

60-6-4-51

REPORT OF GEOPHYSICAL AND SEISMOGRAPH REFLECTION SURVEY

Conducted By
Frontier Geophysical (1960) Ltd.

for

Pan American Petroleum Corporation

**Abstracted for
Geo-Science Data Index**

Date _____

This Report Covers the Period from June 28, 1964 to December 18, 1964

On and Immediately Off

Merrill Permit 2721



Prepared By

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Exploration Group Supervisor

July 7, 1965

Submitted in accordance with Government Regulations

Under Section 29(C) of the Territorial Lands Act

TABLE OF CONTENTS

	<u>Page</u>
Title Page.....	1
Table of Contents.....	2
Text.....	3
Introduction.....	3
Seismic Technique.....	4
Seismic Spread Diagram (Figure #1a and b)....	7

Shot Hole Plat and Structure Contour Map for Area Reported.

(Map is enclosed in envelope at back of report.)

T E X T

INTRODUCTION

During the period June 28, 1964 to December 18, 1964, a seismo-graph reflection program was conducted by Frontier Geophysical (1960) Ltd. for Pan American Petroleum Corporation, on and immediately off Merrill Permit 2721. Frontier Geophysical (1960) Ltd. worked continuously during the months of June to December, 1964, spending approximately 115.15 days in the above-mentioned area.

The lines shot by Frontier Geophysical (1960) Ltd. were bulldozed trails cut by Bruce Rome Construction Ltd. simultaneously with the crew's operations.

Frontier Geophysical (1960) Ltd. was under the supervision of R. R. Platt. The camp was located in the Merrill Area. The interpretation was carried on simultaneously with the field work. The interpretation office was located in Calgary.

Equipment used by Frontier Geophysical (1960) Ltd. in this area was track mounted (Nodwell and Bombardier tractors and trailers). The crew operated out of a mobile track mounted camp which was moved periodically throughout the area surveyed.

SEISMIC TECHNIQUE

Shot holes averaged 67'. Shot depth was determined by near-surface lithology, with best results obtained when shot detonated in clay or shale.

Generally, three hole patterns were used with shot holes offset 200' from the line of detectors or as far as possible to avoid shot hole noise (Fig. 1a and 1b).

Charge sizes varied depending on the lithology exposed by erosion.

A significant difference in the amount of erosion was observed throughout the prospect. Therefore shot holes were located in shale in the valleys and in the Mattson sandstone on the mountain ridges and plateaus.

In shale, normal charge size of 50 lbs. per hole (150 lbs. per shot) had been satisfactory. However, in the shattered sandstone, 300 lbs. per hole (900 lbs. per shot) were detonated to have acceptable energy return.

The energy was recorded on split spreads as diagrammed in Fig. 1a and b.

Inline refraction profiles were recorded on line 602 to obtain velocity information and identification of the Middle Devonian carbonate (Nahanni).

In refraction shooting, charge sizes increased with the recording distance from 200 lbs. to 500 lbs.

The instruments used by Frontier Party #7 were the PT-100 type manufactured by S.I.E.

The data was recorded on Techno-type magnetic tapes.

The reflection method (in conjunction with inline refraction on Line 602) was used to obtain the subsurface data throughout the area, employing 200% multifold technique on all lines, except on Lines 600 and 601 where good record quality justified the use of only 100% subsurface coverage.

The data that appears on the subsurface map are depths in feet below sea level.

Respectfully submitted,

PAN AMERICAN PETROLEUM CORPORATION

By: *M. A. Knock*
M. A. Knock
Exploration Group Supervisor

GROUP LAYOUT AND CONNECTION DIAGRAM FOR REFLECTION SHOOTING

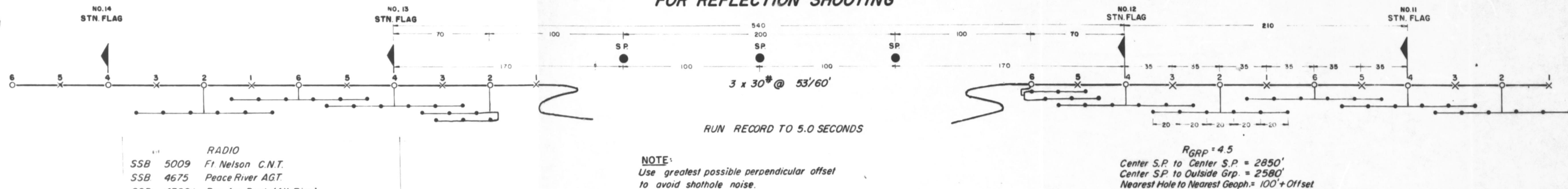


Figure 1a

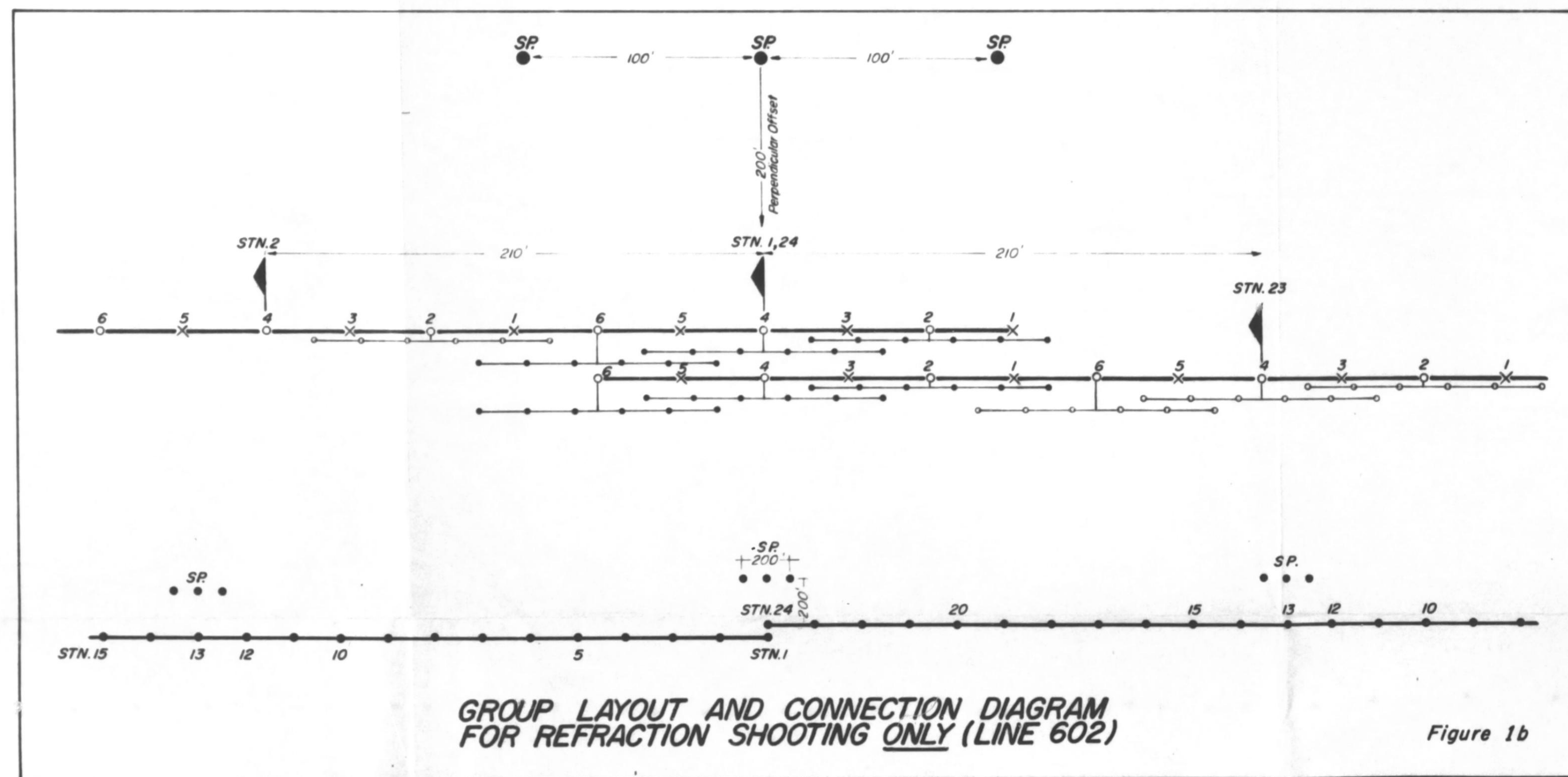
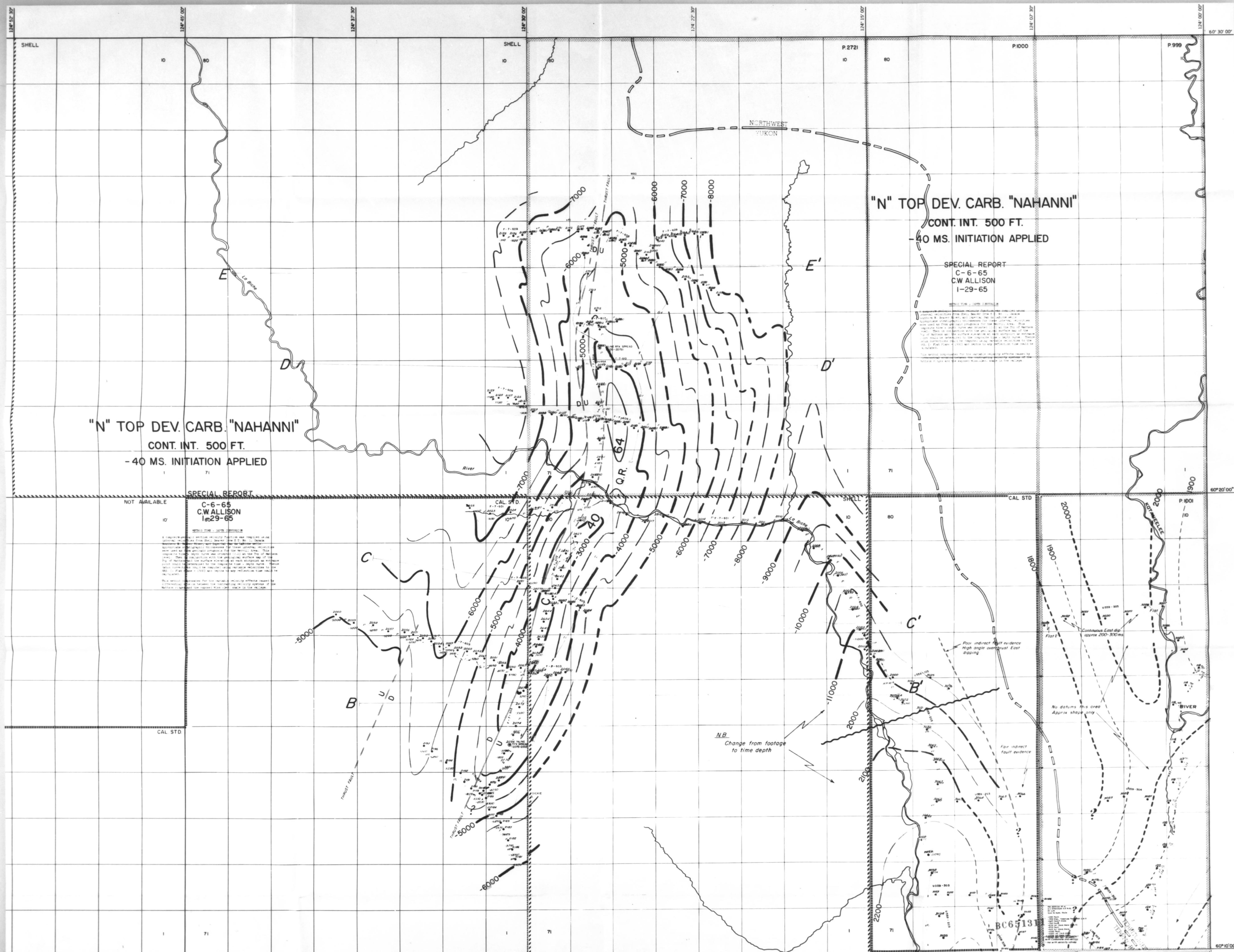


Figure 1b



"N" TOP DEV. CARB. "NAHANNI"
CONT. INT. 500 FT.
- 40 MS. INITIATION APPLIED

"N" TOP DEV. CARB. "NAHANNI"
CONT. INT. 500 FT.
- 40 MS. INITIATION APPLIED

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MAP EVALUATION

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
Questionable Geophysical Data
Unreliable Geophysical Data

"N" TOP DEV. CARB. "NAHANNI" QUAL. RELIABLE

SHOOTING HISTORY (Not in detail)

INCL. DATES	SHOT BY	SHOT FOR	S.P. AND/OR LINE NO.	FINAL REPORT NO.
MARCH 1967	W.C. WOOD	PAN AM	LINE 500-54.5	46
JANUARY 1968	U.S.C. 550	PAN AM	LINE 500-54.5	1
MARCH 1968	W.C. WOOD	PAN AM	LINE 500-54.5	1
MARCH 1968	U.S.C. 550	PAN AM	LINE 500-54.5	1
MARCH 1968	U.S.C. 550	PAN AM	LINE 500-54.5	1
MARCH 1968	U.S.C. 550	PAN AM	LINE 500-54.5	1
MARCH 1968	U.S.C. 550	PAN AM	LINE 500-54.5	1
MARCH 1968	U.S.C. 550	PAN AM	LINE 500-54.5	1
MARCH 1968	U.S.C. 550	PAN AM	LINE 500-54.5	1
MARCH 1968	U.S.C. 550	PAN AM	LINE 500-54.5	1

INTERPRETIVE HISTORY

DATE	INTERP.	CO AFFIL.	APPROX. LOC. ON MAP
AUG. 2, 1967	J.H. JOHNSON	W.C.	SOUTH 1500
AUG. 2, 1967	J.H. JOHNSON	W.C.	SOUTH 1500
AUG. 2, 1967	J.H. JOHNSON	W.C.	SOUTH 1500
AUG. 2, 1967	J.H. JOHNSON	W.C.	SOUTH 1500
AUG. 2, 1967	J.H. JOHNSON	W.C.	SOUTH 1500
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AUG. 2, 1967	J.H. JOHNSON	W.C.	SOUTH 1500
AUG. 2, 1967	J.H. JOHNSON	W.C.	SOUTH 1500
AUG. 2, 1967	J.H. JOHNSON	W.C.	SOUTH 1500

PAN AMERICAN PETROLEUM CORPORATION

AREA: Nahanni
PROVINCE: Yukon and N.W.T.
HORIZON: "N" APPROX. TOP NAHANNI
TYPE OF MAP: STRUCTURE
SHOT BY: FOR
INCL. DATES: CO AFFIL.
INTERP. BY: DATE
REPORT NO.: DATE
REMARKS: BC651311

"N" TOP DEV. CARB. "NAHANNI"
CONT. INT. 500 FT.
-40 MS. INITIATION APPLIED

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