REPORT FOR

CANDEL OIL LTD.

on

KINKADE CREEK

COAL LICENCE NUMBERS

6429

6430

N.T.S. Map 92-F-7

by

M. Cholach, P. Geol., P. Eng.
Springfield Consulting Ltd.
12 Arb Close
Red Deer, Alberta

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

CONCLUSIONS AND RECOMMENDATIONS

The June 1981 exploration program on the Kinkade coal licences failed to locate any coal. All of the drill holes bottomed in fine-grained basaltic rocks at depths of about 40 feet or 12.2 m.

No further work is recommended on Coal Licence No.'s 6429 and 6430, and the licences should be surrendered.

LOCATION AND ACCESS

The Kindade Coal Licences, (6429 and 6430), are located about eight miles (12 km) northeast of Port Alberni, British Columbia.(Fig. 1) The Coal Licences are centered at about 49° 19' north and 124° 35' west. The licences are accessible by existing logging roads from Dashwood.

LISTING OF COAL LICENCES

A listing of the licences and acreages, is shown in Table 1.

TABLE 1: Listing of Kinkade Coal Licences

Licence No.	Acres	Hectares
6429	717	290
6430	351	142
	1,068	432

DESCRIPTION OF WORK PROGRAM

Coal Licence numbers 6429 and 6430 are held by CanDel Oil Ltd. The licences were explored by CanDel from June 1 to 3, 1981.

A T-650W Chicago Pneumatic air rotary drilling rig was used. Additional support equipment consisted of one flat-bed truck for pipe and equipment hauling, and one 4 X 4 pick-up for crew transportation.

The holes were geophysically logged using gamma ray, sidewall densilog, caliper and focused beam resistivity logs.

The exploration program was supervised by the writer.

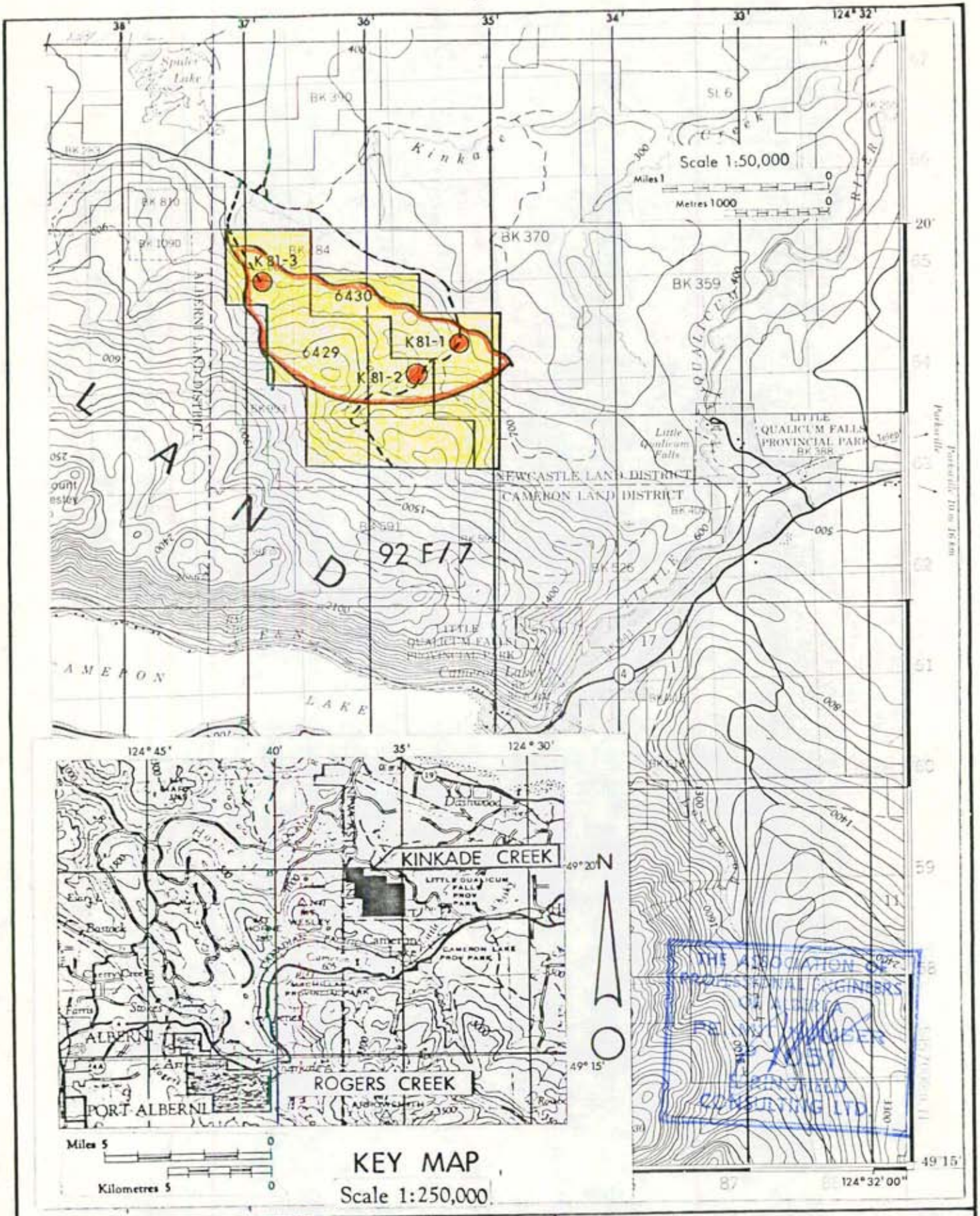
GEOLOGY

Only thin remnants of the Comox Formation remain in the vicinity of the Kinkade coal licences. Furthermore, much of the area is covered with glacial till concealing much of the rock outcrop. (Fig. 1)

A total of three holes were drilled to a depth of about forty feet, or 12.2 m (Fig. 2), each. All of the holes bottomed in fine-grained basaltic rocks, and the drilling program was suspended.

DRILLING RESULTS

The total footage drilled for the three holes was 123 feet, or 37.5 m. Copies of the drill summary sheets, driller's logs and geophysical logs appear in Appendices A, B and C respectively.



CANDEL OIL LTD.	CALGARY ALBERTA	REVISED
INTERPRETATION BY: M. CHOLACH		
DRAWN BY: MB CBJ	DATE JULY 81	
CHECKED BY:	DATE	
SCALE: 1:50,000		

KINKADE EXPLORATION PROGRAM
92 F/7
COMOX FORMATION
DRILL SITE K81-1
EXISTING ROAD
6429 COAL LEASE NUMBER

FIG. 2

JUNE 1981

RECLAMATION PROGRAM

All of the drill holes were partially filled with cuttings and then cemented to the surface, as shown in Fig. 3.

The holes were drilled on existing roads, and surface disturbance was minimal.

KINKADE

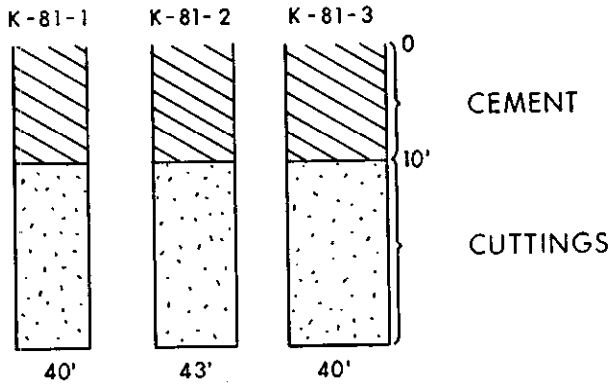


FIG. 3: DRILL-HOLE ABANDONMENT DATA

(All Dimensions in Feet)

EXPENDITURES

A listing of the expenditures for the Kinkade project is shown in Table 2.

TABLE 2: Listing of Expenditures

Contractor	Expenses
Ken's Drilling Ltd.	$2,729.93
Roke Oil Enterprises	869.29
Springfield Consulting	2,314.48
TOTAL	$5,913.70

REFERENCES

MILLER, J. E.: G.S.C. Paper 17-1968

CERTIFICATION

This will certify:

1. That I am a graduate of the University of Alberta, B.Sc., 1967 and M.Sc. in geology, 1969.

2. Since my graduation I have continuously practised my profession in mining and exploration geology.

3. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta as a Professional Geologist.

4. I am a member of the Association of Professional Engineers for the Yukon Territory as a Professional Engineer.

5. That I was employed by Tobe Mines Ltd. from May 1968 to December 1968, as a geologist at Uranium City.

6. That I was employed by Connaught Mines Ltd. from May 1969 to June 1970 as Resident Geologist in mineral exploration.

7. That I was employed by the Consolidation Coal Company as project geologist from July 1970 to July 1971; and as Manager of Canadian Exploration from August 1971 to December 1974.

8. That I have been a Consulting Geologist since January 1975 to the present.

Respectfully submitted

M.S. Cholach, P. Geol., P. Eng.

APPENDIX A

Drill hole summary sheets for:

K 81-1

K 81-2

K 81-3

Project Kinkade Year June 2, 1981

DRILL HOLE SUMMARY SHEET

Page 1 of 1

Hole Number	Incl. (deg)	Azimuth (degree)	Coordinates North South	Coordinates East West	Collar Elevation	Total Depth	Electric Log Nat. Gam.	Electric Log Density	Electric Log Resistivity	Electric Log Date	Electric Log Depth	Drill Log	Overburden Depth	Water Table Depth	Seam Data No.	Seam Data Depth Top	Seam Data Depth Bottom	Seam Data Thickness	Seam Data Samples Core	Seam Data Samples Sw	Seam Data Samples Chip	Elevations Bottom of Hole	Elevations Seam Top	Elevations Seam bottom	Rig rot	Fluid dia	Fluid air	Fluid wtr	Fluid mud	Comments
K 81-2						13.1	X	X	*	6/2	11.3																			No Coal
									*	Caliper log																				

Project Kinkade Year June 3, 1981

DRILL HOLE SUMMARY SHEET

Page 1 of 1

Hole Number	Incl. (deg)	Azimuth (degree)	Coordinates North South	Coordinates East West	Collar Elevation	Total Depth	Electric Log Nat. Gam.	Electric Log Density	Electric Log Resis. (Ind.)	Electric Log Date	Electric Log Depth	Drill Log	Overburden Depth	Water Table Depth	Seam Data No.	Seam Data Depth Top	Seam Data Depth Bottom	Seam Data Thickness	Samples (core)	Samples Sw	Samples chip	Elevations Bottom of Hole	Elevations Seam Top	Elevations Seam bottom	Rig rot	Fluid dia	Fluid air	Fluid water	Fluid mud	Comments
K 81-3						12.2	X	X		6/3	11.3																			No Coal

Project Kinkade Year June 3, 1981

DRILL HOLE SUMMARY SHEET

Hole Number	Incl. (deg)	Azimuth (degree)	Coordinates North South	Coordinates East West	Collar Elevation	Total Depth	Electric Log Nat. Gam.	Electric Log Density	Electric Log Resistivity	Electric Log Date	Electric Log Depth	Drill Log	Over-burden Depth	Water Table Depth	Seam Data No.	Seam Data Depth Top	Seam Data Depth Bottom	Seam Data Thickness	Seam Data Samples Com.	Seam Data Samples Sw.	Seam Data Samples Chip	Elevations Bottom of Hole	Elevations Seam Top	Elevations Seam bottom	Rig (rot.)	Fluid (dia.)	Fluid (air)	Fluid (wtr.)	Fluid (mud)	Comments
K 81-1						12.2	X	X	*	6/3	8.8																			No Coal
									*	Caliper log																				

APPENDIX B

Driller's logs for:

K 81-1

K 81-2

K 81-3

DRILLER'S LOG

PROJECT: Kinkade DATE: June 3, 1981 HOLE NO.: K 81-1

From	To	Thickness	Description
0	5.8	5.8	Overburden
5.8	12.2	6.4	Volcanic rocks

T.D. 12.2 m

DRILLER' LOG

PROJECT: Kinkade DATE: June 2, 1981 HOLE NO.: K 81-2

From	To	Thickness	Description
0	2.4	2.4	Overburden
2.4	13.1	10.7	Green Volcanic rocks

T.D. 13.1 m

DRILLER'S LOG

PROJECT: Kinkade DATE: June 3, 1981 HOLE NO.: K 81-3

From	To	Thickness	Description
0	4.9	4.9	Overburden
4.9	12.2	7.3	Green Volcanic rocks

T.D. 12.2 m

APPENDIX C

Geophysical Logs:

K 81-1

K 81-2

K 81-3

NOTE: (Gamma log one metre higher than Density log)

Cx-Kinkade Creek 81(3)A * 1

ROKE

GAMMA RAY
SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO.
LSD
SEC
TWP
RGE
W _____ M

COMPANY CANDEL OIL LTD.
WELL K - 81 - 2
LOCATION VANCOUVER ISLAND
FIELD KINCAID
PROVINCE BRITISH COLUMBIA

THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF ALBERTA
PERMIT NUMBER P [illegible]
SPRINGFIELD CONSULTING LTD.

Other Services: NONE

Permanent Datum GROUND LEVEL Elev. ____ K.B. ____
Log Measured from GROUND LEVEL Above Perm. Datum CSG ____
Well Depths Measured from GROUND LEVEL G.L. ____
METRIC

Run. No.	ONE
Date	3 JUNE 1981
First Reading	11 m
Last Reading	0
Footage Logged	11 m
Depth Reached	11.3
Depth Driller	13.1
Casing Roke	-
Casing Driller	-
Fluid Type	AIR/WATER
Liquid Level	
Min. Diam.	12.7 cm
Operating Time	½ HOUR
Truck No.	106

Recorded By WILSON Witnessed By CHOLACH

(59) L1

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
ONE	0	11.0	8	3	100	0L	4 API	0.5	5000	2.89 R	139.45
	0	10.5	8		CALIPER						

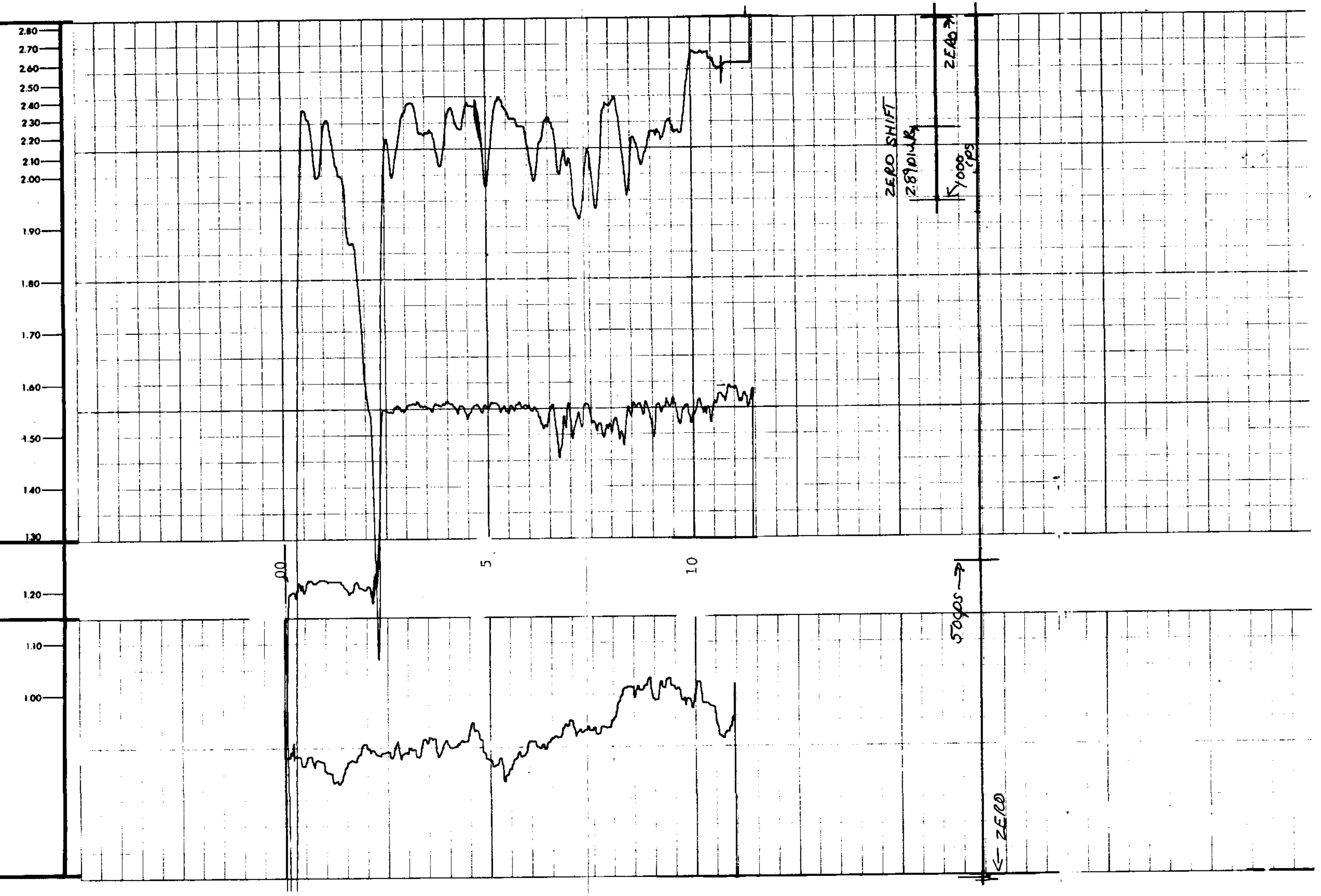
REMARKS
LOGGED OPEN HOLE.
DENSITY TOOL #247AS
CALIPER TOOL #785
GR RES. TOOL #282

CALIPER
DIAMETER – CM
20 15 10

DEPTHS

GAMMA RAY
API
4
0 40

BULK DENSITY
(GRAMS/CC)



CX-Kinkade Creek 81(3)A

ROKE

GAMMA RAY
SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. · CALGARY, ALBERTA

FILE NO.	COMPANY CANDEL OIL LTD.	THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF ALBERTA	
LSD			
SEC	WELL K - 81 - 1	PERMIT HOLDER P 1031	
TWP			
RGE	LOCATION VANCOUVER ISLAND	SPONSORED BY CCNS LTD.	
W M	FIELD KINCAID		Other Services: NONE
	PROVINCE BRITISH COLUMBIA		
Permanent Datum GROUND LEVEL	Elev.		K.B.
Log Measured from GROUND LEVEL	Above Perm. Datum		CSG
Well Depths Measured from GROUND LEVEL			G.L.
			METRIC

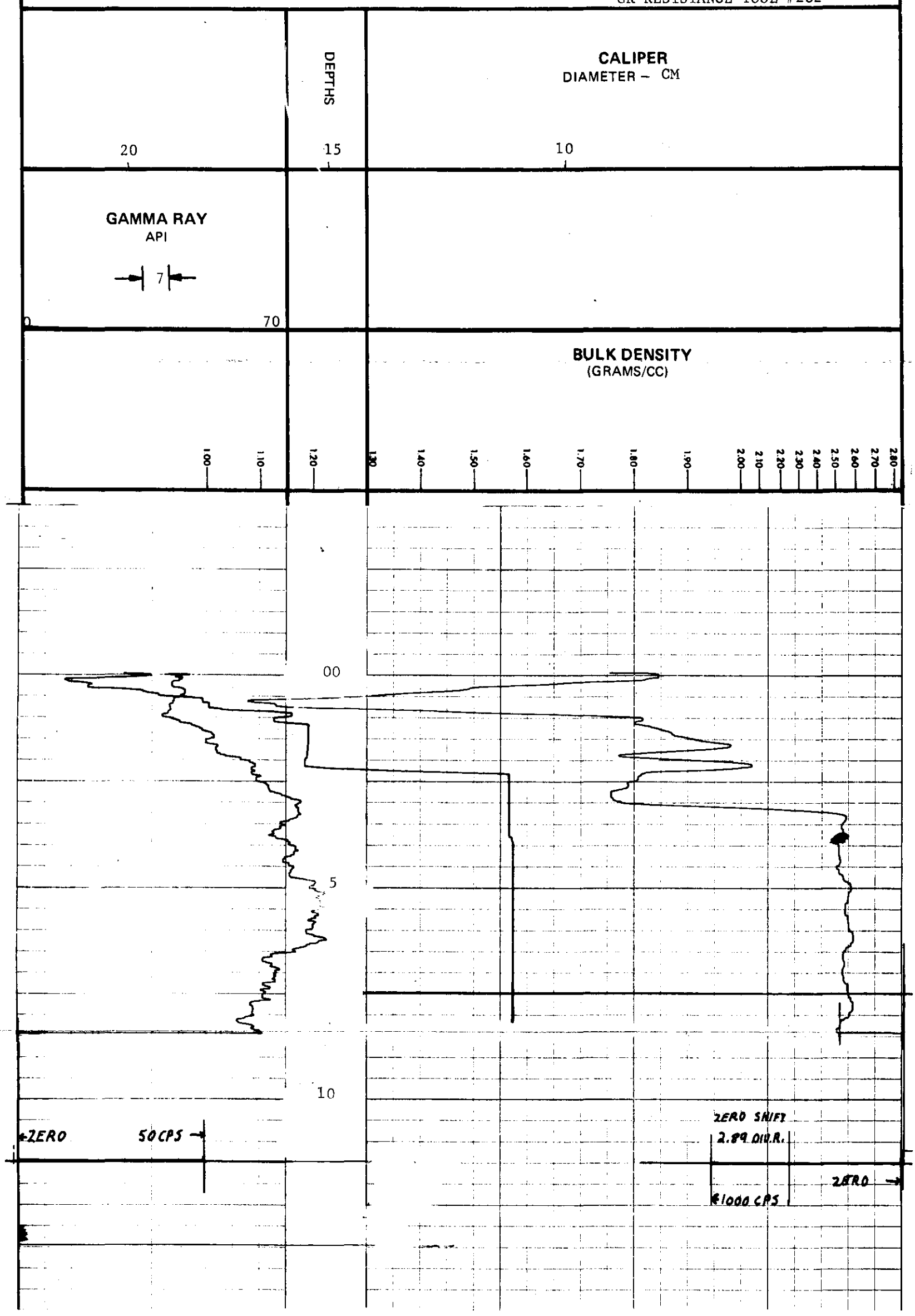
Run. No.	ONE		
Date	3 JUNE 1981		
First Reading	8.5 m		
Last Reading	0		
Footage Logged	8.5 m		
Depth Reached	8.8 m		
Depth Driller	12.2 m		
Casing Roke	-		
Casing Driller	-		
Fluid Type	AIR/WATER		
Liquid Level			
Min. Diam.	12.7 cm		
Operating Time	½ HOUR		
Truck No.	106		
Recorded By WILSON	Witnessed By	CHOLACH	

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
ONE	0	8.5	8	3	100	0L	7 API	0.5	5000	2.89 R	139.45
TWO	0	8.0	8		CALIPER						

REMARKS

LOGGED OPEN HOLE.

DENSITY TOOL #247AS
CALIPER TOOL #785
GR RESISTANCE TOOL #282



59 L2

cx-Kinkade Creek 81C.3/A #1

ROKE

GAMMA RAY
SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO.
LSD
SEC
TWP
RGE
W M

COMPANY CANDEL OIL LTD.

WELL K - 81 - 3

LOCATION VANCOUVER ISLAND

FIELD KINCAID

PROVINCE BRITISH COLUMBIA

THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF ALBERTA
PERMIT NUMBER P 1051
SCIENTIFIC CONSULTING LTD.

Other Services:
NONE

Permanent Datum GROUND LEVEL Elev.
Log Measured from GROUND LEVEL Above Perm. Datum
Well Depths Measured from GROUND LEVEL

K.B.
CSG
G.L.
METRIC

Run No.	ONE
Date	3 JUNE 1981
First Reading	9.5 m
Last Reading	0
Footage Logged	9.5 m
Depth Reached	9.8 m
Depth Driller	12.2 m
Casing Roke	-
Casing Driller	-
Fluid Type	AIR/WATER
Liquid Level	
Min. Diam.	12.7 cm
Operating Time	½ HOUR
Truck No.	106

Recorded By WILSON Witnessed By CHOLACH

59 L3

SIDEWALL DENSILOG: T.C. SEC. 0.5 | SENS SETTINGS 5000 | ZERO DIV'L OR R 2.89 R | CPS/DIV 139.45

GAMMA RAY: T.C. SEC. 3 | SENS SETTINGS 100 CALIPER | ZERO DIV'L OR R OL | API G.R. UNITS PER LOG DIV. 7 API

GENERAL: RUN NO. ONE | DEPTHS FROM 0 0 | TO 9.5 10.5 | SPEED M/MIN 8 8

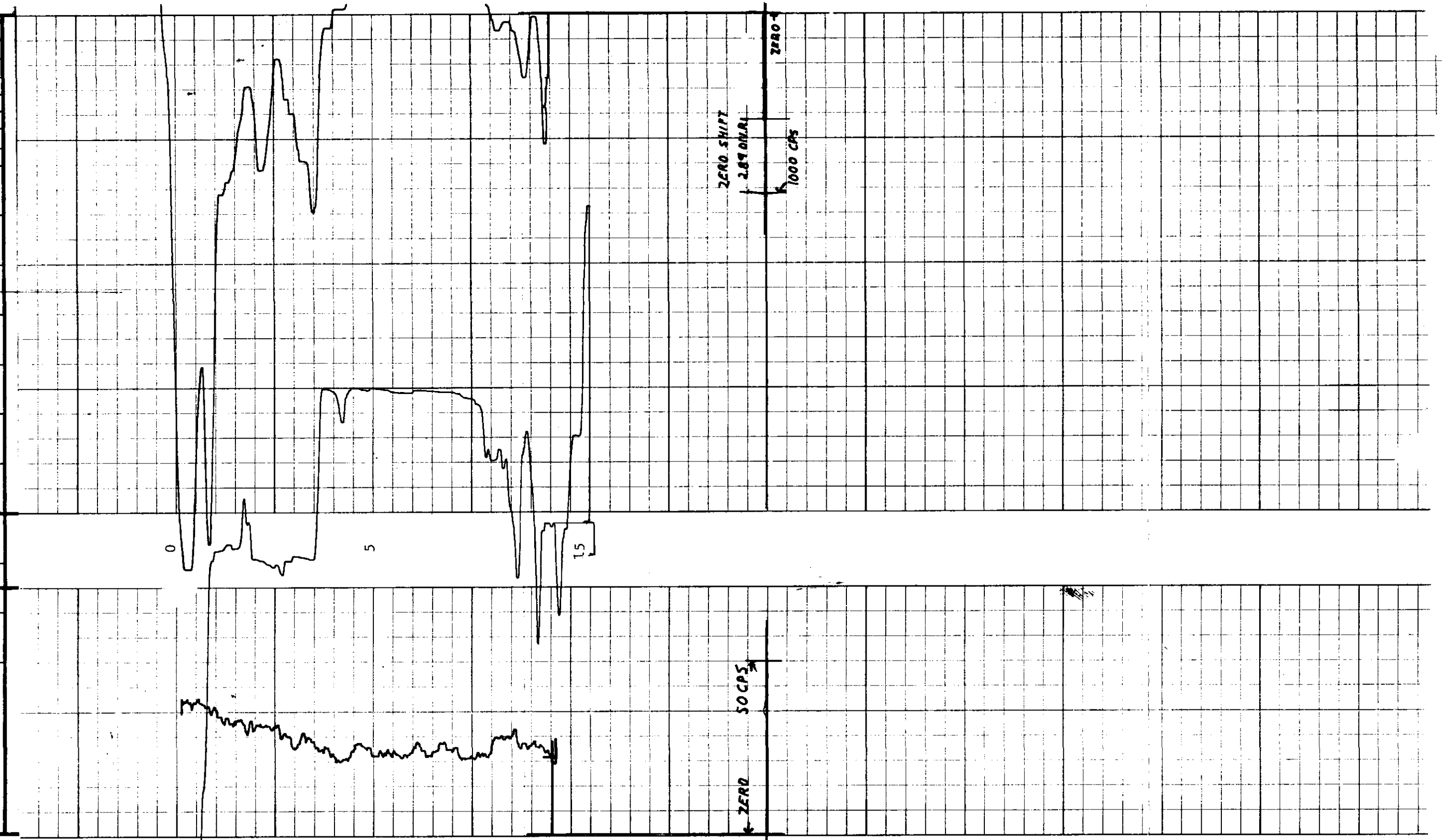
REMARKS: LOGGED OPEN HOLE.

DENSITY TOOL #2474AS
CALIPER TOOL #785
GR-RES. TOOL #282

CALIPER
DIAMETER - CM
10
DEPTHS 15
20

GAMMA RAY
API
0 70
7

BULK DENSITY
(GRAMS/CC)
2.80 2.70 2.60 2.50 2.40 2.30 2.20 2.10 2.00 1.90 1.80 1.70 1.60 1.50 1.40 1.30 1.20 1.10 1.00
0



GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

LEGEND

CENOZOIC

QUATERNARY
PLEISTOCENE AND RECENT
23 Glacial and alluvial deposits

TERTIARY
22 Rhyolitic, to dacitic tuff, breccia, ignimbrite

21 Hornblende quartz diorite, leucoquartz monzonite, porphyritic dacite, breccia

CRETACEOUS OR TERTIARY
20 Sandstone, conglomerate

CRETACEOUS AND (?) TERTIARY
UPPER CRETACEOUS AND (?) TERTIARY
NANAIMO GROUP (11-19)
19 GABRIOLA FORMATION: sandstone, conglomerate, shale

UPPER CRETACEOUS
18 SPRAY FORMATION: siltstone, shale, fine sandstone

17 GEOFFREY FORMATION: conglomerate, sandstone

16 NORTHUMBERLAND FORMATION: siltstone, shale, fine sandstone

15 DE COURCY FORMATION: conglomerate, sandstone

14 CEDAR DISTRICT FORMATION: shale, siltstone, fine sandstone

13 EXTENSION-PROTECTION FORMATION: sandstone, conglomerate, shale, coal

12 HASLAM FORMATION: shale, siltstone, fine sandstone

11 COMOX FORMATION: sandstone, conglomerate, shale, coal: 11a is BENSON MEMBER: mainly coarse conglomerate

MESOZOIC

UPPER JURASSIC AND/OR LOWER CRETACEOUS
10 'Tofino Area Greywacke Unit'
Greywacke, argillite, conglomerate

JURASSIC
MIDDLE TO UPPER JURASSIC
9 ISLAND INTRUSIONS: biotite-hornblende granodiorite, quartz diorite

TRIASSIC AND JURASSIC
LOWER JURASSIC(?)
VANCOUVER GROUP (5-8)
BONANZA SUBGROUP (7, 8)
8 VOLCANIC DIVISION: andesitic to latitic breccia, tuff and lava; minor greywacke, argillite and siltstone

UPPER TRIASSIC AND LOWER JURASSIC
7 SEDIMENTARY DIVISION: limestone and argillite, thin bedded, silty carbonaceous

UPPER TRIASSIC
6 QUATSINO FORMATION: limestone, mainly massive to thick bedded, minor thin bedded limestone

UPPER TRIASSIC AND OLDER
5 KARMUTSEN FORMATION: pillow-basalt and pillow-breccia, massive basalt flows; minor tuff volcanic breccia. Jasperoid tuff, breccia and conglomerate at base

TRIASSIC OR PERMIAN
4 Gabbro, peridotite, diabase

PALEOZOIC

PENNSYLVANIAN, PERMIAN AND OLDER
LOWER PERMIAN
SICKER GROUP (1-3)
3 BUTTLE LAKE FORMATION: limestone, chert

MIDDLE PENNSYLVANIAN
2 Argillite, greywacke, conglomerate; minor limestone, tuff

PENNSYLVANIAN AND OLDER
1 Volcanic breccia, tuff, argillite; greenstone, greenschist; dykes and sills of andesite-porphyry

'WESTCOAST CRYSTALLINE COMPLEX' (A-D)
'BASIC ROCKS'
D Gabbro, peridotite

'TOFINO INLET PLUTON'
C Hornblende-biotite quartz diorite, granodiorite

'WESTCOAST DIORITES'
B Hybrid hornblende diorite, quartz diorite, agmatite; includes masses of hornfelsic volcanic rocks

'WESTCOAST GNEISS COMPLEX'
A Hornblende-plagioclase gneiss, amphibolite, hornfels

Geological boundary (approximate)
Bedding (inclined, vertical, overturned)
Schistosity, foliation (inclined)
Schistosity, foliation and minor fold axes (inclined, vertical, arrow indicates plunge)
Lineation (axes of minor folds)
Fault (approximate); lineament

Geology by J. E. Muller, 1963-1967.
Includes contributions by W. G. Jeffery, D. J. T. Carson

To accompany GSC Paper 68-50 by J. E. Muller

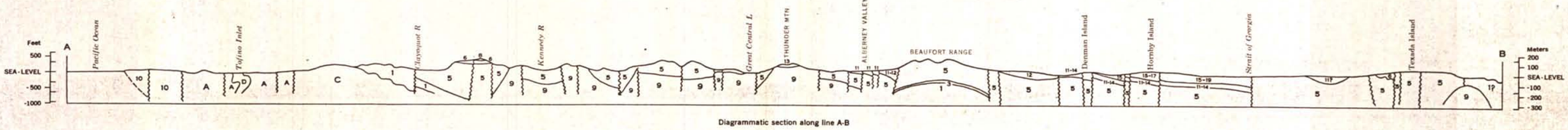
This preliminary edition may be subject to revision and correction

Geological cartography by the Geological Survey of Canada, 1969

Base-map compiled by the Surveys and Mapping Branch, Department of Lands and Forests, British Columbia, 1961-62

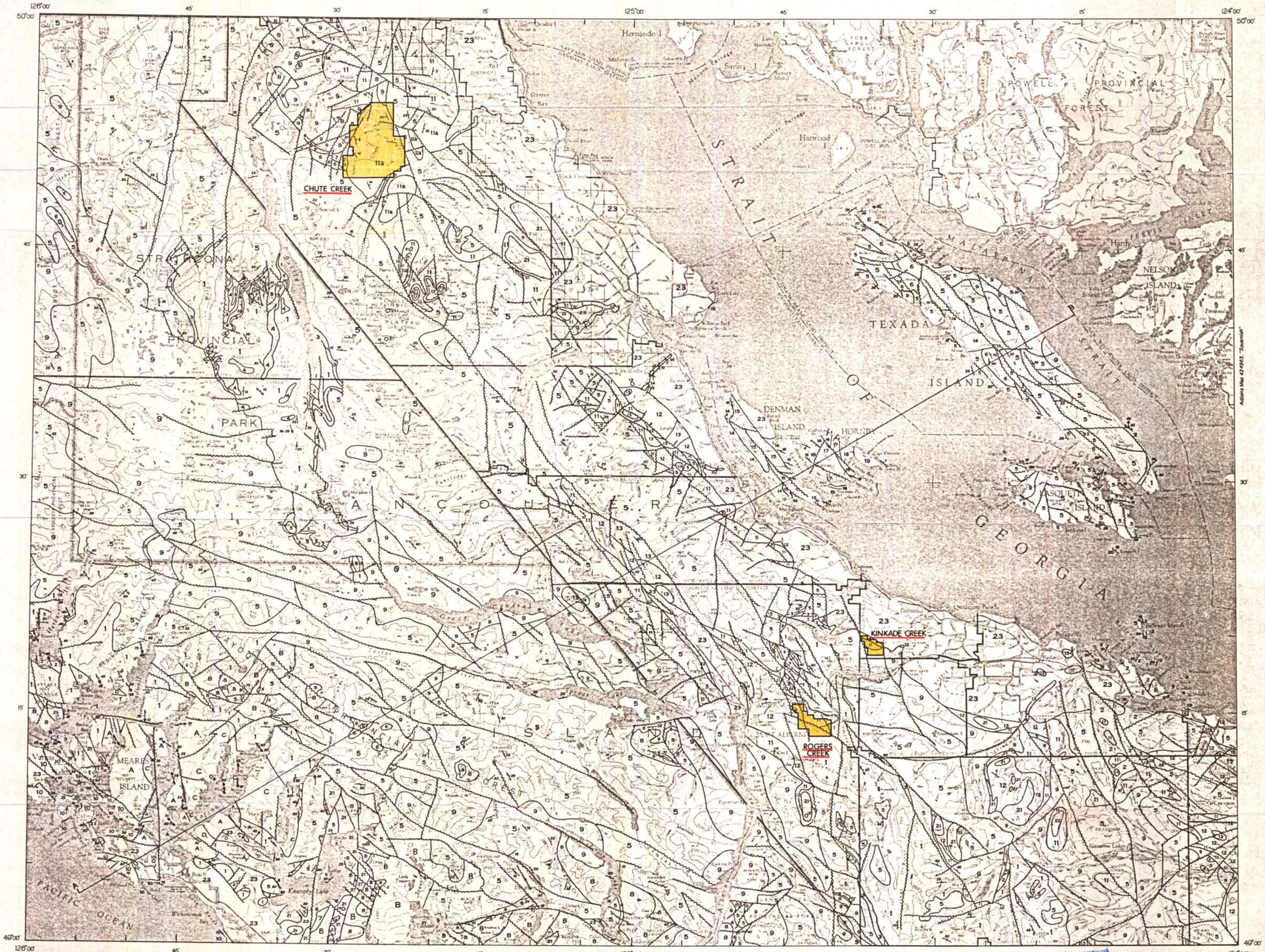
Magnetic declination 1968 varies from 22° 51' easterly at centre of east edge to 23° 09' easterly at centre of west edge. Mean annual change decreasing 2.7'

Elevations in feet above mean sea-level



Diagrammatic section along line A-B

PRELIMINARY SERIES



Published, 1969

MAP 17-1968
PAPER 68-50

GEOLOGY

ALBERNI

BRITISH COLUMBIA

Scale 1:250,000

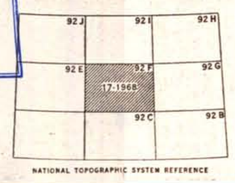
Miles 4 0 4 8 12 Miles
Kilometres 6 0 6 12 18 Kilometres

FIG. 1

CANDEL OIL LTD.

GEOLOGY & LOCATION MAP 59
(Chute, Kinkade & Rogers Coal Licences) M1

cx-Kinkade Creek 81(3)*A *1



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