

Hudson Bay Project, 1965: Aeromagnetic Surveys

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The North Nashwaaksis Basin should provide an excellent opportunity for those interested in a well-equipped natural laboratory for hydrological studies. Additional research projects may be initiated by any qualified individual or organization. Further information may be obtained from the author who is acting as the project coordinator for New Brunswick.

Interest in the I.H.D. program in New Brunswick may be appreciated by the participation of representatives of various disciplines from provincial and federal government departments and from the University of New Brunswick. In particular, the following people are recognized for their active participation in the field program:

1. J.E. PETERS, Water Resources Branch, DEPARTMENT OF NORTHERN AFFAIRS AND NATURAL RESOURCES. (Stream gauging station).
2. R.B.B. DICKISON, Meteorological Branch, DEPARTMENT OF TRANSPORT. (Meteorological station).
3. W.B. CUTHBERTSON, NEW BRUNSWICK ELECTRIC POWER COMMISSION. (Snow course surveys).
4. H. LEGARE, Fish and Wildlife Branch, NEW BRUNSWICK DEPARTMENT OF LANDS AND MINES. (Water quality determination).
5. D.W. PYSKLYWEC, graduate student, Department of Civil Engineering, UNIVERSITY OF NEW BRUNSWICK. (Snowmelt studies).

As the project develops and becomes more widely known many qualified engineers and scientists will be able to make a contribution to the hydrology of New Brunswick through work on the North Nashwaaksis Basin.

It is hoped that the data obtained and the results of the research carried out on the basin may be used to provide information on which the social, physical and biological scientists may combine their efforts to plan an adequate solution to the water resource problems of the future.

Hudson Bay Project, 1965: Aeromagnetic Surveys*

P.J. HOOD, P. SAWATSKY and MARGARET E. BOWER

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A detailed aeromagnetic survey of an area in central Hudson Bay (Figure 1) was carried out in co-operation with the NATIONAL AERONAUTICAL ESTABLISHMENT and the R.C.A.F. during July and August 1965. The primary navigational aid used was the 6F Lambda Decca chain on loan from the Polar Continental Shelf Project which was installed in the southwest part of the bay for the 1965 Hudson Bay Oceanographic Project.

A rubidium-vapour magnetometer system modified by the N.A.E. was used to record digitally on magnetic tape the total intensity of the earth's magnetic field at two heights. This was accomplished using a

*Manuscript received 16 March 1966.

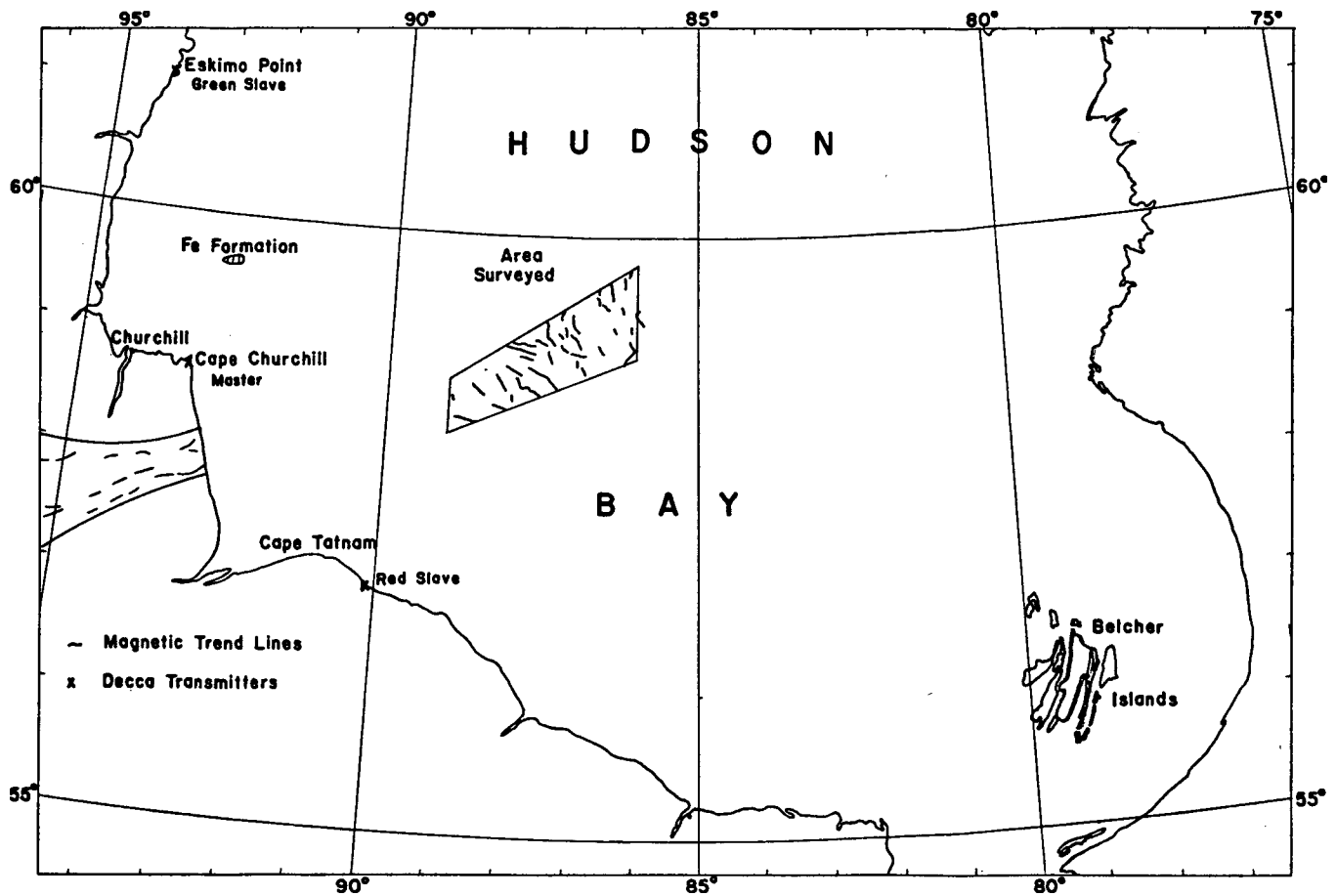


Figure 1. Aeromagnetic survey area, Hudson Bay Oceanographic Project, 1965.

tail "stinger" installation together with a "bird" which was towed below the aircraft and thus was an attempt to measure directly the first vertical derivative of the earth's magnetic field. Approximately 7,000 line miles of aeromagnetic data were obtained in the survey. In addition, much survey information as possible was obtained on the ferry trips between the survey area and Fort Churchill where the North Star aircraft was based. A rubidium-vapour magnetometer was set up at Fort Churchill to record the diurnal variation of the earth's magnetic field during the flights.

The magnetic trend lines plotted from the analog chart recorded during the survey are shown in Figure 1, together with the striking magnetic trends observed in a zone of relatively high amplitude anomalies, some 1,200 gammas above the regional field, found in the G.S.C. aeromagnetic maps of northern Manitoba. It seems reasonable to conclude that the magnetic zone does not pass through the area surveyed; and, moreover, it cannot swing to the north as it was not recorded in the ferry lines data. Presumably it either swings south or dies out before reaching the survey area, where the anomalies are consistent with there being a substantial depth to the crystalline basement.

An area of intense magnetic anomalies was observed about 60 miles NNE of Cape Churchill (see Figure 1), where the depth of water is about 300 feet. Anomalies in excess of 5,000 gammas were recorded, and as the minimum depth to the causative bodies is at least 800 feet, there is little doubt that these result from magnetic iron-formation. Preliminary plots indicate a magnetic zone about 14 by 5 miles in size, which must represent a considerable tonnage of iron formation.

No further work is planned on this project, except for occasional aeromagnetic traverses if and when Decca coverage is available. A major oil company has taken out leases on a large acreage in Hudson Bay, and will be conducting surveys and may also drill test holes.

Deadline for the July issue (Volume 2, No. 3)

Material intended for inclusion in the next issue of MARITIME SEDIMENTS should reach the Editor or Associate Editors before 4th June, 1966; all mail items should be clearly marked MARITIME SEDIMENTS so that it may be dealt with in the event that the recipient is away on field work, etc. Non-report material received up to 25th June can usually be fitted in, but this is not guaranteed.

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