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Mobil Oil Canada Limited  
Calgary House  
Calgary, Alberta.

Attention: Mr. O. Brandt



Report of Winter Operations MOC-60

Introduction

United Geophysical Company of America, Party 567 (Mobil Oil Canada Limited, Party MOC-60) performed a gravity survey on the Alexandra Falls area from December 11, 1967 to March 8, 1968.

The program was for the most part conducted on new cut lines. A vertical and horizontal survey was carried together with the establishment of gravity stations at 1425 foot intervals on the east-west lines and 1220 foot intervals on the north-south lines.

The camp was located near the centre of the prospect about 1/4 mile south of Line I on the access road. It was about twenty miles to Hay River and no supply problems developed.

Physical Conditions

The terrain was fairly level with about 250 feet difference in elevation increasing to the south. The forest cover was generally muskeg, tamarack interspersed with clumps of fairly heavy spruce. The weather was approximately  $-25^{\circ}\text{F}$  from December 11th to February 18th and  $+35^{\circ}\text{F}$  from February 19th to



March 8th, 1968.

### Field Operations

Estabrook Construction commenced work on December 19th, 1967 and did all the bulldozing. The cats suffered some breakdowns during the cold weather and had some difficulty in receiving parts. The bulldozers cut and cleared approximately 190 miles of new line and snow plowed about 22 miles of existing line. The cat camp was situated with the main camp throughout the operation.

The first survey crew left Calgary, December 11, 1967 and directed cats until December 22nd. They then took time off till December 29th and on their return directed cats and commenced the actual survey. The second survey crew left Calgary January 24th and commenced surveying January 27th. The survey crews field marked the north-south access road at 6100 foot intervals for take-offs for the east-west lines which were to be cut as near as possible on the minute lines of latitude. Vertical control was carried into the prospect from a benchmark on the Pine Point Highway and tied into Sandy Tower (Lat.  $60^{\circ}36'23''$ , Long.  $115^{\circ}43'10''$ ) which was used as the horizontal control take-off.

For purposes of computation of latitudes and departures an arbitrary value of 100,000 feet North and East was assigned to Sandy Tower.



The elevation carried from the Geodetic B.M. on the Highway to Sandy Tower (749.26') was used as a take-off for the prospect instead of the figure of 750 feet shown on the Sandy Tower sheets. There is no elevation pin and vertical information as shown on the triangulation sheets is not generally considered to be precise.

All survey ties were within the allowable maxima and benchmarks were established by means of a spike in a tree throughout the prospect. The original surveyor from survey crew number 1 set the cats off on the wrong bearing on line D and although this wrong line was surveyed and metered west of the access road, the line was recut on the correct bearing. Survey crew number 1 returned to Calgary March 6, 1968 and survey crew number 2 March 8th, 1968.

The meter crew left Calgary January 7th, 1968 and started metering January 11th. A few problems were encountered with the gravity meters.

Work was started using a newly purchased thermostatically controlled Worden meter #808, however, the readings were inconsistent on any one location and the meter also drifted erratically. On January 19th, the bases set with meter #808 were rerun with meter #456. Meter #456 worked until January 29th when trouble developed on base loop ties. January 30th

meter #246 was used. On February 4th this meter started drifting extremely and the stations were rerun. On February 5th & 6th both meters #246 and #456 were drifting irratically thus the meterman could not leave the base. This problem was probably due to the extremely cold weather ( $-60^{\circ}\text{F}$ ) on February 4th. On February 7th production commenced with meter #246. The meter functioned properly until February 22nd when it again started drifting extremely. On February 23rd the meter was functioning properly and no further problems developed. An arbitrary value of 2000.00 milligals at base "A" at Sandy Tower was used and all loops were tied within the allowable maxima. By virtue of a loop run to a Dominion Observatory base at Enterprise the true value of base A was found to be 1881.56 mgs. Therefore to reduce the prospect to Dominion grid a correction of -118.44 mgs. must be applied. Twelve gravity bases were set throughout the prospect and three sub bases (see Base Loop Map and Base Descriptions). The meter crew arrived in Calgary March 8, 1968.

#### Interpretation

Elevations were reduced by a Bouguer Free Air Factor of .065 mg./foot. The terrain being level throughout the prospect no terrain corrections were necessary.

The Bouguer contour map submitted shows a gravity low on Lines H,I,J,K on stations 30 Line H, 3,4,5,6, Line I, 392, 393, 394, Line J, 415, LineK. The map also shows

high gravity values increasing to the south-west corner of the prospect.

Conclusion

721 Stations were metered and only one station, #232 on Line F could not be read because of lake ice.

15 bases were set: 12 Bases in the prospect and 3 sub Bases off the prospect.

722 stations were located and surveyed.

Respectfully submitted,

UNITED GEOPHYSICAL COMPANY OF AMERICA

*W. P. Widynowski*

W. P. Widynowski,  
Party Manager, 567.



## STATISTICAL SUMMARY

<u>Survey #1</u>	Field Hours =	737.0
	Office Hours =	135.5

<u>Survey #2</u>	Field Hours =	332.0
	Office Hours =	146.0
	Calgary Hours =	40.0

<u>Meter</u>	Field Hours =	543.5
	Office Hours =	63.5

Surveyed =	722 stations
Metered =	721 stations
Bases =	15

