

INSTITUTE OF GEOLOGICAL SCIENCES
MARINE GEOLOGY UNIT

Report No. 83/8

Cruise Report

m.v. Whitethorn Leg 3 - Bressay Bank

11th - 25th May 1983

by

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INTRODUCTION

The purpose of this leg was to commence a routine sampling survey of the Bressay Bank Sheet (59°N00°), to the east of Fair Isle. Nearly two-thirds of the planned vibrocorer and gravity corer sites were completed due to the good weather conditions that prevailed throughout, with only a few hours when vibrocoreing was not possible.

PERSONNEL

J Chesher	Principal Scientist
A Fyfe	Day Geologist
H Robertson	Surveyor
M McLaughlin	Day Laboratory
W Lonie	Technician
N Campbell	Technician
A Skinner	Night Geologist
J McGuigan	Night Deck
M Dawkins	Geochemist

RESULTS

A total of 198 stations were occupied as follows :

Number of Shipek Grab	198
Number of Sediment Gravity Corer	135
Number of Vibrocorer	63

TIME ANALYSIS

The time utilisation breakdown for this leg was as follows :

Time on passage	8.4%	
traversing	51.8%	Working Time
anchoring	16.3%	
on station	23.3%	
IGS vibrocorer	0.2%	Down Time

EQUIPMENT PERFORMANCE

The comments below are for information and improvement purposes only, rather than a criticism of equipment performance, since the number of stations occupied during the leg is evidence of the satisfactory nature of the equipment functions.

The ship and ship's equipment was satisfactory throughout the cruise apart for some problems of starting and running of the A frame power packs under load caused by contaminated fuel. . This will be rectified during the next port call when the necessary time is available to effect the repair.

The negligible downtime on the vibrocorer was caused by water in electrical function box, the whole unit being replaced by a spare. The loss of shipek grabs on the previous leg and at the beginning of this leg was eventually diagnosed as due to rotten wire which although cut back at the end of the last leg required a further 300 metres of wire to be removed before fresh wire was available for use.

It should also be noted that the gravity corer braidline rope has now reached a state of wear on the outer sheath that a splice cannot be satisfactorily made. A bowline knot changed every two days to prevent significant wear will act as a temporary measure to extend the life of the rope prior to replacement.

The core camera, namely Canon AG1 is very heavy on internal batteries, using one on a leg for only 3 or 4 films taken. This would bear further investigation as the normal camera life is 1 year, perhaps taking 20 - 30 films.

GEOLOGICAL RESULTS

The surface sediments consisted of a uniform cover of fine olive sands less than 1 metre in thickness across the entire area. The shell content was variable but mainly consisted of bivalves, occasional gastropods, scaphlopods and abundant forams. Beneath the surface sediments is a variety of Quaternary lithologies consisting of: extremely well rounded, well sorted thixotropic sands, tough pebbly

boulder clays, soft sulphide rich grey green muds, soft grey muds, and compact overconsolidated grey clays often interbedded with fine grey sands. The interrelationships and geological interpretations of these complex lithologies is not possible at this stage of the investigations.

CONCLUSIONS

This proved to be a highly successful leg in all aspects, and given reasonable weather it should be possible during the next leg to complete the marine survey of the Bressay Bank Sheet.

ACKNOWLEDGEMENTS

Due acknowledgement is given to Captain Roger Vine and the officers and crew of the MV Whitethorn for all the cooperation and assistance given to IGS staff during this leg of the survey operation.

APPENDIXShips LogThursday 12th

0000-2000 In port Scrabster, routine port call
2000-2400 Sailed from Scrabster, en route to Bressay Bank

Friday 13th

0000-1330 En route to Bressay Bank
1330-2230 Vibrocoring Bressay Bank Sheet SW
2230-2400 Routine sampling Bressay Bank SW. Pot plug on vibrocorer
pulled through retaining ring.

Saturday 14th

0000-0800 Routine sampling Bressay Bank SW. Gravity corer lost
due to rope parting above splice when pulling out of
seabed.
0800-2400 Continued routine due to southerly weather force 6,
after attempting to anchor at vibrocorer site.

Sunday 15th

0000-0800 Routine sampling Bressay Bank SW and NW
0800-1930 Vibrocoring Bressay Bank SW but marginal weather conditions
1930-2400 Routine sampling on a close grid on Bressay Bank SW. Shipek
lost in heavy roll by catching on ship's rail.

Monday 16th

0000-0730 Routine sampling Bressay Bank Sheet SW and NW
0730-1200 Vibrocoring Bressay Bank SW. Marginal weather conditions
1200-1700 Routine sampling
1700-2300 Vibrocoring Bressay Bank SE
2300-2400 Routine sampling Bressay Bank SE and SW

Tuesday 17th

0000-0730 Routine sampling Bressay Bank SE and SW
0730-2300 Vibrocoreing Bressay Bank SE and SW
2300-2400 Routine sampling Bressay Bank SE and SW

Wednesday 18th

0000-0700 Routine sampling Bressay Bank SE
0700-2230 Vibrocoreing Bressay Bank SE
2230-2400 Routine sampling Bressay Bank SE

Thursday 19th

0000-0730 Routine sampling Bressay Bank SE
0730-2330 Vibrocoreing Bressay Bank NE. Shipek grab lost due to catching on ship's rubbing streak, Shipek wire diagnosed as weak after load test. 250 metres run off and discarded in order to use fresh wire. Load tested to 3000 psi on new part of wire.
2330-2400 Routine sampling Bressay Bank NE

Friday 20th

0000-0730 Routine sampling Bressay Bank NE
0730-2130 Vibrocoreing Bressay Bank NE. Fault in electrical relay box on vibrocorer on last site.
2130-2400 Routine sampling Bressay Bank NE

Saturday 21st

0000-1200 Routine sampling Bressay Bank NE and SE. Heavy swell, continued routine sampling.
1200-2330 Vibrocoreing Bressay Bank SE
2330-2400 Routine sampling Bressay Bank SE. Power packs faltering on last sites due to contaminated fuel.

Sunday 22nd

0000-0730 Routine sampling Bressay Bank SE

0730-2330 Vibrocoreing Bressay Bank SE
2330-2400 Routine sampling Bressay Bank NW

Monday 23rd

0000-0730 Routine sampling Bressay Bank NW
0730-2300 Vibrocoreing Bressay Bank NW
2300-2400 Routine sampling Bressay Bank NW

Tuesday 24th

0000-0730 Routine sampling Bressay NW
0730-1230 Vibrocoreing Bressay NW
1230-2400 Steaming en route to Scrabster

Wednesday 25th

0000- Steaming en route to Scrabster
2400 In port, Scrabster, routine port call