Report on Airborne Magnetometer Survey

Permits 2090 to 2105 Northwest Territories

An airborne magnetometer survey was conducted during July, 1961 on Permits 2090 - 2105 inclusive. Lines were flown in an E-W direction at one mile spacing with N-S Tie lines 8 to 9 miles apart. The work was done by Hunting Survey Corporation Ltd. using a Gulf Mark III magnetometer. Flight altitude was maintained at a constant barometric elevation 2500' above sea level.

Results are presented on the enclosed total intensity maps (two sheets) which are contoured using a 10 gamma interval. The survey shows a strong (approximately 500 gamma) anomaly trending northwesterly from the south-east corner of the South Sheet to the southeast corner of the North Sheet. The contours suggest that a weak extension of this anomaly may curve westward to join a strong gradient observed in the northwestern corner of the North Sheet. This gradient most probably indicates the presence of another large anomaly similar to the one already described. Another but weaker gradient at the western border of the South Sheet, trends roughly southeastward and is lost on the flank of the large anomaly at the south central boundary of the survey area.

Two depth estimates, indicative of the depth to the Pre Cambrian surface were made -- one of these, made on a weak anomaly at the north central border of Permit 2098, shows a depth of 8500' to basement. Another estimate was made on a weak anomaly in the southern half of Permit 2094 which is super-imposed on the western flank of the large anomaly. The calculated depth to this feature is from 3000 to 6000' below the surface.

Depth estimates made on the large anomaly itself show that the origin of this feature can best be explained by changes in rock type occurring

within the basement rocks at a depth 42,000 feet below the surface.

In conclusion it can be said that (1) the large anomalies are produced by deep-seated magnetic effects well within the Pre Cambrian basement rocks; (2) several weaker anomalies, two of which are mentioned above with respect to the depth estimates, could most probably have been produced by Pre Cambrian basic intrusives reaching as far upward as the basement erosional surface; and (3) yet smaller anomalies of doubtful significance could have been the result of uncorrected diurnal variations. No information was derived as to possible high or low trends on the basement erosional surface nor no information is provided with respect to possible structural trends within the sedimentary cover.

Respectfully submitted,

J. A. Smith

J. A. Smith
Chief Geophysicist
Union Oil Company of Canada Limited

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