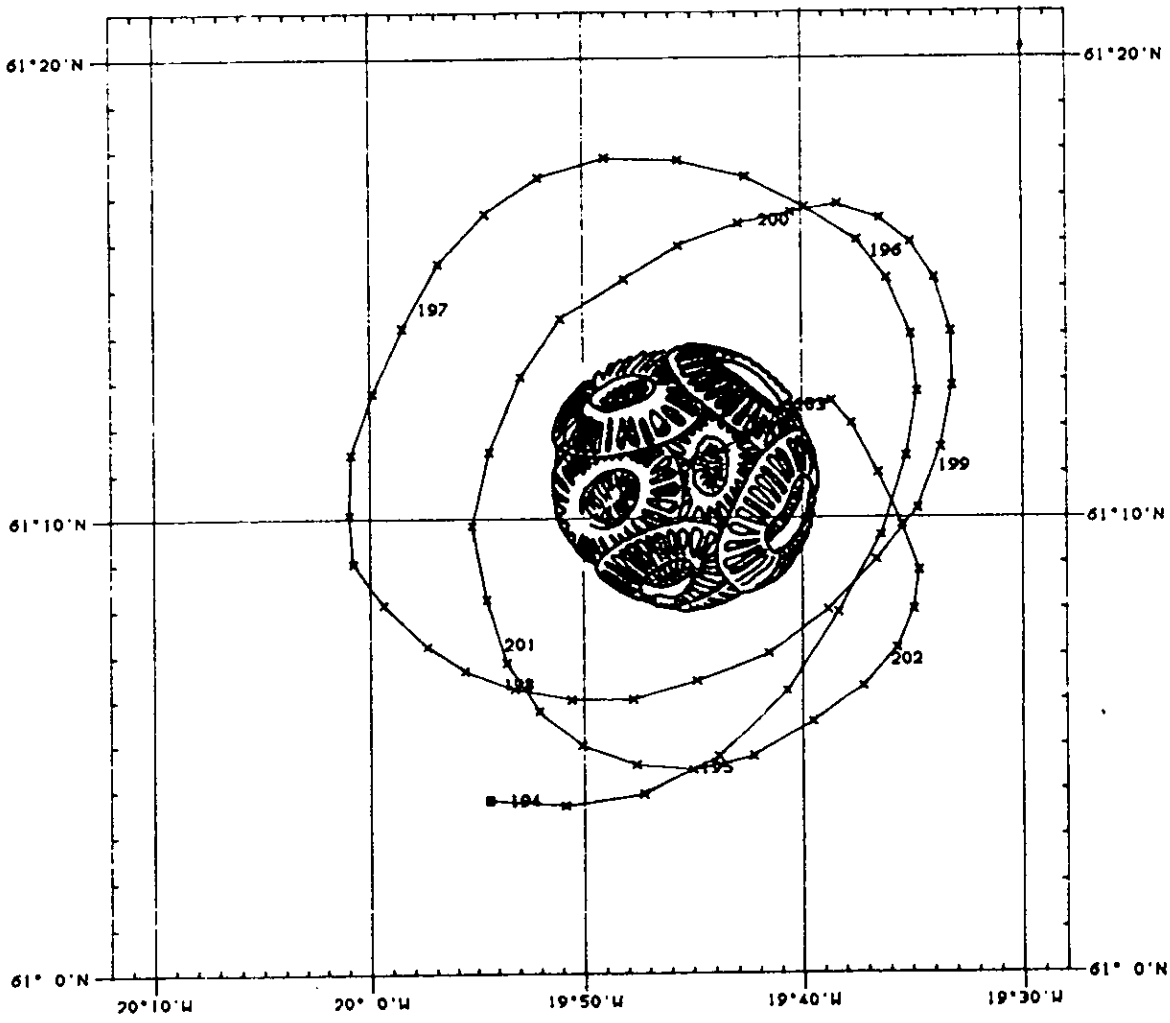
Plymouth Marine Laboratory
Cruise Report

RRS CHARLES DARWIN
Cruise 61/91

6 - 29th July 1991

Principal Scientist
Dr Roger Harris



Biogeochemical Studies on coccolithophore blooms

Biogeochemical Ocean Flux Study
A component of the Joint Global Ocean Flux Study

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1.PERSONNEL

Scientific Party

Roger Harris	PML (Principal Scientist)
Phil Boyd	QUB Belfast
Alan Pomroy	PML
Jane Robertson	PML/UCNW
Mike Wyman	PML
Tracy Anning	PML/Southampton
Glen Tarran	PML
Elaine Edwards	PML/Southampton
Rebecca Saunders	PML
Bob Head	PML
Maureen Conte	OGU Bristol
Rick Jordan	BAS
Paddy Patterson	Bristol
Kari Nygaard	NIVA Oslo
Phil Taylor	RVS
Andy Lord	RVS
Mike Sampson	RVS
Colin Day	RVS

RRS Charles Darwin

Patrick MacDermott	Master
Richard Bourne	Chief Officer
Sidney Sykes	Second Officer
Trevor Boult	Third Officer
Geoff Baker	Radio Officer
David Rowlands	Chief Engineer
Geoff Gimber	Second Engineer
Jim Anderson	Third Engineer
Douglas Lutey	Electrical Engineer
Bob McDonald	C.P.O.D.

2.OBJECTIVES

a) To determine rates of coccolithophore photosynthesis and calcification in relation to the stage of development and species composition of the annual bloom in the S. Iceland basin.

b) To measure water column primary productivity and specific phytoplankton growth rates within and outside the coccolithophore bloom, using fractionation techniques to estimate the relative importance of different size groups of autotrophic cells.

c) To measure rates of grazing on coccolithophores by herbivorous meso- and micro-zooplankton with special attention to grazing efficiency with respect to the size and density of coccolithophore cells and to the nature (composition, pellet size and density etc.) of faecal material.

d) To measure sedimentation rates and particle characteristics throughout the deep water column, both within and outside a coccolithophore bloom, using drifting sediment traps, Stand- alone pumps, camera systems and large-volume water bottles.

e) To identify elements of the protozoan community involved in coccolithophore aggregate remineralization, and to determine the relative importance of bacteria and protozoa on the degredation and transformation of aggregates.

f) To determine the primary production rates of alkenones and other primary produced biomarkers in relation to coccolithophore production, and to determine the export flux of biomarkers relative to POC flux, and their relative loss through the water column.

ITINERARY

Depart Troon 6th July - Arrive Barry 29 July 1991

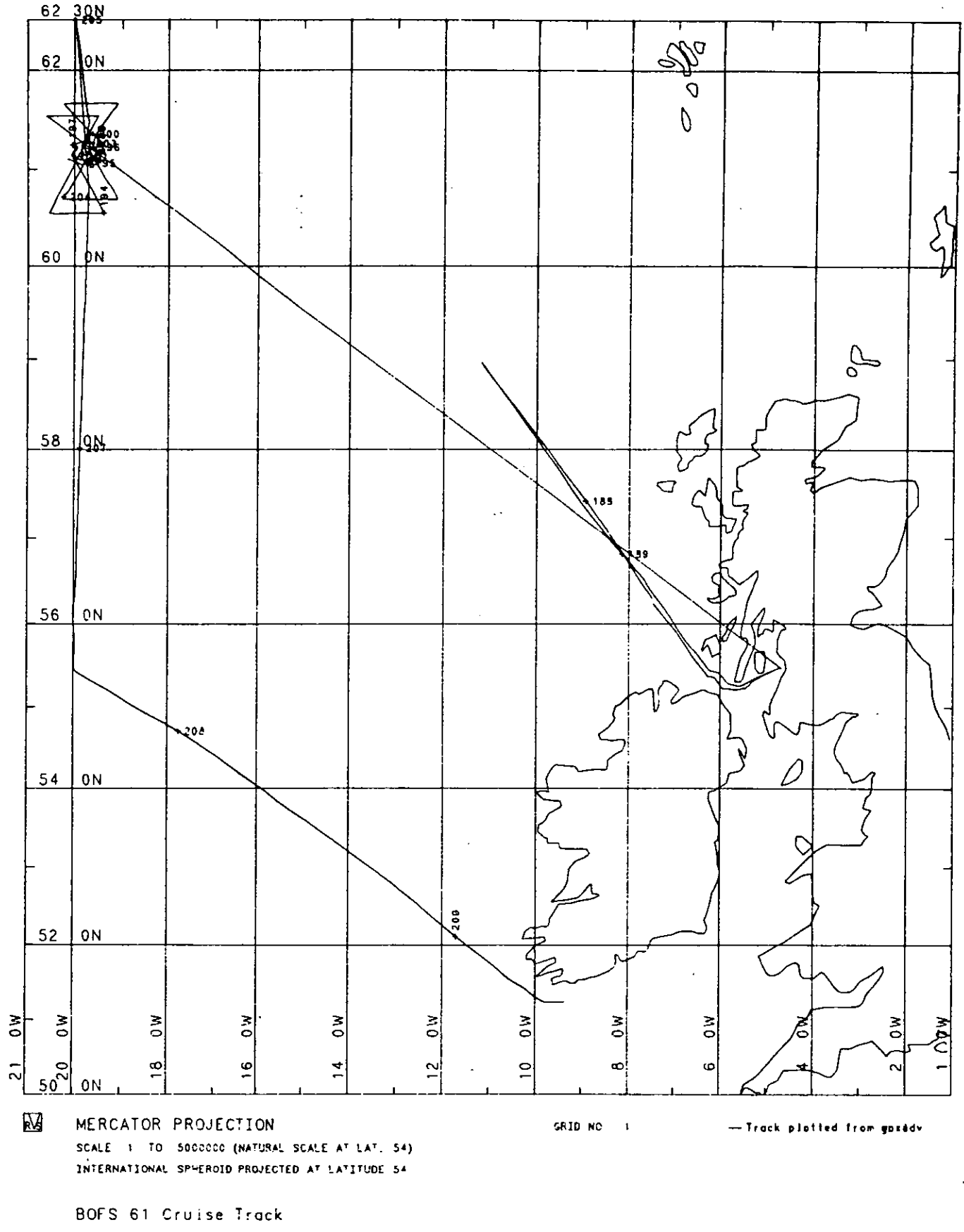

Figure 1. Cruise track CD61.

3) NARRATIVE

The summary cruise track is shown in Fig. 1.

RRS CHARLES DARWIN left Troon at 0650 on the 6 July 1991. Passage through the North Channel was made during daylight, and weather conditions on the outward leg were light to moderate. Surface pumped supply was swithched on and logging of surface properties (temperature, salinity, fluorescence, transmission, and nutrients) commenced, together with sampling of surface particulates from the non-toxic supply.

On 7 July at 1000, after 28hrs at sea the vessel was required to alter course for Troon to effect engine room repairs. The cruise finally re-commenced on July 10th when CHARLES DARWIN left Troon at 0800. The loss of four days scientific time due to the engine room repairs resulted in an attempt to recover IOSDL moorings, in the Iceland Basin region , on behalf of Dr Peter Saunders, being reluctantly cancelled.

The vessel arrived in the vicinity of the 60°N, 20°W coccolithophore study area on 11th July at 2300. Receipt of cloud-free satellite images of the region for 10th July, from Steven Groom (Polytechnic South-West) indicated from the visible image that the surface expression of the intense coccolithophore bloom, observed on CD60, had disappeared. The region from 59 to 62°N along 20°W appeared homogeneous , and there was no longer any evidence of high-reflectance coccolith features. However, the comparable thermal IR image (10 July 1422 GMT) (Fig. 2) showed considerable eddy structure, including a prominent cyclonic feature in the region of 21° 15'N, 20°W. The decision was made to steam north to this position.

We arrived in the area of the eddy feature on the morning of 12th July, and a test CTD drop was made to 200m. By this time we were experiencing considerable problems with the "Level B" computing system, and it was only with the hard work and expertise of Andy Lord that the problem was overcome by essentially bypassing the "Level B" for the remainder of the cruise. Despite these computing problems, a bow-tie surface survey of the eddy region was undertaken, with a series of XBT and CTD drops to define vertical structure (Fig. 3). This intensive survey was completed on early on the morning of 13th July, and after considering surface contour plots of the region, a decision was made to deploy the drifting sediment trap rig at 61°05'N, 20°W. The deployment of the rig with four IOSDL sediment traps and two S4 current meters (Fig. 4) was completed successfuly by 1010.

The vessel then began maintaining station by the sediment trap rig, and we started the main drifting station sampling programme, which lasted for the next 9 days. The normal routine involved a series of zooplankton net hauls at mid-night followed by 30l Go-flo bottle sampling between 0200 and 0400 to provide water for the production experiments. The drifiting production rig was deployed at about 0400.

Figure 2. Thermal IR satellite image for 10th July 1422 GMT
(Steven Groom,Polytechnic South West)

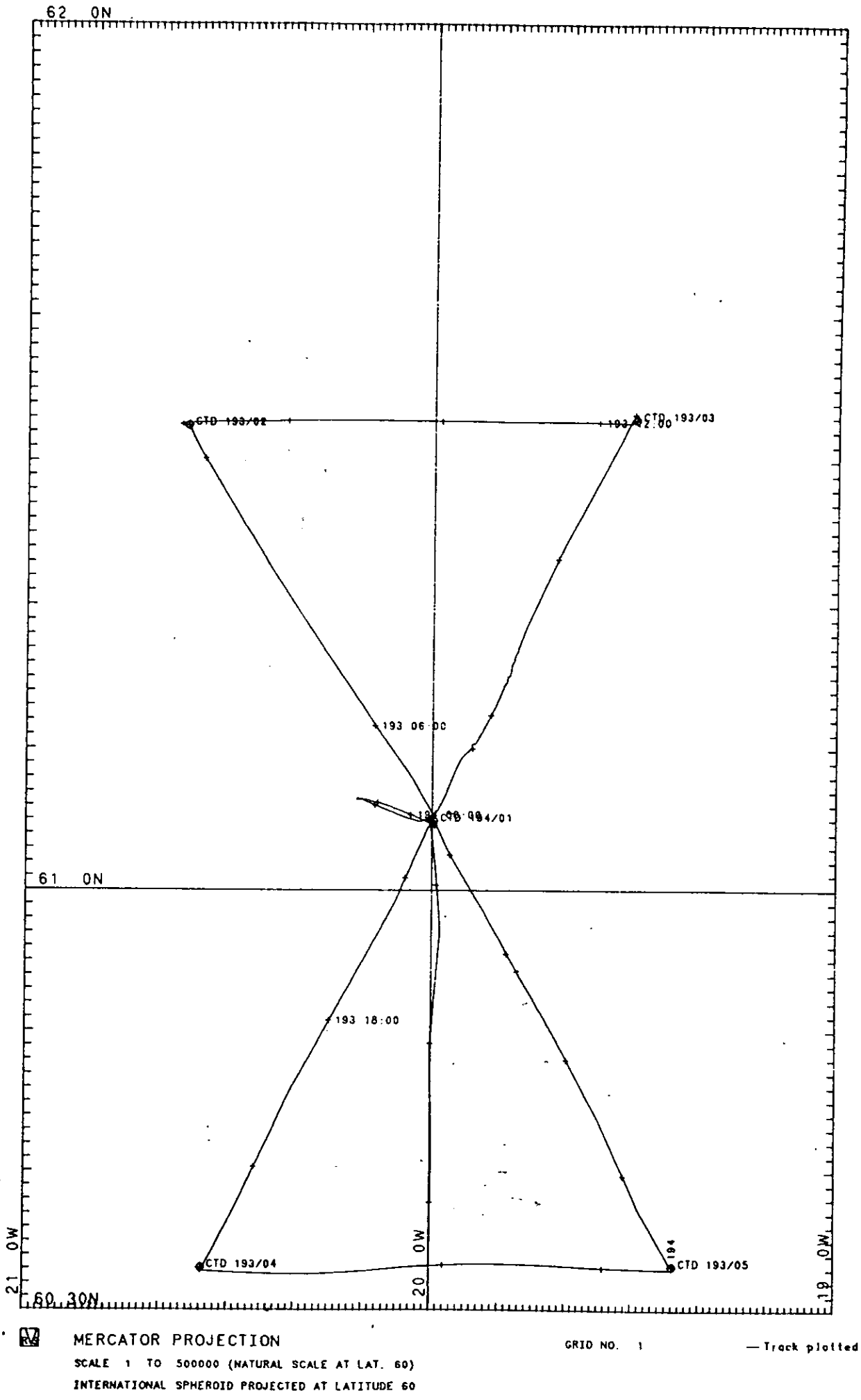

Figure 3. First 'bow-tie' survey track.

Initially this rig was attached to the ship by 200m of line, subsequently it was cast adrift and picked up when required to give the ship more room for manouver while sampling was underway. Early morning shallow CTD drops defined the water column structure and provided material for JGOFS "Level 1" sampling. The midday period saw more zooplankton WP-2 net sampling and additional CTDs. The afternoon period concentrated on deep water sampling with the Stand Alone Pumps (SAPS) and the Muticorer. The first Multicorer deployment on the afternoon of 13th July resulted in portions of the scaffolding legs becoming detached and being lost. The deployment was cancelled, the instrument repaired, and an improved deployment procedure was used subsequently.

Between the recovery and re-deployment of the primary production rig the vessel steamed up to the drifting rig each day. The rig, determined from Argos fixes, and the vessel drifted in an anti-clockwise direction for the period of the sampling study (Fig 5 and 6) consistent with the successful location of the eddy feature observed on the satellite image of 10th July. Full details of the sampling programme are given in the accompanying Outline Sampling Programme, which illustrates the proposed programme for each day, and the Events Log (Appendix Table 16) which shows the actual sampling programme achieved on a daily basis. In general the programme proceded very smoothly and there were no major equipment or instrumentation problems. In particular the SAPs worked extremely well on deep-water deployments, and an intensive sampling programme was completed. The recovery and subsequent re-deployment of the sediment trap rig became a routine, though on the first recovery the honeycomb baffles from three of the traps were missing, suggesting that a design modification is required. Weather was generally adequate throughout the cruise, though between 21st and 22nd July Force 8 conditions were experienced, and these resulted in the Dahn Buoy parting from the Argos Buoy and the remainder of the drifting rig. The Dahn was lost, but fortunately, through careful watch-keeping by the bridge the rig itself was spotted and recovered without loss.

JULIAN DAY 194 : SATURDAY JULY 13 : OUTLINE SAMPLING PROGRAMME

0400	Complete surface survey
0400-0800	Process data from survey, decide on location for drifting sediment trap rig, proceed to position.
0800-1000	Deploy sediment traps
1000-1045	Midwater CTD 3 (1000m for SAPs water)
1045-1130	Shallow CTD 4 (Level 1)
1130-1200	Zooplankton nets and diel Go-flos
1200-1245	Shallow CTD 5
1245-1330	Zooplankton nets and diel Go-flos
1400-1800	SAP Trials
1700-1730	Apstein nets
1600-1700	Zooplankton nets and diel Go-flos

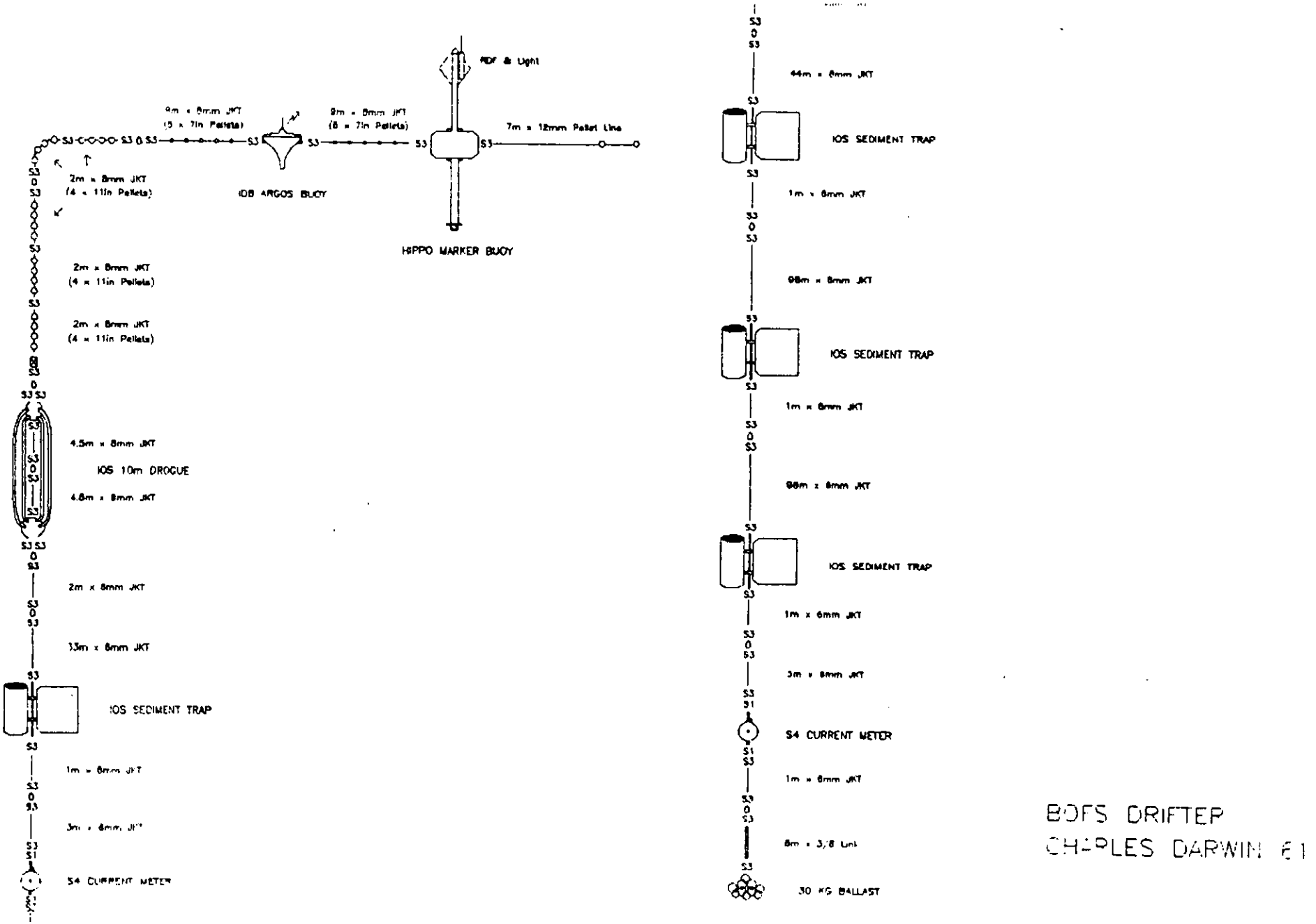

Figure 4. Configuration of drifting sediment trap rig (Phil Taylor, RVS).

2000-2200 Multicorer

2300-0030 Zooplankton nets and diel Go-flos

(The ship attempting to maintain position alongside the sediment trap rig; surface sampling from the non-toxic supply continuing throughout the study)

JULIAN DAY 194 : SATURDAY 14 JULY : OUTLINE SAMPLING PROGRAMME

0200-0400	Main 30l Go-flo sampling (Kevlar winch)
0400	Deploy production rig (attached by line to ship)
0400-0445	Shallow CTD 1
0445-0530	Shallow CTD 2 (Level 1)
0530-0600	Zooplankton nets and diel Go-flos
0630-0715	Shallow CTD 3
0745-1000	Deep CTD 4 (2300m) (Level 1)
1000-1030	Zooplankton nets and diel Go-flos
1030-1045	Shallow CTD 5
1130-1230	Zooplankton nets and diel Go-flos
1200-1500	Shallow SAPs
1700-1730	Apstein nets
1730-1800	Zooplankton nets and diel Go-flos
1900-2330	Midwater SAPs
2300-0030	Zooplankton nets and diel Go-flos

(The ship attempting to maintain position alongside the sediment trap rig; surface sampling from the non-toxic supply continuing throughout the study)

JULIAN DAY 196 : MONDAY JULY 15 : OUTLINE SAMPLING PROGRAMME

2300-0030	Zooplankton nets and diel Go-flos
0030	Recover production rig (attached by line to ship)
0030-0200	Steam up to drifting sediment trap rig
0200-0400	Main 30l Go-flo sampling (Kevlar winch)
0400	Deploy production rig (attached by line to ship)
0400-0445	Shallow CTD 1
0445-0530	Shallow CTD 2
0600-0730	Let go production rig. Steam up to drifting sediment trap rig
0730-1130	Recover and re-deploy sediment traps
1130-1200	Locate and re-attach production rig
1200-1230	Shallow CTD 4 (Level 1)
1230-1300	Zooplankton nets and diel Go-flos
1300-1530	Shallow SAPs

1530-1700	Nutrient pump profiling
1700-1730	Apstein nets
1730-2230	Deep SAPs #1
2300-0030	Zooplankton nets and diel Go-flos

(The ship attempting to maintain position alongside the sediment trap rig; surface sampling from the non-toxic supply continuing throughout the study)

JULIAN DAY 197 : TUESDAY JULY 16 : OUTLINE SAMPLING PROGRAMME

0030	Recover production rig (attached by line to ship)
0030-0200	Steam up to drifting sediment trap rig
0200-0400	Main 30l Go-flo sampling (Kevlar winch)
0400	Deploy production rig (attached by line to ship)
0400-0600	Deep CTD (Level 1)
0630-0700	Shallow CTD 2 (Level 1)
0800-1030	Multicorer
1030-1045	Shallow CTD 5
1100-1200	Zooplankton nets and diel Go-flos
1200-1500	Shallow SAPs
1600-1700	Nutrient pump profiler
1700-1730	Apstein nets
1730-1800	Zooplankton nets and diel Go-flos
1900-2330	Midwater SAPs
2300-0030	Zooplankton nets and diel Go-flos

(The ship attempting to maintain position alongside the sediment trap rig; surface sampling from the non-toxic supply continuing throughout the study)

JULIAN DAY 198 : WEDNESDAY JULY 17 : OUTLINE SAMPLING PROGRAMME

2300-0030	Zooplankton nets and diel Go-flos
0030	Recover production rig (attached by line to ship)
0030-0200	Steam up to drifting sediment trap rig
0200-0400	Main 30l Go-flo sampling (Kevlar winch)
0430	Deploy roduction rig (attached by line to ship)
0430-0515	Shallow CTD 1
0730	Let go production rig
0730-0800	Steam up to drifting sediment trap rig
0800-1130	Recover and re-deploy sediment traps

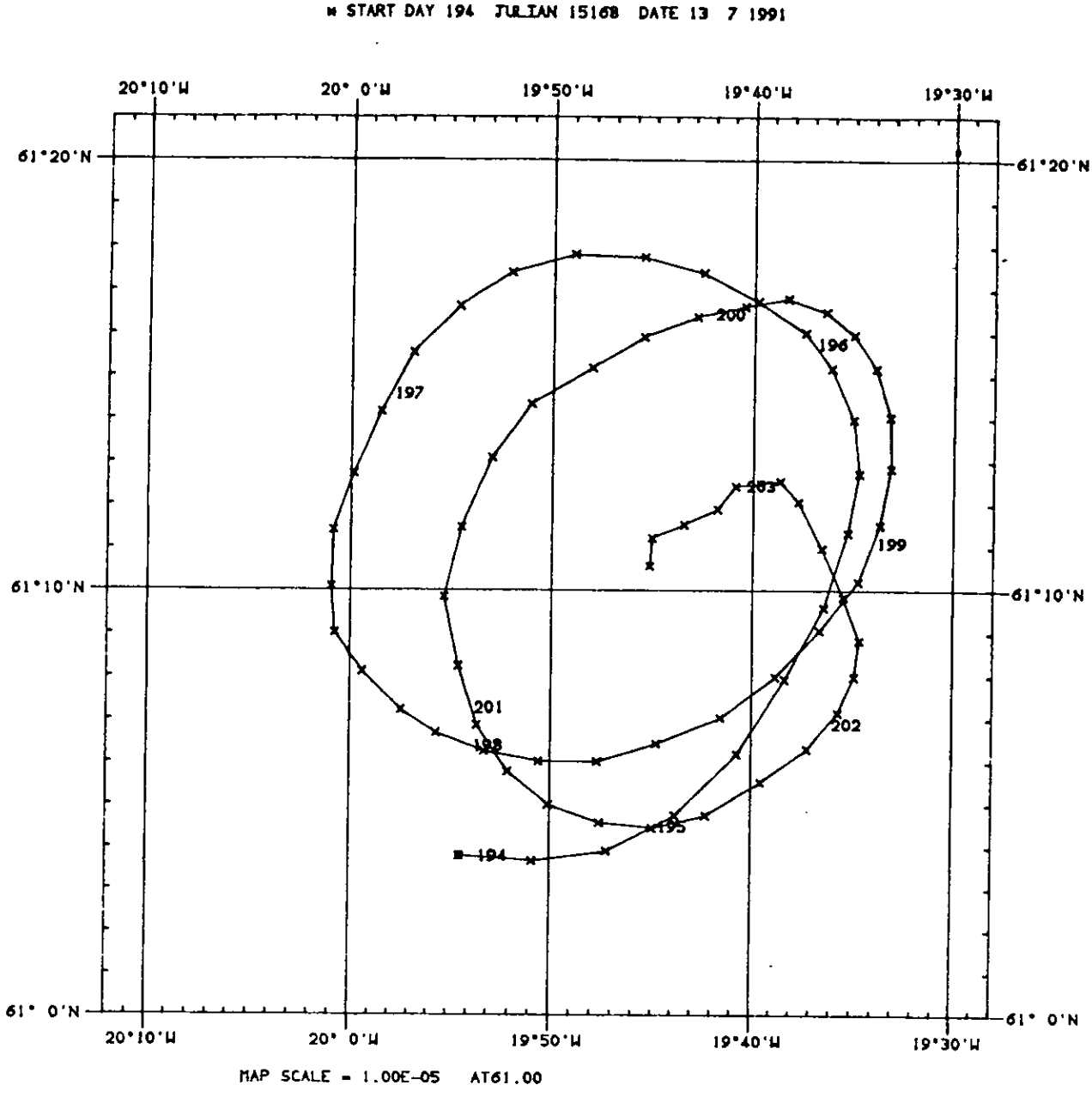

Figure 5. Drift track of sediment trap rig from Argos positions (Robin Pingree & Bob Barrett).

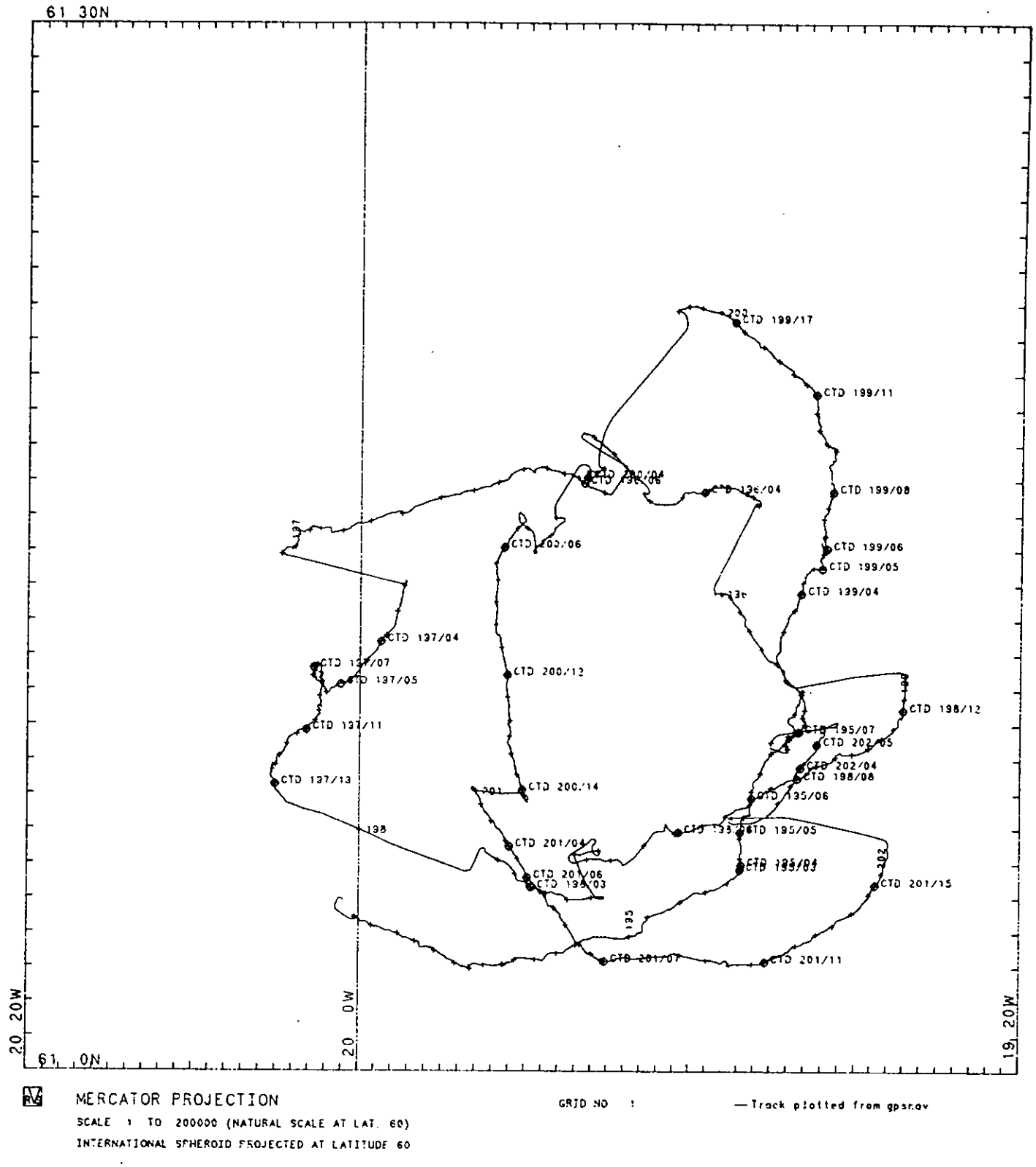

Figure 6. Drift track of CHARLES DARWIN maintaining position by sediment trap rig.

1130 Locate and re-attach production rig
1200-1230 Shallow CTD 4 (Level 1)
1245-1400 Zooplankton nets and diel Go-flos
1400-1700 Multicorer

1700-1730 Apstein nets
1800-1830 Shallow CTD 5 (Profile only)

1900-2300 Shallow SAPs

2300-0030 Zooplankton nets and diel Go-flos

2400 Shallow CTD 6 (Profile only)

(The ship attempting to maintain position alongside the sediment trap rig; surface sampling from the non-toxic supply continuing throughout the study)

JULIAN DAY 199 : THURSDAY JULY 18: OUTLINE SAMPLING PROGRAMME

0030 Recover production rig (attached by line to ship)
0030-0200 Steam up to drifting sediment trap rig
0200-0400 Main 30l Go-flo sampling (Kevlar winch)
0430 Deploy production rig (attached by line to ship)
0430-0515 Shallow CTD 1
0630-0715 Shallow CTD 3 (Level 1)
0800-1000 Deep CTD 4 (Level 1)
1000-1030 Zooplankton nets and diel Go-flos
1030-1115 Shallow CTD 5
1145-1230 Zooplankton nets and diel Go-flos
1230-1430 Shallow SAPs

1500-2300 Deep SAPs #2

1700-1730 Apstein nets
1730-1800 Zooplankton nets and diel Go-flos
1800-1830 Shallow CTD (profile only)

2300-0030 Zooplankton nets and diel Go-flos

2400 Shallow CTD (profile only)

(The ship attempting to maintain position alongside the sediment trap rig; surface sampling from the non-toxic supply continuing throughout the study)

JULIAN DAY 200 : FRIDAY 19 JULY : OUTLINE SAMPLING PROGRAMME

0030	Recover production rig
0030-0200	Steam up to drifting sediment trap rig
0200-0400	Main 30l Go-flo sampling (Kevlar winch)
0430	Deploy production rig
0445-0530	Shallow CTD 1
0730	Let go production rig
0730-0800	Steam up to drifting sediment trap rig
0800-1130	Recover and re-deploy sediment trap rig
1130	Re-locate production rig
1200-1245	Shallow CTD 4 (Level 1)
1245-1430	Zooplankton nets and diel Go-flos
1430-1700	Multicorer
1700-1715	Apstein nets
1715-1800	Nutrient pump profiling
1800-1830	Shallow CTD 5 (profile only)
2300-2400	Zooplankton nets and diel Go-flos
2400	Shallow CTD 6 (Profile only)

(The ship attempting to maintain position alongside the sediment trap rig; surface sampling from the non-toxic supply continuing throughout the study)

JULIAN DAY 201: SATURDAY JULY 20 : OUTLINE SAMPLING PROGRAMME

0030	Recover production rig (attached by line to ship)
0030-0200	Steam up to drifting sediment trap rig
0200-0400	Main 30l Go-flo sampling (Kevlar winch)
0400	Zooplankton Bongo nets
0430	Deploy production rig (attached by line to ship)
0445-0515	Shallow CTD 1 (profile only)
0630-0715	Shallow CTD 3 (Level 1)
0800	Zooplankton Bongo nets
0830-1030	Deep CTD 4 (Level 1)
1145-1330	Zooplankton nets and diel Go-flos
1330-1430	Shallow CTD 5
1430-2300	Deep SAPs #2

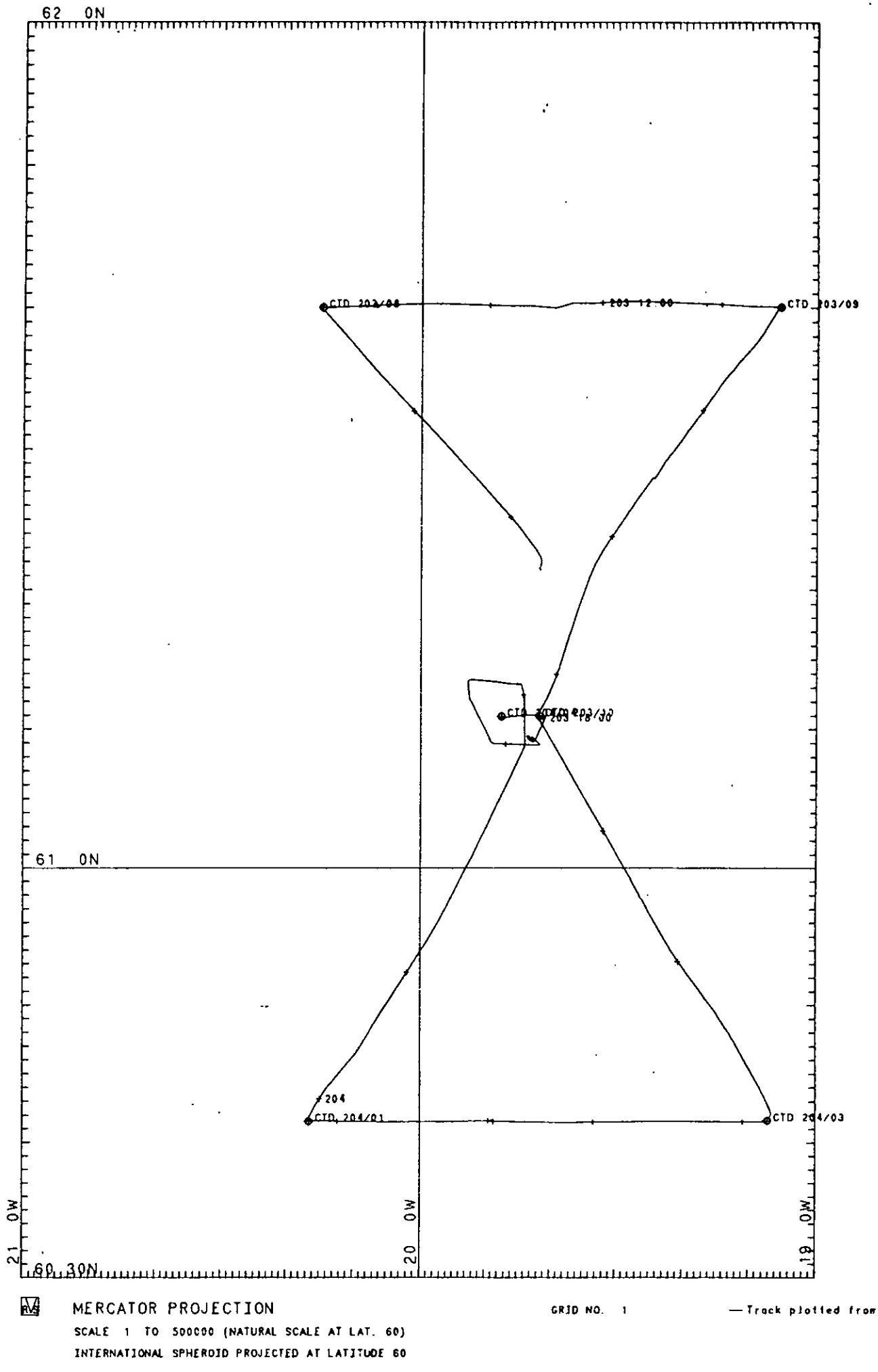

Figure 7. Second 'bow-tie' survey track.

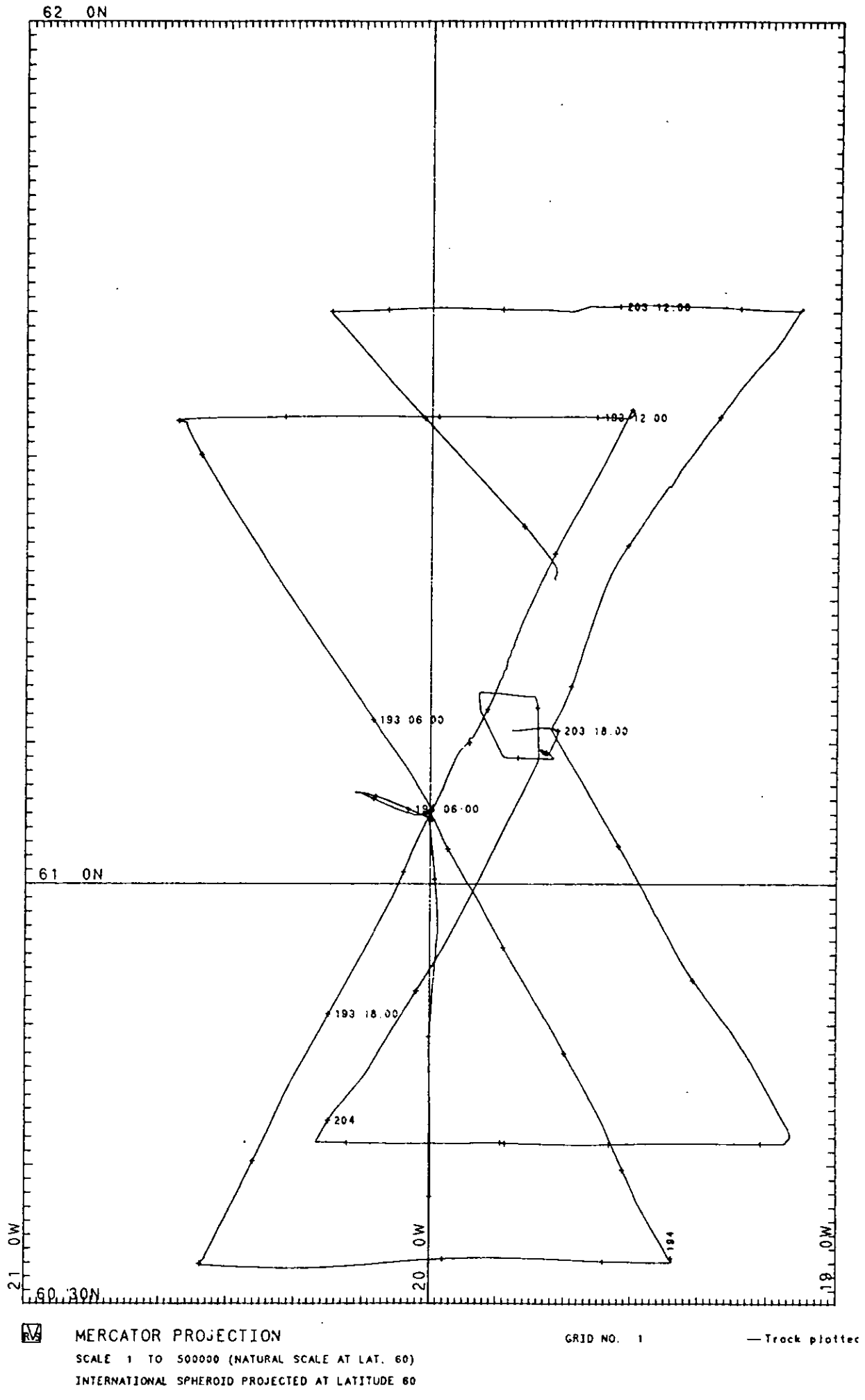

Figure 8. Relative positions of the two survey tracks.

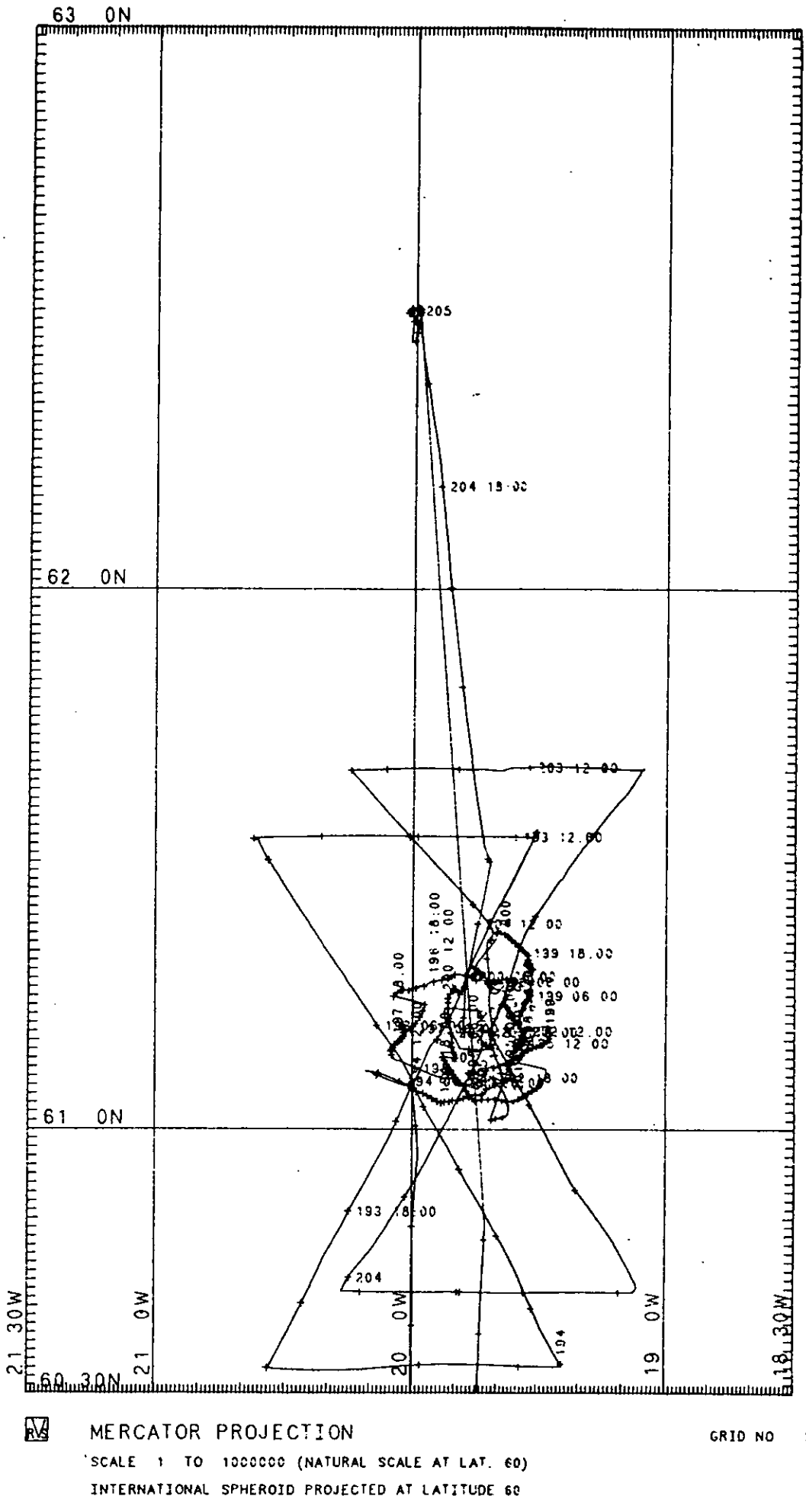

Figure 9. Survey tracks relative to the drift track of CHARLES DARWIN.

1700-1730 Apstein nets

1800-1830 Shallow CTD (profile only)

2000-2030 Zooplankton Bongo nets

2300-0030 Zooplankton Bongo nets

2400 Shallow CTD (profile only)

(The ship attempting to maintain position alongside the sediment trap rig; surface sampling from the non-toxic supply continuing throughout the study)

JULIAN DAY 202 : SUNDAY 21 JULY : OUTLINE SAMPLING PROGRAMME

0030 Recover production rig
0030-0200 Steam up to drifting sediment trap rig
0200-0400 Main 30l Go-flo sampling (Kevlar winch)

0445-0530 Shallow CTD 1
0730-0800 Steam up to drifting sediment trap rig
0800-0900 Recover sediment trap rig

(0900-1030 Read S4 current meter data)

0900-1000 Shallow SAPs

1030-1130 Re-deploy sediment trap rig

1130-1300 Steam to first deep CTD position (probable position 61,01N, 19,47W)

Deep CTD Section - 5 stations

1300-1500 61,01N, 19,47W (position to be confirmed)

1600-1800 61,06N, 19,47W (position to be confirmed)

1900-2100 61,11N, 19,47W (position to be confirmed)

2200-2400 61,16N, 19,47W (position to be confirmed)

JULIAN DAY 203 : MONDAY 22 JULY

(Complete deep CTD section : approximate timings)

0130-0400 61,16N, 19,42W

0400 Go-flo sampling (on station after CTD and nets)

0500-0730 61,21N, 19,42W

(Repeat bow-tie survey)

On completion of the deep CTD section commence bow-tie surface survey by steaming to 6140N, 2015W, for first shallow CTD. Then steam 090 along the bow-tie track indicated (each leg is 3 hours) stopping for shallow CTDs as indicated.

JULIAN DAY 204: TUESDAY 23 JULY : OUTLINE SAMPLING PROGRAMME

0300-0400 Go-flo sampling (ship to interupt survey at 0300 for water-bottle sampling)

0400 Resume survey track

0800 Complete Bow-tie surface survey

0840-1010 Deep CTD #1 at 61.11N, 19.48W

1200-1330 Deep CTD #2 at 61.30N, 19.42W

1330-1900 Steam to northern coccolithophore station (62.30N, 20.00W)

1900-1930 Shallow CTD (Level 1)

1930-2030 Deep CTD (to bottom for nepheloid layer)

2030-2400 Shallow SAPs

2400-0030 Zooplankton nets

JULIAN DAY 206 : WEDNESDAY JULY 24 : OUTLINE SAMPLING PROGRAMME

0200-0400 Main 30l Go-flo sampling (Kevlar winch)
0400-0430 Shallow CTD #1

0430-1230 Deep SAPs

0800-0900 Zooplankton Nets

1230-1300 Shallow CTD #2 (Level 1)
1300-1400 Zooplankton nets and diel Go-flos
1400-1530 Deep CTD #3

1530-1700 Multicorer

1700-1730 Apstein nets
1800-1830 Shallow CTD #3

1830-2230 Shallow SAPs

2300-2330 Zooplankton Nets

2330-0100 Main 30l Go-flo sampling (Kevlar winch)

approx 0100 On completion of the station programme sampling steam to Barry via the following two positions:

61.11N, 19.42W

56.00N, 20.00W

(underway surface sampling continues until 2400, Saturday 27 July)

JULIAN DAY 207: THURSDAY 25 JULY

JULIAN DAY 208: FRIDAY 26 JULY

1400 Pass through 56,00N, 20,00W on passage to Barry

JULIAN DAY 209: SATURDAY 27 JULY

(on passage to Barry)

JULIAN DAY 210: SUNDAY 28 JULY

(on passage to Barry)

JULIAN DAY 211: MONDAY 29 JULY

0700 BARRY

On 21st July the drifiting station was completed and a series of deep CTD stations were worked across the axis of the eddy to better define the deep water column structure of the eddy at the suggestion of Robin Pingree.. This section was completed on the morning of 22nd July. Subsequently the next 24 h was devoted to repeating the bow-tie survey of surface properties (Fig 7), stopping for shallow CTDs as

indicated to compare conditions with the initial survey (Fig 8), and the sampling at the drifting station (Fig. (9).

On completion of the bow-tie survey on the morning of 23rd July a further two deep CTD casts were obtained before the vessel moved north to a station at 62° 30'N, 20°W a region which was characterised by particularly high coccolithophore abundance on CD60. On arrival in the area it was confirmed that the surface expression of the bloom had disappeared and that the phytoplankton were dominated by small diatoms. Sampling at the station commenced with a shallow CTD drop for "Level 1" measurements, followed by a cast to the bottom to detect any possible bottom nepheloid layer. The station was occupied until the evening of 24th July, during which time deep SAP sampling, multicorer drops, and zooplankton sampling were completed.

On completing the sampling programme CHARLES DARWIN set course to the south, steaming via 61 11N, 19.42W, the center of the eddy station, to the JGOFS station at 56N 20W. Surface properties were sampled throughout this section. The vessel passed through 56°N 20'W at 1400 on 27 July.

Course was then set for Barry, and the vessel docked at 0700 on Monday 29 July.

4. ACKNOWLEDGEMENTS

The success of a major multi-disciplinary cruise depends on the support and teamwork of a large group of people.

We owe our thanks, in particular to Phillip Williamson who, as BOFS Project Manager, contributed in so many ways to the planning and smooth preparation for the cruise. The achievements of this cruise, the last BOFS North Atlantic cruise before Phil left his position as BOFS Project Manager, are in great part due to his hard work in building up the BOFS Project team over the past three years.

Captain Patrick MacDermott, the officers, and crew, of RRS CHARLES DARWIN deserve our special thanks for making the cruise both safe, successful and enjoyable. The maintenance of ship position on the drifting station together with complex (and sometimes conflicting) sampling requirements was particularly demanding on this cruise, and was carried out with great skill.

The RVS technical group, Phil Taylor, Andy Lord, Mike Sampson and Colin Day, gave excellent support and contributed in a major way to the success of the scientific programme. Many of their colleagues at RVS ensured that the right items of RVS equipment arrived in the right place on the ship, at the right time.

Dave Joyce and Gordon Siley, from PML, carried out the essential driving and logistics work with great efficiency. Steven Groom, at Polytechnic Southwest,

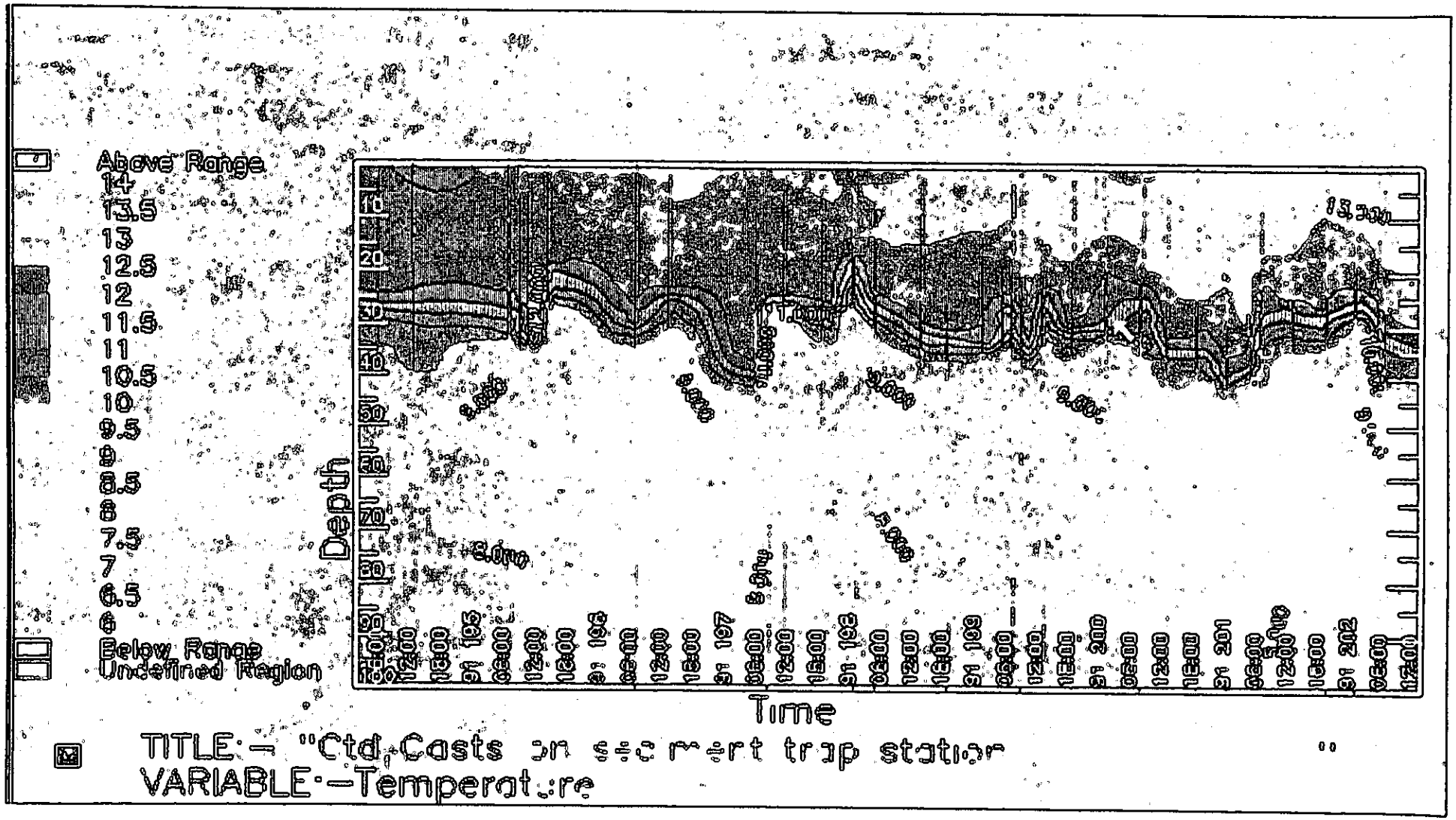

Figure 10. Vertical temperature time-series for CTD casts during the drift station.

worked hard on the remote-sensing back-up which proved so important for both CD60 and CD61. Robin Pingree and Bob Barrett provided invaluable help in relaying Argos positions to the ship. Bob Head took on a special responsiblity for organising many overall aspects of both CD60 and 61 cruises.

Roger Harris

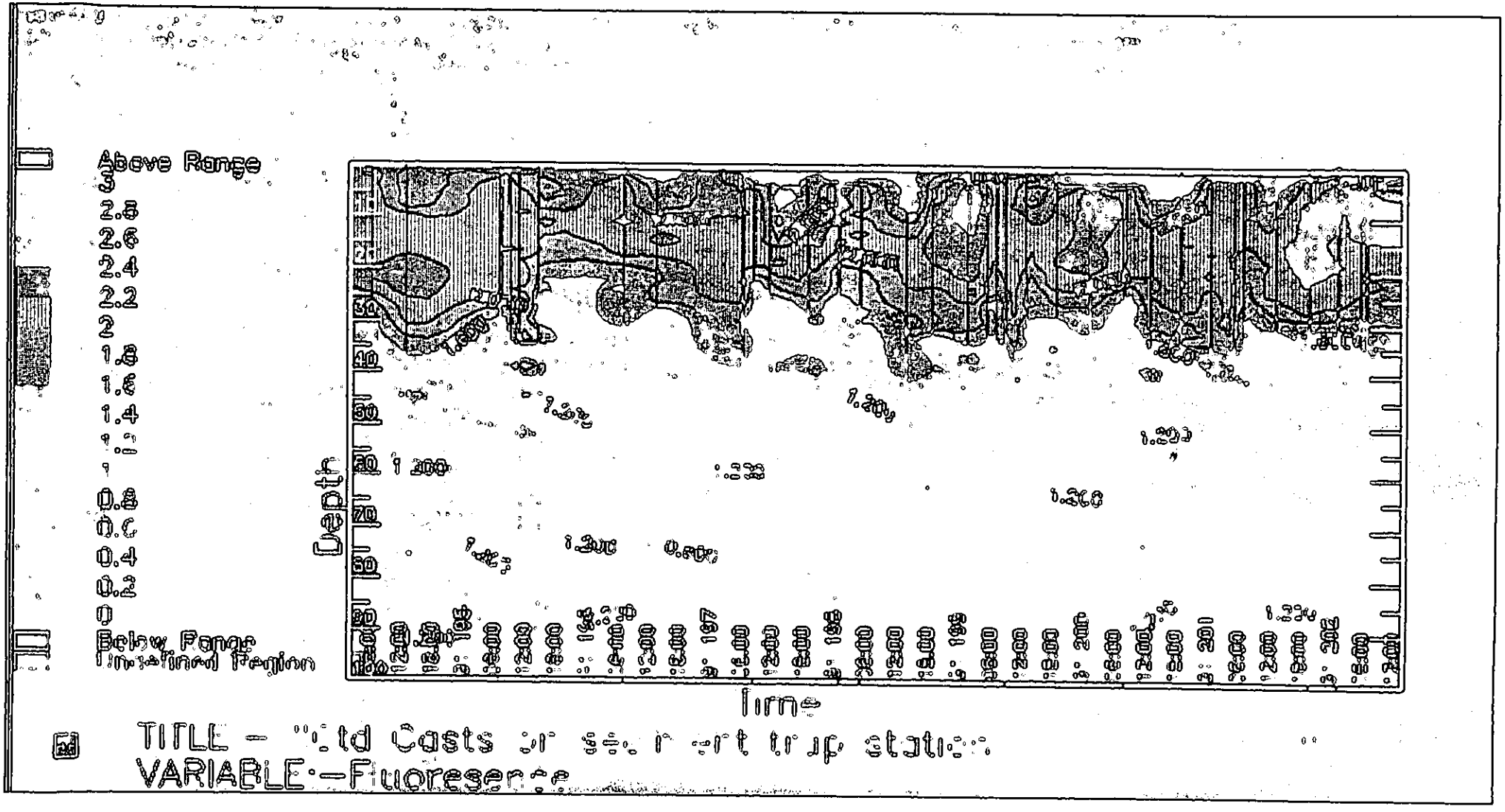

Figure 11. Vertical fluorescence time-series for CTD casts during the drift station.

5. SCIENTIFIC REPORTS

1) Measurement of surface properties *(Bob Head)*

The following surface parameters were continuously measured during the entire period of the cruise. All parameters were recorded by the ships level B computer system.

a) Temperature and salinity by thermosalinograph.

b) Chlorophyll fluorescence

By both Chelsea Instuments Aquatracka (located in the main header tank of the non toxic supply) and Turner 111 fluorometer mounted in the wet lab and supplied from the same non toxic seawater scource. The Turner 111 fluorometer seemed oversensitive and towards the end of the cruise, squares of tracing paper were inserted in front of the source lamp to effect change of scaling. Problems were also experienced with an upward drift of fluorescence due to coating of the flowcell. The flowcell should be cleaned on a daily basis, but was only cleaned once towards the end of the cruise.

c) Transmission by Seatech 25cm transmissometer

This was located in the mainheader tank of the non toxic seawater supply. The lenses of the transmissometer were routinely cleaned every day. In previous cruises both the Aquatracka and the Seatech have been mounted in deck boxes where there have always been associated problems with air leaks and lack of water pressure resulting in a noisy signal output.The transition to siting both instruments in the main header tank has greatly improved the quality of the received data.

d) Flowthrough oxygen sensors fed from the outflow of the Turner 111 fluorometer.

e) On line Technicon Nutrient analyser for nitrate, nitrite, phosphate, silicate and ammonium fed from the non toxic seawater supply.

Inorganic nutrients were measured using a five channel Technicon based autoanalyser system. Nutrients measured were Nitrate, Nitrite, Phosphate, Silicate and Ammonium. The autoanalyser was operated in an on line mode with seawater being supplied from the non toxic supply via a filter block to jointly feed all five channels. For discrete samples from CTD profiles the analyser supply was disconnected from the filter block and the sample tube was dipped into Nalgene polycarbonate bottles containing the samples until a constant plateau was reached. Standards and blanks were run in the same manner. Owing to the sample volume required by five

channels, it was not possible to use an autosampler. At the main working station surface nutrient values decreased from around 1µm Nitrate on day 199 to <0.5um Nitrate on day 203 with Silicate levels remaining at about 1-1.2um. A subsurface ammonium maximum was observed on all profiles with values up to 1µm being observed. During the 20°W transect from 62°30'N to 55° 30'W nutrient values were low with nitrate values being of the order of 0.5µm or less.

2) Surface sample collection and JGOFS Level 1 measurments *(Bob Head and Rebecca Saunders).*

a) >350 samples were taken for chlorophyll a(Appendix Table 1) ,total particulatecarbon / Nitrogen , particulate organic carbon/nitrogen (Appendix Table 2) and calcium (Appendix Table 3) by filtration of seawater samples onto 25mm GF/F filters.

All chlorophyll samples were analysed on board by fluorescence with a Turner Designs fluorometer. All other samples were stored at -20°C for post cruise analysis at P.M.L.

Samples were collected for particle size distribution by prescreening through a 200µm mesh and measuring the particle distribution with a Coulter Multisizer on 100µm and 280µm orifice tubes (Appendix Table 4). Preserved samples were taken into Lugols iodine and formalin for estimation of phytoplankton species (Appendix Table5).

b) Frequency of sampling. During the two Bowtie surveys around the main sampling station, water samples were taken every 30 minutes with T7 (750m) XBT probes fired at hourly intervals. On the 20°W transect from 62° 30'W to 55° 30'Wsamples were taken hourly with T5 (1500m) XBT probes fired at 2 hourly intervals (Appendix Table 6).

3) Measurement of pCO_2 *(Jane Robertson)*

The BOFS pCO_2 system was used to provide measurements of the surface pCO_2 at in-situ temperature during most of the cruise. The system was run whilst underway and provided data every 7 minutes along the ships track. The main interest for this data was to provide an estimate of the change in surface pCO_2 since the coccolithophore bloom several weeks earlier. The system was also run whilst on station to hopefully follow diel changes in the surface water of pCO_2 and so assess the use of the method as a means of calculating in situ production. The intention is to compare estimates from pCO_2 with those calculated from in situ oxygen changes and on-deck 14C and oxygen changes. This approach proved moderately successful, however more calibrations are necessary in order to take account of in situ temperature changes before the data can be used in a comparison.

Measurement of Oxygen

Two Endeco flowthrough oxygen electrodes and cell were left on board by Duncan Purdie of Southampton University. Duncan also left the equipment to enable the electrode to be calibrated. The electrodes behaved well throughout the cruise with a slight tailing of one electrode during the last 36 hours of the cruise. This was not replaced as the other electrode appeared to still be steady and the cruise was close to the end. An average of 2-3 calibration samples were taken each day and titrated in lots every 4 days or so. The electrodes were 'on-line' for the whole of the cruise, both whilst underway and whilst on station next to the drogue.

The CTD oxygen electrode was changed in Barry in between CD60 and CD61. A number of CTD profiles were sampled for oxygen and the data will be used to calibrate the electrode by BODC. The electrode appeared to be giving reasonable changes although the absolute value given on the CTD display was grossly wrong. This can be corrected with the calibration data collected.

4) Primary Production *(Alan Pomroy & Phil Boyd)*

Size-fractionated primary production, as measured by the 14C technique,was initially employed to measure column primary production within and outside a coccolithophore bloom using size fractionation to estimate the relative importance of different size groups of autotrophic cells.

Samples for primary production were taken pre-dawn from nine depths (2, 5, 10, 15, 20, 25, 30, 35, 40m) using 30l Go-flos on Kevlar line. All procedures conformed to JGOFS level 1 protocols for the determination of primary production by the 14C technique. In "station" mode, replicate samples and dark controls were incubated in situ using a free-floating rig for 24h before sequential filtration through 5um, 1um and 0.2um polycarbonate membranes. In "underway mode" samples from six depths (2, 10, 15, 20, 25 and 35m) were incubated using an on deck incubator with an appropriate range of %Io's. The on deck production estimates obtained will be compared with concurrent estimates of production as measured by the high resolution oxygen technique.

Bow-tie surveys

In order to assist with the selection of a "coccolithophore" station during an initial survey period, short term 14C incubations were performed to obtain information on the degree of calcification in relation to photosynthesis - an approach that had been used successfully on CD60/91. Samples were taken from the non-toxic supply (4m) at hourly intervals on the initial and final surveys. Additional samples were taken from CTD bottles (20m) during the initial survey and half of the eight replicates at each time were acidified

prior to counting. All incubations were performed at a temperature of 13.5 C and an irradiance of 23 umols m-2 s-1.

Initial survey	12/07/91 - 13/07/91	26 incubations
Final survey	22/07/91 - 23/07/91	27 incubations

(See Appendix Table 7)

Bacterial production

Production by heterotrophic bacteria was determined by the incorporation of tritiated thymidine and of tritiated leucine. Samples were obtained using 30l Go-flos in common with those for 14C production experiments, with an additional sample being taken from 75m. All incubations were performed in a laboratory incubator at simulated in situ temperatures.

Bacterial numbers

Glutaraldehyde fixed samples of the water used in bacterial production experiments were stained with DAPI, filtered, mounted and stored frozen for enumeration by image analysis at PML.

Chlorophyll a determinations

Replicate samples of the water used for in situ and on-deck primary productionexperiments were taken from all depths and stations for the determination ofchlorophyll a. Unfractionated 2 litre samples were filtered onto GFFs and the filters stored frozen for laboratory analysis by spectrophotometry. Size fractionated samples were analysed fluorometrically on board using acetone extraction; the size categories conforming to those used in the 14C experiments.

Nutrient uptake experiments

Nutrient uptake experiments were performed in order to investigate the effects of nutrient conditions on photosynthesis/calcification at a coccolithophore station. The utilization of nitrate and ammonia by different autotrophic size fractions was also investigated during cd61. Experiments were carried out in situ, using a second free floating rig concurrently and from common water samples as those used for the 14C production experiments. Nitrate uptake was estimated at 2, 10, 15, 20, 25, and 35m using changes in ambient nutrient concentration over 24h in unfractionated samples. Replicate initial and final nitrate concentrations were analysed using a chemiluminescence NOx analyser; the difference between the final and initial concentrations was assumed to be due to nitrate uptake by autotrophs. In situ uptake of ammonia was measured in unfractionated samples using 15N technique at 2, 10, 15, 20 and 25m. In "underway"

mode, nutrient uptake experiments were carried out at 100%Io using an on deck incubator. Samples obtained from 2m were incubated concurrently and using the same water samples as the 14C on deck experiments. Size-fractionated nutrient uptake was performed for each of these incubations (<1um, <5um, unfractionated for NOx and > 5um and 0.5um - 5um for 15N uptake). In addition to NOx and 15N-NH3, 15N-NO3 experiments were also carried out during the on deck experiments thus allowing further comparison of measurements of nitrate uptake using chemiluminescent and tracer techniques.

Nutrient pump-profiling system

High spatial resolution nutrient profiles for nitrate, silicate, phosphate and ammonia were sucessfully obtained from 0-35m using a small, easily deployed, pump-profiling system. This system was selected in order to minimize sample contamination and could be deployed by one person while other over the side operations were taking place. Features of interest such as sub-surface ammonia maxima were discernable from the profiles obtained. Although tests were carried out prior to the cruise, the pumps employed were not sufficiently robust for the range of depths required to obtain information on nutrient concentrations at and below the nutricline. In each instance the seals within the pump failed at depths > 35m resulting in the demise of all three pumps at 40 metres.

5) Molecular Biology, calcification, production and respiration *(Mike Wyman & Tracy Anning)*

Aims and Objectives

1) to estimate rates of calcification in coccolithophorid populations using 45Ca as a tracer.

2) to estimate rates of community production and respiration in in vitro incubations by oxygen titration and relate these to parallel estimates of photosynthetic activity determined by 14C.

3) to analyse temporal variability in gene expression in relation to calcification and photosynthesis.

Calcification

Water samples were collected pre-dawn from depths of 2,10,15,20,25 and 35 metres in 30 litre Go Flos and aliquoted to 75 ml ultra-clean polycarbonate bottles (4 replicates each depth). Each sample was spiked with 10-20 uCi of 45CaCl2 and incubated for 24 hours in situ or on deck in incubators cooled to surface temperature and screened with neutral density filters to transmit 52,27,18,5,2 and 0% of incident irradiance. Following incubation each replicate was filtered through 1.0u Nuclepore filters and

washed with 3 x 100 ml of GFF filtered seawater. Incorporation of 45Ca was determined by scintillation counting.

Three in situ and one on deck incubation were completed at the drifting station and two on deck incubations were carried out at the northerly station centred around 62.3N, 20.0W. Consistent with data obtained using 14C (acidified and non-acidified), no evidence of calcification was obtained in any of the incubations.

Oxygen Primary Productivity

A complete daily time series of incubations were completed over a ten day period at 61N,20W and two incubations completed at 62N,20W. Water was collected pre-dawn at 2m using a 30l GoFlo. Sub-samples were taken immediately into glass BOD bottles for immediate (zero), dark, and light bottles. Four replicates were analysed for each treatment.

Dark and light samples were incubated on deck for 24 hours before fixation and analysis. Neutral density screens were used for on deck incubations to simulate 100, 52, 27, 18, 5, and 2% surface irradiance.

Gross and net production increased over the first two days of sampling (Julian days 195 and 196), with a peak on day 197. Increased production was consistent with increased chlorophyll concentrations and was mirrored by associated changes in photosynthetic activity as measured by 14C. Productivity rates (GPP = 16.29 umoles/day; NPP = 9.11 umoles/day) were comparable to those observed in coccolithophorid-rich waters on CD/60/91. Respiratory activity increased at the time of and following the peak in production. At the 62.30 N 20.00 W station , samples were taken for comparison with the productivity measurements at the drifting station. On day 205 production rates were of the same order as those recorded over the preceeding seven days at the drifting station. However, no net production was observed on the following day.

Molecular Biology

Samples for eukaryote enriched DNA were collected by filtration on GFC filters and stored frozen for on shore analysis. Prokaryote (Synechococcus) samples were collected on 0.6 um pore size Poretics filters following prefiltration through 2.0 um filters. On two occasions large volume samples were collected by SAPS equiped with modified top hats to accomodate 293 mm 0.6 and 2.0 um pore size filters. Samples were washed in sucrose buffer and resuspended in TE buffer prior to storage at -20 C. Samples will be processed on shore for analysis of species composition by RFLPs and to generate libraries for the production of probes for the analysis of RNA samples.

Samples for eukaryote and prokaryote RNA were collected as for DNA except processing time was minimised and cell pellets were frozen in an SDS - based lysis buffer containing EGTA and dithiothreitol. RNA samples

will be processed on shore for the analysis of transcriptional activity using existing probes and those generated from the DNA samples.

Preliminary conclusions

Pre-cruise we had hoped to study calcification and prodution of an active coccolithophorid population and to use molecular tools to gain understanding of the partioning of carbon in these organisms. The absence of actively calcifying coccolithophorids in the study area, while disappointing, was compensated by the opportunity to examine some of the other components of the phytoplankton population in the context of a temporal series. The quality of the samples taken for DNA and RNA analysis were particularly pleasing as was the production data describing a summer dinoflagellate bloom at this latitude. We were surprised at the consistently high production values we obtained both in the context of the literature and prior experience of the region during the BOFS cruises of 1989. To what extent the properties of the eddy can be extended to the surounding area remains to be assessed.

(See Appendix Table 8)

6) Microzooplankton ***(Elaine Edwards)***

The main aim of this work was to quantify the carbon flux from phytoplankton through to the microzooplankton.

Dilution grazing experiments.

A total of 6 dilution grazing experiments were carried out during the cruise, full details are given in Appendix Table 9.

All experiments began as near to dawn as possible, water being collected from either 10m or 25m using 30l go-flos. Incubation for 24 hours were carried out at ambient light and temperature levels. The following subsamples were taken at T0 and T24 hours:-

1) 50-200mls for analysis of chlorophyll by fluorometry
2) 250mls fixed in Lugols for biomass determination
3) 20-50mls fixed in glutaraldehyde, stained with DAPI & proflavin, filtered onto 0.4um nuclepores for subsequent analysis by epifluorescence microscopy.
4) 50mls for flow cytometric analysis by G. Tarran to quantify coccolithophore to microzooplankton flux, if any.

Copepod nauplii grazing experiments

In addition to the dilution work, 2 nauplii grazing experiments were carried out in an attempt to assess the extent to which copepod nauplii graze on other microzooplankton.

Microzooplankton Biomass

On the same day as dilution grazing experiments the following samples were also taken:

1) 1 litre whole water from depths down to 300m were fixed in acid Lugols for the subsequent determination of microzooplankton numbers and biomass.

2) 20-50ml samples, fixed in glutaraldehyde, stained with DAPI & proflavin, filtered onto nuclepores, for the differentiation of photosynthetic and non-photosynthetic flagellates and determination of their numbers and biomass.

3) Apstein net hauls using a 20um mesh were collected from surface waters every 1-2 days on station. Half of the sample was fixed in Lugols for qualitative analysis of larger microzooplankton, the other half was used for live microscopic observation.

Results

Grazing & biomass

Preliminary results of grazing experiments analysed so far suggest that the microzooplankton were grazing 30% of the daily phytoplankton turnover.

All biomass samples will be analysed using image analysis in the laboratory at both PML and at Southampton.

Apstein samples.

Live microscopic observations- main species present:

Tintinnids	*Favella* spp.
	Parafavella spp.
	Salpingella spp.
Ciliates	*Strombidium spp*
	Strobilidium spp
	Tiarena sp.
	Peritromus sp.
Dinoflagellates	*Protoperidinium*
	Dinophysis spp mainly *D.norwegica*
	Gyrodinium spp
	Ceratium spp mainly *C.lineatum*
	Podolampus sp

There was a drop in the overall number of tintinnids present throughout the 8 days on station . This seemed to correspond in an increase in the number of heterotrophic dinoflagellates. Numbers of naked oligotrich ciliates remained high, approximately 5000 per litre. The tinntinnid *Parafavella* spp appeared to be an abundant species at 63'N

7) Flow Cytometry *(Glen Tarran)*

A great deal was achieved during the cruise owing to the modifications made to increase the sample volume throughput of the flow cytometer prior to the cruise. The work carried out will be outlined under the following headings:-

1) Bowtie survey work.
2)CTD profiles.
3)Microzooplankton dilution grazing experiements.
4)Fluorescein diacetate uptake and heterotroph quantitation experiments.

1) Bowtie survey work

Samples were taken for flow cytometer (FC) analysis for the first bowtie but not the second. Samples included hourly surface samples from the non-toxic supply and samples at 2, 10, 20/25 and 40m at the CTD stations.

Coccolithophorids were not in high abundance during the whole of the survey, numbers ranging from c.200-500 cells/ml. Surface phytoplankton (<50 microns) numbers ranged from 3500-8000/ml, averaging just over 5000/ml, a contribution of c.50% of the surface particulates. These numbers remained relatively constant to 20/25m but below the mixed layer at 40m phytoplankton numbers had declined to between a quarter and a half those in the mixed layer. Total particulates numbers stayed relatively constant to 40m.

2) CTD Profiles

Four shallow and two deep in the region of the eddy and two shallow and two deep at 62,30N 20W were analysed for phytoplankton and total particulates.

Profiles from the first site indicated that the area was in a post-bloom/summer condition, ie, there were high numbers of low chlorophyll particles present. Phytoplankton numbers decreased sharply below the mixed layer, total particles decreasing more slowly with depth (Figure 13, a-d). However, numbers increased significantly between 2250 and 2350m, coinciding with the identified nepheloid layer. At the second site phytoplankton contributed nearly 100% to the total particulates in the mixed layer, indicating a healthy population (Figure 13, e and f). This contribution, however, decreased with depth. Yet again at the greatest depths increased numbers of particulates were observed. The two sites varied markedly in both the population size and chlorophyll distributions within the mixed layer. The first site was very heterogeneous with high numbers of low chlorophyll particles and a relatively high number of large cells (Figure 14, a-c). The second site contained many more smaller cells with relatively high chlorophyll (Figure 14, d-f). Different populations of cells can be picked out from site 1 (Figure 14c) whereas for site 2 no such differences are discernable (Figure 14f).

3) Microzooplankton grazing experiments

Six experiments set up by Elaine Edwards had samples removed for FC analysis. It was originally intended to look at both total phytoplankton and coccolithophorid grazing but owing to the low numbers only the total phytoplankton will be analysed for turnover of phytoplankton by microzooplankton.

In addition to the standard grazing experiments two more were run in which the sampling frequency was increased to every six hours instead of just at 0 and 24h. The first was run in conjunction with the first dilution experiment to investigate the possibility that increased sampling caused greater grazer mortality. Both the incresed sampling experiments were also run to look at grazing in greater detail to see if there were any diel changes. The data will be analysed and compared back in the lab.

4) Fluorescein diacetate (FDA) uptake and heterotroph quantification

A number of experiments were run with Kari Nygaard from NIVA, Norway to investigate the uptake and subsequent conversion of FDA to fluorescein in living cells. It was also hoped to be able to differentiate heterotrophs from phytoplankton, mixotrophs and detritus.

Experiments were run to look at the uptake of FDA over time using time and log green fluorescence as FC parameters. Figure 15 illustrates the results from one experiment using water from within and below the mixed layer. FDA uptake was very clear for the samples from the mixed layer over a thirty minute period, with separate populations of medium and high fluorescein containing cells being very apparent. Maximum FDA conversion to fluorescein had occurred in all cases by 15mins and remained constant for the remainder of the experiment.

In addition to the uptake experiments trials were carried out to quantify the numbers of heterotrophs present. The experimental setup was the same as before except that samples were taken at hourly intervals over 5 hours for FC analysis and microscopic quantitation of heterotrophs which will be done by Kari. Some of the samples have been analysed and the numbers of heterotrophs for both microscope and FC methods fall between 300-1000 cells/ml. The trials also showed that by 5h there was a 20-40% reduction in fluorescein containing cells, the fluorescein being released into the sample. These results are encouraging and the methods will be refined at a later date.

Further trials over shorter time periods were carried out and will be analysed in the lab.

8) Zooplankton *(Roger Harris)*

Sampling concentrated on the main drifting station, although additional work was done at the more northerly, 62°30'N station.

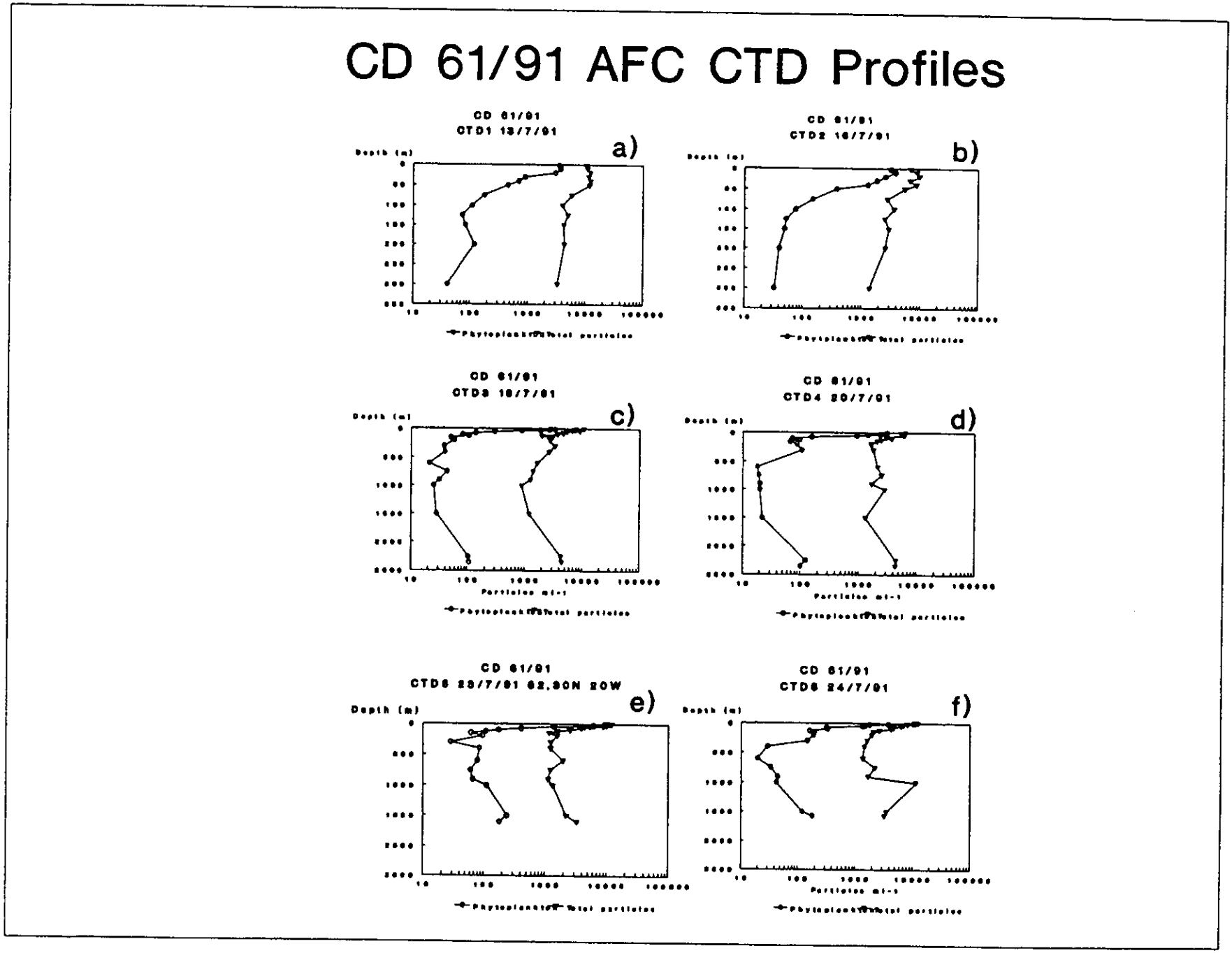

Figure 12. Flow cytometry CTD profiles (Glen Tarran)

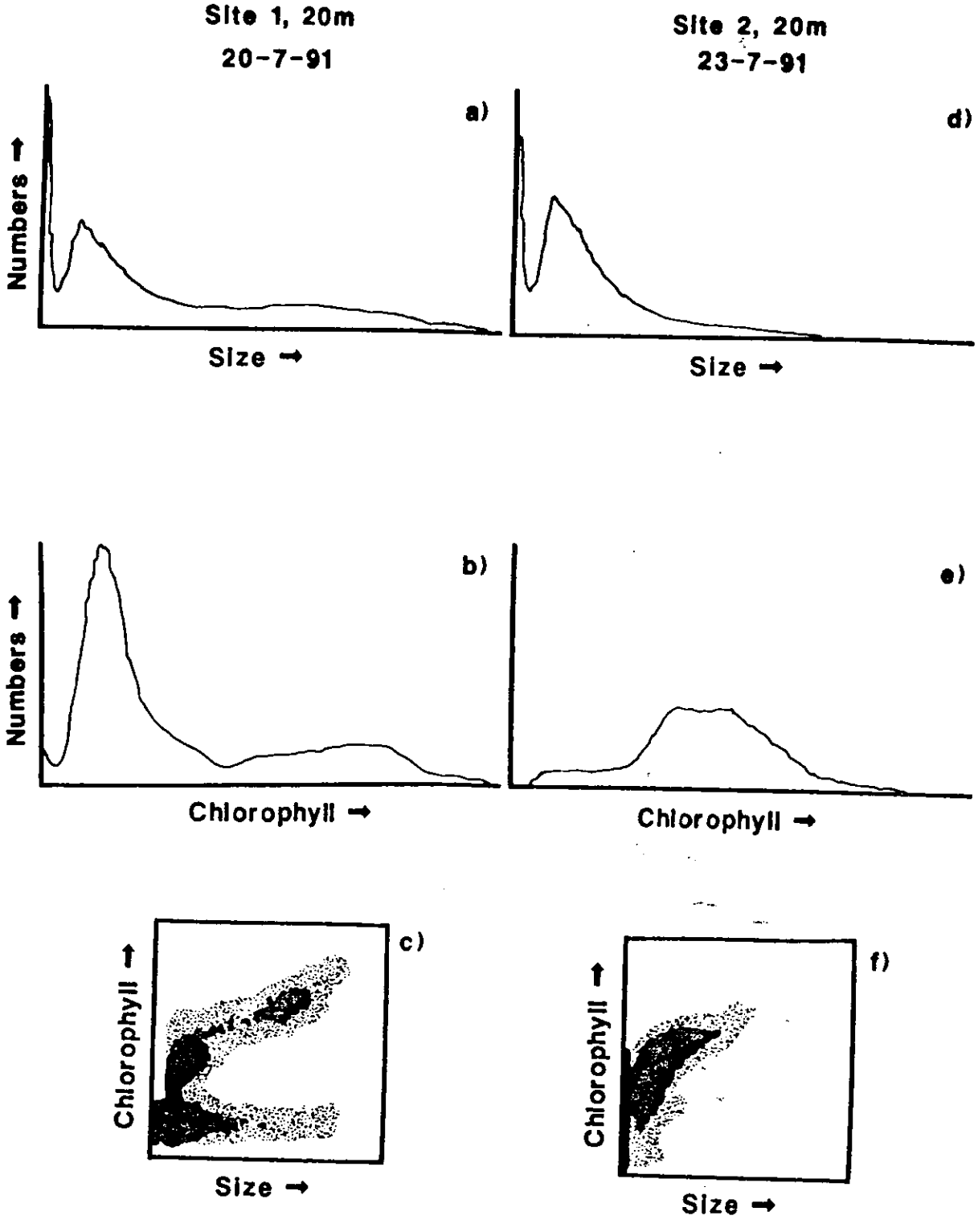

Figure 13. CD 61/91 Particle size and chlorophyll distributions at two sites: Site 1, 61 03N 19 31W and Site 2, 62N 19 51W

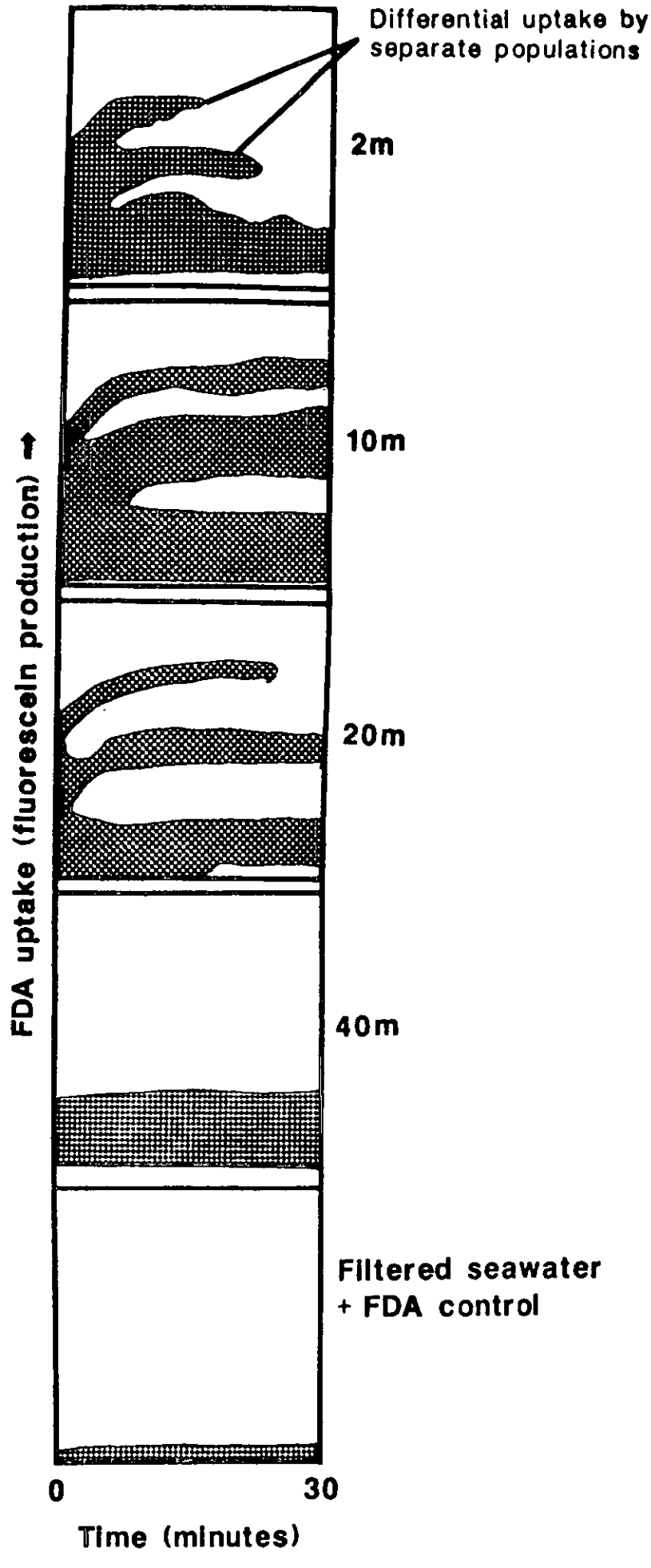

Figure 14. FDA uptake at four depths over 30 minutes

The sampling programme concentrated on the midday and midnight periods of the diel cycle, using vertically hauled 200µm WP-2 nets to sample the upper 100m following the JGOFS "Level 1" protocol. Samples were size fractionated into the JGOFS categories, >2000 µm, 2000-1000 µm, 1000-500 µm, and 500-200 µm, using wet sieving. Triplicate subsamples were then taken for CHN analysis and gut pigment analysis, onto glass-fibre filters, and immediately deep frozen. The remainder of each sample was preserved in formalin for identification and counting.

Samples were also taken using a 55 µm Apstein net for the upper 50m, to sample the earlier developmental stages of copepods, as they occur within the microzooplankton.

A complete listing of all zooplankton sampling activities is given in Appendix Table 8.

Compared with previous BOFS cruises in the area, the most striking feature of the zooplankton was the high abundance of the larger size fractions, which were strongly dominated by *Calanus*.Previous years have been characterised by dominance by the small size fractions, and virtual absence of this species. The eleven day/night sampling pairs showed little evidence of diel periodicity in gut pigment, and vertical migration was not pronounced.

9) Sediment traps *(Roger Harris)*

IOSDL traps were deployed in a four trap configuration in the upper 300m (Fig. 4) on the drifting rig. Five deployments were sucessfully completed, and details of these are given in Appendix Table 11.

The honey comb baffles were lost from the upper three traps by the first recovery, but otherwise the traps appeared to perform well. On visual inspection there was little evidence of coccolith material in the traps, although quantities of pigmented faecal material were clearly visible.

10) Microbial food web community structure *(Paddy Patterson)*

Preamble:

The aims of this work were to characterize the taxonomic and quantitative structure of the flagellate component of the microbial community,to document that community for reference in the video library, and to identify the trophic importance of different elements of that community.

Conclusions

There are two distinct communities of heterotrophic flagellates. These communities are taxonomically distinct and there appears to be little exchange of members. One is associated with the detritus, it is well characterized taxonomically but not numerically. It is distributed throughout the water column. There is a second community of 'free' (not specifically associated with detritus). The total numbers of heterotrophic flagellates in this group can be estimated accurately. The taxonomic structure of the community is poorly known because of methodological difficulties. This community of heterotrophic flagellates is ecologically important, and development of techniques which will allow them to be studied is desirable.

The detrital flagellate community.

This has been the major focus of DJP's work as it is a proscribed target of the Turley/Patterson award under the BOFS programme. This community has been investigated in Bristol and Plymouth using material brought back from previous cruises. Participation in this cruise sought to establish if the material surviving transport to Bristol properly represented the populations in situ.

This community was investigated using material from upper column and deep CTDs, SAPs, and multicorer principally at the first (gyre) site. Microscopical observations were made of living material using a refrigerated microscope to maintain ambient temperature, and documented by records on U- MATIC video tape.

Organisms identified to date include:

Actinomonas mirabilis
Amastigomonas debruynei
Amastigomonas mutabilis
Ancyromonas sigmoides
Bicosoeca sp. (to be identified to species) Bicosta sp. (to be identified to species)
Bodo designis
Bodo parvulus
Bodo saliens
Bordnamonas pacifica
Cafeteria roenbergensis
Cercomonas sp.(to be identified to species)
Leucocryptos marina
Massisteria marina
Metromonas grandis
Paraphysomonas sp. (to be identified to species)
Petalomonas minuta
Protaspis glans
Pseudobodo n.sp.
Pseudobodo tremulans

It is expected that several species will be added to this list following further study in Bristol of cultured material and of material prepared for electron-microscopy. One new genus may be added.

Based on these observations, we have been able to confirm: (1) that the community that survives transit to England fairly reflects the in situ community of detrital heterotrophic flagellates; (2) that the community associated with oceanic detritus is a subset of a larger community of flagellates associated with marine detritus from more productive (inter-tidal) sites. The lesser diversity at oceanic locations and the absence of larger species is attributed to absence of certain categories of food.

There is as yet no satisfactory means of quantifying this community. It is probable that the significance of this community increases with greater depths.

The free flagellates

Despite its importance in harbouring important consumers, this community of flagellates has proven very difficult to sample reliably for taxonomic work. We have employed conventional centrifugation, continuous centrifugation, gravity filtration, reverse filtration, fixation followed by membrane filtration, Coulter counter (Multisizer), and flow cytometry. Of these techniques, membrane filtration of material fixed immediately upon collection gives the highest numbers. We have relied upon this to provide bench-mark data against which other techniques have been compared.

The community structure varies from one location to another (being dominated by the residuum of the coccolithophore community and dinoflagellates at the first site. The second site was dominated by diatoms and a residual population of coccolithophores, and 55.5N 20W, a site of high reflectance sampled on the return voyage, was dominated by coccolithophores).

Large variations in total and relative numbers were encountered in samples taken within 10 metres of each other (see below) and in samples taken on station in successive days.

The following results are typical of those obtained with gultaraldehyde fixed material collected on 0.2 fm Nuclepore filters and stained with DAPI and primulin.

14th July

Depth	Het-flag (per ml)	Autotr-flag (per ml)
10	446	306
20	1200	1800
30	907	752
40	378	180

17th July		
2	1035	351
10	765	747
20	1181	786
40	342	203

The data from 14th July demonstrate small scale (vertical) patchiness. Highest numbers were obtained just above the thermocline, but comparable variations were obtained from day to day.

The ratio of autotrophs to heterotrophs was generally in the vicinity of 60:40 (heterotrophs to autotrophs) when measured by epifluoresence of fixed stained cells. Direct observation of gravity filtered material typically gave much reduced numbers of heterotrophs (40:60 - 20:80). Flow cytometry provides similar information to that obtained using fixed-filtered material. We suspect that the free-flagellates are fragile and are lost when living cells make contact with surfaces - upon collection, storage, and filtering. This aspect requires experimental investigation.

We conclude that the heterotrophic flagellates are fragile and difficult to sample reliably. Species which were seen in unfixed samples were those with some kind of skeletal material (dinoflagellates, acanthocoecian collar-flagellates, Leucocryptos). The organisms which were raely seen, and then mostly in fresh saamples, are smaller naked heterotrophic flagellates. The failure to gain adequate access to this element of the microbial community is a matter of concern and techniques need to be improved. We suspect that two factors contribute. The development of techniques should consider (1) the loss of small flagellates from samples (the bottle effect), and (2) how to collect all flagellates present for observation while still alive. We believe that whole mount electron-microscopical techniques which also permit epifluorescence studies might be another appropriate development as it will allow for definitive identification together with information on the trophic status of the organisms.

The heterotrophic flagellates observed were principally dinoflagellates (Gymnodinium, Gyrodinium, Katodinium, and Cochliodinium), some collar-flagellates, and Leucocryptos. Larger dinoflagellates were sparsely represented. No identities were obtained for the fragile small naked heterotrophic flagellates.

Deeper waters

No live eukaryotes have been observed, but samples taken by multicorer and cultures will subject to further study in Bristol. In situ observations cannot be made easily because of the low numbers of cells, their presumed fragility, and their possible requirements for a strict temperature and pressure regime. We meet these needs as best we can, but further studies will need to be supported by better sampling facilities.

The video data base

The video data base has proven to be a popular and effective means of collecting and disseminating information relating to flagellate taxonomy. One objective of this cruise was to find out if the system can be operated at sea.

The video system per se is sufficiently robust to operate at sea, and the dark-room environment (RRV DARWIN) is particularly suitable - being relatively free from moisture and temperature changes. The video system probably should not be used in other locations in the ship.

However, there are problems in obtaining high-quality new footage. Most flagellates are under 10 fm, and distinguisghing features are best demonstrated using highest magnifications. Despite operating in one of the best localities in the ship, and incorporating two layers of isolating material (Sorbathane and air-filled rubber balls) vibrations and the ship's movement very noticeably reduce the quality of the image. Quality results can only be achieved under the calmest of conditions and improved rigidity between the camera system and microscope as well as enhanced damping of vibration are required.

Many flagellates are sensitive to temperature stress, and future plans to conduct video work at sea must take account of this. Under no circumstances should the video system be installed in a cold room. Our solution was to enclose the microscope within a custom-built refrigerated box. This is of straightforward construction with a domestic refrigeration in which the cooling coil has been placed in 4" ducting. Air is driven gently over this by a fan, and is intercepted by a heating unit, the output of which is adjusted to achieve the desired temperature. This arrangement has difficulty maintaining the lowest temperatures (below 7xC except for short periods). A coling coil with its surface area increased by the use of vanes would be an obvious improvement. A supply of warm air is required to prevent condensation on eyepieces and other elements of the microscope emerging from the box. Using such a system,. it was possible to maintain live organisms for observation for much longer periods than would otherwise be possible.

Benthic Foraminifera

Loose debris from three multicore samples - two taken at the first site and one taken at the second site, were fixed in accordance with instructions for electron-microscopy. This material will be used for Gooday (IOS), Green (PML), Turley (University Bristol) studies of trophic activity of deep sea foraminifera and other large amoebae.

Flow Cytometry

KN collaborated with Glen Tarran in the development of techniques which will allow autotrophic and heterotrophic flagellates to be counted simultaneously using flow cytometry. This work is covered in GT's report.

This work was supported by a Small Equipment and a Marine Sciences grant from the Royal Society of London.

11) Lipid biomarkers, Stand-alone pumps and vertical flux *(Maureen Conte)*

The primary purpose of our participation on this cruise was to assess the primary production of lipid biomarkers associated with a coccolithophorid bloom, and the vertical flux transformations of these compounds in the water column and surficial sediments. A second objective was to assess the genetic structure/diversity of *E. huxleyi* populations in this region of the North Atlantic and during the course of a bloom, and the influence of genotype on lipid and pigment biomarker synthesis (in conjunction with L. Medlin, Bristol and F. Mantoura, PML).

Although this cruise did not sample the major bloom event, we nevertheless were able to collect particulate and surficial sediment samples which will enable us to assess post-bloom surface water conditions, the mid- and deep-water column signal of, and responses to the (apparently) rapidly sedimenting bloom and its arrival on the seafloor.

Stand Alone Pumps (SAPS):

A total of 13 SAP casts were made covering depths of 10-2390 m (Appendix Table 12). Filtration volumes using GFF filters ranged from 200 l in the surface waters to 2300 l in deep waters (comparable to those observed in 1989 and 1990). We sucessfully sampled the nepheloid layer at the 610 N study site.

SAP performance:

The performance of the SAPS was excellent and reliable. The modifications we made to the SAP filter holder base plate and installation of a check valve successfully corrected the problems of filter bursting, uneven distribution and passive filtration which were encountered on previous cruises. We also sea-tested a prototype filter holder which allows for size fractionated sampling (designed and constructed in collaboration with Tim Fileman, PML and Bill Simpson, Challenger Oceanics). This filter holder performed extremely well, and only a few minor modifications are needed (eg replacement of aluminium baffles with stainless steel for greater strength). The large particle fraction (collected on 53 mm Nitex prefilters) was evenly distributed on the prefilter making it amenable for microscopy, etc. in addition to chemical analyses. Further details on SAP performance are given in a separate report to RVS.

Preliminary observations:

The large gradient in filter volumes and loadings in the upper 50 m in the 610 N area mirrored the extremely sharp thermocline observed on CTD traces. Filters in the euphotic zone were bright gold coloured, becoming more brown-yellow at depth. The nepheloid layer was also "mustard" coloured, rather than brownish as in 1989 at 520 N, suggesting that it was not resuspended sediment. Large particle abundances on filters were much lower than those encountered in 1989 and 1990. Almost no large particles of any kind could be seen on the filters in the mixed layer. Large particle counts sharply increased on mid- and deep- water samples (contrary to 1989 and 1990). These particles seemed to be mostly filamentous material and <.5 mm "pepper" rather than the amorphous brown mucus material and tubular fecal pellets encountered in 1989. Large particle abundances on filters at the 620 N site were much greater throughout the water column with larger 1-2 mm aggregates present.

Filtrations from CTD bottles and nontoxic supply:

Filtrations were made during both "bowtie" surveys to assess spatially variability in the surface waters and temporal changes between the first and second surveys, in conjunction with underway sampling conducted for POC/PON, species composition, chlorophyll, particulate Ca, and particle size distributions.

At each CTD cast, samples were taken at the surface, within the mixed layer, at the base of the mixed layer and in the lower thermocline to assess vertical changes within the euphotic zone (Appendix Table14). Innoculations for isolations of coccolithophorids and culturing were also made on each cast. On the first "bowtie" survey, these samples were augmented with additional along-track surface samples (Table 13,). Underway samples from the nontoxic supply were also taken as we transected the 200 W longitude for comparison with samples taken along the same transect in 1989.

Surficial sediments collected using the Multicorer:

Four successful drops of the Multicorer were made, three in the main study area at 610 N and one at 620 N (Appendix Table 15).Cores from one drop at the main site were fine sectioned at mm-scale intervals using the Precision Core Extruder (PCE) designed at Bristol for studies of early diagenesis of biomarker compounds. Cores at 610 N were loosely compacted fine dark brown/gray sediment, indicative of high TOC. The sharp change in colour to dark gray suggested the oxic/anoxic interface was at approximately 7 cm. The shallower cores at 620 N were of coarser material with numerous worm tubes visible at the surface

TABLE 1. Chlorophyll samples.

SAMPLE NO	DATE	TIME (GMT)	LAT (N)	LONG (W)	DEPTH	VOL FILT
6000	6/7/91	2000	56,47.63	'08,05.46	4	100ml
6001	6/7/91	2200	57,06.25	'08,30.50	4	100ml
6002	7/7/91	'0000	57,25.01	'0855.45	4	100ml
6003	7/7/91	'0200	57,43.50	'09,23.74	4	100ml
6004	7/7/91	'0400	58,03.07	'09,50.66	4	100ml
6005	7/7/91	'0600	58,21.68	10,18.60	4	100ml
6006	7/7/91	'0800	58,40.95	10,47.41	4	100ml
6007	7/7/91	1000	58,56.56	11,11.12	4	100ml
6008	7/7/91	1200	58,38.77	10,44.63	4	100ml
6009	7/7/91	1400	58,19.46	10,17.73	4	100ml
6010	7/7/91	1600	58,01.95	'09,53.23	4	100ml
6011	7/7/91	1800	57,43.16	'09,28.21	4	100ml
6012	7/7/91	2000	57,23.73	'09,01.47	4	100ml
6013	7/7/91	2200	57,06.21	'08,36.52	4	100ml
6014	10/7/91	'0800	56,07.35	'08,12.0	4	100ml
6015	10/7/91	'0955	56,19.23	'08,56.26	4	100ml
6016	10/7/91	1200	56,33.04	'09,21.05	4	100ml
6017	10/7/91	1400	56,42.60	'09,57.8	4	100ml
6018	10/7/91	1600	56,52.04	10,32.75	4	100ml
6019	10/7/91	1800	57,04.09	11,08.97	4	100ml
6020	10/7/91	2000	57,16.94	11.45.44	4	100ml
6021	10/7/91	2200	57,31.18	12,22.66	4	100ml
6022	11/7/91	'0000	57,44.04	13,00.62	4	100ml
6023	11/7/91	'0200	57,55.97	13,39.19	4	100ml
6024	11/7/91	'0400	58,09.54	14,18.49	4	100ml
6025	11/7/91	'0600	58,22.8	14,56.62	4	100ml
6026	11/7/91	'0800	58,35.23	15,35.26	4	100ml
6027	11/7/91	1000	58,41.35	15,55.56	4	100ml
6028	11/7/91	1210	58,55.9	16,43.4	4	100ml
6029	11/7/91	1410	59,05.97	17,17.25	4	100ml
6030	11/7/91	1607	59,19.28	17,51.87	4	100ml
6031	11/7/91	1800	59,30.95	18,27.45	4	100ml
6032	11/7/91	2000	59,44.21	19,06.75	4	100ml
6033	11/7/91	2200	59,55.57	19,47.22	4	100ml
6034	12/7/91	'0000	60,14.26	19,59.33	4	100ml
6035	12/7/91	'0200	60,37.55	20,00.59	4	100ml
6036	12/7/91	'0400	61,00.45	19,59.1	4	100ml
6037	12/7/91	'0430	61,04.88	19,59.58	4	100ml
6038	12/7/91	'0500	61,05.06	19,59.36	4	100ml
6039	12/7/91	'0530	61,07.52	20,00.98	4	100ml
6040	12/7/91	'0600	61,11.79	20,08.76	4	100ml

TABLE 1. Chlorophyll samples.

6041	12/7/91	'0630	61,16.53	20,13.74	4	100ml
6042	12/7/91	'0700	61,20.7	20,21.73	4	100ml
6043	12/7/91	'0730	61,25.31	20,27.03	4	100ml
6044	12/7/91	'0800	61,29.97	20,34.34	4	100ml
6045	12/7/91	'0830	61,32.18	20,37.12	4	100ml
6046	12/7/91	'0900	61,32.3	20,37.43	4	100ml
6047	12/7/91	'0930	61,32.38	20,32.39	4	100ml
6048	12/7/91	1000	61,32.32	20,21.29	4	100ml
6049	12/7/91	1030	61,32.7	20,10.23	4	100ml
6050	12/7/91	1100	61,32.41	19,58.93	4	100ml
6051	12/7/91	1130	61,32.44	19,47.68	4	100ml
6052	12/7/91	1200	61,32.33	19,36.89	4	100ml
6053	12/7/91	1230	61,32.45	19,30.91	4	100ml
6054	12/7/91	1300	61,33.28	19,31.00	4	100ml
6055	12/7/91	1330	61,28.23	19,36.74	4	100ml
6056	12/7/91	1409	61,21.43	19,44.41	4	100ml
6057	12/7/91	1430	61,17.74	19,47.13	4	100ml
6058	12/7/91	1500	61,11.94	19,52.3	4	100ml
6059	12/7/91	1609	61,10.68	19,55.46	4	100ml
6060	12/7/91	1635	61,05.34	19,59.96	4	100ml
6061	12/7/91	1705	61,00.18	20,05.59	4	100ml
6062	12/7/91	1733	60,55.43	20,11.86	4	100ml
6063	12/7/91	1800	60,50.51	20,15.6	4	100ml
6064	12/7/91	1834	60,45.06	20,22.22	4	100ml
6065	12/7/91	1916	60,37.69	19,16.27	4	100ml
6066	12/7/91	1930	60,35.34	20,31.19	4	100ml
6067	12/7/91	2000	60,33.04	20,34.16	4	100ml
6068	12/7/91	2030	60,32.63	20,32.71	4	100ml
6069	12/7/91	2100	60,32.64	20,20.19	4	100ml
6070	12/7/91	2130	60,32.7	20,09.17	4	100ml
6071	12/7/91	2200	60,32.72	19,56.92	4	100ml
6072	12/7/91	2230	60,33.32	19,45.14	4	100ml
6073	12/7/91	2300	60,32.89	19,32.77	4	100ml
6074	12/7/91	2330	60,33.02	19,24.06	4	100ml
6075	13/7/91	'0000	60,33.06	19,23.97	4	100ml
6076	13/7/91	'0030	60,35.7	19,27.16	4	100ml
6077	13/7/91	'0100	60,40.45	19,32.46	4	100ml
6078	13/7/91	'0130	60,44.32	19,36.62	4	100ml
6079	13/7/91	'0200	60,47.99	19,40.74	4	100ml
6080	13/7/91	'0230	60,51.96	19,45.31	4	100ml
6081	13/7/91	'0300	60,55.8	19,49.23	4	100ml
6082	13/7/91	'0330	60,58.87	19,53.43	4	100ml
6083	13/7/91	'0400	61,02.48	19,57.63	4	100ml
		CTD61/194/04				
6084	13/7/91	1400	61,03.42	19,56.48	2	100ml
6085	13/7/91	1400	61,03.42	19,56.48	10	100ml

TABLE 1. Chlorophyll samples.

6086	13/7/91	1400	61,03.42	19,56.48	20	100ml
6087	13/7/91	1400	61,03.42	19,56.48	30	100ml
6088	13/7/91	1400	61,03.42	19,56.48	40	100ml
6089	13/7/91	1400	61,03.42	19,56.48	50	250ml
6090	13/7/91	1400	61,03.42	19,56.48	75	250ml
6091	13/7/91	1400	61,03.42	19,56.48	100	250ml
6092	13/7/91	1400	61,03.42	19,56.48	425	250ml
6093	13/7/91	1400	61,03.42	19,56.48	150	250ml
6094	13/7/91	1400	61,03.42	19,56.48	200	250ml
6095	13/7/91	1400	61,03.42	19,56.48	300	250ml
		CTD61/195/04				
6096	14/7/91	'0600	61,06.3	19,36.4	2	100ml
6097	14/7/91	'0600	61,06.3	19,36.4	10	100ml
6098	14/7/91	'0600	61,06.3	19,36.4	20	100ml
6099	14/7/91	'0600	61,06.3	19,36.4	30	100ml
6100	14/7/91	'0600	61,06.3	19,36.4	40	250ml
6101	14/7/91	'0600	61,06.3	19,36.4	50	250ml
6102	14/7/91	'0600	61,06.3	19,36.4	75	250ml
6103	14/7/91	'0600	61,06.3	19,36.4	100	250ml
6104	14/7/91	'0600	61,06.3	19,36.4	125	250ml
6105	14/7/91	'0600	61,06.3	19,36.4	150	250ml
6106	14/7/91	'0600	61,06.3	19,36.4	200	250ml
6107	14/7/91	'0600	61,06.3	19,36.4	300	250ml
		CTD61/195/06				
6108	14/7/91	1215	61,09.9	19,33.6	2	100
6109	14/7/91	1215	61,09.9	19,33.6	25	100
6110	14/7/91	1215	61,09.9	19,33.6	35	100
6111	14/7/91	1215	61,09.9	19,33.6	50	100
		CTD61/196/06				
6112	15/7/91	1144	61,16.02	19,46.00	2	100
6113	15/7/91	1144	61,16.02	19,46.00	10	100
6114	15/7/91	1144	61,16.02	19,46.00	20	100
6115	15/7/91	1144	61,16.02	19,46.00	30	100
6116	15/7/91	1144	61,16.02	19,46.00	40	100
6117	15/7/91	1144	61,16.02	19,46.00	50	250
6118	15/7/91	1144	61,16.02	19,46.00	75	250
6119	15/7/91	1144	61,16.02	19,46.00	100	250
6120	15/7/91	1144	61,16.02	19,46.00	125	250
6121	15/7/91	1144	61,16.02	19,46.00	150	250
6122	15/7/91	1144	61,16.02	19,46.00	200	250
6123	15/7/91	1144	61,16.02	19,46.00	300	250
		CTD 61/197/05				

TABLE 1. Chlorophyll samples.

6124	16/07/91	'0620	61,11.1	20,00.5	2	100
6125	16/07/91	'0620	61,11.1	20,00.5	10	100
6126	16/07/91	'0620	61,11.1	20,00.5	20	100
6127	16/07/91	'0620	61,11.1	20,00.5	30	100
6128	16/07/91	'0620	61,11.1	20,00.5	40	100
6129	16/07/91	'0620	61,11.1	20,00.5	50	100
6130	16/07/91	'0620	61,11.1	20,00.5	75	100
6131	16/07/91	'0620	61,11.1	20,00.5	100	100
6132	16/07/91	'0620	61,11.1	20,00.5	125	100
6133	16/07/91	'0620	61,11.1	20,00.5	150	100
6134	16/07/91	'0620	61,11.1	20,00.5	200	100
6135	16/07/91	'0620	61,11.1	20,00.5	300	100
		CTD 61/198/05				
6136	17/07/91	1203	61,07.2	19,39.8	2	100
6137	17/07/91	1203	61,07.2	19,39.8	10	100
6138	17/07/91	1203	61,07.2	19,39.8	20	100
6139	17/07/91	1203	61,07.2	19,39.8	30	100
6140	17/07/91	1203	61,07.2	19,39.8	40	100
6141	17/07/91	1203	61,07.2	19,39.8	50	100
6142	17/07/91	1203	61,07.2	19,39.8	75	100
6143	17/07/91	1203	61,07.2	19,39.8	100	100
6144	17/07/91	1203	61,07.2	19,39.8	125	100
6145	17/07/91	1203	61,07.2	19,39.8	150	100
6146	17/07/91	1203	61,07.2	19,39.8	200	100
6147	17/07/91	1203	61,07.2	19,39.8	300	100
			CTD 61/199/05			
6148	18/07/91	'0526	61,14.9	19,32.1	2	100
6149	18/07/91	'0526	61,14.9	19,32.1	10	100
6150	18/07/91	'0526	61,14.9	19,32.1	20	100
6151	18/07/91	'0526	61,14.9	19,32.1	30	100
6152	18/07/91	'0526	61,14.9	19,32.1	40	100
6153	18/07/91	'0526	61,14.9	19,32.1	50	100
6154	18/07/91	'0526	61,14.9	19,32.1	75	250
6155	18/07/91	'0526	61,14.9	19,32.1	100	250
6156	18/07/91	'0526	61,14.9	19,32.1	125	250
6157	18/07/91	'0526	61,14.9	19,32.1	150	250
6158	18/07/91	'0526	61,14.9	19,32.1	200	250
6159	18/07/91	'0526	61,14.9	19,32.1	300	250
			CTD 61/199/06			
6160	18/07/91	'0708	61,15.2	19,31.5	400	250

TABLE 1. Chlorophyll samples.

6161	18/07/91	'0708	61,15.2	19,31.5	600	250
6162	18/07/91	'0708	61,15.2	19,31.5	750	250
6163	18/07/91	'0708	61,15.2	19,31.5	900	250
6164	18/07/91	'0708	61,15.2	19,31.5	1000	250
6165	18/07/91	'0708	61,15.2	19,31.5	1500	250
6166	18/07/91	'0708	61,15.2	19,31.5	2250	250
6167	18/07/91	'0708	61,15.2	19,31.5	2350	250
		CTD 61/200/06				
6168	19/07/91	'1100	61,15.1	19,37.54	2	100
6169	19/07/91	'1100	61,15.1	19,37.54	10	100
6170	19/07/91	'1100	61,15.1	19,37.54	20	100
6171	19/07/91	'1100	61,15.1	19,37.54	30	100
6172	19/07/91	'1100	61,15.1	19,37.54	40	100
6173	19/07/91	'1100	61,15.1	19,37.54	50	100
6174	19/07/91	'1100	61,15.1	19,37.54	75	250
6175	19/07/91	'1100	61,15.1	19,37.54	100	250
6176	19/07/91	'1100	61,15.1	19,37.54	125	250
6177	19/07/91	'1100	61,15.1	19,37.54	150	250
6178	19/07/91	'1100	61,15.1	19,37.54	200	250
6179	19/07/91	'1100	61,15.1	19,37.54	300	250
		CTD 61/201/04				
6180	20/07/91	'0324	61,06.7	19,51.1	2	100
6181	20/07/91	'0324	61,06.7	19,51.1	10	100
6182	20/07/91	'0324	61,06.7	19,51.1	20	100
6183	20/07/91	'0324	61,06.7	19,51.1	30	100
6184	20/07/91	'0324	61,06.7	19,51.1	40	100
6185	20/07/91	'0324	61,06.7	19,51.1	50	100
6186	20/07/91	'0324	61,06.7	19,51.1	75	250
6187	20/07/91	'0324	61,06.7	19,51.1	100	250
6188	20/07/91	'0324	61,06.7	19,51.1	125	250
6189	20/07/91	'0324	61,06.7	19,51.1	150	250
6190	20/07/91	'0324	61,06.7	19,51.1	200	250
6191	20/07/91	'0324	61,06.7	19,51.1	300	250
6200	21/7/91	1359	61,01.2	19,41.51	4	100
6201	21/7/91	1655	61,04.7	19,39.64	4	100
6202	21/7/91	1735	61,06.63	19,42.34	4	100
6203	21/7/91	2020	61,08.94	19,40.06	4	100
6204	21/7/91	2050	61,11.17	19,39.78	4	100
6205	21/7/91	2322	61,13.2	19,41.77	4	100
6206	22/07/91	'0011	61,15.99	19,41.2	4	100

TABLE 1. Chlorophyll samples.

6207	22/07/91	'0410	61,20.35	19,43.1	4	100
6208	22/07/91	'0430	61,21.24	19,39.49	4	100
6209	22/07/91	'0700	61,23.14	19,44.52	4	100
6210	22/07/91	'0730	61,27.15	19,51.56	4	100
6211	22/07/91	,0800	61,31.17	19,58.68	4	100
6212	22/07/91	,0830	61,36.84	20,08.98	4	100
6213	22/07/91	,0900	61,40.89	20,15.95	4	100
6214	22/07/91	'0930	61,40.16	20,14.48	4	100
6215	22/07/91	1000	61,40.14	20,06.9	4	100
6216	22/07/91	1030	61,40.18	19,58.22	4	100
6217	22/07/91	1100	61,40.15	19,49.77	4	100
6218	22/07/91	1130	61,40.10	19,41.14	4	100
6219	22/07/91	1200	61,40.35	19,32.22	4	100
6220	22/07/91	1230	61,40.43	19,23.76	4	100
6221	22/07/91	1300	61,40.26	19,15.35	4	100
6222	22/07/91	1330	61,39.99	19,05.65	4	100
6223	22/07/91	1400	61,40.13	19,06.03	4	100
6224	22/07/91	1430	61,37.21	19,09.34	4	100
6225	22/07/91	1500	61,32.21	19,17.03	4	100
6226	22/07/91	1530	61,27.81	19,24.27	4	100
6227	22/07/91	1600	61,22.81	19,31.25	4	100
6228	22/07/91	1630	61,18.78	19,35.4	4	100
6229	22/07/91	1700	61,13.95	19,39.02	4	100
6230	22/07/91	1800	61,11.67	19,41.89	4	100
6231	22/07/91	1901	61,09.53	19,43.18	4	100
6232	22/07/91	2000	61,09.89	19,48.68	4	100
6233	22/07/91	2030	61,13.24	19,51.37	4	100
6234	22/07/91	2100	61,12.44	19,43.57	4	100
6235	22/07/91	2130	61,07.19	19,45.85	4	100
6236	22/07/91	2200	61,02.34	19,51.86	4	100
6237	22/07/91	2230	60,57.07	19,57.21	4	100
6238	22/07/91	2300	60,52.33	20,03.13	4	100
6239	22/07/91	2330	60,47.41	20,09.62	4	100
6240	23/07/91	'0000	60,43.19	20,14.95	4	100
6241	23/07/91	'0030	60,41.6	20,16.37	4	100
6242	23/07/91	'0100	60,41.29	20,12.11	4	100
6243	23/07/91	'0130	60,41.17	20,00.27	4	100
6244	23/07/91	'0200	60,41.59	19,49.41	4	100
6245	23/07/91	'0230	60,41.31	19,51.31	4	100
6246	23/07/91	'0300	60,41.27	19,51.37	4	100
6247	23/07/91	'0330	60,42.24	19,43.78	4	100
6248	23/07/91	'0400	60,42.44	19,32.44	4	100
6249	23/07/91	'0430	60,42.71	19,21.02	4	100
6250	23/07/91	'0500	60,41.27	19,08.35	4	100
6251	23/07/91	'0530	60,41.19	19,06.7	4	100
6252	23/07/91	'0600	60,44.26	19,08.56	4	100
6253	23/07/91	'0630	60,48.07	19,11.74	4	100

TABLE 1. Chlorophyll samples.

6254	23/07/91	'0706	60,54.39	19,21.56	4	100
6255	23/07/91	'0730	60,57.92	19,26.34	4	100
6256	23/07/91	'0800	61,02.81	19,31.85	4	100
6257	23/07/91	'0830	61,07.59	19,37.95	4	100
6258	23/07/91	'0900	61,11.12	19,40.42	4	100
6259	23/07/91	1100	61,13.52	19,41.53	4	100
6260	23/07/91	1200	61,22.73	19,42.66	4	100
6261	23/07/91	1300	61,30.0	19,43.09	4	100
6262	23/07/91	1500	61,38.58	19,45.89	4	100
6263	23/07/91	1600	61,49.61	19,49.08	4	100
6264	23/07/91	1700	62,00.22	19,51.84	4	100
6265	23/07/91	1800	62,10.87	19,54.42	4	100
6266	23/07/91	2000	62,22.1	19,57.93	4	100
		CTD 61/204/06				
6267	23/07/91	2025	62,30.0	20,00.01	2	100
6268	23/07/91	2025	62,30.0	20,00.01	10	100
6269	23/07/91	2025	62,30.0	20,00.01	20	100
6270	23/07/91	2025	62,30.0	20,00.01	30	100
6271	23/07/91	2025	62,30.0	20,00.01	40	100
6272	23/07/91	2025	62,30.0	20,00.01	50	100
6273	23/07/91	2025	62,30.0	20,00.01	75	250
6274	23/07/91	2025	62,30.0	20,00.01	100	250
6275	23/07/91	2025	62,30.0	20,00.01	125	250
6276	23/07/91	2025	62,30.0	20,00.01	150	250
6277	23/07/91	2025	62,30.0	20,00.01	200	250
6278	23/07/91	2025	62,30.0	20,00.01	300	250
		CTD 61/204/07				
6279	23/07/91	2123	62,29.6	20,00.0	400	200
6280	23/07/91	2123	62,29.6	20,00.0	600	200
6281	23/07/91	2123	62,29.6	20,00.0	750	200
6282	23/07/91	2123	62,29.6	20,00.0	900	200
6283	23/07/91	2123	62,29.6	20,00.0	1000	200
6284	23/07/91	2123	62,29.6	20,00.0	1600	200
		CTD 61/205/07				
6285	24/07/91	1126	62,29.5	19,58.1	2	100
6286	24/07/91	1126	62,29.5	19,58.1	10	100
6287	24/07/91	1126	62,29.5	19,58.1	20	100
6288	24/07/91	1126	62,29.5	19,58.1	30	100

TABLE 1. Chlorophyll samples.

6289	24/07/91	1126	62,29.5	19,58.1	40	100
6290	24/07/91	1126	62,29.5	19,58.1	50	100
6291	24/07/91	1126	62,29.5	19,58.1	75	250
6292	24/07/91	1126	62,29.5	19,58.1	100	250
6293	24/07/91	1126	62,29.5	19,58.1	125	250
6294	24/07/91	1126	62,29.5	19,58.1	150	250
6295	24/07/91	1126	62,29.5	19,58.1	200	250
6296	24/07/91	1126	62,29.5	19,58.1	300	250
6297	25/07/91	'0000	62,15.79	19,57.93	4	100
6298	25/07/91	'0100	62,04.15	19,54.87	4	100
6299	25/07/91	'0200	61,53.82	19,52.17	4	100
6300	25/07/91	'0300	61,41.6	19,48.84	4	100
6301	25/07/91	'0400	61,31.6	19,44.73	4	100
6302	25/07/91	'0500	61,20.21	19,43.85	4	100
6303	25/07/91	'0600	61,09.64	19,41.7	4	100
6304	25/07/91	'0700	60,58.13	19,43.68	4	100
6305	25/07/91	'0800	60,47.34	19,43.19	4	100
6306	25/07/91	'0900	60,36.56	19,44.31	4	100
6307	25/07/91	1000	60,26.53	19,44.97	4	100
6308	25/07/91	1100	60,16.7	19,44.85	4	100
6309	25/07/91	1200	60,06.88	19,46.32	4	100
6310	25/07/91	1300	59,57.15	19,47.55	4	100
6311	25/07/91	1400	59,46.03	19,47.78	4	100
6312	25/07/91	1500	59,34.81	19,48.69	4	100
6313	25/07/91	1600	59,24.54	19,49.1	4	100
6314	25/07/91	1700	59,13.13	19,48.48	4	100
6315	25/07/91	1800	59,02.9	19,50.17	4	100
6316	25/07/91	1900	58,53.0	19,50.6	4	100
6317	25/07/91	2000	58,42.5	19,51.21	4	100
6318	25/07/91	2100	58,32.63	19,51.71	4	100
6319	25/07/91	2204	58,21.15	19,53.01	4	100
6320	25/07/91	2303	58,10.7	19,53.4	4	100
6321	26/07/91	'0000	58,01.2	19,54.22	4	100
6322	26/07/91	'0100	57,50.24	19,54.11	4	100
6323	26/07/91	'0200	57,39.75	19,54.04	4	100
6324	26/07/91	'0300	57,28.44	19,55.4	4	100
6325	26/07/91	'0400	57,18.43	19,55.8	4	100
6326	26/07/91	'0500	57,07.69	19,56.33	4	100
6327	26/07/91	'0600	56,56.79	19,57.19	4	100
6328	26/07/91	'0700	56,45.95	19,57.66	4	100
6329	26/07/91	'0800	56,35.14	19,58.13	4	100
6330	26/07/91	'0900	56,24.56	19,58.66	4	100
6331	26/07/91	1000	56,14.0	19,58.54	4	100
6332	26/07/91	1100	56,03.59	19,58.5	4	100
6333	26/07/91	1200	55,55.84	20,00.81	4	100
6334	26/07/91	1300	55,46.73	20,00.67	4	100

TABLE 1. Chlorophyll samples.

6335	26/07/91	1400	55,37.66	20,00.44	4	100
6336	26/07/91	1500	55,29.74	20,00.15	4	100
6337	26/07/91	1600	55,25.9	19,56.93	4	100
9338	26/07/91	1700	55,19.99	19,41.28	4	100
6339	26/07/91	1800	55,14.35	19,24.41	4	100
6340	26/07/91	1900	55,09.35	19,08.54	4	100
6341	26/07/91	2000	55,03.87	18,58.81	4	100
6342	26/07/91	2100	54,58.37	18,37.54	4	100
6343	26/07/91	2200	54,52.8	18,19.16	4	100
6344	26/07/91	2300	54,47.53	18,01.85	4	100
6345	27/07/91	'0000	54,42.92	17,45.24	4	100
6346	27/07/91	'0200	54,30.4	17,14.83	4	100
6347	27/07/91	'0500	54,12.35	16,27.18	4	100
6348	27/07/91	'0700	54,00.2	15,56.43	4	100
6349	27/07/91	'0900	53,47.45	15,24.76	4	100
6350	27/07/91	1100	53,35.96	14,56.51	4	100
6351	27/07/91	1300	53,23.66	14,28.61	4	100
6352	27/07/91	1500	53,11.08	13,58.79	4	100
6353	27/07/91	1632	52,53.84	13,19.7	4	100
6354	27/07/91	1847	52,45.79	13,00.36	4	100

TABLE 2. Particulate Carbon and Nitrogen

SAMPLE NO	DATE	TIME	LAT(N)	LONG(W)	DEPTH	VOL FILT
6000	6/7/91	2000	56,47.63	'08,05.46	4	500ml
6001	6/7/91	2200	57,06.25	'08,30.50	4	500ml
6002	7/7/91	'0000	57,25.01	'0855.45	4	500ml
6003	7/7/91	'0200	57,43.50	'09,23.74	4	500ml
6004	7/7/91	'0400	58,03.07	'09,50.66	4	500ml
6005	7/7/91	'0600	58,21.68	10,18.60	4	500ml
6006	7/7/91	'0800	58,40.95	10,47.41	4	500ml
6007	7/7/91	1000	58,56.56	11,11.12	4	500ml
6008	7/7/91	1200	58,38.77	10,44.63	4	500ml
6009	7/7/91	1400	58,19.46	10,17.73	4	500ml
6010	7/7/91	1600	58,01.95	'09,53.23	4	500ml
6011	7/7/91	1800	57,43.16	'09,28.21	4	500ml
6012	7/7/91	2000	57,23.73	'09,01.47	4	500ml
6013	7/7/91	2200	57,06.21	'08,36.52	4	500ml
6014	10/7/91	'0800	56,07.35	'08,12.0	4	500ml
6015	10/7/91	'0955	56,19.23	'08,56.26	4	500ml
6016	10/7/91	1200	56,33.04	'09,21.05	4	500ml
6017	10/7/91	1400	56,42.60	'09,57.8	4	500ml
6018	10/7/91	1600	56,52.04	10,32.75	4	500ml
6019	10/7/91	1800	57,04.09	11,08.97	4	500ml
6020	10/7/91	2000	57,16.94	11.45.44	4	500ml
6021	10/7/91	2200	57,31.18	12,22.66	4	500ml
6022	11/7/91	'0000	57,44.04	13,00.62	4	500ml
6023	11/7/91	'0200	57,55.97	13,39.19	4	500ml
6024	11/7/91	'0400	58,09.54	14,18.49	4	500ml
6025	11/7/91	'0600	58,22.8	14,56.62	4	500ml
6026	11/7/91	'0800	58,35.23	15,35.26	4	500ml
6027	11/7/91	1000	58,41.35	15,55.56	4	500ml
6028	11/7/91	1210	58,55.9	16,43.4	4	500ml
6029	11/7/91	1410	59,05.97	17,17.25	4	500ml
6030	11/7/91	1607	59,19.28	17,51.87	4	500ml
6031	11/7/91	1800	59,30.95	18,27.45	4	500ml
6032	11/7/91	2000	59,44.21	19,06.75	4	500ml
6033	11/7/91	2000	59,55.57	19,47.22	4	500ml
6034	12/7/91	'0000	60,14.26	19,59.33	4	500ml
6035	12/7/91	'0200	60,37.55	20,00.59	4	500ml
6036	12/7/91	'0400	61,00.45	19,59.1	4	500ml
6037	12/7/91	'0430	61,04.88	19,59.58	4	500ml
6038	12/7/91	'0500	61,05.06	19,59.36	4	500ml
6039	12/7/91	'0530	61,07.52	20,00.98	4	500ml
6040	12/7/91	'0600	61,11.79	20,08.76	4	500ml
6041	12/7/91	'0630	61,16.53	20,13.74	4	500ml
6042	12/7/91	'0700	61,20.7	20,21.73	4	500ml
6043	12/7/91	'0730	61,25.31	20,27.03	4	500ml
6044	12/7/91	'0800	61,29.97	20,34.34	4	500ml
6045	12/7/91	'0830	61,32.18	20,37.12	4	500ml
6046	12/7/91	'0900	61,32.3	20,37.43	4	500ml
6047	12/7/91	'0930	61,32.38	20,32.39	4	500ml
6048	12/7/91	1000	61,32.32	20,21.29	4	500ml
6049	12/7/91	1030	61,32.7	20,10.23	4	500ml
6050	12/7/91	1100	61,32.41	19,58.93	4	500ml

TABLE 2. Particulate Carbon and Nitrogen

6051	12/7/91	1130	61,32.44	19,47.68	4	500ml
6052	12/7/91	1200	61,32.33	19,36.89	4	500ml
6053	12/7/91	1230	61,32.45	19,30.91	4	500ml
6054	12/7/91	1300	61,33.28	19,31.00	4	500ml
6055	12/7/91	1330	61,28.23	19,36.74	4	500ml
6056	12/7/91	1409	61,21.43	19,44.41	4	500ml
6057	12/7/91	1430	61,17.74	19,47.13	4	500ml
6058	12/7/91	1500	61,11.94	19,52.3	4	500ml
6059	12/7/91	1609	61,10.68	19,55.46	4	500ml
6060	12/7/91	1635	61,05.34	19,59.96	4	500ml
6061	12/7/91	1705	61,00.18	20,05.59	4	500ml
6062	12/7/91	1733	60,55.43	20,11.86	4	500ml
6063	12/7/91	1800	60,50.51	20,15.6	4	500ml
6064	12/7/91	1834	60,45.06	20,22.22	4	500ml
6065	12/7/91	1916	60,37.69	19,16.27	4	500ml
6066	12/7/91	1930	60,35.34	20,31.19	4	500ml
6067	12/7/91	2000	60,33.04	20,34.16	4	500ml
6068	12/7/91	2030	60,32.63	20,32.71	4	500ml
6069	12/7/91	2100	60,32.64	20,20.19	4	500ml
6070	12/7/91	2130	60,32.7	20,09.17	4	500ml
6071	12/7/91	2200	60,32.72	19,56.92	4	500ml
6072	12/7/91	2230	60,33.32	19,45.14	4	500ml
6073	12/7/91	2300	60,32.89	19,32.77	4	500ml
6074	12/7/91	2330	60,33.02	19,24.06	4	500ml
6075	13/7/91	'0000	60,33.06	19,23.97	4	500ml
6076	13/7/91	'0030	60,35.7	19,27.16	4	500ml
6077	13/7/91	'0100	60,40.45	19,32.46	4	500ml
6078	13/7/91	'0130	60,44.32	19,36.62	4	500ml
6079	13/7/91	'0200	60,47.99	19,40.74	4	500ml
6080	13/7/91	'0230	60,51.96	19,45.31	4	500ml
6081	13/7/91	'0300	60,55.8	19,49.23	4	500ml
6082	13/7/91	'0330	60,58.87	19,53.43	4	500ml
6083	13/7/91	'0400	61,02.48	19,57.63	4	500ml
			CTD61/194/04			
6084	13/7/91	1400	61,03.42	19,56.48	2	500ml
6085	13/7/91	1400	61,03.42	19,56.48	10	500ml
6086	13/7/91	1400	61,03.42	19,56.48	20	500ml
6087	13/7/91	1400	61,03.42	19,56.48	30	500ml
6088	13/7/91	1400	61,03.42	19,56.48	40	500ml
6089	13/7/91	1400	61,03.42	19,56.48	50	500ml
6090	13/7/91	1400	61,03.42	19,56.48	75	1000
6091	13/7/91	1400	61,03.42	19,56.48	100	1000
6092	13/7/91	1400	61,03.42	19,56.48	425	1000
6093	13/7/91	1400	61,03.42	19,56.48	150	1000
6094	13/7/91	1400	61,03.42	19,56.48	200	1000
6095	13/7/91	1400	61,03.42	19,56.48	300	1000
		CTD61/195/04				
6096	14/7/91	'0600	61,06.3	19,36.4	2	500
6097	14/7/91	'0600	61,06.3	19,36.4	10	500
6098	14/7/91	'0600	61,06.3	19,36.4	20	500

TABLE 2. Particulate Carbon and Nitrogen

6099	14/7/91	'0600	61,06.3	19,36.4	30	500
6100	14/7/91	'0600	61,06.3	19,36.4	40	500
6101	14/7/91	'0600	61,06.3	19,36.4	50	500
6102	14/7/91	'0600	61,06.3	19,36.4	75	500
6103	14/7/91	'0600	61,06.3	19,36.4	100	500
6104	14/7/91	'0600	61,06.3	19,36.4	125	500
6105	14/7/91	'0600	61,06.3	19,36.4	150	500
6106	14/7/91	'0600	61,06.3	19,36.4	200	500
6107	14/7/91	'0600	61,06.3	19,36.4	300	500
		CTD61/195/07				
6108	14/7/91	1215	61,09.9	19,33.6	2	500
6109	14/7/91	1215	61,09.9	19,33.6	25	500
6110	14/7/91	1215	61,09.9	19,33.6	35	500
6111	14/7/91	1215	61,09.9	19,33.6	50	500
		CTD61/196/06				
6112	15/7/91	1144	61,16.02	19,46.00	2	500
6113	15/7/91	1144	61,16.02	19,46.00	10	500
6114	15/7/91	1144	61,16.02	19,46.00	20	500
6115	15/7/91	1144	61,16.02	19,46.00	30	500
6116	15/7/91	1144	61,16.02	19,46.00	40	500
6117	15/7/91	1144	61,16.02	19,46.00	50	500
6118	15/7/91	1144	61,16.02	19,46.00	75	1000
6119	15/7/91	1144	61,16.02	19,46.00	100	1000
6120	15/7/91	1144	61,16.02	19,46.00	125	1000
6121	15/7/91	1144	61,16.02	19,46.00	150	1000
6122	15/7/91	1144	61,16.02	19,46.00	200	1000
6123	15/7/91	1144	61,16.02	19,46.00	300	1000
		CTD 61/197/05				
6124	16/07/91	'0620	61,11.1	20,00.5	2	500
6125	16/07/91	'0620	61,11.1	20,00.5	10	500
6126	16/07/91	'0620	61,11.1	20,00.5	20	500
6127	16/07/91	'0620	61,11.1	20,00.5	30	500
6128	16/07/91	'0620	61,11.1	20,00.5	40	500
6129	16/07/91	'0620	61,11.1	20,00.5	50	500
6130	16/07/91	'0620	61,11.1	20,00.5	75	500
6131	16/07/91	'0620	61,11.1	20,00.5	100	500
6132	16/07/91	'0620	61,11.1	20,00.5	125	500
6133	16/07/91	'0620	61,11.1	20,00.5	150	500
6134	16/07/91	'0620	61,11.1	20,00.5	200	500
6135	16/07/91	'0620	61,11.1	20,00.5	300	500
		CTD 61/198/05				
6136	17/07/91	1203	61,07.2	19,39.8	2	500
6137	17/07/91	1203	61,07.2	19,39.8	10	500
6138	17/07/91	1203	61,07.2	19,39.8	20	500
6139	17/07/91	1203	61,07.2	19,39.8	30	500
6140	17/07/91	1203	61,07.2	19,39.8	40	500

TABLE 2. Particulate Carbon and Nitrogen

6141	17/07/91	1203	61,07.2	19,39.8	50	500
6142	17/07/91	1203	61,07.2	19,39.8	75	500
6143	17/07/91	1203	61,07.2	19,39.8	100	500
6144	17/07/91	1203	61,07.2	19,39.8	125	1000
6145	17/07/91	1203	61,07.2	19,39.8	150	1000
6146	17/07/91	1203	61,07.2	19,39.8	200	1000
6147	17/07/91	1203	61,07.2	19,39.8	300	1000
			CTD 61/199/05			
6148	18/07/91	'0526	61,14.9	19,32.1	2	500
6149	18/07/91	'0526	61,14.9	19,32.1	10	500
6150	18/07/91	'0526	61,14.9	19,32.1	20	500
6151	18/07/91	'0526	61,14.9	19,32.1	30	500
6152	18/07/91	'0526	61,14.9	19,32.1	40	500
6153	18/07/91	'0526	61,14.9	19,32.1	50	500
6154	18/07/91	'0526	61,14.9	19,32.1	75	1000
6155	18/07/91	'0526	61,14.9	19,32.1	100	1000
6156	18/07/91	'0526	61,14.9	19,32.1	125	1000
6157	18/07/91	'0526	61,14.9	19,32.1	150	1000
6158	18/07/91	'0526	61,14.9	19,32.1	200	1000
6159	18/07/91	'0526	61,14.9	19,32.1	300	1000
			CTD 61/199/06			
6160	18/07/91	'0708	61,15.2	19,31.5	400	2000
6161	18/07/91	'0708	61,15.2	19,31.5	600	2000
6162	18/07/91	'0708	61,15.2	19,31.5	750	2000
6163	18/07/91	'0708	61,15.2	19,31.5	900	2000
6164	18/07/91	'0708	61,15.2	19,31.5	1000	2000
6165	18/07/91	'0708	61,15.2	19,31.5	1500	2000
6166	18/07/91	'0708	61,15.2	19,31.5	2250	2000
6167	18/07/91	'0708	61,15.2	19,31.5	2350	2000
			CTD 61/200/02			
6168	19/07/91	'1100	61,15.1	19,37.54	2	500
6169	19/07/91	'1100	61,15.1	19,37.54	10	500
6170	19/07/91	'1100	61,15.1	19,37.54	20	500
6171	19/07/91	'1100	61,15.1	19,37.54	30	500
6172	19/07/91	'1100	61,15.1	19,37.54	40	500
6173	19/07/91	'1100	61,15.1	19,37.54	50	500
6174	19/07/91	'1100	61,15.1	19,37.54	75	1000
6175	19/07/91	'1100	61,15.1	19,37.54	100	1000
6176	19/07/91	'1100	61,15.1	19,37.54	125	1000
6177	19/07/91	'1100	61,15.1	19,37.54	150	1000
6178	19/07/91	'1100	61,15.1	19,37.54	200	1000
6179	19/07/91	'1100	61,15.1	19,37.54	300	1000
			CTD 61/201/04			

TABLE 2. Particulate Carbon and Nitrogen

6180	20/07/91	'0324	61,06.7	19,51.1	2	500
6181	20/07/91	'0324	61,06.7	19,51.1	10	500
6182	20/07/91	'0324	61,06.7	19,51.1	20	500
6183	20/07/91	'0324	61,06.7	19,51.1	30	500
6184	20/07/91	'0324	61,06.7	19,51.1	40	500
6185	20/07/91	'0324	61,06.7	19,51.1	50	500
6186	20/07/91	'0324	61,06.7	19,51.1	75	1000
6187	20/07/91	'0324	61,06.7	19,51.1	100	1000
6188	20/07/91	'0324	61,06.7	19,51.1	125	1000
6189	20/07/91	'0324	61,06.7	19,51.1	150	1000
6190	20/07/91	'0324	61,06.7	19,51.1	200	1000
6191	20/07/91	'0324	61,06.7	19,51.1	300	1000
		CTD 61/201/05				
6192	20/7091	'0458	61,05.7	19,49.8	400	2000
6193	20/7091	'0458	61,05.7	19,49.8	600	2000
6194	20/7091	'0458	61,05.7	19,49.8	750	2000
6195	20/7091	'0458	61,05.7	19,49.8	900	2000
6196	20/7091	'0458	61,05.7	19,49.8	1000	1000
6197	20/7091	'0458	61,05.7	19,49.8	1500	1000
6198	20/7091	'0458	61,05.7	19,49.8	2250	1000
6199	20/7091	'0458	61,05.7	19,49.8	2350	1000
6200	21/7/91	1359	61,01.2	19,41.51	4	500
6201	21/7/91	1655	61,04.7	19,39.64	4	500
6202	21/7/91	1735	61,06.63	19,42.34	4	500
6203	21/7/91	2020	61,08.94	19,40.06	4	350
6204	21/7/91	2050	61,11.17	19,39.78	4	350
6205	21/7/91	2322	61,13.2	19,41.77	4	250
6206	22/07/91	'0011	61,15.99	19,41.2	4	250
6207	22/07/91	'0410	61,20.35	19,43.1	4	250
6208	22/07/91	'0430	61,21.24	19,39.49	4	250
6209	22/07/91	'0700	61,23.14	19,44.52	4	250
6210	22/07/91	'0730	61,27.15	19,51.56	4	250
6211	22/07/91	,0800	61,31.17	19,58.68	4	250
6212	22/07/91	,0830	61,36.84	20,08.98	4	250
6213	22/07/91	,0900	61,40.89	20,15.95	4	250
6214	22/07/91	'0930	61,40.16	20,14.48	4	250
6215	22/07/91	1000	61,40.14	20,06.9	4	250
6216	22/07/91	1030	61,40.18	19,58.22	4	250
6217	22/07/91	1100	61,40.15	19,49.77	4	250
6218	22/07/91	1130	61,40.10	19,41.14	4	250
6219	22/07/91	1200	61,40.35	19,32.22	4	250
6220	22/07/91	1230	61,40.43	19,23.76	4	250
6221	22/07/91	1300	61,40.26	19,15.35	4	250
6222	22/07/91	1330	61,39.99	19,05.65	4	250
6223	22/07/91	1400	61,40.13	19,06.03	4	250
6224	22/07/91	1430	61,37.21	19,09.34	4	250
6225	22/07/91	1500	61,32.21	19,17.03	4	250
6226	22/07/91	1530	61,27.81	19,24.27	4	250
6227	22/07/91	1600	61,22.81	19,31.25	4	250

TABLE 2. Particulate Carbon and Nitrogen

6228	22/07/91	1630	61,18.78	19,35.4	4	250
6229	22/07/91	1700	61,13.95	19,39.02	4	250
6230	22/07/91	1800	61,11.67	19,41.89	4	250
6231	22/07/91	1901	61,09.53	19,43.18	4	250
6232	22/07/91	2000	61,09.89	19,48.68	4	250
6233	22/07/91	2030	61,13.24	19,51.37	4	250
6234	22/07/91	2100	61,12.44	19,43.57	4	250
6235	22/07/91	2130	61,07.19	19,45.85	4	250
6236	22/07/91	2200	61,02.34	19,51.86	4	250
6237	22/07/91	2230	60,57.07	19,57.21	4	250
6238	22/07/91	2300	60,52.33	20,03.13	4	250
6239	22/07/91	2330	60,47.41	20,09.62	4	250
6240	23/07/91	'0000	60,43.19	20,14.95	4	250
6241	23/07/91	'0030	60,41.6	20,16.37	4	250
6242	23/07/91	'0100	60,41.29	20,12.11	4	250
6243	23/07/91	'0130	60,41.17	20,00.27	4	250
6244	23/07/91	'0200	60,41.59	19,49.41	4	250
6245	23/07/91	'0230	60,41.31	19,51.31	4	250
6246	23/07/91	'0300	60,41.27	19,51.37	4	500
6247	23/07/91	'0330	60,42.24	19,43.78	4	500
6248	23/07/91	'0400	60,42.44	19,32.44	4	250
6249	23/07/91	'0430	60,42.71	19,21.02	4	250
6250	23/07/91	'0500	60,41.27	19,08.35	4	250
6251	23/07/91	'0530	60,41.19	19,06.7	4	250
6252	23/07/91	'0600	60,44.26	19,08.56	4	250
6253	23/07/91	'0630	60,48.07	19,11.74	4	500
6254	23/07/91	'0706	60,54.39	19,21.56	4	500
6255	23/07/91	'0730	60,57.92	19,26.34	4	500
6256	23/07/91	'0800	61,02.81	19,31.85	4	500
6257	23/07/91	'0830	61,07.59	19,37.95	4	500
6258	23/07/91	'0900	61,11.12	19,40.42	4	500
6259	23/07/91	1100	61,13.52	19,41.53	4	500
6260	23/07/91	1200	61,22.73	19,42.66	4	500
6261	23/07/91	1300	61,30.0	19,43.09	4	500
6262	23/07/91	1500	61,38.58	19,45.89	4	500
6263	23/07/91	1600	61,49.61	19,49.08	4	500
6264	23/07/91	1700	62,00.22	19,51.84	4	500
6265	23/07/91	1800	62,10.87	19,54.42	4	500
6266	23/07/91	2000	62,22.1	19,57.93	4	500
		CTD 61/204/06				
6267	23/07/91	2025	62,30.0	20,00.01	2	500
6268	23/07/91	2025	62,30.0	20,00.01	10	500
6269	23/07/91	2025	62,30.0	20,00.01	20	500
6270	23/07/91	2025	62,30.0	20,00.01	30	500
6271	23/07/91	2025	62,30.0	20,00.01	40	500
6272	23/07/91	2025	62,30.0	20,00.01	50	500
6273	23/07/91	2025	62,30.0	20,00.01	75	500

TABLE 2. Particulate Carbon and Nitrogen

6274	23/07/91	2025	62,30.0	20,00.01	100	1000
6275	23/07/91	2025	62,30.0	20,00.01	125	1000
6276	23/07/91	2025	62,30.0	20,00.01	150	1000
6277	23/07/91	2025	62,30.0	20,00.01	200	1000
6278	23/07/91	2025	62,30.0	20,00.01	300	1000
		CTD 61/204/05				
6279	23/07/91	2123	62,29.6	20,00.0	400	2000
6280	23/07/91	2123	62,29.6	20,00.0	600	2000
6281	23/07/91	2123	62,29.6	20,00.0	750	2000
6282	23/07/91	2123	62,29.6	20,00.0	900	2000
6283	23/07/91	2123	62,29.6	20,00.0	1000	2000
6284	23/07/91	2123	62,29.6	20,00.0	1600	2000
		CTD 61/205/07				
6285	24/07/91	1126	62,29.5	19,58.1	2	500
6286	24/07/91	1126	62,29.5	19,58.1	10	500
6287	24/07/91	1126	62,29.5	19,58.1	20	500
6288	24/07/91	1126	62,29.5	19,58.1	30	500
6289	24/07/91	1126	62,29.5	19,58.1	40	500
6290	24/07/91	1126	62,29.5	19,58.1	50	500
6291	24/07/91	1126	62,29.5	19,58.1	75	1000
6292	24/07/91	1126	62,29.5	19,58.1	100	1000
6293	24/07/91	1126	62,29.5	19,58.1	125	1000
6294	24/07/91	1126	62,29.5	19,58.1	150	1000
6295	24/07/91	1126	62,29.5	19,58.1	200	1000
6296	24/07/91	1126	62,29.5	19,58.1	300	1000
6297	25/07/91	'0000	62,15.79	19,57.93	4	250
6298	25/07/91	'0100	62,04.15	19,54.87	4	250
6299	25/07/91	'0200	61,53.82	19,52.17	4	250
6300	25/07/91	'0300	61,41.6	19,48.84	4	250
6301	25/07/91	'0400	61,31.6	19,44.73	4	250
6302	25/07/91	'0500	61,20.21	19,43.85	4	250
6303	25/07/91	'0600	61,09.64	19,41.7	4	250
6304	25/07/91	'0700	60,58.13	19,43.68	4	250
6305	25/07/91	'0800	60,47.34	19,43.19	4	250
6306	25/07/91	'0900	60,36.56	19,44.31	4	250
6307	25/07/91	1000	60,26.53	19,44.97	4	250
6308	25/07/91	1100	60,16.7	19,44.85	4	250
6309	25/07/91	1200	60,06.88	19,46.32	4	250
6310	25/07/91	1300	59,57.15	19,47.55	4	250
6311	25/07/91	1400	59,46.03	19,47.78	4	250
6312	25/07/91	1500	59,34.81	19,48.69	4	250
6313	25/07/91	1600	59,24.54	19,49.1	4	250
6314	25/07/91	1700	59,13.13	19,48.48	4	250
6315	25/07/91	1800	59,02.9	19,50.17	4	250
6316	25/07/91	1900	58,53.0	19,50.6	4	250
6317	25/07/91	2000	58,42.5	19,51.21	4	250
6318	25/07/91	2100	58,32.63	19,51.71	4	250

TABLE 2. Particulate Carbon and Nitrogen

6319	25/07/91	2204	58,21.15	19,53.01	4	250
6320	25/07/91	2303	58,10.7	19,53.4	4	250
6321	26/07/91	'0000	58,01.2	19,54.22	4	250
6322	26/07/91	'0100	57,50.24	19,54.11	4	250
6323	26/07/91	'0200	57,39.75	19,54.04	4	250
6324	26/07/91	'0300	57,28.44	19,55.4	4	250
6325	26/07/91	'0400	57,18.43	19,55.8	4	250
6326	26/07/91	'0500	57,07.69	19,56.33	4	250
6327	26/07/91	'0600	56,56.79	19,57.19	4	250
6328	26/07/91	'0700	56,45.95	19,57.66	4	250
6329	26/07/91	'0800	56,35.14	19,58.13	4	250
6330	26/07/91	'0900	56,24.56	19,58.66	4	250
6331	26/07/91	1000	56,14.0	19,58.54	4	250
6332	26/07/91	1100	56,03.59	19,58.5	4	250
6333	26/07/91	1200	55,55.84	20,00.81	4	250
6334	26/07/91	1300	55,46.73	20,00.67	4	250
6335	26/07/91	1400	55,37.66	20,00.44	4	250
6336	26/07/91	1500	55,29.74	20,00.15	4	250
6337	26/07/91	1600	55,25.9	19,56.93	4	250
9338	26/07/91	1700	55,19.99	19,41.28	4	250
6339	26/07/91	1800	55,14.35	19,24.41	4	250
6340	26/07/91	1900	55,09.35	19,08.54	4	250
6341	26/07/91	2000	55,03.87	18,58.81	4	250
6342	26/07/91	2100	54,58.37	18,37.54	4	250
6343	26/07/91	2200	54,52.8	18,19.16	4	250
6344	26/07/91	2300	54,47.53	18,01.85	4	250
6345	27/07/91	'0000	54,42.92	17,45.24	4	250
6346	27/07/91	'0200	54,30.4	17,14.83	4	250
6347	27/07/91	'0500	54,12.35	16,27.18	4	250
6348	27/07/91	'0700	54,00.2	15,56.43	4	250
6349	27/07/91	'0900	53,47.45	15,24.76	4	250
6350	27/07/91	1100	53,35.96	14,56.51	4	250
6351	27/07/91	1300	53,23.66	14,28.61	4	250
6352	27/07/91	1500	53,11.08	13,58.79	4	250
6353	27/07/91	1632	52,53.84	13,19.7	4	250
6354	27/07/91	1847	52,45.79	13,00.36	4	250

TABLE 3. Samples for Particulate Calcium.

SAMPLE NO	DATE	TIME GMT	LAT	LONG	DEPTH	VOL FILT
6000	6/7/91	2000	56 ,47.63	'08,05.46	4	250ml
6001	6/7/91	2200	57,06.25	'08,30.5	4	250ml
6002	7/7/91	'0000	57,25.01	'08,55.45	4	250ml
6003	7/7/91	'0200	57,43.51	'09,23.74	4	250ml
6004	7/7/91	'0400	58,03.07	'09,50.66	4	250ml
6005	7/7/91	'0600	58,21.68	10,18.60	4	250ml
6006	7/7/91	'0800	58,40.95	10,47.41	4	250ml
6007	7/7/91	1000	58,56.56	11,11.12	4	250ml
6008	7/7/91	1200	58,38.77	10,44.63	4	250ml
6009	7/7/91	1400	58,19.46	10,17.73	4	250ml
6010	7/7/91	1600	58,01.95	'09,53.23	4	250ml
6011	7/7/91	1800	57,43.16	'09,58.23	4	250ml
6012	7/7/91	2000	57,23.73	'09,01.47	4	250ml
6013	7/7/91	2200	57,06.21	'08,36.52	4	250ml
6014	10/7/91	'0800	56,07.35	'08,12.00	4	250ml
6015	10/7/91	'0955	56,19.23	'08,56.26	4	250ml
6016	10/7/91	1200	56,33.04	'09,21.05	4	250ml
6017	10/7/91	1400	56,42.60	'09,57.8	4	250ml
6018	10/7/91	1600	56,52.04	10,32.75	4	250ml
6019	10/7/91	1800	57,04.09	11,08.97	4	250ml
6020	10/7/91	2000	57,16.94	11.45.44	4	250ml
6021	10/7/91	2200	57,31.18	12,22.66	4	250ml
6022	11/7/91	'0000	57,44.04	13,00.62	4	250ml
6023	11/7/91	'0200	57,55.97	13,39.19	4	250ml
6024	11/7/91	'0400	58,09.54	14,18.49	4	250ml
6025	11/7/91	'0600	58,22.8	14,56.62	4	250ml
6026	11/7/91	'0800	58,35.23	15,35.26	4	250ml
6027	11/7/91	1000	58,41.35	15,55.56	4	250ml
6028	11/7/91	1210	58,55.9	16,43.4	4	250ml
6029	11/7/91	1410	59,05.97	17,17.25	4	250ml
6030	11/7/91	1607	59,19.28	17,51.87	4	250ml
6031	11/7/91	1800	59,30.95	18,27.45	4	250ml
6032	11/7/91	2000	59,44.21	19,06.75	4	250ml
6033	11/7/91	2200	59,55.57	19,47.22	4	250ml
6034	12/7/91	'0000	60,14.26	19,59.33	4	250ml
6035	12/7/91	'0200	60,37.55	20,00.59	4	250ml
6036	12/7/91	'0400	61,00.45	19,59.1	4	250ml
6037	12/7/91	'0430	61,04.88	19,59.58	4	250ml
6038	12/7/91	'0500	61,05.06	19,59.36	4	250ml
6039	12/7/91	'0530	61,07.52	20,00.98	4	250ml
6040	12/7/91	'0600	61,11.79	20,08.76	4	250ml
6041	12/7/91	'0630	61,16.53	20,13.74	4	250ml
6042	12/7/91	'0700	61,20.7	20,21.73	4	250ml
6043	12/7/91	'0730	61,25.31	20,27.03	4	250ml
6044	12/7/91	'0800	61,29.97	20,34.34	4	250ml
6045	12/7/91	'0830	61,32.18	20,37.12	4	250ml

TABLE 3. Samples for Particulate Calcium.

6046	12/7/91	'0900	61,32.3	20,37.43	4	250ml
6047	12/7/91	'0930	61,32.38	20,32.39	4	250ml
6048	12/7/91	1000	61,32.32	20,21.29	4	250ml
6049	12/7/91	1030	61,32.7	20,10.23	4	250ml
6050	12/7/91	1100	61,32.41	19,58.93	4	250ml
6051	12/7/91	1130	61,32.44	19,47.68	4	250ml
6052	12/7/91	1200	61,32.33	19,36.89	4	250ml
6053	12/7/91	1230	61,32.45	19,30.91	4	250ml
6054	12/7/91	1300	61,33.28	19,31.00	4	250ml
6055	12/7/91	1330	61,28.23	19,36.74	4	250ml
6056	12/7/91	1409	61,21.43	19,44.41	4	250ml
6057	12/7/91	1430	61,17.74	19,47.13	4	250ml
6058	12/7/91	1500	61,11.94	19,52.3	4	250ml
6059	12/7/91	1609	61,10.68	19,55.46	4	250ml
6060	12/7/91	1635	61,05.34	19,59.96	4	250ml
6061	12/7/91	1705	61,00.18	20,05.59	4	250ml
6062	12/7/91	1733	60,55.43	20,11.86	4	250ml
6063	12/7/91	1800	60,50.51	20,15.6	4	250ml
6064	12/7/91	1834	60,45.06	20,22.22	4	250ml
6065	12/7/91	1916	60,37.69	19,16.27	4	250ml
6066	12/7/91	1930	60,35.34	20,31.19	4	250ml
6067	12/7/91	2000	60,33.04	20,34.16	4	250ml
6068	12/7/91	2030	60,32.63	20,32.71	4	250ml
6069	12/7/91	2100	60,32.64	20,20.19	4	250ml
6070	12/7/91	2130	60,32.7	20,09.17	4	250ml
6071	12/7/91	2200	60,32.72	19,56.92	4	250ml
6072	12/7/91	2230	60,33.32	19,45.14	4	250ml
6073	12/7/91	2300	60,32.89	19,32.77	4	250ml
6074	12/7/91	2330	60,33.02	19,24.06	4	250ml
6075	13/7/91	'0000	60,33.06	19,23.97	4	250ml
6076	13/7/91	'0030	60,35.7	19,27.16	4	250ml
6077	13/7/91	'0100	60,40.45	19,32.46	4	250ml
6078	13/7/91	'0130	60,44.32	19,36.62	4	250ml
6079	13/7/91	'0200	60,47.99	19,40.74	4	250ml
6080	13/7/91	'0230	60,51.96	19,45.31	4	250ml
6081	13/7/91	'0300	60,55.8	19,49.23	4	250ml
6082	13/7/91	'0330	60,58.87	19,53.43	4	250ml
6083	13/7/91	'0400	61,02.48	19,57.63	4	250ml
		CTD 61/194/04				
6084	13/7/91	1308	61,04.00	19,57.6	2	250ml
6085	13/7/91	1308	61,04.00	19,57.6	10	250ml
6086	13/7/91	1308	61,04.00	19,57.6	20	250ml
6087	13/7/91	1308	61,04.00	19,57.6	30	250ml
6088	13/7/91	1308	61,04.00	19,57.6	40	250ml
6089	13/7/91	1308	61,04.00	19,57.6	50	250ml
6090	13/7/91	1308	61,04.00	19,57.6	75	250ml

TABLE 3. Samples for Particulate Calcium.

6091	13/7/91	1308	61,04.00	19,57.6	100	250ml
6092	13/7/91	1308	61,04.00	19,57.6	125	250ml
6093	13/7/91	1308	61,04.00	19,57.6	150	250ml
6094	13/7/91	1308	61,04.00	19,57.6	200	250ml
6095	13/7/91	1308	61,04.00	19,57.6	300	250ml
		CTD 61/195/07				
6096	14/07/91	1215	61,09.9	19,33.6	10	250ml
6097	14/07/91	1215	61,09.9	19,33.6	25	250ml
6098	14/07/91	1215	61,09.9	19,33.6	35	250ml
6099	14/07/91	1215	61,09.9	19,33.6	50	250ml
		CTD 61/196/02				
6112	15/07/91	1144	61,16.02	19,46.00	2	250ml
6113	15/07/91	1144	61,16.02	19,46.00	10	250ml
6114	15/07/91	1144	61,16.02	19,46.00	20	250ml
6115	15/07/91	1144	61,16.02	19,46.00	30	250ml
6116	15/07/91	1144	61,16.02	19,46.00	40	250ml
6117	15/07/91	1144	61,16.02	19,46.00	50	250ml
6118	15/07/91	1144	61,16.02	19,46.00	75	250ml
6119	15/07/91	1144	61,16.02	19,46.00	100	250ml
6120	15/07/91	1144	61,16.02	19,46.00	125	250ml
6121	15/07/91	1144	61,16.02	19,46.00	150	250ml
6122	15/07/91	1144	61,16.02	19,46.00	200	250ml
6123	15/07/91	1144	61,16.02	19,46.00	300	250ml
		CTD 61/198/02				
6136	17/07/91	1203	61,07.2	19,39.8	2	250ml
6137	17/07/91	1203	61,07.2	19,39.8	10	250ml
6138	17/07/91	1203	61,07.2	19,39.8	20	250ml
6139	17/07/91	1203	61,07.2	19,39.8	30	250ml
6140	17/07/91	1203	61,07.2	19,39.8	40	250ml
6141	17/07/91	1203	61,07.2	19,39.8	50	250ml
6142	17/07/91	1203	61,07.2	19,39.8	75	250ml
6143	17/07/91	1203	61,07.2	19,39.8	100	250ml
6144	17/07/91	1203	61,07.2	19,39.8	125	500ml
6145	17/07/91	1203	61,07.2	19,39.8	150	500ml
6146	17/07/91	1203	61,07.2	19,39.8	200	500ml
6147	17/07/91	1203	61,07.2	19,39.8	300	500ml
		CTD 61/199/03				
6160	18/07/91	'0708	61,15.2	19,31.5	400	1000ml
6161	18/07/91	'0708	61,15.2	19,31.5	600	1000ml
6162	18/07/91	'0708	61,15.2	19,31.5	750	1000ml

TABLE 3. Samples for Particulate Calcium.

6163	18/07/91	'0708	61,15.2	19,31.5	900	1000ml
6164	18/07/91	'0708	61,15.2	19,31.5	1000	1000ml
6165	18/07/91	'0708	61,15.2	19,31.5	1500	1000ml
6166	18/07/91	'0708	61,15.2	19,31.5	2250	1000ml
6167	18/07/91	'0708	61,15.2	19,31.5	2350	1000ml
		CTD 61/201/05				
6192	20/7091	'0458	61,05.7	19,49.8	400	2000
6193	20/7091	'0458	61,05.7	19,49.8	600	2000
6194	20/7091	'0458	61,05.7	19,49.8	750	2000
6195	20/7091	'0458	61,05.7	19,49.8	900	2000
6200	21/7/91	1359	61,01.2	19,41.51	4	250
6201	21/7/91	1655	61,04.7	19,39.64	4	250
6202	21/7/91	1735	61,06.63	19,42.34	4	250
6203	21/7/91	2020	61,08.94	19,40.06	4	250
6204	21/7/91	2050	61,11.17	19,39.78	4	250
6205	21/7/91	2322	61,13.2	19,41.77	4	250
6206	22/07/91	'0011	61,15.99	19,41.2	4	250
6207	22/07/91	'0410	61,20.35	19,43.1	4	250
6208	22/07/91	'0430	61,21.24	19,39.49	4	250
6209	22/07/91	'0700	61,23.14	19,44.52	4	250
6210	22/07/91	'0730	61,27.15	19,51.56	4	250
6211	22/07/91	,0800	61,31.17	19,58.68	4	250
6212	22/07/91	,0830	61,36.84	20,08.98	4	250
6213	22/07/91	,0900	61,40.89	20,15.95	4	250
6214	22/07/91	'0930	61,40.16	20,14.48	4	250
6215	22/07/91	1000	61,40.14	20,06.9	4	250
6216	22/07/91	1030	61,40.18	19,58.22	4	250
6217	22/07/91	1100	61,40.15	19,49.77	4	250
6218	22/07/91	1130	61,40.10	19,41.14	4	250
6219	22/07/91	1200	61,40.35	19,32.22	4	250
6220	22/07/91	1230	61,40.43	19,23.76	4	250
6221	22/07/91	1300	61,40.26	19,15.35	4	250
6222	22/07/91	1330	61,39.99	19,05.65	4	250
6223	22/07/91	1400	61,40.13	19,06.03	4	250
6224	22/07/91	1430	61,37.21	19,09.34	4	250
6225	22/07/91	1500	61,32.21	19,17.03	4	250
6226	22/07/91	1530	61,27.81	19,24.27	4	250
6227	22/07/91	1600	61,22.81	19,31.25	4	250
6228	22/07/91	1630	61,18.78	19,35.4	4	250
6229	22/07/91	1700	61,13.95	19,39.02	4	250
6230	22/07/91	1800	61,11.67	19,41.89	4	250
6231	22/07/91	1901	61,09.53	19,43.18	4	250
6232	22/07/91	2000	61,09.89	19,48.68	4	250
6233	22/07/91	2030	61,13.24	19,51.37	4	250
6234	22/07/91	2100	61,12.44	19,43.57	4	250

TABLE 3. Samples for Particulate Calcium.

6235	22/07/91	2130	61,07.19	19,45.85	4	250
6236	22/07/91	2200	61,02.34	19,51.86	4	250
6237	22/07/91	2230	60,57.07	19,57.21	4	250
6238	22/07/91	2300	60,52.33	20,03.13	4	250
6239	22/07/91	2330	60,47.41	20,09.62	4	250
6240	23/07/91	'0000	60,43.19	20,14.95	4	250
6241	23/07/91	'0030	60,41.6	20,16.37	4	250
6242	23/07/91	'0100	60,41.29	20,12.11	4	250
6243	23/07/91	'0130	60,41.17	20,00.27	4	250
6244	23/07/91	'0200	60,41.59	19,49.41	4	250
6245	23/07/91	'0230	60,41.31	19,51.31	4	250
6246	23/07/91	'0300	60,41.27	19,51.37	4	500
6247	23/07/91	'0330	60,42.24	19,43.78	4	500
6248	23/07/91	'0400	60,42.44	19,32.44	4	250
6249	23/07/91	'0430	60,42.71	19,21.02	4	250
6250	23/07/91	'0500	60,41.27	19,08.35	4	250
6251	23/07/91	'0530	60,41.19	19,06.7	4	250
6252	23/07/91	'0600	60,44.26	19,08.56	4	250
6253	23/07/91	'0630	60,48.07	19,11.74	4	250
6254	23/07/91	'0706	60,54.39	19,21.56	4	250
6255	23/07/91	'0730	60,57.92	19,26.34	4	250
6256	23/07/91	'0800	61,02.81	19,31.85	4	250
6257	23/07/91	'0830	61,07.59	19,37.95	4	250
6258	23/07/91	'0900	61,11.12	19,40.42	4	250
6259	23/07/91	1100	61,13.52	19,41.53	4	250
6260	23/07/91	1200	61,22.73	19,42.66	4	250
6261	23/07/91	1300	61,30.0	19,43.09	4	250
6262	23/07/91	1500	61,38.58	19,45.89	4	250
6263	23/07/91	1600	61,49.61	19,49.08	4	250
6264	23/07/91	1700	62,00.22	19,51.84	4	250
6265	23/07/91	1800	62,10.87	19,54.42	4	250
6266	23/07/91	2000	62,22.1	19,57.93	4	250
		CTD 61/204/05				
6279	23/07/91	2123	62,29.6	20,00.0	400	1000
6280	23/07/91	2123	62,29.6	20,00.0	600	1000
6281	23/07/91	2123	62,29.6	20,00.0	750	1000
6282	23/07/91	2123	62,29.6	20,00.0	900	1000
6283	23/07/91	2123	62,29.6	20,00.0	1000	1000
6284	23/07/91	2123	62,29.6	20,00.0	1600	1000
		CTD 61/205/07				
6285	24/07/91	1126	62,29.5	19,58.1	2	250
6286	24/07/91	1126	62,29.5	19,58.1	10	250
6287	24/07/91	1126	62,29.5	19,58.1	20	250

TABLE 3. Samples for Particulate Calcium.

6288	24/07/91	1126	62,29.5	19,58.1	30	250
6289	24/07/91	1126	62,29.5	19,58.1	40	250
6290	24/07/91	1126	62,29.5	19,58.1	50	250
6291	24/07/91	1126	62,29.5	19,58.1	75	500
6292	24/07/91	1126	62,29.5	19,58.1	100	500
6293	24/07/91	1126	62,29.5	19,58.1	125	500
6294	24/07/91	1126	62,29.5	19,58.1	150	500
6295	24/07/91	1126	62,29.5	19,58.1	200	500
6296	24/07/91	1126	62,29.5	19,58.1	300	500
6297	25/07/91	'0000	62,15.79	19,57.93	4	250
6298	25/07/91	'0100	62,04.15	19,54.87	4	250
6299	25/07/91	'0200	61,53.82	19,52.17	4	250
6300	25/07/91	'0300	61,41.6	19,48.84	4	250
6301	25/07/91	'0400	61,31.6	19,44.73	4	250
6302	25/07/91	'0500	61,20.21	19,43.85	4	250
6303	25/07/91	'0600	61,09.64	19,41.7	4	250
6304	25/07/91	'0700	60,58.13	19,43.68	4	250
6305	25/07/91	'0800	60,47.34	19,43.19	4	250
6306	25/07/91	'0900	60,36.56	19,44.31	4	250
6307	25/07/91	1000	60,26.53	19,44.97	4	250
6308	25/07/91	1100	60,16.7	19,44.85	4	250
6309	25/07/91	1200	60,06.88	19,46.32	4	250
6310	25/07/91	1300	59,57.15	19,47.55	4	250
6311	25/07/91	1400	59,46.03	19,47.78	4	250
6312	25/07/91	1500	59,34.81	19,48.69	4	250
6313	25/07/91	1600	59,24.54	19,49.1	4	250
6314	25/07/91	1700	59,13.13	19,48.48	4	250
6315	25/07/91	1800	59,02.9	19,50.17	4	250
6316	25/07/91	1900	58,53.0	19,50.6	4	250
6317	25/07/91	2000	58,42.5	19,51.21	4	250
6318	25/07/91	2100	58,32.63	19,51.71	4	250
6319	25/07/91	2204	58,21.15	19,53.01	4	250
6320	25/07/91	2303	58,10.7	19,53.4	4	250
6321	26/07/91	'0000	58,01.2	19,54.22	4	250
6322	26/07/91	'0100	57,50.24	19,54.11	4	250
6323	26/07/91	'0200	57,39.75	19,54.04	4	250
6324	26/07/91	'0300	57,28.44	19,55.4	4	250
6325	26/07/91	'0400	57,18.43	19,55.8	4	250
6326	26/07/91	'0500	57,07.69	19,56.33	4	250
6327	26/07/91	'0600	56,56.79	19,57.19	4	250
6328	26/07/91	'0700	56,45.95	19,57.66	4	250
6329	26/07/91	'0800	56,35.14	19,58.13	4	250
6330	26/07/91	'0900	56,24.56	19,58.66	4	250
6331	26/07/91	1000	56,14.0	19,58.54	4	250
6332	26/07/91	1100	56,03.59	19,58.5	4	250
6333	26/07/91	1200	55,55.84	20,00.81	4	250

TABLE 3. Samples for Particulate Calcium.

6334	26/07/91	1300	55,46.73	20,00.67	4	250
6335	26/07/91	1400	55,37.66	20,00.44	4	250
6336	26/07/91	1500	55,29.74	20,00.15	4	250
6337	26/07/91	1600	55,25.9	19,56.93	4	250
9338	26/07/91	1700	55,19.99	19,41.28	4	250
6339	26/07/91	1800	55,14.35	19,24.41	4	250
6340	26/07/91	1900	55,09.35	19,08.54	4	250
6341	26/07/91	2000	55,03.87	18,58.81	4	250
6342	26/07/91	2100	54,58.37	18,37.54	4	250
6343	26/07/91	2200	54,52.8	18,19.16	4	250
6344	26/07/91	2300	54,47.53	18,01.85	4	250
6345	27/07/91	'0000	54,42.92	17,45.24	4	250
6346	27/07/91	'0200	54,30.4	17,14.83	4	250
6347	27/07/91	'0500	54,12.35	16,27.18	4	250
6348	27/07/91	'0700	54,00.2	15,56.43	4	250
6349	27/07/91	'0900	53,47.45	15,24.76	4	250
6350	27/07/91	1100	53,35.96	14,56.51	4	250
6351	27/07/91	1300	53,23.66	14,28.61	4	250
6352	27/07/91	1500	53,11.08	13,58.79	4	250
6353	27/07/91	1632	52,53.84	13,19.7	4	250
6354	27/07/91	1847	52,45.79	13,00.36	4	250

TABLE 4. Coulter Multisizer samples.

SAMPLE NO	DATE	TIME (GMT)	LAT (N)	LONG (W)	DEPTH (meters)	ORIFICE	FLOW RATE	SAMPLE TIME(secs)	ORIFICE		SAMPLE TIME(secs)
		SURFACE SAMPLING Underway									
							(secs/ml)			(secs/ml)	
6000	6/7/91	2000	56,47.63	'08,05.46	4	280	3.21	9	100	27.36	14
6001	6/7/91	2200	57,06.25	'08,30.50	4	280	3.21	9	100	27.36	14
6002	7/7/91	'0000	57,25.01	'0855.45	4	280	3.21	9	100	27.36	14
6007	7/7/91	1000	58,56.56	11,11.12	4	280	3.21	9	100	27.36	14
6008	7/7/91	1200	58,38.77	10,44.63	4	280	3.21	9	100	27.36	14
6009	7/7/91	1400	58,19.46	10,17.73	4	280	3.21	9	100	27.36	14
6010	7/7/91	1600	58,01.95	'09,53.23	4	280	3.21	9	100	27.36	14
6011	7/7/91	1800	57,43.16	'09,28.21	4	280	3.21	9	100	27.36	14
6012	7/7/91	2000	57,23.73	'09,01.47	4	280	3.21	9	100	27.36	14
6013	7/7/91	2200	57,06.21	'08,36.52	4	280	3.21	9	100	27.36	14
6014	10/7/91	'0800	56,07.35	'08,12.0	4	280	3.21	9	100	27.36	14
6015	10/7/91	'0955	56,19.23	'08,56.26	4	280	3.21	9	100	27.36	14
6016	10/7/91	1200	56,33.04	'09,21.05	4	280	3.21	9	100	27.36	14
6017	10/7/91	1400	56,42.60	'09,57.8	4	280	3.21	9	100	27.36	14
6018	10/7/91	1600	56,52.04	10,32.75	4	280	3.21	9	100	27.36	14
6019	10/7/91	1800	57,04.09	11,08.97	4	280	3.21	9	100	27.36	14
6020	10/7/91	2000	57,16.94	11.45.44	4	280	3.21	9	100	27.36	14
6021	10/7/91	2200	57,31.18	12,22.66	4	280	3.21	9	100	27.36	14
6023	11/7/91	'0200	57,55.97	13,39.19	4	280	3.21	9	100	27.36	14
6022											
6024	11/7/91	'0400	58,09.54	14,18.49	4	280	3.21	9	100	27.36	14
6025	11/7/91	'0600	58,22.8	14,56.62	4	280	3.21	9	100	27.36	14
6026	11/7/91	'0800	58,35.23	15,35.26	4	280	3.21	9	100	27.36	14
6027	11/7/91	1000	58,41.35	15,55.56	4	280	3.21	9	100	27.36	14
6028	11/7/91	1210	58,55.9	16,43.4	4	280	3.21	9	100	27.36	14
6029	11/7/91	1410	59,05.97	17,17.25	4	280	3.21	9	100	27.36	14
6030	11/7/91	1607	59,19.28	17,51.87	4	280	3.21	9	100	27.36	14
6031	11/7/91	1800	59,30.95	18,27.45	4	280	3.21	9	100	27.36	14
6032	11/7/91	2000	59,44.21	19,06.75	4	280	3.21	9	100	27.36	14
6033	11/7/91	2200	59,55.57	19,47.22	4	280	3.21	9	100	27.36	14

TABLE 4. Coulter Multisizer samples.

6034	12/7/91	'0000	60,14.26	19,59.33	4	280	3.21	9	100	27.36	14
6035	12/7/91	'0200	60,37.55	20,00.59	4	280	3.21	9	100	27.36	14
		BOWTIE (1)									
6036	12/7/91	'0400	61,00.45	19,59.1	4	280	3.21	9	100	27.36	14
6037	12/7/91	'0430	61,04.88	19,59.58	4	280	3.21	9	100	27.36	14
6038	12/7/91	'0500	61,05.06	19,59.36	4	280	3.21	9	100	27.36	14
6039	12/7/91	'0530	61,07.52	20,00.98	4	280	3.21	9	100	27.36	14
6040	12/7/91	'0600	61,11.79	20,08.76	4	280	3.21	9	100	27.36	14
6041	12/7/91	'0630	61,16.53	20,13.74	4	280	3.21	9	100	27.36	14
6042	12/7/91	'0700	61,20.7	20,21.73	4	280	3.21	9	100	27.36	14
6043	12/7/91	'0730	61,25.31	20,27.03	4	280	3.21	9	100	27.36	14
6044	12/7/91	'0800	61,29.97	20,34.34	4	280	3.21	9	100	27.36	14
6045	12/7/91	'0830	61,32.18	20,37.12	4	280	3.21	9	100	27.36	14
6046	12/7/91	'0900	61,32.3	20,37.43	4	280	3.21	9	100	27.36	14
6047	12/7/91	'0930	61,32.38	20,32.39	4	280	3.21	9	100	27.36	14
6048	12/7/91	1000	61,32.32	20,21.29	4	280	3.21	9	100	27.36	14
6049	12/7/91	1030	61,32.7	20,10.23	4	280	3.21	9	100	27.36	14
6050	12/7/91	1100	61,32.41	19,58.93	4	280	3.21	9	100	27.36	14
6051	12/7/91	1130	61,32.44	19,47.68	4	280	3.21	9	100	27.36	14
6052	12/7/91	1200	61,32.33	19,36.89	4	280	3.21	9	100	27.36	14
6053	12/7/91	1230	61,32.45	19,30.91	4	280	3.21	9	100	27.36	14
6054	12/7/91	1300	61,33.28	19,31.00	4	280	3.21	9	100	27.36	14
6055	12/7/91	1330	61,28.23	19,36.74	4	280	3.21	9	100	27.36	14
6056	12/7/91	1409	61,21.43	19,44.41	4	280	3.21	9	100	27.36	14
6057	12/7/91	1430	61,17.74	19,47.13	4	280	3.21	9	100	27.36	14
6058	12/7/91	1500	61,11.94	19,52.3	4	280	3.21	9	100	27.36	14
6059	12/7/91	1609	61,10.68	19,55.46	4	280	3.21	9	100	27.36	14
6060	12/7/91	1635	61,05.34	19,59.96	4	280	3.21	9	100	27.36	14
6061	12/7/91	1705	61,00.18	20,05.59	4	280	3.21	9	100	27.36	14
6062	12/7/91	1733	60,55.43	20,11.86	4	280	3.21	9	100	27.36	14
6063	12/7/91	1800	60,50.51	20,15.6	4	280	3.21	9	100	27.36	14
6064	12/7/91	1834	60,45.06	20,22.22	4	280	3.21	9	100	27.36	14
6065	12/7/91	1916	60,37.69	19,16.27	4	280	3.21	9	100	27.36	14
6066	12/7/91	1930	60,35.34	20,31.19	4	280	3.21	9	100	27.36	14
6067	12/7/91	2000	60,33.04	20,34.16	4	280	3.21	9	100	27.36	14

TABLE 4. Coulter Multisizer samples.

6068											
6069	12/7/91	2100	60,32.64	20,20.19	4	280	3.21	9	100	27.36	14
6070	12/7/91	2130	60,32.7	20,09.17	4	280	3.21	9	100	27.36	14
6071	12/7/91	2200	60,32.72	19,56.92	4	280	3.21	9	100	27.36	14
6072	12/7/91	2230	60,33.32	19,45.14	4	280	3.21	9	100	27.36	14
6073	12/7/91	2300	60,32.89	19,32.77	4	280	3.21	9	100	27.36	14
6074	12/7/91	2330	60,33.02	19,24.06	4	280	3.21	9	100	27.36	14
6075	13/7/91	'0000	60,33.06	19,23.97	4	280	3.21	9	100	27.36	14
6076	13/7/91	'0030	60,35.7	19,27.16	4	280	3.21	9	100	27.36	14
6077	13/7/91	'0100	60,40.45	19,32.46	4	280	3.21	9	100	27.36	14
6078	13/7/91	'0130	60,44.32	19,36.62	4	280	3.21	9	100	27.36	14
6079	13/7/91	'0200	60,47.99	19,40.74	4	280	3.21	9	100	27.36	14
6080	13/7/91	'0230	60,51.96	19,45.31	4	280	3.21	9	100	27.36	14
6081	13/7/91	'0300	60,55.8	19,49.23	4	280	3.21	9	100	27.36	14
6082	13/7/91	'0330	60,58.87	19,53.43	4	280	3.21	9	100	27.36	14
6083	13/7/91	'0400	61,02.48	19,57.63	4	280	3.21	9	100	27.36	14
			CTD 61/194/04								
6084	13/7/91	1308	61,04.00	20,00.60	2	280	3.21	9	100	27.36	14
6085	13/7/91	1308	61,04.00	20,00.60	10	280	3.21	9	100	27.36	14
6086	13/7/91	1308	61,04.00	20,00.60	20	280	3.21	9	100	27.36	14
6087	13/7/91	1308	61,04.00	20,00.60	30	280	3.21	9	100	27.36	14
6088	13/7/91	1308	61,04.00	20,00.60	40	280	3.21	9	100	27.36	14
6089	13/7/91	1308	61,04.00	20,00.60	50	280	3.21	9	100	27.36	14
6090	13/7/91	1308	61,04.00	20,00.60	75	280	3.21	9	100	27.36	14
6091	13/7/91	1308	61,04.00	20,00.60	100	280	3.21	9	100	27.36	14
6092	13/7/91	1308	61,04.00	20,00.60	125	280	3.21	9	100	27.36	14
6093	13/7/91	1308	61,04.00	20,00.60	150	280	3.21	9	100	27.36	14
6094	13/7/91	1308	61,04.00	20,00.60	200	280	3.21	9	100	27.36	14
6095	13/7/91	1308	61,04.00	20,00.60	300	280	3.21	9	100	27.36	14
			CTD 61/195/04								
6096	14/7/91	'0712	61,06.07	19,36.00	2	280	3.21	9	100	27.36	14
6097	14/7/91	'0712	61,06.07	19,36.00	10	280	3.21	9	100	27.36	14
6098	14/7/91	'0712	61,06.07	19,36.00	20	280	3.21	9	100	27.36	14

TABLE 4. Coulter Multisizer samples.

6099	14/7/91	'0712	61,06.07	19,36.00	30	280	3.21	9	100	27.36	14
6100	14/7/91	'0712	61,06.07	19,36.00	40	280	3.21	9	100	27.36	14
6101	14/7/91	'0712	61,06.07	19,36.00	50	280	3.21	9	100	27.36	14
6102	14/7/91	'0712	61,06.07	19,36.00	75	280	3.21	9	100	27.36	14
6103	14/7/91	'0712	61,06.07	19,36.00	100	280	3.21	9	100	27.36	14
6104	14/7/91	'0712	61,06.07	19,36.00	125	280	3.21	9	100	27.36	14
6105	14/7/91	'0712	61,06.07	19,36.00	150	280	3.21	9	100	27.36	14
6106	14/7/91	'0712	61,06.07	19,36.00	200	280	3.21	9	100	27.36	14
6107	14/7/91	'0712	61,06.07	19,36.00	300	280	3.21	9	100	27.36	14
			CTD 61/196/06								
6108	15/07/91	1144	61,16.2	19,46.0	2	280	3.21	9	100	27.36	14
6109	15/07/91	1144	61,16.2	19,46.0	10	280	3.21	9	100	27.36	14
6110	15/07/91	1144	61,16.2	19,46.0	20	280	3.21	9	100	27.36	14
6111	15/07/91	1144	61,16.2	19,46.0	30	280	3.21	9	100	27.36	14
6112	15/07/91	1144	61,16.2	19,46.0	40	280	3.21	9	100	27.36	14
6113	15/07/91	1144	61,16.2	19,46.0	50	280	3.21	9	100	27.36	14
6114	15/07/91	1144	61,16.2	19,46.0	75	280	3.21	9	100	27.36	14
6115	15/07/91	1144	61,16.2	19,46.0	100	280	3.21	9	100	27.36	14
6116	15/07/91	1144	61,16.2	19,46.0	125	280	3.21	9	100	27.36	14
6117	15/07/91	1144	61,16.2	19,46.0	150	280	3.21	9	100	27.36	14
6118	15/07/91	1144	61,16.2	19,46.0	200	280	3.21	9	100	27.36	14
6119	15/07/91	1144	61,16.2	19,46.0	300	280	3.21	9	100	27.36	14
			CTD 61/197/05								
6120	16/07/91	'0620	61,11.1	20,00.5	2	280	3.21	9	100	27.36	14
6121	16/07/91	'0620	61,11.1	20,00.5	10	280	3.21	9	100	27.36	14
6122	16/07/91	'0620	61,11.1	20,00.5	20	280	3.21	9	100	27.36	14
6123	16/07/91	'0620	61,11.1	20,00.5	30	280	3.21	9	100	27.36	14
6124	16/07/91	'0620	61,11.1	20,00.5	40	280	3.21	9	100	27.36	14
6125	16/07/91	'0620	61,11.1	20,00.5	50	280	3.21	9	100	27.36	14
6126	16/07/91	'0620	61,11.1	20,00.5	75	280	3.21	9	100	27.36	14
6127	16/07/91	'0620	61,11.1	20,00.5	100	280	3.21	9	100	27.36	14
6128	16/07/91	'0620	61,11.1	20,00.5	125	280	3.21	9	100	27.36	14
6129	16/07/91	'0620	61,11.1	20,00.5	150	280	3.21	9	100	27.36	14

TABLE 4. Coulter Multisizer samples.

6130	16/07/91	0620	61,11.1	20,00.5	200	280	3.21	9	100	27.36	14
6131	16/07/91	0620	61,11.1	20,00.5	300	280	3.21	9	100	27.36	14
			CTD 61/198/04B								
6136	17/07/91	1203	61,07.2	19,39.8	2	280	3.21	9	100	27.36	14
6137	17/07/91	1203	61,07.2	19,39.8	10	280	3.21	9	100	27.36	14
6138	17/07/91	1203	61,07.2	19,39.8	20	280	3.21	9	100	27.36	14
6139	17/07/91	1203	61,07.2	19,39.8	30	280	3.21	9	100	27.36	14
6140	17/07/91	1203	61,07.2	19,39.8	40	280	3.21	9	100	27.36	14
6141	17/07/91	1203	61,07.2	19,39.8	50	280	3.21	9	100	27.36	14
6142	17/07/91	1203	61,07.2	19,39.8	75	280	3.21	9	100	27.36	14
6143	17/07/91	1203	61,07.2	19,39.8	100	280	3.21	9	100	27.36	14
6144	17/07/91	1203	61,07.2	19,39.8	125	280	3.21	9	100	27.36	14
6145	17/07/91	1203	61,07.2	19,39.8	150	280	3.21	9	100	27.36	14
6146	17/07/91	1203	61,07.2	19,39.8	200	280	3.21	9	100	27.36	14
6147	17/07/91	1203	61,07.2	19,39.8	300	280	3.21	9	100	27.36	14
			CTD 61/199/05								
6148	18/07/91	0526	61,14.9	19,32.1	2	280	3.21	9	100	27.36	14
6149	18/07/91	0526	61,14.9	19,32.1	10	280	3.21	9	100	27.36	14
6150	18/07/91	0526	61,14.9	19,32.1	20	280	3.21	9	100	27.36	14
6151	18/07/91	0526	61,14.9	19,32.1	30	280	3.21	9	100	27.36	14
6152	18/07/91	0526	61,14.9	19,32.1	40	280	3.21	9	100	27.36	14
6153	18/07/91	0526	61,14.9	19,32.1	50	280	3.21	9	100	27.36	14
6154	18/07/91	0526	61,14.9	19,32.1	75	280	3.21	9	100	27.36	14
6155											
6156	18/07/91	0526	61,14.9	19,32.1	125	280	3.21	9	100	27.36	14
6157	18/07/91	0526	61,14.9	19,32.1	150	280	3.21	9	100	27.36	14
6158	18/07/91	0526	61,14.9	19,32.1	200	280	3.21	9	100	27.36	14
6159	18/07/91	0526	61,14.9	19,32.1	300	280	3.21	9	100	27.36	14
			CTD 61/200/06								
6169	19/07/91	1100	61,15.1	19,37.54	10	280	3.21	9	100	27.36	14

TABLE 4. Coulter Multisizer samples.

			CTD 61/201/04								
6181	20/07/91	'0324	61,06.7.	19,51.1	10	280	3.21	9	100	27.36	14
		SURFACE SAMPLING CTD survey									
6200	21/7/91	1359	61,01.2	19,41.51	4	280	3.21	9	100	27.36	14
6201	21/7/91	1655	61,04.7	19,39.64	4	280	3.21	9	100	27.36	14
6202	21/7/91	1735	61,06.63	19,42.34	4	280	3.21	9	100	27.36	14
6203	21/7/91	2020	61,08.94	19,40.06	4	280	3.21	9	100	27.36	14
6204	21/7/91	2050	61,11.17	19,39.78	4	280	3.21	9	100	27.36	14
6205	21/7/91	2322	61,13.2	19,41.77	4	280	3.21	9	100	27.36	14
6206	22/07/91	'0011	61,15.99	19,41.2	4	280	3.21	9	100	27.36	14
6207	22/07/91	'0410	61,20.35	19,43.1	4	280	3.21	9	100	27.36	14
6208	22/07/91	'0430	61,21.24	19,39.49	4	280	3.21	9	100	27.36	14
		SURFACE SAMPLING Bowtie 2									
6209	22/07/91	'0700	61,23.14	19,44.52	4	280	3.21	9	100	27.36	14
6210	22/07/91	'0730	61,27.15	19,51.56	4	280	3.21	9	100	27.36	14
6211	22/07/91	,0800	61,31.17	19,58.68	4	280	3.21	9	100	27.36	14
6212	22/07/91	,0830	61,36.84	20,08.98	4	280	3.21	9	100	27.36	14
6213	22/07/91	,0900	61,40.89	20,15.95	4	280	3.21	9	100	27.36	14
6214	22/07/91	'0930	61,40.16	20,14.48	4	280	3.21	9	100	27.36	14
6215	22/07/91	1000	61,40.14	20,06.9	4	280	3.21	9	100	27.36	14
6216	22/07/91	1030	61,40.18	19,58.22	4	280	3.21	9	100	27.36	14
6217	22/07/91	1100	61,40.15	19,49.77	4	280	3.21	9	100	27.36	14
6218	22/07/91	1130	61,40.10	19,41.14	4	280	3.21	9	100	27.36	14
6219	22/07/91	1200	61,40.35	19,32.22	4	280	3.21	9	100	27.36	14
6220	22/07/91	1230	61,40.43	19,23.76	4	280	3.21	9	100	27.36	14
6221	22/07/91	1300	61,40.26	19,15.35	4	280	3.21	9	100	27.36	14
6222	22/07/91	1330	61,39.99	19,05.65	4	280	3.21	9	100	27.36	14
6223	22/07/91	1400	61,40.13	19,06.03	4	280	3.21	9	100	27.36	14
6224	22/07/91	1430	61,37.21	19,09.34	4	280	3.21	9	100	27.36	14
6225	22/07/91	1500	61,32.21	19,17.03	4	280	3.21	9	100	27.36	14
6226	22/07/91	1530	61,27.81	19,24.27	4	280	3.21	9	100	27.36	14
6227	22/07/91	1600	61,22.81	19,31.25	4	280	3.21	9	100	27.36	14

TABLE 4. Coulter Multisizer samples.

6228	22/07/91	1630	61,18.78	19,35.4	4	280	3.21	9	100	27.36	14
6229	22/07/91	1700	61,13.95	19,39.02	4	280	3.21	9	100	27.36	14
6230	22/07/91	1800	61,11.67	19,41.89	4	280	3.21	9	100	27.36	14
6231	22/07/91	1901	61,09.53	19,43.18	4	280	3.21	9	100	27.36	14
6232	22/07/91	2000	61,09.89	19,48.68	4	280	3.21	9	100	27.36	14
6233	22/07/91	2030	61,13.24	19,51.37	4	280	3.21	9	100	27.36	14
6234	22/07/91	2100	61,12.44	19,43.57	4	280	3.21	9	100	27.36	14
6235	22/07/91	2130	61,07.19	19,45.85	4	280	3.21	9	100	27.36	14
6236	22/07/91	2200	61,02.34	19,51.86	4	280	3.21	9	100	27.36	14
6237	22/07/91	2230	60,57.07	19,57.21	4	280	3.21	9	100	27.36	14
6238	22/07/91	2300	60,52.33	20,03.13	4	280	3.21	9	100	27.36	14
6239	22/07/91	2330	60,47.41	20,09.62	4	280	3.21	9	100	27.36	14
6240	23/07/91	'0000	60,43.19	20,14.95	4	280	3.21	9	100	27.36	14
6241	23/07/91	'0030	60,41.6	20,16.37	4	280	3.21	9	100	27.36	14
6242	23/07/91	'0100	60,41.29	20,12.11	4	280	3.21	9	100	27.36	14
6243	23/07/91	'0130	60,41.17	20,00.27	4	280	3.21	9	100	27.36	14
6244	23/07/91	'0200	60,41.59	19,49.41	4	280	3.21	9	100	27.36	14
6245	23/07/91	'0230	60,41.31	19,51.31	4	280	3.21	9	100	27.36	14
6246	23/07/91	'0300	60,41.27	19,51.37	4	280	3.21	9	100	27.36	14
6247	23/07/91	'0330	60,42.24	19,43.78	4	280	3.21	9	100	27.36	14
6248	23/07/91	'0400	60,42.44	19,32.44	4	280	3.21	9	100	27.36	14
6249	23/07/91	'0430	60,42.71	19,21.02	4	280	3.21	9	100	27.36	14
6250	23/07/91	'0500	60,41.27	19,08.35	4	280	3.21	9	100	27.36	14
6251	23/07/91	'0530	60,41.19	19,06.7	4	280	3.21	9	100	27.36	14
6252	23/07/91	'0600	60,44.26	19,08.56	4	280	3.21	9	100	27.36	14
6253	23/07/91	'0630	60,48.07	19,11.74	4	280	3.21	9	100	27.36	14
6254	23/07/91	'0706	60,54.39	19,21.56	4	280	3.21	9	100	27.36	14
6255	23/07/91	'0730	60,57.92	19,26.34	4	280	3.21	9	100	27.36	14
6256	23/07/91	'0800	61,02.81	19,31.85	4	280	3.21	9	100	27.36	14
6257	23/07/91	'0830	61,07.59	19,37.95	4	280	3.21	9	100	27.36	14
6258	23/07/91	'0900	61,11.12	19,40.42	4	280	3.21	9	100	27.36	14
		SURFACE SAMPLING Underway									
6259	23/07/91	1100	61,13.52	19,41.53	4	280	3.21	9	100	27.36	14
6260	23/07/91	1200	61,22.73	19,42.66	4	280	3.21	9	100	27.36	14
6261	23/07/91	1300	61,30.0	19,43.09	4	280	3.21	9	100	27.36	14

TABLE 4. Coulter Multisizer samples.

6262	23/07/91	1500	61,38.58	19,45.89	4	280	3.21	9	100	27.36	14
6263	23/07/91	1600	61,49.61	19,49.08	4	280	3.21	9	100	27.36	14
6264	23/07/91	1700	62,00.22	19,51.84	4	280	3.21	9	100	27.36	14
6265	23/07/91	1800	62,10.87	19,54.42	4	280	3.21	9	100	27.36	14
6266	23/07/91	2000	62,22.1	19,57.93	4	280	3.21	9	100	27.36	14
		CTD 61/204/07									
6279	23/07/91	2123	62,29.6	20,00.0	400	280	3.21	9	100	27.36	14
6280	23/07/91	2123	62,29.6	20,00.0	600	280	3.21	9	100	27.36	14
6281	23/07/91	2123	62,29.6	20,00.0	750	280	3.21	9	100	27.36	14
6282	23/07/91	2123	62,29.6	20,00.0	900	280	3.21	9	100	27.36	14
6283	23/07/91	2123	62,29.6	20,00.0	1000	280	3.21	9	100	27.36	14
6284	23/07/91	2123	62,29.6	20,00.0	1600	280	3.21	9	100	27.36	14
		CTD 61/205/07									
6285	24/07/91	1126	62,29.5	19,58.1	2	280	3.21	9	100	27.36	14
6286	24/07/91	1126	62,29.5	19,58.1	10	280	3.21	9	100	27.36	14
6287	24/07/91	1126	62,29.5	19,58.1	20	280	3.21	9	100	27.36	14
6288	24/07/91	1126	62,29.5	19,58.1	30	280	3.21	9	100	27.36	14
6289	24/07/91	1126	62,29.5	19,58.1	40	280	3.21	9	100	27.36	14
6290	24/07/91	1126	62,29.5	19,58.1	50	280	3.21	9	100	27.36	14
6291	24/07/91	1126	62,29.5	19,58.1	75	280	3.21	9	100	27.36	14
6292	24/07/91	1126	62,29.5	19,58.1	100	280	3.21	9	100	27.36	14
6293	24/07/91	1126	62,29.5	19,58.1	125	280	3.21	9	100	27.36	14
6294	24/07/91	1126	62,29.5	19,58.1	150	280	3.21	9	100	27.36	14
6295	24/07/91	1126	62,29.5	19,58.1	200	280	3.21	9	100	27.36	14
6296	24/07/91	1126	62,29.5	19,58.1	300	280	3.21	9	100	27.36	14
		SURFACE SAMPLING Underway									
6297	25/07/91	'0000	62,15.79	19,57.93	4	280	3.21	9	100	27.36	14
6298	25/07/91	'0100	62,04.15	19,54.87	4	280	3.21	9	100	27.36	14
6299	25/07/91	'0200	61,53.82	19,52.17	4	280	3.21	9	100	27.36	14
6300	25/07/91	'0300	61,41.6	19,48.84	4	280	3.21	9	100	27.36	14

TABLE 4. Coulter Multisizer samples.

6301	25/07/91	'0400	61,31.6	19,44.73	4	280	3.21	9	100	27.36	14
6302	25/07/91	'0500	61,20.21	19,43.85	4	280	3.21	9	100	27.36	14
6303	25/07/91	'0600	61,09.64	19,41.7	4	280	3.21	9	100	27.36	14
6304	25/07/91	'0700	60,58.13	19,43.68	4	280	3.21	9	100	27.36	14
6305	25/07/91	'0800	60,47.34	19,43.19	4	280	3.21	9	100	27.36	14
6306	25/07/91	'0900	60,36.56	19,44.31	4	280	3.21	9	100	27.36	14
6307	25/07/91	1000	60,26.53	19,44.97	4	280	3.21	9	100	27.36	14
6308	25/07/91	1100	60,16.7	19,44.85	4	280	3.21	9	100	27.36	14
6309	25/07/91	1200	60,06.88	19,46.32	4	280	3.21	9	100	27.36	14
6310	25/07/91	1300	59,57.15	19,47.55	4	280	3.21	9	100	27.36	14
6311	25/07/91	1400	59,46.03	19,47.78	4	280	3.21	9	100	27.36	14
6312	25/07/91	1500	59,34.81	19,48.69	4	280	3.21	9	100	27.36	14
6313	25/07/91	1600	59,24.54	19,49.1	4	280	3.21	9	100	27.36	14
6314	25/07/91	1700	59,13.13	19,48.48	4	280	3.21	9	100	27.36	14
6315	25/07/91	1800	59,02.9	19,50.17	4	280	3.21	9	100	27.36	14
6316	25/07/91	1900	58,53.0	19,50.6	4	280	3.21	9	100	27.36	14
6317	25/07/91	2000	58,42.5	19,51.21	4	280	3.21	9	100	27.36	14
6318	25/07/91	2100	58,32.63	19,51.71	4	280	3.21	9	100	27.36	14
6319	25/07/91	2204	58,21.15	19,53.01	4	280	3.21	9	100	27.36	14
6320	25/07/91	2303	58,10.7	19,53.4	4	280	3.21	9	100	27.36	14
6321	26/07/91	'0000	58,01.2	19,54.22	4	280	3.21	9	100	27.36	14
6322	26/07/91	'0100	57,50.24	19,54.11	4	280	3.21	9	100	27.36	14
6323	26/07/91	'0200	57,39.75	19,54.04	4	280	3.21	9	100	27.36	14
6324	26/07/91	'0300	57,28.44	19,55.4	4	280	3.21	9	100	27.36	14
6325	26/07/91	'0400	57,18.43	19,55.8	4	280	3.21	9	100	27.36	14
6326	26/07/91	'0500	57,07.69	19,56.33	4	280	3.21	9	100	27.36	14
6327	26/07/91	'0600	56,56.79	19,57.19	4	280	3.21	9	100	27.36	14
6328	26/07/91	'0700	56,45.95	19,57.66	4	280	3.21	9	100	27.36	14
6329	26/07/91	'0800	56,35.14	19,58.13	4	280	3.21	9	100	27.36	14
6330	26/07/91	'0900	56,24.56	19,58.66	4	280	3.21	9	100	27.36	14
6331	26/07/91	1000	56,14.00	19,58.54	4	280	3.21	9	100	27.36	14
6332	26/07/91	1100	56,03.59	19,58.50	4	280	3.21	9	100	27.36	14
6333	26/07/91	1200	55,55.84	20,00.81	4	280	3.21	9	100	27.36	14
6334	26/07/91	1300	55,46.73	20,00.67	4	280	3.21	9	100	27.36	14
6335											
6336	26/07/91	1500	55,29.74	20,00.15	4	280	3.21	9	100	27.36	14

TABLE 4. Coulter Multisizer samples.

6337	26/07/91	1600	55,25.90	19,56.93	4	280	3.21	9	100	27.36	14
6338	26/07/91	1700	15,19.99	19,41.28	4	280	3.21	9	100	27.36	14
6339	26/07/91	1800	55,14.35	19,24.41	4	280	3.21	9	100	27.36	14
6340	26/07/91	1900	55,09.35	19,08.54	4	280	3.21	9	100	27.36	14
6341	26/07/91	2000	55,03.87	18,53.81	4	280	3.21	9	100	27.36	14
6342	26/07/91	2100	54,58.37	18,37.54	4	280	3.21	9	100	27.36	14
6343	26/07/91	2200	54,52.80	18,19.16	4	280	3.21	9	100	27.36	14
6344	26/07/91	2300	54,47.53	18,01.85	4	280	3.21	9	100	27.36	14
6345	27/07/91	'0000	54,42.96	17,45.26	4	280	3.21	9	100	27.36	14
6346	27/07/91	'0200	54,30.40	17,14.83	4	280	3.21	9	100	27.36	14
6347	27/07/91	'0500	54,12.35	16,27.18	4	280	3.21	9	100	27.36	14
6348	27/07/91	'0700	54,00.2	15,56.43	4	280	3.21	9	100	27.36	14
6349	27/07/91	'0900	53,47.45	15,24.96	4	280	3.21	9	100	27.36	14
6350	27/07/91	1100	53,35.96	14,56.51	4	280	3.21	9	100	27.36	14
6351	27/07/91	1300	53,23.66	14,28.61	4	280	3.21	9	100	27.36	14
6352	27/07/91	1500	53,11.08	13,58.79	4	280	3.21	9	100	27.36	14
6353	27/07/91	1632	52,53.84	13,19.7	4	280	3.21	9	100	27.36	14

TABLE 5. Lugols and formalin phytoplankton samples.

SAMPLE NO	DATE	TIME (gmt)	LAT (N) (deg,min)	LONG (W) (deg,min)	DEPTH	L/F
6828	6/7//91	2000	56,47.63	'08,05.46	4	L
6829						F
6830	6/7//91	2200	57,06.25	'08,30.50	4	L
6831						F
6832	7/7/91	'0000	57,25.01	'0855.45	4	L
6833						F
6834	7/7/91	'0200	57,43.50	'09,23.74	4	L
6835						F
6836	7/7/91	'0400	58,03.07	'09,50.66	4	L
6837						F
6838	7/7/91	'0600	58,21.68	10,18.60	4	L
6839						F
6840	7/7/91	'0800	58,40.95	10,47.41	4	L
6841						F
6842	7/7/91	1000	58,56.56	11,11.12	4	L
6843						F
6844	7/7/91	1200	58,38.77	10,44.63	4	L
6845						F
6846	7/7/91	1400	58,19.46	10,17.73	4	L
6847						F
6848	7/7/91	1600	58,01.95	'09,53.23	4	L
6849						F
6850	7/7/91	1800	57,43.16	'09,28.21	4	L
6851						F
6852	7/7/91	2000	57,23.73	'09,01.47	4	L
6853						F
6854	7/7/91	2200	57,06.21	'08,36.52	4	L
6855						F
6856	10/7/91	'0800	56,07.35	'08,12.0	4	L
6857						F
6858	10/7/91	'0955	56,19.23	'08,56.26	4	L
6859						F
6860	10/7/91	1200	56,33.04	'09,21.05	4	L
6861						F
6862	10/7/91	1400	56,42.6	'09,57.8	4	L
6863						F
6864	10/7/91	1600	56,52.04	10,32.75	4	L
6865						F
6866	10/7/91	1800	57,04.09	11,08.97	4	L
6867						F
6868	10/7/91	2000	57,16.94	11.45.44	4	L
6869						F
6870	10/7/91	2200	57,31.18	12,22.66	4	L
6871						F
6872	11/7/91	'0000	57,44.04	13,00.62	4	L
6873						F

TABLE 5. Lugols and formalin phytoplankton samples.

6874	11/7/91	'0200	57,55.97	13,39.19	4	L
6875						F
6876	11/7/91	'0400	58,09.54	14,18.49	4	L
6877						F
6878	11/7/91	'0600	58,22.8	14,56.62	4	L
6879						F
6880	11/7/91	'0800	58,35.23	15,35.26	4	L
6881						F
6882	11/7/91	1000	58,41.35	15,55.56	4	L
6883						F
6884	11/7/91	'0930	58,41	15,53	4	L
6885						F
6886	11/7/91	'0930	58,41	15,53	10	L
6887						F
6888	11/7/91	'0930	58,41	15,53	30	L
6889						F
6890	11/7/91	1210	58,55.9	16,43.4	4	L
6891						F
6892	11/7/91	'0930	58,41	15,53	40	L
6893						F
6894	11/7/91	1410	59,05.97	17,17.25	4	L
6895						F
6896	11/7/91	1607	59,19.28	17,51.87	4	L
6897						F
6898	11/7/91	1800	59,30.95	18,27.45	4	L
6899						F
6900	11/7/91	2000	59,44.21	19,06.75	4	L
6901						F
6902	11/7/91	2200	59,55.57	19,47.22	4	L
6903						F
6904	12/7/91	'0000	60,14.26	19,59.33	4	L
6905						F
6906	12/7/91	'0200	60,37.55	20,00.59	4	L
6907						F
6908	12/7/91	'0400	61,00.45	19,59.1	4	L
6909						F
6910	12/7/91	'0430	61,04.88	19,59.58	4	L
6911						F
6912	12/7/91	'0500	61,05.06	19,59.36	4	L
6913						F
6914	12/7/91	'0530	61,07.52	20,00.98	4	L
6915						F
6916	12/7/91	'0600	61,11.79	20,08.76	4	L
6917						F
6918	12/7/91	'0439	61,04.97	19,59.47	10	L
6919						F
6920	12/7/91	'0439	61,04.97	19,59.47	25	L
6921						F

TABLE 5. Lugols and formalin phytoplankton samples.

6922	12/7/91	'0439	61,04.97	19,59.47	40	L
6923						F
6924	12/7/91	'0630	61,16.53	20,13.74	4	L
6925						F
6926	12/7/91	'0700	61,20.7	20,21.73	4	L
6927						F
6928	12/7/91	'0730	61,25.31	20,27.03	4	L
6929						F
6930	12/7/91	'0800	61,29.97	20,34.34	4	L
6931						F
6932	12/7/91	'0830	61,32.18	20,37.12	4	L
6933						F
6934	12/7/91	'0900	61,32.3	20,37.43	4	L
6935						F
6936	12/7/91	'0930	61,32.38	20,32.39	4	L
6937						F
6938	12/7/91	1000	61,32.32	20,21.29	4	L
6939						F
6940	12/7/91	1030	61,32.7	20,10.23	4	L
6941						F
6942	12/7/91	1100	61,32.41	19,58.93	4	L
6943						F
6944	12/7/91	1130	61,32.44	19,47.68	4	L
6945						F
6946	12/7/91	1200	61,32.33	19,36.89	4	L
6947						F
6948	12/7/91		CTD :	61/193/02	10	L
6949						F
6950	12/7/91		CTD :	61/193/02	25	L
6951						F
6952	12/7/91		CTD :	61/193/02	40	L
6953						F
6954	12/7/91	1230	61,32.45	19,30.91	4	L
6955						F
6956	12/7/91	1300	61,33.28	19,31.00	4	L
6957						F
6958	12/7/91	1330	61,28.23	19,36.74	4	L
6959						F
6960	12/7/91	1409	61,21.43	19,44.41	4	L
6961						F
6962	12/7/91	1430	61,17.74	19,47.13	4	L
6963						F
6964	12/7/91	1500	61,11.94	19,52.3	4	L
6965						F
6966	12/7/91	1609	61,10.68	19,55.46	4	L
6967						F
6968	12/7/91	1635	61,05.34	19,59.96	4	L
6969						F

TABLE 5. Lugols and formalin phytoplankton samples.

6970	12/7/91		CTD :	61/193/03	10	L
6971						F
6972	12/7/91		CTD :	61/193/03	20	L
6973						F
6974	12/7/91		CTD :	61/193/03	30	L
6975						F
6976	12/7/91	1705	61,00.18	20,05.59	4	L
6977						F
6978	12/7/91	1733	60,55.43	20,11.86	4	L
6079						F
6980	12/7/91	1800	60,50.51	20,15.6	4	L
6981						F
6982	12/7/91	1834	60,45.06	20,22.22	4	L
6983						F
6984	12/7/91	1916	60,37.69	19,16.27	4	L
6985						F
6986	12/7/91	1930	60,35.34	20,31.19	4	L
6987						F
6988	12/7/91	2000	60,33.04	20,34.16	4	L
6989						F
6990	12/7/91	2030	60,32.63	20,32.71	4	L
6991						F
6992	12/7/91	2100	60,32.64	20,20.19	4	L
6993						F
6994	12/7/91	2130	60,32.7	20,09.17	4	L
6995						F
6996	12/7/91	2200	60,32.72	19,56.92	4	L
6997						F
6998	12/7/91	2230	60,33.32	19,45.14	4	L
6999						F
7000	12/7/91	2300	60,32.89	19,32.77	4	L
7001						F
7002	12/7/91	?				L
7003						F
7004	12/7/91	?				L
7005						F
7006	12/7/91	?				L
7007						F
7008	12/7/91	2330	60,33.02	19,24.06	4	L
7009						F
7010	13/7/91	'0000	60,33.06	19,23.97	4	L
7011						F
7012	13/7/91	'0030	60,35.7	19,27.16	4	L
7013						F
7014	13/7/91	'0100	60,40.45	19,32.46	4	L
7015						F
7016	13/7/91	'0130	60,44.32	19,36.62	4	L
7017						F

TABLE 5. Lugols and formalin phytoplankton samples.

7018	13/7/91	'0200	60,47.99	19,40.74	4	L
7019						F
7020	13/7/91	'0230	60,51.96	19,45.31	4	L
7021						F
7022	13/7/91	'0300	60,55.8	19,49.23	4	L
7023						F
7024	12/7/90	2340	60,33.00	19,24.2	10	L
7025						F
7026	13/7/91	"	"	"	30	L
7027						F
7028	13/7/91	"	"	"	40	L
7029						F
7030	13/7/91	'0330	60,58.87	19,53.43	4	L
7031						F
7032	13/7/91	'0400	61,02.48	19,57.63	4	L
7033						F
		CTD61/194/04				
7034	13/7/91	1400	61,03.42	19,56.48	2	L
7035						F
7036	13/7/91	1400	61,03.42	19,56.48	10	L
7037						F
7038	13/7/91	1400	61,03.42	19,56.48	20	L
7039						F
7040	13/7/91	1400	61,03.42	19,56.48	30	L
7041						F
7042	13/7/91	1400	61,03.42	19,56.48	40	L
7043						F
7044	13/7/91	1400	61,03.42	19,56.48	50	L
7045						F
7046	13/7/91	1400	61,03.42	19,56.48	75	L
7047						F
7048	13/7/91	1400	61,03.42	19,56.48	100	L
7049						F
7050	13/7/91	1400	61,03.42	19,56.48	425	L
7051						F
7052	13/7/91	1400	61,03.42	19,56.48	150	L
7053						F
7054	13/7/91	1400	61,03.42	19,56.48	200	L
7055						F
7056	13/7/91	1400	61,03.42	19,56.48	300	L
7057						F
		CTD61/195/04				
7058	14/7/91	'0600	61,06.3	19,36.4	2	L
7059						F
7060	14/7/91	'0600	61,06.3	19,36.4	10	L
7061						F
7062	14/7/91	'0600	61,06.3	19,36.4	20	L

TABLE 5. Lugols and formalin phytoplankton samples.

7063						F
7064	14/7/91	'0600	61,06.3	19,36.4	30	L
7065						F
7066	14/7/91	'0600	61,06.3	19,36.4	40	L
7067						F
7068	14/7/91	'0600	61,06.3	19,36.4	50	L
7069						F
7070	14/7/91	'0600	61,06.3	19,36.4	75	L
7071						F
7072	14/7/91	'0600	61,06.3	19,36.4	100	L
7073						F
7074	14/7/91	'0600	61,06.3	19,36.4	125	L
7075						F
7076	14/7/91	'0600	61,06.3	19,36.4	150	L
7077						F
7078	14/7/91	'0600	61,06.3	19,36.4	200	L
7079						F
7080	14/7/91	'0600	61,06.3	19,36.4	300	L
7081						F
		CTD61/195/06				
7082	14/7/91	1215	61,09.9	19,33.6	2	L
7083						F
7084	14/7/91	1215	61,09.9	19,33.6	25	L
7085						F
7086	14/7/91	1215	61,09.9	19,33.6	35	L
7087						F
7088	14/7/91	1215	61,09.9	19,33.6	50	L
7089						F
		CTD61/196/06				
7090	15/7/91	1144	61,16.02	19,46.00	2	L
7091						F
7092	15/7/91	1144	61,16.02	19,46.00	10	L
7093						F
7094	15/7/91	1144	61,16.02	19,46.00	20	L
7095						F
7096	15/7/91	1144	61,16.02	19,46.00	30	L
7097						F
7098	15/7/91	1144	61,16.02	19,46.00	40	L
7099						F
7100	15/7/91	1144	61,16.02	19,46.00	50	L
7101						F
7102	15/7/91	1144	61,16.02	19,46.00	75	L
7103						F
7104	15/7/91	1144	61,16.02	19,46.00	100	L
7105						F

TABLE 5. Lugols and formalin phytoplankton samples.

7106	15/7/91	1144	61,16.02	19,46.00	125	L
7107						F
7108	15/7/91	1144	61,16.02	19,46.00	150	L
7109						F
7110	15/7/91	1144	61,16.02	19,46.00	200	L
7111						F
7112	15/7/91	1144	61,16.02	19,46.00	300	L
7113						F
		CTD 61/196/05				
7114	16/07/91	'0620	61,11.1	20,00.5	2	L
7115						F
7116	16/07/91	'0620	61,11.1	20,00.5	10	L
7117						F
7118	16/07/91	'0620	61,11.1	20,00.5	20	L
7119						F
7120	16/07/91	'0620	61,11.1	20,00.5	30	L
7121						F
7122	16/07/91	'0620	61,11.1	20,00.5	40	L
7123						F
7124	16/07/91	'0620	61,11.1	20,00.5	50	L
7125						F
7126	16/07/91	'0620	61,11.1	20,00.5	75	L
7127						F
7128	16/07/91	'0620	61,11.1	20,00.5	100	L
7129						F
7130	16/07/91	'0620	61,11.1	20,00.5	125	L
7131						F
7132	16/07/91	'0620	61,11.1	20,00.5	150	L
7133						F
7134	16/07/91	'0620	61,11.1	20,00.5	200	L
7135						F
7136	16/07/91	'0620	61,11.1	20,00.5	300	L
7137						F
		CTD 61/198/05				
7138	17/07/91	1203	61,07.2	19,39.8	2	L
7139						F
7140	17/07/91	1203	61,07.2	19,39.8	10	L
7141						F
7142	17/07/91	1203	61,07.2	19,39.8	20	L
7143						F
7144	17/07/91	1203	61,07.2	19,39.8	30	L
7145						F
7146	17/07/91	1203	61,07.2	19,39.8	40	L
7147						F

TABLE 5. Lugols and formalin phytoplankton samples.

7148	17/07/91	1203	61,07.2	19,39.8	50	L
7149						F
7150	17/07/91	1203	61,07.2	19,39.8	75	L
7151						F
7152	17/07/91	1203	61,07.2	19,39.8	100	L
7153						F
7154	17/07/91	1203	61,07.2	19,39.8	125	L
7155						F
7156	17/07/91	1203	61,07.2	19,39.8	150	L
7157						F
7158	17/07/91	1203	61,07.2	19,39.8	200	L
7159						F
7160	17/07/91	1203	61,07.2	19,39.8	300	L
7161						F
			TD 61/199/05			
7162	18/07/91	'0526	61,14.9	19,32.1	2	L
7163						F
7164	18/07/91	'0526	61,14.9	19,32.1	10	L
7165						F
7166	18/07/91	'0526	61,14.9	19,32.1	20	L
7167						F
7168	18/07/91	'0526	61,14.9	19,32.1	30	L
7169						F
7170	18/07/91	'0526	61,14.9	19,32.1	40	L
7171						F
7172	18/07/91	'0526	61,14.9	19,32.1	50	L
7173						F
7184	18/07/91	'0526	61,14.9	19,32.1	75	L
7185						F
7174	18/07/91	'0526	61,14.9	19,32.1	100	L
7175						F
7176	18/07/91	'0526	61,14.9	19,32.1	125	L
7177						F
7178	18/07/91	'0526	61,14.9	19,32.1	150	L
7179						F
7180	18/07/91	'0526	61,14.9	19,32.1	200	L
7181						F
7182	18/07/91	'0526	61,14.9	19,32.1	300	L
7183						F
			CTD 61/199/06			
7186	18/07/91	'0708	61,15.2	19,31.5	400	L
7187						F
7188	18/07/91	'0708	61,15.2	19,31.5	600	L

TABLE 5. Lugols and formalin phytoplankton samples.

7189						F
7190	18/07/91	'0708	61,15.2	19,31.5	750	L
7191						F
7192	18/07/91	'0708	61,15.2	19,31.5	900	L
7193						F
7194	18/07/91	'0708	61,15.2	19,31.5	1000	L
7915						F
7196	18/07/91	'0708	61,15.2	19,31.5	1500	L
7197						F
7198	18/07/91	'0708	61,15.2	19,31.5	2250	L
7199						F
7200	18/07/91	'0708	61,15.2	19,31.5	2350	L
7201						F
		CTD 61/200/06				
7202	19/07/91	'1100	61,15.1	19,37.54	2	L
7203						F
7204	19/07/91	'1100	61,15.1	19,37.54	10	L
7205						F
7206	19/07/91	'1100	61,15.1	19,37.54	20	L
7207						F
7208	19/07/91	'1100	61,15.1	19,37.54	30	L
7209						F
7210	19/07/91	'1100	61,15.1	19,37.54	40	L
7211						F
7212	19/07/91	'1100	61,15.1	19,37.54	50	L
7213						F
7214	19/07/91	'1100	61,15.1	19,37.54	75	L
7215						F
7216	19/07/91	'1100	61,15.1	19,37.54	100	L
7217						F
7218	19/07/91	'1100	61,15.1	19,37.54	125	L
7219						F
7220	19/07/91	'1100	61,15.1	19,37.54	150	L
7221						F
7222	19/07/91	'1100	61,15.1	19,37.54	200	L
7223						F
7224	19/07/91	'1100	61,15.1	19,37.54	300	L
7225						F
7226	19/07/91	1935	61,09.89	19,50.99	4	L
7227						F
7228	19/07/91	2030	61,09.48	19,51.13	4	L
7229						F
7230	19/07/91	2125	61,08.89	19,50.71	4	L
7231						F

TABLE 5. Lugols and formalin phytoplankton samples.

7232	019/07/91	2230	61,08.22	19,50.29	4	L
7233						F
7234	19/07/91	2340	61,07.90	19,50.55	4	L
7235						F
7236	20/07/91	'0035	61,07.86	19,52.80	4	L
7237						F
7238	20/07/91	'0145	61,07.39	19,52.3	4	L
7239						F
7240	20/07/91	'0245	61,06.69	19,51.29	4	L
7241						F
7242	20/07/91	'0505	61,05.55	19,49.85	4	L
7243						F
		CTD 61/201/04				
7244	20/07/91	'0324	61,06.7	19,51.1	2	L
7245						F
7246	20/07/91	'0324	61,06.7	19,51.1	10	L
7247						F
7248	20/07/91	'0324	61,06.7	19,51.1	20	L
7249						F
7250	20/07/91	'0324	61,06.7	19,51.1	30	L
7251						F
7252	20/07/91	'0324	61,06.7	19,51.1	40	L
7253						F
7254	20/07/91	'0324	61,06.7	19,51.1	50	L
7255						F
7256	20/07/91	'0324	61,06.7	19,51.1	75	L
7257						F
7258	20/07/91	'0324	61,06.7	19,51.1	100	L
7259						F
7260	20/07/91	'0324	61,06.7	19,51.1	125	L
7261						F
7262	20/07/91	'0324	61,06.7	19,51.1	150	L
7263						F
7264	20/07/91	'0324	61,06.7	19,51.1	200	L
7265						F
7266	20/07/91	'0324	61,06.7	19,51.1	300	L
7267						F
		CTD 61/201/05				
7268	20/07/91	'0458	61,05.7	19,47.8	400	L
7269						F
7270	20/07/91	'0458	61,05.7	19,47.8	600	L
7271						F
7272	20/07/91	'0458	61,05.7	19,47.8	750	L
7273						F

TABLE 5. Lugols and formalin phytoplankton samples.

7274	20/07/91	'0458	61,05.7	19,47.8	900	L
7275						F
7276	20/07/91	'0458	61,05.7	19,47.8	1000	L
7277						F
7278	20/07/91	'0458	61,05.7	19,47.8	1500	L
7279						F
7280	20/07/91	'0458	61,05.7	19,47.8	2350	L
7281						F
7282	20/07/91	'0458	61,05.7	19,47.8	2250	L
7283						F
7284	20/07/91	1640		WYMAN	4	L
7285						F
7286	20/07/91	1845			4	L
7287						F
7288	20/07/91	2000			4	L
7289						F
7290	20/07/91	2055			4	L
7291						F
7292	20/07/91	2210			4	L
7293						F
7294	21/07/91	'0015			4	L
7395						F
7296	21/07/91	'0212			4	L
7297						F
7298	21/07/91	'0300			4	L
7299						F
7300	21/07/91	'0345			4	L
7301						F
7302	21/07/91	'0430			4	L
7303						F
7304	21/07/91	'0505			4	L
7305						F
7306	21/07/91	'0555			4	L
7307						F
7308	21/07/91	'0700			4	L
7309						F
7310	21/07/91	'0800		WYMAN	4	L
7311						F
7312	21/7/91	1359	61,01.2	19,41.51	4	L
7313						F
7314	21/7/91	1655	61,04.7	19,39.64	4	L
7315						F
7316	21/7/91	1735	61,06.63	19,42.34	4	L
7317						F

TABLE 5. Lugols and formalin phytoplankton samples.

7318	21/7/91	2020	61,08.94	19,40.06	4	L
7319						F
7320	21/7/91	2050	61,11.17	19,39.78	4	L
7321						F
7322	21/7/91	2322	61,13.2	19,41.77	4	L
7323						F
7324	22/07/91	'0011	61,15.99	19,41.2	4	L
7325						F
7326	22/07/91	'0410	61,20.35	19,43.1	4	L
7327						F
7328	22/07/91	'0430	61,21.24	19,39.49	4	L
7329						F
7330	22/07/91	'0700	61,23.14	19,44.52	4	L
7331						F
7332	22/07/91	'0730	61,27.15	19,51.56	4	L
7333						F
7334	22/07/91	,0800	61,31.17	19,58.68	4	L
7335						F
7336	22/07/91	,0830	61,36.84	20,08.98	4	L
7337						F
7338	22/07/91	,0900	61,40.89	20,15.95	4	L
7339						F
7340	22/07/91	'0930	61,40.16	20,14.48	4	L
7341						F
7350	22/07/91	1000	61,40.14	20,06.9	4	L
7351						F
7352	22/07/91	1030	61,40.18	19,58.22	4	L
7353						F
7354	22/07/91	1100	61,40.15	19,49.77	4	L
7355						F
7356	22/07/91	1130	61,40.10	19,41.14	4	L
7357						F
	CTD 61/203/08					
7358	22/07/91	'0908	60,40.13	20,14.17	10	L
7359						F
7360	22/07/91	'0908	60,40.13	20,14.17	20	L
7361						F
7362	22/07/91	'0908	60,40.13	20,14.17	40	L
7363						F
7364	22/07/91	1200	61,40.35	19,32.22	4	L
7365						F
7366	22/07/91	1230	61,40.43	19,23.76	4	L
7368						F
7370	22/07/91	1300	61,40.26	19,15.35	4	L

TABLE 5. Lugols and formalin phytoplankton samples.

7371						F
7372	22/07/91	1330	61,39.99	19,05.65	4	L
7373						F
7374	22/07/91	1400	61,40.13	19,06.03	4	L
7375						F
	CTD 61/203/09					
7376	22/07/91	1330	61,37.21	19,09.34	10	L
7377						F
7378	22/07/91	1330	61,37.21	19,09.34	20	L
7379						F
7380	22/07/91	1330	61,37.21	19,09.34	30	L
7381						F
7382	22/07/91	1430	61,37.21	19,09.34	4	L
7383						F
7384	22/07/91	1500	61,32.21	19,17.03	4	L
7385						F
7386	22/07/91	1530	61,27.81	19,24.27	4	L
7387						F
7388	22/07/91	1600	61,22.81	19,31.25	4	L
7389						F
7390	22/07/91	1630	61,18.78	19,35.4	4	L
7391						F
7392	22/07/91	1700	61,13.95	19,39.02	4	L
7393						F
7394	22/07/91	1800	61,11.67	19,41.89	4	L
7395						F
	CTD 61/203/10					
7396	22/07/91	1800	61,11.55	19,41.96	10	L
7397						F
7398	22/07/91	1800	61,11.55	19,41.96	25	L
7399						F
7400	22/07/91	1800	61,11.55	19,41.96	40	L
7401						F
7402	22/07/91	1901	61,09.53	19,43.18	4	L
7403						F
7404	22/07/91	2000	61,09.89	19,48.68	4	L
7405						F
7406	22/07/91	2030	61,13.24	19,51.37	4	L
7407						F
7408	22/07/91	2100	61,12.44	19,43.57	4	L

TABLE 5. Lugols and formalin phytoplankton samples.

7409						F
7410	22/07/91	2130	61,07.19	19,45.85	4	L
7411						F
7412	22/07/91	2200	61,02.34	19,51.86	4	L
7413						F
7414	22/07/91	2230	60,57.07	19,57.21	4	L
7415						F
7416	22/07/91	2300	60,52.33	20,03.13	4	L
7417						F
7418	22/07/91	2330	60,47.41	20,09.62	4	L
7419						F
7420	23/07/91	'0000	60,43.19	20,14.95	4	L
7421						F
7422	23/07/91	'0030	60,41.6	20,16.37	4	L
7423						F
7424	23/07/91	'0100	60,41.29	20,12.11	4	L
7425						F
7432	23/07/91	'0130	60,41.17	20,00.27	4	L
7433						F
7434	23/07/91	'0200	60,41.59	19,49.41	4	L
7435						F
7436	23/07/91	'0230	60,41.31	19,51.31	4	L
7437						F
7438	23/07/91	'0300	60,41.27	19,51.37	4	L
7439						F
7440	23/07/91	'0330	60,42.24	19,43.78	4	L
7441						F
7442	23/07/91	'0400	60,42.44	19,32.44	4	L
7443						F
7444	23/07/91	'0430	60,42.71	19,21.02	4	L
7445						F
7446	23/07/91	'0500	60,41.27	19,08.35	4	L
7447						F
7448	23/07/91	'0530	60,41.19	19,06.7	4	L
7449						F
	CTD 61/204/03					
7450	23/07/91	'0515	60,41.16	19,06.59	10	L
7451						F
7452	23/07/91	'0515	60,41.16	19,06.59	25	L
7453						F
7454	23/07/91	'0515	60,41.16	19,06.59	40	L
7455						F
7456	23/07/91	'0600	60,44.26	19,08.56	4	L

TABLE 5. Lugols and formalin phytoplankton samples.

7457						F
7458	23/07/91	'0630	60,48.07	19,11.74	4	L
7459						F
7460	23/07/91	'0706	60,54.39	19,21.56	4	L
7461						F
7462	23/07/91	'0730	60,57.92	19,26.34	4	L
7463						F
7464	23/07/91	'0800	61,02.81	19,31.85	4	L
7465						F
7466	23/07/91	'0830	61,07.59	19,37.95	4	L
7467						F
7468	23/07/91	'0900	61,11.12	19,40.42	4	L
7469						F
7470	23/07/91	1100	61,13.52	19,41.53	4	L
7471						F
7472	23/07/91	1200	61,22.73	19,42.66	4	L
7473						F
7474	23/07/91	1300	61,30.0	19,43.09	4	L
7475						F
7476	23/07/91	1500	61,38.58	19,45.89	4	L
7477						F
7478	23/07/91	1600	61,49.61	19,49.08	4	L
7479						F
7480	23/07/91	1700	62,00.22	19,51.84	4	L
7481						F
7482	23/07/91	1800	62,10.87	19,54.42	4	L
7483						F
7484	23/07/91	2000	62,22.1	19,57.93	4	L
7485						F
		CTD 61/204/06				
7486	23/07/91	2025	62,30.0	20,00.01	2	L
7487						F
7488	23/07/91	2025	62,30.0	20,00.01	10	L
7489						F
7490	23/07/91	2025	62,30.0	20,00.01	20	L
7491						F
7492	23/07/91	2025	62,30.0	20,00.01	30	L
7493						F
7494	23/07/91	2025	62,30.0	20,00.01	40	L
7495						F
7496	23/07/91	2025	62,30.0	20,00.01	50	L
7497						F
7498	23/07/91	2025	62,30.0	20,00.01	75	L
7499						F

TABLE 5. Lugols and formalin phytoplankton samples.

7500	23/07/91	2025	62,30.0	20,00.01	100	L
7501						F
7502	23/07/91	2025	62,30.0	20,00.01	125	L
7503						F
7504	23/07/91	2025	62,30.0	20,00.01	150	L
7505						F
7506	23/07/91	2025	62,30.0	20,00.01	200	L
7507						F
7508	23/07/91	2025	62,30.0	20,00.01	300	L
7509						F
		CTD 61/204/05				
7510	23/07/91	2123	62,29.6	20,00.0	400	L
7511						F
7512	23/07/91	2123	62,29.6	20,00.0	600	L
7513						F
7514	23/07/91	2123	62,29.6	20,00.0	750	L
7515						F
7516	23/07/91	2123	62,29.6	20,00.0	900	L
7517						F
7518	23/07/91	2123	62,29.6	20,00.0	1000	L
7519						F
7520	23/07/91	2123	62,29.6	20,00.0	1600	L
7521						F
		CTD 61/205/07				
7522	24/07/91	1126	62,29.5	19,58.1	2	L
7523						F
7524	24/07/91	1126	62,29.5	19,58.1	10	L
7525						F
7526	24/07/91	1126	62,29.5	19,58.1	20	L
7527						F
7528	24/07/91	1126	62,29.5	19,58.1	30	L
7529						F
7530	24/07/91	1126	62,29.5	19,58.1	40	L
7531						F
7532	24/07/91	1126	62,29.5	19,58.1	50	L
7533						F
7534	24/07/91	1126	62,29.5	19,58.1	75	L
7535						F
7536	24/07/91	1126	62,29.5	19,58.1	100	L
7537						F
7538	24/07/91	1126	62,29.5	19,58.1	125	L
7539						F
7540	24/07/91	1126	62,29.5	19,58.1	150	L
7541						F

TABLE 5. Lugols and formalin phytoplankton samples.

7542	24/07/91	1126	62,29.5	19,58.1	200	L
7543						F
7544	24/07/91	1126	62,29.5	19,58.1	300	L
7545						F
7546	25/07/91	'0000	62,15.79	19,57.93	4	L
7547						F
7548	25/07/91	'0100	62,04.15	19,54.87	4	L
7549						F
7550	25/07/91	'0200	61,53.82	19,52.17	4	L
7551						F
7552	25/07/91	'0300	61,41.6	19,48.84	4	L
7553						F
7554	25/07/91	'0400	61,31.6	19,44.73	4	L
7555						F
7556	25/07/91	'0500	61,20.21	19,43.85	4	L
7557						F
7558	25/07/91	'0600	61,09.64	19,41.7	4	L
7559						F
7560	25/07/91	'0700	60,58.13	19,43.68	4	L
7561						F
7562	25/07/91	'0800	60,47.34	19,43.19	4	L
7563						F
7564	25/07/91	'0900	60,36.56	19,44.31	4	L
7565						F
7566	25/07/91	1000	60,26.53	19,44.97	4	L
7567						F
7568	25/07/91	1100	60,16.7	19,44.85	4	L
7569						F
7570	25/07/91	1200	60,06.88	19,46.32	4	L
7571						F
7572	25/07/91	1300	59,57.15	19,47.55	4	L
7573						F
7574	25/07/91	1400	59,46.03	19,47.78	4	L
7575						F
7576	25/07/91	1500	59,34.81	19,48.69	4	L
7577						F
7578	25/07/91	1600	59,24.54	19,49.1	4	L
7579						F
7580	25/07/91	1700	59,13.13	19,48.48	4	L
7581						F
7582	25/07/91	1800	59,02.9	19,50.17	4	L
7583						F
7584	25/07/91	1900	58,53.0	19,50.6	4	L
7585						F
7586	25/07/91	2000	58,42.5	19,51.21	4	L
7587						F
7588	25/07/91	2100	58,32.63	19,51.71	4	L

TABLE 5. Lugols and formalin phytoplankton samples.

7589						F
7590	25/07/91	2204	58,21.15	19,53.01	4	L
7591						F
7592	25/07/91	2303	58,10.7	19,53.4	4	L
7593						F
7594	26/07/91	'0000	58,01.2	19,54.22	4	L
7595						F
7596	26/07/91	'0100	57,50.24	19,54.11	4	L
7597						F
7598	26/07/91	'0200	57,39.75	19,54.04	4	L
7599						F
7600	26/07/91	'0300	57,28.44	19,55.4	4	L
7601						F
7602	26/07/91	'0400	57,18.43	19,55.8	4	L
7603						F
7604	26/07/91	'0500	57,07.69	19,56.33	4	L
7605						F
7606	26/07/91	'0600	56,56.79	19,57.19	4	L
7607						F
7608	26/07/91	'0700	56,45.95	19,57.66	4	L
7609						F
7610	26/07/91	'0800	56,35.14	19,58.13	4	L
7611						F
7612	26/07/91	'0900	56,24.56	19,58.66	4	L
7613						F
7614	26/07/91	1000	56,14.0	19,58.54	4	L
7615						F
7616	26/07/91	1100	56,03.59	19,58.5	4	L
7617						F
7618	26/07/91	1200	55,55.84	20,00.81	4	L
7619						F
7656	26/07/91	1300	55,46.73	20,00.67	4	L
7657						F
7658	26/07/91	1400	55,37.66	20,00.44	4	L
7659						F
7660	26/07/91	1500	55,29.74	20,00.15	4	L
7661						F
7662	26/07/91	1600	55,25.9	19,56.93	4	L
7663						F
7664	26/07/91	1700	55,19.99	19,41.28	4	L
7665						F
7666	26/07/91	1800	55,14.35	19,24.41	4	L
7667						F
7668	26/07/91	1900	55,09.35	19,08.54	4	L
7669						F
7670	26/07/91	2000	55,03.87	18,58.81	4	L
7671						F
7672	26/07/91	2100	54,58.37	18,37.54	4	L

TABLE 5. Lugols and formalin phytoplankton samples.

7673						F
7674	26/07/91	2200	54,52.8	18,19.16	4	L
7675						F
7676	26/07/91	2300	54,47.53	18,01.85	4	L
7677						F
7678	27/07/91	'0000	54,42.92	17,45.24	4	L
7679						F
7680	27/07/91	'0200	54,30.4	17,14.83	4	L
7681						F
7682	27/07/91	'0500	54,12.35	16,27.18	4	L
7683						F
7684	27/07/91	'0700	54,00.2	15,56.43	4	L
7685						F
7686	27/07/91	'0900	53,47.45	15,24.76	4	L
7687						F
7688	27/07/91	1100	53,35.96	14,56.51	4	L
7689						F
7690	27/07/91	1300	53,23.66	14,28.61	4	L
7691						F
7692	27/07/91	1500	53,11.08	13,58.79	4	L
7693						F
7694	27/07/91	1632	52,53.84	13,19.7	4	L
7695						F
7696	27/07/91	1847	52,45.79	13,00.36	4	L
7697						

TABLE 6. XBT cast log

XBT NO	DATE	TIME (gmt)	LAT (N)	LONG (W)	PROBE TYPE	COMMENTS
1	6/7/91	1900	56,38.3	07,51.4	T7-700m	Test XBT to 450m
2	12/7/91	0616	61,13.5	20,11.2	T7-700m	
3	12/7/91	0716	61,22.7	20,24.5	T7-700m	
4	12/7/91	1004	61,32.8	20,20.9	T7-700m	
5	12/7/91	1131	61,32.7	19,47.4	T7-700m	Noise between 100 and 200m
6	12/7/91	1409	61,23.1	19,42.6	T7-700m	
7	12/7/91	1507	61,12.7	19,51.8	T7-700m	
8	12/7/91	1913	60,38.7	20,27.0	T7-700m	
9	12/7/91	2231	60,33.3	19,45.9	T7-700m	
10	21/7/91	1233	61,05.5	19,15.0	T7-700m	
11	21/7/91	1657	61,04.7	19,39.6	T5 - 1500m	
12	22/7/91	1513	61,31.2	19,19.7	T7-700m	
13	22/7/91	2213	61,01.1	19,51.9	T7-700m	Noise between 50 and 200m
14	23/7/91	0214	60,41.5	19,49.1	T7-700m	
15	23/7/91	0318	60,41.3	19,48.7	T7-700m	
16	23/7/91	0410	60,41.1	19,30.0	T7-700m	
17	23/7/91	0501	60,41.5	19,10.8	T7-700m	Noise below 400m
18	23/7/91	0559	60,42.1	19,06.1	T7-700m	
19	23/7/91	0703	60,53.1	19,20.2	T7-700m	
20	23/7/91	0800	60,02.1	19,31.1	T7-700m	
21	23/7/91	0903	61,10.2	19,46.1	T7-700m	
22	23/7/91	1131	61,17.5	19,45.8	T7-700m	
23	23/7/91	1524	61,42.4	19,47.3	T7-700m	
24	23/7/91	1753	62,09.3	19,53.8	T7-700m	No signal
25	23/7/91	1800	62,09.4	19,53.1	T7-700m	No Plot
26	25/7/91	0123	61,59.6	19,53.4	T5 - 1500m	
27	25/7/91	0331	61,37.0	19,47.2	T5 - 1500m	
28	25/7/91	0527	61,15.1	19,43.0	T5 - 1500m	
29	25/7/91	0729	60,53.0	19,42.1	T5 - 1500m	
30	25/7/91	0930	60,31.1	19,44.1	T5 - 1500m	T5 probe but set up for T7
31	25/7/91	1132	60,11.9	19,45.9	T5 - 1500m	
32	25/7/91	1327	59,52.3	19,47.1	T5 - 1500m	
33	25/7/91	1535	59,29.3	19,49.0	T5 - 1500m	Plot incomplete
34	25/7/91	1741	59,06.9	19,49.8	T5 - 1500m	
35	25/7/91	1938	58,46.6	19,51.0	T5 - 1500m	
36	25/7/91	2130	58,27.0	19,52.0	T5 - 1500m	No Plot
37	25/7/91	2332	58,06.3	19,53.3	T5 - 1500m	
38	26/7/91	0034	57,55.2	19,54.0	T5 - 1500m	
39	26/7/91	0127	57,46.0	19,54.2	T5 - 1500m	
40	26/7/91	0336	57,33.0	19,55.1	T5 - 1500m	
41	26/7/91	0530	57,02.1	19,56.1	T5 - 1500m	
42	26/7/91	0731	56,40.1	19,57.2	T5 - 1500m	T5 probe but set up for T7
43	26/7/91	0932	56,19.0	19,58.1	T5 - 1500m	T5 probe but set up for T7
44	26/7/91	1129	56,00.7	20,01.1	T5 - 1500m	T5 probe but set up for T7
45	26/7/91	1331	55,42.4	19,59.8	T5 - 1500m	
46	26/7/91	1551	55,26.8	19,59.8	T5 - 1500m	
47	26/7/91	1745	55,17.5	19,32.9	T5 - 1500m	No Plot
48	26/7/91	1935	55,06.6	19,01.2	T5 - 1500m	
49	26/7/91	2128	54,55.9	18,29.5	T5 - 1500m	
50	26/7/91	2331	54,50.5	17,55.1	T5 - 1500m	Not recorded to disc

date	stn no.	INCUBATIONS/MEASUREMENTS 14C BACT.P/N (#)	CHLA	CD61/91 NOx/15N-NH3 (#)	15N-NO3
14/07	6119501	*	*	*	
15/07	6119602	*	*		
16/07	6119702	*	*	*	
17/07	6119801	*	*		
18/07	6119902	*	*	*	
19/07	6120002	*	*		
20/07	6120101	*	*	*	

(#) DENOTES IN SITU INCUBATIONS

date	stn no.	14C BACT.P/N ($)	CHLA	NOx/15N-NH3 ($)	15N-NO3 ($)
21/07	6120202	*	*	*	*
22/07	6120304	*	*	*	*
23/07	6120402	*	*	*	*
24/07	6120501	*	*	*	*
24/07	6120515	*	*	*	*

(Where Bact P/N denotes bacterial production and abundance
($) DENOTES ON DECK INCUBATION)

TABLE 7. Primary production experiments.

CD61 - Station List -Mike Wyman and Tracy Anning.

DATE	DAY	TIME	POSITION	STATION #	SAMPLE	ANALYSIS
11/7/91	192		58,41,08N 15,53,55W	61/192/01	CTD 4m	CYANO/O2
"	"	"	"	"	CTD 10m	CYANO
"	"	"	"	"	CTD 25m	CYANO/O2
"	"	"	"	"	CTD 30m	"
"	"	"	"	"	CTD 40m	"
"	"	"	"	"	CTD 50m	CYANO
"	"	"	"	"	CTD 100m	O2
"	"	"	"	"	CTD 200m	"
12/7/91	193	0507	61,05,97N 19,59,32W	D1	SURF	DNA
"	"	0600	61,11,91N 20,08,61W	D2	"	"
"	"	0700	61,20,43N 20,20,79W	D3	"	"
"	"	0800	61,30,19N 20,34,65W	C1/D4	"	DNA/CYANO
"	"	0835	61,32,17N 20,37,25W	C2	"	CYANO
"	"	0905	61,32,28N 20,37,57W	D5	"	DNA
"	"	0939	61,32,36N 20,28,95W	C3	"	CYANO
"	"	1000		61/193/02	CTD 5m	O2
"	"	"	"	"	" 10m	"
"	"	"	"	"	" 20m	"
"	"	"	"	"	" 25m	"
"	"	"	"	"	" 40m	"
"	"	1013	61,32,20N 20,16,84W	D6	SURF	DNA
"	"	1052	61,32,49N 20,01,79W	C4	"	CYANO
"	"	1131	61,32,43N 19,46,78W	D7	"	DNA
DAY	DATE	TIME	POSITION	STATION#	SAMPLE	ANALYSIS
193	12/7/91	1203	61,32,31N 19,34,42W	C5	SURF	CYANO
"	"	1304	61,32,63N	D8	"	DNA

TABLE 8. Molecular biology programme log.

			19,31,51W			
"	"	1335	61,27,30N	C6	"	CYANO
			19,37,83W			
"	"	1404	61,22,50N	D9	"	DNA
			19,43,29W			
"	"	1433	61,17,27N	C7	"	CYANO
			19,47,27W			
"	"	1503	61,11,80N	D10	"	DNA
			19,52,49W			
"	"	1613	61,10,30N	C8	"	CYANO
			19,56,39W			
"	"	1727	60,56,38N	D11	"	DNA
			20,10,57W			
"	"	1835	60,44,87N	C9/DI2	"	CYANO/DNA
			20,22,43W			
"	"	2043	60,32,53N	D13	"	DNA
			20,26,86W			
"	"	2105	60,32,64N	C10	"	CYANO
			20,18,05W			
"	"	2208	60,32,66N	D14	"	DNA
			19,53,37W			
"	"	2225	60,33,28N	C11	"	CYANO
			19,47,00W			
"	"	2347	60,33,07N	C12/D15	"	CYANO/DNA
			19,23,75W			
194	13/7/91		61,04,30N		CTD 5m	O2
			20,00,60W			
"	"	"	"	"	" 10m	"
"	"	"	"	"	" 20m	"
"	"	"	"	"	" 50m	"
"	"		61,03,67N	61/194/05	GOFLO 30m	RNA
			19,56,11W			
195	14/7/91	0155	61,04,85N	61/195/01	GOFLO 2m	O2/Ca
			19,40,56W			
"	"	"	"	"	" 10m	Ca
"	"	"	"	"	" 15m	"
"	"	"	"	"	" 20m	"
"	"	"	"	"	" 25m	"
"	"	"	"	"	" 35m	"
"	"	1425	61,10,20N	61/195/09	" 20m	RNA
			19,32,77W			

DAY	DATE	TIME	POSITION	STATION#	SAMPLE	ANALYSIS
196	15/7/91	0130	61,14,87N 19,37,16W	61/196/02	GOFLO 2m	O2/Ca
"	"	"	"	"	" 10m	Ca
"	"	"	"	"	" 15m	Ca
"	"	"	"	"	" 25m	"
"	"	"	"	"	" 35m	"
"	"	1320	61,17,19N 19,48,12W	61/196/08	" 20m	RNA
"	"	1500		196/R1	SURF	"
197	16/7/91	0145	61,13,85N 20,03,83W	61/197/02	GOFLO 2m	O2/Ca
"	"	"	"	"	" 10m	Ca
"	"	"	"	"	" 15m	"
"	"	"	"	"	" 20m	"
"	"	"	"	"	" 25m	"
"	"	"	"	"	" 35m	"
"	"	0620	61,11,10N 20,00,50W	61/197/05	CTD 2m	CYANO
"	"	"	"	"	" 10m	"
"	"	"	"	"	" 20m	"
"	"	"	"	"	" 30m	"
"	"	"	"	"	" 40m	"
"	"	1120	61,11,70N 20,02,70W	61/197/08	GOFLO 20m	RNA
198	17/7/91		61,05,71N 19,50,38W	61/198/01	" 2m	O2
"	"	0800		198/R1/R2	SURF	RNA
"	"	0915		198/R3/4	"	"
"	"	1130		198/R5/6	"	"
"	"	1315		198/R7/8	"	"
"	"	1505		198/R9/10	"	"
"	"	1630		198/R11/R12	"	"

DAY	DATE	TIME	POSITION	STATION#	SAMPLE	ANALYSIS
198	17/7/91	1805	61,08,93N 19,31,62W	198/R13/14	SURF	RNA
"	"	"	"	61/198/09	SAP6a 10m	DNA
"	"	"	"	"	" 20m	"
198	17/7/91	2100		198/R15/16	SURF	RNA
"	"	2330		198/R17/18	"	"
199	18/7/91	0012	61,11,93N 19,33,74W	61/199/03	GOFLO 2m	O2/Ca
"	"	"	"	"	" 5m	Ca
"	"	"	"	"	" 10m	"
"	"	"	"	"	" 15m	"
"	"	"	"	"	" 25m	"
"	"	"	"	"	" 35m	"
"	"	0100		199/R1/2	SURF	RNA
"	"	0400		199/R3/4	"	"
"	"	0650		199/R5/R6	"	"
"	"	0830		199/R7/8	"	"
"	"	0910		199/R9/10	"	"
"	"	1100		199/R11/12	"	"
200	19/7/91	0402	61,21,88N 19,42,06W	61/200/02	GOFLO 2m	O2
"	"	1245	61,13,70N 19,51,23W	61/200/09	" 20m	RNA
"	"	1900		200/R3/4	SURF	"
"	"	1935		7226/7	"	LUG/FORM
"	"	2030		7228/9	"	"
"	"	2125		7230/31	"	"
"	"	2230		7232/7233	"	"
"	"	2340		7234/7235	"	"
"	"	"	"	200/R5/6	"	RNA
201	20/7/91	0010	61,07,74N	61/201/02	GOFLO 2m	O2

DAY	DATE	TIME	POSITION	STATION#	SAMPLE	ANALYSIS
201	20/7/91	0035		7236/7237	SURF	LUG/FORM
"	"	0130		201/R1/2	"	RNA
"	"	0145		7238/7239	"	LUG/FORM
201	20/7/91	0245		7240/7241	SURF	LUG/FORM
"	"	0505		7242/7243	"	"
"	"	0510		201/R1/2	"	RNA
"	"	0730		201/R3/4	"	"
"	"	0930		201/R5/6	"	"
"	"	1130		201/R7/8	"	"
"	"	1235	61,03,80N 19,44,80W	61/201/08	GOFLO 20m	"
"	"	1615		201/R9/10	SURF	"
"	"	1640		7284/7285	"	LUG/FORM
"	"	1845		201/R11/12	"	RNA
"	"	"	"	7286/7287	"	LUG/FORM
"	"	2000		7288/7289	"	"
"	"	2055		7290/7291	"	"
"	"	"	"	201/R13/14	"	RNA
"	"	2210		201/R15	"	"
"	"	"	"	7292/7293	"	LUG/FORM
202	20/7/91	0045	61,08,23	61/202/02	GOFLO 2m	O2
"	"	0115		7294/7295	SURF	LUG/FORM
"	"	"	"	202/R1	"	RNA
"	"	0212		202/R2	"	"
"	"	"	"	7296/7297	"	LUG/FORM
"	"	0300		7298/7299	"	"
"	"	"		202/R3	"	RNA
"	"	0400		202/R4	"	"

DAY	DATE	TIME	POSITION	STATION#	SAMPLE	ANALYSIS
202	20/7/91	0400		7300/7301	SURF	LUG/FORM
"	"	0430		7302/7303	"	"
"	"	0500		7304/7305	"	"
"	"	"	"	202/R5	"	RNA
202	20/7/91	0500		202/R6	SURF	RNA
"	"	"	61,09,50N 19,32,30W	61/202/05	CTD 2m	CYANO
"	"	"	"	"	" 5m	"
"	"	"	"	"	" 10m	"
"	"	"	"	"	" 15m	"
"	"	"	"	"	" 20m	"
"	"	"	"	"	" 25m	"
"	"	"	"	"	" 30m	"
"	"	"	"	"	" 35m	"
"	"	0600		202/R7	"	"
"	"	"	"	7306/7307	"	LUG/FORM
"	"	0700		7308/7309	"	"
"	"	"	"	202/R8	"	RNA
"	"	0800		202/R9	"	"
"	"	"	"	7310/7311	"	LUG/FORM
"	"	1030	61,09,30N 19,35,12W	61/202/08	SAPS	DNA
203	22/7/91	0215	61,15,81N 19,42,28W	61/203/04	GOFLO 2m	O2
"	"	1410	61,40,06N 19,05,61W	203/D1/2/3	SURF	DNA
204	23/7/91	0315	60,41,30N 19,51,34W	61/204/02	GOFLO 2m	O2/Ca
205	24/7/91	0130	62,29,52N 20,02,52W	61/205/01	"	"
"	"	0555	62,28,94N 20,01,35W	205/R1	SURF	RNA
"	"	0743	62,28,07N 19,59,83W	205/R2	"	"
"	"	0900		205/C1	"	CYANO

DAY	DATE	TIME	POSITION	STATION#	SAMPLE	ANALYSIS
205	24/7/91	1015	62,26,22N 20,00,68W	205/R3	SURF	RNA
"	"	1138	62,29,40N 19,58,16W	205/R4	"	"
205	24/7/91	1335	62,29,99N 20,02,38W	205/R5	SURF	RNA
"	"	1550	62,29,69N 20,03,54W	205/R6	"	"
"	"	1742	62,29,75N 19,59,56W	205/R7	"	"
"	"	1835	62,29,24N 19,59,38W	205/D1	"	DNA
"	"	2024	62,28,88N 19,58,77W	205/R8	"	RNA
"	"	2230	62,26,62N 20,00,61	61/205/15	GOFLO 2m	O2/Ca
"	"	2250	62,26,40N 20,00,76W	205/R9	SURF	RNA
206	25/7/91	1554	59,25,53N 19,49,07W	206/D1	"	DNA
"	"	2046	58,34,70N 19,51,45W	206/D2	"	"
"	"	"				

BOFS MICROZOOPLANKTON SAMPLES							
CHARLES DARWIN 61/91							
APSTEIN NETS 20um							
DATE	DEPTH	TIME					
13/7/91	50m	19:00					
14/7/91	70m	18:35					
16/7/91	100m	12:20					
17/7/91	50m	17:20					
19/7/91	50m	0:00					
21/7/91	50m	0:04					
24/7/91	50m	17:30					
DILUTION GRAZING EXPERIMENTS							
NUMBER	DATE	TIME T0	DEPTH	TEMP'C	POSITION		
					N	W	
6	14/7/91	6:00	10m	12.2	61'04.85'	19'40.56'	
7	16/7/91	5:15	10m	12.39	61'13.85'	20'03.83'	
8	18/7/91	4:30	25m	12.62	61'11.93'	19'33.74'	
9	20/7/91	3:00	10m	12.86	61'07.74'	19'52.94	
10	23/7/91	3:15	10m		61'41.30'	19'51.34	
11	24/7/91	5:30	10m	12.23	62'29.52'	20'02.52'	
NAUPLII GRAZING EXPERIMENTS							
NUMBER	DATE	TIME T0	DEPTH	TEMP 'C	POSITION		
					N	W	
1	19/7/91	6:00	10m	12.74	61'21.88'	19'42.06'	
2	21/7/91	4:30	10m	12.82	61'08.15	19'33.83'	
LEVEL1 MICROZOOPLANKTON BIOMASS SAMPLES							
DATE	CAST	DEPTHS	POSITION		FIXATIVE		
			N	W			
14/7/91	61/195/04	2-300m	61'06'	19'36.4'	LUGOLS		
		2-50m			GLUT.		
		2-50m			DAPI		
16/7/91	61/197/04	600-2250m	61'11.1'	20'00.5'	LUGOLS		
	61/197/05	2-300m			LUGOLS		
		2-50m			GLUT		
		2-50m			DAPI		
18/7/91	61/199/05	2-300m	61'14.9'	19'32.1'	LUGOLS		
		2-50m			GLUT		
		2-50m			DAPI		
	61/199/06	600-2250m	61'15.2'	19'13.5'	LUGOLS		
20/7/91	61/201/03	2-300m	61'06.7	19'51.1'	LUGOLS		
		2-50m			GLUT		
		2-40m			DAPI		
24/7/91	61/205/07	2-300m	62'29.5'	19'58.1'	LUGOLS		
		2-50m			GLUT		
		2-50m			DAPI		
	61/205/09	600-1585m	62'29.9'	20'01.6'	LUGOLS		

TABLE 9. Microzooplankton samples.

TABLE 10. Mesozooplankton sampling log

Date	Time	Latitude	Longitude	Depth	Net	Mesh	Fraction	Formalin	Formalin	Formalin	Biomass	Biomass	Biomass	Gut pigmnt	Gut pigmnt	Gut pigmnt
	(gmt)	(deg,min)	(deg,min)					# hauls	split	Sample #	# hauls	split	replicate	# hauls	split	replicate
14/07/91	1400	61,10.2N	19,33.2W	100m	WP-2	200um	>2000	2	Total	CD61/1						
							2000-1000	1	350/500	CD61/2	1	50/500	9002	1	50/500	9005
							1000-500	1	350/500	CD61/3	1	50/500	9003	1	50/500	9006
							500-200	1	350/500	CD61/4	1	50/500	9004	1	50/500	9007
14/07/91	1738	61,10.9N	19,32.5N	50m	Apstein	55um	Total			CD61/5						
14/07/91	2245	61,13.8N	19,37.8W	100m	WP-2	200um	>2000	2	Total	CD61/6						
							2000-1000	1	350/500	CD61/7	1	50/500	9008	1	50/500	9011
							1000-500	1	350/500	CD61/8	1	50/500	9009	1	50/500	9012
							500-200	1	350/500	CD61/9	1	50/500	9010	1	50/500	9013
15/07/91	1220	61,16.9N	19,47.2W	100m	WP-2	200um	>2000	2	Total	CD61/10						
							2000-1000	1	350/500	CD61/11	1	50/500	9014	1	50/500	9017
							1000-500	1	350/500	CD61/12	1	50/500	9015	1	50/500	9018
							500-200	1	350/500	CD61/13	1	50/500	9016	1	50/500	9019
15/07/91	2057	61,15.64N	20,01.41W	50m	Apstein	55um	Total			CD61/14						
15/07/91	2230	61,15.40N	20,04.1W	100m	WP-2	200um	>2000	2	Total	CD61/15						
							2000-1000	1	350/500	CD61/16	1	50/500	9020	1	50/500	9023
							1000-500	1	350/500	CD61/17	1	50/500	9021	1	50/500	9024
							500-200	1	350/500	CD61/18	1	50/500	9022	1	50/500	9025
16/07/91	1220	61,11.66N	2,02.53W	50m	Apstein	55um	Total			CD61/19						
16/07/91	1121	61,11.70N	20,02.2W	100m	WP-2	200um	>2000	4	Total	CD61/21						
							2000-1000	2	450/500	CD61/22	2	10/500	9026	2	10/500	9029
							1000-500	2	350/500	CD61/23	2	50/500	9027	2	50/500	9030
							500-200	2	400/500	CD61/24	2	50/500	9028	2	50/500	9031
16/07/91	2230	61,08.6N	20,05.5W	100m	WP-2	200um	>2000	4	Total	CD61/25						
							2000-1000	2	350/500	CD61/26	2	50/500	9032	2	50/500	9035
							1000-500	2	350/500	CD61/27	2	50/500	9033	2	50/500	9036
							500-200	2	350/500	CD61/28	2	50/500	9034	2	50/500	9037
17/07/91	1240	61,07.81N	19,34.86W	100m	WP-2	200um	>2000	2	Total	CD61/29						
							2000-1000	1	350/500	CD61/30	1	50/500	9038	1	50/500	9041

TABLE 10. Mesozooplankton sampling log

							1000-500	1	350/500	CD61/31	1	50/500	9039	1	50/500	9042
							500-200	1	350/500	CD61/32	1	50/500	9040	1	50/500	9043
17/07/91	1240	61,07,81N	19,34.86W	50m	WP-2	200um	>2000	2	Total	CD61/33						
							2000-1000	1	350/500	CD61/34	1	50/500	9044			
							1000-500	1	350/500	CD61/35	1	50/500	9045	No gut pigments		
							500-200	1	350/500	CD61/36	1	50/500	9046			
17/07/91	1240	61,07.81N	19,34.86W	30m	WP-2	200um	>2000	2	Total	CD61/37						
							2000-1000	1	350/500	CD61/38	1	50/500	9047			
							1000-500	1	350/500	CD61/39	1	50/500	9048	No gut pigments		
							500-200	1	350/500	CD61/40	1	50/500	9049			
17/07/91	1620	61,08.25N	19,34.63W	50m	Apstein	55um	Total			CD61/41						
17/07/91	2318	61,09.73N	19,26.82W	100m	WP-2	200um	>2000	4	Total	CD61/42						
							2000-1000	2	350/500	CD61/43	2	50/500	9050	2	50/500	9053
							1000-500	2	350/500	CD61/44	2	50/500	9051	2	50/500	9054
							500-200	2	350/500	CD61/45	2	50/500	9052	2	50/500	9055
18/07/91	1000	61,16.27N	19,31.92W	50m	Apstein	55um	Total			CD61/46						
18/07/91	1150	61,16.9N	19,31.6W	100m	WP-2	200um	>2000	2	Total	CD61/47						
							2000-1000	1	350/500	CD61/48	1	50/500	9056	1	50/500	9059
							1000-500	1	350/500	CD61/49	1	50/500	9057	1	50/500	9060
							500-200	1	350/500	CD61/50	1	50/500	9058	1	50/500	9061
18/07/91	1150	61,16.9N	19,31.6W	30m	WP-2	200um	>2000	2	Total	CD61/51						
							2000-1000	1	350/500	CD61/52	1	50/500	9062			
							1000-500	1	350/500	CD61/53	1	50/500	9063	No gut pigments		
							500-200	1	350/500	CD61/54	1	50/500	9064			
18/07/91	1729	61,19.6N	19,32.6W	50m	Apstein	55um	Total			CD61/55						
18/07/91	1740	61,19.6N	19,32.6W	100m	WP-2	200um	>2000									
							2000-1000									
							1000-500	No formalin samples			1	50/500	9065			
							500-200				1	50/500	9066	No gut pigments		
											1	50/500	9067			
18/07/91	2231	61,21.5N	19,36.9W	100m	WP-2	200um	>2000	4	Total	CD61/56						

TABLE 10. Mesozooplankton sampling log

							2000-1000	2	350/500	CD61/57	2	50/500	9068	2	50/500	9071
							1000-500	2	350/500	CD61/58	2	50/500	9069	2	50/500	9072
							500-200	2	350/500	CD61/59	2	50/500	9070	2	50/500	9073
19/07/91	1230	61,14.37N	19,51.90W	50m	Apstein	55um	Total			CD61/60						
19/07/91	1142	61,15.N	19,52.4W	100m	WP-2	200um	>2000	1	Total	CD61/61						
							2000-1000	1	350/500	CD61/62	1	50/500	9074	1	50/500	9077
							1000-500	1	350/500	CD61/63	1	50/500	9075	1	50/500	9078
							500-200	1	350/500	CD61/64	1	50/500	9076	1	50/500	9079
19/07/91	1220	61,15N	19,52.4W	30m	WP-2	200um	>2000									
							2000-1000				4	50/500	9080			
							1000-500	No formalin samples			4	50/500	9081	No gut pigments		
							500-200				4	50/500	9082			
19/07/91	1700	61,12.18N	19,52.13W	60m	Apstein	55um	Total			CD61/65						
19/07/91	2228	61,08.3N	19,50.5W	100m	WP-2	200um	>2000	2	Total	CD61/66						
							2000-1000	1	350/500	CD61/67	1	50/500	9085	1	50/500	9086
							1000-500	1	350/500	CD61/68	1	50/500	9084	1	50/500	9087
							500-200	1	350/500	CD61/69	1	50/500	9083	1	50/500	9088
20/07/91	'0301	61,06.75N	19,51.15W	100m	WP-2	200um	>2000	2	Total	CD61/70						
							2000-1000	1	350/500	CD61/71	1	50/500	9089	1	50/500	9092
							1000-500	1	350/500	CD61/72	1	50/500	9090	1	50/500	9093
							500-200	1	350/500	CD61/73	1	50/500	9091	1	50/500	9094
20/07/91	'0717	61,04.5N	19,47.8W	100m	WP-2	200um	>2000	2	Total	CD61/74						
							2000-1000	1	350/500	CD61/75	1	50/500	9095	1	50/500	9098
							1000-500	1	350/500	CD61/76	1	50/500	9096	1	50/500	9099
							500-200	1	350/500	CD61/77	1	50/500	9097	1	50/500	9100
20/07/91	1138	61,03.1N	19,44.8W	100m	WP-2	200um	>2000	2	Total	CD61/78						
							2000-1000	1	350/500	CD61/79	1	50/500	9101	1	50/500	9104
							1000-500	1	350/500	CD61/80	1	50/500	9102	1	50/500	9105
							500-200	1	350/500	CD61/81	1	50/500	9103	1	50/500	9106
20/07/91	1819	61,03.30N	19,34.72W	100m	WP-2	200um	>2000	2	Total	CD61/82						
							2000-1000	1	350/500	CD61/83	1	50/500	9107	1	50/500	9110

TABLE 10. Mesozooplankton sampling log

							1000-500	1	350/500	CD61/84	1	50/500	9108	1	50/500	9111
							500-200	1	350/500	CD61/85	1	50/500	9109	1	50/500	9112
20/07/91	2248	61,04.8N	19,26.7W	100m	WP-2	200um	>2000	2	Total	CD61/86						
							2000-1000	1	350/500	CD61/87	1	50/500	9113	1	50/500	9116
							1000-500	1	350/500	CD61/88	1	50/500	9114	1	50/500	9117
							500-200	1	350/500	CD61/89	1	50/500	9115	1	50/500	9118
21/07/91	1547	61,01.4N	19,40.5W	100m	WP-2	200um	>2000	2	Total	CD61/90						
							2000-1000	1	350/500	CD/61/91	1	50/500	9119	1	50/500	9122
							1000-500	1	350/500	CD61/92	1	50/500	9120	1	50/500	9123
							500-200	1	350/500	CD61/93	1	50/500	9121	1	50/500	9124
21/07/91	1600	61,01.4N	19,40.5W	50m	Apstein	55um	Total			CD61/94						
21/07/91	1930	61,05.6N	19,40.05W	100m	WP-2	200um	>2000	2	Total	CD61/95						
							2000-1000	1	350/500	CD61/96	1	50/500	9125	1	50/500	9128
							1000-500	1	350/500	CD61/97	1	50/500	9126	1	50/500	9129
							500-200	1	350/500	CD61/98	1	50/500	9127	1	50/500	9130
21/07/91	1930	61,05.6N	19,40.05W	50m	Apstein	55um	Total			CD61/99						
21/07/91	2235	61,10.43N	19,41.53W	100m	WP-2	200um	>2000	2	Total	CD61/100						
							2000-1000	1	350/500	CD61/101	1	50/500	9131	1	50/500	9134
							1000-500	1	350/500	CD61/102	1	50/500	9132	1	Total	9135
							500-200	1	350/500	CD61/103	1	50/500	9133	1	Total	9136
21/07/91	2250	61,10.43N	19,41.53W	50m	Apstein	55um	Total			CD61/104						
22/07/91	'0140	61,15.8N	19,41.8W	100m	WP-2	200um	>2000	2	Total	CD61/105						
							2000-1000	1	350/500	CD61/106	1	50/500	9137	1	50/500	9140
							1000-500	1	350/500	CD61/107	1	50/500	9138	1	50/500	9141
							500-200	1	350/500	CD61/108	1	50/500	9139	1	50/500	9142
22/07/91	'0150	61,15.8N	19,41.8W	50m	Apstein	55um	Total			CD61/109						
22/07/91	'0600	61,21.30N	19,42.05W	100m	WP-2	200um	>2000	2	Total	CD61/110						
							2000-1000	1	350/500	CD61/111	1	50/500	9143	1	50/500	9146
							1000-500	1	350/500	CD61/112	1	50/500	9144	1	50/500	9147
							500-200	1	350/500	CD61/113	1	50/500	9145	1	50/500	9148

TABLE 10. Mesozooplankton sampling log

22/07/91	0616	61,21.30N	19,42.05W	50m	Apstein	55um	Total			CD61/114							
23/07/91	2250	62,29.55N	20,00.12W	100m	WP-2	200um	>2000	2	Total	CD61/115							
							2000-1000	1	950/1000	CD61/116	1	5/1000	9149	1	50/500	9152	
							1000-500	1	950/1000	CD61/117	1	5/1000	9150	1	50/500	9153	
							500-200	1	350/500	CD61/118	1	50/350	9151	1	50/500	9154	
23/07/91	2257	62,29.55N	20,00.12W	50m	Apstein	55um	Total			CD61/119							
24/07/91	0725	62,28.19N	19,59.96W	100m	WP-2	200um	>2000										
							2000-1000				1	5/1000	9161	1	50/500	9158	
							1000-500	No formalin samples			1	5/1000	9162	1	50/500	9159	
							500-200				1	50/500	9163	1	50/500	9160	
24/07/91	0740	62,28.19N	19,59.96W	30m	WP-2	200um	>2000										
							2000-1000				1	5/1000	9155	1	50/500	9164	
							1000-500	No formalin samples			1	5/1000	9156	1	50/500	9165	
							500-200				1	50/500	9157	1	50/500	9166	
24/07/91	1230	62,29.93N	20,01.63W	100m	WP-2	200um	>2000	2	Total	CD61/120							
							2000-1000	1	950/1000	CD61/121	1	10/1000	9167	1	50/500	9170	
							1000-500	1	950/1000	CD61/122	1	10/1000	9168	1	50/500	9171	
							500-200	1	350/500	CD61/123	1	50/500	9169	1	50/500	9172	
24/07/91	1241	62,29.93N	20,01.63W	200m	WP-2	200um	>2000	2	Total	CD61/124							
							2000-1000	1	950/1000	CD61/125	1	10/1000	9173	1	50/500	9176	
							1000-500	1	950/1000	CD61/126	1	10/1000	9174	1	50/500	9177	
							500-200	1	350/500	CD61/127	1	50/500	9175	1	50/500	9178	
24/07/91	1750	62,29.64N	19,59.67W	50m	Apstein	55um	Total			CD61/128							
24/07/91	2205	62,26.79N	20,00.30W	200m	WP-2	200um	>2000	2	Total	CD61/129							
							2000-1000	1	950/1000	CD61/130	1	10/1000	9179	1	50/500	9182	
							1000-500	1	950/1000	CD61/131	1	10/1000	9180	1	50/500	9183	
							500-200	1	350/500	CD61/132	1	50/500	9181	1	50/500	9184	

TABLE 11. Sediment trap log

Deployment no	Start day	Start time (rig away)	End day	End time (rig recovered)	Start Lat (N)	Start Long(W)	Lat(N)	End Long(W)	Depth	In time	out time	Sample # (Formalin)	Sample # (Frozen)	Remarks
1	13/07/91	1010			6104.90N	2000.81W			50m	'0943	'0750	61S/1P	61S/1F	No baffles
			15/07/91	'0730			6110.47N	1943.96W	100m	'0928	'0756	61S/2P	61S/2F	No baffles
									200m	'0914	'0803	61S/3P	61S/3F	No baffles
									300m	'0902	'0810	61S/4P	61S/4F	
2	15/07/91	'0923			6117.88N	1945.06W			50m	'0956	'0910	61S/5p	61S/5F	No baffles
			17/07/91	'0855			6107.9N	1944.2W	100m	'0944	'0915	61S/6P	61S/6F	No baffles
									200m	'0935	'0924	61S/7P	61S/7F	No baffles
									300m	'0925	'0930	61S/8P	61S/8F	
3	17/07/91	'1040			6106.0N	1945.5W			50m	'1021	'0730	61S/9P	61S/9F	No baffles
			19/07/91	'0712			6116.8N	1946.0W	100m	'1012	'0732	61S/10P	61S/10F	No baffles
									200m	'1003	'0744	61S/11P	61S/11F	No baffles
									300m	'0955	'0751	61S/12P	61S/12F	
4	19/07/91	'0845			6114.8N	1948.5W			50m	'0830	'0732	61S/13P	61S/13F	No baffles
			21/07/91	'0714			6111.2	1935.2	100m	'0822	'0738	61S/14P	61S/14F	No baffles
									200m	'0812	'0745	61S/15P	61S/15F	No baffles
									300m	'0806	'0752	61S/16P	61S/16F	
5	21/07/91	.'1012			6109.4	1934.6			50m	'1002	'1912	61S/17P	61S/17F	Rig damaged by storm
			22/07/91	'1905			6109.62	1944.18	100m	'0952	'1922	61S/18P	61S/18F	Dahn buoy missing
									200m	'0946	'1930	61S/19P	61S/19F	on recovery
									300m	'0941	'1936	61S/20P	61S/20F	

TABLE 12. : Stand-Alone Pump (SAPS) deployments. Subsamples taken for lipid biomarkers, molecular genetics, pigments, stable carbon and nitrogen isotopes, and particulate carbon/nitrogen, calcium and barium. All filters are GFF except where noted. * denotes size fractionated sample using 53 um Nitex prefilter and GFF base filter.

DATE	STATION#	START TIME	SAP CAST#	DEPTHS	L filtered	Subsamples taken (a)
13.7.91	61/194/06	1615	1	20	290.4	A,B
	61 03.1N			50	804.8	A,B
	19 52.8W			100	1073.8	A,B
				100*	1244.2	A,B
14.7.91	61/195/10	1500	2	10	259.4	A,B,C,D,E,F,G
	61 10.3N			25	364.2	A,B,C,D,E,F,G
	19 33.1W			35	525.4	A,B,C,D,E,F,G
				50	986.2	A,B,C,D,E,F,G
				50*	1153.4	A,B,C,D,E,F,G
15.7.91	61/196/09	1338	3	15	199.2	A,B,C,D,F
	61 16.9N			15*	223.3	A,B,F,G
	19 47.1W					
15.7.91	61/196/10	1840	4	100	927.8	A,B,D,E,F,G
	61 15.5N			200	2025.4	A,B,D,E,F,G
	20 03.8W			400	1809.4	A,B,D,E,F,G
				600 (b)	2893.6	no filter
				800	1722.0	A,B,D,E,F,G
				900**	1.8	A,B,D,E,F,G
				1000	1590.4	A,B,D,E,F,G
16.7.91	61/197/10	1240	5	200	2126.5	A,B,F
	61 11.6N			385*	2293.2	A,B,F
	20 02.5W			400	1914.4	A,B,F
				500	2095.0	A,B,F
				585*	2012.6	A,B,F
				600	1809.6	A,B,D,E,F,G
				700	1741.4	A,B,F
17.7.91	61/198/09	1805	6a	10+	53.7	NONE
				20+	126.8	NONE
17.7.91	61/198/10	2000	6b	16	264.1	A,B,C,F
	61 09.5N			26	424.5	A,B,C,F
	19 28.1W			51	979.1	A,B,F
				66	1086.0	A,B,F
				91	1181.2	A,B,F
				116	1073.6	A,B,F
				116*	1207.9	A,B,F

Table 12 continued

DATE	STATION#	START TIME	SAP CAST#	DEPTHS	L filtered	Subsamples taken (a)
18.7.91	61/199/10	1225	7a	20**	0.5	A,B,F,G
	61 18.3N			50	706.4	A,B,C,F,G
	19 31.7W			50*	798.0	A,B,F,G
18.7.91	61/199/11	1800	7b	1100	2183.2	A,B,F,G
	61 20.2N			1350	2001.0	A,B,F,G
	19 33.9W			1600	40.9	A,B
				1850	1828.2	A,B,F,G
				2100	1642.4	A,B,F,G
20.7.91	61/201/10	1400	8	865	2147.9	A,B,F,G
	61 03.1N			1115	2186.6	A,B,F,G
	19 35.9W			1465**	10.1	A,B,F,G
				1665	12.0	NONE
				1815	2286.0	A,B,F,G
				1965	2058.8	A,B,F,G
				2115	1617.4	A,B,F,G
				2390(c)	1518.3	A,B,F,G
21.7.91	61/202/08	1030	9	10+	65.6	NONE
	61 09.4N			22	254.8	A,B,C,D,F
	19 34.9W			35	308.0	A,B,C,F
				45	365.2	A,B,C,F
				60	415.2	A,B,F
24.7.91	61/205/04	425	10	100++	362.4	NONE
	62 27.5N			200	1817.4	A,B,F,G
	20 01.5W			400	2077.6	A,B,F,G
				600	2018.1	A,B,F,G
				900	1853.6	A,B,F,G
				1200	1461.2	A,B,F,G
24.7.91	61/205/13	1915	11	20	210.4	A,B,C,D,F,G
	62 29.1N			35	446.0	A,B,C,D,F,G
	19 59.3W			50(d)	656.6	A,B
				70(d)	843.6	A,B
				100(d)	1028.4	A,B
				100*(d)	1090.6	A,B

**: dipped blank

.+: 2.0 um polycarbonate prefilter, 0.6 um polycarbonate base filter

.++: 0.45 um Asypor filter

(a) GFF filters only. A: Particulate carbon/nitrogen; B: Lipids, C: molecular genetics; D: pigments; E: Stable isotopes; F: Particulate Ca; G: Particulate Ba

(b) Forgot to load filter so this is maximum filtration of SAP pumped for 3 hours

(c) Nepheloid layer, 30-60 mab.

(d) Recovered prematurely so some filtration of shallower water.

TABLE 13.: Surface water filtrations from CTD bottles and nontoxic supply (4 m depth). For each depth listed, filtrations were made for particulate carbon/nitrogen; lipid biomarkers, molecular genetic studies, and pigments. Samples were also taken for species composition, and innoculations were made for coccolithophorid cell isolations and cultures. See station log for locations.

Date	CTD Station	Depths	Comment
11.7.91	61/192/01	4, 10, 30, 40	
12.7.91	61/193/01	4, 10, 25, 40	First "bowtie" survey:
	61/193/02	4, 10, 25, 40	
	61/193/03	10, 20, 30	
	61/193/04	4, 10, 20, 40	
	61/193/05	4, 10, 30, 40	
22.7.91	61/203/08	4, 10, 20, 40	Second "bowtie" survey:
	61/203/09	4, 10, 20, 30	
	61/203/10	4, 10, 25, 40	
23.7.91	61/204/01	4, 8, 25, 40	
	61/204/03	4, 10, 25, 40	

TABLE 14. : Underway filtrations of nontoxic supply for lipid biomarkers, pigments, and molecular genetic studies. See underway log for locations.

JDAY	DATE	GMT TIME	TEMP (C)	COMMENT
188	7.7.91	1200	14.40	shakedown
193	12.7.91	'0635	12.15	**First "bowtie" survey:**
		1000	12.37	Filtration for lipids, molecular
		1135	12.2?	genetics, pigments conducted at
		1308	12.15	same time as sample collection for
		1435	12.19	POC/PON and species composition.
		1610	12.45	
		1735	12.16	
		2135	12.34	
		2300	12.61	
194	13.7.91	'0200	12.10	
206	25.7.91	1900	13.25	**N-S transect along 20 W :**
		2000	13.27	No pigment samples collected
		2100	13.27	on transect.
207	26.7.91	'0800	13.38	
		'0900	12.88	
		1000	13.83	
		1100	13.93	
		1200	13.92	
		1300	13.91	
		1400	14.01	

* Culture innoculations made.

TABLE 15. : Locations of Multicorer deployments. Approximate water depth from 10 kHz Simrad acoustic system.

DATE	STATION	LAT	LONG	DEPTH (m)
16.7.91	61/197/06	61 10.72 N	20 02.30 W	2348
17.7.91	61/198/07	61 07.13 N	19 37.74 W	2450
20.7.91	61/200/	61 13.85 N	19 52.18 W	2360
24.7.91	61/205/10	62 30.02 N	19 59.87 W	1615

TABLE 16. CD61 Sampling Events log

EVENT NO	EVENT DATE	START DAY | TIME	TYPE OF DEPLOYMENT	REMARKS	END DAY | TIME
61/192/01	11/07/91	192/0913	CTD 200m	Test CTD Station:bottle depths 200,100,50,40,30, 25,10 and 2m	192/0941
61/193/01	12/7/91	193/0439	CTD 300m	Bottle depths:40,25,20 and 10m	193/0505
61/193/02	12/7/91	193/0837	CTD 300m	Bottle depths:60,40,25,20 and 10m	193/0905
61/193/03	12/7/91	193/1220	CTD 300m	Bottle depths:300,50,40,30,20 and 10m	193/1255
61/193/04	12/7/91	193/1949	CTD 300m	Bottle depths:300,40,30,20 and 10m	193/2236
61/193/05	12/7/91	193/2328	CTD 300m	Bottle depths: 300,40,30,20 and 10m	194/0011
61/194/01	13/07/91	194/0432	CTD 300m	Bottle depths: 300,100,75,50,40,30,20 and 10m	194/0505
61/194/02	13/07/91	194/0850	SEDIMENT TRAP	1st sediment trap deployment : S194/01	194/1010
61/194/03	13/07/91	194/1106	CTD 1000m	Bottle depths :1000,100,50,20,10 and 5m	194/1211
61/194/04	13/07/91	194/1308	CTD 300m	Level-1,bottle depths:300,200,150,125,100,75,50, 40,30,20,10 and 5m	194/1350
61/194/05	13/07/91	194/1450	GOFLO	Bottle depth :30m	194/1520
61/194/06	13/07/91	194/1715	SAP 1	SAP depths:20,50 and 100m	194/2045
61/194/07	13/07/91	194/1900	APSTEIN NET	55um Apstein net :50m	194/1910
61/194/08	13/07/91	194/2240	WP-2 NET	WP-2 NET ;100m	194/2320
61/195/01	14/07/91	195/0155	GOFLO	Bottle depths:2,5,10,15,20,25,30,35,40 and 75m	195/0349
61/195/02	14/07/91	195/0413	PROD RIG	production rig deployed for :14C,45Ca AND 15N	195/0420
61/195/03	14/07/91	195/0506	CTD 300m	No bottles	195/0530
61/195/04	14/07/91	195/0537	CTD 300m	Level-1,bottle depths:300,200,150,125,100,75,50, 40,30,20,10 and 5m	195/0616
61/195/05	14/07/91	195/0712	CTD 300m	Level-1,bottle depths:300,200,150,125,100,75,50, 40,30,20,10 and 5m	195/0850
61/195/06	14/07/91	195/0855	CTD 2350m	Level 1 bottle depths: 2350,2250,1500,1000,900,750, 600 and 400m	
61/195/07	14/07/91	195/1215	CTD 300m	Bottle depths :300,50,40,35,25, and 10m	
61/195/08	14/07/91	195/1400	WP-2 NET	WP-2 NET ;100m	195/1430
61/195/09	14/07/91	195/1435	GOFLO	Bottle depth :20m	195/1440
61/195/10	14/07/91	195/1502	SAP 2	SAP depths:10,25,35 and 50m	195/1923
61/195/11	14/07/91	195/1725	APSTEIN NET	20um Apstein net :70m	195/1748
61/195/12	14/07/91	195/1738	APSTEIN NET	55um Apstein net :50m	195/1748
61/195/13	14/07/91	195/2245	WP-2 NET	WP-2 NET ;100m	195/2315
61/196/01	15/07/91	196/0030	PROD RIG	Recovery of production rig	196/0045
61/196/02	15/07/91	196/0130	GOFLOS	Bottle depths:2,5,10,15,20,25,30,35,40 and 75m	196/0315
61/196/03	15/07/91	196/0324	PROD RIG	Deployment of production rig	196/0334
61/196/04	15/07/91	196/0515	CTD 300m	No bottles	
61/196/05	15/07/91	196/0730	SEDIMENT TRAP	2nd sediment trap deployment : S196/02	196/1015
61/196/06	15/07/91	196/1144	CTD 300m	Level-1,bottle depths:300,200,150,125,100,75,50, 40,30,20,10 and 5m	196/1215
61/196/07	15/07/91	196/1220	WP-2 NET	WP-2 NET ;100m	196/1250
61/196/08	15/07/91	196/1255	GOFLO	Bottle depth:20m	196/1320
61/196/09	15/07/91	196/1338	SAP 3	SAP depths:15m	196/1615
61/196/10	15/07/91	196/1500	NUT/PUMP/PROF	Nutrient pump profile :40m	
61/196/11	15/07/91	196/1840	SAP 4	SAP depths:100,200,400,800,900 and 1000m	197/0020
61/196/12	15/07/91	196/2057	APSTEIN NET	55um Apstein net :50m	196/2100
61/196/13	15/07/91	196/2230	WP-2 NET	WP-2 NET ;100m	196/2245
61/197/01	16/07/91	197/0045	PROD RIG	Recovery of production rig	197/0110
61/197/02	16/07/91	197/0145	GOFLOS	Bottle depths:2,5,10,15,20,25,30,35,40 and 75m	197/0300

TABLE 16. CD61 Sampling Events log

61/197/03	16/07/91	197/0315	PROD RIG	Deployment of production rig	197/0342
61/197/04	16/07/91	197/0415	CTD 2350m	Level 1 bottle depths: 2350,2250,1500,1000,900,750,	197/0555
				600 and 400m	
61/197/05	16/07/91	197/0620	CTD 300m	Level-1,bottle depths:300,200,150,125,100,75,50,	197/0646
				40,30,20,10 and 5m	
61/197/06	16/07/91	197/0725	MULTICORER	Multicorer deployment	197/0925
61/197/07	16/07/91	197/0940	CTD 300m	CTD 300: bottle depths:300,25,20 and 2m	197/1005
61/197/08	16/07/91	197/1112	GOFLO	Bottle depth:20m	197/1120
61/197/09A	16/07/91	197/1121	WP-2 NET	WP-2 NET ;100m	197/1140
61/197/09B	16/07/91	197/1220	APSTEIN NET	55um Apstein net :50m	197/1230
61/197/10	16/07/91	197/1240	SAP 5	SAP depths:200,385,400,500,585,600 and 700m	197/1820
61/197/11	16/07/91	197/1705	CTD 300m	No bottles	197/1716
61/197/12	16/07/91	197/2230	WP-2 NET	WP-2 NET ;100m	197/2300
61/197/13	16/07/91	197/2301	CTD 300m	No bottles	197/2317
61/197/14	16/07/91	197/2330	PROD RIG	Recovery of production rig	197/2355
61/198/01	17/07/91	198/0030	GOFLOS	Bottle depths:2,5,10,15,20,25,30,35,40 and 75m	198/0140
61/198/02	17/07/91	198/0200	PROD RIG	Deployment of production rig	198/0211
61/198/03	17/07/91	198/0310	CTD 300m	No bottles	198/0330
61/198/04/A	17/07/91	198/0855	SEDIMENT TRAP	3rd sediment trap deployment : S198/03	198/1040
61/198/04/B	17/07/91	198/1203	CTD 300m	Level-1,bottle depths:300,200,150,125,100,75,50,	198/1235
				40,30,20,10 and 5m	
61/198/05	17/07/91	1981240	WP-2 NET	WP-2 NET ;100m	198/1307
61/198/06	17/07/91	198/1353	MULTICORER	Multicorer deployment	
61/198/07	17/07/91	198/1620	APSTEIN NETS	55um and 20um Apstein nets:100 and 50m	198/1635
61/198/08	17/07/91	198/1705	CTD 300m	CTD 300: bottle depth: 25m	198/1725
61/198/09	17/07/91	198/1805	SAP'S 6A	SAP depths:10 and 20m	198/1855
61/198/10	17/07/91	198/2000	SAP'S 6B	SAP depths:16,26,51,66,91,116 and 116m (SF)	198/2330
61/198/11	17/07/91	198/2318	WP-2 NET	WP-2 NET ;100m	198/2339
61/198/12	17/07/91	198/2345	CTD 300m	No bottles	199/0006
61/199/01	18/07/91	199/0012	PROD RIG	Recovery of production rig	
61/199/02	18/07/91	199/0114	GOFLOS	Bottle depths:2,5,10,15,20,25,30,35,40 and 75m	199/0230
61/199/03	18/07/91	199/0240	PROD RIG	Deployment of production rig	199/0255
61/199/04	18/07/91	199/0330	CTD 300m	No bottles	199/0350
61/199/05	18/07/91	199/0526	CTD 300m	Level-1,bottle depths:300,200,150,125,100,75,50,	199/0550
				40,30,20,10 and 5m	
61/199/06	18/07/91	199/0708	CTD 2350m	Level 1 bottle depths: 2350,2250,1500,1000,900,750,	
				600 and 400m	
61/199/07	18/07/91	199/1000	APSTEIN NET	55um Apstein net :50m	199/1020
61/199/08	18/07/91	199/1113	CTD 300m	No bottles	199/1145
61/199/09	18/07/91	199/1150	WP-2 NET	WP-2 NET ;100m	199/1230
61/199/10	18/07/91	199/1225	SAP 7A	SAP depth:50m	199/1445
61/199/11	18/07/91	199/1654	CTD 300m	Bottle depths:35,30,25,20,15,10 and 5m	199/1720
61/199/12	18/07/91	199/1729	APSTEIN NET	55um Apstein net :50m	199/1732
61/199/13	18/07/91	199/1740	WP-2 NET	WP-2 NET ;100m	199/1745
61/199/14	18/07/91	199/1810	GOFLO	Bottle depth:25m	
61/199/15	18/07/91	199/1900	SAP 7B	SAP depths:1100,1350,1600,1850 and 2100m	200/0225
61/199/16	18/07/91	199/2231	WP-2 NET	WP-2 NET ;100m	199/2256
61/199/17/A	18/07/91	199/2258	APSTEIN NET	55um Apstein net :50m x 2	199/2310
61/199/17/B	18/07/91	199/2316	CTD 300m	No bottles	199/2333
61/200/01	19/07/91	200/0300	PROD RIG	Recovery of production rig	200/0325
61/200/02	19/07/91	200/0402	GOFLOS	Bottle depths:2,5,10,15,20,25,30,35,40 and 75m	200/0525
61/200/03	19/07/91	200/0531	PROD RIG	Deployment of production rig	200/0550
61/200/04	19/07/91	200/0553	CTD 300m	No bottles	200/0630

TABLE 16. CD61 Sampling Events log

61/200/05	19/07/91	200/0712	SEDIMENT TRAP	4th sediment trap deployment : S198/03	200/1050
61/200/06	19/07/91	200/1100	CTD 300m	Level-1,bottle depths:300,200,150,125,100,75,50,	200/1133
				40,30,20,10 and 5m	
61/200/07	19/07/91	200/1135	NUT/PUMP/PROF	Nutrient pump profile :40m :equipment failed	200/1200
61/200/08	19/07/91	200/1142	WP-2 NET	WP-2 NET ;100m	200/1200
61/200/09	19/07/91	200/1230	APSTEIN NET	55um Apstein net :50m	200/1235
61/200/10	19/07/91	200/1230	GOFLO	Bottle depth:20m	200/1245
61/200/11	19/07/91	200/1315	MULTICORER	Multicorer deployment	200/1534
61/200/12/A	19/07/91	200/1645	APSTEIN NET	55um Apstein net :50m	200/1700
61/200/12/B	19/07/91	200/1657	CTD 300m	No bottles	200/1720
61/200/14	19/07/91	200/2228	WP-2 NET	WP-2 NET ;100m	200/2243
61/200/15	19/07/91	200/2247	CTD 300m	No bottles	200/2306
61/201/01	20/07/91	201/0010	GOFLOS	Bottle depths:2,5,10,15,20,25,30,35,40 and 75m	201/0117
61/201/02	20/07/91	201/0140	PROD RIG	Deployment of production rig	201/0155
61/201/03	20/07/91	201/0301	WP-2 NET	WP-2 NET ;100m	201/0315
61/201/04	20/07/91	201/0324	CTD 300m	Level-1,bottle depths:300,200,150,125,100,75,50,	201/0355
				40,30,20,10 and 5m	
61/201/06/A	20/07/91	201/0458	CTD 2350m	Level 1 bottle depths: 2350,2250,1500,1000,900,750,	201/0635
				600 and 400m	
61/201/06/B	20/07/91	201/0717	WP-2 NET	WP-2 NET ;100m	201/0730
61/201/07	20/07/91	201/1110	CTD 300m	No bottles	201/1130
61/201/08	20/07/91	201/1138	WP-2 NET	WP-2 NET ;100m	201/1220
61/201/09	20/07/91	201/1230	GOFLO	Bottle depth:20m	201/1235
61/201/10	20/07/91	201/1400	SAP 8	AP depths:865,1115,1465,1665,1815,1965,2115,2390	201/2230
61/201/11	20/07/91	201/1742	CTD 300m	Bottle depths:300,40,20,10 and 2m	201/1815
61/201/12	20/07/91	201/1816	WP-2 NET	WP-2 NET ;100m	201/1830
61/201/13	20/07/91	201/2248	WP-2 NET	WP-2 NET ;100m	201/2259
61/201/14	20/07/91	201/2300	APSTEIN NET	55um Apstein net :50m	201/2326
61/201/15	20/07/91	201/2335	CTD 300m	No bottles	201/2351
61/202/01	21/07/91	202/0000	PROD RIG	Recovery of production rig	202/0025
61/202/02	21/07/91	202/0045	GOFLOS	Bottle depths:2,5,10,15,20,25,30,35,40 and 75m	202/0235
61/202/03	21/07/91	202/0240	APSTEIN NET	55um Apstein net :50m x 2	202/0253
61/202/04	21/07/91	202/0345	CTD 300m	No bottles	202/0415
61/202/05	21/07/91	202/0500	CTD 100m	Bottle depths:50,45,40,35,30,25,20,15,10,5 and 2m	202/0525
61/202/06	21/07/91	202/0714	SEDIMENT TRAP	Sediment trap recovery	202/0752
61/202/07	21/07/91	202/0940	SEDIMENT TRAP	5th sediment trap deployment : S198/03	202/1002
61/202/08	21/07/91	202/1030	SAP 8	SAP depths:10,22,35,45 and 60m	202/1135
61/202/09	21/07/91	202/1357	CTD 2375m	Bottle depth:2375m	202/1539
61/202/10	21/07/91	202/1547	WP-2 NET	WP-2 NET ;100m	202/1553
61/202/11	21/07/91	202/1600	APSTEIN NET	55um Apstein net :50m	202/1610
61/202/12	21/07/91	202/1735	CTD 2370m	Bottle depth:2370m	202/1918
61/202/13	21/07/91	202/1930	WP-2 NET	WP-2 NET ;100m	202/1945
61/202/14	21/07/91	202/1945	APSTEIN NET	55um Apstein net :50m	202/1950
61/202/15	21/07/91	202/2050	CTD 2363m	Bottle depths:2363,1600 and 600m	202/2235
61/202/16	21/07/91	202/2235	WP-2 NET	WP-2 NET ;100m	202/2245
61/202/17	21/07/91	202/2245	APSTEIN NET	55um Apstein net :50m	202/2255
61/203/01	22/07/91	203/0010	CTD 2340m	Bottle depth:2340m	203/0135
61/203/02	22/07/91	203/0140	WP-2 NET	WP-2 NET ;100m	203/0150
61/203/03	22/07/91	203/0150	APSTEIN NET	55um Apstein net :50m	203/0155
61/203/04	22/07/91	203/0215	GOFLOS	Bottle depths:2,5,10,15,20,25,30,35,40 and 75m	
61/203/05	22/07/91	203/0429	CTD 2300	Bottle depth:2320m	203/0555
61/203/06	22/07/91	203/0600	WP-2 NET	WP-2 NET ;100m	203/0610
61/203/07	22/07/91	203/0614	APSTEIN NET	55um Apstein net :50m	203/0618

TABLE 16. CD61 Sampling Events log

61/203/08	22/07/91	203/0908	CTD 300	Bottle depths:40,20 and 10m	203/0940
61/203/09	22/07/91	203/1330	CTD 300	Bottle depths:300,150,100,60,50,40,30,20 and 10m	203/1407
61/203/10	22/07/91	203/1726	CTD 300	Bottle depths:300,40,25 and 10m	203/1756
61/203/11	22/07/91	203/1905	SEDIMENT TRAP	Final sediment trap recovery	203/1938
61/204/01	23/07/91	204/0020	CTD 300	Bottle depths:40,25 and 10m	204/0046
61/204/02	23/07/91	204/0315	GOFLOS	Bottle depths:2,5,10,15,20,25,30 and 35m	204/0345
61/204/03	23/07/91	204/0519	CTD 300	Bottle depths:40,25 and 10m	204/0544
61/204/04	23/07/91	204/0916	CTD 2360m	Bottle depth:2360m	204/1045
61/204/05	23/07/91	204/1250	CTD 2200m	Bottle depth:2222m	204/1415
61/204/06	23/07/91	204/2025	CTD 300m	Level-1,bottle depths:300,200,150,125,100,75,50,	204/2055
				40,30,20,10 and 5m	
61/204/07	23/07/91	204/2123	CTD 2350m	evel 1 bottle depths: 1600,1000,900,750,600 and 400r	204/2240
61/204/08	23/07/91	204/2250	WP-2 NET	WP-2 NET ;100m	204/2257
61/204/09	23/07/91	204/2257	APSTEIN NET	55um Apstein net :50m	204/2305
61/205/01	24/07/91	205/0130	GOFLOS	Bottle depths:2,5,10,15,20,25,30,35,40 and 75m	205/0230
61/205/02	24/07/91	205/0300	CTD 300m	No bottles	325
61/205/03	24/07/91	205/0330	SAP 9	SAP depths:100,200,400,600,900 and 1200m	205/0950
61/205/04	24/07/91	205/0540	GOFLO	Bottle depth:100m	205/0546
61/205/05	24/07/91	205/0725	WP-2 NET	WP-2 NET ;100m	205/0740
61/205/06	24/07/91	205/0740	WP-2 NET	WP-2 NET ;30m	205/0755
61/205/07	24/07/91	205/1126	CTD 300m	Level-1,bottle depths:300,200,150,125,100,75,50,	205/1205
				40,30,20,10 and 5m	
61/205/08	24/07/91	205/1230	WP-2 NET	WP-2 NET ;100m	205/1245
61/205/09	24/07/91	205/1300	CTD 1600m	evel 1 bottle depths: 1600,1000,900,750,600 and 400r	205/1445
61/205/10	24/07/91	205/1526	MULTICORER	Multicorer deployment	205/1725
61/205/11	24/07/91	205/1730	APSTEIN NETS	20 and 55um Apstein net :50m and 30m	205/1745
61/205/12	24/07/91	205/1755	CTD 300m	Bottle depths:300,40,20,10 and 2m	205/1820
61/205/13	24/07/91	205/1850	SAP 10	Sap depths 20,35,50,75 and 100m	205/2130
61/205/14	24/07/91	205/2305	WP-2 NET	WP-2 NET ;100m	205/2325
61/205/15	24/07/91	205/2330	GOFLOS	Bottle depths:2,5,10,15,20,25,30 and 35m	206/0045

TIME	LATITUDE	LONGITUDE
91 187 06:46:20	55 28.68N	4 43.97W
91 187 07:01:28	55 27.30N	4 48.94W
91 187 07:30:57	55 24.74N	4 58.74W
91 187 08:00:21	55 22.04N	5 8.87W
91 187 08:30:41	55 19.17N	5 19.37W
91 187 09:00:04	55 16.25N	5 29.66W
91 187 09:30:26	55 15.62N	5 41.64W
91 187 10:00:42	55 17.93N	5 53.53W
91 187 10:30:01	55 23.53N	6 1.00W
91 187 11:00:23	55 26.50N	6 10.77W
91 187 11:30:39	55 29.99N	6 19.19W
91 187 12:00:54	55 34.76N	6 26.03W
91 187 12:30:07	55 39.26N	6 32.25W
91 187 13:00:27	55 42.65N	6 38.73W
91 187 13:30:46	55 46.75N	6 44.88W
91 187 14:00:04	55 51.07N	6 50.24W
91 187 14:30:21	55 55.57N	6 55.77W
91 187 15:00:42	56 0.31N	7 1.42W
91 187 15:30:07	56 5.05N	7 7.11W
91 187 16:00:23	56 9.76N	7 13.17W
91 187 16:30:42	56 14.52N	7 19.67W
91 187 17:00:58	56 19.14N	7 26.32W
91 187 17:30:20	56 23.58N	7 32.66W
91 187 18:00:39	56 28.48N	7 38.15W
91 187 18:30:05	56 33.16N	7 44.12W
91 187 19:00:30	56 37.78N	7 51.27W
91 187 19:30:54	56 42.54N	7 58.32W
91 187 20:00:14	56 47.12N	8 5.00W
91 187 20:30:45	56 51.93N	8 11.68W
91 187 21:00:02	56 56.62N	8 17.67W
91 187 21:30:20	57 1.44N	8 23.84W
91 187 22:00:43	57 6.25N	8 30.06W
91 187 22:30:02	57 10.83N	8 36.16W
91 187 23:00:23	57 15.62N	8 42.72W
91 187 23:30:41	57 20.38N	8 49.18W
91 188 00:00:54	57 25.26N	8 55.90W
91 188 00:30:15	57 29.88N	9 2.65W
91 188 01:00:34	57 34.41N	9 9.71W
91 188 01:30:53	57 39.01N	9 16.81W
91 188 02:00:15	57 43.52N	9 23.68W
91 188 02:30:38	57 48.42N	9 30.58W
91 188 03:00:58	57 53.42N	9 37.45W
91 188 03:30:28	57 58.34N	9 44.08W
91 188 04:00:58	58 3.07N	9 51.19W
91 188 04:30:21	58 7.57N	9 58.10W
91 188 05:00:53	58 12.38N	10 4.80W
91 188 05:30:19	58 16.90N	10 11.56W
91 188 06:00:47	58 21.63N	10 18.35W
91 188 06:30:10	58 26.30N	10 25.05W
91 188 07:00:33	58 31.01N	10 32.27W
91 188 07:34:59	58 36.23N	10 40.20W
91 188 08:00:14	58 40.14N	10 46.13W
91 188 08:30:39	58 44.97N	10 53.36W
91 188 09:00:57	58 49.93N	11 0.48W
91 188 09:30:50	58 54.81N	11 7.24W

TABLE 17. GPS ships position

TIME	LATITUDE	LONGITUDE
91 188 10:00:39	58 56.73N	11 10.74W
91 188 10:30:02	58 52.33N	11 4.52W
91 188 11:00:18	58 47.84N	10 57.85W
91 188 11:30:35	58 43.40N	10 51.17W
91 188 12:00:00	58 38.92N	10 44.79W
91 188 12:30:17	58 34.32N	10 38.15W
91 188 13:00:33	58 29.71N	10 31.66W
91 188 13:30:51	58 24.87N	10 24.86W
91 188 14:00:09	58 20.18N	10 18.49W
91 188 14:30:29	58 15.42N	10 12.13W
91 188 15:00:50	58 10.75N	10 5.55W
91 188 15:30:08	58 6.27N	9 59.26W
91 188 16:00:33	58 1.36N	9 52.89W
91 188 16:35:09	57 55.87N	9 45.70W
91 188 17:00:29	57 52.06N	9 40.23W
91 188 17:30:57	57 47.50N	9 33.72W
91 188 18:00:25	57 42.97N	9 27.62W
91 188 18:30:52	57 38.02N	9 21.43W
91 188 19:00:23	57 33.12N	9 15.34W
91 188 19:30:51	57 28.37N	9 8.62W
91 188 20:00:14	57 23.86N	9 2.25W
91 188 20:30:35	57 19.30N	8 55.67W
91 188 21:00:54	57 14.78N	8 49.07W
91 188 21:30:12	57 10.45N	8 42.67W
91 188 22:00:27	57 6.13N	8 36.04W
91 188 22:30:50	57 1.73N	8 29.29W
91 188 23:00:10	56 57.39N	8 22.60W
91 188 23:30:31	56 52.89N	8 15.68W
91 189 00:00:47	56 48.62N	8 9.04W
91 189 00:30:06	56 44.35N	8 3.10W
91 189 01:00:29	56 39.46N	7 57.42W
91 189 01:30:51	56 34.43N	7 51.56W
91 189 02:00:17	56 29.59N	7 45.95W
91 189 02:30:36	56 24.98N	7 39.97W
91 189 03:02:26	56 20.14N	7 33.27W
91 189 03:30:45	56 15.25N	7 29.69W
91 189 04:00:00	56 10.70N	7 24.04W
91 189 04:30:17	56 6.30N	7 17.30W
91 189 05:00:48	56 1.70N	7 10.21W
91 189 05:30:30	55 57.22N	7 2.98W
91 189 06:00:04	55 52.57N	6 56.28W
91 189 06:30:27	55 47.37N	6 50.23W
91 189 07:00:51	55 42.39N	6 44.09W
91 189 07:30:16	55 37.70N	6 38.72W
91 189 08:00:45	55 33.35N	6 32.52W
91 189 08:30:33	55 29.27N	6 26.46W
91 189 09:00:53	55 25.27N	6 20.59W
91 189 09:30:09	55 22.00N	6 14.71W
91 189 10:00:26	55 20.66N	6 6.67W
91 189 10:32:46	55 16.97N	6 1.83W
91 189 11:00:04	55 14.26N	5 57.22W
91 189 11:30:20	55 14.75N	5 49.07W
91 189 12:00:38	55 14.20N	5 40.97W
91 189 12:30:54	55 14.83N	5 32.46W
91 189 13:00:13	55 16.19N	5 24.13W

TIME	LATITUDE	LONGITUDE
91 189 13:30:31	55 19.47N	5 15.84W
91 189 14:00:49	55 22.34N	5 6.71W
91 189 14:30:05	55 24.86N	4 57.77W
91 189 15:00:23	55 27.42N	4 48.21W
91 189 15:30:41	55 28.09N	4 41.11W
91 189 16:00:59	55 28.06N	4 41.08W
91 189 16:30:20	55 28.09N	4 41.06W
91 189 17:11:47	55 28.08N	4 41.13W
91 190 21:25:19	55 23.80N	5 1.61W
91 190 21:30:21	55 23.38N	5 3.18W
91 190 22:00:35	55 20.84N	5 12.83W
91 190 22:30:51	55 17.80N	5 22.28W
91 190 23:00:07	55 15.58N	5 32.50W
91 190 23:30:23	55 15.89N	5 44.55W
91 191 00:00:40	55 20.15N	5 55.68W
91 191 00:30:56	55 25.98N	6 3.91W
91 191 01:00:17	55 27.55N	6 15.40W
91 191 01:30:31	55 30.64N	6 26.12W
91 191 02:00:45	55 34.15N	6 35.79W
91 191 02:30:05	55 37.35N	6 44.16W
91 191 03:00:11	55 40.83N	6 51.98W
91 191 03:30:32	55 44.17N	6 59.46W
91 191 04:00:54	55 46.82N	7 7.40W
91 191 04:30:26	55 49.16N	7 15.28W
91 191 05:00:47	55 51.62N	7 23.30W
91 191 05:30:15	55 53.98N	7 31.50W
91 191 06:00:37	55 56.60N	7 39.99W
91 191 06:30:55	55 59.11N	7 48.51W
91 191 07:01:17	56 1.54N	7 57.12W
91 191 07:30:35	56 4.26N	8 5.45W
91 191 08:00:55	56 7.10N	8 14.02W
91 191 08:30:20	56 10.22N	8 22.12W
91 191 09:00:43	56 13.65N	8 30.26W
91 191 09:30:57	56 16.73N	8 38.60W
91 191 10:17:23	56 21.74N	8 51.50W
91 191 10:30:30	56 23.17N	8 55.16W
91 191 11:00:44	56 26.52N	9 3.57W
91 191 11:30:58	56 29.96N	9 11.77W
91 191 12:00:13	56 32.68N	9 20.42W
91 191 12:30:31	56 35.08N	9 29.54W
91 191 13:00:47	56 37.52N	9 38.53W
91 191 13:30:06	56 40.03N	9 47.46W
91 191 14:00:25	56 42.52N	9 56.49W
91 191 14:30:41	56 44.83N	10 5.71W
91 191 15:14:06	56 48.12N	10 19.02W
91 191 15:30:19	56 49.33N	10 23.91W
91 191 16:00:42	56 51.87N	10 32.89W
91 191 16:30:58	56 54.80N	10 41.69W
91 191 17:00:19	56 57.74N	10 50.40W
91 191 17:30:42	57 0.81N	10 59.73W
91 191 18:00:05	57 3.81N	11 8.85W
91 192 12:58:07	58 58.79N	16 53.16W
91 192 13:00:08	58 58.97N	16 53.83W
91 192 13:30:23	59 1.76N	17 3.66W
91 192 14:00:46	59 4.84N	17 13.42W

TIME	LATITUDE	LONGITUDE
91 192 14:30:06	59 7.84N	17 22.62W
91 192 15:07:18	59 12.07N	17 34.16W
91 192 15:37:17	59 15.67N	17 43.06W
91 192 16:01:44	59 18.74N	17 50.22W
91 192 16:30:27	59 22.06N	17 58.85W
91 192 17:00:57	59 25.15N	18 8.57W
91 192 17:31:08	59 28.06N	18 18.57W
91 192 18:00:28	59 31.05N	18 28.34W
91 192 18:30:54	59 34.32N	18 38.54W
91 192 19:00:15	59 37.63N	18 48.24W
91 192 19:35:46	59 41.60N	18 59.58W
91 192 20:00:01	59 44.23N	19 7.21W
91 192 20:30:23	59 47.31N	19 16.94W
91 192 21:00:44	59 49.94N	19 27.31W
91 192 21:30:03	59 52.57N	19 37.59W
91 192 22:01:24	59 55.76N	19 48.44W
91 192 22:30:40	59 59.00N	19 57.79W
91 192 23:00:59	60 3.87N	20 0.03W
91 192 23:30:20	60 9.06N	20 0.12W
91 193 00:01:40	60 14.85N	19 59.88W
91 193 00:30:56	60 20.40N	20 0.20W
91 193 01:00:17	60 26.12N	20 0.19W
91 193 01:30:39	60 31.99N	19 59.97W
91 193 02:00:58	60 37.96N	19 59.89W
91 193 02:30:16	60 43.62N	19 59.94W
91 193 03:00:34	60 49.34N	20 0.03W
91 193 03:34:52	60 55.66N	19 59.01W
91 193 04:00:05	61 0.35N	19 59.29W
91 193 04:30:44	61 4.85N	19 59.97W
91 193 05:09:13	61 4.72N	19 59.97W
91 193 05:30:32	61 7.13N	20 2.02W
91 193 06:00:12	61 11.62N	20 8.49W
91 193 06:30:38	61 16.23N	20 15.14W
91 193 07:09:43	61 22.12N	20 23.61W
91 193 07:30:59	61 25.44N	20 28.10W
91 193 08:00:23	61 30.12N	20 34.26W
91 193 08:30:44	61 32.41N	20 36.98W
91 193 09:01:00	61 32.48N	20 37.65W
91 193 09:30:23	61 32.67N	20 32.37W
91 193 10:00:41	61 32.77N	20 21.28W
91 193 10:30:03	61 32.82N	20 10.41W
91 193 11:00:21	61 32.77N	19 58.92W
91 193 11:30:38	61 32.71N	19 47.23W
91 193 12:00:15	61 32.70N	19 35.58W
91 193 12:30:37	61 32.93N	19 30.05W
91 193 13:00:59	61 33.15N	19 30.46W
91 193 13:30:18	61 28.28N	19 35.87W
91 193 14:00:37	61 23.04N	19 41.83W
91 193 14:30:04	61 17.83N	19 46.85W
91 193 15:00:29	61 12.36N	19 51.45W
91 193 15:30:49	61 10.28N	19 54.25W
91 193 16:00:09	61 10.01N	19 54.15W
91 193 16:30:29	61 6.15N	19 58.72W
91 193 17:00:02	61 0.85N	20 3.91W
91 193 17:30:26	60 55.61N	20 9.40W

TIME	LATITUDE	LONGITUDE
91 193 18:00:46	60 50.59N	20 15.18W
91 193 18:30:07	60 45.69N	20 20.84W
91 193 19:00:28	60 40.29N	20 26.11W
91 193 19:32:49	60 34.50N	20 32.06W
91 193 20:00:11	60 32.92N	20 33.96W
91 193 20:30:33	60 32.76N	20 32.70W
91 193 21:01:57	60 32.58N	20 20.37W
91 193 21:38:20	60 32.98N	20 6.22W
91 193 22:00:35	60 33.27N	19 57.57W
91 193 22:30:52	60 33.29N	19 45.71W
91 193 23:00:08	60 33.09N	19 34.13W
91 193 23:30:29	60 33.09N	19 23.78W
91 194 00:00:53	60 33.35N	19 23.90W
91 194 00:30:15	60 35.56N	19 26.88W
91 194 01:00:31	60 39.84N	19 31.34W
91 194 01:30:47	60 44.14N	19 35.49W
91 194 02:00:09	60 47.98N	19 39.89W
91 194 02:30:28	60 51.81N	19 44.53W
91 194 03:00:47	60 55.59N	19 49.06W
91 194 03:30:04	60 59.09N	19 53.14W
91 194 04:00:27	61 2.49N	19 57.33W
91 194 04:30:46	61 4.88N	19 59.83W
91 194 05:00:15	61 4.57N	19 59.64W
91 194 05:30:40	61 4.91N	20 1.15W
91 194 06:00:11	61 5.34N	20 3.21W
91 194 06:30:36	61 5.81N	20 5.72W
91 194 07:00:01	61 6.24N	20 8.18W
91 194 07:30:23	61 6.48N	20 10.62W
91 194 08:00:53	61 5.98N	20 8.20W
91 194 08:30:13	61 4.87N	20 1.94W
91 194 09:00:57	61 5.11N	20 0.20W
91 194 09:30:13	61 5.08N	20 0.54W
91 194 10:00:34	61 4.96N	20 0.85W
91 194 10:30:53	61 4.42N	20 0.26W
91 194 11:00:09	61 4.43N	20 0.19W
91 194 11:30:30	61 4.30N	19 59.77W
91 194 12:00:48	61 4.17N	19 59.10W
91 194 12:30:10	61 4.05N	19 58.23W
91 194 13:00:34	61 3.98N	19 57.58W
91 194 13:30:59	61 3.85N	19 57.22W
91 194 14:00:22	61 3.74N	19 56.55W
91 194 14:30:42	61 3.53N	19 56.01W
91 194 15:01:00	61 3.46N	19 55.39W
91 194 15:30:20	61 3.26N	19 54.70W
91 194 16:00:45	61 3.10N	19 54.19W
91 194 16:30:03	61 3.01N	19 53.73W
91 194 17:00:23	61 2.95N	19 53.28W
91 194 17:30:49	61 3.08N	19 53.08W
91 194 18:00:13	61 3.06N	19 52.49W
91 194 18:30:33	61 3.04N	19 51.79W
91 194 19:00:53	61 3.08N	19 51.32W
91 194 19:55:02	61 3.18N	19 50.64W
91 194 20:00:08	61 3.20N	19 50.61W
91 194 20:30:29	61 3.25N	19 49.95W
91 194 21:00:54	61 3.21N	19 49.36W

TIME	LATITUDE	LONGITUDE
91 194 21:31:20	61 3.29N	19 48.74W
91 194 22:00:42	61 3.41N	19 48.04W
91 194 22:30:02	61 3.52N	19 47.40W
91 194 23:00:20	61 3.65N	19 46.89W
91 194 23:30:41	61 3.83N	19 45.96W
91 195 00:00:54	61 3.90N	19 43.50W
91 195 00:30:13	61 4.16N	19 42.81W
91 195 01:00:34	61 4.46N	19 42.49W
91 195 01:30:50	61 4.64N	19 41.42W
91 195 02:00:10	61 4.89N	19 40.50W
91 195 02:30:32	61 5.16N	19 39.58W
91 195 03:00:49	61 5.18N	19 38.90W
91 195 03:30:31	61 5.30N	19 38.18W
91 195 04:00:54	61 5.44N	19 37.59W
91 195 04:30:14	61 5.61N	19 37.18W
91 195 05:00:36	61 5.77N	19 36.88W
91 195 05:30:07	61 5.91N	19 36.70W
91 195 06:00:29	61 6.16N	19 36.86W
91 195 06:30:54	61 6.44N	19 36.77W
91 195 07:00:17	61 6.74N	19 36.88W
91 195 07:30:42	61 7.07N	19 36.81W
91 195 08:00:07	61 7.40N	19 36.73W
91 195 08:30:33	61 7.59N	19 36.30W
91 195 09:00:51	61 8.10N	19 36.17W
91 195 09:30:08	61 8.37N	19 36.05W
91 195 10:00:28	61 8.64N	19 35.62W
91 195 10:30:46	61 8.96N	19 35.35W
91 195 11:00:03	61 9.20N	19 34.96W
91 195 11:30:21	61 9.40N	19 34.39W
91 195 12:00:39	61 9.61N	19 33.90W
91 195 12:42:07	61 9.80N	19 33.38W
91 195 13:00:20	61 9.80N	19 33.24W
91 195 13:30:40	61 10.01N	19 33.07W
91 195 14:00:01	61 10.02N	19 33.02W
91 195 14:30:23	61 9.98N	19 32.93W
91 195 15:00:41	61 10.23N	19 33.11W
91 195 15:30:59	61 10.32N	19 33.14W
91 195 16:06:23	61 10.50N	19 33.00W
91 195 16:30:36	61 10.66N	19 33.04W
91 195 17:00:10	61 10.90N	19 33.21W
91 195 17:30:33	61 11.15N	19 33.71W
91 195 18:00:01	61 11.30N	19 34.16W
91 195 18:30:26	61 11.59N	19 34.27W
91 195 19:00:51	61 11.70N	19 34.74W
91 195 19:30:10	61 11.96N	19 35.32W
91 195 20:00:31	61 12.19N	19 35.62W
91 195 20:30:57	61 12.43N	19 36.01W
91 195 21:00:16	61 12.72N	19 36.38W
91 195 21:32:37	61 13.05N	19 36.63W
91 195 22:00:56	61 13.26N	19 36.98W
91 195 22:30:15	61 13.53N	19 37.38W
91 195 23:00:33	61 13.67N	19 37.57W
91 195 23:30:47	61 13.78N	19 37.82W
91 196 00:00:07	61 13.79N	19 38.16W
91 196 00:30:29	61 13.88N	19 38.59W

TIME	LATITUDE	LONGITUDE
91 196 01:00:47	61 16.31N	19 35.84W
91 196 01:30:05	61 16.47N	19 35.87W
91 196 02:00:24	61 16.55N	19 36.21W
91 196 02:30:41	61 16.58N	19 36.42W
91 196 03:00:05	61 16.64N	19 36.65W
91 196 03:30:21	61 16.73N	19 37.08W
91 196 04:00:49	61 16.80N	19 37.88W
91 196 04:30:07	61 16.80N	19 38.46W
91 196 05:00:33	61 16.71N	19 38.96W
91 196 05:30:04	61 16.65N	19 39.70W
91 196 06:00:24	61 16.51N	19 40.61W
91 196 06:30:46	61 16.31N	19 41.47W
91 196 07:00:06	61 16.42N	19 42.60W
91 196 07:30:31	61 16.98N	19 43.10W
91 196 08:00:53	61 17.26N	19 43.78W
91 196 08:30:13	61 17.48N	19 44.27W
91 196 09:00:28	61 17.76N	19 44.78W
91 196 09:30:44	61 18.02N	19 45.43W
91 196 10:02:21	61 18.29N	19 46.05W
91 196 10:30:39	61 17.87N	19 45.69W
91 196 11:00:54	61 16.67N	19 45.36W
91 196 11:30:10	61 16.85N	19 46.37W
91 196 12:01:30	61 17.08N	19 46.97W
91 196 12:30:48	61 17.18N	19 47.42W
91 196 13:00:04	61 17.19N	19 47.79W
91 196 13:30:25	61 17.26N	19 48.27W
91 196 14:00:46	61 17.34N	19 48.85W
91 196 14:30:07	61 17.26N	19 49.57W
91 196 15:00:27	61 17.30N	19 50.27W
91 196 15:30:43	61 17.15N	19 51.01W
91 196 16:00:09	61 16.91N	19 51.81W
91 196 16:30:45	61 16.79N	19 52.67W
91 196 17:00:18	61 16.70N	19 53.29W
91 196 17:30:49	61 16.57N	19 54.36W
91 196 18:00:12	61 16.49N	19 55.23W
91 196 18:30:34	61 16.32N	19 56.18W
91 196 19:00:51	61 16.04N	19 57.55W
91 196 19:30:26	61 15.99N	19 58.44W
91 196 20:00:58	61 15.80N	19 59.43W
91 196 20:30:24	61 15.73N	20 0.28W
91 196 21:00:44	61 15.54N	20 1.10W
91 196 21:32:04	61 15.63N	20 1.84W
91 196 22:00:23	61 15.61N	20 2.45W
91 196 22:30:43	61 15.65N	20 2.92W
91 196 23:00:00	61 15.54N	20 3.08W
91 196 23:30:17	61 15.39N	20 3.65W
91 197 00:01:36	61 15.05N	20 3.93W
91 197 00:31:54	61 15.03N	20 4.08W
91 197 01:00:09	61 14.88N	20 4.74W
91 197 01:30:31	61 14.19N	19 59.08W
91 197 02:00:51	61 13.96N	19 57.34W
91 197 02:30:10	61 13.61N	19 57.52W
91 197 03:00:30	61 13.23N	19 57.73W
91 197 03:30:47	61 12.82N	19 57.90W
91 197 04:00:15	61 12.54N	19 58.40W

TIME	LATITUDE	LONGITUDE
91 197 04:30:37	61 12.12N	19 58.96W
91 197 05:00:57	61 11.80N	19 59.53W
91 197 05:30:22	61 11.52N	20 0.03W
91 197 06:00:43	61 11.22N	20 0.64W
91 197 06:30:59	61 11.10N	20 1.36W
91 197 07:00:44	61 10.92N	20 2.03W
91 197 07:30:04	61 11.23N	20 2.49W
91 197 08:00:28	61 11.32N	20 2.65W
91 197 08:30:52	61 11.40N	20 2.73W
91 197 09:00:11	61 11.53N	20 2.70W
91 197 09:30:36	61 11.60N	20 2.70W
91 197 10:00:57	61 11.68N	20 2.67W
91 197 10:30:49	61 11.69N	20 2.61W
91 197 11:00:04	61 11.70N	20 2.51W
91 197 11:30:21	61 11.63N	20 2.33W
91 197 12:00:42	61 11.47N	20 2.35W
91 197 12:30:04	61 11.39N	20 2.33W
91 197 13:00:23	61 11.22N	20 2.22W
91 197 13:30:42	61 11.01N	20 2.35W
91 197 14:00:04	61 10.81N	20 2.40W
91 197 14:30:27	61 10.56N	20 2.40W
91 197 15:00:48	61 10.38N	20 2.44W
91 197 15:30:08	61 10.27N	20 2.42W
91 197 16:00:29	61 10.10N	20 2.68W
91 197 16:30:49	61 9.92N	20 3.08W
91 197 17:00:13	61 9.86N	20 3.21W
91 197 17:30:38	61 9.81N	20 3.57W
91 197 18:00:02	61 9.72N	20 3.74W
91 197 18:30:21	61 9.64N	20 4.13W
91 197 19:00:45	61 9.44N	20 4.36W
91 197 19:30:07	61 9.23N	20 4.54W
91 197 20:00:35	61 9.11N	20 4.80W
91 197 20:30:58	61 9.01N	20 4.97W
91 197 21:00:13	61 8.84N	20 5.03W
91 197 21:30:36	61 8.82N	20 5.23W
91 197 22:00:59	61 8.70N	20 5.26W
91 197 22:30:18	61 8.60N	20 5.29W
91 197 23:00:39	61 8.27N	20 5.08W
91 197 23:30:02	61 7.99N	20 4.83W
91 198 00:00:26	61 6.80N	19 59.57W
91 198 00:30:46	61 6.28N	19 52.39W
91 198 01:00:08	61 6.09N	19 51.64W
91 198 01:30:28	61 5.93N	19 50.99W
91 198 02:00:44	61 5.70N	19 50.64W
91 198 02:30:02	61 5.48N	19 50.32W
91 198 03:00:22	61 5.35N	19 49.76W
91 198 03:30:38	61 5.26N	19 49.33W
91 198 04:00:00	61 5.13N	19 48.71W
91 198 04:30:18	61 5.09N	19 48.05W
91 198 05:00:58	61 4.94N	19 47.40W
91 198 05:30:16	61 4.94N	19 46.69W
91 198 06:00:48	61 5.00N	19 45.92W
91 198 06:30:06	61 5.01N	19 45.15W
91 198 07:00:28	61 6.26N	19 46.95W
91 198 07:30:47	61 6.33N	19 46.18W

TIME	LATITUDE	LONGITUDE
91 198 08:00:19	61 6.37N	19 45.49W
91 198 08:30:41	61 6.47N	19 46.50W
91 198 09:00:01	61 6.11N	19 46.21W
91 198 09:30:18	61 6.12N	19 45.43W
91 198 10:00:37	61 6.09N	19 44.72W
91 198 10:30:53	61 6.05N	19 44.20W
91 198 11:00:08	61 6.54N	19 42.71W
91 198 11:30:27	61 7.03N	19 41.49W
91 198 12:00:44	61 6.84N	19 40.82W
91 198 12:30:06	61 6.92N	19 40.01W
91 198 13:00:24	61 7.10N	19 39.13W
91 198 13:30:49	61 7.12N	19 38.21W
91 198 14:00:11	61 7.36N	19 37.74W
91 198 14:30:34	61 7.59N	19 37.10W
91 198 15:00:56	61 7.71N	19 36.24W
91 198 15:30:17	61 7.97N	19 35.58W
91 198 16:00:34	61 8.19N	19 34.95W
91 198 16:30:11	61 8.32N	19 34.17W
91 198 17:00:50	61 8.45N	19 33.53W
91 198 17:30:17	61 8.65N	19 32.71W
91 198 18:00:39	61 8.84N	19 32.32W
91 198 18:30:14	61 8.91N	19 31.63W
91 198 19:00:41	61 9.11N	19 31.15W
91 198 19:30:09	61 9.15N	19 30.67W
91 198 20:00:41	61 9.17N	19 30.16W
91 198 20:30:59	61 9.25N	19 29.55W
91 198 21:00:17	61 9.35N	19 29.14W
91 198 21:30:37	61 9.48N	19 28.83W
91 198 22:00:56	61 9.62N	19 28.32W
91 198 22:30:13	61 9.75N	19 27.94W
91 198 23:00:32	61 9.91N	19 27.62W
91 198 23:30:49	61 10.17N	19 27.14W
91 199 00:00:14	61 10.77N	19 26.97W
91 199 00:30:32	61 11.27N	19 26.95W
91 199 01:00:53	61 11.36N	19 34.18W
91 199 01:30:11	61 12.38N	19 34.48W
91 199 02:00:31	61 12.69N	19 34.26W
91 199 02:30:50	61 12.99N	19 34.02W
91 199 03:00:09	61 13.30N	19 33.63W
91 199 03:30:26	61 13.74N	19 33.29W
91 199 04:00:54	61 14.09N	19 33.12W
91 199 04:30:15	61 14.38N	19 32.87W
91 199 05:00:39	61 14.50N	19 32.52W
91 199 05:30:59	61 14.50N	19 31.97W
91 199 06:00:17	61 14.91N	19 31.94W
91 199 06:31:33	61 15.04N	19 32.00W
91 199 07:00:21	61 14.97N	19 31.80W
91 199 07:30:41	61 15.22N	19 31.91W
91 199 08:00:58	61 15.43N	19 31.86W
91 199 08:30:16	61 15.68N	19 31.95W
91 199 09:00:30	61 15.92N	19 31.97W
91 199 09:30:45	61 16.07N	19 31.83W
91 199 10:00:04	61 16.23N	19 31.74W
91 199 10:30:19	61 16.44N	19 31.61W
91 199 11:00:35	61 16.60N	19 31.48W

TIME	LATITUDE	LONGITUDE
91 199 11:30:48	61 16.86N	19 31.40W
91 199 12:04:06	61 17.30N	19 31.56W
91 199 12:30:21	61 17.59N	19 31.41W
91 199 13:00:43	61 17.86N	19 31.28W
91 199 13:30:03	61 17.94N	19 31.44W
91 199 14:00:22	61 18.04N	19 31.83W
91 199 14:36:44	61 18.42N	19 32.24W
91 199 15:00:01	61 18.45N	19 32.29W
91 199 15:30:21	61 18.70N	19 32.40W
91 199 16:00:42	61 18.95N	19 32.44W
91 199 16:30:57	61 19.22N	19 32.45W
91 199 17:00:18	61 19.46N	19 32.49W
91 199 17:30:40	61 19.62N	19 32.73W
91 199 18:00:52	61 19.75N	19 33.07W
91 199 18:30:14	61 19.92N	19 33.36W
91 199 19:00:34	61 20.05N	19 33.85W
91 199 19:30:03	61 20.24N	19 34.17W
91 199 20:00:28	61 20.42N	19 34.73W
91 199 20:30:46	61 20.59N	19 35.12W
91 199 21:00:02	61 20.81N	19 35.66W
91 199 21:30:21	61 21.03N	19 36.18W
91 199 22:00:41	61 21.24N	19 36.88W
91 199 22:30:55	61 21.45N	19 37.23W
91 199 23:00:11	61 21.52N	19 37.43W
91 199 23:30:32	61 21.68N	19 37.86W
91 200 00:00:53	61 21.78N	19 38.31W
91 200 00:30:13	61 21.84N	19 38.85W
91 200 01:00:31	61 21.92N	19 39.45W
91 200 01:30:50	61 21.99N	19 39.81W
91 200 02:00:09	61 21.96N	19 40.23W
91 200 02:30:32	61 21.91N	19 40.53W
91 200 03:00:37	61 21.83N	19 40.96W
91 200 03:31:01	61 20.43N	19 42.00W
91 200 04:00:28	61 17.34N	19 45.31W
91 200 04:31:44	61 17.28N	19 45.46W
91 200 05:00:04	61 17.21N	19 45.79W
91 200 05:30:34	61 16.92N	19 46.12W
91 200 06:00:58	61 17.08N	19 46.39W
91 200 06:42:24	61 17.31N	19 47.04W
91 200 07:00:39	61 15.91N	19 48.13W
91 200 07:30:09	61 15.73N	19 48.06W
91 200 08:00:32	61 15.39N	19 48.60W
91 200 08:30:53	61 15.11N	19 49.36W
91 200 09:00:08	61 15.66N	19 50.05W
91 200 09:39:59	61 15.81N	19 50.12W
91 200 10:00:12	61 15.60N	19 50.61W
91 200 10:30:00	61 15.34N	19 51.01W
91 200 11:00:15	61 15.11N	19 51.32W
91 200 11:30:16	61 14.85N	19 51.69W
91 200 12:00:31	61 14.61N	19 51.92W
91 200 12:30:49	61 14.39N	19 51.90W
91 200 13:00:08	61 14.14N	19 51.79W
91 200 13:30:33	61 13.81N	19 51.85W
91 200 14:00:55	61 13.48N	19 51.87W
91 200 14:30:14	61 13.19N	19 51.85W

TIME	LATITUDE	LONGITUDE
91 200 15:00:32	61 12.86N	19 51.89W
91 200 15:30:39	61 12.66N	19 51.70W
91 200 16:03:26	61 12.14N	19 51.52W
91 200 16:30:11	61 11.80N	19 51.39W
91 200 17:04:31	61 11.40N	19 51.16W
91 200 17:30:52	61 11.14N	19 51.24W
91 200 18:00:20	61 10.78N	19 51.14W
91 200 18:30:44	61 10.32N	19 51.05W
91 200 19:01:30	61 10.01N	19 51.10W
91 200 19:30:52	61 9.97N	19 51.07W
91 200 20:00:13	61 9.66N	19 51.02W
91 200 20:30:31	61 9.48N	19 51.13W
91 200 21:00:51	61 9.15N	19 50.91W
91 200 21:30:11	61 8.84N	19 50.70W
91 200 22:00:33	61 8.55N	19 50.54W
91 200 22:30:55	61 8.22N	19 50.29W
91 200 23:00:34	61 7.94N	19 50.10W
91 200 23:35:56	61 7.93N	19 49.91W
91 201 00:00:16	61 8.06N	19 53.00W
91 201 00:30:34	61 7.87N	19 52.81W
91 201 01:00:52	61 7.69N	19 52.69W
91 201 01:30:09	61 7.47N	19 52.48W
91 201 02:00:32	61 7.19N	19 52.07W
91 201 02:30:48	61 6.94N	19 51.56W
91 201 03:00:05	61 6.62N	19 51.21W
91 201 03:30:20	61 6.39N	19 50.88W
91 201 04:00:53	61 6.11N	19 50.47W
91 201 04:30:11	61 5.85N	19 50.13W
91 201 05:01:41	61 5.54N	19 49.84W
91 201 05:30:01	61 5.38N	19 49.50W
91 201 06:00:20	61 5.15N	19 49.09W
91 201 06:38:18	61 4.84N	19 48.65W
91 201 07:01:36	61 4.68N	19 48.18W
91 201 07:30:00	61 4.49N	19 47.83W
91 201 08:00:18	61 4.21N	19 47.53W
91 201 08:30:39	61 3.93N	19 47.16W
91 201 09:00:57	61 3.65N	19 46.66W
91 201 09:32:17	61 3.44N	19 46.34W
91 201 10:00:32	61 3.39N	19 45.98W
91 201 10:30:47	61 3.27N	19 45.71W
91 201 11:00:05	61 3.18N	19 45.38W
91 201 11:30:21	61 3.20N	19 44.67W
91 201 12:00:38	61 3.25N	19 43.86W
91 201 12:30:55	61 3.25N	19 43.00W
91 201 13:00:17	61 3.29N	19 42.28W
91 201 13:30:34	61 3.31N	19 41.50W
91 201 14:02:53	61 3.33N	19 40.43W
91 201 14:30:08	61 3.25N	19 39.71W
91 201 15:00:27	61 3.20N	19 38.88W
91 201 15:30:49	61 3.12N	19 38.08W
91 201 16:00:11	61 3.05N	19 37.47W
91 201 16:30:28	61 3.10N	19 36.76W
91 201 17:00:45	61 3.12N	19 36.03W
91 201 17:30:09	61 3.09N	19 35.64W
91 201 18:00:34	61 3.28N	19 34.77W

TIME	LATITUDE	LONGITUDE
91 201 18:30:56	61 3.43N	19 34.05W
91 201 19:00:44	61 3.63N	19 33.43W
91 201 19:30:17	61 3.76N	19 32.70W
91 201 20:00:38	61 3.95N	19 32.26W
91 201 20:30:59	61 4.08N	19 31.76W
91 201 21:00:18	61 4.20N	19 31.27W
91 201 21:30:37	61 4.45N	19 30.60W
91 201 22:00:57	61 4.57N	19 30.09W
91 201 22:30:14	61 4.75N	19 29.61W
91 201 23:00:34	61 5.14N	19 29.09W
91 201 23:30:50	61 5.40N	19 28.62W
91 202 00:00:54	61 5.74N	19 28.26W
91 202 00:30:15	61 6.52N	19 27.94W
91 202 01:00:39	61 7.27N	19 37.62W
91 202 01:30:55	61 7.45N	19 35.02W
91 202 02:00:18	61 7.76N	19 34.55W
91 202 02:30:35	61 8.02N	19 34.12W
91 202 03:00:40	61 8.25N	19 33.79W
91 202 03:30:12	61 8.65N	19 33.48W
91 202 04:00:37	61 8.90N	19 33.04W
91 202 04:31:01	61 9.17N	19 32.57W
91 202 05:00:22	61 9.45N	19 32.29W
91 202 05:30:42	61 9.68N	19 31.99W
91 202 06:02:55	61 9.96N	19 31.78W
91 202 06:35:02	61 10.08N	19 31.12W
91 202 07:00:27	61 9.45N	19 35.03W
91 202 07:30:49	61 9.26N	19 34.10W
91 202 08:00:13	61 9.33N	19 33.98W
91 202 08:30:30	61 9.35N	19 34.11W
91 202 09:00:50	61 9.41N	19 34.08W
91 202 09:39:14	61 9.63N	19 34.03W
91 202 10:00:25	61 9.69N	19 33.99W
91 202 10:30:42	61 10.22N	19 33.85W
91 202 11:00:00	61 10.32N	19 33.60W
91 202 11:30:17	61 10.62N	19 33.41W
91 202 12:00:36	61 11.00N	19 33.12W
91 202 12:30:58	61 11.36N	19 33.03W
91 202 13:00:16	61 9.00N	19 35.29W
91 202 13:30:35	61 4.15N	19 39.49W
91 202 14:00:02	61 0.98N	19 41.69W
91 202 14:30:24	61 1.17N	19 41.07W
91 202 15:00:44	61 1.15N	19 40.43W
91 202 15:30:04	61 1.21N	19 39.73W
91 202 16:00:37	61 1.30N	19 38.75W
91 202 16:30:11	61 2.02N	19 37.36W
91 202 17:00:47	61 5.20N	19 40.66W
91 202 17:30:25	61 5.79N	19 41.85W
91 202 18:00:46	61 5.73N	19 40.97W
91 202 18:30:16	61 5.62N	19 40.31W
91 202 19:02:27	61 5.46N	19 39.64W
91 202 19:30:01	61 5.28N	19 39.27W
91 202 20:00:19	61 6.24N	19 39.26W
91 202 20:30:42	61 10.36N	19 42.13W
91 202 21:00:05	61 10.85N	19 41.69W
91 202 21:30:27	61 10.72N	19 41.41W

TIME	LATITUDE	LONGITUDE
91 202 22:00:49	61 10.55N	19 41.46W
91 202 22:30:04	61 10.36N	19 41.39W
91 202 23:00:26	61 10.43N	19 41.32W
91 202 23:30:47	61 14.46N	19 42.34W
91 203 00:00:06	61 15.95N	19 41.88W
91 203 00:30:24	61 15.95N	19 41.99W
91 203 01:00:43	61 15.87N	19 41.88W
91 203 01:30:04	61 15.79N	19 41.82W
91 203 02:00:23	61 15.85N	19 41.85W
91 203 02:30:42	61 16.10N	19 42.23W
91 203 03:00:59	61 16.26N	19 42.60W
91 203 03:30:17	61 16.39N	19 42.67W
91 203 04:00:35	61 19.22N	19 42.79W
91 203 04:30:04	61 21.04N	19 42.08W
91 203 05:00:25	61 21.17N	19 41.93W
91 203 05:30:45	61 21.23N	19 41.85W
91 203 06:01:03	61 21.38N	19 41.60W
91 203 06:30:21	61 21.83N	19 41.47W
91 203 07:00:44	61 25.27N	19 46.47W
91 203 07:30:08	61 28.92N	19 53.62W
91 203 08:00:29	61 32.69N	20 1.13W
91 203 08:30:43	61 36.58N	20 8.68W
91 203 09:00:08	61 40.01N	20 14.94W
91 203 09:30:27	61 39.99N	20 14.71W
91 203 10:00:47	61 40.14N	20 6.31W
91 203 10:30:02	61 40.27N	19 57.96W
91 203 11:00:19	61 40.14N	19 49.50W
91 203 11:30:35	61 40.00N	19 40.88W
91 203 12:00:56	61 40.35N	19 31.94W
91 203 12:30:13	61 40.37N	19 23.38W
91 203 13:00:03	61 40.21N	19 14.28W
91 203 13:30:53	61 40.05N	19 5.57W
91 203 14:02:16	61 40.16N	19 5.39W
91 203 14:30:29	61 37.20N	19 9.76W
91 203 15:00:17	61 32.74N	19 17.14W
91 203 15:31:34	61 27.85N	19 24.45W
91 203 16:00:48	61 23.64N	19 30.96W
91 203 16:30:19	61 18.87N	19 35.72W
91 203 17:00:46	61 13.76N	19 39.28W
91 203 17:30:03	61 10.96N	19 41.81W
91 203 18:00:22	61 10.84N	19 41.11W
91 203 18:30:02	61 9.50N	19 43.73W
91 203 19:00:27	61 9.30N	19 42.80W
91 203 19:30:52	61 9.02N	19 42.04W
91 203 20:00:15	61 8.92N	19 47.00W
91 203 20:30:32	61 13.12N	19 52.79W
91 203 21:00:51	61 12.26N	19 44.14W
91 203 21:30:12	61 7.05N	19 45.76W
91 203 22:00:30	61 1.98N	19 50.98W
91 203 22:30:47	60 57.09N	19 56.21W
91 203 23:00:04	60 52.39N	20 1.97W
91 203 23:31:25	60 47.34N	20 8.47W
91 204 00:00:42	60 43.00N	20 15.22W
91 204 00:30:02	60 41.58N	20 16.50W
91 204 01:00:25	60 41.56N	20 12.24W

TIME	LATITUDE	LONGITUDE
91 204 01:30:45	60 41.52N	20 0.21W
91 204 02:00:13	60 41.60N	19 49.35W
91 204 02:30:40	60 41.63N	19 48.92W
91 204 03:00:59	60 41.55N	19 48.63W
91 204 03:30:33	60 41.49N	19 44.16W
91 204 04:00:49	60 41.50N	19 32.84W
91 204 04:30:12	60 41.57N	19 21.59W
91 204 05:00:32	60 41.54N	19 10.40W
91 204 05:30:53	60 41.73N	19 7.09W
91 204 06:04:12	60 44.24N	19 8.69W
91 204 06:30:06	60 48.51N	19 13.73W
91 204 07:00:28	60 53.17N	19 20.69W
91 204 07:30:17	60 58.01N	19 26.61W
91 204 08:00:40	61 2.84N	19 32.17W
91 204 08:30:57	61 7.69N	19 38.13W
91 204 09:02:14	61 10.87N	19 46.67W
91 204 09:30:32	61 10.87N	19 47.70W
91 204 10:00:54	61 10.80N	19 48.04W
91 204 10:30:09	61 10.69N	19 48.26W
91 204 11:00:27	61 12.44N	19 48.19W
91 204 11:45:55	61 20.51N	19 46.05W
91 204 12:00:04	61 22.95N	19 45.01W
91 204 12:30:20	61 28.09N	19 42.98W
91 204 13:00:40	61 29.95N	19 42.29W
91 204 13:30:00	61 30.10N	19 42.42W
91 204 14:00:47	61 30.19N	19 42.72W
91 204 14:30:19	61 32.80N	19 44.15W
91 204 15:02:21	61 38.69N	19 46.18W
91 204 15:30:39	61 43.83N	19 47.61W
91 204 16:00:02	61 49.18N	19 49.07W
91 204 16:30:23	61 54.68N	19 50.45W
91 204 17:00:40	62 0.20N	19 51.87W
91 204 17:30:26	62 5.57N	19 52.97W
91 204 18:00:46	62 11.13N	19 54.27W
91 204 18:37:27	62 17.82N	19 56.41W
91 204 19:00:29	62 22.02N	19 57.80W
91 204 19:30:53	62 27.52N	19 59.56W
91 204 20:00:11	62 30.01N	19 59.82W
91 204 20:30:30	62 29.91N	19 59.69W
91 204 21:00:48	62 29.94N	19 59.51W
91 204 21:30:34	62 29.78N	19 59.35W
91 204 22:00:56	62 29.58N	19 59.50W
91 204 22:30:17	62 29.42N	19 59.68W
91 204 23:00:38	62 29.33N	19 59.82W
91 204 23:30:59	62 29.38N	20 0.43W
91 205 00:00:17	62 29.81N	20 0.40W
91 205 00:30:34	62 29.91N	20 0.08W
91 205 01:00:50	62 29.93N	20 0.26W
91 205 01:30:10	62 29.84N	20 0.79W
91 205 02:00:27	62 29.76N	20 1.33W
91 205 02:30:27	62 29.69N	20 1.86W
91 205 03:00:46	62 29.55N	20 2.49W
91 205 03:30:05	62 29.75N	20 1.21W
91 205 04:00:27	62 29.74N	20 1.43W
91 205 04:30:44	62 29.55N	20 1.31W

TIME	LATITUDE	LONGITUDE
91 205 05:00:09	62 29.23N	20 1.35W
91 205 05:30:28	62 28.96N	20 1.18W
91 205 06:08:50	62 28.94N	20 0.81W
91 205 06:30:07	62 28.79N	20 0.41W
91 205 07:00:31	62 28.46N	20 0.21W
91 205 07:30:53	62 28.29N	19 59.91W
91 205 08:00:13	62 28.24N	20 0.01W
91 205 08:30:34	62 27.83N	20 0.22W
91 205 09:01:52	62 27.41N	20 0.51W
91 205 09:30:37	62 26.97N	20 0.60W
91 205 10:00:53	62 26.58N	20 0.86W
91 205 10:30:06	62 26.46N	20 1.78W
91 205 11:00:21	62 28.68N	20 1.22W
91 205 11:34:40	62 30.15N	19 59.95W
91 205 12:00:52	62 30.14N	20 0.27W
91 205 12:30:07	62 30.08N	20 0.99W
91 205 13:00:29	62 30.07N	20 1.70W
91 205 13:30:59	62 29.98N	20 1.94W
91 205 14:00:43	62 29.73N	20 2.04W
91 205 14:30:03	62 29.88N	20 2.66W
91 205 15:00:25	62 29.98N	20 0.38W
91 205 15:30:48	62 29.99N	20 0.18W
91 205 16:00:06	62 29.91N	20 0.06W
91 205 16:30:25	62 29.90N	19 59.86W
91 205 17:00:14	62 29.67N	19 59.68W
91 206 07:49:40	60 49.27N	19 43.07W
91 206 08:00:45	60 47.31N	19 43.27W
91 206 08:30:04	60 42.14N	19 43.79W
91 206 09:00:21	60 36.80N	19 44.18W
91 206 09:30:41	60 31.51N	19 44.57W
91 206 10:00:57	60 26.24N	19 45.02W
91 206 10:30:13	60 21.19N	19 45.31W
91 206 11:00:29	60 16.18N	19 45.71W
91 206 11:30:46	60 11.48N	19 45.92W
91 206 12:00:04	60 6.84N	19 46.18W
91 206 12:30:20	60 1.88N	19 46.71W
91 206 13:00:42	59 56.73N	19 47.00W
91 206 13:32:12	59 51.16N	19 47.11W
91 206 14:00:31	59 46.09N	19 47.17W
91 206 14:30:49	59 40.61N	19 47.40W
91 206 15:00:09	59 35.25N	19 48.08W
91 206 15:31:24	59 29.67N	19 49.00W
91 206 16:00:43	59 24.42N	19 49.46W
91 206 16:30:01	59 19.11N	19 49.59W
91 206 17:00:21	59 13.81N	19 49.27W
91 206 17:30:39	59 8.48N	19 49.62W
91 206 18:00:07	59 3.25N	19 50.16W
91 206 18:30:37	58 57.87N	19 50.38W
91 206 19:00:58	58 52.63N	19 50.76W
91 206 19:30:16	58 47.54N	19 50.99W
91 206 20:00:39	58 42.37N	19 50.99W
91 206 20:30:02	58 37.36N	19 51.11W
91 206 21:00:23	58 32.16N	19 51.64W
91 206 21:30:41	58 26.99N	19 52.08W
91 206 22:00:01	58 21.83N	19 52.26W

TIME	LATITUDE	LONGITUDE
91 206 22:30:21	58 16.58N	19 52.54W
91 206 23:00:38	58 11.41N	19 53.03W
91 206 23:30:57	58 6.13N	19 53.35W
91 207 00:00:16	58 0.94N	19 53.70W
91 207 00:30:40	57 55.52N	19 53.95W
91 207 01:00:00	57 50.33N	19 54.26W
91 207 01:30:19	57 44.98N	19 54.60W
91 207 02:00:40	57 39.52N	19 54.98W
91 207 02:30:59	57 34.04N	19 55.07W
91 207 03:00:20	57 28.80N	19 55.32W
91 207 03:30:38	57 23.52N	19 55.68W
91 207 04:00:55	57 18.12N	19 55.87W
91 207 04:30:30	57 12.84N	19 56.22W
91 207 05:00:01	57 7.58N	19 56.61W
91 207 05:30:21	57 2.22N	19 56.76W
91 207 06:00:30	56 56.69N	19 57.21W
91 207 06:30:52	56 51.10N	19 57.48W
91 207 07:00:22	56 45.80N	19 57.69W
91 207 07:30:41	56 40.38N	19 57.86W
91 207 08:00:59	56 34.87N	19 57.86W
91 207 08:30:15	56 29.73N	19 58.47W
91 207 09:00:34	56 24.47N	19 58.89W
91 207 09:30:35	56 18.94N	20 1.02W
91 207 10:00:52	56 13.70N	20 1.26W
91 207 10:30:09	56 8.39N	20 1.75W
91 207 11:00:25	56 3.73N	20 3.76W
91 207 11:30:42	56 0.26N	20 1.11W
91 207 12:00:59	55 55.50N	20 0.51W
91 207 12:30:19	55 50.98N	19 59.80W
91 207 13:00:36	55 46.50N	19 59.92W
91 207 13:30:55	55 42.18N	19 59.76W
91 207 14:00:13	55 37.99N	19 59.97W
91 207 14:30:32	55 33.56N	20 0.04W
91 207 15:00:56	55 29.38N	19 59.96W
91 207 15:30:18	55 27.46N	19 59.90W
91 207 16:00:38	55 25.42N	19 57.14W
91 207 16:30:08	55 22.60N	19 49.31W
91 207 17:00:27	55 19.96N	19 41.18W
91 207 17:30:49	55 17.42N	19 32.95W
91 207 18:00:18	55 14.97N	19 25.16W
91 207 18:30:58	55 12.16N	19 16.94W
91 207 19:00:30	55 9.52N	19 9.20W
91 207 19:30:55	55 6.70N	19 1.41W
91 207 20:00:13	55 3.86N	18 53.90W
91 207 20:30:36	55 0.84N	18 45.91W
91 207 21:00:56	54 58.24N	18 37.34W
91 207 21:30:14	54 55.76N	18 28.93W
91 207 22:00:36	54 53.12N	18 20.12W
91 207 22:30:53	54 50.56N	18 11.33W
91 207 23:00:11	54 47.90N	18 3.06W
91 207 23:30:33	54 45.00N	17 54.76W
91 208 00:00:51	54 42.45N	17 46.05W
91 208 00:30:14	54 39.50N	17 38.23W
91 208 01:00:33	54 36.54N	17 30.38W
91 208 01:30:55	54 33.58N	17 22.36W

TIME	LATITUDE	LONGITUDE
91 208 02:20:23	54 28.61N	17 9.31W
91 208 02:32:28	54 27.44N	17 6.03W
91 208 03:00:45	54 24.56N	16 58.64W
91 208 03:47:11	54 19.83N	16 46.62W
91 208 04:00:18	54 18.55N	16 43.14W
91 208 04:38:43	54 14.57N	16 32.97W
91 208 05:02:16	54 12.08N	16 26.73W
91 208 05:30:30	54 9.18N	16 19.18W
91 208 06:00:16	54 6.33N	16 11.19W
91 208 06:30:37	54 3.30N	16 3.21W
91 208 07:00:01	54 0.30N	15 55.33W
91 208 07:30:24	53 56.97N	15 47.26W
91 208 08:00:44	53 53.71N	15 39.44W
91 208 08:30:58	53 50.42N	15 31.88W
91 208 09:00:16	53 47.39N	15 24.77W
91 208 09:30:23	53 44.34N	15 17.73W
91 208 10:00:42	53 41.56N	15 11.03W
91 208 10:30:56	53 38.81N	15 4.13W
91 208 11:00:13	53 36.00N	14 57.06W
91 208 11:30:31	53 32.97N	14 49.66W
91 208 12:00:48	53 29.79N	14 42.18W
91 208 12:30:08	53 26.67N	14 34.91W
91 208 13:00:21	53 23.51N	14 27.66W
91 208 13:37:47	53 19.85N	14 18.61W
91 208 14:00:00	53 17.40N	14 13.13W
91 208 14:30:25	53 14.27N	14 5.75W
91 208 15:00:45	53 10.97N	13 58.28W
91 208 15:31:16	53 7.64N	13 50.46W
91 208 16:00:37	53 4.35N	13 43.05W
91 208 16:30:06	53 1.10N	13 35.41W
91 208 17:00:34	52 57.77N	13 27.58W
91 208 17:30:56	52 54.16N	13 20.07W
91 208 18:00:20	52 50.81N	13 12.35W
91 208 18:30:42	52 47.30N	13 4.41W
91 208 19:00:17	52 43.47N	12 57.23W
91 208 19:30:38	52 39.78N	12 49.38W
91 208 20:00:59	52 36.03N	12 41.53W
91 208 20:30:19	52 32.34N	12 34.05W
91 208 21:00:39	52 28.21N	12 26.78W
91 208 21:30:58	52 24.34N	12 19.25W
91 208 22:00:15	52 20.55N	12 12.04W
91 208 22:30:35	52 16.80N	12 4.44W
91 208 23:00:58	52 13.06N	11 56.90W
91 208 23:30:21	52 9.48N	11 49.56W
91 209 00:00:54	52 5.81N	11 41.92W
91 209 00:30:10	52 2.29N	11 34.61W
91 209 01:00:27	51 58.69N	11 26.93W
91 209 01:32:07	51 54.93N	11 18.84W
91 209 02:00:29	51 51.61N	11 11.63W
91 209 02:30:46	51 48.12N	11 4.21W
91 209 03:00:01	51 44.74N	10 57.17W
91 209 03:49:26	51 38.84N	10 45.76W
91 209 04:00:35	51 37.44N	10 43.41W
91 209 04:31:10	51 33.91N	10 36.61W
91 209 05:00:29	51 30.91N	10 29.42W

TIME	LATITUDE	LONGITUDE
91 209 05:49:14	51 26.31N	10 16.54W
91 209 06:00:22	51 25.09N	10 13.75W
91 209 06:30:47	51 21.37N	10 6.57W
91 209 07:00:11	51 17.99N	9 59.43W
91 209 07:30:30	51 15.05N	9 51.23W
91 209 08:00:51	51 14.24N	9 42.36W
91 209 08:43:15	51 14.37N	9 30.12W
91 209 09:00:25	51 14.35N	9 25.42W

DAY/HASH	START	BOTTOM	END	DEPTH
19301	04:38:01	05:03:02	05:07:54	300
19302	08:22:44	09:02:34	09:07:00	300
19303	12:25:58	12:47:00	12:54:31	300
19304	19:50:02	20:14:07	20:20:11	300
19305	23:37:17	23:58:30	00:10:19	300
19401	04:34:45	04:53:36	05:05:14	300
19403	11:06:11	11:34:51	12:10:09	1000
19503	05:06:46	05:19:16	05:30:02	300
19504	05:38:31	05:55:52	06:12:45	300
19505	07:13:13	07:39:45	07:48:24	300
19506	08:46:53	09:53:26	11:03:14	2389
19507	12:37:53	12:50:03	13:41:50	300
19604	05:12:55	05:29:18	05:41:55	300
19606	11:39:08	12:01:40	12:15:12	300
19704	04:15:17	05:03:35	05:57:56	2350
19705	06:20:15	06:39:48	06:55:10	300
19707	09:38:49	09:48:32	10:01:41	300
19711	17:00:32	17:07:19	17:14:37	300
19713	23:00:12	23:06:20	23:22:34	300
19803	03:10:02	03:18:28	03:27:50	300
19804	12:07:46	12:22:51	12:34:21	300
19808	17:04:36	17:16:17	17:28:43	300
19812	23:41:30	23:54:24	00:13:50	300
19904	03:32:21	03:38:57	03:46:02	300
19905	05:25:27	05:39:29	05:53:17	300
19906	07:11:36	08:16:50	09:41:05	2390

TABLE 18. CTD cast log.

DAY/HASH	START	BOTTOM	END	DEPTH
19908	11:09:29	11:24:09	11:35:11	300
19911	16:57:22	17:14:56	17:19:08	300
19917	22:56:19	23:22:13	23:33:29	300
20004	05:54:38	06:05:02	06:15:01	300
20006	11:04:50	11:19:52	11:33:16	300
20012	17:02:25	17:10:39	17:12:18	300
20014	22:43:21	22:55:57	23:06:12	300
20103	03:19:50	03:42:32	03:54:17	300
20104	04:56:39	05:41:50	06:35:51	300
20106	11:10:25	11:20:44	11:32:18	2390
20111	17:45:18	18:08:45	18:17:06	300
20115	23:27:24	23:40:24	23:48:50	300
20204	03:45:10	03:55:14	04:08:43	300
20205	04:59:52	05:19:37	05:23:25	2390
20209	13:58:47	14:50:33	15:40:22	2400
20212	17:32:56	18:22:34	19:18:40	2400
20215	20:46:11	21:41:23	22:34:25	2400
20301	00:10:16	00:54:40	01:41:13	2400
20305	04:23:49	05:12:10	05:53:12	2400
20308	09:03:19	09:21:24	09:26:38	300
20309	13:31:48	13:52:18	14:11:01	300
20310	17:25:54	17:42:20	17:50:52	300
20401	00:19:07	00:41:15	00:55:36	300
20403	05:18:47	05:34:12	05:41:24	300
20404	09:11:10	09:56:24	10:51:56	2400

DAY/HASH	START	BOTTOM	END	DEPTH
20405	12:49:42	13:31:41	14:13:57	2250
20406	20:25:37	20:50:50	21:00:22	300
20407	21:19:00	22:37:01	22:37:55	1600
20502	02:44:48	02:52:57	03:00:36	300
20507	11:28:54	11:42:15	12:09:23	300
20509	12:56:31	14:11:53	14:47:07	1500
20512	17:52:46	18:04:45	18:21:12	300

TABLE-19. CTD bottle firing parameters

CTD no	Event no	Date	Time	lat(N)	Long (W)	Bottle	Depth	Temp	Sal
			(gmt)	(deg:min:sec)	(deg:min:sec)	no		(deg C)	(ppt)
#1	61/192/01	11/07/91	192/0913	51:41:09	15:53:36	1	202.1	8.9689	35.285
						2	100.9	9.3525	35.301
						3	50.2	9.8295	35.312
						4,5	40.4	10.7017	35.304
						6,7,8	30	12.2561	35.297
						9	24.8	12.5044	35.281
						10	9.6	12.5451	35.281
						11,12	4.4	12.5498	35.281
#2	61/193/01	12/7/91	193/0439	61:05:06	19:59:18	1	39.8	9.4384	35.171
						2	39.5	9.4586	35.165
						3	25.6	12.2359	35.19
						4	25.6	12.3428	35.182
						5	20.4	12.404	35.182
						6,7	10	12.406	35.179
#3	61/193/02	12/7/91	193/0837	61:32:18	20:37:42	1	302.2	7.4979	35.151
						2	60.8	8.3252	35.173
						3	40.1	8.964	35.182
						4	39.9	8.9974	35.169
						5	24.9	9.8413	35.181
						6	24.9	9.8084	35.186
						7	20.4	12.0259	35.249
						8	20.5	12.2376	35.18
						9	10.4	12.3374	35.187
						10	10.2	12.338	35.187
						11	5.1	12.3382	35.186
#4	61/193/03	12/7/91	193/1220	61:33:12	19:30:18	1	303.1	7.62	35.148
						2	50.2	8.8942	35.163
						3	40.2	9.3165	35.168
						4	31.1	9.9144	35.17
						5	20.2	11.5895	35.146
						6	20	11.5551	35.145
						7	10.4	11.7188	35.121
#5	61/193/04	12/7/91	193/1949	60:33:12	20:34:18	1	303.9	7.2982	35.099
						2	39.9	8.9042	35.142
						3	39.8	8.9	35.134
						4	25.7	10.3986	35.204
						5	20.5	11.0722	35.166
						6	20.3	11.5209	35.152
						7	15.4	12.1067	35.136
						8	10.2	12.1469	35.131
						9	10.2	12.1494	35.13
#6	61/193/05	12/7/91	193/2328	60:33:06	19:24:06	1	304.5	7.7517	35.161
						2	39.9	9.6746	35.204
						3	40.1	9.7259	35.206
						4	30.3	10.5951	35.195
						5	30.4	10.7991	35.175
						6	20.2	12.4719	35.165
						7	9.6	12.4779	35.163
						8	9.4	12.4764	35.162

TABLE 19. CTD bottle firing parameters

#7	61/194/01	13/7/91	194/0432	61:04:32	19:59:19	1	304.2	7.0214	35.117
						2	101.4	7.8049	35.152
						3	76.8	8.0137	35.157
						4	51.4	9.0209	35.163
						5	40	9.7686	35.064
						6	40.7	9.3819	35.168
						7	31.2	10.7568	35.183
						8	20	12.3337	35.178
						9	9.9	12.3418	35.177
#8	61/194/03	13/7/91	194/1106	61:04:12	19:59:36	1	1013	4.2451	34.926
						2	1013	4.2456	34.927
						3	1012.7	4.2455	34.926
						4	100.5	7.7498	35.148
						5	50.4	8.8215	35.163
						6	20.4	12.2714	35.176
						7	10	12.2857	35.176
						8	5.1	12.2901	35.175
#9	61/194/04	13/7/91	194/1308	61:04:00'	19:57:42	1	304.7	7.0605	35.117
						2	201.9	7.2528	35.122
						3	151.7	7.4359	35.133
						4	126.2	7.5633	35.141
						5	101.2	7.7761	35.151
						6	75.1	8.0244	35.16
						7	50.1	8.7179	35.161
						8	40.2	9.4597	35.163
						9	30.2	9.7093	35.169
						10	20.5	12.158	35.182
						11	9.6	12.305	35.177
						12	4.2	12.2932	35.177
#10	61/195/03	14/07/91	195/0506	61:06:12	19:36:48	No Bottles			
#11	61/195/04	14/07/91	195/0537	61:06:18	19:36:24	1	303.3	7.1593	35.119
						2	202.2	7.4175	35.128
						3	151.1	7.5939	35.137
						4	125.2	7.6732	35.14
						5	101	7.8167	35.152
						6	77.1	7.9692	35.161
						7	51.3	8.3183	35.159
						8	40.3	8.9004	35.161
						9	29.6	11.6274	35.184
						10	19.9	11.9994	35.186
						11	9.1	12.213	35.178
						12	3.3	12.2144	35.177
#12	61/195/05	14/07/91	195/0712	61:06:42	19:36:00'	1	303	7.1536	35.118
						2	50.5	8.8138	35.164
						3	41	9.417	35.164
						4	31.3	12.1905	35.184
						5	20.5	12.2575	35.179
						6	10.6	12.2629	35.179

TABLE 19. CTD bottle firing parameters

#13	61/195/06	14/07/91	195/0855	61:07:24	19:34:54	1	2283.3	2.6176	34.966
						2	1519.5	3.6921	34.901
						3	1010.6	4.5213	34.945
						4	910.5	4.9171	34.975
						5	758.7	5.5608	35.016
						6	606.4	6.336	35.062
						7	404.2	6.9378	35.104
#14	61/195/07	14/07/91	195/1215	61:09:54	19:33:30	1	302.6	7.1918	35.122
						2	50.3	8.604	35.159
						3	40.1	9.0914	35.171
						4	35.9	9.3099	35.168
						5	25.8	11.7304	35.182
						6	25.7	11.7831	35.172
						7	10.5	12.3758	35.18
#15	61/196/04	15/07/91	196/0515	61:16:36	19:39:24	No Bottles			
#16	61/196/06	15/07/91	196/1144	61:16:12	19:46:24	1	304	7.1063	35.113
						2	202.4	7.3402	35.117
						3	152	7.5506	35.134
						4	126.8	7.6612	35.142
						5	101.5	7.8371	35.153
						6	75.6	7.9762	35.158
						7	50.2	8.3892	35.159
						8	40.6	8.8593	35.164
						9	29.8	10.8025	35.185
						10	19.8	12.3736	35.187
						11	9.9	12.4584	35.177
						12	3.7	12.5144	35.177
#17	61/197/04	16/07/91	197/0415	61:11:18	20:00:18	1	2283	2.6543	34.966
						2	2282.8	2.6536	34.965
						3	2282.7	2.6514	34.966
						4	1521.1	3.6145	34.888
						5	1012	4.4303	34.94
						6	910.2	4.7769	34.963
						7	757.3	5.5497	35.015
						8	605.3	6.2922	35.056
						9	403.5	6.9665	35.109
#18	61/197/05	16/07/91	197/0620	61:11:06	20:00:30'	1	304.3	7.1418	35.118
						2	202.6	7.3666	35.125
						3	150.7	7.5202	35.127
						4	125.4	7.6143	35.135
						5	101.3	7.7886	35.15
						6	76.1	7.9869	35.16
						7	50.1	8.5037	35.176
						8	39.9	9.0849	35.187
						9	30.7	10.8816	35.148
						10	20.4	12.0271	35.18
						11	10.3	12.3582	35.174
						12	3	12.388	35.173
#19	61/197/07	16/07/91	197/0940	61:11:36	20:02:42	1	304.6	7.1711	35.12
						2	25.4	12.3849	35.172
						3	20.3	12.3946	35.172
						4	20.3	12.3943	35.171
						5	4.2	12.4578	35.17
#20	61/197/11	16/07/91	197/1705	61:09:54	20:03:24	No Bottles			

TABLE 19. CTD bottle firing parameters

#21	61/197/13	16/07/91	197/2301	61:08:16	20:05:00'	No Bottles			
#22	61/198/03	17/07/91	198/0310	61:05:18	19:49:36	No Bottles			
#23	61/198/04/B	17/07/91	198/1203	61:07:12	19:39:48	1	303.6	7.1547	35.117
						2	202.6	7.2688	35.11
						3	151.4	7.5585	35.138
						4	125.2	7.666	35.142
						5	101	7.8296	35.154
						6	74.5	7.9763	35.156
						7	51.1	8.443	35.167
						8	39.8	9.3133	35.161
						9	29.9	9.877	35.2
						10	20.7	12.332	35.175
						11	10.4	12.5535	35.177
						12	3.2	12.7019	35.175
#24	61/198/08	17/07/91	198/1705	61:07:12	19:33:30'	1	303	7.1921	35.124
						2	24.3	12.2614	35.165
#25	61/198/12	17/07/91	198/2345	61:10:30'	19:27:00'	No Bottles			
#26	61/199/04	18/07/91	199/0330	61:13:48	19:33:12	No Bottles			
#27	61/199/05	18/07/91	199/0526	61:14:54	19:32:06	1	303.6	7.0924	35.12
						2	202.1	7.2635	35.118
						3	151.1	7.4661	35.135
						4	126.7	7.6454	35.146
						5	100.5	7.7757	35.151
						6	76.1	8.0015	35.159
						7	50.7	8.8335	35.163
						8	40	9.5573	35.187
						9	29.8	11.6017	35.253
						10	20.3	12.4182	35.177
						11	10	12.6221	35.182
						12	3.8	12.6517	35.18
#28	61/199/06	18/07/91	199/0708	61:15:12	19:31:30'	1	2350		
						2	2250		
						3	1500	3.7526	34.913
						4	1000		
						5	900	4.7016	34.958
						6	750		
						7	600		
						8	400		
						9	10	12.6389	35.182
#29	61/199/08	18/07/91	199/1113	61:16:30'	19:31:36	1	305.4	7.1223	35.121
#30	61/199/11	18/07/91	199/1654	61:19:24	19:32:30'	1	35.8	10.0206	35.209
						2	30.3	11.2709	35.186
						3	25.2	12.1225	35.179
						4	19.5	12.4725	35.175
						5	19.5	12.4358	35.174
						6	14.9	12.6592	35.182
						7	9.9	12.7486	35.177
						8	4.9	12.8011	35.174
#31	61/199/17/B	18/07/91	199/2316	61:21:36	19:37:42	No Bottles			
#32	61/200/04	19/07/91	200/0553	61:17:06	19:46:24	No Bottles			
#33	61/200/06	19/07/91	200/1100	61:15:36	19:15:36	1	304.5	7.1252	35.125

TABLE 19. CTD bottle firing parameters

						2	202.3	7.2671	35.123
						3	151.4	7.549	35.141
						4	126.6	7.7209	35.147
						5	99.8	7.8994	35.156
						6	75	8.2728	35.158
						7	50.3	9.9251	35.169
						8	39.9	11.2979	35.179
						9	29.7	12.2452	35.172
						10	20.2	12.61	35.175
						11	9.6	12.9334	35.18
						12	3	13.0194	35.179
#34	61/200/12/B	19/07/91	200/1657	61:1:24	19:51:06	No Bottles			
#35	61/200/15	19/07/91	200/2247	61:08:06	19:50:12	No Bottles			
#36	61/201/04	20/07/91	201/0324	61:06:42	19:51:06	1	302.6	7.0584	35.117
						2	202	7.2335	35.123
						3	151.7	7.5608	35.144
						4	126.1	7.736	35.148
						5	100.8	7.8846	35.155
						6	75.9	8.0836	35.16
						7	50.3	9.3161	35.19
						8	40.4	9.9826	35.168
						9	29.2	11.5078	35.214
						10	19.9	12.5324	35.173
						11	9.5	12.8554	35.171
						12	3.3	13.3397	35.184
#37	61/201/06/A	20/07/91	201/0458	61:05:42	19:49:48	1	2388.4	2.5621	34.967
						2	2284.1	2.5985	34.966
						3	1518.6	3.753	34.906
						4	1012.3	4.5655	34.95
						5	910.2	4.8114	34.966
						6	758.3	5.5154	35.013
						7	606.2	6.3015	35.059
						8	404.2	6.9501	35.111
						9	20.1	12.765	35.169
						10	9.7	13.0331	35.182
#38	61/201/07	20/07/91	201/1110	61:03:06	19:45:06	No Bottles			
#39	61/201/11	20/07/91	201/1742	61:03:12	19:35:06	1	303.8	7.267	35.123
						2	40.6	9.0629	35.165
						3	20.6	11.9901	35.169
						4	9.9	12.5561	35.174
						5	3.4	13.5165	35.162
#40	61/201/15	20/07/91	201/2335	61:05:30'	19:28:30'	No Bottles			
#41	61/202/04	21/07/91	202/0345	61:08:48	19:33:12	No Bottles			

TABLE 19. CTD bottle firing parameters

#42	61/202/05	21/07/91	202/0500	61:09:30'	19:32:12	1	51	9.2085	35.162
						2	45.6	9.4842	35.168
						3	40.4	9.9777	35.173
						4	35.4	10.3822	35.171
						5	30.6	10.5464	35.181
						6	26	12.1088	35.174
						7	20.5	12.4218	35.178
						8	15.7	12.532	35.179
						9	9.6	12.8164	35.188
						10	4.7	13.3338	35.182
						11	3.5	13.2943	35.181
#43	61/202/09	21/07/91	202/1357	61:01:00'	19:41:30'	1	2411	2.5672	34.967
#44	61/202/12	21/07/91	202/1735	61:05:54	19:42:00'	1	2405.8	2.5651	34.967
#45	61/202/15	21/07/91	202/2050	61:10:54	19:42:00'	1	2399.9	2.5875	34.967
						2	1620.8	3.6951	34.919
						3	605.8	6.0598	35.045
#46	61/203/01	22/07/91	203/0010	61:16:00'	19:41:12	1	2376	2.5921	34.967
#47	61/203/05	22/07/91	203/0429	61:21:18	19:42:12	1	2356.6	2.6147	34.967
#48	61/203/08	22/07/91	203/0908	61:40:01	20:15:54	1	40.5	9.0943	35.165
#49	61/203/09	22/07/91	203/1330	61:40:00'	19:05:44	1	304.1	7.3446	35.115
						2	152.3	7.9151	35.159
						3	102.9	8.0101	35.15
						4	58.4	8.1726	35.118
						5	52.2	8.3509	35.13
						6	40.3	8.7844	35.135
						7	30.8	9.3602	35.137
						8	30.8	9.3758	35.131
						9	20.7	11.9883	35.126
						10	20.3	11.8686	35.183
						11	10.3	12.9002	35.13
						12	10.1	12.9002	35.128
#50	61/203/10	22/07/91	203/1726	61:11:12	19:41:54	1	303.4	6.9995	35.115
						2	41.1	10.3139	35.177
						3	40.9	10.3662	35.172
						4	25.5	12.1119	35.168
						5	25.2	12.131	35.175
						6	9.8	12.9506	35.155
						7	9.7	12.9562	35.154
#51	61/204/01	23/07/91	204/0020	60:41:36	20:16:31	1	41	9.8656	35.166
						2	41	10.105	35.156
						3	26	12.8661	35.15
						4	25.9	12.8684	35.148
						5	10	12.9444	35.149
						6	9.6	12.9606	35.149
#52	61/204/03	23/07/91	204/0519	61:41:12	19:06:48	1	9.9	13.1446	35.144
#53	61/204/04	23/07/91	204/0916	61:11:06	19:47:24	1	2397	2.5941	34.967
#54	61/204/05	23/07/91	204/1250	61:29:54	19:42:12	1	2257.3	2.6426	34.959

TABLE 19. CTD bottle firing parameters

#55	61/204/06	23/07/91	204/2025	62:30:00'	20:00:06	1	304.9	7.5817	35.178
						2	202.5	7.6504	35.174
						3	152.1	7.7479	35.179
						4	126.7	7.8382	35.181
						5	101.8	7.959	35.177
						6	76.6	8.2405	35.175
						7	50.9	8.8829	35.168
						8	39.6	11.5913	35.123
						9	29.5	12.137	35.095
						10	19.9	12.2091	35.09
						11	9.5	12.2124	35.091
						12	4.1	12.2037	35.09
#56	61/204/07	23/07/91	204/2123	62:30:00'	19:59:30	1	1622.1	3.0711	34.971
						2	1520.1	3.1318	34.966
						3	1012.3	4.9911	35.007
						4	911.8	5.8143	35.054
						5	759.1	6.708	35.11
						6	606.3	7.2851	35.15
						7	404	7.5406	35.175
						8	40.7	8.8404	35.17
						9	20.1	12.0505	35.102
#57	61/205/02	24/07/91	205/0300	62:29:30'	20:02:30'	No Bottles			
#58	61/205/07	24/07/91	205/1126	62:29:30'	19:58:06	1	303.6	7.5283	35.172
						2	202.3	7.6049	35.164
						3	151.5	7.6892	35.163
						4	126.4	7.8058	35.163
						5	101	7.9692	35.162
						6	74.9	8.3707	35.152
						7	50.7	9.1227	35.148
						8	40.8	9.1457	35.146
						9	31.2	9.1899	35.146
						10	20	9.529	35.145
						11	9.5	12.2349	35.132
						12	3.3	12.3573	35.115
#59	61/205/09	24/07/91	205/1300	62:29:54	20:01:36	1	1593.2	3.0443	34.971
						2	1519.8	3.1279	34.962
						3	1011.1	4.8211	34.982
						4	1012.1	4.8123	34.98
						5	1013.3	4.8108	34.978
						6	910.3	5.4599	35.02
						7	759.3	6.6202	35.107
						8	605.4	7.089	35.131
						9	405.2	7.3987	35.157
#60	61/205/12	24/07/91	205/1755	62:29:48	19:59:30'	1	304.1	7.5197	35.167
						2	40.1	9.4679	35.139
						3	12	11.9616	35.117
						4	10.2	12.4914	35.129
						5	3.8	12.4869	35.11