Continental Shelf Northern Unit

Internal Report No. 77/11

Report on Emerald Cruise

77/EM/06 - Leg 2

23rd August - 2nd September, 1977

by

D. Evans

Personnel

D. Evans	CSNU
D. Woodhall	CSNU
J. McGuigan	CSNU
W. Lonie	CSNU
H. Allen	CSNU/Strathclyde University
R. Nicholson	ACU
D. Long	EGU
P. Hobbs	EGU
G. Birch	Cape Town University

Object of Cruise

This cruise was part of the CSNU regional sampling programme on the Scottish continental shelf. The areas to be sampled were the Forties NW, NE and SE sheets (57^{o}N-58^{o}N, 1^{o}E - 2^{o}E) as well as the Peterhead NE sheet ($57^{o}30'$N-58^{o}N, 0^{o}-1^{o}E) (see Fig. 1). In particular this leg was to concentrate on vibrocoring in Forties SE during daylight while gravity coring, grabbing and dredging at night.

Abridged Cruise Diary

N.B. In addition to this general log, detailed time utilisation analysis was also carried out.

Tuesday, 23rd August

0700 Move to Hall Russel Yards.
1515 Move to go alongside "Scotia". Awaiting laundry and parts for gyro.

Wednesday, 24th

0000 Alongside "Scotia", Aberdeen
1245 Mobilisation complete, steam for Forties SE sheet. Weather outlook poor.
2315 On station to begin night operation.

Thursday, 25th

0000 Night sampling continues. Heavy swell and wind 5-6 prevent vibrocoring, therefore gravity coring continues through day.
2300 Due to seasickness only 1 on night shift, therefore grab and dredge only.

Friday, 26th

0000 Continue sampling
0815 On station ready to anchor for vibrocoring. Continue vibrocoring through day (5 stations).
2015 End vibrocoring, continue full night sampling programme.

Saturday, 27th

0000 Night sampling continues - weather deteriorating.
0200 Abandon sampling due to weather.
0815 Continue grab and dredge sampling in Forties SE.
1115 Coring plus grab and dredge in Forties NE and NW.

Sunday, 28th

0000 Night sampling in Forties NE continues.
0545 End sampling and steam to vibrocore in Forties SE.
0845 Begin anchoring for vibrocoring.
1540 End vibrocoring due to deteriorating weather from SW. Steam for Forties NE to continue sampling. Anchor (starboard forward) broken during heaving.
1832 Begin sampling, no bomb used for night watch (after 2000 hrs) due to weather.

Monday, 29th

0000 Sampling continues, Weather poor, gale 8 from SW, not moderating until early evening. Bombing started at 0800 hrs.

Tuesday, 30th

0000 Sampling continues.
0505 End sampling, steam for vibrocore site in Forties SE.
0800 On station, anchors changed.
0915 Begin anchoring for vibrocoring, which continues throughout day.
2005 Begin night sampling programme.

Wednesday, 31st

0000 Night work continues.
0830 Begin anchoring for vibrocoring. Wind fresh from NW, 4 sites occupied during day.
1950 Lift anchors at final site, begin night sampling.

Thursday, 1st September

0000 Night sampling continues. Weather deteriorating in early morning, poor forecast, sea conditions not suitable for vibrocoring therefore sampling continues.
2000 Bombing stopped for night in adverse weather. Continue Shipek and dredge.
2230 Sampling abandoned due to heavy seas, steam for Peterhead.

Friday, 2nd

0700 Lying off Peterhead.
1045 Alongside at Peterhead.

Equipment Performance

The equipment performed well, the only significant delays during the leg being due to the poor weather encountered. The lack of pistons may however have impared the quality of vibrocore samples, while some difficulty was experienced in judging the time required to obtain full penetration of the barrel. In addition incorrect setting of the gravity core during the previous leg (discovered in mid-cruise) may well have reduced its efficiency.

The pinger on board was not used operationally. It was however found to be out of order, as had also been found on Leg 1.

The ship proved well suited to sampling operations even in poor weather, although the laboratory provided was rather cramped and difficult to keep clean. Communications between the bridge navigator and the lab and deck were considerably improved by the use of the short range radios.

Geological Results

The surface sediment was found to be a rather monotonous dark greyish brown quartzose sand, often very thin and covering a very shelly sand horizon. Beneath the sand both very soft and moderately stiff dark grey clays were recovered. Recovery of all types was good with the vibrocorer (often over 5m was recovered) although the gravity corer often failed to penetrate the shelly horizon.

Conclusions

The cruise was successful despite the poor weather which reduced vibrocoring time to only 3.5 days during which 16 sites were occupied. Regional sampling on an approximately 7km grid

(other than vibrocoring) was completed in Forties NW, NE and SE. The system of using one man permanently navigating and plotting proved very successful and should be continued on future cruises of this type. If the Emerald is to be used by CSNU in future, improved laboratory facilities should be provided.

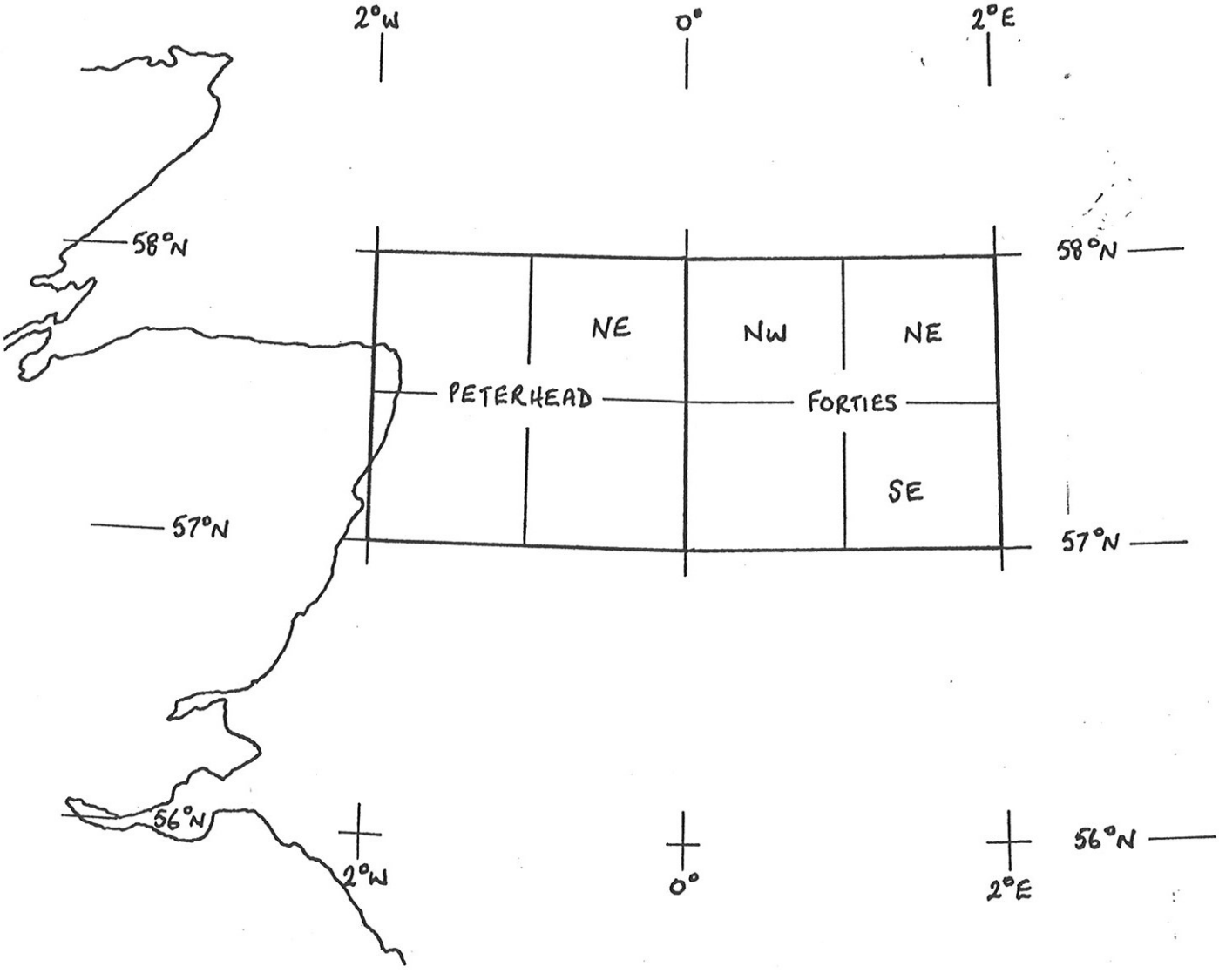

Fig. 1. Location of 1:100,000 sheets where sampling was to be carried out.