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**Ocean Ecology Data Report:  
Coastal Waters off Southwest Vancouver  
Island  
Spring and Summer 1981**

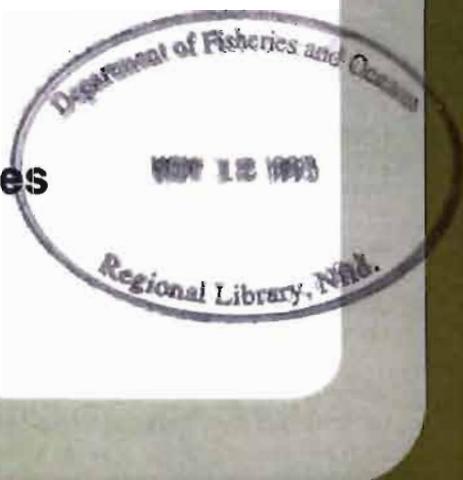
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S. Hill, K. Denman, D. Mackas, H. Sefton and R. Forbes

Institute of Ocean Sciences  
Department of Fisheries and Oceans  
Sidney, B.C. V8L 4B2

1983

**Canadian Data Report of  
Hydrography and Ocean Sciences  
No. 8**



Fisheries  
and Oceans

Pêches  
et Océans

Canada

## **Canadian Data Report Of Hydrography and Ocean Sciences**

These reports provide a medium for the documentation and dissemination of data in a form directly useable by the scientific and engineering communities.

Generally, the reports will contain raw and/or analyzed data but will not contain interpretations of the data. Such compilations will commonly have been prepared in support of work related to the programs and interests of the Ocean Science and Surveys (OSS) sector of the Department of Fisheries and Oceans.

Data Reports are produced regionally but are numbered and indexed nationally. Requests for individual reports will be fulfilled by the issuing establishment listed on the front cover and title page. Out of stock reports will be supplied for a fee by commercial agents.

Regional and headquarters establishments of Ocean Science and Surveys ceased publication of their various report series as of December 1981. A complete listing of these publications and the last number issued under each title are published in the *Canadian Journal of Fisheries and Aquatic Sciences*, Volume 38: Index to Publications 1981. The current series began with Report Number 1 in January 1982.

## **Rapport statistique canadien sur l'hydrographie et les sciences océaniques**

Ces rapports servent de véhicule pour la compilation et la diffusion des données sous une forme directement utilisable par les scientifiques et les techniciens.

En général, les rapports contiennent des données brutes ou analysées mais ne fournissent pas d'interprétations des données. Ces compilations sont préparées le plus souvent à l'appui de travaux reliés aux programmes et intérêts du service des Sciences et Levés océaniques (SLO) du ministère des Pêches et des Océans.

Les rapports statistiques sont produits à l'échelon régional mais sont numérotés et placés dans l'index à l'échelon national. Les demandes de rapports seront satisfaites par l'établissement auteur dont le nom figure sur la couverture et la page de titre. Les rapports épuisés seront fournis contre rétribution par des agents commerciaux.

Les établissements des Sciences et Levés océaniques dans les régions et à l'administration centrale ont cessé de publier leurs diverses séries de rapports depuis décembre 1981. Vous trouverez dans l'index des publications du volume 38 du *Journal canadien des sciences halieutiques et aquatiques*, la liste de ces publications ainsi que le dernier numéro paru dans chaque catégorie. La nouvelle série a commencé avec la publication du Rapport n° 1 en janvier 1982.

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Spring and Summer 1981.

by

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Cat. No. Fs 97-16/8 ISSN 0711-6721

Correct citation for this publication:

Hill, S., K. Denman, D. Mackas, H. Sefton and R. Forbes, 1983.  
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## ABSTRACT

Hill, S., K. Denman, D. Mackas, H. Sefton and R. Forbes, 1983.  
Ocean Ecology Data Report: Coastal Waters off Southwest  
Vancouver Island. Spring and Summer 1981. Can. Data Rep.  
Hydrogr. Ocean Sci. 8: 93 p.

The results of a 1981 sampling program in coastal waters off the southwest coast of Vancouver Island are presented, including physical, chemical and biological data from analysis of bottle samples collected with an integrated vertical profiler, and zooplankton counts from vertical net hauls.

KEYWORDS: data, oceanographic, Pacific

## RÉSUMÉ

Hill, S., K. Denman, D. Mackas, H. Sefton and R. Forbes, 1983.  
Ocean Ecology Data Report: Coastal Waters off Southwest  
Vancouver Island. Spring and Summer 1981. Can. Data Rep.  
Hydrogr. Ocean Sci. 8: 93 p.

Les résultats d'une étude des eaux côtières du sud-ouest de l'île de Vancouver sont présentés. On inclus les données physiques, chimiques et biologiques de l'analyse des échantillons d'eau recueillis durant les profileurs verticaux, et les comptes de zooplankton recueillis avec les coups de filet verticaux.

MOTS-CLÉS: données, oceanographique, Pacifique

### Acknowledgements

The authors wish to acknowledge R. Waters (through EVS Consultants Ltd.) for phytoplankton counts; Seakem Oceanography Ltd., for the nutrient analyses; and Chart Production for providing photographic reductions of our figures and maps. Finally, we wish to thank the officers and crew of all the ships used in this research programme.

### Introduction.

During the spring and summer of 1981, 2 research cruises in the area of Juan de Fuca Strait and the coastal waters off the southwest coast of Vancouver Island were undertaken by the Ocean Ecology group at the Institute of Ocean Sciences (IOS). The purpose of these cruises was to re-examine persistent areas of high planktonic biomass and productivity and to attempt to determine the oceanographic processes responsible for these areas of high productivity. On these cruises, physical, chemical and biological data were collected with an integrated oceanographic vertical profiler (OVP) consisting of several electronic sensors, a data acquisition system (DAS), and a remotely triggerable array of Niskin bottles (rosette sampler). In this report we present the results of the analysis of bottle samples, together with selected data from the electronic sensors, and a cruise-by-cruise inventory of the total data set available from the OVP. Data from the analysis of zooplankton samples collected by vertical net hauls is also included.

### Sampling and analytical methods.

#### 1. Electronic sensors.

Sensors used on the 1981 cruises include a Guildline Model 8701 digital CTD, a Variosens III in situ fluorometer set up to measure chlorophyll fluorescence, a Martek 1 m. path length transmissometer measuring beam attenuation, and a Licor 193SB spherical quantum irradiance sensor measuring photosynthetically active quantum scalar irradiance(PAR). Outputs from these sensors were multiplexed, digitized, and communicated in serial mode to the surface via 7-conductor armoured cable through an oceanographic winch. The DAS was designed and constructed at IOS. At the surface, data from the DAS were sent to a Hewlett-Packard 9845B computer, which stored the data on 8-inch flexible disks and performed some real-time data analysis and graphics display. At the same time that subsurface data was being recorded, the surface PAR was being measured using a Biospherical Instruments QSR 240 Quantum Scalar reference system, and logged by the HP9845. A typical cast of the OVP consisted of two phases. First, the package was lowered at a speed of 0.5 to 1.0 m/sec, and during this time the electronic sensors were being sampled and logged at a frequency of 8 Hz. Then, after the depths at which the bottles were to be tripped were decided upon, the OVP was raised at a speed of approximately 0.5 m/sec and bottles were tripped "on the fly".

#### 2. Bottle data.

a) temperature: duplicate temperatures from protected reversing thermometers were taken periodically as a check on the

CTD temperatures. An offset correction was later applied to the CTD temperatures.

b) salinity: salinity samples were collected periodically as a check on the CTD conductivity measurement. These samples were analysed later in the laboratory using an Autosal Model 8400 induction salinometer. An offset correction was later applied to the CTD salinities.

c) chlorophyll: the chlorophyll content of phytoplankton samples was determined at sea using the fluorometric technique outlined in Strickland and Parsons (1972). These values were used to adjust (by linear transformation) the Variosens chlorophyll value (derived from a laboratory calibration using live phytoplankton cultures) for varying field conditions.

d) dissolved oxygen: the dissolved oxygen content of bottle samples was determined at sea using the Winkler technique outlined in Strickland and Parsons (1972). Samples were "fixed" with manganous sulphate and alkaline iodide solution within 15 minutes of being drawn, and titrations were carried out within 24 hours of sampling.

e) inorganic nutrients: reactive nitrate-nitrite, phosphate and silicate concentrations were measured in the laboratory using colorimetric methods with a Technicon II auto-analyser. Water samples were quick-frozen immediately after collection and were kept frozen until analysis.

f) primary productivity: three sample bottles (1 dark, 2 light) were drawn from rosette bottles. These were inoculated with 1 ml of 5  $\mu\text{C}/\text{ml}$   $^{14}\text{C}$  (as bicarbonate) and incubated for at least 2 hours under fluorescent lights. These samples were then filtered onto 0.45 micron Millipore filters which were fumed over concentrated hydrochloric acid for 1 minute, and then placed in 15 ml Aquasol. The activity of these samples was determined later using a scintillation counter, and the results used to estimate primary productivity.

g) phytoplankton counts: samples were drawn from rosette bottles, preserved in Lugol's solution, and stored for later analysis. Subsamples (ranging from 2.2 ml to 100 ml) were settled out and counted with an inverted microscope.

h) zooplankton counts: zooplankton samples were collected in vertical net hauls, using a net with one-half square meter opening, #6 mesh (233 micron), and a mechanical flowmeter. Samples were preserved in 5% to 10% formalin in seawater for later analysis.

Estimated accuracy and precision of data.

1. CTD and other electronic sensor values - the fundamental limit to resolution is given by the 12 bit accuracy (equivalent to .025% of full scale) of the analog to digital converter used. Manufacturers give the accuracy and resolution of the sensors as follows:

<u>Variable</u>	<u>Accuracy</u>	<u>Resolution</u>
Pressure	: ±1.25 dbar	0.25 dbar
Temperature	: ±0.01 deg. C.	0.003 deg C
Equivalent salinity	: ±0.01 psu	0.005 psu
% transmission	: ±1.00 %	0.5 %
<u>in situ</u> PAR	: ±7.00 %	0.50 %

2. Chlorophyll - Strickland and Parsons (1972) estimate that the fluorometric technique should give a value within 8% of the true value for any chlorophyll concentration greater than 0.5 µg/l.

3. Dissolved oxygen - Strickland and Parsons (1972) estimate that the Winkler technique should give a value within 0.034 ml/l of the true value.

4. Inorganic nutrients - replicate analyses were done for some samples from cruises 79-04, 79-05, and 80-05. The expected percentage error was estimated through a statistical treatment of these data (see Appendix 1), and the values found are summarized below:

<u>Cruise</u>	<u>Nitrate error</u>	<u>Phosphate error</u>	<u>Silicate error</u>	<u>N</u>
79-04	10.1	5.6	8.7	61
79-05	15.4	15.2	15.7	120
80-05	18.2	2.4	6.7	56
SUM	15.0	11.3	12.4	237

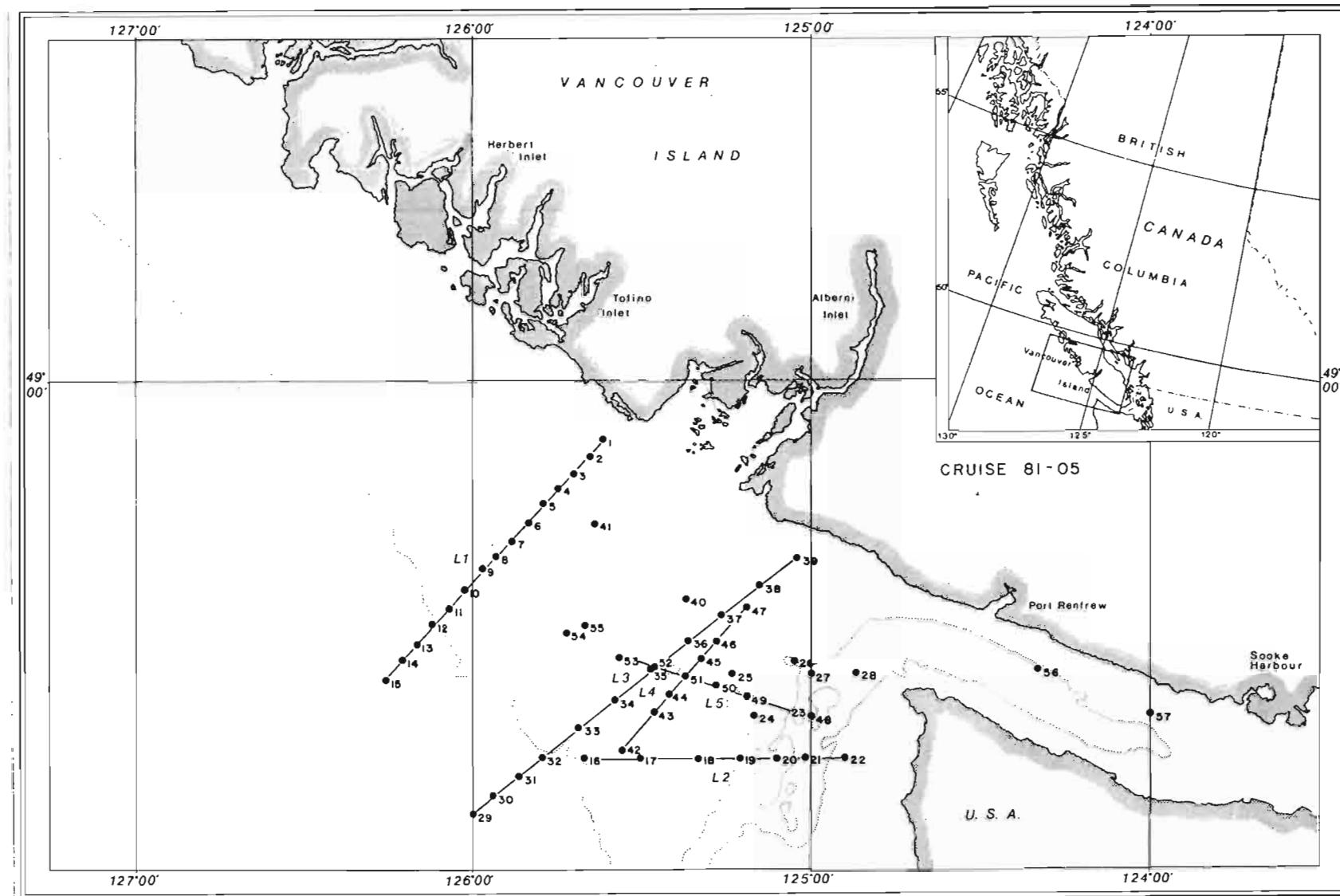
5. Primary productivity - the precision of this method is described in Strickland and Parsons (1972).

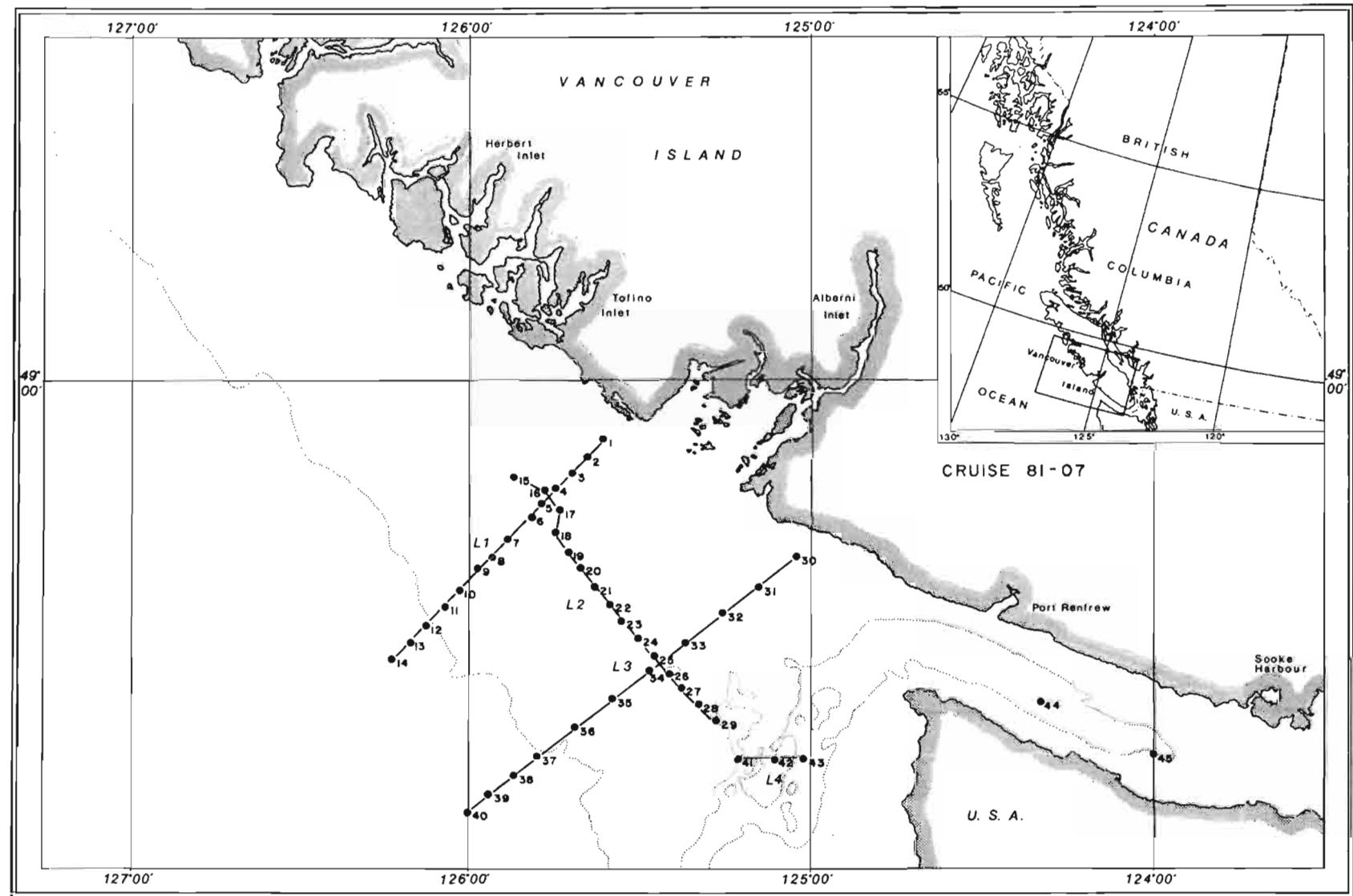
References

Strickland, J.D.H. and Parsons, T.R., 1972. A Practical Manual of Seawater Analysis. Fisheries Research Board of Canada, Bulletin 167(2nd edition).

Notes.

1. The zooplankton samples described in this report were all analyzed by the same worker (H. Sefton). Similarly, the phytoplankton samples were all analyzed by R. Waters.





CRUISE 8105

DATA TYPES AVAILABLE: "+" = available; "—" = not available

STN NO	DATE DA/MO	TIME (PDT)	LAT	LONG	CTD	VARIO. CHL a	BEAM ATTEN- UANCE	IN <i>SITU</i> LIGHT	pH	O <sub>2</sub>	NUTRI- ENTS	CHL a	PHYTO PLANK -TON	ZOO- PLANK -TON	
1	29 04	10 00	48°53.1'	125°36.7'	+	+	+	+	+	+	+	+	+	-	-
2	29 04	11 06	48°51.1'	125°39.3'	+	+	+	-	-	-	-	-	-	-	-
3	29 04	11 40	48°49.2'	125°42.0'	+	+	+	+	+	+	+	+	+	+	-
4	29 04	12 25	48°47.3'	125°44.8'	+	+	+	+	-	-	-	-	-	-	-
5	29 04	13 20	48°45.4'	125°47.4'	+	+	+	+	+	+	+	+	+	+	+
6	29 04	14 11	48°43.2'	125°50.2'	+	+	+	+	-	-	-	-	-	-	-
7	29 04	14 50	48°41.2'	125°53.0'	+	+	+	+	+	+	+	+	+	+	-
8	29 04	16 03	48°39.3'	125°55.8'	+	+	+	+	-	-	-	-	-	-	-
9	29 04	16 52	48°37.9'	125°58.5'	+	+	+	+	+	+	+	+	+	+	+
10	29 04	17 56	48°35.2'	125°01.4'	+	+	+	+	-	-	-	-	-	-	-
11	29 04	18 34	48°33.1'	126°04.2'	+	+	+	+	+	+	+	+	+	+	-
12	29 04	19 26	48°31.0'	126°07.1'	+	+	+	+	-	-	-	-	-	-	-
13	29 04	20 21	48°28.8'	126°10.0'	+	+	+	+	-	+	+	+	+	-	+
14	29 04	21 05	48°26.9'	126°12.8'	+	+	+	+	-	-	-	-	-	-	-
15	29 04	21 38	48°24.6'	126°15.8'	+	+	+	+	-	+	+	-	-	-	+
16	30 04	12 27	48°47.0'	125°29.0	+	+	-	+	-	+	+	+	+	-	-
17	01 05	09 41	48°15.0'	125°30.0'	+	+	-	+	+	+	+	+	+	+	-
18	01 05	10 41	48°15.0'	125°20.0'	+	+	-	+	+	+	+	+	+	+	-
19	01 05	11 24	48°15.0'	125°12.5'	+	+	-	+	+	+	+	+	+	+	-
20	01 05	12 24	48°15.0'	125°06.0'	+	+	-	+	+	+	+	+	+	+	-
21	01 05	13 27	48°15.0'	125°01.0'	+	+	-	+	+	+	+	+	+	+	-
22	01 05	14 34	48°15.0'	124°54.0'	+	+	-	+	+	+	+	+	+	+	-
23	01 05	15 32	48°20.0'	125°00.0'	+	+	-	+	+	+	+	+	+	+	-
24	01 05	17 00	48°20.0'	125°10.0'	+	+	-	+	+	+	+	+	+	+	-
25	01 05	18 55	48°25.0'	125°14.0'	+	+	-	+	+	+	+	+	+	+	-
26	01 05	20 11	48°26.5'	125°03.0'	+	+	-	+	+	+	+	+	+	+	-
27	01 05	20 56	48°25.0'	125°00.0'	+	+	-	+	+	+	+	+	+	+	-
28	01 05	21 51	48°25.0'	124°52.0'	+	+	-	+	+	+	+	+	+	+	-
29	03 05	06 32	48°08.5'	126°00.0'	+	+	-	+	+	+	+	+	+	+	-

CRUISE 8105

DATA TYPES AVAILABLE: "+" = available; "-" = not available

STN NO.	DATE DA/MO	TIME (PDT)	LAT	LONG	CTD	VARIO. a	BEAM CHL	IN SITU	pH	O <sub>2</sub>	NUTRI-	CHL	<sup>14</sup> C	PHYTO-	ZOO-
											ENTS	a	-TON	PLANK	PLANK
30	03	05	08 01	48°10.6'	125°56.2'	+	+	-	+	-	-	+	-	-	+
31	03	05	08 46	48°12.9'	125°52.0'	+	+	-	+	+	+	+	+	+	-
32	03	05	09 40	48°15.1'	125°47.7'	+	+	-	+	+	+	+	+	+	-
33	03	05	10 49	48°18.6'	125°41.2'	+	+	-	+	+	+	+	+	+	+
34	03	05	11 43	48°22.0'	125°34.7'	+	+	-	+	+	+	+	+	+	-
35	03	05	15 51	48°25.5'	125°28.3'	+	+	-	+	+	+	+	+	+	-
36	03	05	17 03	48°28.9'	125°21.8'	+	+	-	+	+	+	+	+	+	+
37	03	05	18 08	48°32.2'	125°15.5'	+	+	-	+	+	+	+	+	+	-
38	03	05	19 10	48°35.6'	125°09.0'	+	+	-	+	+	+	+	+	+	-
39	03	05	20 10	48°39.0'	125°02.5'	+	+	-	+	+	+	+	+	+	+
40	04	05	12 28	48°34.0'	125°22.0'	+	+	-	+	+	+	+	+	+	-
41	04	05	06 31	48°43.0'	125°38.5'	+	+	-	+	+	+	+	+	+	+
42	06	05	05 41	48°16.0'	125°33.6'	+	+	-	+	-	-	+	+	-	+
43	06	05	06 36	48°20.5'	125°27.6'	+	+	-	+	-	-	+	+	-	+
44	06	05	07 32	48°22.5'	125°25.0'	+	+	-	+	-	-	+	+	-	+
45	06	05	10 06	48°26.8'	125°19.3'	+	+	-	+	-	-	+	+	-	+
46	06	05	11 12	48°28.9'	125°16.6'	+	+	-	+	-	-	+	+	-	+
47	06	05	12 21	48°33.0'	125°11.2'	+	+	-	+	+	-	+	+	+	+
48	06	05	14 38	48°20.0'	125°00.0'	+	+	-	+	+	-	+	+	+	+
49	06	05	16 33	48°22.4'	125°11.2'	+	+	-	+	+	-	+	+	+	+
50	06	05	17 30	48°23.6'	125°16.8'	+	+	-	+	-	-	+	+	-	+
51	06	05	08 35	48°24.8'	125°22.2'	+	+	-	+	+	-	+	+	+	+
52	06	05	19 05	48°25.8'	125°27.6'	+	+	-	+	-	-	+	+	-	+
53	06	05	19 45	48°27.1'	125°33.8'	+	+	-	+	-	-	+	+	-	+
54	06	05	21 14	48°30.0'	125°43.3'	+	+	-	-	-	-	+	+	-	+
55	07	05	21 44	48°30.8'	124°40.0'	+	+	-	-	+	+	+	+	+	+
56	07	05	23 32	48°25.4'	124°20.0	+	+	-	-	+	+	+	+	+	+
57	08	05	01 32	48°20.0'	124°00.0'	+	+	-	-	-	+	+	+	-	+

## CRUISE 8107

DATA TYPES AVAILABLE: "+" = available: "-" not available

STN NO.	DATE DA/MO	TIME (PDT)	LAT	LONG	CTD	VARIO. CHL. a	BEAM ATTEN- UANCE	IN SITU LIGHT	pH	O <sub>2</sub>	NUTRI- ENTS	CHL a	<sup>14</sup> C	PHYTO- PLANK- TON	ZOO- PLANK- TON
1	14 09	20 13	48°53.1'	125°36.7'	+	+	+	+	+	+	+	+	+	-	-
2	14 09	20 59	48°51.1'	125°39.3'	+	+	+	+	-	-	-	-	-	-	+
3	14 09	21 32	48°49.2'	125°42.0'	+	+	+	+	+	+	+	+	+	-	-
4	14 09	22 23	48°47.3'	125°44.8'	+	+	+	+	-	-	-	-	-	-	+
5	14 09	22 54	48°45.4'	125°47.4'	+	+	+	+	-	-	-	-	-	-	-
6	14 09	23 35	48°43.8'	125°48.8'	+	+	+	+	+	+	+	+	+	+	+
7	15 09	00 24	48°41.2'	125°53.0'	+	+	+	+	-	-	-	-	-	-	-
8	15 09	01 08	48°39.3'	125°55.8'	+	+	+	+	+	+	+	+	+	+	+
9	15 09	01 48	48°37.9'	125°58.5'	+	+	+	+	-	-	-	-	-	-	-
10	15 09	02 39	48°35.2'	126°01.4'	+	+	+	+	+	+	+	+	-	+	+
11	15 09	03 21	48°33.1'	126°04.2'	+	+	+	+	-	-	-	-	-	-	-
12	15 09	04 13	48°31.0'	126°07.1'	+	+	+	+	+	+	+	+	+	+	+
13	15 09	05 06	48°28.8'	126°10.0'	+	+	+	+	-	-	-	-	-	-	-
14	15 09	06 11	48°26.9'	126°12.8'	+	+	+	+	+	+	+	+	+	+	+
15	15 09	18 29	48°48.8'	125°51.8'	+	+	+	+	+	+	+	+	+	+	+
16	15 09	19 12	48°47.2'	125°46.6'	+	+	+	+	+	+	+	+	+	+	-
17	15 09	19 47	48°44.8'	125°44.2'	+	+	+	+	-	-	-	-	-	-	-
18	15 09	20 36	48°42.2'	125°44.8'	+	+	+	+	+	+	+	+	+	+	+
19	15 09	21 22	48°39.9'	125°42.4'	+	+	+	+	-	-	-	-	-	-	-
20	15 09	22 11	48°37.8'	125°40.1'	+	+	+	+	+	+	+	+	+	+	+
21	15 09	22 58	48°35.6'	125°37.8'	+	+	+	+	-	-	-	-	-	-	-
22	15 09	23 44	48°33.5'	125°35.0'	+	+	+	+	-	-	-	-	-	-	-
23	16 09	00 47	48°31.4'	125°33.5'	+	+	+	+	+	+	+	+	+	+	+
24	16 09	01 32	48°29.4'	125°30.1'	+	+	+	+	-	-	-	-	-	-	-
25	16 09	02 07	48°27.5'	125°27.2'	+	+	+	+	-	-	-	-	-	-	-
26	16 09	02 56	48°25.2'	125°24.5'	+	+	+	+	+	+	+	+	+	+	+
27	16 09	03 43	48°23.4'	125°22.5'	+	+	+	+	-	-	-	-	-	-	-
28	16 09	04 22	48°21.4'	125°19.5'	+	+	+	+	-	-	-	-	-	-	-
29	16 09	05 28	48°19.4'	125°16.8'	+	+	+	+	+	+	-	+	+	+	+

CRUISE 8107

DATA TYPES AVAILABLE: "+" = available: "—" not available

STN NO.	DATE DA/MO	TIME (PDT)	LAT	LONG	CTD	VARIO.	BEAM	IN	pH	O <sub>2</sub>	NUTRI-	CHL	<sup>14</sup> C	PHYTO-	ZOO-
						CHL a	ATTEN- UANCE	SITU LIGHT			ENTS	a	PLANK- TON	PLANK- TON	
30	16 09	18 16	48°39.0'	125°02.5'	+	+	+	+	-	-	-	-	-	-	-
31	16 09	19 20	48°35.6'	125°09.0'	+	+	+	+	+	+	+	+	+	+	+
32	16 09	20 09	48°32.2'	125°15.5	+	+	+	+	-	-	-	-	-	-	-
33	16 09	21 49	48°28.9'	125°21.0'	+	+	+	+	+	+	+	+	+	+	+
34	16 09	22 52	48°25.5'	125°28.3'	+	+	+	+	+	+	+	+	+	+	+
35	17 09	00 01	48°22.0'	125°34.7'	+	+	+	+	+	+	+	+	+	+	+
36	17 09	01 13	48°18.6'	125°41.2'	+	+	+	+	+	+	+	+	+	+	+
37	17 09	02 04	48°15.1'	125°47.7'	+	+	+	+	-	-	-	-	-	-	-
38	17 09	03 01	48°12.9'	125°52.0'	+	+	+	+	+	+	-	+	+	+	+
39	17 09	03 50	48°10.6'	125°56.2'	+	+	+	+	-	-	-	-	-	-	-
40	17 09	04 49	48°08.5'	126°00.0'	+	+	+	+	+	+	+	+	+	+	+
41	17 09	18 32	48°15.0'	125°12.5'	+	+	+	+	+	+	+	+	+	+	+
42	17 09	19 25	48°15.0'	125°06.0'	+	+	+	+	-	-	-	-	-	-	-
43	17 09	20 56	48°15.0'	125°01.0'	+	+	+	+	-	+	+	-	-	+	+
44	18 09	00 52	48°22.0	124°20.0'	+	+	+	+	-	-	-	-	-	-	-
45	18 09	03 15	48°15.4'	124°00.0'	+	+	+	+	-	+	+	+	-	-	+

DATA BASE LISTING: CRUISE 81-05, STATION 1 TO STATION 57. PAGE 1  
 \* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SALTY* (ppt)	CHL A (mg/m3)	OXY (ml/l)	14C PRD mg/m3/h	NO3 (uM/l)	PO4 (uM/l)	SiO4 (uM/l)
1 01		52.1	9.33	31.92		4.87		16.80	2.04	27.00
1 03		30.8	9.30	31.23		5.99		9.10	1.48	14.10
1 04		21.1	9.90	30.43		6.75		3.20	.75	5.10
1 05		9.9	9.99	30.16	1.88	6.49	6.7	2.50	.70	4.50
1 06		4.6	10.09	29.96	3.03	7.17	13.9	2.50	.65	4.20
2 01		5.0			1.94					
3 01		45.4	9.22	31.79		5.01		17.30	1.68	29.20
3 02		25.2	9.19	31.48		5.64		14.40	1.61	22.10
3 03		15.4	9.51	30.87	.46	6.41	1.1	6.70	1.02	10.00
3 04		4.0	9.90	30.15	1.69	6.68	5.9	5.00	.78	6.70
5 01		59.0	9.21	32.30						
5 02		27.6	9.09	31.28	.34	5.92	1.5	13.90	1.49	20.30
5 03		16.9	9.65	30.79		6.62		6.20	.83	8.50
5 04		8.3	9.89	30.75	2.56	6.27	7.6	5.00	.75	7.10
6 01		8.5	10.00	30.69	.53					
7 01		59.9	8.77	32.43		4.11		22.70	2.08	35.60
7 02		29.2	9.03	31.43				15.10	1.48	22.70
7 03		18.2	9.65	30.94		6.31		7.00	.90	10.20
7 04		8.9	9.91	30.68	.36	6.74	8.9	3.80	.66	5.10
7 05		3.5	10.36	30.57	.63	7.53	33.5	.40	.43	2.90
8 01		15.1	9.88	31.02	6.33					
9 01		96.0				2.95		26.50	2.33	41.80
9 02		75.0				4.11		19.60	1.82	30.00
9 03		50.0				4.74		20.90	1.81	32.00
9 04		30.0				5.54		14.80	1.46	22.00
9 05		20.0			.58	5.99	1.8	10.70	1.17	15.60
9 06		10.0				6.71		4.80	.79	6.90
11 01		138.0	6.86	33.89		2.26		32.00	2.65	54.40
11 02		123.6	6.87	33.89		2.24		30.20	2.61	50.60
11 03		98.7	7.73	33.63		3.13		27.10	2.26	39.50
11 04		72.4	9.09	32.85		4.34		16.70	1.63	27.10
11 05		48.3	9.53	32.35		5.78		8.70	1.10	15.10
11 06		26.0	9.59	32.02		5.96		6.50	.99	12.40
11 07		16.2	9.95	31.58	.50	6.51	2.2	2.80	.69	7.10
11 08		7.0	10.28	31.41	1.03	6.75	5.4	1.20	.55	4.70
12 01		96.0	8.55	33.29						
13 01		245.3	6.15	34.03		2.31		35.70	2.71	62.30
13 02		199.3	6.53	34.01		2.66		33.10	2.56	53.70
13 03		171.5	6.66	33.95		2.40		32.60	2.58	54.80
13 04		143.4	7.15	33.90		2.85		28.70	2.35	42.60
13 05		124.1	7.69	33.68		3.58		28.60	2.24	39.70
13 06		97.9	8.53	33.27	.33	4.52		21.60	1.75	27.50
13 07		74.1	9.28	32.72	.26	5.47		14.70	1.40	23.30
13 08		45.0	9.57	32.40		5.81		10.10	1.15	14.80
13 09		29.5	9.62	32.18		6.32		6.70	.99	13.10
13 10		10.6	10.13	31.67		6.86		1.30	.55	9.70
15 01		251.0	6.23	34.03		2.37		36.70	2.48	61.10
15 02		197.7	6.86	33.98		2.72		33.10	2.28	50.90

DATA BASE LISTING: CRUISE 81-05, STATION 1 TO STATION 57. PAGE 2  
 \* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SALTY* (ppt)	CHL A (mg/m3)	OXY (ml/l)	14C PRD mg/m3/h	NO3 (uM/l)	PO4 (uM/l)	SiO4 (uM/l)
15 03		150.8	7.42	33.79		3.24		30.10	2.08	41.80
15 04		125.8	7.90	33.59		3.66		25.90	1.92	33.20
15 05		99.7	8.35	33.11		4.95		19.90	1.53	25.40
15 06		74.1	9.01	32.51		6.51		8.60	1.01	14.20
15 07		48.5	9.45	32.37		7.03		3.90	.72	10.60
15 08		31.3	9.63	32.30		7.12		2.60	.65	9.50
15 09		20.2	9.86	31.76		7.17		2.20	.59	11.50
15 10		8.4	10.18	31.77		7.29		1.20	.52	9.30
16 01		254.2	6.34	34.01		2.07		34.40	2.46	57.40
16 02		197.8	6.64	33.96		2.66		32.60	2.36	53.00
16 03		144.0	6.94	33.90		2.62		28.40	2.40	45.30
16 04		122.1	7.32	33.82		2.97		28.60	2.22	40.90
16 05		97.2	7.63	33.57		3.04		25.90	1.96	34.20
16 06		70.8	8.74	33.14		4.32		20.20	1.56	26.90
16 07		46.5	9.35	32.43		6.22		8.60	1.03	14.10
16 08		24.2	9.54	31.55		6.24		7.50	.99	12.60
16 09		16.5	10.02	31.36	.93	6.80	2.7	2.60	.63	5.70
16 10		9.1	10.09	31.33	.78	6.81	4.1	2.80	.58	6.20
17 01		130.1	7.15	33.84		2.83		29.70	3.33	46.60
17 02		100.4	7.74	33.65		3.23		28.20	2.76	37.50
17 03		72.7	8.54	33.28		4.24		22.70	2.66	29.10
17 04		48.5	9.21	32.56		5.65		12.20	1.59	17.20
17 05		29.3	9.51	32.31	1.03	6.20	.3	7.00	1.48	12.00
17 06		18.7	9.96	31.67		6.71		1.70	.71	6.80
17 07		9.1	10.19	30.92	.66	6.63	4.0	6.40	.84	9.70
18 01		76.6	8.40	33.26		3.89		22.20	2.57	31.30
18 02		47.9	9.13	32.37		6.34		9.70	1.40	16.20
18 03		29.0	9.48	32.23		5.84		8.90	1.47	14.60
18 04		15.6	10.38	31.26	1.06	6.76	3.8	1.70	.58	5.60
18 05		7.0	10.49	31.28	.94	6.74	6.2	2.40	.70	6.70
19 01		209.9	6.42	33.97		2.22		34.90	3.34	58.90
19 02		149.5	6.99	33.84		2.56		33.70	3.15	52.30
19 03		124.7	7.36	33.72		2.79		30.10	2.25	45.80
19 04		97.0	7.79	33.53		2.98		29.40	2.85	43.30
19 05		73.2	9.14	32.69		5.46		13.30	1.42	18.40
19 06		48.8	9.58	32.26		6.35		5.00	.86	10.30
19 07		29.8	10.35	31.80		6.30		0.00	.63	7.40
19 08		21.2	10.43	31.71	.82	6.87	6.0	0.00	.48	5.80
19 09		10.7	10.48	31.33	.85	6.13	7.4	.20	.50	5.20
20 01		93.4	7.82	33.50		3.25		27.30	2.64	40.30
20 02		73.2	8.60	33.08		4.28		22.00	2.18	30.20
20 03		48.2	9.35	32.25		5.77		10.20	.98	17.20
20 04		29.8	9.67	32.00		6.42		5.30	0.00	11.20
20 05		17.5	9.74	31.75	1.00	6.73	1.8	6.10	.98	11.60
20 06		11.1	10.22	31.57	.55	6.30	8.1	5.00	.73	11.20
21 01		251.6	6.25	34.01		2.06		34.50	2.74	58.40
21 02		196.7	6.52	33.94		2.29		32.10	2.90	53.20
21 03		147.4	7.05	33.81		2.67		32.00	2.59	51.40

DATA BASE LISTING: CRUISE 81-05, STATION 1 TO STATION 57. PAGE 3  
 \* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SALTY* (ppt)	CHL A (mg/m <sup>3</sup> )	OXY (ml/l)	14C PRD mg/m <sup>3</sup> /h	NO <sub>3</sub> (μM/l)	PO <sub>4</sub> (μM/l)	SiO <sub>4</sub> (μM/l)
21 04		123.6	7.20	33.76		2.64		31.10	2.52	49.90
21 05		96.9	7.53	33.62		2.78		30.20	2.62	45.80
21 06		71.9	8.18	33.27		3.66		23.60	2.13	34.20
21 07		48.2	8.90	32.47		4.54		18.50	1.76	26.90
21 08		29.6	9.08	31.92		5.25		15.50	1.51	24.40
21 09		18.7	9.58	31.55	.80	6.15	1.1	8.80	1.06	14.90
21 10		8.5	10.40	30.15	1.73	6.42	2.5	7.70	.93	11.50
22 01		68.3	7.79	33.58		3.44		28.40	2.34	38.20
22 02		52.1	8.26	33.28		3.48		24.90	2.18	34.80
22 03		32.6	8.61	32.81		4.14		23.40	1.97	33.90
22 04		21.6	10.30	29.63	.57	6.04	2.5	6.00	.75	13.10
22 05		10.9	10.97	29.13	1.40	6.87	9.1	1.60	.56	8.90
23 01		218.3	6.65	33.94		2.42		32.40	2.38	54.20
23 02		146.8	6.93	33.84		2.36		32.40	2.64	52.00
23 03		125.5	7.09	33.79		2.67		31.50	2.51	49.80
23 04		101.7	7.61	33.62		3.03		33.20	2.09	49.40
23 05		76.1	8.58	33.10		4.06		21.70	1.67	28.60
23 06		50.5	9.43	32.13		6.05		7.10	.96	13.70
23 07		34.2	9.67	31.96	.34	6.18	.9	6.00	.79	11.50
23 08		18.5	9.82	31.59		6.69		6.70	.82	12.20
23 09		10.0	9.75	31.12	.55	6.42	1.9	8.60	.97	13.10
24 01		136.6	7.31	33.72		2.64		31.70	2.30	49.40
24 02		100.4	7.58	33.63		2.87		29.00	2.28	43.20
24 03		77.2	8.06	33.43		3.53		25.50	2.04	35.70
24 04		52.9	9.06	32.83		4.34		15.10	1.36	20.00
24 05		32.1	9.38	32.33		6.35		7.50	.87	13.10
24 06		21.6	9.56	32.21	.45	6.49	.5	4.40	.77	9.80
24 07		14.6	10.02	31.89	.76	6.91	2.9	1.00	.51	8.20
25 01		170.0	6.76	33.92		2.16		28.70	2.51	49.50
25 02		128.5	7.08	33.85		2.27		31.60	2.42	50.10
25 03		101.9	7.44	33.73		2.93		29.50	2.32	44.20
25 04		77.1	8.79	33.13		4.39		19.00	1.61	23.70
25 05		52.5	9.28	32.66		5.47		12.70	1.22	17.30
25 06		32.9	9.43	32.41		6.22		8.00	.94	13.10
25 07		22.3	9.64	32.21	.68	6.41	.5	4.80	.78	10.00
25 08		13.0	10.15	31.78	.92	6.93	2.0	.40	.52	6.20
26 01		149.8	7.05	33.85		2.40		30.40	2.52	48.90
26 02		129.8	7.50	33.72		2.78		29.40	2.33	44.00
26 03		103.9	8.37	33.30		3.76		24.70	1.95	34.00
26 04		75.6	8.52	33.04		3.79		24.30	1.96	34.00
26 05		49.3	8.84	32.12		4.79		19.20	1.66	28.40
26 06		28.8	9.22	31.35		5.98		17.00	1.45	25.80
26 07		22.4	9.81	31.15	10.87	7.01	29.3	8.70	.82	11.60
26 08		11.4	10.14	30.89	10.20		33.6	4.20	.60	6.90
27 01		212.0	6.52	33.97		2.07		33.90	2.62	56.30
27 02		154.5	6.73	33.90		2.13		33.60	2.57	54.70
27 03		123.8	7.07	33.80		2.45		32.20	2.46	50.90
27 04		96.1	7.34	33.65		2.57		31.00	2.40	47.60

DATA BASE LISTING: CRUISE 81-05, STATION 1 TO STATION 57. PAGE 4  
 \* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SAL' TY* (ppt)	CHL A (mg/m3)	OXY (ml/l)	14C PRD mg/m3/h	N03 (uM/l)	P04 (uM/l)	Si04 (uM/l)
27 05		73.4	8.05	33.07		3.36		27.10	2.10	39.80
27 06		49.7	8.64	31.94		4.75		23.80	1.96	37.20
27 07		29.5	9.59	31.34		6.22		11.90	1.15	18.90
27 08		21.0	10.18	31.41	1.05		3.4	5.90	.74	11.80
27 09		10.0	10.28	31.33	1.31		4.1	5.00	.76	10.70
28 01		239.5	6.23	34.01		1.96		34.60	2.54	61.00
28 02		200.6	6.55	33.95		2.14		33.60	3.11	57.20
28 03		150.6	6.83	33.87		2.32		30.50	2.94	47.90
28 04		124.6	7.00	33.82		2.36		30.80	2.92	49.40
28 05		99.7	7.18	33.75		2.47		28.60	2.88	45.60
28 06		75.0	7.68	33.62		3.00		26.10	2.62	38.50
28 07		48.7	7.89	33.10		3.69		26.60	2.29	40.30
28 08		28.7	9.60	30.90	6.68	6.67	18.1	11.40	1.20	17.70
28 09		17.4	10.31	29.89		6.66	5.2	6.20	.80	11.10
28 10		9.6	10.51	29.54	7.03			5.20	.76	11.30
29 01		248.5	6.29	33.98		2.86		32.40	2.65	53.60
29 02		200.7	6.76	33.93		3.68		28.30	2.45	43.70
29 03		148.9	6.95	33.70		4.40		22.90	2.22	32.40
29 04		125.7	7.10	33.47		4.69		23.10	2.05	30.30
29 05		100.1	7.79	33.08		5.12		17.60	1.81	21.90
29 06		77.7	8.92	32.60		5.97		9.50	1.30	14.00
29 07		53.3	9.98	32.36	.22	6.76		3.20	.68	9.90
29 08		25.3	10.49	32.33		6.76		2.80	.88	9.90
29 09		16.0	10.49	32.33		6.64	.3	2.80	.73	11.30
29 10		8.2	10.49	32.32	1.83	6.66	.8	2.80	.80	10.20
30 01		11.5	10.25	31.73	.98					
31 01		240.4	6.23	34.03		2.05		33.20	2.84	56.50
31 02		198.6	6.72	33.97		2.21		32.00	2.66	51.70
31 03		150.7	7.32	33.83		3.28		28.90	2.25	40.40
31 04		124.3	7.53	33.71		3.42		27.70	2.17	37.20
31 05		97.1	8.27	33.35		4.17		21.70	1.88	28.00
31 06		74.4	9.21	32.77		4.68		15.80	1.46	24.60
31 07		48.2	9.48	32.38		5.88		8.30	1.12	15.10
31 08		29.9	9.56	32.12		5.65		8.00	1.16	13.80
31 09		15.8	10.12	31.72	.99	6.70	3.8	2.00	.67	10.40
31 10		3.8	10.28	31.70	1.25	6.88	5.8	.50	.54	9.90
32 01		202.7	6.58	33.99		2.29		33.20	2.54	53.80
32 02		149.6	7.01	33.91		2.58		31.50	2.44	47.30
32 03		123.6	7.59	33.73		3.00		28.50	2.01	38.70
32 04		99.1	8.29	33.41		3.59		25.20	1.92	32.60
32 05		73.5	9.10	32.87		4.69		16.80	1.62	23.60
32 06		49.3	9.48	32.39		5.97		7.90	1.06	13.50
32 07		29.7	9.59	32.19		5.97		7.50	1.01	13.50
32 08		15.5	10.22	31.79	1.05	6.66	4.4	.70	.58	11.00
32 09		9.5	10.13	31.46	.97	6.82	8.9	4.40	.73	8.80
33 01		137.5	6.93	33.91		2.51		30.40	2.49	47.40
33 02		129.0	7.06	33.88		2.51		32.50	2.45	49.20
33 03		98.3	7.67	33.65		2.79		28.10	2.31	42.50

DATA BASE LISTING: CRUISE 81-05, STATION 1 TO STATION 57. PAGE 5  
 \* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SALTY* (ppt)	CHL A (mg/m3)	OXY (ml/l)	14C PRD mg/m3/h	NO3 (uM/l)	PO4 (uM/l)	SiO4 (uM/l)
33 04		72.9	8.68	33.19		4.05		20.40	1.62	26.70
33 05		49.9	9.31	32.59		4.97		14.90	1.50	23.40
33 06		29.5	9.62	31.85		5.91		7.20	.95	12.10
33 07		15.4	10.33	31.54	1.59	7.08	8.8	1.90	.61	7.20
33 08		15.0	10.33	31.54	1.59		9.6			
33 09		5.3	10.19	31.19	1.78	7.08	10.7	3.50	.68	7.40
33 10		4.7	10.19	31.18	1.79		10.7			
34 01		138.5	6.79	33.92		2.25		32.00	2.59	53.60
34 02		97.7	7.72	33.60		3.00		29.70	2.42	46.20
34 03		72.3	8.08	33.37		3.54		27.70	2.32	42.40
34 04		47.4	8.51	32.43		4.26		23.70	2.05	34.80
34 05		29.8	9.41	31.96		5.88		9.70	1.02	16.80
34 06		13.9	10.15	31.69	1.01	6.64	4.6	1.60	.59	7.00
34 07		5.5	10.25	30.98	10.95	7.31	60.6	.60	.44	3.10
35 01		120.2	7.04	33.85		2.35		26.70	2.48	44.80
35 02		100.2	7.55	33.62		2.58		29.70	2.29	45.70
35 03		74.8	8.10	33.32		3.11		24.40	2.33	36.30
35 04		51.5	8.40	32.75		4.06		24.80	1.94	35.60
35 05		29.9	9.06	31.72		5.86		11.90	1.56	17.70
35 06		10.3	10.20	31.03	1.26	7.55		1.30	.65	2.90
35 07		11.3	10.12	31.11	1.31		85.8			
35 08		3.1	10.55	30.96	.76	8.57		0.00	.37	1.10
35 09		3.6	10.50	30.97	.75		50.3			
36 01		122.2	7.29	33.78		3.14	1.2	26.40	2.36	42.10
36 02		100.9	7.82	33.56		3.38		20.40	2.17	29.30
36 03		78.0	8.61	33.26		4.12		21.70	1.75	27.50
36 04		53.2	8.92	32.74		5.44		13.80	.50	19.00
36 05		30.4	9.32	32.35		6.22		7.00	.53	12.70
36 06		21.8	9.82	32.03		6.69		2.70	.70	8.70
36 07		9.7	10.15	31.73	4.81	7.02	22.5	.60	.98	4.50
36 08		3.0	10.35	30.87	19.00	7.79	100.0	0.00	1.37	1.30
37 01		103.2	7.45	33.60		2.51		30.60	2.48	50.10
37 02		76.4	8.13	33.05		3.68		26.10	2.13	38.20
37 03		50.6	8.49	32.25		4.40		24.00	2.13	37.60
37 04		31.2	8.58	32.01		4.76		23.70	2.10	37.80
37 05		13.8	10.42	30.81	14.50	8.43	72.0	.90	.49	2.90
37 06		5.4	10.66	30.62	12.30	8.43	61.4	.10	.45	2.70
38 01		97.9	7.52	33.51		2.78		28.90	2.47	45.60
38 02		70.7	8.03	33.00		3.50		26.40	2.22	40.00
38 03		50.3	8.71	32.07		4.81		20.90	1.92	32.40
38 04		28.6	9.27	31.24		6.00		14.60	1.43	23.40
38 05		15.1	10.11	30.64	1.47	6.39	7.0	8.40	.89	15.20
38 06		5.7	10.52	29.99	2.51	6.98	13.3	3.70	.59	6.90
39 01		43.9	8.60	32.08		4.62		23.10	2.30	36.10
39 02		32.2	8.81	31.80		5.11		21.20	2.11	33.60
39 03		19.4	9.38	31.12		5.99		14.10	1.40	21.90
39 04		10.8	9.74	30.79	1.69	7.02	4.7	8.30	1.06	11.60
39 05		6.8	10.22	30.21	2.20	6.76	8.3	5.10	.72	8.40

DATA BASE LISTING: CRUISE 81-05, STATION 1 TO STATION 57. PAGE 6  
 \* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SAL' TY* (ppt)	CHL A (mg/m3)	OXY (ml/l)	14C PRD mg/m3/h	NO3 (uM/l)	PO4 (uM/l)	SiO4 (uM/l)
40 01		144.4	7.36	33.73		2.34		29.00	2.36	48.60
40 02		127.1	7.43	33.67		2.54		31.40	2.79	51.70
40 03		99.4	7.45	33.61		2.59		29.60	2.36	48.10
40 04		75.0	7.86	33.35		3.07		30.80	2.51	45.50
40 05		50.0	8.47	32.28		4.40		25.30	2.29	39.60
40 06		29.5	9.69	31.41		6.37		10.00	1.07	15.50
40 07		9.0	10.03	31.11	14.40	7.74	74.2	3.60	.64	3.60
40 08		4.5	10.19	30.68	7.25	7.76	43.1	3.50	.65	6.40
41 01		183.1	8.60	32.92		3.51		25.00	2.41	43.60
41 02		149.1	8.68	32.86		3.54		25.10	2.32	42.60
41 03		124.7	8.90	32.70		3.77		23.20	2.17	37.60
41 04		99.1	8.95	32.56		4.34		22.40	2.10	35.60
41 05		75.7	9.03	32.44		4.37		22.00	2.01	33.70
41 06		50.7	8.81	31.94		4.74		20.80	1.93	32.60
41 07		29.9	9.34	31.22		5.82		12.60	1.47	18.50
41 08		20.5	9.63	30.89	10.97	6.50	30.9	7.90	1.16	8.80
41 09		10.4	10.19	30.57		7.58		.40	.46	.90
41 10		7.4	10.37	30.57	1.50	8.05	5.1	0.00	.31	.70
42 01		28.9	9.56	31.75	3.42					
42 02		48.0	9.11	32.38				16.00	1.72	23.40
42 03		3.5	10.72	30.93				.10	.36	4.30
43 01		123.3	7.10	33.85						
43 02		48.5	8.47	32.72				23.40	2.00	34.70
43 03		24.9	9.32	31.65	5.94			0.00	.32	.50
43 04		3.2	10.67	30.87						
44 01		49.6	8.53	32.51				21.20	1.89	31.30
44 02		3.9	10.66	30.89	2.76			.70	.44	5.40
45 01		49.6	9.08	32.70				14.20	1.42	20.20
45 02		10.6	10.00	31.86	.88					
45 03		.7	10.53	31.30				0.00	.46	2.90
46 01		140.9	7.14	33.84						
46 02		50.4	9.16	32.30				12.60	1.38	20.00
46 03		14.4	10.17	31.56	1.23					
46 04		3.4	10.70	31.01				0.00	.40	3.40
47 01		53.0	8.47	32.16				24.60	.47	38.80
47 02		14.5	10.54	30.86	1.64		8.9			
47 03		14.2	10.56	30.78	1.64					
47 04		3.1	10.93	29.20	3.27					
47 05		2.6	10.94	29.19	3.49		22.5			
47 06		2.3	10.93	29.20	3.43					
47 07		2.8	10.92	29.22				1.50	2.14	11.00
48 01		252.2	6.47	33.97						
48 02		47.8	8.72	32.39				14.70	1.83	22.40
48 03		24.4	9.37	31.06	7.83					
48 04		3.8	11.94	26.53				.40	.29	17.40
49 01		48.1	9.16	32.65				13.10	1.34	18.10
49 02		16.3	9.36	31.80	.40		1.7			
49 03		16.1	9.35	31.73	.38					

DATA BASE LISTING: CRUISE 81-05, STATION 1 TO STATION 57. PAGE 7  
 \* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SAL*TY* (ppt)	CHL A (mg/m3)	OXY (ml/l)	14C PRD mg/m3/h	NO3 (uM/l)	PO4 (uM/l)	SiO4 (uM/l)
49 04		4.3	10.61	29.78	3.66					
49 05		4.4	10.67	29.71	3.46		19.9			
49 06		4.4	10.79	29.48				1.70	.48	10.10
50 01		49.6	8.98	32.72				13.30	1.56	18.50
50 02		28.4	9.15	31.92	3.09					
50 03		3.4	11.06	30.79				0.00	.29	.40
51 01		162.2	7.28	33.81						
51 02		48.4	8.65	33.08				21.00	1.84	29.40
51 03		15.2	10.10	31.47	1.44		4.5			
51 04		14.5	10.12	31.38						
51 05		14.6	10.14	31.37	1.43					
51 06		3.0	10.49	31.16	1.98		14.8			
51 07		3.0	10.51	31.14	2.07					
51 08		3.2	10.54	31.11	2.00			1.20	.50	6.50
52 01		142.5	7.08	33.85						
52 02		48.6	8.72	32.28				18.50	1.84	28.10
52 03		9.6	10.46	31.01	3.53					
52 04		4.2	10.95	30.88				0.00	.41	4.50
53 01		48.4	8.69	32.61					1.81	29.20
53 02		10.1	10.12	31.34	3.82			19.60		
53 03		5.3	10.77	30.91				0.00	.38	2.90
54 01		50.2	8.64	32.34				22.20	2.00	35.00
54 02		10.1	10.30	30.67	3.65					
54 03		4.0	10.74	30.26				0.00	.26	1.30
55 01		207.3	6.70	33.92		2.34		37.90	2.33	62.00
55 02		141.2	6.79	33.88		2.04		32.40	2.47	51.30
55 03		123.1	6.99	33.80		2.89		36.60	2.45	56.80
55 04		100.3	7.50	33.54						
55 05		73.0	7.90	33.09		3.49		27.30	2.01	41.90
55 06		47.9	8.36	32.12		4.30		25.30	2.17	41.50
55 07		28.5	8.60	31.76		4.79		21.80	1.87	36.50
55 08		18.4	8.77	31.57		5.14		24.20	2.08	39.70
55 09		10.5	9.06	31.27	1.35	5.69	4.7	20.10	1.57	32.30
55 10		2.9	9.47	30.61	2.47	6.47	8.4	16.70	1.44	27.90
56 01		190.9	6.80	33.89		2.30		35.50	2.50	58.40
56 02		149.1	6.79	33.86		2.31		39.10	2.38	64.80
56 03		125.1	6.82	33.84		2.36		34.80	2.42	57.00
56 04		100.0	7.43	33.40		2.98		33.10	2.09	53.30
56 05		74.3	8.19	32.48		3.95		30.50	1.86	48.30
56 06		48.5	8.51	31.89		4.46		26.10	2.11	42.80
56 07		29.3	8.69	31.61		5.50		26.20	2.18	43.40
56 08		18.2	9.02	31.34	1.32	5.50	6.6	22.80	2.02	37.60
56 09		8.6	9.11	31.27	1.32	5.56	6.8	22.90	2.02	37.60
57 01		136.0	6.93	33.81		2.39		31.00	2.51	50.80
57 02		99.0	7.69	33.06		3.24		28.50	2.05	45.90
57 03		75.4	8.27	32.30		4.23		31.80	2.14	51.00
57 04		55.6	8.68	31.81		4.77		23.40	2.14	39.00
57 05		29.4	8.82	31.58		5.05		27.70	1.81	45.70

DATA BASE LISTING: CRUISE 81-05, STATION 1 TO STATION 57. PAGE 8  
\* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SAL'TY* (ppt)	CHL A (mg/m3)	OXY (ml/l)	14C PRD mg/m3/h	N03 (uM/l)	P04 (uM/l)	Si04 (uM/l)
57 06		16.9	9.15	31.36		5.96		19.80	1.99	33.40
57 07		8.3	9.16	31.36	2.89	6.03		19.30	1.64	32.50

DATA BASE LISTING: CRUISE 81-07, STATION 1 TO STATION 45. PAGE 1  
 \* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SALTY* (ppt)	CHL A (mg/m <sup>3</sup> )	OXY (ml/l)	14C PRD mg/m <sup>3</sup> /h	NO <sub>3</sub> (μM/l)	Po <sub>4</sub> (μM/l)	SiO <sub>4</sub> (μM/l)
1 01		35.2	9.39	32.29		3.29		26.40	3.11	50.40
1 02		18.3	10.76	31.71	.74	4.90	1.3	11.40	2.45	21.70
1 03		8.7	13.05	31.50		8.93		0.00	.93	3.60
1 04		3.9	14.24	31.38	5.17	9.91	27.8	0.00	.85	3.10
3 01		36.7	9.67	32.09		3.85		26.20	2.69	45.90
3 02		28.7	10.55	31.84		4.66		23.70	2.54	43.70
3 03		20.3	10.68	31.78		4.97		23.60	2.44	43.90
3 04		12.0	11.25	31.67	.78	5.55	3.4	21.50	2.30	42.80
3 05		4.9	13.64	31.44	14.01	8.97	41.9	.30	.78	4.70
6 01		100.8	7.88	33.16		2.39		30.70	3.28	53.70
6 02		74.6	8.30	32.90		2.80		29.80	2.88	50.80
6 03		48.0	9.33	32.29		3.64		26.50	2.69	45.70
6 04		29.9	9.92	32.01		4.04		24.60	2.46	43.70
6 05		18.5	11.03	31.88		5.51		21.00	2.07	41.00
6 06		7.7	12.23	31.81	7.08	7.15	38.7	14.10	1.60	31.80
6 07		4.2	12.56	31.74	10.04	7.31	41.3	12.70	1.53	29.30
8 01		83.2	7.43	33.48		2.53		31.00	2.54	52.00
8 02		48.3	9.04	32.50		3.47		26.70	2.26	44.10
8 03		29.5	9.99	32.15		4.28		23.60	2.03	40.60
8 04		17.4	10.73	31.91		5.10		21.90	1.89	39.90
8 05		8.3	11.27	31.80	1.20	5.61	5.6	20.90	1.81	39.50
8 06		5.4	11.86	31.80	2.03	6.18	9.7	17.50	1.67	35.30
10 01		106.3	6.84	33.81		2.26		32.70	2.63	55.60
10 02		74.8	7.65	33.15		3.21		28.10	2.33	42.10
10 03		51.3	8.59	32.76		3.34		26.60	2.26	41.50
10 04		29.8	10.00	32.18		4.31		23.80	2.04	40.30
10 05		18.4	11.72	31.83		5.97	3.7	18.10	1.64	36.20
10 06		7.3	12.01	31.70		5.95		19.00	1.70	37.50
12 01		178.6	6.52	33.98		2.03		34.80	2.71	56.70
12 02		152.0	6.66	33.96		2.07		34.60	2.66	54.30
12 03		101.6	7.05	33.70		3.91		27.00	2.08	35.80
12 04		76.1	7.69	33.27		3.07		28.80	2.35	42.80
12 05		50.5	8.66	32.75		3.49		27.00	2.26	41.40
12 06		29.6	10.08	32.19		4.59		23.50	2.01	39.60
12 07		20.7	10.60	32.03		4.87		22.30	1.91	38.30
12 08		10.8	11.73	31.82	.97	5.87	5.4	20.00	1.77	38.50
14 01		249.8	6.21	34.06		1.79		35.60	3.81	60.00
14 02		199.1	6.48	34.01		2.56		32.50	3.43	51.80
14 03		149.8	6.87	33.95		2.61		31.10	3.43	47.20
14 04		125.1	7.12	33.88		2.66		30.30	3.37	45.00
14 05		100.9	7.22	33.53		4.15		25.20	2.92	32.90
14 06		74.8	7.61	33.25		4.50		19.30	2.68	24.10
14 07		50.5	8.85	32.50		5.95		12.30	1.95	17.40
14 08		29.9	9.37	32.43		6.04		10.00	1.83	14.80
14 09		17.9	10.28	32.36	1.26	6.08	1.8	8.40	1.80	12.60
14 10		8.8	13.89	31.63		6.44		2.10	1.22	3.30
15 01		45.3	8.85	32.52		3.09		27.30	3.01	45.70
15 02		31.3	9.51	32.10		3.49		24.90	2.75	43.30

DATA BASE LISTING: CRUISE 81-07, STATION 1 TO STATION 45. PAGE 2  
 \* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SAL*TYP* (ppt)	CHL A (mg/m3)	OXY (ml/l)	14C PRD mg/m3/h	NO3 (uM/l)	PO4 (uM/l)	SiO4 (uM/l)
15 03		20.1	10.75	31.77		4.89		19.40	2.30	35.10
15 04		9.7	11.19	31.57	12.78	6.37	79.2	13.40	1.71	27.20
15 05		4.1	12.23	31.74	8.59	7.15	78.7	11.80	1.54	29.40
18 01		132.1	7.67	33.26		2.09		31.70	3.43	53.70
18 02		101.2	7.90	33.12		2.34		30.50	3.32	50.60
18 03		74.6	8.32	32.88		2.81		28.90	3.11	47.30
18 04		51.3	9.17	32.23		3.45		27.40	2.84	45.70
18 05		30.0	9.81	31.92		3.84		25.60	0.00	44.20
18 06		20.7	10.24	31.80		4.34		22.90	0.00	40.00
18 07		10.2	11.21	31.74	10.32	6.05	47.6	15.10	0.00	29.40
18 08		5.3	12.69	31.47	15.67	8.50	85.8	3.50	0.00	12.40
20 01		45.1	8.64	32.67		3.09		27.70	2.78	45.10
20 02		28.2	9.44	32.12		3.56		26.30	2.46	44.00
20 03		19.4	10.07	31.87		4.02		24.40	2.34	42.00
20 04		11.4	10.40	31.47		4.38		24.50	2.20	43.60
20 05		4.7	11.19	31.10	1.43	5.10	5.1	22.10	2.02	42.90
23 01		118.0	6.79	33.77		1.67		34.20	3.37	59.60
23 02		99.7	6.81	33.75		1.73		34.40	3.32	59.10
23 03		75.0	7.06	33.61		1.98		33.40	3.16	54.30
23 04		48.8	8.02	33.10		2.96		26.90	2.68	40.80
23 05		30.6	8.85	32.79		3.56		26.00	2.49	40.80
23 06		20.5	9.65	32.35		4.20		24.30	2.19	40.80
23 07		11.5	10.45	32.06	1.01	4.86	5.1	23.00	2.08	40.50
26 01		146.8	6.53	33.87		1.27		35.80	3.49	67.40
26 02		123.6	6.56	33.86		1.37		35.90	3.46	64.50
26 03		98.1	6.62	33.79		1.47		35.70	3.33	59.80
26 04		74.3	6.85	33.69		1.82		35.10	3.17	55.00
26 05		47.0	7.25	33.47		2.29		32.90	2.97	49.70
26 06		29.8	8.91	32.66		3.56		26.20	2.42	41.20
26 07		18.2	9.97	32.39		4.28		21.40	2.10	35.30
26 08		7.0	13.05	31.65	.95	6.59	8.0	8.90	1.08	22.00
29 01		145.2	6.81	33.88		2.04				
29 02		120.4	6.94	33.83		2.49				
29 03		100.5	7.05	33.75		2.72				
29 04		74.6	7.44	33.45		3.42				
29 05		48.6	8.15	32.99		3.04				
29 06		29.9	9.26	32.59		3.94			2.01	
29 07		18.8	10.82	32.21	.61	4.92	3.5			
31 01		96.3	6.92	33.77		2.01				
31 02		49.4	7.59	33.43		2.51				
31 03		30.2	8.70	32.92		3.42				
31 04		21.1	9.01	32.50		3.02				
31 05		11.0	9.30	32.09	.23	3.55	.8	27.20		46.40
33 01		136.4	6.63	33.92		1.54		35.20	3.44	65.20
33 02		122.3	6.73	33.90		1.66		34.90	3.32	60.80
33 03		101.1	6.74	33.87		1.84		34.90	3.48	61.60
33 04		77.4	6.89	33.75		1.68		34.40	3.33	56.10
33 05		50.0	7.69	33.30		2.76		30.70	3.02	47.50

DATA BASE LISTING: CRUISE 81-07, STATION 1 TO STATION 45. PAGE 3  
 \* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SAL' TY* (ppt)	CHL A (mg/m <sup>3</sup> )	OXY (ml/l)	14C PRD mg/m <sup>3</sup> /h	NO <sub>3</sub> (μM/l)	PO <sub>4</sub> (μM/l)	SiO <sub>4</sub> (μM/l)
33 06		31.9	8.49	32.84		3.18		28.70	2.84	45.50
33 07		21.5	9.04	32.67		3.58		26.90	2.75	43.60
33 08		8.3	10.36	32.54	.95	5.90	7.4	14.10	1.76	29.30
34 01		132.4	6.60	33.91		1.46		35.70	3.42	67.20
34 02		98.5	6.65	33.87		1.53		35.90	3.43	63.00
34 03		75.7	6.94	33.72		1.94		34.30	3.29	54.70
34 04		49.7	7.53	33.39		2.51		31.80	3.03	48.50
34 05		31.1	9.23	32.60		3.69		25.50	2.54	40.80
34 06		21.9	10.10	32.54		4.29		21.20	2.24	35.30
34 07		9.0	12.30	31.89	1.43	6.17	6.3	14.30	1.61	30.30
35 01		135.6	6.74	33.96		2.21		33.30	3.13	54.30
35 02		97.3	7.06	33.83				30.40	2.69	45.10
35 03		75.5	7.22	33.67		3.28		29.10	2.77	41.40
35 04		49.4	7.91	33.18		2.82		30.10	2.87	47.50
35 05		28.9	8.31	32.84		3.30		27.50	2.65	42.50
35 06		19.0	9.04	32.63		3.63		25.50	2.53	41.00
35 07		3.9	12.79	31.81	13.28	6.86	50.0	10.10	1.45	22.90
36 01		137.7	6.87	33.93		2.55		32.30	2.94	50.90
36 02		122.7	7.08	33.91		2.95		30.40	2.78	45.70
36 03		99.3	7.03	33.76		3.87		27.10	2.60	38.30
36 04		76.1	7.22	33.58		4.17		25.50	2.27	34.10
36 05		49.0	7.88	33.16		2.87		29.80	2.90	47.00
36 06		28.4	9.15	32.59		3.66		29.80	2.88	47.20
36 07		18.9	10.00	31.92		4.09		25.60	2.39	43.90
36 08		11.0	11.24	31.24	.62	4.96	3.1	22.60	2.13	44.10
38 01		236.9	6.67	34.02		2.15				
38 02		197.4	6.78	33.98						
38 03		151.7	7.08	33.91		2.79				
38 04		126.5	7.24	33.82		2.35				
38 05		99.1	7.60	33.39						
38 06		74.7	8.01	32.92		5.03				
38 07		50.4	8.70	32.54		5.99				
38 08		31.0	10.20	32.43	.79		1.1			
38 09		20.9	12.57	32.26		6.54				
38 10		12.3	15.64	32.06		6.07				
40 01		243.4	6.62	34.04		1.60		29.00	3.15	49.70
40 02		199.9	6.85	33.99		1.60		34.60	3.24	60.90
40 03		152.0	6.99	33.93		2.58		32.30	2.97	52.70
40 04		127.8	7.18	33.85		2.61		30.80	2.87	47.80
40 05		103.3	7.50	33.53		3.34		27.70	2.59	39.40
40 06		75.9	8.34	32.67		5.58		13.50	1.63	18.20
40 07		52.2	9.28	32.40		4.52		8.90	1.35	13.70
40 08		31.3	10.72	32.31	.78	6.46	1.0	6.50	1.17	10.20
40 09		20.9	16.14	31.70		5.52		.80	.79	3.70
40 10		11.3	16.54	31.94		5.84		.20	.67	3.50
41 01		153.3	6.70	33.89		1.86		34.60	2.87	58.60
41 02		124.4	6.79	33.86		2.03		34.00	3.19	57.50
41 03		101.8	7.10	33.75		2.67		30.90	2.90	47.40

## DATA BASE LISTING: CRUISE 81-07, STATION 1 TO STATION 45. PAGE 4

\* - Indicates that data is from an electronic sensor.

STN NO.	BOT NO.	DEPTH (dbar)	TEMP * (deg C)	SAL' TY* (ppt)	CHL A (mg/m3)	OXY (ml/l)	14C PRD mg/m3/h	NO3 (uM/l)	PO4 (uM/l)	SiO4 (uM/l)
41 04		76.8	7.53	33.38		4.00		25.20	2.40	34.20
41 05		49.5	8.39	32.87		3.67		26.20	2.48	39.50
41 06		29.3	9.72	32.43		5.13		19.60	2.04	30.20
41 07		16.5	11.36	32.23		5.78		12.60	1.55	20.70
41 08		7.5	13.09	32.06	7.65	6.91	33.4	5.60	1.06	15.10
41 09		5.8	13.11	32.05	7.20	6.97	30.1	6.70	1.00	
43 01		246.7	6.66	34.00		1.93		34.60	2.77	58.90
43 02		199.0	6.70	33.97		1.87		34.20	3.03	58.00
43 03		147.3	6.90	33.89		2.19		32.90	2.90	53.80
43 04		124.0	6.92	33.83		2.14		33.20	2.85	54.30
43 05		97.8	7.05	33.73		2.42		32.20	2.74	50.80
43 06		74.3	7.43	33.50		3.56		26.80	2.28	37.80
43 07		49.0	7.98	33.01		4.29		23.00	1.98	30.40
43 08		33.4	8.80	32.79		3.40		27.40	2.30	42.20
43 09		23.1	9.86	32.44		3.88		24.80	2.12	41.00
45 01		164.3	6.89	33.89		2.05		33.40	2.66	54.60
45 02		126.0	6.89	33.86		2.03		33.70	2.75	54.60
45 03		98.6	6.98	33.75		2.06		33.50	2.72	54.10
45 04		75.1	7.42	33.54		2.70		30.70	2.47	47.20
45 05		48.8	8.05	33.06		2.94		30.00	2.42	47.40
45 06		28.9	8.49	32.77				29.10	2.39	48.10
45 07		17.9	9.17	32.33		3.59		28.30	2.34	48.30
45 08		7.5	9.38	32.17	.37	4.10		27.70	2.23	48.50

ZOOPLANKTON HAUL RESULTS - CRUISE R1-U5 STANDARD LIST - STATIONS 1 TO 33 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	:	1	5	9	13	15	30	33
AMPHIPODS*								
UNIDENTIFIED JUVENILES							218.472	
PARATHEMISTO SP.			4.76190	6.16650	11.4916	11.1012	5.06462	
EUPRIMNO SP.					5.74581	11.1012		
CYPHOCAPIS SP.						16.6519		
CHAETOGNATHS*								
UNIDENTIFIED JUVENILES	656.983	720.078	166.667	311.100	112.330	192.829	75.9693	
SAGITTA ELEGANS	234.637	66.7103	290.476	67.8314	17.2374	55.5062	167.132	
EUKROHNIA HAMATA	5.58659		52.3810	1076.05	126.408	1049.62	50.6462	
CTENOPHORES*								
PLEUROBACHIA SP.	33.5196	90.2551	52.3810			5.55062	131.680	
EGGS LARVA*								
UNIDENTIFIED EGGS.	5010.61	1559.45		1100.74	380.602	1443.16		
COPEPOD NAUPLII			600.000				638.142	
BARNACLE NAUPLII	2147.49							
EUPHAUSID LARVA	4708.38	1559.45	10252.4		1522.06	2169.74		
DECAPOD LARVA	39.1061	27.4689	14.2857				10.1292	
EUPHAUSIDS*								
JUVENILES			431.655	19.0476	12.3330	22.9832	49.9556	60.7754
EUPHAUSIA PACIFICA					5.74581			
THYSANOESSA SPINIFERA						5.55062		
LARVACEANS*								
LARVACEANS	2147.49	259.935	1200.00	369.496		2169.74	638.142	
MEDUSAE*								
PHIALIDIUM SP.	346.369	66.7103	195.238	18.4995			303.877	
AGLANTHA SP.				6.16650	11.4916			
PROTOSCIDIACTYLA SP.	11.1732			6.16650				
OSTRACODS*								
CONCHOECIA SP.						1716.27		
COPEPODS*								
ACARTIA LONGIREMIS LESS 5	1073.74	259.935		369.496				
ACARTIA LONGIREMIS SUM	357.877	774.765					722.691	
ACARTIA LONGIREMIS SUR	715.642	259.935	1200.00					638.142
CALANUS MARSHALLAF SS	1900.00	1469.20	6195.24	859.609	68.9497	305.839	2073.45	

ZOOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 1 TO 33

(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

PAGE 2

STATION I.D.	:	1	5	9	13	15	30	33
CALANUS MARSHALLAE S4		3773.74	1916.15	13866.7	1718.60	344.748	305.839	3987.88
CALANUS MARSHALLAE S5		908.380	1437.02	6785.71	4965.26	735.463	524.312	7019.56
CALANUS MARSHALLAE S6M		210.257	446.959	1475.24	2482.63	45.9664		797.677
CALANUS MARSHALLAE S6F		475.754	510.922	6195.24	668.448	160.883		797.677
CALANUS PACIFICUS <=S5							43.6834	
CALANUS SP. S1/2		5368.16	2079.40	7800.00	369.496	761.319	723.246	1276.28
CALANUS TENUICORNIS <=S4							665.939	
CALANUS TENUICORNIS S5						140.976	570.673	567.995
CALANUS TENUICORNIS S6M						95.4573	570.673	349.523
CALANUS TENUICORNIS S6F			351.288	295.238	95.4573	285.337	436.889	638.142
CENTROPAGES ABDOMINALIS <=S4		1431.84						
CENTROPAGES ABDOMINALIS S5				3000.48				
CENTROPAGES ABDOMINALIS S6M		2863.13		600.000				
CENTROPAGES ABDOMINALIS S6F		3584.36	31.9424					
EUCLANUS BUNGI S1/2		43.2402		4.76190				
EUCLANUS BUNGI S3		5.59659	7.84827	9.52341	107.790		443.883	10.1292
EUCLANUS BUNGI S4		11.1732	43.7148	47.6190	67.8314	51.7123	122.114	5.06462
EUCLANUS BUNGI S5M		5.58659		19.0476	80.1644	74.6955	22.2025	10.1292
EUCLANUS BUNGI S5F				14.2857	80.1644	45.9664	122.114	5.06462
EUCLANUS BUNGI S6M					43.1655	5.74581	44.4050	
EUCLANUS BUNGI S6F			3.92413	9.52381	221.994	149.391	283.082	15.1939
EUCHAETA JAPONICA S1/2						22.9832	131.050	
EUCHAETA JAPONICA S3					12.3330	5.74581	65.8859	
EUCHAETA JAPONICA S4					43.1655	45.9664		
EUCHAETA JAPONICA S5M					30.8325	28.7290		
EUCHAETA JAPONICA S5F					12.3330	11.4916		
EUCHAETA JAPONICA S6M						5.74581		
EUCHAETA JAPONICA S6F						17.2374		
METRIDIA SP. <=S3				1800.48	3695.15	380.602	2169.74	
METRIDIA SP. S4				600.000	369.496		723.246	3829.36
METRIDIA PACIFICA S5M				600.000	381.953	665.939		1276.28
METRIDIA PACIFICA S5F					668.448	665.939		1276.28
METRIDIA PACIFICA S6M				2400.48	2673.79	190.244		
METRIDIA PACIFICA S6F				600.000	3342.24	2758.56	723.246	2553.07

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ZOOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 1 TO 33 PAGE 3  
 (VALUES ARE NUMBER OF ORGANISMS/SW. METER)

STATION I.D.	:	1	5	9	13	15	30	33
NEOCALANUS CRISTATUS S3			4.76190	86.3309	34.4748	61.0568		
NEOCALANUS CRISTATUS S4			4.76190	191.161	28.7290	93.6390	35.4523	
NEOCALANUS CRISTATUS S5				135.663	28.7290	77.7087	15.1939	
NEOCALANUS PLUMCHRUS S2					160.883	131.050		
NEOCALANUS PLUMCHRUS S3		31.9424		95.4573	339.003	87.3668		
NEOCALANUS PLUMCHRUS S4	11.1732	7.84827	28.5714	271.326	591.818	550.788	169.665	
NEOCALANUS PLUMCHRUS S5	27.9330	11.7724	71.4286	1245.63	293.036	177.620	86.0985	
OITHONA HELGOLANOICA	15827.9	20272.1	39004.8	2956.22	52522.4	74494.9	56804.6	
OITHONA SPINIROSTRIS			600.000	1108.74	1141.69		638.142	
PARACALANUS SP. <S4		259.935	1200.00	369.496				
PARACALANUS SP. S5	6083.80	3118.90	5400.00	1847.48	1141.69	3614.56	1914.93	
PARACALANUS SP. S6M	2147.44	519.948	600.000		380.602			
PARACALANUS SP. S6F	3579.33	2859.12	1200.00	738.746	1522.64	1446.49	1914.93	
PSEUDOCALANUS SP. <S3	17536.3	12474.8	19800.0	26972.2	11037.7	26038.0	51061.5	
PSEUDOCALANUS SP. S4	16462.6	8319.16	11400.0	13301.1	10658.5	48456.9	44680.1	
PSEUDOCALANUS SP. S5M	6798.88	3379.07	8400.00	3325.59	4566.77	39054.2	26168.9	
PSEUDOCALANUS SP. S5F	8944.13	5199.48	10200.0	2956.22	7992.42	36883.9	30635.9	
PSEUDOCALANUS SP. S6M	8586.59	3379.07	19004.8	2956.10	3425.07	5062.72	7019.56	
PSEUDOCALANUS SP. S6F	26480.4	19494.0	59409.5	13671.1	7233.97	28208.3	30635.9	
SCOLOCITHRICELLA MINOR S5				739.363	380.602			
SCOLOCITHRICELLA MINOR S6F		259.935				638.142		

ZOOPLANKTON HAUL RESULTS - CPUTSF 81-05 VARIANTS LIST - STATIONS 1 TO 33 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION 1.0.	:	1	5	9	13	15	30	33
AETIOFUS ARMATUS	S6F					5.74581		
BARNACLE CYPRIDS						728.797		
BIVALVE LARVA		715.084						
CALANUS MARSHALLAF/PACIFICUS	S6F		63.8849					
CALANUS MARSHALLAF/PACIFICUS <=S5			31.9424		190.976		159.535	
CANDACIA COLUMBIAE	S6F					5.74581		
CANDACIA COLUMBIAF	S6M					5.74581	5.55062	
CEPHALOPOD			3.92413					
CLAUSOCALANUS SP.	S6F				1847.48	3869.23	7954.04	638.142
CLAUSOCALANUS SP.	S5				2586.84	1141.75		
CLAUSOCALANUS SP. <=S4						380.602		
CLIONE SP.		5.58659			6.16650			5.06402
CORYCAEUS SP.		1431.84	779.725					
ECHINOPLOUTEUS LARVAE			259.935	1200.00	369.496			
EPILABIDOCERA AMPHITRITE	S6F	5.58659						
EPILABIDOCEPA AMPHITRITE	S6M	5.58659		4.76190				
EUCHIRELLA SP.	S6F					22.9832	5.55062	
EUCHIRELLA SP.	S6M						16.6519	
EUCHIRELLA SP.	S5					369.496	17.2374	5.55062
EUCHIRELLA SP. <=S4							5.74581	
FISH EGGS						380.602		10.1292
GAETANUS SP.	S6F						57.4581	
GAETANUS SP.	S5						28.7290	
GAETANUS SP. <=S4							28.7290	43.6834
GAIDIUS VARIARLIS	S6F					11.4916		
GAIDIUS VARIARLIS <=S4							43.6834	
HETERORHABDUS TANNERI	S6F					5.74581		
HETERORHABDUS TANNERI	S6M					5.74581	27.7531	
HETERORHABDUS TANNERI	S5						16.6519	
LUCICUTIA SP.	S5						87.3668	
MICPOCALANUS SP.	S5			1847.48	3044.70			
MICPOCALANUS SP.	S6F			600.000	2216.86	380.602		
ONCAEA SP.					739.363	761.319	723.246	
PERACLIS SP.		1431.84	259.935					

ZOOPLANKTON HAUL RESULTS - CPUTSF 81-05 VARIANTS LIST - STATIONS 1 TO 33 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)  
 STATION 1.U. : 1 5 9 13 15 30 33

PLEUROMAMMA SP.			6.16650	11.4916	27.7531		
POLYCHAETE LARVAE	1073.74	600.000	6.16650	380.602			
RACOVITZANUS ANTARCTICUS	S6F			80.4413	38.8544		
SAGITTA SCRIPPSAE				5.74581	5.55062		
SALP				5.74581			
SCAPHOCALANUS SP.	S6F				28.7290		
SCAPHOCALANUS SP.	S5					43.6834	
SIPHONOPHORE PLANULA			6.16650	17.2374	38.8544		
SIPHONOPHORE PNEUMATOPHORE					5.55062		
SPINOCALANUS BRVICAUDATUS	S5				380.602		
TOMOPTERIS SEPTENTRIONALIS				55.4985		16.6519	
UNIDENTIFIED MEDUSAE		11.1732	9.52381		11.4916		
LIMACINA SP.		1437.43	2087.25	21000.0	2174.31	3863.48	8986.46 1114.22

ZOOPLANKTON HAUL RESULTS - CRUISE 81-US STANDARD LIST - STATIONS 36 TO 45 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	: 36	39	41	42	43	44	45
<b>AMPHIPODS*</b>							
UNIDENTIFIED JUVENILES							
PARATHEMISTO SP.	5.49034		11.1732		3.76464		
EUPRIMNO SP.						10.7014	361.135
CHAFTOGNATHS*							5.28053
UNIDENTIFIED JUVENILES	477.440	1848.30	5068.16	7.52928	719.712	124.101	503.710
SAGITTA ELEGANS	597.467	22.7656	1486.03	286.113	1091.37	329.137	961.056
EUKROHNIA HAMATA	43.9228	5.05902	44.6927	18.8232	82.5899	16.1871	63.3663
CTENOPHORES*							
PLEUROBRACHIA SP.	76.8648	113.828	407.821	30.1171	88.4892	32.3741	10.5611
EGGS LARVA*							
UNIDENTIFIED EGGS.	9185.35		19005.6		719.712	1482.73	3856.37
COPEPOD NAUPLII	2041.31	3065.77	4224.02	11.2939	1440.01		350.574
BARNACLE NAUPLII	3061.42	681.703	703.911	3.76464			
EUPHAUSID LARVA	6478.61	1022.43	15486.0	1475.10	10078.3	2964.93	1051.88
DECAPOD LARVA	664.112	48.0607	770.950	30.1171	11.7986	10.7914	26.4026
EUPHAUSIODS*							
JUVENILES	258.046	20.2361	223.464	45.1757	218.273	97.1223	873.399
EUPHAUSIA PACIFICA	16.4710		16.7598				15.8416
THYSANOESSA SPINIFERA				7.52928			15.8416
LARVACEANS*							
LARVACEANS	6462.14	1703.88	703.911	2969.02	11515.4	2981.12	4081.32
COPPOPODS*							
ACARTIA LONGIREMIS <=S3/4	1020.65	681.703	1407.82				
ACARTIA LONGIPERMIS <=S4/5	3061.42	2.52951	4223.46	491.926	1440.01		
ACARTIA LONGIREMIS S6M	340.182	1022.43	6335.20	491.662		741.367	
ACARTIA LONGIREMIS S6F	2381.16		4928.49	491.662			350.574
CALANUS MARSHALLAE S3	1003.64	1926.22	4500.00	2249.37	3890.58	3310.79	1069.31
CALANUS MARSHALLAE S4	2341.63	2219.39	4500.00	5646.96	5305.81	4294.96	1604.22
CALANUS MARSHALLAE S5	6857.44	1884.23	14882.7	2456.43	13792.5	1879.32	12477.9
CALANUS MARSHALLAE S6M	6187.62	83.7521	4153.63	245.831	3537.21	805.576	2851.49
CALANUS MARSHALLAE S6F	7022.15	293.170	7268.16	1105.30	6719.28	536.870	7487.74
CALANUS PACIFICUS <=S5							178.218
CALANUS SP. S1/2	1020.65	2380.83	9854.75	7999.86	2159.73	2586.69	

ZOOPLANKTON HAUL RESULTS - CRUISE 81-US STANDARD LIST - STATIONS 36 TO 45 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.		36	39	41	42	43	44	45
CALANUS TENUICORNIS	S5					5.89928		
CALANUS TENUICORNIS	S6M	5.49034	41.8634			719.712		
CALANUS TENUICORNIS	S6F	2392.14			7.52928	11.7986	364.209	717.096
CENTROPAGES ABDOMINALIS	<S4	1003.64		2816.20		7197.12		350.574
CENTROPAGES ABDOMINALIS	S5	340.182				2879.44		701.254
CENTROPAGES ABDOMINALIS	S6M	680.363	340.725	2112.29	7.52928	1451.81		350.574
CENTROPAGES ABDOMINALIS	S6F	1722.87		2112.29				
EUCALANUS BUNGI	S3		5.05902	5.58659	15.0586	11.7986	5.39568	
EUCALANUS BUNGI	S4	5.49034	2.52951	22.3464	45.1757	17.6978	16.1871	5.28053
EUCALANUS BUNGI	S5M	5.49034	10.1180	83.7989	15.0586	23.5971	5.39568	5.28053
EUCALANUS BUNGI	S5F		5.05902	50.2793	26.3525	29.4964		5.28053
EUCALANUS BUNGI	S6M		2.52951		3.76464	5.89928		
EUCALANUS BUNGI	S6F		32.9421	61.4525	15.0586	17.6978		26.4026
EUCHAFTA JAPONICA	S5M		2.52951					
EUCHAFTA JAPONICA	S5F		2.52951					
METRIDIA SP. <S3		4082.07	340.801	4928.49				1402.51
METRIDIA SP.	S4	3741.67	681.577	1407.82		2879.44	370.629	701.254
METRIDIA PACIFICA	S5M	2381.16	681.703	703.911	249.934	2885.34	1128.24	701.254
METRIDIA PACIFICA	S5F	1700.91	340.725	1407.82	764.975	719.712	1117.45	1402.51
METRIDIA PACIFICA	S6M	3741.67		2112.29	249.934	5.89928	746.763	1753.14
METRIDIA PACIFICA	S6F	6903.63	1363.15		791.327	2501.88	833.094	1051.88
NEOCALANUS CRISTATUS	S3	10.9807			18.8232		5.39568	
NEOCALANUS CRISTATUS	S4	5.49034	2.52951	5.58659	20.3525	11.7986	48.5612	95.0495
NEOCALANUS CRISTATUS	S5	27.4517	5.05902		3.76464	5.89928	5.39568	31.6832
NEOCALANUS PLUMCHRUS	S4	345.672	7.58853	710.056	514.250	11.7986	26.9784	350.574
NEOCALANUS PLUMCHRUS	S5	247.066	5.05902	229.050	67.7635	224.173	191.978	934.653
OITHONA HELGOLANOICA		48304.1	2726.31	28860.3	32451.2	23036.7	21495.9	17177.6
OITHONA SPINIROSTRIS		340.182		1407.82			370.629	
PARACALANUS SP. <S4				703.911	491.662		370.629	
PARACALANUS SP.	S5	340.182	2726.31	7743.02	491.662	1440.01	1112.05	2454.39
PARACALANUS SP.	S6M	680.254	340.725					
PARACALANUS SP.	S6F	1700.91	1703.95	7743.02	1474.99	3599.15	1852.88	2103.76
PSEUDOCALANUS SP. <S3		12924.3	25559.2	33793.3	22124.8	42468.9	26314.7	19981.5
PSEUDOCALANUS SP.	S4	12583.9	11555.2	18307.3	21142.2	41755.1	30021.6	22790.8

ZOOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 36 TO 45 PAGE 3  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.		36	39	41	42	43	44	45
PSEUDOCALANUS SP.	S5M	3741.67	7838.95	19709.5	10815.8	26635.3	11859.7	12271.9
PSEUDOCALANUS SP.	S5F	4422.47	8177.91	17603.4	14749.9	25915.5	17050.4	13671.3
PSEUDOCALANUS SP.	S6M	14295.9	11246.0	38720.7	15732.4	42474.8	21868.7	36810.6
PSEUDOCALANUS SP.	S6F	14966.7	14994.7	27452.5	75228.8	83504.3	42992.8	49431.0
SCOLECITHRICELLA MINOR	< S4	340.182				719.712		
SCOLECITHRICELLA MINOR	S5	1020.65					350.574	
SCOLECITHRICELLA MINOR	S6F		340.725	1407.82			350.574	

ZOOPLANKTON HAUL RESULTS - CRUISE 81-05 VARIANTS LIST - STATIONS 36 TO 45 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/SW. METER)

STATION 1-0.	:	36	39	41	42	43	44	45	
BARNACLE CYPRIDS		680.254							
BIVALVE LARVA		680.254		2112.12		719.712	741.367		
BRACHYDITUS SP. S6F				5.58659					
BRACHYDITUS SP. S5									5.28053
CALANUS MARSHALLAE/PACIFICUS LESS			83.7521						
CLAUSOCALANUS SP. S6F		2721.56		1407.82	1966.65	1440.01	1852.88	1402.51	
CLAUSOCALANUS SP. S5							370.629		
CORYCAEUS SP.		340.182	681.577	1407.82			1440.01	370.629	
CYMBULIDAE						3.76464			
ECHINOPLOTEUS LARVAE			340.725	2816.20					
EPILABIDOCERA AMPHITRITE S6M					7.52928	5.89928			
EUCHIPELLA SP. S6F		10.9807							5.28053
EUCHIPELLA SP. S5		5.49034							
FISH LARVAE		5.49034	10.1180			3.76464	5.89928		
GAEΤΑΝΟΣ SP. S6F									5.28053
GAIODIUS VARTARLIS S6F									5.28053
MICROCALANUS SP. S5		1020.65							2454.30
MICROCALANUS SP. S6F		680.254		2816.20					1753.14
MYSTID					5.58659				
ONCAEA SP.					703.911				1753.14
PERACLIS SP.						719.712			
POLYCHAETE LARVAE		1706.40	2.52951	704.497					350.574
RACOVITZANUS ANTARCTICUS S6F					5.58659				
SAGITTA SCRIPPSAE		5.49034		11.1732					
SCAPHOCALANUS SP. S5									350.574
SIPHONOPHORE PLANULA						5.89928			
SIPHONOPHORE PNEUMATOPHORE							5.39568		
TOMOPTERIS SEPTENTRIONALIS		5.49034							
UNIDENTIFIED AMPHIPOD					5.58659				
UNIDENTIFIED EUPHASIID						15.0586			
UNIDENTIFIED MEDUSAE		5.49034	12.6476	727.374		719.712	370.629	5.28053	
LIMACINA SP.		7494.32	681.703	15793.3	2004.29	14518.1	8595.32	6040.92	

ZOOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 46 TO 52 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/SW. METER)

STATION 1.D.	: 46	47	48	49	50	51	52
<b>AMPHIPODS*</b>							
UNIDENTIFIED JUVENILES				342.687			
PARATHEMISTO SP.	10.2257	2.85714			5.24476	5.65262	17.9856
LUPPIMNO SP.	5.11283						
CHAFTOGNATHS*							
UNIDENTIFIED JUVENILES	14.57.84	2608.86	1809.31	990.662	141.608	1894.76	509.592
SAGITTA ELEGANS	991.064	817.143	781.801	685.802	241.259	819.630	1235.01
EUKROHNIA HAMATA	56.2412	17.1429	470.256	80.3674	20.9790	22.6105	29.9760
CTENOPHORES*							
PLEUROBRACHIA SP.	5.11283	68.5714	105.808	10.7157	68.1818		17.9856
EGGS LARVA*							
UNIDENTIFIED EGGS.	7602.79		11274.4	996.020	54340.9	9598.15	5468.23
COPEPOD NAUPLII	2534.94		1410.77	331.971	1927.97		2343.53
BARNACLE NAUPLII							1562.35
EUPHAUSID LARVA	1267.47	4542.86	11274.4	2987.52	7033.22	2550.46	4687.05
DECAPOD LARVA	20.4513	60.0000	2895.02	364.118	10.4895	5.65262	23.9806
EUPHAUSIUS*							
JUVENILES	3455.25	1645.71	1433.11	1580.02	157.343		929.257
EUPHAUSIA PACIFICA				10.7157	5.24476	39.5683	5.99520
THYSANOESSA SPINIFERA		8.57143			10.4895	5.65262	17.9856
LARVACEANS*							
LARVACEANS	4262.57	4665.71	28186.0	2516.57	2583.04	749.538	2463.43
COPEPODS*							
ACARTIA CLAUSII <=S5			1409.59				
ACARTIA LONGIPEMIS <=S3/4	1267.47	757.143	2818.60	331.971	639.336		
ACARTIA LONGIREMIS <=S4/5	1267.47	757.143	9863.63				781.175
ACARTIA LONGIPEMIS S6M		757.143			639.336		
ACARTIA LONGIREMIS S6F			1409.59	331.971		2214.70	
CALANUS MARSHALLAE S3	4362.27	1281.14	6448.39	1687.72	4153.85	2214.70	6145.08
CALANUS MARSHALLAE S4	13707.5	2745.43	10028.2	3206.12	4473.25	6641.83	3840.53
CALANUS MARSHALLAE S5	19316.3	7137.14	40118.7	7763.49	7027.97	42083.8	16516.8
CALANUS MARSHALLAE S6M	11217.6	1830.29	11462.5	3037.35	3514.51	11814.0	8830.94
CALANUS MARSHALLAE S6F	10593.8	4025.71	19048.2	5231.38	3035.66	16240.0	16516.8
CALANUS PACIFICUS <=S5				167.700			

ZOOPLANKTON HAUL RESULTS - CRUISE 91-65 STANDARD LIST - STATIONS 46 TO 52 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/SW. METER)

STATION I.D.		: .	46	47	48	49	50	51	52
CALANUS SP. S1/2			1869.25	366.000	9863.63	3651.36	10227.3	5168.19	3124.70
CALANUS TENUICORNIS	S5			366.000		168.772			
CALANUS TENUICORNIS	S6M					337.543			
CALANUS TENUICORNIS	S6F	623.255				168.772		738.232	384.053
CENTROPAGES ARUGMINALIS <=S4	1267.47		10600.0	38055.5	996.020	5753.50	1476.46	781.175	
CENTROPAGES ARUGMINALIS	S5		6814.29	31007.5	331.971	3196.15			
CENTROPAGES ARUGMINALIS	S6M		757.143	12685.2		639.336			
CENTROPAGES ARUGMINALIS	S6F		14.2857	5661.30	331.971	639.336	5.65262		
EUCALANUS BUNGI S3				17.6346	5.35783	36.7133		5.99520	
EUCALANUS BUNGI S4		5.11283	8.57143	47.0256	10.7157	20.9790	22.6105	11.9904	
EUCALANUS BUNGI S5M		25.5642	14.2857	82.2948	26.7891	15.7343	11.3052	11.9904	
EUCALANUS BUNGI S5F		25.5642	25.7143	99.9295	21.4313	20.9790	11.3052	35.9712	
EUCALANUS BUNGI S6M				17.6346	10.7157	5.24476		11.9904	
EUCALANUS BUNGI S6F		20.4513	14.2857	205.737	75.0096	47.2028	5.65262	23.9808	
EUCHAETA JAPONICA S3			2.85714						
EUCHAETA JAPONICA S4			2.85714	1411.36					
EUCHAETA JAPONICA S5M					5.87820				
EUCHAETA JAPONICA S5F					11.7564			5.99520	
EUCHAETA JAPONICA S6F					5.87820				
METRIDIA SP. <=S3	1267.47			1409.59	5311.21		2214.70	781.175	
METRIDIA SP. S4	1267.47			2818.60	996.020		3691.73	781.175	
METRIDIA PACIFICA S5M	1267.47					1278.67		781.175	
METRIDIA PACIFICA S5F						635.140		1562.35	
METRIDIA PACIFICA S6M	5069.89	757.143	4228.19	1992.64	639.336	758.232	4687.05		
METRIDIA PACIFICA S6F	3802.42	757.143	11274.4	3651.36	639.336	13289.3		7811.75	
NEOCALANUS CRISTATUS S3			2.85714				5.65262		
NEOCALANUS CRISTATUS S4	51.1283	11.4286		26.7891	84.9650	22.6105	17.9850		
NEOCALANUS CRISTATUS S5	5.11283	5.71429	188.103	64.2939	10.4895	175.231	23.9808		
NEOCALANUS PLUMCHRUS S4	1267.47	5.71429		5.35783	79.7727				
NEOCALANUS PLUMCHRUS S5	495.945	128.571	317.423	415.232	1762.24	559.609	197.842		
OITHONA HELGOLANOICA	41028.1	24231.4	16911.6	15034.2	17260.0	56107.9	21091.1		
OITHONA SPINIROSTRIS	1267.47	757.143	1409.59	1327.67		738.232	1562.35		
PARACALANUS SP. <=S4			757.143		1659.85		1476.46	1562.35	
PARACALANUS SP. S5			757.143	5637.78	1992.04	1278.67	2214.70	3124.70	

ZOOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 46 TO 52 PAGE 3  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.		46	47	48	49	50	51	52
PARACALANUS SP.	S6M	1267.47	1514.57	4228.19	1659.85	639.336	2214.79	
PARACALANUS SP.	S6F	1267.47	4542.86	5637.78	6970.53	2556.82	2952.93	1562.35
PSEUDOCALANUS SP.	<S3	48162.9	40891.4	38049.6	7967.09	30047.2	17721.0	31247.0
PSEUDOCALANUS SP.	S4	43896.1	23474.3	57788.6	10292.4	50501.7	14029.8	42182.3
PSEUDOCALANUS SP.	S5M	58306.0	9842.86	36644.7	6306.16	30681.8	8857.66	27883.7
PSEUDOCALANUS SP.	S5F	32957.3	12117.1	26781.1	6970.53	38994.8	12548.8	22655.9
PSEUDOCALANUS SP.	SGM	19014.6	24231.4	35234.0	22572.5	26208.0	25838.1	21091.1
PSEUDOCALANUS SP.	S6F	65909.6	49220.0	66241.5	40167.6	53695.8	36911.6	74208.6
SCOLOCITHRICELLA MINOR	<S4	1267.47			331.971			781.175
SCOLOCITHRICELLA MINOR	S5				331.971	639.336		781.175
SCOLOCITHRICELLA MINOR	S6F	1267.47		2818.60		1917.48	1476.46	

ZOOPLANKTON HAUL RESULTS - CRUISE 81-US VARIANTS LIST - STATIONS 46 TO 52 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.		: 46	47	48	49	50	51	52
AEGISTHUS SP.								
AETIOFUS ARMATUS	S6F	2.85714	11.7564	5.35783				
BARNACLE CYPRIDS				603.835				
BIJALVE LARVA		757.143		663.835	1917.48	738.232	1562.35	
CALANUS MARSHALLAE/PACIFICUS	S6F			168.772				
CALANUS MARSHALLAE/PACIFICUS	<=55				639.336			
CANDACIA COLUMBIAE	S6F		5.71429					
CLAUSOCALANUS SP.	S6F	3802.42		331.971	639.336	2214.70	3905.88	
CLAUSOCALANUS SP.	S5	3802.42					2343.53	
CORYCAEUS SP.			2271.43	1409.59	331.971		1476.52	781.175
EPILARIDOCERA AMPHITRITE	S6F		2.95714	5.87820				
EPILARIDOCERA AMPHITRITE	S6M					5.65262		
EUCHIRELLA SP.	S6F				10.7157	10.4895	5.65262	
EUCHIRELLA SP.	S5				5.35783	5.24476		
FISH LARVAE		5.11283	8.57143	5.87820	5.35783	5.24476	5.65262	11.9904
GAETANUS SP.	S6F			5.87820				
GAETANUS SP.	<=54			1409.59				
GAIIDIUS VARIABILIS	S6F			5.87820				
HETERORHAPDUS SP.	S6M			5.87820				
MICROCALANUS SP.	S5			1409.59				
MICROCALANUS SP.	S6F			1409.59	603.835	639.336		781.175
MICROCALANUS SP.	S6M	1267.47						
MYSTID				23.5128				
ONCAEA SP.		2534.94		2818.60	331.971			1562.35
PERACLIS SP.			757.143			738.232		
POLYCHAETE LARVAE			760.000	1411.36			781.175	
SAGITTA SCRIPPSAE		5.11283		23.5128		39.5683	11.9904	
SIPHONOPHORE PLANULA		5.11283	5.71429			738.232		
SIPHONOPHORE PNEUMATOPHORE						5.65262	781.175	
SPINOCALANUS BREVICAUDATUS	S5			1409.59				781.175
TOMOPTERIS SEPTENTRIONALIS		5.11283		5.35783	5.24476		5.99520	
UNIDENTIFIED COPEPODITES				2818.60				
UNIDENTIFIED MEDUSAE		10.2257	2.85714		5.24476		5.99520	
LIMACINA SP.		2627.6	25785.7	1409.59	5027.78	9613.64	7399.28	8591.13

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ZOOPLANKTON HAUL RESULTS - CRUISE 81-US STANDARD LIST - STATIONS 53 TO 57  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

PAGE 1

STATION I.D.	:	53	54	55	56	57
AMPHIPODS*						
PARATHEMISTO SP.		5.42547		11.7564		
CYPHOCARIS SP.						11.1511
CHAETOGNATHS*						
UNIDENTIFIED JUVENILES		1960.47	460.432	1939.81	1634.69	345.683
SAGITTA ELEGANS		178.509	379.256	2192.57	710.248	457.194
EUKROHNIA HAMATA		5.42547	40.2978	1134.49	570.435	295.504
CTENOPHORES*						
PLEUROBRACHIA SP.		296.168	218.705	35.2692	61.5175	39.0288
EGGS LARVA*						
UNIDENTIFIED EGGS.		4241.63	9306.47	15559.6	17554.9	3054.84
COPEPOD NAUPLII		1413.88	12402.9	2963.20	4298.96	2290.99
BARNACLE NAUPLII				740.654	1074.88	2672.91
EUPHAUSID LARVA		12606.8	6998.56	2222.55	20423.8	13749.3
DECAPOD LARVA		21.7019	287.770	2069.13	744.362	510.106
EUPHAUSIDS*						
JUVENILES		37.0783	23.0216	11.7564		
EUPHAUSIA PACIFICA				70.5384		
THYSANOPSSA SPINIFERA		5.42547		11.7564	11.1850	5.57554
LARVACEANS*						
LARVACEANS		12028.3	3118.85	2222.55	10748.8	3054.84
MEDUSAE*						
PHIALIDIUM SP.		130.211	63.3094	52.9038	1281.80	111.511
AGLANTHA SP.				141.077		11.1511
PROBOSCIDIACTyla SP.		5.42547				
OSTRACODS*						
CONCHOECIA SP.				740.654	1791.28	
COPPOPODS*						
ACARTIA CLAUSII S6F			775.252		358.479	
ACARTIA LONGIREMIS <=S3/4					716.400	1689.39
ACARTIA LONGIPERMIS <=S4/5			2326.33	740.654	3941.04	2440.41
ACARTIA LONGIPERMIS S6M		2827.76	2326.33	1481.31	1074.88	3379.33
ACARTIA LONGIPERMIS S6F			775.252	3703.86	1791.28	2440.41
CALANUS MARSHALLAF S3		4400.60	4685.47	2549.38	352.272	738.201

ZOOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 53 TO 57  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION 1.D.	: 53	54	55	56	57
CALANUS MARSHALLAE S4	2065.48	4685.47	2913.83	864.042	461.487
CALANUS MARSHALLAE S5	1257.62	4123.17	15659.5	4051.21	2768.81
CALANUS MARSHALLAE S6M	359.275	1499.28	10198.7	8278.58	4190.02
CALANUS MARSHALLAE S6F	269.429	3936.12	24406.3	9687.89	3784.12
CALANUS SP. S1/2	6358.65	9306.47	5185.75	3224.64	1527.14
CALANUS TENUICORNIS S6M	89.7900				92.2752
CENTROPAGES ABDOMINALIS <=S4	4048.63	3101.58	740.654	1074.88	2290.99
CENTROPAGES ABDOMINALIS S5	706.939				1145.77
CENTROPAGES ABDOMINALIS S6M		775.252	740.654	358.479	2302.14
CENTROPAGES ABDOMINALIS S6F	16.3600	775.252		5.59250	1240.56
EUCALANUS BUNGI S3	5.42547	5.75540	5.87820	5.59250	5.57554
EUCALANUS BUNGI S4	5.42547	11.5108	52.9038	27.9625	16.7266
EUCALANUS BUNGI S5M			76.4166	33.5550	39.0288
EUCALANUS BUNGI S5F		5.75540	64.6602	100.665	33.4532
EUCALANUS BUNGI S6M			11.7564	27.9625	5.57554
EUCALANUS BUNGI S6F			123.442	89.4800	39.0288
EUCHAETA JAPONICA S4				16.7775	
EUCHAETA JAPONICA S5M			5.87820	22.3700	11.1511
EUCHAETA JAPONICA S5F			11.7564	50.3325	11.1511
EUCHAETA JAPONICA S6M			11.7564		
METRIDIA SP. <=S3		775.252		358.479	1527.70
METRIDIA SP. S4	1413.98		740.654	1791.28	
METRIDIA PACIFICA S5M		775.252	728.897		
METRIDIA PACIFICA S5F		775.252	364.213	1074.88	
METRIDIA PACIFICA S6M		775.252	3642.13	4607.10	2291.55
METRIDIA PACIFICA S6F	706.939		25493.8	1433.36	381.869
NEOCALANUS CRISTATUS S4		11.5108	5.87820		
NEOCALANUS CRISTATUS S5			235.128	50.3325	5.57554
NEOCALANUS PLUMCHRUS S4		5.75540		716.400	797.302
NEOCALANUS PLUMCHRUS S5	21.7019	17.2662	1922.17	923.322	94.7842
NEOCALANUS PLUMCHRUS S6F					5.57554
OITHONA HELGOLANOICA	27572.2	17059.0	19262.9	8595.68	8402.34
OITHONA SPINIROSTRIS		775.252	2222.55	1791.28	763.849
PAPACALANUS SP. <=S4		1551.08			

ZOOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 53 TO 57  
 (VALUES ARE NUMBER OF ORGANISMS/50. METER)

PAGE 3

STATION I.D.		53	54	55	56	57
PARACALANUS SP.	S5	1413.88	6975.54	1481.31	716.400	
PARACALANUS SP.	S6M	706.939		2222.55	716.400	
PARACALANUS SP.	S6F	3534.69	2326.33	740.654	716.400	
PSEUDOCALANUS SP.	<=S3	43832.4	28690.6	69633.2	45142.7	63003.6
PSEUDOCALANUS SP.	S4	36052.3	64356.8	41482.5	13612.2	9930.04
PSEUDOCALANUS SP.	S5M	18391.5	40322.3	15553.7	4298.96	3818.69
PSEUDOCALANUS SP.	S5F	14138.8	36443.2	14813.1	3224.64	2290.99
PSEUDOCALANUS SP.	S6M	25450.9	27136.7	8887.84	6090.24	3818.69
PSEUDOCALANUS SP.	S6F	40295.0	71337.0	20003.5	9317.11	5345.83
SCOLECITHRICELLA MINOR	<=S4		775.252		358.256	
SCOLECITHRICELLA MINOP	S5				358.256	
SCOLECITHRICELLA MINOR	S6M				716.511	
SCOLECITHRICELLA MINOR	S6F	706.939		740.654	716.400	

ZOOPLANKTON HAUL RESULTS - CRUISE 81-05 VARIANTS LIST - STATIONS 53 TO 57  
 (VALUES ARE NUMBER OF ORGANISMS/SU. METER)

PAGE 1

STATION 1.D.		53	54	55	56	57
BARNACLE CYPRIDS				740.654		
BIVALVE LARVA		786.939		740.654	716.400	
CALANUS MARSHALLAE/PACIFICUS <ESS		89.7915				92.2752
CANDACIA COLUMBIAE S6M					11.1850	
CFPHALOPOD					5.59250	
CLAUSOCALANUS SP. S6F		1413.88		1481.31		
CLAUSOCALANUS SP. S5			775.252			
CORYCAEUS SP.		2120.82	1551.08			
CRYPTONTSCID					5.59250	763.849
CUMACEA				5.87820		
ECHINOPLUTEUS LARVAE			775.252		358.256	
EPILARINOCERA AMPHITRITE <SS4						5.57554
EPILARINOCERA AMPHITRITE S6F				5.87820		11.1511
EPILARINOCERA AMPHITRITE S6M			5.75540		5.59250	16.7266
EUCHIRELLA SP. S6F				5.87820		
EUCHIRELLA SP. S5					5.59250	
FISH LARVAE		5.42547	5.75540	17.6346	33.5550	
GAETANUS SP. <SS4					5.59250	
GAIIDIUS VARIARLIS S6F					5.59250	
GAIIDIUS VARIARLIS S5					5.59250	
HETERORHARDUS SP. S6F				5.87820	5.59250	
HETERORHARDUS SP. S6M					5.59250	
HETERORHARDUS SP. S5					5.59250	
MICROCALANUS SP. S5				1481.31	2866.16	2672.91
MICROCALANUS SP. <SS4				740.654	358.256	
MICROCALANUS SP. S6F				2222.55	2507.66	1527.14
MICROCALANUS SP. S6M						1145.77
NATANTIA					33.5550	
ONCAEA SP.				4443.92	4297.28	3054.84
PLEUROMAMMA SP.				17.6346	22.3700	5.57554
POLYCHAETE LARVAE					7164.00	381.869
RACOVITZANUS ANTARCTICUS S6F					11.1850	
SABITTA SCRIPPSAE			5.75540	5.87820	11.1850	
SCAPHOCALANUS SP. S6F					5.59250	

ZOOPLANKTON HAUL RESULTS - CRUISE 81-05 VARIANTS LIST - STATIONS 53 TO 57  
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

PAGE 2

STATION 1.D.	:	53	54	55	56	57
SIPHONOPHORE PLANULA		16.8569		358.256		
SPINUCALANUS PRVICAUDATUS	55			358.256		
TOMOPTERIS SEPTENTRIONALIS			47.0256	55.9250	5.57554	
UNIDENTIFIED COPEPODITES				740.654		
UNIDENTIFIED MEDUSAE		5.75540	11.7564	363.848	11.1511	
LIMACINA SP.		13400.9	6204.32	2237.83	716.400	

ZOOPLANKTON HAUL RESULTS - CRUISE 81-87 STANDARD LIST - STATIONS 2 TO 14 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/SU. METER)

STATION 1.U.	:	2	4	6	8	10	12	14
AMPHIPODS*								
UNIDENTIFIED JUVENILES		234.245		17.6349				235.751
PARATHEMISTO SP.		7.19424	16.7598	5.97828	5.58524	27.9287	19.5861	
EUPRIMNO SP.							5.58575	6.52870
CYPHOCARIS SP.								13.0574
CHAETOGNATHS*								
UNIDENTIFIED JUVENILES		176.029	615.540	800.559	549.620	195.483	320.957	1134.69
SAGITTA ELEGANS		99.8618	115.108	351.955	875.864	541.768	351.902	39.1722
EUKROHNIA HAMATA				11.1732			633.982	537.769
CTENOPHORES*								
PLEUROBRACHIA SP.		232.526	93.5252	117.318	11.7566	22.3409	22.3430	
EGGS LAPVA*								
UNIDENTIFIED EGGS.		7343.24	3982.73	26558.7	4258.23	1810.17	2211.96	432.331
COPPOPOD NAUPLII		1458.24	1874.10	2183.24	3702.73	164.541		
MARINACLE NAUPLII		552.003	2343.17	1637.43	1111.00	329.082		
EUPHAUSTID LARVA		7920.71	9474.82	2569.27	4696.02	2468.12	1632.16	1297.25
DECAPOD LARVA		5.58624	43.1655		17.0349	16.7557	16.7572	6.52870
EUPHAUSIODS*								
JUVENILES		11.1765	21.5827	11.1732	123.444	770.762	83.7862	13.0574
EUPHAUSIA PACIFICA						5.58524	16.7572	6.52870
THYSANOFSSA SPINIFERA					11.7566	33.5114	16.7572	
LARVACEANS*								
LARVACEANS		28154.1	26381.3	15826.8	11480.3	10528.2	9356.13	6593.99
MEDUSAE*								
PHIALIDIUM SP.		27.0412	35.9712	45.4749	5.97828	5.58524	61.4432	6.52870
AGLANTHA SP.				5.58659			5.58575	285.239
PROGROSCIDACTYLA SP.		16.7647		45.4749				6.52870
OSTRACODS*								
CONCHOECIA SP.							5.58575	216.165
COPEPODS*								
ACARTIA LONGIREMIS CES3/4		1402.24	1874.10	1273.74	4443.40	2142.50	680.344	216.165
ACARTIA LONGIREMIS CES4/5		17735.0	16870.5	11826.8	9628.03	10036.7	5274.62	108.050
ACARTIA LONGIREMIS S6M		4920.26	9674.32	6910.61	6665.97	11187.2	7317.33	648.431
ACARTIA LONGIREMIS S6F		10913.8	8201.44	27290.5	7776.97	16292.1	18204.0	2809.95

ZOOPLANKTON HAUL RESULTS - CRUISE 81-07 STANDARD LIST - STATIONS 2 TO 14 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/SU. METER)

STATION I.D.	:	2	4	6	8	10	12	14
CALANUS MARSHALLAE S3		1231.65	396.403	1227.37	1249.14	297.637	669.173	81.0212
CALANUS MARSHALLAE S4		1495.41	439.568	1636.97	1249.14	382.700	1924.29	
CALANUS MARSHALLAE S5		571.676	79.1367	1955.31	1063.97	1573.36	7278.23	81.0212
CALANUS MARSHALLAE S6M		439.850	63.8130	636.313		255.134	501.963	
CALANUS MARSHALLAE S6F		43.9794	56.6187	270.559	46.2621	425.204	1672.93	27.0288
CALANUS PACIFICUS <=S5				181.844	277.631	164.541		53.9924
CALANUS PACIFICUS S6F				181.844				
CALANUS SP. S1/2		2639.88	4685.61	909.497	1666.49	657.941	1531.61	216.165
CALANUS TENUICORNIS S5							83.6745	162.042
CALANUS TENUICORNIS S6M								108.050
CALANUS TENUICORNIS S6F								108.050
CENTROPAGES ABDOMINALIS <=S4		352.059	234.245	181.899	370.273	657.941	510.426	108.050
CENTROPAGES ABDOMINALIS S5		528.032	468.561	181.899	185.166	657.941	510.426	
CENTROPAGES ABDOMINALIS S6M		880.147	234.245	363.855	185.166	493.623		
CENTROPAGES ABDOMINALIS S6F		704.118		363.855	740.664	987.470	340.284	216.165
EUCALANUS BUNGI S1/2								549.390
EUCALANUS BUNGI S3		43.9794			5.87828	27.9262	11.1715	788.667
EUCALANUS BUNGI S4				7.19424	5.58659	17.6349	27.9262	766.470
EUCALANUS BUNGI S5M							39.1002	193.837
EUCALANUS BUNGI S5F							55.8575	118.431
EUCALANUS BUNGI S6M							5.58575	13.0574
EUCALANUS BUNGI S6F				7.19424			5.58524	52.2296
EUCHAETA JAPONICA S3								87.5499
EUCHAETA JAPONICA S4					5.58659			66.2010
EUCHAETA JAPONICA S5M								13.0574
EUCHAETA JAPONICA S5F							5.58575	6.52870
METRIDIA SP. <=S3		352.003				822.705	1361.25	2161.65
METRIDIA SP. S4				181.899		493.623	2552.13	1188.88
METRIDIA PACIFICA S5M				181.899	185.166	164.541	340.284	648.431
METRIDIA PACIFICA S5F				363.855		493.623	340.284	324.215
METRIDIA PACIFICA S6M					185.166	164.541	170.142	
METRIDIA PACIFICA S6F			56.6187	181.899	185.166	164.206	340.284	108.050
NEOCALANUS PLUMCHRUS S4								6.52870
OTTHONA HELGOLANOICA		1056.18	2343.17	2720.05	5554.39	3784.56	3743.01	19886.4

ZOOPLANKTON HAUL RESULTS - CRUISE 81-U7 STANDARD LIST - STATIONS 2 TO 14 PAGE 3  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION 1.U.	:	2	4	6	8	10	12	14
UITHONA SPINIPOSTRIS		234.245	909.497	925.830	822.705	2552.13	5728.28	
PARACALANUS SP. <=S4		1056.18	937.410	545.754	740.664	987.500		324.215
PARACALANUS SP. S5		7566.47	18043.02	5821.23	7218.53	5429.97	2211.96	3026.05
PARACALANUS SP. S6M		4224.15	11014.4	3638.55	2962.07	5263.53	1361.25	324.215
PARACALANUS SP. S6F		17030.9	18978.4	8368.71	5184.06	7735.55	6635.87	3890.45
PSEUDOCALANUS SP. <=S3		2639.88	2343.17	2729.05	3517.57	4772.03	1531.61	108.050
PSEUDOCALANUS SP. S4		2941.94	2811.51	2546.93	1481.33	5265.20	2211.96	108.050
PSEUDOCALANUS SP. S5M		1408.24	468.501	2183.24	370.273	1974.38	1021.07	108.050
PSEUDOCALANUS SP. S5F		704.118	234.245	1455.31	558.378	987.470	1361.25	216.165
PSEUDOCALANUS SP. S6M		176.029	468.561	363.855		1151.68	680.344	
PSEUDOCALANUS SP. S6F		2463.85	468.561	1636.87	4443.40	5101.00	3233.03	756.677
SCOLECITHRICELLA MINOR <=S4							340.284	
SCOLECITHRICELLA MINOR S5						164.541	340.284	108.050
SCOLECITHRICELLA MINOP S6F					185.166	164.541	510.426	

ZOOPLANKTON HAUL RESULTS - CRUISE 81-U7 VARIANTS LIST - STATIONS 2 TO 14 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/SU. METER)

STATION I.D.		2	4	6	8	10	12	14
AETIDEUS ARMATUS	S6F							6.52870
BARNACLE CYPRUS		352.003	234.245	1001.62	745.954	657.941	682.344	
BIVALVE LARVA		352.003		363.855	185.166		340.284	972.777
BRADYIDIUS SP. <=S4					185.166			
CALANUS MARSHALLAE/PACIFICUS	S6M				277.631	170.070		
CALANUS MARSHALLAE/PACIFICUS	S6F			270.559	138.786			27.0288
CALANUS MARSHALLAE/PACIFICUS	<=S5			500.112	1897.51	935.415	836.745	107.985
CANDACIA COLUMBIAE	S6F							6.52870
CLAUSOCALANUS SP.	S6F							864.400
CLAUSOCALANUS SP.	S5							972.777
CLAUSOCALANUS SP.	<=S4							540.381
CORYCAEUS SP.		1760.29	1640.29	2183.24	740.664	329.082	340.284	864.400
CRYPTONISCID								108.050
CUMACEA					5.87828			
CYMBULIDAE						164.541		
ECHINOPLUTEUS LARVAE		176.029	234.245	181.899	558.378		1361.25	108.050
EPILABIDOCERA AMPHITRITE	<=S4	176.029						
EPILABIDOCERA AMPHITRITE	S6F		7.19424				5.58575	
EPILABIDOCERA AMPHITRITE	S5					42.5036		
FISH LARVAE		176.029	7.19424		29.3914	5.58524	11.1715	
GAIDIUS VARIARLTS	S6F							19.5861
GAIDIUS VARIARLIS	S5							6.52870
GAIDIUS VARIARLIS	<=S4							108.050
LUCICUTIA SP. <=S4								324.215
LUCICUTIA SP.	S5							540.381
LUCICUTIA SP.	S6M							216.165
LUCICUTIA SP.	S6F							432.331
MICROCALANUS SP.	S5							108.050
MICROCALANUS SP.	S6F				185.166		170.142	
NATANTIA				5.58659				91.4018
NEMATOSCELIS SP.							5.58575	13.0574
ONCAEA SP.								216.165
PLEUROMAMMA SCUTULLATA	S6F						5.58575	
POON SP.		6862.35	468.561	545.754				324.215

ZOOPLANKTON HAUL RESULTS - CRUISE 81-67 VARIANTS LIST - STATIONS 2 TO 14 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	:	2	4	6	8	10	12	14
POLYCHAETE LARVAE		528.032	1405.76	727.933		329.082	5.58575	324.215
RACOVITZANUS ANTARCTICUS	S6F						13.0574	
RACOVITZANUS ANTARCTICUS	S5					175.728	61.4351	
SAGITTA SCRIPPSAE						50.2717	91.4018	
SALP			7.14424				685.514	
SIPHONOPHORE PLANULA							6.52870	
TESSARABRACHION OCULATUS							6.52870	
TOMOPTERIS SEPTENTRIONALIS							13.0574	
TORTANUS DISCAUDATUS	S6M			181.899				
UNIDENTIFIED AMPHIPOD				5.58659			108.050	
UNIDENTIFIED COPEPODITES							108.050	
UNIDENTIFIED MEDUSAE		533.621	468.576	90.9497	5.87828		5.58575	13.0574
UNIDENTIFIED NAUPLIUS								1080.50
LIMACINA SP.		352.003			370.273		170.142	1297.25

ZOOPLANKTON HALL RESULTS - CRUISE 81-07 STANDARD LIST - STATIONS 15 TO 31 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/50. METER)

STATION I.D.	:	15	18	20	23	26	29	31
<b>AMPHIPODS*</b>								
UNIDENTIFIED JUVENILES		667.272	5.58775	90.9497				
PARATHEMISTO SP.			5.58775		11.1752	12.3901	184.655	4.06190
CYPHOCARIS SP.						6.19504		
CHAETOGNATHS*								
UNIDENTIFIED JUVENILES		376.704	716.349	174.749	941.341	384.093	491.643	724.236
SAGITTA ELEGANS		102.421	704.056	5.58659	525.140	700.040	997.135	150.290
EUKROHNIA HAMATA			22.3510		111.732	167.266	138.491	40.6190
CTENOPHORES*								
PLEUROBACHIA SP.		104.358	27.9387				87.7109	12.1857
EGGS LARVA*								
UNIDENTIFIED EGGS.		667.272		2455.31	1407.82		1107.00	1230.75
COPEPOD NAUPLII		12008.8	6660.60	227.318	175.978			
BARNACLE NAUPLII		5336.13	2933.01	45.4749				
EUPHAUSID LARVA		14682.0	9253.31	545.587	2008.38	1025.28	5650.43	322.271
UFCAPOD LARVA							4.61636	285.714
EUPHAUSIDS*								
JUVENILES		774.935	5.58775		150.838	669.065	106.176	16.2476
EUPHAUSIA PACIFICA					11.1732	972.622	4.61636	
THYSANOESSA SPINIFERA						55.7554	83.0946	
LARVACEANS*								
LARVACEANS		60054.5	29609.5	1227.37	703.911		2213.55	136.764
MEIOPODAE*								
PHIALIDIUM SP.		359.139	33.5265			18.5851	9.23273	
AGLANTHA SP.		5.12104	27.9367			12.3901	18.4655	4.06190
PPUROSCIADACTyla SP.		5.12104	5.58775			6.19504	18.4655	
OSTPACODS*								
CONCHOECIA SP.					175.978			
COPEPODS*								
ACARTIA CLAUSII S6F			370.132			438.671		
ACARTIA LONGIREMIS <=S3/4		3336.36	5551.99	45.4749	527.877	1315.83	22135.5	
ACARTIA LONGIREMIS <=S4/5		11343.1	9253.31	636.313	2815.08	7458.83	78589.0	957.389
ACARTIA LONGIREMIS S6M		10011.6	5181.52	4774.70	4926.82	26322.7	37632.6	7794.78
ACARTIA LONGIREMIS S6F		10677.4	8510.14	2455.31	8268.16	14477.8	55341.0	12855.9

ZOOPLANKTON PAUL RESULTS - CRUISE 81-07 STANDARD LIST - STATIONS 15 TO 31 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	:	15	18	20	23	26	29	31
CALANUS MARSHALLAE S3		2869.83	615.770	126.480	773.184	1940.91	1036.84	352.897
CALANUS MARSHALLAE S4		4017.46	703.497	266.871	1182.12	3235.05	2212.16	386.489
CALANUS MARSHALLAE S5		574.069	2946.98	145.251	5726.26	13158.3	4562.81	739.265
CALANUS MARSHALLAE S6M			131.927	5.58659	90.9497	215.649	484.118	100.816
CALANUS MARSHALLAE S6F		81.9874	175.958	44.6927	136.425	1294.14	414.826	201.673
CALANUS PACIFICUS <S5		327.952	483.787	55.6983			138.260	16.8162
CALANUS PACIFICUS S6M		163.976						
CALANUS SP. S1/2		6672.72	3330.56	818.436	1055.87	1315.83	4427.55	957.389
CALANUS TENUICORNIS S6F		81.9879					69.1531	
CENTROPAGES ABDOMINALIS <S4		667.272	740.377	136.425	879.888		6642.95	
CENTROPAGES ABDOMINALIS S5		1334.54	370.132	227.318	527.877		11070.0	
CENTROPAGES ABDOMINALIS S6M		667.272	740.377	318.268	879.888		14389.2	136.764
CENTROPAGES ABDOMINALIS S6F		2701.82	370.132	318.268	879.888		1107.00	
EUCALANUS BUNGI S1/2							9.23273	
EUCALANUS BUNGI S3		5.12104			5.58659	6.19504	332.009	40
EUCALANUS BUNGI S4		97.2998	11.1755		16.7598	43.3653	69.2455	
EUCALANUS BUNGI S5M		15.3631	5.58775		11.1732	18.5851	23.0818	
EUCALANUS BUNGI S5F		5.12104	16.7632		16.7598	43.3653	23.0818	8.12379
EUCALANUS BUNGI S6M						12.3901		
EUCALANUS BUNGI S6F					5.58659	30.9752	23.0818	
EUCHAETA JAPONICA S5M					5.58659	12.3901		
EUCHAETA JAPONICA S5F						12.3901		
EUCHAETA JAPONICA S6M						12.3901		
EUCHAETA JAPONICA S6F						6.19504		
METRIDIA SP. <S3			370.132	136.425	175.978			547.137
METRIDIA SP. S4			370.132	45.4749	351.899	438.671	2213.55	136.764
METRIDIA PACIFICA S5M			740.377		175.978	1315.83	2213.55	136.764
METRIDIA PACIFICA S5F					351.899		1107.00	136.764
METRIDIA PACIFICA S6M			1110.20	45.4749	527.877	438.671		
METRIDIA PACIFICA S6F					175.978			
NEOCALANUS CRISTATUS S4			5.58775					
NEOCALANUS CRISTATUS S5		5.12104			5.58659		13.8491	
NEOCALANUS PLUMCHRUS S5			5.58775		5.58659	49.5604		4.66190
UITHONA HELGOLANOICA		10011.6	1486.75	227.318	1407.82	6141.77	17768.4	410.251

ZOOPLANKTON HAUL RESULTS - CRUISE 81-67 STANDARD LIST - STATIONS 15 TO 31 PAGE 3  
 (VALUES ARE NUMBER OF ORGANISMS/SU. METER)

STATION I.D.	:	15	18	20	23	26	29	31
OITHONA SPINIFOSTRIS			500.112	703.911		1107.00	820.503	
PARACALANUS SP. <=S4		1334.54	740.377	90.9497		877.218	2213.55	
PARACALANUS SP. S5		16684.4	7403.77	500.112	1935.75	7458.83	34313.4	136.764
PARACALANUS SP. S6M		672.72	7403.77	363.743	1055.87	3509.49	7746.26	
PARACALANUS SP. S6F		23357.1	11846.0	1273.18	2463.13	7018.98	37632.6	273.528
PSEUDOCALANUS SP. <=S3		28693.2	12952.4	318.268	3870.95	6141.77	4897.96	1504.53
PSEUDOCALANUS SP. S4		28027.5	15176.3	363.743	2639.11	19743.6	14149.2	7384.53
PSEUDOCALANUS SP. S5M		2669.79	1850.66	272.793	527.877	6141.77	4353.23	547.137
PSEUDOCALANUS SP. S5F		1334.54	1850.66	45.4749	879.888	6141.77	1088.54	1094.27
PSEUDOCALANUS SP. S6M		67.272		363.743	4222.91	4825.32	1088.54	820.503
PSEUDOCALANUS SP. S6F		2669.79	4671.23	863.687	7391.06	22810.2	9251.19	2871.76
SCOLECITHRICELLA MINOR	S5				175.978			
SCOLECITHRICELLA MINOR	S6F				175.978			136.764

ZOOPLANKTON HAUL RESULTS - CRUISE 81-07 VARIANTS LIST - STATIONS 15 TO 31 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/SW. METER)

STATION 1.D.	:	15	18	20	23	26	29	31
BARNACLE CYPHIDS		2664.09	1480.75	90.9497				136.764
BIVALVE LARVA		2001.82	740.377			877.218		
CALANUS MARSHALLAE/PACIFICUS	S6M	919.379	43.9756	50.2793				16.8162
CALANUS MARSHALLAE/PACIFICUS	S6F	2049.95	439.812	27.9330			138.260	16.8162
CALANUS MARSHALLAE/PACIFICUS	S6S	4099.39	3034.71	692.737	409.218	215.649	1175.33	655.590
CLADOCERUS CALANUS SP.	S6F							136.764
CORYCAEUS SP.		4670.90	1050.66	318.268			1107.00	957.369
CYPHANAUTES LARVA		667.272						
ECHINOPLOUTEUS LARVAE		6006.98	1850.66	136.425	879.888		1107.00	
EPILARIDUCEPA AMPHITRITE	S64			45.4749				1504.53
EPILARIDUCERA AMPHITRITE	S6F					5.58659		4.06190
EPILARIDUCERA AMPHITRITE	S6M		5.58775			6.19564	4.61636	
FISH EGGS		667.272						
FISH LARVAE			11.1755	5.58659				
LUCICUTIA SP.	S6M						1107.00	
MYSIID			79.1142			18.5851		
NATANTIA					5.58659	18.5851	4.61636	
NEMATOSCELIS SP.							9.23273	
PFRACLIS SP.		667.272		90.9497				
PODON SP.				90.9497				
POLYCHAETE LARVAE		672.393	751.552				1107.00	4.06190
SAGITTA SCRIPPSAE			5.58775		5.58659	12.3901		
SALP		20.4842					27.6982	
TORTANUS DISCAUDATUS	S64					438.671		
UNIDENTIFIED AMPHIPOD						12.3901	4.61636	
UNIDENTIFIED COPEPODITES		667.272						
LIMACINA SP.			1110.29	45.4749	175.978		3320.55	136.764

ZOOPLANKTON HAUL RESULTS - CRUISE 91-07 STANDARD LIST - STATIONS 33 TO 41 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/50. METER)

STATION I.D.	33	34	35	36	38	40	41
<b>AMPHIPODS*</b>							
UNIDENTIFIED JUVENILES							
PARATHEMISTUS SP.	25.4460	8.12791			161.456	684.797	22.3529
CYPHOCAPIS SP.					11.1349		5.58824
CHAETOGNATHS*							
UNIDENTIFIED JUVENILES	1125.99	517.749	206.794	312.768	2391.78	1542.18	72.6471
SAGITTA ELEGANS	1094.18	654.297	351.955	37.7698	295.975	105.782	324.118
EUKROHNIA HAMATA	80.5791	109.727	16.7598	75.5396	311.777	1013.28	217.997
CTENOPHORES*							
PLEUROBEPACHIA SP.		16.2558	22.3464		16.7024		
EGGS LARVA*	271.079	5661.09	692.179	6431.65	2211.95	517.773	7516.18
COPEPOD NAUPLII			346.145	83.5252			
BARNACLE NAUPLII					92.1413	172.424	
EUPHAUSID LARVA	543.273	1913.72	8307.26	935.252	1935.25	3017.56	1432.26
EUPHAUSIDS*							4
JUVENILES	1539.91	422.652	16.7598	43.1655		283.940	89.4118
EUPHAUSIA PACIFICA	72.0971	52.8314	11.1732		77.9443	86.1842	
THYSANOSSA SPINIFERA	25.4460	52.8314	11.1732	26.9784			16.7647
MEDUSAE*							
PHIALIDIUM SP.		8.12791	86.4864				11.1765
AGLANTHA SP.	4.24101		16.7598		371.126	180.831	22.3529
PPOROSCIDACTYLUS SP.	4.24101	4.06396					16.7647
COPEPODS*							
ACARTIA LONGIREMIS <ES3/4	543.273	3962.76	5537.99	83.5252	92.1413	172.424	2864.19
ACARTIA LONGIREMIS <ES4/5	4619.00	11987.1	12117.3	918.885	829.556	258.608	15753.2
ACARTIA LONGIREMIS S6M	20100.0	24343.1	13150.8	2924.46	921.413	258.608	17183.8
ACARTIA LONGIREMIS S6F	22006.6	37364.0	28731.8	5097.00	1290.54	601.285	26851.5
CALANUS MARSHALLAE S3	1335.92	1669.47	1011.17	647.482			715.853
CALANUS MARSHALLAE S4	1335.92	3895.30	747.486	1209.17	22.2698		805.265
CALANUS MARSHALLAE S5	7612.61	5425.38	1363.13	985.432	22.2698	43.8158	3399.88
CALANUS MARSHALLAE S6M		130.109	395.754	215.881			89.4676
CALANUS MARSHALLAE S6F	267.141	834.737	219.888	367.014	22.2698		1251.76
CALANUS PACIFICUS <ES5					245.024		89.4676

ZOOPLANKTON HAUL RESULTS - CRUISE #1-67 STANDARD LIST - STATIONS 33 TO 41 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION 1.D.	:	33	34	35	36	38	40	41
CALANUS SP. S1/2		1630.24	566.109	1038.55	1002.52	460.818	172.424	3222.18
CALANUS TENUICORNIS <=S4						92.1413	601.285	
CALANUS TENUICORNIS S5						22.2698	86.1842	
CALANUS TENUICORNIS S6M						22.2698	172.424	
CALANUS TENUICORNIS S6F						22.2698	172.424	
CENTROPAGES ABDOMINALIS <=S4			566.109	1730.73	83.5252	92.1413		2503.53
CENTROPAGES ABDOMINALIS S5			2264.44	692.179	167.104			357.982
CENTROPAGES ABDOMINALIS S6M			2830.95	1384.36	250.629		86.1842	2505.76
CENTROPAGES ABDOMINALIS S6F				346.145	501.313	92.1413		1789.91
EUCALANUS BUNGI S1/2			69.5749			89.0792	306.767	89.4676
EUCALANUS BUNGI S3			69.5749	11.1732	10.7914	334.158	175.319	16.7647
EUCALANUS BUNGI S4		4.24101	417.368	16.7598		556.745	636.360	50.2941
EUCALANUS BUNGI S5M		16.9640	159.429	5.58659	16.1871	200.428	138.463	44.7059
EUCALANUS BUNGI S5F		12.7230	24.3837		10.7914	217.131	132.895	39.1176
EUCALANUS BUNGI S6M				5.58659	5.39568	5.56745	11.1349	
EUCALANUS BUNGI S6F		8.48201	8.12791		16.1871	72.3769	89.0792	44.7059
EUCHAFTA JAPONICA S1/2						368.677		357.982
EUCHAFTA JAPONICA S3						108.844	16.7024	
EUCHAFTA JAPONICA S4		4.24101				22.2698	44.5396	
EUCHAFTA JAPONICA S5M		4.24101	4.06396			11.1349	27.8373	
EUCHAFTA JAPONICA S5F		4.24101	12.1919				11.1349	
EUCHAFTA JAPONICA S6M								
METRIDIA SP. <=S3		543.358		1384.36	501.313	1474.82	1380.73	1432.26
METRIDIA SP. S4		566.109	4154.19	1002.52	1474.82	2499.79		
METRIDIA PACIFICA S5M		1358.34	1698.33	346.145	584.892	824.550	344.848	357.982
METRIDIA PACIFICA S5F		815.121	566.109	692.179	83.5252	276.480	172.424	357.982
METRIDIA PACIFICA S6M		815.121			83.5252	368.677	258.608	357.982
METRIDIA PACIFICA S6F		271.679	1698.33	346.145		1659.10	1120.73	
NEOCALANUS CRISTATUS S4		4.20000						
NEOCALANUS CRISTATUS S5		16.9640			5.39568			5.58824
NEOCALANUS PLUMCHRUS S5		67.8985	8.12791				5.56745	
OITHONA HELGOLANOICA		3260.06	20380.7	2769.27	4010.01	15666.8	5600.86	28282.1
OITHONA SPINIROSTRIS		271.679	1698.33	2422.90	4595.50	3962.91	4309.21	3222.18
PAKACALANUS SP. <=S4				346.145				1432.26

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ZOOPLANKTON HAUL RESULTS - CRUISE 81-07 STANDARD LIST - STATIONS 33 TO 41 PAGE 3  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION 1.D.	:	33	34	35	36	38	40	41
PARACALANUS SP. S5		1086.97	7924.72	1730.73	1253.42	2394.00	344.848	12886.5
PARACALANUS SP. S6M		271.679	1132.22	2422.90	752.158	368.677	690.364	7516.18
PARACALANUS SP. S6F		1086.97	7359.83	8653.63	4762.23	1748.18	1725.91	10025.3
PSEUDOCALANUS SP. <=S3		667.458	18682.0	18692.7	1071.04	183.726	86.1842	13959.4
PSEUDOCALANUS SP. S4		5475.14	57744.8	11424.6	1754.68	183.726	258.608	22196.5
PSEUDOCALANUS SP. S5M		4007.33	5661.09	2769.27		367.452	172.424	19740.6
PSEUDOCALANUS SP. S5F		3072.18	3962.76	3115.58	167.104			4653.88
PSEUDOCALANUS SP. S6M		1469.51	2830.55	2422.90	1671.04	94.6467		2505.76
PSEUDOCALANUS SP. S6F		4542.12	9623.45	7268.16	3843.35	278.373	517.216	10025.3
SCOLECITHRICELLA MINOR <=S4					83.5252	829.550	86.1842	357.982
SCOLECITHRICELLA MINOP S5				346.145	167.104	1107.92	431.032	357.982
SCOLECITHRICELLA MINOR S6M					83.5252	462.098	172.424	
SCOLECITHRICELLA MINOR S6F					83.5252	734.904	172.424	

ZOOPLANKTON HAUL RESULTS - CRUISE 81-07 VARIANTS LIST - STATIONS 33 TO 41 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/SW. METER)

STATION 1.0.	:	33	34	35	36	38	40	41
AFGINA SP.					5.39568	114.411	5.56745	
AFTIDEUS ARMATUS	S6F				94.6467			
AETIDEUS ARMATUS	<=S4				107.104			
BARNACLE CYPRIDS		543.273	566.109	346.257	334.209	184.338		
BIVALVE LARVA			566.109	346.145		184.338	172.424	357.982
CALANIS MARSHALLAE/PACIFICUS	S6M		139.109			22.2698		
CALANUS MARSHALLAE/PACIFICUS	S6F		139.109					
CALANUS MARSHALLAE/PACIFICUS	<=S5	133.592	208.684	703.352	21.5827	92.1413	43.8158	89.4676
CANDACIA COLUMBIAE	S5					92.1413		
CANDACIA COLUMBIAE	<=S4					92.1413		
CANDACIA SP. <=S4						172.424		
CLAUSOCALANUS SP.	S6F			346.145		1380.73	1896.61	357.982
CLAUSOCALANUS SP.	S6M					94.6467	172.591	
CLAUSOCALANUS SP.	S5			1384.36		2394.00	2758.67	
CLAUSOCALANUS SP.	<=S4					94.6467	517.200	
CORYCAEUS SP.					83.5252	1197.00	861.842	357.982
CYMFULIDAE		566.109					357.982	
ECHINOPLUTEUS LARVAE		1698.33	346.145	334.209			2145.88	
EPILABIDOCERA AMPHITRITE	<=S4					92.1413	172.368	
EUCHIRELLA SP.	S6F					16.7024		
EUCHIPELLA SP.	S5					16.7024	16.7024	
EUCHIPELLA SP.	<=S4						91.7516	
EVADNE SP.						94.6467		
FISH LARVAE						92.1413	172.424	
GAETANUS SP.	S6F					27.8373		
GAETANUS SP.	S5						5.56745	5.56745
GAIDIUS COLUMBIAE	S6F					44.5396		
GAIDIUS COLUMBIAE	S5					11.1349		
GAIDIUS COLUMBIAE	<=S4					5.56745		
GAIDIUS VARIABLIS	S6F					60.5182	5.58824	
GAIDIUS VARIABLIS	S5						43.8158	5.58824
HETERORHARDUS SP.	S6F						5.60000	
LUCICUTIA SP.	<=S4				83.5252	924.197	344.848	
LUCICUTIA SP.	SF				250.629	829.550	431.038	

ZOOPLANKTON HAUL RESULTS - CRUISE 91-07 VARIANTS LIST - STATIONS 33 TO 41 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/SU. METER)

STATION I.D.		33	34	35	36	38	40	41
LUCICUTIA SP.	S6M				83.5252	551.178	86.1842	
LUCICUTIA SP.	S6F				167.104	551.178	258.608	
MYSIID		16.9640	4.06396					
NATANTIA		8.48201				16.7024	16.7024	
NEMATOSCELIS SP.			69.0000			33.4047	11.1349	
UNCAEA SP.						92.1413	86.1842	
PLEUROMAMMA SP.						103.280		
POUON SP.			566.109		167.104	94.6467		
POLYCHAETE LARVAE					83.5252			
RACOVITZANUS ANTARCTICUS	S6F					94.6467		
RACOVITZANUS ANTARCTICUS	S5					183.726	86.1842	
SAGITTA SCRIPPSAE		8.48201	12.1919	11.1732	16.1871	77.9443	72.3769	
SALP						1102.36	923.084	
SCAPHOCALANUS SP.	S5					92.1413		
SIPHONOPHORE PLANULA						5.56745		
SIPHONOPHORE PNEUMATOPHORE							5.58824	
SPINOCALANUS BREVICAUDATUS <=S4							86.1842	
TESSARABRACHION OCULATUS		4.24101						
TOMOPTERIS SEPTENTRIONALIS			4.00396			33.4047	27.8373	5.58824
TORTANUS DISCAUDATUS	S6M				83.5252			
UNIDENTIFIED AMPHIPOD				5.56659	10.7914			
UNIDENTIFIED COPEPODITES							517.272	
UNIDENTIFIED MEDUSAE						5.56745		
LIMACINA SP.			566.109	692.179				

ZOOPLANKTON HAUL RESULTS - CRUISE 81-07 STANUARD LIST - STATIONS 43 TO 45  
 (VALUES ARE NUMBER OF ORGANISMS/SU. METER)

PAGE 1

STATION 1.D. : 43 45

AMPHIPODS\*

UNIDENTIFIED JUVENILES 756.797

PARATHEMISTO SP. 27.9330 40.7106

CYPHOCARIS SP. 11.1732

CHAETOGNATHS\*

UNIDENTIFIED JUVENILES 636.872 2614.14

SAGITTA ELEGANS 731.844 1152.82

EUKROHNIA HAMATA 698.324 344.763

CTENOPHORES\*

PLEUROBFACHIA SP. 16.7598 5.41229

EGGS LARVA\*

UNIDENTIFIED EGGS. 1407.82

COPPOPOD NAUPLII 703.911

EUPHAUSID LARVA 2938.55

EUPHAUSIUS\*

JUVENILES 167.598

EUPHAUSIA PACIFICA 81.1843

THYSANOPSSA SPINIFERA 5.58659

LARVACEANS\*

LARVACEANS 5.58659 364.247

MEDUSAE\*

PHIALIDIUM SP. 11.1732 27.0614

AGLANTHA SP. 50.2793 32.4737

OSTRACODS\*

CONCHOECIA SP. 11.1732

COPEPODS\*

ACARTIA LONGIREMIS <=S3/4 703.411

ACARTIA LONGIREMIS <=S4/5 13373.2

ACAPTIA LONGIREMIS S6M 26754.2 3279.85

ACAPTIA LONGIREMIS S6F 35201.1 12940.8

CALANUS MARSHALLAE S3 1681.56

CALANUS MARSHALLAE S4 1452.51 64.9475

CALANUS MARSHALLAE S5 2592.18 519.580

CALANUS MARSHALLAE S6M 272.026 96.5066

ZOOPLANKTON HAUL RESULTS - CRUTSE 81-87 STANDARD LIST - STATIONS 43 TO 45  
 (VALUES ARE NUMBER OF ORGANISMS/SW. METER)

STATION 1.D. : 43 45

CALANUS MARSHALLAE S6F	500.000	324.737
CALANUS SP. S1/2	2145.25	364.247
CENTROPAGES ABDOMINALIS S5	703.911	
CENTROPAGES ABDOMINALIS S6M	2815.64	
CENTROPAGES ABDOMINALIS S6F	1407.82	
EUCALANUS BUNGI S3	102.275	
EUCALANUS BUNGI S4	07.0391	10.8246
EUCALANUS BUNGI S5M	55.8659	10.8246
EUCALANUS BUNGI S5F	61.4525	10.8246
EUCALANUS BUNGI S6M	11.1732	
EUCALANUS BUNGI S6F	39.1061	10.8246
EUCHAETA JAPONICA S1/2	91.0615	
EUCHAETA JAPONICA S4	45.2514	5.41229
EUCHAETA JAPONICA S5M	33.5196	10.8246
EUCHAETA JAPONICA S5F	27.9530	
EUCHAETA JAPONICA S6M	16.7598	
METRIDIA SP. <=S3		1093.28
METRIDIA SP. S4	2815.64	1455.91
METRIDIA PACIFICA S5M	2815.64	730.659
METRIDIA PACIFICA S5F	1407.82	364.247
METRIDIA PACIFICA S6M	703.911	546.641
METRIDIA PACIFICA S6F	703.911	1093.28
NEOCALANUS CRISTATUS S4	11.1732	
NEOCALANUS CRISTATUS S5	11.1732	
NEOCALANUS PLUMCHPUS S5		21.6492
OITHONA HELGOLANOICA	5631.28	1510.03
OITHONA SPINIROSTRIS	5631.28	1510.03
PARACALANUS SP. S5	7156.42	
PARACALANUS SP. S6M	5726.26	
PARACALANUS SP. S6F	10379.9	3772.37
PSEUDOCALANUS SP. <=S3	3519.55	7539.32
PSEUDOCALANUS SP. S4	12670.4	59562.2
PSEUDOCALANUS SP. S5M	9854.75	32419.6
PSEUDOCALANUS SP. S5F	8446.93	11311.7

ZOOPLANKTON HAUL RESULTS - CRUISE 81-07 STANDARD LIST - STATIONS 43 TO 45  
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

PAGE 3

STATION 1.D. : 43 45

PSEUDOCALANUS SP.	S6M	12670.4	752.308
PSEUDOCALANUS SP.	S6F	35201.1	18093.3
SCOLECTHRICELLA MINOR	S6M		752.308
SCOLECTHRICELLA MINOR	S6F		1510.03

ZOOPLANKTON HAUL RESULTS - CRUISE 81-07 VARIANTS LIST - STATIONS 43 TO 45  
 (VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

PAGE 1

STATION I.D. : 43 45

AETTOEUS ARMATUS S6F	5.58659	5.41229
CALANUS MARSHALLAE/PACIFICUS <=S5		129.895
ECHINOPLOUTEUS LARVAE	703.911	
EPILABIDOCERA AMPHITRITE <=S4		182.400
EPILABIDOCEPA AMPHITRITE S6F		10.8246
EPILABIDOCEPA AMPHITRITE S6M		5.41229
EPILABIDOCERA AMPHITRITE S5		5.41229
EUCHIRELLA SP. S5	5.58659	5.41229
FISH LARVAE	5.58659	5.41229
GAETANUS SP. <=S4		10.8246
GAIDIUS VARIARLIS S6F		5.41229
GAIDIUS VARIABLIS S5		27.0614
NATANTIA	5.58659	70.3598
NEMATOSCELLIS SP.	16.7598	5.41229
PLEUROMAMMA SCUTULLATA S5	5.58659	
RACOVITZANUS ANTARCTICUS S6F	5.58659	27.0614
SAGITTA SCRIPPSAE	67.0391	27.0614
SALP	5.58659	
SCAPHOCALANUS BREVICORNIS <=S4		182.394
TESSARABRACHION OCULATUS	5.58659	
THYSANOESSA RASCHII		281.439
TOMOPTERIS SEPTENTRIONALIS		5.41229
TORTANUS DISCAUDATUS S6F		304.247
TORTANUS DISCAUDATUS <=S4		546.641
UNIDENTIFIED AMPHIPOD		21.6492
UNIDENTIFIED MEDUSAE	16.7598	

PHYTOPLANKTON HAUL RESULTS - CRUISE 61-05 STANDARD LIST - STATIONS 3 TO 18 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*\*4)

STATION I.D.	:	3	5	7	13	16	17	18
<b>CENTRIC DIATOMS:</b>								
BACTERIASTRUM DELICATULA		.81000		2.54240				.05000
CHAETOCEROS COMPRESSUS		.94000	6.59300	4.54000	.01800			
CHAETOCEROS DEBILIS		.09000		1.13500	.01000			
CHAETOCEROS DIDYMUS		.18000	.45400	.45400	.00400			
CHAETOCEROS ? RADICANS		3.37000		23.0178				
CHAETOCEROS SOCIALIS		.20000		1.96140				
COSCIODISCUS SPP.		.03000		.09080	.00400			
LEPTOCYLINDRUS DANICUS				.18160	.01400			.04000
RHIZOSOLENIA DELICATULA		.09000		.36320				
RHIZOSOLENIA FRAGILISSIMA			2.27000	.31780	.00400			
SCHRODERELLA DELICATULA			4.35840					
SKELETONEMA COSTATUM		6.16000		11.2592	.38400			.08000
THALASSIOSIRA AESTIVALIS		.04000	.13620	.09080				
THALASSIOSIRA DECTPIENS		.08000						
THALASSIOSIRA GRAVIDA/ROTULA		.09000	.09080	.72640				.03000
THALASSIOSIPA NORDENSKIOLDII		.22000	.36320	1.08960	.00600			.04000
THALASSIOSIPA SPP.		.16000	.54480	.49940	.00800	.02000	.02000	.04000
TOTAL CENTRIC DIATOMS		105.160	29.5102	111.411	1.60200	197.170	88.2900	318.780
<b>PENNATE DIATOMS:</b>								
ASTERIONELLA JAPONICA		1.39000	2.49700	5.72040	.05200	.04000	.10000	.07000
CYLINDROTHECA CLUSTERIUM			.13620			.02000	.03000	
NITZSCHIA? DELICATISSIMA		.13000	.45400	.45400	.01400	.16000	.08000	.08000
NITZSCHIA? LUNGISSIMA		.12000	.09080	.09080	.02800			
NITZSCHIA? PUNGENS		.10000						
NITZSCHIA? SEPIATA		.04000						.04000
THALASSTONEMA NITZSCHOIDES		.49000	.19160	.49940	.01400	.12000	.18000	.10000
TOTAL PENNATE DIATOMS		4.78000	5.94700	9.53400	.01800	1.48000	83.0500	6.90000
<b>INOFLAGELLATES:</b>								
DINOPHYYSIS		.01000			.00200			
GYMNODINIUM		.67000	1.35000	.72640	.06600	.72000	.68000	.22000
GYMNODINIUM		.66000	.09080	.49940	.02000	.02000	.02000	.15000

## PHYTOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 3 TO 18 PAGE 2

(VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)

STATION I.D. : 3 5 7 13 16 17 18

## FLAGELLATES AND OTHERS:

DISTEPHANUS SPECULUM					.03000	.04000
CRYPTOMONADS (5-100)	115.140	42.0000	35.4120	.04600	91.7700	58.1400
CRYPTOMONADS (11-200)	9.90000	13.9000	.81720	.02600	2.64000	6.25000
EUTREPTIELLA spp.	.04000		.09080			
TOTAL FLAGELLATE CELLS	129.790	62.7596	37.7728	.31600	97.9300	66.5800
TOTAL PHYTOPLANKTON CELLS	380.450	117.587	252.787	2.86400	522.510	525.010

PHYTOPLANKTON HAUL RESULTS - CRUISE 41-75 VARIANTS LIST - STATIONS 3 TO 18 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)

STATION 1.D.	:	3	5	7	13	16	17	18
CYCLOTELLA CASPIA			.13620					
ASTEROMPHALUS SARCOPHAGUS		.04000	.09080	.27240				
CHAETOCEROS CONSTRICTUM		.67000						
CHAETOCEROS DIADEMA		.66000						
CHAETOCEROS SIMPLEX C. CALCITRANS	3.78000	1.82000	2.36080	.00800	.71000	.36000	3.36000	
CHAETOCEROS SUBTILE						.06000	.10000	.06000
LAUDERIA BOREALIS	.40000	.49940	.43860					
LEPTOCYLINDRICUS MINIMUS	1.26000	6.13000	6.62840	.00800	.08000	.06000	.07000	
RHIZOSOLENIA ALATA F. GRACILLIMA	.13000	.24540	.36320					
RHIZOSOLENIA FRAGILISSIMA V. ?	.59000		2.99640			.02000	.02000	.05000
THALASSIOSIRA BINATA			.22700					
THALASSIOSIRA CF. CONDENSATA				.09080				
THALASSIOSIRA CONFERTA	.32000	2.18000	.45400	.12000	.16000	.80000	.23000	
THALASSIOSIRA PACIFICA	.46000	.68100	2.96020	.00400	.04000	.06000	.09000	
THALASSIOSIRA PROFUNDA	74.6700		41.9495			132.810	80.3700	109.440
THALASSIOSIRA PSEUDONANA	9.70000	2.90000	4.85780	1.01000	63.2700	6.50000	205.200	
NAVICULA spp.			.18160		.01800			
CYLINDROTHECA FUSTIFORMIS	.08000	.18160	.18160			.04000	.04000	
FILAFILLARIA OCEANICA	.11000	1.18000	1.54360			.49000	.45000	
NITZSCHIA (BACILLARIA) SP.	.36000	.22700	.31780			.34000	.44000	
NITZSCHIA SPANII	.12000	.13620	.16160	.04000	.02000	.02000	.03000	
NITZSCHIA BICAPITATA	1.84000	.68100	.54480	.02000	.38000	1.40000	5.66000	
KATODINTIUM RUTUNDATUM		4.77000			.01800	1.90000	.56000	.12000
PROPOCENTRUM BALTICUM	.32000	.27640	.22700			.08000	.72000	.72000
SCRIPPSIELLA & GLYNODINTIUM spp.	.05000	.36320		.01600				
PHOTOSYNTHETIC CILIATES			.22700				.02000	.04000
APERINELLA SPINIFFRA			1.54000					
OCHROMONAS spp.	10.2500	.81720	7.62720	.14400	43.3200	26.3200	90.0600	
OLISTHODISCUS LUTEUS			.09080					
OLISTHODISCUS SP.			1.63000					
CHRYSOCHROMULINA spp. & IMANTONTA	129.960	8.62000	86.4416	.61600	182.400	259.920	308.940	
PYRAMIMONAS spp.	.56000	6.40000				.21000	.85000	.34000
PTEROSPERMA spp.			.27240					

## PHYTOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 19 TO 25 PAGE 1

(VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*\*4)

STATION 1.D. : 19 20 21 22 23 24 25

## CENTRIC DIATOMS:

BACTERIASTRUM DELICATULA					.04000	.01200
CHAETOCEROS COMPRESSUS		.02400		.02800	.03000	.01800
CHAETOCEROS UEBELIS				.05200		.02000
CHAETOCEROS ? RADICANS		.02800		.06000	.06000	.03200
CHAETOCEROS SOCIALIS		.01800		.03600	.04000	.01400
COSCINODISCUS SPP.	.02000	.00200		.00600	.02000	
CORETHRION HYSTRIX						.00400
LEPTOCYLINDRUS DANICUS	.04000	.02000	.01000		.02400	
RHIZOSOLENIA DELICATULA					.01800	.02000
RHIZOSOLENIA FRAGILISSIMA					.00600	.01000
SKELETONEMA COSTATUM	.11000	.07000	.01400	.04000	.04000	.03600
THALASSIOSIRPA AESTIVALIS		.01000	.00400		.01000	
THALASSIOSIRPA DECIPiens						.00400
THALASSIOSIRPA GRAVIDA/ROTULA	.01000	.02000	.01000	.01000	.03600	.00600
THALLASSIOSIRPA NORDENSKIOLDII	.02000	.06000	.05200	.03000	.02000	.04000
THALLASSIOSIRPA SPP.		.03000	.00800		.02400	.03000
TOTAL CENTRIC DIATOMS	122.520	194.120	1.60800	646.590	3.53000	31.7000

## PENNATE DIATOMS:

ASTERIONELLA JAPONICA	.03000	.04000	.07600		.02000	.05000	.03000
CYLINDROTHECA CLOSTERIUM			.00800			.03000	
NITZSCHIA? DELICATISSIMA	.06000	.15000	.01600	.02000	.29200	.06000	.02400
NITZSCHIA? LONGISSIMA			.00800	.04000	.02600	.02000	.01400
NITZSCHIA? PUNGENS					.01000	.03000	.01200
NITZSCHIA? SERIATA			.00600		.01600	.05000	.00800
THALASSIONEMA NITZSCHOIDES	.06000	.34000	.20400	.82000	.04200	.04000	.01000
TOTAL PENNATE DIATOMS	1.14000	8.67000	.86600	13.1400	2.34900	2.35000	1.12400

## DINOFLAGELLATES:

GYMNOdinium	.14000	.03000	.77000	.81000	.04600	.86000	.19800
GYROQUINUM	.76000	.42000	.24800	.76000	.48400	.92000	2.12000

## FLAGELLATES AND OTHERS:

DISTEPHANUS SPECULUM							.00600
CRYPTOMONADS (5-100)	71.8200	40.4800	3.75200	108.300	3.97600	16.5200	24.1680
CRYPTOMONADS (11-200)	2.70000	5.25000	1.25000	4.50000	1.35000	1.04000	7.16800

## PHYTOPLANKTON HAUL RESULTS - CRUISE 81-95 STANDARD LIST - STATIONS 19 TO 25 PAGE 2

(VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)

STATION I.D.	: 19	20	21	22	23	24	25
TOTAL FLAGELLATE CELLS	77.0200	47.9300	6.17000	117.460	5.94600	19.5200	34.2160
TOTAL PHYTOPLANKTON CELLS	345.410	319.390	38.6120	1136.61	189.920	343.240	161.376

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-05 VARIANTS LIST - STATIONS 19 TO 25 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)  
 STATION I.D.

	19	20	21	22	23	24	25
ACTINOPTYCHUS UNDULATUS			.00600				
ASTEROMPHALUS SARCOPHAGUS	.52000						
CHAETOCEROS CONSTRICTUM			.02600		.04000	.03000	.01000
CHAETOCEROS DIADEMA			.01200		.02400		.00600
CHAETOCEROS LACINIOSUM							.00400
CHAETOCEROS LORENZIANUM					.01400		
CHAETOCEROS STIMPLEX C. CALCITRANS	1.32000	2.64000	.09200	16.1000	.05000	.18000	.02400
CHAETOCEROS SUBTILIS			.01400		.02000	.05000	.01200
LAUDERIA BOREALIS	.02000	.03000	.00800		.03000	.04000	.01200
LEPTOCYLINDRICUS MINIMUS	.42000	.10000	.01400		.04800	.07000	.02400
RHIZOSOLENIA ALATA F. GRACILLIMA					.02600	.06000	.00600
RHIZOSOLENIA FRAGILISSIMA V. ?	.06000	.11000	.01600		.02000	.05000	.02000
THALASSIOSIRA CONFERTA	.08000	.24000	.07800	.08000	.03800	.26000	.04800
THALASSIOSIPA LEPTOPUS			.00800				
THALASSIOSIPA PACIFICA	.03000	.06000	.04800	.03000	.05600	.07000	.02000
THALASSIOSIPA PROFUNDA	96.3300	79.8000	.07200	607.620	2.68800	29.9600	65.4360
THALASSIOSIPA PSEUDONANA	24.0800	100.890	.74400	22.6800	.11600	.52000	2.40800
ASTERIONELLA KARIANA			.00800				
CYLINDROTHECA FUSIFORMIS	.05000		.01000		.01400	.02000	.00600
FRAGILLARIA OCEANICA	.14000	5.00000	.29600	2.50000	.41600	1.84000	.96000
NITZSCHIA (BACILLARIA) SP.	.29000	.56000	.01400	.20000	.05000	.12000	.02000
NITZSCHIA GRANII	.01000		.02000	.01000	.01200	.01000	.02400
NITZSCHIA BICAPITATA	.45000	2.56000	.20000	9.55000	1.50000	.08000	.01600
KATOBINIUM ROTUNDATUM	1.24000	.50000	.12000	2.73000		.11000	.53600
PROROCENTRUM BALTIKUM	.34000	.22000	.02000	.32000	.06000	.07000	.01400
SCIRIPSTIELLA & GLENODINIUM spp.		.03000	.01000	.04000	.03000		.00600
PHOTOSYNTHETIC CILIATES	.02000		.00600	.06000	.03200	.02000	.00800
APEDINELLA SPINIFFRA					.01600		
MERINGUSKAFA RA MEDITERRANEA				.07000			
OCHROMonas spp.	12.8800	9.80000	2.07200	13.1600	1.28800	24.6400	9.01600
OLISTHODISCUS SP.	.56000	.35000	.01600		.03000	.46000	
CHRYSOCHROMULINA spp. & TANTONIA	131.100	68.4000	19.6360	345.420	96.6720	264.480	48.7920
PYRAMIMONAS spp.	.25000	.12000	.04400	.77000	.04000	.09000	.02000

PHYTOPLANKTON HAUL RESULTS - CRUISE #1-75 STANDARD LIST - STATIONS 26 TO 33 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10<sup>4</sup>\*4)  
 STATION 1-6. : 26 27 28 29 31 32 33

CENTRIC DIATOMS:

BACTERIASTRUM DELICATULA	4.994.10		.31780				
CEFRALINA BERGONII			.18160				
CHAETOCEROS COMPRESSUS	7.67260		7.94500				
CHAETOCEROS DEFILIS	2.95100		1.72520				
CHAETOCEROS DIATOMUS	.96260		.27240				
CHAETOCEROS ? RADICANS	127.483		36.0222				
CHAETOCEROS SOCIALIS	9.78000		1.77560				
COSCINODISCUS spp.			.13620				
CORETHRON HYSTRIX	.09080			.00800			
LEPTOCYLINDRUS DANICUS	.45400		.22700				
RHIZOSOLENIA DELICATULA	.89080						
RHIZOSOLENIA FRAGILISSIMA	.45400		.09080				
SKELETONEMA COSTATUM	33.3690	.08000	19.4312	.02000	.20000	.28000	94
THALASSIOSIRA AESTIVALIS	.77180		.27240				
THALASSIOSIRA DECIPiens	.22700						
THALASSIOSIRA GRAVIDA/ROTULA	1.86140	.02000	1.54360	.00400		.01000	
THALASSIOSIRA NORDENSKIOLDII	6.17440	.06000	3.49560	.00400	.01000	.02000	
THALASSIOSIRA spp.	.45400	.02000	.59020	.00800	.01000	.01000	
TOTAL CENTRIC DIATOMS	276.259	998.590	123.579	1.22600	134.130	90.0700	243.080

PENNATE DIATOMS:

ASTERIONELLA JAPONICA	22.3368		14.7046	.00600			
NITZSCHIA? DELICATISSIMA	.90800		.77180	.01000	.12000	.09000	.02000
NITZSCHIA? LONGISSIMA	.68100		.31780	.00400	.02000	.03000	
NITZSCHIA? PUNGENS	.66100	.02000	.54480	.00600			
NITZSCHIA? SERIATA	.09280	.03000	.09080				
THALASSIONEMA NITZSCHOIDES	1.22560	.46000	1.95220	.01200		.03000	.02000
TOTAL PENNATE DIATOMS	34.4132	4.31000	27.8302	.33400	6.35000	7.34000	1.22000

INFUSORIA:

GYMNODINIUM	.91720	.29000	.68100	.10200	1.39000	.22000	.47000
GYMNOCHIUM	1.06460	.46000	.45480	2.08200	2.62000	1.70000	2.63000

FLAGELLATES AND OTHERS:

LISTEPHANUS SPICULUM					.02000		
CRYPTOMONADS (5-100)	7.85900	51.2400	3.63200	2.50000	62.1300	108.300	128.000

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 26 10 33 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/LITTER - DIVIDED BY 10\*\*4)  
 STATION 1.C. : 26 27 28 29 31 32 33  
 CRYPTOMONADS (11-200) 12.7120 3.06000 1.05960 .04200 6.80000 4.62000 6.85000  
 TOTAL FLAGELLATE CELLS 22.1098 56.0600 6.53760 4.55600 73.4900 115.060 138.200  
 TOTAL PHYTOPLANKTON CELLS 434.296 1589.15 213.925 38.454L 368.660 394.980 1088.50

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-95 VARIANTS LIST - STATIONS 26 TO 33 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)

STATION I.D.		26	27	28	29	31	32	33
CHAETOCEROS CONSTRICTUM		12.0764		4.90320				
CHAETOCEROS CONVOLUTUM			.03000	.36320				
CHAETOCEROS DIADEMA		.81720		3.63200				
CHAETOCEROS LACINIOSUM		.54480		1.72520				
CHAETOCEROS SIMPLEX C. CALCITRANS		1.04420	.72000	1.18040	.12400	1.19000	.22000	
LAUREPIA BOREALIS		.09080		.63560				
LEPTOCYLINDRICUS MINIMUS		1.13500						
RHIZOSOLENIA ALATA F. ALATA				.09080				
RHIZOSOLENIA ALATA F. GRACILLIMA		.22700		.31760				
RHIZOSOLENIA FRAGILISSIMA V. ?		.59020		.31760				
THALASSIOSIRA ANGULATA				.01000				
THALASSIOSIRA BINATA								.06000
THALASSIOSIRA CONFERTA		.02700	.76000	4.31300	.02000	.68000	.56000	.40000
THALASSIOSIRA ECCENTRICA			.02000					
THALASSIOSIRA LEPTOPUS			.02000					
THALASSIOSIRA MENDOLANA			.03000					
THALASSIOSIRA PACIFICA		7.56160	.26000	7.76340	.01000	.04000	.03000	
THALASSIOSIRA PROFUNDA		53.3904	637.260	21.6104	.92400	119.700	83.7900	160.000
THALASSIOSIRA PSEUDONANA		1.54360	359.100	2.72400	.10400	12.3000	5.15000	82.6000
NAVICULA SPP.								.06000
CYLINDROTHECA FUSIFORMIS					.04000	.03000		
FLAGILLARIA OCEANICA								.58000
NITZSCHIA (BACILLARIA) SF.		7.12780	.10000	2.27000	.02400	.16000	.10000	.46000
NITZSCHIA GRANTI								.02000
NITZSCHIA PSEUDODELTATISSIMA			.04000	.09080		.01000		
NITZSCHIA RETICULATA		1.36200	1.56000	3.63200	.17400		.21000	.06000
KATOINTUM EUTONDATUM		2.56780	.76000		.02200	.51000	.19000	.25000
PROFOCENTRUM BALTIUM		1.04420	.26000	.68100	.01000	.02000	.03000	
PHOTOSYNTHETIC CILIATES		.27240		.64400				
MERTENGOSPHAERA MEDITERRANEA				.07000				
UCHROMUNAS SPP.		4.81240	26.3200	8.98920	3.05200	41.6100	49.0300	46.7000
OLISTHODISCUS SP.				.36000				
CHRYSOCHROMULINA SPP. & IMANTONIA		95.3400	502.740	44.9460	29.2980	112.860	133.380	659.000
CORYMPELLUS AUREUS								.22000

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-05 VARIANTS LTST - STATIONS 26 TO 33 PAGE 2  
(VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10<sup>-4</sup>)

STATION 1.B.	: 25	27	28	29	31	32	33
<i>PHAFUCYSTIS HOUCHETII</i>				2.24300			
<i>PYRAMIMONAS</i> spp.	1.36200	.58000			.01800	.21000	.13000
<i>PTEFUSHERMA</i> spp.						.01000	.08000

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 34 TO 40 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10<sup>4</sup>\*<sup>4</sup>)

STATION I.D.	: 34	35	36	37	38	39	40
<b>CENTRIC DIATOMS:</b>							
<i>FACTERIASTRUM DELICATULA</i>	3.54120	2.31540	1.54000	2.27000	.45400	.16000	.72640
<i>CEFRATULINA PERGONII</i>	.27240	.40860					
<i>CHAETOCEROS AFFINIS</i>			.85000			.06000	
<i>CHAETOCEROS COMPRESSUS</i>	42.8576	160.807	4.73000	88.1668	2.13380	1.04000	93.6148
<i>CHAETOCEROS DEBILIS</i>	8.39900	60.0642	3.41000	38.2268	.27240	.04000	53.4812
<i>CHAETOCEROS DIOMYMUS</i>	.72640	8.62600	.14000		.13620	.68000	7.53640
<i>CHAETOCEROS ? RADICANS</i>	131.660	284.476	57.2000	93.9780	7.89960	5.20000	368.466
<i>CHAETOCEROS SOCIALIS</i>	10.7144	112.138	3.52000	25.1970	1.77000	.06000	41.2232
<i>COSCINODISCUS SPP.</i>	.09080						
<i>DITYLUM BRIGHTWELLII</i>						.01000	.09080
<i>RHIZOSOLENIA DELICATULA</i>	.63560	.13620	.01000	.27240			
<i>RHIZOSOLENIA FRAGILISSIMA</i>	.13620	.13620	.28000	.27240	.09080	.06000	.54480
<i>SKELETONEMA COSTATUM</i>	36.4120	50.7250	14.1000	34.9580	1.31660	.72000	48.6688
<i>THALASSIOSIRA AESTIVALIS</i>	.22760		.13000	.31780			.317808
<i>THALASSIOSIRA DECIPiens</i>		.13620			.13620		
<i>THALASSIOSIRA GRAVIDA/ROTULA</i>	4.71300	2.36680	.08000	.99880	.13620		2.40620
<i>THALASSIOSIRA NORDENSKIOLDII</i>	12.5304	5.58420	.86000	2.63320	.09080		4.54000
<i>THALASSIOSIRA POLYCHORDA</i>			.04000				.13620
<i>THALASSIOSIRA SPP.</i>	1.16040	.51720	.34000	.54480	.13620	.16000	.68100
<i>RHIZOSOLENIA SETIFERA</i>					.04540		
<b>TOTAL CENTRIC DIATOMS</b>	<b>316.665</b>	<b>779.246</b>	<b>100.470</b>	<b>614.755</b>	<b>258.190</b>	<b>35.3800</b>	<b>727.887</b>
<b>PENNATE DIATOMS:</b>							
<i>ASTERIONELLA JAPONICA</i>	35.9569	52.6640	11.0000	28.2388	1.49820	1.96000	32.2340
<i>CYLINDROTHECA CLOSTERIUM</i>			.68000			.02000	
<i>GYRO/FLFURUSIGMA SPP.</i>			.01000				
<i>NITZSCHIA? DELICATISSIMA</i>	1.40740	2.31540	.62000	2.31540	.18160	.06000	2.90550
<i>NITZSCHIA? LONGISSIMA</i>	.30720	1.49620	.20000	.36320	.09080	.12000	.81720
<i>NITZSCHIA? PUNGENS</i>	.13620	1.089460	.12000	.09080	.04540	.03000	.13620
<i>NITZSCHIA? SEPIATA</i>	.13620	.42860	.28000	.27240	.09080		.54480
<i>THALASSONEMA NITZSCHEIDES</i>	2.04319	1.067440	.16000	2.036080	1.90680	.76000	1.08960
<b>TOTAL PENNATE DIATOMS</b>	<b>56.5212</b>	<b>76.6460</b>	<b>14.0200</b>	<b>59.5756</b>	<b>13.9378</b>	<b>4.94000</b>	<b>57.9363</b>

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 34 TO 40 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10<sup>4</sup>\*4)

STATION I.D. : 34 35 36 37 38 ~ 39 40

DINOPHYCEA:

GYMNOODINIUM	1.36200	.63100	.08700	1.36200	.18100	.28000
GYROQUINUM	1.56900	.22700	.23000	.22700	.13620	.10000

FLAGELLATES AND OTHERS:

DISTEPHANUS SPECULUM	.13620			.09080	.04540	.02000	.09080
CRYPTOMONADS (5-100)	26.7860	9.30700	4.72000	4.35840	28.1480	17.5000	19.5220
CRYPTOMONADS (11-200)	4.55520	1.13500	.56760	27.2460	7.26400	1.01000	1.36200
ENTPELTIELLA spp.						.03000	
TOTAL FLAGELLATE CELLS	36.6254	11.7132	5.62500	36.0022	36.6378	18.9800	21.8828
TOTAL PHYTOPLANKTON CELLS	537.541	955.398	145.350	875.312	374.232	87.3300	912.858

PHYTOPLANKTON HAUL RESULTS - CRUISE 61-05 VARIANTS LIST - STATIONS 34 TO 40 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*\*4)

STATION 1-D.

	: 34	35	36	37	38	39	40
CHAETOCEROS DANICUM						.02000	
PODOSTRA spp.						.08000	
CYCLOCYELLA CASPIA			.02000			.03000	
CHAETOCEROS CONSTRICTUM	3.63200	26.7406	3.00000	3.45040	.49940	.40000	16.3894
CHAETOCEROS CONVOLUTUM	.27240						.09080
CHAETOCEROS DIADEMA	2.72400	17.3428	1.76000	1.63440	.27240	.14000	12.7120
CHAETOCEROS LACINIUSUM	.54480						3.99520
CHAETOCEROS LORENZIANUM	.49940		.77000		.18160	.14000	3.40500
CHAETOCEROS SEPTENTRIONALE		.45450	.04000	.22760	.54480	.08000	2.08840
CHAETOCEROS SIMPLEX C. CALCIPRANS	7.62720	1.13500	.05000	1.72520	3.67740		1.58900
CHAETOCEROS SUBTILE	.72640	.36320		.54480			
LAUREPIA ROPEALIS	.77160	.31720	.15000			.08000	.54480
LEPTOCYLINDRICUS MINIMUS	.99980	.27240		1.72520	.72640		1.63440
RHIZOSOLENIA ALATA f. ALATA			.01000				
RHIZOSOLENIA ALATA f. GRACILLIMA	.36320	.40860	.10000	.09080	.04540	.06000	.54480
RHIZOSOLENIA FRAGILISSIMA v. ?	1.27120	1.22580		1.27120	.09080		.36320
THALASSIOSIRA BINATA			.12000			.10000	
THALASSIOSIRA CF. CONDENSATA			.12000				
THALASSIOSIRA CONFERTA	.00000	2.27000	.12000	1.27120	.04540	.16000	3.35960
THALASSIOSIRA ECCENTRICA			.04000			.06000	
THALASSIOSIRA LEPTOPUS		.27240	.16000	.13620	.09080	.58000	.90800
THALASSIOSIRA MENDICULATA			.04000		.09080	.04000	.09080
THALASSIOSIRA PACIFICA	17.7968	11.2138	1.08000	9.67020	.68100	.22000	14.7046
THALASSIOSIRA PROFUNDA	20.2530	35.5936	.92000	17.7968	231.358	14.8000	2.08840
THALASSIOSIRA PSEUDONANA	5.62960	3.40500	5.04000	292.376	5.17550	10.2000	40.8600
ASTERTOMELLA KARIANA	.77180	.45460	.15000	.09080	.18160	.07000	.54480
NAVATILLA spp.						.04000	
CYLINDROPOTHECA FUSIFORMIS	.22700	.09080	.03000		.04540	.08000	.09080
Fragillaria oceanica	4.94860	.27240		4.94860	.18160	.24000	4.55540
NITZSCHIA (FRAGILLARIA) spp.	5.99280	13.6200	.75000	6.08360	.59020		8.17200
NITZSCHIA GRANII	.36720	.54480	.04000		.04540		
NITZSCHIA PSEUDODELICATISSIMA	.36340			.27240			
PLEUROSTIGMA ACUTUM			.05000				
NITZSCHIA BICAPITATA	5.31180	1.36200	.68000	5.53980	9.08000	.66000	6.81000

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-75 VARIANTS LIST - STATIONS 34 TO 40 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10<sup>-4</sup>)

STATION I.D.	34	35	36	37	38	39	40
KATOUNIUM ROTUNDATUM		.22700		1.45280		.04000	
PROPOCENTRUM PALTICUM	.22700	.13620	.05000	.99880	.77180		.69980
SCIPPSTELLA & GLENOVIRIUM SPP.				.27240	.09080		.81720
PHOTOSYNTHETIC CILIATES	.36320			.45400	.18160		
APEDINELLA SPINIFERA				1.18040		.03000	
OCHROMONAS SPP.	45.7632	15.2690	2.00000	16.5710	5.44800	2.90000	2.90560
OLISTHODISCUS SP.				.27240			
CHEMOCOCHROMULINA SPP. & MANTONIA	74.4560	72.6400	22.0000	148.912	55.3880	26.0000	87.6220
PHAEOPHYTIS POUCHETII				.64000			14.7596
PYRAMIMONAS SPP.		.54480	.20000	2.04300	4.63080		

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-75 STANDARD LIST - STATIONS 41 TO 47 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)  
 STATION 1.D. : 41 42 43 44 45 46 47

CENTRIC DIATOMS:

BACTERIASTRUM DELICATULA	.68160	.45400	.36320	.22000	.01800	1.18040	.22700
CFRATULINA BERGONII			.09080			.09080	
CHAETOCEROS AFFINIS	3.06720						
CHAETOCEROS COMPRESSUS	7.94240	3.45640	13.2568	.24000	.00400	.22700	
CHAETOCEROS DEFILIS	4.44920	.95340	.63560	.08000	.01400	.27240	
CHAETOCEROS DECIPiens			.27240				
CHAETOCEROS UDYMUS	2.90560	.95340					
CHAETOCEROS ? RADICANS	75.5420	44.0380	82.4464	.26000	.02400	7.35480	.22700
CHAETOCEROS SOCIALIS	6.35600	2.36080	4.00320	.28000	.01200	.86260	.13620
COSCINODISCUS spp.					.00600		
CORETHRON HYSTRIX				.01000			
RHIZOSOLENIA DELICATULA	.13620		.22700	.02000	.00600	.22700	
RHIZOSOLENIA FRAGILISSIMA	.54450	.45400	.72640	.08000	.03400	1.58900	.18160
SKELETONEMA COSTATUM	37.0010	21.9730	16.7772	.53000	.03600	1.18040	.72640
THALASSTUSIRA AESTIVALIS	.22700	.18160					
THALASSIOSIPA GRAVIDA/ROTULA	.45400	.18160			.00400	.04540	
THALLASIOSIPA NORDENSKIOLDII	1.9680	.40860	1.36200	.07000	.02600	.09080	.04540
THALASSIOSIPA POLYCHORLA	.04540						
THALASSIOSIPA spp.	.01960	.40860		.01000		.31780	
TOTAL CENTRIC DIATOMS	162.759	84.7164	129.462	278.600	40.7180	79.7678	1973.27

PENNATE DIATOMS:

ASTERIOMELLA JAPONICA	62.6520	19.7416	36.5470	.21000	.02600	.99880	
CYLINDROTHECA CLUSTERIUM	.27240	.09080					
NITZSCHIA? DELICATISSIMA	1.72520	.90880	1.46740	.02000	.02000	.22700	
NITZSCHIA? LUNGISSIMA	.13620	.09080	.81720		.01200	.04540	
NITZSCHIA? PUNGENS	.36320			.05000		.00400	
NITZSCHIA? SERPATA		.17020	.09780	.01000			
THALASSTONEMA NITZSCHOIPIUS	.99860	.72640	2.27800	1.00200	.03000	.13620	.77180
TOTAL PENNATE DIATOMS	72.2768	24.7166	49.5768	23.7800	1.28800	2.90550	80.7212

DINOFLAGELLATES:

CERATTUM				.01000			.04540
DINOPHYTIS				.01000			
GYMNODINIUM	1.05660	.62560	.45400	.56000	.05600	.18160	.09080

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-98 STANDARD LIST - STATIONS 41 TO 47 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)  
 STATION 1.D.  
 : 41 42 43 44 45 46 47

GYRODINIUM	.63560	.63560	1.99760	.42000	.16000	.36320	.81720
FLAGELLATES AND OTHERS:							
DISTEPHANUS SPICULUM						.09080	
CRYPTOMONADS (5-100)	2.05840	11.6670	4.08600	50.6800	20.9760	69.4820	53.7990
CRYPTOMONADS (11-200)	.18160	.90800	2.81460	30.2400	.90400	4.35840	3.08720
CRYPTOMONADS (ALL)						73.8204	
TOTAL FLAGELLATE CELLS	4.25240	15.3400	9.67520	86.1900	23.0260	152.771	58.6838
TOTAL PHYTOPLANKTON CELLS	230.345	165.574	210.974	680.910	173.068	618.076	2439.16

PHOTOPLANKTON HAUL RESULTS - CRUISE 51-05 VARIANTS LIST - STATIONS 41 TO 47 PAGE 1  
 VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10<sup>4</sup>  
 STATION 1.0.

	41	42	43	44	45	46	47
PODOSIKA spp.							.09080
CYCLUTELLA CASPIA	.74540	.39080					
ASTEROMPHALUS SARCOPHAGUS				.01080			
CHAETOCEROS BREVE	.18160		.36320				
CHAETOCEROS CONSTRICTUM	4.81240	.31780					
CHAETOCEROS DIACEMA	2.72400	1.91600	1.27120				.27240
CHAETOCEROS LORENZIANUM	.27240						
CHAETOCEROS SEPTENTRIONALE	.63560	.13620	.09080				
CHAETOCEROS SIMILE	.22700						
CHAETOCEROS SIMPLEX C. CALCITRANS	.18160		.27240	5.92000	.01400	1.36200	12.5304
CHAETOCEROS SUBTILIS				.02000			
LAUDERIA ROPEALIS	.18160	.13620	.09080	.02000			
LEPTOCYLINDRICUS MINIMUS	.86260		.45460	1.54000		.18160	8.17230
RHIZOSOLENIA ALATA F. GRACILLIMA				.06000	.00800	.09080	.04540
RHIZOSOLENIA FRAGILISSIMA V. ?				.56000			1.58900
THALASSIOSIRA BINA	.36320			1.06000			
THALASSIOSIRA CONFERTA	1.08960	1.45280	1.72520	5.28000	.02800	.36320	.68160
THALASSIOSIRA ECCENTRICA		.13620		.02000	.00800		
THALASSIOSIRA LEPTOPUS	1.45280	.36320					
THALASSIOSIRA MENDOLANA	.22700	.09080		.08000			.04540
THALASSIOSIRA PACIFICA	1.81600	1.36200	.63560	.03000	.00600		
THALASSIOSIRA PROFUNDA					177.840	28.9560	15.4360
THALASSIOSIRA PSEUDONANA	2.45160	2.72400	2.96020	84.3600	11.5140	48.5780	364.880
ASTERIUNELLA KAFIANA	.99860	.54460	.81720				
NAVICULA spp.	.81720	.18160	1.27120				
THALASSTONEMA BACTLARIS							.09080
CYLTINROTHeca FUSIFORMIS				.13060	.02000		.04540
FRAGILLARIA OCEANICA	.54480	.72640	.81720	18.3000	.86400	.36320	1.45280
NITZSCHIA (FRACILLARIA) SP.	2.54240	1.72520	1.99760	.52000	.02400	.22700	2.17920
NITZSCHIA GRANIT	.27240		.27240				
NITZSCHIA PSEUDOFELICATISSIMA	.13620	.27240					
NITZSCHIA BICAPITATA	.81720	.18160	3.36880	2.92000	.02400	.81720	76.2720
KATOUTNIUM ROTUNDATUM			1.54360	.18160	.58000	.59400	3.26880
PROPOCENTRUM FALTICUM	.22700		.13620	3.82000	.31800	1.22580	.54460

## PHYTOPLANKTON HAUL RESULTS - CRUISE 81-06 VARIANTS LIST - STATIONS 41 TO 47 PAGE 2

(VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10<sup>4</sup>\*4)

STATION 1.D.

	41	42	43	44	45	46	47
SCRIPPSIELLA & GLENODINUM SPP.	.13620			.07000	.02000		.13620
PHOTOSYNTHETIC CILIATES				.10000	.00800		.13620
APEDINELLA SPINIFERA				.72000			.27240
MERTINGOSPHEAERA MEDITERRANEA	.09380						
OCHPOMONAS SPP.	32.3370		14.0740	44.0000	19.1100	31.7800	39.4072
OLISTHODISCUS SP.					.28000		1.90680
CHRYSOCHROMULINA SPP. & IMANTONIA	7.70340	41.5140	9.17000	241.0000	58.4000	350.651	272.037
CORYMRELLUS AUREUS					2.08000		1.13500
PHAEUCYSTIS POUCHETII	1.08960						
PYRAMIMONAS SPP.		.13620		.42600	.52400		11.5316

## PHYTOPLANKTON HAUL RESULTS - CRUISE 81-82 STANDARD LIST - STATIONS 48 TO 55 PAGE 1

(VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)

STATION I.D.	: 48	49	50	51	52	53	55
<b>CENTRIC DIATOMS:</b>							
BACTERIASTRUM DELICATULA	.31780		.34000		.18160	1.36200	.06000
BIDULPHIA AURITA			.02000				
CHAETOCEROS AFFINIS			.12000			.09080	.04000
CHAETOCEROS COMPRESSUS	6.58300		7.58000			6.08360	1.57000
CHAETOCEROS DEBILIS	1.93680		.25000			.63560	.18000
CHAETOCEROS DEFICIENS						.27240	
CHAETOCEROS DIUYMUS	2.71540		.68000		.18160	.27240	.20000
CHAETOCEROS ? RADICANS	65.0938		5.20000		.09080	13.6200	9.05000
CHAETOCEROS SOCIALIS	9.95300		.48000		.31780	4.44920	1.17000
COSCINODISCUS SPP.	.04540						.01000
CORETHRION HYSTRIX			.03000				
RHIZOSOLENIA DELICATULA			.08000		.03000		
RHIZOSOLENIA FRAGILISSIMA	.27240	.22700	.46000	.12000	1.45280		
SKELETONEMA COSTATUM	12.0310		14.5000		.36320	5.99280	1.75000
THALASSIOSIRA GRAVIDA/ROTULA	.09080		.02000				.03000
THALLASIUSIRA NORDENSKIOLDII	2.08840		.85000	.04000		.72640	.09000
THALASSIOSIRA POLYCHORDA	.09080		.02000				.02000
THALASSIOSIRA SPP.	.54480	.09080	.27000			.69680	
TOTAL CENTRIC DIATOMS	169.614	1573.24	33.3600	450.940	819.425	365.334	50.4100
<b>PENNATE DIATOMS:</b>							
ASTERIOMELLA JAPONICA	4.53520	91.2540		.04000	.18160	6.53760	3.56000
GYRO/PLFUPUSIGMA SPP.							.01000
NITZSCHIA? DELICATISSIMA	.63560		.46000	.31000	1.63440	.45400	.58000
NITZSCHIA? LONGISSIMA	.49940		.03000			.09080	.10000
NITZSCHIA? PUNGENS	.59020		.27000				.02000
NITZSCHIA? SEPIATA	.36320		.08000		.04540	.69080	
THALASSIONEMA NITZSCHOIDES	.18160	1.45280	.57000	.13000	2.36080	.95340	.40000
TOTAL PENNATE DIATOMS	16.8900	163.262	2.51000	16.7200	63.2422	12.2936	5.57000
<b>INFUSIOGELLATES:</b>							
GYMMODINIUM	.18160	.59020	.18000	.70000	.40860	1.81600	.32000
GYRODINIUM			.27000		.36000	2.17920	.36320

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 48 TO 55 PAGE 2  
(VALUES ARE NUMBER OF ORGANISMS/LTFF - DIVIDED BY 10\*\*4)

STATION 1.D.

: 48 49 50 51 52 53 55

FLAGELLATES AND OTHERS:

VISTEPHANUS SPECULUM			.02000	.13620	.27240	
CRYPTOMONADS (5-100)	7.35487	49.0320		57.9600	53.5720	46.3080
CRYPTOMONADS (11-200)	1.68967	4.44920		2.44000	2.27000	6.62840
EUTREPTIELLA spp.					.09080	
TOTAL FLAGELLATE CELLS	8.94380	55.3690	.23000	66.8300	69.6252	64.3772
TOTAL PHYTOPLANKTON CELLS	222.097	2287.61	73.0400	924.680	1318.96	761.721
						.32000
						64.0000

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-75 VARIANTS LIST - STATIONS 48 TO 55 PAGE 1  
(VALUES ARE NUMBER OF ORGANISMS/LITER - UNVIDEOED BY 10\*\*4)  
STATION 48 : 48 49 50 51 52 53 55

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-05 VARIANTS LIST - STATIONS 48 TO 55 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)

STATION 1.0.

: 48 49 50 51 52 53 55

<i>APEDINELLA SPINIFERA</i>					•08000	
<i>MERINGOSPHAERA MEDITERRANEA</i>	.15620					•02000
<i>UCHYMONAS SPP.</i>	1.15240	35.4120	5.32000	16.00000	33.5960	10.8052
<i>OLISTHODISCUS SP.</i>		.68100		.45000	1.72520	
<i>CHRYSOCHROMULINA SPP. &amp; IMANTONIA</i>	26.3320	458.041	31.9200	369.360	326.698	367.948
<i>CORYMPELLUS AUREUS</i>		1.67980		.86000	2.06840	
<i>PHAEOCYSTIS POUCHETII</i>						•36320
<i>PYRAMIMONAS SPP.</i>	2.86020			3.44000	2.36060	

PHOTOPLANKTON HAUL RESULTS - CRUISE 81-05 STANDARD LIST - STATIONS 56 TO 57 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*\*4)  
 STATION 1.D. : 56 57

CENTRIC DIATOMS:

BACTERIASTRUM DELICATULA	.04000	
CHAETOCEROS AFFINIS	.05000	
CHAETOCEROS COMPRESSUS	.66000	2.63320
CHAETOCEROS DEBILIS	.15000	.81720
CHAETOCEROS DECIPiens	.06000	
CHAETOCEROS DIDYMUS	.24000	.40860
CHAETOCEROS ? RADICANS	5.91000	9.80640
CHAETOCEROS SOCIALIS	.18000	1.86140
SKELETONEMA COSTATUM	.72000	1.81600
THALASSIOSIRA AESTIVALIS	.03000	
THALASSIOSIRA GRAVIDA/ROTULA	.24000	.09080
THALASSIOSIRA NORDENSKIOLDII	.24000	.18160
THALASSIOSIRA POLYCHOPA		.09080
THALASSIOSIRA spp.	.18000	.13620
TOTAL CENTRIC DIATOMS	185.920	685.268

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PENNATE DIATOMS:

ASTERIONELLA JAPONICA	1.50000	1.49820
CYLINDROTHECA CLOSTERTUM	.06000	.09080
NITZSCHIA? DELICATISSIMA	.51000	.90800
NITZSCHIA? LONGISSIMA	.26000	.48400
NITZSCHIA? SERIATA		.09080
THALASSIONEMA NITZSCHOIDES	.18000	.27240
TOTAL PENNATE DIATOMS	3.29000	4.34300

DINOFLAGELLATES:

CERATIUM		.04540
GYMNOdinium	.92000	.27240

FLAGELLATES AND OTHERS:

UTSTEPHANUS SPECULUM		.09080
CRYPTOMONADS (5-100)	4.58000	1.19040
CRYPTOMONADS (11-200)	.96000	1.08960
TOTAL FLAGELLATE CELLS	6.55000	3.22340
TOTAL PHYTOPLANKTON CELLS	213.140	704.638

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-05 VARIANTS LIST - STATIONS 56 TO 57

(VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)

STATION I.D.

: 56 57

CHAETOCEROS CONSTRICTUM	.65000	.63560
CHAETOCEROS CONVOLUTUM	.05200	
CHAETOCEROS DIADEMA	.08000	.72640
CHAETOCEROS SEPTENTRIONALE		.09080
CHAETOCEROS SIMILE		.15620
CHAETOCEROS SIMPLEX C. CALCIPRANS	.12000	.31760
CHAETOCEROS SUBTILIS	.06000	.1e160
THALASSIOSIRA ANGULATA	.07000	1.22580
THALASSIOSIRA BINATA	.36000	
THALASSIOSIRA CONFERTA	.21000	.72640
THALASSIOSIRA ECCENTRICA	.05000	.1e160
THALASSIOSIRA LEPTOPUS	.12000	
THALASSIOSIRA MENDICLANA	.02000	.36320
THALASSIOSIRA PACIFICA	.87000	.36320
THALASSIOSIRA PROFUNDA	49.5900	181.146
THALASSIOSIRA PSEUDONANA	124.940	481.331
NAVICULA spp.	.73000	
CYLINDROTHECA FUSIFORMIS	.03000	
NITZSCHIA (BACILLARIA) spp.	.21000	.99880
NITZSCHIA PSEUDOULICATISSIMA	.02000	
NITZSCHIA BICAPITATA	.48000	
KATOINIUM ROTUNDATUM	.04000	.40860
PROPOCENTRUM BALTIUM		.09080
SCRIPPSIELLA & GLENQUINUM spp.		.04540
PHOTOSYNTHETIC CILIATES		.09080
APEDINELLA SPINIFERA		.09080
OCHROMONAS spp.	3.25000	2.96020
OLISTHODISCUS spp.	.05000	
CHRYSOCHROMULTINA spp. & IMANTONTA	13.0500	.71680
PYRAMIMONAS spp.	1.03700	.13620

## PHYTOPLANKTON HAUL RESULTS - CRUISE 81-07 STANDARD LIST - STATIONS 6 TO 18 PAGE 1

(VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*\*4)

STATION 1.0.

: 6 8 10 12 14 15 18

## CENTRIC DIATOMS:

<i>BIDULPHIA LONGICPURIS</i>								.18160
<i>CERATULINA BERGONII</i>	3.49560	.42060						2.27000
<i>CHAETOCEROS AFFINIS</i>							.17000	
<i>CHAETOCEROS COMPRESSUS</i>							.41000	
<i>CHAETOCEROS DEBILIS</i>	169.823	15.3452	.24000	1.67000	.37000	171.430	264.228	
<i>CHAETOCEROS DIDYMUS</i>	.91720	.09080			.11000	.90800	.71680	
<i>CHAETOCEROS ? RADICANS</i>	2.22460	.36320					.45400	.27240
<i>CHAETOCEROS SOCIALIS</i>	4.06600	1.85140	.10000	.04000	.09000	1.72520	7.44560	
<i>COSCINODISCUS SPP.</i>			.01000		.01000			.18160
<i>DACTYLIOSOLENS MEDITERRANEUS</i>					1.21000			
<i>DITYLUM FRIGITWELLII</i>	.04840					.04540	.04540	
<i>EUCAMPIA ZODIACUS</i>	12.3034	4.17640	.02000	.10000	.08000		15.1636	
<i>LEPTOCYLINDRUS DANICUS</i>	1.04420	.86260	.09000	.06000		.09080	.45400	
<i>RHIZOSOLENIA DELICATULA</i>		.09080	.02000	.07000		.09080	.09080	
<i>RHIZOSOLENIA FRAGILISSIMA</i>				.01000	.02000		.04540	
<i>RHIZOSOLENIA STOLTERFOTHII</i>	1.54360	.13620	.09000	.03000	.26000	1.22580	1.63440	
<i>SCHRODERELLA DELICATULA</i>		.99880						
<i>SKELETONEMA COSTATUM</i>	1.36200							
<i>THALLASIOSIRA NORDENSKIOLDII</i>	.49940	.13620		.03000	.13620		.27240	
<i>THALASSIOSIRA POLYCHORDA</i>		.13620	.05000	.06000	.02000	.09080	.18160	
<i>THALASSIOSIRA SPP.</i>	.89080	.69080				.04540	.18160	
<i>RHIZOSOLENIA HERATATA</i>					.01000			
<i>RHIZOSOLENIA SETIGERA</i>	.06260					.18160	.31780	
TOTAL CENTRIC DIATOMS	195.722	55.7890	1.65000	30.2100	12.8800	243.843	409.735	
PENNATE DIATOMS:								
<i>ASTERTONELLA JAPONICA</i>	.13620	.04540		.11000		.36320	1.08960	
<i>CYLINDROTHECA CLOSTERIUM</i>			.01000		.12000			
<i>NITZSCHIA? DELICATISSIMA</i>	.31780		.05000	.06000	2.66000			
<i>NITZSCHIA? LONGISSIMA</i>	.36320	.22700	.03000	.12000	.29000	.54480	5.81120	
<i>NITZSCHIA? SERIATA</i>	2.86020	2.04500	2.59000	.43000	.25000	4.44920	4.13140	
<i>THALASSIONEMA NITZSCHOIDES</i>	.13620	.13620	.06000	.02000	.04000	.77180	1.18040	
TOTAL PENNATE DIATOMS	15.6446	5.17020	4.39000	1.30000	122.300	16.7072	57.8396	

PHYTOPLANKTON HAUL RESULTS - CRUISE 81-07 STANDARD LIST - STATIONS 6 TO 18 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10<sup>4</sup>\*4)

STATION 1.D.	: 6	8	10	12	14	15	18
<b>DINOFLAGELLATES:</b>							
CERATTUM	.13620	.04540			.03060		
DINOPHYYSIS		.04540				.04540	.04540
GYMNODINIUM	1.03680	.40800	.67000	2.02000	8.05000	1.72520	1.90680
GYRODINIUM	.36320	.36320	.26000	.68000	4.80000	.49940	.63560
<b>FLAGELLATES AND OTHERS:</b>							
DISTEPHANUS SPECULUM	.04540	.09080	.07000	.05000			.22700
CRYPTOMONADS (5-10L)	4.44440	3.81360	.98000	1.26000	2.84000	1.58900	1.90680
CRYPTOMONADS (11-20L)	7.12760	4.63080	1.32000	4.32000	.48000	3.08720	15.5268
EUTEPTELLA SPP.		.09080	.05000	.16000			
TOTAL FLAGELLATE CELLS	18.1600	15.6236	3.47000	9.08000	16.2000	7.53640	20.6116
TOTAL PHYTOPLANKTON CELLS	243.892	95.5216	51.1000	52.8280	216.490	295.100	637.870

PHYTOPLANKTON HAUL RESULTS - CRUISE 61-07 VARIANTS LIST - STATIONS 6 TO 18 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*\*4)

STATION 1.0. : 6 8 10 12 14 15 16

PODOSIRA SPP.							.22700
CYCLOTELLA CASPIA		.69080					
ACTINOPTYCHUS UNICULATUS				.04000			
ASTEROMPHALUS SARCOPHAGUS	.22700		.57000	.11000		.13620	
CHAETOCEROS BOREALE							.22700
CHAETOCEROS BREVE							.27240
CHAETOCEROS CONSTRICTUM	32.7780	1.77000			1.35000	27.2400	48.4418
CHAETOCEROS CONVOLUTUM	.99080	.18160	.16000	.04000	.20000	.31760	.99880
CHAETOCEROS DIADEMA	.22700				1.18000	1.04420	2.45160
CHAETOCEROS LACINIUSUM		.22700		.04000	.43000	.81720	
CHAETOCEROS LORENZIANUM	1.27120	.49940		.12000	.19000	1.95220	9.94260
CHAETOCEROS PFLAGICUM				.04000			
CHAETOCEROS PSEUDOCPINITUM	.77180	.18160		.16000	.06000		
CHAETOCEROS SEPTENTRIONALE	.81720	.04540				.68100	
CHAETOCEROS SIMILE			.78000	.04000			
CHAETOCEROS SIMPLEX C. CALCITRANS	1.16040	1.36200	.24000	.24000		.09080	12.4850
LAUDERIA BOREALIS	.40800	.27240		.02000	.02000	1.18040	3.40500
LEPTOCYLINDRICUS MINIMUS						.27240	.95340
RHIZOSOLENIA ALATA F. ALATA						.32000	
RHIZOSOLENIA ALATA F. GRACILLIMA						.09000	
RHIZOSOLENIA FRAGILISSIMA V. ?			.66000			.38000	
THALASSIOSIRA CF. CONDENSATA						.34000	
THALASSIOSIRA CONFERTA	2.36280	1.93680	.51000	.54000	5.44000	1.86140	3.26880
THALASSIOSIRA ECCENTRICA				.04000		.09080	
THALASSIOSIRA MENDOLANA				.01000			
THALASSIOSIRA PACIFICA	.13620		.02000		.04000		1.08960
THALASSIOSIRA PROFUNDA				13.9000			12.9390
THALASSIOSIRA PSEUDONANA	17.2520	24.1528		12.8000			16.7980 24.2890
NAVICULA SPP.				.01000	.24000		
THALASSIONEMA BACILLARIS			.02000		.13000	.09080	
THALASSTOHRIVY FRAUENFELUTI					.01000		
TRIPUDONEIS LEPIDOPTERA				.02000			
AMPHORA SPP.			.11000	.01000	.03000		
CYLINDROTHECA FUSIFORMIS		.13620	.02000	.03000	.01000		

## PHYTOPLANKTON HAUL RESULTS - CRUISE 61-27 VARIANTS LIST - STATIONS 6 TO 18 PAGE 2

(VALUES ARE NUMBER OF ORGANISMS/LITTER - DIVIDED BY 10\*\*\*4)

STATION 1.D.

: 6 8 10 12 14 15 16

CYLINDROTHECA spp.		.79280	.05000	.03000			
FRAGILLARIA OCEANICA	.72640	1.02000	.36000	89.4900	.54480		
NITZSCHIA (HACILLARIA) spp.	11.2130	2.45160	.13000	.13000	9.62480	45.6270	
NITZSCHIA PROLONGATOIDES					9.10000	.18160	
NITZSCHIA PSEUDOCYLATISSIMA	.79280				.42000		
NITZSCHIA TURGIDULATA/TURGIDULOIDES					4.06000	.13620	
NITZSCHIA SUBFRAGILENTA					14.2800		
NITZSCHIA CF. SUBPACIFICA					1.17000		
KATOINIUM ROTUNDATUM			.04000	.44000			
PROPOCENTRUM BALTIKUM			.05000	.09000			.36320
PROPOCENTRUM GRACILE						.18160	
"GONYAULAX" RUGOSUM (GYMNO.)						.09080	
SCRIPPSIELLA & GLENOVINIUM spp.	.13620	.63560	.03000	.06000		.31780	
PHOTOSYNTHETIC CILIATES	.81720	1.72520	.13000	.16000		.18160	.59020
APEDINELLA SPINIFERA	.45460	1.36200	.28000	.14000		1.27120	
DINOBRYON SUECICUM	.72640	.63560	.32000	.40000		.36320	
MERTINGOSPHEIRA MEDITERRANEA	.31780	.95340	.12000	.17000		.13620	
OCHROMONAS spp.	.86260	4.35840	6.72000	6.20000	6.30000	2.54240	12.1672
OLISTHODISCUS spp.			.04000			.18170	
CHRYSOCHROMULINA spp. & IMANTONIA	9.17080	13.3476	33.3200	4.36800	57.5900	17.7060	132.205
CORYMELLUS AUREUS	.95340		.70000	.59000		4.63080	1.90680
PHAEOCYSTIS POUCHETII					1.22000		
PYRAMIMONAS spp.	1.67980	3.72250	.09000	.34000		.16160	3.40500
PTEROSPIRMA spp.				.03000			

PHYTOPLANKTON HAUL RESULTS - CRUISE 61-07 STANDARD LIST - STATIONS 20 TO 34 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*\*4)  
 STATION 1.0.

CENTRIC DIATOMS:

	20	23	26	29	31	33	34
CHAETOCEROS COMPRESSUS	.16000	.17000		.03000	.01000		.07000
CHAETOCEROS DEBILIS							1.30000
CHAETOCEROS DIUYMUS		.12000					.06000
CHAETOCEROS ? RADICANS							.04000
CHAETOCEROS SOCIALIS	.06000	.26000		.03000	.08000		.08000
LEPTOCYLINDRUS DANICUS				.09000			.03000
RHIZOSOLENIA DELICATULA							.03000
RHIZOSOLENIA FRAGILISSIMA	.02000	.34000					
RHIZOSOLENIA STOLTZFORTHII	.16000	.27000	.12000	.03000	.06000		.05000
SKELETONEMA COSTATUM	.49000			.05000	.08000		
THALLASIOSIRA NORDENSKIOLDII				.02000			.03000
THALASSIOSIRA POLYCHORDA	.01000			.01000	.01000		.02000
THALASSIOSIRA spp.							
RHIZOSOLENIA SETIGERA	.12000						
TOTAL CENTRIC DIATOMS	99.7200	123.100	49.9200	22.2600	32.7700	83.6600	94.6300

PENNATE DIATOMS:

	20	23	26	29	31	33	34
CYLINDROTHECA CLOSTRITUM	.03000	.07000			.02000		.03000
LICMOPHORA spp.		.02000					
NITZSCHIA? DELICATISSIMA	.26000	.43000	.42000	.12000	.03000	.04000	.13000
NITZSCHIA? LONGISSIMA	.22000	.63000		.01000	.08000	.06000	.04000
NITZSCHIA? PUNGENS							.03000
NITZSCHIA? SERIATA		.96000	4.42000	5.36000	.05000	.12000	1.46000
THALASSIONEMA NITZSCHOIDES	.50000	.13000		.09000	.13000		.06000
TOTAL PENNATE DIATOMS	2.17000	15.4500	32.8700	14.3600	2.10000	86.7300	10.9700

DINOFLAGELLATES:

	20	23	26	29	31	33	34
CERATIUM			.03000				
LYMMODINIUM	.24000	1.08000	1.97000	1.56000	.42000	.82000	1.42000
GYRODINIUM	.26000	.63000	.98000	1.14000	.17000	.40000	.76000
FLAGELLATES AND OTHERS:							
LISTERPHANUS SPECULUM		.04000					.07000
CRYPTOMONADS (5-100)	2.92000	35.2800	38.6400	5.63000	6.32000	36.2600	30.2400
CRYPTOMONADS (11-200)	3.40000	2.52000	5.20000	3.50000	.16000	.60000	2.82000
EUTREPIELLA spp.							.02000

PHYTOPLANKTON HAUL RESULTS - CRUISE 61-07 STANDARD LIST - STATIONS 20 TO 34 PAGE 2  
(VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)

STATION 1.0.	: 20	23	26	29	31	33	34
TOTAL FLAGELLATE CELLS	6.94000	40.4800	47.9600	13.0600	7.12000	38.4700	35.6200
TOTAL PHYTOPLANKTON CELLS	190.640	326.590	227.540	86.2900	53.8300	247.610	210.610

PHYTOPLANKTON HAUL RESULTS - CRUISE 61-07 VARIANTS LIST - STATIONS 20 TO 34 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10<sup>-4</sup>)  
 STATION 1.D.

	20	23	26	29	31	33	34
ASTEROPHALUS SARCOPHAGUS				.03000			
CHAETOCEROS CONVOLUTUM	.05000	.08000	.07000			.02000	.03000
CHAETOCEROS SEPTENTRIONALE	.03000						
CHAETOCEROS SIMPLEX C. CALCITRANS	.11000	.13000	.13000	.08000	.12000	.08000	.14000
LAUERIA BOREALIS				.03000			.10000
RHIZOSOLENIA FRAGILISSIMA V. ?		.06000	.05000	.02000			.04000
THALASSIOSIRA CONFERTA		.56000	3.07000	.74000	.36000	.90000	1.86000
THALASSIOSIRA PACIFICA			.10000				.04000
THALASSIOSIRA PROFUNDA	17.6700	20.5200	5.86000	13.9000	20.2000	92.6600	88.3500
THALASSIOSIRA PSEUDONANA	90.9400	100.890	43.6000	7.26000	11.8000		2.38000
CYLINDROTHECA FUSIFORMIS		.03000			.02000		
CYLINDROTHECA SPP.		.01000	.04000	.05000		.01000	.02000
FRAGILLARIA OCEANICA		.07000	13.6000	27.4400	8.35000	1.42000	86.0700
NITZSCHIA (RACILLARIA) SPP.		.95000	.48000	.07000	.34000	.32000	.10000
NITZSCHIA PROLONGATOIDES					.02000	.02000	.09000
NITZSCHIA PSEUDODELICATISSIMA		.02000					
NITZSCHIA TURGIDULAZ/TURGIDULOIDES			.08000		.07000		.13000
KATOBINUM ROTUNDATUM							
PROPOCENTRUM FAULTICUM							
PROPOCENTRUM GRACILE							
SCRIPPSIELLA & ELENDOVNIUM SPP.				.06000			
PHOTOSYNTHETIC CILIATES						.02000	.13000
APEDINELLA SPINIFERA		.06000	.10000		.04000		
DINOBRYLON SUECICUM			.02000		.03000		.08000
MERINGOSPHAERA MEDITERRANEA					.31000		.36000
UCHROMONAS SPP.							.07000
OLISTHODISCUS LUTEUS							.04000
OLISTHODISCUS SPP.							
CHRYSOCHROMULTINA SPP. & IMANTONIA	10.9000	17.1000	1.04000	1.75000	1.68000	1.86000	8.30000
CORYMBELLUS AUREUS							
PYRAMTMONAS SPP.							
PTEROSPERMA SPP.							

PHYTOPLANKTON HAUL RESULTS - CRUISE 61-67 STANDARD LIST - STATIONS 35 TO 45 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10<sup>-4</sup>)

STATION 100. : 35 36 38 40 41 43

CENTRIC DIATOMS:

BIDULPHIA LONGICUPRIS	.95740	.84780		.04540	
CERATULINA PERGONII				.63560	.00660
CHAETOCEROS AFFINIS		.31780	.10000		
CHAETOCEROS COMPRESSUS	.91720	.45460	.50000		.01600
CHAETOCEROS DEBILIS	133.748	.62060	.74000	65.3760	.05000
CHAETOCEROS DIUYNMUS	1.04420	.15160	.31000	.86260	.01200
CHAETOCEROS SOCIALIS	12.6936	1.54360	.16000	11.0776	.04000
COSCIODISCUS SPP.			.01000		
DACTYLIOSELENS MEDITERRANUS		.36320	.32000		
EUCAMPIA ZODIACUS	4.63060		.04000		
LEPTOCYLINDRUS DANICUS	1.91600		.08000	.36320	.00800
RHIZOSOLENIA DELICATULA	1.04420			.04540	.00400
RHIZOSOLENIA FRAGILISSIMA	.09080	.13620	.03000		.01200
RHIZOSOLENIA STOLTERFOTHII	2.17920	.03000	.04080	.05000	.01400
SKELETONEMA COSTATUM		.04000	.40960	.10000	
THALASSIOSIRA GRAVIDA/ROTULA		.01000			
THALASSIOSIRA POLYCHORDA	.13620			.04540	
THALASSIOSIRA SPP.		.03000			.22700
RHIZOSOLENIA HERATATA					
RHIZOSOLENIA SETIGERA	.04540				
TOTAL CENTRIC DIATOMS	212.245	54.4400	9.89720	6.02000	164.076

PENNATE DIATOMS:

ASTERIOMELLA JAPONICA				.09080	
CYLINDROTHECA CLOSTERIUM		.09080			
NITZSCHIA? DELICATISSIMA	.27240	.11000	1.27120	1.04000	.40860
NITZSCHIA? LONGISSIMA	.63560	.02000	.18160		.09080
NITZSCHIA? PUNGENS		.04000			.03600
NITZSCHIA? SERIATA	12.2580	.10000	.22700	.12000	.63560
THALASSIONEMA NITZSCHOIDES	.72640	.07000	.31780	.26000	.18160
TOTAL PENNATE DIATOMS	73.3732	.90000	56.8962	18.4600	78.5874
DINOFLAGELLATES:					
CERATIUM	.09080	.02000		.02000	
UNOPHYYSIS		.01000			

PHYTOPLANKTON HAUL RESULTS - CRUISE 61-07 STANDARD LIST - STATIONS 35 TO 43 PAGE 2  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*\*4)

STATION 1.D.	: 35	36	38	40	41	43
GYMNODINIUM	.40860	1.22000	3.54120	3.83000	5.44800	.10200
UVREDINIUM	.22700	.38000	19.0582	13.0500	1.86140	.07800
FLAGELLATES AND OTHERS:						
LISTEOPHANUS SPECULUM		.85000		.05000	.45400	
CRYPTOMONADS (5-100)	.45400	5.58000		.38000	6.53760	3.76000
CRYPTOMONADS (11-200)	.27240	1.28000		.12000	7.99040	.68800
EUTREPTIELLA spp.					.04540	.00800
TOTAL FLAGELLATE CELLS	2.76840	8.89000	23.2448	17.5000	24.3798	5.05200
TOTAL PHYTOPLANKTON CELLS	711.716	84.6300	338.094	96.4500	422.175	68.0500

PHYTOPLANKTON HAUL RESULTS - CRUISE 61-07 VARIANTS LIST - STATIONS 35 TO 43 PAGE 1  
 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10<sup>4</sup>)  
 STATION 1-6.

	35	36	38	40	41	43
CYCLOTELLA CASPIA						.00400
ASTEROMPHALUS SARCOPHAGUS		.02000				
CHAETOCEROS AFFINE V. WILLEI			.12000			
CHAETOCEROS ATLANTICUM			.13620	.10000		
CHAETOCEROS CONSTRICTUM	41.7680	.16000	.59020	.35000	25.7872	.01800
CHAETOCEROS CONVOLUTUM	1.45740	.08000	.09080		.95340	.01000
CHAETOCEROS DIADEMA	.95340			.36000	.40800	.00800
CHAETOCEROS LACINIUSUM				.06000		
CHAETOCEROS LORENZIANUM	1.86140		.86260	.02000	.63560	.02600
CHAETOCEROS PELAGICUM			1.72520	.36000		
CHAETOCEROS PSEUDOURINITUM				.08000	.68100	.00800
CHAETOCEROS SEPTENTRIONALE	.27240					
CHAETOCEROS SIMPLEX C. CALCIPANS	1.54360	.08000	.13620		4.63080	.05600
CHAETOCEROS SUBTILIS	.18160					
LAUDERIA RUPEALIS	1.54360				.68100	.00800
LEPTOCYLINDRICUS MINIMUS	.22700					
RHIZOSOLENIA ALATA F. ALATA	.04540		.18160	.08000		
RHIZOSOLENIA ALATA F. GRACILLIMA			.04540			
RHIZOSOLENIA FRAGILISSIMA V. ?	.04540		.54480	.55000		.01000
RHIZO. STYLIFORMIS V. STYLIFORMIS				.04000		
THALASSIOSIRA CF. CONDENSATA		.04000				
THALASSIOSIRA CONFERTA	1.22580	.54000	1.63440	1.50000	1.36230	.07400
THALASSIOSIRA ECCENTRICA				.02000		
THALASSIOSIRA PACIFICA	.18160	.03000	.09080		.09080	.02000
THALASSIOSIRA PROFUNDA		5.20000			32.2340	17.6700
THALASSIOSIRA PSEUDONANA	1.56960	48.1620			16.3440	14.9340
THALASSIONEMA BACILLARIS			.09080	.18000		
THALASSIOTHEIX LONGISSIMA				.01000		
CYLINDROTHECA FUSIFORMIS		.01000				
CYLINDROTHECA SPP.			.18160	.09000	12.3488	
FRAGILLARIA OCEANICA	.99880	.26000	40.6330	7.90000	63.5600	
NITZSCHIA (FRAGILLARIA) SP.	58.1120	.11000	.63560	.14000	1.27120	.04000
NITZSCHIA PROLONGATOIDES			3.35960	5.96000		.00800
NITZSCHIA TURFIDULA/TURGIDULOIDES		.08000	3.99520	.79000		

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 (VALUES ARE NUMBER OF ORGANISMS/LITER - DIVIDED BY 10\*\*4)  
 STATION I.D. : 35 36 38 40 41 43

NITZSCHIA SUBFRAGILLANTA		4.35940	.72000			
NITZSCHIA CF. SUBPACIFICA		1.54360	1.25000			
KATODINUM POTUNDATUM	.27240	.30000		.25000	2.04300	.40400
PROPOCENTRUM BALISTICUM		.05000				
SCRIPPSIELLA & GLENOQUINUM SPP.	.36320		.64540			.01200
PHOTOSYNTHETIC CILIATES	1.99760	.04000		3.22340	.02400	
APERINELLA SPINIFERA	.15160	.04000				.02600
MFRINGOSPHAERA MEDITERRANEA		.04540				
OCHROMONAS SPP.	.99880	2.52000	21.7920	5.75000	22.9270	3.16000
OLISTHODISCUS LUTFUS						.07200
OLISTHODISCUS SP.		.06000				
CHRYSOCHROMULINA SPP. & IMANTONIA	20.6840	16.5000	226.274	48.7200	132.205	25.9920
CORYMRELLUS AUREUS		2.74300	.10000			
PYRAMIMONAS SPP.		.22700	1.18000			.50200

APPENDIX 1

A method of estimating the accuracy of nutrient concentration measurements through statistical analysis of duplicate readings.

Let  $y_t$  = true value;

$y_r$  = measured value; and

$e$  = expected fractional error.

Then  $y_r = y_t(1+e)$

The implicit assumption is that the variance of measurements is proportional to their mean value. This assumption was tested by graphical analysis of the data.

Taking the logarithm gives:  $\ln(y_r) = \ln(y_t) + \ln(1+e)$

If  $e \ll 1$ , then  $\ln(1+e) \approx e$ .

Thus  $\ln(y_r) = \ln(y_t) + e$ .

If  $y_1$  and  $y_2$  are replicate measurements of the same nutrient concentration, we have:

$$\ln(y_1) - \ln(y_2) = e_1 - e_2$$

Letting  $D = \ln(y_1) - \ln(y_2)$ , and squaring and averaging gives:

$$\overline{D^2} = \overline{e_1^2} - 2\overline{e_1 e_2} + \overline{e_2^2}$$

But  $e_1$  and  $e_2$  are uncorrelated, and therefore  $\overline{e_1 e_2} \rightarrow 0$  for large  $N$ .

Thus  $\overline{D^2} = \overline{e_1^2} + \overline{e_2^2}$ , and for large  $N$   $\overline{e_1^2} \rightarrow \overline{e_2^2} \rightarrow \overline{e^2}$

Therefore  $\overline{D^2} = 2\overline{e^2}$ , and

$$e = \sqrt{\overline{D^2}/2}$$

This is the expression used to calculate the expected fractional error shown in the text. The expected percentage error is simply given by:

$$e * 100$$