Miss Howard

Provisional: not to be quoted without reference to the writer

# R.V. CLIONE

## Report for Cruise 1/1968

| Staff | Duration |
|---|---|
| J. W. Ramster | 1010 hours 3 January to |
| G. C. Baxter | 1230 hours 18 January |
| J. W. Read (Part time: 3-7 January) | |
| A. Jeffery (The Plessey Co. Ltd.) | All times are G.M.T. |
| R. Adams (Aberdeen) | 7-18 January |
| E. Martin (Delta Diving Ltd.) | 7-16 January |
| J. Twilley (The Plessey Co. Ltd.) | 7-16 January |

## Aims

1. To measure currents during a period of 7-14 days at three depths at each of seven points in the eastern Irish Sea by means of moored recording current meters.
2. To release Woodhead seabed drifters along a line of stations between Anglesey and the Isle of Man and over a small network in the region between St. Bee's Head and Walney Island.
3. To measure surface salinity and temperature over the whole region and take serial observations at selected points.
4. To measure surface currents in the region by means of towed electrodes.

## Narrative

The ship sailed at 1010 hours, 3 January and made a reasonable passage to the eastern Irish Sea arriving off Douglas at 2300 hours, 5 January. Rigging the gear began early next day and because conditions were ideal and the foredeck was soon covered with weights, buoys, wires and sub-surface floats it was decided to begin laying the moored stations that afternoon. Between 1330 hours and 0045 hours on 7 January rigs were laid at 54°05', 04°25'W (the Douglas buoy), 54°00' 03°55' (Midway buoy), 54°32' 04°20' (the Solway buoy), 54°25' 03°45'(St. Bee's buoy) and 54°05' 03°35' (the Walney buoy). By 0100 hours the wind had freshened considerably but it was thought best to move to the sea area between Holyhead and the Isle of Man in case conditions had improved by morning. An improvement did in fact occur and the "Hughes" buoy was laid in marginal conditions at 53°46' 04°37' between 0730 and 1030.

CLIONE then steamed to Morecombe Bay and Messrs Adams, Martin, Twilley and Hill came on board via the Fleetwood Pilot boat. After an hour's discussion with the divers and Captain Sutton, Mr. Hill left the ship in company with Mr. Read at 1600 hours. By 2030 hours that night the seventh and final moored station was laid at 53°38' 03°45' (the Orme buoy).

At 0700 hours, 8 January preparations began for the divers to examine the 3 Plessey meters at the Orme buoy as the tide slackened. This work was done between 1020 and 1040 hours, the divers reporting that the meters were clear of all obstructions and externally in good order. Attempts were then made to pick up the signals from the meters

via the Plessey hydrophone but these were unsuccessful. In rapidly deteriorating conditions the ship ran for a lee against the Great Orme, where further unsuccessful tests of the hydrophone were made during the afternoon.

By 1630 hours a full southeasterly gale was blowing, but acting on the most recent weather forecast it was decided to move to the area of Ramsey Bay. The expected veering of the wind did not occur so that the ship had to dodge from 2200 until 0800 hours the next day when she moved south-about round the Isle of Man and laid at anchor under Nairbyli Point. That afternoon the Plessey hydrophone was checked and found to be working satisfactorily: a Direct Reading Current Meter made neutrally buoyant and the warp-anchor rigged.

At 0700 hours, 10 January, the ship steamed to the Douglas buoy which was partially raised. A surface pellet was then attached to the sub-surface buoy by the divers and the meters on the relaid rig examined by them between 1000 hours and 1120 hours that morning. They reported that the ground line had fouled the bottom meter, but that this had been easily cleared: the other two meters were in good order. A hydrophone check on these meters that afternoon gave reasonable results from meter 220 and suspect readings from meter 150. The 3rd. meter could not be checked because the sea was making rapidly; many of the readings taken from meter 150 were not of themselves of good quality because of this. The ship moved into Douglas for the night out of the southwesterly gale.

The following day the light at the Douglas buoy was changed at dawn as the ship moved off to the vicinity of the St. Bee's buoy. On reaching this position it was found that the seas were too steep for the divers to work from the rubber boat, so a detailed hydrophone check began. By 1700 hours one good series of tapes and two puzzling ones had been received. The vessel then moved south to the Walney buoy which was found upturned at 1930 hours and righted by 1950 hours. A hydrophone check was begun and a good set of tapes for meter 398 soon assembled but it was not possible to pin-point with sufficient accuracy the frequency of the other instrument on this rig for reasonable tapes to be received. The exercise ended at 2320 hours.

Early the next morning, 12 January, preparations began for marking the sub-surface float at this station and sending the divers down to look at the meters. As the crew made ready to recover the surface buoy a flag caught in a block high in the rigging. Various attempts were made to free the gear but no success was achieved until Skipper Button climbed up the mast and cut free the flag from around the block. In the meantime the smouldering of a dynamo in the engine room had been reported and dealt with.

By 0845 hours the sub-surface float had been tagged with a pellet and the divers examined the meters between 0900 and 0910 hours: both were in good order. A second hydrophone check began and this time good tapes were received from both meters. The ship then set course for the St. Bee's buoy arriving there at 1315 hours. An unsuccessful attempt to locate the sub-surface float by sweeping was made while the tide was easing, and then the float was tagged by partially lifting the rig. At 1600 hours the divers went down to the meters and reported that the gate of the frame holding the top meter had opened and that the whole system had canted over until the bottom pin was caught in a small bight of the taut meter wire. It seemed to the divers that the wire was stranding at this point. Preparations were put in hand for recovering the station completely, but the actual operation had to be postponed some four hours until the next slack water. By this time the wind had

reached 30 knots and whipped up a big sea. At the last minute it was decided to again postpone the recovery since it was felt that the damaged wire might part as it was brought into the surface layers.

Instead the ship moved westwards to check the position and light of the Solway buoy and then took up a lee for the night just off the northwest corner of the Isle of Man. At 0700 hours, 13 January it moved into Ramsey Bay and anchored in order to shelter from the south-westerly gale which blew for the rest of the day.

By 0640 hours, 14 January however, the wind and sea had moderated to such an extent that it was felt reasonable to weigh anchor and move out to the St. Bee's buoy. At 0900 hours a search was begun for the surface pellet marking the sub-surface float, but none could be found. The divers left the ship in the rubber boat in case they could be of use during the recovery of the rig and then the surface buoy was hauled aboard. As the wires were brought on to the winch the sub-surface buoy appeared showing the meter wire to be still intact. The winch and ship's engines were stopped and a diver secured a line to the damaged frame and the sub-surface float. Recovery then proceeded as normal, all meters being recovered.

The damaged strop was immediately replaced and 3 current meters belonging to the Plessey Co. Ltd. clamped on to the new wire. The rig was then relaid and examined by the divers who found all the meters to be free and working. The ship next set course for the Midway buoy in order to capitalize on the lull in the gale and arrived at the position at 1410 hours. No surface buoy could be found but signals from one meter were picked up on the hydrophone. In rapidly worsening conditions there was no time to do a full hydrophone search, the first priority at that time being to prepare the grappling gear. By 1525 hours the wind was gusting to 30 knots and the preparations had to be called off. An attempt was made to move into the southwesterly gale in order to see if the Hughes buoy was in place, but conditions were so bad that by 1710 hours it proved necessary to run for Ramsey Bay.

The lee was gained by 2030 hours and the ship forced to be at anchor until 1800 hours, 15 January. By this time both wind and sea conditions were such that it was practical to think in terms of not only checking that the surface buoys were in place but also of recovering some of the rigs. At 0030 hours, 16 January the "Hughes" buoy was brought inboard, at 0445 hours the Douglas buoy and finally at 1000 hours the Solway buoy was recovered in rapidly deteriorating conditions. In each case three current meters were retrieved without a great deal of trouble, although there were puzzling features about the recovery operations at the Hughes and Solway stations that are discussed further in the next section.

By 1100 hours a force 8 Westerly gale was blowing and the ship was forced to shelter in Ramsey Bay yet again. Messrs Twilley and Martin were put ashore and the recovered gear was stowed during the afternoon. By 0200 hours, 16 January the wind had dropped so the ship weighed anchor and moved to the St. Bee's buoy in order to begin a check of the 4 stations that were still occupied. At 0440 hours the St. Bee's buoy was seen with the light working, at 0730 hours the Walney buoy was found to be turned over, at 0900 hours the Midway station was re-marked with a surface buoy and by 1645 hours the Orme buoy was seen to be in good order. This passage round the buoy stations was accomplished during a northwesterly gale which moderated quickly as the ship steamed back to the Walney buoy for the midnight slack water.

By 2100 hours the ship was searching for the buoy. On previous occasions it had been possible to bring the ship into the rays of the

searchlight very easily via the Decca but this time some 10-15 minutes went by before the buoy was spotted. It was found to be the right way up, though overturned 16 hours previously, and 0.4 of a Decca lane from the position in which it was laid and about the same distance from the morning's position. After ninety minutes the tide had slackened sufficiently for the recovery operation to begin. The buoy was quickly brought in and the reeving of the buoy wire began. Within a few fathoms of the surface the wire was very badly stranded, the first time such a thing had been seen in two years of working the gear, and there were several anxious moments before the weakened part reached the winch drum. As the rest of this wire came in there were times when it was bar tight and then quite suddenly slack. Eventually the end appeared and the weight was brought in. The ground wire was then taken on to the winch and it too came bar tight and flew off slack. The last few fathoms were found to be twisted round the second weight. Since the bottom meter was at the surface it was brought in before the weights most of its fin was missing. The rest of the meter wire was then hauled in by hand until the top frame appeared. It was seen to be broken apart and the meter was missing. The Decca position was taken immediately. The weight and the sub-surface float were then recovered, the latter showing no signs of damage.

A hydrophone search began within minutes, but it was not until the ship had steamed back to the area between the beginning and the end of the recovery operation that a distinct signal from the meter was heard. The crew began to prepare the trawl while the hydrophone search continued but at 0040 hours, 17 January a warning of imminent south-westerly gales was given for the region. It was not felt reasonable to press ahead with several hours of preparations in view of this development, bearing in mind the incessant gales of the previous 7 days. However, the hydrophone search continued until the wind and swell had begun to make. By this time, 0300 hours, a circle of radius 200 yards had been delimited as the area containing the instrument. The ship then made for the Liverpool Bar, took the Pilot at 1030 hours and docked at 1230 hours, 18 January.

Results

Because of the continued gales Aims 2, 3 and 4 have had to be held over until the next cruise. Aim 1 has been achieved in some degree, however, in that:-

1. Thirteen Plessey meters were run for 7-9 days at 4 of the 7 stations, at two more stations 6 meters have a potential running time by the end of the second cruise of 35 days, at the seventh station the 3 instruments belonging to the Plessey Co. Ltd. have a potential running time of 27 days.

2. Of the 19 meters that could be inspected by divers, 14 were in fact examined: in one instance the ground line had fouled the bottom meter and in another a frame had opened at the top gate. In all other cases the instruments were clear of obstructions.

3. There was only time to search for and find signals from 7 meters via the Plessey hydrophone system, but in each case it proved possible to decode the signals and decide whether or not the meter in question was working properly. In 4 (220, 329, 398, 387) out of the 7 cases there was little doubt that all channels were working well, in the other 3 instances (150, 353, )349) there was some doubt about the velocity channel. It proved difficult to proceed with hydrographic checks in anything more than sea-state 4.

4. The following items relate to the performance of various parts of the gear.

(a) M.A.F.F. Plessey meters

353 Transducer damaged, some leakage and signs of corrosion on circuit boards.

328 Cylinder badly scored externally.

429 Clock cell decomposing, partial record only.

150 Rotor stiff, bearings apparently worn.
Ten of 13 fins were damaged at recovery.

Plessey Co. Ltd. Instruments

655 Found to be missing, 2 readings in 6 at check, put right before launching.

651 Compass jammed at check, freed, but potentially a faulty condition.

(b) On recovery at both Hughes' and Solway stations the top meter in each case had lost its retaining key-ring. A key-ring on the middle frame at the Hughes station was partially straightened. Further investigation of this phenomenon will be made by the divers during the second cruise. The pins at the tops of the frames proved susceptible to damage when stored on board ship and in many cases had to be wired into place.

(c) Two snap-shackle pins bent during use and a third shackle failed in that the buoy weight at the Solway never appeared. The meter wire was quite free however.

(d) Buoy 4 was lost. The rig will be salvaged during the next cruise and every effort will be made to ascertain which part of the gear failed.

Buoy 1 turned over twice. The metal fillets, unique to this buoy, may be making it top-heavy in gale-driven seas and will be burnt off.

In two cases, buoys 2 and 7, the radar reflectors were of a new pattern and held on by wire strops. Both were blown off.

(e) Two Stone-Chance lights filled with water; 2 gave the correct signal throughout the cruise; 1 changed character and gave "Flash 5 every 47 seconds" after some 5-10 days at sea; another changed to "Flash one every second" after being on a buoy which turned over in the first gale. The seventh light was on the buoy which broke adrift, nothing is known about its performance.

J. W. Ramster
23.1.68.

Seen in draft: T.A.S.
Initialled: A.J.L.

Distribution

Basic list plus the following:-

Scientific staff on cruise

J. W. Ramster
G. C. Baxter
J. W. Read

A. Jeffery
R. Adams
E. Martin
J. Twilley