MR BAPE

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

1973 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 10/1973

(PROVISIONAL: NOT TO BE QUOTED WITHOUT PRIOR REFERENCE TO THE AUTHOR)

STAFF:

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DURATION

Left Grimsby 0800 h, 30 November

Arrived Grimsby 1400 h, 20 December

All times Greenwich Mean Time

LOCALITY

Western Approaches to the Channel

AIMS

1. To lay and recover 6 moored current meter stations in a line stretching from Lands End to Ushant.

2. To complete a temperature-salinity and echo-trace survey over the region between the Mid-Channel and 7°W.

3. To track the drift of parachute drogues within short-term triangles of moored current meter stations built up from the established line of moored stations.

4. To test:

   a. the MAFF acoustic release system at a depth of about 600 m and if the test is successful to leave 4 releases out in the field to be recovered by CIROLANA 1/74. (The single line deep mooring in this case to be laid via the free-fall technique from the stern deck.)

   b. Various radar-target structures on the existing surface buoys.

NARRATIVE

The ship left Grimsby at 0800 h, 30 November and after a good passage reached station A, the northern-most point on a line of 6 moored stations lying between Lands End and Ushant, at 1900 h the following day. In marginal wind and sea conditions a current meter rig was launched and all went reasonably

well apart from the fact the pellet line fouled the sub-surface buoy and sank out of sight as the meter weight was lowered. The ship dodged up to station B during the night and when deck preparations began at 0600 h, 2 December the wind and sea had moderated considerably compared with the previous evening. Consequently the other stations were launched in rapid succession, (station B 0930 h, C 1201 h, D 1400 h, E 1845 h and F 2200 h), with conditions getting progressively better during the day. In fact, there was so little wind at station C that the pellet fouled the sub-surface buoy yet again, while at station D there was some difficulty experienced in getting the vessel to drive away from the floating sub-surface buoy. Stations E and F gave no trouble and indeed appeared to be copy-book launches. Figure 1 shows the position of this line of stations and also indicates the extent of the rest of the working area.

After station F had been launched the ship steamed eastwards overnight towards Guernsey and at 0830 h, 3 December the first station of the temperature/salinity/echo-trace survey was sampled. This survey continued for the next three days being ended prematurely at 0615 h, 7 December by gale-force winds and associated seas and the discovery that the bow-thruster could not be started. The vessel dodged in the gale throughout the morning while the bow-thrust unit was checked and then set course for Falmouth with the intention of seeking shelter and land-based assistance but en route the fault was found and so the ship moved into Mounts Bay instead during the early afternoon. At about the same time the news was received from the Laboratory that the surface buoy from Station A had been brought into Newlyn by a Mr Thomas. Since the vessel had anchored just off Newlyn harbour the South Western District Inspector of Fisheries and the Newlyn Harbour Master were contacted and it was arranged that the buoy would be brought out to the RV CIROLANA at about High Water (1100 h) the following day. Once the buoy had been lifted on board it was found that all movable strops, ropes, buffs and associated shackles had been removed and that the lens of the light was cracked.

During the afternoon of 8 December the wind moderated and so at 1845 h the anchor was weighed and the vessel moved to the vicinity of station A. The re-possessed buoy was then put out on a single-point mooring in the immediate vicinity of the meter weight in order to warn all vessels of the presence of the current meters. Course was next set for 47°49', 7°54'W, the centre of a Continental Shelf region that appeared from the available charts to be ideal for the deep water testing of the MAFF acoustic release. Preparations for laying a deep single-point moor via the free-fall technique began at 0845 h, 9 December at about the same time as the vessel contacted RRS DISCOVERY, which was known to be working in the area, in order to confirm that her on-going experiments would not be disturbed by the Lowestoft mooring. Once this confirmation had been obtained the launching of the rig began. At 1202 h, the weight was slipped and a minute later the surface and sub-surface buoys which were floating some 600 metres to windward began to plane towards the ship. At 1207 h the surface marker finally came to rest at 47°52', 7°58'W and subsequent observation showed that two pellets of the upper part of the mooring line lay on the surface so that there was every external indication that the rig was in good order. The three acoustic releases put near the bottom of the mooring line were turned on and off without difficulty. Full details of the preparations for launching are provided in a Hydrographic Section internal report.

During the rest of the day the ship stayed in the area of the Continental Shelf, firstly, in order to be able to pay out all the hydrographic wire so that its condition could be checked and, secondly, so that a small "Edge" Section could be sampled via serial observations. In the early hours of 10 December the return passage to the Land'sEnd-Ushant area began and at 1302 h, station D was found to be in good order. The depth was checked along an equilateral triangle of side 5 miles stemming from this station and then an attempt was made to repeat part of the temperature/salinity grid but the vessel was forced to seek

shelter overnight in Falmouth Roads after only two stations had been occupied.

Conditions had improved by daylight the next day and the ship steamed back to station D during the morning and in the early afternoon stations D_1 and D_2, apices of a Stokes' triangle based on station D, were established. The water column at each station, and also at the point in the centre of the traingle where the parachute drogue was launched later that afternoon were sampled and by 1630 h the vessel was concentrating on tracking the surface marker of the drogue. Five hours later an attempt was made to free the recovery line from the surface dahn stave and the marker was snapped in half in the process. A new drogue and marker were made, re-launched at 2305 h and tracked successfully for thirteen hours (see Figure 2) although right near the end of the exercise this second surface marker broke in half of its own accord. By mid-afternoon 12 December the wind was gusting to 30 knots and station D_1 was recovered in marginal conditions. Station D_2 was then approached but the recovery attempt was postponed and the vessel dodged out a westerly gale for 36 hours. By 0845 h, 14 December the sea-state had moderated a bit, though the wind was still 25-30 knots, and this allowed station D_2 to be brought in. At 1100 h the situation at station D itself was being considered. An unsuccessful attempt was made to cut the wire via the acoustic release before the rig was approached in the normal way. The surface marker came inboard satisfactorily but the forward winch could not pull in the buoy tow and the line had to be transferred to the trawl winch. A great tangle of wires and all three of the chain anchors appeared at the ship's side together and had to be cleared before the current meters could be brought in. Once this had been done the ship moved to station E which was found at 1400 h, but heavy seas and swell prevented any attempts at recovery being made. Conditions were much better at station F at 1600 hours and this station was brought in in two stages after the meter wire had been chopped at a first attempt by the acoustic release. The ship returned to the vicinity of station E and dodged through the early part of the evening until the swell had gone down a little. The station could not be found during the early hours of 15 December, nor at daylight nor via the acoustic search system.

In order to make best use of the vastly improved weather conditions the ship moved to station C, but it too could not be found either via a visual search or an acoustic sweep, although by this time the shipboard acoustic unit had become unstable and shortly afterwards burnt out both a particular transformer and its spare. Station B was found and recovered at 1605 h though the top meter was missing, part of the swivel having sheared off at some stage. Station A was reached at 1645 h and dragging for the ground line began but was called off, because the wind began to freshen, in preference for recovery of the surface buoy that had been laid in the area.

Course was then set for station E via station C while contact was being made with Lowestoft in order to see if a spare transformer for the shipboard unit could be sent. A visual search was set up as the ship moved through the area of station C, but no light was seen; station E was found however at 0600 h and recovery began immediately. Again the forward winch could not pull in the buoy tow and again it was found, after transfer to the trawl winch had been made, that all the weights were coming in together. The bottom current meter was plucked out of a tangle of wire that arrived at the ship's side just before the weights: though the A-frame was complete in every detail it was not attached to the wire at any point! Once the weights were in it was found that the meter wire had parted 5 metres above the meter weight.

The vessel moved back northwards to the vicinity of station C and a visual "creeping" search in near gale conditions was made. Information was received at this time that the ship-board unit spares were being sent to Plymouth and at 2030 h, after the steam to Plymouth Sound had been accomplished, Mr Pearson came on board and repaired it. He left at 2230 h: Messrs E and T Yarborough having left the vessel for compassionate reasons via the Pilot boat two hours previously.

While the ship lay at anchor all the wires that had been brought in to date were pulled off the winches and coiled.

By 0830 h, 17 December the ship was once more in the area of station A beginning an acoustic search. It became clear that the current meter wire was close to its original position and further unsuccessful attempts to drag up the ground wire were made. The guillotine release system was then brought into use and just as everyone had begun to think that it had not worked the sub-surface buoy was spotted some 4 cables away. The meters were quickly brought in.

Station C was also quickly found via an acoustic search and "fired" once dragging had failed to pick up the ground wire. The transducer had been trained to the starboard beam and all observers asked to look out on that beam, but in fact the sub-surface buoy appeared 2 cables ahead just off the port bow. The vessel closed on the buoy and it was hauled on board. The top A-Frame had been pulled apart and the meter was missing but the bottom meter was hove up to rail height without difficulty. The entire meter wire was found to be flattened and shiny on one side.

It was then seen that a bar-tight wire was wrapped around this A-Frame while another stray end was maypoled above the acoustic release. The ship came up on the wire in order to take the weight off it and as attempts were made to free the A-frame system the stray end spun round and hit the meter which fell off into the water and sank. Almost immediately afterwards the maypoled wire ripped down the meter tow and tore off the acoustic release and guillotine and the ship was left with a "bitter end" and an A-frame with a sheared or unscrewed swivel piece hanging from it.

The trawl was rigged in the next 3½ hours and whilst it was being made ready the MV SEISMARINER came by towing a two-mile long cable. Radio contact was made by the SEISMARINER, which had been seen during the visual search around station C the previous day, and out of it came the information that at 1630 h, 10 December her cable had fouled a buoy at 49°36', 5°18'W - the position of station C - and that severe damage had been done to the cable as a result of wire or wires running along it. It seems clear that the top meter of the rig at station C was ripped off with part of its A-frame during this collision and highly likely that the rig was pulled together at the same time.

Fishing at and around the Decca positions of the rig and the lost meter began at 1925 h and continued through the night until 0645 hours. On one haul the complete set of wires and weights that had been laid at the station was brought in after it had become caught up on the Starboard Dan Leno. There was no sign of either of the missing current meters in the hauls however and principally in view of the nature of the target being offered to the trawl and the fact that on the other similar occasions in the last ten years we have never managed to trawl up individual meters it was felt to be unreasonable to continue fishing after a twelve-hour-long trawl search. Consequently the ship set course for Gorleston to unload the current meter gear. It docked there at 1430 h, 19 December, left at 1830 h for Grimsby and tied up in the Royal Dock, Grimsby at 1400 h, 20 December.

RESULTS

1. Ten days of measurements from at least one point in the water column at 5 of the 6 stations established were achieved. Four current meters were lost. A full report on the detailed current meter aspects of the cruise has been prepared.

2. A "before-the-gales" picture of the temperature/salinity situation in the western half of the Channel was gained. Unfortunately it was not possible to complete even a single line of stations towards the end of the cruise, but data may be available from the regular surveys of the Plymouth Laboratory to compare with the current meter results at this time.

3. The echo-trace survey showed dense fish traces off the Manacles. Some 54 vessels were fishing in these areas. A few other light traces were found off Start Point and Mounts Bay.

4. A 13 hour period of Stokes' triangle data was gained though it may be necessary to carefully screen the current meter data from station D for this particular purpose.

5. A single line mooring with an array of 3 acoustic releases was put out on long-term test at 47°47', 7°54'W. It is hoped to recover it during CIROLANA 1/74.

6. There was no substantial improvement in the radar target given by the test-structures strapped onto buoy D_2, though the "Scotch-lite" tape did make the existing towers more easily seen.

7. The location and subsequent cutting of the meter wires at stations A and C showed beyond all doubt the value of the acoustic search and release system.

J W Ramster
31 December 1973

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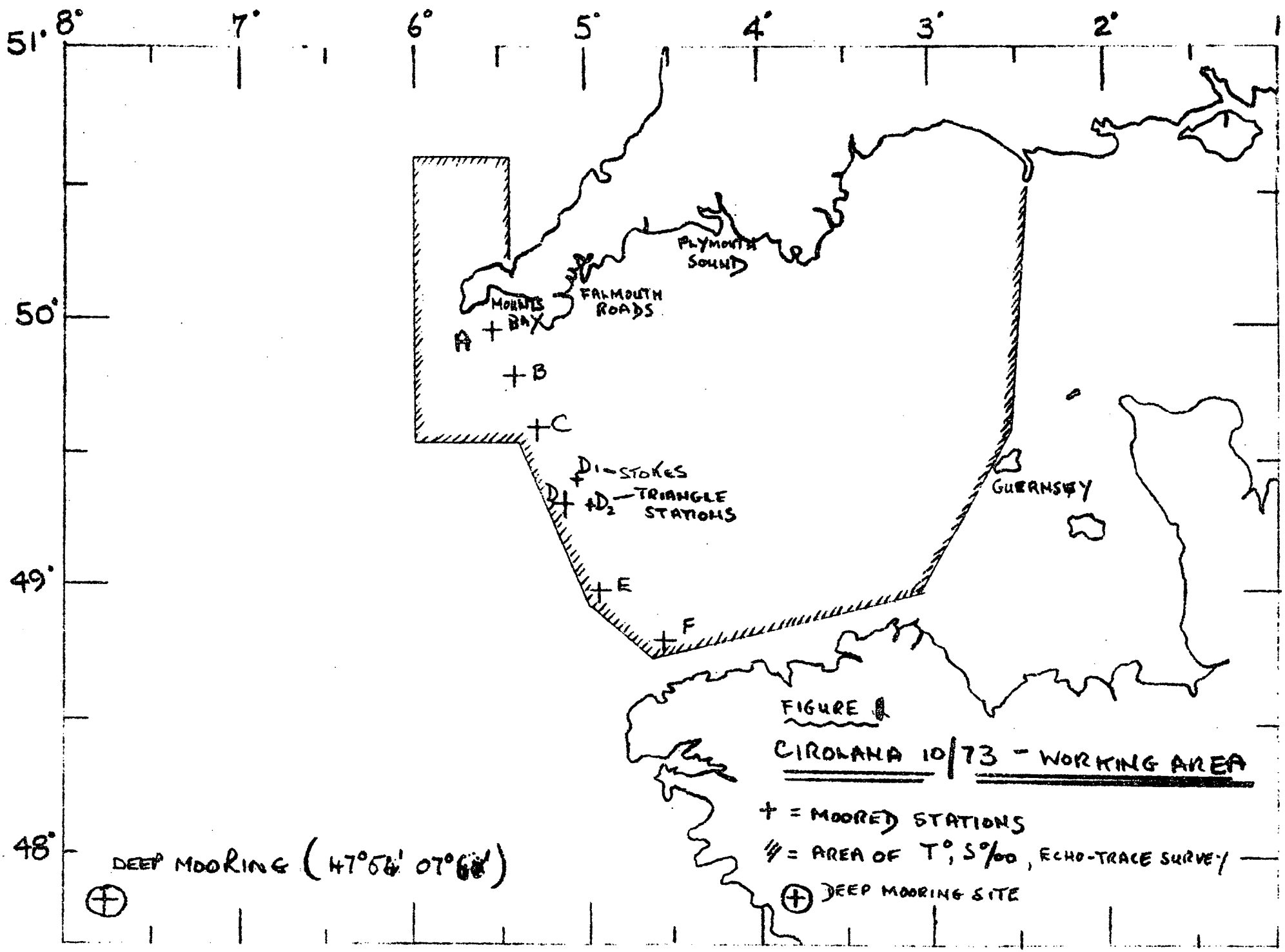


FIGURE 1

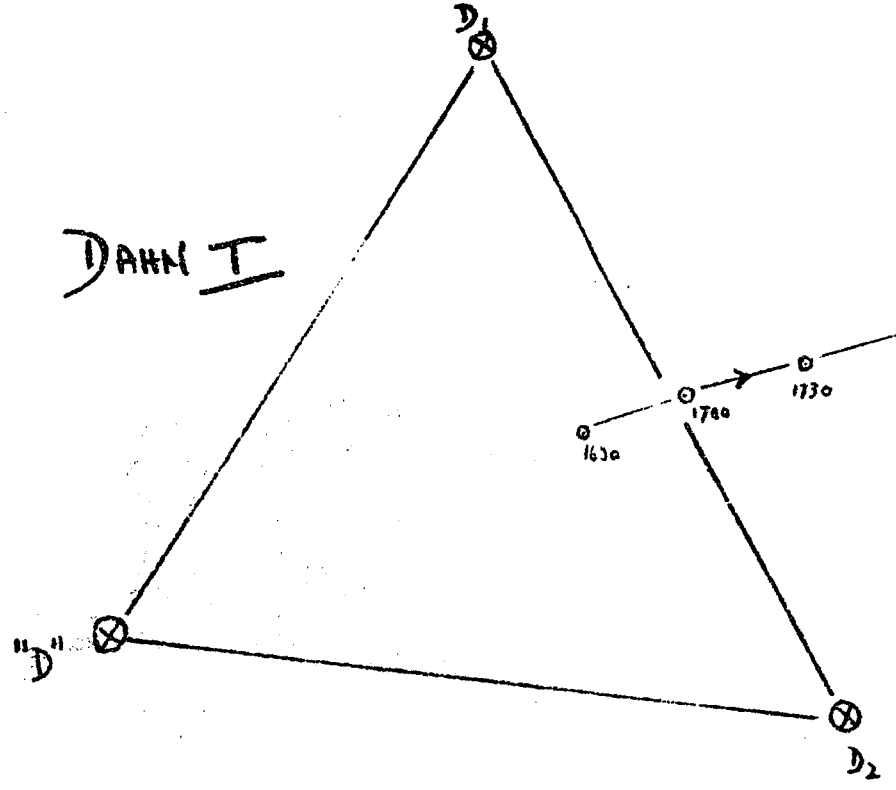
CIROLANA 10/73 - WORKING AREA

FIGURE 2

CIROLANA 10/73

STOKES' TRIANGLE EXERCISE

SHIP'S POSITION ALONGSIDE DAHM DURING TRACKING PERIOD



KEY

⊗ = MOORED CURRENT METER STATIONS

⊙ = SHIP'S POSITION WITHIN 3 CABLES OF DAHM

= 12½ HR. RESIDUAL (1·5 NM. SE)

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