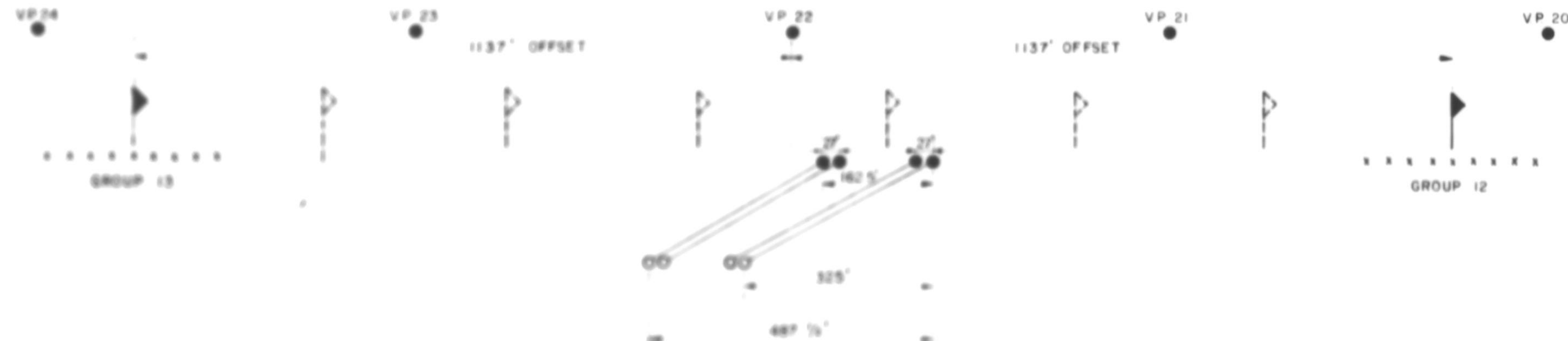
J. L. Hudson  
District Geophysicist

CRANSWICK RIVER  
 WESTERN V-12 VIBROSEIS  
 NOV. 69 - APRIL 70  
 600% SYMMETRICAL SPREAD  
 Scale 1" = 650'



VIBRATOR PATTERN  
 (DETAIL)

Scale 1" = 200'  
 4 VIBRATORS TAKING 16 SWEEPS COVERING 487 1/2'   
 21' BETWEEN SWEEPS WITH 1137' OFFSET

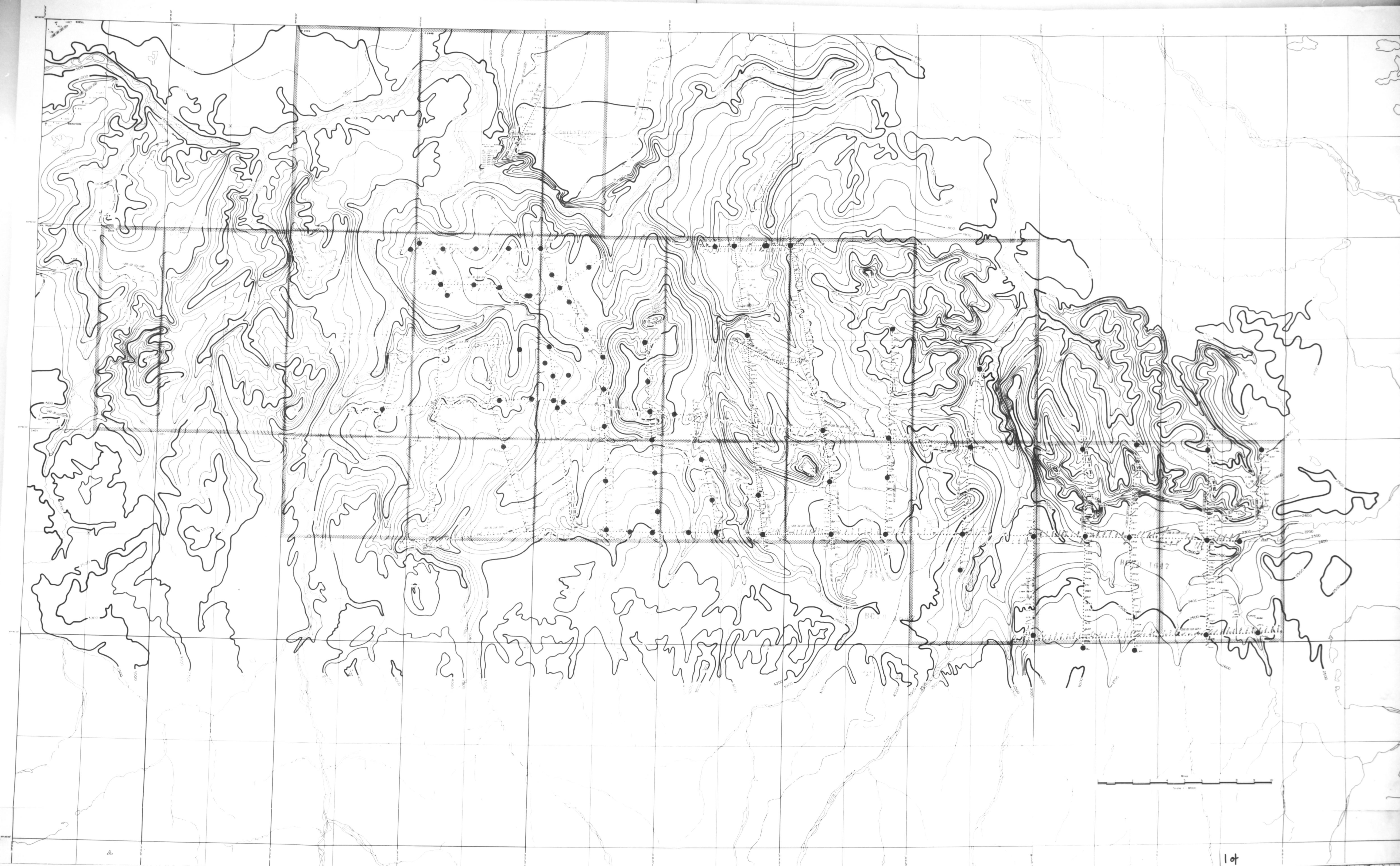


9 GEOPHONES / GROUP  
 GEOPHONES 36' APART

Scale 1" = 100'








1 a

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 **AMOCO COMPANY**  
PETROLEUM COMPANY LTD

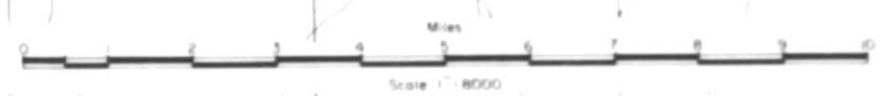
AREA Upper Ramparts River GRID CR-8,9(10) SCALE  
PROVINCE NWT 1:10000  
REGION  
TYPE OF SURFACE TOPOGRAPHY (SHOT HOLE LOGS)  
TYPE OF CONTACT INT. KOO MA  
SHOT BY WESTERN V-12 FOR  
INT. DATES NOV. 1963 - APRIL 1970  
INTER BY R S AYAN CO AFFIL AMOCO  
HEIGHT N DATE  
REMARKS

1000 1617

GEOLOGICAL UNIT DATE







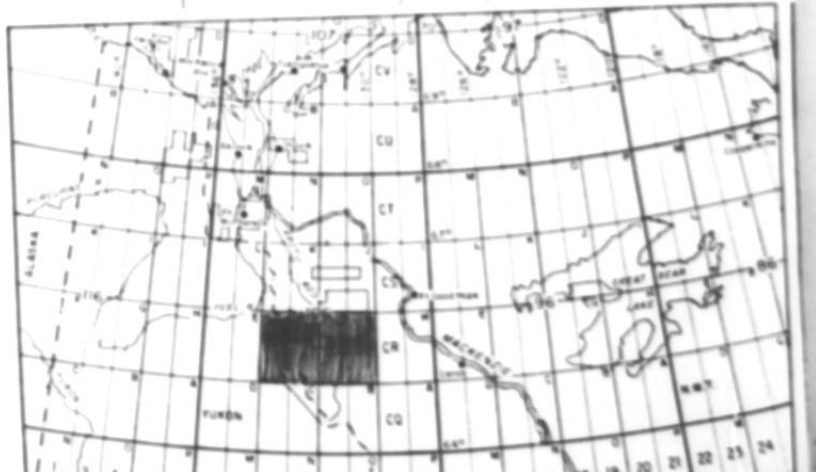
**MAP EVALUATION**  
Qualification considers type of map or play, amount of relief considered critical, quality of data and density of control, (geophysical or geological)  
Geological data  
Reliable geophysical data  
Qualitatively reliable geophysical data  
Unreliable geophysical data

SHOOTING HISTORY (Not in detail)				
INCL. DATES	SHOT BY	SHOT FOR	S/P AND/OR LINE No's	FINAL REPORT No
JULY 1969	SMELL	SMELL	SMELL	104
AUG. 1969	SMELL	SMELL	SMELL	105
NOV. 1969	SMELL	SMELL	SMELL	106

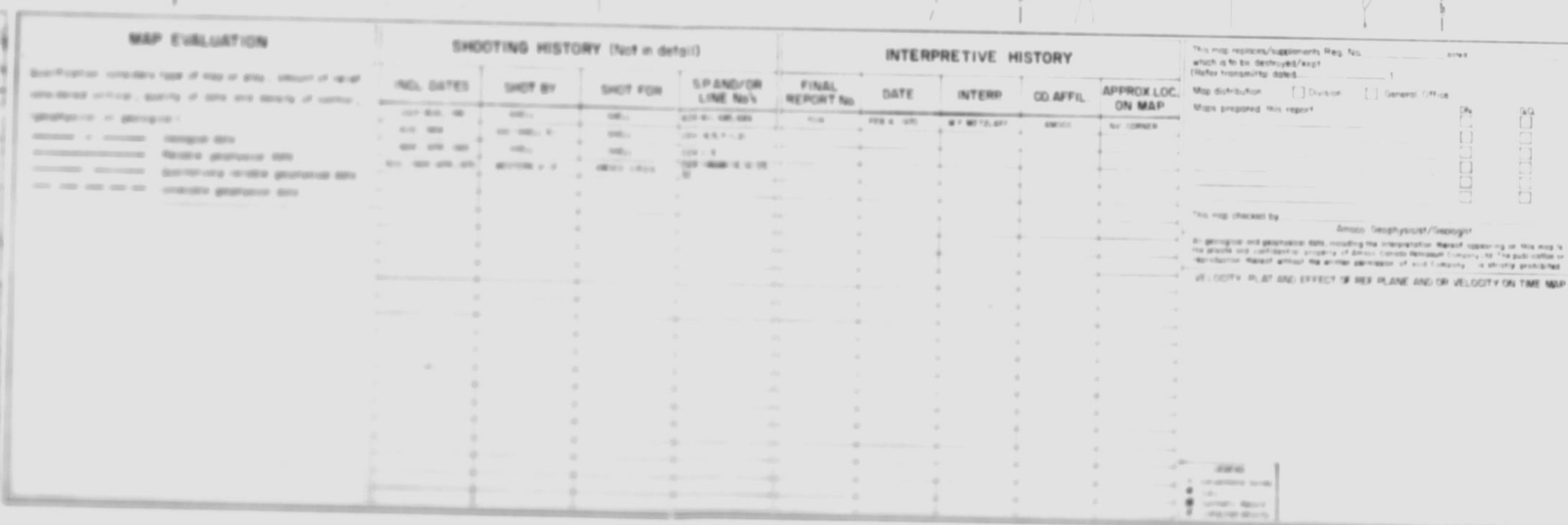
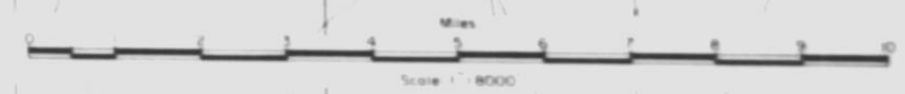
INTERPRETIVE HISTORY				
DATE	INTER	CO AFFIL	APPROX. LOC. ON MAP	REMARKS
1969	WESTERN	AMOCO	104	

This map represents/Supplements Map No. 104  
which is to be destroyed/kept  
After transcription/other use  
Map distribution: ☐ Division ☐ General Office  
Map prepared this report  
This map checked by: AMOCO Geophysical/Geological  
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VELOCITY PLAT AND EFFECT OF REF PLANE AND/OR VELOCITY ON TIME MAP

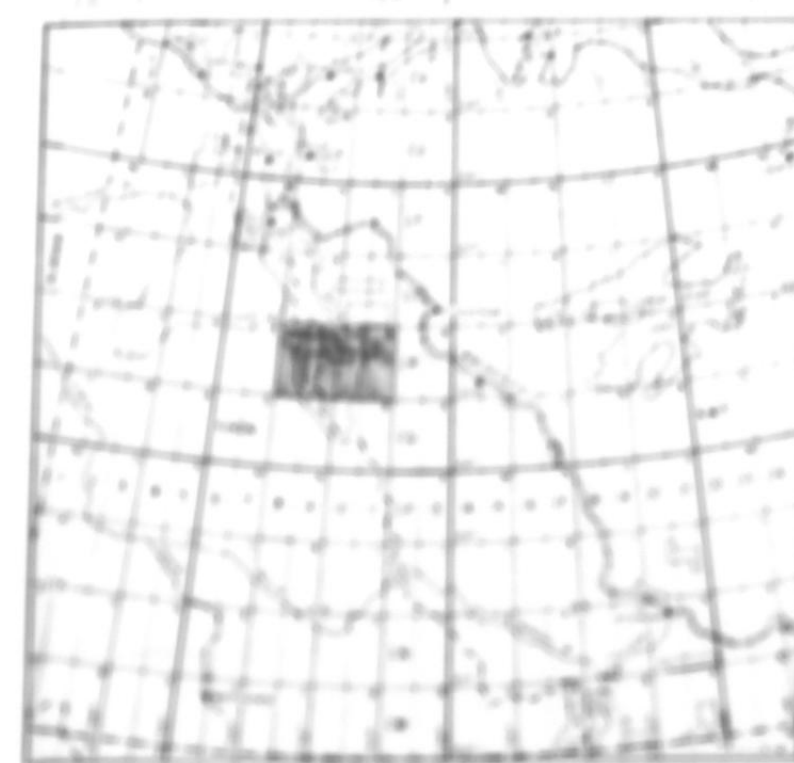
**AMOCO CANADA**  
PETROLEUM COMPANY LTD.  
AREA: Upper Romperts River  
PROVINCE: N.W.T.  
SCALE: 1"=8000'  
HORIZON: SURFACE TOPOGRAPHY (SHOT HOLE LOGS)  
TYPE OF MAP: TOPOGRAPHIC  
SHOT BY: WESTERN V-12  
INCL. DATES: NOV. 1969 - APRIL 1970  
INTER BY: R. S. RYAN  
REPORT NO: 104  
CO AFFIL: AMOCO  
DATE: 1970  
REMARKS: 1617







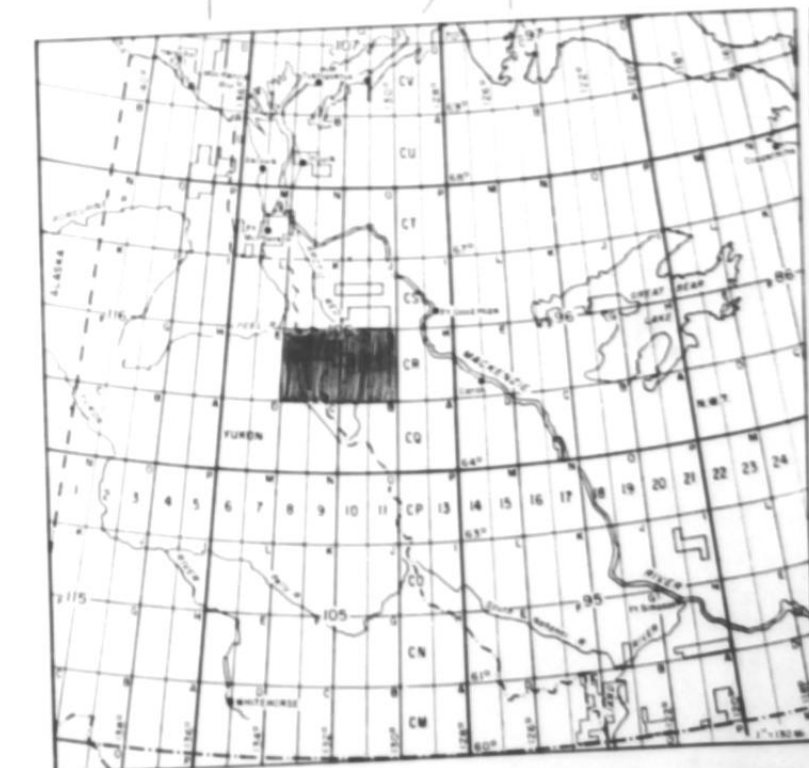




MAP EVALUATION				SHOOTING HISTORY (Not in detail)				INTERPRETIVE HISTORY			
INCL. DATES	SHOT BY	SHOT FOR	SPAND/OR LINE NO.	FINAL REPORT NO.	DATE	INTERP.	CO. AFFL.	APPROX. LOC. ON MAP	DATE	INTERP.	CO. AFFL.
NOV. 1963 - APR. 1970	R. S. RYAN	WESTERN V-12	100 ft.	100 ft.	100 ft.	100 ft.	100 ft.	100 ft.	100 ft.	100 ft.	100 ft.

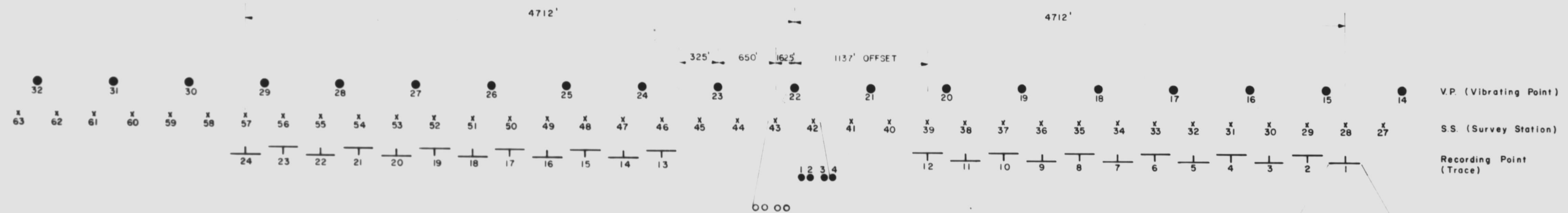
This map is a topographic map of the area shown. It is a contour map showing the elevation of the land. The map is a black and white print. The map is a topographic map of the area shown. It is a contour map showing the elevation of the land. The map is a black and white print.

**AMOCO CANADA**  
 PETROLEUM COMPANY LTD.  
 AREA: Upper Romperts River (GRID CR-9,910(1))  
 PROVINCE: N.W.T.  
 HORIZON: SURFACE TOPOGRAPHY (SHOT HOLE LOGS)  
 TYPE OF SURFACE: SURFACE TOPOGRAPHY (SHOT HOLE LOGS)  
 SHOT BY: WESTERN V-12  
 INCL. DATES: NOV. 1963 - APR. 1970  
 INTERP. BY: R. S. RYAN  
 REPORT NO.: 100 ft.  
 DATE: 100 ft.  
 REMARKS: 100 ft.  
 CLASS I



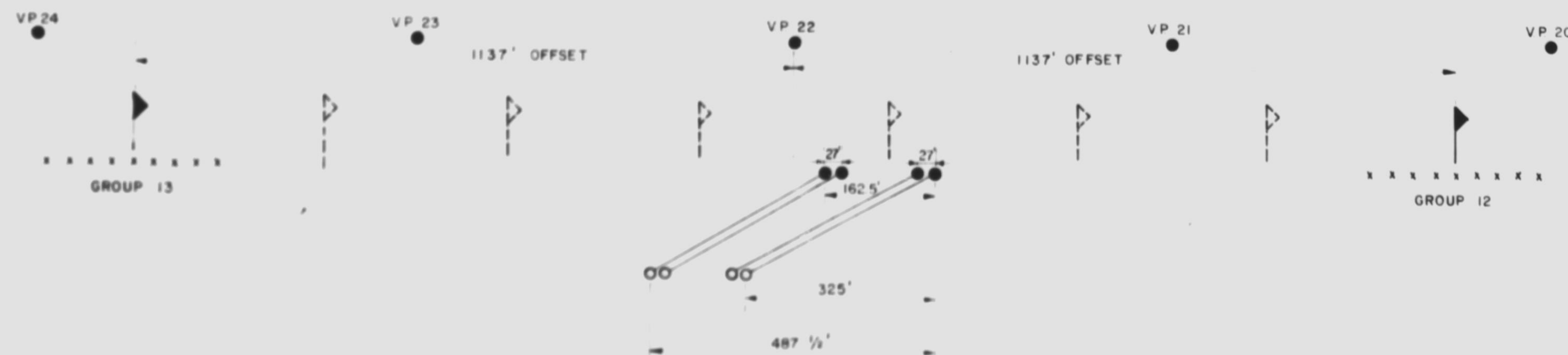


CRANSWICK RIVER  
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