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

1992 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES CRUISE 2

(Provisional, not to be quoted without prior reference to author)

STAFF
M H Beach (SIC)
T J Storeton-West
W J Meadows
J D Metcalfe
B F Riches
M O Eagle
E G Shreeve) P/T - joined 3/2/92
B C Mumford)

DURATION

Sailed Lowestoft : 1620h 28 January
Docked Lowestoft: 0940h 6 February (All times GMT).

AIMS

1 200 tagged plaice to be released at 5 stations over a 24-hour period.

2 Trials of new pressure telemetry tag, switched-mode prototype tag, etc.

3 Re-evaluate the Scanner during a short tag tracking exercise (about 24 hours). (If the trials are successful and without compromising the programme, a 3-man BBC team will be available at short notice to film a portion of the tracking exercise).

4 Assess an Acoustic Doppler Current Profiler system, and determine if it can be used in conjunction with the Scanner (conflicting operating frequencies).

5 Deploy a Granton trawl and investigate the effects of the door backstrop attachment point on the wing-end distance and headline height, and the performance of the Scanmar net telemetry system.

6 Evaluate the EG&G software, and the Continuous Logging software.

7 Compare the sensor data from Chelsea and Guildline flow cells.

8 Evaluate the RoxAnn sea-bed discrimination system (if delivered in time for the cruise).

NARRATIVE

Corystes left Lowestoft at 1620h and anchored off Southwold in preparation for the telemetry tag trials. Initial minor scanner problems were resolved with the exception of the display of GPS position fix which had to be recorded manually (possibly related to the recent installation of a new Differential GPS system). *Aim 1* was abandoned due to the lack of suitable fish for tagging. The following morning trials commenced with the standard 300kHz acoustic transponding tag and switched-mode prototype tag using a tethered buff and weighted line (about 90m range and depth of 17m). Subsequently Corystes moved out into deeper water and released a plaice equipped with a standard transponding tag which went directly to the bottom and was lost after 7 minutes. Tag trials continued using a free buff and weighted line which was set adrift and then recovered. Considerable experience of the operation of the scanner was obtained, and a second plaice was tracked for most of the following day. The deployment of the scanner, attachment and release of the tagged plaice, and a portion of the track were recorded by a BBC East team put aboard by a locally chartered vessel.

Corystes then steamed out to the Silver Pit to obtain sufficient water depth to test the pressure telemetry tags (about 85m). The ship's Searider and VHF radio communication to the bridge and acoustic laboratory were used to achieve precise depths for each pressure tag and the transmitted signals monitored using the scanner. Also tested using the same rig was the switched-mode telemetry tag.

Two of the three tested pressure tags were then released on plaice and tracked, and the remaining tag subjected to range tests by steaming around a buoyed rig with the tag on the seabed. The same rig was used for tests on the long-life 34kHz gear-marking tag with the ship's Simrad SM600 sonar.

Messrs Shreeve and Mumford were collected from Lowestoft on 3 February together with additional tag telemetry components. A freshening wind and the need for deeper waters (at least 50m) required that Corystes move south to work east of the Thames estuary. Here trials were conducted with the Granton trawl to investigate the effects of the backstrop position using Polyvalent doors on the spread and headline height, and to compare this data with that obtained using wooden doors. The Scanmar net telemetry system was used for these measurements.

The Acoustic Doppler Current Profiler system and the RoxAnn seabed evaluation systems did not arrive in time for the cruise and so *Aims 4* and *8* could not be completed.

Corystes headed for Lowestoft and docked at 0940h on 6 February.

RESULTS

Aim 2 Static tests of the pressure telemetry tags were successful (Figs 1, 2 and 3) although attachment to fish and bottom range tests were disappointing. The miniature silicon chip pressure sensor (about 1mm square) behaved perfectly and supports fully its use in the new Data Storage Tag. Minor modifications to the tags will be instigated as a result of the data obtained, and in time for October's tracking cruise (Corystes 2/92). The prototype switched-mode tag gave excellent results with switchable control out to a range of 350m, and an overall detectable range of 400m. The 34kHz transponding gear-marker tag was detected by the Simrad SM600 at a range of 2.5km and at a depth from the surface of only 2m.

Aim 3 The sector scanning sonar system performed well and valuable hands-on experience of its use was gained. An acoustic calibration programme must be instigated to ensure that its beam pattern and source level remain as specified. The BBC East team recorded a successful tracking exercise that included all aspects of the track (from the deployment of the scanner package to the tagging, release and tracking). The entire exercise was completed within about 2 hours with the team well satisfied and with no repeat sequences. This was to complete an item for BBC's "Look East" which had been part-filmed in the electronics laboratory at DFR.

Aim 5 Three sets of replicate deployments of the Granton trawl were completed: two sets with the French Polyvalent doors (3.1m by 1.8m, 1400kg per door) with backstrops in the middle and aft positions, and one set with the Fearnought wooden doors (3.1m x 1.3m). Data from these

trials are attached (Figs 4, 5 and 6) which were acquired using the Scanmar net telemetry system. It can be seen that spread is excessive using the Polyvalent doors and no advantage gained by moving the backstrop position aft and reducing the angle of "attack". The Scanmar system operated satisfactorily with the exception of the headline height sensor which frequently indicated that the headline area around the sensor was unstable. The attachment additionally of the Simrad headline transducer on the last haul induced a stability to the central area of the headline, consistent headline readings were then recorded from the Scanmar headline height sensor. Consideration will be given to the design of a suitable housing to overcome the instability experienced.

Aim 6 The EG&G software logging software (modified in-house) was evaluated by collecting data from two V-hauls of the Tin Tow Net via its on-board sensors and the Guildline unit in the Conning Laboratory. The new software functioned extremely well (suggested modifications are listed separately and concur mainly with those from Corystes 1/92). Particularly valuable for AEP3 is the post-processing software package. The two ASCII data files were saved to disk so that suitable post-processing for plankton applications can be derived by FSM2.
The Continuous Logging (CL) software (used with the pumped Guildline and Chelsea cells) was evaluated and used to compare the Chelsea flow cell with the Guildline cell (*Aim 7*). A careful note was made of the current windows presentation package, and suggestions for improvements listed. Again, some of the points are common to those resulting from Corystes 1/92 and will be forwarded for discussion.

Aim 7 The data from the CL software was used to compare the temperature and conductivity ratio data obtained from the Chelsea and Guildline flow cells. The CL software itself did not present a close comparison between the cells but calculations using the appropriate conversion polynomials and the CL logged voltages gave very good agreement.

A cruise track is shown at Fig 7.

M H Beach
5 February 1992

SEEN IN DRAFT

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Fishing Skipper - P McKay

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PRESSURE TAG TRIALS Bernard (Corystes 2/92, Silver Pit).

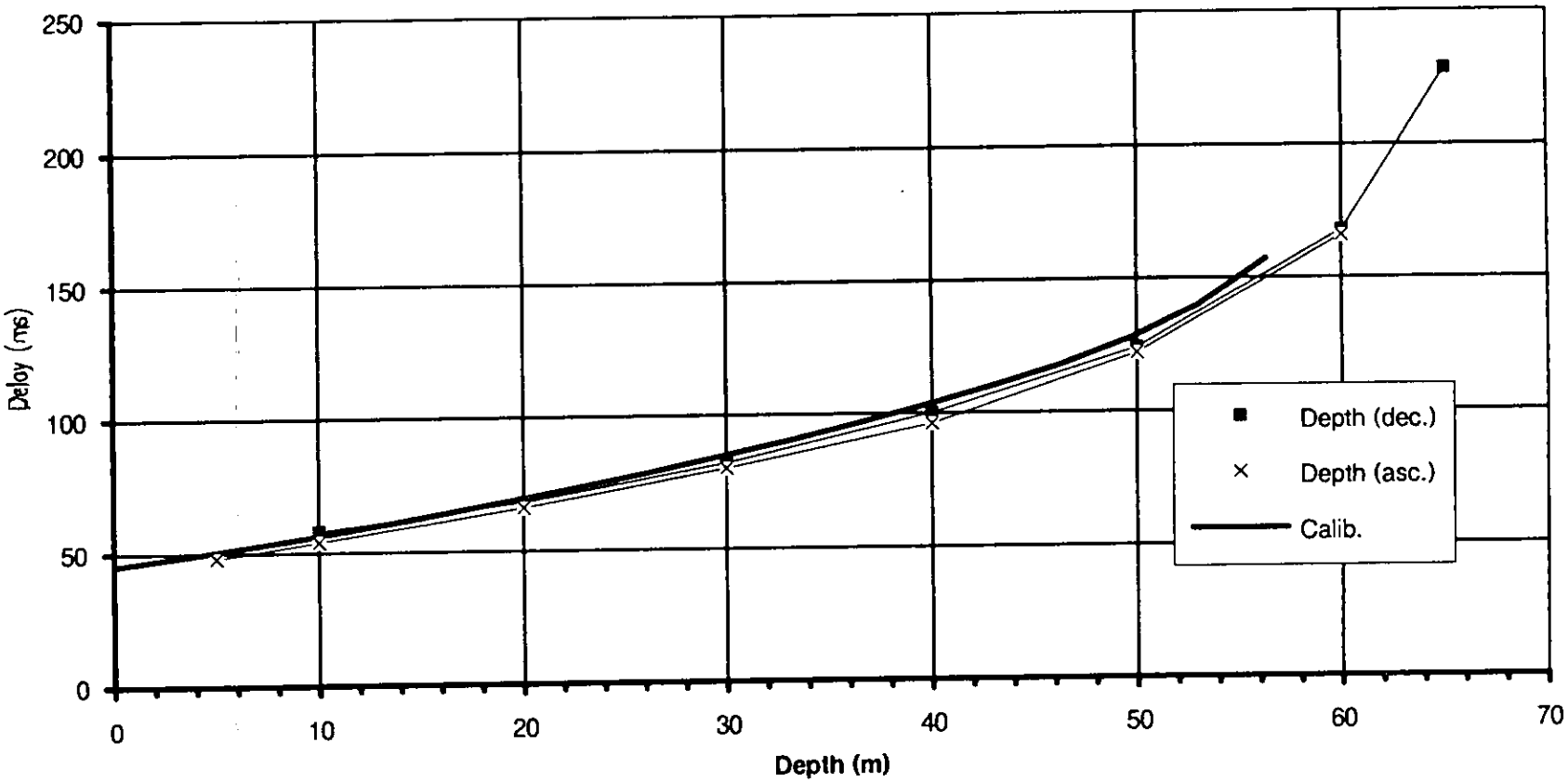


Figure 1

5/2/92 BERN-2.XLC

PRESSURE TAG TRIALS Arthur (Corystes 2/92, Silver Pit).

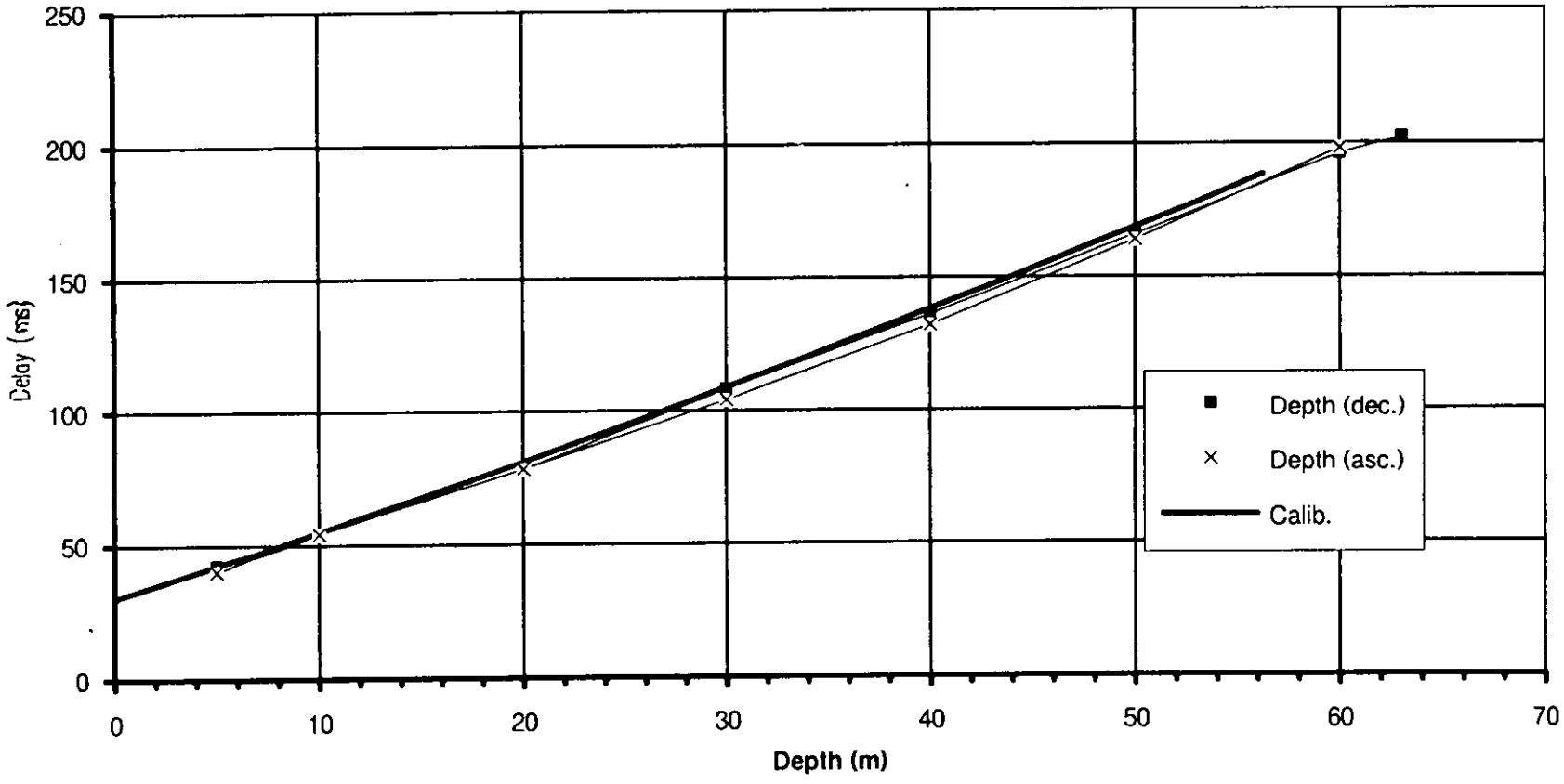


Figure 2

5/2/92 ARTH-2.XLC

PRESSURE TAG TRIAL Farquah (Corystes 2/92, Silver Pit).

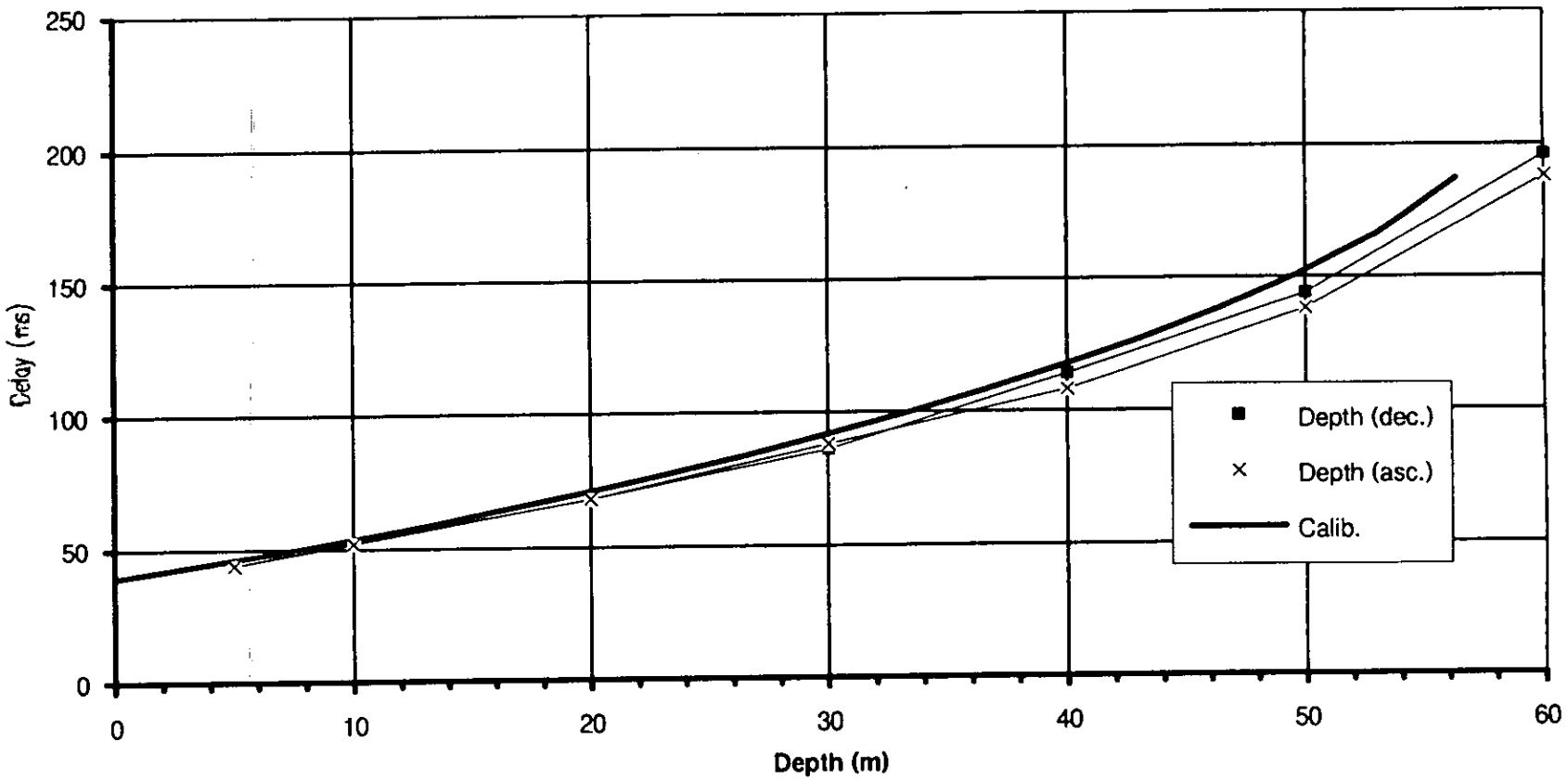
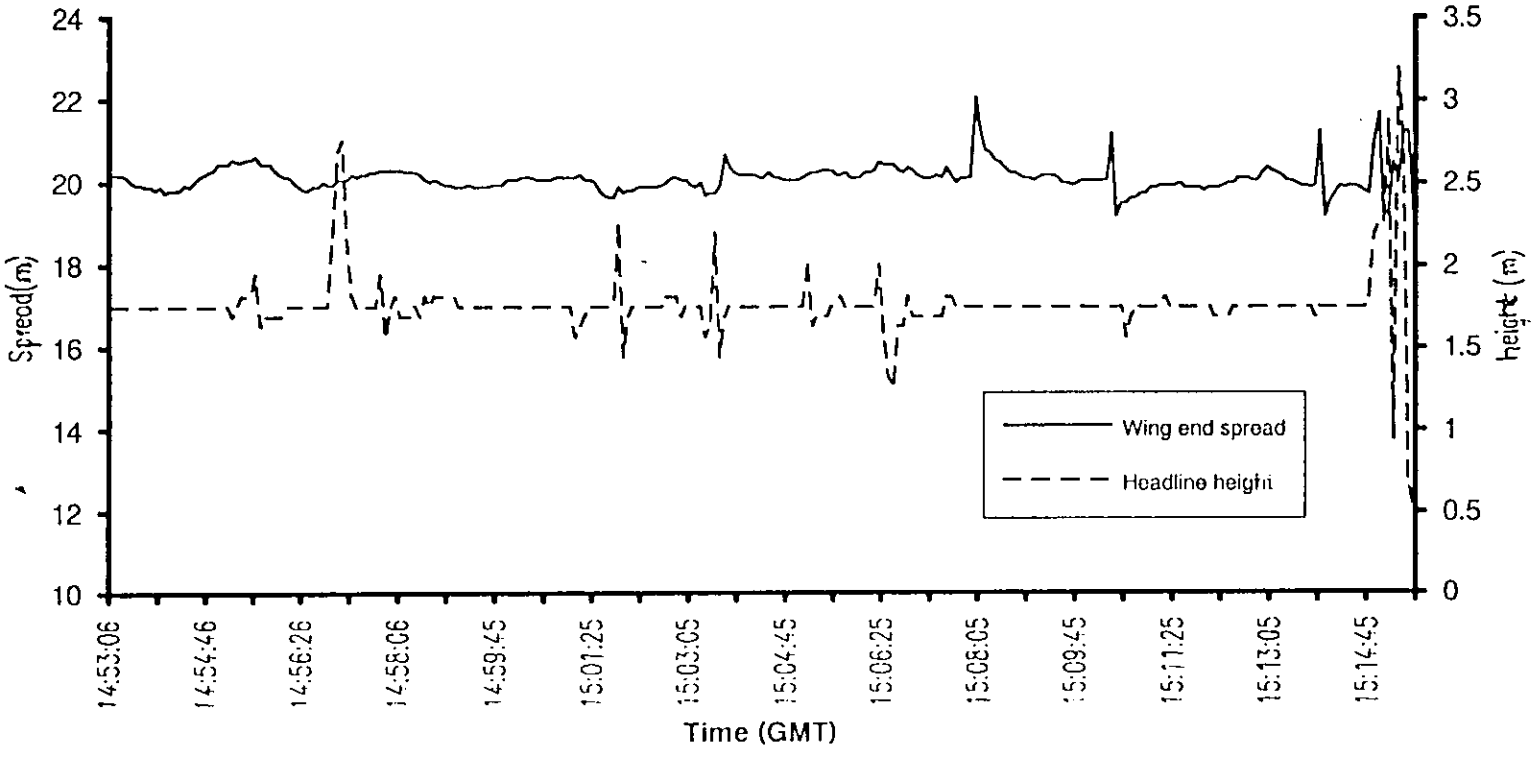


Figure 3

5/2/92 FARQ-2.XLC

Granton trawl: rigging trials. Corystes 2/92, Station 21.



Date: 3 Feb 1992

Time: 1424h

Position: (shoot) 52° 41.41'N 2° 19.46'E
(haul) 52° 39.05'N 2° 22.66'E

Tide: 354° at 1.9kts
Warp: 199m

Door type: Polyvalent (French, 3.1m by 1.8m)

Backstrop position: centre

Ground speed: 3.1kts

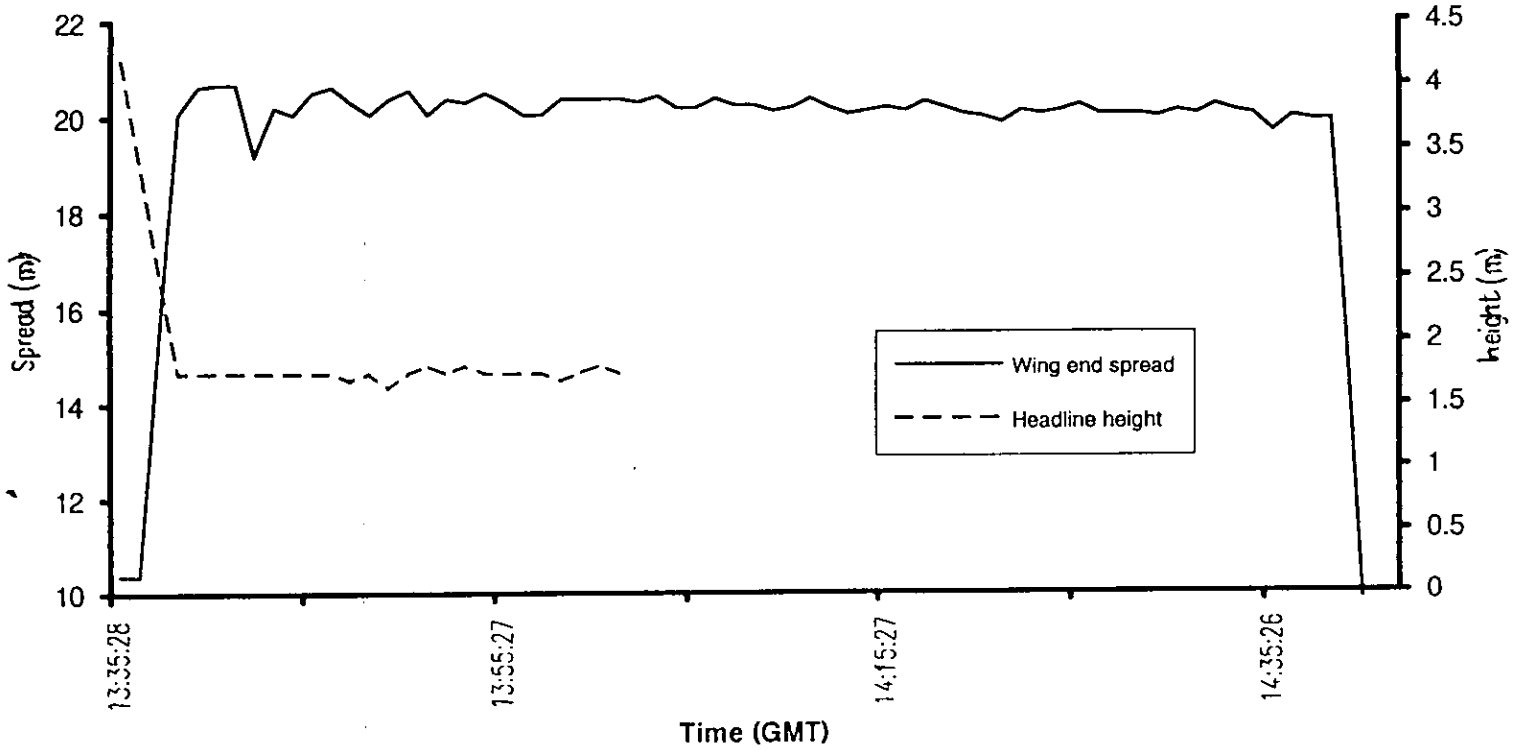
Water speed: 4.8kts

Water depth: 50m

Tow distance: 3.5nmiles

Figure 4

Granton trawl: rigging trials. Corystes 2/92, Station 25.



Date: 4 Feb 1992

Time: 1346h

Position: (shoot) 51° 37.16'N 1° 48.56'E
(haul) 51° 41.36'N 1° 49.43'E

Tide: 027° at 1.4kts
Warp: 181m

Door type: Polyvalent (French, 3.1m by 1.8m)

Backstrop position: aft

Ground speed: 4.25kts

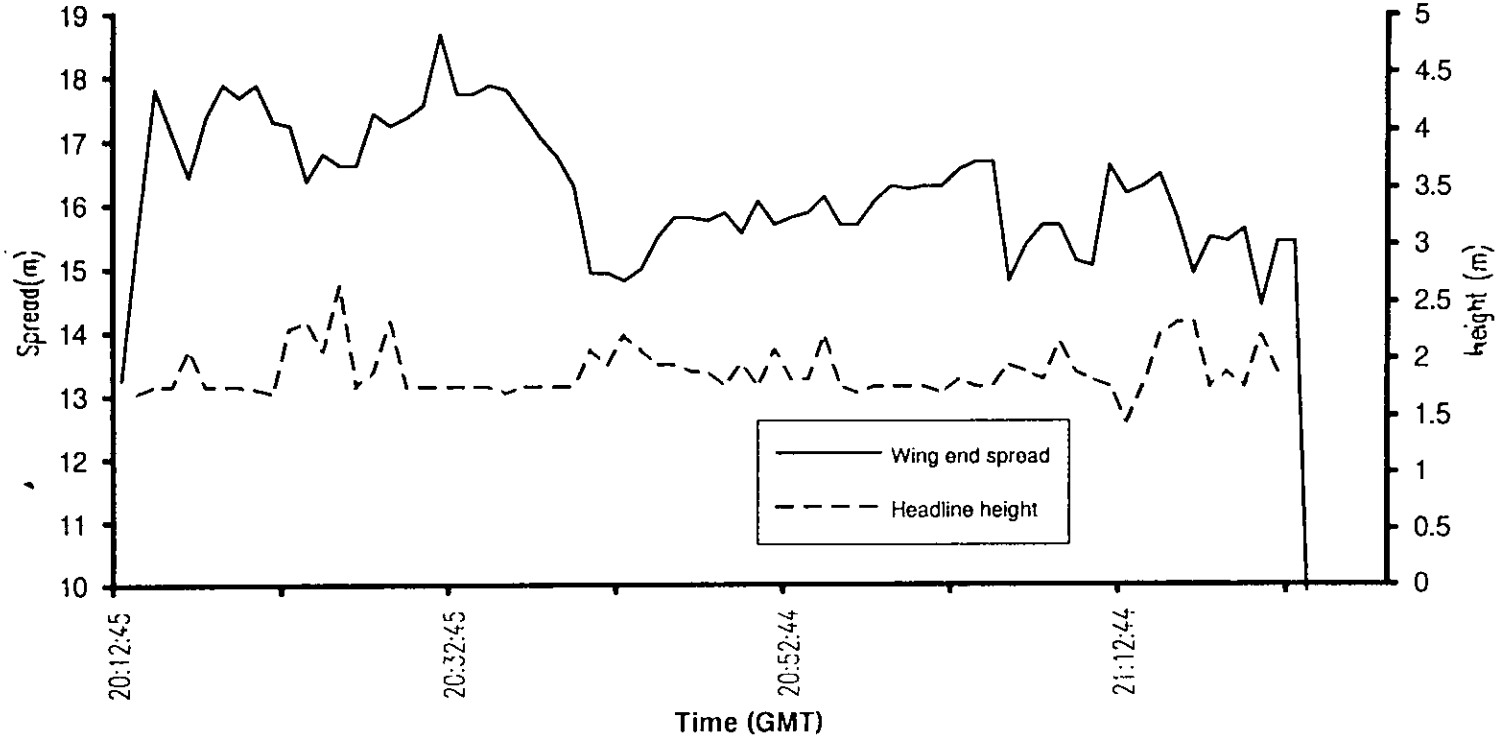
Water speed: 2.15kts

Water depth: 52m

Tow distance: 3.9nmiles

Figure 5

Granton trawl: rigging trials. Corystes 2/92, Station 29.



Date: 4 Feb 1992

Time: 2015h

Position: (shoot) 51° 31.13'N 1° 37.40'E
(haul) 51° 33.66'N 1° 39.83'E

Tide: 205° at 2.0kts
Warp: 145m

Door type: Fearnaught Wooden (3.1m by 1.3m)

Backstrop position: fixed

Ground speed: 3.15kts

Water speed: 4.37kts

Water depth: 29m

Tow distance: 3.5nmiles

Figure 6

CORYSTES 2/92 STN POSITIONS

MULTIPLE PLOT :

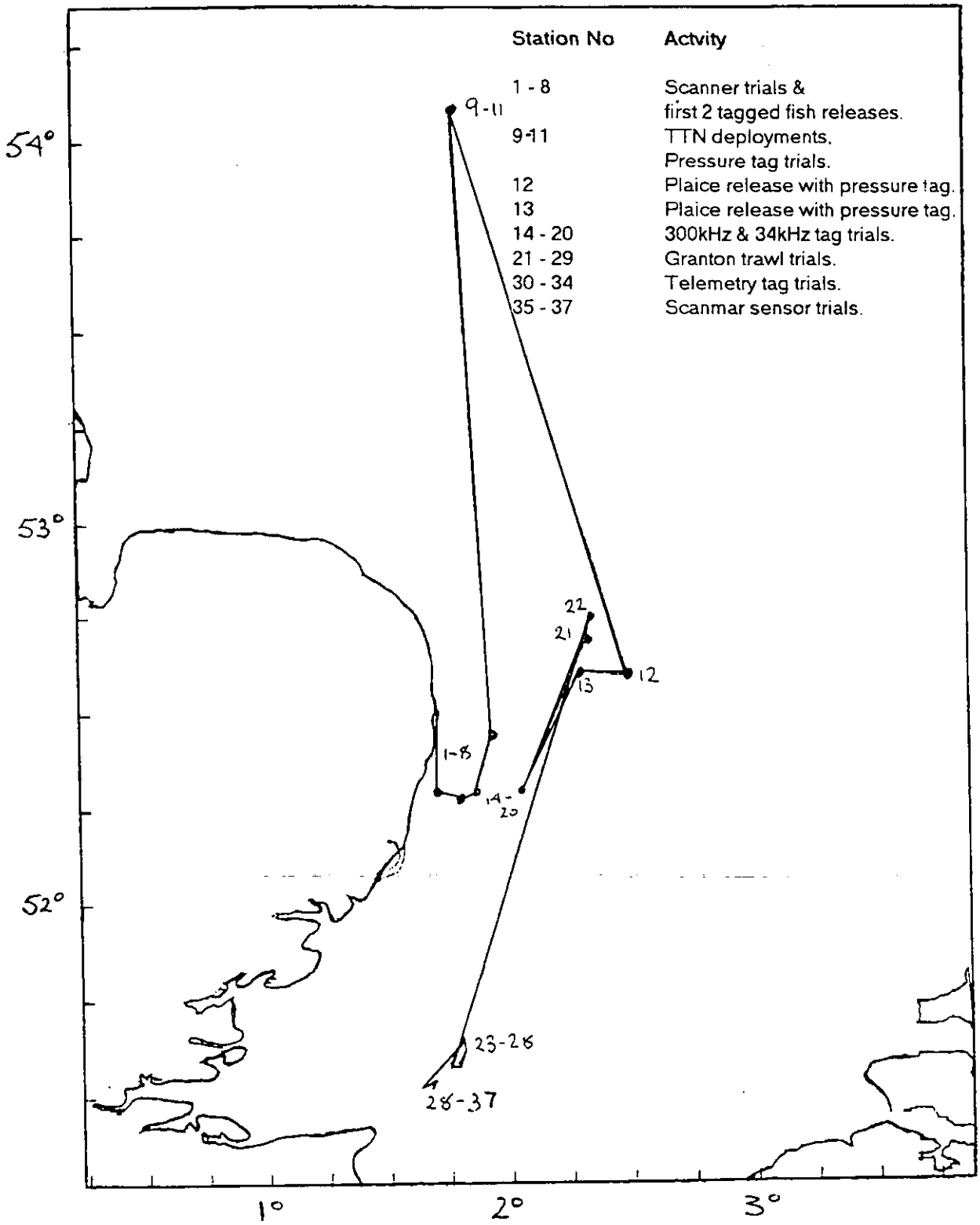


Figure 7