

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1982 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA; CRUISE 8
(PROVISIONAL: Not to be quoted without prior reference to the author)

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DURATION

Left Grimsby 21 September 1982
Arrived Grimsby 25 October 1982
(All times are Greenwich Mean Time)

LOCALITY

North East Atlantic from $51^{\circ}45'N$ to $40^{\circ}N$

AIMS

1. Recover and relay 4 SMBA/MAFF moorings along $51^{\circ}40'N$, west of Porcupine bank.
2. Complete line of CTD stations along $51^{\circ}40'N$, West of Porcupine bank.
3. Recover and relay dummy waste drum mooring for colonisation studies at NEA dumpsite.
4. Collect 300l water samples (for ^{14}C , ^{228}Ra and ^{137}Cs analysis) and 30 l samples (for ^{226}Ra analysis) along meridional section along a deep water track in the Eastern Atlantic. Samples for 3H and 3He analysis to be collected for W Jenkins at W.H.O.I., USA.
5. Collect CTD data and water samples for nutrient analysis along meridional section.
6. Deploy and recover fish traps where appropriate.
7. Take sediment cores on an approach to and at the NEA low level dumpsite and along a meridional section, including the Azores-Biscay rise, to provide estimates of sediment accumulation rates, biological mixing and flux of ^{226}Ra from the sediments. To collect material for sorption studies and for Pu studies by V Noshkin at Lawrence Livermore Laboratory, USA.
8. Deploy moored $^{226}/^{228}Ra$ collectors where appropriate.

9. Deploy XBTs where appropriate, particularly in a region of oceanic front about 41°N.
10. Collect near bottom water samples on a 3 x 3 grid at the NEA low-level dumpsite for ²²²Rn analysis.
11. To study the bottom nepheloid layer at the NEA low-level dumpsite using CTD, nephelometers and water samples. The size spectrum of the suspended particulates will be studied using the Coulter Counter.
12. To run a continuous profile of particulate concentration across the shelf edge using the HIAC system.
13. To deploy the Neuston net in the Western Approaches as appropriate.
14. To study the behavior of (non-radioactive) waste containers under normal operating conditions.

NARRATIVE

RV CIROLANA sailed from Grimsby on 21 September, with the Swiss container on board, and proceeded via the English Channel to the first working area west of the Porcupine bank. Three of the four current meter moorings were successfully recovered and the two SMBA moorings on the upper part of the slope were relaid. Because of bad weather the attempt to complete a line of CTD stations begun on CIROLANA 6/82 was abandoned and the ship proceeded south to the NEA low-level dumpsite, deploying XBTs en route until this became too dangerous.

As the rope used for Gerard Barrel and coring stations parted while being streamed, work on the NEA dumpsite was restricted to the recovery of a dummy barrel deployed for colonisation studies and the study of the bottom nepheloid layer using the Swiss CTD and nephelometer and the collection of water for ²²²Rn analysis.

XBTs were deployed on passage to two Gerard Barrel/CTD stations at 43°N and 40°N. The upper half of the barrel stations were completed prior to the mid cruise break and the lower casts after more rope had been collected from Lisbon. The dummy barrel tests were made and one core recovered from the abyssal plain using the Reineck corer.

In Lisbon, the Swiss scientists, together with their container, left the ship. On the second part of the cruise, a gravity core was taken at 40°N, the two Gerard barrel stations completed and a small box core collected on the Azores-Biscay rise prior to returning to the NEA low-level dumpsite.

At the dumpsite, a dummy barrel mooring for colonisation studies was deployed, a fishtrap deployed and recovered, a full depth Gerard barrel/CTD station completed together with 6 Reineck cores and 3 gravity cores. En route to Grimsby surface water sample for Np and Pu analysis and for Cambridge University was collected prior to running a continuous profile of particulate concentration across the shelf edge using the HIAC system. Between the 200 m depth contour and Lands End six Neuston Net Stations were worked.

RESULTS

1. Three full/depth ¹⁴C/²²⁸Ra stations, together with accompanying CTD/nutrients casts were worked successfully as part of the meridional ¹⁴C section. Full depth ¹³⁷Cs sampling was conducted at one of these stations.
2. The three current meter moorings recovered from the continental slope west of Porcupine bank all had good data records. Preliminary analysis shows that despite the stations being separated by just six miles the

record is largely non-coherent. There was no evidence of significant energy at frequencies above that of the semi diurnal.

3. A current meter pressure sensor was tested on the hydro wire and it proved to be accurate. This implies that there may be up to a 5% error in the estimated length of our full depth moorings because of rope stretch.
4. The 55 XBT deployments did not reveal any significant mesoscale features.
5. Near bottom ²²²Rn measurements at a grid of 7 stations on the NEA dump-site indicate a bottom mixed layer varying between 20 m and 100 m. This agreed with nephelometer (both types) and particle size measurements made by the Swiss scientists.
6. Two Coryphaenoides and about 100 amphipods were collected from the three fish traps deployments.
7. There were no visible signs of colonisation on the dummy drum which had been deployed at the NEA dumpsite. A drum was redeployed for recovery July 1983.
8. Three of the full size dummy (non-radioactive) waste barrels were allowed to fall to the sea bed tethered to the ship by a rope which had been streamed on the sea surface. Two were hauled back undamaged apart from small surface dents whereas the third, without a vent tube, imploded. The other three barrels were allowed to free fall and were tracked acoustically to obtain estimates of the descent speed. All descent rates were slower than previously estimated.
9. Most of the 11 cores recovered showed signs of biological activity, mainly worm cases, and some fauna were collected. The cores were subsampled and X-rayed before further analysis was undertaken.
10. The Neuston net tows recovered mainly jelly fish and only two fish larvae were seen.
11. Computer Software was developed for direct data entry of bench salinometer and auto analyser results via the TRANSTERM portable computer terminal.
12. Tritium and Helium-3 samples were collected at the 3 full depth CTD stations for W Jenkins and sediment samples were collected for V Noshkin.
13. A cross-slope surface HIAC transect was obtained on crossing the Continental slope.

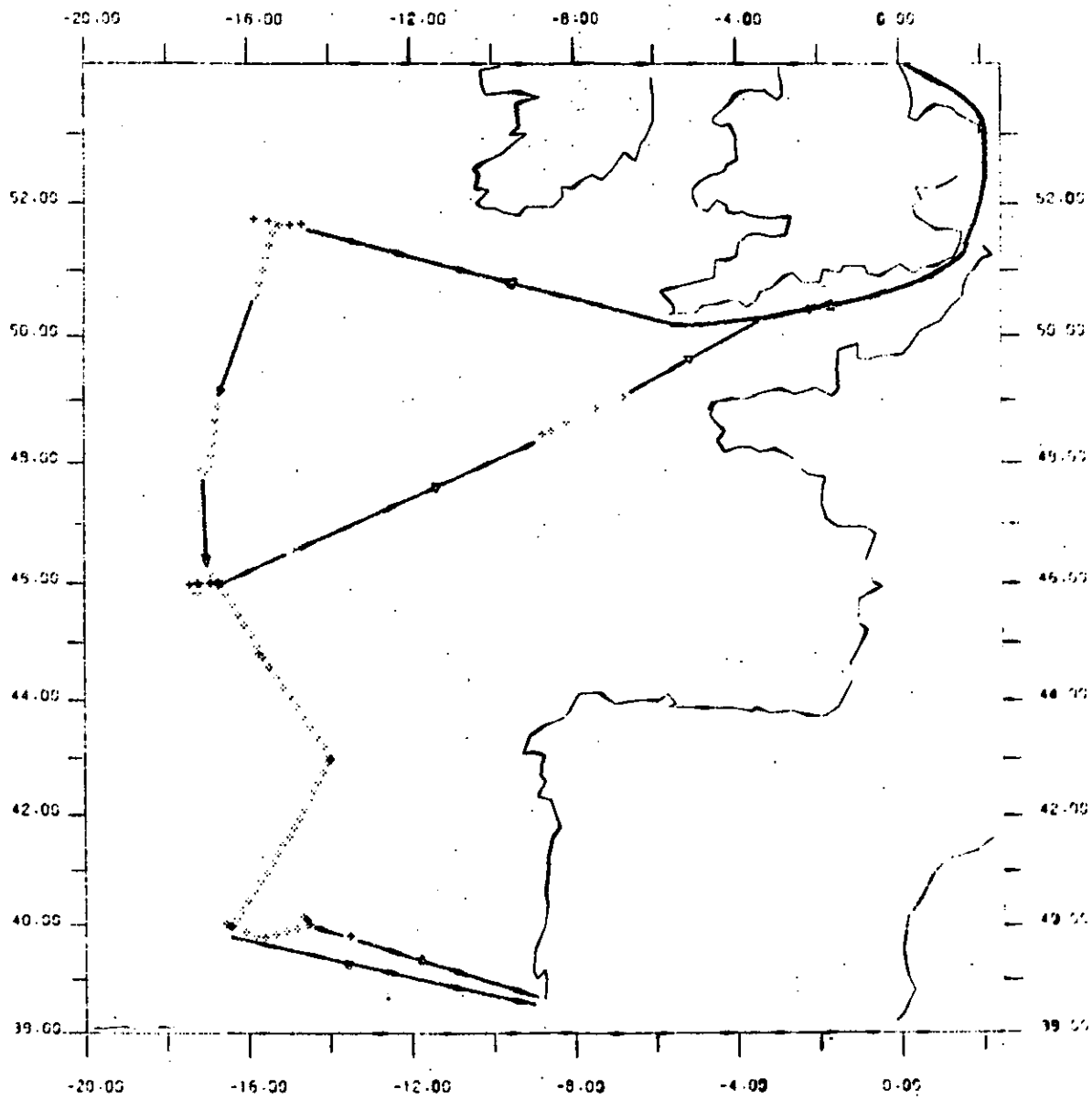
P A Gurbutt (SIC)
12 November 1982

SEEN IN DRAFT: (Master) M J Willcock
(Fishing Skipper) E W Pearson

INITIALLED: HWH

DISTRIBUTION:

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CAROLINA 9/92 STATION POSITIONS