CONTINENTAL SHELF NORTHERN UNIT

Internal Report No. 79/8

CRUISE REPORT ON 3RD LEG OF WHITETHORN

CRUISE NO. 79/WH/03,

18 June - 8 July 1979,

With an appendix showing 79/WH/03
Time Utilization Analysis

by

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CONTENTS

1. Introduction

The objectives of the leg were to briefly complete the IGS regional seabed sampling of the Halibut Bank sheet before moving on to the Orkney sheet. The Halibut Bank sheet was completed after one week, but poor weather did not allow as much work as had been anticipated to be carried out on the Orkney sheet, and much sampling was carried out in sheltered areas of the Caithness sheet. A total of 278 sites were occupied. A survey log is presented in Appendix I, while a time utilization analysis is shown in Table I.

2. Personnel

D. Evans	IGS CSNU	Party Chief
W. Lonie	IGS CSNU	Technical Officer
R.S. Sutherland	IGS CSNU	Day Laboratory
N.A. Ruckley	IGS CSNU	Day Navigation
M. Smith	IGS CSNU	Night Geologist
D. McKay	IGS CSNU	Night Navigation
R. Nicholson	IGS ACU	Geochemist (Night Laboratory)
H. Allen	Strathclyde Univ.	Geologist

3. IGS Equipment

20ft. Vibrocorer system and penetrometer

Gravity corer system

Shipek grab system

5 IGS containers (Lab, Technical, barrels, stores, samples)

4. Ship's Performance

The layout of the platform and equipment on Whitethorn was generally

satisfactory; the only serious reservation relates to the location of the shipek system although the positioning of the gravity coring system could also be reconsidered. The shipek's present position on the lower deck makes it dangerous in a lower sea state than if it were located on the main platform. No serious problems were experienced with the anchor winches, although more powerful winches would be desirable, for an anchor and cable were lost due to an inability to pull in the anchor in a rising wind.

The level of cooperation from the ship's officers and crew was very high and much appreciated by the IGS team, while the ship is basically well suited to the work.

5. IGS Equipment Performance

a) Vibrocorer System

The vibrocorer performed well and recovered some remarkably hard rock in the Orkney area. The pot had to be replaced once, and the difficulties involved in this operation due to a lack of 'flexible' lifting facilities resulted in a port call. The penetrometer system was impressive and extremely useful.

b) The Containers

The containers system has proved a useful innovation, and with further consideration and improvement over the winter could be excellent. Points for consideration include: redesigning the lab to make better use of the small space and the role of the samples container.

c) Gravity Corer

This worked satisfactorily although the cable end had to be respliced

about every other day. One bomb was lost in marginal weather conditions.

d) Shipek

A number of minor damages occurred and two grabs were beyond shipboard repair. Most problems appeared to relate to the grab catching on a keel on the side of the ship.

6. Geological Results

The following stations were occupied during the leg:

Sheet No.	Total Stations	Shipek	Rock Core	Sediment Core	Vibrocorer
56-Ø7	21	21	20	0	0
58-Ø3	55	54	48	8	2
58-Ø4	9	9	0	6	0
58-Ø5	1	0	0	1	0
59-Ø3	84	84	50	10	21
59-Ø4	48	47	39	11	1
60+ØØ	27	27	0	23	2
60+Ø1	41	41	0	25	15
61+Ø1	1	1	0	1	

No picture was built up on this leg alone for the Halibut Bank sheet, but samples seemed broadly consistent with earlier work. On the Orkney sheet the widespread distribution of shell sands was confirmed and many vibrocore stations allowed an assessment of their thickness to be made. The most significant work on the Orkney sheet was the recovery of solid rock in up to half the vibrocorer stations. These were mostly redbeds, but other lithologies more likely to be palaeontologically datable were also recovered. The geophysical interpretation of the area will be reconsidered

in the light of these samples, and the extent of the Devonian may be greatly reduced.

7. Conclusions

1. The ship performed well and the layout proved generally satisfactory although the shipek system was not well placed.
2. The vibrocorer worked well and recovered solid rock in a number of Orkney sheet sites. The penetrometer is a very valuable innovation.
3. A Hiab type crane would be very useful and could largely or wholly replace the ship's derricks which are unsuited to work at sea. Positioning and storage of the vibrocorer pots was not wholly satisfactory. A combination of lack of lifting facilities and vibrocorer pot storage led to an unscheduled day in port.
4. The container system worked well but has much scope for improvement. The sample container was however of limited value, and the samples in it had to be manually unloaded onto the deck prior to offloading at Liverpool.
5. A large number of samples were collected during the leg but adverse weather limited vibrocoring and prevented sampling in the exposed parts of the Orkney sheet.

8. Recommendations

1. The Whitethorn would be well suited for future IGS use, particularly if certain layout changes are carried out.
2. The containers should be improved prior to next season, irrespective of any uncertainties regarding possible charter vessels. The fitting of a 'Hiab' type crane should also be considered.
3. The CSNU manning level of 5 per day and 3 per night is ideal for the work involved and should be retained.

FIG. 1 LOCATION MAP

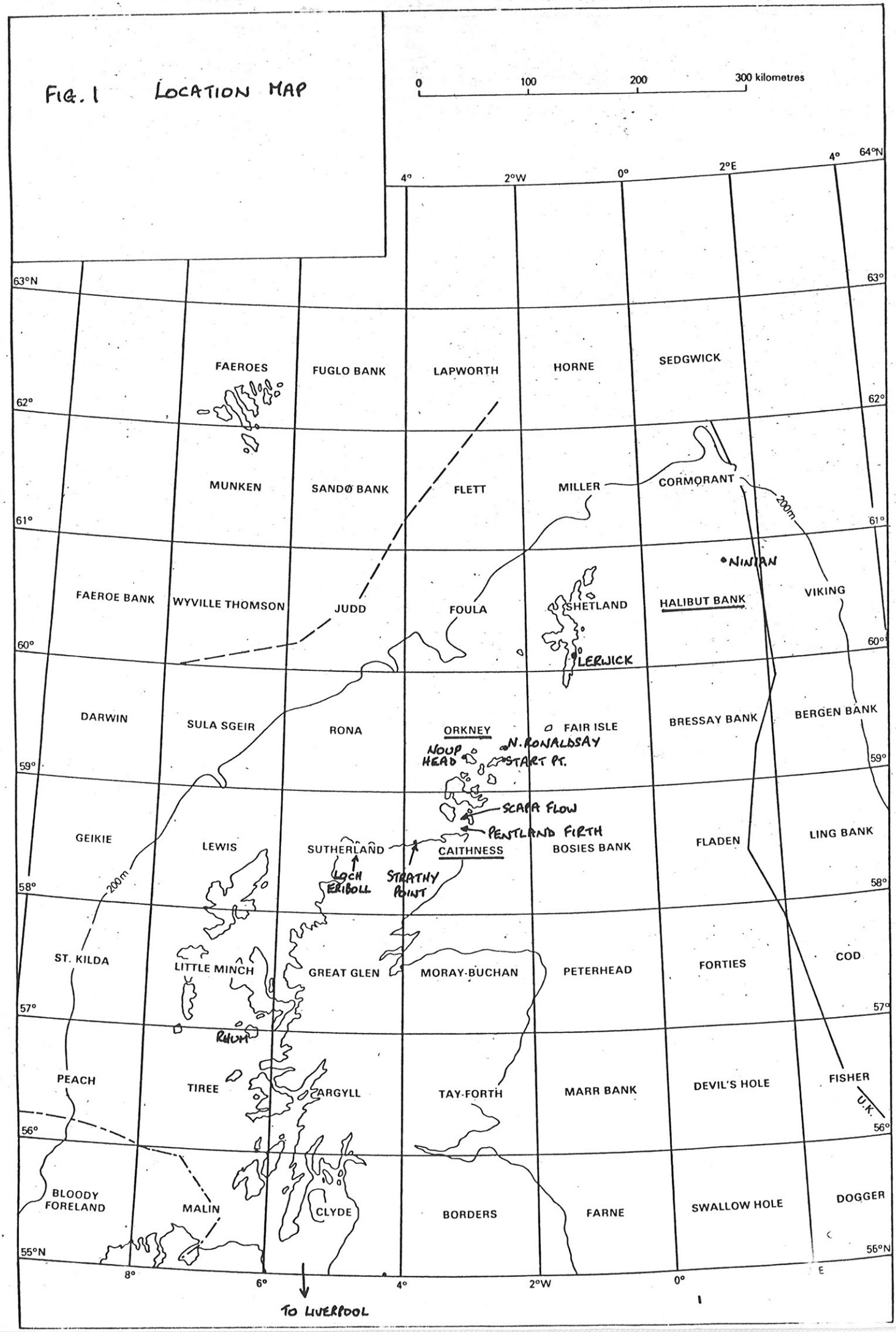

TABLE I

TIME UTILIZATION ANALYSIS

Time	In Port	On Passage	Traversing	Anchoring	On Station	Downtime: Weather	Downtime: IGS Equipment	Downtime: Ship	Downtime: Other	No. Anchored Stations	No. GS/CS Stations
June											
19		8	4½	7	4½					5	3
20			10½	5	5½		3			4	6
21	8	15½	0	½						0	0
22			8		2	12	2			0	7
23			12½	6	5½					5	3
24			16	2	6					2	18
25		9	11		4					0	12
26		8	11	1½	3½					2	14
27			12½	5½	4½			1½		5	10
28			10		2½	2			9½	0	9
29			14		7	2½	½			0	33
30		4½	13	½	4½	1½				1	23
July											
1		5	13		5¼		¾			0	23
2		3¼	8¼	1	4¼	6		1¼		1	17
3		7	5½	6	3½	2				6	0
4			14	3½	6½					4	13
5			11	6	6			1		6	12
6		3	8½		3½	9				0	13
7		13½	7		3½					0	21
8		24									
9	14½	9½									
%	4.5	21.9	37.7	8.8	16.4	6.9	1.2	0.7	1.9	41 + 237 = 278	

Appendix I

SURVEY LOG

Survey Log

Monday June 18

2105 Sail from Lerwick for NE Halibut Bank to complete sheet.

Tuesday June 19

0000 Steaming for Halibut Bank NE

0750 On station ready to anchor on first VE station. VE all day, 5 sites occupied.

2130 Steam for 1st night sampling site.

Wednesday June 20

0000 Night sampling

0540 Night sampling ends, 9 sites occupied

0710 Begin anchoring on 1st VE site

1915 Anchoring 5th VE station. Pot defective, therefore changed but main warp damaged during operation. Steam for Lerwick for splicing.

2320 Finish work on deck and begin lifting anchors to head for Lerwick

Thursday June 21

0030 Anchors aweight, steam for Lerwick

1100 Along side at Lerwick, dense fog.

1905 Cast off from Lerwick, poor forecast. Sail for Halibut Bank

Friday June 22

0005 On 1st night site, weather deteriorated to 6/7. 4 sites occupied but only with partial success, totally abandoned 0420.

0420 Stand by in vicinity of VE site. Weather continues poor throughout day until late p.m.

1600 Traversing to bomb site.

1635 On site, for gravity coring.

Saturday June 23

0000 Night sampling

0620 On 1st VE site. Five sites successfully occupied during day.

2115 Anchors aweigh on last site, steam for Ninian platform to collect winch spares.

Sunday June 24

0000 Traversing to sample site.

0015 On 1st CS site, due to requirement to finish sheet bombing carried on until 1645.

1645 Steam for VE site. 2 sites occupied but wind getting up quickly on 2nd site.

2300 1st night site.

Monday June 25

0000 Sampling continues but conditions poor, generally 6/7 and increasing through day. No VE possible.

1440 Sampling on Halibut Bank ended - steam for Orkney sheet via Lerwick - pilot boat pickup of spares, etc. Force 8 winds. Call at Lerwick 2200.

Tuesday June 26

0000 Steaming for Orkney, weather drops in early hours but increases at morning to 6/7.

0800 On VE site S of Start Pt.

1025 On 2nd VE site further out to sea in more exposed conditions wind rises while on site to 8 resulting in loss of anchor and reel of wire. Head for sheltered coring as wind further increases to 9.

Wednesday June 27

0000 Night sampling to east of Orkney.

0730 On VE site, weather having moderated. 5 sites occupied during day, some anchoring difficulties due to strong tides.

2050 On 1st night station.

Thursday June 28

0000 Night sampling, but weather poor in early a.m. so no VE possible.

0830 Break off to assist in Air/Sea search for missing fishing vessel 'Carinthia' of Buckie. Searching 20m west of Noup Head area.

1800 End search and head for sample station. Weather W6.

1825 On station, sampling begins W of Orkney.

2155 Increasing wind causes abandonment of sampling. Head for E Orkney in W7 or so.

Friday June 29

0000 Steaming for E Orkney

0210 On station sampling, continues all day in W7 decreasing in evening.

Saturday June 30

0000 Sampling continues

0400 Head for NE of North Ronaldsay, but on arrival winds had not died down (c7) and heavy swell was resuming, so retreat to E Orkney area to bomb.

0700 Sampling begins down E Orkney to E approach to Pentland Firth. Winds begin to die down c 2100.

Sunday July 1

0000 Sampling E of Pentland Firth.

0515 Head for W Orkney via Pentland Firth due to wind having dropped - but poor forecast still.

1010 On 1st station. Continue bombing though day with poor recovery from most sample stations. Although the wind dropped to zero for a time, heavy swell prevented anchoring.

Monday July 2

0000 Sampling W of Orkney.

0725 Worsening weather, c 7 gusting 8, steam for Scapa Flow, only protected site not yet sampled.

1230 Begin anchoring on VE station in Scapa Flow, strong wind, difficulty in raising anchors, also snagged and damaged cable.

1445 Ship's anchors down to give calm while stern anchors are rearranged.

1700 Begin sampling run within Scapa.

2050 End sampling steam for E Orkney.

Tuesday July 3

0000 Steaming for E Orkney

0700 Anchoring on 1st VE site. 6 sites occupied during the day as well as work on camera grab.

2200 Starter motor breakdown on forward winch - downtime.

Wednesday July 4

0000 Working on winch starter motor.

0010 Steaming for 1st bomb site.

0100 Begin sampling.

0615 Anchoring on 1st VE station in E of sheet. 4 sites occupied before increasing swell prevents anchoring.

1725 Begin routine sampling in heavy swell and force 6 wind but these conditions soon improved.

Thursday July 5

0000 Night sampling

0645 Anchoring on 1st VE site, 6 sites occupied during day.

2130 Begin night sampling work.

Friday July 6

0000 Night sampling. Weather unsuitable for anchoring so carry on bombing.

1100 Finish sampling due to weather following loss of gravity corer.

1110 Steam for shelter E of Strathy Point, and later due to slow progress against wind and sea, to mouth of Loch Eriboll.

2020 Repair bomb at mouth of Loch Eriboll and take sample.

2100 Steam for area S of Rhum for sampling.

Saturday July 7

0000 Steaming down west coast.

1220 Begin sampling, mainly rock coring.

2240 Sampling ended, steam for Liverpool.

Sunday July 8

0000 Steaming for Liverpool. Tidying up of IGS responsibilities during day.

Monday July 9

0000 Steaming for Liverpool.

1000 Alongside at Nelson Dock.

Appendix II

TIME UTILIZATION ANALYSIS

79/HW/03

Time Utilization Analysis 79/WH/03

The table accompanying this appendix shows analyses for the three legs of the cruise as well as the total time usage. Also included for comparison are the total figures for both Emerald (1977) and Cape Shore (1978).

The records show that some 60% of the time was spent directly working (ie traversing, anchoring or on station). Traversing and on passage time cannot be compared with previous years, since the two were not previously differentiated, but the average anchoring times per site were appreciably shorter than those for both Emerald and Cape Shore.

Downtime this year is comparable with that of previous years, while port call times are only marginally lower as a result of 3 week legs.

The total number of samples collected is down on the last two years, but the much greater number of anchored sites obtained this year make 1979 the most successful sample collecting season of the last three years.

PERIOD	IN PORT	ON PASSAGE	TRAVERSING	ANCHORING	ON STATION	DOWNTIME WEATHER	DOWNTIME IGS EQUIPMENT	DOWNTIME SHIP	DOWNTIME OTHER	NO. ANCHORED STATIONS	NO. GS/CS STATIONS	REMARKS
LEG 1	47·5	114	109	42	117	56·5	9	9		55 + 85	= 140	
%	9·4	22·6	21·6	8·3	23·3	11·2	1·8	1·8		0·8 HRS PER SITE ANCHORING		
LEG 2	106	24	160·25	81·75	105·25	10·5	3	2·75	10·5	96 + 156	= 242	
%	21·0	4·8	31·8	16·2	21·0	21·1	0·5	0·5	2·1	0·9 HRS PER SITE ANCHORING		
LEG 3	22·5	110·25	190·25	44·5	82	35	6·25	3·75	9·5	41 + 237	= 278	
%	4·5	21·9	37·7	8·8	16·4	6·9	1·2	0·7	1·9	1·1 HRS PER SITE ANCHORING		
79/WH/03 TOTAL	176	248	460	168	304	102	18	16	20	192 + 478	= 660	[63 DAYS]
%	11·6	16·4	30·4	11·1	20·2	6·8	1·2	1·1	1·3	0·9 HRS PER SITE ANCHORING		
										1·2 HRS PER SITE ANCHORING		
EMERALD '77 %	15·8		40·4	7·4	22·8	9·6	2·6	0·2	1·2	89 + 694	= 783	[59 DAYS]
CAPE SHORE '78 %	13·2		36·6	12·6	27·6	6·2	2·6	1·2		144 + 536	= 680	[63 DAYS]
										1·4 HRS PER SITE ANCHORING		

APPENDIX II - TABLE