

## Developments in petroleum exploration offshore West Greenland during 1975

**Gilroy Henderson**

On 8th April 1975 the Ministry for Greenland granted 13 concessions to explore for and exploit petroleum to six groups consisting of 19 foreign companies and one Danish consortium. The concessions comprise 46 blocks with a total area of 19 082 km<sup>2</sup> (fig. 9).

During the period leading up to the granting of the concessions GGU assisted the Ministry in assessing the applications received and was represented in the ministerial delegation that negotiated the concessions with the groups concerned. One of the major problems was that there were numerous overlaps in the areas originally applied for by the various groups. This meant that there were in most cases considerable differences between what was applied for and what the Ministry was able to offer, with consequent need for negotiating new work programmes related to the areas offered. The detailed knowledge of the geology of the shelf obtained by GGU through interpretation of geophysical data submitted by the industry in earlier years proved indispensable in arriving at equitable and geologically reasonable allocations.

The concessionaires took on firm commitments to spend just below 500 million Danish kroner in the initial part of the 10-year exploration period and will be committed to spending in addition more than 1000 million kroner during the remainder of the period, unless they relinquish concessions. Thus the total sum for the 10-year exploration period is over 1500 million Danish kroner, which sum in terms of work undertaken means a very substantial exploration programme.

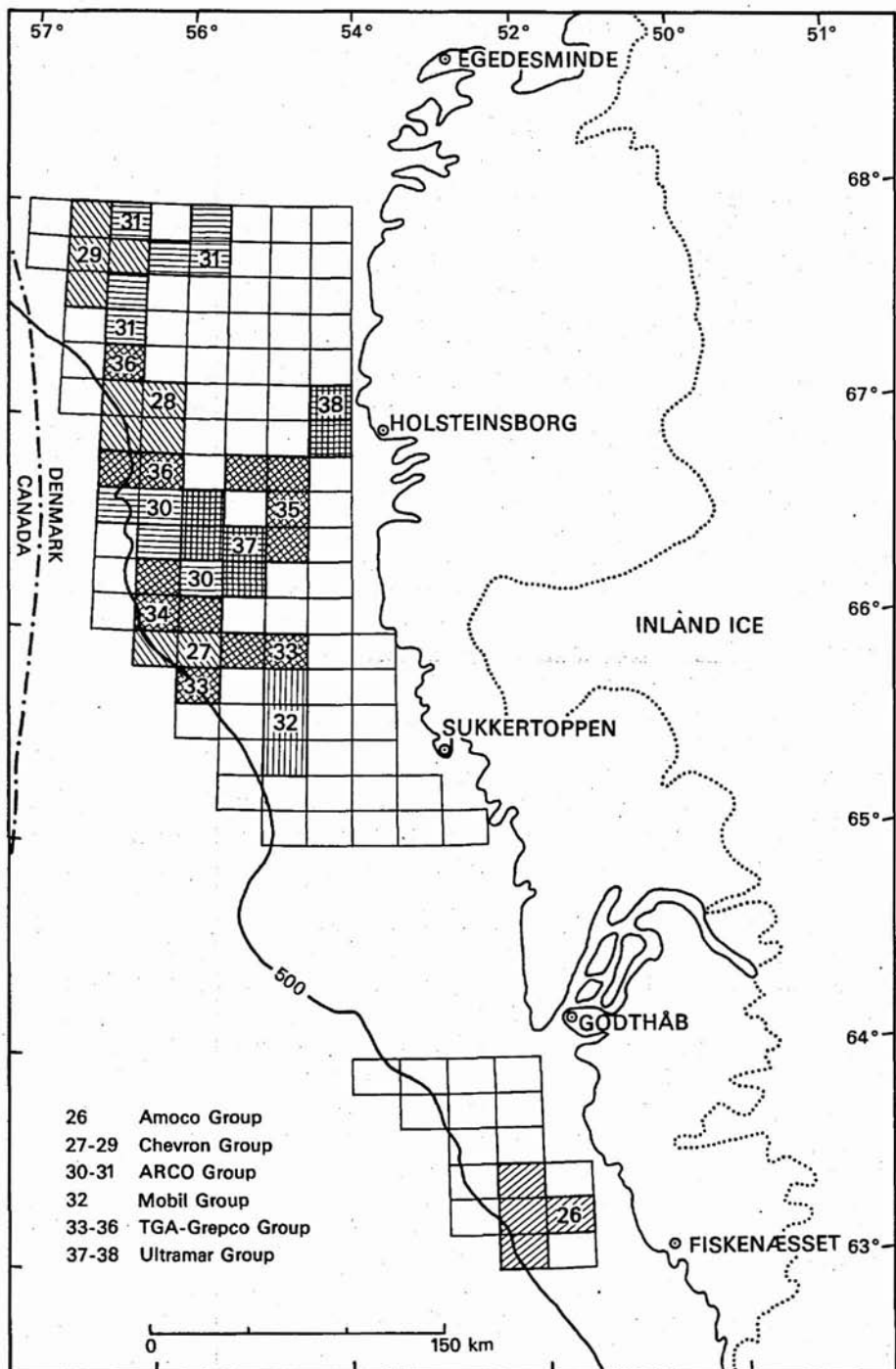
The summer and autumn of 1975 have been marked by considerable company activity in the West Greenland area. The groups have acquired nearly 12 000 km of deep-penetration seismic reflection data from within the concession areas. This has been supplemented by gravity and magnetic data, all designed to improve geological knowledge of the deeper sedimentary section.

In addition, considerable effort has been put into obtaining environmental data of various types with a view to future drilling. This has included specific geophysical surveys using side-scan sonar, fathometer and high-resolution, shallow-penetration profiling systems designed to give information on the nature of the sea-floor and the strata immediately below it. Other data acquired include ice, meteorological and oceanographic data.

Representatives of two of the groups undertook field work onshore in the Nûgssuaq area to study and collect from the sedimentary sections in outcrop.

One of the main functions of the Survey is to advise the Ministry on any mineral exploration and exploitation undertaken by private companies in onshore and offshore Greenland. These extensive new developments will bring with them a corresponding involvement from GGU's side as part of the control system already established and being established by the State.

In addition, the Survey receives many visitors from industry, and had in 1975 many fruitful discussions with representatives of groups holding petroleum concessions offshore West Greenland.



The Survey continued to be represented in the working group drawing up regulations to govern the activities of companies undertaking mineral exploration on land in Greenland and in adjacent marine areas. This group completed in 1975 regulations for exploration work in marine areas and supplied the draft material for 'Offshore drilling regulations' published by the Ministry for Greenland in March 1976.

## Physiographic and geological mapping of the sea-floor off West Greenland

Miodrag M. Roksandic

Part of the continental shelf off West Greenland between 61° and 64°N was mapped in 1975. For this, data were drawn from three main sources.

(1) Newly published bathymetric maps covering offshore West Greenland from 59°N to 69°30'N, with 10 m contour interval (Henderson, 1975) give a detailed picture of the sea-floor.

(2) The original echograms recorded by the Royal Danish Hydrographic Office give a more detailed picture of the relief along selected lines than can be obtained from (1) as well as giving indications of the nature of the sea-floor. Copies of echograms have been obtained from the Hydrographic Office, but the interpretation of these is at an early stage.

(3) Some sparker seismic profiles acquired in 1970 by Greenland Exploration Management Company, Inc. were studied to allow identification of units immediately below the sea-floor. The author wishes to thank the company for permission to refer in general terms to some of the main results stemming from this interpretation.

This brief report comprises general conclusions based on interpretation of data from all three sources, including the seismic data.

### *Types of sea-floor*

Bathymetric data (Holtedahl, 1970; Henderson, 1975) enable four main types of physiographic units to be recognised:

- (a) a very rugged inner part – strandflat,
- (b) fairly flat banks on the outer side,
- (c) marginal channels separating the banks from the strandflat and being roughly parallel to the coastline, and
- (d) transverse channels lying between the banks.

The marginal channels, although very marked features, are not always the largest and/or deepest channels and numerous channels within the strandflat may exceed them in size. The

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Fig. 9. Map showing petroleum concessions in the marine areas off part of West Greenland. The 500 m bathymetric contour is indicated.