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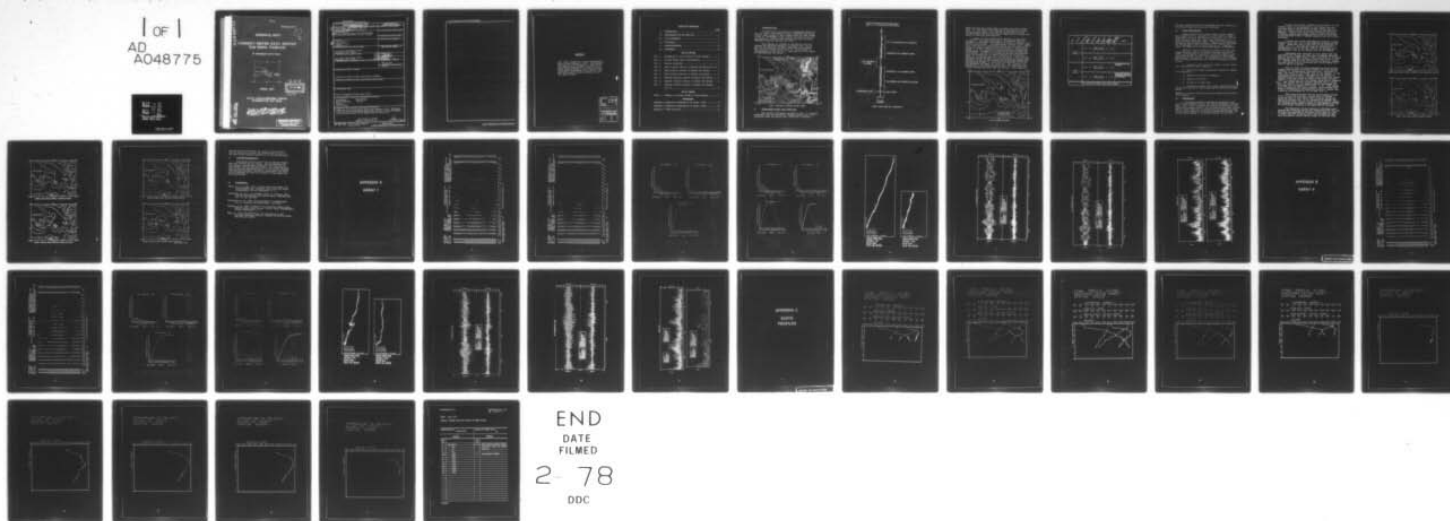
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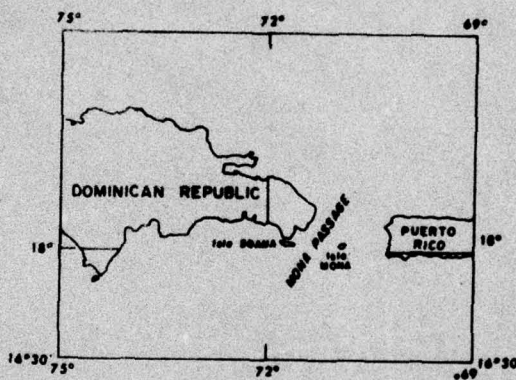
TN 3431-01-77

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TECHNICAL NOTE

CURRENT METER DATA REPORT
FOR MONA PASSAGE

M. Bourkland and S. Dorey



APRIL 1977

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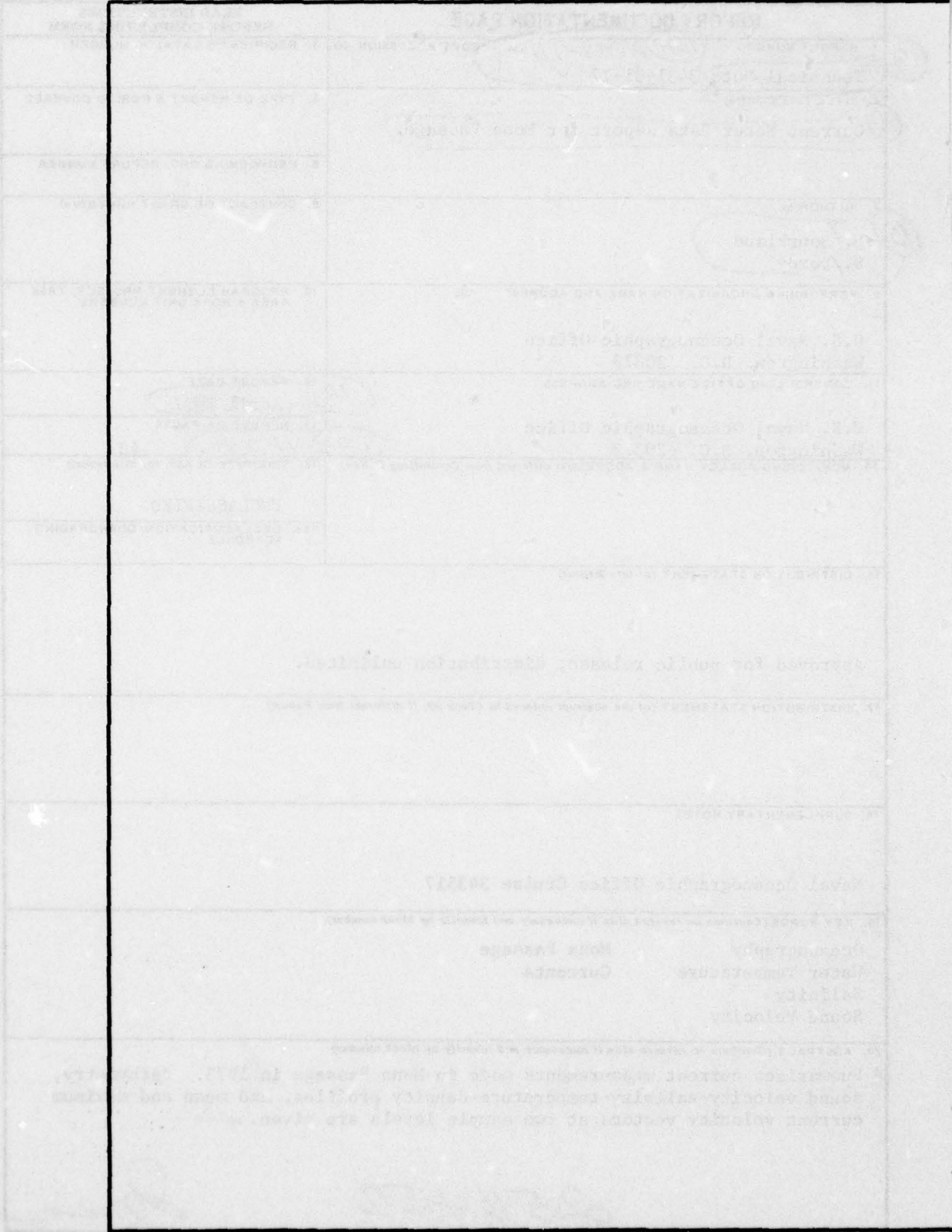
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Summarizes current measurements made in Mona Passage in 1975. Bathymetry, sound velocity-salinity-temperature-density profiles, and mean and maximum current velocity vectors at two sample levels are given. ←		

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ABSTRACT

This report summarizes current measurements made in Mona Passage in 1975. The figures included show the bathymetry, location of the current observations, location of the SVSTD stations taken at the time of array implantment (NAVOCEANO cruise 343517), and mean and maximum velocity vectors at the two sample levels.

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TABLE OF CONTENTS

	page
I. INTRODUCTION	1
II. INSTRUMENTATION AND SAMPLING	1
III. DATA PROCESSING	5
IV. DISCUSSION	5
V. ACKNOWLEDGEMENTS	10
VI. REFERENCES	10

LIST OF FIGURES

Fig. 1. Bathymetry in the Vicinity of Mona Passage	1
Fig. 2. Current Meter Array Configuration	2
Fig. 3. Station Locations	3
Fig. 4. Mean Velocity Vectors 10 Meters Off Bottom, Oct '72	7
Fig. 5. Mean Velocity Vectors 20 Meters Off Bottom	7
Fig. 6. Mean Velocity Vectors 10 Meters Off Bottom	8
Fig. 7. Maximum Velocity Vectors 20 Meters Off Bottom ...	8
Fig. 8. Maximum Velocity Vectors 10 Meters Off Bottom ...	9
Fig. 9. Maximum Velocity Vectors 10 Meters Off Bottom, Oct '72	9

LIST OF TABLES

Table 1. Summary of Current Arrays in Mona Passage	4
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APPENDICES

Appendix A Graphical Presentation of Array 1 Data	11
Appendix B Graphical Presentation of Array 4 Data	21
Appendix C SVSTD Profiles	31

I. INTRODUCTION

In March 1975, the Physical Oceanography Branch of the U.S. Naval Oceanographic Office implanted taut-lined current meter arrays in Mona Passage from the USNS WILKES (T-AGS 33) (NAVOCEANO cruise 343517) to measure near bottom currents. Recovery was accomplished from the USNS HARKNESS (T-AGS 32) during July 1975.

Mona Passage is located in the Greater Antilles between the Dominican Republic and Puerto Rico, and is part of the Antilles Arc which separates the Caribbean Sea from the Atlantic Ocean (Fig. 1). The Passage is approximately 114 km (62.5 mi.) wide and has a sill depth of approximately 450 meters.

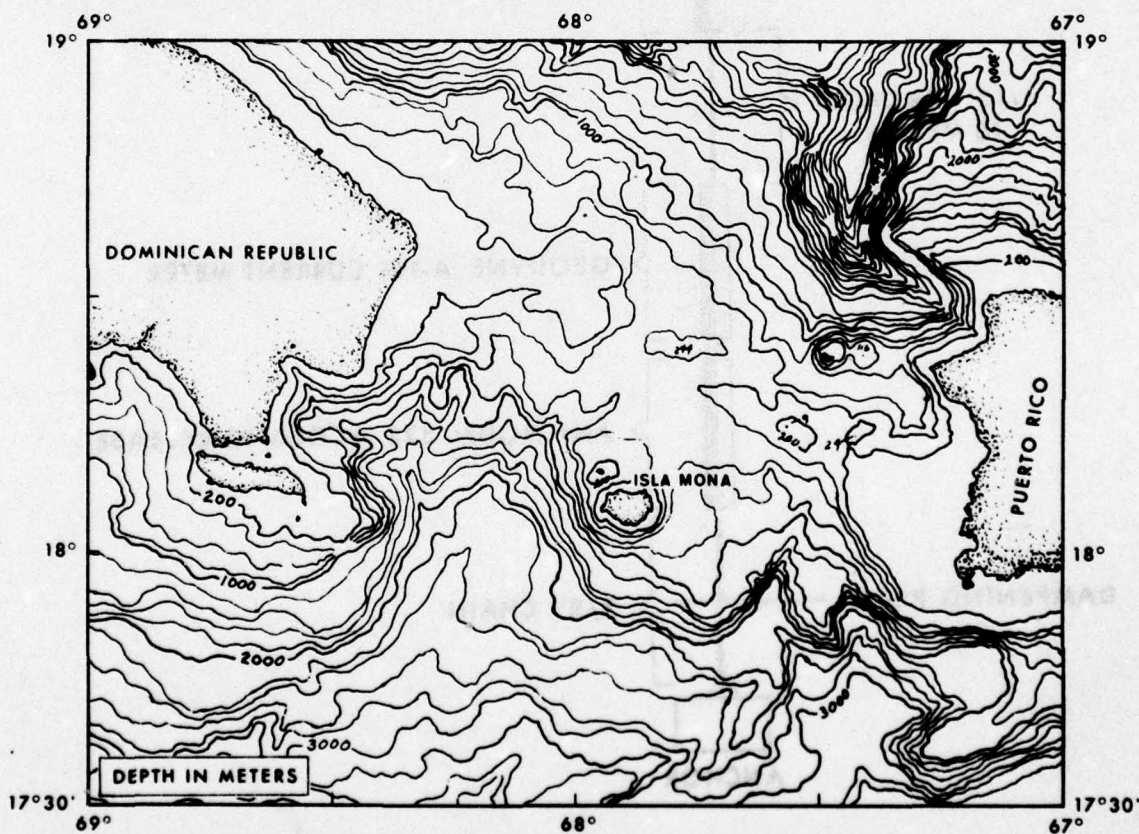


FIGURE 1. BATHYMETRY IN THE VICINITY OF MONA PASSAGE

II. INSTRUMENTATION AND SAMPLING

Five arrays (configured as shown in Fig. 2) utilizing Richardson type current meters (Geodyne model A-101) were implanted using the anchor last "free fall" technique.

**RADIO TRANSMITTER FLASHING LIGHT
WITH 3 10" GLASS BALLS IN HARDHATS**

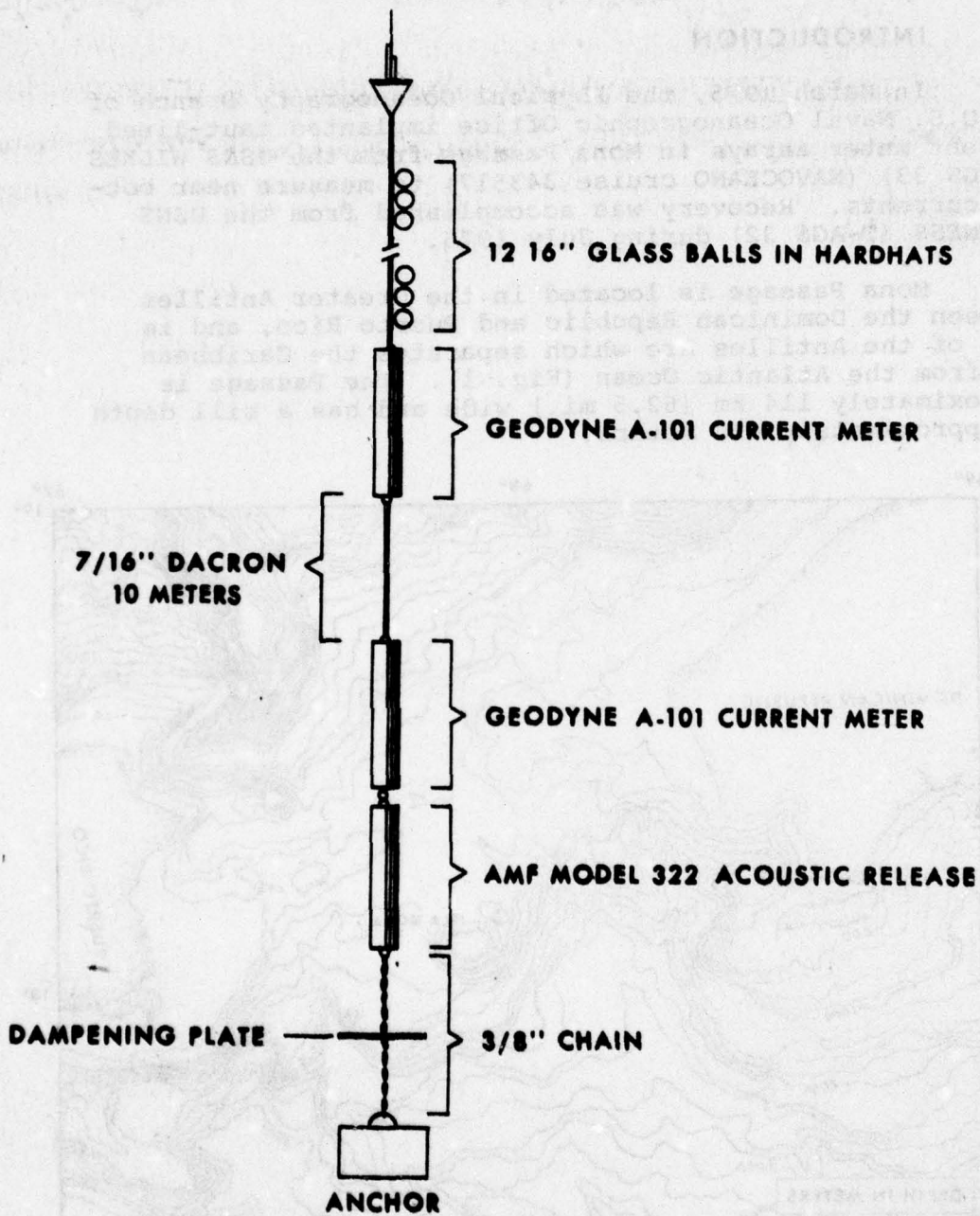


FIGURE 2. CURRENT METER ARRAY CONFIGURATION

SVSTD stations were taken near the array site after launch (Fig. 3). The arrays were deployed by streaming the glass balls, current meter, line, and the release device from the ship before cutting the anchor clump loose, allowing the array to free fall into position.

A summary of the current meter implants is presented in Table 1. The meters on array 1 ran properly from implantment to recovery. Both meters on array 4, however, had partial malfunctions. The speed sensor of meter N-413 stopped after 1098 hours of observation and the film in meter N-429 failed to advance properly after 2318 hours of observation. Arrays 2, 3, and 5 failed to surface when the releases were interrogated. Attempts to recover the arrays by grappling also failed. Failure of the releases may have been attributable to flooding due to excess corrosion on the bottom plate of the release near the 'O' ring seals. Both releases recovered showed excessive corrosion around the purging plug. Corrosion on one of the releases had progressed through the purging plug primary 'O' ring seal and was about 1/8" from the secondary or backup 'O' ring seal. The corrosion was determined to have been caused by a lack of electrical continuity between the anode and the end cap. This condition

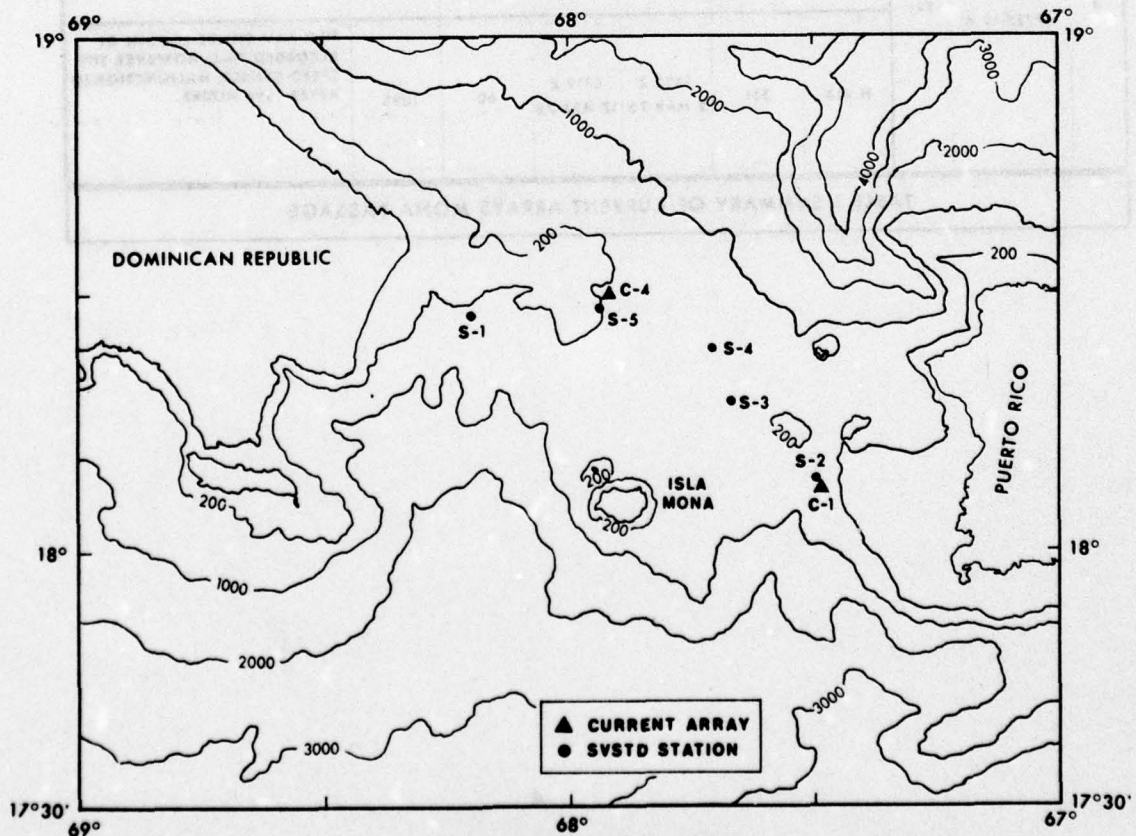
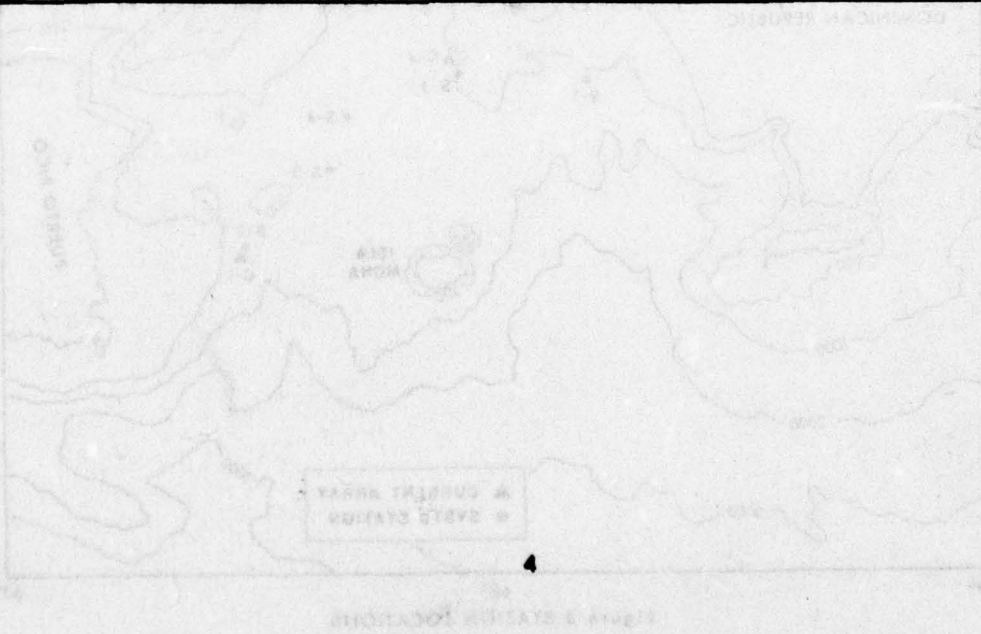


Figure 3 STATION LOCATIONS

ARRAY	POSITION	WATER DEPTH (m)	CURRENT METER S/N	METER DEPTH (m)	METER DATA STARTS	METER DATA ENDS	SAMPLING INTERVAL (MINUTES)	TOTAL USABLE RECORD (HOURS)	REMARKS
1	18°07.08'N 67°29.07'W	405	N 434	385	2025 Z 2 MAR 75	1640 Z 14 JUL 75	60	3212	
			N 128	395	2025 Z 2 MAR 75	1640 Z 14 JUL 75	60	3212	
4	18°30.3'N 67°53.10'W	341	N 429	321	1905 Z 2 MAR 75	0819 Z 7 JUN 75	60	2318	METER MALFUNCTION AFTER 2318 HOURS
			N 413	331	1405 Z 2 MAR 75	0719 Z 17 APR 75	60	1098	FILM RAN ENTIRE LENGTH OF RECORDED TIME; HOWEVER THE SPEED SENSOR MALFUNCTIONED AFTER 1098 HOURS.

TABLE 1 SUMMARY OF CURRENT ARRAYS MONA PASSAGE



has been rectified and all instruments are now checked for continuity before the arrays are launched.

III. DATA PROCESSING

Geodyne model A-101 current meters record compass, vane, speed and tilt information on 100' rolls of 16mm photographic film as described by Richardson, et al (1963). Films recovered from the meters were developed at the Naval Research Laboratory (NRL). They were then processed through an Optical Data Converter (OPDAC) which translates the photographic code to binary data on 1/2" magnetic tape. The OPDAC is an in-house development of NAVOCEANO.

Magnetic tapes created by the OPDAC were then processed through a series of FORTRAN language routines on a UNIVAC 1108 computer to produce a final data tape of current observations from which all statistical and graphic presentations are derived. The appendices A and B contain the following presentations of the data collected on these arrays:

- a. Bivariate distribution of speed (4 cm/sec interval) and direction (10° intervals).
- b. Cumulative speed distribution (cm/sec vs cumulative frequency).
- c. Speed and direction histograms.
- d. Speed vs time plot.
- e. V_e and V_n vs time plot.
- f. Progressive vector plot (shows relative motion during time span as a single particle of water thru a fixed point).

Appendix C contains SVSTD profiles and temperature-salinity (T-S) graphs.

IV. DISCUSSION

A literature search on subsurface currents in the area of Mona Passage reveals that few measurements have been made. Wüst (1964) discusses the general circulation in the Antillean-Caribbean Basins, but not specifically Mona Passage. Wüst's report does show a tendency for the surface currents to flow in a northerly direction through Mona Passage, and that a slight change in circulation occurs in the Fall.

Surface flow charts created for an Atlantic Surface Current Atlas, to be published by this Office show the northern edge of the Caribbean current flowing westerly past the southern shore of Puerto Rico and the Dominican Republic. Some of this water mass bifurcates and flows northward through Mona Passage where it may be entrained by the Antilles Current, thereby resuming its flow to the northwest.

A series of current measurements conducted in Mona Passage in the fall of 1972 are reported by Burns and Car (1975). These data show a mean flow of approximately 14 cm/sec (Fig. 4). The maximum observed currents show a northeasterly flow on the east side of the passage and a southwesterly flow on the western side of the passage.

Subsurface data contained in this report show the northward flow through the east side of passage continues down to the sill depth where it has a mean flow of 10 cm/sec between Mona Isle and the Puerto Rican coast (Figs. 5 and 6). Between Mona Isle and the Dominican Republic, however, the mean bottom flow is southward into the Caribbean at a rate of nearly 20 cm/sec.

Both our data and those presented by Burns and Car suggest there exists a horizontal shear zone that extends northward or northeastward from Mona Isle. According to Wüst, the inflow on the western side of the passage is the subtropical undercurrent. The core of this current is characterized by a salinity maximum near 36.9‰ which occurs between 80 and 200 meters as shown by the SVSTD stations taken in conjunction with the current meter arrays (Appendix C). Near bottom maximum currents observed show a strong flow (40 cm/sec) for the eastern side of the passage and 80 cm/sec for the western side (Figs. 7 & 8). This agrees with the Burns and Car data, although their maximum flow shows a northeasterly-southwesterly direction rather than northerly and southerly as in our data (Fig. 9).

Wüst reports maximum flow of the Caribbean Current to be in June and July and a minimum flow in October. Since the data in this report were collected during the period of maximum flow, it can therefore be assumed that the maximum bottom currents would not significantly exceed the observed 80-85 cm/sec currents on the western side and 40 to 50 cm/sec currents on the east side of the pass.

The definition of the location of the shear zone between the inflowing subtropical undercurrent and the outflow and the magnitude of the shear would require a grid of SVSTD stations extending north and northeast of Mona Isle and several current meters arrays in the grid area

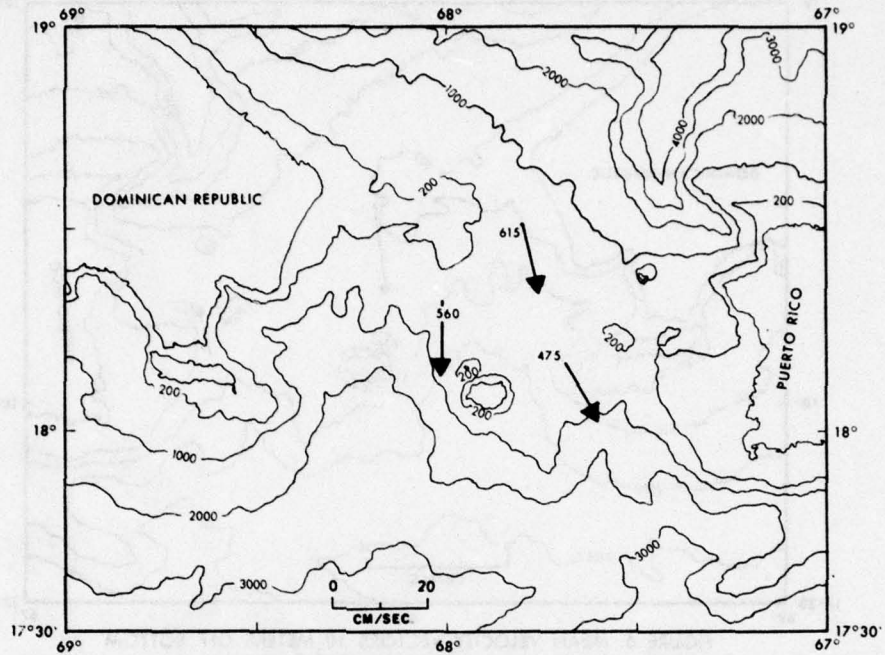


FIGURE 4. MEAN VELOCITY VECTORS 10 METERS OFF BOTTOM (BURNS AND CAR 1972)

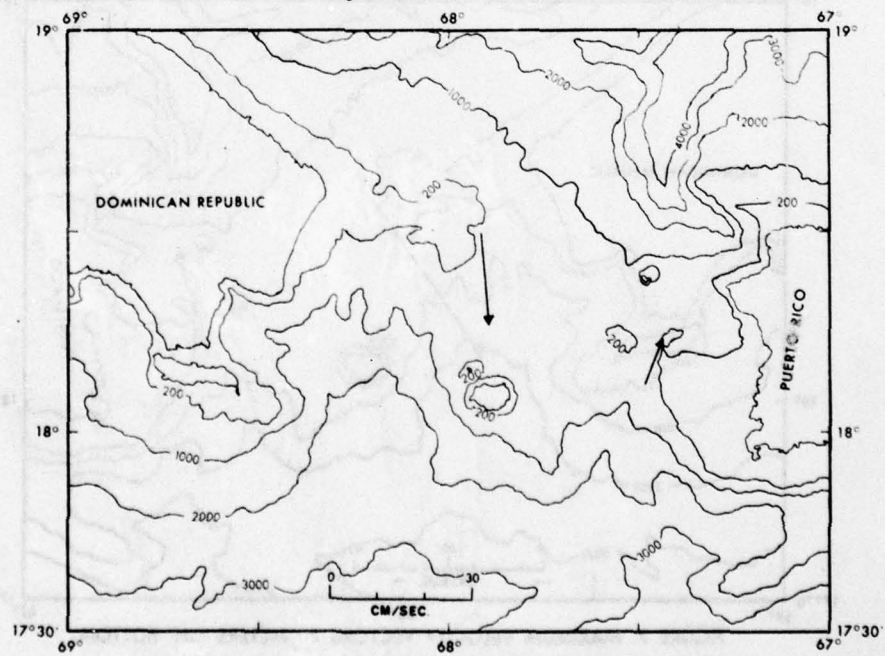


FIGURE 5. MEAN VELOCITY VECTORS 20 METERS OFF BOTTOM

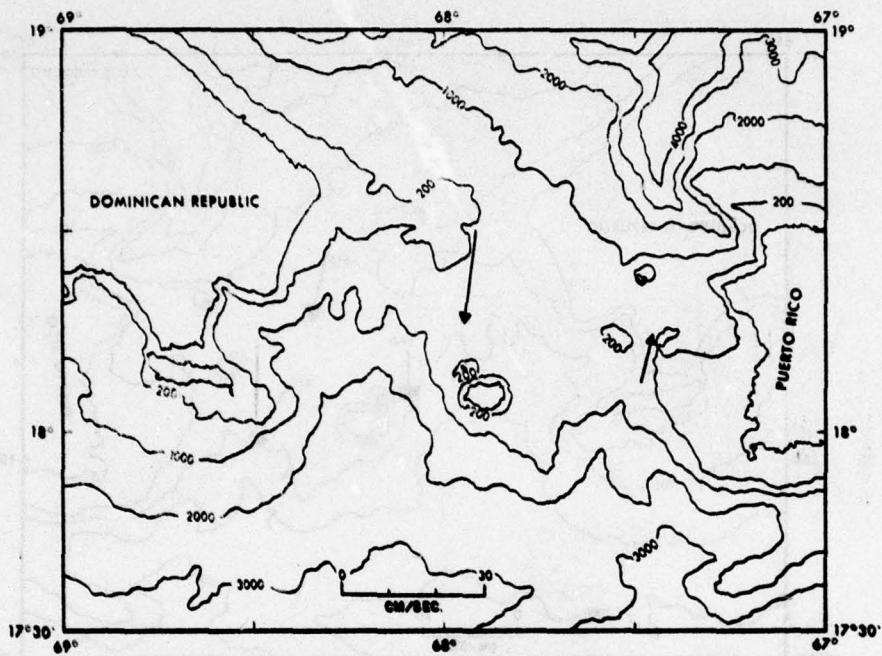


FIGURE 6. MEAN VELOCITY VECTORS 10 METERS OFF BOTTOM

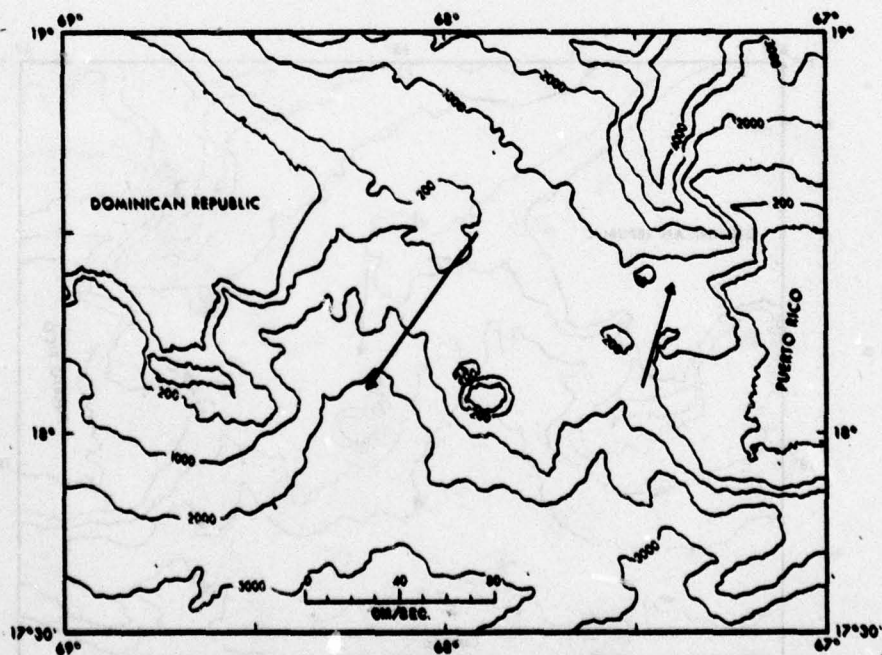


FIGURE 7. MAXIMUM VELOCITY VECTORS 20 METERS OFF BOTTOM

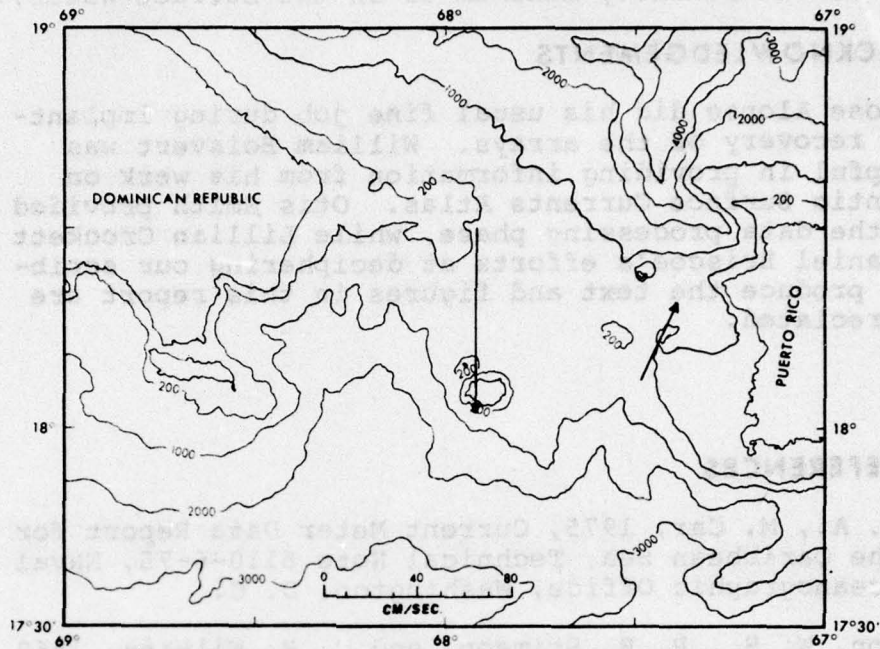


FIGURE 8. MAXIMUM VELOCITY VECTOR 10 METERS OFF BOTTOM

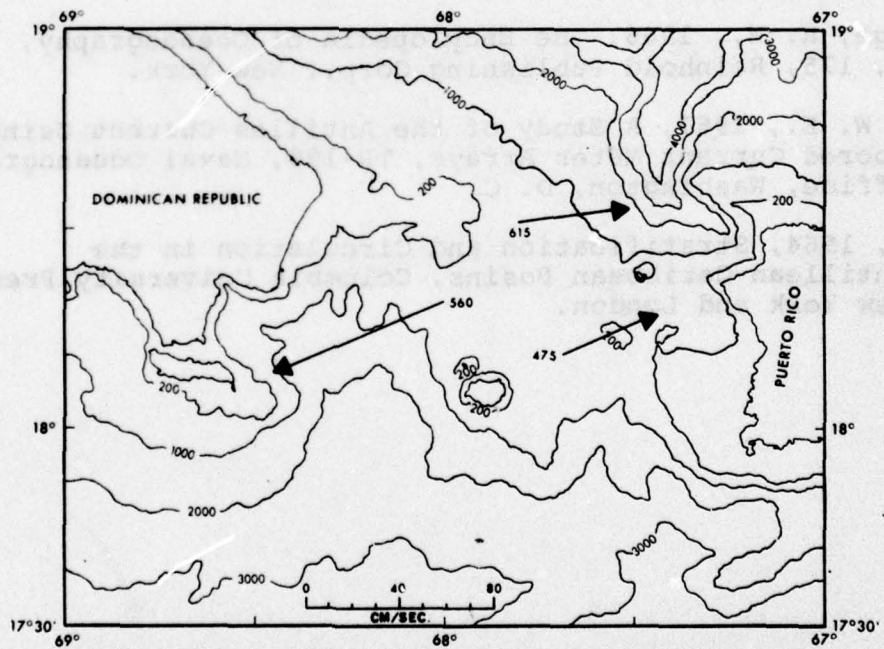


FIGURE 9. MAXIMUM VELOCITY VECTORS 10 METERS OFF BOTTOM
(BURNS AND CAR 1972)

with meters spaced between the surface and the bottom. Maximum velocities through the passage should occur in the area of the salinity maximum or in the surface water.

V. ACKNOWLEDGEMENTS

Jose Alonso did his usual fine job during implantment and recovery of the arrays. William Boisvert was most helpful in providing information from his work on the Atlantic Surface Currents Atlas. Otis Smith provided help in the data processing phase, while Lillian Crockett and Nathaniel Briscoe's efforts at deciphering our scribbling to produce the text and figures in this report are most appreciated.

VI. REFERENCES

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APPENDIX A

ARRAY 1

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90
91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120
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631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660
661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690
691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720
721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750
751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780
781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810
811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840
841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870
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931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960
961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990
991 992 993 994 995 996 997 998 999 1000

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MEAN SPEED 10.10 CM/SFC
 MEAN DIRECTION 22.42 DEGREES TRUE
 MEDIAN SPEED 9.20 CM/SFC
 MAXIMUM SPEED 45.00 CM/SFC
 DIRECTION OF MAXIMUM 17.30 DEGREES TRUE
 STANDARD DEVIATION 6.79 CM/SEC

METER ON 19742 02 MAR 1975
 PLANTED 20202 02 MAR
 FIRST FRAME IN FILE 20242 02 MAR
 RECOVERED 16002 14 JUL 1975

METER DEPTH 305 M
 WATER DEPTH 405 M
 VIBRATION 0 M
 CALCULATED FRAMES 3212
 FRAMES RECORDED 3212
 60 MINUTE OBSERVATIONS

NOAA MASSAGE
 10 07 05 V
 07 2 07 V
 A 07 1
 C 07 0-3
 S 07 12 B

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10-20	32	52	60	70	65	35	13	5	2	1	1	344	10.7
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30-40	18	38	32	32	22	8	5	3	1	2		161	5.0
40-50	19	19	21	25	6	3	2	2	1			96	3.0
50-60	6	16	12	6	1	2						86	1.7
60-70	11	20	5	1								36	1.1
70-80	6	20	5	2								37	1.2
80-90	13	22	7	2								33	1.0
90-100	9	15	7	2								42	1.3
100-110	0	10	9	3	1	2	1					36	1.1
110-120	16	16	15	3	1							33	1.0
120-130	15	13	17	10	5	1						51	1.6
130-140	25	21	22	6	1	9	2	1				61	1.9
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150-160	8	20	23	10	8	7	3	3				88	2.7
160-170	13	23	30	16	12	2	4	1				79	2.5
170-180	17	25	29	25	13	5	2	1				101	3.1
180-190	13	19	27	22	9	9	4	1				117	3.6
190-200	6	19	24	24	9	5	1	1				105	3.3
200-210	11	21	9	8	2	2	2	1				79	2.5
210-220	13	11	10	6	1	1						60	1.9
220-230	6	13	8	1	1							42	1.3
230-240	6	11	4	2	1							31	1.0
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250-260	5	2	5									30	.9
260-270	6	9	2									12	.4
270-280	13	5	7									19	.6
280-290	11	12	4	2	2							25	.8
290-300	14	8	2									31	1.0
300-310	14	19	41	4	2							28	.9
310-320	15	25	23	9	6	1						50	1.6
320-330	11	34	38	36	20	7	4	2	1			88	2.7
330-340	22	32	46	53	37	18	7	1	1			161	5.0
340-350	3	4	8	12	16	24	29	13	36	40	44	218	6.8

SPEED 3 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80
 SUM 430 739 703 531 353 171 66 22 10 7 1 1 0 0 0 0 0 0 0 0 0 0
 PER C% 13.6 23.0 21.9 16.5 11.0 5.3 2.1 .7 .3 .2 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0

NUMBER OF ZERO SPEED AVERAGES = 169
 TOTAL NUMBER OF OBS. = 3211
 PERCENTAGE ZERO SPEED AVERAGES = 5.3

APPENDIX A
 ARRAY 1

MONA PASSAGE
 18 07.00 M
 67 25.07 V
 AIR # 1
 C H N-1.28
 S P B L 12 17

METER DEPTH 395 M
 WATER DEPTH 405 M
 VARIATION 8 M
 CALCULATED FRAMES 3212
 FRAMES RECORDED 3212
 60 MINUTE OBSERVATIONS

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 PLANTED 20207 02 MAR
 FIRST FRAME IN FILE 20252 02 MAR
 RECOVERED 18407 14 JUL 1975

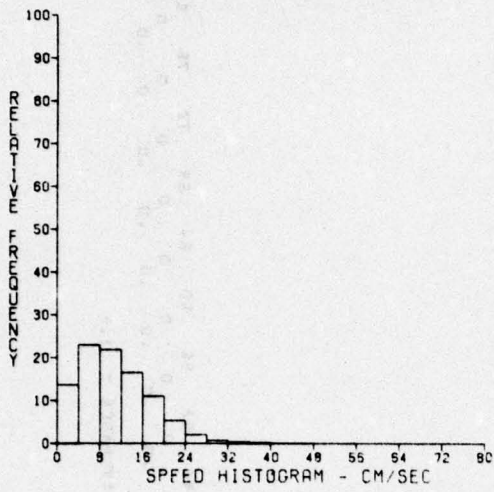
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 MAXIMUM SPEED 37.20 CM/SEC
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 STANDARD DEVIATION 6.32 CM/SEC

0-10	27	46	59	43	28	20	5	1	229	7.1
10-20	21	60	72	54	38	23	4	1	273	8.5
20-30	21	42	48	52	26	17	3	1	212	6.6
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40-50	10	32	28	16	6	8	1	1	102	3.2
50-60	9	20	16	9	2	1	1		57	1.8
60-70	7	14	9	8	1	1			39	1.2
70-80	4	14	9	2	1	2			29	.9
80-90	13	14	9	3					41	1.3
90-100	6	17	45	5	2		1		44	1.4
100-110	12	14	5	2	1				34	1.1
110-120	11	13	40	4					38	1.2
120-130	15	20	9	3	1				48	1.5
130-140	11	21	12	6	5		1		59	1.8
140-150	11	21	16	7	2		4		66	2.1
150-160	8	23	13	12	7	8	2	1	74	2.3
160-170	10	18	33	15	14	7	3	1	101	3.1
170-180	9	28	22	21	9	12	1		104	3.2
180-190	8	17	41	41	25	9	8	3	158	4.9
190-200	11	18	32	18	20	15	9	4	129	4.0
200-210	14	29	34	26	22	9	3	1	138	4.3
210-220	9	22	17	22	11	8	1		91	2.8
220-230	11	18	42	15	14	4			74	2.3
230-240	11	15	7	4	5	2			45	1.4
240-250	13	17	10	7	1				48	1.5
250-260	10	9	5	2	1				27	.8
260-270	8	14	9	1	2				34	1.1
270-280	5	11	6						22	.7
280-290	10	11	9	2					32	1.0
290-300	8	23	8	2					41	1.3
300-310	10	17	9	4	1				42	1.3
310-320	13	15	19	8	1	1			58	1.8
320-330	8	26	19	7	9	2			71	2.2
330-340	9	14	25	24	7	11	3	1	93	2.9
340-350	9	28	44	37	16	9		1	145	4.5
350-360	11	37	48	51	35	19	3	1	205	6.4

SPEED 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80
 SUM 400 797 780 563 321 206 57 18 12 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 PER CT. 12.5 24.8 24.3 17.5 10.0 6.4 3.0 .6 .4 .1 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 3158

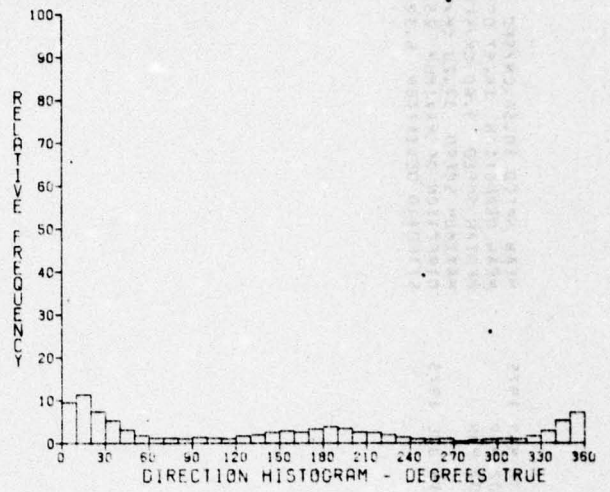
NUMBER OF ZERO SPEED AVERAGES = 53
 TOTAL NUMBER OF OBS. = 3211
 PERCENTAGE ZERO SPEED AVERAGES = 1.7

TOTAL NUMBER OBS. = 3211



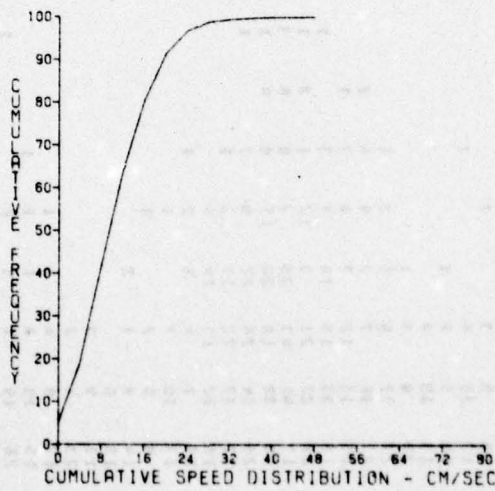
MONA PASSAGE ARRAY 1 DEPTH 385 M

TOTAL NUMBER OBS. = 3042



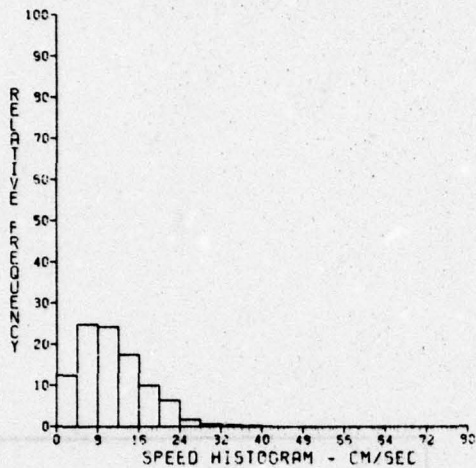
MONA PASSAGE ARRAY 1 DEPTH 385 M

TOTAL NUMBER OBS. = 3211



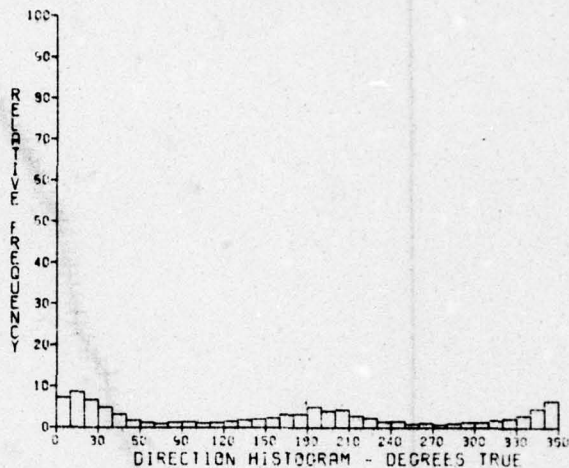
MONA PASSAGE ARRAY 1 DEPTH 385 M

TOTAL NUMBER OBS. = 3211



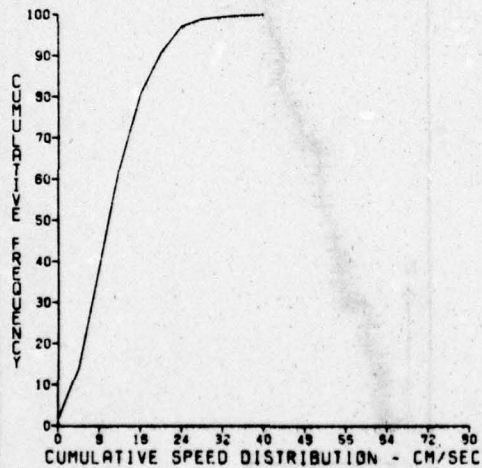
MONA PASSAGE ARRAY 1 DEPTH 395 M

TOTAL NUMBER OBS. = 3158

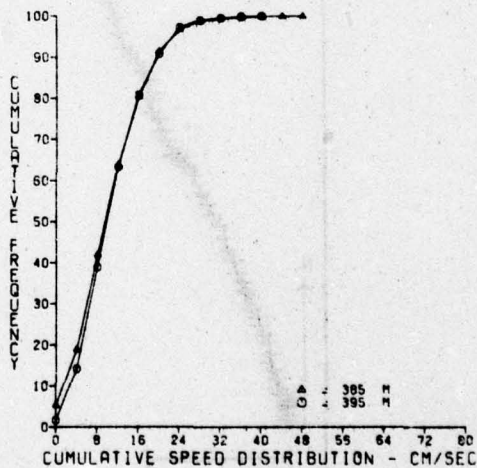


MONA PASSAGE ARRAY 1 DEPTH 395 M

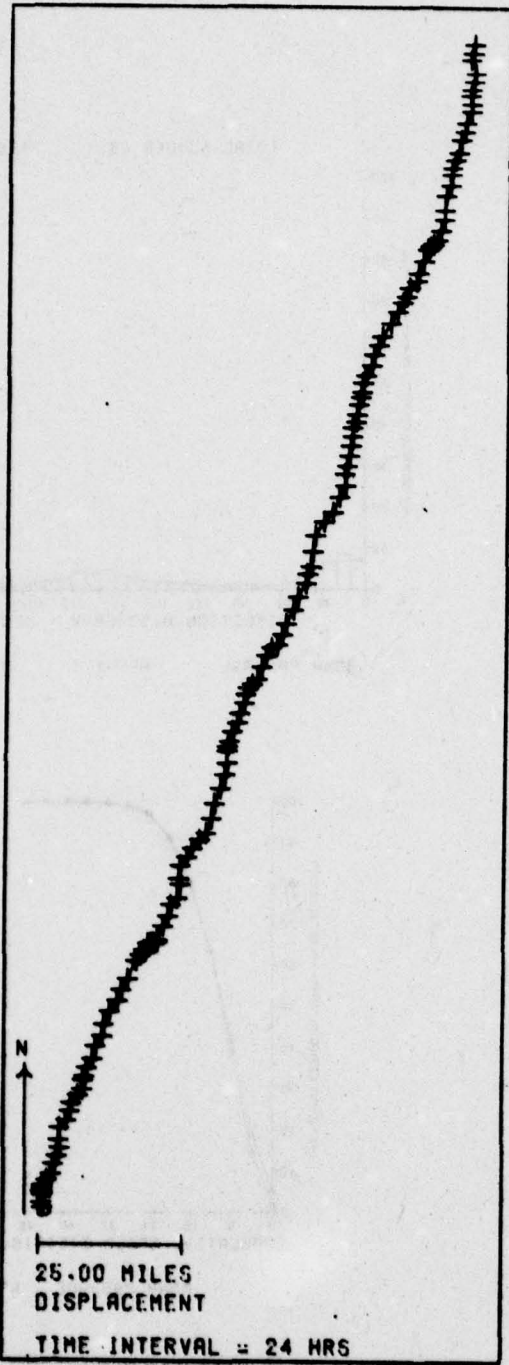
TOTAL NUMBER OBS. = 3211



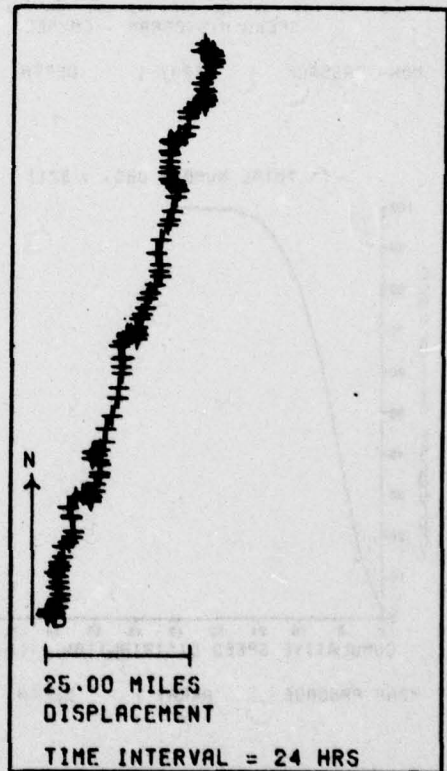
MONA PASSAGE ARRAY 1 DEPTH 395 M



MONA PASSAGE ARRAY 1

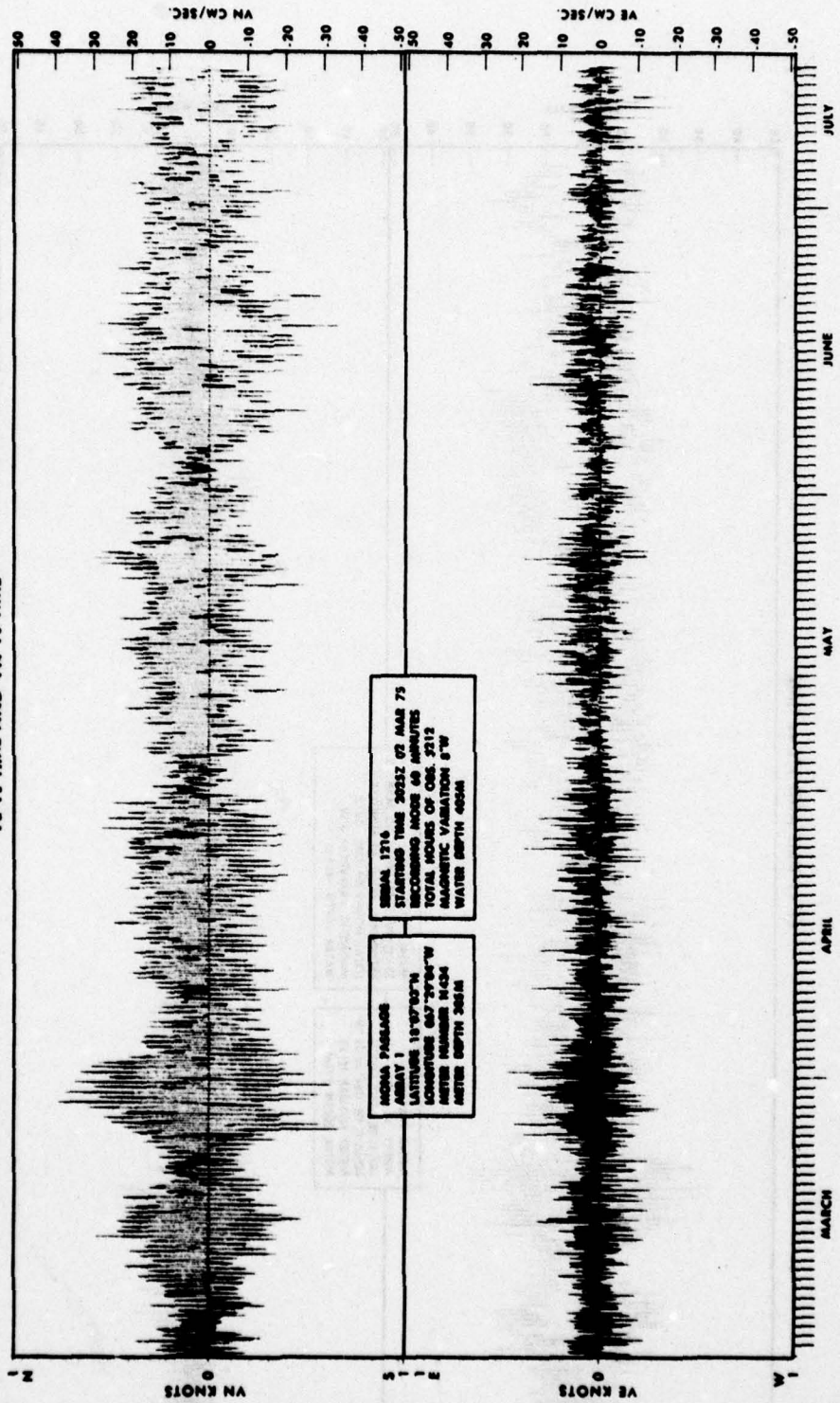


**CRUISE MONA PASS
STATION 1 TOP
METER N434
DEPTH 385 METERS**

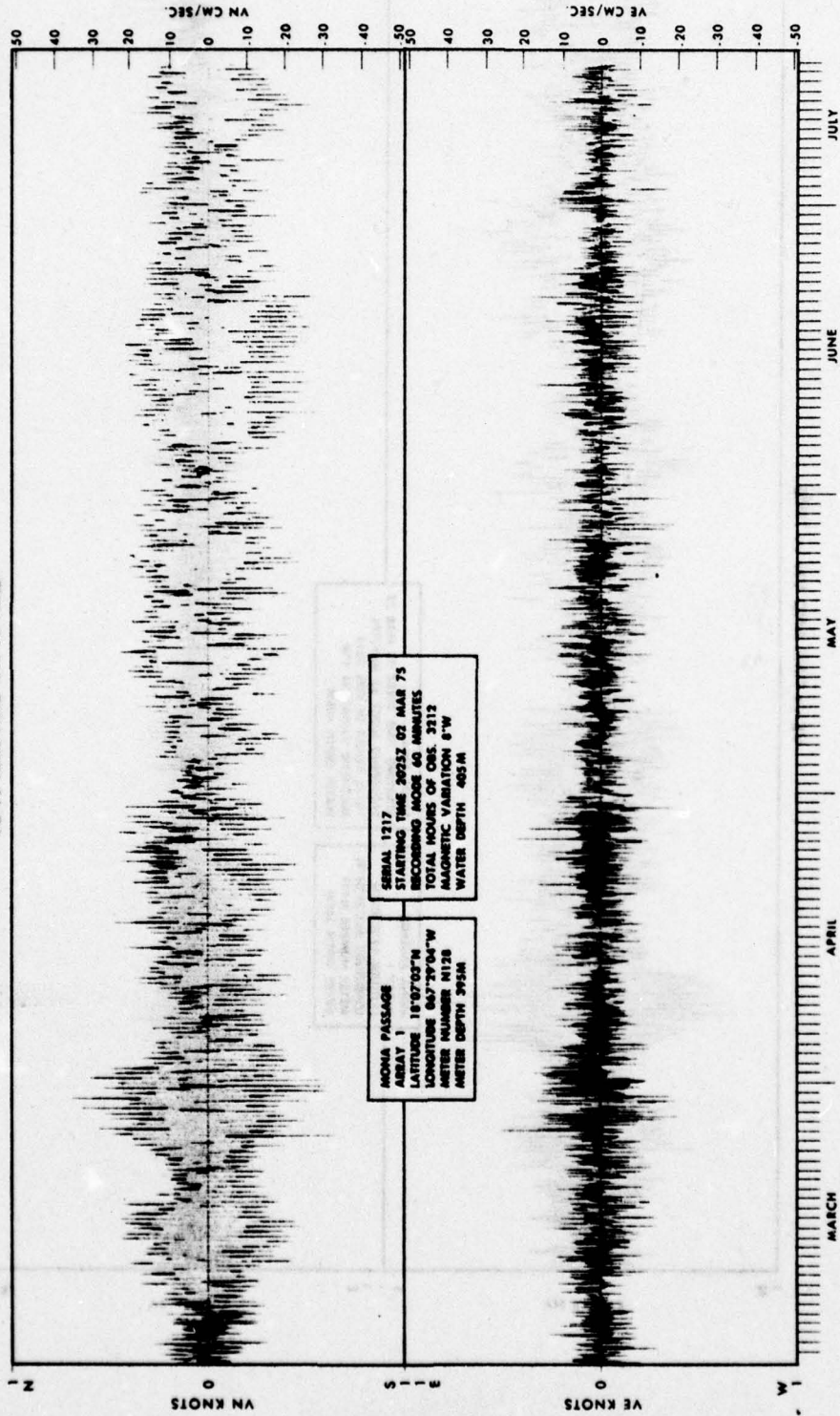


**CRUISE MONA PASS
STATION 1 LOW
METER N128
DEPTH 395 METERS**

VE vs TIME AND VN vs TIME



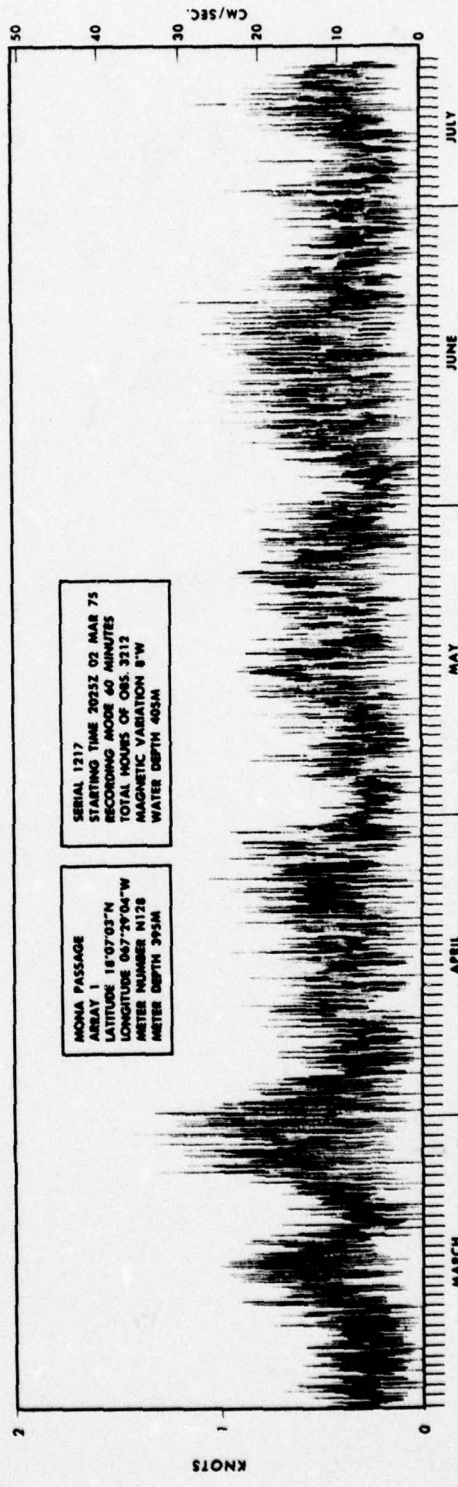
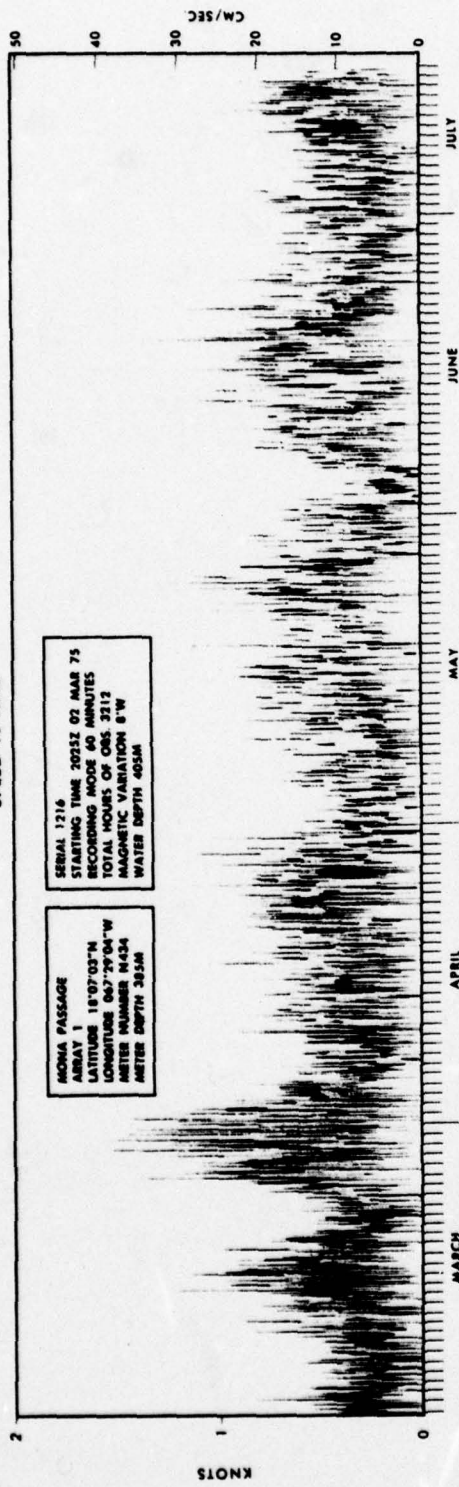
VE vs TIME AND VN vs TIME



SRMAL 1317
 STARTING TIME 2023Z 03 MAR 75
 RECORDING MODE 40 MINUTES
 TOTAL HOURS OF OBS 2312
 MAGNETIC VARIATION 0°W
 WATER DEPTH 405M

MONA PASSAGE
 ARRAY 1
 LATITUDE 18°07'03"N
 LONGITUDE 64°29'04"W
 HYDRE NUMBER 8128
 WATER DEPTH 395M

SPEED vs TIME



APPENDIX B

ARRAY 4

100 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200
210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400
410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600
610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800
810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000

100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300
310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500
510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700
710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900
910 920 930 940 950 960 970 980 990 1000

100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300
310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500
510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700
710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900
910 920 930 940 950 960 970 980 990 1000

PRODUCTION DIVISION 1574-1000
REVISION 1574-1000
APRIL 1950

REVISION 1574-1000
REVISION 1574-1000
REVISION 1574-1000

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REVISION 1574-1000

REVISION 1574-1000
REVISION 1574-1000
REVISION 1574-1000

PRECEDING PAGE BLANK-NOT FILMED

MONA MASSAGE
 18 30.03 N
 67 55.10 W
 ARR MW 4
 CH N-4-28
 SERIAL 1238

METER DEPTH 321 M
 WATER DEPTH 341 M
 VARIATION 8 M
 CALCULATED FRAMES 3172
 FRAMES RECORDED 2318
 60 MINUTE OBSERVATIONS

METER ON 1205Z 02 MAR 1975
 PLANTED 1319Z 02 MAR
 FIRST FRAME IN FILE 1905Z 02 MAR
 RECOVERED 1755Z 12 JUL 1975

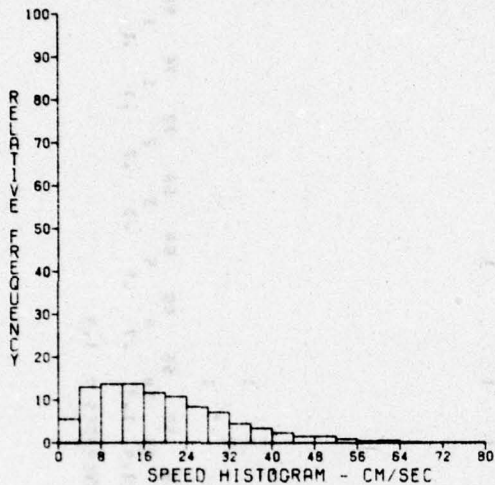
MEAN SPEED 19.52 CM/SEC
 MEAN DIRECTION 175.47 DEGREES TRUE
 MEDIAN SPEED 17.20 CM/SEC
 MAXIMUM SPEED 79.90 CM/SEC
 DIRECTION OF MAXIMUM 215.60 DEGREES TRUE
 STANDARD DEVIATION 12.94 CM/SEC

0-10	1	9	11	14	18	23	13	14	10	6	5	4	2	1	131	5.7
10-20	3	12	22	15	13	13	15	10	5	1	3				104	4.5
20-30	4	12	18	16	13	7	4	5	2	1	1				82	3.5
30-40	4	7	12	8	11	12	1	1	1						57	2.5
40-50	6	14	8	10	8	6	2	2							56	2.4
50-60	4	9	17	11	7	1	3	4	1						57	2.5
60-70	4	11	21	6	5	3	2	1	1						44	1.9
70-80	6	8	12	8	4	2	1	1							42	1.8
80-90	5	3	4	4	5	1	2	1	1						22	.9
90-100	8	11	4	3	3	5	3	1	1						39	1.7
100-110	1	9	5	3	4	2	1	1	1						26	1.1
110-120	2	4	6	5	1	2	4	2	3	1					29	1.3
120-130	4	8	10	6	5	4	5	3	2						50	2.2
130-140	5	9	8	6	2	3	3	2	2	1					47	2.0
140-150	1	5	8	13	8	8	9	4	4	3	1	1	1	1	66	2.8
150-160	8	6	9	9	8	9	11	6	4	4	2	2	1	1	77	3.3
160-170	2	8	16	15	12	12	7	6	3	2	2	1	2	1	90	3.9
170-180	4	13	16	11	11	15	7	8	4	6	1	2	3	1	96	4.1
180-190	2	5	9	20	16	16	12	13	8	7	8	2	3	2	124	5.4
190-200	6	16	13	8	5	20	15	13	14	9	3	8	5	6	138	6.0
200-210	6	10	16	15	15	18	15	17	23	8	10	2	2	2	153	6.6
210-220	3	8	12	7	7	17	11	12	9	9	6	3	5	1	102	4.4
220-230	3	8	10	11	9	14	5	12	10	4	1	1	3	1	94	4.1
230-240	1	5	8	3	10	7	4	2	1	4	3	1	3	1	54	2.3
240-250	6	3	5	8	4	2	2	1	1	1	1				33	1.4
250-260	1	4	3	5	5	3	1	1	2	1					20	.9
260-270	5	12	9	1	2	2	1	3	2	1					34	1.5
270-280	1	4	4	1	1	1	1								12	.5
280-290	4	6	2	2	2	3			1						18	.8
290-300	3	9	1	6	2	2									23	1.0
300-310	3	4	5	4	3	4	1	1							25	1.1
310-320	4	7	9	5	4	3	1	1	1						34	1.5
320-330	6	14	3	9	8	6									49	2.1
330-340	2	12	7	16	10	13	4	1	1	1					69	3.0
340-350	4	13	10	14	16	8	9	7	3	2	1	1	1	1	89	3.8
350-360	3	11	9	16	17	12	13	16	4	4	6	3	2	1	118	5.1

SPEED 0 4 8 12 16 20 24 28 32 35 40 44 48 52 56 60 64 68 72 76 80
 SUM 129 301 387 318 269 248 194 166 105 80 55 35 20 9 12 5 2 2 2 2 2
 PER CT. 5.6 13.0 13.7 13.7 11.6 10.7 8.4 7.2 4.5 3.5 2.4 1.5 1.5 .8 .4 .5 .2 .1 .1 .1 .1

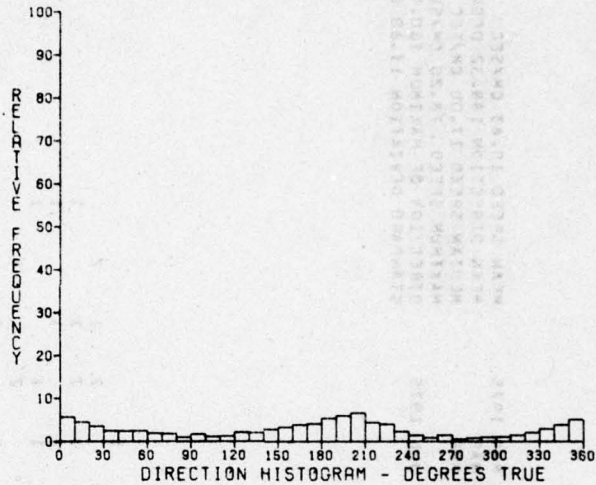
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 TOTAL NUMBER OF OBS. = 2317
 PERCENTAGE ZERO SPEED AVERAGES = .6

TOTAL NUMBER OBS. = 2317



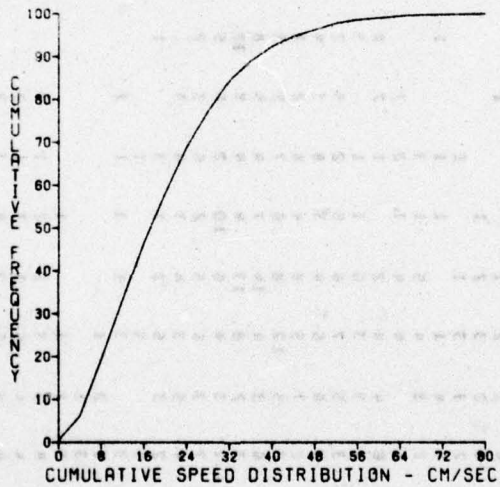
MONA PASSAGE ARRAY 4 DEPTH 321 M

TOTAL NUMBER OBS. = 2304



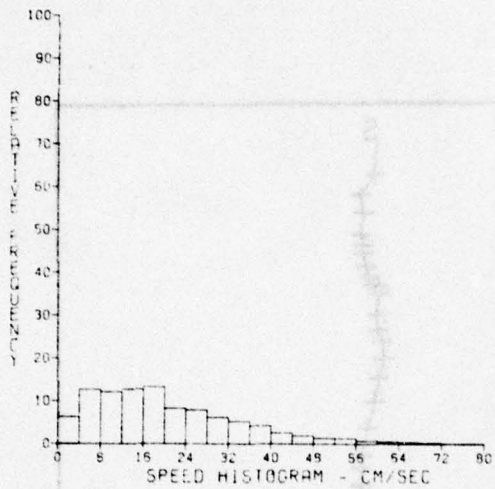
MONA PASSAGE ARRAY 4 DEPTH 321 M

TOTAL NUMBER OBS. = 2317



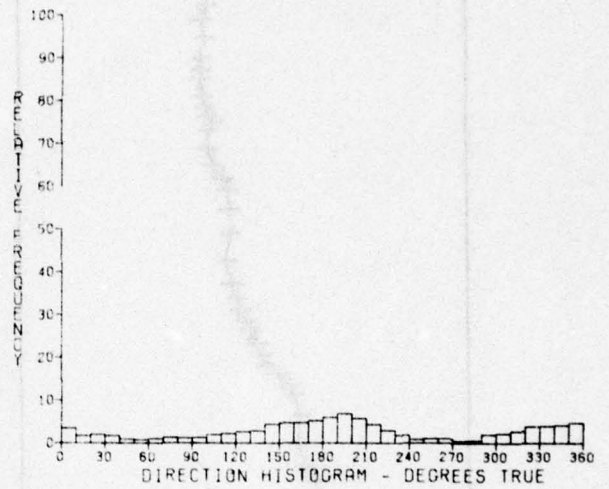
MONA PASSAGE ARRAY 4 DEPTH 321 M

TOTAL NUMBER OBS. = 1097



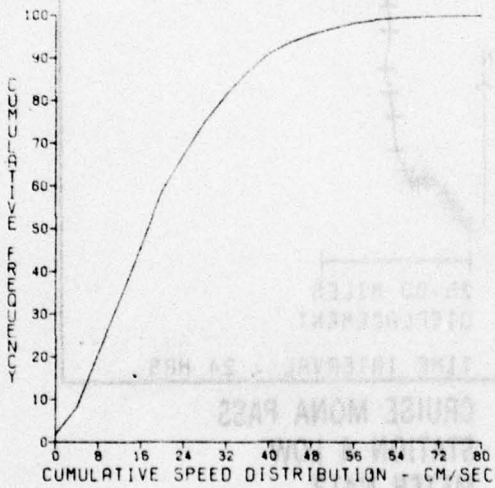
MONA PASSAGE ARRAY 4 DEPTH 331 M

TOTAL NUMBER OBS. = 1077

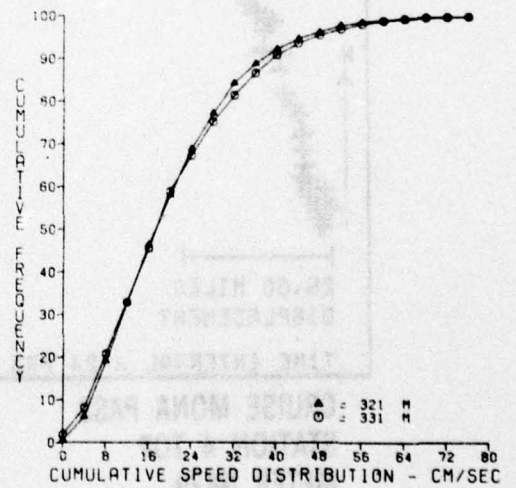


MONA PASSAGE ARRAY 4 DEPTH 331 M

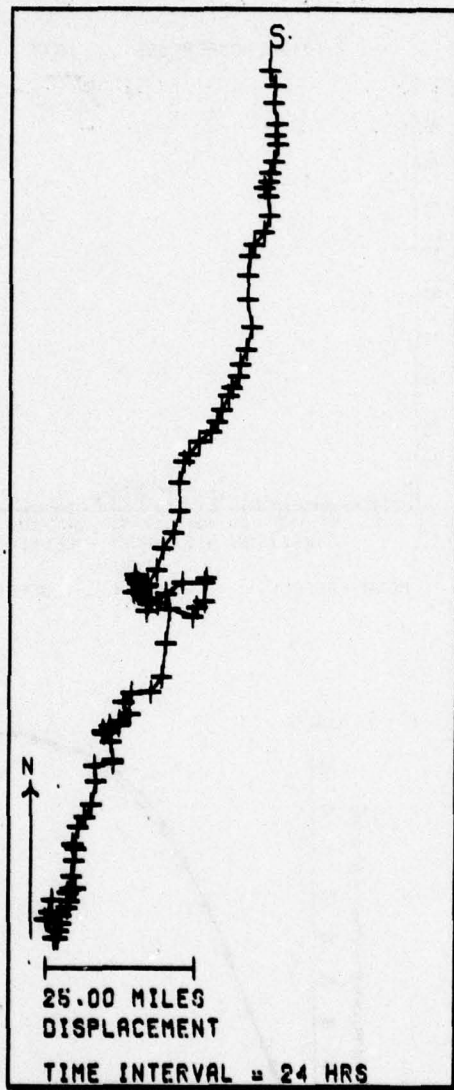
TOTAL NUMBER OBS. = 1097



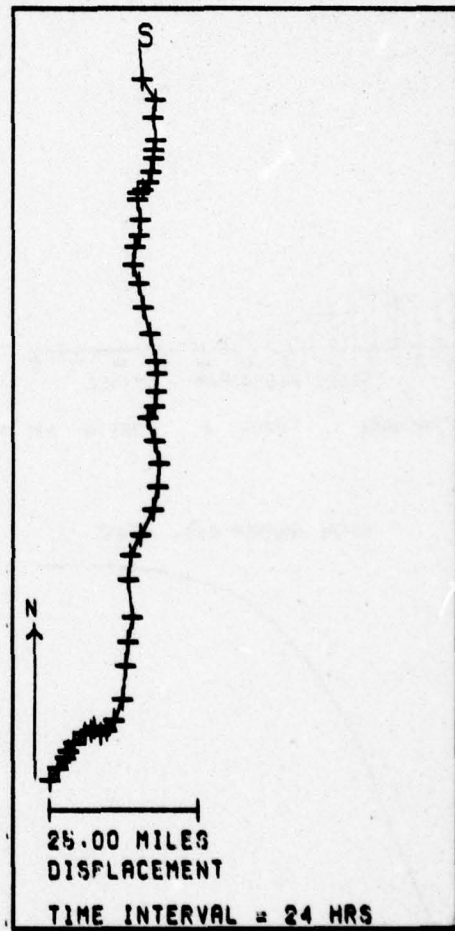
MONA PASSAGE ARRAY 4 DEPTH 331 M



MONA PASSAGE ARRAY 4

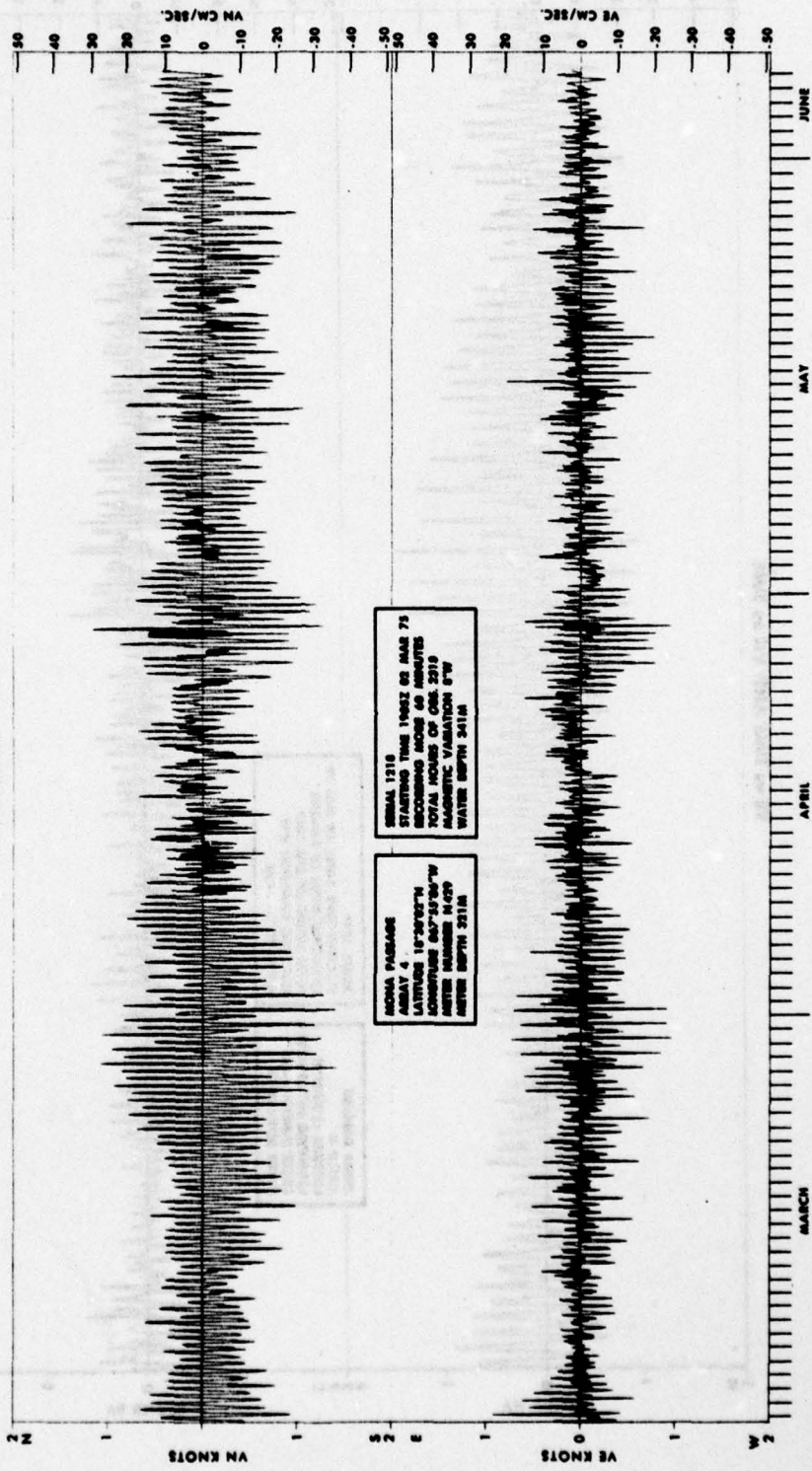


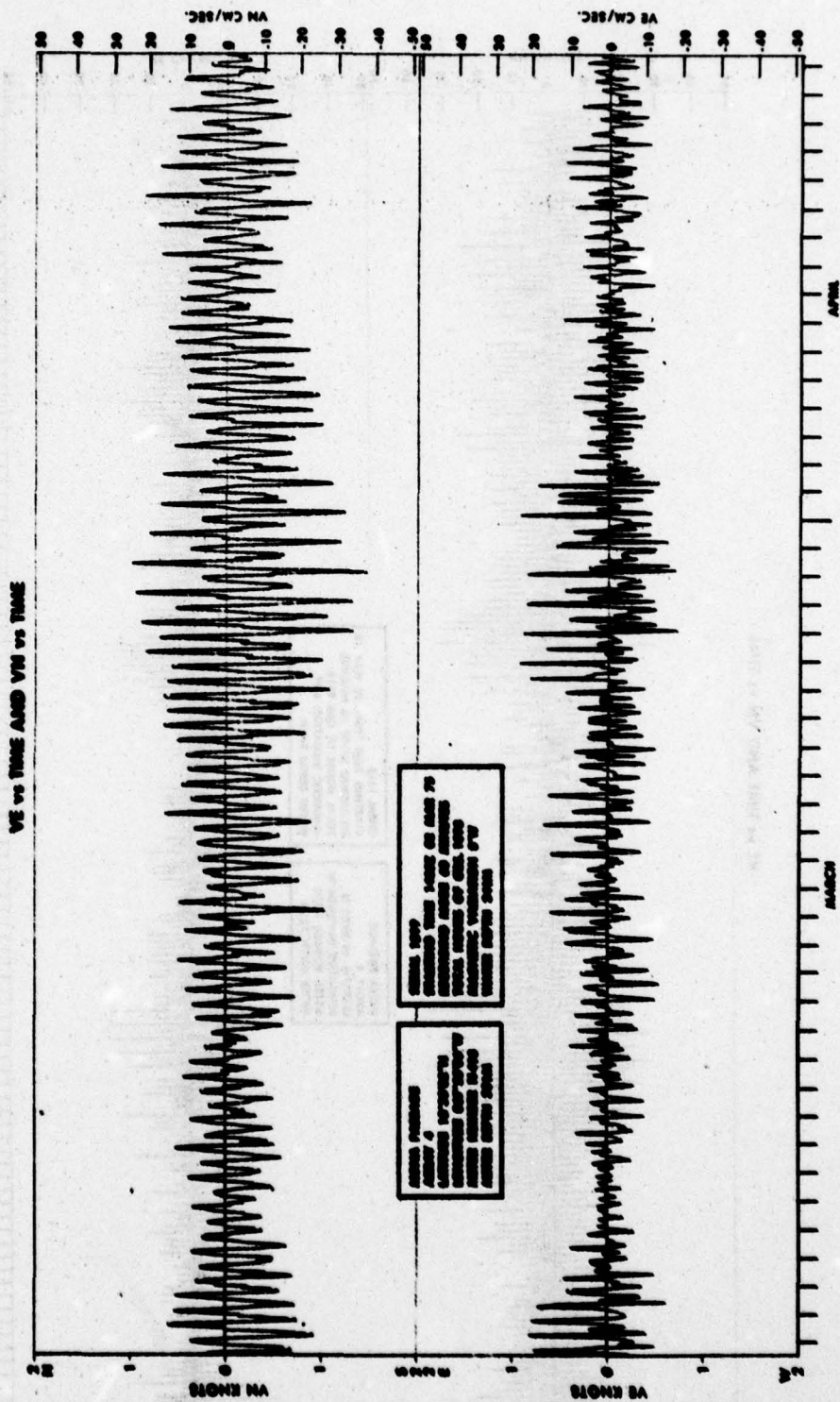
**CRUISE MONA PASS
STATION 4 TOP
METER N429
DEPTH 321 METERS**



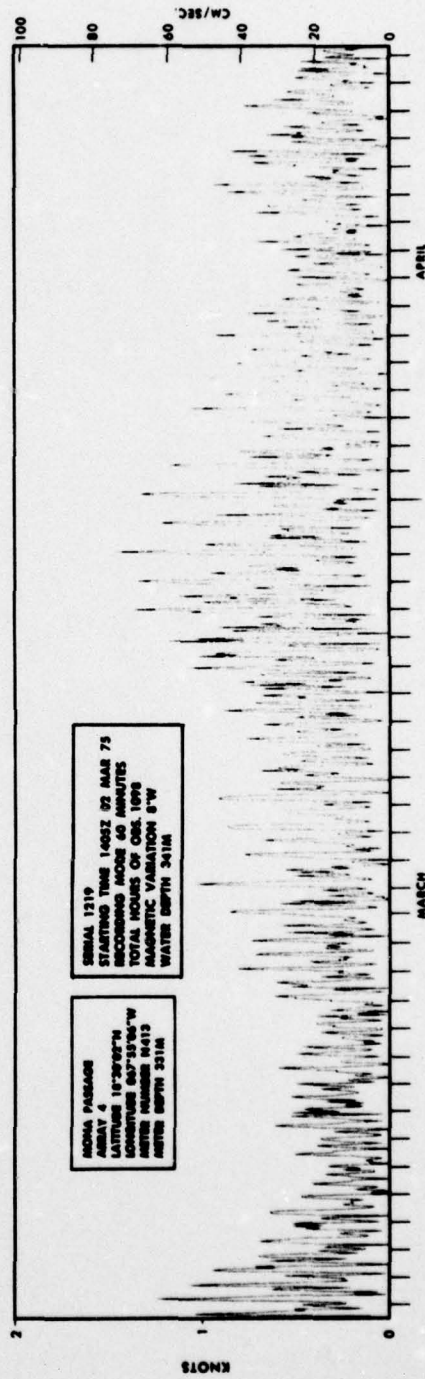
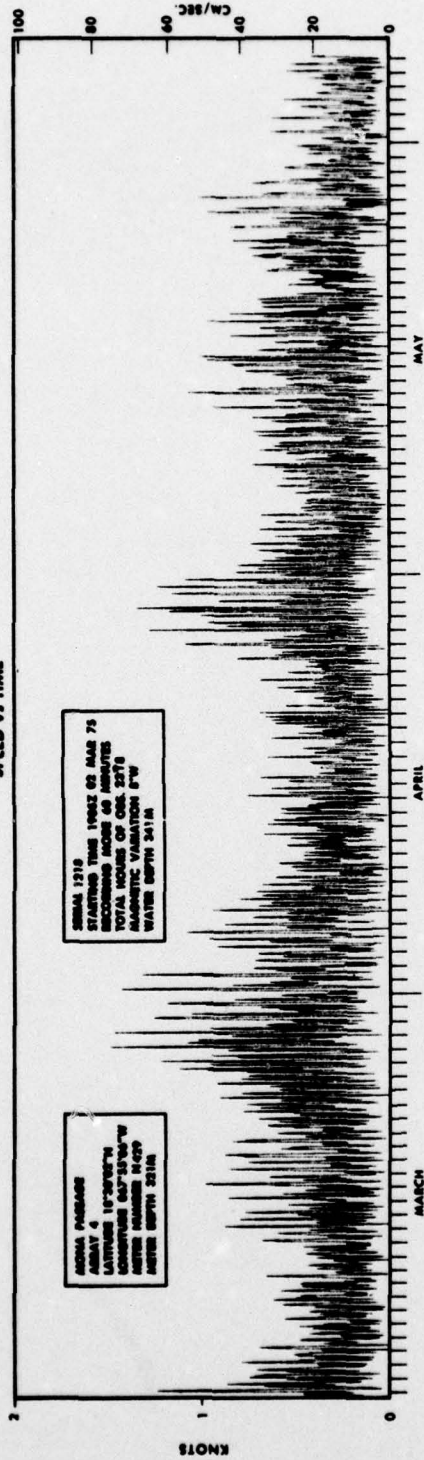
**CRUISE MONA PASS
STATION 4 LOW
METER N413
DEPTH 331 METERS**

VE vs TIME AND VN vs TIME





SPEED vs TIME



FINAL PROFILE WIKES
NAVOCERNOCRUISE 243517
STATION 035001

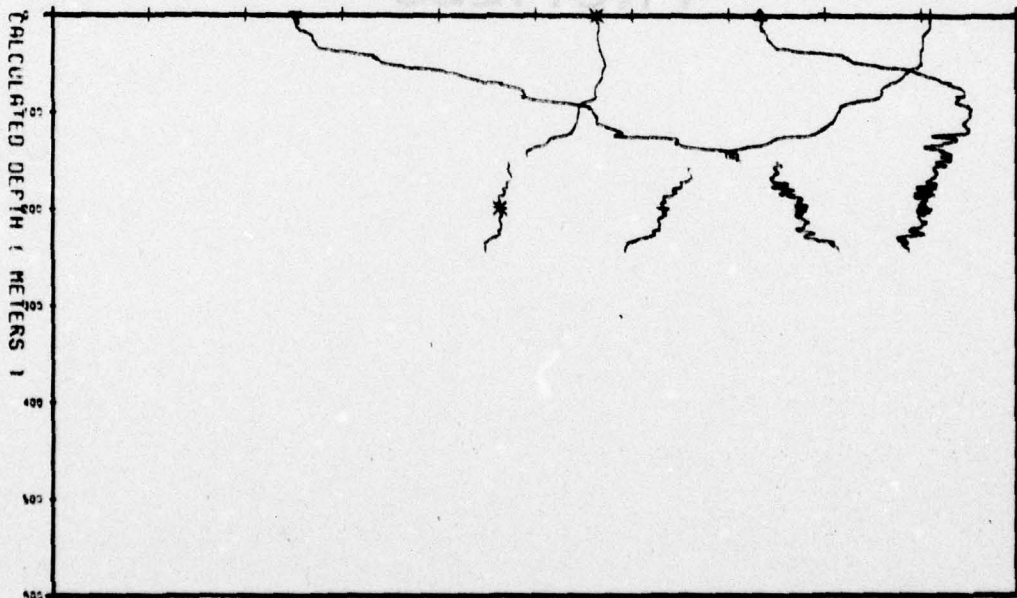
APPENDIX C

SVSTD PROFILES



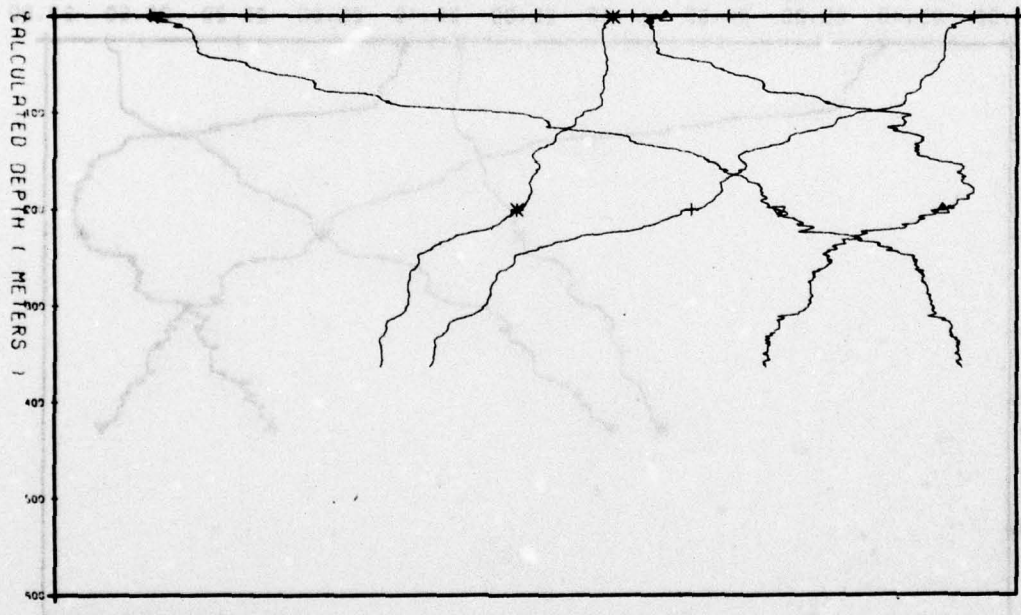
FINAL PROFILE WILKES
 NAVOCEANO CRUISE 343517
 STATION 005001.

+ TEMPERATURE (DEGREES C)										
7.00	9.00	11.00	13.00	15.00	17.00	19.00	21.00	23.00	25.00	27.00
+	+	+	+	+	+	+	+	+	+	+
Δ SALINITY (0/00)										
33.00	33.40	33.80	34.20	34.60	35.00	35.40	35.80	36.20	36.60	37.00
+	+	+	+	+	+	+	+	+	+	+
* CALCULATED S. VELOCITY (M/SEC)										
1480	1490	1500	1510	1520	1530	1540	1550	1560	1570	1580
+	+	+	+	+	+	+	+	+	+	+
▽ SIGMA-T										
23.00	23.40	23.80	24.20	24.60	25.00	25.40	25.80	26.20	26.60	27.00



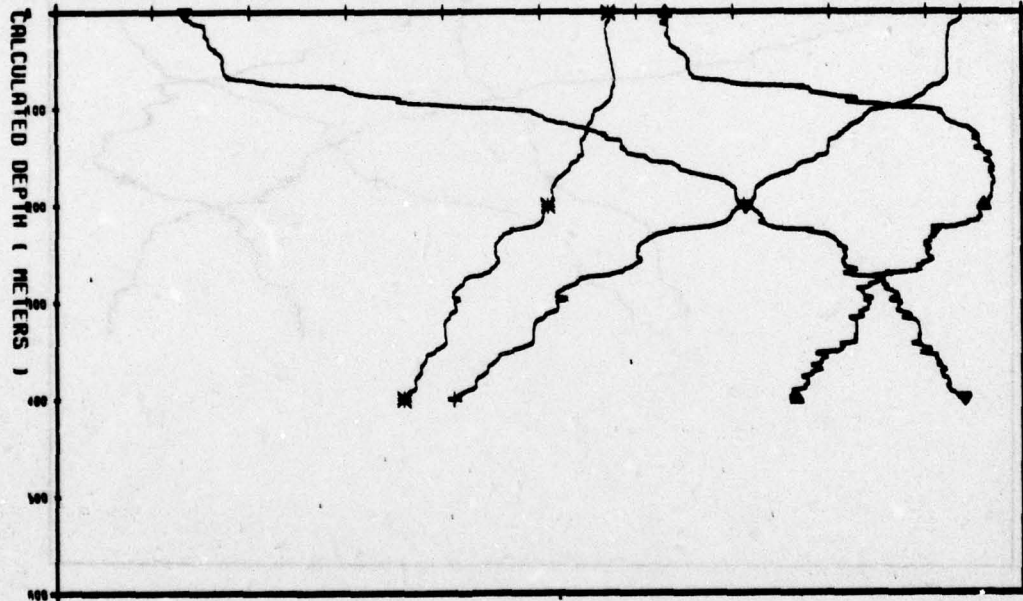
FINAL PROFILE WILKES
 NAVOCEANO CRUISE 343517
 STATION 001002

+ TEMPERATURE (DEGREES C)										
7.00	9.00	11.00	13.00	15.00	17.00	19.00	21.00	23.00	25.00	27.00
00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +
Δ SALINITY (0/00)										
33.00	33.40	33.80	34.20	34.60	35.00	35.40	35.80	36.20	36.60	37.00
00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +
* CALCULATED S. VELOCITY (M/SEC)										
1480	1490	1500	1510	1520	1530	1540	1550	1560	1570	1580
00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +	00 +
▽ SIGMA-T										
23.00	23.40	23.80	24.20	24.60	25.00	25.40	25.80	26.20	26.60	27.00



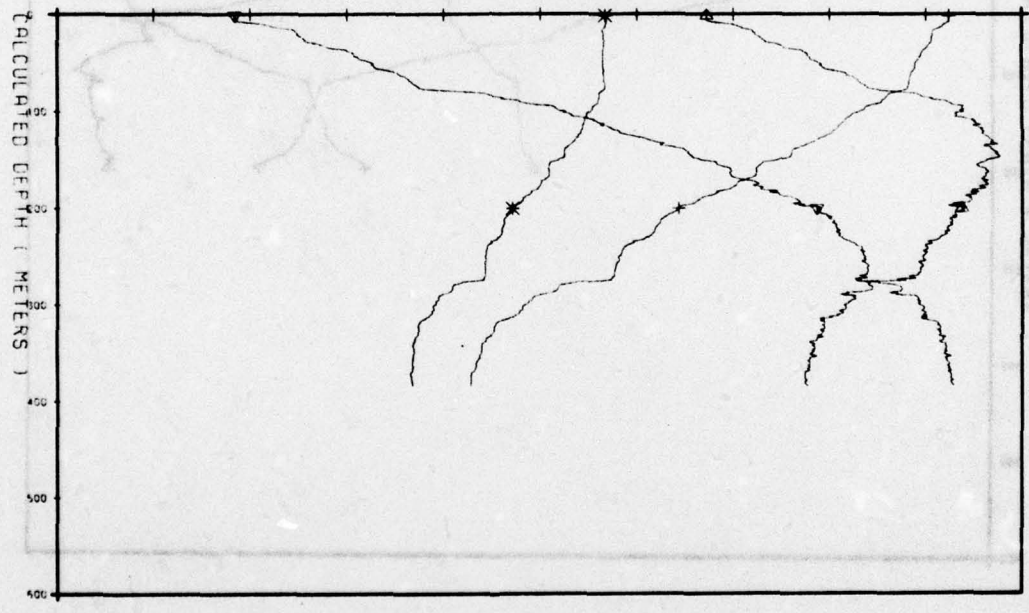
FINAL PROFILE WILKES
 NAVOCEANO CRUISE 343517
 STATION 002003

+ TEMPERATURE (DEGREES C)										
7.00	9.00	11.00	13.00	15.00	17.00	19.00	21.00	23.00	25.00	27.00
+	+	+	+	+	+	+	+	+	+	+
Δ SALINITY (0/00)										
33.00	33.40	33.80	34.20	34.60	35.00	35.40	35.80	36.20	36.60	37.00
+	+	+	+	+	+	+	+	+	+	+
* CALCULATED S. VELOCITY (M/SEC)										
1480	1490	1500	1510	1520	1530	1540	1550	1560	1570	1580
+	+	+	+	+	+	+	+	+	+	+
▽ SIGMA-T										
23.00	23.40	23.80	24.20	24.60	25.00	25.40	25.80	26.20	26.60	27.00



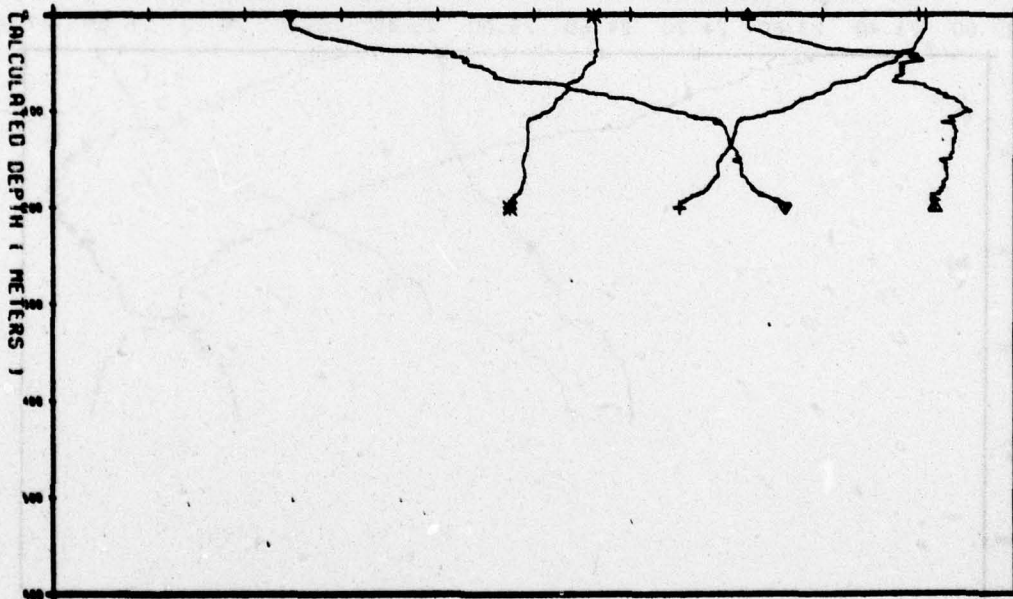
FINAL PROFILE WILKES
 NAVOCEANO CRUISE 343517
 STATION 003004

+ TEMPERATURE (DEGREES C)										
7.00	9.00	11.00	13.00	15.00	17.00	19.00	21.00	23.00	25.00	27.00
+	+	+	+	+	+	+	+	+	+	+
Δ SALINITY (0/00)										
33.00	33.40	33.80	34.20	34.60	35.00	35.40	35.80	36.20	36.60	37.00
+	+	+	+	+	+	+	+	+	+	+
* CALCULATED S. VELOCITY (M/SEC)										
1480	1490	1500	1510	1520	1530	1540	1550	1560	1570	1580
+	+	+	+	+	+	+	+	+	+	+
▽ SIGMA-T										
23.00	23.40	23.80	24.20	24.60	25.00	25.40	25.80	26.20	26.60	27.00

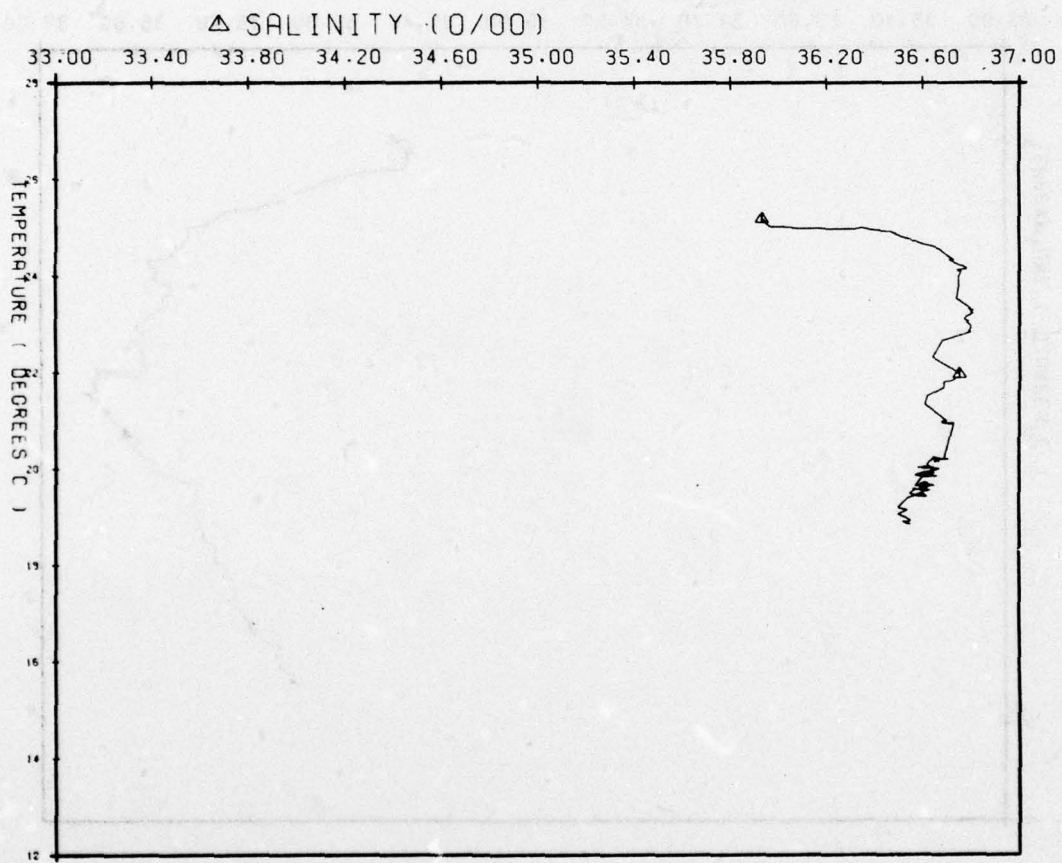


FINAL PROFILE WILKES
 NAVOCEANO CRUISE 343517
 STATION 004005

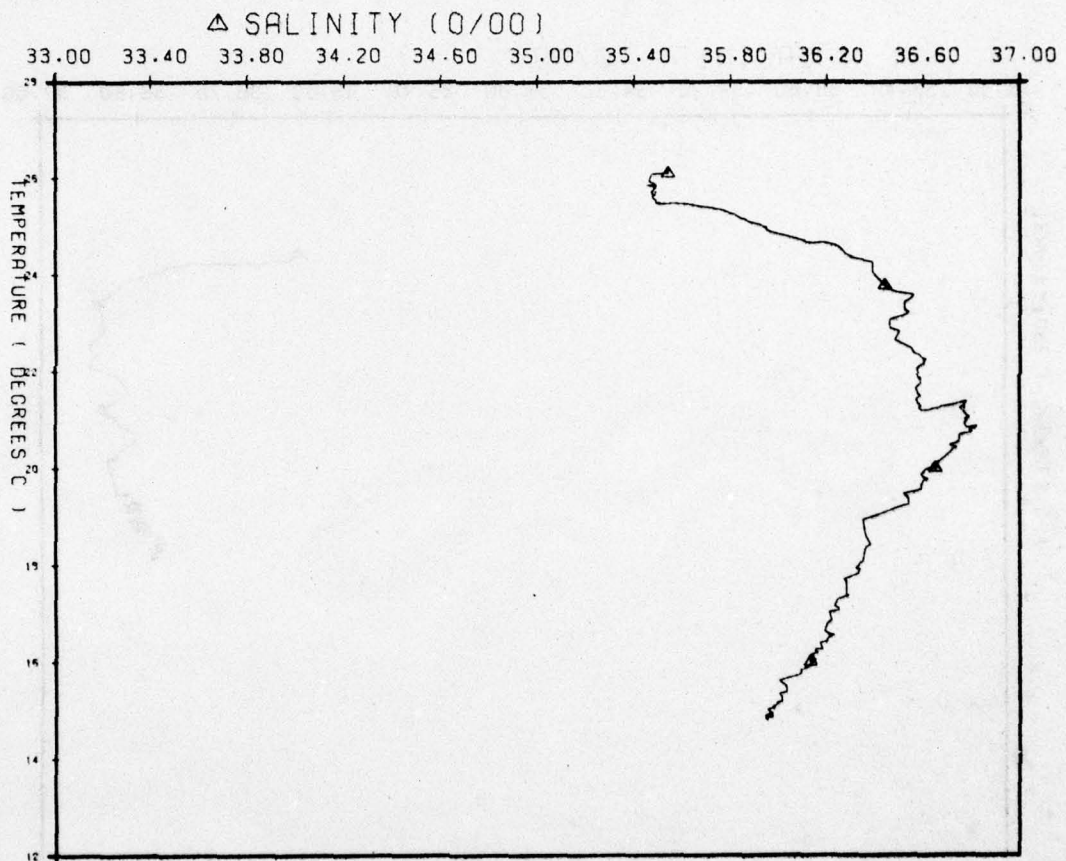
+ TEMPERATURE (DEGREES C)										
7.00	9.00	11.00	13.00	15.00	17.00	19.00	21.00	23.00	25.00	27.00
+	+	+	+	+	+	+	+	+	+	+
Δ SALINITY (0/00)										
33.00	33.40	33.80	34.20	34.60	35.00	35.40	35.80	36.20	36.60	37.00
+	+	+	+	+	+	+	+	+	+	+
* CALCULATED S. VELOCITY (M/SEC)										
1480	1490	1500	1510	1520	1530	1540	1550	1560	1570	1580
+	+	+	+	+	+	+	+	+	+	+
▽ SIGMA-T										
23.00	23.40	23.80	24.20	24.60	25.00	25.40	25.80	26.20	26.60	27.00



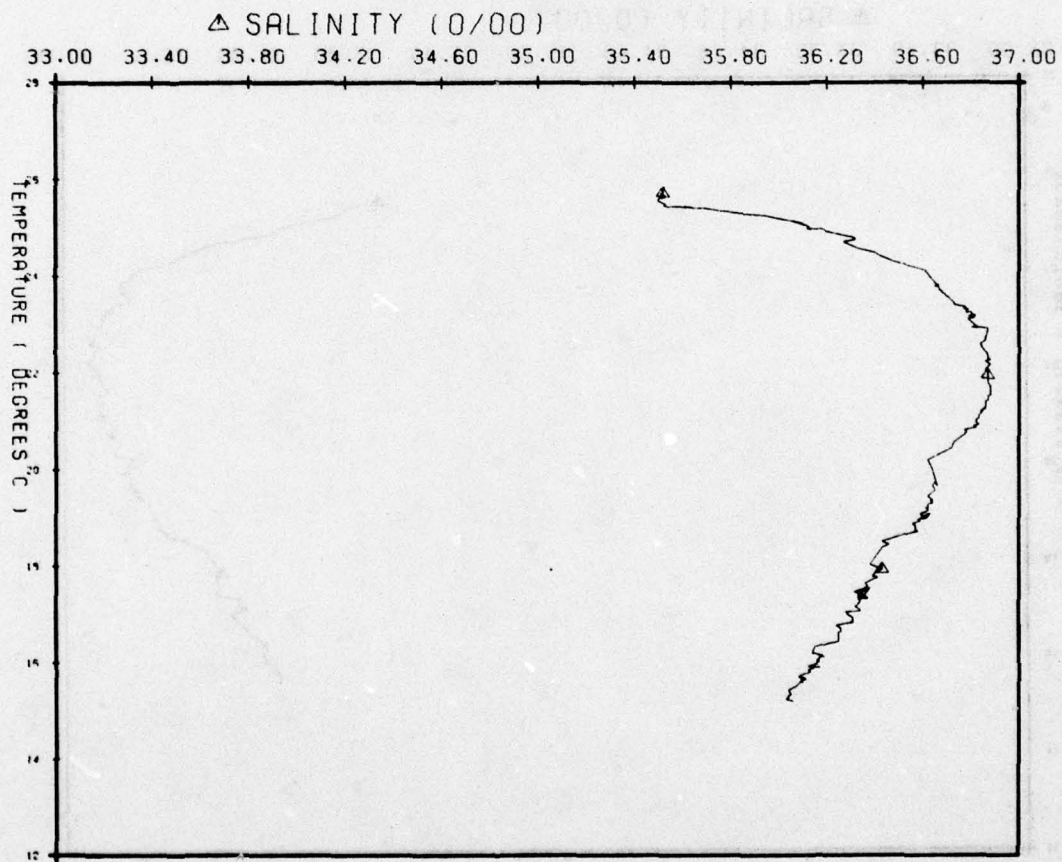
TEMPERATURE VS SALINITY
WILKES CR. 343517
STATION 005001.



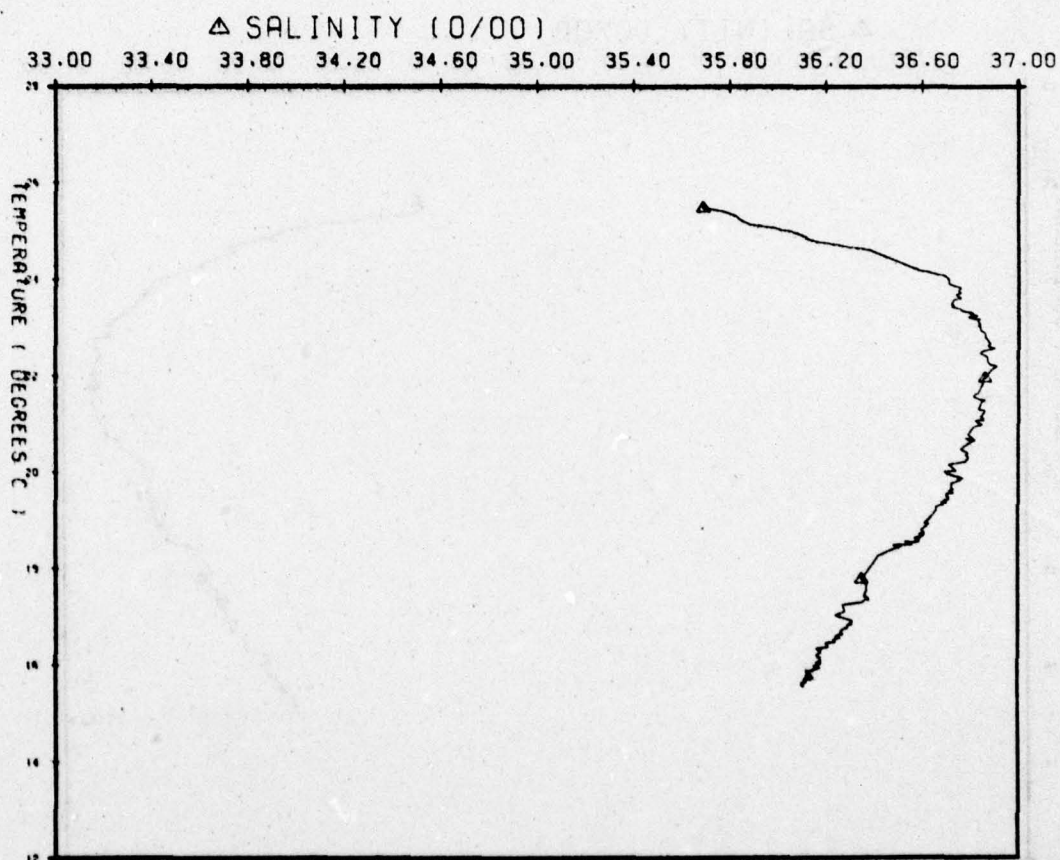
TEMPERATURE VS SALINITY
WILKES CR. 343517
STATION 001002



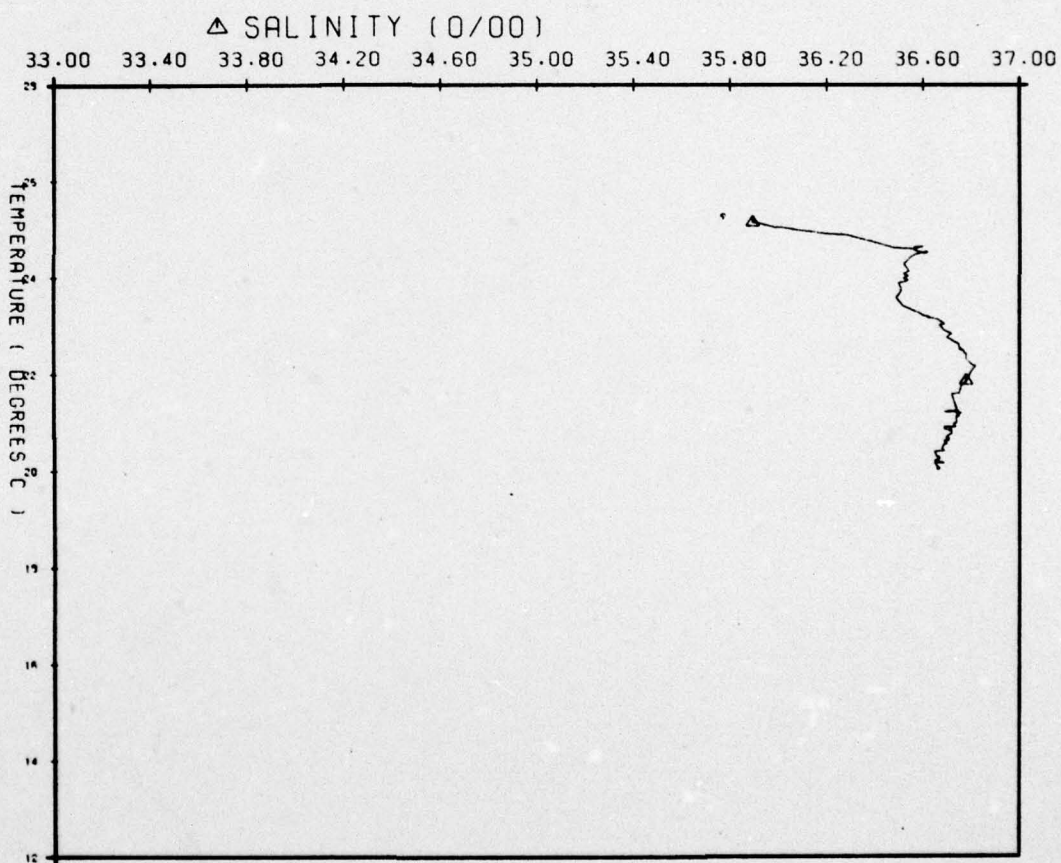
TEMPERATURE VS SALINITY
WILKES CR. 343517
STATION 002003



TEMPERATURE VS SALINITY
WILKES CR. 343517
STATION 003004



TEMPERATURE VS SALINITY
WILKES CR. 343517
STATION 004005



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