



# The University College of Wales, Aberystwyth

## Coleg Prifysgol Cymru

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### CRUISE REPORT R.R.S. SHACKLETON 9TH - 25TH JUNE 1982

The objective of this cruise was a regional geophysical survey of the continental margin in the area around the Hebrides Terrace Seamount. The surveying consisted of gravity and magnetic field measurements, echo-sounding and air-gun single channel reflection profiling. As the area in the immediate vicinity of the seamount had been surveyed previously (R.R.S. John Murray Cruise 4/79) the main survey tracks shown on the accompanying diagram were laid out to give an overall coverage of the area of interest ( $9^{\circ} - 11^{\circ}W$ ,  $56^{\circ} - 57^{\circ}N$ ). Eleven east-west and six north-south survey lines were obtained in weather which varied from little or no wind to wind force seven, the majority of the work being carried out in <sup>nd</sup>wide force four to five. For the seismic reflection profiling an air-gun array consisting of three 40 cubic inch and one 20 cubic inch guns were used at a firing rate of four seconds. A Flexitir hydrophone array with two active sections was used to receive the reflected signals. A short reversed refraction line was shot across the top of the seamount using two one thousand cubic inch air-guns as the seismic source and disposable sono buoys. One large block of basalt and sundry pebbles were dredged from a site on the southern flank of the seamount, however an attempt to dredge the western flank resulted in the dredge and two thousand metres of the main warp being lost. Technical problems, both mechanical and electronic encountered during the cruise were of a minor nature and were promptly dealt with by Messrs. Smith and Gallon.

The results of this cruise will be combined with those of the R.R.S. John Murray Cruise 4/77 and published in due course.

#### Cruise Statistics

Passage Time		58 hours
Bad weather	down-time	30 hours
Equipment	down-time	0 hours
Scientific time		295 hours
Line nautical mileage of surveying		1407

### Scientific Complement

Dr. R.J. Whittington	Senior Scientist,	Department of Geology, U.C.W.,	Aberystwyth.
Mr. J. Millson	Scientist	"	"
Mr. T. Lewis	"	"	"
Mr. H. Griffiths	"	"	"
Mr. P. England	"	"	"
Mr. I. Preece	"	"	"
Mr. J. Wallace	"	"	"
Mr. J. McKenzie	"	"	"
Mr. V. Casey	Irish Observer,	Department of Geology, University College,	Galway Ireland.
Mr. K. Smith	Technician	Research Vessel Services,	Barry
Mr. M. Gallon	"	"	"

### Summary Cruise Diary

#### 8th June

All equipment loaded and connected up under the direction of Messrs. Smith and Gallon in Ardrossen Harbour. Aberystwyth party arrived in the late afternoon and Mr. Casey in the evening.

#### 9th June

Vessel left Ardrossan at 06.00 hours and made passage in excellent weather. At 18.00 hours a sparker and hydrophone were deployed and after some experimentation with flotation arrangements a sparker survey line was run across part of the Malin Sea in deteriorating weather conditions.

#### 10th June

At 8°40'W commenced a sparker run northwards in poor conditions. By 08.00 hours the vessel was forced into taking a E-W course. A number of short E-W lines were run across the 200-500 metre isobaths during the day with the sparker until 18.00 hours when near gale force winds occasioned retrieval of all equipment and the vessel hove to for the night.

#### 11th June

At 06.00 hours the Flexitir hydrophone array was streamed and the air-gun array deployed. After some experimentation the vessel commenced a survey line to the west along 56°44'N. Conditions during the day varied between force four and six.

#### 12th June

Continued surveying E-W lines all day and night in winds of between force four and six.

#### 13th June

Continued surveying E-W lines in improving weather conditions.

#### 14th June

Continued surveying E-W in good weather conditions.

#### 15th June

Continued surveying E-W lines in deteriorating weather conditions.

16th June

Continued surveying E-W lines in moderate weather conditions.

17th June

Completed E-W lines during the day and started N-S lines in moderate weather conditions.

18th June

Weather deteriorated during the night to a full gale. All gear recovered at 09.00 and vessel hove to for the rest of the day and night.

19th June

Vessel rigged for dredging after breakfast and a dredge carried out on southern flank of seamount in 1700 metres of water. One large block of basalt and various pebbles recovered. At 15.00 hours the vessel moved to the western flank of the seamount and began a dredge in 1400 m. of water. Very good indications of dredge snagging on bottom until main warp broke leaving dredge and 2000m. of wire on the seabed. At midnight air-gun array and hydrophone deployed and surveying N-S lines re-started.

20th June

Continued surveying until late afternoon when the air gun array was replaced by two one thousand cubic inch air guns and a refraction line run across the seamount using disposable sonobuoys. At midnight the large air guns were replaced by the air-gun array and a N-S survey line commenced.

21st June

Continued surveying N-S lines in good weather.

22nd June

Continued surveying N-S lines in deteriorating weather conditions. At 18.00 hours all gear retrieved and the vessel made passage towards the North Channel.

23rd June

On passage in poor weather.

24th June

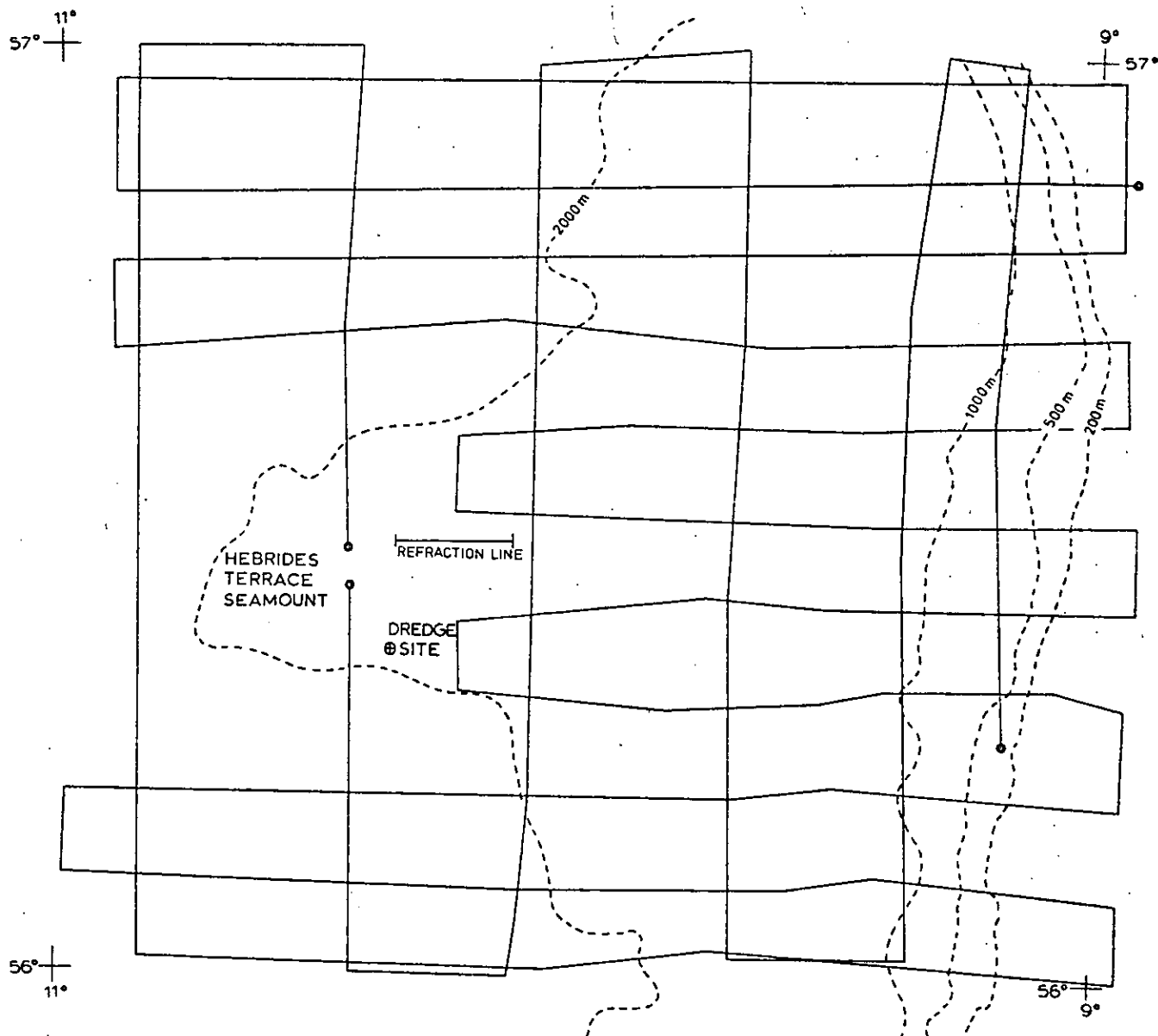
On passage in poor weather.

25th June

Arrived Research Vessel Bay, Barry at 07.00 hours.

Acknowledgements

It is a pleasure to acknowledge the assistance of R.V.S. staff before and during this cruise. In particular I would like to thank Mr. Chris Adams, Mr. Ian Innes and Mr. Ken Robertson for organisation and advice prior to the cruise and Mr. Mike Gallon and Mr. Kevin Smith for their expertise during the cruise. The success of the cruise is also due in no small way to the advice and cooperation of the Officers of the R.R.S. Shackleton, especially Captain Geoff Long and 1st Officer Dennis Coverdale.



TRACK CHART R.R.S. SHACKLETON CRUISE 5/82 9<sup>th</sup>-25<sup>th</sup> JUNE 1982. GRAVITY, MAGNETICS AND AIR GUN PROFILING.  
 Dr. R.J. WHITTINGTON, DEPARTMENT OF GEOLOGY, UNIVERSITY COLLEGE OF WALES, ABERYSTWYTH.