

**REPORT OF THE GEOPHYSICAL SURVEY
ON PERMITS 5590 AND 4617
IN THE
TWISTED MOUNTAIN AREA OF N. W. T.
AS SHOT BY
NORCANA EXPLORATION LIMITED
IN
FEBRUARY, 1971**



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TWISTED MOUNTAIN, N. W. T.

Introduction

On February 6, 1971, a Norcana Exploration Limited seismic party moved into the Twisted Mountain Area to conduct a joint refraction-reflection seismic survey. Operations were conducted on Permits 5590 and 4617 and bounded by Longitude $123^{\circ} 30' \text{ W.}$ and $123^{\circ} 40' \text{ W.}$ and Latitude $61^{\circ} 05' \text{ N.}$ to $61^{\circ} 15' \text{ N.}$ Approximately 19 miles of in-line refraction data and four miles of 400% C.D.P. reflection data were gathered. Camp was maintained in the settlement of Nahanni Butte and supply was expedited from Fort Simpson and Calgary. Wheeled vehicles were utilized.

Refraction

Four refraction lines were shot and two types of interpretive data were derived. On lines 710, 712 and 713, sufficient distance from shot to detector was available for the mapping of two refractors vis: Base of unconsolidated layer with a velocity of 12000-14000 $\text{'}/\text{'}$ and the Nahanni carbonate showing a 19000-22000 $\text{'}/\text{'}$ interval velocity. Line 718, however, on a high mountain valley yielded a Mississippian event only, with a velocity of about 15000 $\text{'}/\text{'}$. No penetration to the underlying Nahanni was in evidence. In order to obtain interval and average velocities, the first breaks were plotted and preliminary depth

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estimates were made by the cosine-intercept method. These parameters were then used to construct wave front charts and a detailed wave front plot was made on the appropriate refractor. Depths were then determined in feet below sea level.

Reflection

The 400% C.D.P. line was processed in structure form utilizing the programs noted on the enclosed section. Tentative identification places the Nahanni between 1.4 and 1.8 seconds on the east end of the line. Several semi-continuous reflections are present, but correlation from one side to the other is questionable.

Interpretation

In order to prepare a map on the work done, four different sets of data were assembled as follows:

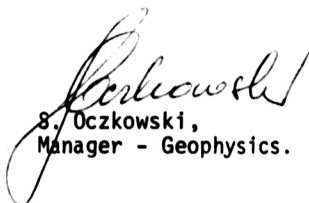
- (a) Nahanni refractor in feet
- (b) Mississippian refractor in feet
- (c) Nahanni reflection in time
- (d) Possible Upper Paleozoic reflection in time

Conclusions

Interpretation at this time is tentative due to the incom-

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pleteness of data. However, some structural reversal has been noted and the Twisted Mountain Anticline is illustrated. Additional refraction shooting would be of value if undertaken west of the present control lines.

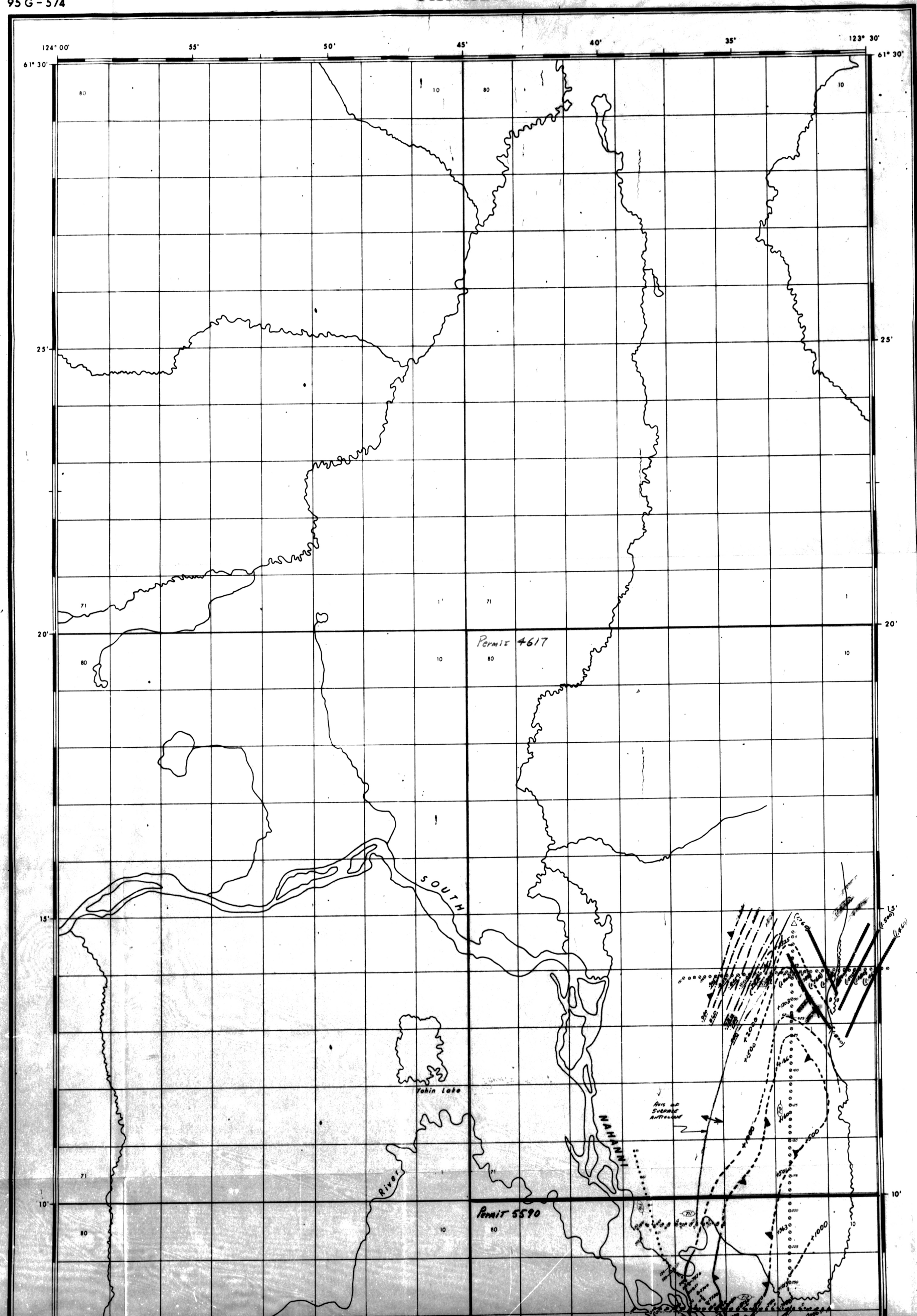

S. Oczkowski,
Manager - Geophysics.

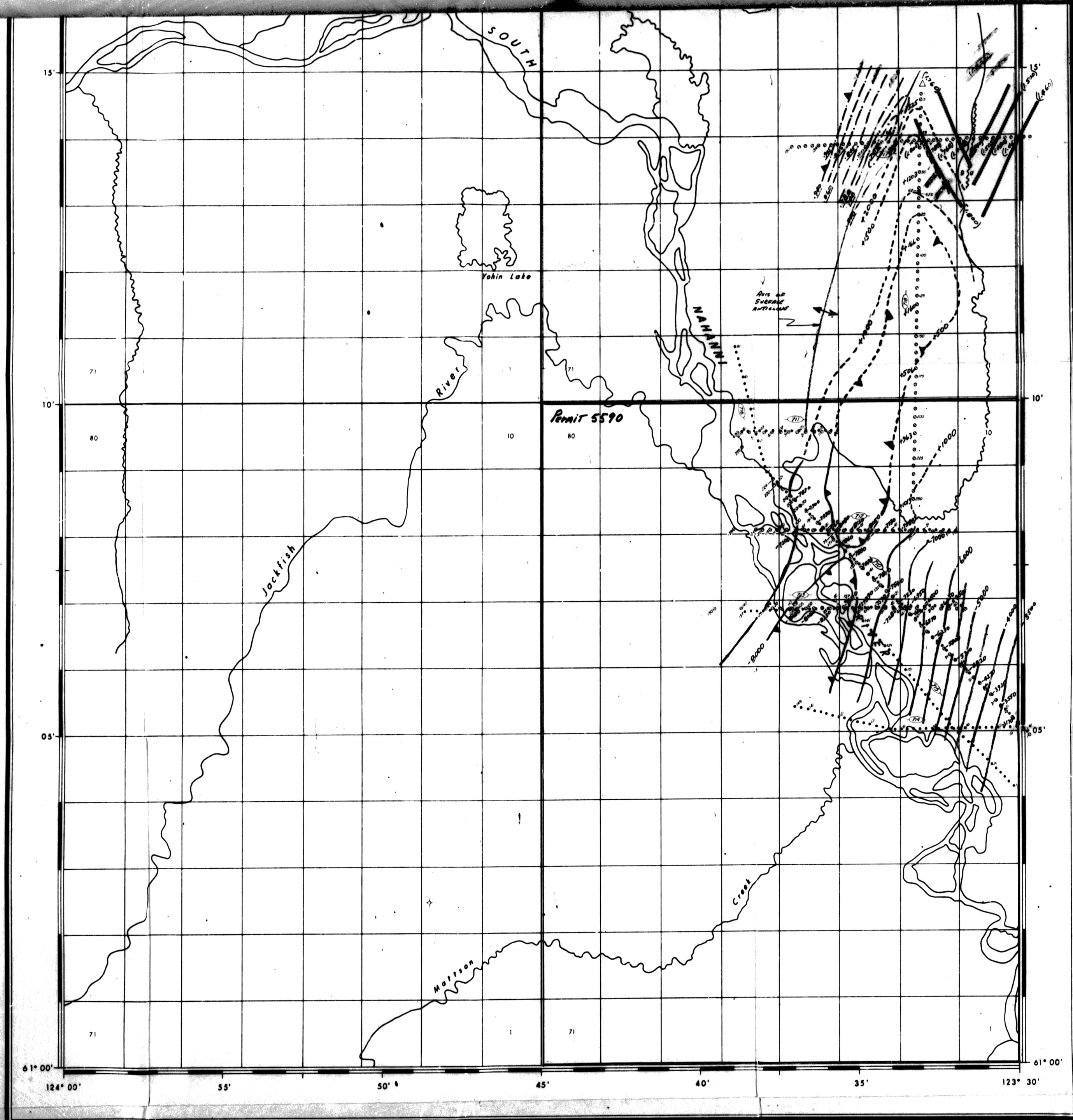
JDTC/slp.
September 24th, 1971.



S T A T I S T I C S

| | | |
|-----------------------|---|-----------------------------|
| Crew | - | Norcana Exploration Limited |
| Party Chief | - | D. A. MacDonald |
| Drill Contractor | - | H. M. Kuntz & Associates |
| Bulldozing Contractor | - | Keen Industries |
| Commenced Shooting | - | February 6, 1971 |
| Completed Shooting | - | February 28, 1971 |
| Profiles Shot | - | 287 |
| Instruments | - | PT 100 |
| Geophones | - | Mark 8 CPS and 14 CPS |
| Geophones Per Trace | - | 8 |
| Spread Length | - | 3450'-0-3450' |
| Refraction Offset | - | Variable |
| C.D.P. Reflection | - | 400% |



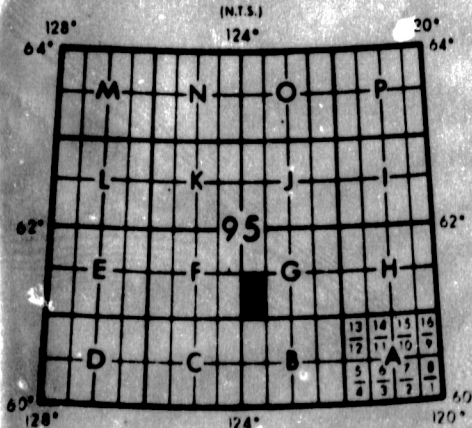


• Beaver
○ Not on map

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INDEX TO ADJOINING MAPS

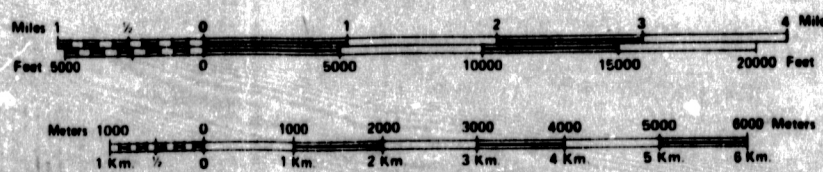


95G-5/4
MATTSON CREEK

MATTSON CREEK DISTRICT OF MACKENZIE NORTHWEST TERRITORIES

SCALE 1:50,000

1.25 inches to 1 mile approximately



North American Datum 1927
Universal
Transverse Mercator Projection
(Gauss Kruger)

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LEGEND
REFRACTION -7180
+363
REFLECTION (1.5M)
265

NAHANNI CREEK
MISSISSIPPIAN
NAHANNI 72
PALMISTO 201C 72

| | | | |
|---|--|--|--|
| | | PACIFIC PETROLEUMS LTD. CALGARY, ALBERTA | |
| TWISTED MOUNTAIN AREA COMPOSITE STRUCTURE MAP | | | |
| CONTOUR INTERVAL 500 FT & 000' | | DATE APRIL 28, 1971 | |
| DATUM ELEVATION 56' & 200000 | | FLEV CORR VEL | |
| INTERPRETED BY | | J.D.T.C. | |