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GEOLOGICAL REPORT

SULPHUR PROSPECTING PERMIT NO. 201

NORTHERN ALBERTA

Submitted to

Mr. J. F. Frey, President

Anco Exploration Ltd.

by

Harry L. Taylor, P. Geol.

Consulting Geologist

April 24th, 1969
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INTRODUCTION

This report has been prepared at the request of Mr. J. F. Frey of Anco Exploration Ltd. A sample study was made of all samples on wells adjacent to and on Sulphur Prospecting Permit No. 201. The information from the sample study was integrated with all other available geological information in an attempt to find the best possible location for one or more test holes which would be drilled to evaluate the potential of sulphur accumulation in the Devonian sediments.

Sulphur Prospecting Permit No. 201 totals approximately 38,400 acres and is located 24 miles north of Fort McMurray on the east bank of the Athabasca River.
RECOMMENDATIONS

All of the samples taken from holes in the vicinity of Permit No. 201 were negative with respect to the presence of sulphur and therefore it is recommended that Sulphur Prospecting Permit No. 201 be surrendered.
The Mesozoic rocks in the area of Permit 201 are about 400 to 600 feet thick being composed principally of Cretaceous sands and shales. In general the Cretaceous rocks thin to the east and thicken to the west. They are inclined gently westward into the Alberta Syncline so that progressively younger rocks are present in that direction.

The Cretaceous rocks rest with angular unconformity on rocks of Devonian age composed principally of carbonates and evaporites. Like the Cretaceous rocks, the Devonian rocks are inclined gently into the Alberta Syncline and become progressively younger in the westward direction. The Devonian rocks rest on the Precambrian basement rocks at a depth of approximately 1400 feet.
EXPECTED MODE OF OCCURRENCE

and

RELATIONSHIP TO GENERAL GEOLOGY

Sulphur Permit 201 was acquired in order to prospect for sulphur within strata of Devonian age. The Devonian rocks in the area of the permit are buried by approximately 500 feet of Cretaceous sands and shales so that the search for sulphur had to be carried out by examining all of the samples from nearby wells.

The expected mode of occurrence was based on the similarity between the Devonian sequence of rocks in the McMurray area and the sequence of rocks found in the Sicilian sedimentary sulphur deposits. The sulphur in the Sicilian deposits occurs directly below a bed of anhydrite and/or gypsum. One theory put forth for the deposition of sulphur in deposits of this type is the chemical reactions between calcium sulphate, hydrocarbons, water and oxygen. The following equations are given in Ries Economic Geology to account for the formation of sulphur:

\[
\begin{align*}
\text{CaSO}_4 + 2C & \rightarrow \text{CaS} + 2\text{CO}_2 \\
\text{CaS} + \text{CO}_2 + \text{H}_2\text{O} & \rightarrow \text{CaCO}_3 + \text{H}_3\text{S}_2 \\
\text{H}_2\text{S} + \text{O} & \rightarrow \text{H}_2\text{O} + \text{S}
\end{align*}
\]
Expected Mode of Occurrence and Relationship to General Geology (cont'd)

In the McMurray area the Prairie Evaporite of Devonian age could be the source of the calcium sulphate and the porous underlying Winnipegosis formation could have supplied the necessary hydrocarbons. Under the proper conditions the reactions as given in the above equations could have taken place with the resultant formation and deposition of sulphur. Although there are no known sulphur occurrences of this type in the McMurray area at the present time it is entirely possible that future work on the Prairie Evaporite could reveal an economic sulphur deposit.
PROCEDURE

In an attempt to evaluate Permit 201 with respect to a sulphur occurrence of this type a detailed sample examination was carried out on all of the wells in the area of Permit 201 which had penetrated the Devonian section. As the samples were examined, any rock chips which could possibly be sulphur either in its elemental or amorphous states were removed from the sample and sent to the Chemical and Geological Laboratories in Calgary for a qualitative sulphur determination. In all a total of 23 samples were taken from three wells located to the south and west of Permit 201.

The Chemical and Geological Laboratories followed the procedure, outlined below, to establish the presence or absence of sulphur.

1. The samples were converted to sulphide, polysulphide and thiosulphate by boiling a few milligrams with alkali hydroxide.

2. The solutions were evaporated and the residues treated with potassium cyanide to produce possible thiocyanates.

3. The residues, on evaporation, were tested for thiocyanates by taking them into a dilute sulphuric acid solution and testing the solutions reaction to ferric chloride. If a red soluble complex \((\text{Fe}^{3+} + 3\text{CNS}^-)\) formed, it was taken as a positive test for original free sulphur.

The test as outlined above would reveal from 3 to 5 ppm free sulphur and so the tests can be taken as being very conclusive.
CONCLUSIONS

The tests as carried out by Chemical and Geological Laboratories were negative. These test results indicate that the Devonian in the area of Permit 201 does not contain sulphur in quantities sufficient to support any further investigations.
SAMPLE DESCRIPTION

SUN UNION RUTH LAKE 6-3-93-10-W4M

Sample Quality: Excellent
K.B. Elevation -- 868 feet
Ground Elevation -- 862 feet

100 - 110 SANDSTONE: white, coarse grained, unconsolidated, saturated with bitumen with minor Limestone: greyish-white, microcrystalline, micro-sucrosic, very argillaceous; no visible porosity.

110 - 230 LIMESTONE: light grey, microcrystalline, micro-sucrosic, moderately to very silty, moderately argillaceous; spotty bitumen stain.

230 - 240 LIMESTONE: buff, microcrystalline to cryptocrystalline, clear, pyritic, a few fossils; no visible porosity.

240 - 270 LIMESTONE: buff, microcrystalline to cryptocrystalline, clear, pyritic, many crinoid stems; traces of large vugs with crystal linings.

270 - 310 LIMESTONE: light grey, microcrystalline, moderately silty, dense; no visible porosity.

310 - 373 LIMESTONE: buff, microcrystalline to crystalline, slightly argillaceous, dense, calcarenitic in part, traces of pyrite; no visible porosity.

373 - 430 LIMESTONE: light grey, microcrystalline, moderately silty, dense, traces of pyrite; no visible porosity.
Sample No. 1 370' - 380'

430 - 490 LIMESTONE: light grey, microcrystalline, very slightly argillaceous, dense; no visible porosity.
Sample No. 2 450' - 460'

490 - 500 LIMESTONE: light grey, microcrystalline, very slightly argillaceous, dense; no visible porosity with minor LIMESTONE: light brown, microcrystalline to crystalline, clear, slightly anhydritic; traces of pinpoint intercrystalline porosity.

500 - 510 LIMESTONE: light brown, microcrystalline to crystalline, clear, slightly anhydritic, traces of pinpoint intercrystalline porosity.
SUN UNION RUTH LAKE 6-3-93-10-W4M (cont'd)

510 - 520 **ANHYDRITE**: white, crystalline to cryptocrystalline, dense.

520 - 530 **LIMESTONE**: tan, microcrystalline, dense, anhydritic; no visible porosity with minor **ANHYDRITE**: white, crystalline to cryptocrystalline, dense.

530 - 540 **SANDSTONE**: light grey, very fine, dense, calcareous, no visible porosity with minor **ANHYDRITE**: white, crystalline to cryptocrystalline, dense.

Sample No. 3 530' - 540'

540 - 550 **SANDSTONE**: light brown, very fine, dense, calcareous, no visible porosity.

550 - 560 **SANDSTONE**: light brown, very fine, dense, calcareous, no visible porosity with minor **ANHYDRITE**: white, crystalline to cryptocrystalline, dense.

560 - 590 **LIMESTONE**: whitish grey, microcrystalline, silty, dense; no visible porosity with minor **ANHYDRITE**: white, crystalline to cryptocrystalline, dense.

Sample No. 4 560' - 570'

590 - 604 **LIMESTONE**: light brown, cryptocrystalline to microcrystalline, very argillaceous; no visible porosity with minor **ANHYDRITE**: white, cryptocrystalline to crystalline, dense.

Watt Mountain 604 +264

604 - 610 **SHALE**: light grey, calcareous, with minor **SANDSTONE**: light grey, very fine, calcareous cement; no visible porosity.

610 - 650 **SHALE**: light grey, calcareous, with minor **ANHYDRITE**: white, dense, amorphous with minor **SANDSTONE**: light grey, very fine calcareous cement; no visible porosity.

Sample No. 5 610' - 620'

650 - 660 **LIMESTONE**: light brown, cryptocrystalline to microcrystalline, slightly argillaceous; no visible porosity with minor **ANHYDRITE**: white, dense, amorphous (one chip in the interval 650' - 660' looked like amorphous anhydrite but it had a yellow sulphur colored coating on it).

Sample No. 6 650' - 660'

660 - 664 **LIMESTONE**: tan, microcrystalline, micro-sucrosic, very argillaceous; traces of vugs with anhydrite linings with minor **ANHYDRITE**: white, amorphous, dense.

Prairie Evaporite 664 +204
664 - 700 ANHYDRITE: white, microcrystalline, dense (690-700); considerable yellow stain on anhydrite; this could be sulphur. Sample No. 7 690' - 700'

700 - 720 DOLOMITE: light brown, crystalline, sucrosic, very good small intercrystalline porosity with minor ANHYDRITE: white, crystalline to amorphous, dense.

720 - 750 DOLOMITE: dark brown, crystalline, sucrosic with minor ANHYDRITE: white, crystalline to amorphous, dense. Sample No. 8 740' - 750'

750 - 780 DOLOMITE: light brown, crystalline, sucrosic, excellent small intercrystalline porosity.

780 - 790 DOLOMITE: dark brown, crystalline, sucrosic, excellent small intercrystalline porosity.

790 - 820 LIMESTONE: dark brown, cryptocrystalline to microcrystalline, clear; no visible porosity.

820 - 830 LIMESTONE: dark brown, cryptocrystalline to microcrystalline, dense with minor DOLOMITE: light brown, crystalline, clear, fair intergranular small porosity with minor ANHYDRITE: white, cryptocrystalline to crystalline, dense. Sample No. 9 970' - 980'

830 - 970 LIMESTONE: dark brown, microcrystalline, clear, anhydritic; no visible porosity.

970 - 980 LIMESTONE: light brown, cryptocrystalline to microcrystalline, moderately argillaceous; no visible porosity with minor ANHYDRITE: white, amorphous, dense. Sample No. 9 970' - 980'

980 - 990 SHALE: red, silty, slightly calcareous.

990 - 1000 LIMESTONE: buff, cryptocrystalline, silty; no visible porosity.

1000 - 1010 SHALE: red, silty, slightly calcareous with minor LIMESTONE: buff, cryptocrystalline, silty; no visible porosity.
1010 - 1034 SHALE: red, silty, slightly calcareous.

Precambrian 1034 -166
SAMPLE DESCRIPTION

BAYSEL STEEPBANK 13-16-91-8-W4M

Sample Quality: Excellent  K.B. Elevation - 1439 feet
                 Ground Elevation - 1437 feet

560 - 580  LIMESTONE: light grey, cryptocrystalline to micro-
              crystalline, moderately silty and sandy,
              fossiliferous in part; no visible poros-
              ity, traces of dead oil stain.

580 - 610  LIMESTONE: light grey, cryptocrystalline, to micro-
              crystalline, moderately silty and sandy,
              fossiliferous in part; no visible poros-
              ity, traces of dead oil stain with minor

610 - 680  LIMESTONE: light grey, cryptocrystalline, slightly
              silty; no visible porosity.
              Sample No. 10  660' - 670'

680 - 818  LIMESTONE: buff, cryptocrystalline, slightly fossili-
              ferous, moderately silty, scattered
              crystals of pyrite; no visible porosity.

FIREBAG  818  +621

818 - 940  LIMESTONE: buff, cryptocrystalline, clear, traces of
              pyrite; no visible porosity.

940 - 960  LIMESTONE: brown, cryptocrystalline, slightly anhy-
              dritic, clear; no visible porosity.

960 - 970  LIMESTONE: brown, cryptocrystalline, slightly anhy-
              dritic, clear; no visible porosity, with
              minor ANHYDRITE: white, microcrystalline
              to amorphous, dense.
              Sample No. 11  960' - 970'

970 - 980  ANHYDRITE: white, crystalline to amorphous, dense,
              Sample No. 12  970' - 980'

980 - 990  ANHYDRITE: white, crystalline to amorphous, dense
              with minor LIMESTONE: buff, crypto-
              crystalline, anhydritic; no visible
              porosity.

990 -1010  SANDSTONE: light grey, very fine, well cemented with
              a calcareous cement; no visible porosity.

1010 -1020  SANDSTONE: light grey, very fine, well cemented with
              a calcareous cement, no visible porosity
              with minor ANHYDRITE: white, micro-
              crystalline to amorphous.
              Sample No. 13  1010' - 1020'
<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Rock Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1020 - 1047</td>
<td>Anhydrite</td>
<td>White, crystalline to amorphous, dense.</td>
</tr>
<tr>
<td>1047 - 1100</td>
<td>Anhydrite</td>
<td>White, crystalline to amorphous, dense.</td>
</tr>
<tr>
<td>1100 - 1130</td>
<td>Anhydrite</td>
<td>White, crystalline to amorphous, dense.</td>
</tr>
<tr>
<td>1130 - 1160</td>
<td>Dolomite</td>
<td>Light brown, crystalline, sucrosic, traces of pinpoint intercrystalline porosity with minor Anhydrite: white, crystalline to amorphous, dense.</td>
</tr>
<tr>
<td>1160 - 1200</td>
<td>Dolomite</td>
<td>Light brown, crystalline, slightly sucrosic; no visible porosity.</td>
</tr>
<tr>
<td>1200 - 1210</td>
<td>Dolomite</td>
<td>Buff, crystalline, moderately sucrosic, traces of pinpoint intercrystalline porosity.</td>
</tr>
<tr>
<td>1210 - 1230</td>
<td>Dolomite</td>
<td>Buff, crystalline, moderately sucrosic; traces of pinpoint intercrystalline porosity increasing to fair pinpoint porosity.</td>
</tr>
<tr>
<td>1230 - 1240</td>
<td>Dolomite</td>
<td>Buff, microcrystalline to crystalline, moderately silty; no visible porosity. Sample No. 14 1220' - 1230'</td>
</tr>
<tr>
<td>1240 - 1370</td>
<td>Dolomite</td>
<td>Buff, crystalline, slightly sucrosic, slightly silty, fossiliferous; poor intercrystalline porosity. Sample No. 15 1320' - 1330' Sample No. 16 1360' - 1370'</td>
</tr>
<tr>
<td>1370 - 1400</td>
<td>Dolomite</td>
<td>Buff, crystalline, slightly sucrosic, slightly silty, fossiliferous; poor intercrystalline porosity with minor Shale: black.</td>
</tr>
<tr>
<td>1400 - 1410</td>
<td>Dolomite</td>
<td>Buff, crystalline, clear; poor to trace pinpoint intercrystalline porosity.</td>
</tr>
<tr>
<td>1410 - 1440</td>
<td>Dolomite</td>
<td>Buff, cryptocrystalline, clear; no visible porosity with minor Shale: black and minor Sandstone: white, coarse, unconsolidated.</td>
</tr>
</tbody>
</table>
|            |                  | Red Beds                                                     | 1440 - 1
BAYSEL STEEPBANK 13-16-91-8-W4M

<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Rock Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1440 - 1470</td>
<td><strong>SHALE:</strong></td>
<td>orange with minor <strong>SANDSTONE:</strong> clear, coarse,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>unconsolidated.</td>
</tr>
<tr>
<td></td>
<td><strong>Sample No. 17</strong></td>
<td>1440' - 1450'</td>
</tr>
<tr>
<td>1470 - 1480</td>
<td><strong>SHALE:</strong></td>
<td>black with minor <strong>SANDSTONE:</strong> clear, coarse,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>unconsolidated.</td>
</tr>
<tr>
<td>1480 - 1500</td>
<td><strong>SHALE:</strong></td>
<td>orange with minor <strong>SHALE:</strong> black with minor</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>SANDSTONE:</strong> clear, coarse, unconsolidated.</td>
</tr>
<tr>
<td>1500 - 1516</td>
<td><strong>SANDSTONE:</strong></td>
<td>clear, coarse, unconsolidated with minor **</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>GRANITE:</strong> pink, weathered.</td>
</tr>
<tr>
<td>1516 - 1568</td>
<td><strong>GRANITE:</strong></td>
<td>weathered.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Precambrian</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1516 - 77</td>
</tr>
</tbody>
</table>
## SAMPLE DESCRIPTION

### BAYSEL STEEPBANK 15-29-91-8-W4M

Sample Quality: Excellent  
K.B. Elevation - 1319 ft.  
Ground Elevation - 1316 ft.

<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>540 - 630</td>
<td>LIMESTONE: light grey, cryptocrystalline, moderately silty, micro-sucrosic; no visible porosity.</td>
</tr>
<tr>
<td>630 - 640</td>
<td>SANDSTONE: clear, very coarse, sub-rounded to sub-angular grains, unconsolidated.</td>
</tr>
<tr>
<td>640 - 752</td>
<td>LIMESTONE: light grey, cryptocrystalline, slightly chalky, moderately silty and sandy, dense; no visible porosity.</td>
</tr>
<tr>
<td>752 - 850</td>
<td>LIMESTONE: light grey, cryptocrystalline, slightly chalky, moderately silty and sandy, dense; no visible porosity.</td>
</tr>
<tr>
<td>850 - 870</td>
<td>LIMESTONE: light grey, cryptocrystalline, slightly chalky, moderately silty and sandy, dense; no visible porosity with minor SANDSTONE: clear to pink, medium to coarse grained, sub-rounded to sub-angular grains, unconsolidated.</td>
</tr>
<tr>
<td>870 - 880</td>
<td>LIMESTONE: brown (mottled), cryptocrystalline, moderately argillaceous; no visible porosity.</td>
</tr>
<tr>
<td>880 - 890</td>
<td>LIMESTONE: brownish-grey, cryptocrystalline, chalky, very soft; poor pinpoint porosity.</td>
</tr>
<tr>
<td>890 - 930</td>
<td>LIMESTONE: light grey, cryptocrystalline, slightly argillaceous; no visible porosity.</td>
</tr>
<tr>
<td>930 - 944</td>
<td>LIMESTONE: light grey, cryptocrystalline, slightly argillaceous; no visible porosity with minor ANHYDRITE: white, amorphous.</td>
</tr>
<tr>
<td>944 - 960</td>
<td>SHALE: black with minor SHALE: grey with minor ANHYDRITE: white, amorphous.</td>
</tr>
<tr>
<td>960 - 976</td>
<td>LIMESTONE: brown, cryptocrystalline to microcrystalline, moderately argillaceous, slightly anhydritic; no visible porosity.</td>
</tr>
</tbody>
</table>
BAYSEL STEEPBANK 15-29-91-8-W4M

976 - 980 **ANHYDRITE:** clear and white; microcrystalline and amorphous with minor **LIMESTONE:** brown, cryptocrystalline to microcrystalline, moderately argillaceous, slightly anhydritic; no visible porosity.

Sample No. 20 970' - 980'

980 - 990 **ANHYDRITE:** clear and white, microcrystalline and amorphous.

990 - 1000 **ANHYDRITE:** clear and white, microcrystalline and amorphous with minor **SHALE:** black.

1000 - 1072 **ANHYDRITE:** clear and white, microcrystalline and amorphous.

Winnipegosis 1072 +247

1072 - 1080 **DOLOMITE:** buff, microcrystalline to cryptocrystalline, slightly anhydritic; no visible porosity.

1080 - 1090 **DOLOMITE:** buff, microcrystalline to cryptocrystalline, slightly anhydritic; no visible porosity with minor **ANHYDRITE:** white, microcrystalline, dense.

1090 - 1100 **ANHYDRITE:** white, microcrystalline, dense.

1100 - 1110 **DOLOMITE:** brown, microcrystalline to cryptocrystalline, anhydritic, dense with minor **ANHYDRITE:** white, microcrystalline, dense.

1110 - 1130 **DOLOMITE:** buff, microcrystalline to cryptocrystalline, slightly micro-sucrosic; no visible porosity.

1130 - 1140 **DOLOMITE:** buff, microcrystalline to cryptocrystalline, slightly micro-sucrosic; no visible porosity with minor **ANHYDRITE:** white, amorphous.

Sample No. 21 1130' - 1140'

1140 - 1150 **DOLOMITE:** brown, microcrystalline to cryptocrystalline, anhydritic; no visible porosity.

1150 - 1190 **DOLOMITE:** brown, microcrystalline to crystalline, slightly sucrosic; very poor pinpoint intercrystalline porosity.

1190 - 1220 **DOLOMITE:** dark brown, microcrystalline, silty, dense.

1220 - 1240 **DOLOMITE:** buff, microcrystalline, clear; very poor pinpoint intercrystalline porosity.

1240 - 1250 **DOLOMITE:** buff, microcrystalline, clear; very poor pinpoint intercrystalline porosity with minor **ANHYDRITE:** white, microcrystalline, dense.
<table>
<thead>
<tr>
<th>Interval</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1250 - 1260</td>
<td>DOLOMITE</td>
<td>grey, cryptocrystalline, chalky with minor SANDSTONE: clear to pink, sub-rounded grains, unconsolidated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sample No. 22 1250' - 1260'</td>
</tr>
<tr>
<td>1260 - 1290</td>
<td>DOLOMITE</td>
<td>light brown, cryptocrystalline to microcrystalline, slightly chalky; no visible porosity.</td>
</tr>
<tr>
<td>1290 - 1300</td>
<td>MUDSTONE</td>
<td>red, chalky with minor SANDSTONE: clear, medium-grained, sub-rounded grains, unconsolidated.</td>
</tr>
<tr>
<td>1300 - 1330</td>
<td>DOLOMITE</td>
<td>buff, cryptocrystalline, dense; no visible porosity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sample No. 23 1310' - 1320'</td>
</tr>
<tr>
<td>1330 - 1340</td>
<td>DOLOMITE</td>
<td>buff, cryptocrystalline, dense; no visible porosity with minor ANHYDRITE: white, amorphous to microcrystalline, dense.</td>
</tr>
<tr>
<td>1340 - 1350</td>
<td>DOLOMITE</td>
<td>buff, cryptocrystalline, dense; no visible porosity with minor SANDSTONE: red, medium-grained, weakly cemented with red mud to unconsolidated, sub-angular grains.</td>
</tr>
<tr>
<td>1350 - 1430</td>
<td>SANDSTONE</td>
<td>pink to red, medium to coarse grained, weakly cemented with red mud to unconsolidated, sub-rounded grains.</td>
</tr>
</tbody>
</table>
| 1430 - 1438 | GRANITE | pink. }
Dear Sir:

The chips submitted have been qualitatively tested for the presence of free sulfur, and the findings are recorded below. The method used was as follows:

Samples converted to sulfide, solylsulfide and thiosulphate by boiling a few milligrams with alkali hydroxide. The solutions were evaporated and the residues treated with potassium cyanide to produce possible throcyanates. The residues on evaporation were tested for thiocyanate by taking them into a dilute sulfuric acid and testing the solution reaction to ferric chloride. If a red soluble complex (Fe$^{3+}$ + 3CNS$^-$) formed, it was taken as a positive test for original free sulfur. As the test outlined above would reveal from 3<5 ppm free sulfur the results may be taken as very conclusive.

<table>
<thead>
<tr>
<th>SAMPLE #</th>
<th>WELL NAME</th>
<th>LOCATION</th>
<th>DEPTH</th>
<th>SULFUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sun Union Ruth Lake</td>
<td>6-3-93-10W4</td>
<td>370-380</td>
<td>Nil</td>
</tr>
<tr>
<td>2</td>
<td>&quot;</td>
<td>&quot;</td>
<td>450-460</td>
<td>&quot;</td>
</tr>
<tr>
<td>3</td>
<td>&quot;</td>
<td>&quot;</td>
<td>530-540</td>
<td>&quot;</td>
</tr>
<tr>
<td>4</td>
<td>&quot;</td>
<td>&quot;</td>
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Yours truly
CERTIFICATION

I, Harry L. Taylor, of Calgary, Alberta do hereby certify that:

1. I am a graduate of the University of Minnesota where I obtained a M.S. degree in Economic Geology. I am also a graduate of the Michigan College of Mining and Technology where I obtained a B.S. degree in Geological Engineering. Prior to attending the Michigan College of Mining and Technology I graduated from a two year course in technical mining at the Lakehead Technical Institute.

2. I am a Consulting Geologist and an active member in good standing of the Alberta Association of Professional Engineers. I am also a member in good standing of the Alberta Society of Petroleum Geologists.

3. From May 1949 to April 1957, except for the time that I was attending University, I was actively engaged in the mining industry; both in mine operations and field exploration.
4. From April 1957 to the present time I have been actively engaged in the petroleum business, both as a Production Geologist and an Exploration Geologist.

5. I have not received, nor do I expect to receive or acquire, directly or indirectly, any interest in any of the properties or securities of Anco Exploration Ltd., or its subsidiaries.

Respectfully submitted,

H. L. Taylor
SULPHUR PROSPECTING PERMIT No. 201

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505 WEBSTER BLDG.,
237 - 7th AVENUE S.W.,
CALGARY, ALBERTA

DATE OF ISSUE - OCTOBER 2, 1968
AREA - 38,400 ACRES