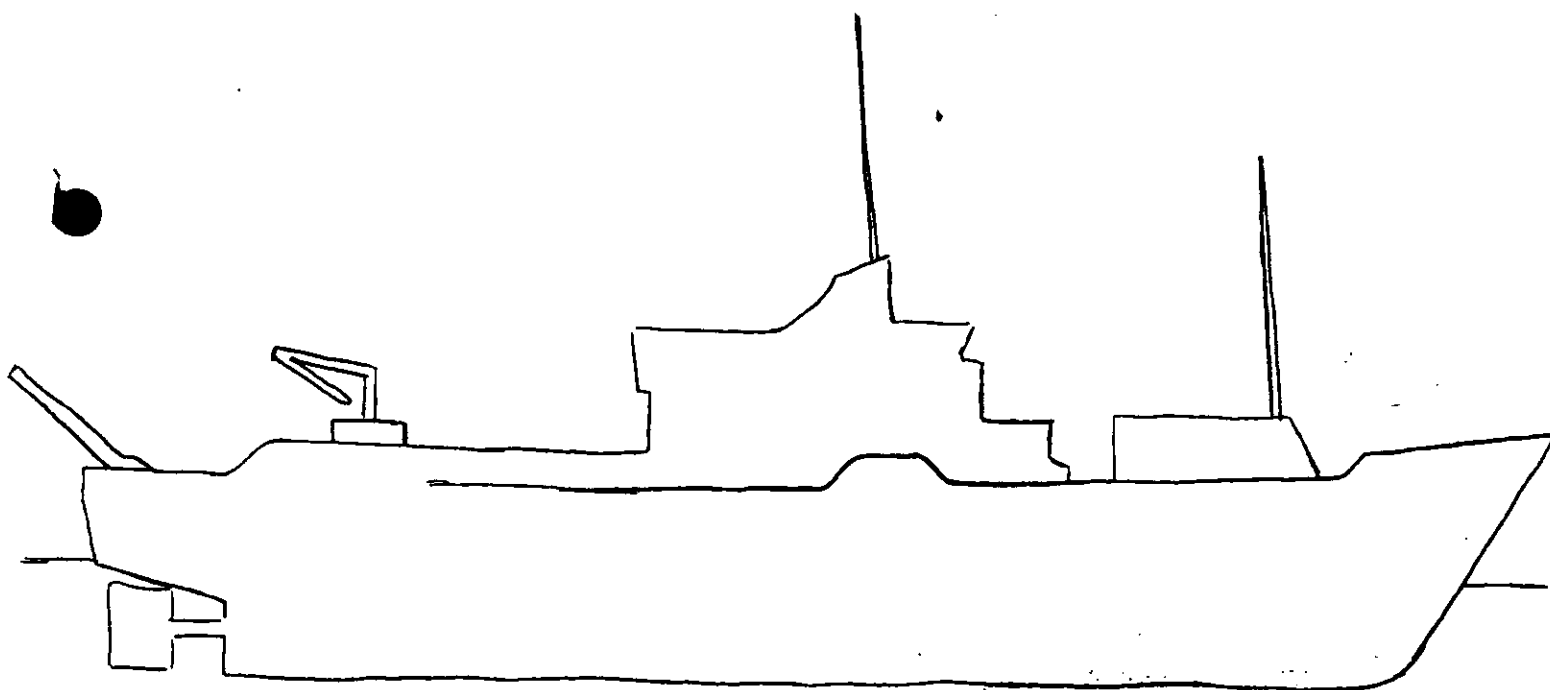


UNIVERSITY OF EDINBURGH

Department of Geology



Report on Cruise 6/80 of

RRS CHALLENGER

2-16 April, 1980

RRS CHALLENGER Cruise 6/80

Working area and cruise objectives

The original objective had been to fire three reversed seismic refraction lines in the mouth of Rockall Trough to investigate the deep crustal structure. This plan had to be abandoned at the last minute, however, because the bottom seismic receivers (PUBS) to be used were delayed in arriving back in the U.K. from the West Indies by dockers' strikes in the West Indies and the U.K.

Fortunately, underway geophysical surveying equipment had been requested from R.V.S., allowing an alternative cruise programme to be drawn up immediately. The revised objectives were to complete the surveying programme started in the mouth of Rockall Trough on SHACKLETON Cruise 3/79 to investigate the shallow structure of the Trough and the relationship of the Trough to Porcupine Abyssal Plain, Porcupine Bank and Rockall Bank. Continuous recording of bathymetry, gravity, magnetics and seismic reflection between $51\frac{1}{2}^{\circ}\text{N}$ and 55°N and $13\frac{1}{2}^{\circ}\text{W}$ and 20°W were planned.

Personnel

Last minute changes to the scientific party were necessary because of the change of plans, some technical staff and shotfirers no longer being required.

R.A. Scrutton	(Edinburgh University)	Principal Scientific Officer
Miss Joan Megson	(Edinburgh University)	
Miss Susannah Betts	(Edinburgh University)	
T. Furey	(University of Galway, for the Eire Government)	
A. Cumming	(R.V.S., Barry)	
J. Strangward	(R.V.S., Barry)	
E. Cooper	(R.V.S., Barry)	

Narrative

After a delay to allow higher rating contact breakers to be fitted to the

circuit supplying the compressor, CHALLENGER sailed from No.1 Dock, Barry at 2130A, 2 April. Good time was made in fair weather on a course directly to the survey starting point over Porcupine Bank at $52^{\circ}36'N$, $14^{\circ}00'W$. This point was reached in the afternoon of 4 April. Despite a southwesterly gale that was now blowing, equipment deployment went smoothly. Minor problems had been encountered on testing the PES, seismic recorders and data logger the previous day, but these had been resolved. Surveying began at 2100A using PES, gravimeter, magnetometer and seismic reflection and continued in improved, even beautiful, weather until 1330A, 7 April. Three short lines on the western side of Rockall Trough were to be run using a 1000 in³ airgun chamber rather than the 300 in³ normally used in an attempt to achieve better seismic penetration in that area. From 1715A, 7 April until 0850A, 8 April a 1000 in³ chamber was used with only marginal improvement to the records.

Surveying, using a 300 in³ chamber for the airgun, recommenced at 1140A, 8 April, and continued unbroken until 1345A, 13 April, during which time the weather deteriorated slowly, bringing gales on 11 and 12 April. Repairs to mistriggering by the airgun and air hose damage caused a loss of reflection record between 1245A and 1430A, 13 April. Thereafter, surveying continued uninterrupted until work was suspended at 1330A, 14 April, although the airgun mistriggering was not completely cured. The weather was again fair when all the outboard equipment was recovered.

A course was set for Ardrossan at 1500A, 14 April and CHALLENGER docked at 0900A, 16 April.

Equipment used

Magnavox 1107 satellite navigator

Colnbrook EM log

IOS Precision echo sounder

Barringer proton precession magnetometer

LaCoste and Romberg S86 gravimeter

Bolt PAR airgun with 300 in³ or 1000 in³ chamber operating at 2000 psi.

2 Channel Geomechanique hydrophone array (output summed).
EPC 3200 seismic recorder (15-100 Hz band width)
EPC 4100 seismic recorder (5-80 Hz band width)
Decca MagLog digital data logger.

Results

Approximately 2600 km of good quality bathymetric, gravity, magnetic and seismic reflection data were obtained along the tracks shown on the attached sketch map. All the bathymetric, gravity and magnetic data were logged digitally for post-cruise processing.

MIAS 2435

20W
RRS CHALLENGER CRUISE 6/80

3W

16

14W

54N

52N

