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

1970 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE : CRUISE 12

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

STAFF:

J W Ramster
G C Baxter
T C Doddington
J W Read
C Turner
M B Jordon (Marine Laboratory, Menai Bridge)

DURATION:

Left Lowestoft 0930 hours 15 September
Arrived Lowestoft 1500 hours 8 October

All times are British Standard Time

LOCALITY:

Irish Sea

AIMS:

1. To moor and recover a network of 9 current meter stations extending from Anglesey to the Irish coast and the "Midway" station of the Eastern Irish Sea network. (See attached map)

2. To measure currents at 4 metre intervals throughout the water column for at least one tidal cycle at a station inside the Kish Bank.

3. To monitor by means of serial observations hydrographic conditions between the moored stations.

4. To pick up from Portavogie and Port Erin the surface buoys that went adrift last year and a sub-surface buoy from Aberdaron on the Lleyn peninsula in North Wales.

5. To test a new release hook, the ability of the acoustic release system to cut an instrument wire and the addition of a pressure transducer to the data recording system.

6. On behalf of the "Working Party on the disposal of sewage sludge in Liverpool Bay":

    i. To change the moored current meters at the Mid-Grid buoy.

ii. For 12½ hours after the releases of activated sludge on 22 and 25 September, to measure tidal currents, salinity and temperature throughout the water column in the vicinity of the release.

iii. To collect water samples from the stations of the Main Sampling Grid for subsequent salinity and nutrient analysis and for Dr Burrows' Bioassay programme.

NARRATIVE:

The vessel left Lowestoft at 0930 hours 15 September and anchored in Wicklow Bay during the early evening of Thursday, 17 September in order that some shelter might be gained from a south-westerly gale whilst various items of gear were made ready. The anchor was weighed at 0700 hours the next morning and an attempt to lay station K of the Anglesey-Dublin network began at 0900 hours. Because the bottom topography was extremely rugged and the tidal stream very strong the vessel drifted out of the required water depth and the rig had to be recovered mid-way through the operation. It was re-laid successfully at the next slack water and stations G and C were launched in turn later in the day. Anchor chains and other items of gear were pulled out of the hold and made ready during the last five hours of the day. At the same time Captain Sutcliffe received news of family illness from the Laboratory and had to begin thinking in terms of flying home at short notice. Stations D and H were laid at 0800 hours and 1000 hours the following morning and the ship then steamed to Dublin arriving during the early afternoon. Captain Sutcliffe left immediately and Captain Craig arrived at 2100 hours.

The next day, 20 September, the ship left Dublin and by 1830 hours stations L, E, F and G had been put into the water so that the Anglesey-Dublin network was complete. It was not possible to reach the Mid-Grid buoy in Liverpool Bay in time for the next slack water but at 0930 hours the following day the rig was recovered and three hours later put back in position after the wires and instruments had been replaced and the other components hosed down. The vessel then moved to Holyhead where, at 1800 hours, Mr Jordan and the current meter rig built by the Hydraulics Research Station, Wallingford specifically for use in the Liverpool Bay project was taken on board. A line of hydrographic stations running from Anglesey to Dublin was sampled before the ship set course for the "Midway" station of the Eastern Irish Sea network.

During the early hours of 22 September, a south-westerly gale began to blow and conditions were not suitable for the launching of the station. The ship steamed instead for the sampling-grid being worked at various times by all members of the Liverpool Bay Working Party and from 0931 hours until 0610 hours the following day water samples were collected from four depths and surface and bottom dissolved oxygen values were measured. By 0800 hours that day the ship lay at anchor between the Mid-Grid Buoy and the North West Light in company with the SV PERCY DAWSON and RV LADY OF ESSEX. Activated sludge was released from the former vessel at 0833 hours and was tracked by the latter whilst four hours of current measurements, salinities and temperatures at 3 meter intervals were made from RV CLIONE using the Wallingford instruments. This was followed by 12·5 hours of current measurements using the Kelvin Hughes Direct Reading Current Meter (D.R.C.M.) and hourly bottle casts. Early the next morning, Thursday 24 September, the acoustic release was tested just off Hoylake and then by 0930 hours, the ship was back on an extended sampling-grid which was completed a little before midnight. The vessel then returned to her anchor station and a second set of detailed measurements of water-mass conditions was made in the four hours following the second release of activated sludge at 1030 hours, 25 September. Water samples for Dr Burrows' Bioassay programme were collected on the flood tide that began at 1515 hours that day and the ship then moved to Liverpool, docking at 2030 hours. Mr Jordan left the ship there while Captain Sutcliffe rejoined her.

At 1800 hours, 27 September course was set for Port Lynas and then during the night's passage from Anglesey to the Kish Bank 7 of the 9 moored stations were inspected. All were found to be in good order except Station E where the light was out. The ship anchored between the Kish Bank and the Irish Coast for a 12½ hour D.R.C.M. station after which she moved back to station E where the surface buoy was changed at 0530 hours 29 September. Passage was then made to Port Erin but the westerly swell prevented a vessel bringing off the surface buoy recovered in the vicinity in December 1969. A second toroid was brought out from Portavogie that afternoon however. On the return journey to the Kish Bank region hydrographic stations were worked and drifters released at regular intervals until the rising swell and wind from the south west made conditions unworkable. The surface buoy at station C was found to be upside-down during this steam.

By the early hours of Wednesday 30 September it was clear that the overall weather situation had changed for the worst and it was decided to begin the

recovery operation a day earlier than originally planned. An attempt was made to recover Station C at 1100 hours but the wind drove the ship close to the pellet of the instrument line and the attempt had to be abandoned. Stations D and H were recovered at later slack waters that day but rising wind and swell brought an end to the work as darkness fell. Station G was recovered at 0615 hours the next morning however. A bottle-screw holding the traveller in position came adrift during the operation and the ship had to anchor off Howth whilst it was put back into working order. Station C was then brought in at 1230 hours and the ship moved southwards towards station K. A south-westerly gale and rapidly rising swell forced her into anchorage off Wicklow at 2000 hours.

The ship lay at anchor until 0830, Saturday 3 October. During this period a message was received from the Laboratory to the effect that station K had been seen adrift by the MV EDEN FISHER. Although the wind and sea had not moderated sufficiently in the anchorage to suggest that work could be done in the open sea the ship moved out to reconnoitre the situation. Both stations K and L were in position but sea conditions were, in fact, worse than ever although the wind was expected to moderate later in the day. Since the ship was obviously going to be late and extra stores would be required it was decided to steam to Dublin, take on the extra food and then be back at station E for the slack water at 0100 hours the next day. This was done: the vessel docking at 1830 hours and leaving half an hour later. Hydrographic stations were worked on the journey from Dublin to station E which lay close to Anglesey. Station E was recovered at 0100, J at 0700 hours and Station F at 1300 hours. By this time however another south-westerly gale was beginning to make and the work had to be called off yet again.

During the early hours of Monday, 5 October the ship dodged out a Force 9 gale and then at 0700 hours after a heavy shower of rain the swell fell away somewhat and station L was attempted at the 0800 hours slack water. 70 fathoms of a 100 fathom buoy tow were pulled in and then "the bitter end", a twisted, broken loose end, appeared. No appreciable weight had come onto the wire during this operation. A temporary surface marker was put down close to the instrument lines' pellet and the vessel moved to station K which was recovered in squally conditions at 1400 hours that day. Since (a) the cruise was already running two days late, (b) continued gales were forecast for the area, (c) the Spring tides restricted working time to about 2 hours in any 24 hour period, (d) the ship was returning to the Irish Sea on a hydrographic cruise within 5 weeks, it was

felt unreasonable to stay in the vicinity of station L waiting for a chance to drag up the ground wire. A surface buoy was prepared and launched close to the Decca position of the instrument weight, the gear stowed away and a course set for Lowestoft at 1900 hours. After a good passage the ship docked at 1500 hours, 8 October, two days late.

RESULTS:

1. The 9 current meter stations of the Anglesey-Dublin network were laid; 8 were recovered and a first assessment suggests that the 17 meters gave the normal 70-75% data collection level. Two instruments had to be left at sea.

   The stations were laid and recovered during the equinoctial Spring tides when 3-4 knot tidal streams were running at several of the stations.

2. 12½ hours of direct reading current observations at a station inside the Kish Bank were obtained for comparison with the records from the moored stations C and G lying just outside it.

3. Hydrographic conditions in the region of the moored stations were monitored at the beginning and end of the cruise. Sea-bed drifters were released at several points and 200 sea-surface drifters were released at station H on 21 September.

4. A surface buoy was retrieved from Portavogie. It was not possible to call at Port Erin and Aberdaron.

5. The new release hook was seen to be too clumsy for use with the current meter rigs. The acoustic release system only cut through one third of the 1½" circumference wire when tested in operational conditions. The pressure transducer and the new clock circuitry appear to have worked well.

6. In order to facilitate the study of the disposal of sewage sludge in Liverpool Bay:-

   i. New wires and instruments were laid at the Mid-Grid Buoy. A 70 day and a 2-10 day tape were recovered from the station.

   ii. Tidal currents, salinity and temperature measurements were made in the 4 hours following the release of activated sludge near the Mid-Grid buoy on 23 and 25 September.

iii. Water samples for subsequent nutrient analysis were collected together with temperatures and dissolved oxygen valves from many stations of the Main Sampling Grid. This means we now have available data for February, May, June, July and September and it will be of the greatest value when the moored buoy data are assessed. Samples were also collected for Dr Burrows' Bioassay programme.

7. Moored Rig performance.

i. The Mid-Grid buoy

This rig, which has a surface buoy with a modified tower, was untouched since 5 July and survived Force 12 winds in early September. A frame bolt was missing but all else was in good order. The instruments were covered in part with a reddish deposit.

ii. Anglesey-Dublin Network.

Two lights failed because the bulbs burned out. One buoy turned over and, as usual, it was one of the 10-20 fathom inshore stations. All the other rigs survived a week of almost continous 35-40 knot winds.

30 lengths of wire were launched and recovered, one brand-new length parted on recovery. Examination of the broken end suggests that it had been wrapped round a sea-bed obstruction of some kind and that most of the strands had gone before the recovery operation began. Supporting evidence for this line of reasoning is provided by the condition of the $\frac{3}{4}$" buoy shackle at this rig. Almost half the metal from the "D" of the shackle had been worn away showing that the tow must have been bar-tight most of the time. The true scope of the tow had never been allowed to come into effect.

J W Ramster
14 October 1970

SEEN IN DRAFT: M R Sutcliffe (Master)
A H Button (Skipper)

INITIALLED: AJL

DISTRIBUTION:

Basic List
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MOORED CURRENT METER STATIONS — IRISH SEA

15 SEPT — 6 OCT 1970