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Plate 389

1981 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE : CRUISE 13

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

STAFF:

- M S Rolfe (SIC)
- A Franklin
- S M Rowlett
- E G Shreeve
- Lynda George
- C D Byrne

DURATION:

Left Lowestoft 0853 h 26 October
Arrived Lowestoft 1655 h 6 November

(All times are GMT)

LOCALITY:

Bristol Channel, English Channel, Southern North Sea

AIMS:

1. To conduct an 'intensive' monitoring survey of the Bristol Channel disposal area (including the main and bad weather sewage sludge dumping grounds and the Swansea Bay spoil ground) by (i) side scanning sonar for bottom morphology, (ii) grabbing for biological, physical, chemical and bacteriological analysis and (iii) trawling for fish for chemical analysis in the vicinity of Swansea Bay (3-4 days).
2. To conduct a side scanning sonar and grabbing survey off Falmouth Bay with a view to the possible re-siting of the existing sewage sludge dumping ground (1-2 days).
3. To conduct a 'routine' survey of the Plymouth sewage sludge dumping ground by grabbing for sediments for physical, chemical and bacteriological analysis (1-2 days).
4. To conduct a short side scanning sonar survey over the Hurst Narrows spoil ground for bottom morphological studies and discernment of dumped spoil (≤ 1 day).
5. To conduct a survey of the South Falls dumping ground by (i) side scanning sonar (to supplement data obtained on earlier cruises) and (ii) grabbing for sediments for biological, chemical, physical and bacteriological analysis (2 days).
6. To collect fish for chemical analysis from the vicinity of Barrow Deep, outer Thames Estuary by trawling (1 day).
7. To deploy underwater television at dumping sites listed above as conditions permit.

Additional aims (not on programme):

8. To conduct a short side scanning sonar survey over the Dover spoil ground, collecting ground truth sediment sample as necessary.

9. Dumping at Sea Act Enforcement: Sightings of dumping vessels will be noted by Mr Byrne.
10. A performance assessment will be made on a Walker Sat Nav 801 navigational system.

NARRATIVE:

CLIONE sailed from Lowestoft at 0853 h 26 October. It was originally intended to complete the aims in the order listed but in view of the diminished priority of Aim 1 (Bristol sewage sludge dumping vessel laid up in dry dock) and the strong south-westerly airflow, CLIONE steamed to the Falls area to commence Aim 5. Pre-survey side scan trials were conducted on passage and a sonar survey was commenced at 1650 h, 26 October and completed at 2043 h the following day. A grab survey of 48 stations over the Falls area was commenced at 0849 h 28 October using a 0.14 m² Day grab. Work was interrupted at 1915 h by bad weather but resumed the following morning. On completion of grabbing at 2100 h 29 October, CLIONE steamed to the Hurst Narrows at the western end of the Isle of Wight, to carry out Aim 4. Side scan surveying was commenced at 1556 h, 30 October and completed at 1810 h the same evening. CLIONE then steamed to Plymouth to put a sick crew member ashore and receive a supply of stylus bands for the EPC sonar recorder and further rolls of sounder and scanner paper. CLIONE anchored in Plymouth Sound at 1151 h, 31 October and after rendezvous with a launch from Plymouth, left at 1220 h for Falmouth to carry out Aim 2. Six scallop dredge stations were worked in the area of the dumping ground receiving Truro sewage sludge on the evening of 31 October and bacteriological analysis of batches of five scallops from each haul was made. On 1 November a grabbing survey of 45 stations was completed over the same area using the 0.14 m² Day grab.

During this period a series of deep depressions had developed and it was clear that Aim 1 would have to be abandoned as passage around Land's End and work in the Bristol Channel would not be possible for several days. On 2 November the new underwater TV rig (a modified shallow water current meter rig) was deployed in the shelter of Falmouth Bay, firstly at anchor and then over parts of the dumping ground. This was successfully completed at 1430 h and CLIONE steamed to Plymouth to conduct Aim 3. Test runs were made on passage to set up the side scan to record at 1/4" sweep/second (instead of 1/8" sweep/second) doubling the width of seabed scanned. This duly completed, CLIONE anchored in Plymouth Sound at 2117 h. On 3 November a grabbing survey of 41 stations was completed over the Plymouth sewage dumping ground. The sediments appeared muddier than on previous surveys in the area and apart from a few coastal stations, adequate sampling was achieved with the 0.14 m² Day grab. CLIONE anchored in Plymouth Sound overnight and on 4 November a side scan survey of the area was completed by 1423 h. CLIONE then proceeded east to the Needles to carry out a further side scanning run over the course surveyed on 30 October, but using the wider range. This was commenced at 0638 h, 5 November and completed at 0756 h. Several dredge spoil vessels were observed, one of which was dumping spoil directly in CLIONE's path; however, the spoil was not apparent on the side scan trace at first inspection. CLIONE then continued steaming eastwards and at 2000 h conducted a short sonar survey over the Dover spoil ground. In view of the numerous war-time wrecks in the area, side-scanning was preceded by an echo-sounding survey. Following the collection of sediment samples for verification of sediment type, CLIONE resumed her eastwards passage at 2210 h and arrived in the East Swin, outer Thames Estuary, at 0734 h 6 November to commence Aim 6. Three Granton trawl hauls furnished sufficient fish for chemical analysis and CLIONE then steamed for Lowestoft and berthed at 1655 h, 6 November.

RESULTS:

With the exception of Aim 1, which was aborted, all the aims were successfully completed. In addition a short survey of the Dover spoil ground was carried out.

Aim 2. Bacteriological examination of scallops (Pecten maximus) showed some slight elevation of faecal coliforms in samples taken within the dumping ground. In the sediments levels of E. Coli, coliforms and faecal streptococci were low indicating no recent dumping but there were higher levels of the more persistent Clostridium perfringens in the dumping ground and landwards of it. Sediment samples for physical and chemical analysis were recovered from all of the 45 stations worked.

Aim 3. As at Falmouth, levels of E. coli, coliforms and faecal streptococci at Plymouth were low; higher levels of Clostridium perfringens to the south west of the dumping ground indicated sludge particle transport in that direction. Sediment samples for physical, chemical and biological analysis were recovered from all but 3 of the 41 stations worked. Good records of sea bed morphology and type were obtained by the side-scan sonar survey.

Aim 4. The survey was successfully carried out at both $\frac{1}{8}$ " and $\frac{1}{4}$ " sweeps/second, but no dumped spoil was apparent on the paper record.

Aim 5. Side scanning and grabbing were successfully carried out. Bacteriological analysis of sediments indicated higher levels of Clostridium perfringens well to the west of the dumping ground but this may not be due to short dumping as there is considerable bacterial outflow from the Thames, and the Falls dumping ground itself is sited in an area well swept by the tides and where sludge particles are unlikely to remain.

Aim 6. Three Granton trawl hauls in the East Swin, yielded adequate samples of cod and whiting (25 of each). No flounder or mackerel were caught and insufficient plaice to make a sample.

Aim 7. The new TV frame was successfully deployed using the forward winch and useful observations made.

Aim 8. (Additional to programme). This was successfully completed. Grabbing provided some samples of dumped anoxic mud but most consisted of encrusted chalk cobbles.

Aim 9. (Additional to programme). A number of sightings were made during the cruise and these are being reported on separately by Mr Byrne.

Aim 10. (Additional to programme). A separate report is being made by Captain Chapman.

SEEN IN DRAFT:

RFG (Skipper)
BAC (Master)

M S Rolfe
16 November 1981

INITIALLED:

HWH

DISTRIBUTION:

Basic List +
M S Rolfe
A Franklin

S M Rowlatt
E G Shreeve

Lynda George
C D Byrne