

Report on Leg 5 of
Cape Shore Programme
Cruise No. 78/CS/06
16 - 29 June 1978

by

D Evans

J Chesher

CONTENTS

	<u>Page</u>
Introduction	1
Personnel	1
Summary Log	1
Geological Assessment	4
Equipment Performance	5
Conclusions	6

Table I Time Utilisation Analysis

Fig. 1 Location Map

Introduction

The purpose of this leg was to complete sampling the seabed, in the area west of Shetland before proceeding southwards to the Malin Sea where further work was required. In the event only three days work was carried out west of Shetland before having to steam to Kyle of Lochalsh to pick up an anchor and wire. The remainder of the leg was then spent in the Malin Sea (see Fig. 1 for locations).

Weather was generally poor during the leg, particularly in view of the time of year. This considerably affected the work programme but did not result in much downtime. A time utilisation analysis is presented in Table I.

Personnel

D Evans	CSNU	Chief Scientist
J A Chesher	CSNU	
W Lonie	CSNU	Operations
N A Ruckley	CSNU	
J McGuigan	CSNU	
R S Sutherland	CSNU	
R Nicholson	ACU	
P Begg	Student, Edinburgh University	

Summary Log

Friday 16 June

0000	Alongside, Lerwick.
1650	Leave port, steam for west Shetland via Sumburgh Head.
2110	Begin night sampling.

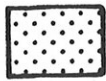
8°W

6°W

4°W

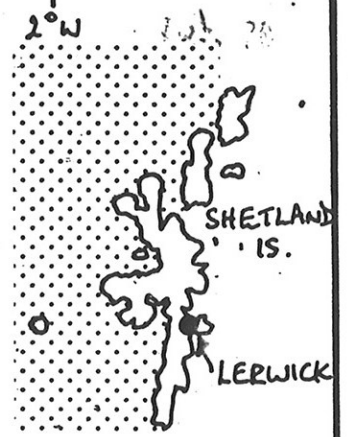
2°W

FIG. 1 LOCATION MAP



Intended areas of sampling
- partly completed only.

60°N



SHETLAND IS.

LERWICK

58°N

58°N

KYLE OF LOCHALSH

Kylevea

56°N

56°N

ISLAY

Sound of Jura

RATHLIN IS.

LOUGH FOYLE

TO BARROW

6°W

4°W

2°W

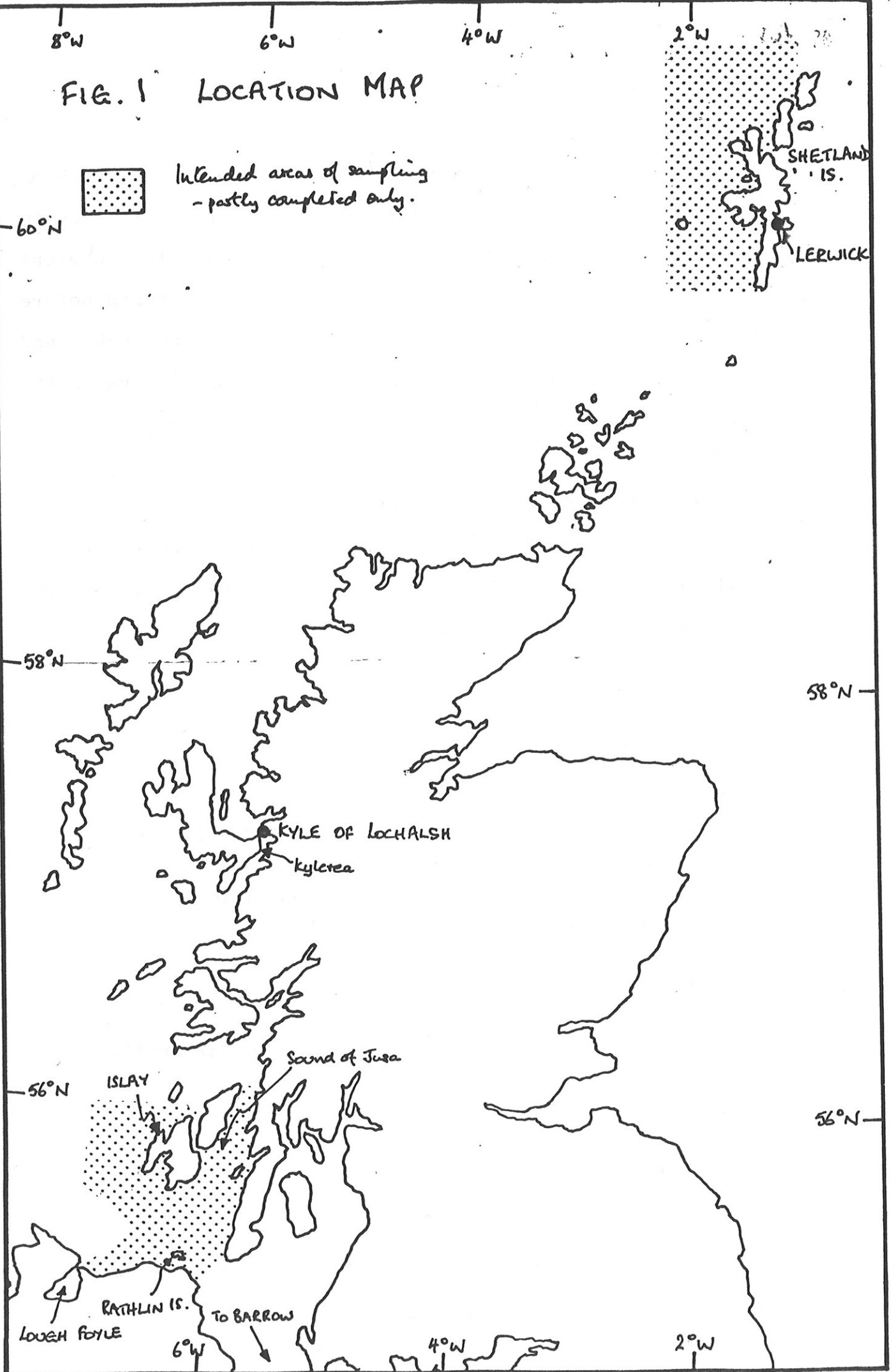


TABLE I
TIME UTILISATION ANALYSIS

DATE	IN PORT	ON PASSAGE	ANCHORING	ON STATION	DOWNTIME		NO. V/E STATIONS	NO. GS/CS STATIONS	REMARKS
					WEATHER EQUIPMENT	SHIP			
June 16	16.8	4.9		1.3				4	
17		10.0	5.0	9.0			5	12	
18		6.0	4.0	13.2		0.8	5	9	
19		14.0		8.5	1.5		-	25	
20		11.8			22.2		-	-	
21	12.6	11.4					-	-	Really all ship down-time at Kyle.
22	4.2	13.3	4.3	2.2			2	-	
23		9.0	4.8	5.2	5.0		1	11	
24		9.5	6.1	7.8		0.6	4	7	
25		10.5	4.0	9.0	0.5		4	9	
26		11.6	5.8	6.6			4	8	
27		13.0	3.5	5.8	1.7		3	10	
28		18.3	1.2	4.0	0.5		1	15	
29	17.8	6.2							
TOTAL	51.6	149.7	38.9	72.7	19.3	2.3	29	110	139 Sample stations
%	15.4	44.5	11.5	21.6	5.7	0.7	(1.3hrs/site average anchoring time)		

Saturday 17 June

0000 Night sampling.
0645 Anchoring for vibrocore work.
2040 Anchors aweigh on 5th site of day.
2145 Night sampling east of Foula.

Sunday 18 June

0000 Night sampling.
0640 Anchoring on 1st vibrocore site.
1215 Anchoring on 3rd site.
1225 Stern starboard anchor wire breaks about 600ft from anchor.
1540 Anchored on 4th site, 2 anchors only, broadside on to sea, conditions good.
2200 Anchors aweigh on 5th site, steam to begin night sampling.

Monday 19 June

0000 Night sampling.
0500 Sampling abandoned due to deteriorating weather, c. force 6.
0610 Head for Yell Sound to work in sheltered waters.
0820 Begin sampling in Yell Sound and Sullom Voe.
1800 Steam out of Yell Sound to assess conditions - not suitable.
2025 Futher sampling in Yell Sound.

Tuesday 20 June

0000 Loss of Shipek grab, damaged davit. Loss of stern half of gravity core trough. Steam for St Magnus Bay.
0315 Anchored in southern (sheltered) part of St Magnus Bay. Wind 6-7.
0630 Move to anchor in voes off St Magnus Bay for repairs to equipment.
1200 Following link call confirming anchor to be available, steam for Kyle of Lochalsh.

Wednesday 21 June

0000 Steaming for Kyle.
1130 Alongside at Kyle, working on anchors.

Thursday 22 June

0000 Alongside at Kyle.
0415 Steam for Malin Sea via Kylereea.
1345 Anchoring in 1st vibrocore site, Malin SW. . .
2215 Anchors aweigh on 3rd site, weather deteriorating.

Friday 23 June

0000 Heading for night sampling following welding work.
0030 Night sampling.
0130 Sampling abandoned due to weather, standing by.
0800 Entering N of Sound of Islay heading for Sound of Jura.
0910 Anchoring on vibrocore site. Anchoring successful on 3rd attempt, problems with wind, tide and holding ground.
1550 Gravity coring in strong tide.
1745 Steam for 2nd vibrocorer site but increasing wind (force 9) made anchoring unfeasible.
1850 Night sampling.

Saturday 24 June

0000 Night sampling in Sound of Jura.
0650 Anchoring on 1st vibrocorer site.
2045 Anchors aweigh on 4th site, delay due to tangle of starboard anchor.
2220 Night sampling begins, starting out to west of Islay, but poor conditions force working in shelter of Islay.

Sunday 25 June

0000 Night sampling.
0645 Anchoring in Loch Indaal, vibrocorer site.
2155 Anchors aweigh on 4th site, begin night work.

Monday 26 June

0000 Night sampling.
0620 Anchoring on vibrocorer site off Lough Foyle.
1610 Anchors aweigh on 3rd site, steam for Port Ellen.

1830 J E Wright, D A Arduis and G H Rhys aboard off
Port Ellen.
1935 Anchoring on 4th vibrocorer site.
2150 Anchors aweigh, steam for night sites.

Tuesday 27 June

0000 Night sampling.
0615 Anchoring on 1st vibrocorer site. Cable
becomes entangled in screw, J A Chesher and
N A Ruckley dive to disentangle.
1120 Anchoring on 2nd site.
1745 Anchors aweigh on 3rd site, too foggy for
further anchoring; begin night sampling.
Again attempt to get W of Islay, but conditions
unsuitable, work towards Rathlin Island.

Wednesday 28 June

0000 Night sampling.
0615 Anchoring on 1st site, Rathlin Sound, Anchors
drag to cause early lifting of vibrocorer.
1100 Following delay with anchors, begin gravity
coring due to poor visibility.
1510 Sampling finished, steam for Barrow-in-Furness

Thursday 29 June

0000 Steaming for Barrow.
0610 Alongside at Barrow, hand over to Leeds.

Geological Assessment

1. West Shetland

Priority was given to the completion of sampling the
surface sediments and Quaternary deposits within the area by
use of the vibrocorer. The thin pockets of Quaternary
identified from the geophysics proved to consist of tough
red pebbly silty clay in most instances and could be classed
as typical till deposits. The surface sediments throughout

the majority of the area consisted of coarse shell sands, but in the north considerable areas of pebble lag deposits were present. Some solid vibrocore samples of Permo-Triassic strata consisting of red marls and siltstone were obtained in the southern part of the area indicating the Permo-Triassic basin is more extensive than originally indicated by geophysics. However, the Permo-Triassic outside the main basin is probably relatively thin resting on Devonian basement.

2. Malin Sea

Unfortunately the weather prevented much work in the wholly unsampled area west of Islay to 7°W, but as no vibrocoreing had previously been carried out in the Malin Sea much useful work was carried out. Most of the vibrocoreing was into the muds and fine sands/muddy sands of Binns' formation III, with some into isolated patches of reddish till in the tidally scoured zones. In the Sound of Jura a sample taken from an inter-channel area proved to be very significantly different to a core from the central deep of a channel. This probably indicates that the channelling was post-depositional.

Some solid samples were also obtained, notably a red sandstone from the edge of the Rathlin Trough south of the Oa, and a good sample of Dalradian phyllite obtained with an NX sediment core barrel immediately south-west of the Mull of Oa. The barrel was completely undamaged following the recovery of this latter sample.

Equipment Performance

The vibrocorer worked well throughout the leg, the only

problem being the loss of cable and ship time when the cable became wrapped around the screw while the ship was anchored stern on to the tide. This was due to excessive slack in the cable being carried under the ship by the very strong tides in the area. Tying off of the first 20m of cable to the hoisting wire proved to be perfectly adequate to protect the cable, even without a plastic sleeving.

The gravity coring was successful although half a gravity core trough was lost overboard, due to weakening of the welding and the fact that the two halves were not bolted together. It was decided to replace the Sykes winch at the end of the leg due to oil leakage into the sump. The winch often proved difficult to start.

During the leg one Shipek grab was lost as a result of excessive drifting on station, and a further two damaged. The davit was also damaged, but soon repaired, while at the end of the leg the ship's Shipek winch again burnt out one of its coils (as in leg 2).

Conclusions

1. The ship is not wholly suitable to our operations, particularly in marginal-rough seas, (see report 78/9) when deck conditions become dangerous.
2. The ship's officers and crew, in particular Captain Carruthers, were very helpful throughout the cruise.
3. Once more, problems were experienced with the anchors

and anchoring system, including considerable downtime. To date this system has only been kept operative on a temporary leg to leg basis.. Although hampered by numerous factors, . . once again no more than five sites were occupied in a 16-hour day.

4. The cruise objectives were not satisfactorily carried out, largely because of adverse weather, which for the time of year was extremely poor.

