

**MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
CEFAS, LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK, UK**

1997 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 6B

STAFF: G P Arnold (SIC)
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M O Eagle

DURATION: 26-30 May

LOCALITY: Southern North Sea

AIMS:

1. To test the engineering performance of the upgraded sector scanning sonar
2. To track fish with the upgraded scanner in conjunction with the ADCP.
3. To assess the precision of geographical location using data storage tags in conjunction with the POL tidal model.

DURATION: Left Lowestoft 1200 h 26 May
Arrived Lowestoft 0310 h 30 May
ALL times are GMT

LOCALITY: Southern North Sea

NARRATIVE:

This cruise began on 26 May, three days later than planned, when CORYSTES returned from an unscheduled dry docking to replace two stern seals damaged during cruise 6A. The ship returned to Lowestoft at 1045 h 26 May and sailed again on the same tide with scientific staff and live fish. Work on Aim 1 began at 1500 h with the inspection of a wreck at 52° 26.39' N 01° 48.52' E. CORYSTES then steamed to a position (52° N 02° E) near the Inner Gabbard, where she laid a small instrument frame carrying an Aandera recording current meter and a Data Storage Tag (DST). This frame was recovered at 1015 h 28 May. Evaluation of the upgraded sector scanning sonar continued while the frame was in the water, using acoustic tags deployed on buffs. The work continued until 1700 h 28 May, when CORYSTES steamed north to relay the frame at 53° N 02° E. Unfortunately, the buoy line snagged the rudder, whilst the frame was being deployed, and broke during attempts to free it. The frame, which was fitted with 300 and 75 kHz transponding acoustic tags, was located with the sector scanning sonar. Several attempts were made to recover it using small grapnels on the end of a tow line, which was also fitted with an acoustic tag. These attempts were abandoned at 2300 h but the tag was recovered at 0850 h the following morning using a larger grapnel on a

vertical rope. This grapnel was deployed amidships after the ship was drifted downtide over the plotted position of the target. The frame, which was undamaged, was redeployed and sonar trials continued for the rest of the day. The instrument frame was recovered at 2010 h 29 May. CORYSTES then set course for Lowestoft and docked there in the early hours of the following morning.

RESULTS:

1. *Sonar evaluation*

The upgraded sonar gave excellent pictures of the wreck, revealing features that had not been resolved with previous versions of the sector scanner. Signals from 75 and 300 kHz tags were, however, only detected out to a range of about 280 m because of broad band noise in the system. Greater ranges should be achievable once Systems Engineering have installed frequency limiting filters, supplied the new transducer and written the RCG (reverberation controlled gain) software. Problems were encountered with the new transmitter, which was not working at full power, and which caused the whole system to crash several times as a result of spurious signals. It is anticipated that this problem can be resolved by installing opto-isolator connections at the various interfaces between the package control system, the navigation systems and the receiver. Interference from the ADCP was overcome during the cruise by the provision of a triggering pulse from the new system and modifications to existing hardware.

2. *Fish tracking*

This aim was not attempted because of the noise limitation on tag detection at long ranges.

3. *Geographical location with data storage tags*

Tidal height and tidal current data were recorded at 52° N 2° E for 39 hours between 26 and 28 May. Similar information was collected at 53° N 2° E between 2030 h 28 and 29 May, although the run of data was broken because of the need to relay the rig.

G P Arnold
30 May 1997

SEEN IN DRAFT: B Chapman (Master)
M Reynolds (Senior Fishing Mate)

DISTRIBUTION:

Basic list +
G P Arnold
P Robinson
S Barnes
A Emery
B F Riches
A A Buckley
M Eagle
Clerk to Eastern SFC; FCO