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A plan for the Iceland cruise of R/V "Akademik Golitzyn" 1986

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Greinargerð KG-86-01

ORKUSTOFNUN
National Energy Authority, Iceland
1986.01.13

Report
KG-86/01
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A PLAN FOR THE ICELAND CRUISE OF R/V "AKADEMIK GOLITZYN" 1986

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The following report was being written in preparation of a Soviet/Icelandic marine geophysical cruise when the research permit for the Soviet ship R/V Akademic Golitzyn was cancelled. This put an end to the planning of the cruise, and this report and various other relevant data will be put in store for better days.

A plan for a seismic reflection survey off the south coast of Iceland is presented here. The survey will be carried out by the Soviet research ship Akademic Golitzyn, under the scientific direction of dr. O.V. Mikhailov, in cooperation with Icelandic scientist. The purpose of the survey is to give a general idea of the deeper sedimentary structure of the southern insular shelf. This will be the first multi channel survey of this region.

The use of the ship was offered by a delegation of the Academy of Sciences of the USSR under the leadership of Professor V.V. Beloussov, as a part of a more extensive proposal for geological/geophisical research in cooperation with Icelandic scientists. The cruise in question was discussed by members of Orkustofnun (National Energy Authority) and Dr. Zverev at their meeting in Reykjavík 3.7.85 and a preliminary plan was decided on. At the time it was not certain if or when the cruise would take place, but it was confirmed in a telex to Orkustofnun dated 10.11.85, and the approximate timing by 2.12.85. The duration of the survey will be between 20.21.86 and 4.2.86. 2

Planned survey lines

The plan for seismic lines is designed to investigate the areas off the southern coast where sediments are thought to be present. Water depths vary from over 1000 m in the deep to 100-200 m on the shelf. The final version of the plan is shown in fig 1. This map does not however show ship tracks in details. Combined track length is about 600 km.

Line S-1-86 is the longest and is along the RRISP deep seismic profile from 1977. The present survey will better define the uppermost crustal structure of this profile, and thus provide constraints for further

interpretation of the deep structure. Lines S-2-86 and S-3-86 are laid perpendicular to line 1, for investigating the volcanic zone of Vestmannaeyjar. There is evidence that sedimentary formations underlie the volcanic eruptive formations.

The other lines, S-4-86 to S-7-86, are placed further to the east, where the shelf has different characteristics. This area is not affected by recent vocanism, the slopes are steeper, and submarine valleys extend out to the shelf edge. The shelf edge is believed to have prograded by a few kilometers in this area by deposition of sediments, but on the inner part of the shelf sedimentary cover is thought to be thin or nonexistant. The lines are placed to transect the slopes and outer shelf. On the shelf the lines are laid along the submarine valleys, in an attempt to reduce the disturbing effect of multiple reflections within the water layer. The valleys (deeps) are about twice as deep as the banks between them, and there are indications that the sea bottom is made of softer deposits in the valleys, wrereas basltic basement or glacial morain deposits outcrop on the banks.

Table 1 lists details of the seismic lines. I propose that the lines should have the following priority: S-1-86, S-2-86, S-3-86, S-6-86, S-5-86, S-4-86, S-7-86.

Table 1. Seismic reflection lines planned for S-Iceland shelf 1986 survey. Line numbers, coordinates of line ends, and approx. length of lines.

line no.	length (km)	latitude deg min	longitude deg min	latitude deg min	longitude deg min
S-1-86	150				
S-2-86	90				
S-3-86	25	Not Calculated.			
S-4-86	90				
S-5-86	90				
S-6-86	90				

Survey parameters

As the water depth will be up to 2000 m (nearly 3 s in twt), where the sediments may amount to up to 2 s, 5 s would be a minimum save registration time. I assume that 4 ms sampling interval will be used, but these and other parameters must be discussed on board. Gravity will be recorded, preferably all the time and not only on planned lines. Hopefully an magnetometer will be on board.

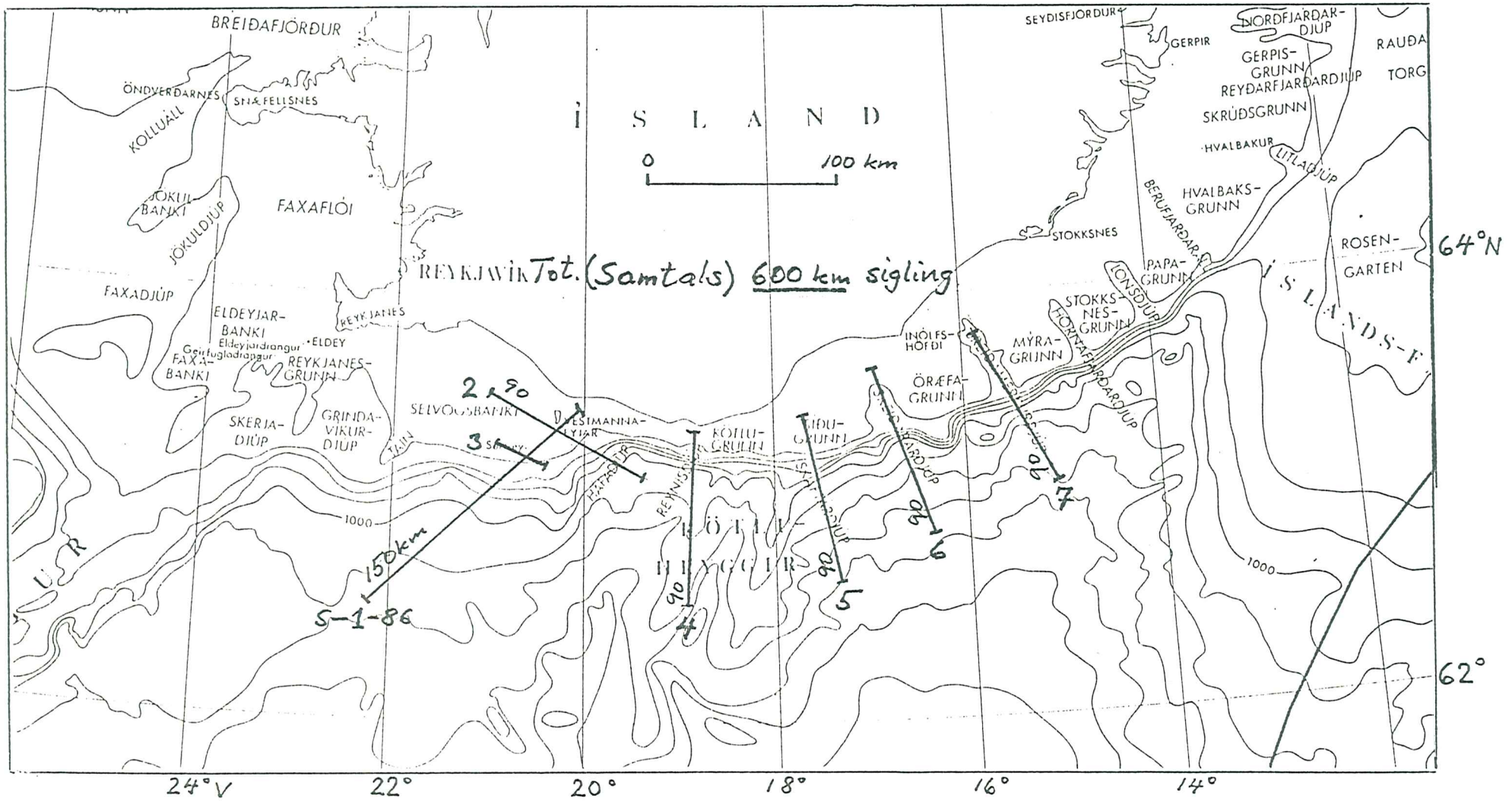
Calibration of gravimeter

Orkustofnun can provide a gravity tie between the ship in Reykjavík harbour and a reference station. The national network has recently been calibrated to the IGSN-71 datum.

Administrative matters

Landhelgisgæslan (Coast Guard) has been contacted. According to their estimates it is unlikely that fishing activities will interfere with the survey, as the net-fishing season can hardly have started at this time. At the time of the survey a warning to ships will be broadcast by radio.

A short note will be sent to the Icelandic news media describing the extent and purpose of the cruise, and the scientific cooperation of the two countries.



1. Planned ship`s tracks for R/V Ak. Golitzyn, January/February 1986.

7.1.86, Karl Gunnarsson.