

INSTITUTE OF GEOLOGICAL SCIENCES

Marine Geology Unit

Internal Report No. 81/13

WHITETHORN SURVEY - LEG 12

2nd September - 16th September
1981

by

J A Chesher

No. 81/13

1. Introduction

The purpose of this leg was to complete selected vibrocorer and gravity corer sites in the Central North Sea, namely on the Devil's Hole and Forties Sheets, and then to complete routine sampling in Caithness Sheet NW, and if time permitted to commence sampling the Sutherland Sheet.

All of the above objectives were achieved, the last four days spent sampling on the Sutherland Sheet. Weather was relatively good and in spite of south-easterly gales in the latter part of the leg, little time was lost due to the inability to sample along the sheltered south side of the Pentland Firth. Strong tides often made anchoring and station keeping in the Pentland Firth and along the N Scottish coast extremely difficult.

2. Personnel

J Chesher (Party Chief)
 D Evans
 E McElvanney
 N Ruckley
 C Graham
 J McGuigan
 P Wiggins
 W Lonie
 M Stewart (Geochemistry Unit)

3. Results

The number and type of sample stations occupied are tabulated below:

<u>Area</u>	<u>GS</u>	<u>VE</u>	<u>CS</u>	<u>CR</u>
Central N. Sea	48	12	36	
NW Caithness	81	13	57	11
Sutherland	36	19	17	

4. Geology

Since the sites in the Central N. Sea were selected for specific problems by the area geologist they will not be discussed here. However in general terms the NW Caithness Sheet comprised coarse shell sand/gravel in the eastern half of the area and became finer to the west with a marked decrease in shell content. The Pentland Firth area was mainly exposed bedrock with thin scatterings of shell sand. Generally the surface sediments were less than 0.2 metres in thickness except along the N Scottish coast where they reached up to 6 metres. Beneath the sand where penetrated, the material was either tough reddish pebbly boulder clay or soft pink brown buttery clays. In two vibrocores north of Thurso New Red Sandstone was recovered.

The northern part of the Sutherland Sheet was extremely variable in surface sediments ranging from coarse shell sands/gravel to fine well sorted quartz sands and well sorted lithic gravels. The shell sands predominated near the coast. Beneath the surface sediments were very soft buttery pink brown clays up to 3 metres thick overlying very tough pink brown pebbly sandy boulder clays.

5. Ships Log

Wednesday 2nd September to Wednesday 16th September, Central North Sea.

Wed 2 Sept

0000-2400 In port, Blyth, routine port call

Thur 3 Sept

0000-2400 In port, Blyth, routine port call. Departure delayed awaiting delivery of power cable.

Fri 4 Sept

0000-0900 In port Blyth
 0900-1800 Steaming to Central N Sea
 1800-2400 Vibrocoreing Sheet 56°N 00°E

Sat 5 Sept

0000-1030 Routine sampling Sheet 56°N 00°E
 1030-2400 Vibrocoreing sheets 56°N 01°E and 56°N 02°E.

Sun 6 Sept

0000-0200 Vibrocoreing sheet 56°N 02°E
 0200-0800 Routine sampling sheet 56°N 01°E
 0800-2330 Vibrocoreing sheet 56°N 01°E
 2330-2400 Routine sampling sheet 56°N 00°E

Mon 7 Sept

0000-0900 Routine sampling sheet 56N.00E
 0900-2200 Vibrocoreing sheet 56N 00E
 2200-2400 Completed Central North Sea, steaming to NW Caithness

Tues 8 Sept

0000-2000 Steaming to NW Caithness Sheet
 2000-2200 Vibrocoreing NW Caithness
 2200-2400 Routine sampling NW Caithness

Wed 9 Sept

0000-0400 Routine sampling
 0400-0700 Steaming into weather due to heavy swell and generator Rolls Royce stopped.
 0700-0900 Steaming to mainland coast for some shelter.
 0900-1630 Repairing voltage regulator to generator and recharging batteries in Dunnet Bay at anchor
 1630-1830 Vibrocoreing Dunnet Bay

Wed 9 Sept (Cont'd)

1830-2000 Steaming north into Pentland Firth to attempt
continuing vibrocoreing

2000-2400 Too heavy swell for vibrocoreing, commenced routine
sampling programme

Thurs 10 Sept

0000-0700 Routine sampling Sheet 58N 04W, Caithness NW

0700-2400 Attempted vibrocoreing but tide and wind too strong
(gale force 9 SE). Continued routine sampling

Fri 11 Sept

0000-0800 Steaming for shelter Dunnet Bay. At anchor Dunnet Bay

0800-2400 Vibrocoreing along N coast of Scotland W of Dunnet Bay

Sat 12 Sept

0000-0800 Routine sampling Caithness NW

0800-1400 Continued routine sampling during slack water through
Pentland Firth

1400-2400 Vibrocoreing Caithness Sheet NW

Sun 13 Sept

0000-0700 Routine sampling Caithness NW

0700-2400 Vibrocoreing Sutherland NE

Mon 14 Sept

0000-0700 Routine sampling Sutherland NW

0700-2300 Vibrocoreing Sutherland NW

2300-2400 Routine sampling Sutherland NE

Tues 15 Sept

0000-0700 Routine sampling Sutherland NE

0700-2200 Vibrocoreing Sutherland NE. (0800- fault on aft
winch power pack, broken pipe)

2200-2400 Steaming to Stornoway

Wed 16 Sept

0000-0700 Steaming to Stornoway

0700-2400 Stornoway, routine port call

6. Acknowledgements

Thanks are due to the master, John Harvey, and crew for all their assistance and to the IGS team.