4765

CEFAS
FISHERIES LABORATORY, LOWESTOFT

1999 RESEARCH VESSEL PROGRAMME

~~PROGRAMME~~ REPORT: CIROLANA 1/99

STAFF: **Part A:** (4TH – 12TH FEBRUARY)

D LIMPENNY (SIC)
D SIVYER
A REEVE
R PARKER
M SMITH
S KROEGER
J BOYD

Part B: (12TH - 17th)

D SIVYER (SIC)
A REEVE
M SMITH

Part C: (18th – 23rd)

D SIVYER (SIC)
A REEVE
M SMITH
A WALNE
I McMEEKAN

DURATION: Part A: 4TH Feb – 12th Feb
Part B: 12th Feb – 17th Feb
Part C: 18th Feb – 23rd Feb

AIMS:

1. To undertake sampling for the nutrient monitoring component of the National Monitoring Programme in coastal water of England and Wales (AE004)
2. To deploy a smart mooring at the Outer Gabbard (AE004)
3. To carry out shipboard tests of the Aqua Monitor water sampler and a silicate measuring version of the W.S. Ocean Systems *in situ* nutrient analyser (A1108)
4. To carry out sea trials of an undulating towed body, Utow (A1108)
5. To measure nutrients and zooplankton along a transect from the shelf edge into the Irish Sea (A1208)

Part A: Report

Cirolana sailed at 23:00 hrs on 4th Feb and steamed to the Warp NMP anchor station in the Thames estuary collecting half hourly surface water CTD samples on route. A pilot was put aboard at the Sunk Head for the steam into the Thames. CTD rosette casts were carried out hourly at the Warp anchor station (NMP 465) between 11:30 hrs and 15:30 hrs. Cirolana steamed to the South Varne (NMP 485) site collecting surface water samples hourly on route. A single CTD rosette cast was carried out at 21:30 hrs. At 08:30 hrs the following morning a single CTD rosette cast was carried out at the Selsey Bill (NMP 495) site. Bi-hourly surface water samples were collected on route to the Central Channel (NMP 535) site where a single CTD rosette cast was carried out at 18:45 hrs. Hourly surface water samples were collected on route to the Off Tamar (NMP 576) anchor station. CTD rosette casts were carried out at this site between 01:00 hrs and 03:00hrs on 7th Feb. Cirolana then steamed to the Off Plymouth Sound (NMP 585) site collecting hourly surface water samples, and carried out a single CTD rosette cast at the site at 05:45 hrs. Surface water CTD samples were collected bi-hourly until 17:45 hrs. Two ARGOS drifters were released at a site in the southern part of the outer Bristol Channel at 18:00 hrs. Surface water CTD samples were collected bi-hourly on the way into the Bristol Channel until 21:30 hrs. CTD rosette casts were carried hourly out at anchor at the Nash Point (NMP 615) site between 05:30 and 11:30 hrs on 8th Feb. Surface water CTD samples were collected on route out of the Bristol Channel bi-hourly until 19:30 hrs.

An ARGOS drifter was released at a site off Milford Haven at 19:00 hrs. At 09:00 hrs the following morning a single CTD rosette cast was carried out at the Cardigan Bay (NMP 655) site. Hourly surface water CTD samples were collected on route to the Outer Cardigan Bay (NMP 665) site where a single CTD rosette cast was carried out. Bi-hourly surface water CTD samples were collected on route to IS15 where a single CTD rosette cast was carried out at 23.15 hrs. On 10th Feb a series of 6 single CTD casts (including NMP 775 Irish Sea and NMP 715 Liverpool Bay) was carried out on a transect running between a position north of Anglesey and NMP 705 in the Burbo Bight. CTD casts were carried out hourly at anchor at NMP 705 between 18:30 hrs on 10th Feb and 01:30 on 11th Feb. During the 11th Feb single CTD rosette casts were carried out at sites off the Ribble estuary and off Morecambe Bay and at NMP 785 (Morecambe Bay) with steam through surface water CTD sites collected mid way between each rosette site. Cirolana steamed into Morecambe Bay to anchor at NMP 795 in the Lune Deep. CTD rosette casts were carried out at anchor every hour between 14:30 hrs and 20:30 hrs. The following morning four scientific staff were put ashore at Fleetwood, and Cirolana sailed off happily into the distance with a small but highly efficient crew.

Part B

After leaving Fleetwood CTD casts were carried out between NMP805 (SE IOM) and IS06 (just off the NI coast), regularly interspersed with steam through surface stations. Cirolana anchored at IS07 overnight. 08:30 13/2/99 a single CTD cast was completed at IS07. A further 4 CTD casts were completed in the Western Irish Sea Gyre area, including one at the DANI mooring at IS13. The following 42 hours were spent steaming along the transect to NMP535 (Western Approaches) (Aim 5). Steam through water samples were collected along the transect until 22:30 with CTD casts at 3 key sites and NMP605 (Celtic Deep). ARGOS drifters were deployed at D18 (26109), D13 (26112) and D1, en route. A single CTD cast was conducted NMP535 (Western Approaches) at 08:30 15/2/99, hourly surface water samples were collected on a transect to Prawle Point until 00:30 16/2/99. Surface sampling

recommenced at Start Point 06:00 16/2/99 and continued until just off Dungeness at 22:30. On 17/2/99 CTD casts were made at two stations in the southern Thames, the Warp (NMP465), and then a transect out to NMP475 Outer Gabbard for an anchor station. On completion of the anchor station, Cirolana steamed slowly back to Lowestoft.

Part C

The following morning two scientific staff were picked up by searider at 09:30, but repairs to the ships radar's delayed departure to the Wash by 6 hours. As Cirolana left Lowestoft the DGPS navigation system failed causing a further delay and then the ships engines stopped for no apparent reason. Samples were collected from the continuous seawater supply until 00:30 18/2/99. An anchor station at NMP385 (The Wash) was conducted with hourly CTD casts between 08:30 and 15:30. A single CTD cast was made at WSS8 and three more between the Wash and the Humber. On the 20th February a CTD anchor station was conducted at NMP375 (Humber) between 08:30 and 14:30 and bi-hourly steam through samples were collected en-route to the NE coast. A single CTD cast at NMP295 (Off Tees) was made at 07:30 on the 21st, steam through samples were collected near the mouth of the Tees and the Wear and another CTD cast at Tynemouth. An anchor station with hourly CTD casts was undertaken at NMP245 (Off Tyne) between 12:30 and 17:30. The last two CTD dips were replaced with surface samples, as high winds made recovery of the rosette a risky operation. Cirolana moved back inshore and anchored overnight near Tynemouth. On the morning of the 22nd Feb, after severe NW gale force 9 warnings throughout the whole southern Bight area it was decided, on advice from the master and fishing skippers, to cancel the proposed route to west Dogger and Outer Silver Pits. The southerly return route was plotted to remain inshore to collect further samples from the NE coast, Humber plume and outer Wash.

Results

Aim 1 - was completed with CTD casts, nutrients, chlorophyll α, suspended solids, dissolved oxygen at surface and bottom at NMP water sites designated to CEFAS. (See appendix 1 for cruise track, site positions, salinity and chlorophyll α)

Aim 2 - was not completed due to illness of WS Ocean Systems personnel

Aim 3 – see appendix 2

Aim 4 – was not completed due to illness of WS Ocean Systems personnel

Aim 5 – the transect was completed as far as NMPWestern Approaches, with steam through stations and CTD casts, for dissolved nutrients, chlorophyll α, suspended solids and dissolved oxygen. Zooplankton hauls were not possible due to a lack of scientific staff on board to allow round the clock working.

Misc 1 – ARGOS drifters were deployed at 5 sites.

Misc 2 –nutrient samples were collected at 16 stations in the Irish Sea for an intercomparison exercise.

Misc 3 – suspended load and chlorophyll α samples were collected from simultaneously from surface Niskins and continuous seawater supply to calibrate the Chelsea CTD and Aquatraka fluorimeter. Duplicate salinity bottles were collected at 20 sites to check the shipboard Portasal against the lab-based Autosal.

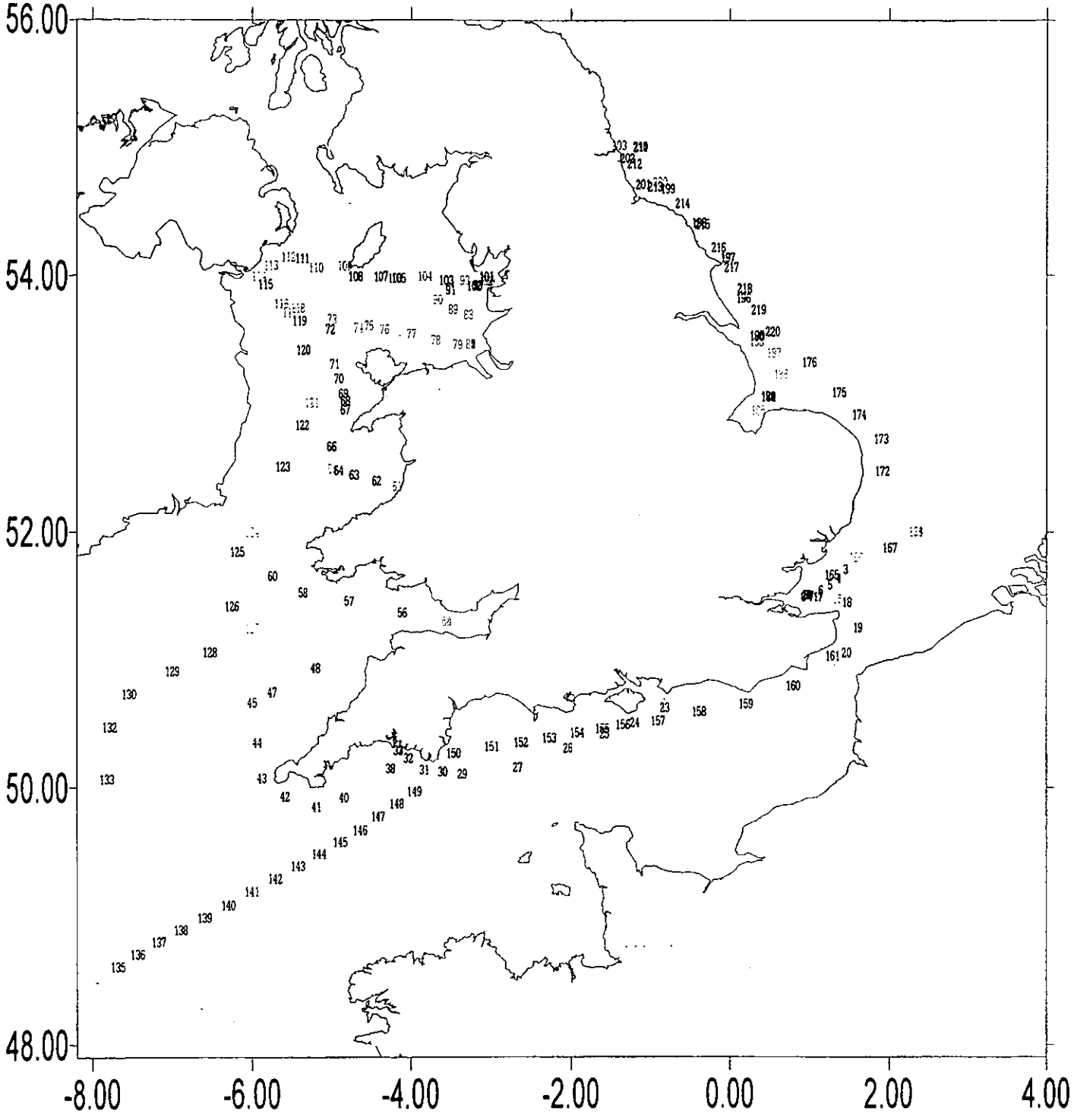
INITIALLED:

DISTRIBUTION:

Basic List
Staff list

Appendix 1

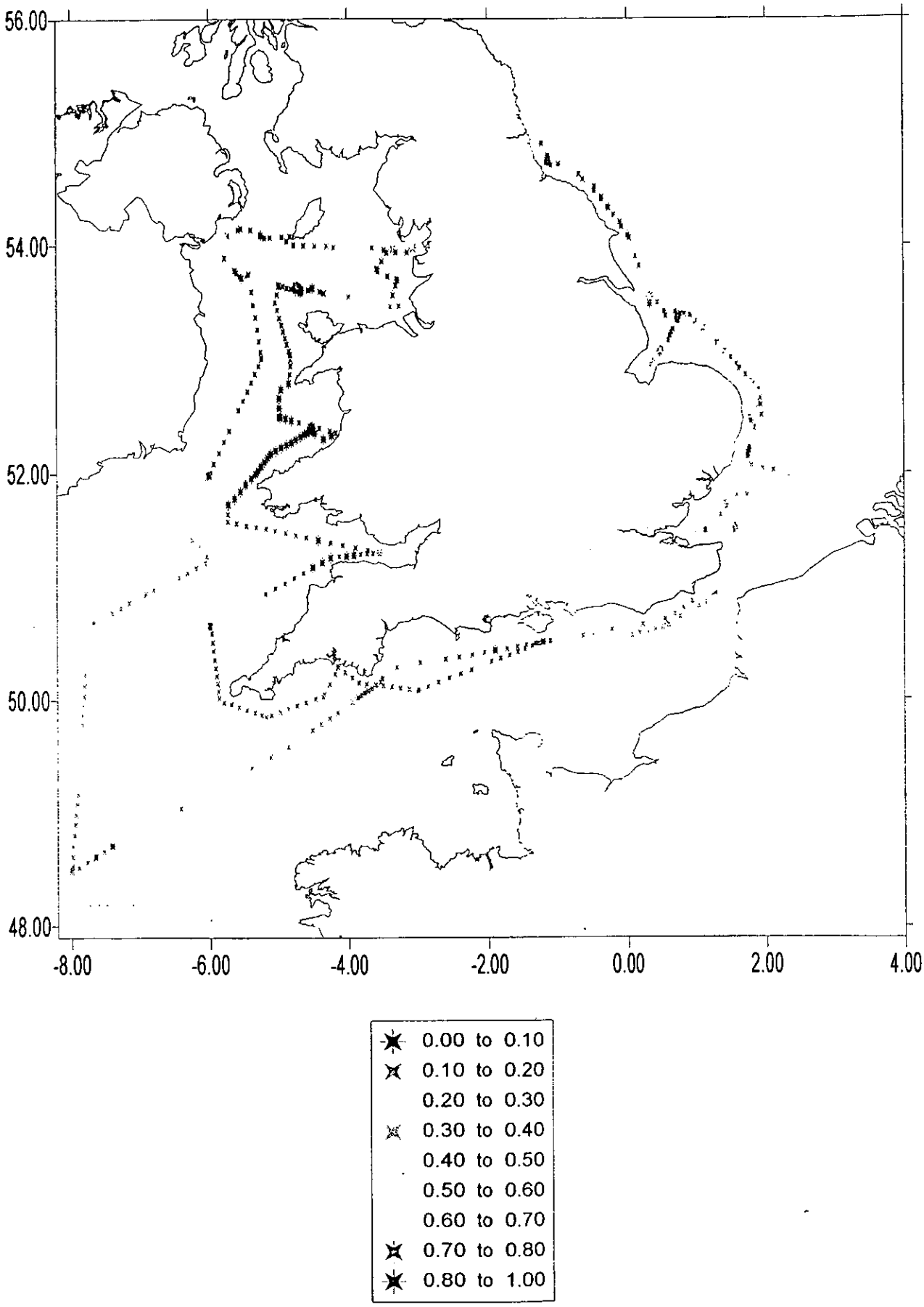
Cirolana 1/99 Site Positions



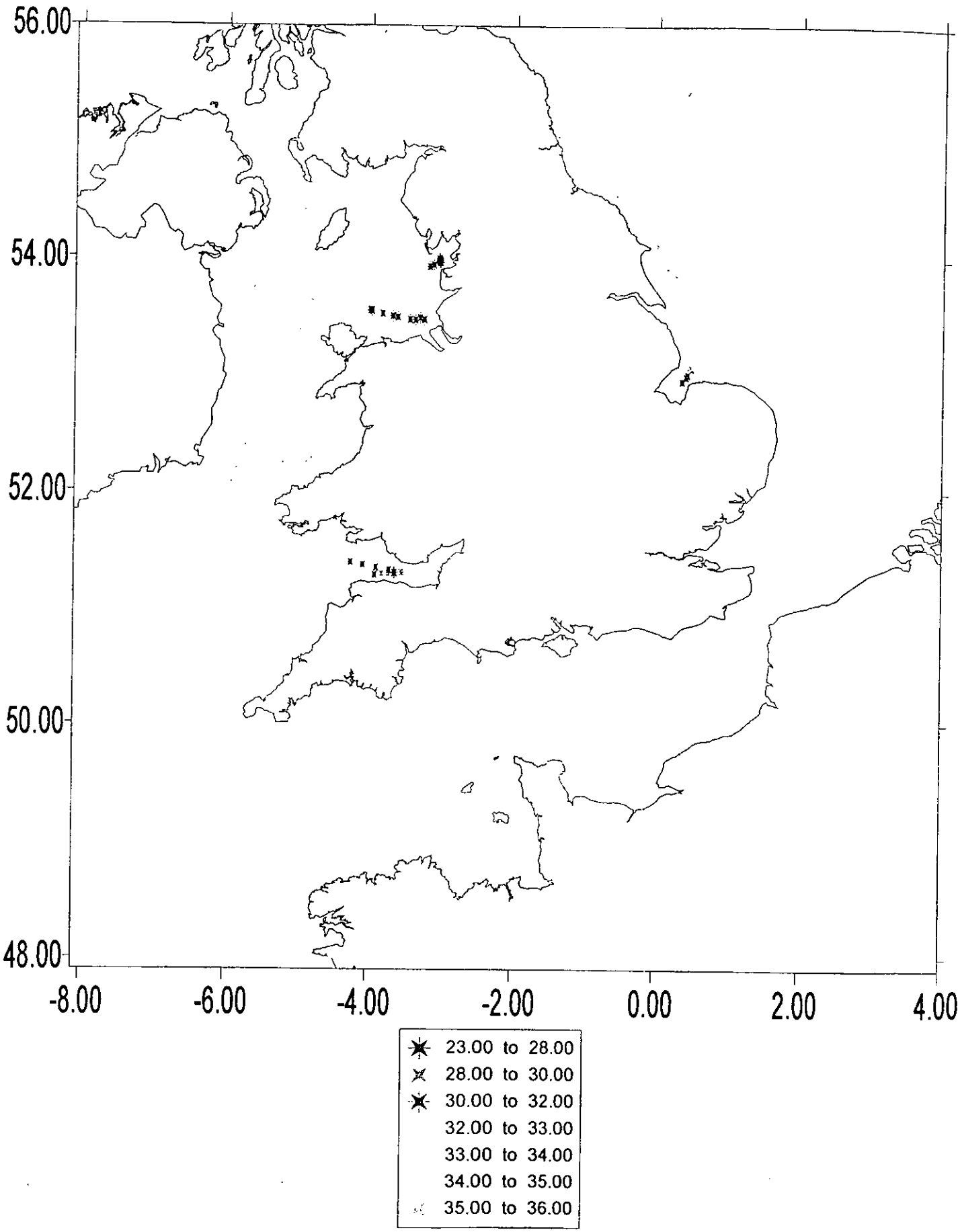
Surface stations

CTD Stations

Cirolana 1/99 Chlorophyll ($\mu g\ l^{-1}$)



Cirolana 1/99 Salinity (from continuous supply)



Appendix 2

Nas-2E Nutrient Analysers.

Four Nas-2E nutrient analysers were taken on the Cirolana cruise to measure surface nutrient levels. Two of the instruments were nitrate analysers, one low range (>30μM) and a higher range (30-80μM) instrument. The other two instruments consisted of a silicate analyser and phosphate analysers, which were both development instruments. The instruments were deployed in the ships wet laboratory and utilised the ships non-toxic seawater supply. In order to de-bubble the water supply, the intake was lead through two large containers (barrels) and a small bucket.

During set-up it was found that the low range nitrate instrument was faulty and was therefore unable to be deployed. The higher range nitrate analyser experienced problems during the first few days of the cruise due to excessive amounts of bubbles in the water even after passing through the de-bubbling system. An air leak in the seawater supply pump was found and repaired which greatly reduced the problem thus allowing nitrate data to be collected from the 9th of February. The early results look promising (Figure 1).

Silicate data was collected from the 7th of February as the instrument was not as effected by the air bubbles as the nitrate analyser. This is possibly due to the geometry of the larger flow cell in this instrument. Early analysis shows expected trends in the silicate data (Figure 1). However, a more detailed analysis is required especially since a sample taken from the 5μM on-board standard was measured as less than 0.5μM on the ships Auto-Analyser.

The phosphate analysers was not deployed as it was damaged on the cruise before it was deployed.

Figure 1.