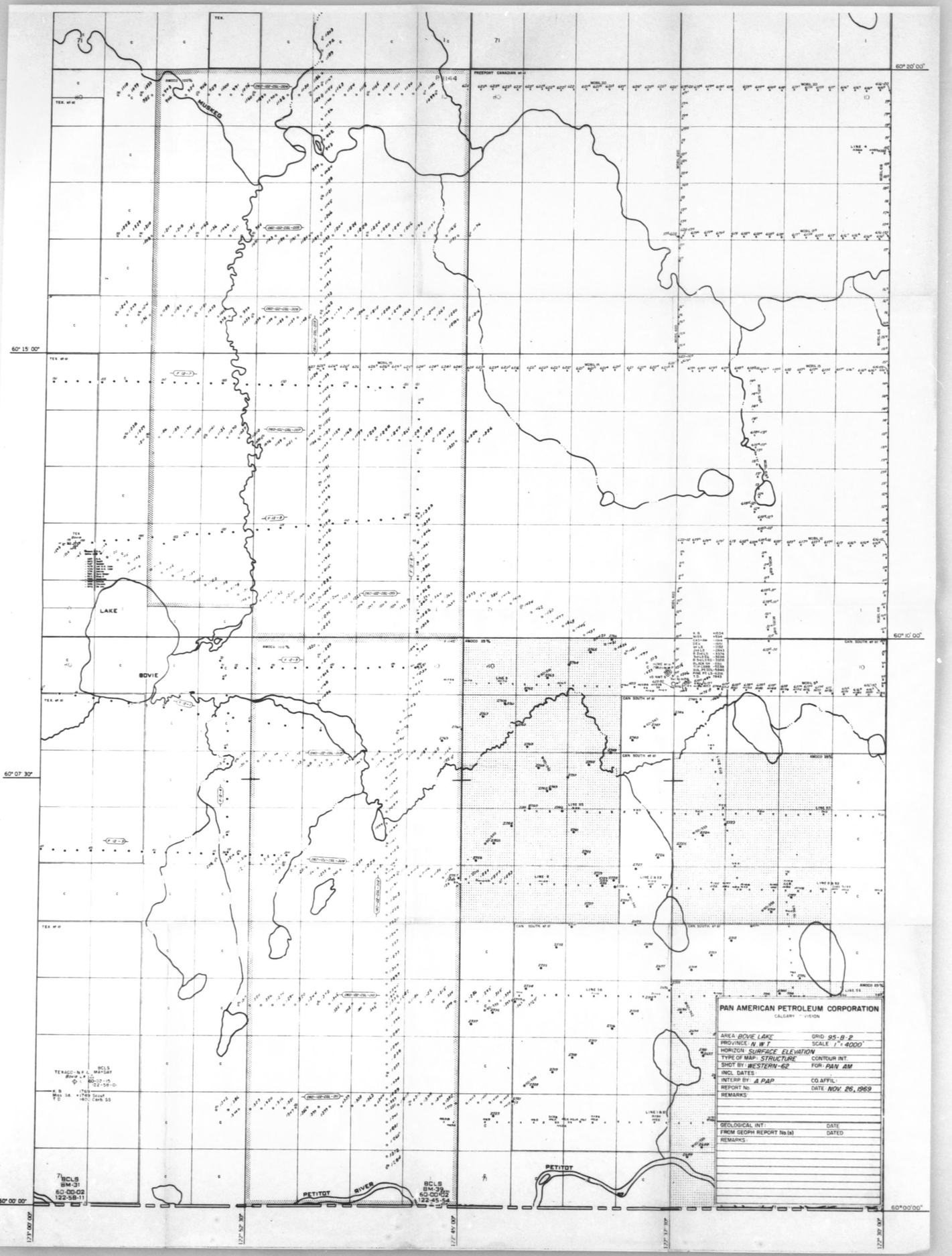
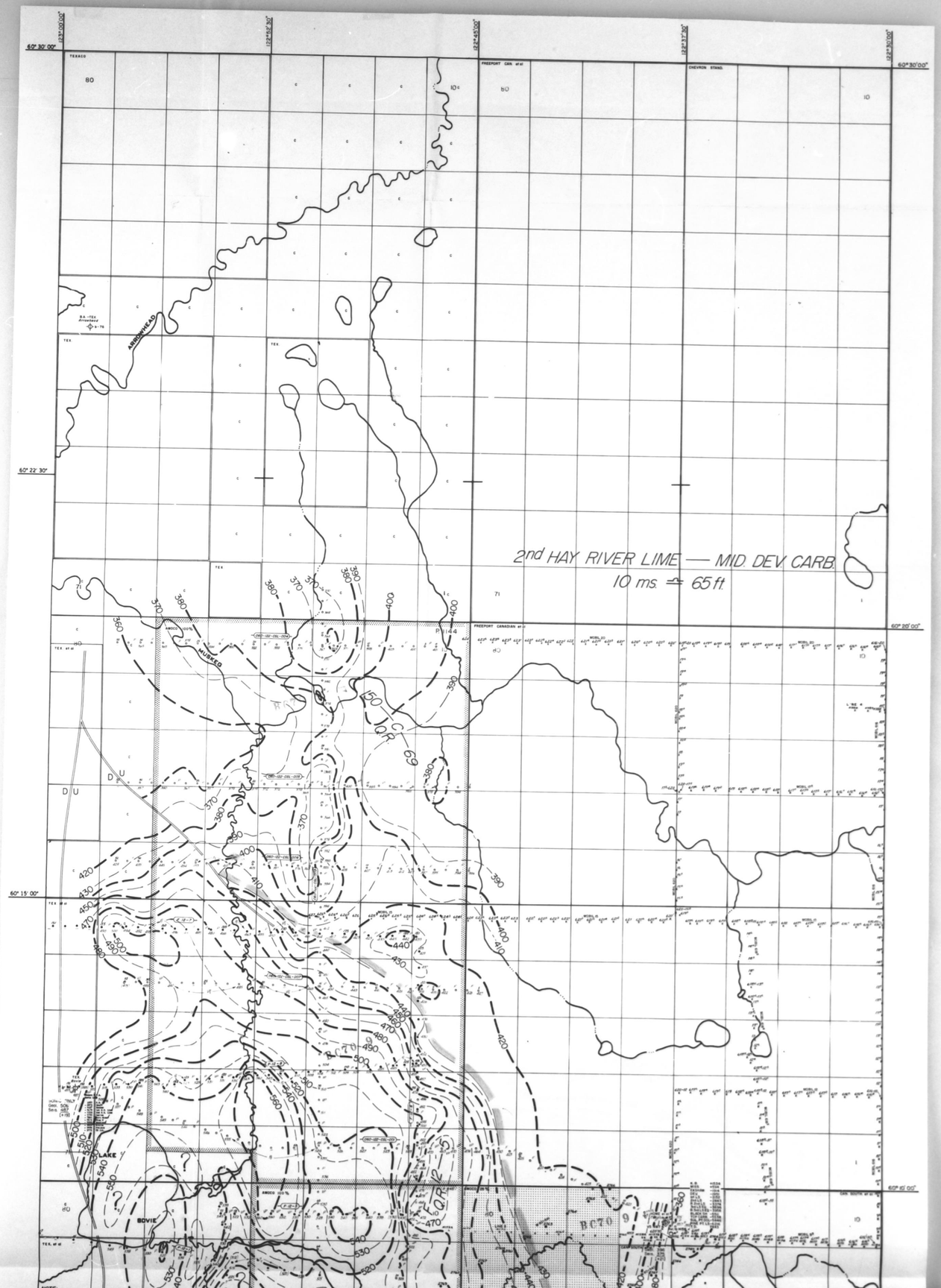
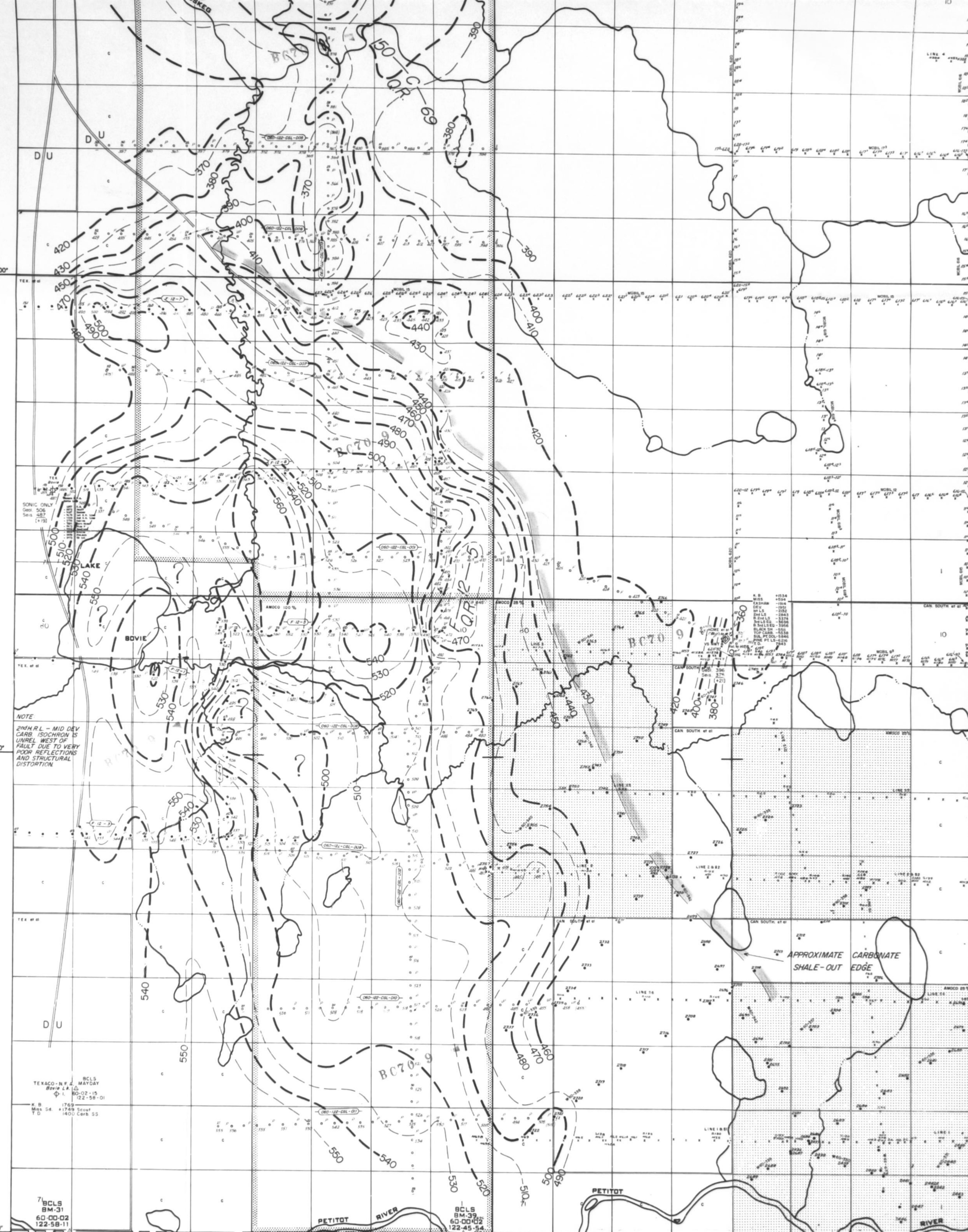

60° 20' 00"
60° 15' 00"
60° 10' 00"
60° 07' 30"
60° 00' 00"
127° 00' 00"
126° 52' 30"
126° 45' 00"
126° 37' 30"
126° 30' 00"
HUSKEG
LAKE
BOVIE
PETITOT
RIVER
PETITOT
BCLS
BM-31
60-00-02
122-58-11
BCLS
BM-32
60-00-02
122-45-54
PAN AMERICAN PETROLEUM CORPORATION
CALGARY DIVISION
AREA: BOVIE LAKE
GRID: 95-B-2
PROVINCE: N.W.T.
SCALE: 1" = 4000'
HORIZON: SURFACE ELEVATION
TYPE OF MAP: STRUCTURE
CONTOUR INT.
SHOT BY: WESTERN-62
FOR: PAN AM
INCL. DATES:
INTERP. BY: A.PAP
CO. AFFIL.:
REPORT No.
DATE: NOV. 26, 1969
REMARKS
GEOLOGICAL INT.:
DATE
FROM GEOPH REPORT No.(s)
DATED
REMARKS:


2nd HAY RIVER LIME — MID. DEV. CARB.
10 ms. ≙ 65 ft.
60° 30' 00"
60° 22' 30"
60° 15' 00"
60° 07' 30"
122°49'30"
122°45'00"
122°37'30"
122°30'00"
TEXACO
FREEPORT CAN. et al
CHEVRON STAND.
FREEPORT CANADIAN et al
ARROWHEAD
HUBER
MUIRHEAD
BOVIE
80
10
71
144
1 of 2



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

QUAL. REL.

SHOOTING HISTORY (Not in detail)

NOTE: MOBIL SURVEY ADJUSTED 1600 FT. SOUTH TO TIE H3 LINE

INCL. DATES	SHOT BY	SHOT FOR	S.P. AND/OR LINE No's
FEB.-MAR., 1958	FRONTIER F-12	PAN AM	LINES F12-1 to 8
JAN.-MAR., 1959	HEILAND	CANADA SOUTHERN	LINES 1-4
FEB., 1960	W.G.C. W-62	PAN AM	LINE W62-67
MAR., 1961	SEISMOTECH	HOME OIL	LINES 51,52,55,58,510,511
	MOBIL	MOBIL	LINES 9,12,15,17,20,616, 618-1,620
FEB.,MAR. 1962	W.G.C. W-60	PAN AM	LINES W60-330,331, 336 to 342
MARCH, 1969	W.G.C. W-62	PAN AM	CGL-001 to 011

INTERPRETIVE HISTORY

FINAL REPORT No.	DATE	INTERP.	CO AFFIL.	APPROX LOC. ON MAP
3 (FINAL)	JUNE 2, 1958	W.L. KELSCH	FRONTIER	S.W. QUADRANT
FINAL	MAY 29, 1959	G.E. LONGPHEE	UNITED	S.E. QUADRANT
FINAL	SEPT. 8, 1959	R.H. ROLLANS	WESTERN	SOUTH HALF
E-60-23	OCT 4, 1960	E.F.K. ZARUDZKI	PAN AM	SOUTH HALF
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E-62-41	JULY 26, 1962	D.E. BIRNIE E.F.K. ZARUDZKI	PAN AM	S.E. QUADRANT
6862	SEPT. 25, 1968	V.G. MERITS	PAN AM	S.W. QUADRANT
69116	NOV. 26, 1969	A. PAP	AMOCO	SOUTH HALF

This map replaces/supplements Registration No. ______ dated ______ which is to be destroyed/kept (Refer transmittal dated ______)

Map distribution: ☐ Division ☐ General Office

Other maps prepared this report:
- 2nd H.R.L. — Mid. Dev. Carbonate
- Mid. Dev. Carb. — Approx. Cambrian
- Mid. Dev. Carbonate Time Structure

This map checked by ______ Amoco Geophysicist / Geologist

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VELOCITY PLAT AND EFFECT OF REF. PLANE AND/OR VELOCITY ON TIME MAP

LEGEND
- Conventional Survey
- C.V.L.
- Synthetic Record
- Computed Velocity

AMOCO CANADA
PETROLEUM COMPANY LTD.

AREA: Bovie Lake	GRID: CM-19/SW
PROVINCE: Northwest Territories	SCALE: 1" = 4000'
HORIZON: 2nd H.R.L. — MID DEVONIAN CARB.	
TYPE OF MAP: ISOCHRON	CONTOUR INT. 10ms
SHOT BY: WESTERN 62	FOR: PAN AM
INCL. DATES: MARCH–JUNE, 1969.	
INTERP. BY: A. PAP	CO. AFFIL.: AMOCO
REPORT No. 69116	DATE: NOV. 26, 1969.
REMARKS: BC70 9	
GEOLOGICAL INT.: J. SHAW	DATE: NOV. 26/69
FROM GEOPH REPORT No.(s)	DATED
REMARKS:	

CLASS I

2 of 2

REPORT OF GEOPHYSICAL AND SEISMOGRAPH REFLECTION SURVEY

On and off Federal Permits
1144 and 1145

Spring, 1969

Prepared By: J. L. Hudson
District Geophysicist

REPORT OF GEOPHYSICAL SURVEY

REPORT OF SEISMOGRAPH REFLECTION SURVEY

Conducted By

Western Geophysical Company of Canada Ltd.

for

Pan American Petroleum Corporation

April 16, 1969 to June 14, 1969

On and off North West Territory Permits 1144 and 1145, North West Territory Topographic Grid 95-B-2.

Abstracted for
Geo-Science Data Index

Date

OIL & GAS OPERATIONS UNIT
Oil and Mineral Division
FEB 4 1970
OTTAWA, CANADA
Dept. of Indian Affairs & Northern Development

Prepared By

J. L. Hudson

District Geophysicist

January , 1970

Submitted in support of application for credit; see affidavit made by of 1970 and in accordance with work obligations under Section , sub-section of the Regulations

TABLE OF CONTENTS

Introduction:

During the spring of 1969 a seismic survey was carried out by Western Geophysical Party W-62 for Pan American Petroleum Corporation.

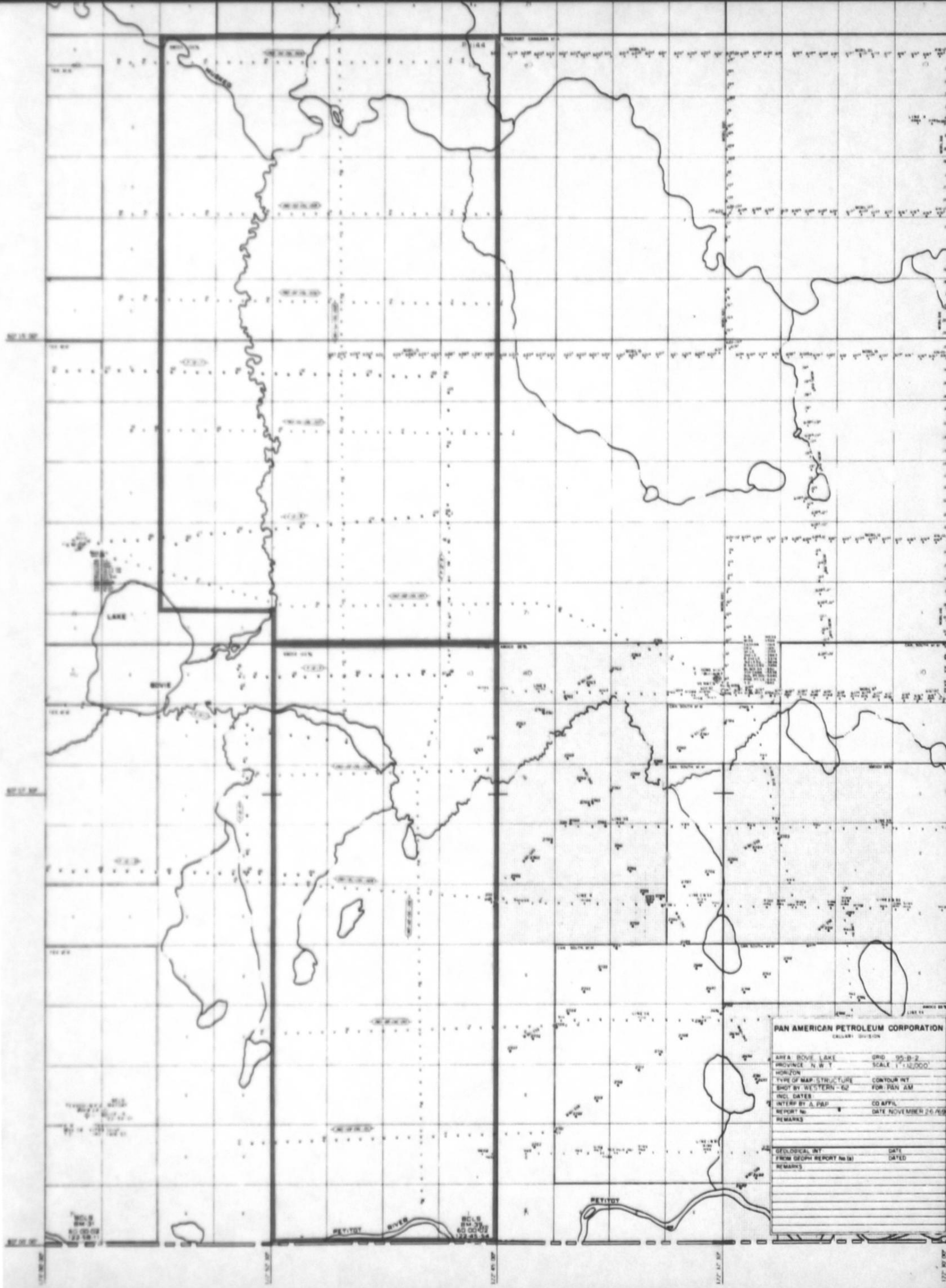
The area covered was off and on Federal Permits (N.W.T.) 1144 and 1145 held by Pan American Petroleum Corporation.

A total of 77 days (April 19 - June 14, 1969) were spent by the crew in the area gathering the data that was interpreted in Calgary over an estimated period of 90 days.

Western Geophysical Party W-62 was operating under the supervision of Mr. W. F. Cherniak, Party Manager.

Track mounted equipment was used throughout the operation both for the technical vehicles and for camp moving trucks and trailer facilities.

Apart from the usual difficulties of operating in early spring no major or unforseen problems were encountered in the course of the survey.


PAN AMERICAN PETROLEUM CORPORATION
CALGARY DIVISION
AREA BOVIE LAKE
GRID 95-B-2
PROVINCE N.W.T.
SCALE 1 : 12,000
HORIZON
TYPE OF MAP: STRUCTURE
CONTOUR INT.
SHOT BY: WESTERN - 62
FOR: PAN AM
INCL. DATES:
INTERP. BY: A. P&P
CO. AFFIL.
REPORT No.
DATE: NOVEMBER 26/69
REMARKS:
GEOLOGICAL INT.
DATE
FROM GEOPH. REPORT No (s)
DATED
REMARKS:
LAKE
BOVIE
PETITOT
RIVER

STATISTICAL DATA

A. Production

The survey consisted of eleven seismic lines covering a total of 94 surface miles. There were 404 shot points drilled. (Lines 060-122-001-011; open circles on Lacality Map)

The survey began April 19, 1969 and ended June 14, 1969 (57 days), however due to spring break-up shut-down lasted from May 7 to May 23 (17 days). Total number of productive days equalled 40, thus giving an average daily production of 2.1 miles.

B. Personnel

i) Recording

1	Party Manager
1	Observer
1	Assistant Observer
4	Helpers
2	Surveyors
2	Rodman/Chainman
1	Shooter
1	Shooter's Helper
1	Clerk
1	Mechanic
1	Supplyman
TOTAL 14	Men

ii) Drilling

6	Drillers/Drillers' Helpers
TOTAL 6	Men

iii) Line Cutting

	4	Bulldozer Operators
TOTAL	4	Men

iv) Camp Attendants

	1	Cook
	1	Cook's Helper
	1	Camp Attendant
TOTAL	3	Men

Grand Total = 27 Men

C. Equipment

i) Western Geophysical Vehicles

1.	Unit	#346	Flex-Track Nodwell for Surveyors
2.	"	#379	Supply - Nodwell
3.	"	#385	Cable Unit - Nodwell
4.	"	#343	Conventional Drill (Nodwell)
5.	"	#364	" " "
6.	"	#363	Auger Drill (Nodwell)
7.	"	#417	Water Truck (Nodwell)
8.	"	#389	" " "
9.	"	"	Expandable Trailer Unit
10.	"	"	Office Sleeper
11.	"	"	Kitchen-Diner-Sleeper
12.	"	"	Power Plant Trailer
13.	"	"	½ Ton Pickup for Party Manager
14.	"	"	3/4 Ton Supply Truck

ii) Amoco Canada Petroleum Company Ltd. Vehicles

15.	Unit	#6286	Seismic Recorder (Nodwell)
16.	"	"	Expandable Trailer

iii) Bruce Rome Construction Vehicles

17. Unit #D7E Bulldozer
18. " #D6C "

The instruments used by Western Party W-62 were the FA 44 C type manufactured by Pan American Petroleum Corporation. The data were recorded on Techno Type Magnetic tapes.

D. Mobilization and Recording Dates

The two bulldozers rented from Bruce Rome Construction commenced work in the area March 1, 1969. The D7E bulldozer was released April 5, 1969, and the D6C bulldozer on June 20, 1969.

The remaining vehicles listed under the heading Equipment, were utilized from April 18, 1969 until June 20, 1969 (date released).

Recording commenced April 26, 1969 to May 7, 1969 and again from May 26, 1969 to June 14, 1969.

E. Navigation

The horizontal and vertical survey control ran from the B.C. - N.W.T. border monument labelled BM #39. This was tied to the legally surveyed wellsite Home et al Celibeta #7. Azimuth control was from celestial observations. Equipment used were WILD T I A theodites.

F. Conditions

No major or unforseen problems were encountered in the area. The operation was hampered somewhat due to numerous creeks and muskeg patches

as well as Spring break-up which occurred at the time of the survey.

FIELD PROCEDURE

Shotholes averaged 40 feet in depth throughout the area. Depth of shot was determined by near-surface lithology.

A two-hole shot pattern was used with a normal charge size of 2 x 5 lbs.

The area was surveyed by 600% C.D.P.

The reflection method was used to obtain the sub-surface data throughout the area. (See spread diagram in pocket).

The data that appears on the subsurface maps are vertical two-way times from a + 500' datum plane or isochron times whichever is applicable.

DATA PROCESSING

Near surface and elevation corrections were applied to a +500' datum plane. Dynamic (NMO), average amplitude scaling (400 ms.), deconvoluation (600-2500 ms. gate) and filtering (9-18-32-48 cps.) were applied to the data.

All processing was done by Pan American Petroleum Corporation, Calgary Division.

RESULTS AND INTERPRETATION

The seismic survey was conducted to explore the area for possible pinacle reefs, structures involving the Middle Devonian Carbonate, and to define the Carbonate Shale-out edge.

Three maps were prepared:

(1) Mid. Devonian Carbonate Time Structure (in pocket)

(2) 2nd H.R.L. - Mid. Devonian Carbonate Isochron (in pocket)

(3) Mid. Dev. Carb. - Approx. Cambrian Isochron (in pocket)

The present seismic control has not shown any new significant leads that may indicate reefing. The detailed 600% shooting of anomaly F-12-5 (see maps) did not eliminate the possibility of a reef; however the apparent 20 ms. of built up Dev. Carbonate may indicate a basement high rather than reefing, inasmuch as the anomaly is not reflected in the Mid. Dev. Carbonate-Cambrian isochron.

Anomaly 150-C-69 appears to be a recent structure involving rocks of Mezozic and Paleozoic eras. The feature is poorly controlled, with a maximum closure of 200 feet.

The Carbonate shale-out is reflected by the multifold shooting as a gradual phenomenom rather than a sharp drop-off edge.

Respectfully submitted,

PAN AMERICAN PETROLEUM CORPORATION

By: J. L. Hudson

J. L. Hudson
District Geophysicist

FORM 205C 3-61

PAN AMERICAN PETROLEUM CORPORATION
RECORD OF MAPS TRANSMITTED

TO The Dominion Government LOCATION DATE January 15, 1970

PARTY NO.	PRINT OR MAP PREFIX AND NUMBER	QUADRANGLE OTHER DESCRIPTION	HORIZON	REPORT NO.	DATE OF REPORT	DATE PRINTED OR REVISED	REMARKS
W-62	BC 70-7	CM - 19/SW	2nd HRL-Mid Dev. Carb.	69-116	11-26-69	1-9-70	
"	BC 70-8	"	" " " "	"	"	"	
"	BC 70-9	"	" " " "	"	"	"	
"	BC 70-10	"	Mid Dev. Carb.-Approx. Camb.	"	"	"	
"	BC 70-11	"	" " " "	"	"	"	
"	BC 70-12	"	" " " "	"	"	"	
"	BC 70-13	"	Mid Devonian Carb.	"	"	"	
"	BC 70-14	"	" " " "	"	"	"	
"	BC 70-15	"	" " " "	"	"	"	

ATTACHED IS ONE COPY EACH OF THE ABOVE DESCRIBED PRINTS.

BY H. A. Baker LOCATION Calgary Division
Amoco Canada Petroleum Company Ltd.

RECEIPT OF ABOVE PRINTS IS ACKNOWLEDGED

BY _____ DATE _____

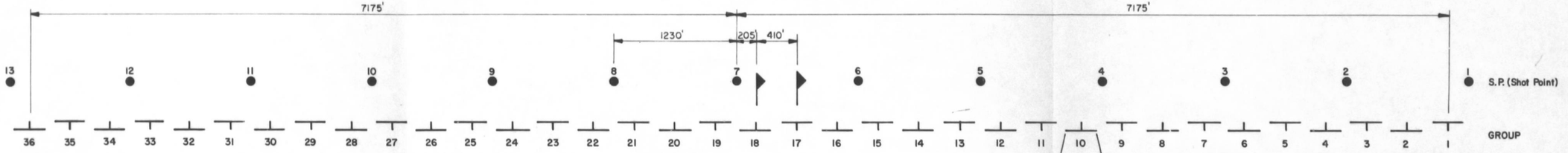
BOVIE LAKE

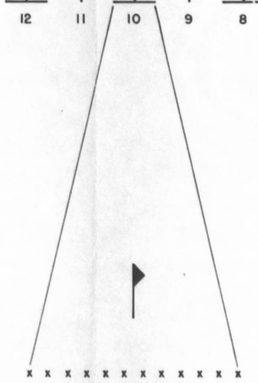
W-62

APRIL – 1969

600% SYMMETRICAL SPREADS

Scale 1" = 817'





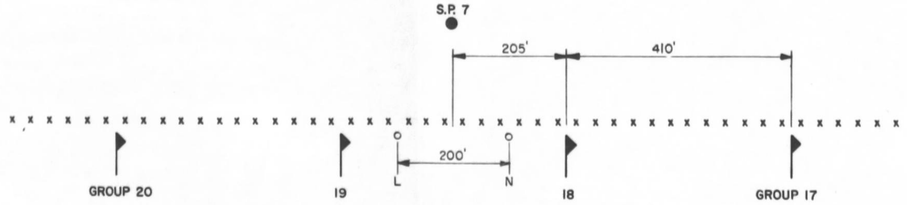
12 GEOPHONES / GROUP
GEOPHONES 35' APART

Scale 1" = 200'

SHOT POINT 7
(DETAIL)

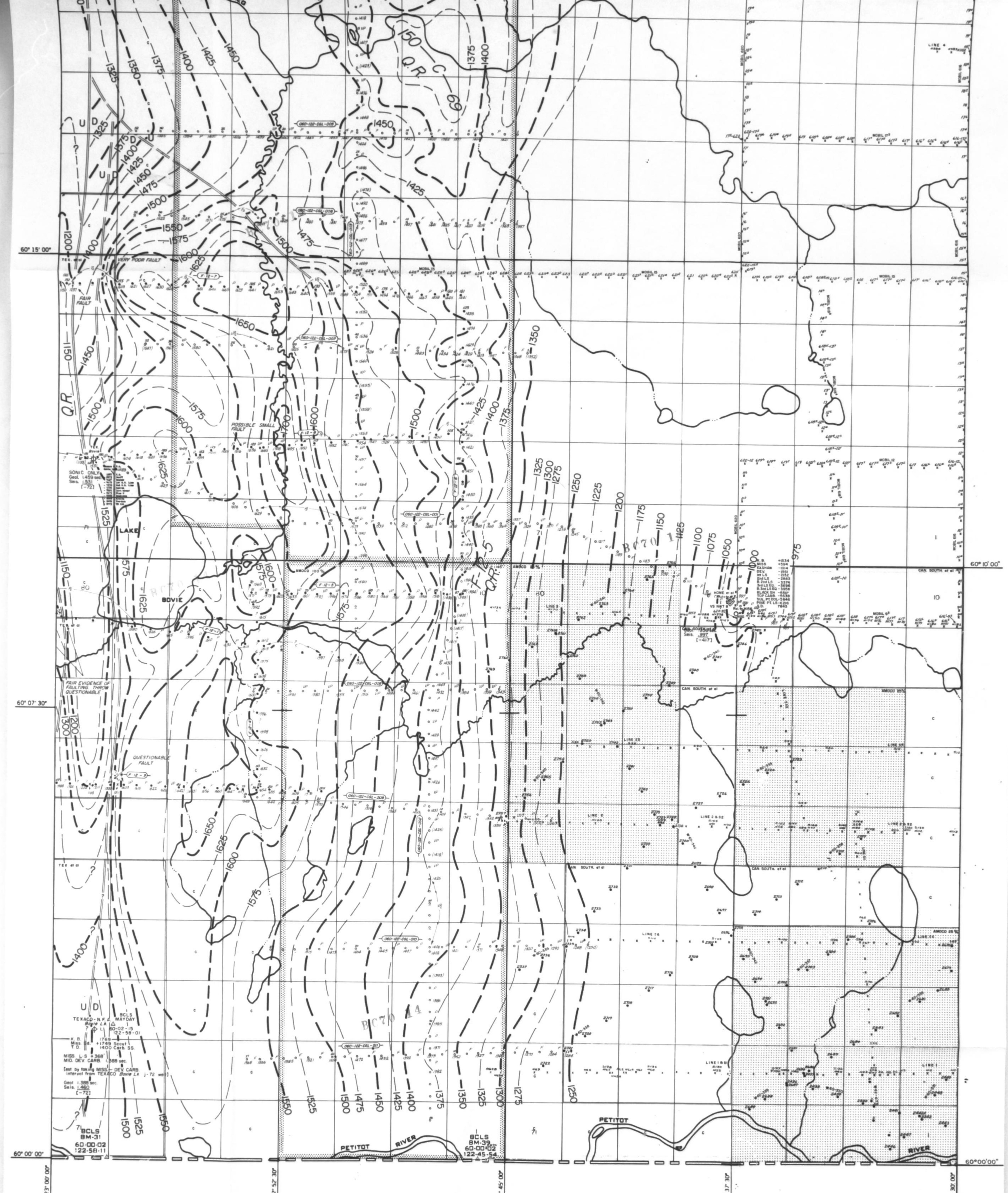
Scale 1" = 200'

2 HOLE PATTERN



MID. DEV. CARBONATE
TIME STRUCTURE
25ms ≙ 150ft.

1 of 2



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

QUAL. REL.

SHOOTING HISTORY (Not in detail)

NOTE: MOBIL SURVEY ADJUSTED 1600 FT. SOUTH TO TIE H-3 LINE

INCL. DATES	SHOT BY	SHOT FOR	S.P. AND/OR LINE No's
FEB.-MAR., 1958	FRONTIER F-12	PAN AM	LINES F12-1 to 8
JAN.-MAR., 1959	HEILAND	CANADA SOUTHERN	LINES 1-4
FEB., 1960	W.G.C. W-62	PAN AM	LINE W62-67
MAR., 1961	SEISMOTECH	HOME OIL	LINES S1,S2,S5,S6,S10,S11
	MOBIL	MOBIL	LINES 9½,12,15,17½,20,616, 618½-5,620
FEB.,MAR. 1962	W.G.C. W-60	PAN AM	LINES W60-330,331, 336 to 342
MARCH, 1969	W.G.C. W-62	PAN AM	CGL-001 to 011

INTERPRETIVE HISTORY

FINAL REPORT No.	DATE	INTERP.	CO. AFFIL.	APPROX. LOC. ON MAP
3 (FINAL)	JUNE 2, 1958	W.L. KELSCH	FRONTIER	S.W. QUADRANT
FINAL	MAY 29, 1959	G.E. LONGPHEE	UNITED	S.E. QUADRANT
FINAL	SEPT. 8, 1959	R.H. ROLLANS	WESTERN	SOUTH HALF
E-60-23	OCT. 4, 1960	E.F.K. ZARUDZKI	PAN AM	SOUTH HALF
E-62-1	JAN. 19, 1962	E. LIPSETT	PAN AM	EAST HALF
E-62-41	JULY 26, 1962	D.E. BIRNIE E.F.K. ZARUDZKI	PAN AM	S.E. QUADRANT
6862	SEPT. 25, 1969	V.G. MERITS	PAN AM	S.W. QUADRANT
69116	NOV. 26, 1969	A. PAP	AMOCO	SOUTH HALF

This map replaces/supplements Registration No. ______ dated ______, which is to be destroyed/kept (Refer transmittal dated ______)

Map distribution: ☐ Division ☐ General Office

Other maps prepared this report (Div. / G.O.):
- 2nd H.R.L. — Mid. Dev. Carbonate
- Mid. Dev. Carb. — Approx. Cambrian
- Mid. Dev. Carbonate Time Structure

This map checked by ______ Amoco Geophysicist/Geologist

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VELOCITY PLAT AND EFFECT OF REF. PLANE AND/OR VELOCITY ON TIME MAP

LEGEND
- Conventional Survey
- C.V.L.
- Synthetic Record
- Computed Velocity

AMOCO CANADA PETROLEUM COMPANY LTD.

AREA: Bovie Lake — GRID: CM-19/S W.
PROVINCE: Northwest Territories — SCALE: 1" = 4000'
HORIZON: MID. DEVONIAN CARBONATE
TYPE OF MAP: TIME STRUCTURE — CONTOUR INT. 25ms.
SHOT BY: WESTERN 62 — FOR: PAN AM
INCL. DATES: MARCH-JUNE, 1969.
INTERP. BY: A. PAP — CO. AFFIL.: AMOCO
REPORT No. 69116 — DATE: NOV. 26, 1969.
REMARKS: DATA BELOW +500 ft. DATUM

BC70 14

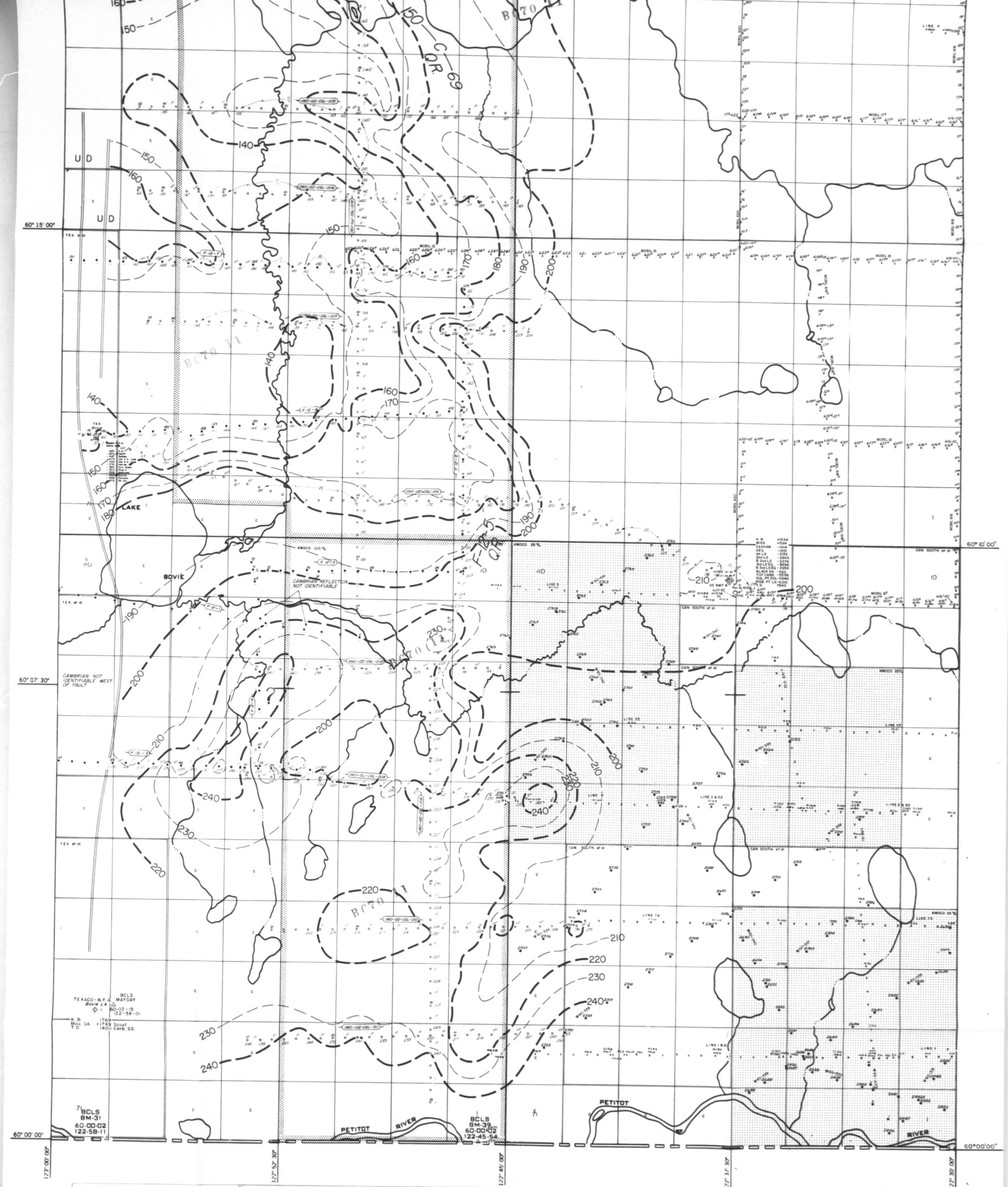
GEOLOGICAL INT.: J. SHAW — DATE: NOV. 26/69
FROM GEOPH REPORT No.(s) — DATED
REMARKS:

CLASS I

2 of 2

MID. DEV. CARB. — APPROX. CAMBRIAN
10 ms. ≙ 100 ft.

1 of 2



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FEB., 1960	W.G.C. W-62	PAN AM	LINE W62-67
MAR., 1961	SEISMOTECH	HOME OIL	LINES S1,S2,S5,S6,S10,S11
	MOBIL	MOBIL	LINES 9,12,15,17,20,616, 618-1,620
FEB.,MAR. 1962	W.G.C. W60	PAN AM	LINES W60-330,331, 336 to 342
MARCH, 1969	W.G.C. W-62	PAN AM	CSL-001 to 011

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- *Mid. Dev. Carb. — Approx. Cambrian* ☐ ☐
- *Mid. Dev. Carbonate Time Structure* ☐ ☐

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VELOCITY PLAT AND EFFECT OF REF. PLANE AND/OR VELOCITY ON TIME MAP

LEGEND
- Conventional Survey
- C.V.L.
- Synthetic Record
- Computed Velocity

AMOCO CANADA
PETROLEUM COMPANY LTD.

AREA: Bovie Lake	GRID: CM-19/SW
PROVINCE: Northwest Territories	SCALE: 1" = 4000'
HORIZON: *MID. DEV. CARB. — APPROX. CAMBRIAN*	
TYPE OF MAP: *ISOCHRON*	CONTOUR INT. *10 ms.*
SHOT BY: *WESTERN 62*	FOR: *PAN AM*
INCL. DATES: *MARCH–JUNE, 1969.*	
INTERP. BY: *A. PAP*	CO. AFFIL.: *AMOCO*
REPORT No. *69116*	DATE *NOV. 26, 1969.*
REMARKS:	
BC70 11	
GEOLOGICAL INT.: *J. SHAW*	DATE *NOV. 26/69*
FROM GEOPH. REPORT No.(s)	DATED
REMARKS:	
CLASS I	

2 of 2