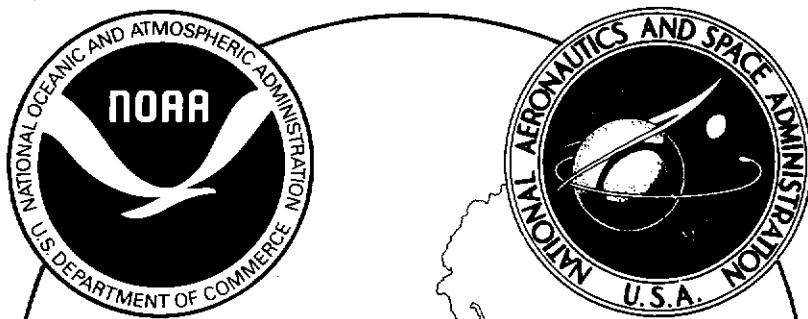


# *Large Area Marine Productivity Experiment*



## **LAMPEX I SEA-TRUTH DATA REPORT April 17-19, 1979**

UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Northeast Fisheries Center  
Sandy Hook Laboratory  
Division of Environmental Assessment  
Highlands, New Jersey

Report No. SHL-79-28 (July 1979)

LAMPEX I SEA-TRUTH DATA REPORT

April 17-19, 1979

Compiled by: James P. Thomas, Craig N. Robertson and Christine A. Evans

U. S. Department of Commerce  
National Oceanic and Atmospheric Administration  
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## ABSTRACT

### Large Area Marine Productivity Experiment I

A Large Area Marine Productivity Experiment to test the feasibility of mapping chlorophyll a and total suspended solids concentrations in surface waters of the continental shelf from Cape Hatteras to the Canadian border was conducted jointly by the National Aeronautics and Space Administration (NASA)/Langley Research Center/Marine Environments Branch and the National Marine Fisheries Service (NMFS)/Northeast Fisheries Center (NEFC)/Division of Environmental Assessment during the period of 17-21 April 1979 as part of the Ocean Pulse Program. One-hundred eleven people from 25 federal, state and private research facilities on 19 research vessels and 3 aircraft participated in the experiment. NASA was responsible for the remote sensing systems, data collection, and reduction. The NMFS with the cooperation of other federal, state and private research facilities was responsible for the organization, collection and reduction of sea-truth data to calibrate the remote sensors.

During the experiment (17-21 April 1979) NASA accomplished the remote sensing using two aircraft, a NASA U-2 flown at 19.7 km (65,000 ft) with an Ocean Color Scanner (OCS) and Mitchell-Vinton cameras using aerial color and multispectral film (Principal Investigator - Craig Ohlhorst) and a NASA C-130 flown at 3.0 km (10,000 ft) with a multispectral scanner (Modular Multispectral Scanner M2S) and Zeiss mapping camera using aerial color film (Principal Investigator - Dr. Robert Johnson). The sea-truth data were collected at locations depicted in Figure 1. Additionally Landsat imagery for these same locations and approximate times is being examined by Dr. Vic Klemas, University of Delaware.

NASA U-2 inflight observations suggest successful, cloud-free coverage of a 14 mile wide swath along the coast between 19 and 21 April from Oregon Inlet, North Carolina to the Canadian border including Long Island Sound, but not Georges Bank.

NASA C-130 inflight observations on 17 and 19 April suggest successful quantitative coverage where concurrent sea-truth was available from Chesapeake Bay to Cape Cod, except for the coastal zone of New Jersey off Barnegat Inlet and Long Island at Fire Island inlet where cloud cover prevented data collection. Cloud and light conditions hindered or prevented data collection north of Cape Cod and over Georges Bank.

This report presents the sea-truth data collected in conjunction with the NASA C-130 overflights on 17 and 19 April 1979.

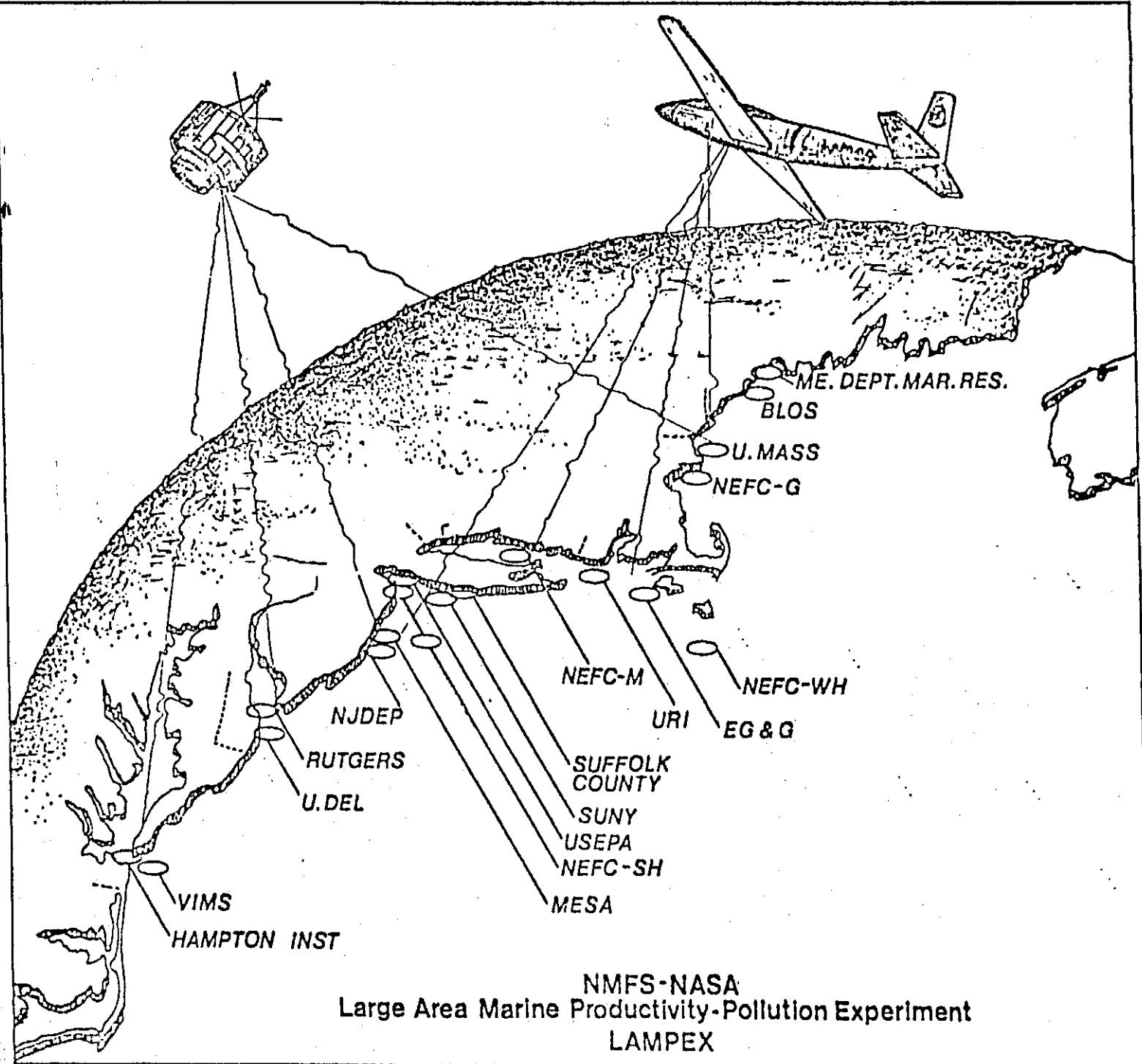


Figure 1. Locations where sea-truth data were collected during LAMPEX I.

## INTRODUCTION

Large Area Marine Productivity Experiments (LAMPEX) were designed as a joint program between the National Aeronautics and Space Administration (NASA)/Langley Research Center and the National Marine Fisheries Service (NMFS)/Northeast Fisheries Center (NEFC) to: 1) advance the development of improved remote sensing systems and techniques for monitoring and assessing regional marine resources and environmental quality; 2) to increase our understanding of regional marine ecosystem processes; and 3) ultimately to provide an extensive, synoptic, integrated and timely data base for application to problems of ocean resource and environmental management. The particular objective for LAMPEX I was to test the feasibility of mapping via remote sensing chlorophyll a and total suspended solids concentrations in near-shore surface waters of the continental shelf between Cape Hatteras and the Canadian border. NASA was responsible for the remote sensing. NMFS/NEFC was responsible for the coordination and execution of sea-truth data collection.

To meet their responsibility, the NEFC, through Dr. Herb Austin of Virginia Institute of Marine Science, contacted individuals along the northeast coast of the United States to assist in the collection of sea-truth data to be used in the calibration of the remote sensors being flown by NASA. As part of this coordination effort, a set of minimal requirements and initial protocol for vessels and manpower was issued by the NEFC. Standardized methodology (Appendices A and B) and a list of required equipment were also distributed. Potential participants were asked to check off equipment shortages and return list. The NEFC in turn endeavoured to supply missing pieces of equipment and provide instruction as required. Weekly updates on who would be participating and where they would be collecting sea-truth data were prepared

so that NASA could plan and file appropriate flight plans. To avoid sun glint problems and coordinate overflight and sea-truth data collection, a sampling schedule (Appendix C) was issued. A land-based communications network was established so that last minute decisions could be disseminated rapidly and dependably. A mutual radio frequency for the NASA C-130 aircraft and all NOAA ships and laboratories was established. However, direct radio communications between the NASA C-130 aircraft and NOAA never functioned properly. Prior to the experiment, National Weather Service long-range marine forecasters at Boston and at Wallops Island were consulted. Based on weather information and aircraft and sea-truth vessel availability, a joint NASA/NEFC decision was made to conduct LAMPEX I with the NASA C-130 aircraft on Tuesday (17 April) and Thursday (19 April). Further, it was decided to examine the area between Chesapeake Bay and Long Island on 17 April and the area north and east of there on 19 April. Plans were also made for the retrieval, following the experiment, of both equipment and samples to the NEFC, Sandy Hook Laboratory where sample analyses and sea-truth data reduction would occur. Finally, a preliminary synopsis (Appendix D) was distributed and evaluative comments were sought for improving future experiments.

This report presents the sea-truth data collected in conjunction with the NASA C-130 overflights on 17 April and 19 April 1979. No sea-truth was collected during the NASA U-2 overflights, 19-21 April 1979 (Appendix E). In all, one-hundred seven people from 23 federal, state and private research facilities on 19 surface craft and one helicopter participated in the collection of sea-truth data (Appendix F).

## METHODS

### Chlorophyll a

Chlorophyll a measurements basically followed those described in Strickland and Parsons "A Manual for Seawater Analysis, 1972". Filtration, extraction and measurements of fluorescence were accomplished either at sea, shortly after collection of seawater on long cruises or preferably in the laboratory under standardized conditions if samples could be sent to NEFC, Sandy Hook within 20 hrs of collection. Samples were collected from the sea surface. After collection, the seawater was poured through a 300 micron nylon filter. This removed the larger zooplankton. The phytoplankton in a measured subsample (100-500 ml) were filtered onto a 2.5 cm diameter Whatman GF/F glass fiber filter. Care was taken not to exceed 55 mm Hg vacuum during filtration. The phytoplankton adhering to the walls of the filter funnel were rinsed down onto the filter using prefiltered seawater from the same station as the chlorophyll sample.

On long cruises the filter was removed and submerged in 2-3 ml of 90% acetone in a glass tissue grinding vessel. The filter and plankton were pulverized using a teflon-tip grinding rod attached to an electric hand-drill. The volume of extract in the grinding vessel was brought to 10 ml using 90% acetone. The vessels were stoppered and shaken. Particulates and glass fibers were separated from the chlorophyll extract by filtration through Whatman GF/A glass fiber filters. Approximately 6 ml of this extract were placed in a fluorometer cuvette and the fluorescence measured on a Turner Designs fluorometer. Two drops of 5% HCL were added to the extract and its fluorescence was reread within 5 minutes on the fluorometer. The two fluorescence readings and appropriate equations were used to generate "corrected" estimates of chlorophyll a, phaeopigments and the sample acidification ratio ( $F_0/F_a$ ).

On short cruises, sample filters were submerged in 4 ml of 90% acetone in a calibrated 10-ml capped centrifuge tube. The sample was refrigerated in complete darkness for 24 hrs to allow complete extraction of chlorophyll pigments. The chlorophyll extract and particulates were separated and the fluorescence measured as described above.

The Turner Designs fluorometers used during LAMPEX I were calibrated using the spectrophotometric method for "corrected" chlorophyll a according to Lorenzen's equations (Limnol. Oceanog. 12: 343, 1967) given by Strickland and Parsons (1972). Calibration of the fluorometers was accomplished using chlorophyll a extract from actively growing cultures of Skeletonema costatum. All fluorometers additionally were intercalibrated at Brookhaven National Laboratory by Dr. Paul Falkowski using purified chlorophyll a.

#### Total Suspended Solids

Total suspended solids were determined following the total suspended matter (nonfilterable residue) procedure in Standard Methods (APHA, 1975) except that an isotonic ammonium carbonate  $[(\text{NH}_4)_2 \text{CO}_3]$  solution (Uematsu et al., 1978) was used instead of distilled water to wash salt through the filter. Filtration was accomplished using Reeve Angel 934-AH (nominal particle retension 1.0  $\mu\text{m}$ ) and Whatman GF/F (nominal particulate retension 0.7  $\mu\text{m}$ ) glass fiber filters. Samples were filtered under low vacuum (approximately 55 mm Hg). We believe that the combination of the isotonic rinse, which should not have broken phytoplankton cells, and low vacuum used during filtration resulted in abnormally high values of total suspended solids compared with other investigators (Manheim, Meade and Bond, 1970; Drake, 1974; Schubel, 1974; Biscaye and Olsen, 1976).

## RESULTS

The NASA C-130 flight lines for LAMPEX I are presented in Figure 2. The open circles represent the approximate locations of sea-truth collecting craft. The dashed flight lines represent unsuccessful attempts at remote sensing because of cloud cover. Flight lines over the York River, the south shore of Delaware Bay, Buzzards Bay, Cape Cod-Martha's Vineyard and Nantucket Sound have concurrent ground truth data collected by other programs. Such data is not presented here. Flight lines east of Chesapeake Bay, off the Maryland-Virginia coast, near Montauk Point (Long Island) and over Georges Bank, have no concurrent sea-truth data because of rough weather, lack of personnel, mechanical failure and wrong timing (inadequate communication), respectively.

The cruise tracks of the vessels involved in the collection of sea-truth data are depicted in Figure 3. The area from Chesapeake Bay to the south shore of Long Island was sampled concurrently by surface craft and the NASA C-130 on 17 April 1979. The areas from Long Island Sound to Maine and adjacent to Sandy Hook were sampled concurrently on 19 April 1979 as noted in the Preliminary Synopsis (Appendix D).

The chlorophyll a and total suspended solids sea-truth data are presented in Figures 4-21 and Tables 2-22. Table 1 explains the numbers found in the comments column of each table. The figures are presented together with the tables from the same geographical area in chronological order based generally on overflight days and times.

## RECOMMENDATIONS FOR FUTURE EXPERIMENTS

- 1) Greater flexibility required for both sea-truth and remote sensing craft (i.e. larger operational windows; increased flexibility with regard

to operational plans and tracks; ability to perform cooperative joint operations in and over Canadian or Mexican air space and waters). Weather and lack of flexibility greatly hindered LAMPEX I.

- 2) Improve communications via radio.
- 3) Improve training with regard to sea-truth data collection. Update and revise sea-truth methodologies.

## ACKNOWLEDGMENTS

Cover page and figures were drawn by M. Cox. Typing was done by M. Montone.

## REFERENCES

- APHA (American Public Health Association).
1975. Standard Methods for the Examination of Water and Wastewater,  
14 ed. pp. 1193.
- Biscaye, P. E. and C. R. Olsen.
1976. Suspended particulate concentrations and compositions in the  
New York Bight. Am. Soc. Limnol. Oceanogr. Spec. Symp. 2: 124-137.
- Drake, D. E.
1974. Suspended particulate matter in the New York Bight Apex:  
September-November 1973. NOAA Tech. Rept. ERL 318 MESA I. 53 p.
- Lorenzen, C. F.
1967. Determination of chlorophyll and phaeopigments: spectrophotometric  
equations. Limnol. Oceanogr. 12: 343-346.
- Manheim, F. T., R. H. Meade and G. C. Bond.
1970. Suspended matter in surface waters of the Atlantic continental  
margin from Cape Cod to the Florida Keys. Science 167: 371-376.
- Schubel, J. R.
1974. Effects of Agnes on the suspended sediment of the Chesapeake Bay  
estuarine system. Chesapeake Research Consortium Pub. 34: B1-B6.
- Strickland, J. D. H. and T. R. Parsons.
1972. A Practical Handbook of Seawater Analysis. Fisheries Res. Bd.  
of Canada, Ottawa.
- Uematsu, M., M. Minigawa, H. Arita and S. Tsunogai.
1978. Determination of dry weight of total suspended matter in seawater.  
Bull. Fac. of Fish. Hokkaido Univ. 29(2): 164-172.

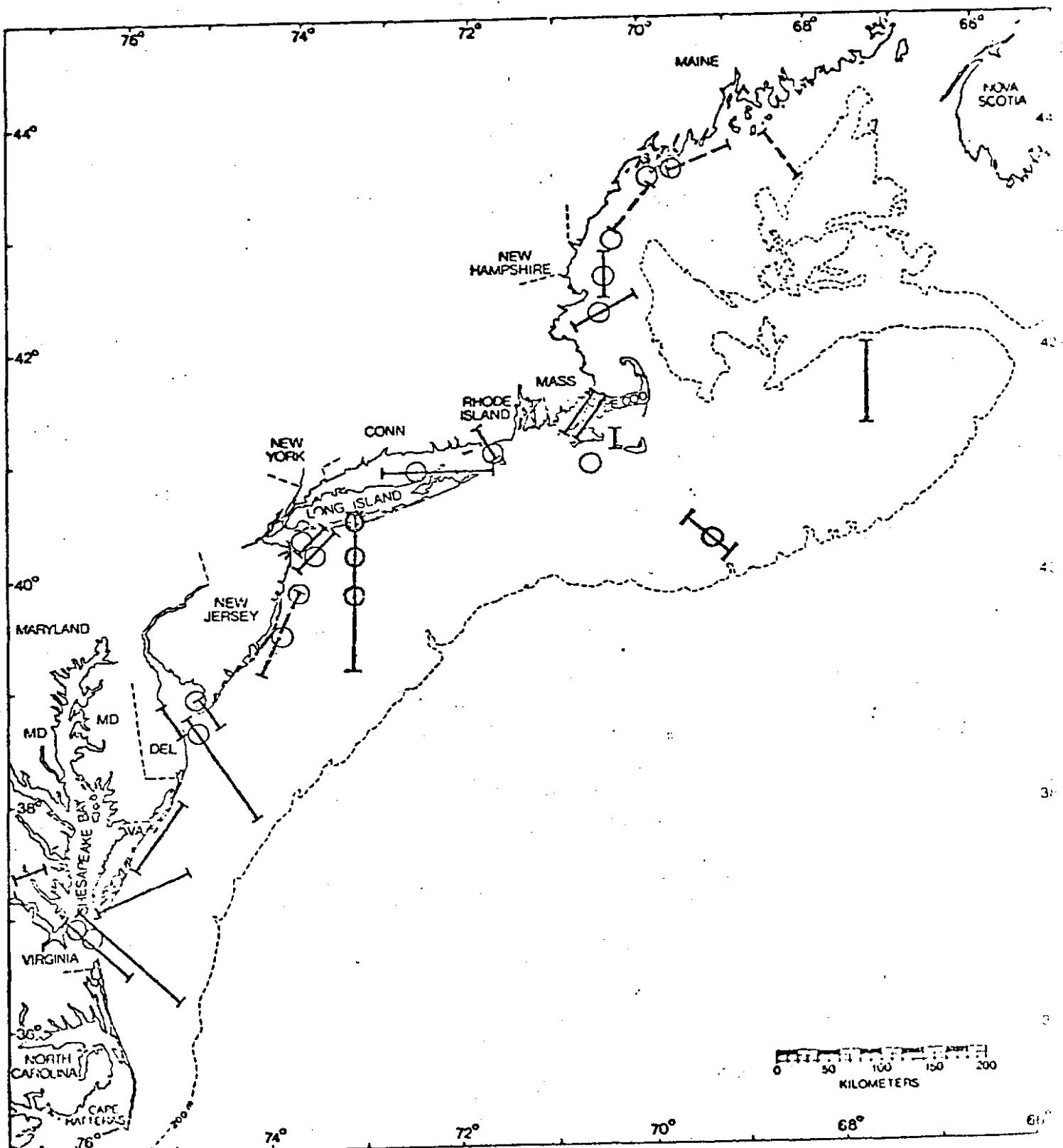


Figure 2. NASA C-130 flight lines April 17 and 19, 1979. Circles indicate approximate positions of sea truth vessels at time of overflight. Dashed flight lines represent unsuccessful remote sensing.

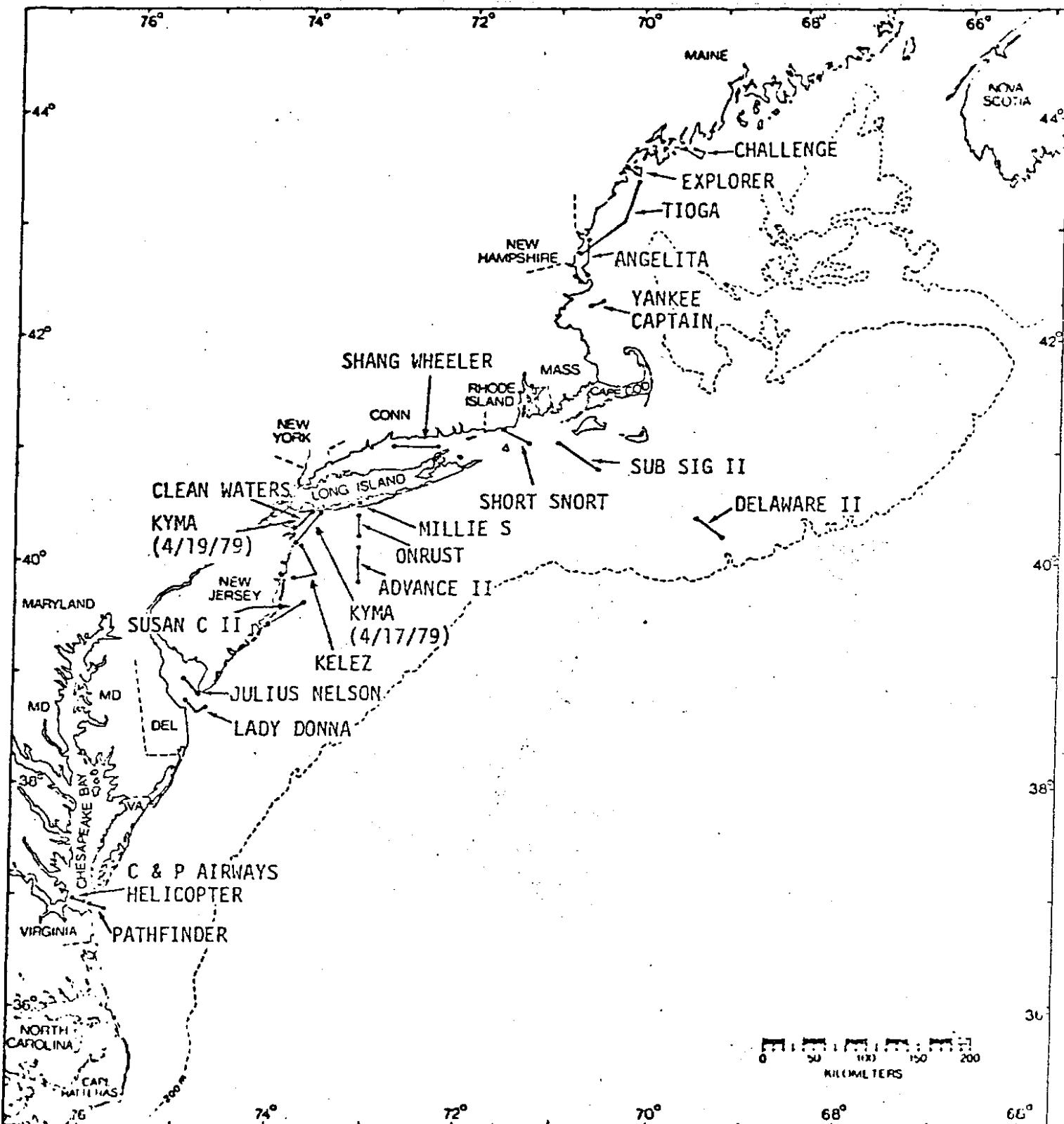


Figure 3. Cruise track locations for vessels collecting sea-truth data, April 17 and 19, 1979.

Table 1a. Chlorophyll data comments. Numbered statements correspond to numbers in comments columns of summary tables.

---

1. Relatively high chlorophyll a concentration when compared to adjacent stations.
2. Relatively low chlorophyll a concentration when compared to adjacent stations.
3. Relatively low acidification ratio (Fo/Fa) when compared to adjacent stations.
4. Excess vacuum used during filtration - chlorophyll estimates may be low due to cell breakage.
5. No 300  $\mu$  filter used - possibility of contamination due to presence of zooplankton, possible elevated phaeophytin values.
6. Deviated from proposed sampling track.
7. Sample lost at sea.
8. Samples stored and filtered upon return to land, potential breakdown of water sample.
9. Filter dropped while transferring to centrifuge tube.
10. Forceps touched sample while transferring to centrifuge tube. Forceps rinsed with acetone to remove any phytoplankton adhering to them.
11. Sample took approximately 3 hours to filter.
12. 0.4  $\mu$ m nucleopore filter used.
13. Samples may be out of order.
14. Fo/Fa (acidification ratio) 1.64 - concentration of phaeophytin is greater than or equal to concentration of chlorophyll a.
15. Water not shaken in sample bottle prior to filtering, potential settling of phytoplankton.
16. Sides of filtration cup not rinsed with pre-filtered seawater.
17. Samples may be out of sequence due to possible mixup of numbering.

Table 1b. Total suspended matter data comments. Numbered statements correspond to numbers in comments column of summary tables.

- 
- 1 = Samples filtered in shore-based laboratory rather than at sea.
  - 2 = Distilled or deionized water used for blank instead of filtered sea water.
  - 3 = No blanks.
  - 4 = Samples taken at longer time intervals.
  - 5 = Samples not taken during times of overflight.
  - 6 = Samples not taken during day of overflight.
  - 7 = Samples not taken in the area of overflight.
  - 8 = Samples exhibit large unexplained variability.
  - 9 = Low volume filtered.

NOTES:

- 1. Column labeled "TSM Concentrations Minus Blank" was determined only for samples that also had blanks which were run at the same time and in the same manner as the samples. These TSM concentrations were calculated by subtracting the harmonic mean of the blanks from each initial TSM sample concentration for that particular set.
- 2. Initial TSM sample concentrations followed by an asterisk (\*) were not rinsed with isotonic  $(\text{NH}_4)_2\text{CO}_3$  solution therefore no correction for salt retained by the filters was made. An estimated average salt correction that could be subtracted from the initial TSM concentrations is 4.41 mg/l (based on a personal communication with W. Philpot using TSM samples taken in the same general area in August 1975).

0 2  
NAUTICAL MILES

1022

16.00 23.94  
40.99 19.38

18.00 20.52  
37.50 23.94  
19.50 25.08

19.00 27.93  
16.00 26.68

CHLOROPHYLL a

TOTAL SUSPENDED MATTER

32.00 27.93  
16.00 22.80  
67.49 13.33

0944

19.19 10.99  
23.67 29.36  
38.38 25.82  
83.00 28.21

20.55 24.11

26.93 28.27  
19.61 20.73

20.83 27.29  
13.63 25.65  
11.99 23.77

37°00'  
76°00'

Hampton Institute/C&P Airways Helicopter, April 17, 1979

CHART NO. 12221

Virginia Institute of Marine Science/Pathfinder, April 17, 1979

Figure 4. Cruise tracks and sea-truth chlorophyll a and total suspended solids data for C&P Airways Helicopter and R/V Pathfinder, April 17, 1979.

Table 2a. Virginia Institute of Marine Science/Pathfinder, April 17, 1979

Summary of chlorophyll a ( $\text{mg/m}^3$ ), phaeophytin ( $\text{mg/m}^3$ ) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll a ( $\text{mg/m}^3$ )	Phaeophytin ( $\text{mg/m}^3$ )	Fo/Fa	Comment Number
0945	36°57.3'	76°02.5'	1	0	29.36	5.40	2.06	6
0958	36°57.1'	76°01.8'	2	0	28.21	5.98	2.03	6
1002	36°57.0'	76°01.1'	3	0	28.27	4.23	2.09	6
1007	36°56.7'	76°00.1'	4	0	27.29	3.15	2.12	6
1013	36°56.4'	75°58.8'	5	0	23.77	4.02	2.07	6
1018	36°56.6'	75°59.8'	6	0	25.65	6.41	2.00	6
1023	36°56.8'	76°00.5'	7	0	20.73	3.24	2.08	6
1028	36°57.0'	76°01.3'	8	0	24.11	3.68	2.08	6
1042	36°57.3'	76°02.0'	9	0	25.82	6.24	2.01	6

Mean chlorophyll a  $\text{mg/m}^3$  25.91

Range chlorophyll a  $\text{mg/m}^3$  20.73 to 29.36

Table 2b. Virginia Institute of Marine Science /Pathfinder, April 17, 1979  
Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
0945	36°57.3'	76° 2.5'	1	0	19.19		3
0958	36°57.1'	76° 1.8'	2	0	38.38		
1002	36°57.0'	76° 1.1'	3	0	26.93		
1007	36°56.7'	76° 0.1'	4	0	20.83		
1013	36°56.4'	75°58.8'	5	0	11.99		
1018	36°56.6'	75°59.8'	6	0	13.63		
1023	36°56.8'	76° 0.5'	7	0	19.61		
1028	36°57.0'	76° 1.3'	8	0	20.55		
1033	36°57.3'	76° 2.0'	9	0	23.67		

Table 3a. Hampton Institute/C&amp;P Airways Helicopter, April 17, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll a (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
0944	36°57.4'	76°02.7'	1	1	10.99	2.07	2.05	
0949	36°57.6'	76°03.3'	2	1	13.33	6.03	1.86	
0952	36°57.7'	76°04.0'	3	1	22.80	8.55	1.91	
0956	36°57.9'	76°04.6'	4	1	27.93	6.27	2.02	
1000	36°58.1'	76°05.2'	5	1	26.68	5.39	2.04	
1003	36°58.2'	76°05.9'	6	1	27.93	6.27	2.02	
1007	36°58.4'	76°06.4'	7	1	25.08	8.41	1.94	
1010	36°58.6'	76°07.0'	8	1	23.94	4.56	2.05	
1014	36°58.6'	76°07.6'	9	1	20.52	13.86	1.75	
1018	36°59.0'	76°08.8'	10	1	19.38	15.53	1.69	
1022	36°59.2'	76°10.0'	11	1	23.94	4.56	2.05	

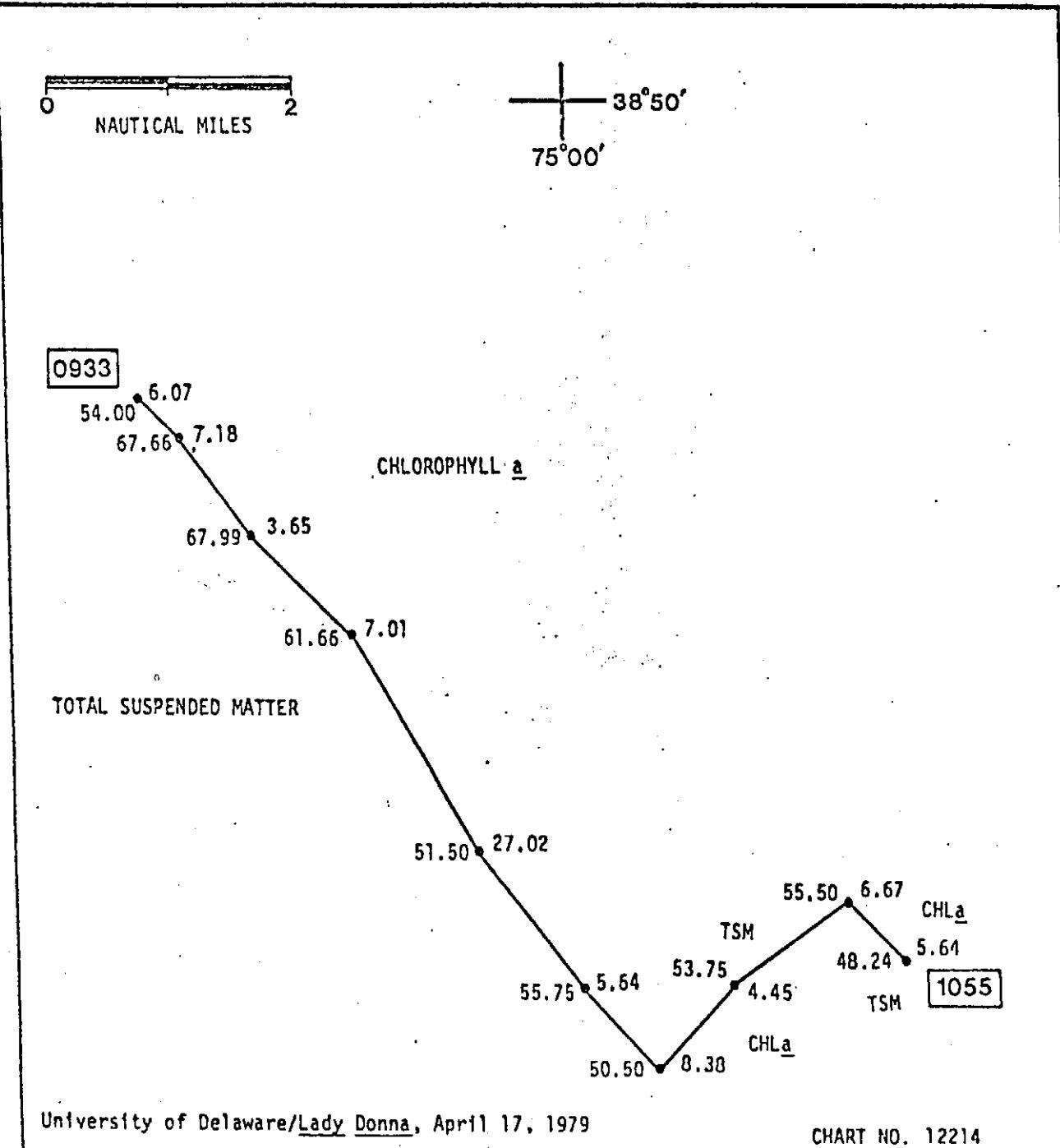
Mean chlorophyll a mg/m<sup>3</sup> 22.05

Range chlorophyll a mg/m<sup>3</sup> 10.99 to 27.93

Table 3b. Hampton Institute/C&P Airways Helicopter, April 17, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
0944	36°57.4'	76° 2.7'	1	1	83.00	62.47	1
0949	36°57.6'	76° 3.3'	2	1	61.49	40.97	
0952	36°57.7'	76° 4.0'	3	1	16.00	-4.52	
0956	36°57.9'	76° 4.5'	4	1	32.00	11.47	
1000	36°58.1'	76° 5.2'	5	1	16.00	-4.52	
1003	36°58.2'	76° 5.9'	6	1	19.00	-1.52	
1007	36°58.4'	76° 6.4'	7	1	19.50	-1.02	
1010	36°58.6'	76° 7.0'	8	1	37.50	16.97	
1014	36°58.6'	76° 7.6'	9	1	18.00	-2.52	
1018	36°59.0'	76° 8.8'	10	1	40.99	20.47	
1022	36°59.2'	76°10.0'	11	1	16.00	-4.52	
		Blank 1		1	9.00		
		Blank 2		1	61.00		
		Blank 3		1	53.50		

21



University of Delaware/Lady Donna, April 17, 1979

Figure 5. Cruise track and sea-truth chlorophyll a and total suspended solids data for R/V Lady Donna, April 17, 1979.

Table 4a. University of Delaware/Lady Donna, April 17, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
0935	38°48.3'	75°05.0'	1	0				7,8
0945	38°47.6'	75°04.5'	2	0	6.07	2.05	1.93	12,8
0950	38°47.2'	75°04.0'	3	0	7.18	1.80	2.00	12,8
1000	38°46.4'	75°03.3'	4	0	3.65	1.13	1.96	9,11,8
1010	38°45.7'	75°02.3'	5	0	7.01	1.75	2.00	12,4
1027	38°44.0'	75°01.1	6	0	27.02	10.41	1.90	1
1028	38°42.9'	75°00.0'	7	0	5.64	0.98	2.06	12
1036	38°42.2'	74°59.2'	8	0	8.38	1.88	2.02	12,4
1043	38°42.8'	74°58.6'	9	0	4.45	1.54	1.93	12
1052	38°43.6'	74°57.2'	10	0	6.67	1.67	2.00	4,12
1100	38°43.1'	74°56.6'	11	0	5.64	1.62	1.97	4,12

Mean chlorophyll a mg/m<sup>3</sup> 8.17

Range chlorophyll a mg/m<sup>3</sup> 3.65 to 27.02

Table 4b. University of Delaware /Lady Donna, April 17, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
0933	38°47.6'	75° 4.5'	2	0	54.00*		3
0942	38°47.2'	75° 4.0'	3	0	67.66*		
0950	38°46.4'	75° 3.3'	4	0	67.99*		
1001	38°45.7'	75° 2.3'	5	0	61.66*		
1013	38°44.0'	75° 1.1'	6	0	51.50*		
1021	38°42.9'	75° 0.0'	7	0	55.75*		
1029	38°42.2'	74°59.2'	8	0	50.50*		
1037	38°42.8'	74°58.6'	9	0	53.75*		
1045	38°43.6'	74°57.2'	10	0	55.50*		
1055	38°43.1'	74°56.6'	11	0	48.24*		

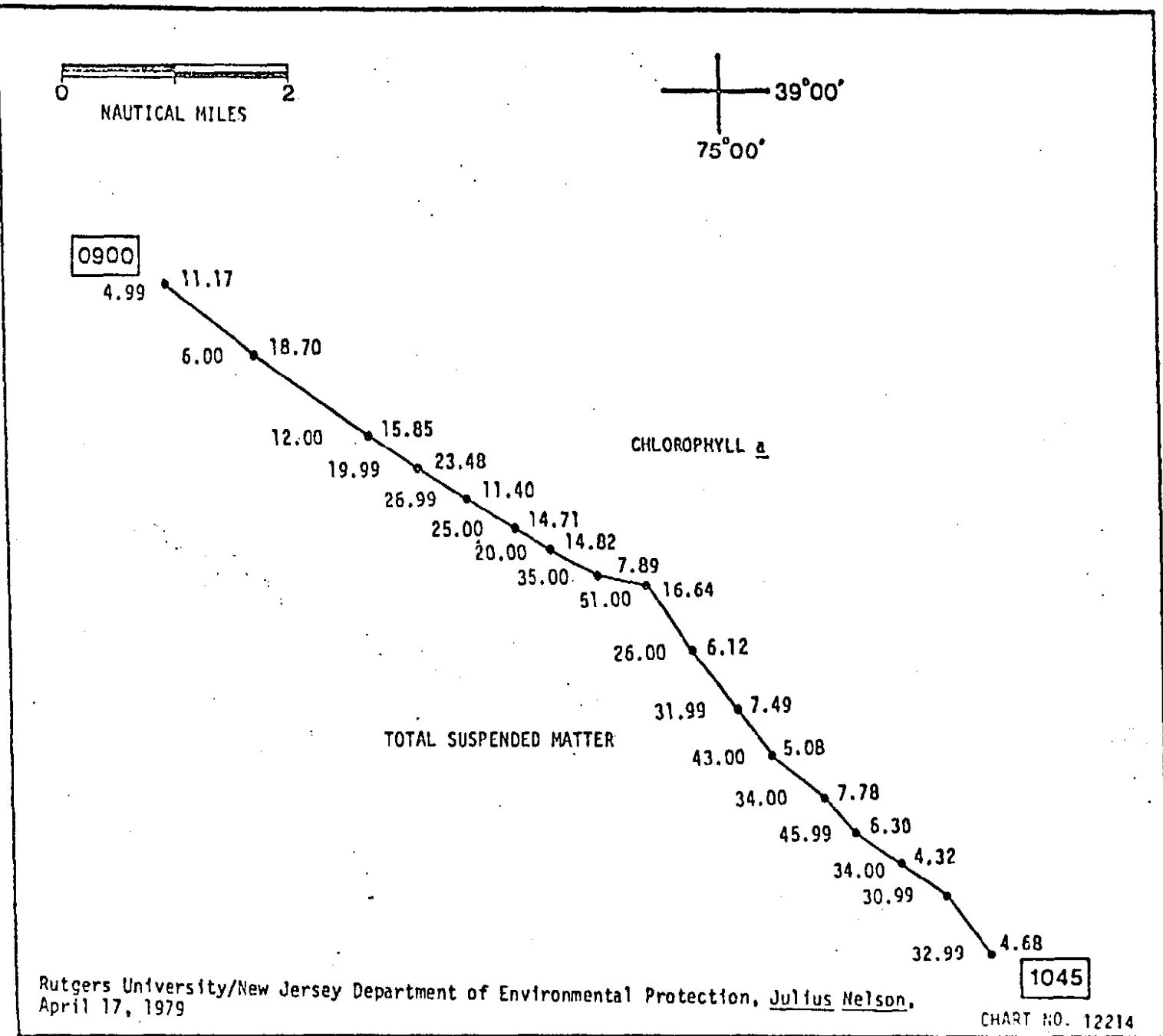


Figure 6. Cruise track and sea-truth chlorophyll *a* and total suspended solids data for R/V Julius Nelson, April 17, 1979.

Table 5a. Rutgers University/New Jersey Department of Environmental Protection, Julius Nelson,  
April 17, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

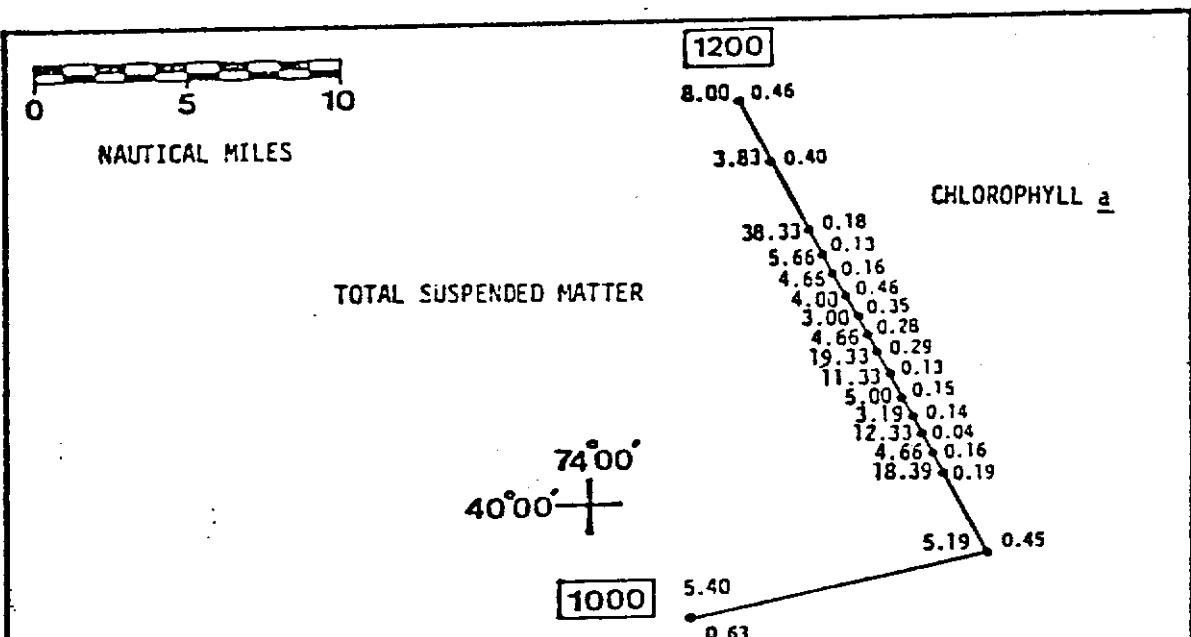
Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
0900	38°58.5'	75°06.3'	1	0	11.17	2.79	2.00	8
0915	38°57.8'	75°05.2'	2	0	18.70	4.25	2.02	8
0930	38°57.1'	75°04.0'	3	0	15.85	4.25	1.99	8
0935	38°56.8'	75°03.5'	4	0	23.48	7.15	1.96	1,8
0940	38°56.6'	75°03.0'	5	0	11.40	7.12	1.77	8
0945	38°56.3'	75°03.5'	6	0	14.71	2.54	2.07	8
0950	38°56.1'	75°02.0'	7	0	14.82	3.85	1.99	8
0955	38°55.9'	75°01.5'	8	0	7.89	2.96	1.91	2,8
1000	38°55.8'	75°00.9'	9	0	16.64	6.87	1.88	8
1005	38°55.2'	75°00.4'	10	0	6.12	2.43	1.89	8
1010	38°54.8'	75°00.0'	11	0	7.49	2.46	1.94	8
1015	38°54.4'	74°59.7'	12	0	5.08	2.53	1.83	8
1020	38°54.0'	74°59.1'	13	0	7.78	3.25	1.88	8
1025	38°53.7'	74°58.8'	14	0	6.30	2.70	1.87	8
1030	38°53.4'	74°58.3'	15	0	4.32	2.11	1.84	8
1045	38°52.6'	74°57.3'	16	0	4.68	2.75	1.79	8

Mean chlorophyll a mg/m<sup>3</sup> 11.03

Range chlorophyll a mg/m<sup>3</sup> 4.32 to 23.48

Table 5b. Rutgers University/New Jersey Department of Environmental Protection /Julius Nelson, April 17, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
0900	38°58.5'	75° 6.3'	1	0	4.99	-12.57	
0915	38°57.8'	75° 5.2'	2	0	6.00	-11.57	
0930	38°57.1'	75° 4.0'	3	0	12.00	- 5.57	
0935	38°56.8'	75° 3.5'	4	0	19.99	2.42	
0940	38°56.6'	75° 3.0'	5	0	26.99	9.42	
0945	38°56.3'	75° 2.5'	6	0	25.00	7.42	
0950	38°56.1'	75° 2.0'	7	0	20.00	2.42	
0955	38°55.9'	75° 1.5'	8	0	35.00	17.42	
1000	38°55.8'	75° 0.9'	9	0	51.00	33.42	
1005	38°55.2'	75° 0.4'	10	0	26.00	8.42	
1010	38°54.8'	75° 0.0'	11	0	31.99	14.42	
1015	38°54.4'	74°59.7'	12	0	43.00	25.42	
1020	38°54.0'	74°59.1'	13	0	34.00	16.42	
1025	38°53.7'	74°58.8'	14	0	45.99	28.42	
1030	38°53.4'	74°58.3'	15	0	34.00	16.42	
1045	38°52.6'	74°57.3'	16	0	30.99	13.42	
1100	38°53.2'	74°57.8'	17	0	32.99	15.42	
		Blank 1		0	16.00		
		Blank 2		0	19.00		
		Blank 3		0	17.99		



NOAA/Atlantic Oceanographic and Meteorological Laboratories/Kelez, April 17, 1979

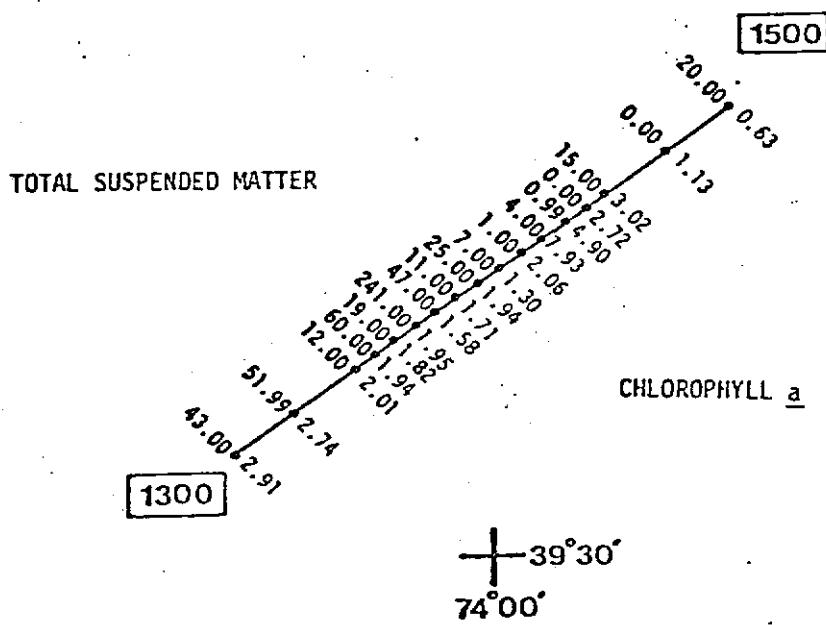


CHART NO. 12300

New Jersey Department of Environmental Protection/Susan C II, April 17, 1979

Figure 7. Cruise tracks and sea-truth chlorophyll a and total suspended solids data for R/V Kelez, April 17, 1979 and R/V Susan C II April 17, 1979.

Table 6a. NOAA/Atlantic Oceanographic and Meteorological Laboratories/Kelez, April 17, 1979

Summary of chlorophyll a ( $\text{mg}/\text{m}^3$ ), phaeophytin ( $\text{mg}/\text{m}^3$ ) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> ( $\text{mg}/\text{m}^3$ )	Phaeophytin ( $\text{mg}/\text{m}^3$ )	Fo/Fa	Comment Number
1000	39°56.3'	73°55.2'	1	0	0.63	0.31	1.72	
1015	39°57.8'	73°43.2'	2	0	0.45	0.33	1.62	
1030	40°00.1'	73°44.6'	3	0	0.19	0.25	1.46	
1035	40°00.9'	73°45.0'	4	0	0.16	0.20	1.48	
1040	40°01.8'	73°45.4'	5	0	0.04	0.23	1.15	
1045	40°02.5'	73°45.7'	6	0	0.14	0.20	1.44	
1050	40°03.3'	73°46.2'	7	0	0.15	0.24	1.42	
1055	40°04.2'	73°46.3'	8	0	0.13	0.24	1.37	
1100	40°04.9'	73°46.7'	9	0	0.29	0.29	1.53	
1105	40°05.7'	73°47.1'	10	0	0.28	0.32	1.50	
1110	40°06.5'	73°47.7'	11	0	0.35	0.27	1.60	
1115	40°07.3'	73°47.9'	12	0	0.46	0.41	1.56	
1120	40°08.1'	73°48.2'	13	0	0.16	0.29	1.39	
1125	40°09.0'	73°48.4'	14	0	0.13	0.30	1.32	
1130	40°09.4'	73°49.2'	15	0	0.18	0.28	1.41	
1145	40°11.4'	73°51.5'	16	0	0.40	0.27	1.64	
1200	40°13.3'	73°53.7'	17	0	0.46	0.35	1.94	

Mean chlorophyll a  $\text{mg}/\text{m}^3$  .268

Range chlorophyll a  $\text{mg}/\text{m}^3$  0.04 to 0.63

Table 6b. NOAA/Atlantic Oceanographic and Meteorological Laboratories/Kelez, April 17, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
1000	39°56.3'	73°55.8'	1	0	5.40		3,9
1015	39°57.8'	73°43.2'	2	0	5.19		
1030	40° 0.1'	73°44.6'	3	0	18.39		
1035	40° 0.9'	73°45.0'	4	0	4.66		
1040	40° 1.8'	73°45.4'	5	0	12.33		
1045	40° 2.5'	73°45.7'	6	0	3.19		
1050	40° 3.3'	73°46.2'	7	0	5.00		
1055	40° 4.2'	73°46.3'	8	0	11.33		
1100	40° 5.0'	73°46.7'	9	0	19.33		
1105	40° 5.7'	73°47.1'	10	0	4.66		
1110	40° 6.5'	73°47.7'	11	0	3.00		
1115	40° 7.3'	73°47.9'	12	0	4.00		
1120	40° 8.2'	73°48.2'	13	0	4.66		
1125	40° 9.0'	73°48.5'	14	0	5.66		
1130	40° 9.5'	73°49.3'	15	0	38.33		
1145	40°11.4'	73°51.5'	16	0	3.83		
1200	40°13.3'	73°53.7'	17	0	8.00		

Table 7a. New Jersey Department of Environmental Protection/Susan C II, April 17, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio(Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
1300	39°33.6'	74°11.0'	1	0	2.91	1.15	1.89	
1315	39°35.0'	74°08.5'	2	0	2.74	1.11	1.89	
1330	39°36.4'	74°06.0'	3	0	2.01	0.77	1.91	
1335	39°36.9'	74°04.9'	4	0	1.94	0.84	1.87	
1340	39°37.2'	74°04.2'	5	0	1.82	0.74	1.89	
1345	39°27.7'	74°03.4'	6	0	1.95	0.76	1.90	
1350	39°38.4'	74°02.6'	7	0	1.58	1.55	1.63	14
1355	39°38.9'	74°01.7'	8	0	1.71	0.64	1.91	
1400	39°39.4'	74°00.7'	9	0	1.94	0.64	1.94	
1405	39°39.9'	73°59.7'	10	0	1.30	0.59	1.86	
1410	39°40.0'	73°59.0'	11	0	2.06	0.79	1.91	
1415	39°40.1'	73°58.3'	12	0	7.93	1.98	2.00	
1420	39°41.1'	73°57.4'	13	0	4.90	1.63	1.94	
1425	39°41.6'	73°56.6'	14	0	2.72	0.71	1.99	
1430	39°42.0'	73°55.7'	15	0	3.02	1.97	1.76	
1445	39°43.1'	73°53.0'	16	0	1.13	0.67	1.79	
1500	39°45.0'	73°50.0'	17	0	0.63	0.34	1.81	

Mean chlorophyll a mg/m<sup>3</sup> 2.49

Range chlorophyll a mg/m<sup>3</sup> 0.63 to 7.93

Table 7b. New Jersey Department of Environmental Protection /Susan C II, April 17, 1979  
Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
1300	39°33.6'	74°11.0'	1	0	43.00	32.52	8,9
1315	39°35.0'	74° 8.5'	2	0	51.99	41.52	
1330	39°36.4'	74° 6.0'	3	0	12.00	1.52	
1335	39°36.9'	74° 4.9'	4	0	60.00	49.52	
1340	39°37.2'	74° 4.2'	5	0	19.00	8.52	
1345	39°37.7'	74° 3.4'	6	0	241.00	230.52	
1350	39°38.4'	74° 2.6'	7	0	47.00	36.52	
1355	39°38.9'	74° 1.7'	8	0	11.00	0.52	
1400	39°39.4'	74° 0.7'	9	0	25.00	14.52	
1405	39°39.9'	73°59.7'	10	0	7.00	-3.47	
1410	39°40.0'	73°59.0'	11	0	1.00	-9.47	
1415	39°40.1'	73°58.3'	12	0	4.00	-6.47	
1420	39°41.1'	73°57.4'	13	0	0.99	-9.47	
1425	39°41.6'	73°56.6'	14	0	0.00	-10.47	
1430	39°42.0'	73°55.7'	15	0	15.00	4.52	
1445	39°43.1'	73°53.0'	16	0	0.00	-10.47	
1500	39°45.0'	73°50.0'	17	0	20.00	9.52	
		Blank 1		0	7.00		
		Blank 2		0	11.00		
		Blank 3		0	18.99		

State University of New York at Stony Brook/Onrust, April 17, 1979 CHART 7

**1045**



TOTAL  
SUSPENDED  
MATTER

14.37 • 1.29  
10.37 • 0.71  
12.37 • 0.55  
10.12 • 0.48  
8.60 • 0.43  
6.52 • 0.49  
12.80 • 0.41  
14.56 • 0.32  
10.00 • 0.46  
13.00 • 0.38  
4.62 • 0.43  
5.50 • 0.42  
5.37 • 0.48  
13.50 • 0.38  
4.99 • 0.24  
9.50 • 0.21  
10.50 • 0.22

CHLOROPHYLL a

NAUTICAL MILES

**1245**

**1045**  
17.33 • 0.10  
13.33 • 0.19  
16.66 • 0.32  
7.99 • 0.45  
5.99 • 0.24  
5.33 • 0.23  
3.33 • 0.16  
4.00 • 0.28  
11.33 • 0.23  
3.99 • 0.35  
4.66 • 0.36  
22.66 • 0.40  
3.99 • 0.44  
4.66 • 0.29  
5.33 • 0.22  
6.66 • 0.18  
11.33 • 0.27

73°30'  
— 40°00'

**1245**

National Marine Fisheries Service/Advance II, April 17, 1979 CHART NO. 12300

Figure 8: Cruise tracks and sea-truth chlorophyll a and total suspended solids data for R/V Onrust, April 17, 1979 and R/V Advance II, April 17, 1979.

Table 8a. National Marine Fisheries Service/Advance II, April 17, 1979

\* Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
1045	40°14.3'	73°15.0'	1	0	0.10	0.48	1.22	5,14,16
1100	40°12.2'	73°15.0'	2	0	0.19	0.39	1.40	5,14,16
1115	40°09.5'	73°15.0'	3	0	0.32	0.31	1.63	5,14,16
1120	40°08.6'	73°15.0'	4	0	0.45	0.25	1.79	5,16
1125	40°07.7'	73°15.0'	5	0	0.24	0.32	1.53	14,16
1130	40°06.8'	73°15.0'	6	0	0.23	0.31	1.53	14,16
1135	40°06.0'	73°15.0'	7	0	0.16	0.27	1.47	14,16
1140	40°05.0'	73°15.0'	8	0	0.28	0.28	1.62	14,16
1145	40°04.1'	73°15.0'	9	0	0.23	0.28	1.55	5,14,16
1150	40°03.3'	73°15.0'	10	0	0.35	0.19	1.80	5,16
1155	40°02.5'	73°15.0'	11	0	0.36	0.12	1.92	5,16
1200	40°01.5'	73°15.0'	12	0	0.40	0.12	1.94	5,16
1205	40°00.6'	73°15.0'	13	0	0.44	0.13	1.95	5,16
1210	39°59.7'	73°15.0'	14	0	0.29	0.16	1.80	5,16
1215	39°58.9'	73°15.0'	15	0	0.22	0.14	1.75	5,16
1230	39°56.4'	73°15.1'	16	0	0.18	0.17	1.63	5,14,16
1245	39°54.2'	73°15.2'	17	0	0.27	0.11	1.88	5,16

Mean chlorophyll a mg/m<sup>3</sup> 0.270

Range chlorophyll a mg/m<sup>3</sup> 0.10 to 0.44

Table 8b. National Marine Fisheries Service/Advance II, April 17, 1979.  
Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
1045	40°14.3'	73°15.0'	1	0	17.33		3.9
1100	40°12.2'	73°15.0'	2	0	13.33		
1115	40° 9.5'	73°15.0'	3	0	16.66		
1120	40° 8.6'	73°15.0'	4	0	7.99		
1125	40° 7.7'	73°15.0'	5	0	5.99		
1130	40° 6.8'	73°15.0'	6	0	5.33		
1135	40° 6.0'	73°15.0'	7	0	3.33		
1140	40° 5.0'	73°15.0'	8	0	4.00		
1145	40° 4.1'	73°15.0'	9	0	11.33		
1150	40° 3.3'	73°15.0'	10	0	3.99		
1155	40° 2.5'	73°15.0'	11	0	4.66		
1200	40° 1.5'	73°15.0'	12	0	22.66		
1205	40° 0.6'	73°15.0'	13	0	3.99		
1210	39°59.7'	73°15.0'	14	0	4.66		
1215	39°53.9'	73°15.0'	15	0	5.33		
1230	39°56.4'	73°15.1'	16	0	6.66		
1245	39°54.2'	73°15.2'	17	0	11.33		

Table 9a. State University of New York at Stony Brook/Onrust, April 17, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
1045	40°35.2'	73°15.2'	1	0	1.29	0.67	1.82	
1100	40°33.1'	73°14.6'	2	0	0.71	0.37	1.82	
1115	40°31.1'	73°15.0'	3	0	0.55	0.25	1.85	
1120	40°30.4'	73°15.0'	4	0	0.48	0.18	1.90	
1125	40°29.7'	73°14.9'	5	0	0.43	0.14	1.94	
1130	40°29.0'	73°14.8'	6	0	0.49	0.24	1.83	
1135	40°28.3'	73°14.8'	7	0	0.41	0.17	1.88	
1140	40°27.7'	73°14.8'	8	0	0.32	0.17	1.82	
1145	40°27.0'	73°14.7'	9	0	0.46	0.20	1.87	
1150	40°26.4'	73°14.8'	10	0	0.38	0.17	1.86	
1155	40°25.7'	73°14.8'	11	0	0.43	0.21	1.83	
1200	40°25.1'	73°14.9'	12	0	0.42	0.18	1.87	
1205	40°24.2'	73°14.9'	13	0	0.48	0.22	1.86	
1210	40°23.7'	73°15.1'	14	0	0.38	0.18	1.84	
1215	40°22.8'	73°15.1'	15	0	0.24	0.15	1.77	
1230	40°20.9'	73°14.9'	16	0	0.21	0.23	1.58	14
1245	40°18.9'	73°14.9'	17	0	0.22	0.16	1.72	

Mean chlorophyll a mg/m<sup>3</sup> .465

Range chlorophyll a mg/m<sup>3</sup> .21 to 1.29

Table 9b. State University of New York at Stony Brook /Onrust, April 17, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
1045	40°35.2'	73°15.2'	1	0	14.37		1,3
1100	40°33.1'	73°14.6'	2	0	10.37		
1115	40°31.1'	73°15.0'	3	0	12.37		
1120	40°30.4'	73°15.0'	4	0	10.12		
1125	40°29.7'	73°14.9'	5	0	8.60		
1130	40°29.0'	73°14.8'	6	0	6.52		
1135	40°28.3'	73°14.8'	7	0	12.80		
1140	40°27.7'	73°14.8'	8	0	14.56		
1145	40°27.0'	73°14.7'	9	0	10.00		
1150	40°26.4'	73°14.8'	10	0	13.00		
1155	40°25.7'	73°14.8'	11	0	4.62		
1200	40°25.1'	73°14.9'	12	0	5.50		
1205	40°24.2'	73°14.9'	13	0	5.37		
1210	40°23.7'	73°15.1'	14	0	13.50		
1215	40°22.8'	73°15.1'	15	0	4.99		
1230	40°20.9'	73°14.9'	16	0	9.50		
1245	40°18.9'	73°14.9'	17	0	10.50		

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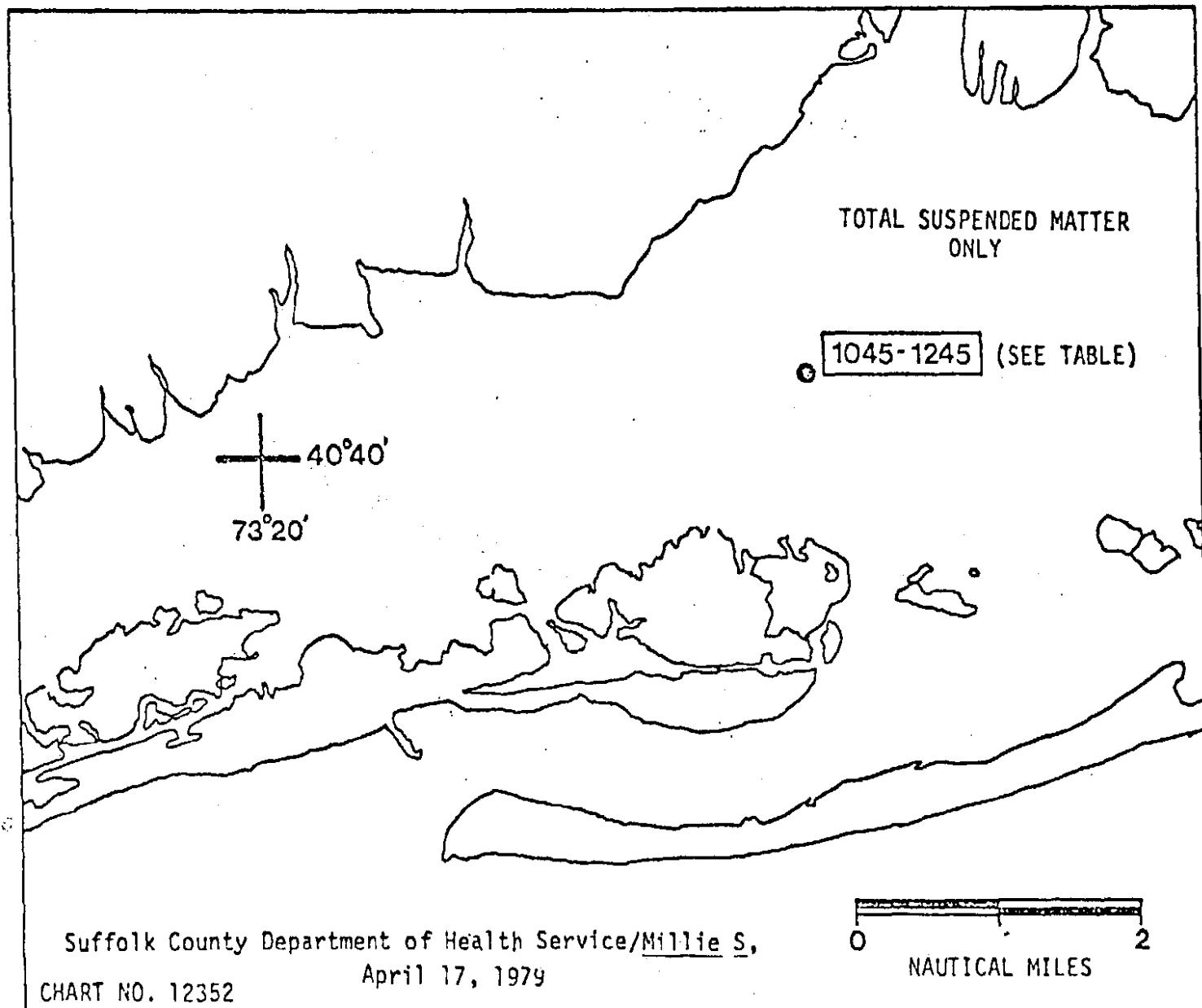


Figure 9. Cruise track and total suspended solids data for R/V Millie S., April 17, 1979.

Table 10a. Chlorophyll samples accidentally destroyed because of misunderstanding  
in mode of transfer of samples back to Sandy Hook Laboratory.

Table 10b. Suffolk County Department of Health Service /Millie S, April 17, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
1045	40°40.5'	73°15.0'	1	0	48.99	17.36	9
1100	40°40.5'	73°15.0'	2	0	67.99	36.36	
1115	40°40.5'	73°15.0'	3	0	83.99	52.36	
1120	40°40.5'	73°15.0'	4	0	60.00	28.37	
1125	40°40.5'	73°15.0'	5	0	76.00	44.37	
1130	40°40.5'	73°15.0'	6	0	82.00	50.37	
1135	40°40.5'	73°15.0'	7	0	61.99	30.36	
1140	40°40.5'	73°15.0'	8	0	69.99	38.36	
1145	40°40.5'	73°15.0'	9	0	61.99	30.36	
1150	40°40.5'	73°15.0'	10	0	83.99	52.36	
1155	40°40.5'	73°15.0'	11	0	103.99	72.36	
1200	40°40.5'	73°15.0'	12	0	82.00	50.37	
1205	40°40.5'	73°15.0'	13	0	83.99	52.36	
1210	40°40.5'	73°15.0'	14	0	132.00	100.37	
1215	40°40.5'	73°15.0'	15	0	129.99	98.36	
1230	40°40.5'	73°15.0'	16	0	133.99	102.36	
1245	40°40.5'	73°15.0'	17	0	111.99	80.36	
		Blank 1		0	51.66		
		Blank 2		0	16.99		
		Blank 3		0	59.99		

CHART NO. 12300

0 5 10  
NAUTICAL MILES

74°00  
40°30

TOTAL SUSPENDED MATTER

1200

CHLOROPHYLL a

1445

National Marine Fisheries Service/Sandy Hook Laboratory/Kyma, April 17, 1979

Figure 10. Cruise track and sea-truth chlorophyll a and total suspended solids data for R/V Kyma, April 17, 1979.

Table 11a. National Marine Fisheries Service/Sandy Hook Laboratory/Kyma, April 17, 1979  
 Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
1200	40°34.7'	73°38.7'	1	1	3.02	3.48	1.58	14
1215	40°33.3'	73°40.3'	2	1	1.67	1.55	1.65	
1228	40°31.9'	73°41.8'	3	1	2.05	1.29	1.77	
1233	40°31.4'	73°42.4'	4	1	1.51	1.09	1.73	
1240	40°30.6'	73°43.3'	5	1	1.05	0.63	1.78	
1245	40°30.0'	73°44.0'	6	1	0.77	0.45	1.79	
1250	40°29.6'	73°44.5'	7	1	0.70	0.41	1.79	
1254	40°29.0'	73°44.9'	8	1	0.94	0.44	1.85	
1300	40°28.6'	73°45.5'	9	1	1.05	0.57	1.81	
1305	40°28.0'	73°46.0'	10	1	1.40	0.78	1.80	
1310	40°27.5'	73°46.6'	11	1	1.30	0.70	1.81	
1315	40°26.9'	73°47.3'	12	1	1.22	0.65	1.81	
1320	40°26.4'	73°47.9'	13	1	0.64	0.56	1.67	15
1325	40°25.9'	73°48.5'	14	1	0.42	0.49	1.58	14
1330	40°25.4'	73°49.1'	15	1	0.32	0.38	1.58	14
1345	40°23.6'	73°51.0'	16	1	0.33	0.41	1.55	14
1400	40°21.9'	73°52.8'	17	1	0.86	0.62	1.73	
1415	40°20.2'	73°54.7'	18	1	3.68	0.81	2.02	
1430	40°18.7'	73°56.5'	19	1	8.38	1.76	2.03	
1445	40°16.9'	73°58.5'	20	1	14.19	2.87	2.04	

Mean chlorophyll a mg/m<sup>3</sup> 2.28

Range chlorophyll a mg/m<sup>3</sup> 0.32 to 14.19

Table 11b. National Marine Fisheries Service/Sandy Hook Laboratory/Kyma, April 17, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
1200	40°34.7'	73°38.7'	1	1	23.66	7.49	9
1215	40°33.3'	73°40.3'	2	1	57.19	41.02	
1228	40°31.9'	73°41.8'	3	1	28.13	11.96	
1233	40°31.4'	73°42.4'	4	1	8.66	-7.50	
1240	40°30.6'	73°43.3'	5	1	5.66	-10.50	
1245	40°30.0'	73°44.0'	6	1	7.00	-9.16	
1250	40°29.6'	73°44.5'	7	1	8.99	-7.16	
1255	40°29.0'	73°44.9'	8	1	4.66	-11.50	
1300	40°28.6'	73°45.5'	9	1	6.66	-9.50	
1305	40°28.0'	73°46.0'	10	1	6.83	-9.33	
1310	40°27.5'	73°46.6'	11	1	5.00	-11.16	
1315	40°26.9'	73°47.3'	12	1	8.50	-7.66	
1320	40°26.4'	73°47.9'	13	1	4.97	-11.19	
1325	40°25.9'	73°48.5'	14	1	7.75	-8.41	
1330	40°25.4'	73°49.1'	15	1	5.50	-10.66	
1345	40°23.6'	73°51.0'	16	1	4.66	-11.50	
1400	40°21.9'	73°52.8'	17	1	5.16	-11.00	
1415	40°20.2'	73°54.7'	18	1	3.50	-12.66	
1430	40°18.7'	73°56.5'	19	1	3.50	-12.66	
1445	40°16.9'	73°58.5'	20	1	6.50	-9.66	
		Blank 1		1	25.00		
		Blank 2		1	18.00		
		Blank 3		1	11.11		

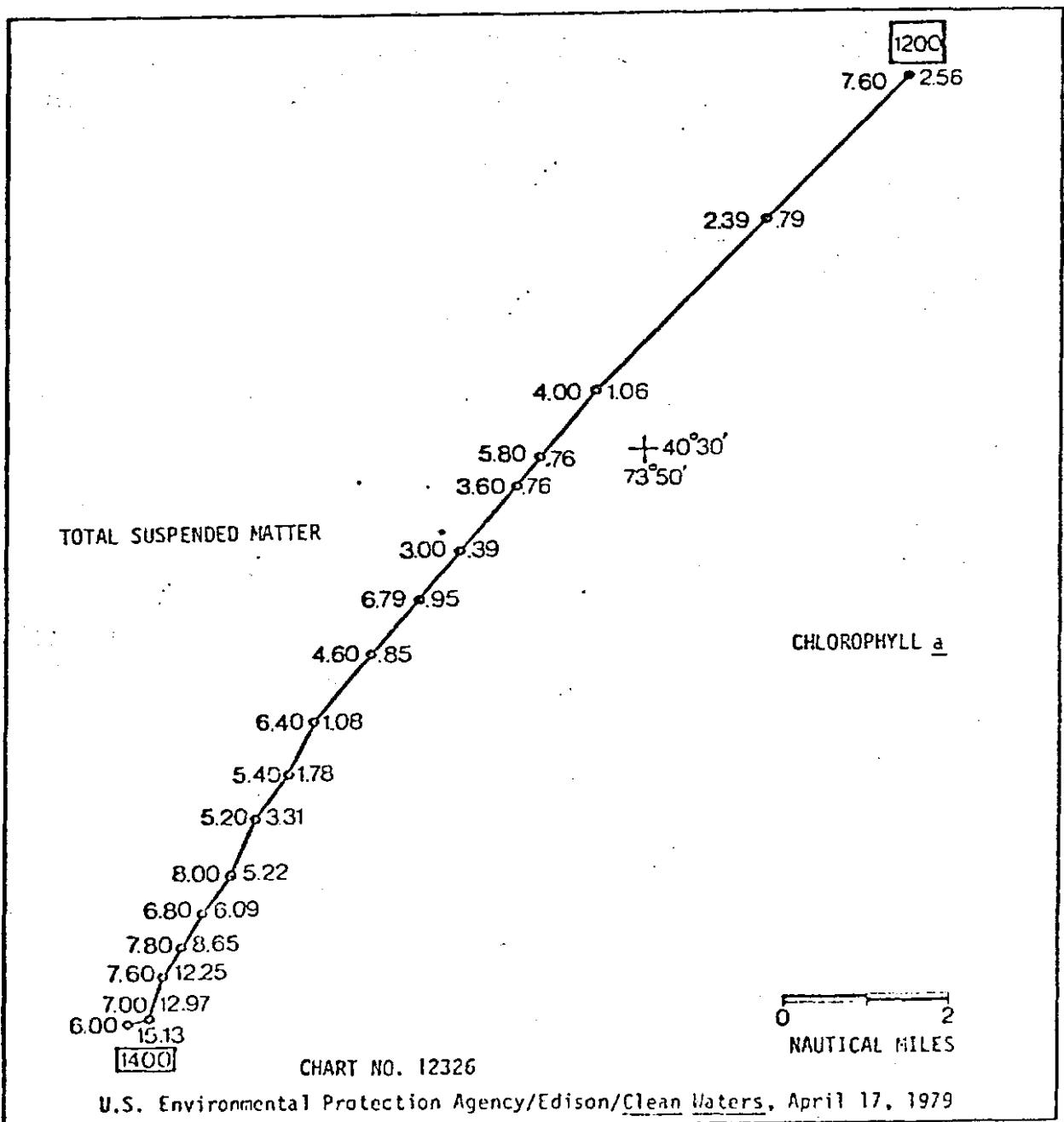


Figure 11. Cruise track and sea-truth chlorophyll a and total suspended solids data for R/V Clean Waters, April 17, 1979.

Table 12a. U.S. Environmental Protection Agency/Edison/Clean Waters, April 17, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

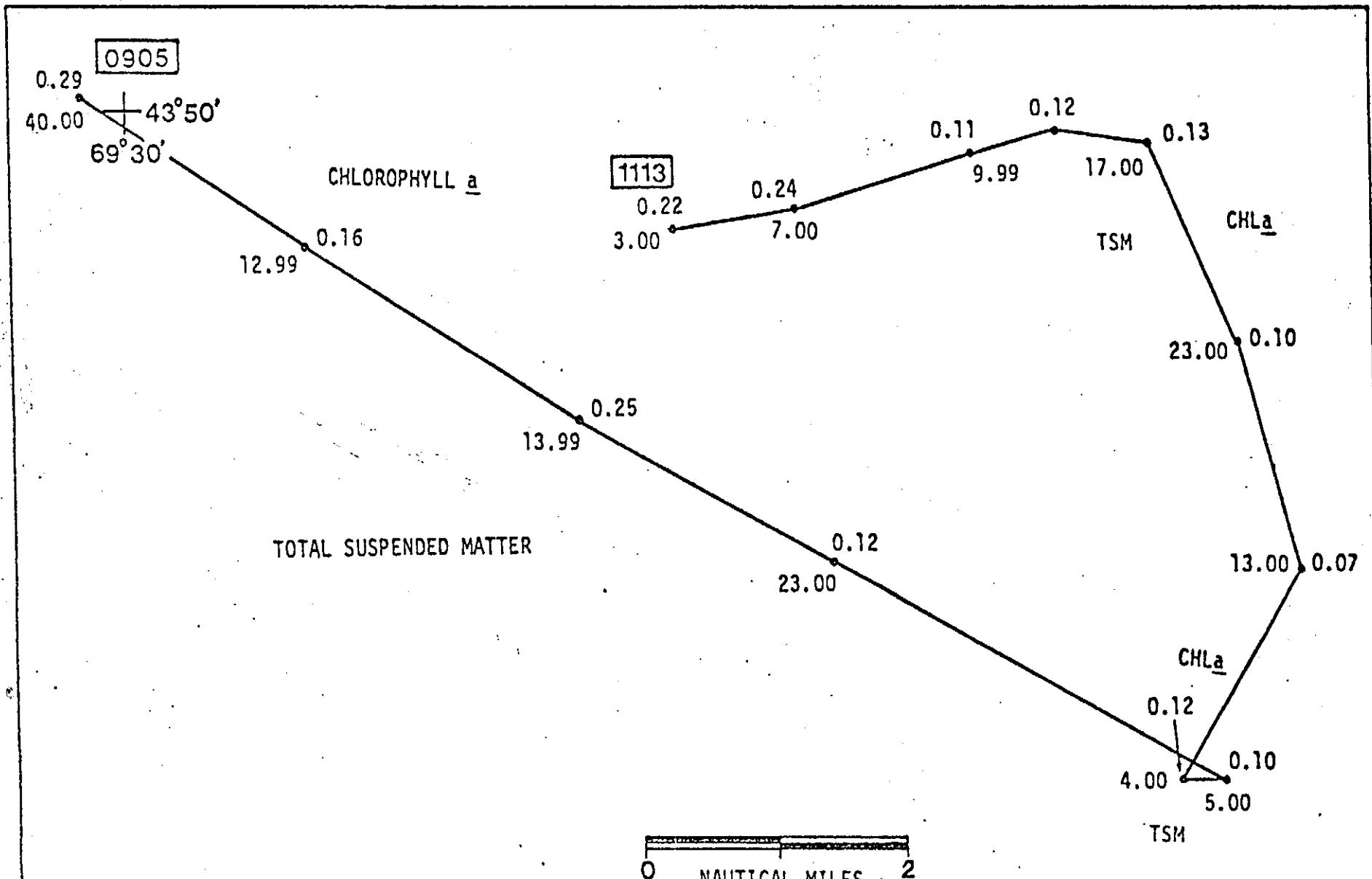
Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
1200	40°34.9'	73°46.0'	1	0	2.56	1.50	1.77	
1215	40°32.9'	73°48.3'	2	0	0.79	0.47	1.78	
1230	40°30.7'	73°50.8'	3	0	1.06	0.45	1.88	
1235	40°29.9'	73°51.7'	4	0	0.76	0.46	1.78	
1240	40°29.5'	73°52.1'	5	0	0.76	0.40	1.82	
1245	40°28.7'	73°52.9'	6	0	0.39	0.20	1.83	2
1250	40°28.0'	73°53.5'	7	0	0.95	0.60	1.77	
1255	40°27.3'	73°54.2'	8	0	0.85	0.64	1.71	
1301	40°26.4'	73°55.0'	9	0	1.08	0.72	1.75	
1305	40°25.9'	73°55.4'	10	0	1.78	0.86	1.84	
1310	40°25.3'	73°55.9'	11	0	3.31	0.97	1.97	
1315	40°24.6'	73°56.3'	12	0	5.22	1.98	1.91	
1320	40°24.1'	73°56.7'	13	0	6.09	1.16	2.05	
1325	40°23.6'	73°57.0'	14	0	8.65	2.61	1.96	
1330	40°23.2'	73°57.3'	15	0	12.25	2.61	2.03	
1345	40°22.7'	73°57.5'	16	0	12.97	3.29	2.00	
1400	40°22.7'	73°57.8'	17	0	15.13	3.83	2.00	

Mean chlorophyll a mg/m<sup>3</sup> 4.39

Range chlorophyll a mg/m<sup>3</sup> 0.20 to 3.83

Table 12b. U. S. Environmental Protection Agency/Edison /Clean Waters, April 17, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
1200	40°34.9'	73°46.0'	1	0	7.60	2.93	
1215	40°32.9'	73°48.3'	2	0	2.39	-2.26	
1230	40°30.7'	73°50.8'	3	0	4.00	-0.66	
1235	40°29.9'	73°51.7'	4	0	5.80	1.13	
1240	40°29.5'	73°52.1'	5	0	3.60	-1.06	
1245	40°28.7'	73°52.9'	6	0	3.00	-1.66	
1250	40°28.0'	73°53.5'	7	0	6.79	2.13	
1255	40°27.3'	73°54.2'	8	0	4.60	-0.06	
1300	40°26.4'	73°55.0'	9	0	6.40	1.73	
1305	40°25.9'	73°55.4'	10	0	5.40	0.73	
1310	40°25.3'	73°55.9'	11	0	5.20	0.53	
1315	40°24.6'	73°56.3'	12	0	8.00	3.33	
1320	40°24.1'	73°56.7'	13	0	6.80	2.13	
1325	40°23.6'	73°57.0'	14	0	7.80	3.13	
1330	40°23.2'	73°57.3'	15	0	7.60	2.93	
1345	40°22.7'	73°57.5'	16	0	7.00	2.33	
1400	40°22.7'	73°57.8'	17	0	6.00	1.33	
		Blank 1		0	4.00		
		Blank 2		0	4.00		
		Blank 3		0	7.00		



Maine Department of Marine Resources/Challenge, April 17, 1979

CHART NO. 13288

Figure 12. Cruise track and sea-truth chlorophyll a and total suspended solids data for R/V Challenge, April 17, 1979.

Table 13a. Maine Department of Marine Resources/Challenge, April 17, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
0905	43°50.2'	69°30.9'	1	0	0.29	-	2.06	
0915	43°49.0'	69°28.1'	2	0	0.16	-	1.86	
0925	43°47.7'	69°25.2'	3	0	0.25	-	2.07	
0935	43°46.6'	69°22.4'	4	0	0.12	-	1.63	
0955	43°45.0'	69°18.2'	5	0	0.10	-	1.52	
1025	43°45.0'	69°18.7'	6	0	0.12	-	1.58	
1029	43°46.6'	69°17.4'	7	0	0.07	-	1.33	
1035	43°48.3'	69°18.1'	8	0	0.10	-	1.53	
1042	43°50.2'	69°19.0'	9	0	0.13	-	1.58	
1047	43°49.9'	69°20.0'	10	0	0.12	-	1.55	
1049	43°49.7'	69°20.9'	11	0	0.11	-	1.50	
1103	43°49.3'	69°22.8'	12	0	0.24	-	1.80	
1113	43°49.1'	69°24.1'	13	0	0.22	-	1.91	

Mean chlorophyll a mg/m<sup>3</sup> .156

Range chlorophyll a mg/m<sup>3</sup> .07 to .29

Table 13b. Maine Department of Marine Resources/Challenge, April 17, 1979.  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
0905	43°50.2'	69°30.5'	1	0	40.00		3,6,9
0915	43°49.0'	69°28.1'	2	0	12.99		
0925	43°47.7'	69°25.2'	3	0	13.99		
0935	43°46.6'	69°22.4'	4	0	23.00		
0955	43°45.0'	69°18.2'	5	0	5.00		
1025	43°45.0'	69°18.7'	6	0	4.00		
1029	43°46.6'	69°17.4'	7	0	13.00		
1035	43°48.3'	69°18.1'	8	0	23.00		
1042	43°50.2'	69°19.0'	9	0	17.00		
1047	43°49.9'	69°20.0'	10	0	9.99		
1049	43°49.7'	69°20.9'	11	0	7.00		
1103	43°49.3'	69°22.8'	12	0	5.00		
1113	43°49.1'	69°24.1'	13	0	3.00		

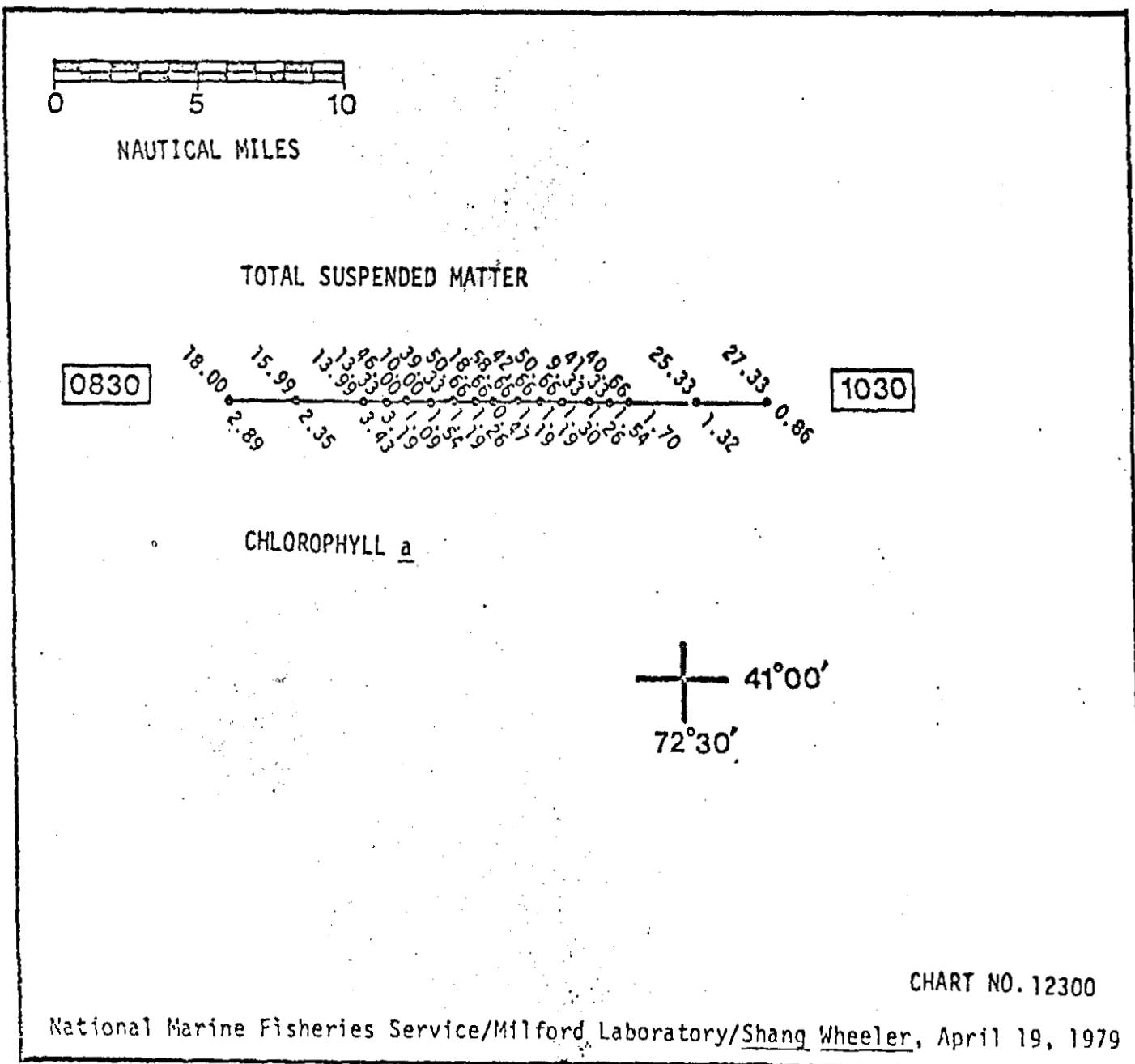


Figure 13. Crustacean and sea-trout chlorophyll a and total suspended solids.

Table 14a. National Marine Fisheries Service/Milford Laboratory/Shang Wheeler, April 19, 1979

Summary of chlorophyll a ( $\text{mg/m}^3$ ), phaeophytin ( $\text{mg/m}^3$ ) and acidification ratio (Fo/Fa) listed by participant.

50

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll a ( $\text{mg/m}^3$ )	Phaeophytin ( $\text{mg/m}^3$ )	Fo/Fa	Comment Number
0830	41°09.5'	72°51.0'	1	0	2.89	0.74	1.99	
0845	41°09.5'	72°47.8'	2	0	2.35	0.77	1.94	
0900	41°09.5'	72°44.8'	3	0	3.43	1.13	1.94	
0905	41°09.5'	72°43.7'	4	0	3.19	1.01	1.95	10
0910	41°09.5'	72°42.7'	5	0	1.09	2.68	1.36	14
0915	41°09.5'	72°41.7'	6	0	1.54	1.03	1.75	
0920	41°09.5'	72°40.7'	7	0	1.19	0.74	1.77	
0925	41°09.5'	72°39.7'	8	0	1.26	0.68	1.81	
0930	41°09.5'	72°38.7'	9	0	0.47	1.96	1.24	14
0935	41°09.5'	72°37.7'	10	0	1.19	0.63	1.81	
0940	41°09.5'	72°36.7'	11	0	1.19	0.70	1.79	10
0945	41°09.5'	72°35.6'	12	0	1.30	0.68	1.82	
0950	41°09.5'	72°34.7'	13	0	1.26	0.67	1.82	
0955	41°09.5'	72°33.5'	14	0	1.54	0.81	1.82	
1000	41°09.5'	72°32.6'	15	0	1.70	0.72	1.88	
1015	41°09.5'	72°29.4'	16	0	1.32	0.61	1.85	
1030	41°09.5'	72°26.5'	17	0	0.86	0.37	1.87	

Mean chlorophyll a  $\text{mg/m}^3$  1.63

Range chlorophyll a  $\text{mg/m}^3$  0.47 to 3.43

Table 14b. National Marine Fisheries Service/Milford Laboratory /Shang Wheeler, April 19, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
0830	41° 9.5'	72° 51.0'	1	0	18.00	10.68	9
0845	41° 9.5'	72° 47.8'	2	0	15.99	8.68	
0900	41° 9.5'	72° 44.8'	3	0	13.99	6.68	
0905	41° 9.5'	72° 43.7'	4	0	13.33	6.01	
0910	41° 9.5'	72° 42.7'	5	0	46.00	38.68	
0915	41° 9.5'	72° 41.7'	6	0	10.00	2.68	
0920	41° 9.5'	72° 40.7'	7	0	39.33	32.01	
0925	41° 9.5'	72° 39.7'	8	0	50.66	43.35	
0930	41° 9.5'	72° 38.7'	9	0	18.66	11.35	
0935	41° 9.5'	72° 37.7'	10	0	58.66	51.35	
0940	41° 9.5'	72° 36.7'	11	0	42.66	35.35	
0945	41° 9.5'	72° 35.6'	12	0	50.66	43.35	
0950	41° 9.5'	72° 34.7'	13	0	9.33	2.01	
0955	41° 9.5'	72° 33.5'	14	0	41.33	34.01	
1000	41° 9.5'	72° 32.6'	15	0	40.66	33.35	
1015	41° 9.5'	72° 29.4'	16	0	25.33	18.01	
1030	41° 9.5'	72° 26.5'	17	0	27.33	20.01	
		Blank 1		0	42.66		
		Blank 2		0	4.00		

\* University of Rhode Island / Short Snort, April 19, 1979

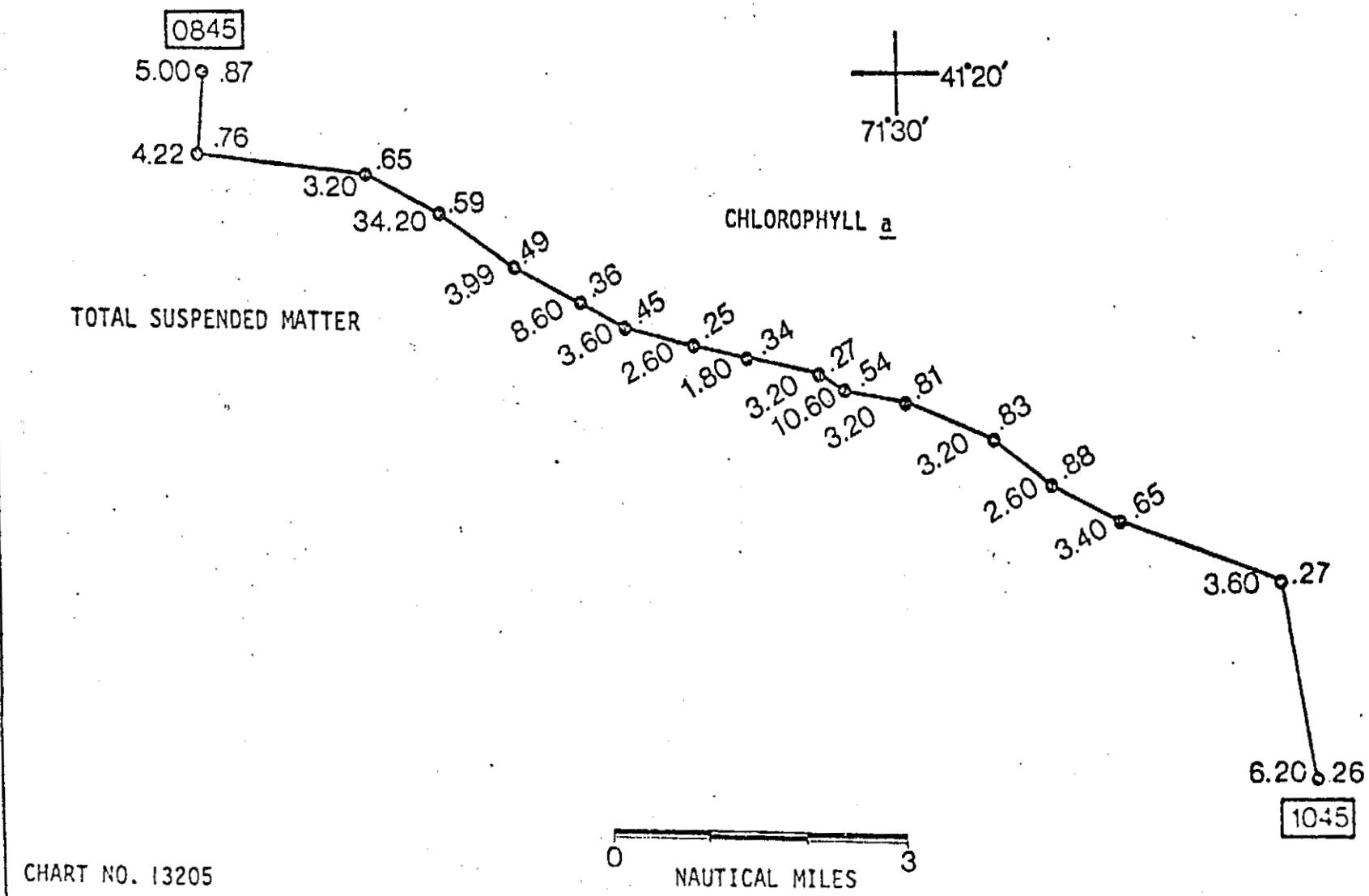


Figure 14. Cruise track and sea-truth chlorophyll a and total suspended solids data for R/V Short Snort, April 19, 1979.

Table 15a. University of Rhode Island/Short Snort, April 19, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
0845	41°20.0'	71°39.4'	1	0	0.87	0.44	1.83	
0900	41°20.8'	71°39.5'	2	0	0.76	0.37	1.84	
0915	41°19.0'	71°37.2'	3	0	0.65	0.24	1.91	
0920	41°18.6'	71°36.2'	4	0	0.59	0.24	1.89	
0925	41°18.0'	71°35.1'	5	0	0.49	0.17	1.93	
0930	41°17.7'	71°34.3'	6	0	0.36	0.16	1.87	
0936	41°17.5'	71°33.7'	7	0	0.45	0.22	1.85	
0940	41°17.3'	71°32.8'	8	0	0.25	0.12	1.83	
0945	41°17.2'	71°32.1'	9	0	0.34	0.16	1.86	
0949	41°16.9'	71°31.1'	10	0	0.27	0.14	1.83	
0955	41°16.8'	71°30.7'	11	0	0.54	0.17	1.95	
1000	41°16.7'	71°29.9'	12	0	0.81	0.18	2.02	
1005	41°16.4'	71°28.8'	13	0	0.83	0.20	2.00	
1010	41°15.9'	71°27.9'	14	0	0.88	0.22	2.00	
1015	41°15.0'	71°27.0'	15	0	0.65	0.11	2.08	
1029	41°15.0'	71°24.0'	16	0	0.27	0.10	1.92	
1045	41°13.0'	71°24.0'	17	0	0.26	0.07	1.98	

Mean chlorophyll a mg/m<sup>3</sup> 0.55

Range chlorophyll a mg/m<sup>3</sup> 0.25 to 0.88

Table 15b. University of Rhode Island /Short Snort, April 19, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM	TSM	Comments
					Concentrations (mg/l)	Concentrations Minus Blank (mg/l)	
0845	41°20.0'	71°39.4'	1	0	5.00	-2.60	1
0900	41°20.8'	71°39.5'	2	0	4.22	-3.37	
0915	41°19.0'	71°37.2'	3	0	3.20	-4.40	
0920	41°18.6'	71°36.2'	4	0	34.20	26.59	
0925	41°18.0'	71°35.1'	5	0	3.99	-3.60	
0930	41°17.7'	71°34.3'	6	0	8.60	0.99	
0936	41°17.5'	71°33.7'	7	0	3.60	-4.00	
0940	41°17.3'	71°32.8'	8	0	2.60	-5.00	
0945	41°17.2'	71°32.1'	9	0	1.80	-5.80	
0949	41°16.9'	71°31.1'	10	0	3.20	-4.40	
0955	41°16.8'	71°30.7'	11	0	10.60	2.99	
1000	41°16.7'	71°29.9'	12	0	3.20	-4.40	
1005	41°16.4'	71°28.8'	13	0	3.20	-4.40	
1010	41°15.9'	71°27.9'	14	0	2.60	-5.00	
1015	41°15.5'	71°27.0'	15	0	3.40	-4.20	
1029	41°15.0'	71°24.9'	16	0	3.60	-4.00	
1045	41°13.5'	71°24.4'	17	0	6.20	-1.40	
		Blank 1		0	31.80		
		Blank 2		0	33.39		
		Blank 3		0	3.00		

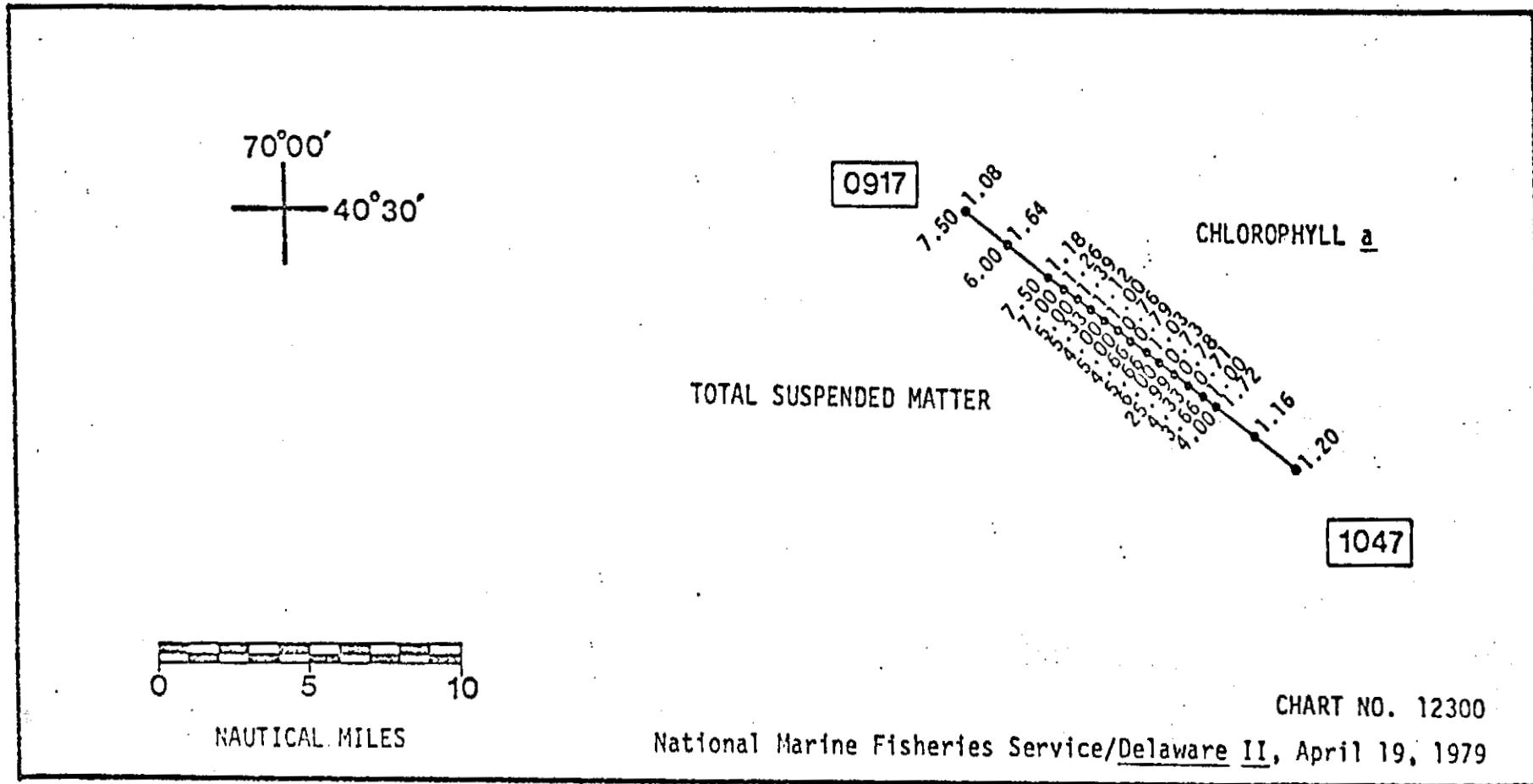


Table 16a. National Marine Fisheries Service/Delaware II, April 19, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
0915	40°30.0'	69°30.5'	1	0	1.08	0.73	1.74	
0930	40°29.2'	69°29.5'	2	0	1.64	0.38	2.01	1
0945	40°27.5'	69°28.0'	3	0	1.18	0.47	1.89	
0950	40°26.7'	69°26.0'	4	0	1.26	0.41	1.93	
0955	40°26.3'	69°26.0'	5	0	1.39	0.39	1.97	
1000	40°25.9'	69°25.0'	6	0	1.12	0.34	1.95	
1005	40°25.4'	69°23.8'	7	0	1.00	0.31	1.94	
1010	40°24.6'	69°23.0'	8	0	0.76	0.35	1.85	
1015	40°24.4'	69°22.4'	9	0	0.79	0.27	1.93	
1020	40°23.9'	69°21.4'	10	0	1.03	0.30	1.96	
1025	40°23.5'	69°20.3'	11	0	0.73	0.23	1.94	
1030	40°23.0'	69°19.0'	12	0	0.78	0.19	1.99	
1035	40°22.5'	69°18.4'	13	0	0.71	0.25	1.92	
1040	40°22.0'	69°17.5'	14	0	1.00	0.30	1.96	
1045	40°21.7'	69°16.2'	15	0	1.72	0.59	1.92	1
1100	40°20.0'	69°13.8'	16	0	1.16	0.22	2.04	
1115	40°18.5'	69°11.0'	17	0	1.20	0.27	2.01	

Mean chlorophyll a mg/m<sup>3</sup> 1.09

Range chlorophyll a mg/m<sup>3</sup> 0.71 to 1.72

Table 16b. National Marine Fisheries Service/Delaware II, April 19, 1979.  
Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
0917	40°30.0'	69°30.5'	1	0	7.50		3,9
0930	40°29.2'	69°29.5'	2	0	6.00		
0945	40°27.5'	69°28.0'	3	0	7.50		
0950	40°26.7'	69°26.0'	4	0	7.00		
0955	40°26.3'	69°26.0'	5	0	5.00		
1000	40°25.9'	69°25.0'	6	0	5.33		
1005	40°25.4'	69°23.8'	7	0	4.00		
1010	40°24.6'	69°23.0'	8	0	5.00		
1015	40°24.4'	69°22.4'	9	0	4.66		
1020	40°23.9'	69°21.4'	10	0	5.66		
1025	40°23.5'	69°20.3'	11	0	6.00		
1030	40°23.0'	69°19.4'	12	0	25.99		
1035	40°22.5'	69°18.4'	13	0	4.33		
1040	40°22.0'	69°17.5'	14	0	3.66		
1045	40°21.7'	69°16.2'	15	0	4.00		

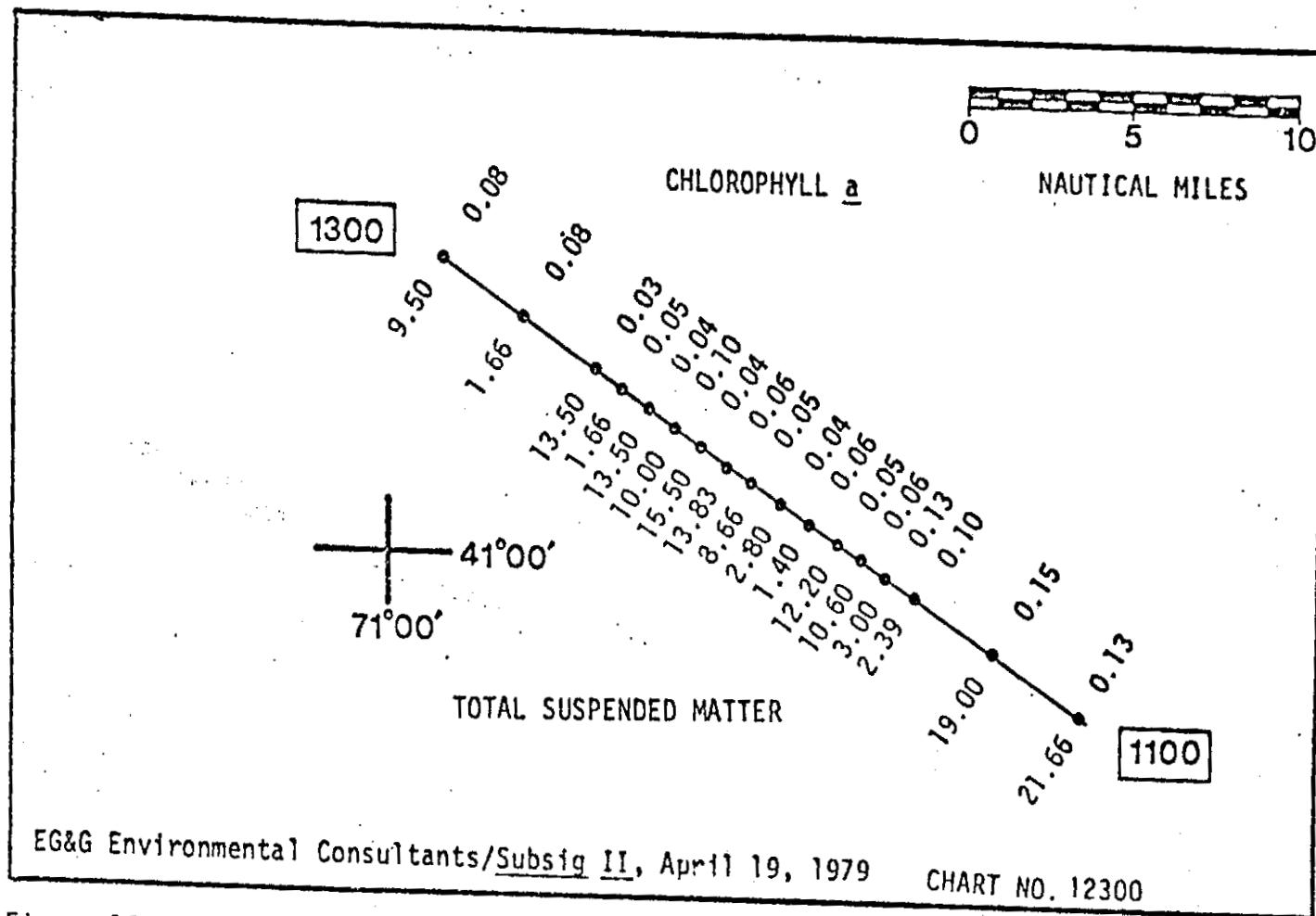


Figure 16. Cruise track and sea-truth chlorophyll a and total suspended solids data for R/V Subsig II, April 19, 1979.

Table 17a. EG&amp;G Environmental Consultants / Subsig II, April 19, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
1100	40°55.7'	70°32.7'	1	0	0.13	0.12	1.63	14
1115	40°57.3'	70°36.1'	2	0	0.15	0.17	1.56	14
1130	40°58.9'	70°39.3'	3	0	0.10	0.09	1.64	14
1135	40°59.3'	70°40.3'	4	0	0.13	0.09	1.71	
1140	40°59.9'	70°41.4'	5	0	0.06	0.11	1.46	14
1145	41°00.4'	70°42.5'	6	0	0.05	0.09	1.45	14
1150	41°00.9'	70°43.6'	7	0	0.06	0.04	1.75	
1155	41°01.4'	70°44.7'	8	0	0.04	0.06	1.50	14
1200	41°02.0'	70°45.8'	9	0	0.05	0.08	1.50	14
1205	41°02.5'	70°46.8'	10	0	0.06	0.13	1.40	14
1210	41°03.0'	70°47.9'	11	0	0.04	0.09	1.40	14
1215	41°03.5'	70°49.0'	12	0	0.10	0.07	1.69	1
1220	41°04.1'	70°50.0'	13	0	0.04	0.13	1.31	14
1225	41°04.6'	70°51.1'	14	0	0.05	0.06	1.56	14
1230	41°05.1'	70°52.1'	15	0	0.03	0.07	1.38	14
1245	41°06.7'	70°55.4'	16	0	0.08	0.07	1.64	14
1300	41°08.6'	70°58.3'	17	0	0.08	0.06	1.70	

Mean chlorophyll a mg/m<sup>3</sup> 0.07

Range chlorophyll a mg/m<sup>3</sup> 0.03 to 0.15

Table 17b. EG&G Environmental Consultants /Subsig II, April 19, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
1100	40°55.7'	70°32.7'	1	0	21.66	19.66	2,9
1115	40°57.3'	70°36.1'	2	0	19.00	16.99	
1130	40°58.9'	70°39.3'	3	0	2.39	0.39	
1135	40°59.3'	70°40.3'	4	0	3.00	0.99	
1140	40°59.9'	70°41.4'	5	0	10.60	8.59	
1145	41° 0.4'	70°42.5'	6	0	12.20	10.19	
1150	41° 0.9'	70°43.6'	7	0	1.40	-0.60	
1155	41° 1.4'	70°44.7'	8	0	2.80	0.79	
1200	41° 1.9'	70°45.8'	9	0	8.66	6.66	
1205	41° 2.5'	70°46.8'	10	0	13.83	11.83	
1210	41° 2.9'	70°47.9'	11	0	15.50	13.49	
1215	41° 3.5'	70°48.9'	12	0	10.00	7.99	
1220	41° 4.1'	70°49.9'	13	0	13.50	11.49	
1225	41° 4.6'	70°51.1'	14	0	1.66	-0.33	
1230	41° 5.1'	70°52.1'	15	0	13.50	11.49	
1245	41° 6.7'	70°55.3'	16	0	1.66	-0.33	
1300	41° 8.6'	70°58.3'	17	0	9.50	7.49	
		Blank 1		0	0.00		
		Blank 2		0	1.00		
		Blank 3		0	1.99		

Maine Department of Marine Resources/Explorer, April 19, 1979

$+43^{\circ}40'$   
 $70^{\circ}10'$

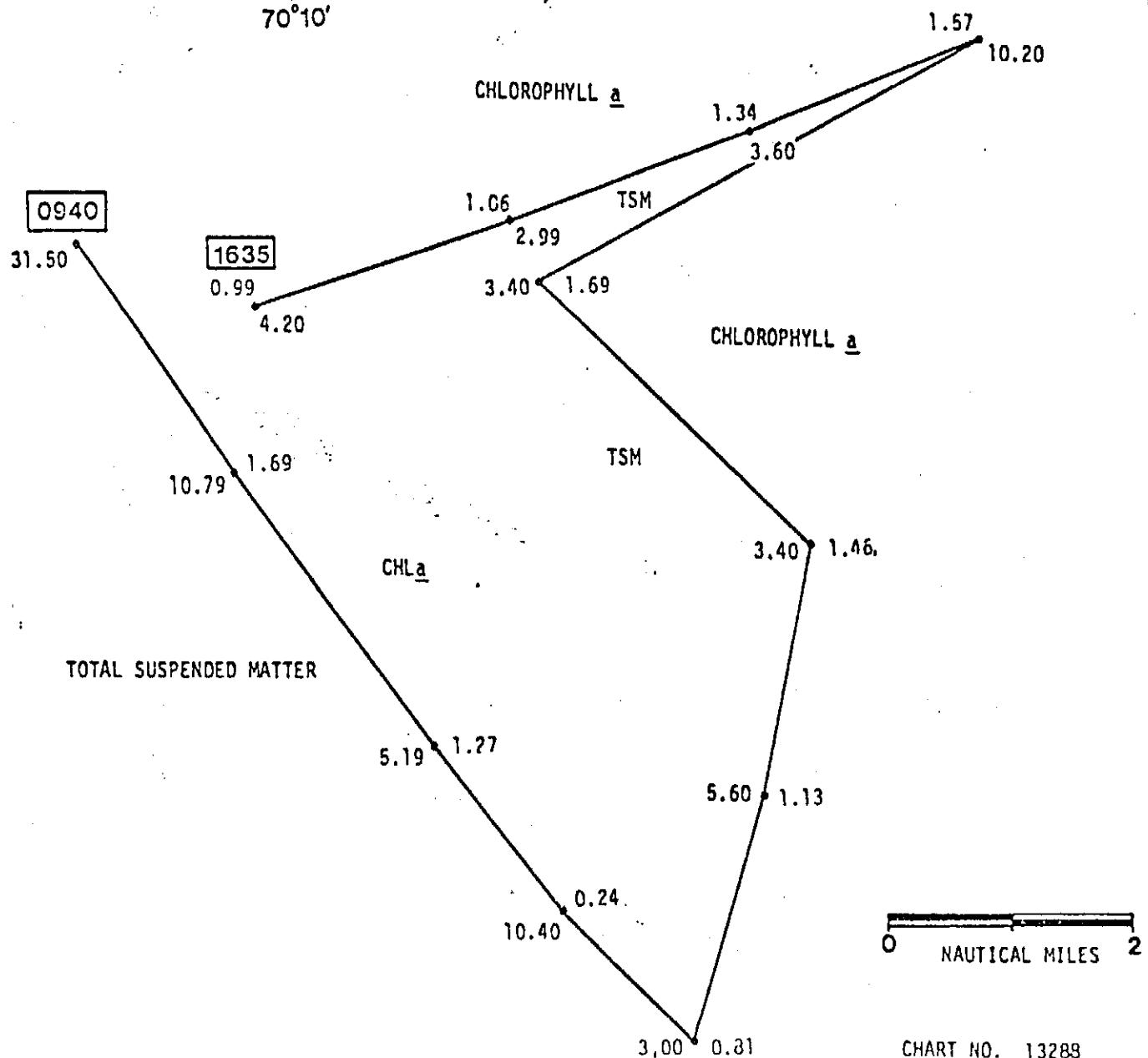


Table 18a. Maine Department of Marine Resources/Explorer, April 19, 1979

Summary of chlorophyll a ( $\text{mg/m}^3$ ), phaeophytin ( $\text{mg/m}^3$ ) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> ( $\text{mg/m}^3$ )	Phaeophytin ( $\text{mg/m}^3$ )	Fo/Fa	Comment Number
0940	43°37.9'	70°12.4'	1	0	-	-	-	
1010	43°36.1'	70°10.7'	2	0	1.69	-	2.02	
1040	43°34.0'	70° 8.6'	3	0	1.27	-	2.18	
1105	43°32.7'	70° 7.2'	4	0	0.24	-	2.00	
1230	43°31.6'	70° 5.7'	5	0	0.81	-	2.25	
1310	43°33.6'	70° 4.9'	6	0	1.13	-	2.24	
1345	43°35.6'	70° 4.3'	7	0	1.46	-	2.13	
1420	43°37.6'	70° 7.3'	8	0	1.69	-	2.13	
1450	43°39.5'	70° 2.4'	9	0	1.57	-	2.06	
1530	43°38.8'	70° 4.9'	10	0	1.34	-	2.09	
1600	43°38.1'	70° 7.6'	11	0	1.06	-	2.09	
1635	43°37.4'	70°10.4'	12	0	0.99	-	2.00	

Mean chlorophyll a  $\text{mg/m}^3$  1.04

Range chlorophyll a  $\text{mg/m}^3$  .24 to 1.69

Table 18b. Maine Department of Marine Resources/Explorer, April 19, 1979.  
Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
0940	43°37.9'	70°12.4'	1	0	31.50		3,4,9
1010	43°36.1'	70°10.7'	2	0	10.79		
1040	43°34.0'	70° 8.6'	3	0	5.19		
1105	43°32.7'	70° 7.2'	4	0	10.40		
1230	43°31.6'	70° 5.7'	5	0	3.00		
1310	43°33.6'	70° 4.9'	6	0	5.60		
1345	43°35.6'	70° 4.3'	7	0	3.40		
1420	43°37.6'	70° 7.3'	8	0	3.40		
1450	43°39.5'	70° 2.4'	9	0	10.20		
1530	43°38.8'	70° 4.9'	10	0	3.60		
1600	43°38.1'	70° 7.6'	11	0	2.99		
1635	43°37.4'	70°10.4'	12	0	4.20		

Bigelow Laboratory for Ocean Sciences/Tioga, April 19, 1979

26.00 0.32

0751

TOTAL SUSPENDED MATTER

1.99  
18.00  
2.99  
4.00  
2.99  
0.16  
0.68  
1755

2.99  
4.00

1.00

0.51

5.00  
0.32

CHLOROPHYLL a

CHART NO. 13278

0 10  
NAUTICAL MILES

Figure 18. Cruise track and sea-truth chlorophyll a and total suspended solids data for R/V Tioga, April 19, 1979.

Table 19a. Bigelow Laboratory for Ocean Sciences/Tioga, April 19, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
0751	43°32.1'	70° 3.8'	1	0	0.32	-	1.92	
0859	43°25.8'	70° 4.8'	2	0	-	-	-	
0941	43°22.5'	70° 5.2'	3	0	-	-	-	
1015	43°19.1'	70° 5.6'	4	0	0.15	-	1.83	
1113	43°13.5'	70° 9.6'	5	0	-	-	-	
1241	43° 7.8'	70°13.6'	6	0	0.32	-	2.16	
1330	43° 6.2'	70°20.5'	7	0	-	-	-	
1421	43° 4.2'	70°29.0'	8	0	0.51	-	1.96	
1519	42°58.1'	70°33.2'	9	0	-	-	-	
1612	42°51.9'	70°37.4'	10	0	0.16	-	1.94	
1702	42°50.0'	70°41.4'	11	0	-	-	-	
1755	42°48.4'	70°45.3'	12	0	0.68	-	2.03	

Mean chlorophyll a mg/m<sup>3</sup> .356

Range chlorophyll a mg/m<sup>3</sup> .15 to .68

Table 19b. Bigelow Laboratory for Ocean Sciences / Tioga, April 19, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
0751	43°32.1'	70° 3.8'	1	0	26.00		3,4,9
0859	43°25.8'	70° 4.8'	2	0	12.00		
0941	43°22.5'	70° 5.2'	3	0	4.00		
1015	43°19.1'	70° 5.6'	4	0	5.00		
1113	43°13.5'	70° 9.6'	5	0	5.00		
1241	43° 7.8'	70°13.6'	6	0	5.00		
1330	43° 6.2'	70°20.5'	7	0	1.00		
1421	43° 4.2'	70°29.0'	8	0	2.99		
1519	42°58.1'	70°33.2'	9	0	4.00		
1612	42°51.9'	70°37.4'	10	0	2.99		
1702	42°50.0'	70°41.4'	11	0	18.00		
1755	42°48.4'	70°45.3'	12	0	1.99		

University of Massachusetts Marine Station/Angelita,

April 19, 1979

+ 43°00'  
70°30'

TOTAL SUSPENDED MATTER

CHLOROPHYLL a

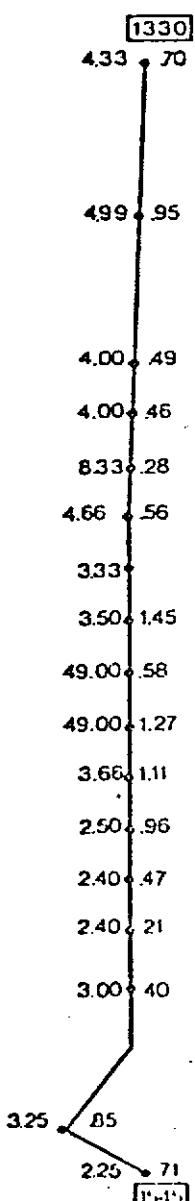


CHART NO. 13278

0 3  
NAUTICAL MILES

70°40'  
+ 42°40'

Figure 19. Cruise track and sea-truth chlorophyll a and total suspended solids data for R/V Angelita, April 19, 1979.

Table 20a. University of Massachusetts Marine Station/Angelita, April 19, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll a (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
1330	42°56.9'	70°40.0'	1	0	0.70	0.16	2.02	17
1345	42°54.7'	70°40.0'	2	0	0.95	0.11	2.12	17
1400	42°52.7'	70°40.0'	3	0	0.49	0.09	2.05	17
1405	42°51.9'	70°40.1'	4	0	0.46	0.11	2.00	17
1410	42°51.2'	70°40.1'	5	0	0.28	0.10	1.92	17
1415	42°50.5'	70°40.0'	6	0	0.56	0.09	2.07	17
1420					LOST SAMPLE			
1425	42°49.0'	70°40.1'	8	0	1.45	0.17	2.12	17
1430	42°48.0'	70°40.1'	9	0	0.58	0.05	2.14	17
1435	42°47.6'	70°40.1'	10	0	1.27	0.12	2.14	17
1440	42°46.9'	70°40.1'	11	0	1.11	0.16	2.10	17
1445	42°46.1'	70°40.1'	12	0	0.96	0.14	2.10	17
1450	42°45.4'	70°40.1'	13	0	0.47	0.11	2.10	17
1455	42°44.7'	70°40.1'	14	0	0.21	0.06	1.98	17
1500	42°43.9'	70°40.1'	15	0	0.40	0.07	2.06	17
1515	42°42.0'	70°41.3'	16	0	0.85	0.14	2.07	17
1545	42°41.3'	70°39.8'	17	0	0.71	0.13	2.06	17

Mean chlorophyll a mg/m<sup>3</sup> .72

Range chlorophyll a mg/m<sup>3</sup> .21 to 1.45

Table 20b. University of Massachusetts Marine Station /Angelita, April 19, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
1330	42°56.9'	70°40.0'	1	0	4.33		1,2,3,5,9
1345	42°54.7'	70°40.0'	2	0	4.99		
1400	42°52.7'	70°40.0'	3	0	4.00		
1405	42°51.9'	70°40.1'	4	0	4.00		
1410	42°51.2'	70°40.1'	5	0	8.33		
1415	42°50.5'	70°40.0'	6	0	4.66		
1420	42°49.8'	70°40.1'	7	0	3.33		
1425	42°49.0'	70°40.1'	8	0	3.50		
1430	42°48.0'	70°40.1'	9	0	49.00		
1435	42°47.6'	70°40.1'	10	0	49.00		
1440	42°46.9'	70°40.1'	11	0	3.66		
1445	42°46.1'	70°40.1'	12	0	2.50		
1450	42°45.4'	70°40.1'	13	0	2.40		
1455	42°44.7'	70°40.1'	14	0	2.40		
1500	42°43.9'	70°40.1'	15	0	3.00		
1515	42°42.0'	70°41.3'	16	0	3.25		
1545	42°41.3'	70°39.8'	17	0	2.25		

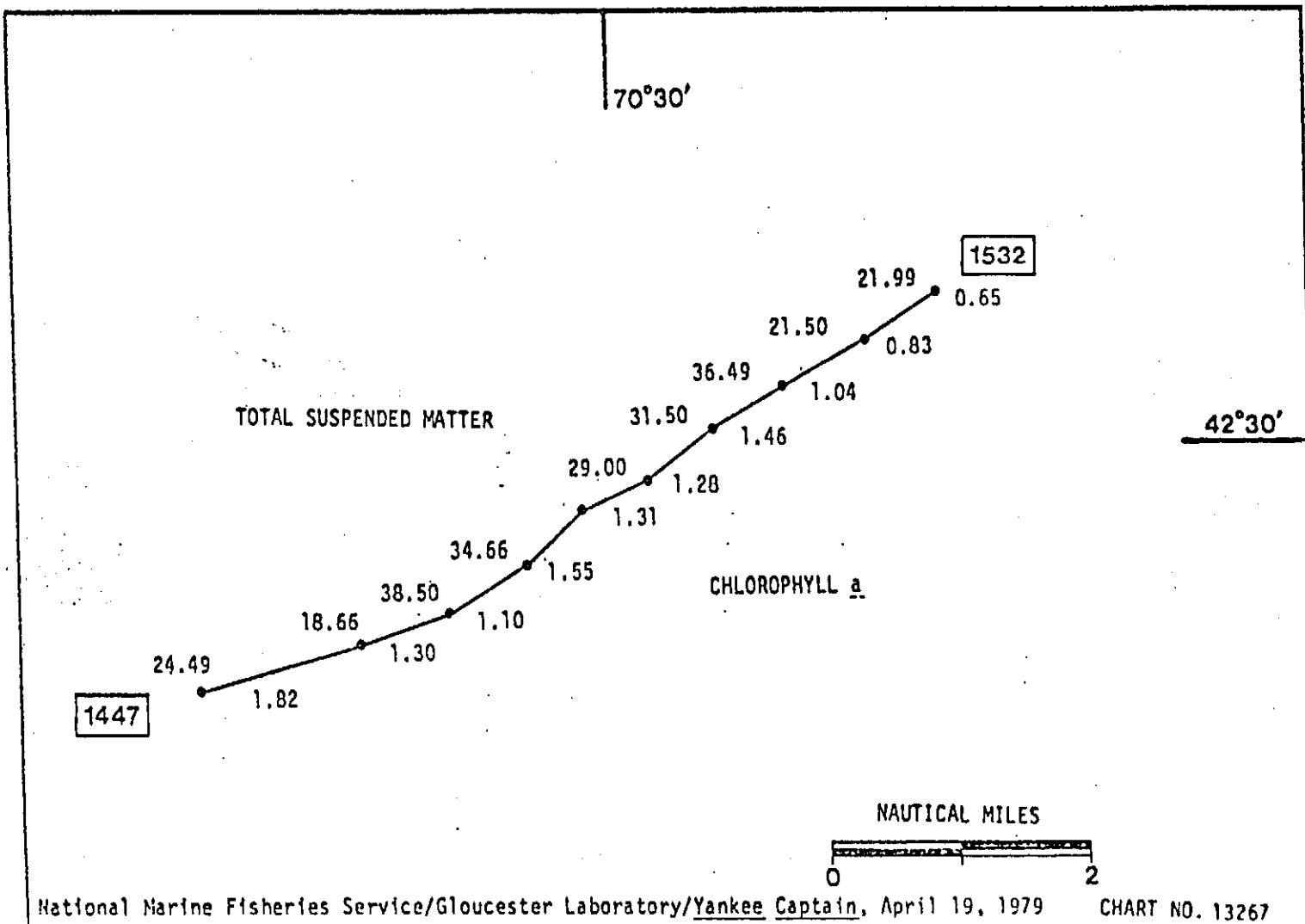


Figure 20. Cruise track and sea-truth chlorophyll a and total suspended solids data for R/V Yankee Captain, April 19, 1979.

Table 21a. National Marine Fisheries Service/Gloucester Laboratory/Yankee Captain, April 19, 1979

Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
1447	42°28.2'	70°33.5'	1	0	1.82	0.38	2.03	
1452	42°28.5'	70°32.8'	2	0	1.30	0.28	2.03	
1457	42°28.7'	70°31.9'	3	0	1.10	0.23	2.03	2
1502	42°29.1'	70°31.0'	4	0	1.55	0.36	2.01	
1507	42°29.5'	70°30.4'	5	0	1.31	0.22	2.07	
1512	42°29.7'	70°29.7'	6	0	1.28	0.18	2.09	
1517	42°30.1'	70°29.0'	7	0	1.46	0.25	2.07	
1522	42°30.4'	70°28.2'	8	0	1.04	0.17	2.07	
1527	42°30.8'	70°27.3'	9	0	0.83	0.09	2.12	
1532	42°31.1'	70°26.6'	10	0	0.65	0.09	2.09	

Mean chlorophyll a mg/m<sup>3</sup> 1.23

Range chlorophyll a mg/m<sup>3</sup> 0.65 to 1.82

Table 21b. National Marine Fisheries Service/Gloucester Laboratory /Yankee Captain, April 19, 1979  
 Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
1447	42°28.2'	70°33.5'	1	0	24.49	10.08	5,9
1452	42°28.5'	70°32.8'	2	0	18.66	4.25	
1457	42°28.7'	70°31.9'	3	0	38.50	24.09	
1502	42°29.1'	70°31.0'	4	0	34.66	20.25	
1512	42°29.7'	70°29.7'	6	0	29.00	14.58	
1517	42°30.1'	70°29.0'	7	0	31.50	17.09	
1522	42°30.4'	70°28.2'	8	0	36.49	22.08	
1527	42°30.8'	70°27.3'	9	0	21.50	7.08	
1532	42°31.1'	70°26.6'	10	0	21.99	7.58	
		Blank 1		0	8.00		
		Blank 2		0	72.49		

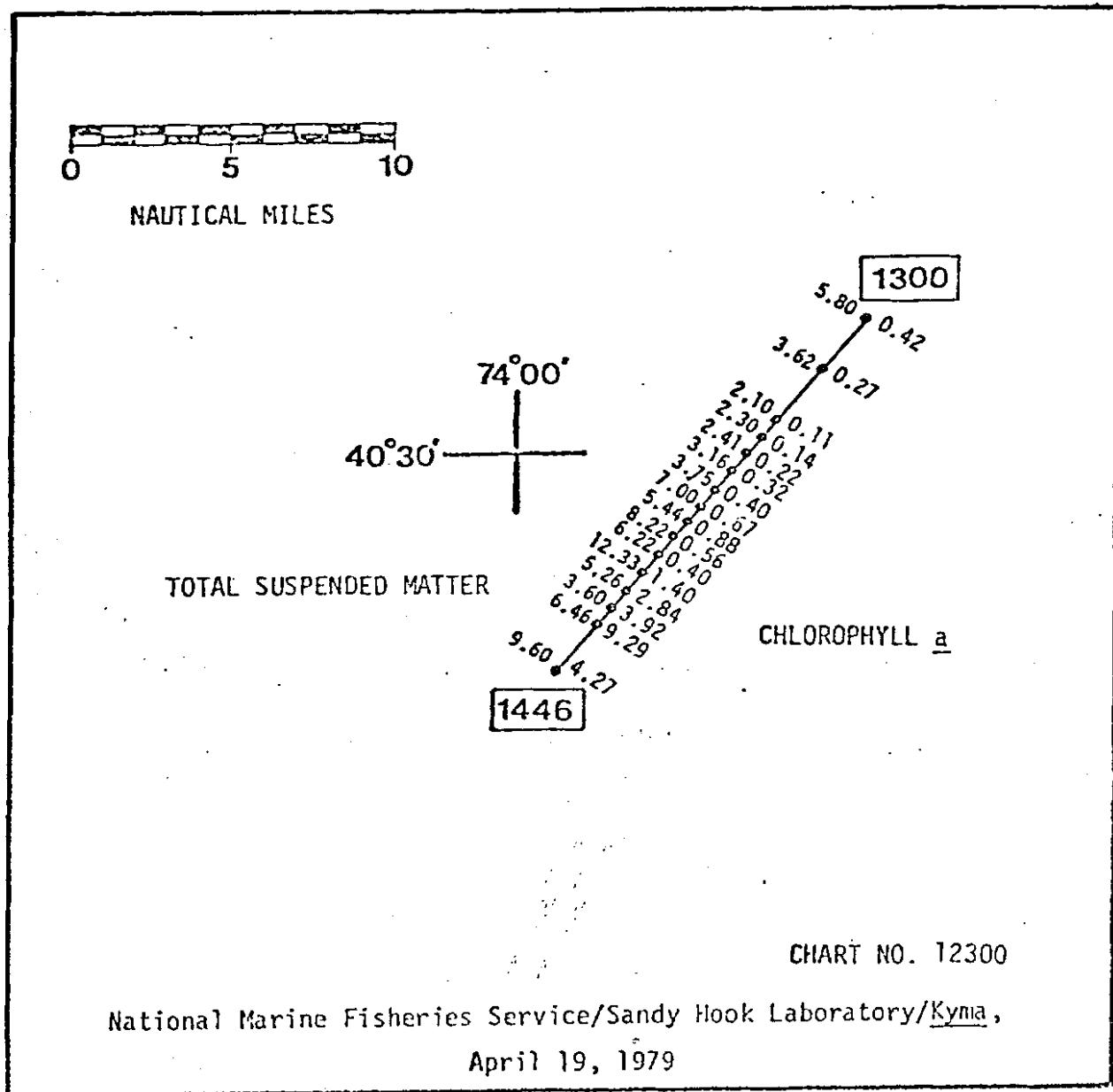


Figure 21. Cruise track and sea-truth chlorophyll a and total suspended solids data for R/V Kyma, April 19, 1979.

Table 22a. National Marine Fisheries Service/Sandy Hook Laboratory/Kyma, April 19, 1979

<sup>a</sup> Summary of chlorophyll a (mg/m<sup>3</sup>), phaeophytin (mg/m<sup>3</sup>) and acidification ratio (Fo/Fa) listed by participant.

Time	Lat. N	Long. W	Sta. No.	Sampling Depth(m)	Chlorophyll <u>a</u> (mg/m <sup>3</sup> )	Phaeophytin (mg/m <sup>3</sup> )	Fo/Fa	Comment Number
1300	40°34.5'	73°45.5'	1	1	0.42	0.91	1.39	14
1315	40°33.0'	73°47.2'	2	1	0.27	0.23	1.67	
1330	40°31.5'	73°49.1'	3	1	0.11	0.10	1.66	
1335	40°30.8'	73°49.7'	4	1	0.14	0.14	1.64	14
1340	40°30.3'	73°50.4'	5	1	0.22	0.15	1.73	
1345	40°29.6'	73°51.0'	6	1	0.32	0.18	1.80	
1350	40°29.1'	73°51.6'	7	1	0.40	0.21	1.81	
1355	40°28.6'	73°52.2'	8	1	0.67	0.57	1.67	
1400	40°28.0'	73°52.8'	9	1	0.88	0.33	1.91	
1405	40°27.5'	73°53.4'	10	1	0.56	0.32	1.80	
1410	40°26.9'	73°54.0'	11	1	0.40	1.77	1.23	14
1415	40°26.4'	73°54.7'	12	1	1.40	0.53	1.91	
1420	40°25.7'	73°55.4'	13	1	2.84	0.45	2.08	
1425	40°25.2'	73°55.9'	14	1	3.92	0.94	2.01	
1430	40°24.7'	73°56.6'	15	1	9.29	1.56	2.07	1
1446	40°23.1'	73°58.3'	16	1	4.27	0.93	2.03	

Mean chlorophyll a mg/m<sup>3</sup> 1.63

Range chlorophyll a mg/m<sup>3</sup> 0.11 to 9.29

Table 22b. National Marine Fisheries Service/Sandy Hook Laboratory /Kyma, April 19, 1979  
Summary of total suspended matter.

Time	Lat. N	Long. W	Station	Depth (m)	TSM Concentrations (mg/l)	TSM Concentrations Minus Blank (mg/l)	Comments
1300	40°34.5'	73°45.5'	1	1	5.80		3
1315	40°33.0'	73°47.2'	2	1	3.62		
1330	40°31.5'	73°49.1'	3	1	2.10		
1335	40°30.8'	73°49.7'	4	1	2.30		
1340	40°30.3'	73°50.4'	5	1	2.41		
1345	40°29.6'	73°51.0'	6	1	3.16		
1350	40°29.1'	73°51.6'	7	1	3.75		
1355	40°28.6'	73°52.2'	8	1	7.00		
1400	40°28.0'	73°52.8'	9	1	5.44		
1405	40°27.5'	73°53.4'	10	1	8.22		
1410	40°26.9'	73°54.0'	11	1	6.22		
1415	40°26.4'	73°54.7'	12	1	12.33		
1420	40°25.7'	73°55.4'	13	1	5.26		
1425	40°25.2'	73°55.9'	14	1	3.60		
1430	40°24.7'	73°56.6'	15	1	6.46		
1445	40°23.1'	73°58.3'	16	1	9.60		

Appendix A. Chlorophyll a sampling procedure sent to all participants collecting sea-truth data.

Chlorophyll Procedure:

A total of 17 samples will be taken from an hour before to an hour after the overflight. Samples should be taken every 5 min from 1/2 hour before to 1/2 hour after overflight. All other samples should be taken at 15 min intervals. Samples will be taken at the following times where  $T_0$  = time of overflight:

T-60 min	T-20 min	T+5 min	T+25 min
T-45 min	T-15 min	T+10 min	T+30 min
T-30 min	T-10 min	T+15 min	T+45 min
T-25 min	T- 5 min	T+20 min	T+60 min
$T_0$ -overflight			

- 1) Collect surface seawater at designated times using a plastic bucket with line attached to it. Secure the line to the vessel before taking first sample (take 2-3 additional buckets for backups).  
Care should be taken to insure water sampled is free from ship discharges.
- 2) Record the sampling time (hours-EST), station number, station location, sampling depth, sample bottle number, volume of seawater filtered, centrifuge tube number, as well as other relevant information indicated on the chlorophyll data sheet.
- 3) Immediately after the bucket is brought on deck water is poured through the funnel with the 300 micron mesh, and into the numbered plastic 250 ml sample bottle. This step removes the larger zooplankton which may interfere with chlorophyll analyses.
- 4) Using forceps, place a 1 inch diameter, glass fiber (GF/F) filter in the filtration assembly and securely fasten upper filtration funnel to lower filter support.
- 5) Turn vacuum pump on. Vacuum must not exceed 55 mm Hg (~2½ inches Hg). Higher vacuum can break phytoplankton and result in underestimates of chlorophyll concentration.
- 6) Shake the sample bottle.
- 7) Rinse the graduated cylinder with sample to remove any residual from previous sample.
- 8) Measure exactly 150 ml's using graduated cylinder (record the volume of sample filtered on the chlorophyll data sheet).

←

9) Carefully pour the 150 ml of sample into the filtration cup.

If samples get backed up - store samples in a cool, dark place. However, do not refrigerate seawater samples. Shake bottle vigorously before rinsing graduated cylinder with sample and measuring 150 ml subsample. This resuspends particulate matter which may have settled during storage.

10) When 10-15 ml of sample remain in the filter cup, rinse down the plankton on the sides of the filter cup with about 20 ml of filtered seawater collected from the previous station. The white plastic squeeze bottle is used to rinse down the filter cup walls.

11) As soon as the rinse seawater passes through the glass fiber filter, remove the funnel cup.

12) Using Millipore or Gelman filter forceps, carefully remove the filter from the filter support and carefully place the filter into a pre-numbered centrifuge tube.

Care must be taken to grasp only the outer perimeter of the glass fiber filter with forceps. Forceps should not contact phytoplankton on the filter. Do not handle filters with fingers.

13) Push the filter below the 10 ml mark of the centrifuge tube with forceps.

14) Hold forceps over mouth of centrifuge tube and rinse the portion of the forceps which contacted the filter with a few ml of 90% acetone (use squeeze bottle).

15) Fill the centrifuge tube to the 10 ml mark with 90% acetone.

16) Securely stopper the centrifuge tube and shake vigorously. After shaking, be sure that the filter is submerged in acetone.

17) Place the centrifuge tube in the wooden sample storage box containing "blue ice".

It is important that the acetone extract be kept refrigerated and in complete darkness.

18) After two hours, remove sample from cooler and shake the sample vigorously to facilitate extraction. After shaking be sure that the filter is submerged in acetone. Quickly return sample to cooler.

- 19) The sample is extracted for 20-22 hours. During this period the acetone extracts must be kept in darkness and refrigerated.

The chemical blue ice should be removed from the sampling box and put in a freezer 2 days prior to the overflight. It should be returned to the sample box just prior to boarding vessel. If possible it should be kept in a freezer on board the vessel and placed in sample box just prior to sampling the first station. This coolant will have to keep the samples chilled for 24 hours.

- 20) Samples, data sheets, and equipment should be returned to Sandy Hook Laboratory within 20 hours after the first seawater sample was collected. Make sure that samples are kept chilled from the time extraction begins to the time samples arrive at Sandy Hook.

- 21) At Sandy Hook Laboratory, the acetone extracts will be centrifuged and read on a fluorometer to determine the concentration of chlorophyll a.

Other Comments: If a Secchi disc is available a Secchi reading should be taken just prior to T-60 min and just after T+60 min. This data should be recorded on the data sheet corresponding to these times.

Appendix B. Total suspended solids procedure sent to all participants collecting sea-truth data.

Total Suspended Solids Procedure:

Sampling

Samples for chlorophyll a and total suspended matter should be taken at the same time.

A total of 17 samples will be taken from an hour before to an hour after the overflight. Samples should be taken every 5 min from 1/2 hour before to 1/2 hour after overflight. All other samples should be taken at 15 min intervals. Samples will be taken at the following times where  $T_0$  = time of overflight:

T-60 min	T-20 min	T+5 min	T+25 min
T-45 min	T-15 min	T+10 min	T+30 min
T-30 min	T-10 min	T+15 min	T+45 min
T-25 min	T- 5 min	T+20 min	T+60 min
$T_0$ -overflight			

- 1) Collect surface seawater at designated times using a plastic bucket with line attached to it. Secure the line to the vessel before taking first sample (take 2-3 additional buckets for backups).

Care should be taken to insure water sampled is free from ship discharges.

- 2) The position along the sampling track should be noted each time a sample is taken and recorded, in degrees latitude and longitude, on the data sheets. Once the sample is on board a subsample is taken with a clean, one (1) or two(2) liter, plastic or glass bottle and capped. The bottle should be rinsed twice with small quantities of the water to be sampled before filling.
- 3) Filter holders (glass), graduate cylinder, and forceps should be rinsed thoroughly with filtered deionized water, prior to use. Immediately prior to filtering, the desiccated weighed filters are removed from the desiccator and Petri dishes, using only forceps to handle the filters, and placed upon the filter holders. A note of which filter holder contains which filter should be made on the record sheet. The filters, under vacuum, are then rinsed with a small quantity of filtered deionized water. The sample is then shaken to thoroughly mix it and a 100 ml aliquot is measured out in a rinsed graduate cylinder and this is then quickly poured into the filter holder. Any large suspended particles (twigs, leaves, insects, etc.) should be removed prior to pouring the aliquot into the filter funnel. The filter holder is then loosely covered with aluminum foil to keep atmospheric particles from entering. (The filter holder should be covered with aluminum foil at all times except when sample is added). The sample is then

allowed to filter under vacuum. The vacuum pressure should not exceed 55 mm mercury to prevent cells from rupturing. If it appears enough suspended matter was not obtained from the first aliquot, subsequent aliquots should be taken mixing the sample well each time before taking an aliquot and being sure to record the cumulative volumes of all the aliquots taken from any one sample next to the correct filter number on the record sheet. Enough water must be filtered to allow us to measure a significant change in the weight of the filter. (Within nearshore waters enough suspended matter should be obtained from a 100-200 ml aliquot to be visible on the filter; in offshore waters larger aliquots may have to be taken). After the sample has almost completely passed through the filters holders are then rinsed with small quantities of isotonic  $(\text{NH}_4)_2 \text{CO}_3$  to remove salts and to wash any remaining suspended material off the sides of the filter holders. The filters are sucked dry and then the vacuum is removed. The filters are removed from the filter holder using forceps and placed back onto the aluminum foil in their respective Petri dishes. The dishes are then resealed with tape and placed in a safe container in an upright position and braced to prevent turning over.

- 4) Blanks (ideally 3) should be established by rinsing filters with filtered seawater and isotonic  $(\text{NH}_4)_2 \text{CO}_3$  solution as above.
- 5) Both the chlorophyll and suspended matter samples should be packed in shipping container in an upright position for storage and transport.

All effort should be made to fill in all required information on the data sheets before returning them to NEFC/Sandy Hook Lab. The data sheets should accompany the samples in transport. Transport mode is to be determined shortly and participants will be notified.

Also, chart showing the area sampled, stations, cruise track, course changes and times, should be returned to NEFC/Sandy Hook no later than one (1) week after the cruise.

allowed to filter under vacuum. The vacuum pressure should not exceed 55 mm mercury to prevent cells from rupturing. If it appears enough suspended matter was not obtained from the first aliquot, subsequent aliquots should be taken mixing the sample well each time before taking an aliquot and being sure to record the cumulative volumes of all the aliquots taken from any one sample next to the correct filter number on the record sheet. Enough water must be filtered to allow us to measure a significant change in the weight of the filter. (Within nearshore waters enough suspended matter should be obtained from a 100-200 ml aliquot to be visible on the filter; in offshore waters larger aliquots may have to be taken). After the sample has almost completely passed through the filters holders are then rinsed with small quantities of isotonic  $(\text{NH}_4)_2 \text{CO}_3$  to remove salts and to wash any remaining suspended material off the sides of the filter holders. The filters are sucked dry and then the vacuum is removed. The filters are removed from the filter holder using forceps and placed back onto the aluminum foil in their respective Petri dishes. The dishes are then resealed with tape and placed in a safe container in an upright position and braced to prevent turning over.

- 4) Blanks (ideally 3) should be established by rinsing filters with filtered seawater and isotonic  $(\text{NH}_4)_2 \text{CO}_3$  solution as above.
- 5) Both the chlorophyll and suspended matter samples should be packed in shipping container in an upright position for storage and transport.

All effort should be made to fill in all required information on the data sheets before returning them to NEFC/Sandy Hook Lab. The data sheets should accompany the samples in transport. Transport mode is to be determined shortly and participants will be notified.

Also, chart showing the area sampled, stations, cruise track, course changes and times, should be returned to NEFC/Sandy Hook no later than one (1) week after the cruise.

Appendix C. Sampling Schedule

Day 1 LAMPEx Sampling Schedule - April 1979

Vessel Number	Vessel	Institution	C-130 Time of Overflight hrs(EST)	Sampling Interval	Location
1	Pathfinder	Va. Inst. Mar. Sci.	0900	0800-1000	Steam course 107°T from bell "1" at entrance to Thimble Shoal Channel. Begin course and sampling at 0800 hrs (begin 36°57.3'N, 76°02.8'W). Also appr. 1500 hrs. Begin course 248°T from 37°04'.1N, 75°58.9'W to 37°03.5'N, 76°03.9'W.
6	Helicopter	Hampton Inst.	0900	0800-1000	Along Thimble Shoal Channel from bell "1" at entrance to channel to 6 miles west of Bay Bridge-Tunnel. Preferably sample section as close to 0900 as possible. Sample every 0.5 naut. mi. from bell "1" (36°57.3'N, 76°02.8'W) to buoy 18 near Thimble Shoal
10	Miss Donna	Univ. of Del.	1000	0900-1100	Steam course 130°T from south end of Outer Breakwater. Begin course and sampling at 0900 hrs (begin 38°48.8'N, 75°05.6'W)
14	Koeneke	NJ Mar. Sci. Consort.	1000	0900-1100	Steam course 130°T from 38°54.8'N, 75°06.9'W [between BW Mo (A) and Bell "9" Brandywine Range near Brown Shoal]. Begin course and sampling at 0900 hrs
16	Julius Nelson	NJ Dept. Env. Prot.	1000	0900-1100	Steam course 130°T from RBN at south end of Brandywine Shoal. Begin (38°58.5'N, 75°06.3'W) course and sampling at 0900 hrs
21	Kelez	MESA/NY Bight	1100	1000-1200	Steam course of 150°T from 40°34.6'N, 73°38.7'W. Begin course and sampling at 1000 hrs
12	Advance II	Cape Fear Tech. Inst.	1145	1045-1245	Steam course 180°T from 40°14.25'N, 73°15'W. Begin course and sampling at 1045 hrs
24	Onrust	State Univ. of NY Stony Brook	1145	1045-1245	Steam course 180°T from 40°35'N, 73°15'W. Begin course and sampling at 1045 hrs
22	Suffolk Co. #2	Suffolk Co. Health Dept.	1145	1045-1245	Stationary point at 40°40.5'N, 73°15'W.
33	Clean Waters	US EPA	1300	1200-1400	Steam course of 220°T from 40°34.65'N, 73°45.6'W by BW "ER" bell East Rockaway Inlet. Begin course and sampling at 1200 hrs
17	Kyma	NEFC/Sandy Hook	1300	1200-1400	Steam course of 220°T from 40°34.6'N, 73°38.7'W. Begin course and sampling at 1200 hrs
15	Susan C	NJ Dept. Env. Prot.	1400	1300-1500	Steam course of 054°T from 39°33.65'N, 74°11.3'W. Alternatively steam course of 234°T from 39°45.3'N, 73°50.3'W. Begin course and sampling at 1300 hrs
9	Delaware Bay	VA Mar. Sci. Consort.	1445	1345-1545	Steam course of 080°T from bell R "2TL" (37°49'N, 75°22.5'W). Begin course and sampling at 1345 hrs

\*Geographical location to be determined closer to overflight

## Appendix C. (continued)

## Day 2 LAMPEX Sampling Schedule - April 1979

Vessel Number	Vessel	Institution	C-130 Time of Overflight hrs(EST)	Sampling Interval	Location	
25	Shang Wheeler	NEFC/Milford	0930	0830-1030	Steam course of 090°T from 41°9.5'N, 72°51'W. Begin course and sampling at 0830 hrs	
*23	Swordfish	NY Ocean Sci. Lab.	0930	0830-1030	Steam course of 090°T from 41°9.5'N, 72°07.6'W. Begin course and sampling at 0830 hrs	
29	Short Snort	Univ. RI	0945	0845-1045	Steam course of 120°T from 41°20'N, 71°40'W. Begin course and sampling at 0845 hrs	
*19	Delaware II	NEFC	1015	0915-1115	Location to be determined closer to overflight. Steam course of 130°T or 310°T, whichever is more convenient for vessel.	
*37	Subsig II	EG&G	1215	1115-1315	Stationary point at 42°00'N, 66°15'W. Begin sampling at 1115 hrs. If underway desire course heading of 360°T or 180°T, whichever is most convenient (must avoid Canadian waters)	
28	*35	Albatross IV	NEFC	1250	1150-1350	Location to be determined closer to overflight. Vessel must be in US waters, preferably no closer than 5 nautical miles to the Canadian boundary. Steam course of 215°T or 035°T, whichever is more convenient for vessel. Begin course and sampling at 1150 hrs
*39	Challenge	State of Maine/ Dept. Mar. Res.	1330	1230-1430	Location to be determined closer to overflight. Steam course of 260°T or 080°T, whichever is more convenient for vessel. Begin course and sampling at 1230 hrs	
*40	Explorer	State of Maine/ Dept. Mar. Res.	1400	1300-1500	Location to be determined closer to overflight. Steam course of 210°T or 030°T, whichever is more convenient for vessel. Begin course and sampling at 1300 hrs	
*32	Tioga	Bigelow Ocean Sci. Lab	1415	1315-1515	Location to be determined closer to overflight. Steam course of 210°T or 030°T, whichever is more convenient for vessel. Begin course and sampling at 1315 hrs	
31	Angelita	Univ. of Mass.	1430	1330-1530	Steam course of 180°T from 43°01'N, 70°40'W. Begin course and sampling at 1330 hrs	
30	Rorqual	NEFC/Gloucester	1430	1330-1530	Steam course of 060°T from 42°21.08'N, 70°50.5'W near three and one-half fathom Ledge bell. Begin course and sampling at 1330 hrs	
17	Kyma	NEFC/Sandy Hook	1400	1300-1500	Steam course of 220°T from 40°34.65'N, 73°45.6'W by GK "ER" bell East Rockaway Inlet. Begin course and sampling at 1300 hrs	

\*Geographical location to be determined closer to overflight.  
Course headings have been selected to minimize sun glint.

Appendix D. Preliminary Synopsis.

LAMPEX Sea Truth/Overflight Preliminary Synopsis

Vessel Number	Vessel	Institution	Sea Truth Status	NASA C-130 Overflight Status
<u>DAY 1 = 17 APRIL 1979</u>				
1	Pathfinder	VIMS	Only 9 samples - too rough. Five on way out, 4 on way in. No sampling Fisherman's Island to tunnel. York R. - yes. 0945-1042 hrs.	0951 hrs 9,500 ft
6	Helicopter	Hampton Inst.	11 samples along planned line. 0944-1022 hrs.	0951 hrs 9,500 ft
10	Lady Donna	U. of Delaware	10 samples taken. 0935-1100 hrs.	1111 hrs 9,300 ft
14	Koeneke	NJ Mar. Sci. Consort.	Cancelled - too rough	10,000 ft
16	Julius Nelson	Rutgers U.	16 samples collected; filtered back at lab. 16 on way out, 1 on way in. 0900-1045 hrs.	10,000 ft
21	Kelez	MESA/NY Bight	All 17 samples collected as planned. 1000-1200 hrs.	Poor weather
12	Advance II	Cape Fear Tech. Inst.	All 17 samples collected as planned. Some collection problems. 1045-1245 hrs.	1216 hrs 10,000 ft
24	Onrust	SUNY/Stony Brook	All 17 samples collected as planned. 1045-1245 hrs.	1222 hrs 10,000 ft
22	Suffolk Co. #2	Suffolk Co. DHS	All 17 samples collected as planned. Chlorophyll storage-transfer problem, chlorophylls lost. TSS-OK. 1045-1245 hrs.	Poor weather

## Appendix D. (continued)

NASA C-130  
Overflight  
Status

Vessel Number	Vessel	Institution	Sea Truth Status	NASA C-130 Overflight Status
17	Kyma	NEFC/Sandy Hook	All 20 samples collected as planned. 1200-1445 hrs.	Poor weather
38	Clean Waters	US EPA	All 17 samples collected as planned. 1200-1400 hrs.	Poor weather
15	Susan C	NJ DEP	All 17 samples collected as planned. 1300-1500 hrs.	Poor weather
9	Delaware Bay	Mar. Sci. Consort.	Cancelled - too rough	10,000 ft
39	Challenge	State of Maine Mar. Res.	13 samples taken 0905-1113 hrs	No overflight

## Appendix D. (continued)

## LAMPEX Sea Truth/Overflight Preliminary Synopsis

NASA C-130  
Overflight  
Status

Vessel Number	Vessel	Institution	Sea Truth Status	
<u>DAY 2 - 19 APRIL 1979</u>				
25	Shang Wheeler	NEFC/Milford	All 17 samples collected as planned. TSS may not be significant, filtered only 150 ml. 0830-1030 hrs.	0957 hrs 10,000 ft good
28	Swordfish	NY Ocean Sci. Lab.	Cancelled - too rough. Also generator failure.	10,000 ft
29	Short Snort	U. Rhode Island	All 17 samples collected on modified plan. Started with dog leg. Cloudy. Currents move sea truth off flight track. 0845-1045 hrs.	1015 hrs 6,500 ft good
38	Advance II	Cape Fear Tech. Inst.	No samples taken	No overflight
19	Delaware II	NMFS/NEFC	All 17 samples collected 0917-1047 hrs south of Martha's Vineyard.	1046 hrs 7,470 ft low light
37	Subsig II	EG&G	All 17 samples collected as planned. 1100-1300 hrs.	No overflight
35	Albatross IV	NMFS/NEFC	Cancelled due to damaged rectifier	No overflight
39	Challenge	State of Maine Mar. Res.	Cancelled - short manpower	
40	Explorer	State of Maine Mar. Res.	Snow, hail, rain 1200-1300. 12 samples taken 0940-1635 hrs in mouth of Casco Bay.	Poor weather

## Appendix D. (continued)

NASA C-130  
Overflight  
Status

Vessel Number	Vessel	Institution	Sea Truth Status	
32	Tioga	Bigelow Lab. Ocean Sci.	12 samples collected 0751-1755 hrs.	Poor weather
31	Angelita	U. of Mass.	16 chla and 17 TSS samples along modified line 18 miles long 1330-1545 hrs. Rough weather, cloudy. Filtered at lab.	1219 hrs 1,500 ft doubtful
30	Rorqual	NEFC/Gloucester	Engine failure, returned to port	
30	Yankee Captain	NEFC/Gloucester	10 samples 1447-1532 along planned line .	1237 hrs 2,500 ft
17	Kyma	NEFC/Sandy Hook	All 16 samples collected as planned . 1300-1446 hrs.	1413 hrs 8,500 ft good

**Appendix E. U-2 Flights, Thursday, April 19 - Saturday, April 21, 1979. All data collected at 65,000 ft. Times - EST.**

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**Thursday, April 19 - OCS and MV cameras working**

1. 1st line - Southern coast of Long Island from New York Bight to Montauk Point, 1339-1354, 30 to 70% cloud cover.
2. 2nd line - Northern coast of Long Island from Gardiners Bay to Smithtown Bay, 1357-1405, 30-70% cloud cover.
3. 3rd line - Southern New Jersey coast from Barnegat Inlet to Cape Henlopen, 1415-1430, no clouds.
4. 4th line - Fenwick Island and Virginia coast from Fenwick Island to Cape Henry, 1432-1446, no clouds.

**Friday, April 20**

**Morning - OCS and MV cameras working**

5. 1st line - Northern New Jersey coast from Barnegat Inlet to Brooklyn, 0830-0839, clear.
6. 2nd line - Staten Island into New York Bight, 0846-0851, clear.
7. 3rd line - Atlantic Ocean into Delaware Bay, 0940-0945, clear.

**Afternoon - No OCS but have camera data**

8. 1st line - Southern coast of Long Island from New York Bight to Nantucket Island, 1345-1413, clear.
9. 2nd line - Nantucket Sound to Smithtown Bay, 1417-1430, mostly clear.
10. 3rd line - Long Island Sound from New York to Cape Cod, 1443-1512, mostly clear.
11. 4th line - Provincetown to Plymouth, Massachusetts, 1516-1523, some clouds.

**Saturday, April 21**

**Morning - OCS and MV cameras working**

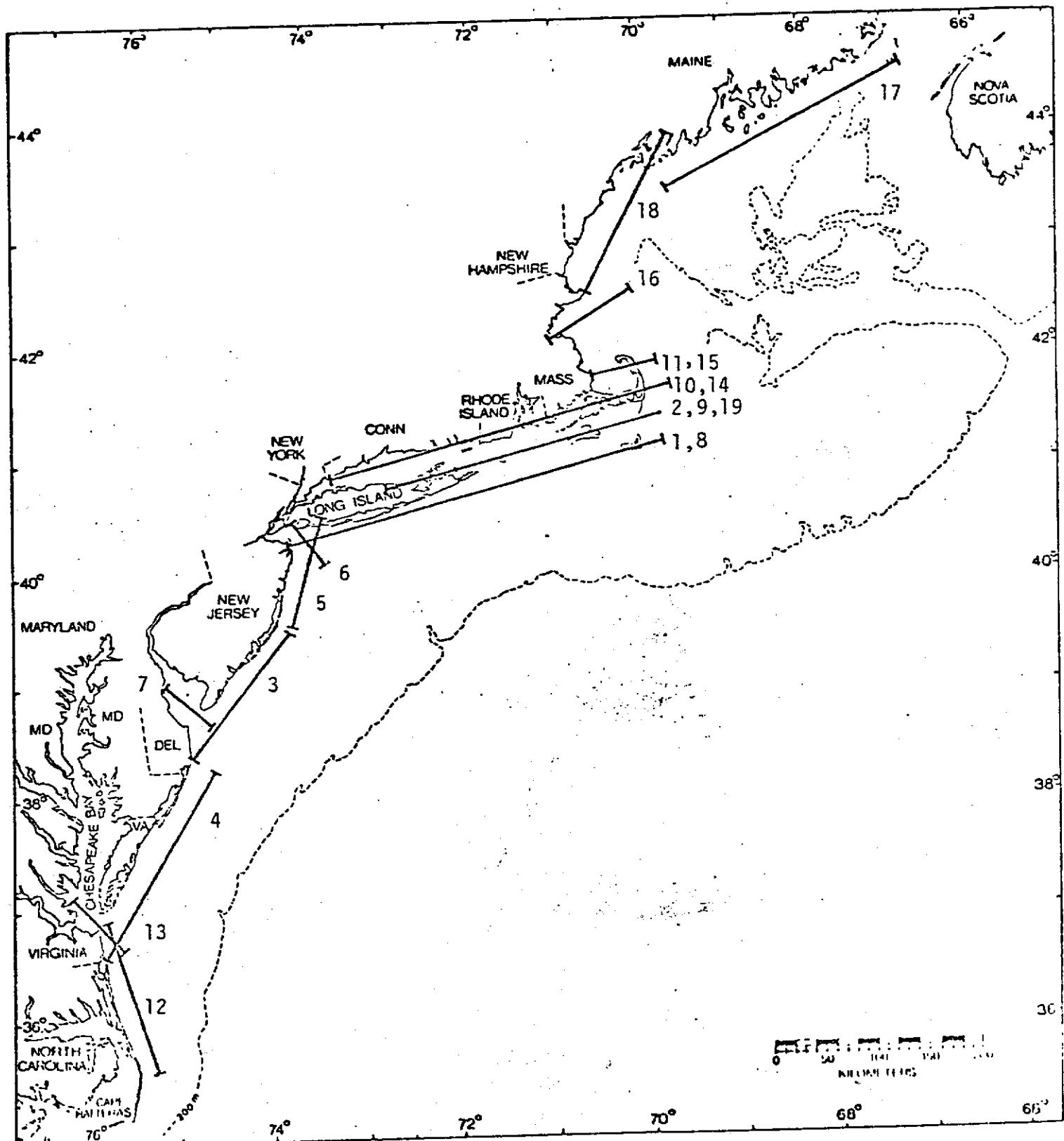
12. 1st line - Mouth of Chesapeake Bay to Oregon Inlet, 0757-0811, clear.
13. 2nd line - Mouth of York River to Chesapeake Bay entrance, 0944-0948, clear.

## Appendix E. (continued)

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### Afternoon - OCS and MV cameras working

14. 1st line - Northern part of Long Island Sound from New York to Cape Cod, 1342-1411, clear.
  15. 2nd line - Provincetown to Plymouth, Massachusetts, 1414-1421, clear.
  16. 3rd line - Just short of Boston to Cape Ann, 1424-1431, clear.
  17. 4th line - Maine coast from Bath to Canada border, 1438-1459, clear.
  18. 5th line - Lower Maine coast to New Hampshire from Casco Bay to Newburyport, 1519-1532, clear.
  19. 6th line - Nantucket Sound to Smithtown Bay, 1545-1607, clear.
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Appendix Figure E1. NASA U-2 flight tracks 19-21 April 1979. For explanation of flight line numbers see previous page.

## Appendix F. LAMPEX I Participants.

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Participants include those involved in planning<sup>1</sup>, coordination<sup>2</sup>, sample and data collection<sup>3</sup>, sample transport<sup>4</sup>, and data processing<sup>5</sup>.

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**Appendix F. (continued)**

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**Appendix F. (continued)**

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**Appendix F. (continued)**

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**Bigelow Laboratory for Ocean Sciences**

**Charles Yentsch<sup>1 4</sup>**  
**Mary Lou Brann<sup>3</sup>**

**Appendix F. (continued)**

**LAMPEX I SUMMARY**

Total Participants	111
Planning	14
Coordination	46
Sample and data collection	70
Transport, shipping, delivery of samples	18
Data processing	18
Total Research Facilities	25
Federal laboratories	10
State and municipal institutions	10
Private institutions	5
Surface Vessels	19
Aircraft	3
Satellites	1
Areas Sampled for Sea-Truth	20
Areas Sampled Via Remote Sensing	22
Areas Sampled Remotely with Sea-Truth	10
Chlorophyll Samples	296
Total Suspended Solids Samples	315