PROJECT ACTION SHEET

RESOURCE EVALUATION BRANCH

PROJECT NUMBER: 9229-F9-3E

COMPANY: FORAND RESOURCES LTD

REPORT TITLE: REFLECTION SEISMOGRAPH SURVEY - COLVILLE 1983

The following action has been taken:

Receipt acknowledged ..... ✓

Reports and maps date-stamped ..... ✓

Memo sent to Land Management.....

Reports for review list edited .....

Inventory sheet made ..... ✓

REVIEW AND APPROVAL made by:

John O'Beirne 84-03-29

COMMENTS:

PROJECT NUMBER: 9229-F9-3E

Filed under same project number _____ or _____

(A) WRITTEN REPORTS

(1) Operations Reports

Number: 1

(2) Interpretation Reports

Number: 1

(B) MAPS

(1) Shotpoint Maps

Number: 1

(2) Interpretation Maps

Number: 3

MT. CAP STRUCTURE MAP
PROTEROZOIC STRUCTURE MAP
MT. CAP TO PROTEROZOIC ISOCHRON MAP

(3) Other Maps

Number:

(C) SEISMIC SECTIONS

Number: 18

FR-50
S1
S2
S3 — REVERSED POLARITY
S4
S5
S6
S7
S8

FR-50
S1
S2
S3
S4 — NORMAL POLARITY
S5
S6
S7
S8

9229 - F9 - 3E

Report on the
REFLECTION SEISMOGRAPH SURVEY
ON THE
COLVILLE AREA, N.W.T.
66°-68°N, 123°-125°W

For

Forward Resources Ltd.

by

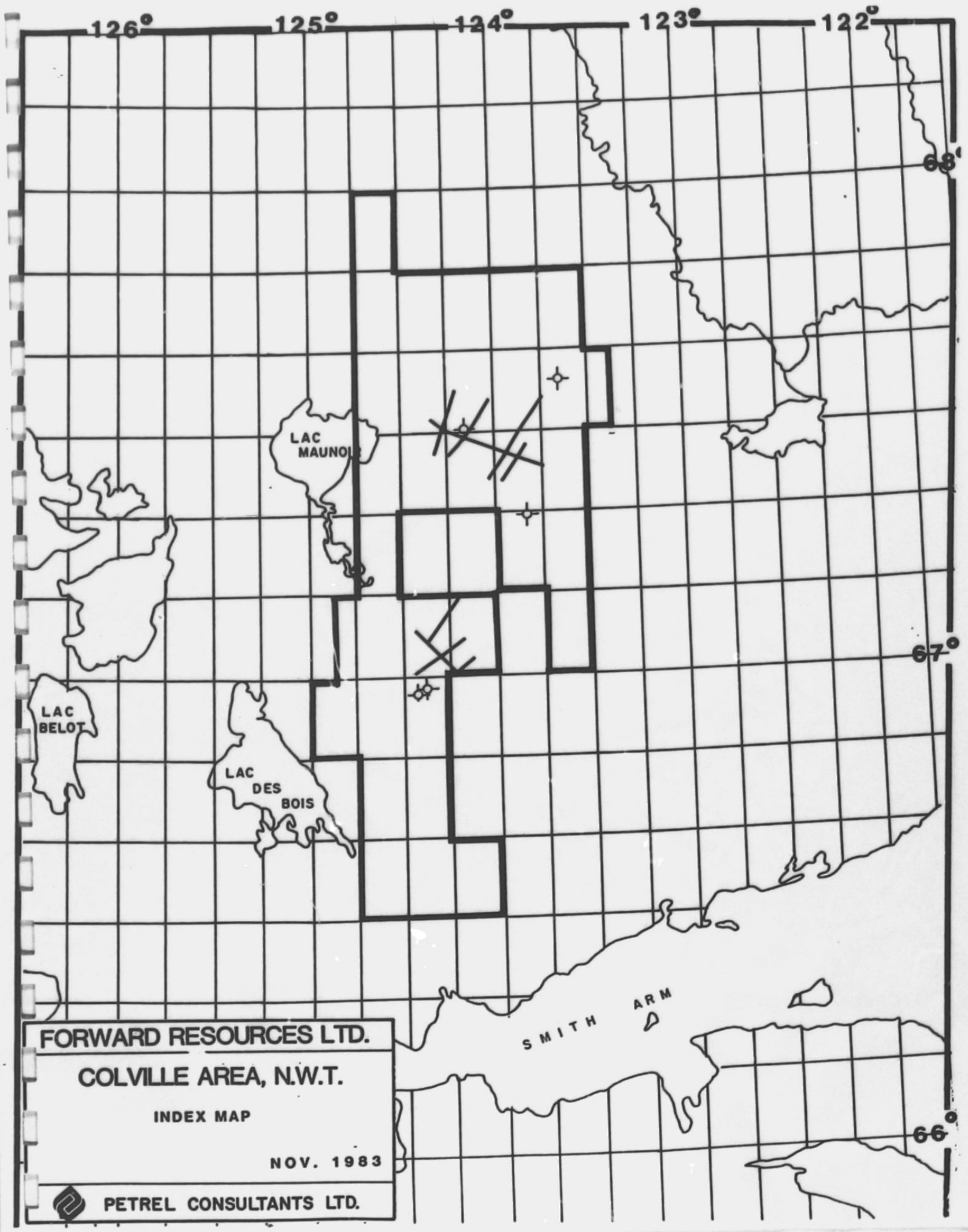
Petrel Consultants Ltd.

December, 1983

Land Use No. N82-B786

COGLA File No. 9229-F9-3E

J.D.T. Crane


126°
125°
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DES
BOIS
SMITH
ARM
FORWARD RESOURCES LTD.
COLVILLE AREA, N.W.T.
INDEX MAP
NOV. 1983
PETREL CONSULTANTS LTD.

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Enclosures

Mt. Cap Structure Map
Proterozoic Structure Map
Mt. Cap to Proterozoic Isochron Map

INTRODUCTION

The Colville Hills prospect consists of 600,000 hectares of land which was farmed-out to Forward Resources Ltd. from Esso Resources Ltd. It lies north of Great Slave Lake between 66°30' and 68° north and 123° to 125° west latitude.

Several vintages of seismic data were examined to form a basis for the evaluation of the exploration potential. These data included:

1. 950 km of pre-1982 data provided by Esso.
2. 300 km of 1200% data shot by Forward during February and March 1982.
3. 117 km of 1200% data shot by Forward in January - March 1983.

Two wells were drilled by Forward during early 1983 and one more is to be drilled during early 1984.

Reference is made to Petrel Consultants Ltd. reports dated December 1981 and August 1982.

Data Base

As reported in the August 1982 report by Petrel the Esso data was utilized without reprocessing. The Forward seismic data was processed by Geo-X Systems Ltd. under Petrel Consultants Ltd. supervision. These sequences are reported in the appendix.

The new data is comparable to the data obtained in 1982 and quality is only fair to poor due to the same factors attributed to the 1982 data, namely:

1) the presence of a very high velocity carbonate rock at or near the surface.
2) karst topography
3) variation in the thickness of glacial drift
4) variation in the thickness of perma-frost near and beneath the lakes which are present over much of the area.

Regional Geology

The geologic section in the area consists of Proterozoic sands and shales, Cambrian sands, shales and evaporites overlain by Ordovician and Silurian limestones and dolomites. In the western part of the area some limestones of Devonian age are present. In the west, south and eastern parts of the area, Cretaceous sands and shales rest unconformably on the Paleozoic surface. Several unconformities occur within the section; between Lower and Upper Ordovician and between Ordovician and Devonian. The area has experienced considerable block and strike-slip faulting which is felt to be basement controlled. Many of these faults were probably active at various times throughout geologic history.

The main reservoir target is the basal Old Fort Island sand, commonly referred to as the Mt. Clark sand, which appears to increase in porosity from the Good Hope well in the south to the Stopover well in the north which tested 2550 feet of salt water. The Izok and Anderson wells drilled by Forward confirmed the thin nature of this sand relative to that found at Maunoir M-48.

Interpretation

The well velocity survey at Izok together with the new 1983 data provided a basis for a more accurate identification and correlation of reflectors. As a result the entire area was re-interpreted and reflectors were identified at the Base of the Franklin Mt., Mt. Cap and top of Proterozoic.

Structure maps were prepared for the Mt. Cap formation and the top of the Proterozoic. An isochron map was also prepared between the two horizons: Mt. Cap to Top of Proterozoic.

The two tests IZOK and Anderson, drilled by Forward Resources Ltd. in this prospect, on previously recommended highs, indicated that these highs existed during Mt. Clark time. The absence of Mt. Clark sands over these

features indicates that future efforts be directed to highs or flanks of structural highs having sufficient isochron thickness in the Mt. Cap to Proterozoic interval to indicate the presence of Mt. Clark sand.

Using these criteria the following areas are recommended for further evaluation:

1) Block B, Lease #3921, Camp M-61 location
   N.E. co-ordinates 67°10'N 124°00'W
   Location: Seismic Line FR-10, SP 310

This closed high feature is separate from the East Maunoir high by normal faulting. The isochron Mt. Cap to Proterozoic indicates this feature to be on the flank of an old Proterozoic high. It is recommended that this feature be tested by a well at SP 310, FR 10.

2) Block B, Lease #3931
   N.E. Co-ordinates 67°20'N 123°45'W

This tract involves the area southwest of the Forward IZOK M-20 well. Considerable structure and thickening in the Mt. Cap to Proterozoic interval indicates Mt. Clark sand to be present, south and west of the IZOK test. Additional seismic control is recommended in this area (see attached map).

3) Block B, Leases #3923, #3932
   N.E. Co-ordinates 67°10'N, 124°30'W
   67°20'N, 124°30'W

These two blocks are on the flank of structural highs. The Mt. Cap to Proterozoic isochron indicates the Mt. Clark formation to be present, and possibly thick, over much of the area.

Additional seismic control is recommended over these two leases.

Conclusions and Recommendations

Present knowledge of the area indicate the Mt. Clark sand to be directly related to the Proterozoic paleo-topography. Regionally the area near Maunoir M-48 well has the thickest sand. Structural highs and isochron thicks suggest prospects exist for oil accumulations in the centre of the farmin blocks.

One location, at Camp M-61 (SP 310 on line FR 10), is recommended for drilling to the Proterozoic while other areas north, northeast and northwest Maunoir are recommended for additional seismic coverage.

APPENDIX A

FIELD PARAMETERS

COLVILLE LAKE

Recording

Sample Rate	2 Milli-seconds
Record Length	3 Seconds
Recording Filter	9/18-125 Hz.
Sub-surface Coverage	1200%
Number of Groups	96 Trace
Group Interval	33.5 Meters
Geophone Array	9 at 3.7 Meters
Seismometers per Group	9
Shot Point Location	134 Meters
Spread	1608-33.5-X-33.5-1608 meters
Holes per Location	1
Hole Depth	10 meters
Dynamite Charge	2 kg.

APPENDIX B

STATISTICAL DATA

Dates

Mobilization Date.....January 2, 1983
Drills Started.....January 7, 1983
Start of Recording.....January 13, 1983
Completion of Recording.....January 27, 1983
Demobilization Date.....January 28, 1983

PRODUCTION

Recording

Total operating days.....27 days
Total recording days.....12 days
Total moving days.....1 day
Total weather days.....0 days
Total testing days.....0 days
Total down days.....3 days
Kilometers shot.....117.0 km
Kilometers per production day.....9.75 km average
Total days moving mob/demob.....5 days

APPENDIX C
EQUIPMENT AND PERSONNEL

Technical

Amplifiers	MDS 10
Oscilloscope	Tektronic 465
Camera	Mandrel SDW 400
Remote Firing System	Input Output Encoder/Decoder #200
Cables	Mark Products Ltd. - 1410 Ft Spread Cables with 58 feet intervals
Geophone Strings	Mark Products Ltd. - L 15A - 14 Hz - 600 OHM coil. 9 per string.

Vehicles

Number	Use	
1	Party Manager	1980 Ardco - K4X4 Buggie
1	Party Manager/Rec. Shift	1978 Ardco - K4X4 Buggie
1	Recorder	1976 Ardco - K4X4 Buggie
1	Shooting	1980 Ardco - K4X4 Buggie
3	Cable Trucks	1978 Ardco - K4X4 Buggie

Number	Use	Type
2	Survey Trucks	1966 Nodwell 110
5	Drilling Rigs	Mayhew Air Drills - Mounted on Diesel Powered Nodwells
2	Drilling Rigs	Top Drives with Air Mounted on Diesel Powered Nodwells
2	Camp Water Trucks	Foremost Track; Vehicles
1	Mechanic Utility	1978 Ardco K4X4 Buggie
1	Expediter Truck	1980 Dodge 4X4
2	Survey Snowmachines	John Deeres

Camp - Drilling

1	Kitchen - Diner	Sleigh Mounted
1	Utility	Sleigh Mounted
1	Office-Sleeper	Sleigh Mounted
2	Sleepers	Sleigh Mounted
1	Power-Shop-Storage	Sleigh Mounted
2	Fuel Sloops (6000 gallon)	Sleigh Mounted
1	Powder Magazine	Sleigh Mounted
1	Incinerator	Sleigh Mounted

Camp - Recording

1	Kitchen - Diner	Sleigh Mounted
1	Power-Shop-Storage	Sleigh Mounted
1	Utility-Sleeper	Sleigh Mounted
2	Sleepers	Sleigh Mounted
2	Fuel Sloops (600 gallon)	Sleigh Mounted
1	Incinerator	Sleigh Mounted

DOZER CREWS

Vehicles

3	85E Komatsu Tractors	c/w hydraulic blades
3	65E Komatsu Tractors	winch and mushroom shoes
1	Bombardier	Foreman's vehicle
1	FN-60 Nodwell	Cat Push's vehicle
1	Evinrude Snowmachine	Cat Push's vehicle

Camp

1	Kitchen-Diner-Utility	Sleigh Mounted
1	Sleeper	Sleigh Mounted
1	Shop-Power Unit	Sleigh Mounted
2	Fuel Sloops (8000 gallons)	Sleigh Mounted

Fuel Haul Camp

1	Kitchen-Diner-Sleeper-Power Unit	Sleigh Mounted

APPENDIX D

Processing Sequence

1. Digital Conversion
2. Amplitude Recovery
3. Spiking Deconvolution
4. Structural connections
5. Preliminary Moveout
6. Scaling
7. Statics - Surface stack residual
8. Display
9. Trace kills
10. Static analysis
11. Final moveout
12. Cross correlation statics
13. Mute
14. 1200% gather
15. Stack
16. Filter 10/25-90/100
17. Equalization
18. Linear range scaling
19. Amplitude coherency enhancement
20. Final film display