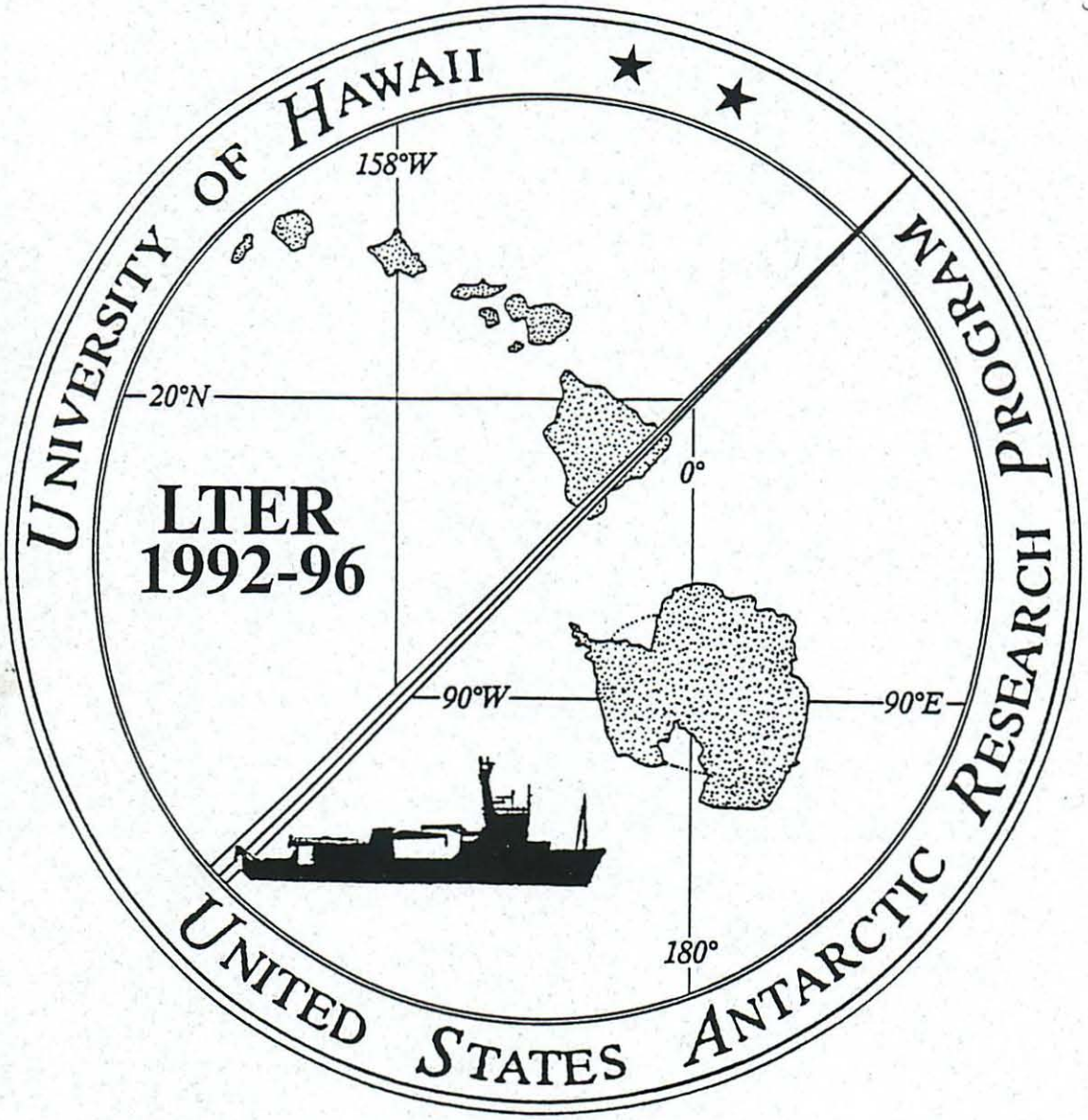
PALMER PENINSULA LONG-TERM ECOLOGICAL RESEARCH (LTER) PROGRAM



INITIAL CRUISE REPORT
R/V POLAR DUKE #92-09
~~DECEMBER~~ November 1992

R/V POLAR DUKE 92-09
02-23 NOVEMBER 1992
INITIAL CRUISE REPORT

David M. Karl
University of Hawaii
"Long-term Ecological Research (LTER)
on the Antarctic Marine Ecosystem:
Microbiology and Carbon Flux"
NSF-DPP-9118439

Walker O. Smith
University of Tennessee
"Nitrogen Dynamics Within Two
International Southern Ocean
JGOFS Cruises"
NSF-DPP-9116872

DECEMBER 1992

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02-23 NOVEMBER 1992
D. M. KARL, CHIEF SCIENTIST

I. CRUISE OBJECTIVES AND SCIENTIFIC PARTY

Cruise 92-09 of the *R/V POLAR DUKE* had several independent, but complementary research objectives. Project S-046 (D. Karl, P.I.) enlisted a party of 12 scientists to investigate various aspects of the marine carbon cycle including experimental studies of microbial loop processes. These studies, conducted under the Palmer LTER program auspices, ranged in scope from the deployment of an array of bottom-moored sediment traps, to *in situ* photographic measurements of particulate matter, to measurements of the response of bacterioplankton to increases in temperature and additions in organic substrates. Project S-047 (W. O. Smith, P.I.) sponsored a complement of 8 scientists with research efforts focused on autotrophic rate processes, krill biology, benthic protozoa and sulfur cycling. More detailed descriptions of these individual scientific investigations are presented in Section III of this cruise report. These 20 individuals, along with three ASA personnel (Marine Projects Coordinator, Marine Technician and Electronic Technician) comprised the scientific party. The *R/V POLAR DUKE* was under the able command of Master Magnar Aklestad.

1. PROJECT S-046 PERSONNEL

David M. Karl, University of Hawaii, Professor/Chief Scientist/PI
Georgia Tien, University of Hawaii, Research Oceanographer
Brian Popp, University of Hawaii, Professor
Luigi Pozzi, University of Hawaii, Research Oceanographer
Joe Resing, University of Hawaii, Graduate Student
James Christian, University of Hawaii, Graduate Student
Terrence Houlihan, University of Hawaii, Research Oceanographer
Rachael Dow, Bermuda Biological Station, Research Oceanographer
Vernon Asper, University of So. Mississippi, Professor
Arne Diercks, University of So. Mississippi, Graduate Student
Anthony Amos, University of Texas, Professor

2. PROJECT S-047 PERSONNEL

Walker O. Smith, University of Tennessee, Professor/PI
Giacomo DiTullio, University of Tennessee, Research Oceanographer
Kendra Daly, University of Tennessee, Graduate Student
Victoria Johns, University of Tennessee, Research Oceanographer
Mercedes Pascal, Woods Hole, Research Oceanographer
Amy Schauer, University of Alaska, Graduate Student
John Goodlaxson, University of Tennessee, Research Oceanographer
Joseph Ustach, Duke University, Professor

3. ASA PERSONNEL

Maria Tarantino, Marine Projects Coordinator
Cole Mather, Marine Technician
Steve Brownell, Electronics Technician

II. CRUISE TIMELINE AND SAMPLING METHODS

1. TIMELINE (NOTE: all dates/times are GMT; also see Figures 1-6 for maps of study areas)

11-02; 1131 - Depart Punta Arenas
11-05; 1400 - ETA Palmer Station
11-05; 2200 - ETD Palmer Station
11-06; 1900 - ETA Palmer Basin, deploy Bottom-Moored Sediment Trap Arrays (3)
11-07; 0230 - ETD Palmer Basin
11-07; 1355 - ETA Dallmann Bay, begin CTD ops.
11-08; 1300 - ETD Dallmann Bay, return to Palmer for equipment repair
11-09; 0700 - Begin Stations on LTER line 600
11-10; 0913 - ETD line 600
11-10; 1907 - ETA Charlotte Bay, begin CTD, camera, nets and drifting sediment trap ops.
11-13; 1427 - ETD Charlotte Bay, initial destination - RACER ROCKS but due to inclement weather we head south to Paradise Bay (Harbour) and beyond in search of higher phytoplankton standing stocks (i.e., bloom)
11-13; 2215 - ETA Paradise Bay, begin CTD ops
11-13; 2300 - ETD Paradise Bay
11-14; 1145 - ETA Lemaire Channel, begin CTD ops
11-14; 1600 - ETD Lemaire Channel, return to Paradise Bay
11-14; 2300 - ETA Paradise Bay, begin CTD and miscellaneous ops
11-18; 1250 - ETD Paradise Bay
11-18; 1741 - ETA Palmer Station
11-18; 2301 - ETD Palmer Station
11-19; 0924 - ETA RACER Rocks, deploy field party for AWS repair
11-19; 1047 - ETD RACER Rocks
11-19; 1807 - ETA Deception Island, breaking fast ice
11-19; 2007 - Bar-B-Q on the fantail
11-19; 2300 - Begin Deception Island CTD ops
11-20; 0708 - End station work for PD92-09, head for anchorage in Whaler's Bay for brief shore leave and completion of retrograde packing
11-20; 1418 - ETD Deception Island
11-23; 1406 - ETA Punta Arenas, lines ashore!

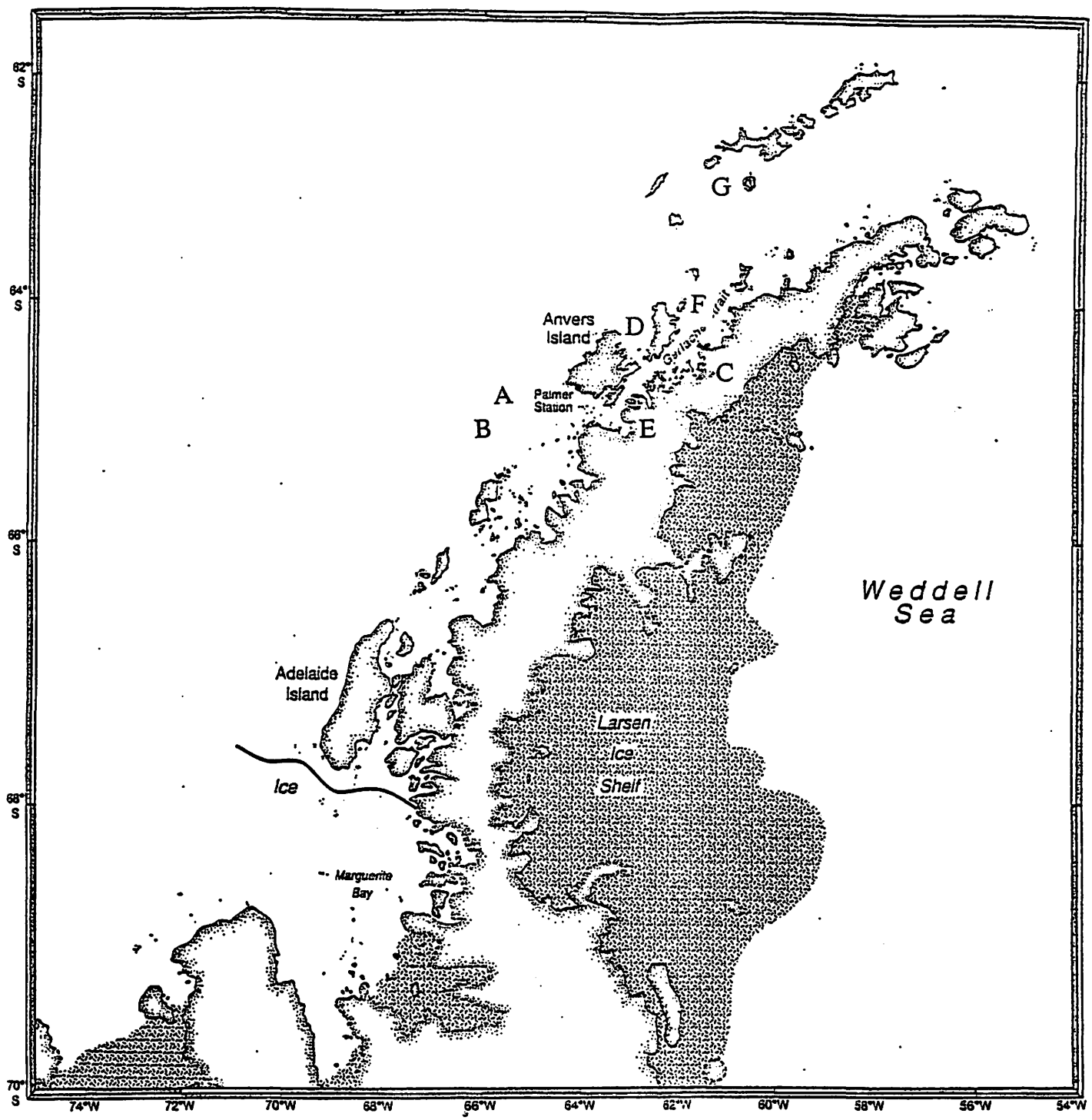


Figure 1: Map of the Antarctic Peninsula Region showing the approximate locations of: (A) LTER line 600, (B) "sediment trap triangle", (C) Charlotte Bay, (D) Dallman Bay, (E) Paradise Harbour, (F) RACER Rocks and (G) Deception Island. Refer to Daily Science Log for precise station positions.

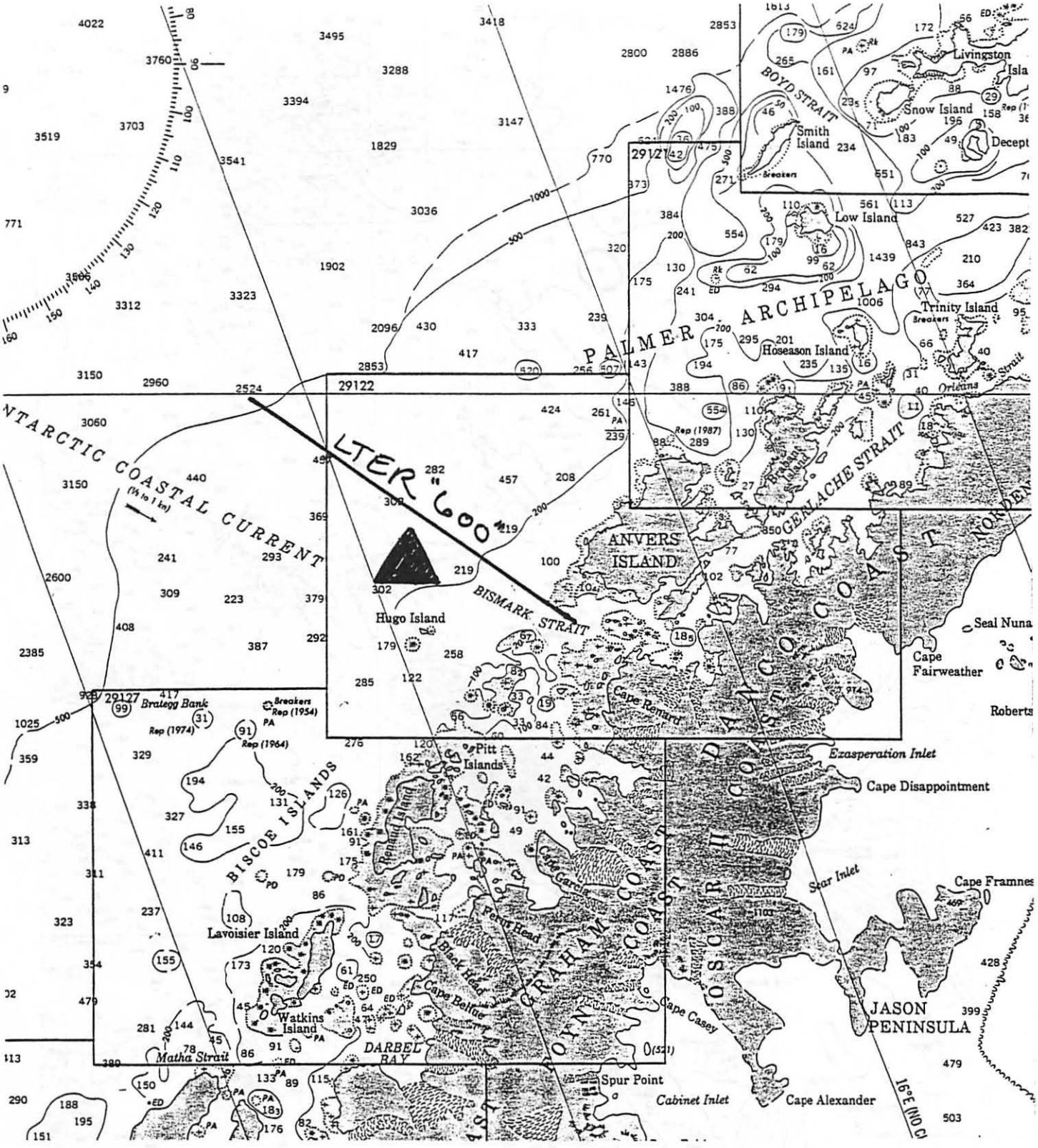


Figure 2: Map of the Antarctic Peninsula region showing the approximate locations of the "sediment trap triangle" and the LTER 600 line. Refer to Daily Science Log for precise positions.

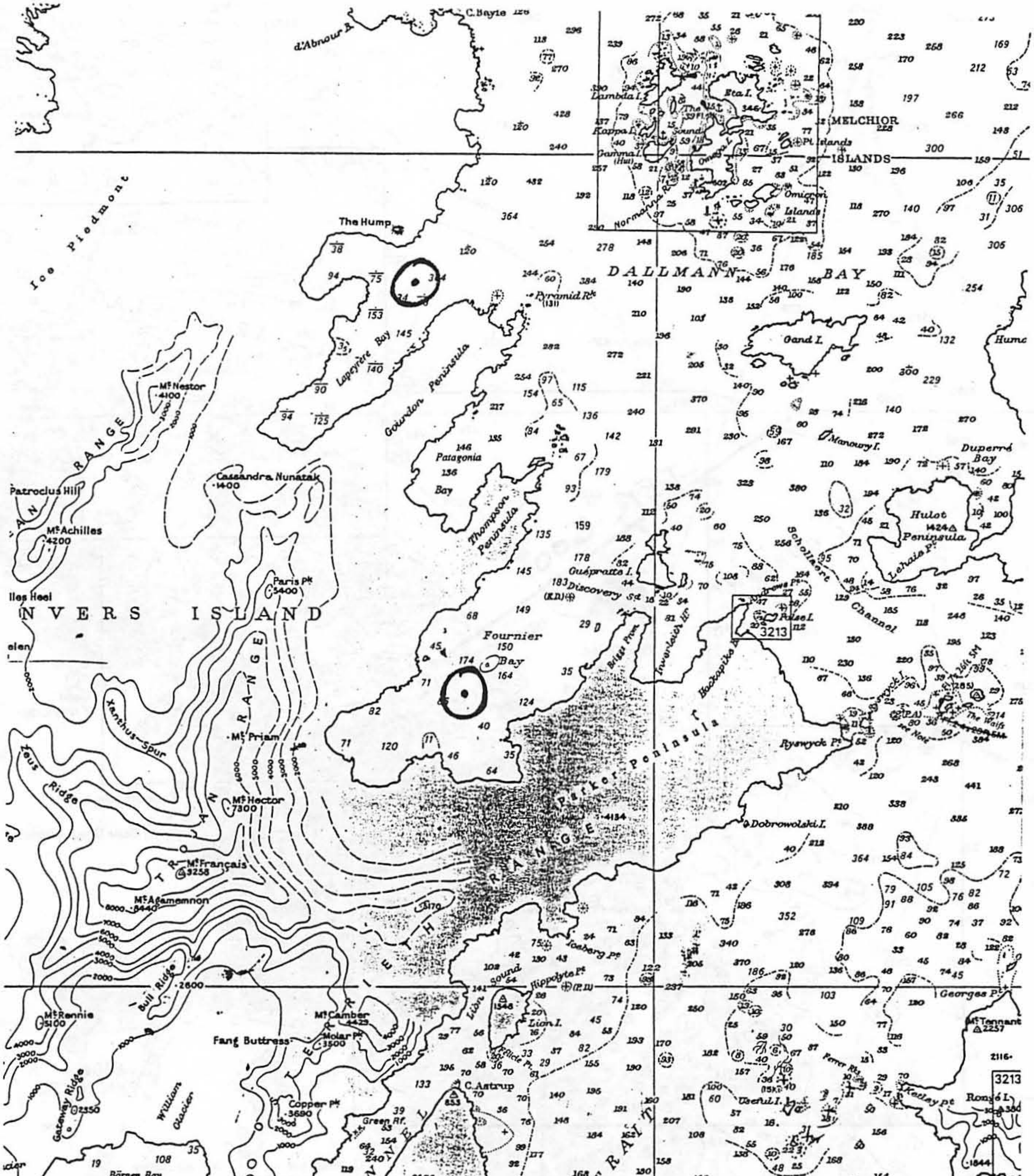


Figure 3: Map showing the approximate locations of Dallmann Bay sampling sites: Fournier Bay and Lapeyere Bay. Refer to Daily Science Log for precise positions.

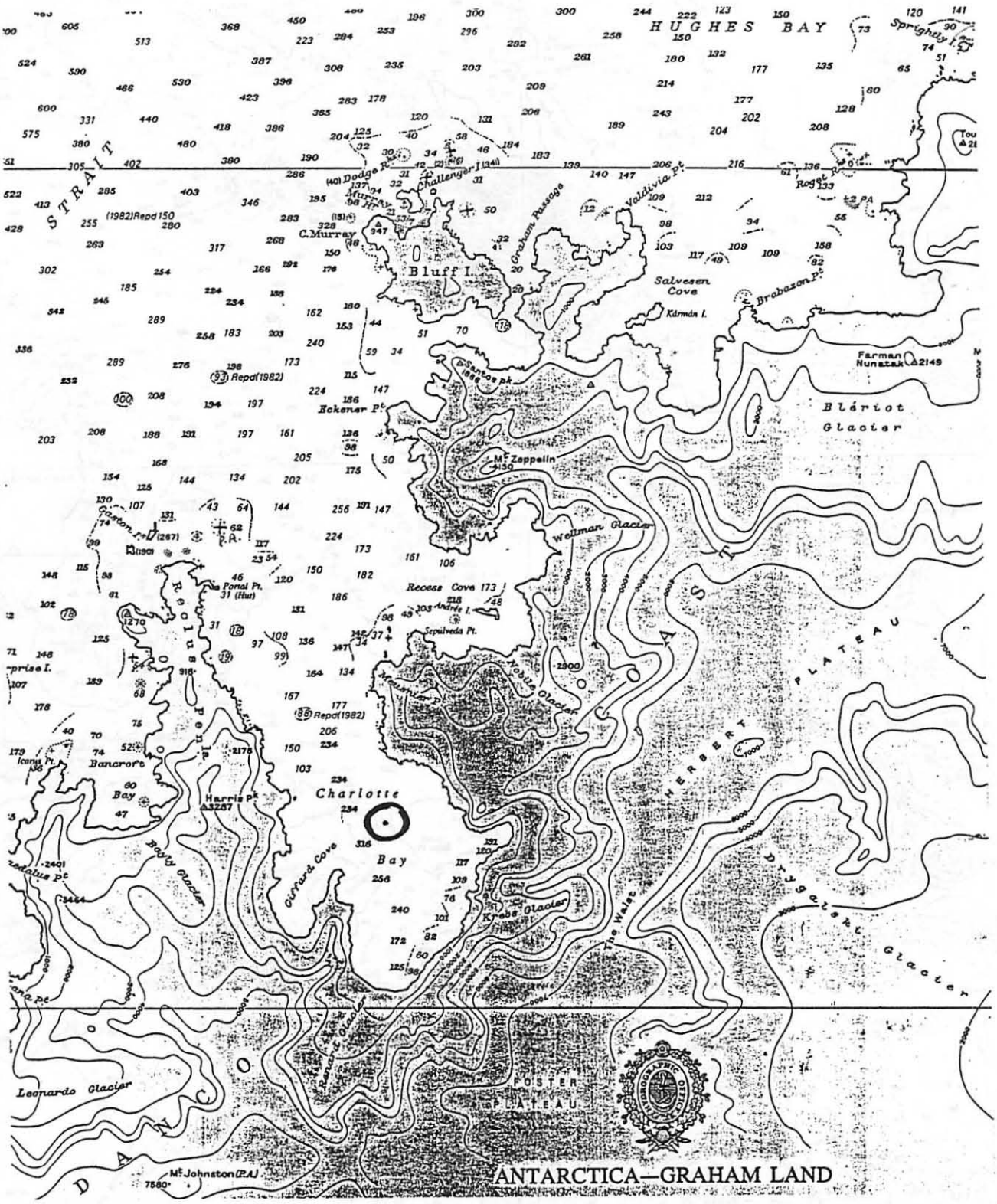


Figure 4: Map showing the approximate location of the Charlotte Bay study area. Refer to Daily Science Log for precise positions.

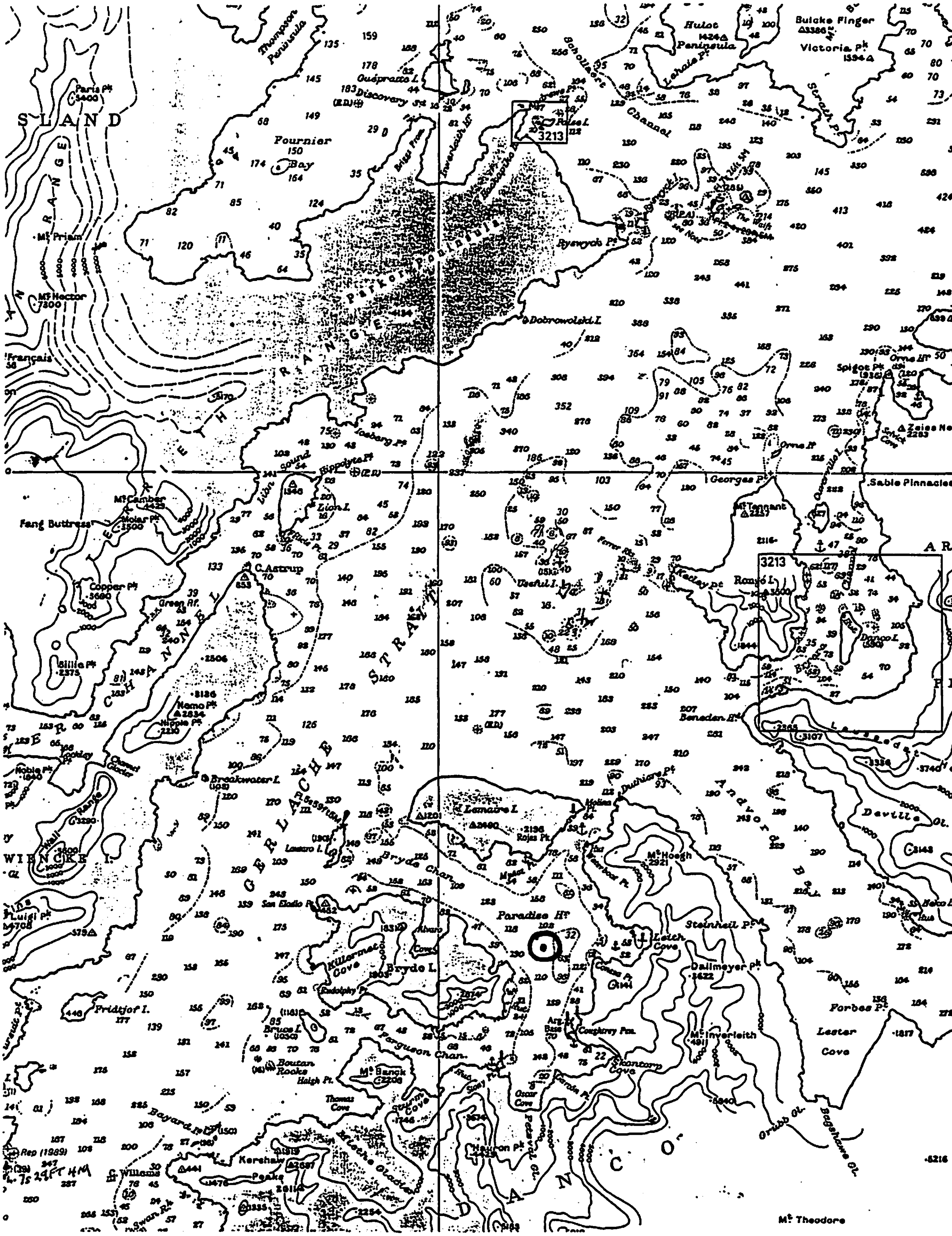


Figure 5: Map showing the approximate location of the Paradise Harbour study region. Refer to Daily Science Log for precise positions.

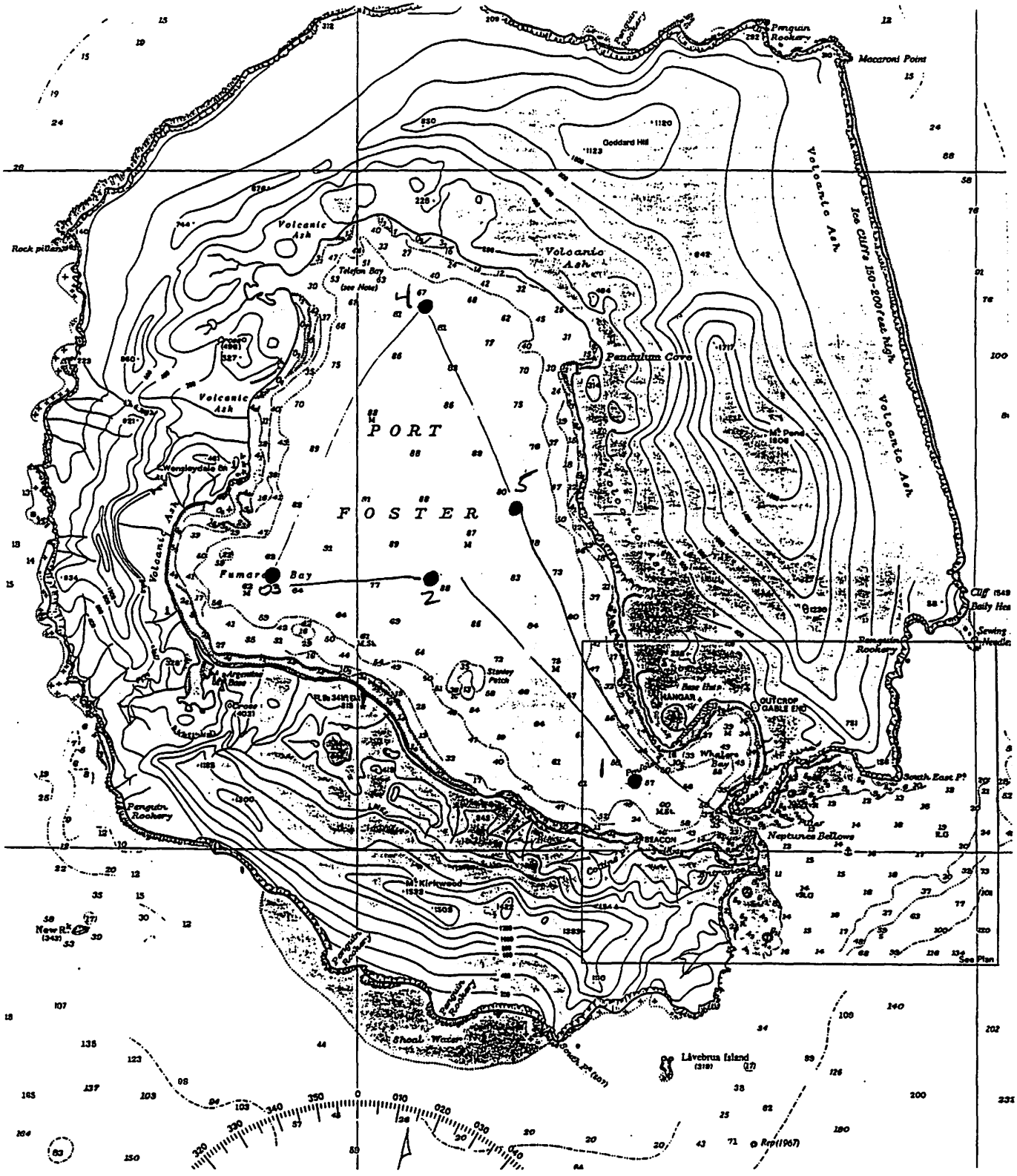


Figure 6: Map of Deception Island showing the approximate locations of the 5 hydrostations. Refer to Daily Science Log for precise positions.

2. OVERVIEW OF SAMPLING METHODS

During *POLAR DUKE* 92-09, we obtained data and collected samples using a variety of different methods, including: (a) CTD with additional sensors for PAR, dissolved oxygen, light transmission and stimulated fluorescence, (b) rosette-mounted Niskin bottles for collection of discrete water samples, (c) 1-m plankton nets (oblique and towed), (d) Isaacs-Kidd midwater trawl, (e) Smith-MacIntyre bottom sampler, (f) Asper-type marine snow camera system, (g) MK7-21 bottom moored time-series sediment traps (deployed only), (h) drifting sediment traps of the VERTEX multitrap design (2 deployments and recoveries), (i) *in situ* drifting photolysis array (1 deployment/recovery), (j) large volume pump sampler for collection of near surface water samples and (k) zodiak-assisted collections of seasurface microlayer samples and ice-associated algal communities. Collection frequency and locations are provided in the detailed "Daily Science Log" (Section IV).

III. SCIENCE REPORTS

In lieu of Science SITREPS which are not routinely required for research conducted aboard the *POLAR DUKE*, we have prepared the following PD92-09 science reports. These are not intended to be comprehensive summaries or interpretations of data, but rather capsules of the research conducted at sea and inventories of the experiments conducted and samples collected.

1. PROJECT S-046 AND ASA PERSONNEL

A. HYDROGRAPHY, METEOROLOGY AND UNDERWAY DATA LOGGING: A. Amos (with help from others) - prepared by D. Karl

Sandwiched in between more "formal" commitments on RACER (July-Aug 1992) and AMLR (Feb 1993), Tony Amos volunteered to sail with us during *POLAR DUKE* 92-09. In retrospect, I'm not too sure what we would have done without him! During his 20 hr/day shift, Tony was responsible for all of the CTD hydrographic data collected on the cruise, for the underway sail loop and meteorology records, for emergency repair of the automatic weather station (AWS) on RACER Rocks in Gerlache Strait and for the preparation of the "Daily Science Log." The latter is reproduced in it's entirety in Section IV of this cruise report. Of course he did receive some noteworthy assistance, especially from M. Pascal, V. Johns, L. Pozzi and S. Brownell. Bottle salinity samples were cheerfully run on board by V. Asper and R. Dow, following an emergency repair of the Palmer Station salinometer by V. Asper. The CTD-O_2 data, along with underwater PAR, fluorescence and beam transmission, when completely analyzed, will reside in the LTER data base.

B. CORE BIOGEOCHEMICAL MEASUREMENTS AND PARTICLE FLUX: D. Karl, G. Tien, T. Houlihan, J. Christian, B. Popp, L. Pozzi, R. Dow, V. Asper, A. Diercks

One of the major obligations of Project S-046, in the overall context of the PALMER LTER Program, is to make repeat measurements of a variety of "core" biogeochemical measurements, including: hydrography (see Section III.1.A, above), inorganic carbon system parameters (alkalinity, total carbon dioxide and derived estimates of partial pressure of CO_2), dissolved oxygen, inorganic and organic nutrients, dissolved organic carbon, particulate ATP, bacterial cell numbers, bacterial productivity, and total and dissolved lipopolysaccharide (LPS). Collectively, these measurements will help describe the magnitude and intensity of autotrophic and microheterotrophic processes within the LTER study region. All measurements will be made using JGOFS program standardized protocols which will allow more meaningful comparisons to be made between antarctic habitats and other regions of the world ocean. During *POLAR DUKE* 92-09 we collected samples at 7 stations along the LTER line 600 (one station was aborted due to inclement weather), and at 3 stations in Dallman Bay, 8 stations in Charlotte Bay, 10 stations in Paradise Harbour and 5 stations in the Deception Island crater. Inorganic nutrients (phosphate, nitrate+nitrite, nitrite and silicate) and dissolved oxygen concentrations were measured at sea. All other samples were retrograded to the University of Hawaii for subsequent

processing. From the levels of nutrients and oxygen saturation state observed during the cruise, we conclude that the spring phytoplankton bloom was in the earliest stages of development.

Another major S-046 program objective, and obligation to LTER, was the deployment of three time-series sediment trap moorings in order to provide continuous measurements and samples of sinking particulate materials throughout the period of the spring-summer plankton bloom. It is intended that these moorings will comprise a longterm data base on the timing and magnitude of this important event. To accomplish this goal, we have scheduled periodic recovery/redeployment throughout a period of several years. During *POLAR DUKE* 92-09 we successfully deployed the three moorings in Palmer Basin approximately 2-10 km south of the axis of LTER line 600 between stations 600.080 and 600.120 (see Figure 2, and Daily Science Log). Because sediment trap mooring measurements are rarely, if ever, replicated, we designed this "cluster mooring" to be a single replicated field experiment. The three sediment traps, each deployed on a single mooring equipped with a deep-sea acoustical release mechanism, are able to collect 21 discrete samples over a pre-determined time schedule (see Figure 7). Summaries of trap location, water depth and collection schedule are presented in Tables 1 and 2. All three trap moorings will be recovered during the Mar-May 1993 LTER cruise aboard the *R/V N. B. PALMER*, and redeployed in the same region for a 9-month collection period. If the traps are recovered successfully, sample materials will be distributed to numerous colleagues around the world for specialized determinations, in addition to our own measurements of carbon, nitrogen, phosphorus, silica, total mass and microscopic identification.

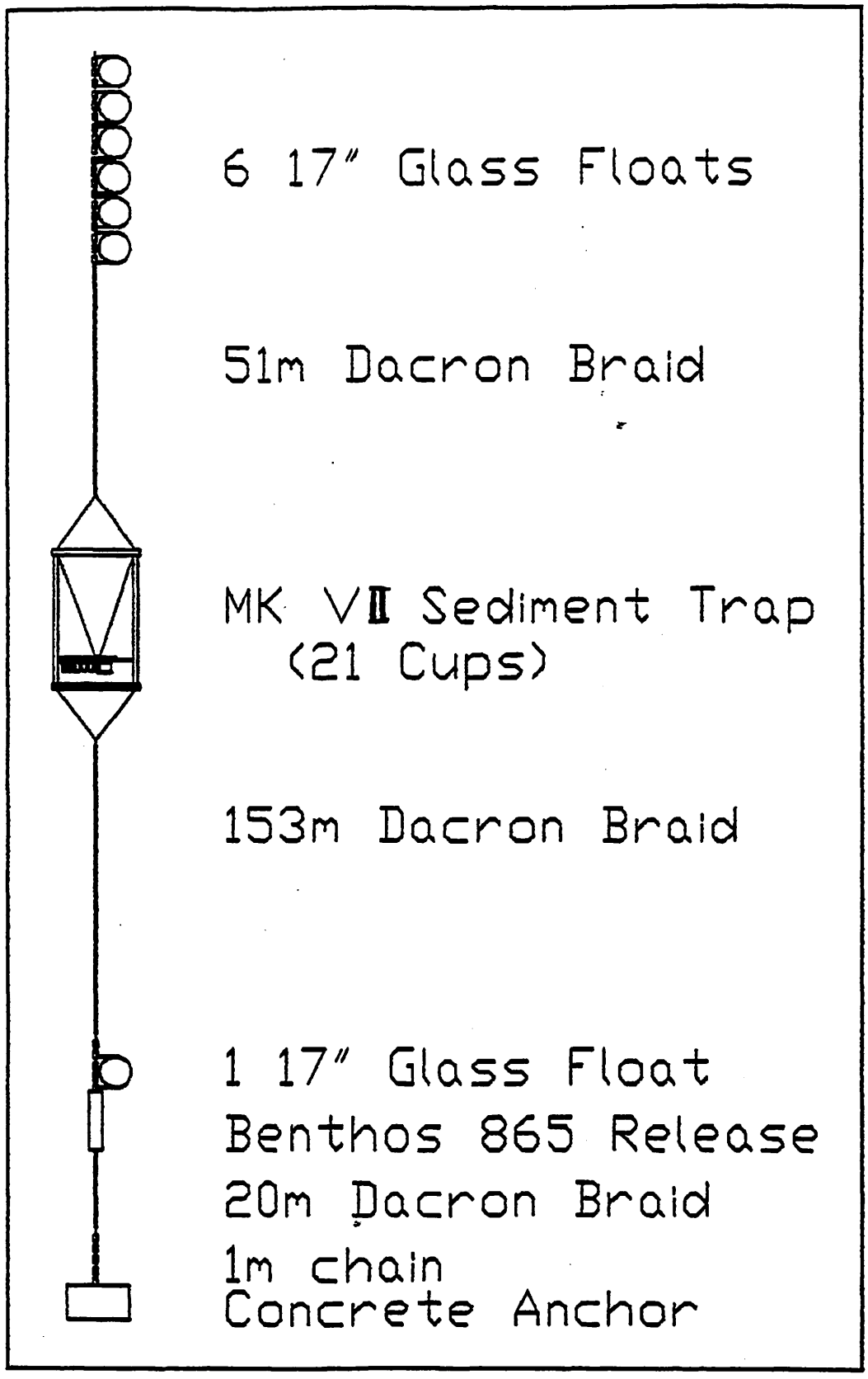


Figure 7: Schematic representation (prepared by V. Asper) of the sediment trap mooring configuration used for the Palmer LTER cluster. Note: In each case the sediment trap is located 176 m above the sea floor, however, water depths varied between 300-359 m.

Table 1. Summary of sediment trap positions, acoustic release codes and water/trap depth.

Site	Time	Position Latitude	Longitude	Release	Enbl	Rel	Depths (m) Water	Trap
A	19:00	64° 30.22W	66° 01.71W	620	1A	1B	345*	169
B	21:54	64° 43.75W	66° 11.00W	621	2A	2B	300 m	124
C	23:35	64° 44.09W	65° 51.22W	622	3A	3B	359 m	183 m

Table 2. Summary of LTER sediment trap schedule for collection of sinking particles.

Sample #	Open Date and Time	Close Date and Time
1	11/07/92 12:00:00	11/14/92 05:00:00
2	11/14/92 05:00:00	11/20/92 22:00:00
3	11/20/92 22:00:00	11/27/92 15:00:00
4	11/27/92 15:00:00	12/04/92 08:00:00
5	12/04/92 08:00:00	12/11/92 01:00:00
6	12/11/92 01:00:00	12/17/92 18:00:00
7	12/17/92 18:00:00	12/24/92 11:00:00
8	12/24/92 11:00:00	12/31/92 04:00:00
9	12/31/92 04:00:00	01/06/93 21:00:00
10	01/06/93 21:00:00	01/13/93 14:00:00
11	01/13/93 14:00:00	01/20/93 07:00:00
12	01/20/93 07:00:00	01/27/93 00:00:00
13	01/27/93 00:00:00	02/02/93 17:00:00
14	02/02/93 17:00:00	02/09/93 10:00:00
15	02/09/93 10:00:00	02/16/93 03:00:00
16	02/16/93 03:00:00	02/22/93 20:00:00
17	02/22/93 20:00:00	03/01/93 13:00:00
18	03/01/93 13:00:00	03/08/93 06:00:00
19	03/08/93 06:00:00	03/14/93 23:00:00
20	03/14/93 23:00:00	03/21/93 16:00:00
21	03/21/93 16:00:00	03/28/93 09:00:00

All samples are 6 days and 17 hours long (6.71 days).

C. DRIFTING SEDIMENT TRAPS: D. Karl, G. Tien, B. Popp, D. Bird, G. DiTullio, W. Smith, J. Christian, R. Dow and A. Diercks

As one subcomponent of the S-046/S-047 interdisciplinary plankton rate processes study, we deployed (and recovered) two short-term (1.5-2 days) drifting sediment trap arrays of the MULTITRAP design (Knauer et al. 1979). The first experiment was conducted in Charlotte Bay and the second in Paradise Harbour. For each experiment, we deployed 12 individual sediment trap collectors at each of three depths (60, 80 and 100 m). Each trap had a specially-prepared solution designed to be compatible with the intended experiment or measurement. For example, several traps were deployed with a hypersaline solution containing formalin for the preservation and subsequent measurement of organic matter. Others were deployed without any poison or preservative so that post-collection "live" experiments could be performed. During the deployment periods, the drifting arrays were tracked by ARGOS satellite, and locally by strobelight and VHF-radiotransmitter. Both drifting arrays were deployed and recovered without incident. In spite of the relatively low concentrations of phytoplankton in the surface waters, particle fluxes were much higher than expected and were dominated by zooplankton fecal pellets. One hypothesis resulting from this observation is that the pre-bloom macrozooplankton demand for carbon and energy is supported, in part, by consumption of ice algae which were fairly abundant in our study area. Algal pigment "fingerprints" measured in the water column, the "brown" ice and the sediment traps (G. DiTullio, K. Daly, W. Smith) should provide a rigorous test of this hypothesis. Samples collected for measurements of virus concentration (D. Bird), exoenzymatic activity (J. Christian), DMS content (G. DiTullio), carbon, nitrogen, phosphorus, silica, microscopic identification, ATP (G. Tien and D. Karl) and abundance of stable C and N isotopes (B. Popp) will be measured at our respective home institutions.

Reference

Knauer, G. A., J. H. Martin and K. W. Bruland. 1979. Fluxes of particulate carbon, nitrogen and phosphorus in the upper water column of the northeast Pacific. *Deep-Sea Research* **26**: 97-108.

D. EXPERIMENTAL STUDIES OF THE MICROBIAL LOOP: D. Karl, G. Tien, D. Bird and J. Christian

Our current models of the trophic organization of antarctic marine ecosystems have evolved considerably during the past decade. Prior to 1980, energy flow in Southern Ocean habitats was believed to be relatively short and, therefore, a highly efficient transfer from large phytoplankton cells to krill to higher trophic levels. This classical view of a linear antarctic food chain model has recently been expanded to reflect the roles of other herbivorous and carnivorous macrozooplankton including copepods, ostracods and gelatinous predators, benthic secondary productivity and plankton-benthos coupling and energy flow through microheterotroph (bacteria) and protozooplankton (flagellates and ciliates) assemblages. Nevertheless, it is important to emphasize that comprehensive, quantitative ecosystem studies of energy and carbon flow through the antarctic food web do

not exist. At best only order of magnitude estimates for a few selected study areas are available. Consequently we must view food web models as hypotheses that require and deserve a thorough, quantitative field evaluation.

During the extensive RACER program (1986-1992), we had an opportunity to study the coupling between phytoplankton and bacterioplankton communities in a variety of antarctic coastal marine ecosystems. One of the more interesting, and unexpected, results of these analyses was the relationship between phytoplankton and bacterioplankton biomasses. Contrary to highly positive correlations often observed between their standing crops for aquatic environments worldwide (Bird and Kalff 1984, Cole et al. 1988), the RACER study failed to support this ecological prediction. These data revealed a deficiency, by up to an order of magnitude, in bacterial cells at chl *a* concentrations $\geq$ 2.5 μg chl *a* l^{-1}, relative to aquatic ecosystems previously studied (Karl et al. 1991). Several independent studies in high latitudes have revealed similar results suggesting that depauperate bacterial populations may be a fundamental difference between polar and non-polar habitats (Cota et al. 1990, Pomeroy et al. 1991). This apparent uncoupling of algal and bacterial processes suggests that the microbial loop consumes a negligible amount of the total carbon production. The reason(s) for this uncoupling are not well understood at present. At least four processes may be important: (1) organic substrate limitation, (2) differential temperature effects, (3) direct competition by mixotrophic algae and (4) chemical antagonism.

During *POLAR DUKE* 92-09, we conducted a series of experiments designed to test simultaneously the effects of temperature and organic substrate concentration. We designed and constructed an incubation device referred to as the "organothermotron" which allowed us to independently vary either incubation temperature or substrate level or both. This device is analogous to the "photosynthetron" used to study photoautotrophic processes in that it allows one to vary the microheterotrophic energy supply under controlled experimental conditions. Three complete experiments were conducted with temperatures in the range of -1.6 to 4° C and organic conditions ranging from 0 (ambient levels) to 5 μM. All samples were retrograded to the University of Hawaii for final processing.

References

Bird, D. F. and J. Kalff. 1984. Empirical relationships between bacterial abundance and chlorophyll concentration in fresh and marine waters. *Canadian Journal of Fisheries Aquatic Science* **41**: 1015-1023.

Cole, J. J., S. Findlay and M. L. Pace. 1988. Bacterial production in fresh and saltwater ecosystems: a cross-system overview. *Marine Ecology Progress Series* **43**: 1-10.

Cota, G. F., S. T. Kottmeier, D. H. Robinson, W. O. Smith, Jr. and C. W. Sullivan. 1990. Bacterioplankton in the marginal ice zone of the Weddell Sea: Biomass, production and metabolic activities during austral autumn. *Deep-Sea Research* **37**: 1145-1167.

Karl, D. M., O. Holm-Hansen, G. T. Taylor, G. Tien and D. F. Bird. 1991. Microbial

biomass and productivity in the western Bransfield Strait, Antarctica during the 1986-87 austral summer. *Deep-Sea Research* 38: 1029-1055.

Pomeroy, L. R., W. J. Wiebe, D. Diebel, R. J. Thompson, G. T. Rowe and J. D. Pakulski. 1991. Bacterial responses to temperature and substrate concentration during the Newfoundland spring bloom. *Marine Ecology Progress Series* 75: 143-159.

E. BACTERIAL EXOENZYME ACTIVITY: J. Christian

During the *POLAR DUKE* 92-09 cruise bacterial exoenzyme activities were measured in several coastal antarctic habitats, using the fluorescent substrate analog method (Hoppe 1983, Somville and Billen 1983). Measuring exohydrolytic activities is a crucial component in the study of microbial loop processes because it is thought that most dissolved organic nutrients occur in polymeric forms (e.g. Coffin 1989) and hydrolysis is thus a crucial "bottleneck" step in their utilization by bacteria.

Samples were collected at 7 stations along the LTER 600 as well as in Charlotte Bay and Paradise Harbour. Activities associated with materials collected by free-floating sediment traps in both locations were also measured. The primary enzyme under study was leucine aminopeptidase (LAPase; EC 3.4.1.1); B-glucuronidase (GUase; EC 3.2.1.31) and N-acetylhexosidase (NAHase; EC 3.2.1.30) activities were also measured at selected stations.

LAPase activities were found to be intermediate between those obserevd on previous summer (Dec 1991 - Jan 1992) and winter (Jul-Aug 1992) cruises. The onshore-offshore gradient observed along the LTER 600 line was weak; but the high activities observed in near-surface waters extended to greater depths at the offshore stations. The highest activities observed were on the first occupation of Charlotte Bay (8 Nov 1992), immediately after the breakup of the winter pack ice. By 11 Nov the activity had decreased to about half the 8 Nov level. GUase and NAHase activities were consistently below the detection limit ($\sim$10 nmol l^{-1} d^{-1}) in Charlotte Bay and Paradise Harbour.

LAPase activity was measured on sinking particulate material collected in free-floating sediment traps in Charlotte Bay and Paradise Harbour. Activities in the traps were extremely low in comparison to similar experiments conducted in the Pacific Ocean near Hawaii, where the water column activities are much lower than in Antarctica. These results suggest a fundamentally different character of the particles in the Antarctic habitats (intact algal cells and faecal pellets vs. aggregates) resulting in a different partitioning of microheterotrophic activity between particle-associated and free-living cells.

Experiments were also conducted to determine the effects of temperature on exoproteolysis. The LAPases of antarctic bacterioplankton do not have a temperature optimum over the range 0-20° C. Activites increase with temperature over the entire range and the slope of a plot of $\log(V_{max})$ vs. temperature is similar to that observed in tropical waters. Total activity per ml of seawater is much greater than in tropical waters when temperature effects are considered, while numbers of bacteria are about the same,

indicating a much greater concentration of proteolytic enzymes per unit of cell surface area in antarctic bacterioplankton.

The kinetic parameters K_m and V_{max} are both greater at high temperatures (> 10° C), but there are insufficient data to determine whether the decrease in K_m at low temperatures is due to a change in the initial slope (V_0) or to a change in V_{max} with constant V_0 and thus whether temperature affects activity at low substrate concentration.

References

Coffin, R. B. 1989. Bacterial uptake of dissolved free and combined amino acids in estuarine waters. *Limnology and Oceanography* **34**: 531-542.

Hoppe, H.-G. 1983. Significance of exoenzymatic activities in the ecology of brackish water: measurements by means of methylumbelliferyl-substrates. *Marine Ecology Progress Series* **11**: 299-308.

Somville, M. and G. Billen. 1983. A method for determining exoproteolytic activity in natural waters. *Limnology and Oceanography* **28**: 190-193.

F. MARINE SNOW CAMERA SURVEYS: V. Asper and A. Diercks

Our objective on this cruise was the acquisition of the first profiles of marine snow aggregate abundance in Antarctica. These initial profiles will serve as baseline data for comparison with future samples and will provide supporting information for the interpretation of light transmissometer, fluorometer, sediment trap and water column samples such as particulate organic carbon.

The technique employed follows that of Honjo et al. (1984) where a collimated light "slab" is used to define a sample volume of water. A deep-sea camera (Lobsiger model DS 6000 with Elcan 90°, f2.8 lens) is positioned at a right angle to axis of illumination to photograph and intersecting volume. The camera frame is lowered at 5-12 m min^{-1} (depending on water depth and time available) with photographs taken at 10 second intervals during the descent. On most occasions, the frame was retrieved at 30 m min^{-1} and a second profile acquired immediately. Films are developed in continuous process to provide repeatable image quality and the cleanest possible negatives. These images are then processed and analyzed using Java software to give the size distribution of particles in each photograph.

In general, the cameras performed very well in spite of the extreme cold and over 4,500 images were acquired in 20 lowerings of the camera at 4 separate locations. The spatial and temporal variety of these profiles, coupled with the unique thermal structure and particle abundance profiles will place these data among the most interesting ever acquired. The station locations, depths reached and total number of samples (images) acquired are presented in Table 3.

Reference

Honjo, S., K. W. Doherty, Y. C. Agrawal and V.L. Asper. 1984. Direct optical assessment of large amorphous aggregates (marine snow) in the deep ocean. *Deep-Sea Research* **31**: 67-76.

Table 3: Marine snow camera deployments during *POLAR DUKE* 92-09

Cast #	Location Name	Latitude	Longitude	Depth Reached	Images
1	LTER-601	64° 48.16'S	64° 43.15'W	254 m	356
2	LTER-602	64° 55.59'S	64° 23.61'W	0 m	0
3	Charlotte Bay	64° 28.03'S	61° 43.06'W	182 m	498
4	Charlotte Bay	64° 28.00'S	61° 43.60'W	175 m	84
5	Charlotte Bay	64° 27.18'S	61° 43.65'W	332 m	400
6	Charlotte Bay	64° 26.59'S	61° 45.26'W	336 m	346
7	Charlotte Bay	64° 26.71'S	61° 45.03'W	332 m	188
8	Paradise Bay	64° 51.03'S	62° 53.65'W	295 m	288
9	Paradise Bay	64° 51.11'S	62° 53.59'W	290 m	192
10	Paradise Bay	64° 50.95'S	62° 54.74'W	288 m	280
11	Paradise Bay	64° 50.80'S	62° 55.03'W	276 m	170
12	Paradise Bay	64° 50.57'S	62° 55.47'W	285 m	303
13	Paradise Bay	64° 50.55'S	62° 55.48'W	290 m	170
14	Paradise Bay	64° 50.62'S	62° 55.18'W	285 m	266
15	Paradise Bay	64° 50.53'S	62° 55.14'W	268 m	258
16	Deception-1	62° 59.34'S	60° 35.67'W	98 m	98
17	Deception-2	62° 50.00'S	60° 38.01'W	154 m	170
18	Deception-3	62° 57.71'S	60° 41.44'W	101 m	96
19	Deception-4	62° 56.40'S	60° 39.16'W	151 m	170
20	Deception-5	62° 57.16'S	60° 37.76'W	145 m	170
	TOTALS:			3,953 m	4,503

G. STUDIES OF VIRAL ECOLOGY: D. Bird

My main objectives on this cruise were: (a) to count free-living viruses in the water column, (b) to follow their dynamics through time, (c) to count viruses in the sediments below productive waters, (d) to determine viral infection rate of bacteria, (e) to determine viral loss rates due to adhesion and sedimentation on particles, as well as due to chemical antagonists and (f) to see if viral activity could explain the lack of correlation between bacterial population size and algal biomass in antarctic coastal ecosystems (Karl et al. 1991, Bird and Karl 1991).

The primary site of interest was the Paradise Harbour time series station. Bacterial-viral samples were collected twice daily from the less than 200 m depths on the standard 0400 and 2000 hr casts. Samples were fixed with glutaraldehyde and stored in polypropylene vials. Viral counts by transmission electron microscopy will be done following direct sedimentation of viruses onto EM grids, in Montreal. Viruses from two profiles were spun down on grids on board when sea conditions were calm, using the Beckman EM-90 rotor in the airfuge. This rotor is especially designed for viral sedimentation and avoids the biases due to convection and uneven distribution that are a problem with larger ultracentrifuges. Approximately 170 samples were collected for these counts.

Viral ecology has not yet established standard, reliable routines for sample fixation and storage. Consequently, I conducted a storage study using five types of vessels: glass, polypropylene, high-density polyethylene, TE polyethylene and polycarbonate. Time zero samples were spun down onto grids from each of these samples. Addition of glycerol to each of the vessel types was an experimental approach to the prevention of adhesive losses.

I attempted to compare viral and grazing losses of bacteria using a Landry-Hassett (1982)-type dilution approach. Whole water was diluted to 50, 20, 5, 1 and 0.2% with filtered seawater. These samples as well as whole water were incubated for 24 to 72 hours. Samples diluted with water filtered through 0.02 μm Anopore filters will provide combined viral and protozoan mortalities. Samples diluted with 0.2 μm Millipore filtered water will provide protozoan grazing mortality by the Landry-Hassett protocol. One set of these experiments was conducted in Fournier Bay (Dallmann Bay region) and a second set in Paradise Harbour.

I measured viral loss rate due to adsorption and to chemical antagonists in samples amended with 1 mM arsenate. A control sample was live water. I followed the time course of viral loss over several days. This method has been used in the literature as a method of measuring production rate of viruses.

I did two ultraviolet (UV) radiation damage experiments. The first was a short exposure experiment. Samples were incubated in bright sunlight near noon for 1.5 hours. Duplicate samples were kept in quartz (full UV), in quartz wrapped in Mylar film (cuts out most UV-B), and behind plexiglass (cuts out most UV-A and UV-B). Samples were then incubated in the dark for 36 h with periodic sampling to watch for bursts of induced viral replication. The second was an *in situ* incubation on the drifting array used for photolysis experiments (see Section III.1.H). Water from 15 m was incubated at 0, 5, 10, 15 and 20 m for a full day. Subsamples were taken and fixed with glutaraldehyde for viruses, bacteria and phytoplankton at the time of array recovery and after a further half-day of incubation in the dark. UV light was measured with single-wavelength radiometers at 365 nm and 250 nm, which gave an index of UV exposure to compare with PAR measurements.

Viral samples were taken from drifting sediment trap arrays at two locations (Charlotte Bay and Paradise Harbour). Samples (45 ml) were fixed for electron microscopy (EM) study using EM-grade glutaraldehyde buffered with seawater. Samples

were taken from well-mixed, unfixed traps deployed at 60, 80 and 100 m.

An exploratory attempt was made to measure viral production by re-filtering the filtrate from a leucine incubation onto a 0.02 μm Anopore filter.

Finally, several samples of whole seawater from the stations occupied, and of ice algae, were fixed with EM-grade fixatives for investigation of mixotrophy by algae, algal identification, and, potentially, algal infection by viruses.

References

Bird, D. F. and D. M. Karl. 1991. Spatial patterns of glutamate and thymidine assimilation in the Bransfield Strait, Antarctica during and following the austral spring bloom. *Deep-Sea Research* **38**: 1057-1075.

Karl, D. M., O. Holm-Hansen, G. T. Taylor, G. Tien and D. F. Bird. 1991. Microbial biomass and productivity in the western Bransfield Strait, Antarctica during the 1986-87 austral summer. *Deep-Sea Research* **38**: 1029-1055.

Landry, M. R. and R. P. Hassett. 1982. Estimating the grazing impact of marine microzooplankton. *Marine Biology* **67**: 283-288.

H. PHOTOLYTIC DEGRADATION OF ORGANIC MATTER AND HYDROGEN PEROXIDE MEASUREMENTS: J. Resing and D. Karl

Data collected from previous cruises around the Antarctic Peninsula have revealed anomalously low concentrations of dissolved organic nutrients (DOC, DON, DOP) in spite of the hypereutrophic conditions that are sometimes observed (D. Karl and G. Tien, unpublished). One possible explanation for these results might be the result of photolytic breakdown of organic matter in the near surface waters. If this abiotic carbon dissimilation pathway is found to be important in antarctic coastal waters, it may have to be included in future considerations of the carbon cycle. Furthermore, due to the increased UV fluxes observed for the Southern Ocean in general, organic photolysis may become an important control in the overall functioning fo the microbial loop.

During *POLAR DUKE* 92-09, we conducted several preliminary experiments to test ecological predictions of the organic photolysis hypothesis. These included measurements of the concentration and diel dynamics of hydrogen peroxide (H_2O_2; a potential photolytic intermediate), experimental studies of the effects of various organic nutrient additions on the UV and visible-light induced hydrogen peroxide dynamics and the deployment of a free-drifting *in situ* array to evaluate the depth dependence of the photoinduced effects. In addition to providing direct information on potential photochemical-organic matter interactions, these data may provide information on vertical advection in habitats using the steady-state model calculations of Johnson et al. (1989).

Hydrogen peroxide determinations were made for the first time in antarctic waters.

Concentrations, determined by the method of Miller and Kester (1988), ranged from 8 to 20 nM in surface waters taken from hydrocast stations. These concentrations for surface ocean water are the lowest reported to date. H_2O_2 concentrations typically decreased to ~1 nM below the mixed layer. The low levels are probably explained by low dissolved organic matter, low primary productivity, recent ice cover, and/or low ambient light during the winter months, which allowed for the depletion in the inventory of the H_2O_2 in the water column. Incubations with surface seawater initially collected near Hawaii (which we had transported to Antarctica for our inorganic nutrient determinations) or with antarctic waters supplemented with various organic substrates produced significantly larger amounts of H_2O_2 than antarctic waters alone when incubated under identical conditions. These results support the "organic carbon limitation" conclusion. During the cruise, H_2O_2 was determined in depth profiles from 17 time series stations at Charlotte Bay, 6 stations on the LTER-600 transect line, 23 time series stations at Paradise Harbour, and stations from Dallman Bay, the La Mer Strait, the Argentine Isles and Deception Island. Samples were also analyzed from water proximal to "brown algal ice," glacial ice, and penguin rookery run off.

Mixed layer (0-20 m) inventories of H_2O_2 at the time series stations revealed a diel signal with an H_2O_2 maximum in late afternoon and a H_2O_2 minimum around dawn. This cycle is similar to that observed in other marine environments. H_2O_2 dark decay rates, determined by dark incubations, were ~1 nM/hr. This decay rate was adequate, but not necessarily sufficient, to explain the H_2O_2 peroxide decay observed during diel cycles.

Samples taken from selected environments showed elevated concentrations of H_2O_2. For example, samples collected near "brown algal ice" contained 100-150 nM H_2O_2. Water from penguin rookery meltwater run off contained 200-500 nM H_2O_2. The addition of extracted ice algae to incubation experiments produced elevated levels of H_2O_2. Samples of fresh snow fall had < 10 nM H_2O_2 and were, therefore, an unlikely source for H_2O_2 to the surface waters.

An *in situ* photolysis array was deployed consisting of matched quartz and borosilicate glass tubes affixed to the arms of the sediment trap support racks. As expected, daytime H_2O_2 production was greatest in the quartz tubes with organic supplement. *In situ* production was observed at all depths (0-25 m), although the peroxide concentrations decreased with depth.

Preliminary conclusions from this cruise indicate that the low levels of hydrogen peroxide are likely due to the low levels of DOM in the surrounding seawater. Furthermore, our data show that H_2O_2 production occurs from both UV and visible radiation. Finally, these data provide insight into a set of intriguing questions regarding the production, decay and role of H_2O_2 in antarctic waters as the summer season progresses and full phytoplankton bloom dynamics are observed.

Reference

Johnson, K. S., S. W. Willason, D. A. Wiesenburg, S. E. Lohrenz and R. A. Arnone. 1989.

Hydrogen peroxide in the western Mediterranean Sea: a tracer for vertical advection. *Deep-Sea Research* **36**: 241-254.

Miller, W. L. and D. R. Kester. 1988. Hydrogen peroxide measurement in seawater by (p-hydroxyphenyl)acetic acid dimerization. *Analytical Chemistry* **60**: 2711-2715.

I. TRACE METAL SURVEY: J. Resing

A cursory study of trace element concentrations in nearshore antarctic waters was undertaken with samples to be analyzed ashore at a later date. While samples were taken with the intent of analyzing Fe, Mn, Se and Al, the condition of the rosette and Niskin bottles may have compromised any analysis for Fe or Al. The samples collected are likely to be contamination-free with regards to Mn and Se. Samples were collected from three stations on the LTER-600 transect line and one station at Paradise Harbour. Surface samples were taken at Charlotte Bay and Paradise Harbour during zodiac ops.

The profile from Paradise Harbour was desired for several reasons. Se, as a bio-active element, can provide information on nutrient uptake in the coastal waters. The data from this cruise should provide us with a baseline pre-bloom value for Se in Antarctic coastal waters. Mn, with probable sedimentary and shoreline sources, should indicate the general availability of trace metals to high productivity nearshore waters prior to the onset of a phytoplankton bloom. The dark color and presence of acid volatile H_2S in local sediments indicate a potential source for Fe. It is hoped that if the samples obtained were of high enough quality, Fe determinations may also show prebloom baseline conditions for this element and its potential availability from sedimentary sources.

The samples obtained from the LTER-600 transect will provide us with several important pieces of information. Primarily, we expect the transect to show decreasing trace element concentrations with increasing distance from shore. Secondarily, we expect that the samples obtained furthest from land (Station 600.180) may provide us with an estimate of the quality of our samples. This will be very important in evaluating the data obtained for all trace element samples.

J. STABLE CARBON ISOTOPE ANALYSES: B. Popp

Samples were obtained during the course of the cruise on the *POLAR DUKE* for stable carbon isotopic analyses. Systematically collected samples included water samples for determination of the carbon isotopic composition of dissolved inorganic carbon (δ DIC), dissolved organic carbon (δ DOC) and dissolved methane ($\delta\ CH_4$) as well as samples of particulate organic matter for compound-specific isotopic analyses (CSIA). Numerous krill and other miscellaneous zooplankton were collected opportunistically using net tows. Samples for δ DIC, δ DOC and $\delta\ CH_4$ were collected in glass or plastic bottles either directly from Niskins or from filtered water first collected from Niskins in a polycarbonate container. Samples for CSIA were filtered from seawater using the aquarium water supply on board and material collected until the filter plugged. Two size fractions were collected using a 20 μm Nitex screen and a Gelman A/E brand glass fiber filter.

The general goal of this work is to provide a carbon-isotope mass balance of the major organic carbon phases in the area of study. Specific goals of the analyses are as follows: (1) determine the effect of changes in [CO_2(aq)] on the magnitude of the isotope effect associated with autotrophic carbon fixation by using differences between δ_{DIC} and CSIA of sterols derived from major phytoplankton, (2) compare food web reconstructions determined through conventional analyses (e.g., analyses of gut contents) with study of the trophic structure using CSIA of compounds isolated from the macrofaunal components and their gut extracts, (3) use δ_{CH_4} to infer origins and mechanisms of formation of dissolved methane and (4) use δ_{DOC} to determine origins and mechanisms of recycling of dissolved organic matter. Such results will help trace the flow of carbon in the antarctic microbial food web and should aid materially in determining the source organisms for numerous biochemicals. I hope these results will allow significant advances in identifying processes driving recycling of organic matter in this region.

The following list is a compilation of samples obtained:

Transect

Suspended Organic Matter

Station	Time interval	Volume of water pumped (gallons)
L600.180	0437-0615	198.0
L600.160	0805-1013	358.6
L600.140	1130-1320	275.6
L600.120	1530-1650	199.3
L600.100	1846-2035	336.5
l600.080	2141-2250	171.6
L600.060	0041-0233	265.4
L600.040	0459-0615	189.5

Dissolved Organic and Inorganic Carbon

Station	Depth samples (m)	Vial sample numbers
L600.180	2, 10, 25, 50, 100, 200	1-6
L600.160	2, 10, 25, 50, 100, 200	7-12
L600.140	2, 10, 25, 50, 100, 200	13-18
L600.120	no samples taken	
L600.100	2, 10, 25, 50, 100, 200	25-30
L600.080	2, 10, 25, 50, 100, 200	31-36
L600.060	2, 10, 25, 50, 100, 200	37-42
L600.040	2, 10, 25, 50, 100, 200	43-48

Samples for analyses of the carbon isotopic compositions of dissolved methane were taken

from the deepest samples at all stations except Sta. 600.120.

Time series samples (Charlotte Bay and Paradise Harbour)

All samples of suspended organic matter were taken during the time intervals noted. All samples of DIC and DOC were taken during the 0400 cast at depths of 2, 10, 20, 50 and 100 meters. One net tow was obtained in Paradise Harbour from 0200-0300, depth varies from surface to 20 m at a ship speed of ~2 km hr^{-1}. Four samples for determination of $\delta\, CH_4$ of sediment pore water were obtained using syringe micro-cores from sediment sampled using a Smith-McIntyre grab sampler.

Charlotte Bay

Date	Time interval (POM)	Volume sampled	Vial sample # (DOC, DIC)
11 Nov	0120-0600	397.9	49-53
12 Nov	0130-0530	400.2	54-59
13 Nov	0100-0530	425.9	60-65

Sediment trap samples

Depth (m)	Number of traps	Preservation
60	3	formalin
80	3	formalin
100	3	formalin

Paradise Harbour

Date	Time interval (POM)	Volume sampled	Vial sample # (DOC, DIC)
15 Nov	0115-0600	327.9	66-70
16 Nov*	0005-0515	385.8	71-75
17 Nov*	0725-1255	701.6	76-80
17 Nov	1740-2040	300.3	

* used only 20 μm Nitex screen

Sediment trap samples

Depth (m)	Number of traps	Preservation
60	2	none (saline)
80	2	none (saline)
100	2	none (saline)

Methane samples[1] (11/15/92; 0300 cast, Paradise Harbour)

Niskin[2]	Depth	Sample number (CH_4)	Sample number (DOC)
1	10	11, 23a, 23b	11
2	30	10	10
3	50	09	09
4	100	08, 24a, 24b	08
5	150	07	07
6	200	06	06
7	220	05	05
8	264	04, 26a, 26b	04
9	280	03	03
10	287	02, 27a, 27b	02
11	287	01	01

[1] bottles tripped on downward deployment
[2] sediment samples taken using a grab sampler 16 Nov, 0200; four samples for determination of $\delta\, CH_4$ of sediment pore water.

K. DECEPTION ISLAND HYDROTHERMAL SURVEY: D. Karl, J. Resing and B. Popp

Depth profiles were taken at five stations on Deception Island. At least three of the five stations showed a significant light attentuation anomaly at approximately 5 m above the cauldera floor. The anomaly was evident over an approximate 5-10 m range. Samples were triggered within this particle rich area. Samples were taken for conventional tracers of hydrothermal activity, including Fe, Mn, and CH_4. Further, samples were taken for the carbon isotopic compostion of CH_4 (B. Popp). This data set should unambiguously establish the prescence of hydrothermal venting on Deception Island. The carbon isotopic data will be useful in distinguishing between CH_4 of hydrothermal and diagenetic sources. Samples were further taken for Al determinations (J. Resing) to assess the role of Al in low temperature venting.

2. PROJECT S-047 AND ASA PERSONNEL

NITROGEN DYNAMICS WITHIN TWO SOUTHERN OCEAN JGOFS CRUISES: *W. Smith et al.*

In previous studies of nitrogen uptake and new production in polar regions, it has been found that the response of the microplankton assemblages varies with respect to the particular substrate (nitrate, ammonium and bicarbonate) and the local environment. For example, nitrogen and carbon uptake appear to be greatly uncoupled at low irradiances, and one explanation for this uncoupling is that heterotrophic processes are significantly influencing nitrogen uptake. If this were true that the traditional interpretation of new production needs to be reassessed in polar waters. Therefore, the objectives of this project were to: (1) determine the extent of uncoupling between carbon and nitrogen uptake, particularly at low light intensities, (2) assess the heterotrophic utilization of nitrogen, particularly ammonium and (3) investigate the interactions between nitrate and ammonium in controlling nitrate uptake.

During cruise 92-09 of the *POLAR DUKE*, a series of experiments were conducted to help begin to understand the carbon/nitrogen dynamics in the southern ocean. For example, routine ^{15}N-nitrate and ^{15}N-ammonium uptake measurements were made at a number of stations along the LTER-600 line as well as the time-series stations. At each station, ^{14}C-incorporation and ^{15}N-nitrogen (nitrate and ammonium) uptake was measured at 7 depths using tracer techniques. After sample processing we will normalize uptake to irradiance and see if there is any relationship between uptake, uptake ratios and irradiance. Furthermore, a number (4) of experimental N vs. I experiments with a photosynthetron were conducted. These are short-term ^{15}N-incubations within a light gradient incubator.

An experiment was conducted to assess the degree of ammonium inhibition of nitrate uptake. Concentrations of ammonium tested ranged from 0.18 to 3.0 μM. Size fractionations were also completed to determine which fraction was incorporating the greatest amount of nitrogen.

In addition to the ^{15}N-measurements, routine biomass assessments (chlorophyll, particulate carbon and nitrogen, biogenic silica) were conducted, and irradiance was measured continuously. Primary productivity using ^{14}C-incorporation was also measured. These data will assist in a description of the regions sampled and the temporal changes in plankton communities.

Dimethyl sulfide (DMS) concentrations were measured at depths ranging from the surface to approximately 200 m. Eleven vertical profiles were analyzed from Charlotte Bay, eight profiles from Paradise Harbour, four from the LTER-600 transect and one station (Fumarole Bay) at Deception Island. In addition, subsamples were frozen from most of the above stations for subsequent DMSP and pigment analyses by high pressure liquid chromatography (HPLC).

DMS fluxes into a free floating sediment trap were measured at three depths in

Charlotte Bay and Paradise Harbour. Two treatments (live vs. formalin treated) were compared at each site. Samples were frozen for particulate flux determinations of xanthophyll pigments, chorophylls, phaeopigments and DMSP. An experiment investigating the effects of UV irradiance on *in situ* DMSO production was also performed in Paradise Harbor in conjunction with D. Karl. Finally, two incubation experiments were performed with K. Daly with ice algae and krill to investigate the release of DMS from these organisms.

Antarctic krill (*Euphausia superba*) were collected by IKMT hauls, vertical ring net tows and with a dip net from a deployed zodiac. Four IKMT hauls, one ring net tow, and two zodiac trips were made in Charlotte Harbour, one zodiac deployment was made in the Argentine Islands and one IKMT haul, two ring net tows, and one zodiac trip were made in Paradise Bay. Some krill were frozen for CHN analysis, dry-weight measurements, and HPLC analysis of gut pigments. Growth rate, molting rate, and ingestion rate experiments also were made during the cruise. Fecal pellets collected from live krill held in aquaria will be used as a baseline for those collected in the sediment traps in collaboration with D. Karl's group.

IV. DAILY SCIENCE LOG

The following underway data log was prepared by A. Amos (S-046). It provides both a running account of shipboard activities and daily science ops summaries. Continuous meteorological data are also provided.

V. ACKNOWLEDGEMENTS

We thank the master, officers and crew of the R/V *POLAR DUKE* for their outstanding assistance during our expedition. We also gratefully acknowledge the support provided to us by ASA and AGUNSA personnel from Englewood to Punta Arenas. Maria Tarantino, Cole Mather and Steve Brownell also contributed directly and significantly to the success of our cruise. Finally, we express our appreciation to the scientific party and the National Science Foundation for "making it happen" and to Lisa Lum for getting this report completed.

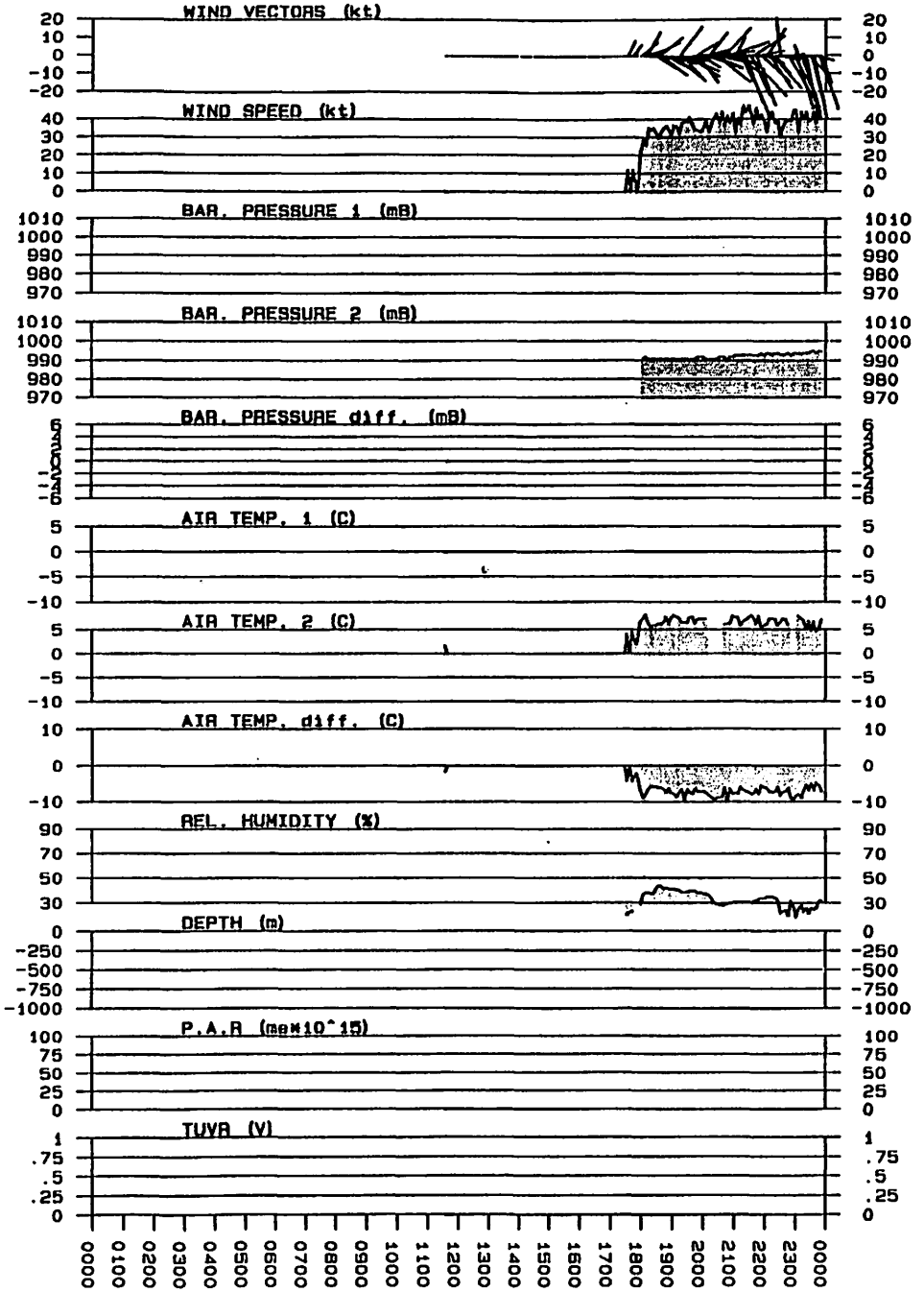
POLAR DUKE NOV 1992 - DAILY SCIENCE LOG; DAY # 1 11-02-1992 ; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
1131 GPS	53 10.25S	70 54.37W	1.0	330	0.0	0.0	0.0	36.0	0.0	18.5	144	0.0	180	---	--	-----	0.0	---	---	DEPART ON PD 92-09
1200 GPS	53 8.26S	70 47.48W	11.4	043	5.0	5.0	0.0	0.0	0.0	0.0	000	0.0	180	---	--	-----	0.0	---	---	
1300 GPS	52 59.81S	70 33.58W	12.2	038	11.9	17.0	0.0	0.0	0.0	0.0	000	0.0	180	---	--	-----	0.0	---	---	
1400 GPS	52 47.60S	70 28.91W	13.6	358	13.2	30.1	0.0	0.0	0.0	0.0	000	0.0	180	---	--	-----	0.0	---	---	
1500 GPS	52 41.11S	70 9.01W	14.1	073	14.8	44.9	0.0	0.0	0.0	0.0	000	0.0	180	---	--	-----	0.0	---	---	
1600 GPS	52 37.28S	69 48.25W	13.3	063	13.3	58.2	0.0	0.0	0.0	0.0	000	0.0	180	---	--	-----	0.0	---	---	
1700 GPS	52 28.99S	69 32.56W	12.4	051	12.9	71.1	0.0	0.0	0.0	0.0	000	0.0	180	---	--	-----	0.0	---	---	
1708 GPS	52 28.16S	69 30.83W	10.3	047	1.3	72.4	0.0	0.0	0.0	0.0	000	0.0	180	---	--	-----	0.0	---	---	DROP OFF PILOT AT PTA. DELGADA
1800 GPS	52 21.38S	69 17.83W	12.1	089	10.7	83.1	0.0	38.0	0.0	21.4	202	32.9	283	---	--	-----	0.0	---	---	
1900 GPS	52 23.01S	68 59.06W	11.5	108	11.8	94.8	0.0	41.0	0.0	26.6	200	37.6	302	---	--	-----	0.0	---	---	
2000 GPS	52 27.70S	68 41.45W	11.9	113	11.8	106.6	0.0	37.0	0.0	29.4	192	41.1	301	---	--	-----	0.0	---	---	
2100 GPS	52 32.91S	68 23.87W	11.7	134	12.1	118.7	0.0	33.0	0.0	35.8	078	35.2	231	---	--	-----	0.0	---	---	
2200 GPS	52 41.51S	68 10.22W	12.0	134	12.0	130.7	0.0	34.0	0.0	37.9	208	48.8	336	---	--	-----	0.0	---	---	
2300 GPS	52 50.15S	67 56.18W	12.6	134	12.2	142.8	0.0	25.0	0.0	38.3	203	50.1	331	---	--	-----	0.0	---	---	

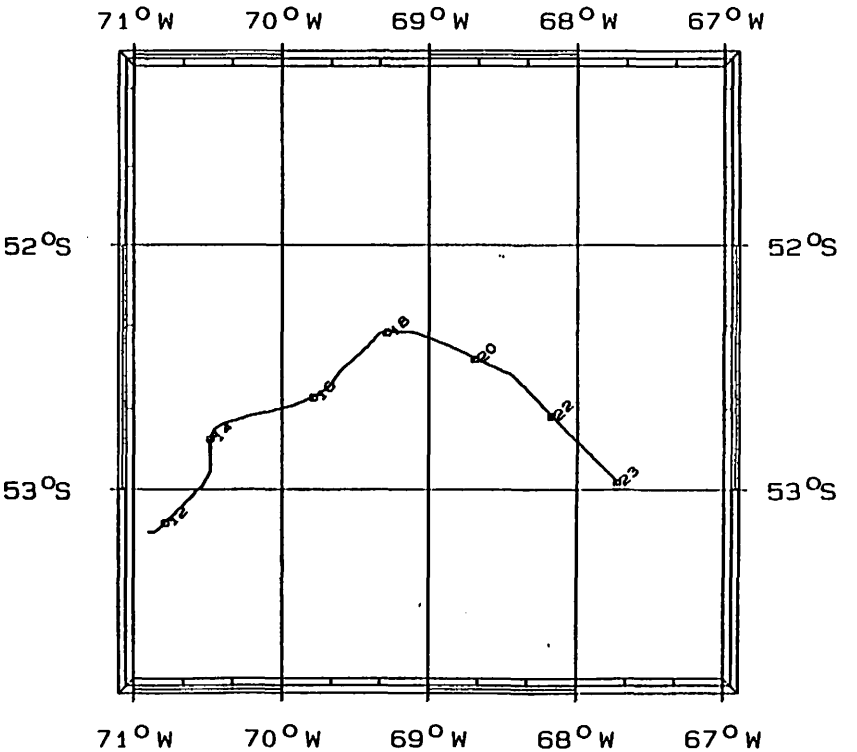
DAILY SUMMARY

DISTANCE TRAVELLED TODAY	154.6 nm									
TOTAL DISTANCE TRAVELLED	154.6 nm									
SHIP'S SPEED (kts) ;		AVERAGE=	12.4	MAXIMUM=	16.9	AT 1427 HRS.	MINIMUM=	1.0	AT 1131 HRS.	
AIR TEMPERATURE (C);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 1131 HRS.	MINIMUM=	0.0	AT 1131 HRS.	
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 1131 HRS.	MINIMUM=	0.00	AT 1131 HRS.	
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.	
BAROMETRIC PRESSURE (mb);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 1131 HRS.	MINIMUM=	0.0	AT 1131 HRS.	
RELATIVE HUMIDITY (%);		AVERAGE=	16.7	MAXIMUM=	45.0	AT 1832 HRS.	MINIMUM=	0.0	AT 1132 HRS.	
WIND SPEED (kts);		AVERAGE=	18.9	MAXIMUM=	53.0	AT 2233 HRS.	MINIMUM=	0.0	AT 1131 HRS.	
MEAN DAILY WIND VELOCITY= 11.4 (kts) FROM 328 DEGREES TRUE										
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 1131 HRS.	MINIMUM=	0.00	AT 1131 HRS.	
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT	HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT	HRS.

POLAR DUKE 92-9 UNDERWAY DATA: 11-02-1992



SCIENTIFIC ACTIVITIES THIS DAY:



POLAR DUKE NOV 1992 - DAILY SCIENCE LOG; DAY # 2 11-03-1992 ; PAGE # 1

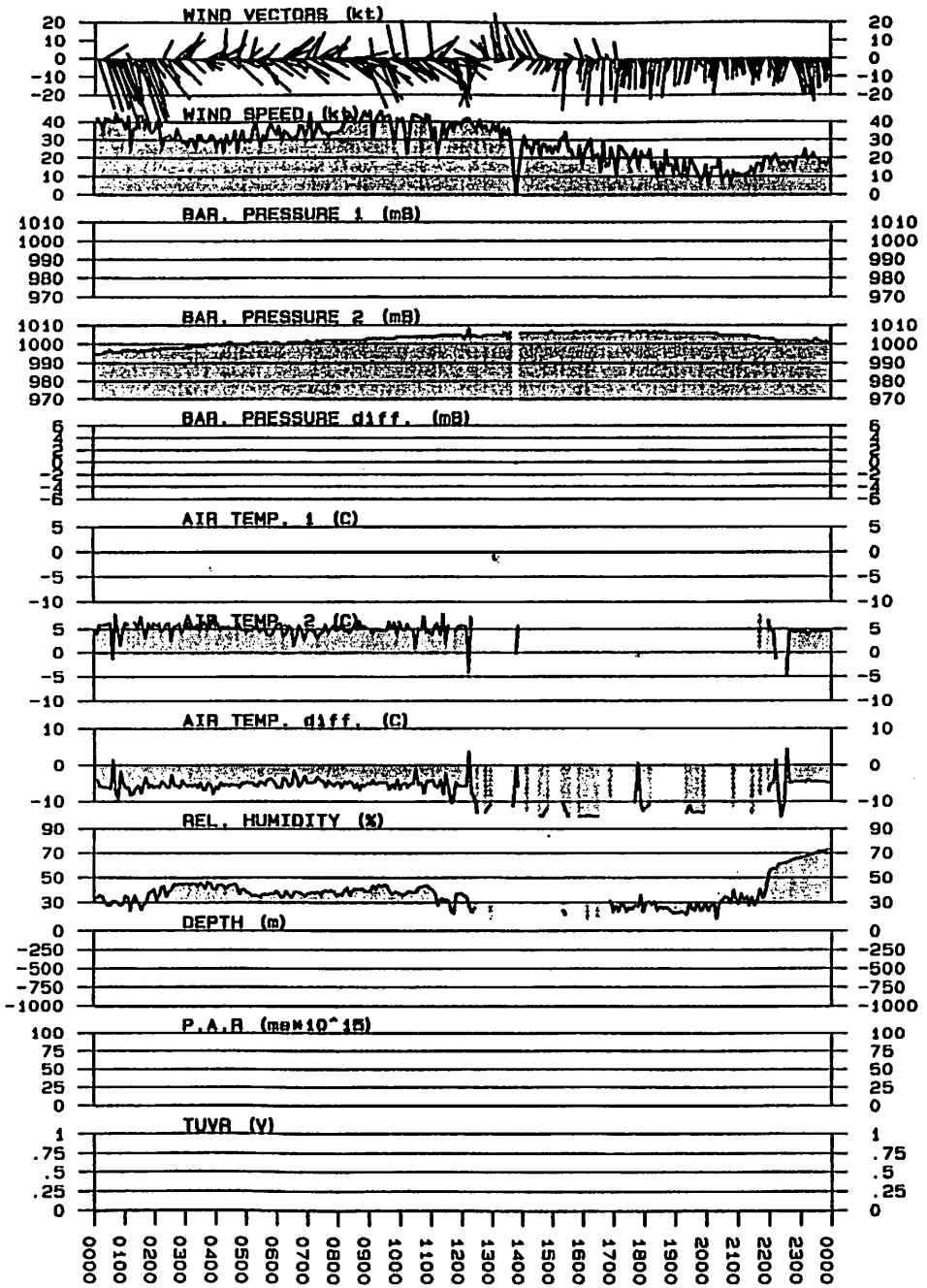
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0000 GPS	52 58.96S	67 41.86W	12.1	134	0.0	0.0	0.0	36.0	0.0	35.2	200	46.7	329	---	--	-----	0.0	---	---	
0100 GPS	53 7.67S	67 27.89W	12.4	134	12.1	12.1	0.0	38.0	0.0	31.3	183	43.7	316	---	--	-----	0.0	---	---	
0200 GPS	53 16.06S	67 14.68W	11.4	131	11.6	23.7	0.0	43.0	0.0	29.0	152	39.4	290	---	--	-----	0.0	---	---	
0300 GPS	53 23.70S	67 1.15W	11.3	129	11.2	34.9	0.0	46.0	0.0	30.5	056	25.9	206	---	--	-----	0.0	---	---	
0400 GPS	53 31.21S	66 48.25W	10.7	131	10.8	45.7	0.0	36.0	0.0	25.3	007	14.7	143	---	--	-----	0.0	---	---	
0500 GPS	53 38.66S	66 35.51W	10.8	130	10.7	56.3	0.0	38.0	0.0	29.2	108	34.1	255	---	--	-----	0.0	---	---	
0600 GPS	53 46.19S	66 22.03W	12.1	131	11.0	67.3	0.0	40.0	0.0	32.9	017	21.6	157	---	--	-----	0.0	---	---	
0700 GPS	53 53.87S	66 8.15W	11.5	131	11.3	78.6	0.0	37.0	0.0	37.7	069	35.3	217	---	--	-----	0.0	---	---	
0800 GPS	54 1.89S	65 53.94W	12.4	131	11.6	90.2	0.0	35.0	0.0	31.5	062	27.9	216	---	--	-----	0.0	---	---	
0900 GPS	54 9.94S	65 38.91W	11.4	130	12.0	102.2	0.0	41.0	0.0	36.5	107	41.3	252	---	--	-----	0.0	---	---	
1000 GPS	54 18.26S	65 24.14W	12.9	135	12.0	114.3	0.0	38.0	0.0	38.5	187	51.3	320	---	--	-----	0.0	---	---	
1100 GPS	54 26.35S	65 9.74W	14.0	137	11.7	126.0	0.0	42.0	0.0	35.6	006	21.7	147	---	--	-----	0.0	---	---	
1200 GPS	54 34.58S	64 57.98W	10.3	148	10.8	136.7	0.0	37.0	0.0	37.3	033	29.2	192	---	--	-----	0.0	---	---	
1300 GPS	54 42.06S	64 56.54W	8.2	178	7.8	144.5	0.0	0.0	0.0	40.8	334	33.6	146	---	--	-----	0.0	---	---	
1400 GPS	54 49.75S	64 55.68W	8.6	178	7.7	152.3	0.0	10.0	0.0	33.2	199	41.5	013	---	--	-----	0.0	---	---	
1500 GPS	54 58.40S	64 52.00W	10.6	168	9.0	161.3	0.0	11.0	0.0	26.0	200	36.2	002	---	--	-----	0.0	---	---	
1600 GPS	55 8.34S	64 47.90W	10.6	167	10.3	171.5	0.0	13.0	0.0	26.6	343	16.8	140	---	--	-----	0.0	---	---	
1700 GPS	55 18.50S	64 45.17W	10.9	168	10.3	181.8	0.0	17.0	0.0	22.9	205	33.1	005	---	--	-----	0.0	---	---	
1801 GPS	55 29.39S	64 42.40W	10.3	167	11.1	192.9	0.0	30.0	0.0	21.0	211	30.3	008	---	--	-----	0.0	---	---	
1900 GPS	55 40.40S	64 39.02W	10.3	167	11.2	204.2	0.0	27.0	0.0	17.3	002	7.0	172	---	--	-----	0.0	---	---	
2000 GPS	55 51.65S	64 36.51W	12.2	167	11.4	215.5	0.0	22.0	0.0	14.4	010	3.2	218	---	--	-----	0.0	---	---	
2100 GPS	56 3.25S	64 34.18W	11.6	167	11.7	227.2	0.0	26.0	0.0	8.0	253	15.9	015	---	--	-----	0.0	---	---	
2200 GPS	56 15.68S	64 30.87W	12.2	167	12.6	239.8	0.0	56.0	0.0	16.1	274	19.5	042	---	--	-----	0.0	---	---	
2300 GPS	56 28.67S	64 26.34W	12.7	167	13.3	253.1	0.0	66.0	0.0	11.7	297	12.8	041	---	--	-----	0.0	---	---	

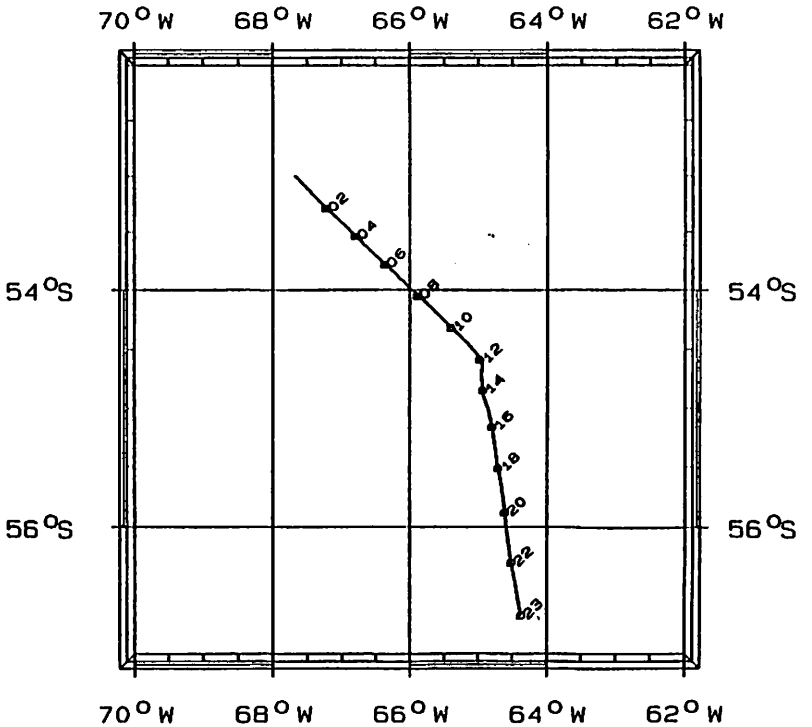
DAILY SUMMARY

DISTANCE TRAVELLED TODAY	266.3 nm									
TOTAL DISTANCE TRAVELLED	420.9 nm									
SHIP'S SPEED (kts) ;		AVERAGE=	11.2	MAXIMUM=	16.8	AT 1731 HRS.	MINIMUM=	3.7	AT 1747 HRS.	
AIR TEMPERATURE (C);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT 0000 HRS.	
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.	
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.	
BAROMETRIC PRESSURE (mb);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT 0000 HRS.	
RELATIVE HUMIDITY (%);		AVERAGE=	33.7	MAXIMUM=	74.0	AT 2350 HRS.	MINIMUM=	0.0	AT 1110 HRS.	
WIND SPEED (kts);		AVERAGE=	28.7	MAXIMUM=	54.9	AT 0857 HRS.	MINIMUM=	0.0	AT 1109 HRS.	
MEAN DAILY WIND VELOCITY= 10.1 (kts) FROM 310 DEGREES TRUE										
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.	
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT	HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.	

POLAR DUKE 92-9 UNDERWAY DATA; 11-03-1992

SCIENTIFIC ACTIVITIES THIS DAY;





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GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0000 GPS	56 41.86S	64 21.88W	13.8	166	0.0	0.0	0.0	73.0	0.0	16.5	109	24.7	307	---	--	-----	48.52	---	---	
0100 GPS	56 55.30S	64 16.99W	13.6	168	13.7	13.7	0.0	75.0	0.0	15.9	302	14.5	057	---	--	-----	0.0	---	---	
0200 GPS	57 9.02S	64 12.15W	14.1	166	14.0	27.8	0.0	75.0	0.0	14.8	300	14.4	049	---	--	-----	0.0	---	---	
0300 GPS	57 22.97S	64 6.44W	15.5	168	14.3	42.1	0.0	77.0	0.0	8.9	268	18.2	017	---	--	-----	0.0	---	---	
0400 GPS	57 36.62S	64 0.11W	13.4	169	14.1	56.2	0.0	78.0	0.0	9.5	243	19.7	014	---	--	-----	0.0	---	---	
0500 GPS	57 49.64S	63 56.98W	13.0	165	13.2	69.4	0.0	80.0	0.0	11.1	259	18.6	020	---	--	-----	0.0	---	---	
0600 GPS	58 2.29S	63 54.02W	12.4	165	12.8	82.2	0.0	81.0	0.0	13.8	153	25.5	331	---	--	-----	0.0	---	---	
0700 GPS	58 14.86S	63 49.93W	12.7	169	12.8	95.0	0.0	82.0	0.0	15.7	238	24.9	021	---	--	-----	0.0	---	---	
0800 GPS	58 27.22S	63 45.95W	12.0	166	12.6	107.6	0.0	83.0	0.0	15.0	192	26.8	352	---	--	-----	0.0	---	---	
0900 GPS	58 39.34S	63 41.41W	12.4	167	12.4	120.0	0.0	82.0	0.0	15.6	116	23.8	311	---	--	-----	0.0	---	---	
1000 GPS	58 51.49S	63 36.72W	12.2	167	12.4	132.4	0.0	82.0	0.0	17.1	013	5.9	208	---	--	-----	0.0	---	---	
1100 GPS	59 3.66S	63 32.18W	12.7	165	12.4	144.9	0.0	82.0	0.0	17.5	213	29.0	005	---	--	-----	0.0	---	---	
1200 GPS	59 15.94S	63 27.79W	12.4	165	12.5	157.4	0.0	82.0	0.0	22.5	197	34.6	356	---	--	-----	0.0	---	---	
1300 GPS	59 28.33S	63 22.94W	13.3	164	12.7	170.1	0.0	82.0	0.0	19.8	137	30.9	318	---	--	-----	0.0	---	---	
1400 GPS	59 40.61S	63 17.77W	12.3	163	12.6	182.7	0.0	82.0	0.0	22.4	137	32.5	315	---	--	-----	0.0	---	---	
1500 GPS	59 52.60S	63 12.36W	12.0	166	12.3	195.0	0.0	82.0	0.0	19.8	173	31.8	341	---	--	-----	0.0	---	---	
1512 GPS	59 55.01S	63 11.33W	12.9	165	2.5	197.5	0.0	81.0	0.0	20.8	139	31.7	319	---	--	-----	0.0	---	---	BREAK IN RECORD. TRYING NEW VERSION

DAILY SUMMARY

DISTANCE TRAVELLED TODAY	197.5 nm									
TOTAL DISTANCE TRAVELLED	618.4 nm									
SHIP'S SPEED (kts) ;		AVERAGE=	13.0	MAXIMUM=	16.2	AT 0204 HRS.	MINIMUM=	11.3	AT 1451 HRS.	
AIR TEMPERATURE (C);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT 0000 HRS.	
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.	
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.	
BAROMETRIC PRESSURE (mb);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT 0000 HRS.	
RELATIVE HUMIDITY (%);		AVERAGE=	79.9	MAXIMUM=	86.0	AT 1158 HRS.	MINIMUM=	0.0	AT 0110 HRS.	
WIND SPEED (kts);		AVERAGE=	21.4	MAXIMUM=	35.4	AT 1201 HRS.	MINIMUM=	0.0	AT 0108 HRS.	
MEAN DAILY WIND VELOCITY= 16.6 (kts) FROM 319 DEGREES TRUE										
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	0.06	MAXIMUM=	48.52	AT 0000 HRS.	MINIMUM=	0.00	AT 0001 HRS.	
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.	
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.	

GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	ATRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
1502 GPS	64 51.46S	62 53.14W	0.1	197	0.0	13.1	0.4	74.0	994.2	17.5	311	17.4	148	274	--	-----	29.87	---	---	CTD PB10 START
1522 GPS	64 51.41S	62 53.00W	1.0	197	0.2	13.3	0.4	74.0	994.2	17.7	234	18.3	069	26	--	-----	22.31	---	---	CTD PB10 ON DECK
1600 GPS	64 50.90S	62 54.36W	1.2	356	1.0	14.3	0.6	74.0	994.6	15.9	269	16.0	261	284	--	-----	20.12	---	---	
1632 GPS	64 50.68S	62 54.11W	0.3	010	0.4	14.7	0.0	72.0	998.6	20.2	289	20.1	298	29	--	-----	20.71	---	---	CTD PB11 START
1642 GPS	64 50.73S	62 54.27W	0.8	005	0.1	14.8	0.4	73.0	995.0	19.0	356	18.3	000	298	--	-----	16.48	---	---	CTD PB11 ON DECK
1700 GPS	64 50.80S	62 54.64W	0.7	021	0.2	15.0	0.0	74.0	994.8	18.5	140	19.0	162	29	--	-----	18.22	---	---	
1701 GPS	64 50.78S	62 54.64W	0.9	019	0.0	15.0	0.2	74.0	994.8	20.0	236	20.5	253	298	--	-----	18.13	---	---	CTD PB12 START
1718 GPS	64 50.73S	62 54.57W	0.4	017	0.1	15.1	0.0	74.0	994.6	17.5	307	17.3	323	285	--	-----	20.76	---	---	CTD PB12 ON DECK
1801 GPS	64 50.95S	62 54.26W	0.6	043	0.5	15.6	0.4	76.0	995.2	9.9	022	9.4	067	284	--	-----	14.96	---	---	
1900 GPS	64 50.74S	62 54.36W	0.2	018	0.5	16.2	0.4	75.0	995.6	10.7	118	10.8	137	298	--	-----	11.11	---	---	
1904 GPS	64 50.73S	62 54.30W	0.3	018	0.0	16.2	0.4	77.0	995.6	12.1	132	12.3	151	294	--	-----	12.04	---	---	CTD PB13 START
1926 GPS	64 50.62S	62 54.14W	0.4	018	0.2	16.4	0.6	77.0	995.6	10.7	230	11.0	246	283	--	-----	13.19	---	---	CTD PB13 ON DECK
2000 GPS	64 50.93S	62 54.79W	4.5	151	0.7	17.1	0.2	75.0	995.8	14.4	062	12.9	231	285	--	-----	14.58	---	---	
2101 GPS	64 50.96S	62 54.58W	1.2	339	0.8	17.9	0.6	74.0	996.4	5.6	120	6.3	109	290	--	-----	5.04	---	---	
2200 GPS	64 51.17S	62 54.93W	0.7	334	0.7	18.7	-0.4	77.0	997.2	3.9	301	3.6	265	27	--	-----	12.34	---	---	
2203 GPS	64 51.18S	62 54.99W	0.4	332	0.1	18.8	-0.4	78.0	997.2	2.9	344	2.5	314	272	--	-----	11.32	---	---	CTD PB14 START
2214 GPS	64 51.22S	62 55.12W	0.5	335	0.2	18.9	-0.2	77.0	997.2	1.4	067	1.3	064	26	--	-----	7.17	---	---	CTD PB14 ON DECK
2300 GPS	64 51.05S	62 54.72W	0.3	359	0.7	19.6	0.4	79.0	998.2	2.9	338	2.6	335	293	--	-----	2.76	---	---	
2301 GPS	64 51.06S	62 54.73W	0.4	000	0.0	19.6	0.4	79.0	998.0	2.7	324	2.4	319	291	--	-----	2.54	---	---	CTD PB15 START
2322 GPS	64 51.07S	62 54.73W	0.4	005	0.2	19.8	0.4	79.0	998.0	10.7	148	11.0	154	285	--	-----	1.47	---	---	CTD PB15 ON DECK

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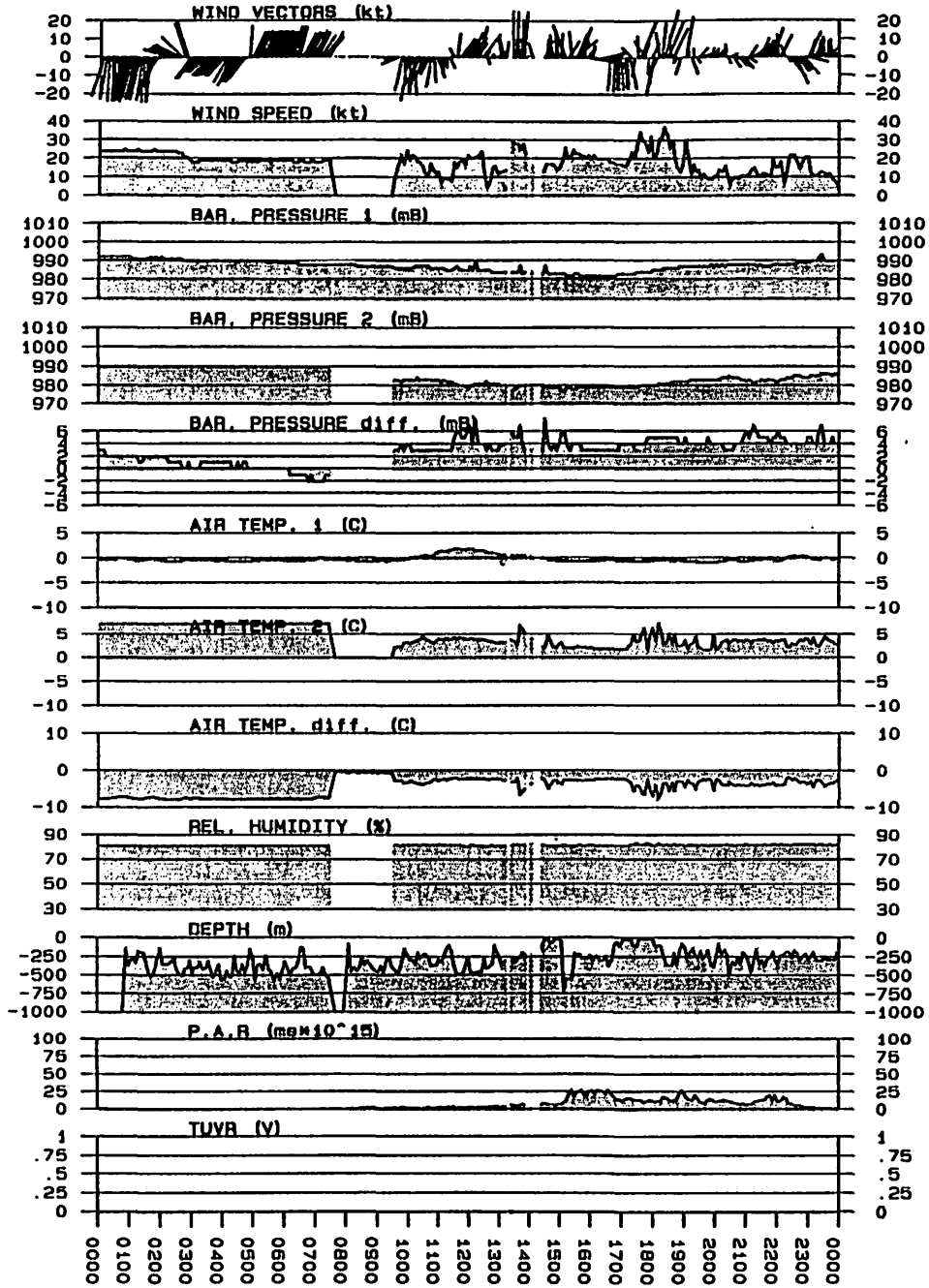
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0002 GPS	64 51.14S	62 53.60W	1.0	138	0.0	0.0	-0.2	82.0	990.0	7.8	041	7.1	184	300	--	-----	0.85	---	---	
0030 GPS	64 51.03S	62 53.65W	1.3	183	0.4	0.4	-0.4	82.0	990.4	13.2	329	12.1	149	310	--	-----	0.91	---	---	CAM 08 START
0032 GPS	64 51.01S	62 53.68W	0.6	182	0.0	0.4	-0.4	82.0	990.2	13.2	008	12.6	190	310	--	-----	0.88	---	---	CORRECTION: CAMERA #8 (EIGHT)
0100 GPS	64 51.09S	62 53.79W	0.3	181	0.3	0.7	-0.4	82.0	990.4	12.1	023	11.8	205	309	--	-----	0.27	---	---	
0116 GPS	64 51.11S	62 53.95W	0.6	183	0.1	0.8	-0.4	81.0	990.8	10.9	014	10.3	198	29	--	-----	0.08	---	---	CAMERA BACK; STARTING DOWN FOR LOWERING 9
0117 GPS	64 51.12S	62 53.97W	0.8	182	0.0	0.8	-0.4	81.0	990.8	10.7	347	9.9	168	301	--	-----	0.07	---	---	CAM 09 START
0142 GPS	64 51.19S	62 54.01W	0.6	181	0.3	1.1	0.0	82.0	990.4	9.7	326	9.2	145	302	--	-----	0.0	---	---	CAMERA ON THE BOTTOM; 290M WIRE OUT
0200 GPS	64 51.22S	62 54.02W	1.2	180	0.2	1.3	0.2	82.0	991.0	8.6	331	7.5	147	293	--	-----	0.0	---	---	CTD PB03 START
0219 GPS	64 51.16S	62 53.94W	0.5	180	0.3	1.6	0.2	81.0	990.8	12.2	004	11.7	184	293	--	-----	0.0	---	---	CTD PB03 ON DECK
0300 GPS	64 51.22S	62 54.19W	0.3	201	0.4	2.0	-0.4	79.0	991.2	18.3	032	18.0	233	292	--	-----	0.0	---	---	
0304 GPS	64 51.22S	62 54.23W	0.2	202	0.0	2.0	-0.4	79.0	999.4	22.0	027	21.8	230	292	--	-----	0.0	---	---	CTD PB04 START
0326 GPS	64 51.17S	62 54.20W	0.4	204	0.1	2.2	-0.4	79.0	991.2	16.7	029	16.4	234	29	--	-----	0.0	---	---	CTD PB04 ON DECK
0400 GPS	64 51.35S	62 54.38W	0.2	204	0.4	2.6	0.0	78.0	991.2	3.3	091	3.3	299	28	--	-----	0.0	---	---	
0500 GPS	64 51.37S	62 54.47W	0.5	205	0.8	3.4	0.0	77.0	990.2	24.3	015	23.8	220	282	--	-----	0.0	---	---	
0524 GPS	64 51.53S	62 54.37W	0.8	186	0.3	3.7	0.0	76.0	990.2	26.8	313	26.3	138	282	--	-----	0.0	---	---	GRAB #?? HIT AT ??
0600 GPS	64 50.92S	62 54.66W	1.4	356	1.1	4.8	0.4	76.0	990.2	25.3	263	25.5	256	292	--	-----	0.0	---	---	
0606 GPS	64 50.89S	62 54.83W	0.8	000	0.1	4.9	0.0	75.0	1000.2	27.8	340	27.0	339	293	--	-----	0.0	---	---	CTD PB05 START
0639 GPS	64 50.78S	62 54.76W	0.6	013	0.5	5.4	0.6	79.0	990.2	25.9	293	25.6	305	294	--	-----	0.0	---	---	CTD PB05 ON DECK
0700 GPS	64 50.90S	62 54.35W	0.8	015	0.4	5.8	0.6	77.0	990.4	25.9	297	25.5	311	291	--	-----	0.0	---	---	
0728 GPS	64 51.17S	62 54.38W	0.7	201	0.4	6.2	0.6	74.0	989.6	33.0	306	32.6	146	292	--	-----	0.0	---	---	CTD PB06 START
0750 GPS	64 51.23S	62 54.02W	0.4	192	0.2	6.4	0.6	72.0	990.2	32.9	014	32.5	206	292	--	-----	0.0	---	---	CTD PB06 ON DECK
0800 GPS	64 51.11S	62 54.45W	1.0	006	0.4	6.8	0.6	75.0	989.6	35.4	303	34.8	307	292	--	-----	0.0	---	---	
0828 GPS	64 51.19S	62 54.35W	1.6	205	0.5	7.3	0.6	78.0	990.0	31.5	338	30.0	182	292	--	-----	0.0	---	---	CTD PB07 START
0843 GPS	64 51.22S	62 53.99W	1.6	195	0.3	7.6	0.8	73.0	990.0	31.1	300	30.3	132	291	--	-----	0.0	---	---	CTD PB07 ON DECK
0900 GPS	64 51.05S	62 54.29W	0.8	351	0.6	8.2	0.8	71.0	990.0	30.3	157	31.1	149	298	--	-----	0.0	---	---	
1000 GPS	64 51.34S	62 52.97W	1.4	162	1.0	9.2	0.6	75.0	991.6	24.3	001	22.9	163	272	--	-----	0.0	---	---	
1100 GPS	64 51.41S	62 53.15W	1.5	175	0.7	10.0	0.8	73.0	992.4	18.9	002	17.4	177	271	--	-----	0.0	---	---	
1105 GPS	64 51.43S	62 53.09W	0.5	170	0.1	10.0	0.8	73.0	992.2	16.9	237	17.2	046	279	--	-----	0.0	---	---	CTD PB08 START
1123 GPS	64 51.49S	62 53.07W	0.3	178	0.2	10.2	0.6	73.0	992.2	17.7	010	17.4	188	279	--	-----	0.0	---	---	CTD PB08 ON DECK
1200 GPS	64 51.30S	62 53.70W	1.0	163	0.5	10.7	0.6	74.0	992.6	20.2	016	19.3	179	292	--	-----	0.0	---	---	
1300 GPS	64 51.35S	62 54.88W	1.8	203	0.9	11.6	0.4	74.0	992.8	25.1	005	23.3	209	279	--	-----	19.20	---	---	
1400 GPS	64 51.35S	62 53.69W	0.5	194	0.9	12.5	0.8	72.0	993.0	24.9	305	24.6	138	298	--	-----	24.49	---	---	
1401 GPS	64 51.35S	62 53.68W	0.4	194	0.0	12.5	0.8	73.0	993.6	29.7	208	30.1	042	290	--	-----	23.66	---	---	CTD PB09 START
1431 GPS	64 51.40S	62 53.15W	0.4	199	0.3	12.9	0.6	72.0	994.6	25.9	312	25.6	150	273	--	-----	19.46	---	---	CTD PB09 ON DECK
1500 GPS	64 51.47S	62 53.12W	0.6	194	0.2	13.1	0.4	70.0	993.8	20.8	308	20.4	141	279	--	-----	28.83	---	---	

POLAR DUKE 92-9 UNDERWAY DATA; 11-14-1992



SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

TIME	LATITUDE	LONGITUDE	EVENT
1145	65 07.68S	64 02.29W	LC01
1325	65 13.04S	64 11.37W	LC02
1541	65 21.59S	64 25.22W	LC03
2307	64 51.02S	62 54.68W	PB02

VERN'S CAMERA

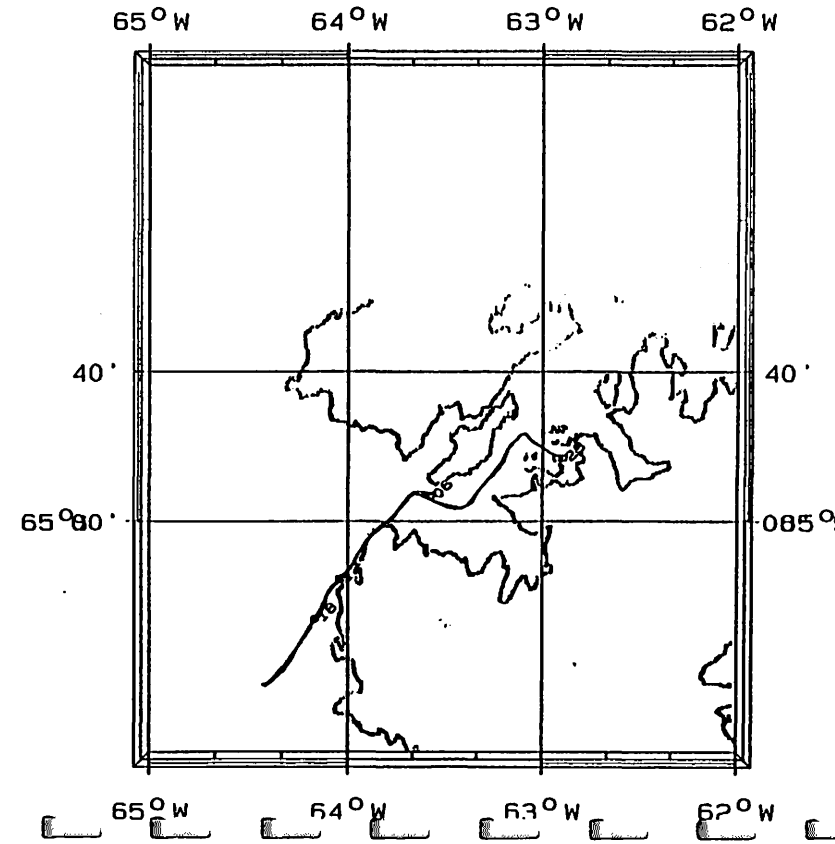
TIME	LATITUDE	LONGITUDE	EVENT
0028	64 26.76S	61 45.98W	G #5
0029	64 26.85S	61 45.98W	CB06

ISAACS-KIDD TRAWLS

TIME	LATITUDE	LONGITUDE	EVENT
0407	64 26.15S	61 44.74W	POPP

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT
1427	64 29.68S	61 42.25W	R CB01



DAILY SUMMARY

DISTANCE TRAVELLED TODAY	120.4 nm								
TOTAL DISTANCE TRAVELLED	1766.9 nm								
SHIP'S SPEED (kts) ;		AVERAGE=	4.9	MAXIMUM=	11.5	AT 2052 HRS.	MINIMUM=	0.0	AT 0254 HRS.
AIR TEMPERATURE (C);		AVERAGE=	-0.2	MAXIMUM=	2.0	AT 1128 HRS.	MINIMUM=	-1.0	AT 1948 HRS.
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);		AVERAGE=	987.3	MAXIMUM=	1003.8	AT 2326 HRS.	MINIMUM=	982.0	AT 1514 HRS.
RELATIVE HUMIDITY (%);		AVERAGE=	75.3	MAXIMUM=	87.0	AT 1332 HRS.	MINIMUM=	0.0	AT 0737 HRS.
WIND SPEED (kts);		AVERAGE=	17.0	MAXIMUM=	41.2	AT 1752 HRS.	MINIMUM=	0.0	AT 0737 HRS.
	MEAN DAILY WIND VELOCITY=	1.3 (kts) FROM 069 DEGREES TRUE							
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	5.97	MAXIMUM=	29.92	AT 1854 HRS.	MINIMUM=	0.00	AT 0003 HRS.
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A:SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
2100 GPS	64 58.05S	63 25.60W	10.7	091	9.9	100.2	-0.6	82.0	987.8	4.9	087	11.5	246	434	--	-----	7.92	---	---	
2200 GPS	64 50.11S	63 10.38W	10.3	032	10.6	110.8	-0.6	82.0	987.8	13.8	197	23.8	222	322	--	-----	12.49	---	---	
2300 GPS	64 51.04S	62 54.66W	7.5	081	8.7	119.5	0.0	81.0	988.8	19.4	137	25.4	230	291	--	-----	3.09	---	---	
2307 GPS	64 51.07S	62 54.30W	0.7	212	0.2	119.7	-0.2	82.0	989.4	11.9	012	11.2	224	299	--	-----	2.73	---	---	CTD PB02 START
2327 GPS	64 51.13S	62 54.02W	0.4	224	0.3	120.0	0.0	82.0	989.8	13.6	346	13.2	210	294	--	-----	2.34	---	---	CTD PB02 ON DECK

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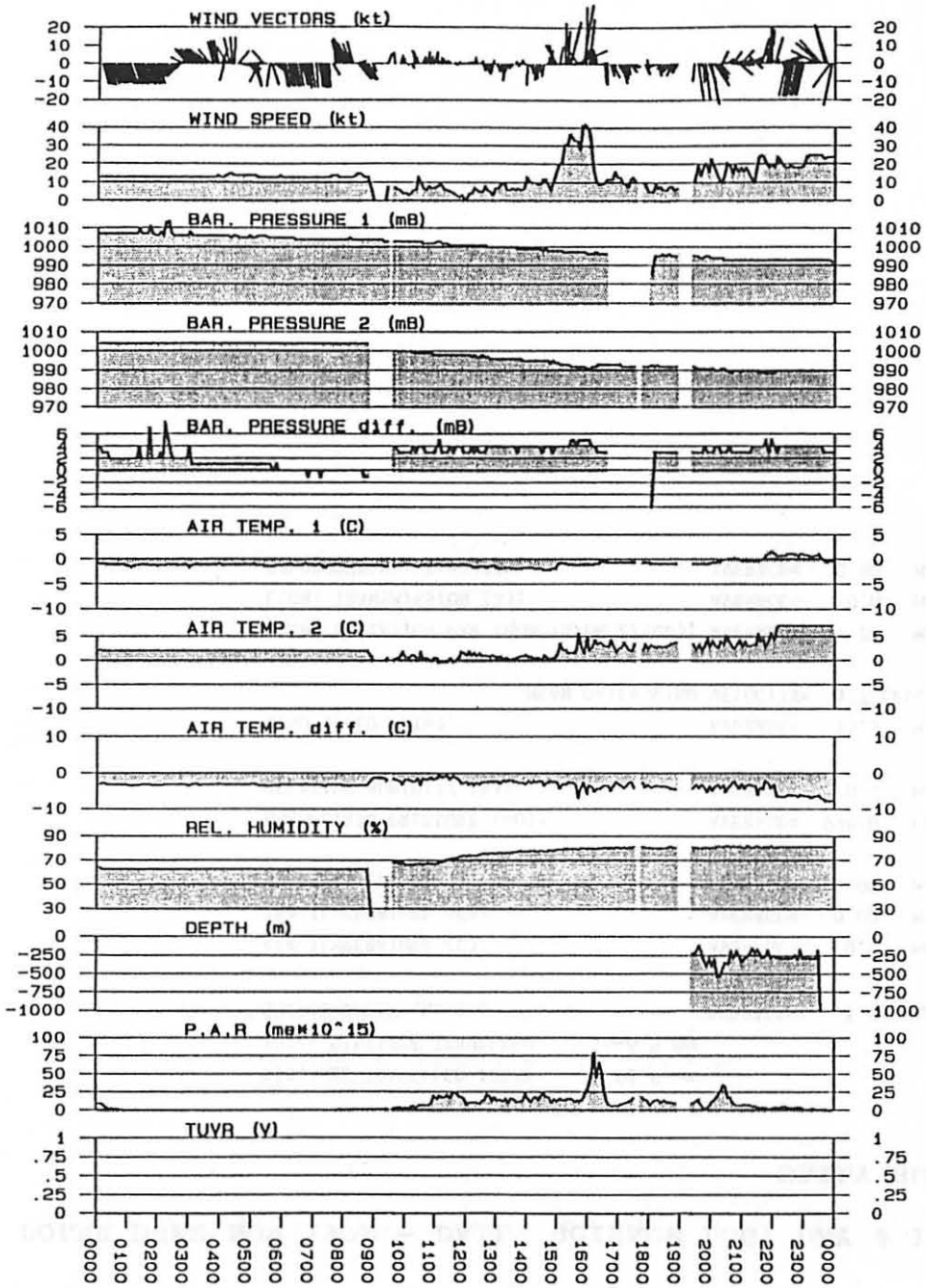
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	64 48.79S	63 7.69W	6.4	229	0.0	0.0	-0.4	81.0	992.2	17.9	156	23.9	031	---	--	-----	1.46	---	---	
0100 GPS	64 54.13S	63 16.13W	6.3	214	6.7	6.7	-0.2	81.0	991.4	17.9	156	23.8	016	315	--	-----	0.01	---	---	
0200 GPS	64 58.21S	63 27.26W	6.4	280	6.8	13.4	-0.4	81.0	991.4	17.9	156	23.9	083	28	--	-----	0.0	---	---	
0300 GDRT	64 55.94S	63 35.70W	0.2	261	4.7	18.1	-0.4	81.0	989.8	17.9	156	18.1	057	455	--	-----	0.0	---	---	
0400 GPS	64 56.31S	63 36.68W	0.7	258	1.1	19.2	-0.4	81.0	990.0	17.9	156	18.5	055	555	--	-----	0.0	---	---	
0500 GPS	64 56.44S	63 36.17W	0.7	065	1.0	20.2	-0.6	81.0	990.2	17.9	156	18.5	222	55	--	-----	0.0	---	---	
0600 GPS	64 56.27S	63 34.28W	1.2	064	1.0	21.1	-0.4	81.0	989.0	17.9	156	19.0	221	505	--	-----	0.0	---	---	
0700 GPS	64 56.07S	63 33.35W	0.1	061	0.8	22.0	-0.2	81.0	987.8	17.9	156	18.0	218	480	--	-----	0.04	---	---	
0710 GPS	64 56.09S	63 33.25W	0.9	074	0.1	22.1	0.0	81.0	988.2	17.9	156	18.7	231	480	--	-----	0.11	---	---	WAITING AT THE LEMAIRE CHANNEL ENTRANCE
0729 GPS	64 56.30S	63 33.18W	0.6	060	0.3	22.4	-0.2	81.0	988.2	17.9	156	18.4	217	544	--	-----	0.0	---	---	WEATHERPAK MODULE FAILED (2204)
0738 GPS	64 56.28S	63 32.81W	1.2	060	0.2	22.5	-0.2	0.0	988.0	0.0	000	0.0	180	---	--	-----	0.20	---	---	BACK TO OLD PROGRAM. CANNOT GET WPAK TO
0802 GPS	64 56.09S	63 34.37W	2.2	276	0.8	23.4	-0.6	0.0	987.6	0.0	000	0.0	180	---	--	-----	0.28	---	---	
0900 GPS	64 56.06S	63 33.64W	0.2	252	1.5	24.8	-0.6	0.0	987.0	0.0	000	0.0	180	444	--	-----	1.86	---	---	
0930 GPS	64 55.95S	63 34.82W	9.5	268	1.0	25.8	-0.4	0.0	986.8	0.0	000	0.0	180	540	--	-----	2.46	---	---	UNDERWAY TOWARDS LE MAIRE CHANNEL
0944 GPS	64 55.93S	63 40.09W	8.3	221	2.3	28.1	-0.2	81.0	986.2	16.7	148	24.2	020	299	--	-----	2.66	---	---	BACK TO WPAK PROGRAM
1000 GPS	64 57.49S	63 42.91W	8.5	215	2.0	30.0	0.0	81.0	986.4	17.1	153	25.0	017	288	--	-----	2.02	---	---	
1100 GPS	65 3.60S	63 55.67W	7.9	204	8.3	38.4	1.2	82.0	985.4	8.7	081	10.8	331	369	--	-----	3.36	---	---	
1145 GPS	65 7.39S	64 2.21W	1.9	212	4.9	43.2	1.0	81.0	985.2	16.9	315	15.6	162	471	--	-----	2.46	---	---	CTD LC01 START
1200 GPS	65 7.54S	64 2.42W	0.6	217	0.2	43.4	1.8	82.0	985.2	21.8	034	21.3	252	462	--	-----	2.85	---	---	
1214 GPS	65 7.61S	64 2.56W	0.1	219	0.2	43.6	1.6	81.0	993.6	21.2	354	21.1	213	452	--	-----	2.81	---	---	CTD LC01 ON DECK
1226 GPS	65 7.68S	64 2.54W	0.6	213	0.1	43.7	1.6	81.0	985.2	26.8	031	26.3	244	449	--	-----	3.13	---	---	UNDERWAY TO FARADAY?
1300 GPS	65 11.98S	64 7.99W	8.8	209	5.1	48.8	0.6	80.0	984.0	18.5	350	9.9	190	351	--	-----	3.99	---	---	
1325 GPS	65 13.64S	64 11.27W	0.5	210	2.2	51.0	0.6	85.0	983.4	28.0	306	27.7	155	39	--	-----	5.64	---	---	CTD LC02 START
1345 GPS	65 13.87S	64 11.24W	0.5	202	0.3	51.3	0.6	81.0	983.4	30.1	008	29.6	210	295	--	-----	7.27	---	---	CTD LC02 ON DECK
1351 GPS	65 14.06S	64 11.46W	6.5	225	0.3	51.6	0.4	82.0	983.8	20.6	326	15.6	177	244	--	-----	6.14	---	---	TRYING NEW WPAK MODULE
1400 GPS	65 15.15S	64 13.24W	9.0	209	1.3	52.9	0.4	82.0	983.4	20.0	006	11.1	220	242	--	-----	7.37	---	---	
1414 GPS	65 16.74S	64 16.24W	8.6	214	2.0	54.9	0.0	81.0	983.0	21.0	006	12.5	224	23	--	-----	7.19	---	---	SYSTEM DOWN FOR EVEN MORE TESTS
1500 GPS	65 20.73S	64 24.02W	5.0	223	5.2	60.2	-0.6	82.0	982.8	18.3	263	19.5	112	12	--	-----	8.16	---	---	
1541 GPS	65 21.16S	64 25.13W	1.2	283	1.4	61.6	-0.6	81.0	983.0	21.0	262	21.2	182	265	--	-----	28.68	---	---	CTD LC03 START
1600 GPS	65 21.19S	64 25.01W	0.3	322	0.2	61.7	-0.6	82.0	982.0	22.4	169	22.6	131	293	--	-----	26.50	---	---	
1601 GPS	65 21.19S	64 25.01W	0.2	320	0.0	61.7	-0.6	81.0	982.0	23.9	344	23.7	304	290	--	-----	26.63	---	---	CTD LC03 ON DECK
1700 GPS	65 20.00S	64 21.31W	6.1	030	2.2	63.9	-0.6	81.0	983.0	20.4	327	15.7	345	13	--	-----	13.29	---	---	
1800 GPS	65 13.34S	64 10.91W	8.9	029	8.1	72.0	-0.4	81.0	985.2	29.9	357	21.1	024	33	--	-----	10.61	---	---	
1900 GPS	65 5.75S	63 58.56W	7.6	030	9.3	81.3	-0.6	83.0	986.6	21.6	130	27.1	173	181	--	-----	18.25	---	---	
2000 GPS	64 58.91S	63 45.33W	10.7	044	8.9	90.2	-0.8	82.0	987.4	10.3	308	9.2	286	271	--	-----	10.38	---	---	

POLAR DUKE 92-9 UNDERWAY DATA; 11-13-1992



SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

TIME	LATITUDE	LONGITUDE	EVENT
0203	64 26.04S	61 44.33W	CB31
0302	64 26.41S	61 44.94W	CB32
0703	64 27.36S	61 42.04W	CB33
0803	64 27.65S	61 42.65W	CB34
1102	64 27.91S	61 44.83W	CB35
2227	64 51.03S	62 54.99W	PB01

VERN'S CAMERA

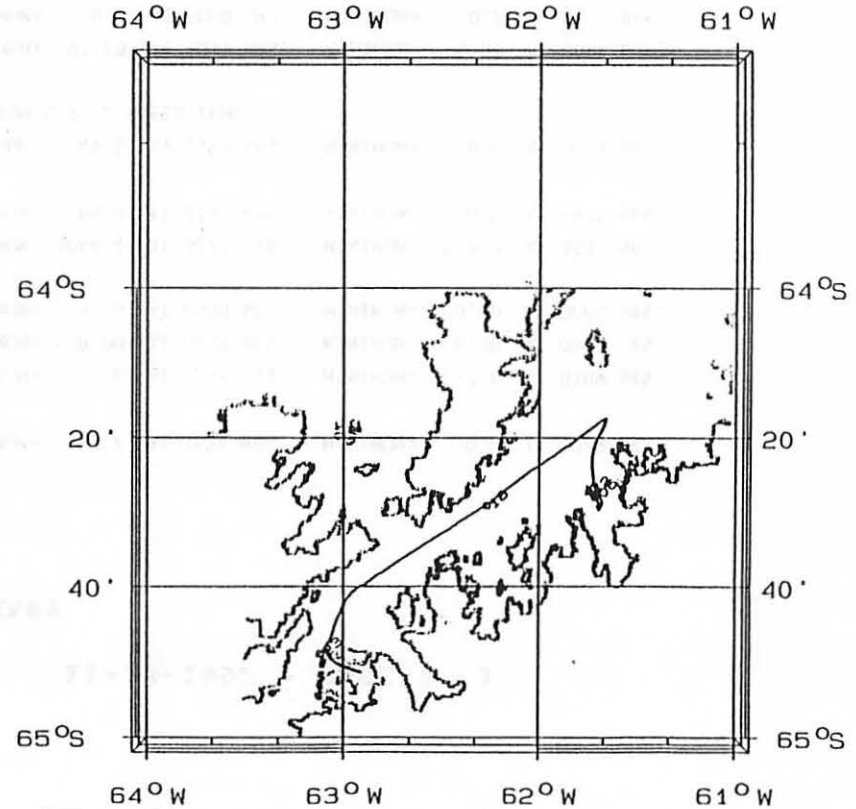
TIME	LATITUDE	LONGITUDE	EVENT
0028	64 26.76S	61 45.98W	G #5
0029	64 26.85S	61 45.98W	CB06

ISAACS-KIDD TRAWLS

TIME	LATITUDE	LONGITUDE	EVENT
0407	64 26.15S	61 44.74W	POPP

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT
1427	64 29.68S	61 42.25W	R CB01



DAILY SUMMARY

DISTANCE TRAVELLED TODAY	96.8 nm									
TOTAL DISTANCE TRAVELLED	1646.5 nm									
SHIP'S SPEED (kts) ;		AVERAGE=	3.8	MAXIMUM=	10.7	AT 1654 HRS.	MINIMUM=	0.0	AT 0029 HRS.	
AIR TEMPERATURE (C);		AVERAGE=	-0.9	MAXIMUM=	1.6	AT 2153 HRS.	MINIMUM=	-2.6	AT 0109 HRS.	
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0002 HRS.	MINIMUM=	0.00	AT 0002 HRS.	
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.	
BAROMETRIC PRESSURE (mb);		AVERAGE=	998.0	MAXIMUM=	1044.4	AT 0221 HRS.	MINIMUM=	950.0	AT 1635 HRS.	
RELATIVE HUMIDITY (%);		AVERAGE=	70.4	MAXIMUM=	85.0	AT 2130 HRS.	MINIMUM=	0.0	AT 0855 HRS.	
WIND SPEED (kts);		AVERAGE=	13.3	MAXIMUM=	49.5	AT 1559 HRS.	MINIMUM=	0.0	AT 0855 HRS.	
MEAN DAILY WIND VELOCITY=	1.7 (kts) FROM 019 DEGREES TRUE									
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	7.75	MAXIMUM=	91.88	AT 1611 HRS.	MINIMUM=	0.00	AT 0004 HRS.	
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT	HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.	

GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
1427 GPS	64 29.27S	61 42.14W	1.1	222	0.4	20.1	-2.0	78.0	998.4	10.7	169	11.8	032	---	--	-----	20.67	---	---	SED TRAP CB01 RECOVERED
1430 GPS	64 29.32S	61 42.22W	2.5	204	0.1	20.2	-2.0	78.0	998.4	15.6	034	13.6	244	---	--	-----	20.15	---	---	EN ROUTE TO RACER ROCK
1500 GPS	64 26.62S	61 43.01W	10.1	346	3.8	23.9	-0.6	79.0	997.8	25.1	009	15.2	001	---	--	-----	15.88	---	---	
1600 GPS	64 17.76S	61 39.67W	9.1	022	9.3	33.2	-1.0	80.0	996.2	38.3	018	29.8	045	---	--	-----	25.39	---	---	WEATHER DETERIORATING: ABANDON RACER ROCK
1601 GPS	64 17.62S	61 39.52W	9.4	021	0.2	33.4	-1.0	82.0	996.0	39.5	143	47.3	171	---	--	-----	26.60	---	---	C/C FOR PARADISE BAY
1617 GPS	64 18.65S	61 43.84W	9.9	233	2.6	35.9	-0.8	80.0	996.2	17.3	020	8.7	276	---	--	-----	51.36	---	---	WPAK WIND DIR. IS RUBBISH!
1700 GPS	64 22.92S	61 56.98W	10.2	230	7.2	43.1	-0.6	80.0	950.0	15.9	058	13.6	328	---	--	-----	8.68	---	---	
1800 GPS	64 28.79S	62 15.40W	10.0	225	9.9	53.0	-0.8	81.0	995.6	9.1	293	10.6	098	---	--	-----	6.99	---	---	
1905 GPS	64 34.45S	62 35.66W	10.4	237	10.4	63.5	-0.8	81.0	995.4	9.7	124	17.8	030	---	--	-----	7.51	---	---	
1920 GPS	64 35.79S	62 40.41W	9.9	231	2.4	65.9	-0.8	79.0	995.0	14.2	010	4.8	263	548	--	-----	9.00	---	---	ATTEMPTING TO ADD DEPTH. FORMAT PROBS.
1931 GPS	64 36.83S	62 44.01W	10.1	234	1.9	67.8	-0.8	82.0	994.6	19.6	077	20.0	341	181	--	-----	17.19	---	---	DEPTH ADDED TO RECORD
2000 GPS	64 38.93S	62 51.39W	7.0	226	4.0	71.8	-0.6	81.0	994.0	22.2	072	21.1	317	518	--	-----	11.32	---	---	
2100 GPS	64 45.00S	63 2.47W	7.1	194	8.1	79.9	-0.2	81.0	993.4	17.3	064	15.6	283	328	--	-----	7.51	---	---	
2200 GPS	64 50.46S	62 58.25W	7.4	104	7.7	87.6	1.2	81.0	993.0	18.9	069	17.6	196	30	--	-----	4.75	---	---	
2204 GPS	64 50.62S	62 57.03W	8.2	105	0.5	88.2	0.8	81.0	992.8	17.9	156	25.6	268	291	--	-----	4.69	---	---	LOST WEATHERPAK MODULE AGAIN!
2227 GPS	64 51.01S	62 54.59W	0.3	217	1.3	89.4	1.2	81.0	993.4	17.9	156	18.2	014	291	--	-----	4.24	---	---	CTD PDPB01 START
2249 GPS	64 51.08S	62 54.67W	0.6	220	0.2	89.6	1.2	81.0	993.0	17.9	156	18.4	017	298	--	-----	4.44	---	---	CTD PDPB01 ON DECK
2300 GPS	64 51.12S	62 54.97W	3.7	262	0.2	89.8	1.0	81.0	993.0	17.9	156	21.3	062	290	--	-----	2.20	---	---	
2329 GPS	64 49.57S	63 2.62W	7.0	308	3.7	93.5	1.2	81.0	993.2	17.9	156	24.4	111	---	--	-----	1.41	---	---	DIGITRAK TURNED OFF (MISTAKE)

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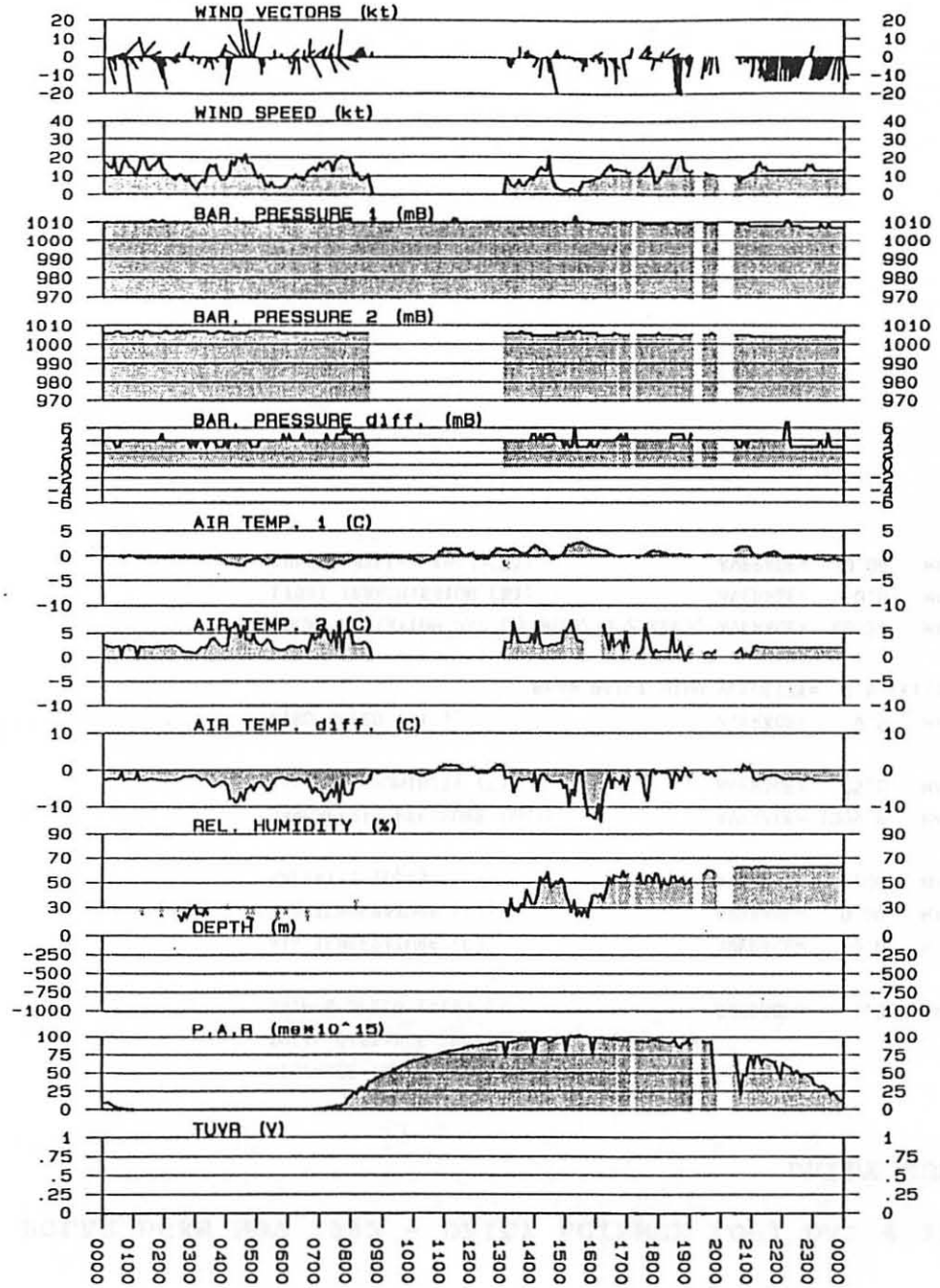
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0002 GPS	64 26.54S	61 45.13W	0.3	202	0.0	0.0	-0.8	69.0	1007.0	8.9	334	13.0	322	---	--	-----	12.29	---	---	
0028 GPS	64 26.58S	61 45.26W	0.2	208	0.2	0.2	-1.0	63.0	1007.0	12.8	119	12.9	327	---	--	-----	2.70	---	---	CAMERA LOWERING #5 STARTS
0029 GPS	64 26.59S	61 45.26W	0.0	206	0.0	0.3	-1.0	63.0	1007.0	12.8	119	12.8	325	---	--	-----	2.58	---	---	CAM CB06 START
0043 GPS	64 26.64S	61 45.25W	0.5	203	0.2	0.4	-1.0	63.0	1006.8	12.8	119	13.1	324	---	--	-----	1.39	---	---	CORRECTION: CAMERA LOWERING#6; 90M BELOW
0100 GPS	64 26.72S	61 45.08W	0.9	204	0.2	0.6	-1.2	63.0	1006.6	12.8	119	13.3	326	---	--	-----	0.42	---	---	
0110 GPS	64 26.78S	61 45.15W	0.6	203	0.1	0.8	-1.4	63.0	1007.0	12.8	119	13.1	325	---	--	-----	0.16	---	---	336M WIRE OUT; CAMERA ON THE BOTTOM
0122 GPS	64 26.71S	61 45.03W	0.9	205	0.2	1.0	-1.2	63.0	1006.6	12.8	119	13.3	328	---	--	-----	0.0	---	---	CAMERA ON SURFACE AND ON THE WAY BACK DOW
0145 GPS	64 26.86S	61 44.93W	0.5	206	0.3	1.3	-1.2	63.0	1006.4	12.8	119	13.1	327	---	--	-----	0.0	---	---	CAMERA 30 MAB AND COMING UP
0159 GPS	64 26.92S	61 44.97W	0.5	298	0.2	1.4	-1.2	63.0	1006.2	12.8	119	13.1	059	---	--	-----	0.0	---	---	CAM CB06 ON DECK
0200 GPS	64 26.92S	61 44.96W	0.3	302	0.0	1.4	-1.2	63.0	1006.6	12.8	119	13.0	062	---	--	-----	0.0	---	---	
0203 GPS	64 26.96S	61 44.94W	0.7	302	0.0	1.5	-1.2	63.0	1006.2	12.8	119	13.2	063	---	--	-----	0.0	---	---	CTD CB31 START
0223 GPS	64 26.99S	61 44.90W	0.2	298	0.2	1.7	-1.0	63.0	1010.4	12.8	119	12.9	057	---	--	-----	0.0	---	---	CTD CB31 ON DECK
0300 GPS	64 26.98S	61 44.72W	0.2	007	0.4	2.1	-1.2	63.0	1006.0	12.8	119	12.9	127	---	--	-----	0.0	---	---	
0302 GPS	64 26.98S	61 44.73W	0.4	005	0.0	2.1	-2.4	63.0	1017.0	12.8	119	13.0	125	---	--	-----	0.0	---	---	CTD CB32 START
0326 GPS	64 26.93S	61 44.66W	1.2	354	0.3	2.3	-1.0	63.0	1005.8	12.8	119	13.5	118	---	--	-----	0.0	---	---	CTD CB32 ON DECK
0400 GPS	64 26.82S	61 44.29W	0.5	197	0.6	2.9	-1.0	63.0	1005.4	12.8	119	13.1	318	---	--	-----	0.0	---	---	
0407 GPS	64 26.78S	61 44.36W	1.5	354	0.1	3.0	-1.2	63.0	1005.8	12.8	119	13.6	118	---	--	-----	0.0	---	---	IKMT B.POPP START
0500 GPS	64 27.22S	61 41.84W	1.6	208	2.4	5.4	-1.0	63.0	1005.6	12.8	119	13.7	333	---	--	-----	0.0	---	---	
0600 GPS	64 27.56S	61 42.67W	0.5	220	1.0	6.4	-1.0	63.0	1004.6	12.8	119	13.1	341	---	--	-----	0.0	---	---	
0703 GPS	64 27.68S	61 42.82W	0.3	229	0.6	7.0	-1.0	63.0	1004.0	12.8	119	13.0	349	---	--	-----	0.35	---	---	CTD CB33 START
0726 GPS	64 27.80S	61 42.96W	0.4	231	0.2	7.2	-1.0	63.0	1004.4	12.8	119	13.0	352	---	--	-----	0.53	---	---	CTD CB33 ON DECK
0800 GPS	64 27.65S	61 42.31W	0.7	026	0.7	7.9	-1.2	63.0	1004.4	12.8	119	13.2	148	---	--	-----	0.66	---	---	
0803 GPS	64 27.62S	61 42.26W	0.5	017	0.0	7.9	-1.2	63.0	1004.4	12.8	119	13.1	138	---	--	-----	0.62	---	---	CTD CB34 START
0816 GPS	64 27.53S	61 42.46W	0.1	034	0.2	8.1	-1.2	63.0	1004.2	12.8	119	12.9	154	---	--	-----	0.0	---	---	CTD CB34 ON DECK
0855 GPS	64 28.24S	61 42.28W	1.1	194	1.3	9.4	-1.2	0.0	1003.8	0.0	000	0.0	180	---	--	-----	1.15	---	---	WEATHER SYSTEM DOWN. BACK TO OLD PROGRAM
0900 GPS	64 28.18S	61 42.29W	1.2	197	0.1	9.5	-1.2	0.0	1004.2	0.0	000	0.0	180	---	--	-----	1.22	---	---	
0931 GPS	64 28.22S	61 42.53W	1.5	199	0.4	9.9	-1.2	69.0	1003.4	7.8	324	6.6	155	---	--	-----	2.29	---	---	TRY WPAK AGAIN!
1000 GPS	64 28.22S	61 42.77W	0.9	201	0.4	10.3	-1.0	67.0	1003.0	4.9	253	5.2	085	---	--	-----	4.29	---	---	
1100 GPS	64 27.40S	61 44.54W	0.9	191	4.2	14.5	-1.0	68.0	1002.0	7.2	020	6.4	213	---	--	-----	21.05	---	---	
1102 GPS	64 27.47S	61 44.55W	0.5	193	0.1	14.6	-1.0	66.0	1005.4	6.8	017	6.3	211	---	--	-----	19.50	---	---	CTD CB35 START
1126 GPS	64 27.39S	61 44.45W	0.3	191	0.3	14.9	-1.0	71.0	1001.6	6.0	020	5.7	212	---	--	-----	20.88	---	---	CTD CB35 ON DECK
1200 GPS	64 27.22S	61 44.62W	2.2	214	0.6	15.5	-1.2	74.0	1001.6	2.7	010	0.7	259	---	--	-----	9.67	---	---	
1250 GPS	64 28.46S	61 42.61W	3.6	082	2.0	17.5	-1.4	77.0	1000.2	6.2	004	2.6	092	---	--	-----	14.22	---	---	SEARCHING FOR SED. TRAPS
1300 GPS	64 28.91S	61 41.85W	3.2	161	0.6	18.1	-1.4	76.0	1000.0	7.4	146	10.2	317	---	--	-----	17.94	---	---	
1400 GPS	64 29.25S	61 42.29W	0.1	237	1.7	19.7	-1.6	77.0	998.6	11.5	061	11.4	298	---	--	-----	21.05	---	---	

POLAR DUKE 92-9 UNDERWAY DATA; 11-12-1992



SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

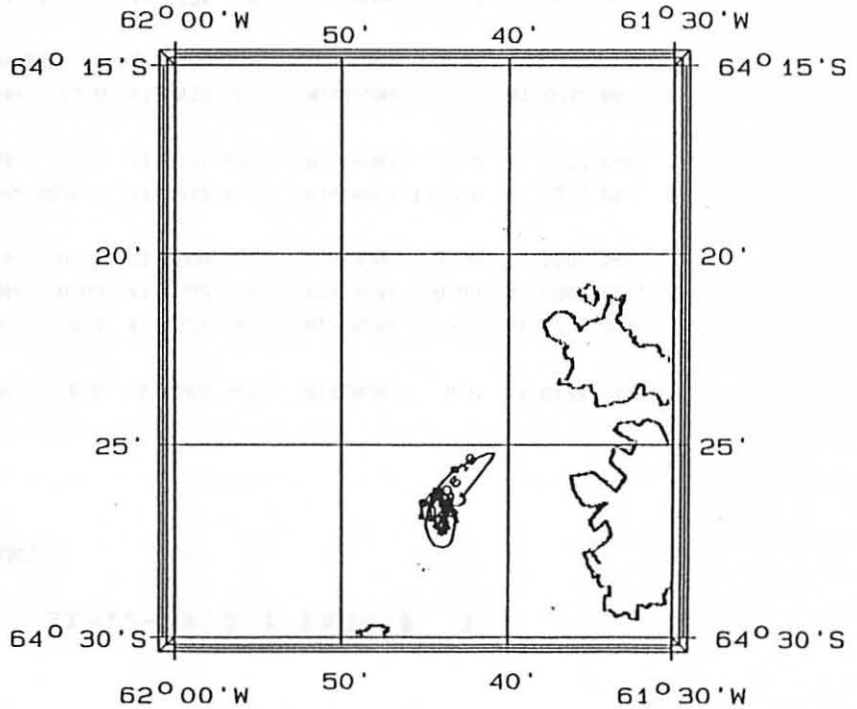
TIME	LATITUDE	LONGITUDE	EVENT
0200	64 26.28S	61 43.08W	CB20
0307	64 26.23S	61 43.55W	CB21
0704	64 27.67S	61 44.07W	CB22
0803	64 27.02S	61 44.33W	CB23
1102	64 27.38S	61 43.96W	CB24
1359	64 26.87S	61 45.83W	CB25
1503	64 27.41S	61 44.06W	CB26
1703	64 26.82S	61 44.19W	CB27
1902	64 26.89S	61 42.53W	CB28
2201	64 26.52S	61 43.83W	CB29
2304	64 26.28S	61 44.48W	CB30

VERN'S CAMERA

TIME	LATITUDE	LONGITUDE	EVENT
0033	64 27.43S	61 43.46W	CB05

ISAACS-KIDD TRAWLS

TIME	LATITUDE	LONGITUDE	EVENT
0418	64 27.75S	61 43.49W	IKMT



DAILY SUMMARY

DISTANCE TRAVELLED TODAY 29.4 nm
TOTAL DISTANCE TRAVELLED 1549.7 nm

SHIP'S SPEED (kts) ;	AVERAGE=	1.2	MAXIMUM=	6.6	AT 0246 HRS.	MINIMUM=	0.0	AT 0423 HRS.
AIR TEMPERATURE (C);	AVERAGE=	-0.0	MAXIMUM=	2.8	AT 1527 HRS.	MINIMUM=	-2.4	AT 0717 HRS.
SEA TEMPERATURE (C);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0002 HRS.	MINIMUM=	0.00	AT 0002 HRS.
SALINITY (ppt);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);	AVERAGE=	1009.8	MAXIMUM=	1025.2	AT 2212 HRS.	MINIMUM=	1007.0	AT 2259 HRS.
RELATIVE HUMIDITY (%);	AVERAGE=	25.8	MAXIMUM=	65.0	AT 2106 HRS.	MINIMUM=	0.0	AT 0002 HRS.
WIND SPEED (kts);	AVERAGE=	9.5	MAXIMUM=	24.0	AT 0435 HRS.	MINIMUM=	0.0	AT 0838 HRS.
MEAN DAILY WIND VELOCITY= 2.8 (kts) FROM 333 DEGREES TRUE								
SOLAR RADIATION-PAR (quanta/cm^2/sec);	AVERAGE=	48.24	MAXIMUM=	104.44	AT 1528 HRS.	MINIMUM=	0.00	AT 0004 HRS.
LIGHT TRANSMISSION (%);	AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);	AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

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GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
1500 GPS	64 27.36S	61 43.97W	0.2	355	1.3	19.0	1.6	10.0	1009.6	2.5	211	2.7	203	---	--	-----	01.45	---	---	
1503 GPS	64 27.34S	61 44.01W	0.9	357	0.0	19.0	2.2	44.0	1009.6	2.3	333	1.6	316	---	--	-----	02.05	---	---	CTD CB26 START
1528 GPS	64 27.17S	61 44.05W	0.7	004	0.4	19.4	2.6	30.0	1009.6	4.7	003	4.0	007	---	--	-----	04.44	---	---	CTD CB26 ON DECK
1600 GPS	64 27.16S	61 44.11W	0.3	062	0.3	19.7	1.4	34.0	1009.4	8.9	279	8.9	339	---	--	-----	00.10	---	---	
1605 GPS	64 27.13S	61 44.17W	0.5	061	0.0	19.7	1.2	45.0	1009.4	9.3	306	9.0	005	---	--	-----	99.36	---	---	GRAB CB02 HIT
1624 GPS	64 27.02S	61 44.06W	0.6	065	0.2	19.9	0.4	58.0	1009.4	15.7	309	15.4	012	---	--	-----	97.41	---	---	GRAB CB03 HIT
1700 GPS	64 26.87S	61 44.33W	1.0	060	0.4	20.3	0.0	59.0	1009.6	12.1	097	12.2	162	---	--	-----	95.92	---	---	
1703 GPS	64 26.85S	61 44.38W	0.9	062	0.0	20.4	-0.2	60.0	1009.6	10.9	030	10.1	095	---	--	-----	95.62	---	---	CTD CB27 START
1706 GPS	64 26.82S	61 44.44W	0.8	061	0.0	20.4	-0.2	60.0	1009.6	12.1	132	12.6	196	---	--	-----	95.32	---	---	WEATHERPAK TESTS
1719 GPS	64 26.71S	61 44.38W	0.7	068	0.1	20.5	0.0	60.0	1009.6	11.1	171	11.8	239	---	--	-----	94.42	---	---	CTD CB27 ON DECK
1800 GPS	64 25.63S	61 43.16W	4.1	060	1.5	22.0	0.8	59.0	1009.4	10.1	096	11.3	177	---	--	-----	94.87	---	---	
1900 GPS	64 26.28S	61 42.76W	0.9	191	2.8	24.8	0.0	59.0	1009.2	12.2	216	13.0	044	---	--	-----	92.63	---	---	
1902 GPS	64 26.32S	61 42.77W	0.9	194	0.0	24.8	0.0	46.0	1009.2	13.2	163	14.1	358	---	--	-----	82.76	---	---	CTD CB28 START
1907 GPS	64 26.37S	61 42.74W	0.5	206	0.1	24.9	0.0	58.0	1009.2	12.6	159	13.1	005	---	--	-----	94.42	---	---	SAIL LOOP DOWN
1929 GPS	64 26.47S	61 42.58W	0.4	214	0.1	25.0	0.0	61.0	1009.0	10.7	139	11.0	354	---	--	-----	92.33	---	---	CTD CB28 ON DECK (1926)
1936 GPS	64 26.52S	61 42.67W	0.5	218	0.1	25.0	0.2	60.0	1009.2	10.1	139	10.5	359	---	--	-----	92.78	---	---	STOP PROGRAM TO TEST WPAK MODULE
2016 GPS	64 26.59S	61 43.11W	0.8	246	0.3	25.3	1.2	61.0	1008.8	9.5	016	8.8	263	---	--	-----	87.40	---	---	
2034 GPS	64 26.50S	61 43.40W	0.6	256	0.3	25.6	1.8	63.0	1008.8	7.6	110	7.8	010	---	--	-----	25.69	---	---	FINALLY! THE WEATHERPAK DATA GETS RECORDE
2100 GPS	64 26.29S	61 43.41W	1.2	214	0.4	25.9	0.4	62.0	1008.2	11.7	142	12.6	359	---	--	-----	76.63	---	---	
2126 GPS	64 26.78S	61 43.68W	0.7	249	0.7	26.6	0.4	64.0	1008.2	14.2	118	14.5	010	---	--	-----	69.75	---	---	WEATHERPAK MODULE FAILED HERE
2200 GPS	64 26.55S	61 43.93W	0.2	237	0.4	27.0	-0.2	63.0	1008.2	12.8	119	12.9	357	---	--	-----	63.62	---	---	
2201 GPS	64 26.55S	61 43.94W	0.3	237	0.0	27.0	-0.2	63.0	1008.2	12.8	119	13.0	358	---	--	-----	64.22	---	---	CTD CB29 START
2214 GPS	64 26.54S	61 43.90W	0.3	237	0.1	27.1	-0.2	63.0	1007.8	12.8	119	13.0	357	---	--	-----	58.99	---	---	CTD CB29 ON DECK
2300 GPS	64 26.63S	61 44.48W	0.6	260	1.5	28.6	-1.6	63.0	1007.2	12.8	119	13.1	021	---	--	-----	41.50	---	---	
2304 GPS	64 26.63S	61 44.52W	0.8	261	0.0	28.6	-0.6	63.0	1007.4	12.8	119	13.2	023	---	--	-----	38.95	---	---	CTD CB30 START
2330 GPS	64 26.57S	61 44.78W	0.5	264	0.4	29.0	-0.6	63.0	1007.4	12.8	119	13.1	025	---	--	-----	26.63	---	---	CTD CB30 ON DECK

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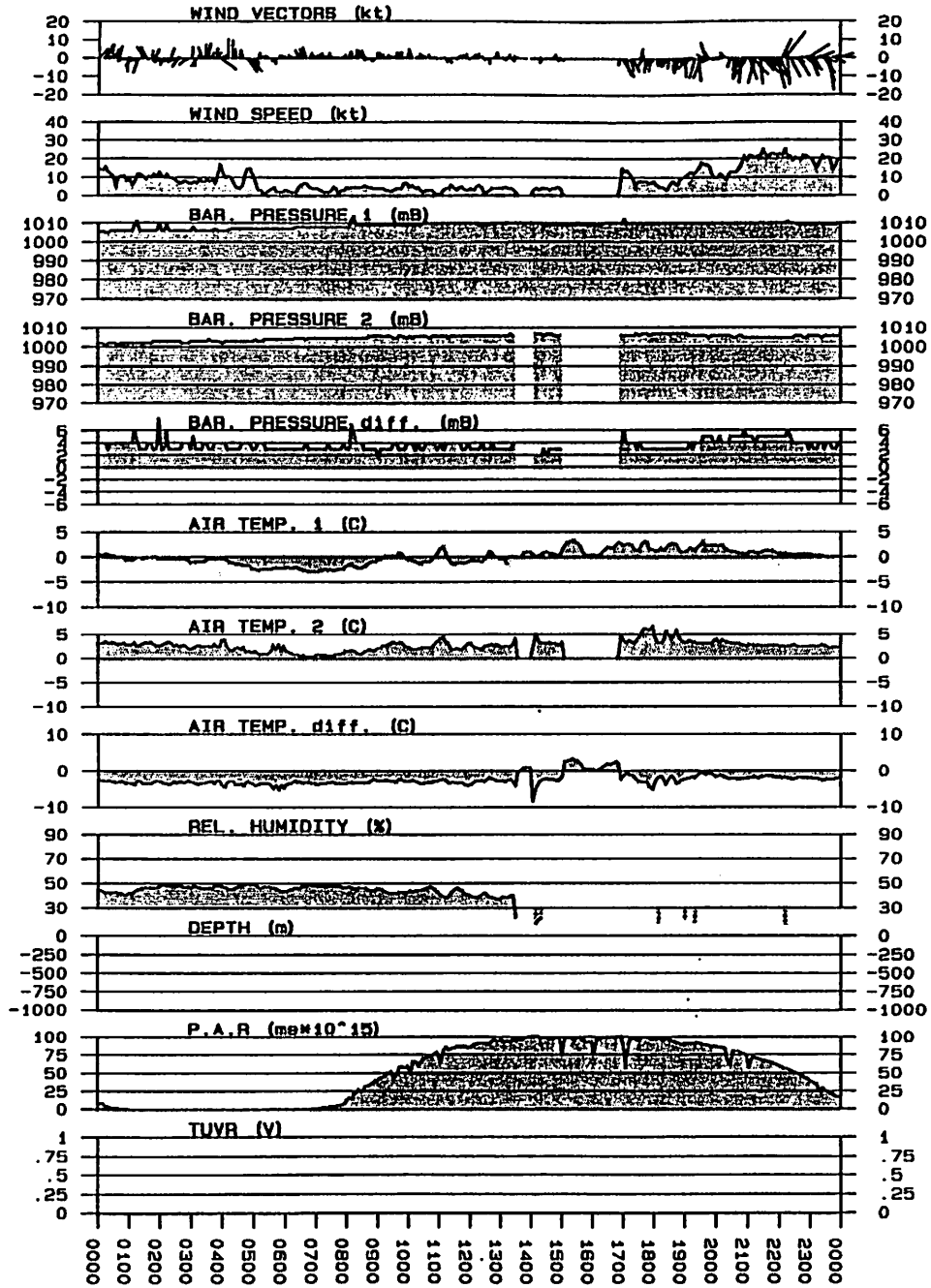
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0002 GPS	64 27.06S	61 43.65W	0.3	060	0.0	0.0	0.0	0.0	1009.8	21.0	286	20.9	346	---	--	-----	12.50	---	---	
0031 GPS	64 27.18S	61 43.65W	1.3	069	0.6	0.6	0.0	0.0	1009.6	11.1	286	10.8	349	---	--	-----	3.07	---	---	CAMERA NUMBER 5 GOING OVER THE SIDE
0033 GPS	64 27.16S	61 43.73W	1.0	059	0.0	0.6	0.0	0.0	1009.8	13.8	190	14.8	249	---	--	-----	2.83	---	---	CAM CB05 START
0044 GPS	64 27.10S	61 43.78W	0.2	063	0.1	0.7	0.0	0.0	1010.0	17.9	174	18.1	237	---	--	-----	1.67	---	---	CAMERA AT 90M BELOW SURFACE
0100 GPS	64 26.94S	61 43.66W	0.9	064	0.3	1.0	0.0	0.0	1010.2	12.1	194	12.9	257	---	--	-----	0.57	---	---	
0102 GPS	64 26.90S	61 43.69W	1.0	062	0.0	1.0	-0.2	0.0	1010.2	8.0	263	8.2	318	---	--	-----	0.48	---	---	CAMERA 90M ABOVE BOTTOM
0124 GPS	64 26.72S	61 43.78W	1.1	067	0.3	1.4	-0.2	0.0	1010.2	15.4	284	15.1	347	---	--	-----	0.0	---	---	CAM CB05 ON DECK
0200 GPS	64 26.88S	61 43.08W	0.5	063	1.4	2.7	-0.4	0.0	1010.2	10.9	269	10.9	330	---	--	-----	0.0	---	---	CTD CB20 START
0223 GPS	64 26.70S	61 43.23W	1.0	061	0.4	3.1	-0.2	23.0	1010.4	9.5	321	8.8	018	---	--	-----	0.0	---	---	CTD CB20 ON DECK
0300 GPS	64 26.98S	61 43.10W	1.0	051	1.0	4.1	-0.4	32.0	1010.2	2.1	224	2.9	261	---	--	-----	0.0	---	---	
0307 GPS	64 26.97S	61 43.13W	0.4	053	0.0	4.2	-0.4	0.0	1010.2	8.7	266	8.8	317	---	--	-----	0.0	---	---	CTD CB21 START
0332 GPS	64 26.81S	61 43.26W	0.6	066	0.3	4.5	-0.4	0.0	1010.2	14.6	212	15.1	277	---	--	-----	0.0	---	---	CTD CB21 ON DECK
0400 GPS	64 27.09S	61 43.20W	3.8	185	0.6	5.1	-1.4	29.0	1010.0	8.4	208	11.8	024	---	--	-----	0.0	---	---	
0418 GPS	64 27.63S	61 43.65W	0.8	236	0.6	5.7	-1.8	0.0	1010.0	19.2	176	20.0	052	---	--	-----	0.0	---	---	IKMT START
0454 GPS	64 26.26S	61 44.49W	3.0	010	1.8	7.6	-0.6	0.0	1009.8	12.2	089	12.6	113	---	--	-----	0.0	---	---	IKMT ON DECK
0500 GPS	64 26.17S	61 43.91W	4.4	160	0.4	8.0	-0.6	47.0	1010.2	6.4	073	6.6	272	---	--	-----	0.0	---	---	
0512 GPS	64 26.74S	61 43.91W	2.0	066	0.7	8.6	-1.0	0.0	1010.8	6.4	091	6.8	174	---	--	-----	0.0	---	---	START DEPLOYING SED.TRAP CB01
0541 GPS	64 26.51S	61 44.08W	1.3	091	0.3	9.0	-0.4	0.0	1010.8	4.7	155	5.9	252	---	--	-----	0.0	---	---	SED TRAP CB01 DEPLOYED
0600 GPS	64 26.27S	61 44.09W	0.4	069	0.3	9.2	-0.4	46.0	1010.4	9.9	217	10.2	285	---	--	-----	0.0	---	---	
0700 GPS	64 27.22S	61 44.08W	0.1	059	1.8	11.0	-1.6	0.0	1010.6	14.2	175	14.3	234	---	--	-----	1.42	---	---	
0704 GPS	64 27.19S	61 44.03W	0.3	055	0.0	11.0	-2.0	0.0	1010.4	15.6	200	15.8	255	---	--	-----	1.82	---	---	CTD CB22 START
0727 GPS	64 27.15S	61 44.29W	0.3	056	0.2	11.3	-1.8	0.0	1010.4	14.4	173	14.7	229	---	--	-----	4.45	---	---	CTD CB22 ON DECK
0800 GPS	64 27.04S	61 44.24W	0.3	057	0.4	11.6	-1.0	0.0	1010.6	15.7	286	15.7	342	---	--	-----	19.87	---	---	
0803 GPS	64 27.04S	61 44.24W	0.2	057	0.0	11.7	-0.6	0.0	1010.4	14.2	185	14.4	242	---	--	-----	21.60	---	---	CTD CB23 START
0817 GPS	64 27.00S	61 44.41W	0.5	053	0.2	11.8	-0.2	0.0	1010.4	7.2	168	7.7	222	---	--	-----	28.53	---	---	CTD CB23 ON DECK
0900 GPS	64 26.65S	61 43.66W	1.3	060	0.7	12.5	-0.2	0.0	1010.2	0.0	000	0.0	180	---	--	-----	47.33	---	---	
1000 GPS	64 26.80S	61 43.71W	5.6	159	1.3	13.8	-0.4	0.0	1010.2	0.0	000	0.0	180	---	--	-----	67.51	---	---	
1100 GPS	64 27.11S	61 43.85W	0.9	352	1.1	14.8	1.4	0.0	1010.0	0.0	000	0.0	180	---	--	-----	79.02	---	---	
1102 GPS	64 27.11S	61 43.86W	0.6	354	0.0	14.9	1.4	0.0	1010.0	0.0	000	0.0	180	---	--	-----	79.32	---	---	CTD CB24 START
1129 GPS	64 27.01S	61 43.81W	1.8	049	0.4	15.3	1.2	0.0	1010.0	0.0	000	0.0	180	---	--	-----	82.91	---	---	CTD CB24 ON DECK
1200 GPS	64 26.90S	61 44.34W	0.9	038	0.4	15.7	0.0	0.0	1009.8	0.0	000	0.0	180	---	--	-----	88.14	---	---	
1300 GPS	64 26.87S	61 45.22W	0.2	356	0.9	16.6	1.2	29.0	1010.0	7.6	356	7.4	352	---	--	-----	92.63	---	---	
1359 GPS	64 26.76S	61 45.16W	0.8	305	0.7	17.3	2.2	31.0	1009.8	8.2	182	9.0	127	---	--	-----	96.52	---	---	CTD CB25 START
1400 GPS	64 26.74S	61 45.13W	1.1	303	0.0	17.3	2.2	42.0	1009.8	8.2	180	9.3	123	---	--	-----	95.77	---	---	
1417 GPS	64 26.61S	61 44.95W	0.5	315	0.3	17.6	1.2	47.0	1009.6	12.4	039	12.1	356	---	--	-----	96.96	---	---	CTD CB25 ON DECK

POLAR DUKE 92-9 UNDERWAY DATA; 11-11-1992



SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

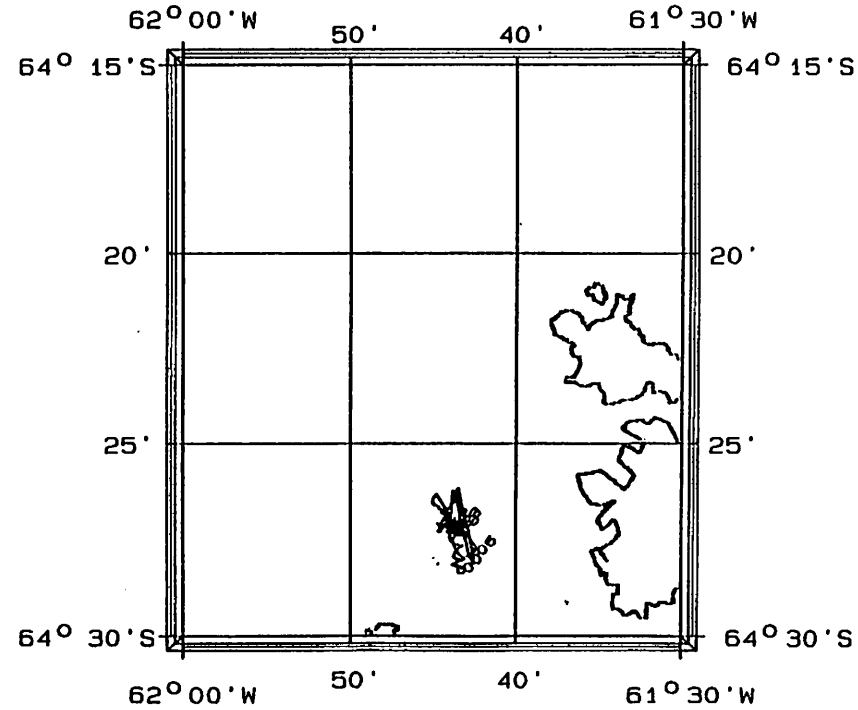
TIME	LATITUDE	LONGITUDE	EVENT
0202	64 27.36S	61 43.01W	CB09
0305	64 27.65S	61 43.92W	CB10
0701	64 27.69S	61 43.99W	CB11
0802	64 27.23S	61 43.22W	CB12
1105	64 27.49S	61 44.04W	CB13
1358	64 26.41S	61 44.75W	CB14
1502	64 26.74S	61 44.52W	CB15
1703	64 27.68S	61 44.94W	CB16
1900	64 27.13S	61 43.92W	CB17
2201	64 26.47S	61 44.37W	CB18
2302	64 26.35S	61 43.16W	CB19

VERN'S CAMERA

TIME	LATITUDE	LONGITUDE	EVENT
0045	64 28.09S	61 43.55W	M 03

ISAACS-KIDD TRAWLS

TIME	LATITUDE	LONGITUDE	EVENT
0407	64 27.17S	61 43.36W	CB02
0507	64 28.01S	61 42.19W	CB03



DAILY SUMMARY

DISTANCE TRAVELLED TODAY	29.3 nm								
TOTAL DISTANCE TRAVELLED	1520.3 nm								
SHIP'S SPEED (kts) ;		AVERAGE=	1.1	MAXIMUM=	7.2	AT 0445 HRS.	MINIMUM=	0.0	AT 0713 HRS.
AIR TEMPERATURE (C);		AVERAGE=	0.1	MAXIMUM=	3.6	AT 1517 HRS.	MINIMUM=	-3.0	AT 0723 HRS.
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);		AVERAGE=	1008.7	MAXIMUM=	1034.4	AT 0815 HRS.	MINIMUM=	1005.2	AT 0001 HRS.
RELATIVE HUMIDITY (%);		AVERAGE=	27.4	MAXIMUM=	50.0	AT 0351 HRS.	MINIMUM=	0.0	AT 1329 HRS.
WIND SPEED (kts);		AVERAGE=	8.1	MAXIMUM=	29.3	AT 2210 HRS.	MINIMUM=	0.0	AT 1328 HRS.
MEAN DAILY WIND VELOCITY= 1.3 (kts) FROM 251 DEGREES TRUE									
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	50.61	MAXIMUM=	103.24	AT 1353 HRS.	MINIMUM=	0.00	AT 0023 HRS.
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

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GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
1414 GPS	64 26.87S	61 44.32W	0.3	082	0.2	18.7	0.4	0.0	1009.6	3.9	169	4.2	252	---	--	-----	02.94	---	---	CTD CB14 ON DECK
1457 GPS	64 26.66S	61 44.65W	0.7	264	0.5	19.2	1.4	0.0	1009.4	1.7	059	1.5	347	---	--	-----	98.31	---	---	WEATHERPAK DRIED AND UP AGAIN (1415)
1500 GPS	64 26.67S	61 44.68W	0.7	268	0.0	19.2	1.8	23.0	1009.2	17.1	076	0.0	180	---	--	-----	98.91	---	---	
1502 GPS	64 26.66S	61 44.75W	1.2	269	0.0	19.2	2.2	0.0	1009.4	0.0	000	0.0	180	---	--	-----	98.31	---	---	CTD CB15 START
1533 GPS	64 26.44S	61 45.02W	0.3	321	0.4	19.7	2.6	0.0	1009.2	0.0	000	0.0	180	---	--	-----	99.06	---	---	CTD CB15 ON DECK
1600 GPS	64 27.40S	61 43.36W	0.8	136	1.5	21.1	0.4	0.0	1009.4	0.0	000	0.0	180	---	--	-----	95.47	---	---	
1620 GPS	64 27.26S	61 43.66W	0.6	199	0.4	21.5	1.6	0.0	1009.6	0.0	000	0.0	180	---	--	-----	99.51	---	---	WEATHERPAK DOWN
1700 GPS	64 27.19S	61 44.26W	0.5	200	0.9	22.4	1.8	0.0	1014.4	12.1	060	11.8	262	---	--	-----	79.17	---	---	
1703 GPS	64 27.18S	61 44.30W	0.5	205	0.0	22.4	2.6	10.0	1009.8	14.2	109	14.4	316	---	--	-----	83.96	---	---	CTD CB16 START
1719 GPS	64 27.12S	61 44.58W	0.6	201	0.2	22.6	1.8	13.0	1010.0	4.5	273	4.5	106	---	--	-----	98.76	---	---	CTD CB16 ON DECK
1800 GPS	64 27.27S	61 43.48W	0.8	248	0.9	23.5	1.4	14.0	1009.8	6.2	079	6.1	334	---	--	-----	96.96	---	---	
1900 GPS	64 27.22S	61 43.33W	0.6	196	1.1	24.6	1.0	18.0	1010.0	10.7	149	11.2	346	---	--	-----	91.58	---	---	CTD CB17 START
1924 GPS	64 27.28S	61 43.30W	0.7	236	0.2	24.9	2.2	0.0	1010.0	13.2	103	13.4	342	---	--	-----	92.18	---	---	CTD CB17 ON DECK
2000 GPS	64 27.12S	61 43.67W	1.0	246	0.5	25.3	2.2	0.0	1010.2	7.4	173	8.4	059	---	--	-----	86.95	---	---	
2100 GPS	64 27.21S	61 43.38W	0.3	071	0.8	26.1	1.0	0.0	1010.0	17.9	293	17.8	004	---	--	-----	72.89	---	---	
2200 GPS	64 26.89S	61 44.18W	0.5	066	0.8	26.9	0.8	0.0	1009.6	22.2	313	21.8	018	---	--	-----	59.74	---	---	
2201 GPS	64 26.89S	61 44.16W	0.7	066	0.0	26.9	0.8	23.0	1009.8	25.9	240	26.2	305	---	--	-----	59.44	---	---	CTD CB18 START
2214 GPS	64 26.80S	61 44.29W	0.9	068	0.2	27.1	0.6	0.0	1009.8	18.9	303	18.4	009	---	--	-----	55.70	---	---	CTD CB18 ON DECK
2300 GPS	64 26.47S	61 43.61W	0.5	065	0.6	27.7	0.6	0.0	1009.0	17.1	186	17.6	251	---	--	-----	39.10	---	---	
2302 GPS	64 26.46S	61 43.61W	0.4	063	0.0	27.7	0.6	0.0	1009.2	20.4	189	20.8	252	---	--	-----	38.36	---	---	CTD CB19 START
2328 GPS	64 26.28S	61 43.78W	0.7	064	0.3	28.1	0.2	0.0	1009.2	22.7	289	22.5	351	---	--	-----	27.24	---	---	CTD CB19 ON DECK

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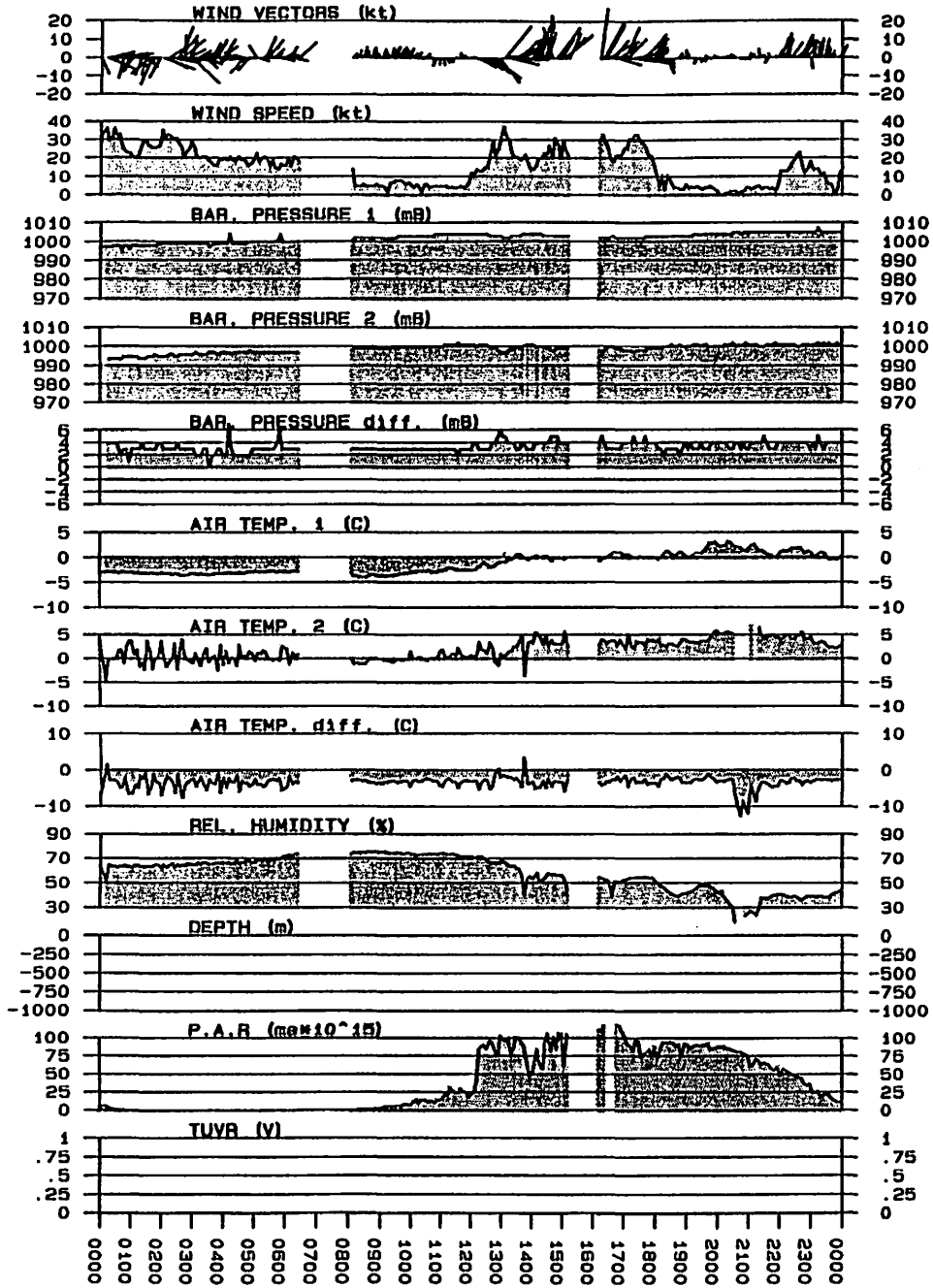
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A:SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	64 28.28S	61 43.31W	0.4	062	0.0	0.0	0.6	46.0	1005.2	18.9	228	19.1	290	---	--	-----	10.16	---	---	
0044 GPS	64 28.03S	61 43.06W	0.3	198	1.0	1.0	0.2	41.0	1005.6	11.3	196	11.6	033	---	--	-----	1.50	---	---	MARINE SNOW CAMERA IN THE WATER; LOWERING
0045 GPS	64 28.01S	61 43.13W	0.6	191	0.0	1.1	0.2	41.0	1005.6	12.2	193	12.8	024	---	--	-----	1.42	---	---	CAM 03 START
0100 GPS	64 28.06S	61 43.33W	0.1	210	0.2	1.3	-0.4	42.0	1005.8	9.7	203	9.8	052	---	--	-----	0.49	---	---	
0102 GPS	64 28.05S	61 43.39W	1.2	209	0.0	1.3	-0.4	42.0	1006.0	7.8	301	7.2	142	---	--	-----	0.45	---	---	CAMERA 75M ABOVE BOTTOM
0109 GPS	64 28.03S	61 43.52W	1.3	214	0.1	1.4	-0.4	43.0	1005.8	8.9	229	9.8	078	---	--	-----	0.24	---	---	CAMERA ON THE BOTOM
0124 GPS	64 28.00S	61 43.60W	0.8	244	0.2	1.6	-1.2	46.0	1005.6	11.7	254	11.9	134	---	--	-----	0.04	---	---	105M WIRE OUT; SECOND CAMERA LOWERING; 75
0131 GPS	64 28.02S	61 43.72W	0.6	248	0.1	1.7	-0.2	48.0	1005.8	8.7	318	8.3	204	---	--	-----	0.0	---	---	CAMERA ON BOTTOM; COMING UP
0200 GPS	64 27.70S	61 43.44W	1.0	224	0.8	2.5	-0.2	48.0	1006.0	10.7	168	11.7	033	---	--	-----	0.0	---	---	
0202 GPS	64 27.68S	61 43.52W	0.5	227	0.1	2.5	-0.2	49.0	1006.0	11.1	081	11.0	310	---	--	-----	0.0	---	---	CTD CB09 START
0223 GPS	64 27.63S	61 43.59W	0.3	222	0.2	2.8	-0.2	46.0	1005.8	10.3	246	10.4	106	---	--	-----	0.0	---	---	CTD CB09 ON DECK
0300 GPS	64 27.19S	61 43.84W	4.5	108	0.8	3.5	-0.8	47.0	1006.2	11.1	069	10.4	201	---	--	-----	0.0	---	---	
0305 GPS	64 27.26S	61 43.53W	0.7	213	0.2	3.7	-0.8	48.0	1006.2	5.8	007	5.1	221	---	--	-----	0.0	---	---	CTD CB10 START
0331 GPS	64 27.08S	61 43.97W	1.0	011	0.3	4.0	-0.4	46.0	1006.4	10.5	218	11.3	226	---	--	-----	0.0	---	---	CTD CB10 ON DECK
0400 GPS	64 27.33S	61 42.88W	4.1	156	2.1	6.1	-0.2	47.0	1006.4	11.7	084	12.0	260	---	--	-----	0.0	---	---	
0407 GPS	64 27.31S	61 43.12W	2.4	339	0.3	6.4	-0.4	47.0	1006.6	8.2	043	6.6	036	---	--	-----	0.0	---	---	IKMT CB02 START
0436 GPS	64 26.22S	61 43.71W	2.0	037	1.2	7.5	-1.4	48.0	1006.6	4.9	141	6.5	189	---	--	-----	0.0	---	---	IKMT CB02 ON DECK
0500 GPS	64 28.02S	61 42.62W	4.4	159	2.0	9.5	-2.4	49.0	1006.8	9.3	166	13.6	329	---	--	-----	0.0	---	---	
0507 GPS	64 28.06S	61 42.67W	3.3	329	0.2	9.7	-2.6	47.0	1007.0	2.3	002	1.0	144	---	--	-----	0.0	---	---	IKMWT CB03 START
0600 GPS	64 27.82S	61 42.55W	2.3	060	2.1	11.8	-2.0	44.0	1007.4	4.1	008	1.8	078	---	--	-----	0.0	---	---	IKMT CB03 ON DECK
0700 GPS	64 27.37S	61 43.78W	0.2	074	1.2	13.0	-2.8	48.0	1008.0	4.7	160	4.9	235	---	--	-----	1.35	---	---	
0701 GPS	64 27.36S	61 43.78W	0.3	071	0.0	13.0	-2.8	48.0	1008.0	4.5	161	4.8	233	---	--	-----	0.0	---	---	CTD CB11 START
0726 GPS	64 27.31S	61 43.91W	0.3	031	0.2	13.3	-2.4	48.0	1008.4	1.0	219	1.2	241	---	--	-----	3.84	---	---	CTD CB11 ON DECK
0800 GPS	64 27.23S	61 43.85W	0.7	090	0.4	13.7	-1.8	47.0	1008.4	2.7	186	3.4	275	---	--	-----	13.27	---	---	
0802 GPS	64 27.22S	61 43.88W	0.4	085	0.0	13.7	-1.6	47.0	1008.4	5.1	175	5.5	261	---	--	-----	14.62	---	---	CTD CB12 START
0816 GPS	64 27.23S	61 43.96W	0.9	077	0.1	13.8	-1.6	45.0	1008.8	4.5	165	5.3	244	---	--	-----	21.34	---	---	CTD CB12 ON DECK
0900 GPS	64 27.27S	61 44.03W	1.1	307	0.6	14.4	-0.6	47.0	1008.8	2.7	252	3.2	180	---	--	-----	41.05	---	---	
1000 GPS	64 27.21S	61 43.62W	0.2	067	0.9	15.3	-0.6	45.0	1009.2	6.6	152	6.8	220	---	--	-----	62.28	---	---	
1100 GPS	64 27.18S	61 43.98W	0.7	122	0.7	16.0	1.4	41.0	1009.6	0.0	000	0.7	302	---	--	-----	78.42	---	---	
1105 GPS	64 27.17S	61 44.03W	0.2	120	0.0	16.0	2.2	40.0	1009.4	0.6	181	0.8	301	---	--	-----	81.71	---	---	CTD CB13 START
1132 GPS	64 27.23S	61 43.87W	0.9	119	0.3	16.3	-1.2	46.0	1009.6	2.7	346	1.9	098	---	--	-----	87.69	---	---	CTD CB13 ON DECK
1200 GPS	64 27.10S	61 44.03W	1.0	116	0.4	16.6	-0.6	39.0	1009.6	3.1	163	4.1	283	---	--	-----	84.70	---	---	
1300 GPS	64 27.13S	61 44.71W	0.1	137	0.8	17.5	-0.2	39.0	1009.6	3.1	125	3.2	263	---	--	-----	95.17	---	---	
1358 GPS	64 26.98S	61 44.11W	1.0	084	1.0	18.5	1.0	0.0	1009.6	0.0	000	0.0	180	---	--	-----	99.95	---	---	CTD CB14 START
1400 GPS	64 26.97S	61 44.11W	0.0	081	0.0	18.5	0.8	0.0	1009.6	0.0	000	0.0	180	---	--	-----	01.00	---	---	

POLAR DUKE 92-9 UNDERWAY DATA; 11-10-1992



SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

TIME	LATITUDE	LONGITUDE	EVENT
0046	64 41.08S	65 01.01W	L608
0327	64 48.39S	64 42.43W	L609
0530	64 47.75S	64 44.72W	L610
0808	64 56.04S	64 23.86W	L611
1913	64 28.48S	61 42.25W	C806
2002	64 28.48S	61 42.08W	C807
2306	64 28.11S	61 42.26W	C808

VERN'S CAMERA

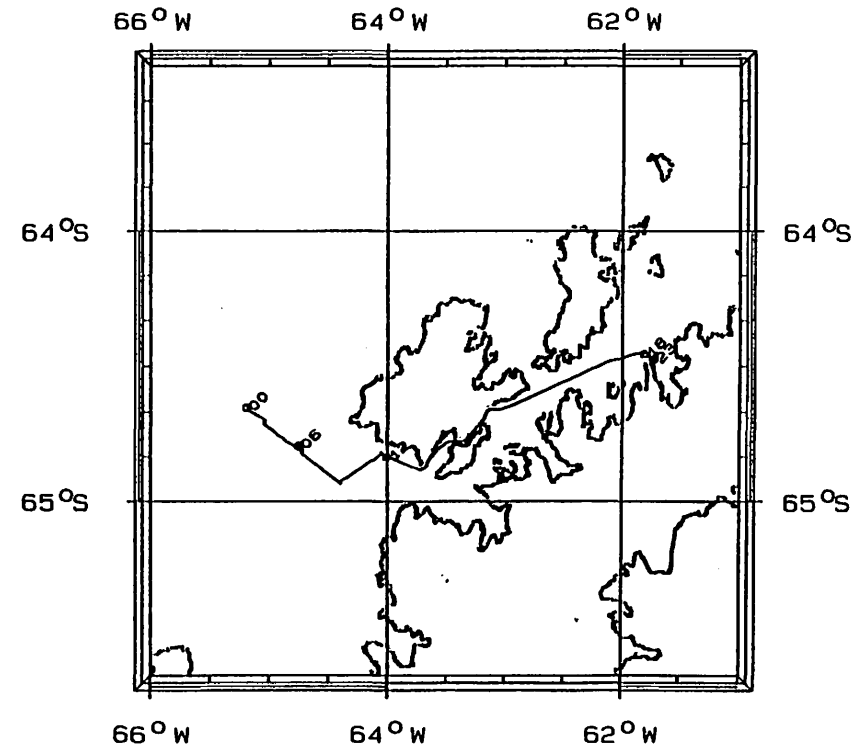
TIME	LATITUDE	LONGITUDE	EVENT
0421	64 48.28S	64 43.81W	L601
0851	64 55.61S	64 23.69W	L602

ISAACS-KIDD TRAWLS

TIME	LATITUDE	LONGITUDE	EVENT
1203	64 28.86S	61 40.15W	C801

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT
0035	64 43.84S	66 10.44W	D T02)
0224	64 43.68S	65 49.11W	D 'C'



DAILY SUMMARY

DISTANCE TRAVELLED TODAY	123.2 nm								
TOTAL DISTANCE TRAVELLED	1491.0 nm								
SHIP'S SPEED (kts) ;		AVERAGE=	4.7	MAXIMUM=	12.7	AT 1717 HRS.	MINIMUM=	0.0	AT 0844 HRS.
AIR TEMPERATURE (C);		AVERAGE=	-1.1	MAXIMUM=	3.2	AT 1951 HRS.	MINIMUM=	-4.0	AT 0828 HRS.
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);		AVERAGE=	1002.2	MAXIMUM=	1053.4	AT 2018 HRS.	MINIMUM=	988.0	AT 0331 HRS.
RELATIVE HUMIDITY (%);		AVERAGE=	57.6	MAXIMUM=	76.0	AT 0625 HRS.	MINIMUM=	0.0	AT 1510 HRS.
WIND SPEED (kts);		AVERAGE=	15.3	MAXIMUM=	44.5	AT 0010 HRS.	MINIMUM=	0.1	AT 0915 HRS.
	MEAN DAILY WIND VELOCITY= 7.3 (kts) FROM 217 DEGREES TRUE								
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	41.52	MAXIMUM=	123.58	AT 1426 HRS.	MINIMUM=	0.00	AT 0029 HRS.
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

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GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	ATRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A:SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
1608 GPS	64 33.60S	62 32.09W	11.4	067	11.1	94.6	-0.6	54.0	1002.4	24.1	079	24.6	173	---	--	-----	13.41	---	---	
1609 GPS	64 33.53S	62 31.68W	11.5	069	0.2	94.8	-0.6	54.0	1002.4	25.3	086	27.0	180	---	--	-----	09.52	---	---	BACK ON-LINE
1700 GPS	64 29.56S	62 10.68W	11.9	065	9.9	104.7	0.6	53.0	1002.0	16.9	254	23.2	289	---	--	-----	00.25	---	---	
1800 GPS	64 27.07S	61 48.10W	8.5	095	10.2	114.9	0.0	51.0	1002.8	6.0	123	12.8	251	---	--	-----	93.23	---	---	
1900 GPS	64 28.65S	61 43.44W	3.2	066	3.9	118.8	0.2	41.0	1003.6	5.4	096	6.6	191	---	--	-----	92.93	---	---	
1907 GPS	64 28.74S	61 42.52W	1.2	144	0.4	119.3	0.2	43.0	1003.4	2.7	079	2.8	248	---	--	-----	85.60	---	---	STOP ON STATION CB (CHARLOTTE BAY)
1913 GPS	64 28.73S	61 42.58W	0.6	187	0.1	119.3	1.2	45.0	1003.6	4.7	302	4.4	122	---	--	-----	89.34	---	---	CTD CB06 START
1934 GPS	64 28.69S	61 42.77W	0.1	205	0.2	119.5	1.8	47.0	1003.8	3.3	166	3.4	011	---	--	-----	91.13	---	---	CTD CB06 ON DECK
2000 GPS	64 28.72S	61 42.91W	1.5	347	0.2	119.7	2.2	42.0	1004.0	1.4	000	0.1	167	---	--	-----	88.74	---	---	
2002 GPS	64 28.73S	61 42.92W	0.3	356	0.0	119.8	2.2	42.0	1004.2	0.0	000	0.3	176	---	--	-----	88.44	---	---	CTD CB07 START
2019 GPS	64 28.66S	61 43.07W	0.6	046	0.2	120.0	3.0	35.0	1004.2	1.7	090	1.8	108	---	--	-----	86.50	---	---	CTD CB07 ON DECK
2100 GPS	64 28.67S	61 42.49W	0.5	010	0.8	120.8	2.0	0.0	1004.6	4.7	268	4.7	272	---	--	-----	76.48	---	---	
2200 GPS	64 28.52S	61 42.85W	0.3	017	0.6	121.4	1.0	41.0	1004.6	12.4	182	12.7	199	---	--	-----	60.04	---	---	
2300 GPS	64 28.32S	61 42.85W	4.3	105	1.1	122.5	0.6	38.0	1004.8	12.6	206	16.6	305	---	--	-----	35.20	---	---	
2306 GPS	64 28.34S	61 42.79W	1.0	026	0.1	122.6	0.4	39.0	1004.8	12.6	131	13.3	161	---	--	-----	16.48	---	---	CTD CB08 START
2327 GPS	64 28.32S	61 42.96W	0.9	008	0.3	122.8	0.8	38.0	1005.2	8.6	185	9.4	192	---	--	-----	23.83	---	---	CTD CB08 ON DECK

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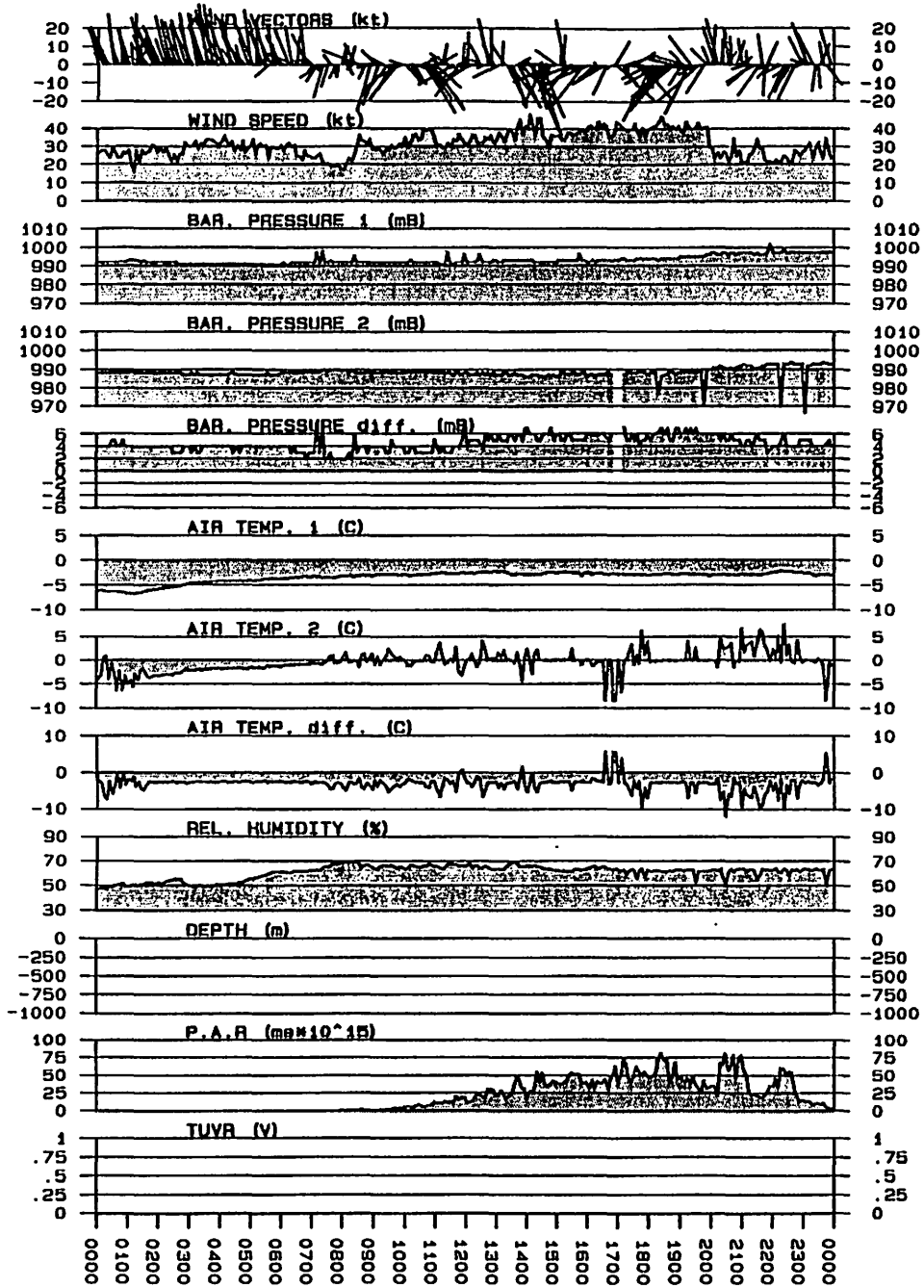
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	64 38.39S	65 12.03W	8.4	145	0.0	0.0	-3.0	64.0	997.0	30.1	148	37.5	300	---	--	-----	5.80	---	---	
0046 GPS	64 41.95S	65 1.84W	0.9	207	6.0	6.0	-2.8	65.0	997.6	25.3	003	24.4	210	---	--	-----	0.63	---	---	CTD L608 START
0100 GPS	64 41.99S	65 2.18W	0.3	211	0.2	6.2	-2.8	64.0	997.8	22.7	095	22.8	307	---	--	-----	0.32	---	---	
0117 GPS	64 42.12S	65 2.36W	0.4	208	0.2	6.3	-3.0	65.0	998.0	24.5	214	24.8	062	---	--	-----	0.08	---	---	CTD L608 ON DECK
0200 GPS	64 42.99S	65 1.56W	9.1	126	1.4	7.7	-3.0	63.0	998.4	28.2	081	28.2	226	---	--	-----	0.0	---	---	
0300 GPS	64 47.77S	64 46.44W	7.7	125	8.1	15.8	-3.2	65.0	998.6	18.7	119	23.4	260	---	--	-----	0.0	---	---	
0327 GPS	64 48.70S	64 42.77W	1.2	106	2.0	17.7	-3.4	67.0	999.0	19.4	208	20.5	313	---	--	-----	0.0	---	---	CTD L609 START
0349 GPS	64 48.40S	64 42.76W	1.2	063	0.3	18.1	-3.2	66.0	999.2	16.9	199	18.1	261	---	--	-----	0.0	---	---	CTD L609 ON DECK
0400 GPS	64 48.23S	64 42.58W	3.0	135	0.2	18.3	-3.2	67.0	999.0	18.3	130	20.3	272	---	--	-----	0.0	---	---	
0421 GPS	64 48.16S	64 43.15W	0.7	227	0.4	18.7	-3.0	67.0	999.4	17.9	218	18.4	084	---	--	-----	0.0	---	---	CAM L601 START
0432 GPS	64 48.08S	64 43.41W	1.5	227	0.2	18.9	-3.0	66.0	999.2	16.1	109	16.7	341	---	--	-----	0.0	---	---	CAMERA LOWERING #1; NOW AT 160M BELOW SUR
0500 GPS	64 47.99S	64 44.26W	3.3	285	0.4	19.3	-2.6	68.0	999.6	21.2	221	23.8	141	---	--	-----	0.0	---	---	
0505 GPS	64 47.96S	64 44.75W	0.3	129	0.2	19.6	-2.8	68.0	999.6	17.1	162	17.4	291	---	--	-----	0.0	---	---	CAM L601 ON DECK
0506 GPS	64 47.94S	64 44.72W	0.7	104	0.0	19.6	-2.8	69.0	999.8	16.3	205	17.0	308	---	--	-----	0.0	---	---	CAMERA ON DECK; STILL FLASHING!!!!!!
0530 GPS	64 47.60S	64 44.62W	0.9	093	0.4	20.0	-2.6	68.0	1000.0	18.1	193	19.0	286	---	--	-----	0.0	---	---	CTD L610 START
0557 GPS	64 47.28S	64 44.60W	0.8	088	0.4	20.3	-2.8	71.0	1000.2	16.7	198	17.5	285	---	--	-----	0.0	---	---	CTD L610 ON DECK
0600 GPS	64 47.24S	64 44.60W	0.9	085	0.0	20.4	-2.8	72.0	1000.2	15.0	197	15.8	281	---	--	-----	0.0	---	---	
0807 GPS	64 56.02S	64 23.73W	0.8	119	12.9	33.3	-3.8	75.0	1001.8	4.3	057	3.9	186	---	--	-----	1.30	---	---	
0808 GPS	64 56.01S	64 23.70W	0.9	117	0.0	33.3	-3.8	75.0	1001.8	3.9	086	3.9	216	---	--	-----	1.36	---	---	CTD L611 START
0809 GPS	64 56.00S	64 23.69W	0.4	112	0.0	33.4	-3.8	75.0	1001.8	5.6	209	6.0	319	---	--	-----	1.39	---	---	DATA GAP; OPERATOR ERROR
0845 GPS	64 55.77S	64 23.71W	0.5	026	0.6	34.0	-3.4	76.0	1002.2	4.3	197	4.8	221	---	--	-----	2.20	---	---	CTD L611 ON DECK
0851 GPS	64 55.69S	64 23.61W	1.0	355	0.1	34.1	-3.6	76.0	1002.0	4.7	185	5.7	180	---	--	-----	2.49	---	---	CAM L602 START
0900 GPS	64 55.65S	64 23.57W	0.5	010	0.1	34.2	-3.4	76.0	1002.2	5.1	050	4.7	064	---	--	-----	3.51	---	---	
0907 GPS	64 55.55S	64 23.60W	1.6	009	0.1	34.4	-3.6	75.0	1002.2	3.5	217	4.9	215	---	--	-----	4.36	---	---	CAM L602 ABANDONNED
0913 GPS	64 55.45S	64 23.56W	3.7	039	0.1	34.5	-3.6	75.0	1002.2	2.3	053	3.0	180	---	--	-----	5.27	---	---	UNDERWAY TO PALMER STA.
1000 GPS	64 51.74S	64 10.85W	9.0	053	6.6	41.1	-3.0	75.0	1002.8	4.3	296	8.1	261	---	--	-----	11.28	---	---	
1047 GPS	64 49.06S	64 2.39W	0.1	166	4.7	45.8	-2.8	73.0	1003.4	4.5	267	4.5	072	---	--	-----	13.28	---	---	ZODIAC OPS OUTSIDE PALMER
1100 GPS	64 48.95S	64 2.53W	0.7	120	0.1	45.9	-2.4	75.0	1003.6	4.7	297	4.4	048	---	--	-----	17.76	---	---	
1148 GPS	64 49.00S	64 2.92W	0.9	196	0.8	46.7	-2.4	72.0	1004.2	4.7	056	4.2	262	---	--	-----	25.05	---	---	ZODIAC RETURNS
1152 GPS	64 49.01S	64 2.97W	0.5	198	0.0	46.7	-2.4	73.0	1004.2	3.3	147	3.7	349	---	--	-----	24.39	---	---	UNDERWAY TO CHARLOTTE BAY
1200 GPS	64 49.63S	64 0.62W	10.5	113	1.2	47.9	-2.4	73.0	1004.4	6.0	084	11.5	262	---	--	-----	27.41	---	---	
1300 GPS	64 51.28S	63 39.23W	10.8	020	10.8	58.7	-0.8	67.0	1002.8	29.4	240	36.0	245	---	--	-----	00.85	---	---	
1400 GPS	64 45.77S	63 18.73W	11.5	039	11.3	69.9	0.2	49.0	1004.2	8.6	067	11.3	175	---	--	-----	51.51	---	---	
1500 GPS	64 39.11S	62 59.83W	11.1	067	11.5	81.4	-0.2	57.0	1003.6	17.7	169	28.7	240	---	--	-----	11.02	---	---	
1511 GPS	64 38.27S	62 55.30W	11.9	064	2.1	83.6	0.0	56.0	1003.2	19.6	028	10.7	124	---	--	-----	04.14	---	---	PROGRAM HALTED FOR TESTS

POLAR DUKE 92-9 UNDERWAY DATA; 11-09-1992



SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

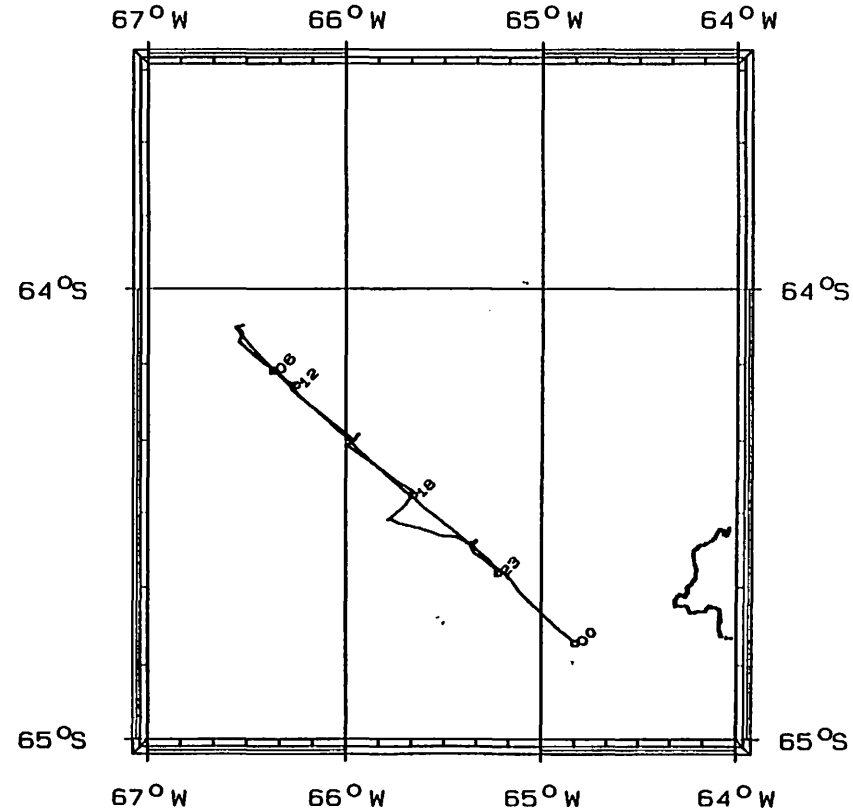
TIME	LATITUDE	LONGITUDE	EVENT
0709	64 05.01S	66 33.26W	L601
1121	64 12.28S	66 15.45W	L602
1131	64 12.82S	66 15.69W	L602
1212	64 12.23S	66 14.33W	L603
1432	64 20.08S	65 57.23W	L604
1522	64 19.39S	65 56.76W	L605
2120	64 34.43S	65 20.21W	L606
2200	64 33.67S	65 19.78W	L607

ISAACS-KIDD TRAWLS

TIME	LATITUDE	LONGITUDE	EVENT
1203	64 28.86S	61 40.15W	CB01

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT
0035	64 43.84S	66 10.44W	D T02)
0224	64 43.68S	65 49.11W	D 'C'



DAILY SUMMARY

DISTANCE TRAVELLED TODAY	132.6 nm								
TOTAL DISTANCE TRAVELLED	1367.8 nm								
SHIP'S SPEED (kts) ;		AVERAGE=	5.5	MAXIMUM=	11.3	AT 0128 HRS.	MINIMUM=	0.0	AT 2220 HRS.
AIR TEMPERATURE (C);		AVERAGE=	-3.3	MAXIMUM=	-2.0	AT 2213 HRS.	MINIMUM=	-6.8	AT 0059 HRS.
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);		AVERAGE=	993.2	MAXIMUM=	1024.0	AT 2156 HRS.	MINIMUM=	990.6	AT 0308 HRS.
RELATIVE HUMIDITY (%);		AVERAGE=	61.0	MAXIMUM=	73.0	AT 1208 HRS.	MINIMUM=	22.0	AT 2341 HRS.
WIND SPEED (kts);		AVERAGE=	31.7	MAXIMUM=	53.6	AT 1400 HRS.	MINIMUM=	8.2	AT 0024 HRS.
	MEAN DAILY WIND VELOCITY=	7.9 (kts) FROM 279 DEGREES TRUE							
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	20.50	MAXIMUM=	120.14	AT 1711 HRS.	MINIMUM=	0.00	AT 0003 HRS.
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
2120 GPS	64 34.40S	65 20.77W	0.4	217	2.0	122.8	-2.6	64.0	996.6	25.9	214	26.2	071	---	--	-----	22.36	---	---	CTD L606 START
2140 GPS	64 34.31S	65 20.60W	0.4	218	0.3	123.0	-2.8	63.0	996.6	31.9	304	31.7	162	---	--	-----	19.61	---	---	CTD L606 ON DECK
2200 GPS	64 33.81S	65 19.87W	2.0	220	0.9	123.9	-2.4	63.0	996.4	20.2	316	18.8	172	---	--	-----	42.54	---	---	CTD L607 START
2234 GPS	64 33.77S	65 20.02W	0.3	212	0.4	124.3	-2.2	63.0	997.4	20.0	201	20.3	052	---	--	-----	60.04	---	---	CTD L607 ON DECK
2300 GPS	64 34.09S	65 21.93W	2.9	233	1.0	125.3	-2.6	64.0	997.6	24.9	207	27.5	077	---	--	-----	15.79	---	---	

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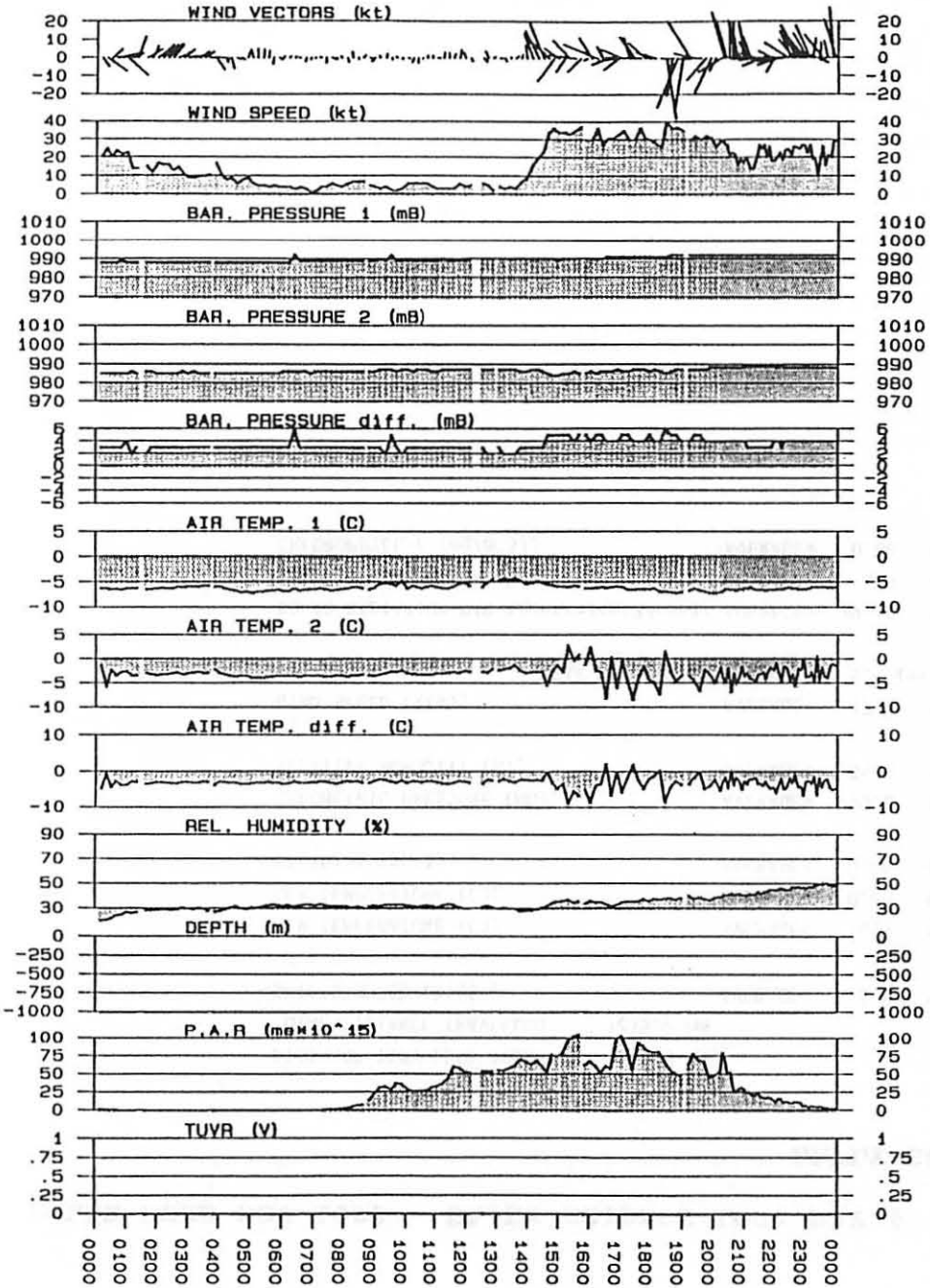
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	64 47.47S	64 48.56W	9.1	307	0.0	0.0	-6.0	50.0	992.4	23.5	254	27.5	182	---	--	-----	1.78	---	---	
0100 GPS	64 41.26S	65 5.02W	10.3	312	9.4	9.4	-6.6	51.0	992.6	21.2	097	24.7	073	---	--	-----	0.29	---	---	
0200 GPS	64 34.69S	65 20.69W	10.8	310	9.5	18.9	-5.6	53.0	992.0	21.0	123	28.4	092	---	--	-----	0.0	---	---	
0300 GPS	64 28.89S	65 36.96W	8.7	310	9.2	28.1	-4.6	51.0	990.8	25.5	232	31.6	169	---	--	-----	0.0	---	---	
0400 GPS	64 22.88S	65 52.22W	7.6	312	9.0	37.0	-4.0	51.0	991.0	27.0	220	33.2	164	---	--	-----	0.0	---	---	
0500 GPS	64 16.70S	66 7.15W	9.0	311	9.0	46.0	-4.0	56.0	990.8	27.2	136	34.3	098	---	--	-----	0.0	---	---	
0600 GPS	64 10.76S	66 21.58W	9.2	311	8.7	54.7	-3.6	61.0	991.4	27.0	225	34.2	165	---	--	-----	0.0	---	---	
0700 GPS	64 5.25S	66 33.31W	1.1	242	7.6	62.3	-3.4	63.0	992.0	24.1	285	23.8	164	---	--	-----	0.0	---	---	
0709 GPS	64 5.09S	66 33.34W	1.3	234	0.2	62.5	-3.2	63.0	992.0	21.8	200	23.0	073	---	--	-----	0.0	---	---	CTD L601 START
0800 GPS	64 4.98S	66 32.08W	1.0	193	0.9	63.4	-3.2	68.0	992.0	18.1	070	17.8	266	---	--	-----	0.79	---	---	
0829 GPS	64 4.89S	66 31.02W	3.9	253	0.7	64.1	-3.0	69.0	991.8	31.7	220	34.8	109	---	--	-----	1.08	---	---	CTD L601 ON DECK
0900 GPS	64 6.02S	66 31.45W	2.3	214	2.2	66.4	-3.0	65.0	992.0	28.4	201	30.5	053	---	--	-----	1.32	---	---	
1000 GPS	64 7.10S	66 32.32W	3.1	150	1.4	67.8	-2.8	63.0	992.6	32.7	190	35.7	340	---	--	-----	6.30	---	---	
1100 GPS	64 12.48S	66 16.21W	4.8	118	8.9	76.7	-2.6	66.0	992.4	29.2	191	33.9	308	---	--	-----	12.62	---	---	
1121 GPS	64 12.49S	66 15.22W	0.6	217	0.7	77.4	-2.4	65.0	991.2	31.1	332	30.6	189	---	--	-----	16.81	---	---	CTD L602 START
1131 GPS	64 12.46S	66 15.14W	1.1	216	0.1	77.5	-2.6	69.0	991.4	30.5	215	31.4	069	---	--	-----	13.38	---	---	CTD L602 START
1154 GPS	64 12.50S	66 14.89W	0.2	215	0.3	77.8	-2.6	67.0	1012.4	31.3	044	31.2	259	---	--	-----	22.64	---	---	CTD L602 ON DECK
1200 GPS	64 12.56S	66 14.86W	0.4	223	0.1	77.9	-2.6	67.0	991.8	29.5	204	29.9	067	---	--	-----	11.44	---	---	
1212 GPS	64 12.58S	66 14.94W	1.3	220	0.1	78.0	-2.4	63.0	992.4	31.3	206	32.5	065	---	--	-----	20.85	---	---	CTD L603 START
1243 GPS	64 12.53S	66 15.04W	0.3	213	0.4	78.4	-2.4	63.0	992.4	36.9	320	36.7	173	---	--	-----	31.93	---	---	CTD L603 ON DECK
1300 GPS	64 12.85S	66 15.70W	1.8	217	0.5	79.0	-2.2	64.0	992.2	34.4	168	36.2	026	---	--	-----	27.03	---	---	
1400 GPS	64 17.59S	66 4.29W	9.0	128	7.4	86.4	-2.8	66.0	993.6	44.9	196	53.6	322	---	--	-----	26.32	---	---	
1432 GPS	64 20.05S	65 57.22W	0.4	224	4.0	90.4	-2.6	64.0	992.2	35.2	078	35.1	303	---	--	-----	41.20	---	---	CTD L604 START
1454 GPS	64 19.90S	65 57.23W	0.6	217	0.2	90.6	-2.4	63.0	992.4	33.6	212	34.1	069	---	--	-----	43.44	---	---	CTD L604 ON DECK
1500 GPS	64 19.87S	65 57.11W	0.3	227	0.1	90.7	-2.4	63.0	992.4	36.4	309	36.2	176	---	--	-----	35.44	---	---	
1522 GPS	64 19.56S	65 56.83W	1.7	206	0.4	91.1	-2.4	62.0	992.8	34.0	318	32.8	162	---	--	-----	52.11	---	---	CTD L605 START
1548 GPS	64 19.21S	65 56.01W	1.7	205	0.5	91.6	-2.6	62.0	992.8	36.4	218	37.7	061	---	--	-----	37.46	---	---	CTD L605 ON DECK
1600 GPS	64 19.54S	65 56.60W	3.7	217	0.5	92.2	-2.4	63.0	992.4	39.1	218	42.0	072	---	--	-----	40.45	---	---	
1700 GPS	64 22.99S	65 52.25W	9.5	129	5.7	97.9	-2.8	63.0	993.2	42.6	113	47.1	253	---	--	-----	39.10	---	---	
1758 GPS	64 27.23S	65 39.25W	1.8	196	7.2	105.1	-3.0	62.0	993.8	41.0	202	42.7	037	---	--	-----	50.17	---	---	HOVE-TO AT STATION L606 UNTIL WINDS ABATE
1800 GPS	64 27.24S	65 39.22W	0.2	186	0.0	105.1	-3.0	62.0	993.4	38.9	213	39.0	039	---	--	-----	48.82	---	---	
1900 GPS	64 29.35S	65 42.80W	2.9	220	2.7	107.9	-2.6	63.0	994.4	34.8	208	37.4	066	---	--	-----	42.39	---	---	
1951 GPS	64 30.86S	65 47.06W	3.8	220	2.5	110.3	-3.0	62.0	995.2	39.1	304	37.1	160	---	--	-----	29.57	---	---	HEAD TO NEXT STATION
2000 GPS	64 31.18S	65 45.11W	7.9	107	1.3	111.6	-3.0	63.0	996.8	32.9	038	27.1	155	---	--	-----	31.41	---	---	
2100 GPS	64 33.58S	65 24.81W	10.4	107	9.2	120.8	-2.6	63.0	996.8	24.9	119	31.3	243	---	--	-----	85.00	---	---	

POLAR DUKE 92-9 UNDERWAY DATA; 11-08-1992



SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

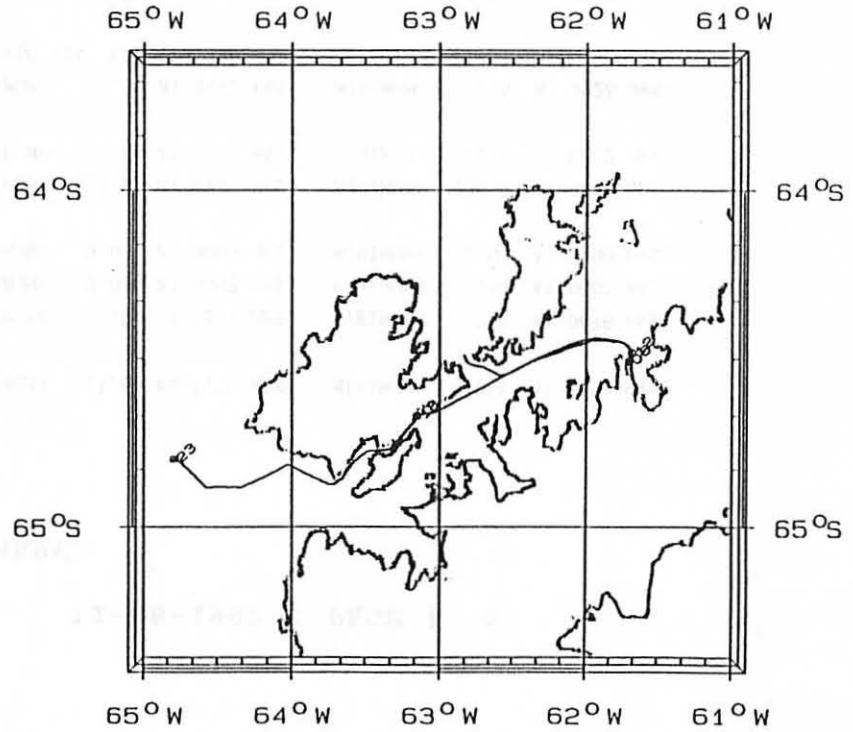
TIME	LATITUDE	LONGITUDE	EVENT
0703	64 30.02S	61 42.02W	CB02
0919	64 30.22S	61 41.81W	03 R
1026	64 30.52S	61 41.48W	CB04

ISAACS-KIDD TRAWLS

TIME	LATITUDE	LONGITUDE	EVENT
1203	64 28.86S	61 40.15W	CB01

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT
0035	64 43.84S	66 10.44W	D T02)
0224	64 43.68S	65 49.11W	D 'C'



DAILY SUMMARY

DISTANCE TRAVELLED TODAY	146.3 nm									
TOTAL DISTANCE TRAVELLED	1235.2 nm									
SHIP'S SPEED (kts) ;		AVERAGE=	6.5	MAXIMUM=	11.6	AT 1410 HRS.	MINIMUM=	0.1	AT 0551 HRS.	
AIR TEMPERATURE (C);		AVERAGE=	-6.1	MAXIMUM=	-3.8	AT 1314 HRS.	MINIMUM=	-7.2	AT 0438 HRS.	
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0002 HRS.	MINIMUM=	0.00	AT 0002 HRS.	
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.	
BAROMETRIC PRESSURE (mb);		AVERAGE=	990.2	MAXIMUM=	1003.4	AT 0932 HRS.	MINIMUM=	988.0	AT 0004 HRS.	
RELATIVE HUMIDITY (%);		AVERAGE=	35.6	MAXIMUM=	53.0	AT 2231 HRS.	MINIMUM=	20.0	AT 0002 HRS.	
WIND SPEED (kts);		AVERAGE=	17.1	MAXIMUM=	44.1	AT 1445 HRS.	MINIMUM=	0.3	AT 0926 HRS.	
MEAN DAILY WIND VELOCITY= 5.1 (kts) FROM 164 DEGREES TRUE										
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	29.30	MAXIMUM=	117.75	AT 1647 HRS.	MINIMUM=	0.00	AT 0101 HRS.	
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT	HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT	HRS.

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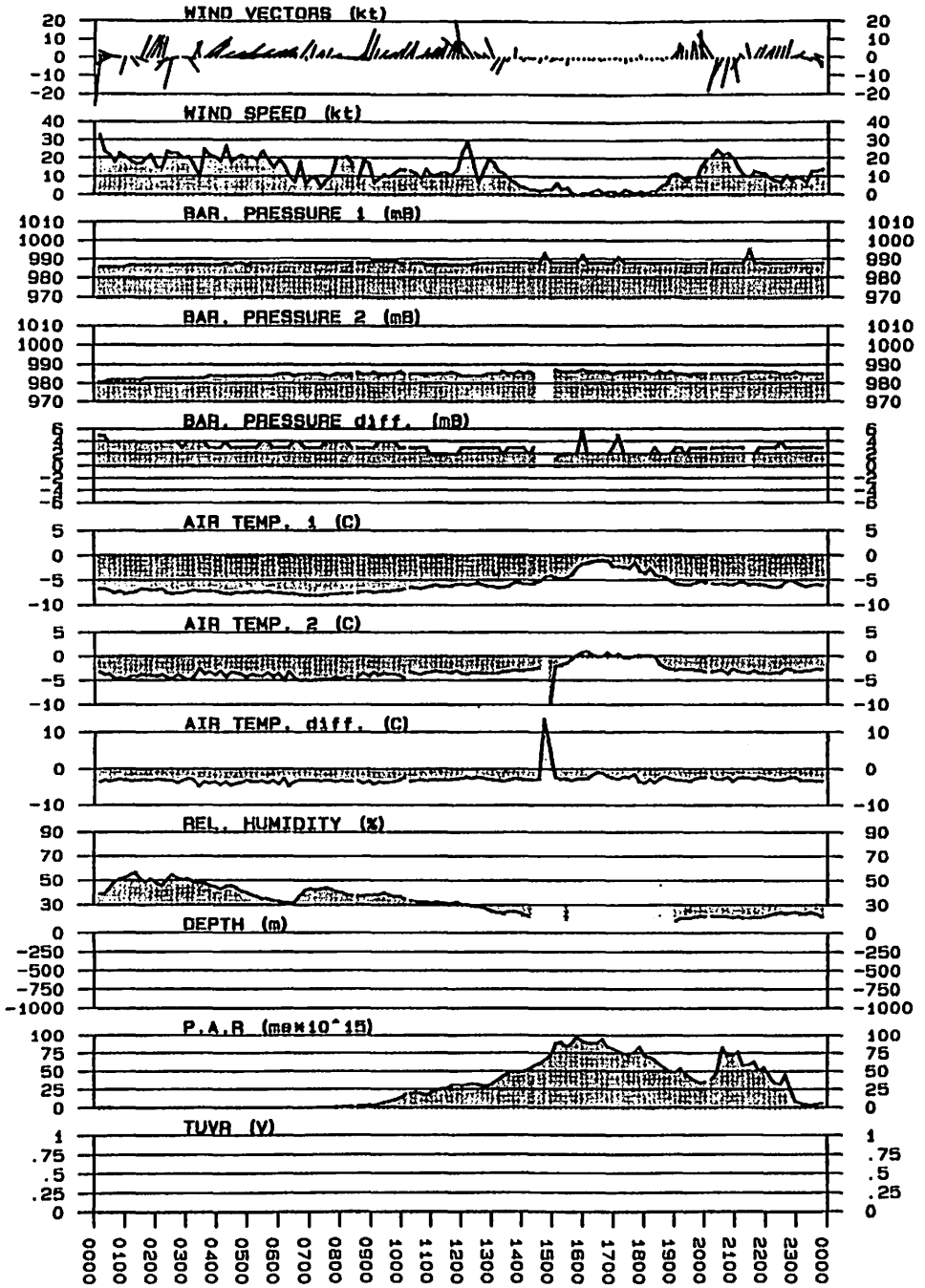
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A:SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0002 GPS	64 28.40S	62 51.58W	8.8	139	0.0	0.0	-6.2	20.0	988.2	18.1	322	12.4	075	---	--	-----	2.08	---	---	
0101 GPS	64 32.70S	62 35.82W	9.2	118	8.7	8.7	-6.2	27.0	988.4	16.1	193	25.2	306	---	--	-----	0.0	---	---	
0200 GPS	64 29.23S	62 14.95W	9.9	068	9.9	18.6	-6.2	28.0	988.4	8.7	176	18.6	247	---	--	-----	0.0	---	---	
0300 GPS	64 26.81S	61 54.98W	7.7	077	9.1	27.7	-5.8	30.0	988.2	0.8	155	8.4	255	---	--	-----	0.0	---	---	
0401 GPS	64 29.95S	61 40.97W	4.2	187	8.1	35.8	-6.0	29.0	988.4	11.7	011	7.6	204	---	--	-----	0.0	---	---	
0500 GPS	64 32.41S	61 40.62W	3.7	296	3.7	39.5	-7.0	30.0	988.4	4.1	173	7.8	112	---	--	-----	0.0	---	---	
0601 GPS	64 30.22S	61 41.94W	0.6	128	2.6	42.1	-6.8	32.0	988.6	3.1	264	3.2	021	---	--	-----	0.0	---	---	
0701 GPS	64 30.09S	61 42.04W	0.9	231	0.5	42.6	-6.4	33.0	988.6	1.0	149	1.8	035	---	--	-----	0.26	---	---	
0703 GPS	64 30.08S	61 42.06W	0.4	241	0.0	42.6	-6.4	33.0	988.6	1.6	164	1.9	049	---	--	-----	0.31	---	---	CTD CB02 START
0802 GPS	64 30.15S	61 41.96W	0.4	285	0.6	43.2	-6.2	32.0	989.0	5.1	204	5.4	128	---	--	-----	3.92	---	---	
0901 GPS	64 30.41S	61 41.82W	1.1	280	0.9	44.1	-5.8	33.0	988.8	2.7	035	1.9	334	---	--	-----	20.28	---	---	
0919 GPS	64 30.36S	61 41.87W	0.6	005	0.2	44.4	-5.2	33.0	988.8	4.3	191	4.9	195	---	--	-----	38.80	---	---	CTD CB03 RESTART
0942 GPS	64 30.34S	61 41.89W	0.7	028	0.2	44.6	-5.8	33.0	989.0	2.5	071	2.4	115	---	--	-----	54.20	---	---	CTD CB03 ON DECK
1001 GPS	64 30.34S	61 41.93W	0.5	039	0.2	44.8	-6.2	33.0	989.2	5.2	298	5.0	332	---	--	-----	27.28	---	---	
1026 GPS	64 30.30S	61 41.93W	0.7	039	0.2	45.0	-6.4	32.0	989.2	6.6	299	6.3	333	---	--	-----	26.36	---	---	CTD CB04 START
1048 GPS	64 30.29S	61 41.96W	0.6	039	0.2	45.1	-6.4	33.0	989.4	5.2	297	5.0	330	---	--	-----	29.58	---	---	CTD CB04 ON DECK
1100 GPS	64 30.24S	61 41.89W	0.7	041	0.1	45.3	-6.0	31.0	989.4	3.5	166	4.2	209	---	--	-----	32.79	---	---	
1201 GPS	64 28.35S	61 40.91W	2.9	164	2.6	47.8	-5.4	29.0	989.4	2.9	198	5.7	353	---	--	-----	55.40	---	---	
1203 GPS	64 28.42S	61 40.91W	1.9	146	0.1	47.9	-5.6	31.0	989.6	3.9	129	5.3	291	---	--	-----	54.20	---	---	IKMWT CB01 START
1234 GPS	64 29.96S	61 40.63W	2.4	170	1.6	49.5	-5.8	31.0	989.8	5.6	086	6.0	280	---	--	-----	54.65	---	---	IKMWT CB01 ON DECK
1300 GPS	64 29.80S	61 41.56W	0.3	356	0.8	50.2	-4.8	31.0	989.8	3.9	323	3.7	316	---	--	-----	54.20	---	---	
1400 GPS	64 27.11S	61 44.51W	10.2	290	3.7	53.9	-5.0	29.0	989.6	11.7	273	15.1	160	---	--	-----	65.72	---	---	
1501 GPS	64 27.57S	62 7.63W	9.8	243	10.3	64.2	-5.8	37.0	989.4	31.7	304	27.4	169	---	--	-----	88.59	---	---	
1601 GPS	64 31.55S	62 27.77W	9.6	237	9.6	73.8	-6.2	36.0	990.2	28.4	300	25.0	158	---	--	-----	54.05	---	---	EN ROUTE TO PALMER STATION
1700 GPS	64 35.92S	62 46.77W	9.3	236	9.3	83.1	-6.0	33.0	990.8	33.2	230	39.9	095	---	--	-----	02.20	---	---	
1801 GPS	64 39.63S	63 7.60W	10.0	259	9.9	93.0	-6.4	38.0	990.8	28.4	032	20.6	306	---	--	-----	61.23	---	---	
1900 GPS	64 46.56S	63 20.62W	9.7	239	9.2	102.2	-6.8	40.0	992.0	27.8	293	25.6	151	---	--	-----	51.51	---	---	
2001 GPS	64 51.30S	63 39.14W	9.0	210	10.1	112.2	-7.2	38.0	991.8	26.8	234	32.9	071	---	--	-----	44.93	---	---	
2021 GPS	64 52.36S	63 45.60W	10.1	285	3.4	115.6	-6.4	42.0	991.8	23.1	169	33.1	097	---	--	-----	63.92	---	---	JUST NOTICED;GETTING PECULIAR MESSAGES FR
2024 GPS	64 52.15S	63 46.66W	10.0	290	0.5	116.1	-6.4	41.0	992.0	23.1	258	27.0	167	---	--	-----	81.86	---	---	MAGNAVOX CODE 212 WAS IN EFFECT. DISABLE
2100 GPS	64 49.43S	63 59.72W	7.6	294	6.2	122.3	-6.2	42.0	992.2	16.7	254	20.2	167	---	--	-----	29.67	---	---	
2200 GPS	64 52.28S	64 16.23W	6.7	251	8.0	130.3	-6.4	46.0	992.2	14.4	169	21.0	063	---	--	-----	14.37	---	---	
2300 GPS	64 53.12S	64 32.59W	7.2	276	7.2	137.5	-6.4	46.0	992.4	17.5	238	22.2	138	---	--	-----	6.60	---	---	

POLAR DUKE 92-9 UNDERWAY DATA; 11-07-1992



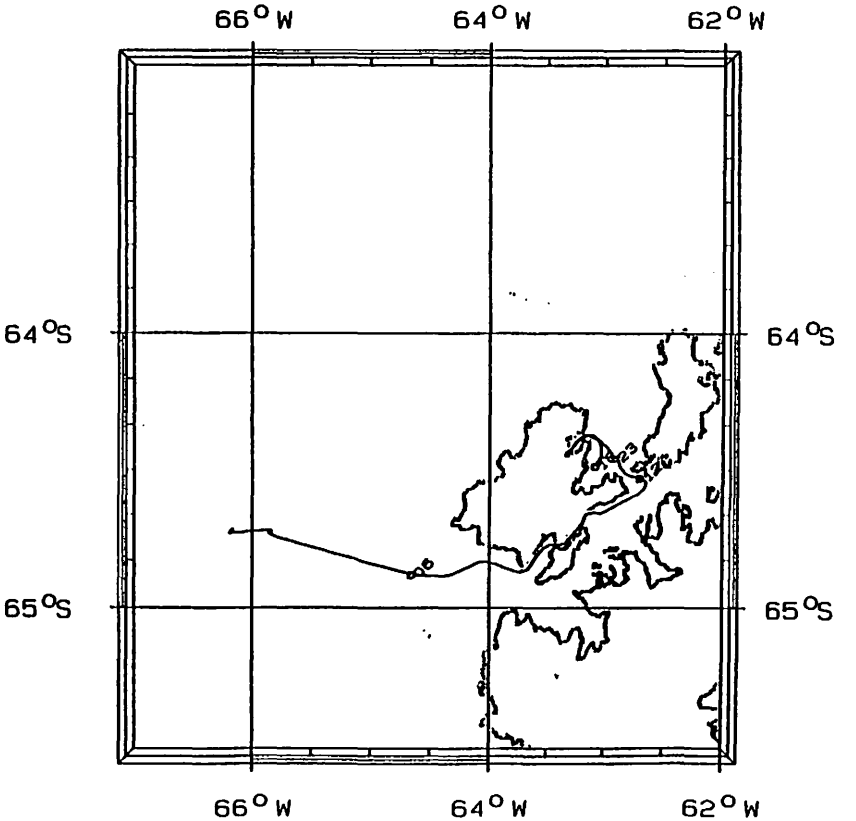
SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

TIME	LATITUDE	LONGITUDE	EVENT
1638	64 28.72S	63 05.56W	DB02
1744	64 28.07S	63 04.47W	DB03

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT
0035	64 43.84S	66 10.44W	D T02)
0224	64 43.68S	65 49.11W	D 'C'



DAILY SUMMARY

DISTANCE TRAVELLED TODAY 159.7 nm
TOTAL DISTANCE TRAVELLED 1088.9 nm

SHIP'S SPEED (kts) ;	AVERAGE=	6.7	MAXIMUM=	12.5	AT 0933 HRS.	MINIMUM=	0.0	AT 1431 HRS.
AIR TEMPERATURE (C);	AVERAGE=	-6.0	MAXIMUM=	-0.6	AT 1630 HRS.	MINIMUM=	-8.2	AT 0649 HRS.
SEA TEMPERATURE (C);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0002 HRS.	MINIMUM=	0.00	AT 0002 HRS.
SALINITY (ppt);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);	AVERAGE=	987.9	MAXIMUM=	1012.6	AT 1439 HRS.	MINIMUM=	985.6	AT 0002 HRS.
RELATIVE HUMIDITY (%);	AVERAGE=	29.4	MAXIMUM=	58.0	AT 0114 HRS.	MINIMUM=	0.0	AT 1421 HRS.
WIND SPEED (kts);	AVERAGE=	12.7	MAXIMUM=	39.2	AT 0004 HRS.	MINIMUM=	0.0	AT 1738 HRS.
MEAN DAILY WIND VELOCITY=	4.2 (kts) FROM 080 DEGREES TRUE							
SOLAR RADIATION-PAR (quanta/cm^2/sec);	AVERAGE=	29.66	MAXIMUM=	109.97	AT 2030 HRS.	MINIMUM=	0.00	AT 0112 HRS.
LIGHT TRANSMISSION (%);	AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);	AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

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GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A:SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
2301 GPS	64 22.22S	63 4.87W	10.1	119	8.2	151.7	-6.0	24.0	988.2	8.9	029	4.9	236	---	--	-----	7.20	---	---	

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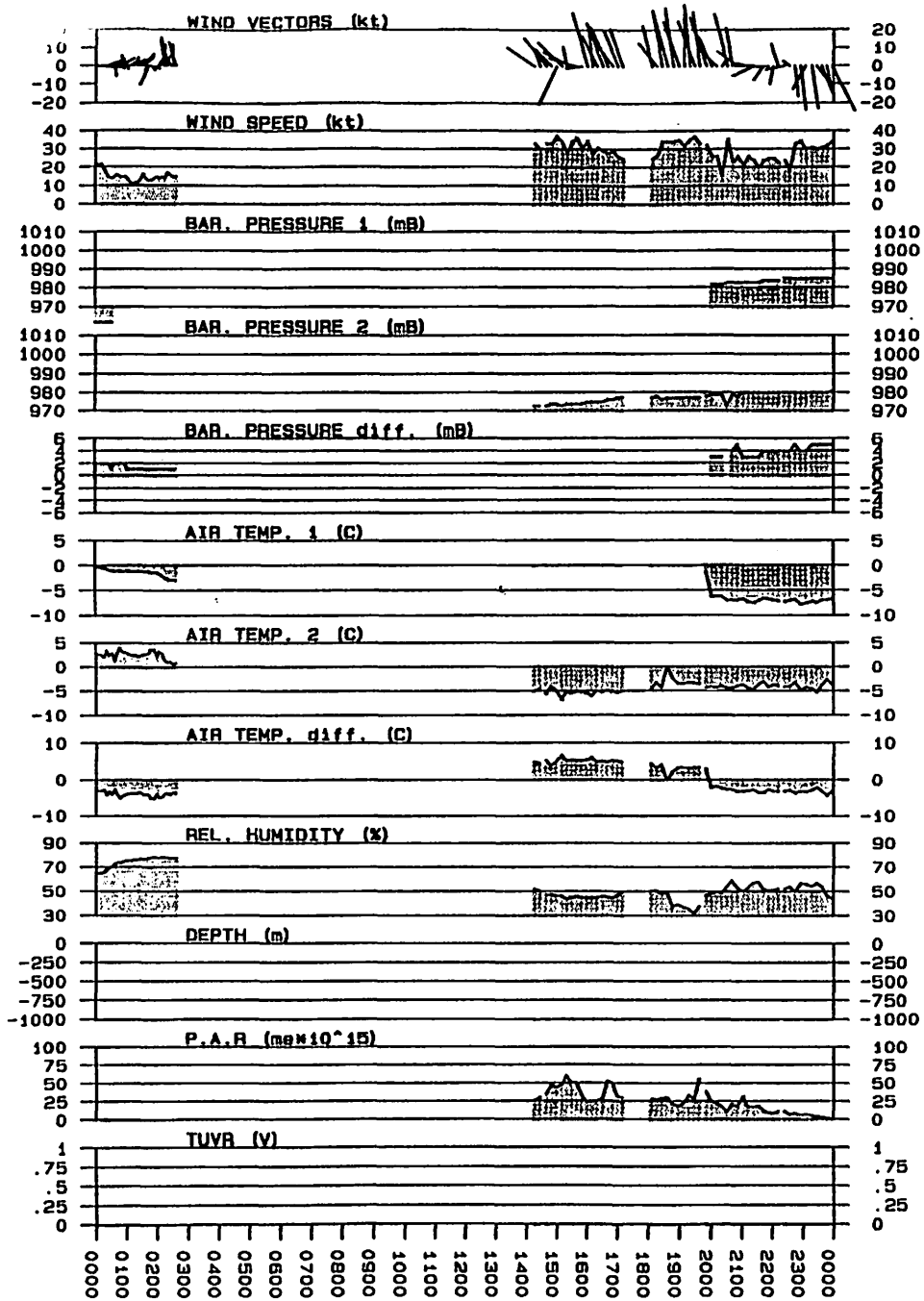
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0002 GPS	64 41.69S	66 9.48W	8.4	181	0.0	0.0	-6.6	39.0	985.6	27.6	182	36.0	003	---	--	-----	1.44	---	---	
0035 GPS	64 43.50S	66 10.49W	1.5	221	2.3	2.3	-7.6	46.0	986.0	18.7	234	19.6	092	---	--	-----	0.27	---	---	SED. TRAP B (ST02) AWAY!
0101 GPS	64 43.94S	66 11.15W	3.7	142	0.6	2.8	-7.4	53.0	986.4	12.2	082	12.3	241	---	--	-----	0.12	---	---	
0114 GPS	64 43.89S	66 9.41W	0.9	128	0.8	3.6	-7.6	58.0	986.8	14.6	157	15.4	287	---	--	-----	0.0	---	---	MOVED 1KM; ST02 SLANT RANGE 1280M
0118 GPS	64 43.86S	66 9.29W	0.8	124	0.1	3.7	-7.2	57.0	987.0	17.5	218	18.1	340	---	--	-----	0.0	---	---	ST02 RANGE 1390M
0200 GPS	64 43.49S	65 54.81W	9.1	087	6.2	9.9	-6.8	47.0	986.4	14.0	056	11.7	183	---	--	-----	0.0	---	---	
0214 GPS	64 43.48S	65 50.09W	4.4	097	2.0	11.9	-6.6	45.0	986.6	17.9	051	15.5	161	---	--	-----	0.0	---	---	STOPPED AT SED. TRAP SITE C (ST03)
0224 GPS	64 43.66S	65 49.98W	1.1	227	0.2	12.2	-8.0	54.0	987.0	22.7	219	23.6	084	---	--	-----	0.0	---	---	SED TRAP 'C' AWAY!
0301 GPS	64 44.49S	65 49.98W	3.9	108	1.7	13.9	-7.2	52.0	987.2	16.5	162	20.3	274	---	--	-----	0.0	---	---	
0401 GPS	64 47.34S	65 27.13W	11.1	103	10.2	24.1	-7.2	46.0	987.4	17.1	022	8.0	157	---	--	-----	0.0	---	---	
0500 GPS	64 50.09S	65 4.06W	9.5	104	10.3	34.4	-7.4	40.0	987.6	15.2	142	23.4	260	---	--	-----	0.0	---	---	
0600 GPS	64 52.68S	64 39.99W	10.1	100	10.6	45.0	-7.4	34.0	987.8	16.7	130	24.5	249	---	--	-----	0.0	---	---	
0701 GPS	64 52.48S	64 16.60W	9.3	066	10.2	55.2	-8.0	44.0	988.0	3.7	097	10.4	225	---	--	-----	0.03	---	---	
0801 GPS	64 51.08S	63 54.17W	11.1	107	10.2	65.4	-7.6	41.0	988.6	10.7	147	20.9	271	---	--	-----	1.04	---	---	
0901 GPS	64 48.28S	63 34.12W	10.5	041	11.0	76.3	-7.4	39.0	988.6	8.2	351	2.8	249	---	--	-----	3.43	---	---	
1000 GPS	64 43.19S	63 13.73W	10.5	039	10.9	87.2	-6.8	38.0	988.4	9.1	267	14.3	259	---	--	-----	15.18	---	---	
1100 GPS	64 38.08S	62 54.97W	10.7	058	10.5	97.8	-6.0	30.0	987.2	1.6	255	11.2	246	---	--	-----	22.01	---	---	
1201 GPS	64 31.65S	62 40.86W	10.6	282	11.1	108.8	-5.8	31.0	987.2	23.3	230	31.2	137	---	--	-----	30.32	---	---	
1300 GPS	64 26.84S	62 58.81W	8.5	269	10.5	119.3	-6.2	25.0	988.0	13.0	269	15.7	145	---	--	-----	33.62	---	---	
1355 GPS	64 27.92S	63 3.23W	0.4	188	4.4	123.8	-5.8	23.0	988.2	4.7	106	4.8	299	---	--	-----	48.07	---	---	STOP ON STATION DB01
1401 GPS	64 27.98S	63 3.28W	0.4	198	0.1	123.8	-5.8	21.0	988.2	3.3	248	3.5	080	---	--	-----	49.12	---	---	
1447 GPS	64 28.09S	63 3.11W	0.4	068	0.4	124.2	-3.8	0.0	988.0	2.1	150	2.5	222	---	--	-----	66.61	---	---	CTD DB01 ON DECK
1501 GPS	64 28.27S	63 3.44W	4.2	232	0.3	124.5	-4.6	19.0	987.8	6.8	221	10.3	077	---	--	-----	85.15	---	---	
1600 GPS	64 28.84S	63 5.32W	0.2	198	1.4	125.8	-2.0	4.0	988.0	1.6	096	1.6	301	---	--	-----	87.54	---	---	
1638 GPS	64 28.76S	63 5.37W	0.3	178	0.3	126.2	-1.2	14.0	988.0	0.0	000	0.3	358	---	--	-----	92.63	---	---	CTD DB02 START
1700 GPS	64 28.62S	63 5.29W	0.4	247	0.2	126.3	-2.4	12.0	1003.0	1.4	012	1.0	264	---	--	-----	79.47	---	---	
1704 GPS	64 28.60S	63 5.30W	0.4	263	0.0	126.4	-2.6	13.0	988.2	0.2	041	0.3	056	---	--	-----	77.98	---	---	CTD DB02 ON DECK
1744 GPS	64 28.97S	63 4.75W	0.5	195	0.6	127.0	-3.0	11.0	988.0	3.1	342	2.6	174	---	--	-----	74.84	---	---	CTD DB03 START
1801 GPS	64 28.91S	63 4.78W	0.2	190	0.1	127.1	-3.2	0.0	987.8	1.2	141	1.3	337	---	--	-----	68.71	---	---	
1815 GPS	64 28.88S	63 4.76W	0.6	251	0.1	127.2	-3.6	12.0	988.0	2.1	013	1.6	269	---	--	-----	66.61	---	---	CTD DB03 ON DECK
1900 GPS	64 26.88S	63 1.87W	5.4	003	2.5	129.7	-5.8	19.0	987.8	9.5	188	14.9	188	---	--	-----	49.42	---	---	
2001 GPS	64 22.23S	63 7.32W	6.5	269	6.1	135.8	-5.4	22.0	987.8	19.2	239	23.3	134	---	--	-----	35.52	---	---	
2100 GPS	64 25.93S	63 18.42W	4.5	221	6.5	142.3	-5.4	20.0	988.0	13.4	213	17.4	066	---	--	-----	77.68	---	---	
2152 GPS	64 26.19S	63 19.54W	0.6	052	1.1	143.4	-5.8	21.0	988.2	11.1	205	11.6	256	---	--	-----	51.66	---	---	CTD DB04 ON DECK
2200 GPS	64 26.15S	63 19.56W	0.1	061	0.0	143.5	-6.2	22.0	988.4	9.3	206	9.4	267	---	--	-----	55.85	---	---	

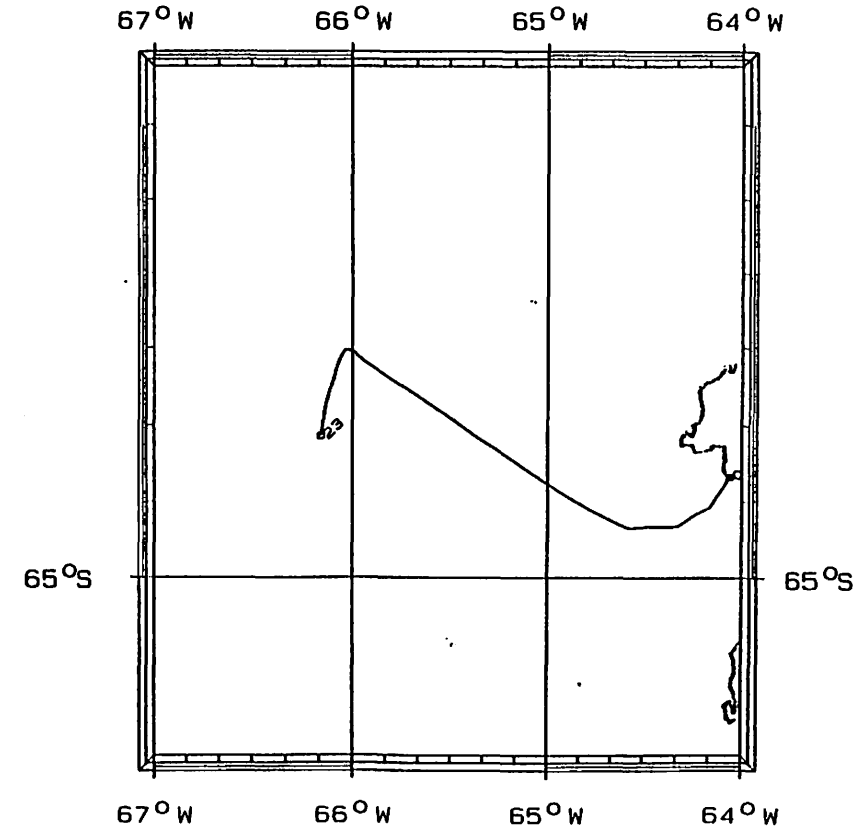
POLAR DUKE 92-9 UNDERWAY DATA: 11-06-1992



SCIENTIFIC ACTIVITIES THIS DAY:

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT
2207	64 30.45S	66 01.51W	D T01)



DAILY SUMMARY

DISTANCE TRAVELLED TODAY	75.2 nm								
TOTAL DISTANCE TRAVELLED	929.2 nm								
SHIP'S SPEED (kts) ;		AVERAGE=	4.6	MAXIMUM=	10.8	AT 1814 HRS.	MINIMUM=	0.1	AT 0003 HRS.
AIR TEMPERATURE (C);		AVERAGE=	-2.5	MAXIMUM=	0.0	AT 1406 HRS.	MINIMUM=	-8.0	AT 2250 HRS.
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);		AVERAGE=	634.3	MAXIMUM=	985.6	AT 2356 HRS.	MINIMUM=	0.0	AT 1406 HRS.
RELATIVE HUMIDITY (%);		AVERAGE=	58.1	MAXIMUM=	80.0	AT 0130 HRS.	MINIMUM=	31.0	AT 1926 HRS.
WIND SPEED (kts);		AVERAGE=	24.2	MAXIMUM=	41.2	AT 2248 HRS.	MINIMUM=	9.7	AT 2017 HRS.
MEAN DAILY WIND VELOCITY=	8.4 (kts) FROM 344 DEGREES TRUE								
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	16.00	MAXIMUM=	89.49	AT 1938 HRS.	MINIMUM=	0.00	AT 0012 HRS.
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

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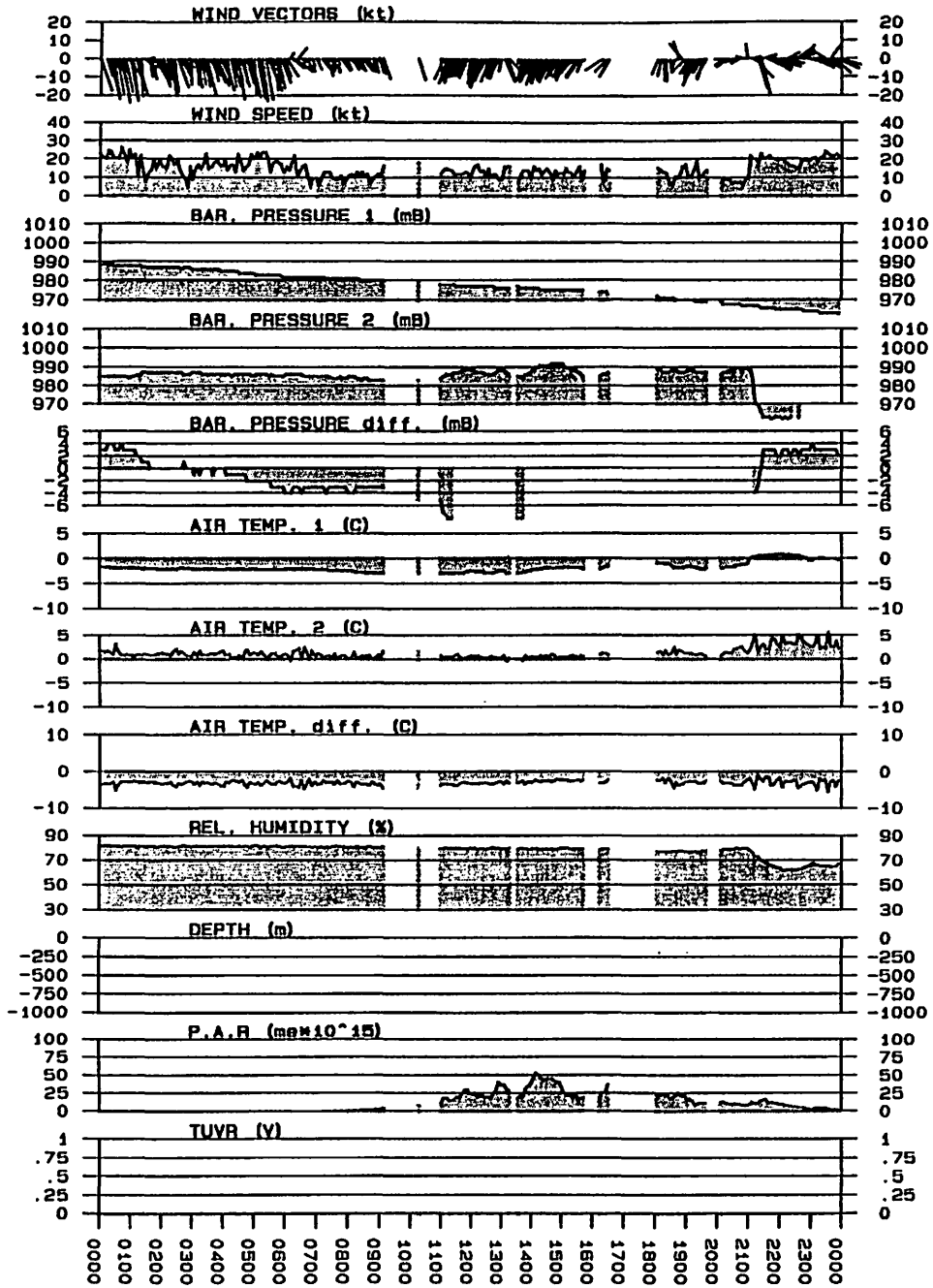
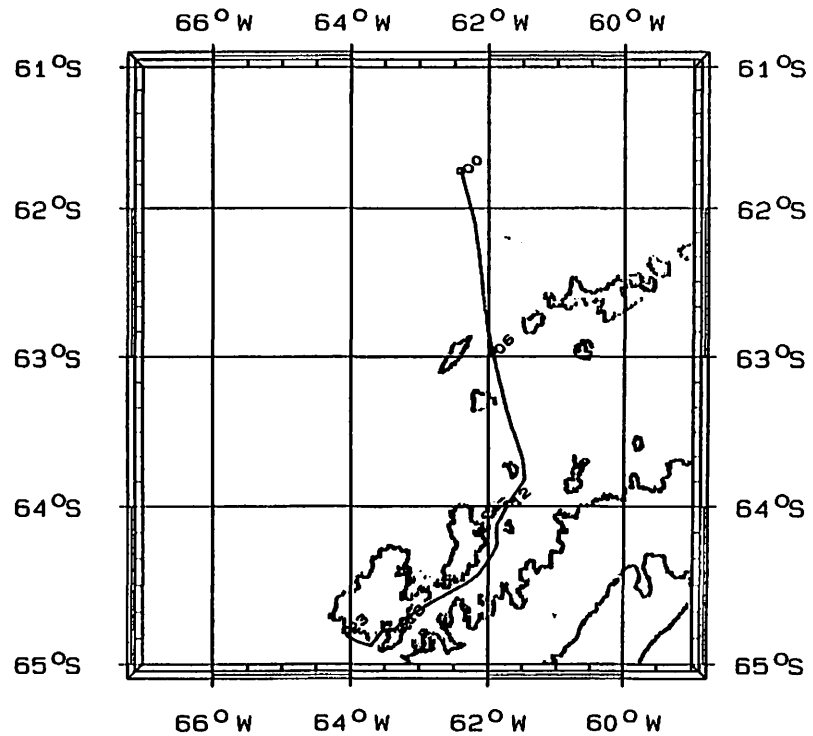
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	64 46.47S	64 3.32W	0.7	284	0.0	0.0	-0.2	66.0	962.4	23.7	349	23.0	273	---	--	-----	1.52	---	---	
0100 GPS	64 46.45S	64 3.34W	0.5	284	0.7	0.7	-1.0	76.0	961.6	14.8	008	14.3	292	---	--	-----	0.0	---	---	
0200 GPS	64 46.50S	64 3.30W	0.9	284	0.6	1.3	-1.4	79.0	960.6	15.7	319	15.1	241	---	--	-----	0.0	---	---	
1406 GPS	64 50.14S	64 7.36W	7.0	232	4.4	5.6	0.0	51.0	0.0	32.5	228	37.5	092	---	--	-----	27.25	---	---	
1408 GPS	64 50.27S	64 7.80W	7.4	230	0.2	5.8	0.0	50.0	0.0	32.1	226	37.6	088	---	--	-----	26.86	---	---	GO BACK TO VERSION 1 PROGRAM (NO WEATHER)
1501 GPS	64 53.22S	64 20.17W	7.6	246	6.1	11.9	0.0	46.0	0.0	29.2	212	35.8	091	---	--	-----	41.65	---	---	
1600 GPS	64 52.88S	64 37.71W	8.3	293	7.6	19.5	0.0	45.0	0.0	28.2	226	34.5	149	---	--	-----	22.34	---	---	
1700 GPS	64 48.51S	64 56.50W	9.2	301	9.2	28.7	0.0	47.0	0.0	15.7	155	24.4	105	---	--	-----	27.69	---	---	
1712 GPS	64 47.44S	65 0.13W	9.5	304	1.9	30.6	0.0	47.0	0.0	15.4	218	23.6	147	---	--	-----	28.78	---	---	PROGRAM STOPPED
1800 GPS	64 43.26S	65 14.83W	9.0	300	7.6	38.2	0.0	52.0	0.0	18.9	238	24.8	161	---	--	-----	29.35	---	---	
1804 GPS	64 42.93S	65 15.96W	9.4	296	0.6	38.8	0.0	51.0	0.0	20.2	235	26.7	154	---	--	-----	28.60	---	---	BACK ON LINE; TESTS UNSUCCESSFUL
1902 GPS	64 38.13S	65 32.95W	10.0	300	8.8	47.5	0.0	37.0	0.0	31.1	297	28.0	219	---	--	-----	23.27	---	---	
1951 GPS	64 34.30S	65 47.28W	9.6	299	7.3	54.8	-6.2	49.0	981.6	23.3	216	31.6	145	---	--	-----	20.09	---	---	TRY AGAIN WITH OTHER PROGRAM
2001 GPS	64 33.44S	65 50.28W	10.5	303	1.6	56.4	-6.0	48.0	981.8	20.2	220	29.1	150	---	--	-----	25.54	---	---	
2100 GPS	64 30.46S	66 0.00W	0.6	250	5.4	61.8	-6.4	49.0	983.4	16.9	199	17.5	089	---	--	-----	26.55	---	---	
2149 GPS	64 30.23S	66 1.20W	1.2	237	0.9	62.7	-6.6	51.0	983.8	23.3	213	24.3	089	---	--	-----	10.23	---	---	SED. TRAP A (ST01) IN WATER
2201 GPS	64 30.19S	66 1.52W	1.3	225	0.2	62.9	-7.0	50.0	984.0	24.9	090	24.9	093	---	--	-----	9.76	---	---	
2207 GPS	64 30.22S	66 1.71W	0.3	246	0.1	63.0	-6.8	53.0	984.4	23.5	208	23.8	093	---	--	-----	9.74	---	---	SED. TRAP A (ST01) AWAY!
2209 GPS	64 30.16S	66 1.77W	1.9	247	0.1	63.1	-7.0	52.0	984.4	22.7	308	21.6	191	---	--	-----	10.32	---	---	SLANT RANGE 387M
2221 GPS	64 30.66S	66 2.42W	1.9	242	0.7	63.8	-7.2	52.0	984.6	21.0	204	22.7	084	---	--	-----	10.73	---	---	1KM FROM ST 01 LOCATION
2300 GPS	64 33.24S	66 5.05W	8.3	190	3.2	67.0	-7.6	57.0	984.6	28.0	206	35.6	030	---	--	-----	7.88	---	---	

POLAR DUKE 92-9 UNDERWAY DATA; 11-05-1992



SCIENTIFIC ACTIVITIES THIS DAY;



DAILY SUMMARY

DISTANCE TRAVELLED TODAY 235.6 nm
TOTAL DISTANCE TRAVELLED 854.0 nm

SHIP'S SPEED (kts) ;	AVERAGE=	9.7	MAXIMUM=	14.2	AT 0152 HRS.	MINIMUM=	0.0	AT 2153 HRS.
AIR TEMPERATURE (C);	AVERAGE=	-1.7	MAXIMUM=	1.0	AT 2203 HRS.	MINIMUM=	-2.8	AT 0829 HRS.
SEA TEMPERATURE (C);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);	AVERAGE=	977.2	MAXIMUM=	988.8	AT 0009 HRS.	MINIMUM=	962.4	AT 2340 HRS.
RELATIVE HUMIDITY (%);	AVERAGE=	78.1	MAXIMUM=	83.0	AT 0002 HRS.	MINIMUM=	61.0	AT 2204 HRS.
WIND SPEED (kts);	AVERAGE=	15.1	MAXIMUM=	28.9	AT 0619 HRS.	MINIMUM=	0.1	AT 0247 HRS.
MEAN DAILY WIND VELOCITY= 9.0 (kts) FROM 275 DEGREES TRUE								
SOLAR RADIATION-PAR (quanta/cm^2/sec);	AVERAGE=	10.23	MAXIMUM=	55.10	AT 1410 HRS.	MINIMUM=	0.00	AT 0001 HRS.
LIGHT TRANSMISSION (%);	AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);	AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

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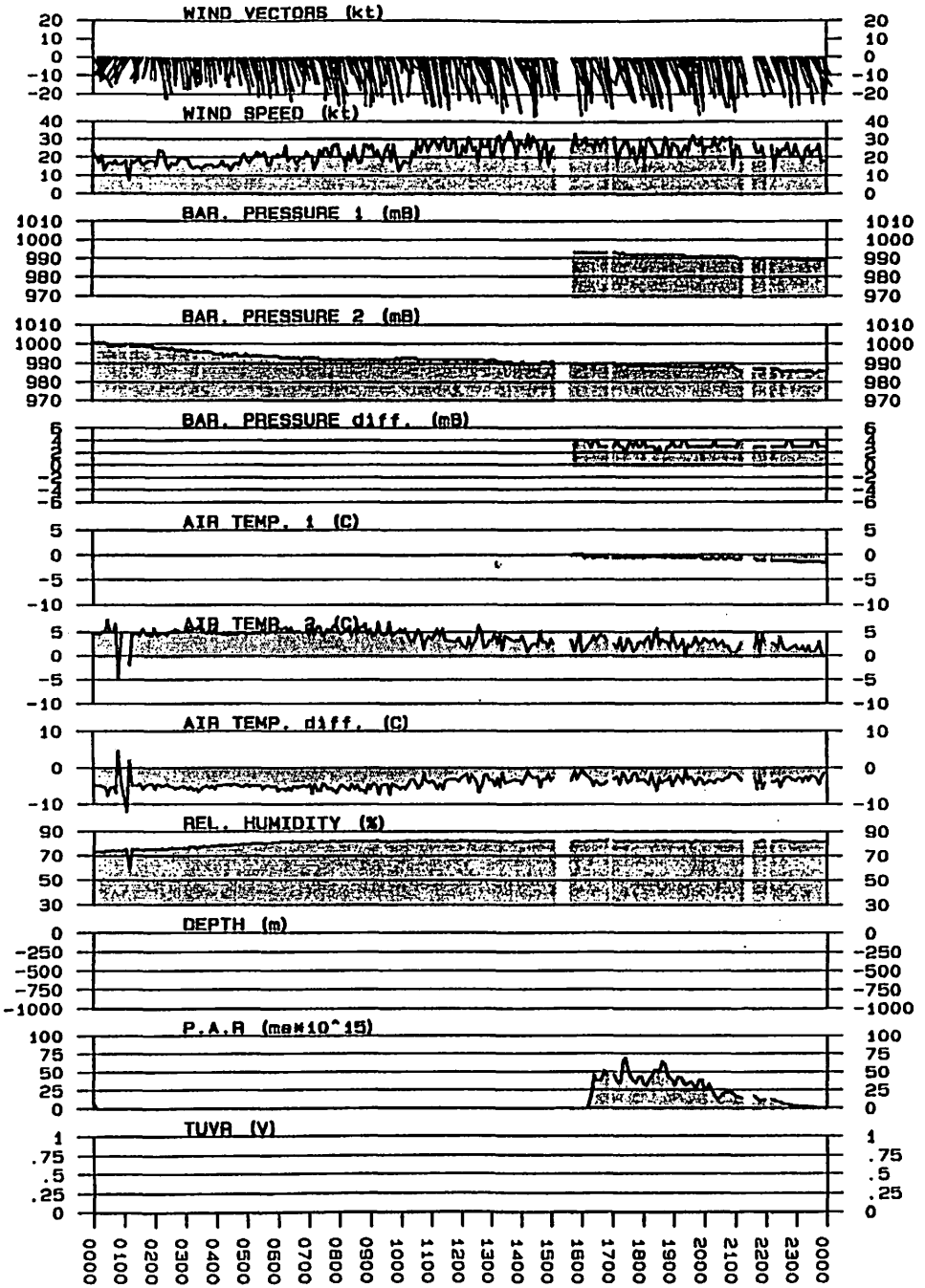
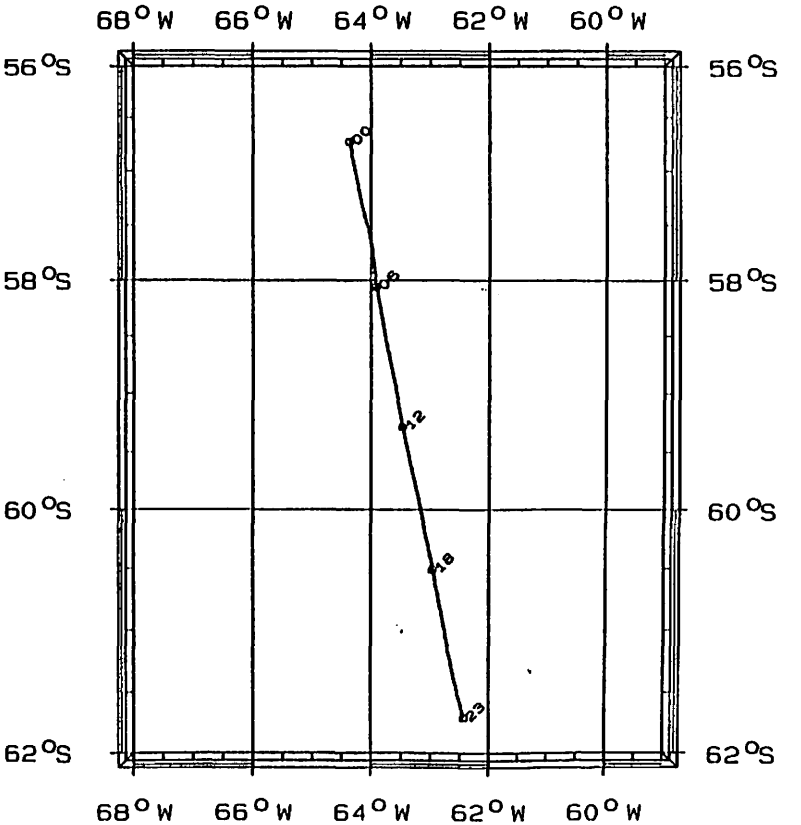
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A:SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	61 42.85S	62 24.56W	12.6	166	0.0	0.0	-1.6	81.0	988.4	14.6	187	27.1	349	---	--	-----	0.0	---	---	
0100 GPS	61 54.59S	62 17.83W	12.9	162	12.2	12.2	-1.8	82.0	987.4	13.8	221	25.0	003	---	--	-----	0.0	---	---	
0201 GPS	62 6.83S	62 11.58W	12.0	169	12.6	24.9	-1.8	82.0	987.2	12.8	351	2.1	097	---	--	-----	0.0	---	---	
0300 GPS	62 19.00S	62 8.24W	12.4	169	12.3	37.2	-2.0	82.0	986.4	11.3	142	22.4	331	---	--	-----	0.0	---	---	
0400 GPS	62 31.54S	62 5.02W	12.5	167	12.7	49.8	-2.2	82.0	985.2	10.3	161	22.5	339	---	--	-----	0.0	---	---	
0500 GPS	62 44.30S	62 1.67W	13.0	168	12.9	62.7	-2.0	82.0	983.6	12.6	163	25.4	340	---	--	-----	0.0	---	---	
0600 GPS	62 56.38S	61 56.56W	11.6	162	12.4	75.1	-2.0	80.0	982.4	7.4	133	17.5	324	---	--	-----	0.0	---	---	
0700 GPS	63 7.16S	61 51.01W	10.8	161	11.1	86.2	-2.2	81.0	982.0	9.7	010	2.1	287	---	--	-----	0.0	---	---	
0800 GPS	63 17.63S	61 45.64W	10.7	162	10.8	97.0	-2.4	80.0	981.0	9.9	075	12.6	292	---	--	-----	0.82	---	---	
0900 GPS	63 27.95S	61 39.22W	10.4	158	10.8	107.8	-2.8	80.0	980.4	8.2	127	16.6	315	---	--	-----	2.39	---	---	
1016 GPS	63 40.83S	61 30.30W	10.2	159	13.5	121.3	-2.8	80.0	978.8	12.6	285	14.0	039	---	--	-----	9.25	---	---	
1101 GPS	63 48.72S	61 27.45W	11.0	208	8.0	129.4	-2.8	79.0	978.2	4.3	210	14.9	037	---	--	-----	15.65	---	---	
1200 GPS	63 57.74S	61 41.42W	11.0	200	11.0	140.3	-2.4	79.0	977.2	4.7	121	14.0	003	---	--	-----	29.17	---	---	
1300 GPS	64 7.68S	61 52.58W	11.4	182	11.2	151.5	-2.2	80.0	976.4	10.1	005	1.6	329	---	--	-----	43.14	---	---	
1400 GPS	64 18.00S	61 56.36W	11.2	206	10.8	162.4	-2.2	80.0	975.8	5.4	292	10.5	055	---	--	-----	40.00	---	---	
1500 GPS	64 26.58S	62 10.69W	10.2	223	10.7	173.1	-1.8	79.0	975.0	3.7	189	13.9	045	---	--	-----	30.89	---	---	
1547 GPS	64 31.14S	62 26.56W	10.5	242	8.3	181.4	-2.2	79.0	974.4	7.4	152	17.4	050	---	--	-----	15.87	---	---	SYSTEM DOWN TO INSTALL COM2:
1615 GPS	64 33.45S	62 36.72W	10.7	239	5.0	186.3	-1.8	79.0	973.6	8.2	276	12.8	098	---	--	-----	24.99	---	---	
1616 GPS	64 33.53S	62 37.09W	10.6	237	0.2	186.5	-1.8	79.0	973.6	9.1	331	5.1	117	---	--	-----	24.72	---	---	BACK ON-LINE
1631 GPS	64 34.83S	62 42.41W	10.5	238	2.6	189.1	-1.2	80.0	973.2	7.4	157	17.5	048	---	--	-----	41.50	---	---	OFF LINE
1801 GPS	64 42.64S	63 12.65W	10.3	219	15.1	204.3	-0.8	76.0	971.4	5.8	201	15.9	046	---	--	-----	24.99	---	---	
1803 GPS	64 42.90S	63 13.19W	10.8	218	0.3	204.6	-0.8	76.0	971.2	9.5	084	13.6	354	---	--	-----	23.32	---	---	IN THE NEUMAYER CHANNEL. RESTART PROGRAM
1900 GPS	64 47.50S	63 32.01W	10.6	219	10.0	214.6	-1.4	77.0	969.6	5.2	012	5.6	028	---	--	-----	18.54	---	---	
1941 GPS	64 52.93S	63 42.82W	9.9	293	7.2	221.9	-2.0	78.0	969.0	8.7	343	3.0	172	---	--	-----	10.54	---	---	BREAK FOR PROGRAM TESTS
2006 GPS	64 51.53S	63 50.76W	5.3	290	3.7	225.5	-1.8	79.0	968.2	9.1	079	9.6	042	---	--	-----	13.97	---	---	
2100 GPS	64 49.56S	64 1.43W	11.0	299	5.0	230.5	0.0	80.0	967.2	25.1	325	17.3	243	---	--	-----	10.19	---	---	
2143 GPS	64 46.48S	64 3.29W	0.2	284	3.9	234.4	0.6	65.0	965.6	20.4	004	20.2	288	---	--	-----	12.77	---	---	DOCKED AT PALMER STATION
2200 GPS	64 46.48S	64 3.36W	0.3	284	0.1	234.5	0.8	63.0	965.2	18.3	356	18.0	280	---	--	-----	10.12	---	---	
2300 GPS	64 46.49S	64 3.32W	0.5	283	0.5	235.0	-0.2	68.0	964.2	23.5	000	23.0	283	---	--	-----	3.97	---	---	

POLAR DUKE 92-9 UNDERWAY DATA; 11-04-1992



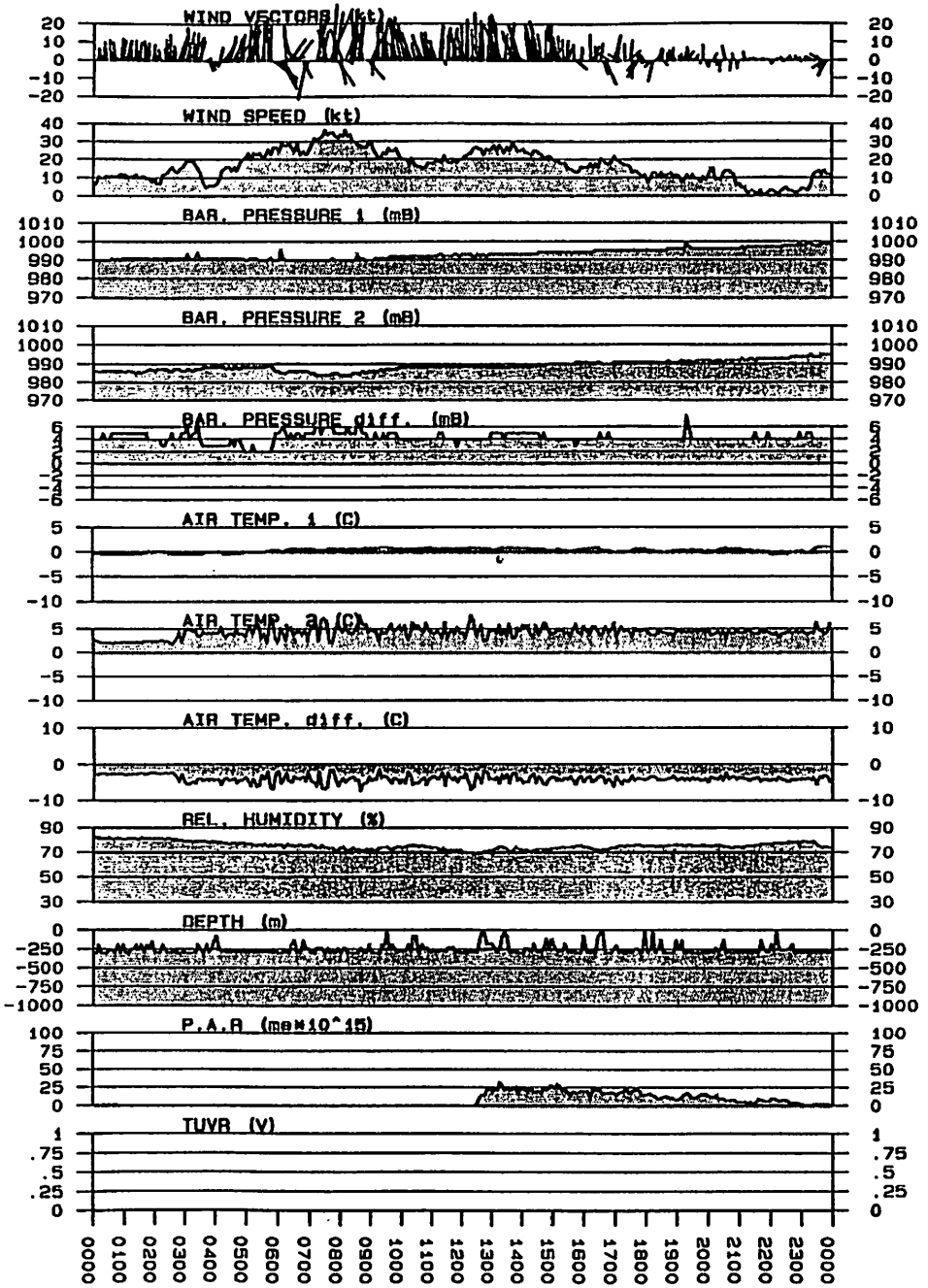
SCIENTIFIC ACTIVITIES THIS DAY;



DAILY SUMMARY

DISTANCE TRAVELLED TODAY	20.3 nm								
TOTAL DISTANCE TRAVELLED	1787.2 nm								
SHIP'S SPEED (kts) ;		AVERAGE=	0.8	MAXIMUM=	4.6	AT 2001 HRS.	MINIMUM=	0.0	AT 0048 HRS.
AIR TEMPERATURE (C);		AVERAGE=	0.3	MAXIMUM=	1.2	AT 2331 HRS.	MINIMUM=	-1.4	AT 2307 HRS.
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0002 HRS.	MINIMUM=	0.00	AT 0002 HRS.
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);		AVERAGE=	993.2	MAXIMUM=	1011.8	AT 1920 HRS.	MINIMUM=	989.4	AT 0808 HRS.
RELATIVE HUMIDITY (%);		AVERAGE=	75.7	MAXIMUM=	83.0	AT 0012 HRS.	MINIMUM=	66.0	AT 0809 HRS.
WIND SPEED (kts);		AVERAGE=	17.0	MAXIMUM=	38.9	AT 0809 HRS.	MINIMUM=	0.2	AT 2138 HRS.
MEAN DAILY WIND VELOCITY=	8.0 (kts) FROM 073 DEGREES TRUE								
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	6.82	MAXIMUM=	31.80	AT 1504 HRS.	MINIMUM=	0.00	AT 0012 HRS.
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

POLAR DUKE 92-9 UNDERWAY DATA: 11-15-1992



SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

TIME	LATITUDE	LONGITUDE	EVENT
0200	64 51.38S	62 54.04W	PB03
0304	64 51.38S	62 54.79W	PB04
0606	64 50.62S	62 54.81W	PB05
0728	64 51.77S	62 54.55W	PB06
0828	64 51.92S	62 54.29W	PB07
1105	64 51.74S	62 53.04W	PB08
1401	64 51.75S	62 53.58W	PB09
1502	64 51.92S	62 53.26W	PB10
1632	64 50.05S	62 54.49W	PB11
1701	64 50.44S	62 54.51W	PB12
1904	64 50.79S	62 54.68W	PB13
2203	64 51.96S	62 54.55W	PB14
2301	64 51.09S	62 54.47W	PB15

VERN'S CAMERA

TIME	LATITUDE	LONGITUDE	EVENT
0030	64 51.05S	62 53.23W	M 08
0116	64 51.16S	62 53.54W	ACK;
0117	64 51.25S	62 53.08W	M 09

ISAACS-KIDD TRAWLS

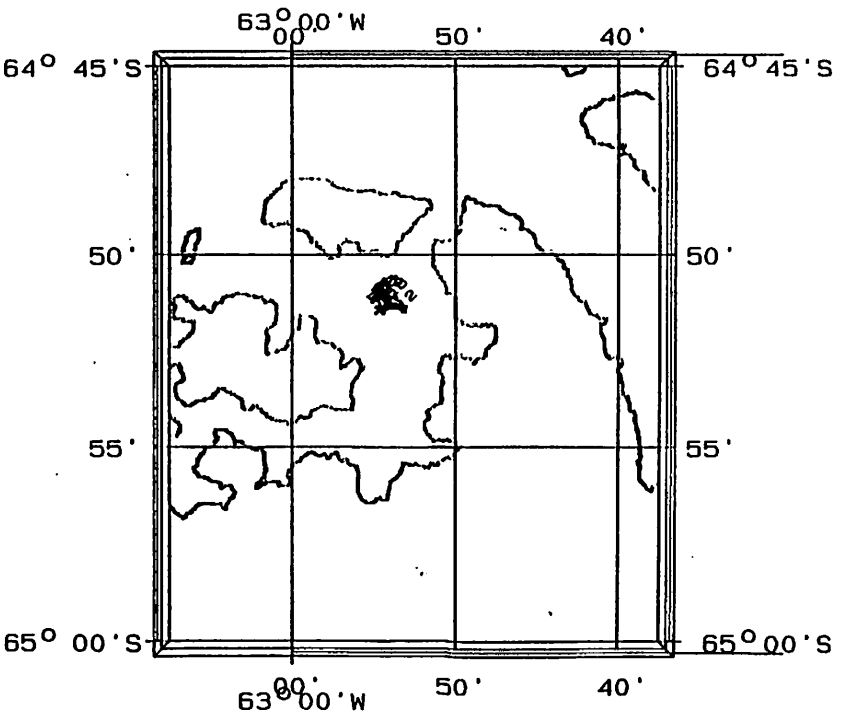
TIME	LATITUDE	LONGITUDE	EVENT
0407	64 26.15S	61 44.74W	POPP

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT
1427	64 29.68S	61 42.25W	R CB01



POLAR DUKE NOV 1992 - DAILY SCIENCE LOG; DAY # 15 11-16-1992 ; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	64 50.93S	62 54.60W	0.5	226	0.0	0.0	1.0	66.0	998.6	15.4	202	11.3	083	290	--	-----	2.13	---	---	
0023 GPS	64 50.95S	62 54.77W	0.8	228	0.3	0.3	0.8	75.0	998.8	14.8	016	14.0	245	299	--	-----	1.70	---	---	CAMERA LOWERING NUMBER 10 AT SURFACE
0024 GPS	64 50.95S	62 54.74W	0.5	225	0.0	0.3	0.6	75.0	998.6	14.8	162	15.2	027	293	--	-----	1.69	---	---	CAM 10 START
0100 GPS	64 50.84S	62 54.97W	0.9	264	0.5	0.8	0.6	75.0	999.0	14.0	055	13.5	323	291	--	-----	0.58	---	---	
0102 GPS	64 50.81S	62 54.98W	1.1	262	0.0	0.8	0.6	73.0	999.2	15.9	123	16.6	028	300	--	-----	0.56	---	---	288M WIRE OUT; CAMERA STOPPED
0134 GPS	64 50.79S	62 55.28W	0.1	231	0.3	1.1	0.6	73.0	999.6	16.7	178	16.8	049	281	--	-----	0.04	---	---	276M WIRE OUT; STOPPED
0152 GPS	64 50.80S	62 55.03W	0.8	231	0.2	1.3	0.4	73.0	999.4	12.8	160	13.6	033	11	--	-----	0.0	---	---	CAM 10 ON DECK
0158 GPS	64 50.78S	62 54.97W	0.6	199	0.1	1.4	0.6	72.0	999.6	14.8	194	15.4	032	293	--	-----	0.0	---	---	CTD PB16 START
0200 GPS	64 50.80S	62 54.95W	0.6	205	0.0	1.5	0.6	71.0	999.6	4.5	090	4.5	097	293	--	-----	0.0	---	---	
0218 GPS	64 50.92S	62 55.19W	1.1	207	0.3	1.7	0.8	73.0	999.6	0.4	208	1.5	034	260	--	-----	0.0	---	---	CTD PB16 ON DECK
0300 GPS	64 50.90S	62 54.29W	0.7	209	1.1	2.8	0.6	72.0	1000.4	7.0	123	7.4	336	28	--	-----	0.0	---	---	
0305 GPS	64 50.86S	62 54.38W	0.9	205	0.1	2.8	0.6	72.0	1001.0	8.2	157	9.0	004	290	--	-----	0.0	---	---	CTD PB17 START
0327 GPS	64 50.70S	62 54.64W	0.8	159	0.3	3.2	0.8	71.0	1001.4	9.1	201	9.9	358	291	--	-----	0.0	---	---	CTD PB17 ON DECK
0400 GPS	64 50.87S	62 54.37W	0.7	182	0.3	3.5	0.8	69.0	1002.0	12.1	211	12.7	032	284	--	-----	0.0	---	---	
0415 GPS	64 50.96S	62 54.19W	0.3	184	0.2	3.6	0.8	68.0	1002.6	9.1	212	9.4	035	285	--	-----	0.0	---	---	CTD PB18 START
0424 GPS	64 51.02S	62 54.22W	0.6	196	0.1	3.8	0.8	67.0	1002.8	10.9	273	10.9	106	29	--	-----	0.0	---	---	CTD PB18 ON DECK
0500 GPS	64 52.02S	62 54.26W	3.4	168	1.1	4.9	0.8	67.0	1002.8	18.1	189	21.4	356	305	--	-----	0.0	---	---	
0504 GPS	64 52.07S	62 54.29W	0.9	192	0.1	4.9	0.8	66.0	1002.6	16.3	140	17.0	334	310	--	-----	0.0	---	---	START DEPLOYING PHOTOCHEMICAL DRIFTER
0505 GPS	64 52.09S	62 54.31W	0.6	187	0.0	4.9	0.8	66.0	1003.0	15.7	150	16.3	338	310	--	-----	0.0	---	---	SED DRIFTER PB01
0545 GPS	64 52.23S	62 53.97W	0.3	191	0.5	5.4	0.8	66.0	1003.2	15.6	103	15.6	296	30	--	-----	0.0	---	---	PHOTOCHEMICAL DRIFTER DEPLOYED
0546 GPS	64 52.23S	62 53.97W	0.2	191	0.0	5.4	0.8	65.0	1003.4	15.2	200	15.4	031	309	--	-----	0.0	---	---	SED DRIFTER PB01 AWAY!
0600 GPS	64 52.07S	62 54.46W	0.9	192	0.4	5.8	1.0	66.0	1003.8	7.4	202	8.2	032	318	--	-----	0.0	---	---	
0603 GPS	64 52.07S	62 54.38W	0.7	188	0.0	5.8	1.0	65.0	1003.4	12.2	205	12.9	032	310	--	-----	0.0	---	---	GRAB PB02 HIT
0700 GPS	64 51.51S	62 54.41W	0.7	205	1.3	7.2	1.0	64.0	1003.8	16.5	180	17.2	025	284	--	-----	0.45	---	---	
0703 GPS	64 51.54S	62 54.43W	0.5	209	0.0	7.2	1.0	63.0	1004.0	14.6	211	15.0	059	290	--	-----	0.52	---	---	CTD PB19 START
0724 GPS	64 51.64S	62 54.31W	0.2	232	0.2	7.4	1.0	62.0	1004.0	21.0	130	21.1	002	300	--	-----	1.23	---	---	CTD PB19 ON DECK
0800 GPS	64 51.15S	62 54.70W	0.4	215	0.8	8.2	0.8	61.0	1004.0	19.4	058	19.2	274	290	--	-----	2.89	---	---	
0809 GPS	64 51.22S	62 54.56W	1.0	220	0.1	8.3	0.8	62.0	1004.0	14.6	233	15.2	090	285	--	-----	3.35	---	---	CTD PB20 START
0824 GPS	64 51.37S	62 54.73W	1.2	229	0.2	8.6	1.0	61.0	1004.4	18.3	222	19.2	089	289	--	-----	4.14	---	---	CTD PB20 ON DECK
0900 GPS	64 51.22S	62 54.51W	0.4	216	0.6	9.2	0.4	61.0	1004.6	12.1	218	12.4	073	285	--	-----	6.08	---	---	
1000 GPS	64 51.07S	62 54.76W	1.5	277	0.8	10.0	0.2	62.0	1005.0	7.4	302	6.7	208	290	--	-----	14.88	---	---	
1004 GPS	64 51.07S	62 54.62W	0.5	275	0.1	10.0	0.2	62.0	1005.0	8.0	311	7.7	224	290	--	-----	15.57	---	---	IKMT START
1054 GPS	64 50.68S	62 55.86W	2.8	109	2.1	12.1	1.6	56.0	1005.4	1.6	328	1.7	318	290	--	-----	29.00	---	---	IKMT ON DECK
1100 GPS	64 50.91S	62 54.91W	5.5	115	0.5	12.6	1.4	57.0	1005.2	9.5	075	9.7	223	301	--	-----	24.87	---	---	
1107 GPS	64 50.96S	62 54.67W	1.0	233	0.2	12.7	0.6	59.0	1005.2	9.3	246	9.8	114	292	--	-----	29.33	---	---	CTD PB21 START

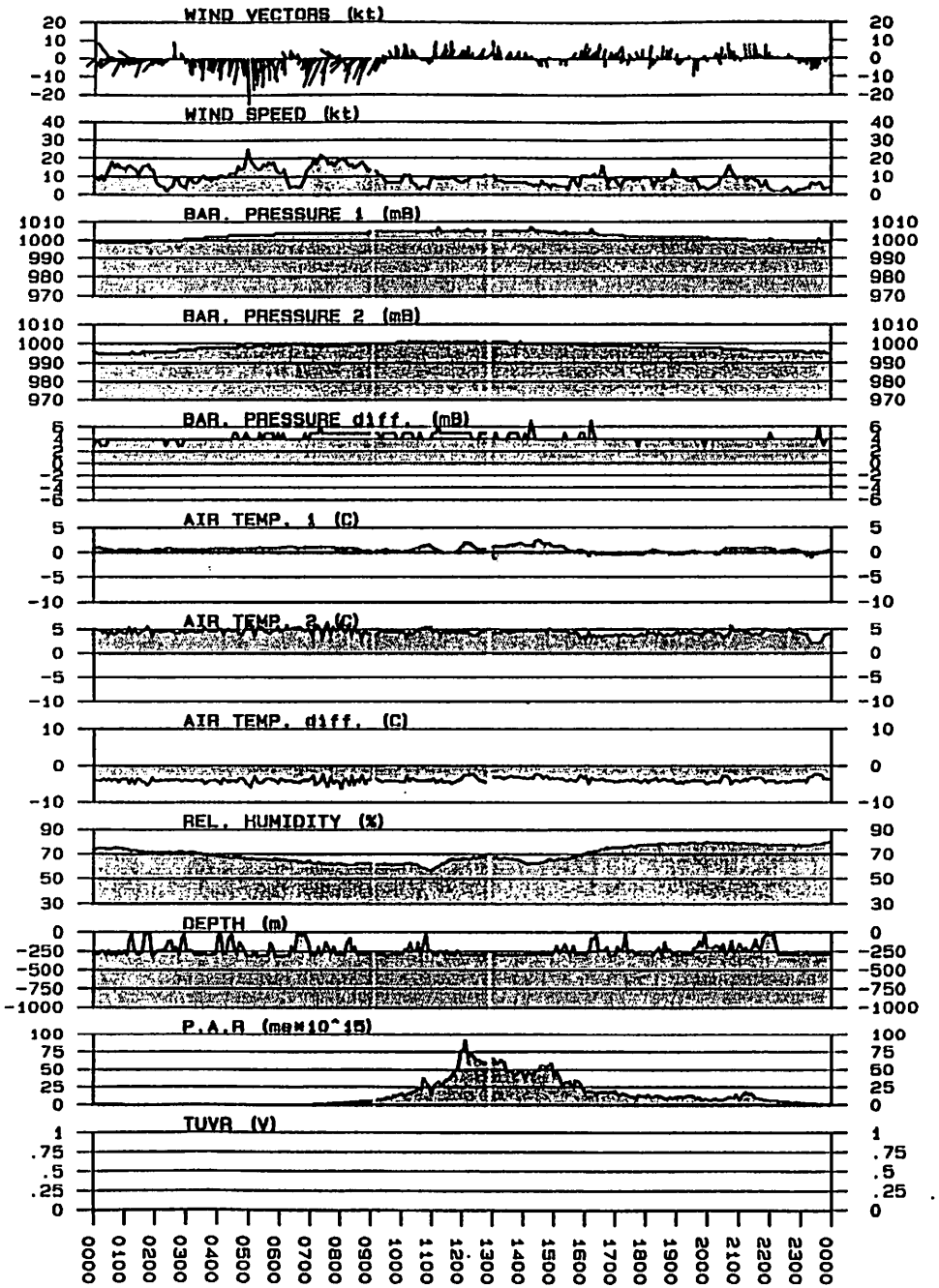
POLAR DUKE NOV 1992 - DAILY SCIENCE LOG; DAY # 15 11-16-1992 ; PAGE # 2

GHT		LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A:SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
1131	GPS	64 51.02S	62 54.84W	0.7	231	0.3	13.0	0.0	65.0	1005.2	9.3	025	8.7	258	298	--	-----	36.41	---	---	CTD PB21 ON DECK
1200	GPS	64 50.96S	62 54.63W	0.1	208	0.3	13.4	1.2	67.0	1005.4	6.2	045	6.2	253	292	--	-----	95.17	---	---	
1259	GPS	64 51.04S	62 54.91W	0.6	193	0.6	14.0	1.2	67.0	1005.2	11.1	330	10.6	162	292	--	-----	66.76	---	---	SYSTEM HAS BEEN OFF FOR YET MORE TESTS
1301	GPS	64 51.02S	62 54.91W	0.4	195	0.0	14.0	1.2	67.0	1005.2	10.9	330	10.5	164	292	--	-----	65.42	---	---	
1400	GPS	64 50.72S	62 55.28W	0.2	213	0.9	14.9	1.6	64.0	1004.8	7.2	354	7.0	207	292	--	-----	44.19	---	---	
1404	GPS	64 50.73S	62 55.34W	0.4	213	0.0	14.9	1.4	63.0	1004.8	7.4	297	7.2	147	291	--	-----	45.08	---	---	CTD PD22 START
1422	GPS	64 50.70S	62 55.54W	0.4	220	0.2	15.1	2.2	63.0	1004.6	5.6	018	5.3	239	291	--	-----	48.22	---	---	CTD PB22 ON DECK
1500	GPS	64 50.72S	62 55.67W	0.7	332	0.3	15.4	1.0	66.0	1004.4	6.0	273	6.0	239	28	--	-----	48.52	---	---	
1503	GPS	64 50.76S	62 55.66W	0.8	330	0.0	15.5	1.4	66.0	1004.4	5.8	083	5.8	061	275	--	-----	48.37	---	---	CTD PB23 START
1522	GPS	64 50.87S	62 55.71W	0.3	324	0.2	15.6	-0.8	66.0	1006.2	5.4	047	5.2	013	249	--	-----	32.49	---	---	CTD PB23 ON DECK
1600	GPS	64 50.99S	62 54.64W	0.9	221	1.0	16.6	0.2	70.0	1003.6	11.7	325	10.9	184	291	--	-----	20.92	---	---	
1608	GPS	64 50.91S	62 54.44W	1.0	213	0.1	16.8	0.2	71.0	1003.6	10.1	332	9.2	182	28	--	-----	18.67	---	---	CTD PB24 START
1623	GPS	64 50.91S	62 54.34W	0.5	222	0.2	17.0	0.0	74.0	1003.8	9.9	022	9.5	245	28	--	-----	18.52	---	---	CTD PB24 ON DECK
1700	GPS	64 50.80S	62 54.46W	0.7	246	1.0	18.0	-0.4	75.0	1002.8	9.5	023	8.9	271	292	--	-----	18.55	---	---	
1800	GPS	64 50.89S	62 54.76W	1.1	018	1.2	19.2	0.2	79.0	1002.2	8.7	293	8.4	304	293	--	-----	12.58	---	---	
1900	GPS	64 50.66S	62 54.99W	0.9	034	0.8	20.0	-0.2	78.0	1002.0	11.3	029	10.5	066	293	--	-----	11.54	---	---	
1903	GPS	64 50.61S	62 54.93W	0.5	031	0.1	20.1	-0.2	79.0	1002.0	10.7	183	11.2	214	299	--	-----	11.27	---	---	CTD PB25 START
1924	GPS	64 50.53S	62 55.27W	1.4	026	0.3	20.4	0.2	80.0	1001.6	7.2	030	6.0	063	290	--	-----	13.08	---	---	CTD PB25 ON DECK
1953	GPS	64 51.22S	62 56.48W	0.6	340	1.2	21.6	0.0	79.0	1001.4	4.7	304	4.4	278	20	--	-----	8.73	---	---	BEGIN RECOVERY OF PHOTOCHEMICAL DRIFTER
2000	GPS	64 51.20S	62 56.49W	1.6	332	0.1	21.7	0.2	80.0	1001.6	1.9	075	2.2	092	202	--	-----	8.53	---	---	
2015	GPS	64 51.17S	62 56.77W	0.4	322	0.2	21.9	-0.2	80.0	1001.2	6.0	247	6.2	206	209	--	-----	8.46	---	---	PHOTOCHEMICAL DRIFTER ON BOARD
2016	GPS	64 51.17S	62 56.80W	1.1	319	0.0	21.9	-0.2	80.0	1001.2	6.4	245	7.0	195	20	--	-----	8.31	---	---	SED DRIFTER PB01 RECOVERED
2100	GPS	64 50.33S	62 52.91W	1.8	027	2.1	24.0	0.8	79.0	1000.6	10.1	008	8.3	036	240	--	-----	13.23	---	---	
2200	GPS	64 50.90S	62 54.34W	0.7	209	1.4	25.4	0.8	78.0	1000.0	5.6	243	6.0	086	28	--	-----	6.74	---	---	
2205	GPS	64 50.90S	62 54.38W	0.4	211	0.1	25.4	0.6	78.0	1000.0	2.1	312	1.9	154	28	--	-----	5.91	---	---	CTD PB26 START
2219	GPS	64 50.87S	62 54.51W	0.2	212	0.2	25.6	0.4	79.0	1000.0	2.9	038	2.8	253	284	--	-----	5.54	---	---	CTD PB26 ON DECK
2225	GPS	64 50.87S	62 54.49W	0.8	212	0.1	25.7	0.4	78.0	999.8	1.9	093	2.1	327	285	--	-----	5.62	---	---	ZODIAC OPS TO GONZALEZ VIDELA
2300	GPS	64 50.90S	62 54.74W	0.4	214	0.4	26.1	0.2	77.0	999.2	2.5	353	2.1	206	298	--	-----	3.93	---	---	
2311	GPS	64 50.83S	62 54.88W	0.5	206	0.1	26.2	0.0	77.0	999.0	3.9	146	4.3	356	29	--	-----	3.09	---	---	ZODIAC RETURNS
2316	GPS	64 50.80S	62 54.95W	0.5	206	0.0	26.3	-0.2	77.0	999.4	3.9	099	4.0	312	292	--	-----	2.91	---	---	CTD PB27 START
2337	GPS	64 50.62S	62 55.15W	1.2	228	0.2	26.5	0.0	78.0	998.8	6.0	055	5.4	294	292	--	-----	2.38	---	---	CTD PB27 ON DECK

DAILY SUMMARY

DISTANCE TRAVELLED TODAY	26.7 nm								
TOTAL DISTANCE TRAVELLED	1813.9 nm								
SHIP'S SPEED (kts) ;		AVERAGE=	1.1	MAXIMUM=	6.7	AT 2146 HRS.	MINIMUM=	0.0	AT 0120 HRS.
AIR TEMPERATURE (C);		AVERAGE=	0.6	MAXIMUM=	2.6	AT 1427 HRS.	MINIMUM=	-3.6	AT 1606 HRS.
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);		AVERAGE=	1002.6	MAXIMUM=	1014.0	AT 1611 HRS.	MINIMUM=	998.6	AT 0001 HRS.
RELATIVE HUMIDITY (%);		AVERAGE=	70.2	MAXIMUM=	81.0	AT 1828 HRS.	MINIMUM=	56.0	AT 1054 HRS.
WIND SPEED (kts);		AVERAGE=	9.6	MAXIMUM=	28.8	AT 0457 HRS.	MINIMUM=	0.5	AT 2159 HRS.
MEAN DAILY WIND VELOCITY= 1.4 (kts) FROM 359 DEGREES TRUE									
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	14.75	MAXIMUM=	102.79	AT 1205 HRS.	MINIMUM=	0.00	AT 0011 HRS.
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

POLAR DUKE 92-9 UNDERWAY DATA; 11-16-1992



SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

TIME	LATITUDE	LONGITUDE	EVENT
0158	64 50.44S	62 54.38W	PB16
0305	64 50.16S	62 54.55W	PB17
0415	64 50.29S	62 54.36W	PB18
0703	64 51.96S	62 54.16W	PB19
0809	64 51.29S	62 54.64W	PB20
1107	64 50.42S	62 54.86W	PB21
1404	64 50.79S	62 55.59W	PD22
1503	64 50.03S	62 55.26W	PB23
1608	64 50.68S	62 54.25W	PB24
1903	64 50.38S	62 54.85W	PB25
2205	64 50.71S	62 54.55W	PB26
2316	64 50.36S	62 54.71W	PB27

VERN'S CAMERA

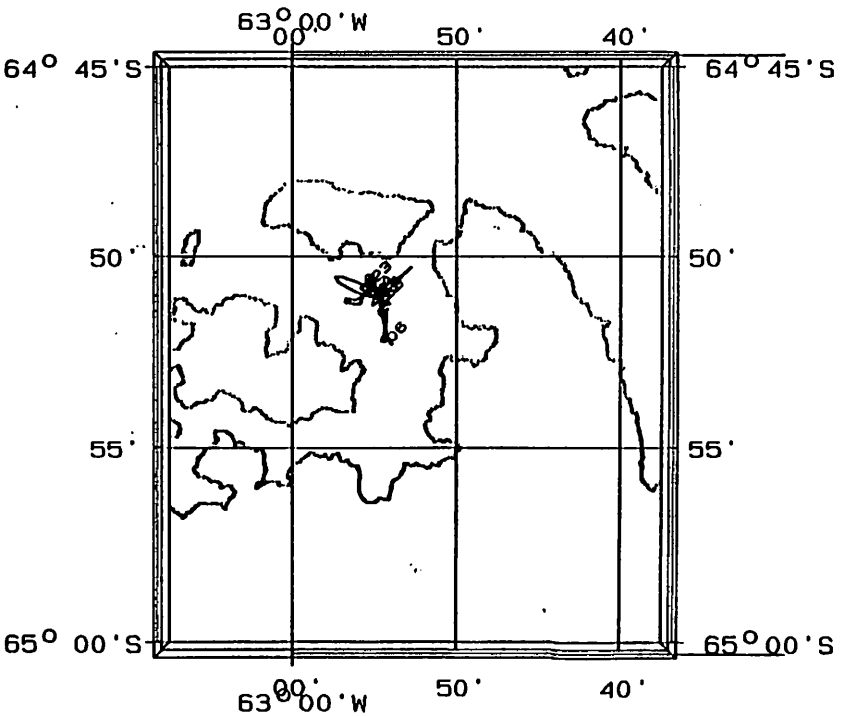
TIME	LATITUDE	LONGITUDE	EVENT
0024	64 50.33S	62 54.66W	M 10

ISAACS-KIDD TRAWLS

TIME	LATITUDE	LONGITUDE	EVENT
1004	64 51.04S	62 54.25W	IKMT

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT
0546	64 52.94S	62 53.08W	D PB01
2016	64 51.77S	62 56.63W	R PB01



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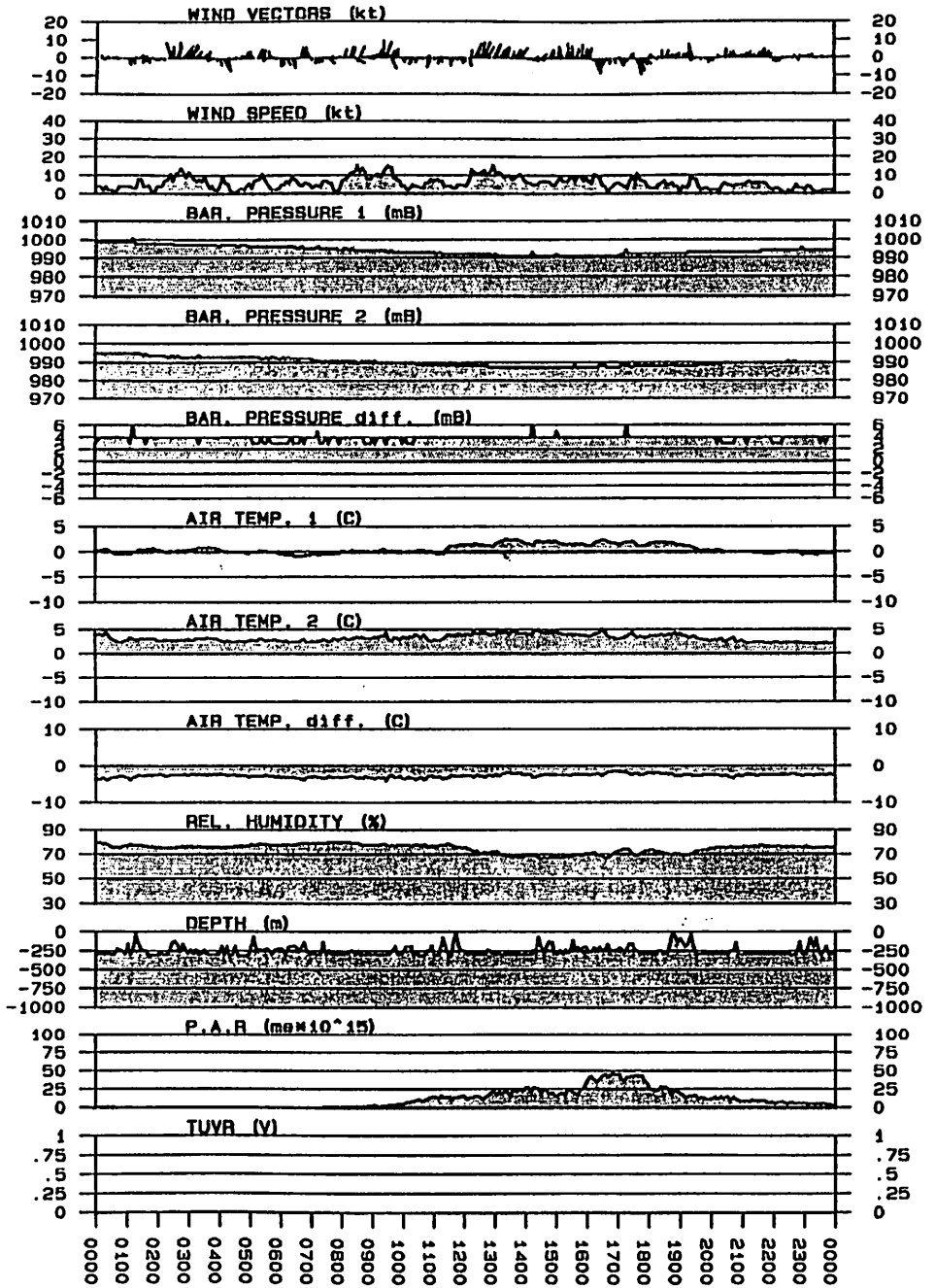
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	ATRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	64 50.51S	62 55.38W	0.4	337	0.0	0.0	0.4	81.0	998.8	3.9	093	3.9	076	290	--	-----	1.43	---	---	
0031 GPS	64 50.57S	62 55.47W	0.2	328	0.2	0.2	-0.2	77.0	999.0	3.3	355	3.1	323	292	--	-----	0.90	---	---	CAMERA #12 AT THE SURFACE AND STARTING DO
0032 GPS	64 50.55S	62 55.48W	0.6	330	0.0	0.3	-0.2	77.0	998.6	2.3	210	2.9	174	292	--	-----	0.87	---	---	CAM 12 START
0100 GPS	64 50.52S	62 55.67W	0.5	280	0.3	0.6	-0.2	77.0	998.8	4.9	057	4.6	342	173	--	-----	0.22	---	---	
0110 GPS	64 50.47S	62 55.88W	1.6	288	0.2	0.8	0.0	77.0	998.8	3.9	050	3.1	001	298	--	-----	0.11	---	---	CAMERA STOPPED; 285M WIRE OUT
0200 GPS	64 50.43S	62 55.94W	0.3	306	0.5	1.3	0.4	76.0	997.8	4.1	020	3.8	328	298	--	-----	0.0	---	---	
0300 GPS	64 50.56S	62 54.20W	0.4	221	1.3	2.7	0.4	77.0	997.0	14.0	328	13.7	188	280	--	-----	0.0	---	---	
0304 GPS	64 50.57S	62 54.26W	0.7	221	0.0	2.7	0.4	77.0	996.8	12.2	014	11.6	236	288	--	-----	0.0	---	---	CTD PB28 START
0325 GPS	64 50.57S	62 54.32W	0.5	220	0.2	2.9	0.8	76.0	996.8	6.4	031	6.0	253	291	--	-----	0.0	---	---	CTD PB28 ON DECK
0400 GPS	64 50.72S	62 54.41W	2.8	169	0.5	3.4	0.6	76.0	996.4	2.3	334	1.2	044	292	--	-----	0.0	---	---	
0450 GPS	64 52.24S	62 54.37W	0.6	307	1.8	5.1	0.0	77.0	996.4	2.5	309	2.2	244	311	--	-----	0.0	---	---	KARL DRIFTER DEPLOYED
0500 GPS	64 52.02S	62 54.46W	4.2	303	0.3	5.4	-0.2	76.0	996.4	7.6	294	7.0	204	309	--	-----	0.0	---	---	
0530 GPS	64 51.62S	62 53.59W	2.0	081	1.9	7.3	0.2	79.0	995.8	7.0	045	5.8	140	280	--	-----	0.0	---	---	IKMT START
0600 GPS	64 51.27S	62 55.43W	2.7	206	1.3	8.6	-0.2	77.0	996.0	1.9	127	4.2	004	26	--	-----	0.0	---	---	
0635 GPS	64 52.43S	62 54.23W	2.7	127	1.4	10.0	-1.0	79.0	995.4	6.6	009	4.0	142	311	--	-----	0.0	---	---	IKMT ON DECK
0700 GPS	64 50.95S	62 54.39W	3.5	332	1.7	11.8	-0.6	79.0	995.2	0.0	218	3.5	152	284	--	-----	0.25	---	---	
0706 GPS	64 50.88S	62 54.41W	0.4	211	0.1	11.9	-0.4	78.0	995.4	4.3	156	4.6	009	285	--	-----	0.33	---	---	CTD PB29 START
0727 GPS	64 50.80S	62 54.64W	0.4	224	0.2	12.1	-0.4	80.0	994.6	7.4	000	7.0	224	299	--	-----	0.85	---	---	CTD PB29 ON DECK
0800 GPS	64 50.72S	62 54.56W	0.5	257	0.3	12.4	0.0	80.0	994.4	7.2	270	7.2	266	290	--	-----	1.19	---	---	
0811 GPS	64 50.74S	62 54.55W	0.7	248	0.1	12.5	0.0	80.0	994.6	7.8	040	7.3	291	291	--	-----	1.38	---	---	CTD PB30 START
0826 GPS	64 50.86S	62 54.70W	1.4	254	0.3	12.8	0.2	79.0	994.0	13.2	336	12.0	227	300	--	-----	1.77	---	---	CTD PB30 ON DECK
0900 GPS	64 50.92S	62 54.80W	0.6	240	0.5	13.2	0.0	78.0	993.8	11.3	324	10.8	202	298	--	-----	3.32	---	---	
1000 GPS	64 50.88S	62 53.69W	0.6	240	1.0	14.3	0.0	78.0	993.4	4.9	003	4.3	243	298	--	-----	6.89	---	---	
1100 GPS	64 51.03S	62 53.67W	0.3	262	1.2	15.5	0.0	76.0	992.6	7.4	005	7.1	267	305	--	-----	14.61	---	---	
1103 GPS	64 51.04S	62 53.62W	0.3	318	0.0	15.5	0.0	76.0	992.6	5.2	134	5.5	094	305	--	-----	15.27	---	---	CTD PB31 START
1129 GPS	64 51.04S	62 53.71W	1.0	301	0.3	15.8	0.6	79.0	992.6	3.3	069	3.1	028	310	--	-----	13.40	---	---	CTD PB31 ON DECK
1200 GPS	64 50.96S	62 54.07W	0.5	291	0.3	16.1	1.2	75.0	992.0	5.1	046	4.7	341	293	--	-----	15.38	---	---	
1300 GPS	64 50.61S	62 54.23W	4.2	284	1.4	17.5	1.6	73.0	991.8	12.8	263	14.0	170	292	--	-----	23.23	---	---	
1400 GPS	64 50.63S	62 54.73W	1.0	223	0.8	18.3	1.8	70.0	991.2	6.8	057	6.3	287	293	--	-----	27.92	---	---	
1401 GPS	64 50.63S	62 54.71W	0.4	223	0.0	18.3	0.6	70.0	990.8	7.0	061	6.8	287	293	--	-----	28.21	---	---	CTD PB32 START
1417 GPS	64 50.49S	62 54.59W	0.7	226	0.2	18.5	2.0	71.0	991.2	6.0	336	5.4	199	289	--	-----	26.19	---	---	CTD PB32 ON DECK
1500 GPS	64 50.56S	62 54.28W	0.2	209	0.5	19.0	2.2	68.0	994.6	6.8	292	6.7	140	288	--	-----	17.80	---	---	
1502 GPS	64 50.52S	62 54.32W	0.1	211	0.0	19.1	2.0	67.0	991.6	8.9	008	8.8	219	282	--	-----	17.87	---	---	CTD PB33 START
1523 GPS	64 50.57S	62 54.21W	0.5	205	0.1	19.2	1.6	68.0	991.2	8.0	008	7.5	213	279	--	-----	24.03	---	---	CTD PB33 ON DECK
1600 GPS	64 50.50S	62 54.02W	0.7	195	0.4	19.6	1.2	72.0	991.4	8.6	046	8.1	244	250	--	-----	38.66	---	---	

GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
1607 GPS	64 50.53S	62 54.06W	0.9	202	0.1	19.7	1.4	71.0	991.2	7.4	137	8.1	344	253	--	-----	42.24	---	---	WPAK ANEMOMETER SECURED TO POINT TO SHIP'
1642 GPS	64 50.53S	62 53.99W	0.3	206	0.4	20.1	1.8	69.0	991.2	2.3	199	2.6	043	248	--	-----	45.23	---	---	ANEMOMETER TEST ENDED
1700 GPS	64 50.39S	62 54.14W	0.8	212	0.2	20.3	1.6	72.0	991.4	6.0	116	6.4	334	252	--	-----	47.93	---	---	
1707 GPS	64 50.44S	62 54.35W	0.6	256	0.1	20.4	1.8	75.0	991.8	4.5	104	4.7	007	271	--	-----	36.11	---	---	CTD PB34 START
1723 GPS	64 50.38S	62 54.01W	0.9	258	0.2	20.6	2.0	73.0	992.0	9.7	011	8.8	270	239	--	-----	42.09	---	---	CTD PB34 ON DECK
1800 GPS	64 51.31S	62 54.13W	0.5	154	1.1	21.7	1.8	73.0	992.0	1.9	036	1.6	200	284	--	-----	32.15	---	---	
1900 GPS	64 51.36S	62 54.23W	0.7	231	0.7	22.3	1.4	69.0	992.6	1.0	245	1.4	090	28	--	-----	17.87	---	---	
1902 GPS	64 51.37S	62 54.26W	0.3	231	0.0	22.3	1.4	69.0	992.2	1.9	270	2.0	261	28	--	-----	17.46	---	---	CTD PB35 START
1922 GPS	64 51.40S	62 54.27W	0.6	222	0.2	22.5	1.0	72.0	992.4	8.4	326	7.9	186	284	--	-----	17.00	---	---	CTD PB35 ON DECK
2000 GPS	64 51.30S	62 53.99W	0.4	171	0.5	23.0	0.2	75.0	993.0	0.8	185	1.2	354	285	--	-----	12.29	---	---	
2100 GPS	64 51.06S	62 54.41W	0.7	212	0.8	23.8	0.0	76.0	993.4	5.6	031	5.1	247	291	--	-----	8.50	---	---	
2200 GPS	64 50.95S	62 54.49W	0.2	197	0.5	24.3	-0.2	77.0	993.6	1.9	218	2.1	051	285	--	-----	7.25	---	---	CTD PB36 START
2301 GPS	64 50.83S	62 54.65W	0.8	270	0.7	25.0	-0.2	76.0	993.8	1.6	028	0.9	322	295	--	-----	6.30	---	---	CTD PB37 START
2322 GPS	64 50.84S	62 54.75W	0.6	272	0.3	25.2	-0.4	76.0	993.6	0.0	000	0.6	092	29	--	-----	4.94	---	---	CTD PB37 ON DECK

DAILY SUMMARY

DISTANCE TRAVELLED TODAY	25.6 nm							
TOTAL DISTANCE TRAVELLED	1839.5 nm							
SHIP'S SPEED (kts) ;	AVERAGE=	1.0	MAXIMUM=	5.7	AT 0647 HRS.	MINIMUM=	0.0	AT 0718 HRS.
AIR TEMPERATURE (C);	AVERAGE=	0.6	MAXIMUM=	2.6	AT 1320 HRS.	MINIMUM=	-1.8	AT 2257 HRS.
SEA TEMPERATURE (C);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);	AVERAGE=	994.0	MAXIMUM=	1012.6	AT 0109 HRS.	MINIMUM=	990.6	AT 1339 HRS.
RELATIVE HUMIDITY (%);	AVERAGE=	75.0	MAXIMUM=	81.0	AT 0001 HRS.	MINIMUM=	66.0	AT 1428 HRS.
WIND SPEED (kts);	AVERAGE=	6.0	MAXIMUM=	18.0	AT 1257 HRS.	MINIMUM=	0.1	AT 0759 HRS.
MEAN DAILY WIND VELOCITY=	2.0 (kts) FROM 173 DEGREES TRUE							
SOLAR RADIATION-PAR (quanta/cm^2/sec);	AVERAGE=	11.10	MAXIMUM=	48.07	AT 1739 HRS.	MINIMUM=	0.00	AT 0012 HRS.
LIGHT TRANSMISSION (%);	AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);	AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

POLAR DUKE 92-9 UNDERWAY DATA; 11-17-1992



SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

TIME	LATITUDE	LONGITUDE	EVENT
0304	64 50.82S	62 54.14W	PB28
0706	64 50.44S	62 54.59W	PB29
0811	64 50.88S	62 54.57W	PB30
1103	64 51.01S	62 53.88W	PB31
1401	64 50.53S	62 54.74W	PB32
1502	64 50.21S	62 54.84W	PB33
1707	64 50.36S	62 54.19W	PB34
1902	64 51.94S	62 54.23W	PB35
2200	64 50.23S	62 54.86W	PB36
2301	64 50.83S	62 54.56W	PB37

VERN'S CAMERA

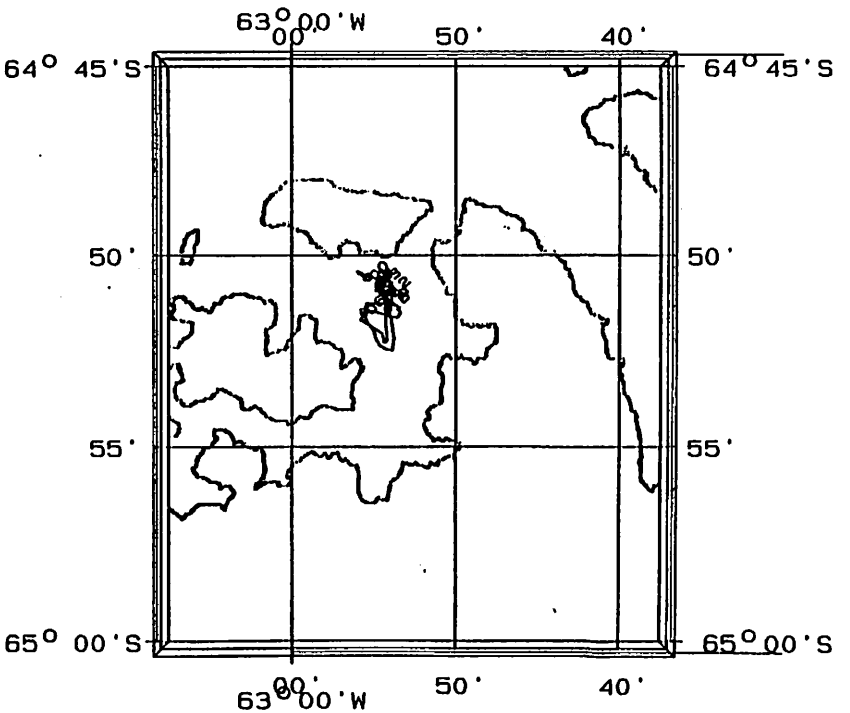
TIME	LATITUDE	LONGITUDE	EVENT
0031	64 50.95S	62 55.07W	AND
0032	64 50.68S	62 55.16W	M 12

ISAACS-KIDD TRAWLS

TIME	LATITUDE	LONGITUDE	EVENT
0530	64 51.03S	62 53.52W	IKMT

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT
0546	64 52.94S	62 53.08W	D PB01
2016	64 51.77S	62 56.63W	R PB01



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GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0003 GPS	64 50.73S	62 54.69W	0.3	359	0.0	0.0	-0.4	76.0	993.8	4.5	208	4.7	205	285	--	-----	3.02	---	---	
0030 GPS	64 50.62S	62 55.18W	0.3	245	0.4	0.4	-0.4	74.0	994.0	10.1	250	10.2	133	285	--	-----	1.49	---	---	CAMERA #14 ON THE SURFACE AND HEADING DOW
0031 GPS	64 50.61S	62 55.19W	0.5	242	0.0	0.4	-0.4	74.0	994.0	10.5	157	11.0	040	290	--	-----	1.46	---	---	CAM 14 START
0100 GPS	64 50.65S	62 55.12W	1.2	265	0.4	0.8	-0.6	73.0	994.2	11.3	152	12.3	060	291	--	-----	0.52	---	---	
0106 GPS	64 50.62S	62 55.09W	0.5	265	0.1	0.8	-0.6	73.0	994.4	12.8	113	13.0	020	293	--	-----	0.0	---	---	CAMERA ON THE BOTTOM; 285M WIRE OUT
0116 GPS	64 50.53S	62 55.14W	0.5	267	0.1	1.0	-0.6	74.0	994.2	12.4	233	12.7	138	260	--	-----	0.17	---	---	CAMERA BACK ON AND HEADING BACK DOWN
0200 GPS	64 50.26S	62 54.99W	0.6	231	0.5	1.5	-0.8	74.0	994.8	11.7	237	12.0	106	281	--	-----	0.0	---	---	
0209 GPS	64 50.27S	62 55.03W	0.9	071	0.1	1.6	-0.8	73.0	994.8	12.1	310	11.5	018	28	--	-----	0.0	---	---	END OF CAMERA # 14 CAST
0300 GPS	64 50.36S	62 55.73W	1.1	074	0.8	2.4	-0.2	67.0	994.4	3.5	109	4.0	198	293	--	-----	0.0	---	---	
0304 GPS	64 50.34S	62 55.80W	0.3	070	0.0	2.4	-2.6	66.0	994.6	3.5	057	3.3	131	293	--	-----	0.0	---	---	CTD PB38 START
0327 GPS	64 50.29S	62 56.10W	0.3	068	0.3	2.7	-0.4	66.0	994.8	3.5	216	3.7	281	284	--	-----	0.0	---	---	CTD PB38 ON DECK
0400 GPS	64 50.22S	62 56.57W	0.2	073	0.4	3.1	-0.6	68.0	994.6	1.6	304	1.5	011	298	--	-----	0.0	---	---	
0500 GPS	64 51.13S	62 54.55W	0.5	047	2.2	5.3	-0.4	63.0	994.4	11.5	228	11.8	274	290	--	-----	0.0	---	---	
0511 GPS	64 51.14S	62 54.74W	0.6	038	0.1	5.4	-0.6	62.0	994.4	10.9	320	10.4	356	290	--	-----	0.0	---	---	RING NET #2 START
0532 GPS	64 51.14S	62 55.04W	0.4	037	0.3	5.7	-0.6	63.0	994.4	11.5	220	11.8	255	264	--	-----	0.0	---	---	RING NET #2 ON DECK
0536 GPS	64 51.17S	62 55.05W	0.6	023	0.0	5.7	-0.8	63.0	994.8	10.9	352	10.3	014	264	--	-----	0.0	---	---	RING NET #3 START
0600 GPS	64 51.03S	62 55.04W	0.2	022	0.3	6.1	-0.8	63.0	994.8	10.5	107	10.6	130	279	--	-----	0.0	---	---	
0609 GPS	64 51.03S	62 55.04W	0.2	034	0.1	6.2	-0.8	63.0	994.8	9.1	119	9.2	155	27	--	-----	0.0	---	---	RING NET #3 ON DECK
0700 GPS	64 50.87S	62 55.13W	0.9	030	0.7	6.9	-0.8	63.0	994.8	9.9	006	9.0	037	289	--	-----	0.81	---	---	
0702 GPS	64 50.85S	62 55.10W	0.5	031	0.0	6.9	-0.8	62.0	994.8	10.9	211	11.3	241	289	--	-----	0.85	---	---	CTD PB39 START
0724 GPS	64 50.87S	62 55.22W	0.2	038	0.1	7.0	-0.8	61.0	994.8	7.2	038	7.0	077	27	--	-----	2.12	---	---	CTD PB39 ON DECK
0800 GPS	64 50.86S	62 55.36W	0.9	043	0.4	7.4	-0.6	61.0	995.0	6.8	224	7.5	262	268	--	-----	3.96	---	---	
0801 GPS	64 50.85S	62 55.42W	0.4	043	0.0	7.4	-0.6	61.0	995.0	7.8	234	8.0	274	268	--	-----	0.0	---	---	CTD PB40 START
0820 GPS	64 50.80S	62 55.37W	0.5	048	0.3	7.7	-0.6	61.0	995.2	8.0	237	8.3	282	265	--	-----	4.38	---	---	CTD PB40 ON DECK
0900 GPS	64 50.63S	62 55.18W	1.0	040	0.5	8.2	-0.4	58.0	995.4	7.4	343	6.4	020	290	--	-----	9.37	---	---	
1000 GPS	64 50.63S	62 55.74W	0.9	309	1.0	9.1	-0.2	60.0	995.8	2.9	067	2.7	034	298	--	-----	22.13	---	---	
1100 GPS	64 50.75S	62 56.00W	0.2	257	0.7	9.9	0.6	57.0	996.0	2.9	286	2.9	179	282	--	-----	19.85	---	---	
1103 GPS	64 50.75S	62 55.96W	0.4	259	0.0	9.9	0.4	56.0	996.0	3.1	312	2.9	205	275	--	-----	19.81	---	---	CTD PB41 START
1123 GPS	64 50.76S	62 56.13W	0.7	240	0.2	10.1	0.0	59.0	996.0	1.4	021	0.8	280	274	--	-----	26.84	---	---	CTD PB41 ON DECK
1148 GPS	64 50.46S	62 56.20W	0.8	304	0.9	11.0	0.8	57.0	995.8	0.0	000	0.8	124	293	--	-----	43.44	---	---	RECOVERING TRAPS
1200 GPS	64 50.41S	62 56.21W	0.1	330	0.1	11.1	1.8	54.0	995.8	1.9	104	2.0	076	291	--	-----	43.74	---	---	
1205 GPS	64 50.44S	62 56.25W	0.5	324	0.1	11.2	1.4	56.0	995.8	1.9	060	1.7	039	291	--	-----	44.93	---	---	SED TRAP PB02 RECOVERED
1252 GPS	64 48.16S	63 6.70W	9.1	217	5.3	16.5	-0.8	65.0	996.0	17.7	234	24.2	073	274	--	-----	65.42	---	---	DATA GAP (SHIP'S SPEED OF 0?)
1300 GPS	64 49.01S	63 8.61W	8.9	218	1.2	17.7	-1.0	66.0	995.6	17.1	150	25.2	018	414	--	-----	78.13	---	---	
1400 GPS	64 56.63S	63 20.64W	8.8	206	9.3	27.0	-0.8	69.0	995.2	9.5	215	17.5	045	26	--	-----	83.81	---	---	

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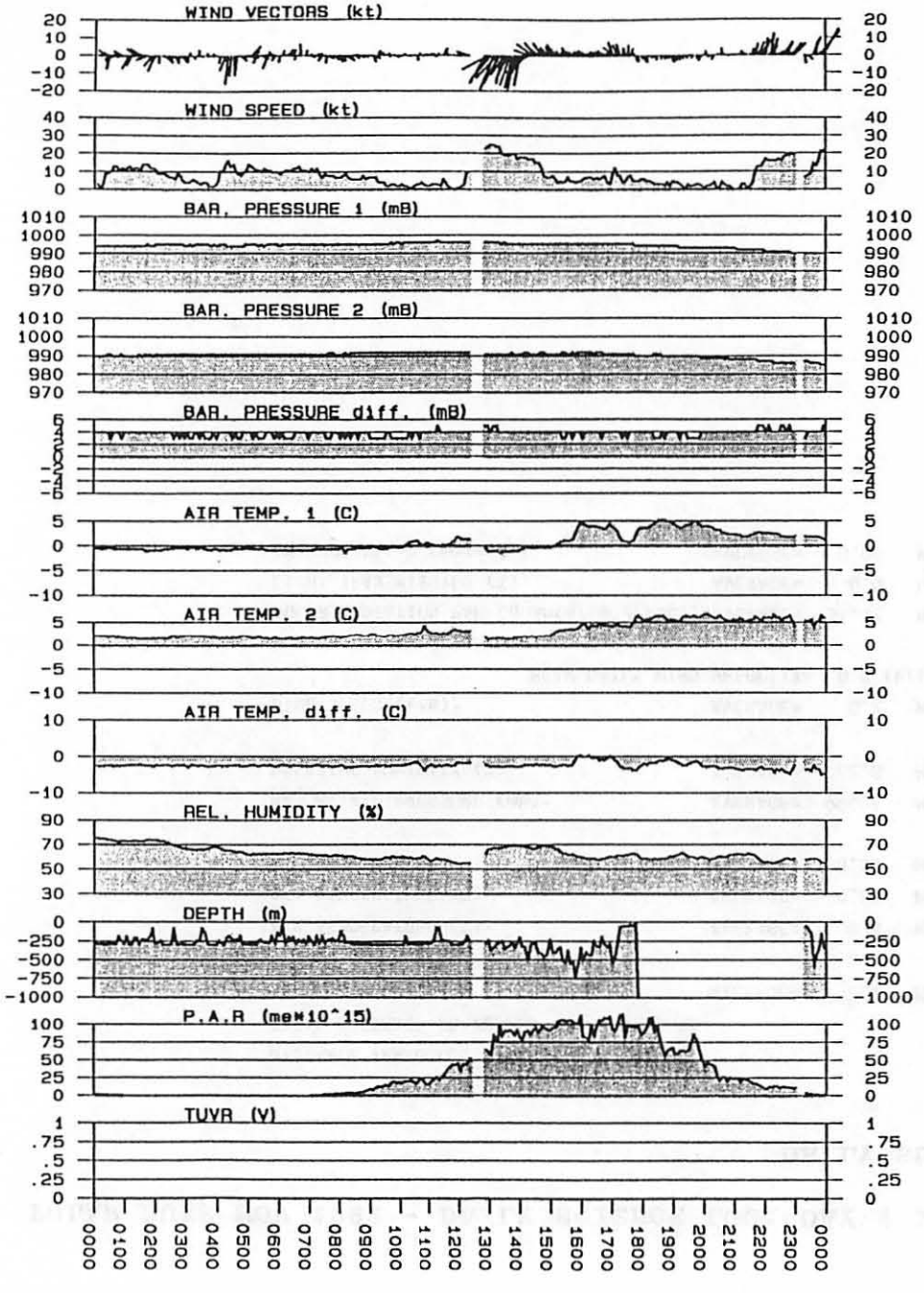
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A.SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
1500 GPS	64 55.48S	63 38.20W	6.5	306	8.8	35.8	-0.2	69.0	995.4	3.3	220	9.3	139	58	--	-----	95.47	---	---	
1600 GPS	64 52.19S	63 49.51W	5.3	298	5.9	41.6	4.8	60.0	995.2	0.2	290	5.2	120	530	--	-----	72.44	---	---	
1700 GPS	64 49.95S	63 59.71W	9.1	303	4.9	46.6	3.6	59.0	995.2	7.0	279	10.6	164	531	--	-----	00.55	---	---	
1741 GPS	64 46.45S	64 3.57W	1.0	295	4.4	51.0	1.4	63.0	994.6	5.4	210	6.3	140	30	--	-----	06.38	---	---	ARRIVING AT PALMER STATION
1746 GPS	64 46.48S	64 3.32W	0.8	281	0.1	51.1	2.6	63.0	994.4	4.9	027	4.2	313	19	--	-----	93.38	---	---	LINE ASHORE. SHUT DOWN PDR
1800 GPS	64 46.46S	64 3.29W	0.6	282	0.1	51.2	3.4	59.0	994.2	5.8	032	5.3	318	---	--	-----	88.29	---	---	
1900 GPS	64 46.49S	64 3.34W	0.3	281	0.5	51.7	4.4	62.0	993.6	3.9	038	3.7	322	---	--	-----	61.98	---	---	
2000 GPS	64 46.51S	64 3.34W	0.5	282	0.6	52.3	4.0	58.0	993.2	0.0	332	0.5	102	---	--	-----	50.17	---	---	
2100 GPS	64 46.49S	64 3.31W	0.3	282	0.5	52.8	2.2	62.0	992.6	1.0	172	1.3	096	---	--	-----	24.42	---	---	
2200 GPS	64 46.48S	64 3.30W	0.6	282	0.5	53.3	2.6	56.0	991.6	17.5	217	18.0	138	---	--	-----	12.70	---	---	
2300 GPS	64 46.48S	64 3.27W	0.6	282	0.7	54.0	1.8	59.0	990.2	19.6	249	19.9	170	---	--	-----	9.82	---	---	
2317 GPS	64 47.55S	64 3.78W	7.7	147	1.1	55.1	1.8	58.0	990.4	8.9	026	3.9	233	91	--	-----	5.28	---	---	LEFT PALMER @ 2301

DAILY SUMMARY

DISTANCE TRAVELLED TODAY	61.6 nm								
TOTAL DISTANCE TRAVELLED	1901.1 nm								
SHIP'S SPEED (kts) ;		AVERAGE=	2.4	MAXIMUM=	11.0	AT 2328 HRS.	MINIMUM=	0.0	AT 0157 HRS.
AIR TEMPERATURE (C);		AVERAGE=	0.8	MAXIMUM=	5.4	AT 1832 HRS.	MINIMUM=	-2.6	AT 0304 HRS.
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0003 HRS.	MINIMUM=	0.00	AT 0003 HRS.
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);		AVERAGE=	994.3	MAXIMUM=	1002.2	AT 1120 HRS.	MINIMUM=	989.6	AT 2341 HRS.
RELATIVE HUMIDITY (%);		AVERAGE=	62.8	MAXIMUM=	76.0	AT 0003 HRS.	MINIMUM=	53.0	AT 2358 HRS.
WIND SPEED (kts);		AVERAGE=	8.2	MAXIMUM=	27.8	AT 1251 HRS.	MINIMUM=	0.0	AT 1157 HRS.
MEAN DAILY WIND	VELOCITY= 0.8 (kts) FROM 223 DEGREES TRUE								
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	34.12	MAXIMUM=	128.81	AT 1637 HRS.	MINIMUM=	0.00	AT 0014 HRS.
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

POLAR DUKE 92-9 UNDERWAY DATA; 11-18-1992



SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

TIME	LATITUDE	LONGITUDE	EVENT
0304	64 50.32S	62 55.83W	PB38
0702	64 50.97S	62 55.02W	PB39
0801	64 50.97S	62 55.46W	PB40
1103	64 50.94S	62 55.68W	PB41

VERN'S CAMERA

TIME	LATITUDE	LONGITUDE	EVENT
0031	64 50.38S	62 55.83W	M 14

ISAACS-KIDD TRAWLS

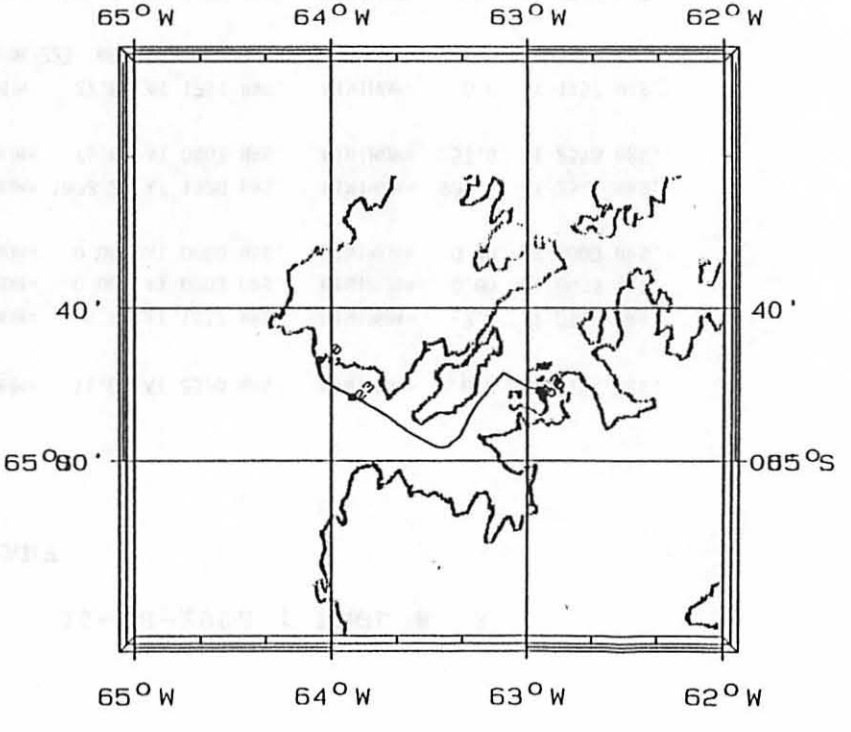
TIME	LATITUDE	LONGITUDE	EVENT
0530	64 51.03S	62 53.52W	IKMT

RING-NET TRAWL

TIME	LATITUDE	LONGITUDE	EVENT
0511	64 51.31S	62 54.66W	T #2
0536	64 51.86S	62 55.03W	T #3

SEDIMENT TRAP

TIME	LATITUDE	LONGITUDE	EVENT
1205	64 50.45S	62 56.25W	R PB02



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GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	64 51.61S	63 52.00W	9.7	110	0.0	0.0	0.8	55.0	989.6	18.7	087	20.6	225	425	--	-----	1.53	---	---	
0100 GPS	64 49.02S	63 35.45W	9.7	037	9.6	9.6	0.2	63.0	989.2	25.5	280	25.6	295	282	--	-----	0.47	---	---	
0200 GPS	64 44.98S	63 17.14W	8.6	037	9.6	19.2	-0.4	63.0	988.6	42.2	036	35.6	081	405	--	-----	0.0	---	---	
0300 GPS	64 39.62S	63 3.52W	8.7	084	9.3	28.5	-1.2	72.0	988.6	32.9	012	24.4	100	180	--	-----	0.0	---	---	
0400 GPS	64 35.99S	62 43.39W	10.0	059	9.5	38.0	-1.4	76.0	988.2	31.5	132	38.9	202	729	--	-----	0.0	---	---	
0500 GPS	64 31.44S	62 23.45W	10.3	058	9.8	47.8	-1.4	79.0	987.4	31.3	099	34.4	174	61	--	-----	0.0	---	---	
0600 GPS	64 26.54S	62 3.52W	10.0	036	10.0	57.8	-1.4	76.0	987.2	22.9	032	15.4	088	804	--	-----	0.0	---	---	
0700 GPS	64 19.01S	61 48.64W	9.3	031	10.0	67.7	-1.2	78.0	987.2	27.2	124	33.3	168	870	--	-----	0.0	---	---	
0800 GPS	64 11.64S	61 35.29W	9.0	030	9.4	77.2	-1.2	82.0	987.0	25.3	224	32.4	243	98	--	-----	0.0	---	---	
0900 GPS	64 4.63S	61 33.12W	3.4	306	7.5	84.7	-1.2	79.0	987.0	14.0	273	14.2	206	111	--	-----	0.0	---	---	
0924 GPS	64 3.91S	61 34.78W	0.5	189	1.1	85.8	-1.0	81.0	986.8	8.2	018	7.7	208	113	--	-----	0.0	---	---	STOPPED NEAR RACER ROCK FOR ZODIAC OPS
0931 GPS	64 3.83S	61 34.93W	2.0	186	0.1	85.9	-0.8	80.0	986.8	8.7	354	6.8	178	112	--	-----	0.0	---	---	ZODIAC DEPARTS FOR R.R.
1001 GPS	64 3.66S	61 35.18W	0.7	212	0.5	86.4	-0.8	80.0	987.6	4.9	121	5.3	339	80	--	-----	0.0	---	---	
1045 GPS	64 3.38S	61 34.94W	0.6	189	0.7	87.1	0.4	79.0	988.6	5.6	271	5.7	094	190	--	-----	0.0	---	---	ZODIAC RETURNS. ANEMOMETER ON AT 1019
1047 GPS	64 3.37S	61 34.90W	1.4	222	0.0	87.1	0.6	80.0	988.6	3.1	255	3.7	095	209	--	-----	0.0	---	---	U/W TO DECEPTION I.
1100 GPS	64 1.76S	61 34.57W	9.9	354	1.7	88.8	1.0	77.0	988.4	9.9	291	11.2	230	355	--	-----	0.0	---	---	
1201 GPS	63 52.30S	61 35.80W	9.9	018	9.8	98.5	1.0	75.0	990.0	24.9	191	34.7	206	1071	--	-----	0.0	---	---	
1300 GPS	63 43.77S	61 23.02W	10.0	036	10.3	108.8	1.8	70.0	990.8	13.8	278	15.9	275	77	--	-----	0.0	---	---	
1400 GPS	63 36.16S	61 6.88W	11.1	054	10.6	119.4	1.6	76.0	991.2	13.8	299	12.9	304	393	--	-----	0.0	---	---	
1500 GPS	63 27.79S	60 52.65W	10.2	030	10.6	129.9	0.4	77.0	991.8	17.1	122	24.1	173	409	--	-----	0.0	---	---	
1600 GPS	63 18.28S	60 43.75W	10.0	018	10.4	140.4	1.4	76.0	992.4	18.7	054	15.1	105	538	--	-----	0.0	---	---	
1700 GPS	63 9.75S	60 36.58W	8.8	018	9.2	149.5	1.4	77.0	993.6	19.4	074	19.0	118	628	--	-----	95.62	---	---	
1800 GPS	63 1.61S	60 30.32W	5.5	359	8.7	158.2	1.6	77.0	994.2	21.0	156	26.1	160	362	--	-----	62.28	---	---	
1807 GPS	63 0.98S	60 30.10W	5.5	352	0.6	158.9	1.6	76.0	994.2	23.3	256	25.2	236	292	--	-----	69.75	---	---	APPROACHING DECEPTION I.
1900 GPS	62 59.41S	60 34.44W	2.5	282	3.3	162.2	1.0	70.0	994.0	18.9	293	18.0	208	112	--	-----	31.00	---	---	
1909 GPS	62 59.10S	60 35.96W	5.1	312	0.8	163.0	1.6	71.0	994.2	29.2	137	33.1	095	10	--	-----	37.91	---	---	BREAKING FAST ICE IN DECEPTION BAY
2000 GPS	62 59.15S	60 35.87W	0.1	315	0.8	163.8	1.4	71.0	994.2	26.0	322	26.0	277	109	--	-----	26.64	---	---	
2004 GPS	62 59.14S	60 35.90W	1.0	315	0.1	163.9	1.2	73.0	994.0	23.5	211	24.4	165	109	--	-----	26.82	---	---	BARBEQUE ON THE FANTAIL!
2100 GPS	62 59.14S	60 35.89W	0.4	316	0.6	164.4	1.8	72.0	993.4	27.6	124	27.8	081	109	--	-----	18.90	---	---	
2200 GPS	62 59.32S	60 35.70W	0.5	322	0.6	165.0	1.4	73.0	992.2	29.5	202	30.0	164	108	--	-----	8.71	---	---	
2300 GPS	62 59.33S	60 35.32W	1.1	310	1.3	166.3	1.0	75.0	992.0	37.1	107	37.5	059	108	--	-----	3.12	---	---	
2302 GPS	62 59.33S	60 35.31W	0.9	310	0.0	166.3	1.0	76.0	992.0	31.1	105	31.3	057	108	--	-----	3.43	---	---	CTD D101 START
2321 GPS	62 59.39S	60 35.51W	0.1	310	0.3	166.6	1.0	76.0	991.8	33.0	181	33.1	131	108	--	-----	2.89	---	---	CTD D101 ON DECK
2332 GPS	62 59.34S	60 35.67W	0.4	320	0.1	166.7	1.0	78.0	992.0	28.4	099	28.4	060	109	--	-----	2.88	---	---	CAMERA #16 AT THE SURFACE
2333 GPS	62 59.35S	60 35.68W	0.2	320	0.0	166.7	1.0	76.0	992.0	28.8	091	28.8	052	109	--	-----	2.66	---	---	CAM 16 START

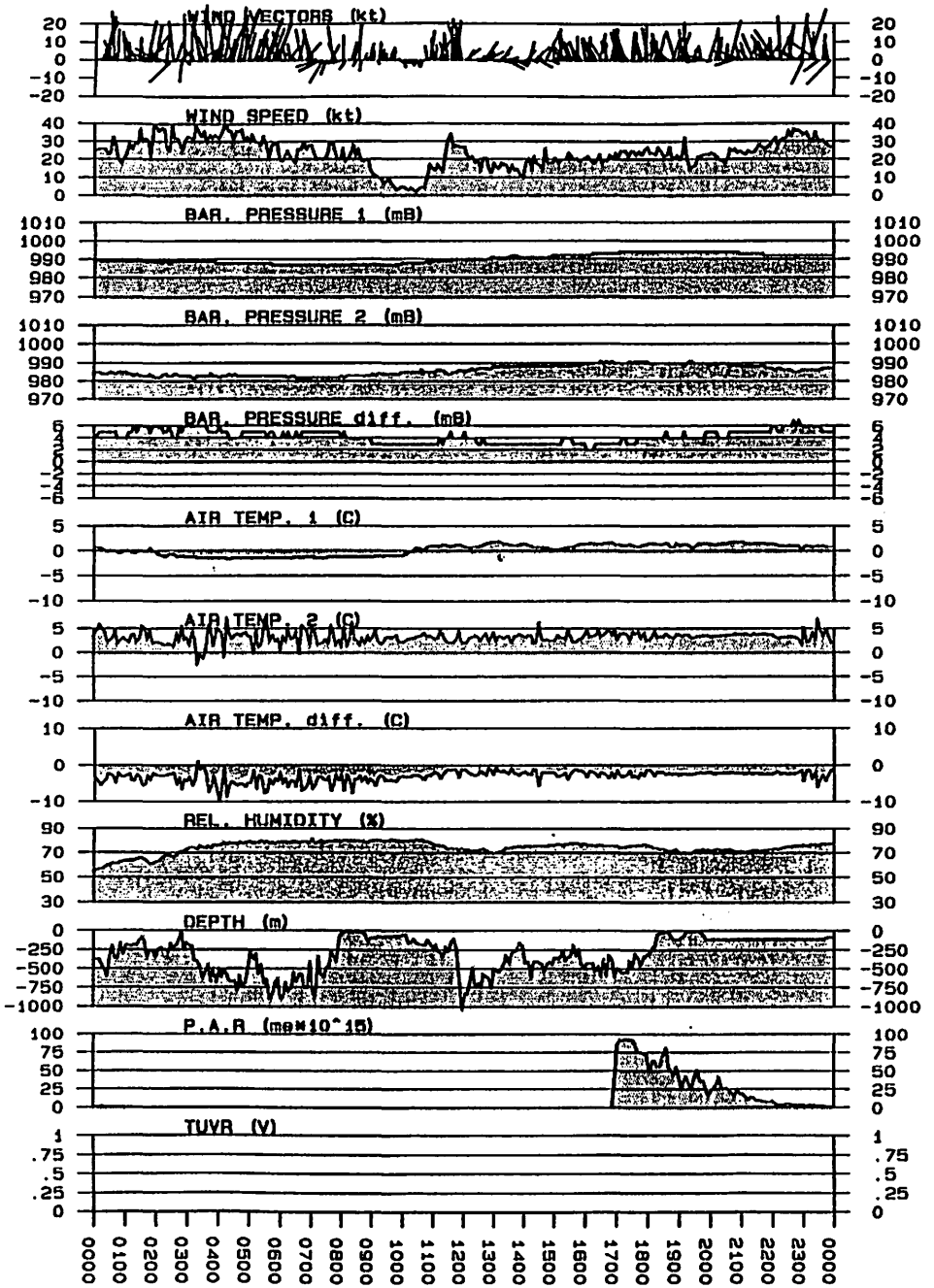
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS

DAILY SUMMARY

DISTANCE TRAVELLED TODAY 167.1 nm
TOTAL DISTANCE TRAVELLED 2068.2 nm

SHIP'S SPEED (kts) ;	AVERAGE=	6.9	MAXIMUM=	11.9	AT 1412 HRS.	MINIMUM=	0.0	AT 1939 HRS.
AIR TEMPERATURE (C);	AVERAGE=	0.3	MAXIMUM=	2.0	AT 1305 HRS.	MINIMUM=	-2.2	AT 2254 HRS.
SEA TEMPERATURE (C);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);	AVERAGE=	990.3	MAXIMUM=	994.6	AT 1802 HRS.	MINIMUM=	986.4	AT 0713 HRS.
RELATIVE HUMIDITY (%);	AVERAGE=	74.5	MAXIMUM=	85.0	AT 0525 HRS.	MINIMUM=	55.0	AT 0001 HRS.
WIND SPEED (kts);	AVERAGE=	23.7	MAXIMUM=	48.6	AT 0321 HRS.	MINIMUM=	0.8	AT 1028 HRS.
MEAN DAILY WIND VELOCITY= 9.0 (kts) FROM 193 DEGREES TRUE								
SOLAR RADIATION-PAR (quanta/cm^2/sec);	AVERAGE=	9.63	MAXIMUM=	100.25	AT 1734 HRS.	MINIMUM=	0.00	AT 0012 HRS.
LIGHT TRANSMISSION (%);	AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);	AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

POLAR DUKE 92-9 UNDERWAY DATA; 11-19-1992



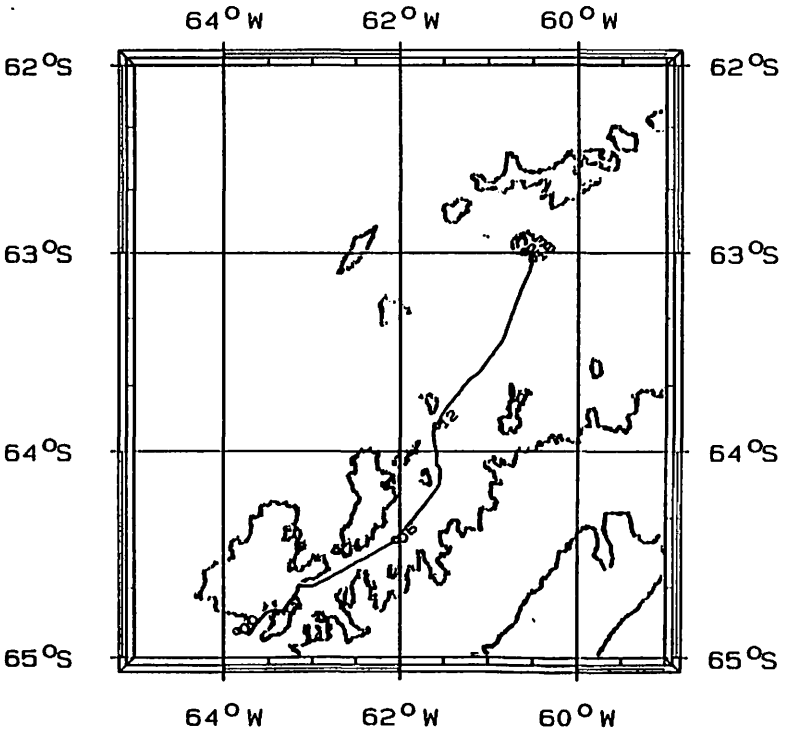
SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

TIME	LATITUDE	LONGITUDE	EVENT
2302	62 59.39S	60 35.86W	DI01

VERN'S CAMERA

TIME	LATITUDE	LONGITUDE	EVENT
2333	62 59.55S	60 35.06W	16



POLAR DUKE NOV 1992 - DAILY SCIENCE LOG; DAY # 19 11-20-1992 ; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	62 59.09S	60 36.23W	1.8	310	0.0	0.0	0.6	77.0	992.2	22.7	103	23.2	058	33	--	-----	1.32	---	---	
0047 GPS	62 57.94S	60 38.99W	0.7	086	2.1	2.1	0.6	75.0	992.4	16.1	255	16.3	339	150	--	-----	0.80	---	---	CTD D102 START
0100 GPS	62 58.00S	60 38.54W	1.2	093	0.2	2.4	0.8	73.0	992.2	22.5	280	22.4	010	163	--	-----	0.32	---	---	
0113 GPS	62 57.97S	60 38.46W	0.6	089	0.2	2.6	0.6	70.0	992.4	16.9	263	17.0	350	155	--	-----	0.07	---	---	CTD D102 ON DECK
0200 GPS	62 57.99S	60 38.07W	0.7	087	0.4	3.0	0.8	63.0	992.4	23.1	320	22.6	046	154	--	-----	0.0	---	---	
0202 GPS	62 58.00S	60 38.01W	1.3	085	0.0	3.0	1.0	63.0	992.4	16.3	046	15.5	134	162	--	-----	0.0	---	---	CAMERA #17 ON THE WAY DOWN (STA D102)
0203 GPS	62 58.01S	60 37.97W	1.1	088	0.0	3.1	1.0	61.0	992.4	20.2	264	20.4	349	154	--	-----	0.0	---	---	CAM 17 START
0246 GPS	62 57.85S	60 41.29W	0.5	122	1.9	5.0	0.6	66.0	993.4	14.6	222	15.0	343	110	--	-----	0.0	---	---	CTD D103 START
0300 GPS	62 57.71S	60 41.38W	0.3	110	0.2	5.2	0.4	64.0	993.4	13.6	084	13.6	195	111	--	-----	0.0	---	---	CTD D103 ON DECK
0323 GPS	62 57.71S	60 41.43W	0.6	120	0.3	5.5	0.4	65.0	993.2	5.2	254	5.4	008	110	--	-----	0.0	---	---	CAMERA 18 ON THE WAY DOWN (STA D103)
0324 GPS	62 57.71S	60 41.44W	0.7	115	0.0	5.5	0.4	65.0	993.2	18.1	282	17.9	035	110	--	-----	0.0	---	---	CAM 18 START
0334 GPS	62 57.71S	60 41.58W	0.6	120	0.2	5.7	0.0	66.0	993.2	15.9	265	16.0	023	110	--	-----	0.0	---	---	CAMERA ON THE BOTTOM AND HEADED BACK
0400 GPS	62 57.12S	60 39.82W	6.9	028	1.2	6.9	0.0	67.0	993.0	16.1	282	16.2	285	155	--	-----	0.0	---	---	
0419 GPS	62 56.50S	60 39.17W	0.4	123	0.8	7.7	0.2	66.0	993.0	13.8	075	13.7	200	15	--	-----	0.0	---	---	CTD D104 START
0442 GPS	62 56.56S	60 38.91W	0.9	123	0.3	8.0	-0.2	66.0	993.2	20.6	147	21.4	272	15	--	-----	0.0	---	---	CTD D104 ON DECK
0458 GPS	62 56.40S	60 39.16W	0.6	115	0.3	8.2	-0.2	70.0	992.8	18.1	037	17.6	153	15	--	-----	0.0	---	---	CAM 19 START
0500 GPS	62 56.39S	60 39.16W	0.5	121	0.0	8.3	-0.2	69.0	993.0	17.9	281	17.8	040	15	--	-----	0.0	---	---	
0522 GPS	62 56.45S	60 38.68W	0.3	117	0.3	8.6	-0.2	69.0	992.8	18.9	277	18.8	033	15	--	-----	0.0	---	---	CAMERA 5M ABOVE BOTTOM AND HEADING UP
0529 GPS	62 56.44S	60 38.77W	0.8	109	0.1	8.6	-0.2	70.0	992.8	18.5	289	18.2	036	10	--	-----	0.0	---	---	CAM 19 ON DECK
0558 GPS	62 57.26S	60 37.73W	0.2	105	1.3	10.0	-0.6	73.0	994.8	18.1	058	18.0	163	158	--	-----	0.0	---	---	CTD D105 START
0600 GPS	62 57.25S	60 37.72W	0.5	104	0.0	10.0	-0.6	73.0	992.8	18.1	278	18.0	021	158	--	-----	0.0	---	---	
0621 GPS	62 57.19S	60 37.46W	0.5	102	0.3	10.3	-0.6	75.0	992.6	22.0	287	21.8	028	144	--	-----	0.0	---	---	CTD D105 ON DECK
0632 GPS	62 57.16S	60 37.76W	0.9	099	0.2	10.4	-0.6	75.0	992.8	21.4	290	21.1	027	110	--	-----	0.0	---	---	CAM 20 START
0657 GPS	62 57.16S	60 37.46W	0.4	110	0.3	10.7	-0.8	75.0	993.2	17.9	285	17.8	034	145	--	-----	0.0	---	---	COMING UP
0700 GPS	62 57.16S	60 37.49W	0.6	098	0.0	10.7	-1.0	75.0	993.2	21.0	278	20.9	015	145	--	-----	0.0	---	---	
0704 GPS	62 57.14S	60 37.55W	0.2	106	0.0	10.8	-1.0	75.0	993.2	17.1	283	17.1	028	12	--	-----	0.0	---	---	CAM 20 ON DECK
0708 GPS	62 57.13S	60 37.48W	1.5	106	0.0	10.8	-1.0	76.0	993.2	17.5	273	17.5	014	12	--	-----	0.0	---	---	END STATION WORK PD 92-09!
0746 GPS	62 58.72S	60 36.46W	0.2	168	1.8	12.6	-1.0	77.0	993.2	14.6	265	14.6	072	119	--	-----	0.0	---	---	IN PACK HEADING FOR ANCHORAGE
0800 GPS	62 58.71S	60 36.43W	0.6	168	0.1	12.7	-0.8	76.0	993.2	13.4	276	13.4	081	119	--	-----	0.0	---	---	
0910 GPS	62 59.37S	60 35.42W	4.8	098	1.4	14.1	-0.6	72.0	993.4	11.3	278	11.6	352	13	--	-----	0.0	---	---	
1000 GPS	62 58.92S	60 33.66W	0.5	274	1.5	15.5	-0.6	76.0	993.8	14.4	272	14.4	184	38	--	-----	12.88	---	---	
1056 GPS	62 58.92S	60 33.70W	0.3	269	0.6	16.1	-0.6	76.0	993.8	17.9	244	18.0	152	38	--	-----	24.96	---	---	ANCHOR IN WHALER'S BAY
1100 GPS	62 58.96S	60 33.71W	1.0	263	0.1	16.2	-0.6	76.0	993.8	13.6	256	13.9	155	38	--	-----	23.84	---	---	
1200 GPS	62 58.91S	60 33.70W	0.3	264	0.5	16.7	0.2	75.0	993.6	20.6	186	20.9	090	38	--	-----	64.07	---	---	
1300 GPS	62 58.90S	60 33.61W	0.3	199	0.6	17.2	-0.4	73.0	994.4	17.1	261	17.2	099	38	--	-----	40.00	---	---	

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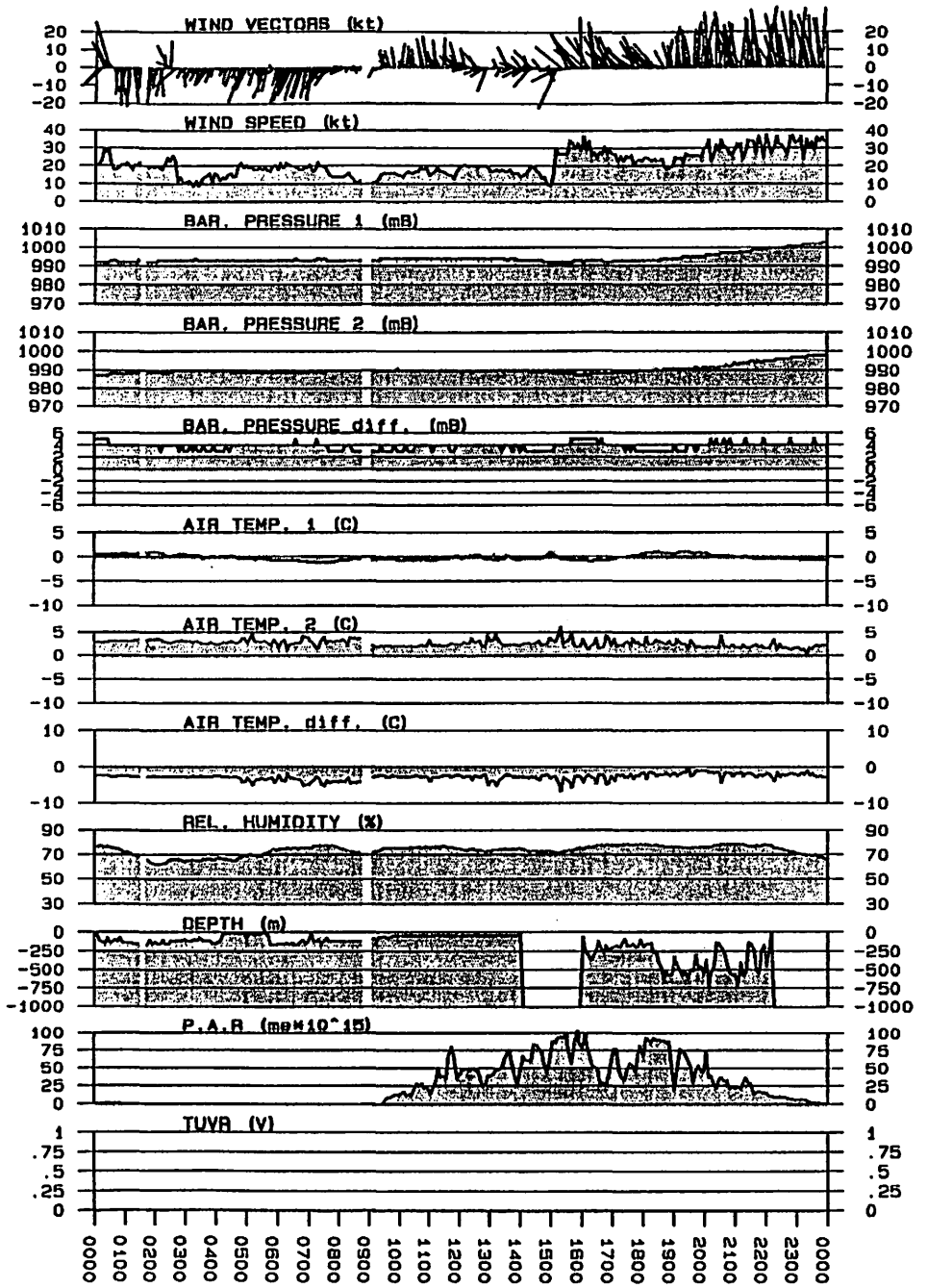
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
1400 GPS	62 59.10S	60 33.98W	0.9	246	1.4	18.7	-0.4	76.0	993.4	13.2	249	13.6	131	---	--	-----	49.42	---	---	
1418 GPS	62 59.10S	60 34.19W	3.4	238	0.3	19.0	-0.2	72.0	993.0	17.5	279	17.3	146	---	--	-----	48.07	---	---	LEAVING WHALER'S BAY
1500 GPS	63 0.05S	60 29.96W	11.4	150	2.8	21.7	0.8	72.0	992.2	9.7	116	17.9	301	---	--	-----	64.67	---	---	
1601 GPS	63 1.39S	60 51.01W	12.7	282	11.9	33.6	-0.6	76.0	992.6	27.4	152	39.1	083	284	--	-----	80.67	---	---	DIGITRACK ON. WHY WAS IT OFF?
1700 GPS	62 57.53S	61 17.28W	13.2	284	12.6	46.2	-0.2	79.0	992.6	19.6	142	31.1	081	23	--	-----	70.50	---	---	
1800 GPS	62 53.79S	61 43.72W	13.3	287	12.7	58.9	1.0	77.0	992.8	13.0	109	21.4	072	191	--	-----	86.95	---	---	
1900 GPS	62 45.62S	62 1.22W	12.2	350	12.9	71.7	0.8	76.0	994.0	15.9	238	24.7	203	540	--	-----	33.71	---	---	
2000 GPS	62 32.95S	62 5.74W	12.7	351	12.9	84.6	0.8	77.0	995.4	20.6	261	25.8	223	615	--	-----	44.64	---	---	
2016 GPS	62 29.61S	62 7.03W	13.0	352	3.4	88.1	0.4	77.0	996.0	22.4	080	23.8	104	282	--	-----	36.11	---	---	WE FEEL THE DRAKE EARLY
2100 GPS	62 20.44S	62 10.24W	13.2	353	9.3	97.4	0.0	78.0	997.4	22.0	081	23.8	108	811	--	-----	22.42	---	---	
2200 GPS	62 7.84S	62 14.06W	13.2	351	12.8	110.2	-0.2	78.0	999.0	25.5	200	38.1	185	735	--	-----	17.49	---	---	
2211 GPS	62 5.48S	62 14.86W	12.0	352	2.4	112.6	-0.2	78.0	999.8	24.3	089	26.9	107	---	--	-----	12.46	---	---	DEPTH OFF;TOO ROUGH TO OBTAIN BOTTOM
2300 GPS	61 55.01S	62 18.31W	12.5	351	10.6	123.2	-0.4	70.0	1001.2	27.6	236	36.1	211	---	--	-----	6.39	---	---	

DAILY SUMMARY

DISTANCE TRAVELLED TODAY	136.3 nm									
TOTAL DISTANCE TRAVELLED	2204.5 nm									
SHIP'S SPEED (kts) ;		AVERAGE=	5.7	MAXIMUM=	15.7	AT 1942 HRS.	MINIMUM=	0.0	AT 0038 HRS.	
AIR TEMPERATURE (C);		AVERAGE=	-0.1	MAXIMUM=	1.4	AT 1925 HRS.	MINIMUM=	-1.6	AT 0514 HRS.	
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.	
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.	
BAROMETRIC PRESSURE (mb);		AVERAGE=	994.3	MAXIMUM=	1003.4	AT 2359 HRS.	MINIMUM=	992.0	AT 0007 HRS.	
RELATIVE HUMIDITY (%);		AVERAGE=	73.7	MAXIMUM=	80.0	AT 1648 HRS.	MINIMUM=	61.0	AT 0203 HRS.	
WIND SPEED (kts);		AVERAGE=	21.6	MAXIMUM=	41.6	AT 2348 HRS.	MINIMUM=	4.2	AT 0914 HRS.	
MEAN DAILY WIND VELOCITY=	8.7 (kts) FROM 075 DEGREES TRUE									
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	26.97	MAXIMUM=	116.10	AT 1438 HRS.	MINIMUM=	0.00	AT 0018 HRS.	
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT	HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.	

POLAR DUKE 92-9 UNDERWAY DATA; 11-20-1992



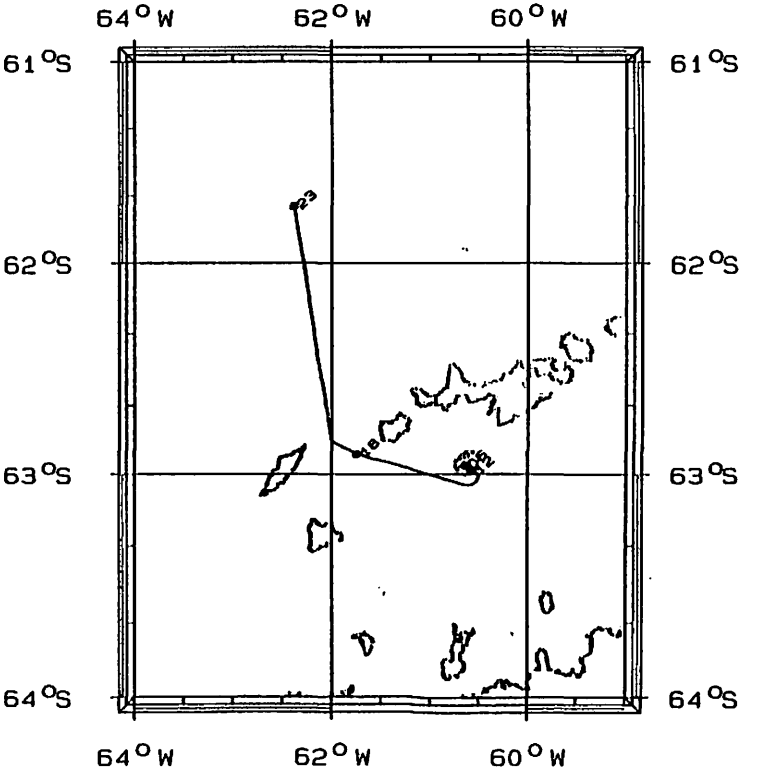
SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS

TIME	LATITUDE	LONGITUDE	EVENT
0047	62 57.45S	60 38.08W	DI02
0246	62 57.93S	60 41.44W	DI03
0419	62 56.89S	60 39.17W	DI04
0558	62 57.65S	60 37.63W	DI05

VERN'S CAMERA

TIME	LATITUDE	LONGITUDE	EVENT
0203	62 58.02S	60 37.34W	17
0324	62 57.73S	60 41.19W	18
0458	62 56.76S	60 39.11W	19
0632	62 57.41S	60 37.08W	20



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GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	61 41.69S	62 22.74W	13.7	347	0.0	0.0	-0.4	66.0	1003.0	25.7	248	33.3	213	---	--	-----	1.80	---	---	
0100 GPS	61 28.94S	62 27.04W	14.2	346	13.0	13.0	-0.4	68.0	1004.8	24.3	240	33.7	204	---	--	-----	0.08	---	---	
0200 GPS	61 16.18S	62 31.62W	13.3	345	13.0	26.0	-0.6	70.0	1005.8	20.8	135	31.6	137	---	--	-----	0.0	---	---	
0300 GPS	61 3.38S	62 36.56W	13.5	344	13.1	39.1	-0.6	75.0	1007.0	22.4	261	27.9	216	---	--	-----	0.0	---	---	
0400 GPS	60 51.00S	62 43.75W	13.1	343	12.9	52.0	0.0	66.0	1008.2	18.9	164	31.7	153	---	--	-----	0.0	---	---	
0500 GPS	60 38.48S	62 50.39W	13.7	344	13.0	65.0	-0.6	72.0	1008.8	22.2	284	23.1	233	---	--	-----	0.0	---	---	
0600 GPS	60 26.05S	62 56.99W	12.6	345	12.9	77.9	-0.4	76.0	1009.2	26.4	131	36.0	132	---	--	-----	0.0	---	---	
0700 GPS	60 13.59S	63 3.68W	13.1	346	12.9	90.8	-0.4	78.0	1010.0	26.8	283	27.1	241	---	--	-----	0.0	---	---	
0800 GPS	60 1.01S	63 10.25W	12.8	344	13.1	103.9	0.2	79.0	1010.6	24.3	110	31.1	117	---	--	-----	0.0	---	---	
0900 GPS	59 48.25S	63 16.04W	13.2	346	13.2	117.0	0.6	81.0	1012.0	23.7	221	34.8	192	---	--	-----	0.0	---	---	
1000 GPS	59 35.12S	63 20.86W	13.2	345	13.4	130.5	1.0	82.0	1012.8	26.2	245	34.0	210	---	--	-----	0.0	---	---	
1114 GPS	59 19.33S	63 27.51W	12.1	346	16.2	146.7	1.6	81.0	1014.4	24.7	205	36.0	182	---	--	-----	0.0	---	---	
1200 GPS	59 9.64S	63 30.86W	13.1	347	9.9	156.5	2.0	81.0	1015.0	23.7	271	26.9	229	---	--	-----	25.90	---	---	
1300 GPS	58 56.79S	63 35.10W	12.6	347	13.1	169.6	2.8	80.0	1016.0	22.2	269	25.7	227	---	--	-----	47.33	---	---	
1400 GPS	58 43.91S	63 39.18W	11.9	344	13.1	182.7	3.6	77.0	1016.8	22.7	143	33.0	140	---	--	-----	50.47	---	---	
1500 GPS	58 31.08S	63 43.51W	12.7	346	13.1	195.8	4.4	75.0	1017.4	25.1	072	24.4	088	---	--	-----	72.30	---	---	
1600 GPS	58 18.32S	63 48.01W	13.3	347	13.0	208.8	4.6	75.0	1018.4	22.5	079	23.9	100	---	--	-----	67.36	---	---	
1700 GPS	58 5.31S	63 52.60W	13.2	348	13.3	222.1	5.8	72.0	1018.8	21.8	219	33.1	192	---	--	-----	56.45	---	---	
1800 GPS	57 52.21S	63 57.34W	13.2	346	13.4	235.5	5.6	71.0	1019.0	21.4	217	32.9	189	---	--	-----	52.56	---	---	
1900 GPS	57 39.25S	64 1.48W	13.1	347	13.2	248.6	5.6	71.0	1019.4	22.7	232	32.5	201	---	--	-----	52.86	---	---	
2000 GPS	57 26.27S	64 5.95W	12.8	347	13.2	261.9	5.4	72.0	1019.8	22.2	278	24.0	234	---	--	-----	48.52	---	---	
2100 GPS	57 13.28S	64 10.64W	12.3	347	13.3	275.2	5.2	67.0	1020.2	17.7	251	24.6	210	---	--	-----	34.87	---	---	
2200 GPS	57 0.35S	64 15.08W	12.8	347	13.2	288.4	5.2	69.0	1020.2	18.7	262	24.1	218	---	--	-----	20.69	---	---	
2300 GPS	56 46.99S	64 18.81W	12.9	346	13.6	301.9	5.2	71.0	1020.6	18.9	297	17.4	242	---	--	-----	10.33	---	---	

DAILY SUMMARY

DISTANCE TRAVELLED TODAY	315.5 nm									
TOTAL DISTANCE TRAVELLED	2520.0 nm									
SHIP'S SPEED (kts) ;		AVERAGE=	13.2	MAXIMUM=	15.6	AT 0042 HRS.	MINIMUM=	10.3	AT 0039 HRS.	
AIR TEMPERATURE (C);		AVERAGE=	2.5	MAXIMUM=	5.8	AT 1646 HRS.	MINIMUM=	-0.8	AT 0254 HRS.	
SEA TEMPERATURE (C);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.	
SALINITY (ppt);		AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.	
BAROMETRIC PRESSURE (mb);		AVERAGE=	1014.0	MAXIMUM=	1021.0	AT 2324 HRS.	MINIMUM=	1002.6	AT 0003 HRS.	
RELATIVE HUMIDITY (%);		AVERAGE=	73.5	MAXIMUM=	83.0	AT 0948 HRS.	MINIMUM=	61.0	AT 0024 HRS.	
WIND SPEED (kts);		AVERAGE=	28.9	MAXIMUM=	40.5	AT 0014 HRS.	MINIMUM=	13.9	AT 0041 HRS.	
MEAN DAILY WIND VELOCITY= 20.8 (kts) FROM 236 DEGREES TRUE										
SOLAR RADIATION-PAR (quanta/cm^2/sec);		AVERAGE=	24.25	MAXIMUM=	86.50	AT 1511 HRS.	MINIMUM=	0.00	AT 0006 HRS.	
LIGHT TRANSMISSION (%);		AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT	HRS.
CHLOROPHYLL-a (mg/m^3);		AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.	

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GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BARDM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	61 41.69S	62 22.74W	13.7	347	0.0	0.0	-0.4	66.0	1003.0	25.7	248	33.3	213	---	--	-----	1.80	---	---	
0100 GPS	61 28.94S	62 27.04W	14.2	346	13.0	13.0	-0.4	68.0	1004.8	24.3	240	33.7	204	---	--	-----	0.08	---	---	
0200 GPS	61 16.18S	62 31.62W	13.3	345	13.0	26.0	-0.6	70.0	1005.8	20.8	135	31.6	137	---	--	-----	0.0	---	---	
0300 GPS	61 3.38S	62 36.56W	13.5	344	13.1	39.1	-0.6	75.0	1007.0	22.4	261	27.9	216	---	--	-----	0.0	---	---	
0400 GPS	60 51.00S	62 43.75W	13.1	343	12.9	52.0	0.0	66.0	1008.2	18.9	164	31.7	153	---	--	-----	0.0	---	---	
0500 GPS	60 38.48S	62 50.39W	13.7	344	13.0	65.0	-0.6	72.0	1008.8	22.2	284	23.1	233	---	--	-----	0.0	---	---	
0600 GPS	60 26.05S	62 56.99W	12.6	345	12.9	77.9	-0.4	76.0	1009.2	26.4	131	36.0	132	---	--	-----	0.0	---	---	
0700 GPS	60 13.59S	63 3.68W	13.1	346	12.9	90.8	-0.4	78.0	1010.0	26.8	283	27.1	241	---	--	-----	0.0	---	---	
0800 GPS	60 1.01S	63 10.25W	12.8	344	13.1	103.9	0.2	79.0	1010.6	24.3	110	31.1	117	---	--	-----	0.0	---	---	
0900 GPS	59 48.25S	63 16.04W	13.2	346	13.2	117.0	0.6	81.0	1012.0	23.7	221	34.8	192	---	--	-----	0.0	---	---	
1000 GPS	59 35.12S	63 20.86W	13.2	345	13.4	130.5	1.0	82.0	1012.8	26.2	245	34.0	210	---	--	-----	0.0	---	---	
1114 GPS	59 19.33S	63 27.51W	12.1	346	16.2	146.7	1.6	81.0	1014.4	24.7	205	36.0	182	---	--	-----	0.0	---	---	
1200 GPS	59 9.64S	63 30.86W	13.1	347	9.9	156.5	2.0	81.0	1015.0	23.7	271	26.9	229	---	--	-----	25.90	---	---	
1300 GPS	58 56.79S	63 35.10W	12.6	347	13.1	169.6	2.8	80.0	1016.0	22.2	269	25.7	227	---	--	-----	47.33	---	---	
1400 GPS	58 43.91S	63 39.18W	11.9	344	13.1	182.7	3.6	77.0	1016.8	22.7	143	33.0	140	---	--	-----	50.47	---	---	
1500 GPS	58 31.08S	63 43.51W	12.7	346	13.1	195.8	4.4	75.0	1017.4	25.1	072	24.4	088	---	--	-----	72.30	---	---	
1600 GPS	58 18.32S	63 48.01W	13.3	347	13.0	208.8	4.6	75.0	1018.4	22.5	079	23.9	100	---	--	-----	67.36	---	---	
1700 GPS	58 5.31S	63 52.60W	13.2	348	13.3	222.1	5.8	72.0	1018.8	21.8	219	33.1	192	---	--	-----	56.45	---	---	
1800 GPS	57 52.21S	63 57.34W	13.2	346	13.4	235.5	5.6	71.0	1019.0	21.4	217	32.9	189	---	--	-----	52.56	---	---	
1900 GPS	57 39.25S	64 1.48W	13.1	347	13.2	248.6	5.6	71.0	1019.4	22.7	232	32.5	201	---	--	-----	52.86	---	---	
2000 GPS	57 26.27S	64 5.95W	12.8	347	13.2	261.9	5.4	72.0	1019.8	22.2	278	24.0	234	---	--	-----	48.52	---	---	
2100 GPS	57 13.28S	64 10.64W	12.3	347	13.3	275.2	5.2	67.0	1020.2	17.7	251	24.6	210	---	--	-----	34.87	---	---	
2200 GPS	57 0.35S	64 15.08W	12.8	347	13.2	288.4	5.2	69.0	1020.2	18.7	262	24.1	218	---	--	-----	20.69	---	---	
2300 GPS	56 46.99S	64 18.81W	12.9	346	13.6	301.9	5.2	71.0	1020.6	18.9	297	17.4	242	---	--	-----	10.33	---	---	

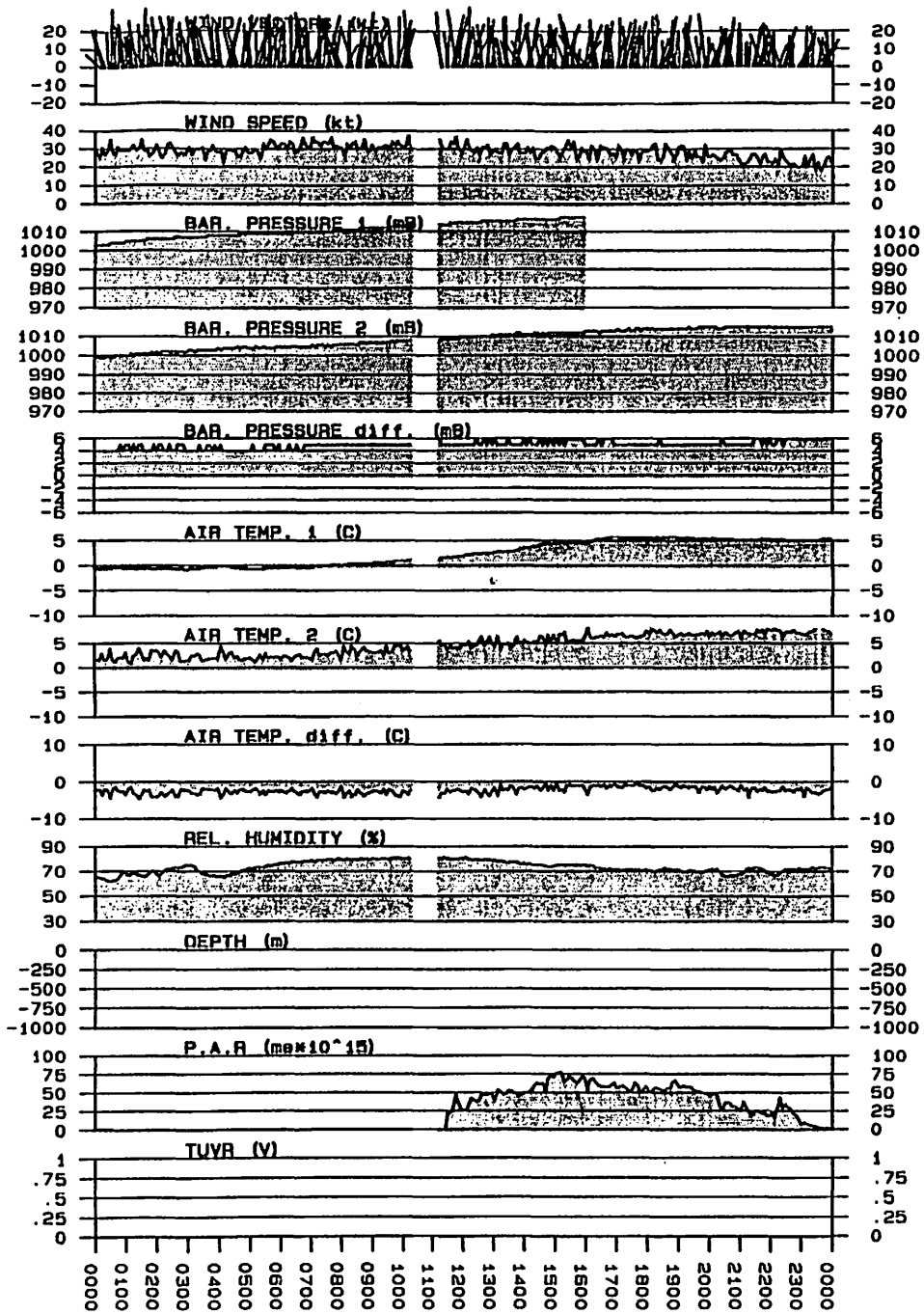
DAILY SUMMARY

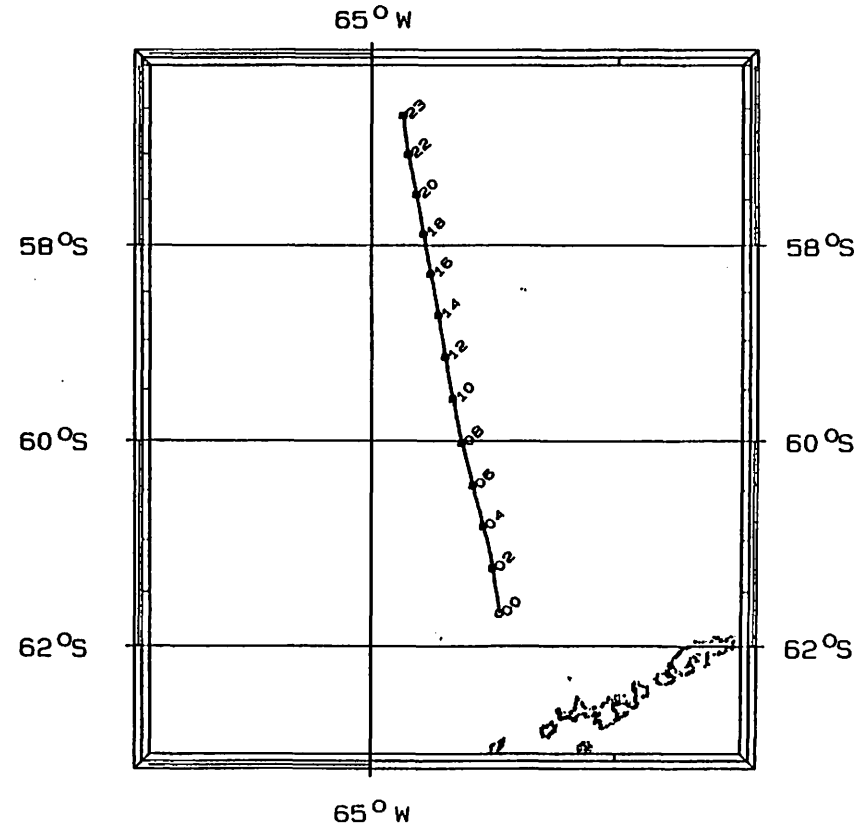
DISTANCE TRAVELLED TODAY 315.5 nm
TOTAL DISTANCE TRAVELLED 2520.0 nm

SHIP'S SPEED (kts) ;	AVERAGE=	13.2	MAXIMUM=	15.6	AT 0042 HRS.	MINIMUM=	10.3	AT 0039 HRS.
AIR TEMPERATURE (C);	AVERAGE=	2.5	MAXIMUM=	5.8	AT 1646 HRS.	MINIMUM=	-0.8	AT 0254 HRS.
SEA TEMPERATURE (C);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);	AVERAGE=	1014.0	MAXIMUM=	1021.0	AT 2324 HRS.	MINIMUM=	1002.6	AT 0003 HRS.
RELATIVE HUMIDITY (%);	AVERAGE=	73.5	MAXIMUM=	83.0	AT 0948 HRS.	MINIMUM=	61.0	AT 0024 HRS.
WIND SPEED (kts);	AVERAGE=	28.9	MAXIMUM=	40.5	AT 0014 HRS.	MINIMUM=	13.9	AT 0041 HRS.
MEAN DAILY WIND VELOCITY= 20.8 (kts) FROM 236 DEGREES TRUE								
SOLAR RADIATION-PAR (quanta/cm^2/sec);	AVERAGE=	24.25	MAXIMUM=	86.50	AT 1511 HRS.	MINIMUM=	0.00	AT 0006 HRS.
LIGHT TRANSMISSION (%);	AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);	AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

POLAR DUKE 92-9 UNDERWAY DATA; 11-21-1992

SCIENTIFIC ACTIVITIES THIS DAY;





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GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	ATRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A.SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	56 33.12S	64 22.09W	12.7	347	0.0	0.0	5.4	73.0	1021.0	18.5	152	30.3	150	---	--	-----	0.0	---	---	
0100 GPS	56 20.38S	64 25.89W	13.8	349	12.9	12.9	5.4	72.0	1020.8	17.5	305	14.8	244	---	--	-----	0.0	---	---	
0200 GPS	56 7.54S	64 30.34W	13.1	346	13.1	26.1	5.4	72.0	1021.0	24.1	318	16.8	272	---	--	-----	0.0	---	---	
0300 GPS	55 54.94S	64 34.91W	12.8	346	12.9	39.0	5.8	69.0	1020.4	26.2	317	19.0	275	---	--	-----	0.0	---	---	
0400 GPS	55 42.32S	64 39.89W	13.3	346	13.0	51.9	6.0	72.0	1019.8	28.0	251	34.7	215	---	--	-----	0.0	---	---	
0500 GPS	55 29.59S	64 44.66W	12.0	342	13.1	65.0	6.0	78.0	1019.4	28.0	304	23.5	261	---	--	-----	0.0	---	---	
0600 GPS	55 17.04S	64 49.84W	12.9	342	12.9	77.9	6.2	79.0	1018.6	29.4	324	20.4	284	---	--	-----	0.0	---	---	
0700 GPS	55 4.70S	64 54.22W	12.3	338	12.6	90.5	6.4	72.0	1018.2	34.0	141	44.3	129	---	--	-----	0.0	---	---	
0800 GPS	54 51.89S	64 56.71W	12.6	351	13.1	103.6	6.6	74.0	1018.2	26.0	341	14.7	316	---	--	-----	0.0	---	---	
0900 GPS	54 38.78S	64 57.67W	12.2	359	13.2	116.8	6.6	75.0	1017.4	25.5	126	34.1	142	---	--	-----	0.0	---	---	
1000 GPS	54 29.32S	65 6.37W	11.5	314	11.5	128.3	6.8	75.0	1017.2	24.3	152	34.9	115	---	--	-----	0.0	---	---	
1100 GPS	54 22.03S	65 19.35W	10.1	315	10.5	138.8	7.6	70.0	1016.6	26.2	063	23.5	041	---	--	-----	0.0	---	---	
1200 GPS	54 14.59S	65 30.82W	9.3	314	10.1	148.9	7.4	70.0	1016.0	25.9	311	21.0	246	---	--	-----	0.0	---	---	
1300 GPS	54 7.40S	65 41.98W	9.4	311	9.8	158.6	7.0	73.0	1015.8	25.3	319	19.2	251	---	--	-----	0.0	---	---	
1400 GPS	54 0.46S	65 53.09W	9.5	311	9.6	168.2	7.2	75.0	1015.4	23.5	241	29.3	175	---	--	-----	0.0	---	---	
1500 GPS	53 54.01S	66 5.13W	9.9	307	9.6	177.8	7.2	76.0	1014.8	26.0	155	35.3	109	---	--	-----	0.0	---	---	
1600 GPS	53 47.29S	66 17.66W	10.2	308	10.0	187.8	7.0	76.0	1014.4	28.4	012	18.5	327	---	--	-----	0.0	---	---	
1700 GPS	53 40.04S	66 31.03W	10.3	310	10.8	198.6	7.0	78.0	1013.8	27.6	010	17.6	326	---	--	-----	0.0	---	---	
1800 GPS	53 32.35S	66 44.20W	11.3	313	11.0	209.6	6.8	79.0	1012.8	27.0	015	16.4	339	---	--	-----	0.0	---	---	
1900 GPS	53 24.58S	66 58.07W	10.7	313	11.4	221.0	6.8	78.0	1012.2	26.2	322	19.0	254	---	--	-----	0.0	---	---	
2000 GPS	53 16.45S	67 11.98W	11.2	314	11.7	232.7	6.6	79.0	1012.0	25.5	300	22.1	228	---	--	-----	0.0	---	---	
2100 GPS	53 8.09S	67 25.54W	11.9	314	11.7	244.4	6.6	80.0	1011.4	25.5	152	36.4	115	---	--	-----	0.0	---	---	
2201 GPS	52 59.21S	67 39.14W	10.8	314	12.1	256.5	6.6	80.0	1010.8	22.5	160	32.9	120	---	--	-----	0.0	---	---	
2300 GPS	52 51.42S	67 51.58W	10.6	314	10.8	267.3	6.4	80.0	1010.6	21.2	319	14.9	245	---	--	-----	0.0	---	---	

DAILY SUMMARY

DISTANCE TRAVELLED TODAY 276.4 nm
TOTAL DISTANCE TRAVELLED 2796.4 nm

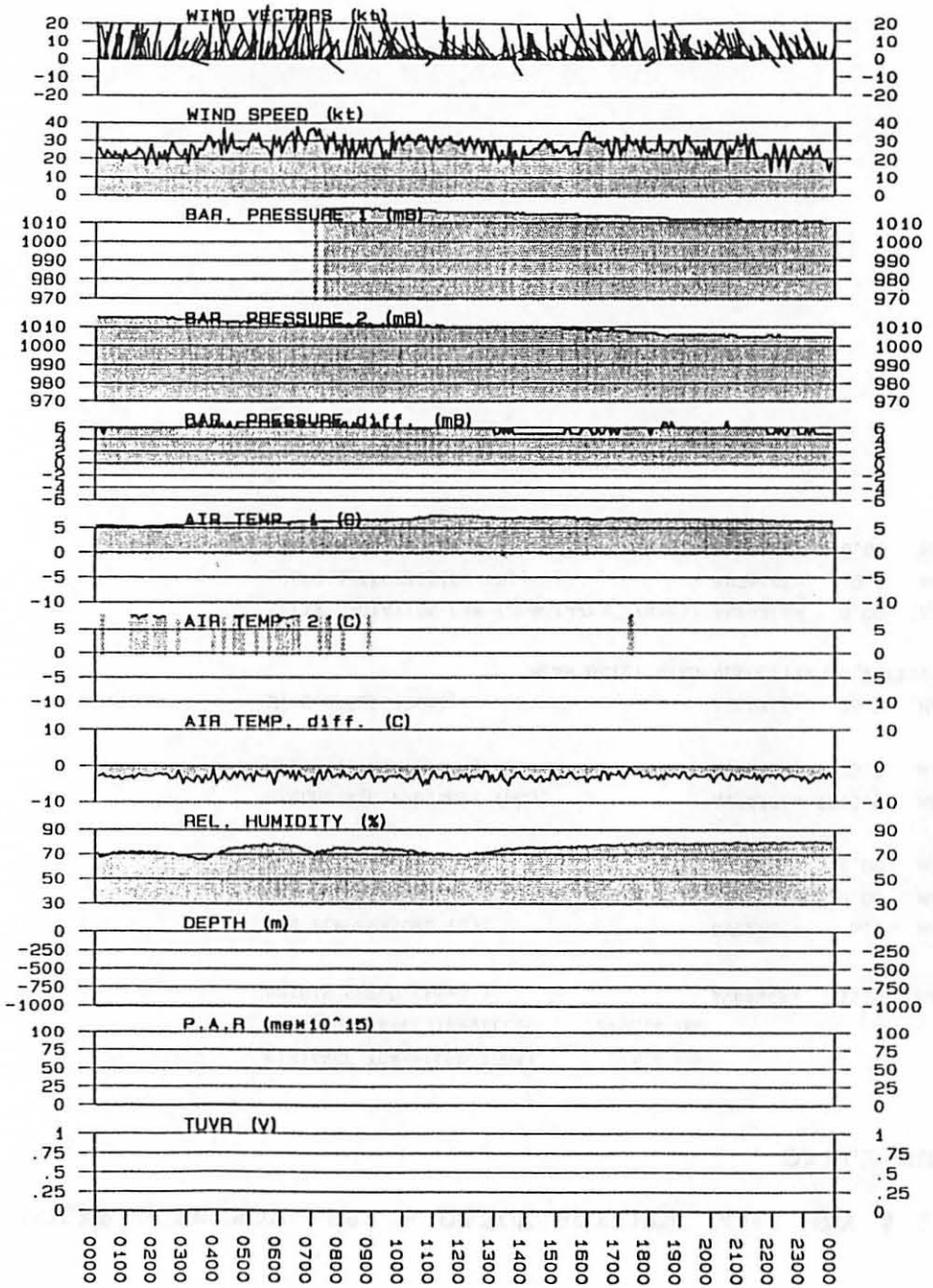
SHIP'S SPEED (kts) ;	AVERAGE=	11.5	MAXIMUM=	14.8	AT 0028 HRS.	MINIMUM=	7.6	AT 2352 HRS.
AIR TEMPERATURE (C);	AVERAGE=	6.5	MAXIMUM=	7.6	AT 1056 HRS.	MINIMUM=	5.2	AT 0116 HRS.
SEA TEMPERATURE (C);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);	AVERAGE=	1015.9	MAXIMUM=	1021.2	AT 0008 HRS.	MINIMUM=	1010.4	AT 2247 HRS.
RELATIVE HUMIDITY (%);	AVERAGE=	75.2	MAXIMUM=	82.0	AT 1756 HRS.	MINIMUM=	63.0	AT 0326 HRS.
WIND SPEED (kts);	AVERAGE=	26.5	MAXIMUM=	46.3	AT 0657 HRS.	MINIMUM=	5.5	AT 0137 HRS.

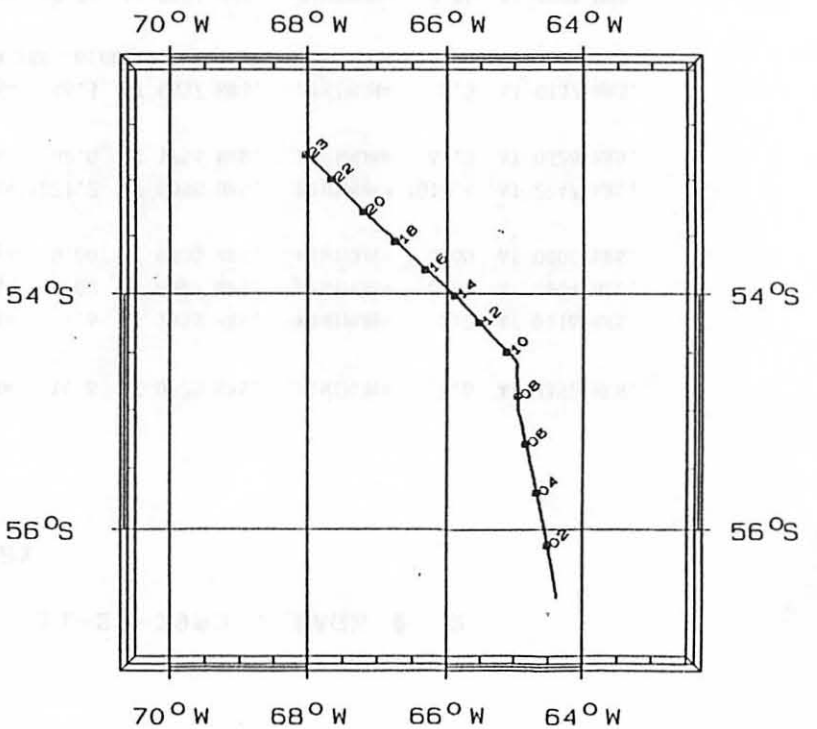
MEAN DAILY WIND VELOCITY= 10.7 (kts) FROM 289 DEGREES TRUE

SOLAR RADIATION-PAR (quanta/cm^2/sec);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
LIGHT TRANSMISSION (%);	AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);	AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

POLAR DUKE 92-9 UNDERWAY DATA; 11-22-1992

SCIENTIFIC ACTIVITIES THIS DAY;





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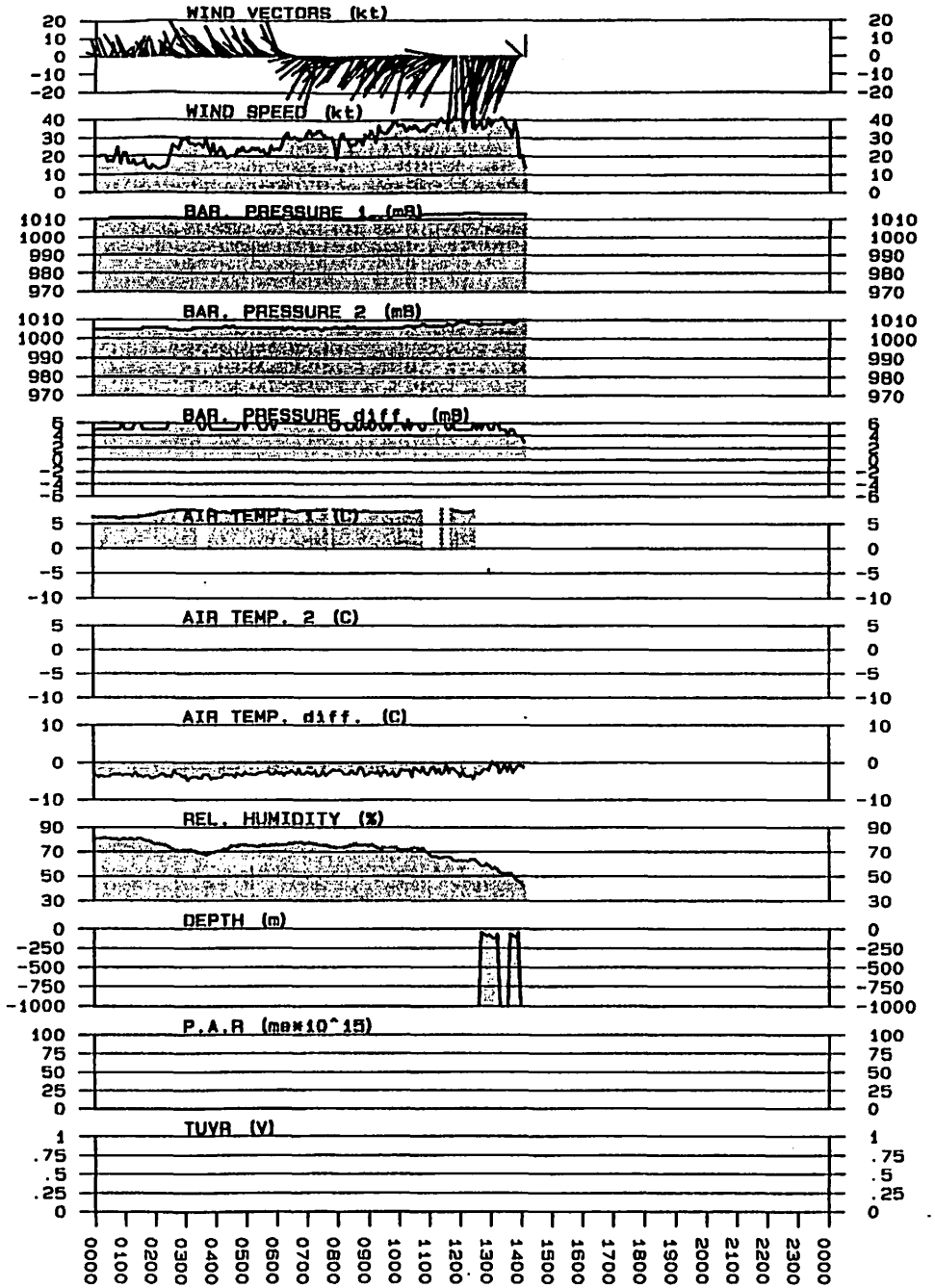
GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	TOTAL	AIRT	RH	BAROM	AWS	AWD	TWS	TWD	DPTH	A-SEA	SALIN	PAR	TRANS	FLUOR	COMMENTS
0001 GPS	52 44.81S	68 2.59W	8.7	314	0.0	0.0	6.4	82.0	1010.4	19.4	346	11.2	289	---	--	-----	0.0	---	---	
0100 GPS	52 39.42S	68 11.59W	7.3	310	7.7	7.7	6.4	82.0	1010.6	18.5	154	25.2	111	---	--	-----	0.0	---	---	
0200 GPS	52 35.47S	68 18.91W	5.8	310	6.0	13.7	7.0	77.0	1011.0	13.4	305	11.1	229	---	--	-----	0.0	---	---	
0300 GPS	52 30.79S	68 29.48W	9.2	292	8.1	21.8	8.0	72.0	1011.2	22.5	216	30.5	138	---	--	-----	0.0	---	---	
0400 GPS	52 26.99S	68 42.93W	9.2	293	9.1	30.9	7.4	70.0	1011.4	16.9	247	22.2	158	---	--	-----	0.0	---	---	
0500 GPS	52 23.83S	68 54.62W	8.2	288	7.9	38.8	7.8	74.0	1011.4	18.7	113	23.1	060	---	--	-----	0.0	---	---	
0600 GPS	52 21.35S	69 7.30W	7.9	282	8.2	46.9	8.0	76.0	1011.4	18.5	225	24.7	134	---	--	-----	0.0	---	---	
0700 GPS	52 21.57S	69 19.17W	7.9	227	7.7	54.6	7.8	77.0	1011.4	25.7	181	33.6	048	---	--	-----	0.0	---	---	
0800 GPS	52 25.99S	69 28.01W	8.0	222	7.3	61.9	8.0	75.0	1011.4	26.6	227	32.6	079	---	--	-----	0.0	---	---	
0900 GPS	52 32.00S	69 37.30W	9.6	213	8.3	70.2	7.6	76.0	1011.6	25.7	227	33.0	067	---	--	-----	0.0	---	---	
0933 GPS	52 35.44S	69 44.60W	11.3	239	5.8	76.1	7.6	73.0	1011.8	26.2	127	34.3	021	---	--	-----	0.0	---	---	PILOT ABOARD
1000 GPS	52 37.93S	69 52.57W	11.9	242	5.5	81.5	7.6	73.0	1012.0	30.1	224	39.6	094	---	--	-----	0.0	---	---	
1100 GPS	52 41.63S	70 12.83W	13.1	247	12.9	94.4	8.4	67.0	1012.8	28.6	139	39.4	039	---	--	-----	0.0	---	---	
1200 GPS	52 50.44S	70 29.01W	15.4	175	15.1	109.5	7.4	62.0	1013.4	24.9	190	40.1	001	---	--	-----	0.0	---	---	
1300 GPS	53 2.82S	70 38.41W	14.0	219	14.6	124.1	9.2	58.0	1013.4	28.2	191	42.0	046	120	--	-----	0.0	---	---	
1400 GPS	53 10.44S	70 54.19W	5.7	300	12.8	136.9	10.2	44.0	1013.4	9.7	184	15.4	123	---	--	-----	0.0	---	---	
1406 GPS	53 10.21S	70 54.38W	1.0	332	0.3	137.2	10.8	39.0	1013.4	11.9	058	11.4	034	---	--	-----	0.0	---	---	FIRST LINE ASHORE!
1407 GPS	53 10.21S	70 54.36W	0.8	333	0.0	137.2	10.8	40.0	1013.4	12.2	359	11.4	332	---	--	-----	0.0	---	---	END CRUISE PD 92-09

DAILY SUMMARY

DISTANCE TRAVELLED TODAY 137.2 nm
TOTAL DISTANCE TRAVELLED 2933.6 nm

SHIP'S SPEED (kts) ;	AVERAGE=	9.7	MAXIMUM=	16.5	AT 1155 HRS.	MINIMUM=	0.1	AT 1408 HRS.
AIR TEMPERATURE (C);	AVERAGE=	7.8	MAXIMUM=	11.0	AT 1405 HRS.	MINIMUM=	6.2	AT 0021 HRS.
SEA TEMPERATURE (C);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
SALINITY (ppt);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0000 HRS.	MINIMUM=	0.00	AT 0000 HRS.
BAROMETRIC PRESSURE (mb);	AVERAGE=	1011.8	MAXIMUM=	1013.6	AT 1203 HRS.	MINIMUM=	1010.4	AT 0001 HRS.
RELATIVE HUMIDITY (%);	AVERAGE=	71.4	MAXIMUM=	83.0	AT 0029 HRS.	MINIMUM=	39.0	AT 1406 HRS.
WIND SPEED (kts);	AVERAGE=	28.6	MAXIMUM=	45.1	AT 1145 HRS.	MINIMUM=	7.5	AT 0156 HRS.
MEAN DAILY WIND VELOCITY= 16.6 (kts) FROM 100 DEGREES TRUE								
SOLAR RADIATION-PAR (quanta/cm^2/sec);	AVERAGE=	0.00	MAXIMUM=	0.00	AT 0001 HRS.	MINIMUM=	0.00	AT 0001 HRS.
LIGHT TRANSMISSION (%);	AVERAGE=	0.0	MAXIMUM=	0.0	AT 0000 HRS.	MINIMUM=	0.0	AT HRS.
CHLOROPHYLL-a (mg/m^3);	AVERAGE=	0.00	MAXIMUM=	0.00	AT HRS.	MINIMUM=	0.00	AT HRS.

POLAR DUKE 92-9 UNDERWAY DATA; 11-23-1992



SCIENTIFIC ACTIVITIES THIS DAY;