MAR 19680051: ALBERTA

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Alberta

Alberta Mineral Assessment Reporting System

December 20, 1968

REPORT ON ALBERTA SULPHUR PERMIT #48

Prepared by R. Thiers CANADIAN FINA OIL LIMITED

The reconnaissance of sulphur permit #48 has been conducted in two MINERALS steps.

I. Step One - Macro-fracture analysis and Terrain Analysis.

Stereoscopic, near-order infrared photographs taken for the Alberta Government in 1964 were used in this study.

The study was made for the specific purpose of delineating criteria which may indicate potential areas of sulphur occurrence. A variety of possible mechanisms are available with which to form native sulphur in the area. Major faults trending from the Precambrian Shield to the Peace River Arch may provide a conduit for escaping H₂S gases. The decay of organic matter, the backing of probably high sulphate containing bedrock and glacial till by ground water with subsequent deposition of sulphate salts could also generate sulphur deposits.

The purpose of the fracture analysis was to delineate areas of concentrated faulting. Permit 48 is mostly covered by low lineament density which means a small amount of fracturing, except north of the river in the north-west corner of the permit.

The purpose of the terrain analysis was essentially to delineate areas with poor vegetation because it was empirically assumed that the areas of high sulphurous soils will not support extensive vegetation.

The results of the study of the aerial photographs are summarized in the map joined herewith.

II. Step Two

A field trip was undertaken in order to collect samples with a handauger. Investigations were concentrated in areas where there is a lack of vegetation and along major lineaments. A series of hand-auger test holes were dug in all the dry clearings and along the major lineaments. At each sampling

INDEXING DOCUMENT NO. 700360

location (see map) a series of soil samples were taken as the auger progressed downwards. The depth of the holes varied from two to six feet. Samples were collected from the bottom of the green vegetation until the auger became difficult to pull up, or until the auger tip struck rock. A total of 241 soil profile samples were collected from 43 different sampling locations. 158 samples were analyzed for elemental sumphur on a percentage dry weight by Chemical and Geological Laboratories Ltd., in Calgary. The assay sheets resulting from the analysis are attached to this report.

- 2 -

1.3

SOIL PROFILE DETAILS

Clearing A

Clearing A is a floating bog with almost all the area containing water and high grass (up to three feet high). Most of the area smelled strongly of H_2S due to decaying vegetation and stagnant water.

Sampling Location F1	** : :		% Sulphur (dry wt	.) T = trace
	А	8**	0.68%	γ.* ζγω
	В	8"	0.14%	
· · · · ·	С	8''	T	
	D	1.	T	
	E	1'	T	
	F	1"	T	
Sample Location F2				
(Not assayed)	A	81		
	В	8"		· .
2	C	8''		
	D	1,		· · · · · · · · · · · · · · · · · · ·
	E	1'	· ·	2' 2
	F	1'		. •
Sample Location F 3				·
RENE COMMENTE COMMENTE DE LA COMMENTAL DE LA COMMENTA DE LA COMPANIA DE LA COMPANIA DE LA COMPANIA DE LA COMPAN	A	8''	Т	
	В	8"	Т	
	, C	8''	Τ	
· · · · · · · · · · · · · · · · · · ·	D	1'	T	·
	E	1'	T	· · · ·
•	F	Less a constance	1.87%	e en state de la de la destate de la dest
	G	1	0.98%	· .
•	Н	1.	0.36%	· · ·
Sample Location F4	•.	15" we	iter	
(Not assayed)	A	4"	· ·	
· .	В	8"		
	C	8"		·
· ·	D	1'	· · · · ·	
	F	1 8		

nan an an 1938 - Anna

Clearing B

Clearing B is quite swampy on either side of the stagnant stream. This area also had a strong H_2S smell. The grass grows up to five feet high.

Sample Location F 5			% Sulphur (dry wt.)	T = trace.
	Å	A 8"	T	
₹	F	3 8"	Т	
· · · ·	(C 8"	T	· ·
	E E	D 1'	T	
	F	3 1'	T	
· · · · · · · · · · · · · · · · · · ·]	F 1º	Ť	
	Ċ	G 1°	T	
•			· .	
Sample Location F 6	×.			
(Not assayed)		x -8"		
. · · ·	Ē	3 8"		
	- (Č 8"	· · ·	
	. 1) 1'		
	E	31		
	I	2 10		
Sample Location F 7				
(Not assayed)		A 071	,	
	ł	7 0 1		
	ц. С	9 © 7 011		
		2 Q		
	. L. T			
	Ŀ.	S 1		
Sample Location F8				
		6 011		
	4		1 m	· .
· .	ر ۳	J.Ø. N.N.N.S.S.MSDa	1	i shekara a seminarakara
	L T	2 1. (<u>area</u>) 2 11	0.12%	한 1993년 - 1993년 1월 19 1997년 1월 1997년 1월 1997년 1월 1997년 1월 1997년 1월 1993년 1월 19 1997년 1월 1997년 1월 1997년 1월 1997년 1월 1997년 1월 1993년 1월 1993년 1월 1993년 1월 199
	L T	5 L 7 1		
	1	7 I 7 30	1	
	. (2 L	λ .	

(NAT ASSAUDT)			<u>/0 DUI</u>	MART REALY WEST	r = srace.	·.
liver gopayed	Α	8"		. •	÷.	•
· _	B	8"				
	C	8"				
	D	1,				
	E	1'			· · ·	••
	F	1'			•	
•						7
Sample Location F 14	• .					•
-	Δ	8"		Т		
₹.	В	8"		T	• • •	
	Ċ	8''		T		
	D	1°		Т		
	E	1'		T	•	
	F	1'	• .	T		•
•		-			2 •	
Sample Location F 15	÷				5.	
(Not assaved)	A	8"	~	· ·		
	R	8"	•			
·	Č	- <u>8</u> H	٠		· .	
	D	· i ·			• •	
· · · · ·	्यू म	1			•	
	E .	<u>к</u>		* 3		
	χ.	V .				
Sample Location F 16					•	
(Not opposed)	٨	<u>Gu</u>	•			
(nor assayen)	л р	6 6				
· · ·	a . D	011				
		0				:
		1.0 T				
	E E	Y		•	•	
· ·		•		•		
	• •	()	.			
·		<u>clearing</u> (. ور مەدە			

Clearing C is a floating bog containing much water; the area

smelled strengly of H_2S due to rotting vegetation and stagnant water.

 $\begin{array}{c} \underline{Sample \ Location \ F \ 9} \\ & A \ 8'' \\ & B \ 8'' \\ & C \ 8'' \\ & T \\ & D \ 1' \\ & T \\ & D \ 1' \\ & T \\ & F \ 6'' \\ & T \end{array}$

Sample Location F 10	_	% Sulphur (dry v	vt.) T=trace.
(Not assayed)	A 8"	89/10 99 00,2012982,005,004,004,004,005,009,009,009,009,009,004,004,000,000	
` ```	B 8"		
	C 8"	*	
· ·	D 1°		
	E 1°		
	F 1'	•	
Sample Location F 11		· · · ·	
ID HAR BANK INC COMMERCIA SHIM BODY SUBJECTION ARE DONISTING AND A	A 8"	Т	
· ·	B 8"	Ĩ	
	C 8"	Ţ	
	D 1'	T	
	E 1°	0.04%	·
	F 1'	T	
	· · ·		
Sample Location F 12			
(Not assayed)	A 8''	, *	
	B 8''	• • • • • • • • • • • • • • • • • • •	
	C 8''		
	D 1'		
,	E 1°		
· · ·	F 1°		
	G 1'	ч.	

Clearing D

This area is a dry clearing with tall grass.

 $\begin{array}{c} \underline{Sample \ Location \ F \ 17} \\ \hline (Not \ absayed) & A \ 1' \\ B \ 1' \\ C \ 1' \\ D \ 1' \\ E \ 4'' \\ \hline \\ \underline{Sample \ Location \ F \ 18} \\ \hline \\ A \ 8'' & T \\ B \ 8'' & 0.80\% \\ C \ 8'' & 0.82\% \\ D \ 1' & T \\ E \ 1' & 1.12\% \\ \hline \end{array}$

Clearing E

	• (v		
Sample Location F 19	2	% Sulphur (dry wt.)	T = trace.
	A 8"	10.68%	
	B 8"	T	
	C 8"	T	
	D 1°	T	
	E 1'	0.67%	
Sample Location F 20	· · · · · · · · · · · · · · · · · · ·	. ·	·
azəndə əsərə əzərə yazında yazır. 20 yılında yazır 20 yılında yazır yazır yazır yazır yazır yazır yazır yazır y	A 8"	Ţ	· .
	B 8"	T	• .
	C 8"	Т	• •
	D 1'	Т	
	E 1'	T	

Clearing E is a dry clearing with one to two feet high grass.

Clearing F

Clearing F is a dry clearing with grass one to two feet high.

Sample Location F 21		
ARABAMANTA STATISTICS AND	"8 A	T
	B 8"	3.94%
•	C 8"	Т
	D 1'	0.74%
	E 1'	0.45%
Sample Location F 22	•	· .
(Not assayed)	A 8"	•
	B 8"	
	C 8"	
	D 1'	
	E 1'	

Clearing G

Clearing G is a small clearing containing grass two feet high. The

clearing has a few large trees in the center.

Sample Location F 23

		% Sulphur (dry wc.)
A	8"	T
B	8"	Ţ
С	8"	T
D	Ĩ,	T
E	1'	0.37%
F	1°	Т

Clearing H

This small clearing is a partially filled-in floating bog (quite wet)

containing high grass.

Sample Location F 24

A 8"	T
B 8"	17.38%
C 8"	9.71%
D 1'	7.63%
E 1°	Â,
F 1°	0.35%
Clearing I	t i i i i i i i i i i i i i i i i i i i

Clearing I is a dry clearing with grass one to three feet high.

gangang komatilapan diakatan kang panangan apan diakatan katan kang diakan kang diakatan kang diakatan kang dia	ß	8**	0.24%
÷	8	8"	T
•	C	8''	0.84%
,	D	<u>3</u> °	0.24%
	E	1'	Т
	F	149	Τ
Sample Location F 26	•		
(Not assaved)	A	8''	
	B	8"	
	C	8"	
· ·	D	1'	
	E	1'	

T = trace

Clearing J

This clearing is not of the open type - it is overgrown with 25 feet high trees and low bushes.

Sample Location F 27% Sulphur (dry wt.)T = traceA 8"TB 8"TC 8"TD 1'TE 1'T

Clearing K

This is a small dry clearing containing one foot high grass and a

few trees in the center.

Sample Location F 28

A	8''			Т
В	8*'			T
\mathbf{C}	8''	•.	. `	Ť
Ð	1'			Т
E	1'			1.17%

Clearing L

Clearing L is a dry clearing with low, grassy vegetation.

T T T T T

Sample Location F 29			
(Not assayad)	•	A 8"	
		Б 8''	
		C 8"	
		D 1'	
		E 1'	
	2.1	. <i>1</i>	
Sample Location F 30			
<u> </u>		A 8"	
		B 8"	
	ب	C 8"	
		D 1'	
		E 1'	

Clearing M

Clearing M is a pair of small clearings that were slightly wet and

contained two to three feet high grass.

Sample Location F 31	· · ·	% Sulphur (dry wt.)	T = trace
a frank na standar si yan sha sa	A 8"		
	B 8"	T	· .
¥.	C 8''	Т	
	D 1'	T .	
	E 1'	T	
	F 1'	0.36%	
•		****	
Sample Location F 32	· · · ·	· · ·	
	A 8"	0.52%	
· · ·	B 8"	Ť	
	C 8"	T	· · ·
· .	D 1'	Т	
. *	E 1'	Т	• · · .
	F 1'	0.38%	
	•	• •	• • •

<u>Clearing</u> N

Clearing N is a large sized dry clearing with grass two feet high.

法认为无法保险

Sample Location F 33			
(Not assayed)		A 8''	
	$\Delta x \in \mathcal{X}$	B 8"	•
· · · ·	* .	C 8"	1
	· · ·	D 1'	· · ·
		E 1'	
		F 1'	
Sample Location F 34			
₽ <u>₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽</u>		A 8"	0.38%
· · ·		B 8"	0.27%
		C 8"	Т
	•	D 1	\mathbf{T} .
		E 1'	Т
		F 1°	Т

Sample Location F 35

% Sulphur (Dry wt). T = trace

A 8" B 8" C 8" D 1' E 1' F 1'

<u>Clearing</u> O

Clearing O is a large floating bog with grass two feet high.

- A 8"	3.19%
B 8"	5.69%
C 8"	8.26%
D 1'	2.76%
E 1'	1.50%
•	
A 8"	Т
B 8"	4.16%
C 8"	2.32%
D 1'	1.23%
E 4"	Т
•	
A 8"	2.13%
B 8"	1.24%
C 8"	1.16%
·	
A 8"	Τ
B 8"	0.55%
C 8"	1.06%
D 1'	T
E 1'	0.28%
	A 8" B 8" C 8" D 1' E 1' A 8" B 8" C 8" D 1' E 4" A 8" B 8" C 8" D 1' E 4" A 8" B 8" C 8" D 1' E 1'

•	Sample Location F 40				% Sulphur (dr	ywt.)	T = trace
n getaan ah			A	8"	T	₩	
Telephone Contracts and		•	В	811 march and the state	T	•	an managaist a
		- 1. A	С	8''	T		•
			D	1'	Т		
	(hit sandy material)) - (E	1"	0.18%		· · ·
		• • •				· · · · · ·	
	Sample Location F 41		•			• .	
•			A	8''	Т	•	,
•.	·		В	8!!	Т		
			С	8"	Т	۰.	
			D	1°	Т	·	
			Ε	1'	0.38%		
	(hit rocks)	e s '	F	8''	T	• •	
		•		•		,	·
	Sample Location F 42			•	•	•	
			A	8"	Т		
	••,		В	8"	2.59%		
	•		C	8"	Т	• .	
· ·		•	D	1'	1,13%	÷	
			Е	<u>]</u> '	0.53%		·
	(hit rocks)	ta	F	8''	T		
		• .	;				
	Sample Location F 43			~			
	All la francisco provinsi dell'Inder en la constructione della constructione della constructione de 2011, sec		A	8"	r	•	
•			В	8''	T		
	د		C	8''	Т		
			D	1°	T	:	•
	•	× .	E	1'	Т		
	(hit rocks)	- •	F	6" Sampl	e destroyed at	assay lab.	
				•	e	•	

.



APPENDIX 2

CHEMICAL & GEOLOGICAL LABORATORIES LTD.



14240-115 AVENUE, EDMONTON, ALBERTA

Date Reported: October 10, 1968

Laboratory Report Number: C68-4128

GEOPHOTO SERVICES LTD.

Kind of Sample: Soil

4.

Date Received: September 30, 1968

SAMPLE	ELEMENTAL SULFUR Z	SAMPLE	ELEMENTAL SHLFUR %
NIMBER	DRY WEICHT	NIMBER	DRY WEICHT
MOLIDER		MOLIDEIC	DIGI WEICHIT
			_
F1-A	0.68	F14-C	Trace
F1-B	0.14	F14-D	Trace
F1-C	Trace	FL4-E	Trace
F1-D	Trace	F14-F	Trace
F1-E	Trace	F9-A	1.78
F1-F	Trace	F9-B	Trace
F3-A	Trace	F9-C	Trace
F3-B	Trace	F9-D	Trace
F3-C	Trace	F9- Е	Trace
F3-D	Trace	F9-F	Trace
F3-E	Trace .	F11-A	Trace
F3-F	1.87	F11-B	Trace
F3-G	0.98	F11-C	Trace
F3-H	0.36	F11-D	Trace
F5-A	Trace	F11-E	0.04
F5-B	Trace	F11-F	Trace
F5-C	Trace	F18-A	Trace
F5-D	Trace	F18-B	0.80
F5-E	Trace	F18-C	0.82
F5-F	Trace	F18-D	Trace
F5-G	Trace	F18-E	1.12
F8-A	Trace	F19-A	10.68
F8-B	Trace	F19-B	Trace
F8-C	Trace	F19-C	Trace
F8-D	0.12	F19-D	Trace
F8-E	Trace	F19-E	0.67
F8-F	Trace	F21-A	Trace
F8-G	Trace	F21-B	3.94
F14-A	Trace	F21-C	Trace
F14-B	Trace	F21-D	0.74

continued.....

Geophoto Services Ltd.

Trace

Trace

Trace Trace

Trace

Trace 0.36

F30-E

F31-A

F31-B

F31-C

F31-D

F31-Е F31-F

Laboratory Report Number: C68-4128

	ELEMENTAL		ELEMENTAL
SAMPLE	SULFUR %	SAMPLE	SULFUR %
NUMBER	DRY WEIGHT	NUMBER	DRY WEIGHT
		B	
F21-E	0.45	F32–A	0.52
F23-A	Trace	F32-B	Trace
F23-B	Trace	F32-C	Trace
F23C	Trace	F32-D	Trace
F23-D	Trace	F32E	Trace
F23-E	0.37	F32-F	0.38
F23-F	Trace	F34-A	0.38
F24-A	Trace	F34-B	0.27
F24-B	17.38	F34-C	Trace
F24-C	9.71	F34-D	Trace
F24-D	7.63	F34-E	Trace
F24-E	Trace	F34-F	Trace
F24-F	0.35	F36-A	3.19
F25-A	0.24	F36-B	5.69
F25-B	Trace	F36-C	8.26
F25-C	0.84	F36-D	, 2.76
F25-D	0.24	F36-E	1.50
F25-E	Trace	F39-A	Trace
F25-F	Trace	F39-В	0.55
F27-A	Trace	F39-C	1.06
F27-B	Trace	F39-D	Trace
F27-C	Trace	F39-Е	0.28
F27-D	Trace	F42-A	Trace
F27-E	Trace	F42-B	2.59
F28-A	Trace	F42-C	Trace
F28-B	Trace	F42-D	1.13
F28-C	Trace	F42-Е	0.53
F28-D	Trace	F42-F	Trace
F28-E	1.17		· · · · ·
F30-A	Trace		
F30-B	Trace		
F30-C	Trace		
F30-D	Trace	and the second	

CHEMICAL & GEOLOGICAL LABORATORIES LTD.



14240-115 AVENUE, EDMONTON, ALBERTA

Date Reported: October 28, 1968 Laboratory Report Number: C68-4177

GEOPHOTO SERVICES LTD.

Kind of Sample: Soil

Date Received: October 16, 1968

SAMPLE NUMBER	ELEMENTAL SULFUR % DRY WEIGHT	SAMPLE NUMBER	ELEMENTAL SULFUR % DRY WEIGHT
F20-A	Trace	F41-A	Trace
F20-B	Trace	F41-B	Trace
F20-C	Trace	F41-C	Trace
F20-D	Trace	F41-D	Trace
F20-E	Trace	F41-E	0.38
F37-A	Trace	F41-F	Trace
F37-B	4.16	F43-A	Trace
F37-C	2.32	F43-B	Trace
F37-D	1.23	F43-C	Trace
F37-E	Trace	F43-D	Trace
F38-A	2.13 (2:00 P.M.)	F43-E	Trace
F38-B	1.24	F43-F	Sample Destroyed
F38-C	1.16		
F40-A	Trace		
F40-B	Trace		
F40-C	Trace	•	· .
F40-D	Trace		
F40-E	0.18		

19680051

SULPHUR PROSPECTING PERMIT NO. 48



and a second R. 5

R. 4 W. 5 M.



TERRAIN ANALYSIS

of

SULPHUR PERMIT 48

Prepared for

CANADIAN FINA OIL LIMITED



OCTOBER. 1968

EXPLANATION

Primarily tall trees, generally fully stocked; trees

average over 40 feet in height; moderate to good

Primarily trees of medium or less height, generally

fully stocked; trees average less than 40 feet in

height; moderate to fair relief, moderate to fair

Primarily scattered groves of trees, moderately stocked, with brush, grassland and minor areas of

muskeg. Trees average less than 40 feet in height.

Moderate to low relief, fair to poor drainage.

Muskeg or marsh with minor brush areas and

scattered trees; low relief, water table at or near

Undifferentiated vegetation associated with river flats, bottomlands and pediments; cover may range

Moderate slope. Arrows indicate direction of slope.

Steep slope. Arrows indicate direction of slope.

tc

drainage.

drainage.

underbrush.

surface.

TP

108

<u><u><u>t</u></u><u>t</u><u>o</u><u>c</u></u>



Brush and meadows with minor muskeg areas; moderate to low relief, fair to poor drainage. Includes m old burn regrowth areas of low trees and dense





Turner 411/11/2 41111 11114

-....

-6-

0F17

TP

107

Road or trail

Lake or pond

Stream or river

from muskeg to tall trees.

Moderate escarpment 15-50 feet.

Prominent escarpment over 50 feet.

I. Clearing, devoid of vegetation, possibly grass covered, surrounded by deciduous trees.

2. Clearing, single or clumps of trees in clearing, or pot-hole in center, surrounded by deciduous trees.

3. Clearing, devoid of vegetation, possibly grass covered, surrounded by coniferous trees.

4. Clearing, single or clumps of trees in clearing, or pot-hole in center, surrounded by coniferous trees.

5. Clearings surrounded by mixed vegetation, may or may not contain clumps of trees or pot-holes.

Photo lineation, generally with topographic relief, may be fault controlled.

Anomalous tonal pattern

Glacial grooves. Direction of glacial movement indicated.

Forest clearing.

Sample Location

Deciduous -

D

C

CD

-

Coniferous

DC -7 Mixed conifers and deciduous (First letter indicates predominant type).