

Appendix 1:

Acquisition of refraction and multichannel reflections seismic data off the Faroe Islands and optionally off West Greenland

Technical requirements

1. Survey vessel

Use of a large seismic surveying vessel will be required. The identity and complete operational and technical details of this vessel must be fully stated in the tender.

2. Source array

Two source arrays will be required:

1. For refraction work

A large (min. 5000 cu. in., preferably larger) fully functioning air gun will be required. The tuning of the array is not the prime issue for this array, size is. Evidence of system performance must be fully documented and supplied with the tender. Monitoring capabilities and drop out specifications must also be specified to maintain size. The system will be operated with:

- 200 m shot point interval
- a gun depth suited to the array

2. for multichannel reflection work

A large (preferably larger than 4500 cu. in.) fully functioning air gun array (preferably sleeve guns) will be required, having:

- Good primary to bubble characteristics
- Strong peak-to-power output
- A basically flat spectrum within the recording band
- Suitable geometry for the area – state ability for wide tow

Evidence of system performance must be fully documented and supplied with the tender. Monitoring capabilities and drop out specifications must also be specified. The system will further be operated with:

- 25 m shot point interval
- a gun depth suited to the array (6-8 m)

3. Seismic streamer

A digital seismic streamer of a make suitable for the hydrography of the survey areas should be used. In addition, this streamer cable should be of length 6000 active metres. Complete streamer and hydrophone specifications must be stated. Further operational parameters are:

- 12.5 m group length
- 9 m cable depth

It should be noted that cable depth, feather angle and noise parameters are of primary importance and will be strictly controlled.

4. Recording system

Technical documentation for the corresponding recording system must also be given. Minimum requirements are:

- 2 msec sample rate
- 8 / 10 sec record length
- Low-cut filter: 3.5 Hz/out

5. Onboard processing system

An onboard processing system has to be in operation and utilised in full during the survey. Details, including examples, shall be supplied.

6. Potential field data

An additional price shall be given for acquisition and post processing of gravity and magnetic data.

7. Navigation

The primary navigation for the survey shall be DGPS. The applicant should demonstrate that the complete system configuration proposed, including in-the-water location systems and accurate time logging, is appropriate and sufficient for the survey areas.

It is required to log all shot times with an accuracy of 1 ms of absolute time (GPS time) in order to utilise data recorded on Ocean Bottom Instruments (OBS). For the acquisition of refraction data these data must be available at sea for OBS data downloading purposes on the OBS deployment/recovery vessel.

Navigation tapes must be supplied in the appropriate UKOOA format on both IBM 3590 cartridges and 8 mm Exabyte tapes.

Paper and film plots of navigation data for the Faroes area must be supplied at a specified scale and projection.

8. Tape formats

SEG and UKOOA tape formats shall be produced at all stages. Cost uplift for dual tape production shall also be given; onboard copying is acceptable. IBM 3590 cartridges will be preferred as media for recording of field data.

9. Echosounder

A calibrated echosounder capable of recording waterdepths to 3000 m is preferred.

10. Acquisition period

The work is to be coordinated with another vessel doing OBS deployment and recovery, and the survey must be initiated with mobilisation complete on 01 June 2004. Penalties for delayed mobilisation will be defined.

11. Survey programme

The minimum survey will consist of an 700 - 800 km line (no line change) in the area south of the Faroe Islands, to be acquired twice; once with only the large refraction gun array and no streamer, and once for multichannel reflection seismic. The order of acquisition will be 400 + 100 km overlap (total 500 km) refraction acquisition, then reconfigure to reflection seismic gun array and acquire the 700 - 800 km line, reconfigure to refraction gun array and acquire the last 300 - 400 km + 100 overlap (total 400 - 500 km) refraction with no streamer.

A provisional A4 survey layout map is included as Fig. 1. Both an additional refraction and reflection seismic programme in the same area is possible.

The optional West Greenland program will consist of minimum 1000 km of reflection seismic data. A provisional A4 survey layout map is included as Fig 2. An additional reflection seismic program in the same area is possible.

12. Quality control

The tender must include complete internal survey quality control parameters to be used for this project, with the appropriate quality assurance manuals and procedures. GEUS will have an onboard quality assurance representative to monitor and approve program performance.

13. Final acquisition report

An acquisition report ("Final Report", separate for the Faroe Islands programme and the optional West Greenland programme) shall be supplied not later than 2 weeks after completion of the survey. The report shall summarise the work, focusing on data quality and problems encountered and must include recommendations to improve data quality. Details on the content of the report will be given in the draft acquisition contract.

14. Price quotations

The tenderer shall use the format below to give a price quotation for the seismic acquisition, based on the scope of services given above. Bids not complying with this format may be rejected.

Fixed prices:

Mobilisation/Demobilisation	Lump Sum DKK
Acquisition of 7-800 km multichannel seismic data offshore the Faroe Islands	
	DKK/Km
Acquisition of 900-1000 km (7-800 km line length plus overlap) refraction seismic (shots only), including reconfigure time from refraction array to reflection array and back	
	DKK/km

Optional additional seismic acquisition offshore the Faroe Islands 0 - 800 Km DKK/Km

For the optional West Greenland survey:

Added Mobilisation/Demobilisation Lump Sum DKK

Acquisition of 1000 km multichannel data offshore West Greenland DKK/Km

Optional additional seismic acquisition offshore West Greenland 0 - 1000 Km DKK/Km

Day rate:

Acquisition of 7- 800 km seismic data

Refraction shooting (shots only) DKK/day

Multichannel reflection seismic DKK/day

Reconfigure time DKK/day

Standby DKK/day

Optional additional multichannel seismic acquisition 0 - 800 Km DKK/day

For the optional West Greenland survey:

Multichannel reflection seismic DKK/day

Standby DKK/day

Optional additional multichannel seismic acquisition 0 - 1000 Km DKK/day

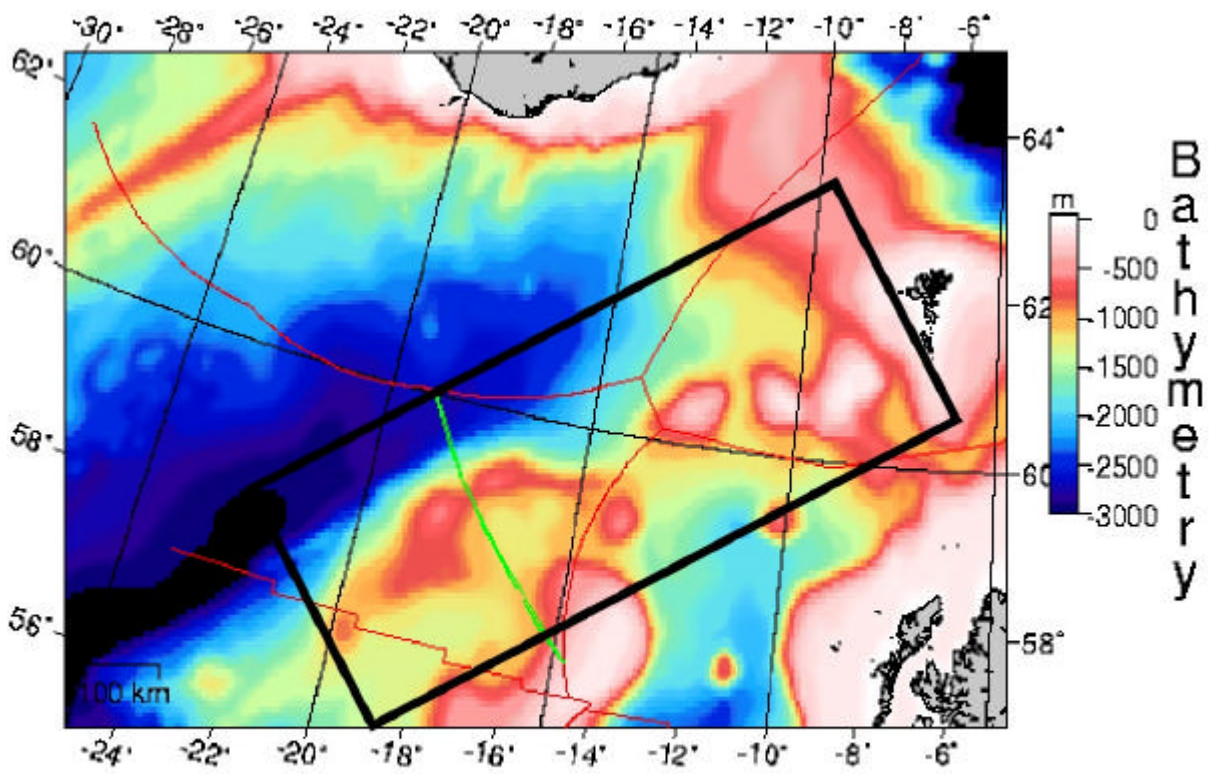


Fig 1. Area of operation off Faroe Islands.

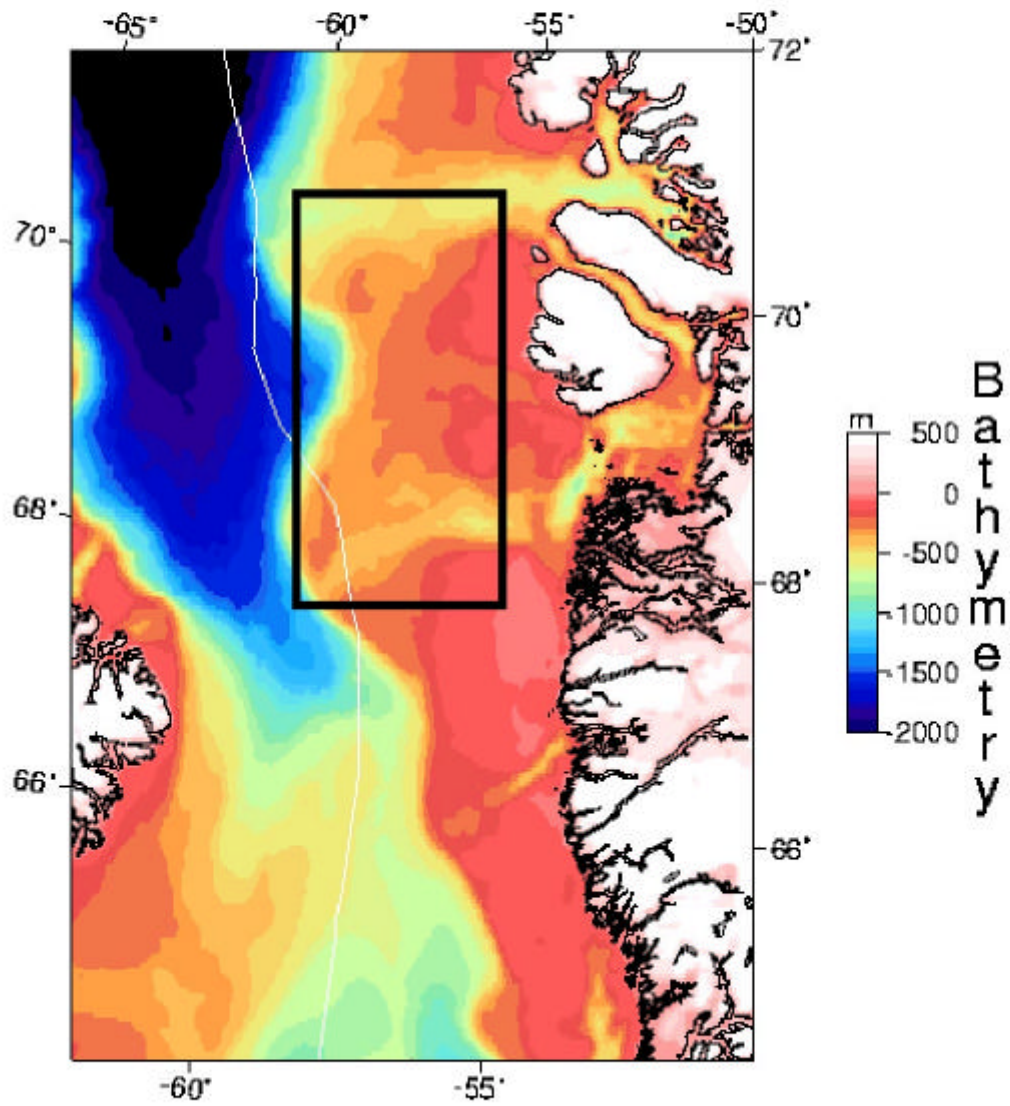


Fig 2. Area of operation in West Greenland. The border to Canada is marked,