

Review of the Survey's activities in 1977

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There has been renewed interest in the uranium deposits at Kvanefjeld near Narssaq in South Greenland as a consequence of the search for new sources of energy. In 1977 an extensive drilling programme was carried out under the auspices of the Survey (Grønlands Geologiske Undersøgelse = GGU), supplementing several earlier drilling programmes, and jointly financed by the European Economic Communities (EEC) and the Danish Ministry for Commerce. Together with detailed mapping of the surface geology the drilling has made possible revised estimates of measured and indicated reserves of uranium.

Uranium prospecting has continued in both East and West Greenland. In East Greenland a 5-year programme of exploration has been completed, and the base at Stordal in Hudson Land has been dismantled and the site cleared. In West Greenland anomalies discovered during airborne radiometric surveys in 1975 and 1976 were investigated on the ground, and geochemical prospecting has begun with systematic collection of river sediments and water samples.

Magnetic anomalies in West Greenland, revealed by aeromagnetic prospecting in earlier years, were investigated on the ground in 1977. Previously known places and other mineral deposits in the Thule district, North-West Greenland, were also investigated by one party in 1977.

Considerable interest has been expressed in recent years in the possibilities of developing hydroelectric power in Greenland, and a hydrological programme is now being run by the Survey. In Copenhagen these studies have taken the form of delineation and analyses of water basins throughout western Greenland, especially in respect of the volume of water potentially available in each basin from both precipitation and meltwater from the local glaciers and the Inland Ice. These data are fundamental in any feasibility studies for hydroelectric schemes. Several basins have been selected for detailed studies in the field, and in the summer of 1977 GGU and Grønlands Tekniske Organisation (GTO) ran a joint project in Johan Dahl Land in South Greenland.

Environmental studies have continued in the vicinity of Kvanefjeld in South Greenland related to the possible exploitation of the uranium ore deposits. These studies, which are supported by the Survey and the Danish Natural Science Research Council (SNF), comprise collection of climatological and hydrological data in the Narssaq Elv basin, investigation of weathering activity and soils, botany, limnology and marine biology.

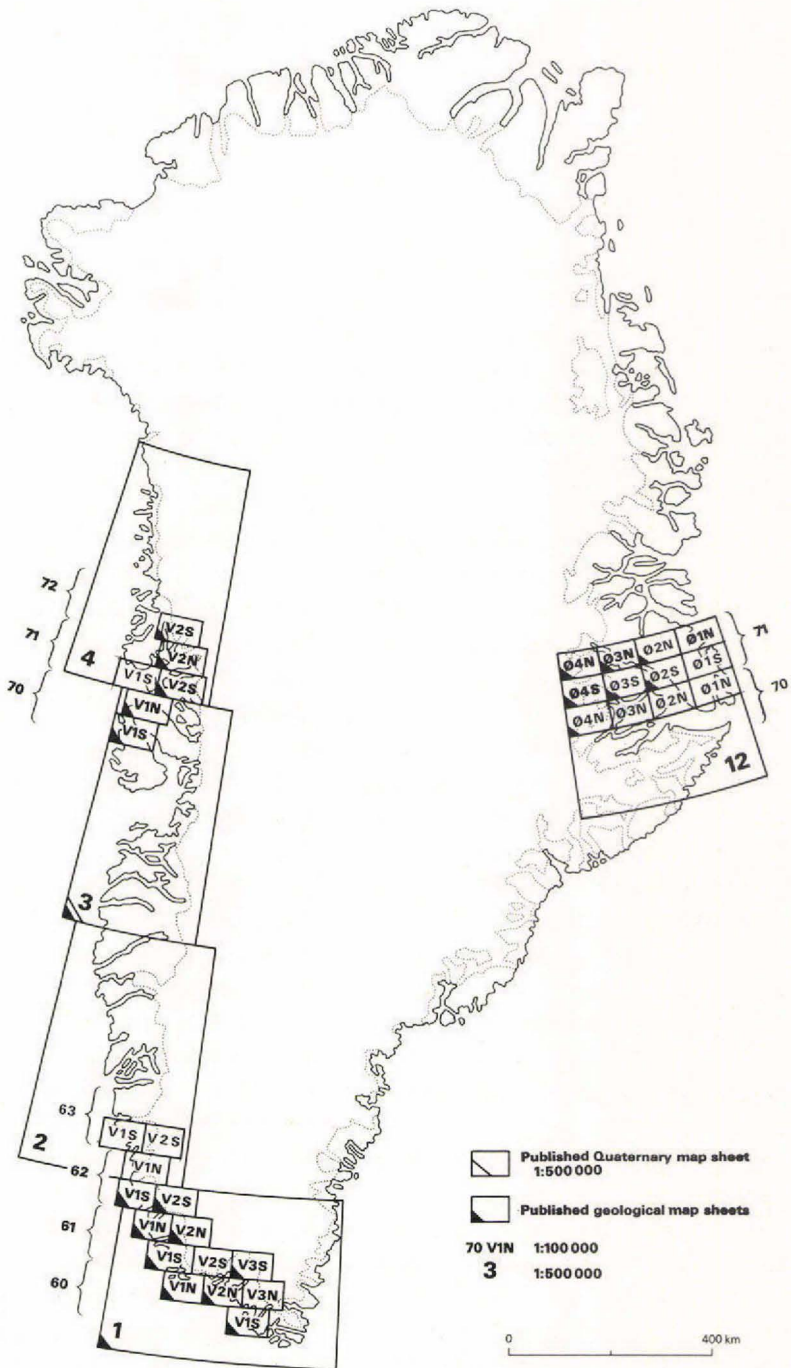


Fig. 3. Map sheets published and in preparation by the Survey (see inside rear cover).

Further visits were made in March and November to the lead-zinc mine at Sorte Engel, Marmorilik in West Greenland, to monitor the environmental impact of tailings disposal in the fjord Agfardlikavså. As in previous years bottom samples and water samples were collected, as well as various species of fish, mussels and seaweed, in order to assess proportions of heavy metals. The results of the most recent studies have been presented in the fifth number of *Recipientundersøgelse, Agfardlikavså, Qaumajuruk, 1976–77*. These investigations are carried out in collaboration with Grønlands Fiskeriundersøgelse (GFU) and the Institute of Petrology at Copenhagen University. In addition, regular inspections of the mining activities at Sorte Engel are carried out by GGU staff on behalf of the Ministry for Greenland.

Offshore West Greenland saw increased activity in the petroleum concession areas with four wildcat wells being drilled between June and September. The Mobil Group drilled two wells – Nukik 1 and 2, the Chevron Group one – Ikermiut 1, and the ARCO Group also one – Hellefisk 1. Results of the summer's drilling were disappointing from the point of view of potential petroleum resources, and all five wells so far drilled off West Greenland have been dry. Regular inspection visits were made by Survey staff to the two drill ships and the semisubmersible platform on behalf of the Ministry for Greenland.

The organic geochemistry laboratory, established through funds provided by the Danish Natural Science Research Council (SNF), became operative during the year. As a continuation of the basin analysis carried out over the years in the Disko–Nûgssuaq area, it concentrated primarily on organic geochemical characterisation of organic matter rich sediments. A specific regional aspect, the effect of igneous bodies, like sills and dykes, on the organic matter in surrounding sediments is also receiving attention.

An important contribution to these investigations is the visual identification of the organic matter by coal petrographical methods. GGU's facilities now allow reflected light investigations with both white light and UV-light (fluorescence), as well as photometric reflectance determination. The latter method has been used on sample preparation from the four wells drilled offshore West Greenland as part of GGU's control with the concessionaires' activities.

Within the energy research programme funded by the Ministry for Commerce, the initial phase of a detailed sea-floor survey off West Greenland came off the ground in the latter half of the year. A two-season charter agreement for the former Danish fisheries research vessel *Dana* was concluded, as was the selection and ordering of geophysical and positioning equipment.

The Survey's principal task, the geological mapping of Greenland, has continued with activity in all parts of Greenland. Field work for the 1:100 000 Buksefjord sheet in collaboration with the University of Exeter, U.K., (3 teams) was completed, and work on the Godthåb sheet (2 teams) and Agto (Nordre Strømfjord) sheet

(6 teams) continues. Reflecting the increased emphasis on mapping for publication at 1:500 000 scale, field work was carried out in 1977 in Washington Land (4 teams), the Thule region (1 team), Upernavik region (2 teams), the Sukkertoppen region (5 teams) and South-East Greenland (6 teams).

Two coloured geological map sheets were published during the year, Sydlige Stauning Alper and Rolige Bræ, both in the Scoresby Sund region of East Greenland. A total of 21 geological maps at 1:100 000 have now been published, as well as two geological maps at 1:500 000 and one Quaternary sheet at 1:500 000. Other sheets in both East and West Greenland are at various stages of compilation.

Other publications issued by the Survey during 1977 include 5 Bulletins, 4 Reports and 5 Miscellaneous Papers. The book *Geology of Greenland* published by the Survey in 1976 has continued to be very favourably received and reviewed, and in 15 months 1200 copies were sold to customers in all parts of the world.

During the year one member of the scientific staff left to take up a new appointment in Canada. Three new short-term contract scientific personnel were attached to GGU, the contracts being funded by the Ministry for Commerce for a three-year period as projects related to the search for new energy resources.