

4. PRE-CRUISE SITE SURVEY¹

Shipboard Scientific Party²

To prepare for Leg 152 drilling, approximately 2800 km of high-resolution, seismic-reflection profiles and marine magnetic data were acquired in an area centered around the proposed ODP drilling sites off the coast of East Greenland (Fig. 1).

These seismic measurements were performed from the *Magnus Heinasson*, sailing from Tórshavn, Faeroe Islands. The seismic equipment was supplied from the Department of Earth Sciences, University of Aarhus, and from Institut für Geophysik, University of Hamburg.

Acoustic pulses were generated by means of a cluster of four synchronously fired, 40-in.³ sleeve guns (Halliburton). The operating pressure was about 100 bars. This gun-cluster was towed at a depth of approximately 2 m. Depending on the water depth, the firing rate was 5 or 7.5 s, which corresponds to shot distances 12.5 and 18.75 m, respectively, at a cruising speed of 5 kt. The acoustic signature (derived as an average from 100 consecutive shots) is shown in Figure 2.

Data were recorded by a 24-channel Teledyne streamer, with a group spacing of 6.25 m and a total active length of 143.75 m. Data acquisition was by an EG&G Geometrics ES2420 instrument having a sampling rate of 0.5 ms. A 360-Hz anti-alias filter was applied before data were stored on nine-track tapes in multiplexed SEG-D format. Navigational data were obtained by means of the ship's GPS-receiver.

Processing was performed at the University of Aarhus on a ND-570 computer using the software package Norseis, developed by GECO, Norway. The data were resampled to 1 ms. Because of the short streamer length compared to the depth of investigation (down to about 3 km), no velocity information could be derived from the data. Thus, a velocity model having spatially invariant velocities assigned to the different sequences was applied for correcting the normal move out. The stacking fold varied between six on the shelf and four outside the shelf.

The data are displayed with a horizontal scale of 1:25,000 and with a vertical scale of 1 s = 20 cm. An example of the seismic data at proposed Site EG63-2 is shown in Figure 3.

We estimated that vertical resolution in the shallow part of the sections was about 5 m. The sedimentary cover generally was penetrated and, occasionally, internal reflectors were seen in the volcanic basement.

The comprehensive seismic coverage along the proposed Site EG63-transect allows for a true three-dimensional understanding of the sediments drilled during Leg 152, and a seismic stratigraphic study based on our initial drilling results is planned for the Leg 152 *Scientific Results* volume.

The following institutions participated in the seismic survey: Geological Survey of Greenland, Geological Survey of Denmark, Institut für Geophysik, Hamburg, and Department of Earth Sciences, Aarhus. The survey was funded by the Danish Natural Research Council.

¹ Larsen, H.C., Saunders, A.D., Clift, P.D., et al., 1994. *Proc. ODP, Init. Repts.*, 152: College Station, TX (Ocean Drilling Program).

² Shipboard Scientific Party is as given in list of participants preceding the contents.

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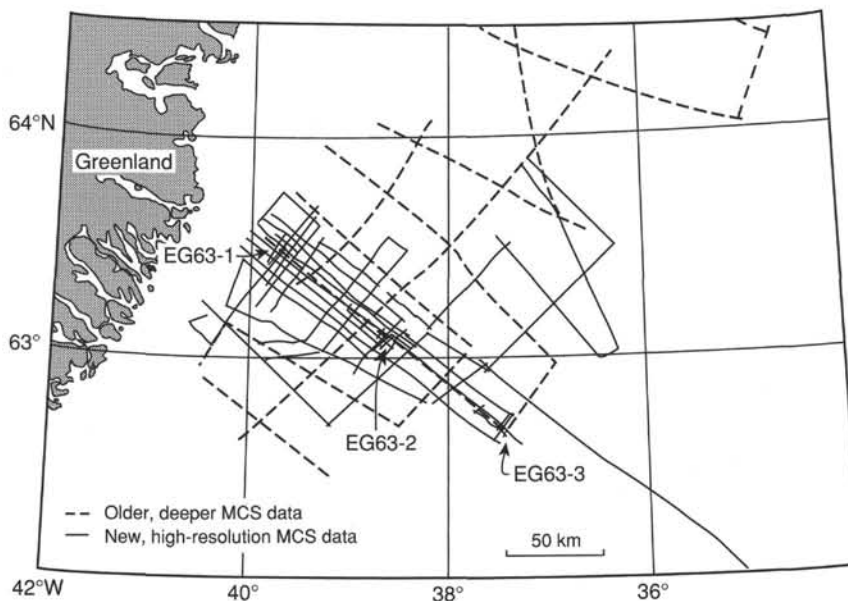


Figure 1. Location map.

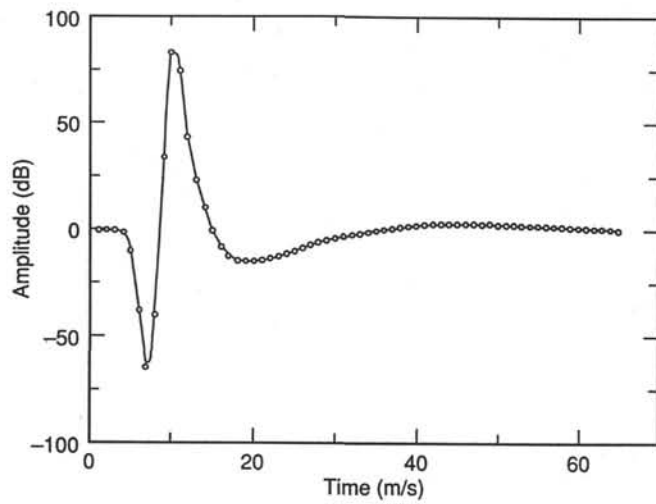


Figure 2. Acoustic signature derived as an average of 100 shots.

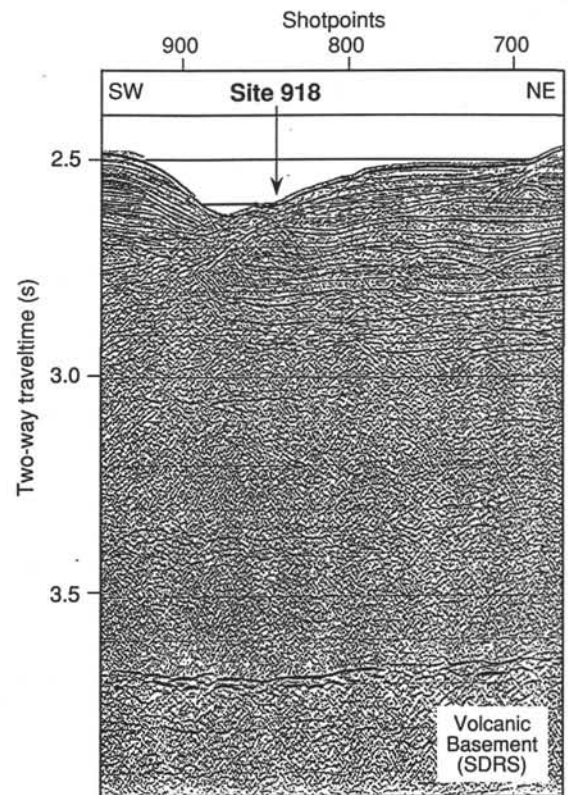


Figure 3. Seismic-reflection profile (EG92-14) at proposed Site EG63-2.

This page is a replacement for page 46 of the Initial Reports volume of the Proceedings of the Ocean Drilling Program for Leg 152. On page 46 in the book, the caption for Figure 2 was omitted.