

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, NR33 0HT, ENGLAND

1995 RESEARCH VESSEL

REPORT : RV CORYSTES : CRUISE 3

STAFF:

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DURATION:

25 February - 6 March

LOCALITY:

Holderness, Yorkshire and North Norfolk coasts

AIMS:

1. To recover the Tetrapod, STABLE II and Quadrapod from off the Holderness coast. A POL (Proudman Oceanographic Laboratory) waverider buoy will also be recovered. (AE0207A0)
2. To recover a line of 4 Minipods perpendicular to the Holderness Coast (AE0207A0).
3. To conduct a survey of the Holderness coast and Humber area with the Sidescan, ADCP and RoxAnn (AE0207A0).
4. To test a new VHF tracking system on the Argos buoy with revised transmitter.
5. To evaluate and calibrate the new RoxAnn seabed discrimination system over a range of sediment types and depths.
6. To evaluate a new Sidescan digitiser/storage unit over a range of bedform types.

NARRATIVE (all times are GMT):

RV Corystes sailed at 1700 on the 25th, two days earlier than planned, because the Tetrapod had not been recovered on either Corystes 15/94 or Cirolana 1/95.

On reaching the Tetrapod early on the 26th a guard buoy was removed from the protective triangle of buoys to allow easier access. A Mini Sector Scanning Sonar (MSSS) was then lowered to the seabed on the camera frame, and in conjunction with Sextant (DGPS

navigation package) was used to locate the Tetrapod (Figures 1 and 2). Several dips of the MSSS were then undertaken to accurately assess the Tetrapod's location. Corystes then ran over the calculated position and the Tetrapod was seen on the echo sounder. The Tetrapod was not recovered as weather conditions were unsuitable.

Later, the Quadrapod and Minipod at position E were recovered along with their associated guard buoys. A further Minipod and guard buoy were recovered from position D. Corystes then proceeded inshore and anchored overnight. While anchored the Argos buoy tracking system was tested.

On the morning of the 27th the Minipod and guard buoy from positions C and B were recovered. STABLE was recovered in worsening weather. An attempt to recover the waverider buoy at Tetrapod position was made in the afternoon but was aborted due to rising winds. A sidescan survey of Flamborough Head was made to assess the digitisation and seabed enhancement features of the new hired deck unit.

Both directional waveriders and one uni-directional waverider buoy were recovered on the morning of the 28th. A sidescan survey of the southern line was also undertaken. The position of the University of Plymouth's BLISS (Benthic Lander in Situ System - similar to a Minipod) was checked during the afternoon and a test of the RoxAnn system was conducted during early evening.

RV Corystes then proceeded south to Race Bank overnight. A sidescan survey from Area 107 in the Wash to Race Bank was completed in the morning but due to squally weather conditions sidescanning was aborted and a RoxAnn grid completed in its place.

A further sidescan survey was completed along the southern edge of the Holderness lines during the morning of the 2nd. Sediment samples were taken for calibrating RoxAnn and suspended load sensors. As weather conditions were excellent and the forecast weather conditions were poor a decision was made to attempt to recover the Tetrapod using the MSSS and a grapnel. Two trawl floats were attached to the grapnel to act as an acoustic target for the MSSS. Both the MSSS and the grapnel were then lowered within a metre of the seabed and Corystes gently manoeuvred towards the Tetrapod. On the third pass the Tetrapod was snagged and recovered without damage (Fig. 3). The remaining guard buoys were then recovered and the remainder of the sediment grab survey completed.

A large RoxAnn and ADCP grid of the Holderness coast area was then completed during the 3rd. No sidescan was attempted due to poor weather conditions.

RV Corystes then proceeded north overnight to Seaham off the Northumbrian coast to conduct trials of new suspended load sensors on the CTD.

RV Corystes docked at 0930 on the 5th at Tyne Commissioners Quay at North Shields to unload all the gear. Corystes then moved to the dry dock at South Shields early on the 6th.

RESULTS:

1. The Tetrapod, STABLE II and Quadrapod were recovered from off the Holderness coast. Two directional and one uni-directional waverider buoys were also recovered.

Data from the Tetrapod indicated that it stopped logging on its planned recovery date of the 15 December. The significant wave height was less than expected so the Tetrapod did not go into foreground (faster, more comprehensive) sampling regime. This resulted in a three quarters full BASS (Benthic Acoustic Stress Sensor) logger and only 6 bursts (1 % full) on the ABS (Acoustic Backscatter sensor) logger.

The Quadrapod remained upright for all the deployment and successfully took 6 water samples.

STABLE had been deployed from Cirolana towards the end of January. It was fitted with flow and pressure sensors, suspended sediment sensors and sediment collection tubes.

STABLE and its mooring were recovered on 27 March at 1130. Its spar buoy and anchor were recovered on the groundline. Some tension came onto the groundline and this probably pulled the rig over onto its nose : the electro-magnetic current meters had been damaged and there were stones in the tubes containing the acoustic backscatter sensor.

2. Four Minipods were recovered from a line perpendicular to the Holderness Coast. Three of the Minipod loggers were 100 % full with the fourth a third full. This fault is presently unknown but will be fully investigated at the Laboratory. Initial analysis show the data to be of high quality except for one Minipod which fell over after 106 bursts.

Tests on the Minipod MORS Acoustic release were perfect at distances at 1500 m.

3. A comprehensive survey of the Holderness coast area was made with the Sidescan, ADCP and RoxAnn. A sidescan and RoxAnn survey of the area between area 107 and Race Bank was completed.
4. A doppler radio direction finding (RDF) system was fitted to Corystes main mast to allow automatic direction-finding of Argos buoy VHF beacons. This entailed modification of the beacons to lengthen the transmit time and allow the RDF to lock on to the signal. An Argos Buoy (with Dhan buoy, radar reflector and light) was streamed downtide on a tether whilst at anchor. The RDF system was able to track the buoy to maximum line out (measured on the radar at 0.6 nautical miles. This trial indicated an area approximately 1 nm across could be searched for Argos buoys.
5. A new RoxAnn seabed discrimination system (electronics and software) was tested over a range of sediment types and depths. The Microplot software was found to be bug free but retained the usual convoluted style of operation. The ability to overlay electronic marine charts (Livecharts) on the RoxAnn display was a vast step forward. The electronics was calibrated to give similar readings to the original and two RoxAnn grid surveys were undertaken - one in marginal conditions. Further trials and grab samples are required for ground-truthing, but RoxAnn operation can at last be resumed.

6. A PC-based Sidescan digitiser/storage unit was evaluated with data gathered from the EG&G system. The immediate usefulness of a colour display on standard PC monitors became evident (multiple displays throughout the ship). Several hours of survey yielded high quality records of dredging activity, large sand ripples and a wreck all digitally recorded on a large optical laser disc. Later replay with digital enhancement will complete the evaluation

Without the combination the MSSS, Sextant and the delicate handling of the ship the recovery of the Tetrapod would not have been possible.

This cruise could not of been completed without the skill and expertise of the crew and officers of the RV Corystes especially in the variable weather conditions. It is a pleasure to acknowledge their professionalism.

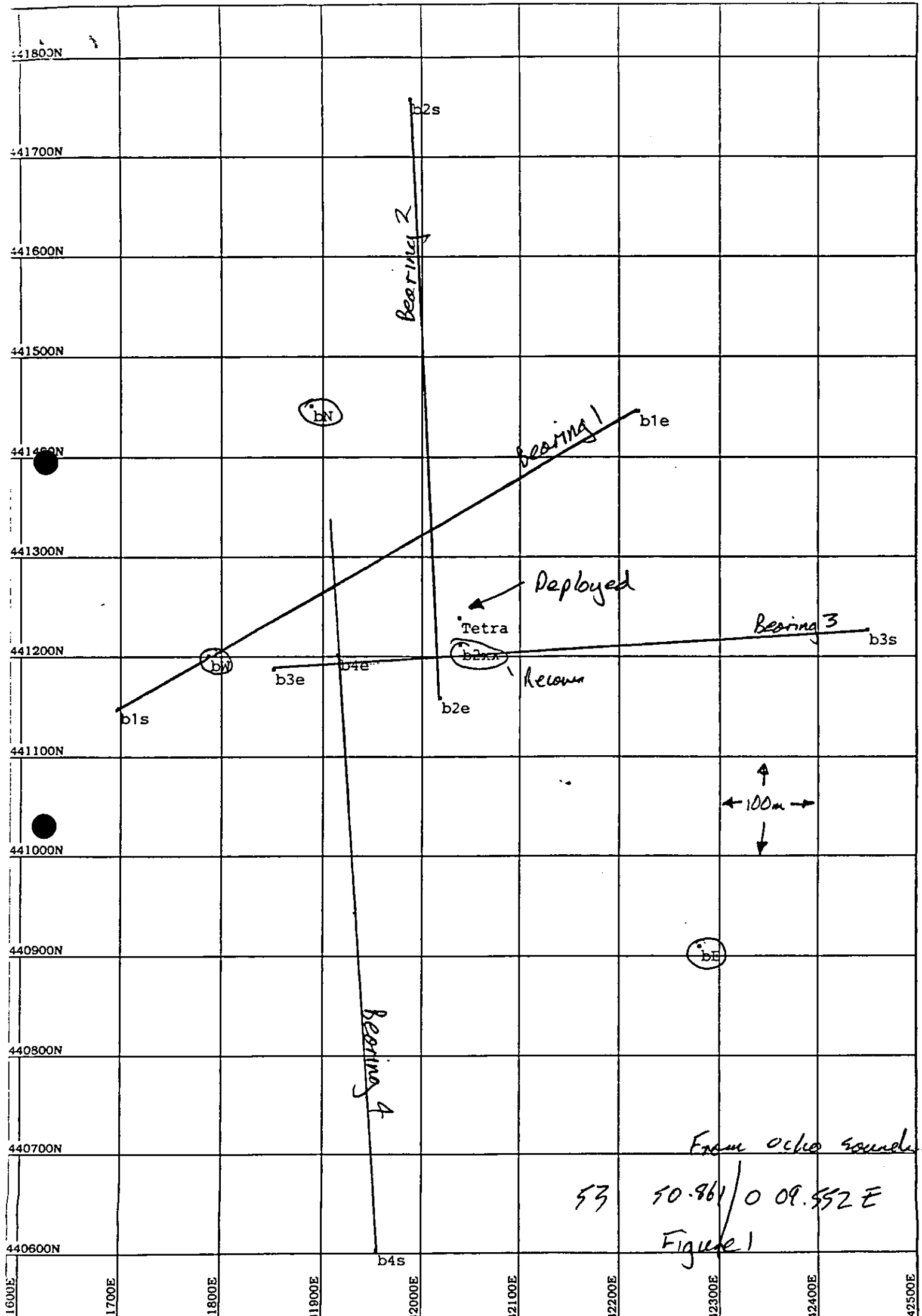
J M Rees, SIC
6 March 1995

SEEN IN DRAFT: BC, WM

INITIALLED: JEP

DISTRIBUTION:

Basic List +
Staff Members
S Rowlett (BOC)
L Murray (BOC)
J Brown



441800N
 441700N
 441600N
 441500N
 441400N
 441300N
 441200N
 441100N
 441000N
 440900N
 440800N
 440700N
 440600N

b2s
 Bearing 2
 b4s

b1e
 Bearing 1
 b1s
 b3e
 b4e
 b2e
 Tetra
 Deployed
 Return
 b3s

↑
 ← 100m →
 ↓

From octa sound

53 50.961 / 0 09.552 E

Figure 1

41600E 41700E 41800E 41900E 42000E 42100E 42200E 42300E 42400E 42500E

TO GUN
RANGE



02.01.93
26/02/95 10:39

47.27
284.1deg

GAIN MAXIMUM
SWEEP forward
ARC 60 deg
CENTER -90 deg
RANGE 60 metres
START zero
MODE normal
DISPLAY SECTION
ARC RANGE full
COLOURS MAXIMUM
TX PULSE long
THRESHOLD 6
SCANNER head down

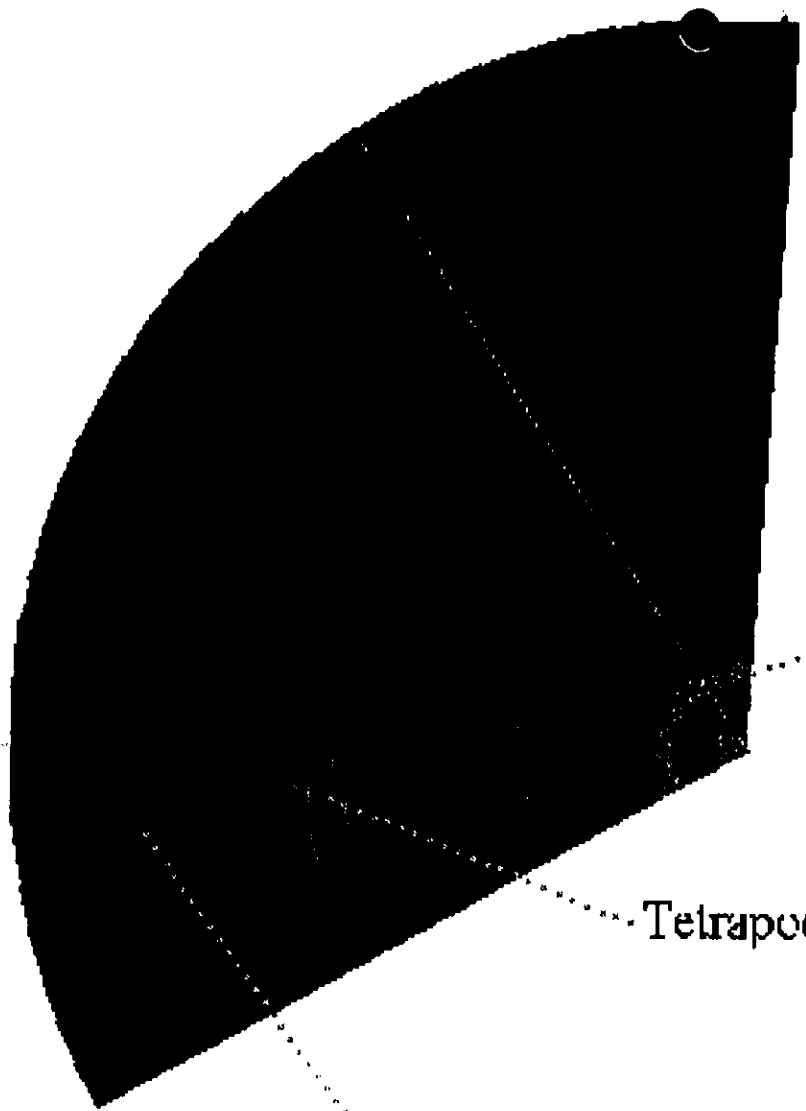
Scanner status
Scanner 121 online

Use arrow keys
change section

F1 MENU OFF	F2 CRAT.	F3 MEASURE	F4 CONTROL	F5 CUR. OFF
F6 PAUSE	F7 SAVE	F8 RESTORE	F9 FRENCH	F10 KEY BEEP

Figure 2

head down



Sea Bed

Tetrapod

Grapple



02.01.85 02.01.85 02.01.85 14.05.85
UNIT 10 SINGLE POSITION RUC 12M DEG
CONTROLS AND INFO RANGE 06 meters CURVE 2000 HOLD FEET DISTANCE POLAR 00 RANGE PAUSE COLOUR POSITION 10 PULSE short THRESHOLD 14 SEARCHING head down
SEARCHING STATUS Position 120 on line
USE CONTROL KEYS TO change settings



Figure 3