

MAR 19680138: FORT VERMILION

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FINAL GEOLOGICAL REPORT
SULPHUR PROSPECTING PERMIT #172
FORT VERMILION AREA

ECONOMIC MINERALS

FILE REPORT No.

S-AF-172(1)

INTRODUCTION

Sulphur Prospecting Permit #172 comprising 19,840 acres was issued with effective date of February 21, 1968.

A thorough study with respect to sulphur occurrences on the permit has been conducted both on a regional and on a local basis, the details of which are briefly outlined below.

LOCATION

The Sulphur Permit is located in Twps. 98 and 99, Rges. 16 and 17 W5M, and is approximately 60 miles south southwest of Fort Vermilion in north central Alberta. The permit lies several miles southwest of the main body of sulphur permits, none of which have reported any production of sulphur on a commercial basis.

The permit lies in the Buffalo Head Hills northwest of Bison Lake at an elevation of 1,100 - 1,500 feet above sea level and is drained to the northeast by the Peace River via the Buffalo and Wolverine Rivers and several small tributary streams. (Index Map).

Natural vegetation consists mostly of variable patches of evergreen with some deciduous growth and considerable deadfall and muskeg.

EVALUATION FOR SULPHUR

Subsurface Geology

A test well, Amerada et al Wolverine 13-29, drilled on Sulphur Permit 172 in Lsd. 13-29-98-16 W5M was spudded on February 23, 1968 and was abandoned at 5,241 feet in the Precambrian on March 12, 1968. The well was drilled at a cost of \$137,550.37 to assist in evaluating the lands for sulphur as well as for gas and oil. No cores were cut, however four tests were completed, one each in the "Granite Wash", Keg River, Gilwood Sandstone and Slave Point formations. (Fig. 2 & 3)

In an attempt to determine the possible origin or route of migration of the surficial sulphur and/or sulphurous waters, all available borehole cuttings from the well were carefully examined with respect to sulphur content.

Chemical Analysis

To determine exact percentages of sulphur content, a chemical analysis was conducted on samples from surface to 900 feet from the test well 13-29-98-16 W5. Several other samples were collected at or near the surface from various location on the lease and subjected to chemical analysis. (See results - Fig. 4 & 5)

The results of this analysis were compared with those of samples taken in areas of known sulphur occurrences of the Birch River. (Fig. 2)

Photographic Study

Aerial photographs covering the area were obtained and studied in detail for small areas lacking vegetation, light colored areas surrounding potholes and other features which, by comparison with areas of known sulphur occurrences on the Birch River and on the north flank of the Buffalo Head Hills, were thought to be characteristic of sulphur deposits or springs.

Surface Geology

A trip, by a company geologist, to the Fort Vermilion area on February 9, 1968 and inspection of several outcrops there encouraged the undertaking of a large scale regional study which was contracted to V. Zay Smith and Associates. At a total cost of \$2,750.00 that company conducted a two-phased study of an area covering the bulk of the sulphur permits, Twps. 92-101, Rges. 1-17 W5.

The first phase, completed in June 1968, dealt primarily with regional structural geology, physiography, stratigraphy and research of sulphur occurrences and origins.

The results of the work in Phase I was presented in a written report along with maps at a scale of 1" = 2 miles which showed all localities of interest with respect to sulphur.

Phase II, completed in August 1968, was a continuation of the study involving field work and a limited drilling program to thoroughly inspect all favourable areas revealed through Phase I. These results were presented on the same maps which were accompanied by chemical analysis of samples taken in the field, photographs of several pertinent localities, and a written report.

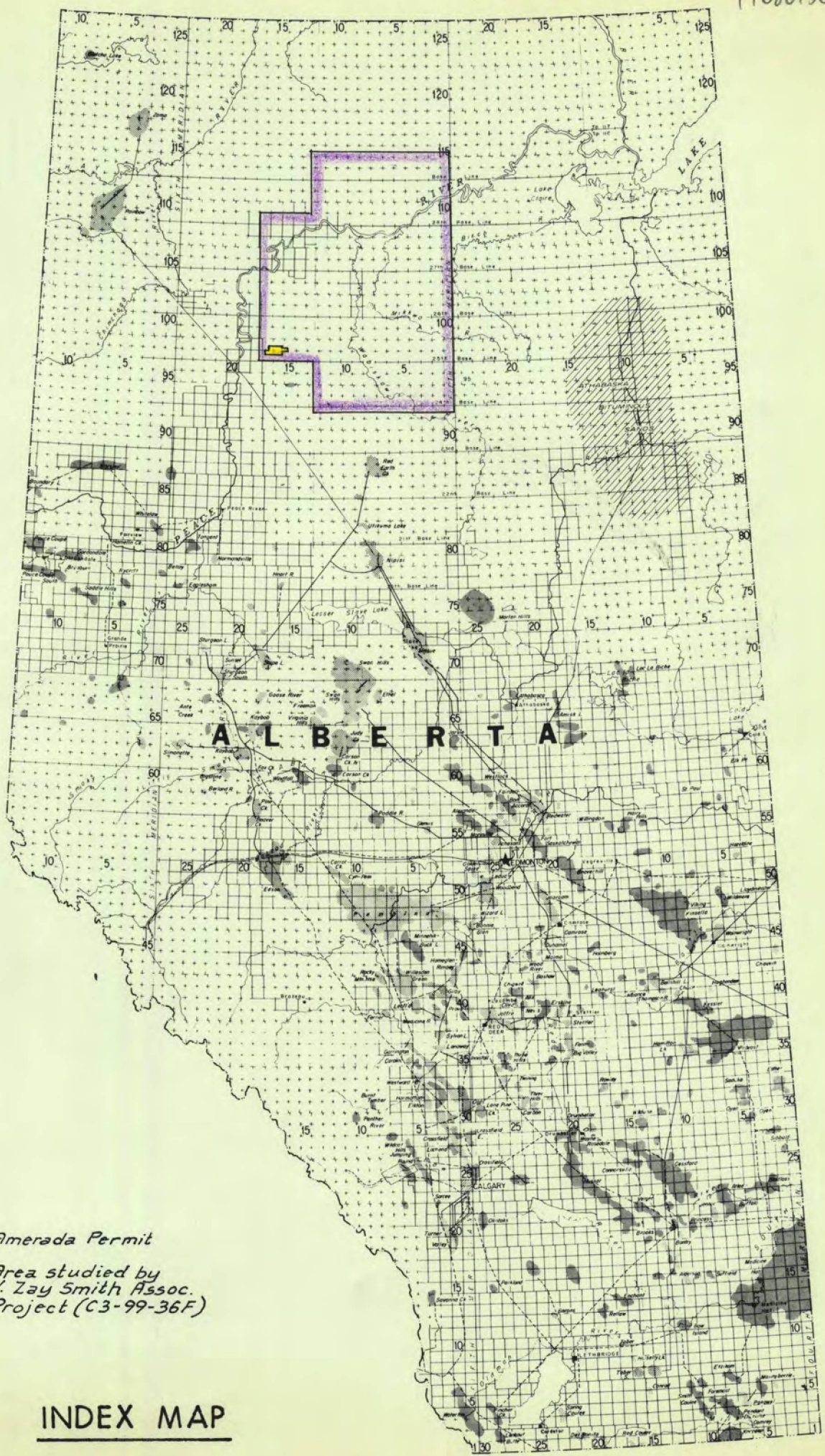
CONCLUSIONS

With the results of the above evaluation of Sulphur Prospecting Permit #172 in hand it has been concluded that the occurrence of sulphur in the Fort Vermilion area is erratic, disseminated, often poor quality and not economically commercial at this time. Specifically on Permit #172, the studies have revealed no facts to indicate that sulphur exists in commercial quantities.



K. L. Phelps
Geological Department

September 24, 1968
KLP:ls



- Amerada Permit
- Area studied by V. Zay Smith Assoc. Project (C3-99-36F)

INDEX MAP

ALBERTA SULPHUR PROSPECTING PERMITS

NO.	T	R	M	ISSUED	HOLDER	ACRES
1.				CANCELLED		
2.				CANCELLED		
3.	44	16	4	6-7-66	E.A. Brownless	20,000
4.	112	12	6	11-1-67	Inland Chemical	19,200
5.	43	17	4	29-5-67	G.I. White	19,980
6.	48	16	4	17-7-67	K.R.C., Inc.	19,800
7.	76	1	4	17-7-67	Harwood Oils	19,800
8.	110	5	5	8-12-67	J.J. O'Connor	19,840
9.	101	9	5	8-12-67	J.J. O'Connor	19,840
10.	103	15	5	8-12-67	J.J. O'Connor	19,840
11.	98	10	5	8-12-67	Spooner et al	19,800
12.	100	9	5	8-12-67	Husky Oil	19,200
13.	112	13	5	8-12-67	J.F. Cleveland	19,840
14.	108	4	5	8-12-67	Shell Canada	19,840
15.	109	6	5	8-12-67	Shell Canada	19,840
16.	110	5	5	8-12-67	Shell Canada	19,840
17.	109	6	5	8-12-67	Shell Canada	19,840
18.	109	4	5	8-12-67	Alaska-Canadian	19,840
19.	104	7	5	8-12-67	Inland Chemical	19,200
20.	105	3	5	8-12-67	Great Plains	39,680
21.	111	5	5	8-12-67	Spooner Mines	19,840
22.	110	4	5	8-12-67	Spooner Mines	19,840
23.	108	3	5	8-12-67	Spooner Mines	19,840
24.	110	3	5	7-12-67	B.A.	81,865
25.	112	4	5	7-12-67	Inland Chemical	39,680
26.	99	5	5	7-12-67	Inland Chemical	19,840
27.	102	9	5	7-12-67	Inland Chemical	19,779
28.	112	2	5	7-12-67	J.M. Hope	19,840
29.	106	4	5	7-12-67	Imperial Oil Ent.	99,840
30.	108	6	5	7-12-67	Chevron	19,840
31.	111	6	5	7-12-67	Chevron	19,840
32.	101	8	5	7-12-67	Chevron	19,840
33.	98	1	5	7-12-67	Alexandra Petrs	19,840
34.	110	1	5	7-12-67	Alexandra Petrs	77,440
35.	113	3	5	7-12-67	Spooner-Kamalte	19,840
36.	107	5	5	11-12-67	Omega Hydro	19,840
37.	107	6	5	11-12-67	Omega Hydro	19,840
38.	108	7	5	11-12-67	Omega Hydro	19,840
39.	96	1	5	11-12-67	H.B.O.G.	99,840
40.	97	3	5	11-12-67	H.B.O.G.	99,840
41.	103	7	5	11-12-67	H.B.O.G.	99,840
42.	104	7	5	11-12-67	H.B.O.G.	99,840
43.	103	9	5	11-12-67	H.B.O.G.	91,918
44.	101	10	5	11-12-67	H.B.O.G.	94,720
45.	103	12	5	11-12-67	H.B.O.G.	97,920
46.	102	14	5	11-12-67	H.B.O.G.	99,840
47.	107	3	5	11-12-67	Abetis Expl.	19,840
48.	108	5	5	11-12-67	Canadian Fina	19,829
49.	104	3	5	11-12-67	W.L. Mc Knight	19,840
50.	107	8	5	14-12-67	Placid & Hunt	80,000
51.	108	8	5	14-12-67	Placid & Hunt	55,680
52.	109	9	5	14-12-67	Placid, Hunt, Chev, Delh	98,156
53.	107	10	5	14-12-67	Placid & Hunt	99,840
54.	104	10	5	14-12-67	Placid, Hunt, Chev, Delh	35,520
55.	115	12	5	14-12-67	Placid, Hunt, Chev, Delh	19,840
56.	110	13	5	14-12-67	Placid, Hunt, Chev, Delh	39,680
57.	106	15	5	14-12-67	Placid, Hunt, Chev, Delh	69,120
58.	104	4	5	14-12-67	Abatis-Doverton	19,840
59.	104	5	5	14-12-67	Abatis-Doverton	79,360
60.	115	16	5	14-12-67	Western Decalta	97,280
61.	111	7	5	18-12-67	Texaco Expl.	79,360
62.	109	7	5	18-12-67	Texaco Expl.	7,680
63.	105	8	5	18-12-67	Texaco Expl.	19,840
64.	108	2	5	18-12-67	Texaco Expl.	39,680
65.	109	1	5	18-12-67	Texaco Expl.	19,200
66.	120	9	5	18-12-67	Western Decalta	99,840
67.	110	12	5	2-1-68	Shell Canada	97,230
68.	104	24	4	18-12-67	Shell Canada	59,520
69.	107	2	5	18-12-67	J. Phillips	39,680
70.	112	1	5	18-12-67	J. Phillips	39,680
71.	100	8	5	20-12-67	Pheasant-W'dvide	38,400
72.	109	2	5	2-1-68	L.A. Pearce	19,840
73.	105	2	5	2-1-68	Nunac	19,840
74.	99	7	5	2-1-68	Simmons Drig.	38,400
75.	113	2	5	2-1-68	Stall Lake Mines	19,840
76.	106	6	5	2-1-68	Nunac	47,360
77.	108	1	5	8-1-68	Kanalta-Fisher	19,840
78.	118	9	5	8-1-68	H.B.O.G.	99,840
79.	104	14	5	8-1-68	Burn Oil Land	19,840
80.	100	4	5	8-1-68	Burn Oil Land	19,840
81.	117	1	5	8-1-68	Shell Canada	99,840
82.	118	3	5	8-1-68	Shell Canada	99,560
83.	106	9	5	8-1-68	Five Star Petr.	19,840
84.	87	21	5	11-1-68	Dirk Vos	19,840
85.	112	6	5	11-1-68	United Mineral	19,840
86.	105	1	5	11-1-68	Laurence Oil	19,840
87.	104	1	5	11-1-68	Laurence Oil	19,840
88.	104	2	5	11-1-68	Laurence Oil	19,840
89.	103	1	5	11-1-68	Laurence Oil	19,840
90.	114	1	5	11-1-68	A. Andrakon	99,840
91.	100	6	5	11-1-68	A. Andrakon	99,840
92.	97	18	4	11-1-68	Amarada-Cdn Sup	99,885
93.	98	18	4	11-1-68	Amarada-Cdn Sup	60,000
94.	106	1	5	11-1-68	Alaska-Canadian	39,280
95.	111	9	5	11-1-68	Alaska-Canadian	39,680
96.	98	8	5	12-1-68	Panoll	80,000
97.	112	5	5	12-1-68	Mesa Petr.	19,840
98.	113	6	5	12-1-68	Mesa Petr.	19,840
99.	112	7	5	12-1-68	Mesa Petr.	19,840
100.	114	1	5	12-1-68	Sinclair Canada	19,840
101.	103	13	5	12-1-68	Sinclair Canada	19,840
102.	97	10	5	12-1-68	Sinclair Canada	19,840
103.	104	10	5	12-1-68	Sinclair Canada	19,840
104.	112	3	5	12-1-68	Sinclair Canada	11,520
105.	103	3	5	12-1-68	L. Johnston	39,680
106.	114	2	5	12-1-68	Cleveland Power	19,840
107.	104	18	5	12-1-68	Heritage Hold.	99,840
108.	105	9	5	22-1-68	Apex Gravel	99,680
109.	113	8	5	22-1-68	J.A. Tannous	19,840
110.	106	8	5	25-1-68	National Trust	18,560
111.	99	8	4	25-1-68	Cdn. Superior	99,840
112.	103	14	5	25-1-68	Montego Mines	3,840
113.	103	5	5	25-1-68	United Mineral	12,160
114.	113	3	5	25-1-68	Cdn. Bonanza	19,840
115.	106	12	5	25-1-68	National Petr.	39,680
116.	103	12	4	25-1-68	Stall Lake Mines	19,840
117.	103	11	4	25-1-68	Stall Lake Mines	19,840
118.	103	12	4	25-1-68	Stall Lake Mines	19,840
119.	104	11	4	25-1-68	Stall Lake Mines	19,840
120.	104	12	4	25-1-68	Stall Lake Mines	19,840
121.	104	22	4	25-1-68	Stall Lake Mines	19,840
122.	102	1	5	25-1-68	Stall Lake Mines	19,840
123.	103	1	5	25-1-68	Stall Lake Mines	19,840
124.	103	2	5	25-1-68	Stall Lake Mines	19,840
125.	102	2	5	25-1-68	Stall Lake Mines	19,840
126.	113	8	5	30-1-68	J.A. Tannous	19,840
127.	93	10	4	30-1-68	Toho Mines	19,582
128.	116	2	5	30-1-68	Nugent Sales	19,840
129.	107	4	5	30-1-68	C.P. Dolan	5,120
130.	107	11	5	30-1-68	Abtec Equip.	19,840
131.	113	4	5	30-1-68	H.P. Killoran	19,840
132.	97	9	5	30-1-68	Giant Reef Petr.	19,840
133.	101	3	5	30-1-68	J.F. Grimm	99,840
134.	101	5	5	30-1-68	A.G. Hattis	59,520
135.	116	3	5	30-1-68	Bata Resources	19,840
136.	113	7	5	30-1-68	Bata Resources	19,840
137.	101	11	5	30-1-68	G.L. Kirwan	3,840
138.	120	1	5	30-1-68	Montclair	19,840
139.	125	11	5	30-1-68	Montclair	19,840
140.	126	10	5	30-1-68	Montclair	19,840
141.	125	10	5	30-1-68	Montclair	19,840
142.	126	11	5	30-1-68	Montclair	19,840
143.	113	4	5	30-1-68	H.P. Killoran	19,840
144.	108	11	5	7-2-68	Wainoco Oil	19,576
145.	101	3	5	7-2-68	J. Superstein	39,680
146.	114	3	5	7-2-68	Alexandra Petr.	19,840
147.	100	11	5	7-2-68	Spencer	99,840
148.	119	1	5	7-2-68	D.A. Campbell	19,840
149.	98	11	5	7-2-68	R.P. Killoran	19,840
150.	112	13	5	7-2-68	R. Superstein	19,840
151.	99	10	5	7-2-68	R. Superstein	19,840
152.	109	14	5	7-2-68	R. Superstein	19,840
153.	103	12	5	7-2-68	Nilo Building	39,680
154.	113	8	5	7-2-68	Nilo Building	39,680
155.	93	5	5	7-2-68	Nilo Building	39,680
156.	101	1	5	8-2-68	Ranger Oil	19,840
157.	104	12	5	8-2-68	Ranger Oil	19,840
158.	89	5	4	8-2-68	H.L. Banting	19,840
159.	105	11	5	12-2-68	Giant Fxn	19,840
160.	94	1	5	12-2-68	WatnExp, Guyer & Abidon	19,840
161.	115	1	5	12-2-68	Abidon Oils	18,560
162.	99	17	4	12-2-68	Imperial Oil Ent	99,840
163.	104	13	5	12-2-68	WatnExp, Guyer & Abidon	19,840
164.	113	5	5	12-2-68	WatnExp, Guyer & Abidon	19,840
165.	117	5	5	16-2-68	Peyto Oils	19,840
166.	116	6	5	16-2-68	Buffalo Minerals	19,840
167.	114	8	5	16-2-68	Heritage Hold.	99,840
168.	100	9	4	21-2-68	G.W. Goettler	59,520
169.	116	7	5	21-2-68	Peyto Oils	19,840
170.	120	2	5	21-2-68	D.A. Campbell	19,840
171.	98	13	5	21-2-68	Amerada	19,840
172.	98	16	5	21-2-68	Amerada	19,840
173.	117	7	5	21-2-68	Farmers Chem.	19,840
174.	116	7	5	21-2-68	Farmers Chem.	19,840
175.	107	15	5	21-2-68	D.L. Hope	19,840
176.	119	1	5	26-2-68	R. Thomas	12,320
177.	101	11	4	26-2-68	R.E. Harris	19,840
178.	125	18	5	26-2-68	Astec Oil & Gas	19,840
179.	101	12	5	27-2-68	G. Lonn	19,840
180.	106	13	5	27-2-68	G. Lonn	19,840
181.	116	11	5	5-3-68	Syracuse	19,840
182.	95	4	5	21-3-68	G.S. Splane	19,840
183.	106	13	5	21-3-68	Arco	39,680
184.	89	3	4	29-3-68	Sinclair	99,840
185.	96	2	4	29-3-68	Sinclair	97,280
186.	97	4	4	29-3-68	Sinclair	98,560
187.	88	6	4	29-3-68	Sinclair	96,334
188.	88	8	4	29-3-68	Sinclair	99,840
189.	90	9	4	29-3-68	Sinclair	73,069
190.	97	10	4	29-3-68	Sinclair	99,137
191.	99	11	4	29-3-68	Sinclair	98,560
192.	102</					

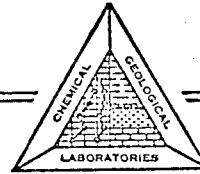
DRILLSTEM TEST RECORD
13-29-98-16 W5

No	Interval	Zone	Results	VO	HP	FP	SIP	Time
1.	5090-5241	Granite Wash	Gab, Rec. 5035' s.w.	45	2915	2374	2374	30
				5	2848	2520	2593	40
2.	4895-5030	Keg R.	Fab, Rec. 850' s.w.	60	2813	39	2213	30
				5	2775	302	2044	60
3.	4190-4260	Gilwood Sst.	Wab dead in 5 mins. in preflow & test. No recovery.	30	2335	11	40	30
				5	2297	11	35	60
4.	4050-4120	Slave Point	Fab, throughout. Rec. 430' sl. salty muddy water.	60	2335	45	1491	30
					2297	183	1330	60

PERFORATION AND STIMULATION RECORD

No	Interval	Zone	Method and Results

14240-115 AVENUE, EDMONTON, ALBERTA



Date Reported: March 27, 1968

Laboratory Report Number: C68-3427

AMERADA PETROLEUM CORPORATION

KIND OF SAMPLE: Soil

Well: 13-29-98-16

Date Received: March 11, 1968

Location: 13-29-98-16W5

- C68-3427-1: Water Hole sample 1' from surface 1 mile W and 1 mile N of location 13-29-98-16W5
- C68-3427-2: Sample 2' from surface 50' N along bank from Med. Hole.
- C68-3427-3: Sample 2' from surface 50' NE from well head 13-29-98-16W5
- C68-3427-4: Sample Unknown origin at location 13-29-98-16W5

LABORATORY
NUMBER

ELEMENTAL SULPHUR
(% by Weight)

C68-3427-1

Traces

C68-3427-2

Traces

C68-3427-3

Traces

C68-3427-4

Traces

continued.....

19680136

AMERADA PETROLEUM CORPORATION

Laboratory Report Number: C68-3427-5

C68-3427-5: 44 Samples:

- 5 Samples (in 100' of well) 10-20; 30-40; 50-60; 70-80; 90-100.
- 5 Samples (in 100'-200' of well) 110-120; 130-140; 150-160; 170-180; 190-200.
- 5 Samples (200'-300' in well) 210-220; 230-240; 250-260; 270-280; 290-300.
- 4 Samples (300'-400' in well) 330-340; 350-360; 370-380; 390-400.
- 5 Samples (400'-500' in well) 410-420; 430-440; 450-460; 470-480; 490-500.
- 5 Samples (500'-600' in well) 510-520; 530-540; 550-560; 570-580; 590-600.
- 5 Samples (600'-700') 610-620; 630-640; 650-660; 670-680; 690-700.
- 5 Samples from 700-800.
- 5 Samples from 800-900.

SAMPLE
NUMBER

ELEMENTAL SULPHUR
(% by Weight)

10-20	3.07 —
30-40	2.05 —
50-60	Trace
70-80	0.44
90-100	0.42
110-120	1.58
130-140	1.20
150-160	0.69
170-180	1.03
190-200	1.19
210-220	0.69
230-240	1.72
250-260	0.81
270-280	0.51
290-300	0.13
310-320	No Sample
330-340	0.19
350-360	Trace
370-380	Trace
390-400	0.28
410-420	Trace
430-440	Trace
450-460	Trace
470-480	Trace
490-500	0.19
510-520	Trace
530-540	Trace
550-560	0.19
570-580	0.65
590-600	0.50

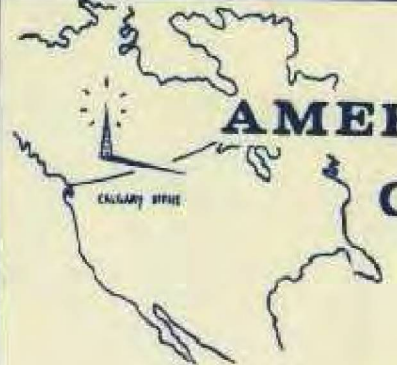
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19680136


ERADA PETROLEUM CORPORATION

Laboratory Report Number: C68-3427-5

<u>SAMPLE NUMBER</u>	<u>ELEMENTAL SULPHUR (% by Weight)</u>
610-620	0.51
630-640	0.92
650-660	1.41
670-680	0.95
690-700 I	Trace
690-700 II	0.97
710-720	1.65
730-740	1.89
750-760	Trace
770-780	2.87
790-800	<u>5.15</u>
810-820	4.78
830-840	2.50
850-860	Trace
870-880	0.59
890-900	0.31



AMERADA PETROLEUM CORPORATION



PROV. ALBERTA

NAME Amerada etal Wolverine

Lsd. 13 Sec. 29 Twp. 98 Rge. 16 W. 5 Meridian

Ground elevation 1451 Kelly Bushing 1462

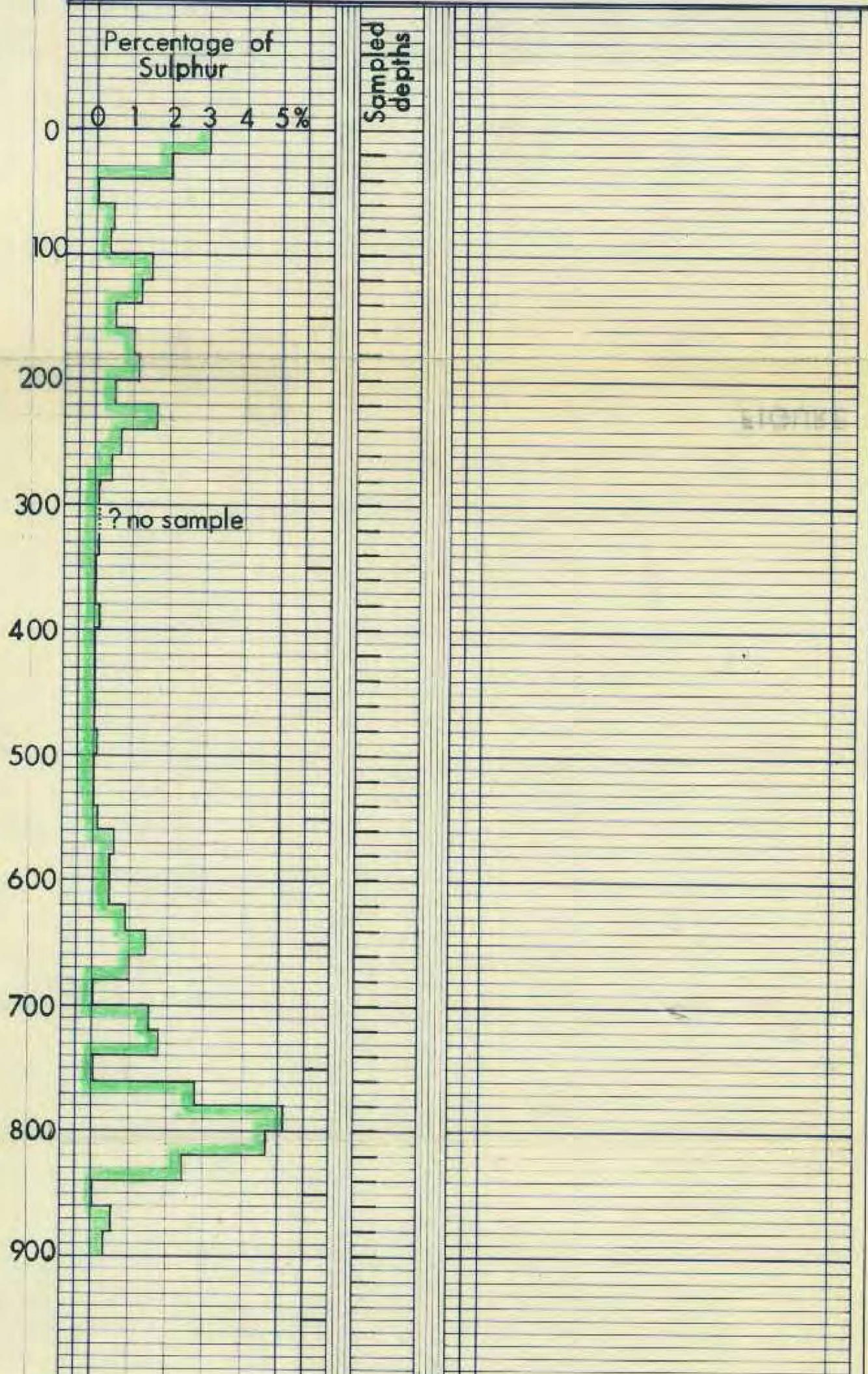
Total Depth 5241 in PreCambrian

Date Spudded Feb. 23, 1968

Date Completed Mar. 12, 1968

Status D. & A. in _____

Logged by _____



SULPHUR PROSPECTING PERMIT No. 172

AMERADA PETROLEUM CORPORATION,
BRITANNIA BLDG.,
703 - 6th AVENUE S.W.,
CALGARY, ALBERTA

DATE OF ISSUE - FEBRUARY 21, 1968
AREA - 19,840 ACRES

TP. 99

TP. 98

84F/9410
NE

TP. 97

R. 17

R. 16

R. 15 W. 5 M.