

SCOTTISH MARINE BIOLOGICAL ASSOCIATION

DUNSTAFFNAGE MARINE RESEARCH LABORATORY

CRUISE REPORT

m.v. GORSETHORN

Cruise 1/1988

23 October - 6 November

1988

m.v. GORSETHORN, Cruise 1/1988

Duration of cruise: 0300 h 23 October - 0940 h 6 November 1988.
All times GMT

Locality: North Channel, Scottish continental shelf and
Wyville-Thomson Ridge

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Aims:

- 1) To make CTD transects and collect large volume water samples for radiocaesium analysis between the shelf-edge and the Sound of Mull and between Copeland and Portpatrick.
- 2) To obtain water samples and sediment cores by Craib corer at thirteen sites between Sellafeld and Dounreay.
- 3) To service the current meter mooring in the Tيرة Passage.
- 4) To retrieve mooring N3, south of Faroe Bank and to work CTD sections in the vicinity of Faroe Bank and the Wyville-Thomson Ridge.
- 5) To work on the SMBA CTD section from Rockall across Anton Dohrn Seamount to the Scottish shelf-edge.

Narrative:

Oban and Lowestoft gear were installed on the ship at Albert Dock, Hull on Thursday 20 October. In discussion with Mr Read of Lowestoft it was agreed that the CTD winch was not suitable for the full length of the Lowestoft 5000 m cable and enquiries were made of Mr Innes, RVS Barry for a shorter length. For use at shelf stations a 200 m length from SMBA was available, and the Neil Brown CTD could be used in internal logging mode upon the hydrowire for deeper lowerings if necessary. During 21 October preparations continued, and Mr Innes confirmed that a 2000 m length of CTD cable could be sent to Milford Haven for collection by the ship on its passage to the North Channel. The hull transducer of the ship's Kelvin Hughes echo-sounder was found to be inoperative and a Simrad sounder was installed for use when stopped with a transducer lowered upon an arm over the ship's side.

Sailing had been scheduled for a.m. 22 October, but this was postponed firstly to the afternoon tide and then to the following morning due to engine room problems. These had been cured by 2200 h, and GORSETHORN sailed from Hull at 0300 h 23 October. Weather was fine and a MOD Hydrographic Department party was landed off Dover at 0230 h 24 October. The Lizard was passed at 0830 h 25 October and winds freshened to forces 6-7, southeasterly, towards evening. The call at Milford Haven to collect the CTD cable and blocks occupied from 2110 to 2200 h, after which the passage northward continued. GORSETHORN called off Amlwch to land an engineer at 1313 h 26 October, and following this a trial coring, CTD and

Niskin bottle station was worked. Difficulty was encountered with the corer due to the low speed of the winch (ca. 12 m/min). Lowestoft station A was reached at 2345 h, but the stern A-frame jammed and was not freed until 0345 h 27 October. Station A was completed and the Copeland-Portpatrick section begun. However, the A-frame continued to give cause for concern and the CTD winch was losing a good deal of hydraulic oil and at 0845 h, after completing station 2Z, it was decided to suspend work and communicate with the ship's owners with a view to obtaining repairs at a local port. It was agreed to make for the Firth of Clyde, and GORSETHORN berthed at Ardrossan at 2250 h.

New drive units for the CTD winch and a replacement hydrographic winch arrived at Ardrossan during 28 October, but A-frame problems persisted until the seals of the ram units were replaced during 29 October. Winches and A-frame were working satisfactorily by 2230 h and the ship sailed at 0215 h 30 October. A trial coring station was worked 3 n.ml west of Ardrossan at 0310 h with the new winch, and a good core was obtained.

Lowestoft coring and large volume water sampling stations B to E in the Firth of Clyde were worked in fine weather. Station F, a coring station in Kilbrannan Sound, was left to be worked at the end of the cruise in order to save time. G and H, in the Sound of Jura and Firth of Lorne respectively, were worked in the evening and the ship proceeded to station I overnight via the Sound of Mull. During 31 October I, J and K were completed through the Minches and course was set for the site of mooring N3, south of Faroe Bank.

In moderate swell and fresher winds GORSETHORN reached the mooring position at 1530 h 1 November. Despite good agreement between Decca and satellite fixes no response was obtained from the acoustic release. Two circuits of the position were made at 0.5 and 1.2 n.ml radius with the ship stopping in each octant to allow the deck unit transducer to be lowered, but no return signal was received. A CTD section from the mooring position to the south flank of the Faroe Bank was begun at 2113 h using the Neil Brown CTD upon the hydrowire and was completed at 0310 h 2 November, after which the ship returned to the mooring position. In daylight with excellent visibility the firing frequency was transmitted from 0800-0930 h in the near vicinity of the mooring site, but no response was obtained and no sign of the equipment was seen on the surface. A final visual search around the position was completed at 1000 h, when the ship set course for Lowestoft station M, in the western entrance to the Pentland Firth.

A good passage was made to M despite a moderate swell, and the station was completed at 0545 h 3 November. The last of the water sampling stations, L off Cape Wrath, was worked at 1200 h, and course was set for Barra Head. The southerly wind increased to forces 7-8 during the evening and by the morning of 4 November GORSETHORN was proceeding at reduced speed into a heavy swell and sea. With no early improvement in the weather expected, it was decided to make for station 6G of the Barra Head to Sound of Mull section, where some lee from Coll could be obtained. This station was reached at 1250 h, but despite more comfortable swell conditions, winds had reached forces 8-9, making it practicable to obtain surface radiocaesium samples only. The eastward stations of the section were similarly sampled, 1G off Ardmore Point being reached at 1540 h. The ship steamed southward via the Sound of Mull and Sound of Islay to complete the North Channel and Clyde sampling.

At station 2Z off Copeland Is., where radiocaesium had been sampled on 27 October, a repeat CTD lowering was made at 0549 h 5 November, with CTD profiles and radiocaesium sampling at 3Z to 6Z following during the morning. Surface radiocaesium and salinity samples were taken at station LS at 1315 h, and the ship headed for Kilbrannan Sound to obtain the remaining Firth of Clyde core at Lowestoft station F at 1645 h. Courses were then set for the eastern coast of Arran, and GORSETHORN lay off Irvine Bay at 2007 h. At 0725 h 6 November the ship steamed for Troon and berthed alongside at 0940 h. Both Oban and Lowestoft gear was landed, and staff left by 1200 h.

Results:

Aim 1): The CTD and radiocaesium sampling section in the North Channel was worked on 27 October (1Z and 2Z) and 5 November (2Z to 6Z). A surface sample between Larne and Stranraer (station LS) was collected on 5 November. Southerly gales prevented CTD and sub-surface sampling upon the shelf-edge to Sound of Mull section, but surface samples for radiocaesium analysis were collected at stations 6G to 1G (Lowestoft stations C4-C1) on 4 November.

Aim 2): Large volume water samples for Pu, Am, Cm, Np and Cs analysis were obtained as planned at the surface at 10 stations between the North Channel and the Pentland Firth and at the bottom at five selected stations. Cores were successfully obtained with the Craib corer at ten sites (seven of which were water sampling stations) and a test core from the Firth of Clyde was also kept. Initial processing of the water samples was carried out on board by Mr Blowers.

Aim 3): Recovery of the Tيرة Passage current meter mooring would have only been possible in calm conditions. Lack of time upon the northward passage and a southerly gale upon return gave no opportunity to attempt this aim. It is hoped to arrange recovery from CALANUS in December.

Aim 4): The site of mooring N3, to the west of the Wyville-Thomson Ridge, was visited on 1-2 November, but no acoustic contact could be made with the release. The release and bottom current meter of mooring N2, also deployed on 10 June 1988 on the southern flank of Faroe Bank, were recovered floating in early September by a Faroese fisherman, which may indicate unusually deep trawling activity or a period of particularly great stress upon these two moorings.

A CTD section was worked from the current meter position to the bank edge during 2113 h 1 November to 0312 h 2 November, using the Neil Brown 'Smart' CTD in internal recording mode upon the hydrowire. Warmer and slightly fresher water in the upper 60-150 m may have originated from the bank. At the three deeper stations Atlantic water occupied the water column beneath this to the maximum sampling depth of 600 m, but on the bank edge in 530 m Norwegian Sea influence was apparent in the bottom layers.

Aim 5): There was no opportunity to work any of the stations of the Anton Dohrn Seamount section.

Miscellaneous:

The expectations for the planned programme had to be reduced to fit the available facilities, but this is partly due to the fact that although the statement of the requirements was issued from SMBA in early April, misunderstandings meant that direct contact with shipowners only occurred during the five weeks before we joined the ship. This in turn restricted the availability of winches, cables, etc., from equipment hirers. The advantages of m.v. GORSETHORN were the large laboratory space with ample clean power supplies, a good aft working deck with hydraulic A-frame giving good clearance from the hull, and extremely willing officers and crew. For CTD profiling, Craib coring and water sampling work in shelf areas the ship was very satisfactory. Lack of a hull-mounted echo-sounder, due to a fault in the ship's fitted transducer was partly overcome by use of a borrowed MAFF pinger system, and no difficulties were found in working the CTD to depths of 600 m.

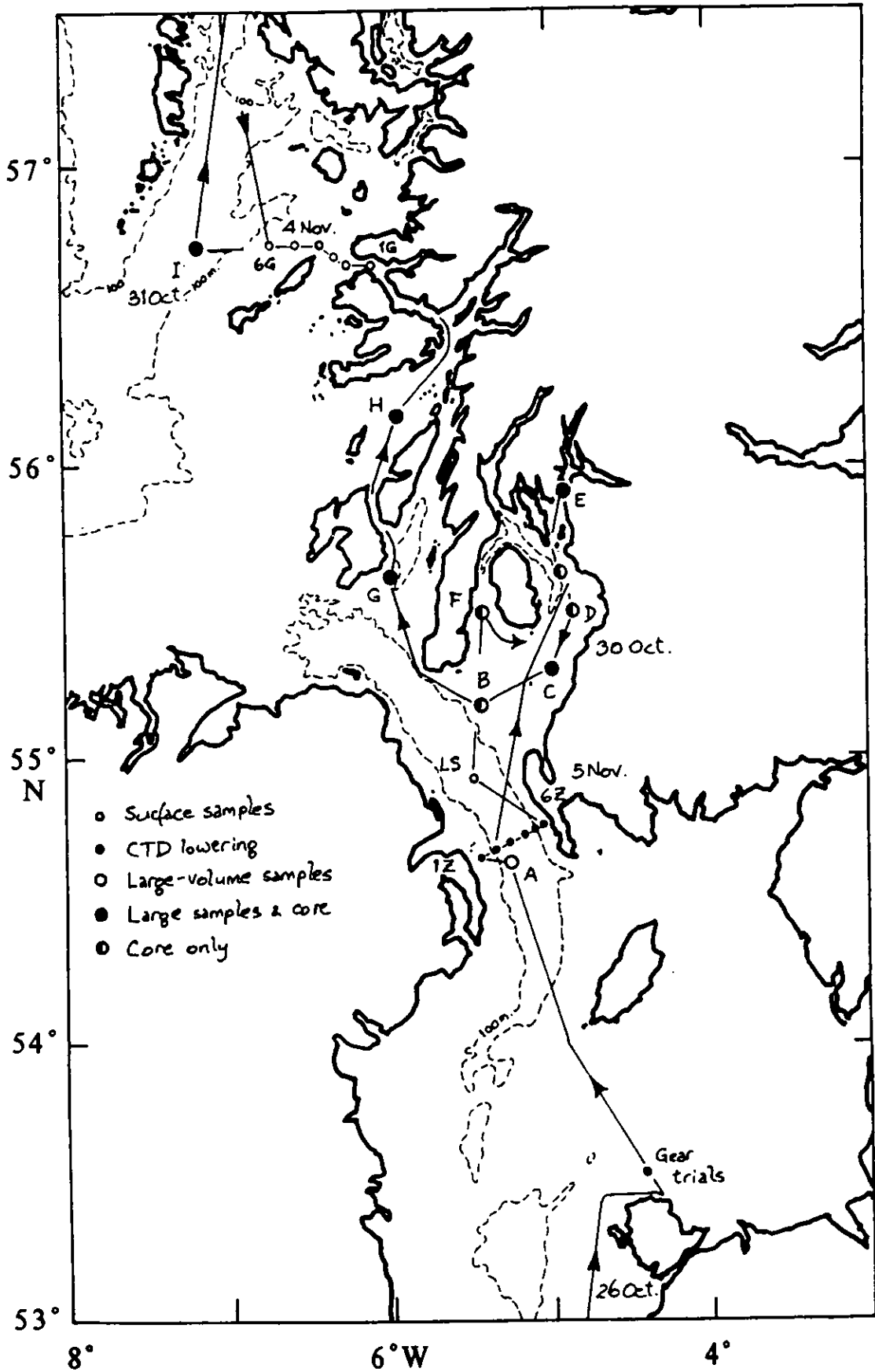
Given a deep echo-sounder and appropriate winches GORSETHORN would be very suitable for Seasoar tows and CTD work over deep water, but off-shelf work in which near-bottom sampling was of importance would be difficult in the absence of a fitted bow-thrusted unit.

The efforts of Captain Shaw and his officers and crew to provide the required facilities in the face of problems are gratefully acknowledged. The total crew of 11 gave excellent and cheerful service, with two men available on deck at all times.

D.J. ELLETT

9 November 1988.

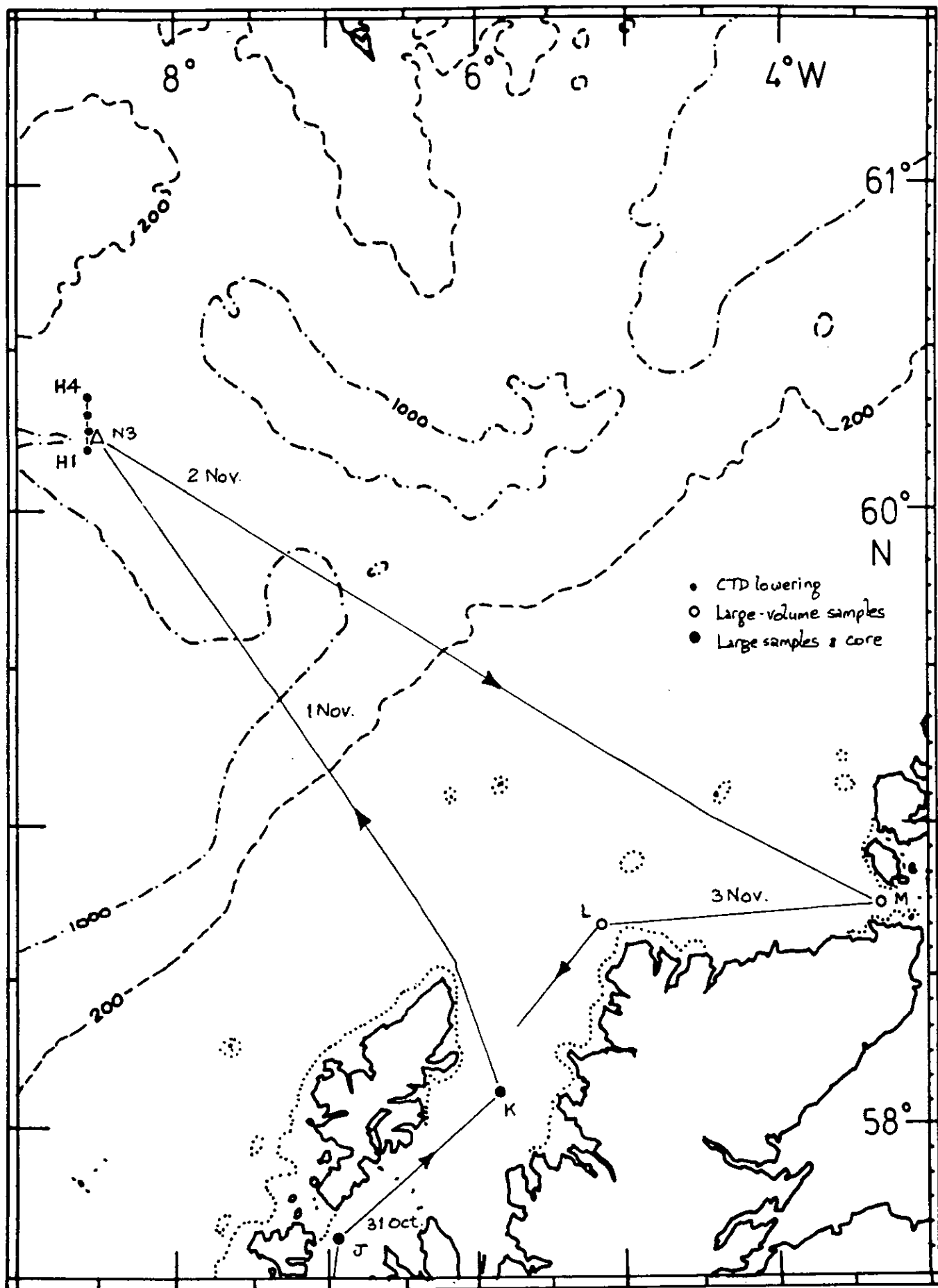
Figure 1. Ship's track (1)



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Figure 2. Ship's track (2)



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