

Airborne radiometric survey between 63° and 66°N, southern West Greenland

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The airborne radiometric survey in West Greenland, initiated in 1975 (Secher, 1976), was completed in 1976 with the completion of the region between Søndre Strømfjord and Frederikshåbs Isblink – an area of 42 000 km². This made a total of 100 000 km² thus investigated in West Greenland (Steenfelt *et al.*, 1977). The programme was carried out as a collaboration between GGU and the Research Establishment, Risø. The aircraft, a Britten-Norman Islander, was chartered through Greenlandair Charter A/S. Field operations were carried out from the GGU field station at Søndre Strømfjord Air Base.

Equipment and methods used during the radiometric survey were as in 1975 (Secher, 1976). Follow-up field work on the ground will take place during the next few years.

Remarks on the radioactivity

The survey area is situated within the pre-Nagssugtoqidian block where very little was previously known about radioactivity. The present investigation has shown some general trends concerning the radiation level of the rock units and the detected anomalies, which are briefly presented below. The rock units follow the divisions described by Escher & Watt (1976).

The Archaean gneisses are mainly of enderbitic and granodioritic composition. Both types have a low radiation level but with our present knowledge it is impossible to distinguish between them radiometrically. The anorthosites within the gneiss complex also have a very low radiation level and are not possible to distinguish from the surrounding rocks.

Granites display variable, mostly higher, radiation levels, distinguishing them from the gneisses. Isolated radioactive highs may be due to pegmatites. Known occurrences of allanite cause locally increased radiation, as around Fiskenæsset and Sukkertoppen.

Supracrustal rocks within the survey area, e.g. Isukasia, Ivisârtoq and Ravns Storø, show low radiation levels and therefore cannot be distinguished from the gneisses. The supracrustal rocks of the Godthåbsfjord area are situated, together with granite units, in a NE–SW trending zone, 30 km wide (from Nunatarssuaq to the mouth of Buksefjord), in which there is a concentration of localities with radiation 2 to 3 times higher than the rocks to the north and south. Some anomalies detected within this zone are obviously related to pegmatites.

The Phanerozoic carbonatite complex at Qaqarssuk, south-east of Sukkertoppen (explored by Kryolitselskabet Øresund A/S), is marked by several anomalies, mainly along the western border of the complex.

References

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Reconnaissance mapping for the 1:500 000 map sheet in the Godthåb–Isua region, southern West Greenland

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A two summer reconnaissance mapping programme covering the region east of Godthåb and Sukkertoppen was started in 1976 in order to complete the field work for the 1:500 000 map sheet Frederikshåb Isblink – Søndre Strømfjord (62° 30'–66° 45'N). Most of the coastal areas have been visited previously and the earliest results were published as a reconnaissance map (Noe-Nygaard & Ramberg, 1961). The area immediately north of Itivnera was mapped by Walton in 1975 (Walton, 1976), and the area around Isukasia was mapped by Allaart in 1974 and 1975 (Allaart, 1975, 1976).

During the 1976 summer the following areas were covered: south of the fjord Ameragdla, around the inner parts of Godthåbsfjord and to the north along the edge of the Inland Ice to Isua, and between Godthåbsfjord and Fiskefjord (fig. 14). At the same time C. R. L. Friend & R. P. Hall (see this report) carried out more detailed mapping of the Ivisârtoq area.

The mapping team of four geologists was supported by two Bell G 3 helicopters that operated from a base camp established at the reindeer station Itivnera. Transport of equipment, fuel and personnel was by GGU motor cutter *F. Johnstrup*.

Rock units

Except for the Taserssuaq granodiorite (see below) no new rock units were discovered and no changes have been made in the chronology of events put forward for the Godthåb district by McGregor (1973) and Bridgwater *et al.* (1976). The following units have been mapped.

Isua supracrustals and Akilia association (c. 3760 m.y.). These include a variety of lithologies, mainly of supracrustal origin, which occur in many places within the Amitsoq gneisses; they appear to be older than the gneisses. The Isua supracrustal rocks are a relatively large unit of well-preserved rocks that form a semicircular arc over an area of 10 by 20 km in the Isukasia area. Supracrustals were found south-west of Isukasia in a zone about 15 km long by 500 m wide. These consist mainly of amphibolites, but also include charac-