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

1987 RESEARCH VESSEL PROGRAMME

~~PROGRAMME~~ REPORT : RV CIROLANA : CRUISE 6b

(PROVISIONAL: Not to be quoted without prior reference to the author)

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DURATION: Sailed from Falmouth 1807h 8 July 1987
Docked at Lowestoft 0440h 20 July 1987

All times are Greenwich Mean Time

LOCATION: Irish Sea

AIMS:

1. To carry out a full servicing programme in the Irish Sea including:

Recover 8 moorings and relay 3 (W, U, X) for recovery by SMBA in August.

CTD sections between the Isle of Man and Scottish, English and Welsh coasts.

Work a line of tetrapod, anchor, thorium geochemistry and coring stations from a position off Sellafield to Burbo Bight (held over from the DAWN SKY March cruise).

NARRATIVE

CIROLANA left Falmouth at 1807h, 8 July and proceeded to recover current meter moorings between Anglesey and the Isle of Man. Between 1625 and 1920h, 9 July, moorings X, U and W were successfully recovered but a subsequent attempt to recover mooring V ended at 2030h when the buoy tow parted. In mist and gathering darkness the recovery was postponed and the vessel continued to recover remaining moorings (M, R, Q, P) and work the standard CTD sections from Burrow Head to Isle of Man and Isle of Man to St Bees. This work was completed without incident by 1923h 10 July.

Between 0600h 11 July and 0830h 15 July CIROLANA then carried out a series of four 24 hour anchor stations in 20-27m depth of Sellafield, Morecambe Bay, the Ribble and the Mersey with hourly CTD/Niskin sampling for suspended particles and light transmission, with NBA DRCM observations at mid depth and with the tetrapod deployed nearby throughout. During this period faulty M021F current meters were modified and were rigged overside for tests, the blanks for geochemistry work were run, and some current meter records processed.

From 0630h to 1740h, 15 July the ship returned north to carry out geochemical sampling at each of the four anchor station positions, with 8 x 301 Niskins used in the near-surface and near-bottom layers at each site to provide bulk samples

for suspended load and Th,U,Pb and Ra analysis, and with 1-3 Reineck box cores at each site for sediment analysis. This work was continued between 0610h and 1455h 16 July with the working of a further four stations along the standard geochemical section west of St Bees though in these cases, the chemical samples were restricted to Th and U only.

In the evening of 16 July, flat calm conditions provided the ideal opportunity to drag for the abandoned mooring V, south of the Isle of Man, using trawl warp, chain and "creeper". The ground wire was hooked and the mooring recovered by 1826h, without loss. From 0600h to 1159h 17 July the work program was completed with the working of the standard CTD section from Isle of Man to Anglesey and the relaying of moorings W,U and X at the new sewage sludge study site. In view of the roughness of the seabed a bathymetric survey of the site was carried out between 1208h and 1542h 17 July to aid in interpretation of results from the area. CIROLANA then sailed for Lowestoft, docking 0440 h 20 July.

RESULTS:

1. All 8 current meter moorings (21 instruments) were recovered without loss though with damage to one instrument at site V during dragging operations.

2. The performance of the 21 instruments was as follows.

Grundy 9021 (one)	- good record
Aanderaa (six)	- 4 good records - 1 spurious numbers in reference, temperature and direction channels in second half of record - 1 with some dubious speeds
MO21F (nine)	- 5 good records - 3 mostly zero speeds - 1 50% zero speeds and large blocks of errors
Valeport (five)	- still to be analysed

3. In a sequence of overside tests of a faulty MO21F the cause of the failure was conclusively narrowed down to failure of the complex reed-switch in the rotor counter, resulting in abrupt loss of speed information. After modification to the electronics, this was replaced by less complicated spare reed-switches from the Valeports in all three of the instruments which had previously shown zero speeds (see above), and subsequent overside tests showed that all three were now recording speed correctly. Thus although the original cause of reed failure is unknown, it now appears that the problem of losses of speed information in MO21F's is close to being solved, subject to long-term trial of modified instruments.

4. The three moorings (W, U, X) at the sewage sludge study site were relaid. Each mooring included one of the three modified MO21F's on long-term trial.

5. The bathymetry of the sewage sludge site was mapped. This mapping should be continued and completed during the August SMBA commission cruise since the roughness of the bed has obvious implications for the analysis of sediment grain size trends uing McLaren's technique, as well as for near-bottom flow in general around the site.

6. The standard CTD sections from Isle of Man to the Scottish, English and Welsh coasts were successfully completed. Bulk Cs samples from the bottom and surface layers were taken at each of these 10 stations.

7. The 4 anchor stations from the Cumbrian coast to inner Liverpool Bay coupled with the four geochemistry stations at the same sites provide the first detailed information on suspended sediment climatology along a full meridional section of

the eastern Irish Sea. In addition the four geochemistry stations worked along the standard section west of St Bees completes the series by providing a summer description of sediment resuspension and scavenging to go with the autumn, winter and spring sections already obtained.

8. The trials of the "stripped-down" NBVR at each of the four anchor stations appear to have been successful, though its performance will not be fully known until calbration factors can be applied to each of the flow sensors. One further question to be addressed at that time is the extent to which the tetrapod legs and sensor pole shield the sensors in different flow conditions.

9. The aim of transferring all last years deep CTD data from cassette tape onto the HP1000 was completed.

R R Dickson
(Scientist-in-Charge)
20 July 1987

SEEN IN DRAFT : M J Willcock (Master)
William May (Fishing Skipper)

INITIALLED : H W H

DISTRIBUTION:
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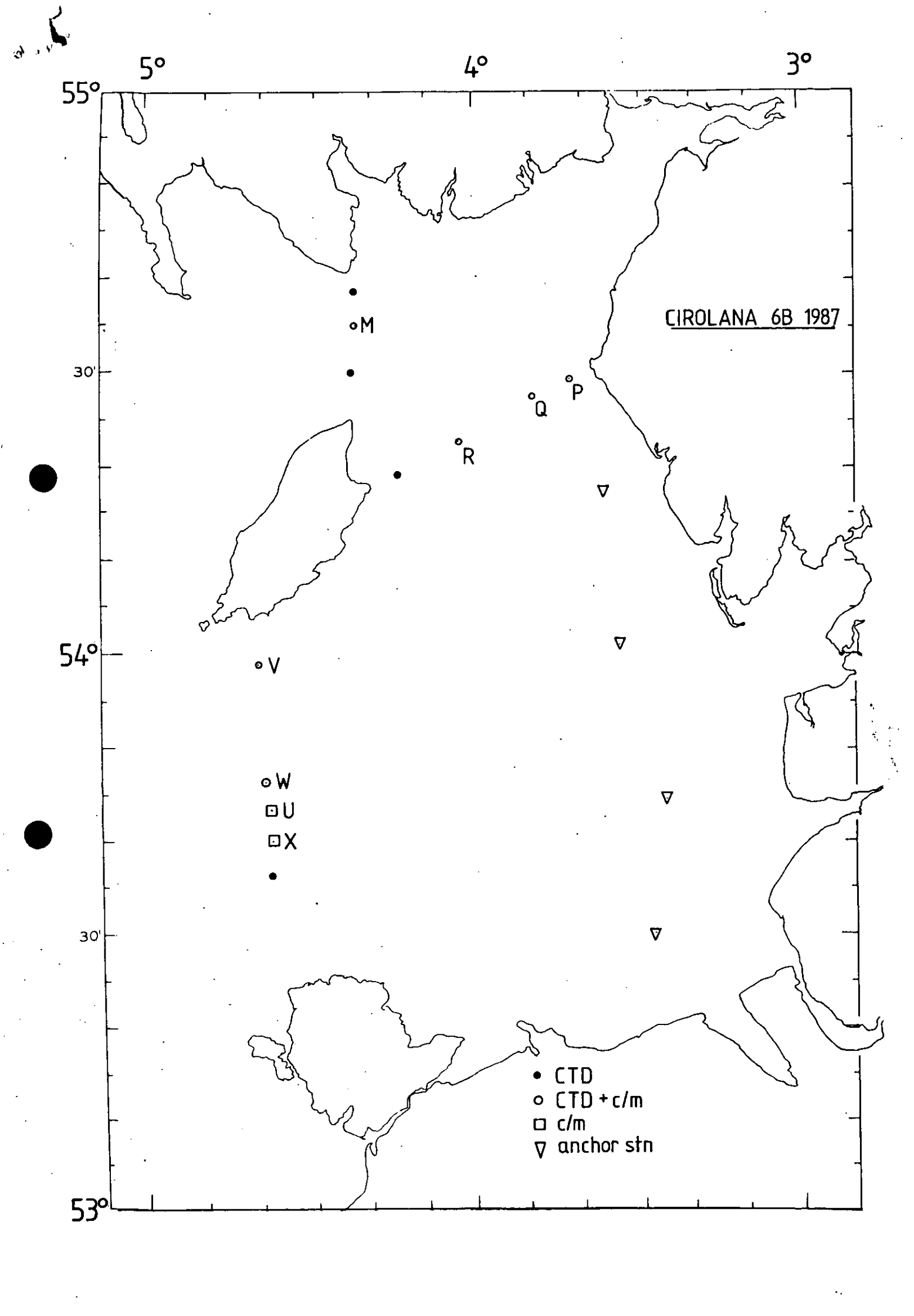
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CIROLANA 6B 1987
M
P
Q
R
V
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