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**WEST HACKBERRY STRATEGIC PETROLEUM RESERVE SITE BRINE
DISPOSAL MONITORING, YEAR I REPORT**

**Final Report. Volume 4: Bibliography and Supporting Data for Physical
Oceanography**

February 1983

Work Performed Under Contract No. AC96-80PO10288

McNeese State University
Lake Charles, Louisiana

and

Texas A&M University
College Station, Texas

U. S. DEPARTMENT OF ENERGY

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WEST HACKBERRY STRATEGIC PETROLEUM RESERVE SITE BRINE DISPOSAL MONITORING

YEAR I REPORT
FINAL REPORT

VOLUME IV
BIBLIOGRAPHY AND SUPPORTING DATA FOR PHYSICAL OCEANOGRAPHY

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through the
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Appendix A

A.1 Vertical Sections of Hydrographic Data

Figures A-1 through A-35 show vertical sections of temperature, salinity, sigma-t and dissolved oxygen for transects parallel and perpendicular to the coastline near Calcasieu Pass, Louisiana. Figure A-36 shows study area and location of each station. The hydrographic data were collected synoptically once a month during a one-day (about 10 hours) cruise. The primary instrument for measuring the hydrographic variables was a Grundy Model 9400-1 CTD/DO system attached to a General Oceanics rosette sampler. Data logging was accomplished by a Hewlett Packard Model 85 computer interfaced to the C/DO system through a Grundy Model 8400 digital data logger. A Hydrolab 8000 CTD/DO instrument was used as a backup for the Grundy system. Samples collected with the rosette sampler were used to insure quality control for salinity and dissolved oxygen, and the instruments were also calibrated in the laboratory. A more detailed description of data collection and quality control procedures is given in section 2.2 and in the West Hackberry Field and Laboratory Procedures Manual (Randall and James, 1981).

It should be kept in mind that the brine diffuser is located near station 10A and that changes in the values of the variables near 10A are likely a result of the diffuser operation rather than natural processes.

Figure A-1. Hydrography for cross-shelf transect offshore Cameron, Louisiana for January 18, 1981.

Figure A-2. Hydrography for alongshore transect offshore Cameron, Louisiana, for January 18, 1981.

Figure A-3. Hydrography for cross-shelf transect offshore Cameron, Louisiana, for February 3, 1981.

Figure A-4. Hydrography for cross-shelf transect offshore Cameron, Louisiana, for February 4, 1981.

Figure A-5. Hydrography for alongshore transect offshore Cameron, Louisiana, for February 4, 1981.

Figure A-6. Hydrography for cross-shelf transect offshore Cameron, Louisiana, for March 7, 1981.

Figure A-7. Hydrography for alongshore transect offshore Cameron, Louisiana, for March 7, 1981.

Figure A-8. Hydrography for cross-shelf transect offshore Cameron, Louisiana, for April 10, 1981.

Figure A-9. Hydrography for alongshore transect offshore Cameron, Louisiana for April 10, 1981.

Figure A-10. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on May 21, 1981.

Figure A-11. Hydrography for alongshore transect offshore Holly Beach, Louisiana on May 21, 1981.

Figure A-12. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on June 8, 1981.

Figure A-13. Hydrography for alongshore transect offshore Holly Beach, Louisiana on June 8, 1981.

Figure A-14. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on July 1, 1981.

Figure A-15. Hydrography for alongshore transect offshore Holly Beach, Louisiana on July 1, 1981.

Figure A-16. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on July 16, 1981.

Figure A-17. Hydrography for alongshore transect offshore Holly Beach, Louisiana on July 16, 1981.

Figure A-18. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on August 7, 1981.

Figure A-19. Hydrography for alongshore transect offshore Holly Beach, Louisiana on August 7, 1981.

Figure A-20. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on September 11, 1981.

Figure A-21. Hydrography for alongshore transect offshore Holly Beach, Louisiana on September 11, 1981.

Figure A-22. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on October 2, 1981.

Figure A-23. Hydrography for alongshore transect offshore Holly Beach, Louisiana on October 2, 1981.

Figure A-24. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on November 18, 1981.

Figure A-25. Hydrography for alongshore transect offshore Holly Beach, Louisiana on November 18, 1981.

Figure A-26. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on December 2, 1981.

Figure A-27. Hydrography for alongshore transect offshore Holly Beach, Louisiana on December 2, 1981.

Figure A-28. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on January 21, 1982.

Figure A-29. Hydrography for alongshore transect offshore Holly Beach, Louisiana on January 22, 1982.

Figure A-30. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on February 11, 1982.

Figure A-31. Hydrography for alongshore transect offshore Holly Beach, Louisiana on February 11, 1982.

Figure A-32. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on March 12, 1982.

Figure A-33. Hydrography for alongshore transect offshore Holly Beach, Louisiana on March 12, 1982.

Figure A-34. Hydrography for cross-shelf transect offshore Holly Beach, Louisiana on April 27, 1982.

Figure A-35. Hydrography for alongshore transect offshore Holly Beach, Louisiana on April 27, 1982.

Figure A-36. Locations of hydrographic stations and in situ instrumentation stations at the West Hackberry brine disposal site.

A.2 Tables of Basic Statistics of Time Series Data

Tables A-1 through A-10 list the basic statistics for the time series. Minimum, maximum and mean values and the standard deviation about the mean were computed for monthly intervals using hourly values of time series which had been filtered with a 3-hour low-pass filter. The low-pass filter reduces spurious spikes in the data which can give unrealistic minimum and maximum values. Prior to filtering and averaging, short gaps (on the order of a few hours) in the series were filled by linear interpolation. The interpolated values were included in the computation of basic statistics. Gaps on the order of days to weeks in duration, however, were not interpolated and were not included in the statistics. Thus, some intervals have fewer than the number of hours appropriate for a given month.

Table A-1. Basic statistics by month for the wind velocity time series data from NDBO Buoy 42010. See introduction to section A.2 for additional information.

NDBO BUOYS: 2010 & 2011		ALONGSHORE (M/S)					CROSS SHELF (M/S)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-31-81(1800)	01-31-81(2300)	6	-7.2	-3.1	-5.25	1.6	6	4.1	5.8	4.66	0.6
02-01-81(0000)	02-28-81(2300)	508	-12.	7.7	-0.94	3.9	508	-15.	12.0	0.27	4.1
03-01-81(0000)	03-31-81(2300)	744	-10.	10.6	-1.10	4.3	744	-13.	11.6	0.09	4.4
04-01-81(0000)	04-30-81(2300)	720	-11.	8.0	-0.96	4.0	720	-9.3	8.4	1.56	4.0
05-01-81(0000)	05-31-81(2300)	269	-7.9	6.1	-1.79	3.3	269	-8.1	8.3	3.68	2.9
06-01-81(0000)	06-30-81(2300)	500	-13.	5.3	-1.91	3.2	500	-7.1	14.7	3.26	3.5
07-01-81(0000)	07-31-81(2300)	744	-9.4	6.2	-1.18	3.0	744	-40.	12.8	4.18	3.8
08-01-81(0000)	08-31-81(2300)	744	-11.	7.1	-1.94	3.6	744	-10.	15.6	2.21	4.2
09-01-81(0000)	09-30-81(2300)	720	-9.7	5.4	-2.84	3.0	720	-13.	11.7	-0.08	5.0
10-01-81(0000)	10-31-81(2300)	744	-10.	10.7	-2.76	3.5	744	-17.	10.2	1.50	6.1
11-01-81(0000)	11-30-81(2300)	720	-9.3	8.3	-1.22	3.0	720	-13.	10.1	-0.51	4.6
12-01-81(0000)	12-31-81(2300)	733	-14.	7.7	-2.31	4.0	733	-13.	11.3	-1.38	5.8
01-01-82(0000)	01-31-82(2300)	744	-12.	14.3	-2.02	3.9	744	-14.	12.2	-0.43	5.6
02-01-82(0000)	02-28-82(2300)	672	-11.	7.3	-2.39	3.4	672	-15.	7.8	-2.49	5.0
03-01-82(0000)	03-09-82(0400)	744	-14.	5.4	-3.19	3.6	744	-13.	9.0	0.88	5.0
04-01-82(0000)	04-30-82(2300)	720	-14.	7.6	-3.30	4.0	720	-13.	9.1	0.50	5.3

Table A-2. Basic statistics in intervals of one month for the time series data at Site D, top. See introduction to section A.2 for additional information.

SITE D TOP		ALONGSHORE (CM/S)					CROSS SHELF (CM/S)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)	244	-25.	14.	-2.9	8.2	244	-12.	11.	0.4	3.7
02-01-81(0000)	02-28-81(2300)	672	-32.	38.	-3.7	11.7	672	-11.	16.	1.6	4.8
03-01-81(0000)	03-31-81(2300)	123	-22.	22.	-1.8	9.9	123	-8.	14.	2.0	4.5
04-01-81(0000)	04-30-81(2300)	622	-48.	17.	-17.9	13.2	622	-28.	19.	2.7	6.0
05-01-81(0000)	05-31-81(2300)	744	-54.	22.	-9.5	17.1	744	-16.	22.	1.7	6.4
06-01-81(0000)	06-30-81(2300)	720	-64.	33.	-8.4	21.0	720	-30.	26.	0.4	9.3
07-01-81(0000)	07-31-81(2300)	711	-30.	46.	2.9	15.4	711	-25.	21.	-0.4	7.9
08-01-81(0000)	08-31-81(2300)	705	-42.	23.	-4.2	12.0	705	-17.	16.	0.1	5.5
09-01-81(0000)	09-30-81(2300)	720	-28.	16.	-3.3	7.8	720	-17.	15.	0.7	5.3
10-01-81(0000)	10-31-81(2300)	744	-41.	22.	-12.4	10.7	744	-15.	25.	2.1	5.9
11-01-81(0000)	11-30-81(2300)	720	-38.	21.	-5.3	10.1	720	-13.	15.	0.6	4.7
12-01-81(0000)	12-31-81(2300)	744	-53.	18.	-9.9	14.5	744	-13.	27.	2.6	6.1
01-01-82(0000)	01-31-82(2300)	541	-45.	34.	-8.6	14.5	541	-13.	20.	2.1	6.2
02-01-82(0000)	02-28-82(2300)	672	-81.	38.	-6.3	16.8	672	-26.	24.	1.3	7.1
03-01-82(0000)	03-31-82(2300)	744	-61.	31.	-18.2	17.7	744	-22.	26.	1.9	8.1
04-01-82(0000)	04-30-82(2300)	720	-57.	23.	-18.3	15.8	720	-30.	24.	2.0	8.2

SITE D TOP		TEMPERATURE (C)					SALINITY (PPT)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-21-81(2000)	01-31-81(2300)	244	9.4	12.0	10.6	0.8	244	30.5	32.2	31.4	0.4
02-01-81(0000)	02-28-81(2300)	672	9.1	13.6	10.8	1.0	672	29.4	32.9	31.1	0.7
03-01-81(0000)	03-31-81(2300)	744	12.6	19.1	15.8	1.1	744	27.2	32.4	30.5	1.1
04-01-81(0000)	04-30-81(2300)	720	18.9	26.5	22.4	2.0	720	22.8	32.5	28.4	2.2
05-01-81(0000)	05-31-81(2300)	744	22.3	26.8	24.6	0.8	744	25.2	31.4	28.9	1.2
06-01-81(0000)	06-30-81(2300)	720	26.1	30.3	28.5	0.9	720	17.4	31.3	26.4	3.1
07-01-81(0000)	07-31-81(2300)	744	28.2	31.7	30.3	0.8	744	18.7	31.9	26.0	3.3
08-01-81(0000)	08-31-81(2300)	744	29.0	31.8	30.6	0.6	744	19.3	29.8	27.1	1.7
09-01-81(0000)	09-30-81(2300)	720	25.6	29.8	27.8	1.3	720	22.0	31.1	26.0	1.2
10-01-81(0000)	10-31-81(2300)	744	19.8	27.8	25.3	2.6	744	20.3	30.2	26.0	1.9
11-01-81(0000)	11-30-81(2300)	720	18.6	21.3	19.8	0.6	720	27.2	30.6	29.2	0.7
12-01-81(0000)	12-31-81(2300)	744	12.4	20.9	16.1	2.5	344	28.5	32.4	30.5	0.8
01-01-82(0000)	01-31-82(2300)	541	10.1	15.0	12.9	1.2	170	26.0	32.4	29.5	1.4
02-01-82(0000)	02-28-82(2300)	672	10.1	16.8	12.6	1.3	385	28.1	32.2	31.0	1.0
03-01-82(0000)	03-31-82(2300)	744	13.7	20.2	16.7	2.1	411	17.5	27.2	24.4	1.5
04-01-82(0000)	04-30-82(2300)	720	17.0	22.0	19.8	1.2	720	15.3	27.6	23.6	2.1

Table A-3. Basic statistics in intervals of one month for the time series data at Site D, bottom. See introduction to section A.2 for additional information.

SITE D BOTTOM		ALONGSHORE (CM/S)					CROSS SHELF (CM/S)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-21-81(2000)	01-31-81(2300)	244	-19.	8.	-1.0	4.1	244	-6.	10.	0.6	2.5
02-01-81(0000)	02-28-81(2300)	383	-25.	19.	-4.3	7.6	383	-6.	12.	2.7	3.3
03-01-81(0000)	03-31-81(2300)	406	-26.	37.	-1.8	10.1	406	-15.	30.	1.0	6.4
04-01-81(0000)	04-30-81(2300)	430	-27.	12.	-6.5	8.2	430	-18.	14.	0.7	5.7
05-01-81(0000)	05-31-81(2300)	744	-33.	18.	-4.0	11.1	744	-17.	16.	0.7	6.5
06-01-81(0000)	06-30-81(2300)	720	-43.	21.	-4.2	12.3	720	-29.	17.	0.2	7.5
07-01-81(0000)	07-31-81(2300)	744	-22.	19.	-0.1	7.8	744	-33.	25.	0.6	9.0
08-01-81(0000)	08-31-81(2300)	744	-28.	19.	-1.9	8.0	744	-20.	32.	0.5	7.0
09-01-81(0000)	09-30-81(2300)	720	-26.	19.	-1.1	7.1	720	-19.	21.	0.8	5.8
10-01-81(0000)	10-31-81(2300)	744	-29.	16.	-6.1	8.5	744	-19.	20.	1.0	6.6
11-01-81(0000)	11-30-81(2300)	720	-26.	17.	-2.3	8.0	720	-17.	18.	1.3	5.5
12-01-81(0000)	12-31-81(2300)	744	-36.	19.	-6.9	10.6	744	-21.	28.	2.3	7.2
01-01-82(0000)	01-31-82(2300)	744	-36.	27.	-4.3	9.8	744	-19.	37.	2.8	7.7
02-01-82(0000)	02-28-82(2300)	672	-47.	26.	-4.6	9.7	672	-22.	27.	2.3	6.6
03-01-82(0000)	03-31-82(2300)	744	-40.	24.	-7.6	10.6	744	-23.	18.	1.2	7.1
04-01-82(0000)	04-30-82(2300)	720	-32.	19.	-6.4	11.5	720	-25.	26.	2.1	8.8

SITE D BOTTOM		TEMPERATURE (C)					SALINITY (PPT)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-21-81(2000)	01-31-81(2300)	244	10.7	12.1	11.1	0.3	244	30.9	32.5	31.9	0.5
02-01-81(0000)	02-28-81(2300)	672	9.4	12.1	10.8	0.8	672	29.5	32.5	31.1	0.8
03-01-81(0000)	03-31-81(2300)	529	11.9	18.8	15.5	1.8	529	28.4	32.4	30.7	0.8
04-01-81(0000)	04-30-81(2300)	720	18.3	24.4	21.9	2.0	720	24.0	33.7	30.0	1.9
05-01-81(0000)	05-31-81(2300)	744	23.6	26.5	24.5	0.6	744	27.1	32.5	30.3	1.2
06-01-81(0000)	06-30-81(2300)	720	26.1	30.3	28.2	0.9	720	20.0	33.8	29.4	2.9
07-01-81(0000)	07-31-81(2300)	744	28.0	31.0	29.4	0.7	744	23.9	33.2	28.8	2.3
08-01-81(0000)	08-31-81(2300)	744	29.0	30.8	30.3	0.4	744	19.7	31.6	28.6	1.8
09-01-81(0000)	09-30-81(2300)	720	25.7	29.5	28.0	1.3	720	24.8	31.2	27.5	1.3
10-01-81(0000)	10-31-81(2300)	744	19.9	27.8	25.9	2.6	744	20.5	32.2	29.1	2.0
11-01-81(0000)	11-30-81(2300)	720	18.5	21.5	20.0	0.8	720	29.0	32.4	30.7	0.7
12-01-81(0000)	12-31-81(2300)	744	12.8	20.9	16.3	2.6	744	29.0	33.0	31.3	0.7
01-01-82(0000)	01-31-82(2300)	744	9.4	14.7	12.4	1.6	744	25.7	34.0	31.2	1.5
02-01-82(0000)	02-28-82(2300)	672	10.2	15.8	12.5	1.1	672	22.5	34.2	31.0	2.0
03-01-82(0000)	03-31-82(2300)	744	13.9	19.5	16.6	1.9	744	22.8	31.3	28.3	1.8
04-01-82(0000)	04-30-82(2300)	720	17.2	21.7	19.8	1.1	720	20.0	30.1	26.3	1.9

Table A-4. Basic statistics in intervals of one month for the time series data at Site N, bottom. See introduction to section A.2 for additional information.

SITE N BOTTOM		ALONGSHORE (CM/S)					CROSS SHELF (CM/S)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)										
02-01-81(0000)	02-28-81(2300)										
03-01-81(0000)	03-31-81(2300)										
04-28-81(2100)	04-30-81(2300)	51	-18.	15.	-1.0	8.9	51	-18.	4.	-3.3	5.7
05-01-81(0000)	05-31-81(2300)	744	-44.	20.	-5.6	14.3	744	-18.	17.	1.1	6.2
06-01-81(0000)	06-30-81(2300)	720	-50.	25.	-5.2	14.9	720	-34.	25.	0.4	8.9
07-01-81(0000)	07-31-81(2300)	744	-34.	30.	-1.0	10.0	744	-21.	21.	0.6	6.7
08-01-81(0000)	08-31-81(2300)	744	-23.	16.	-3.7	8.7	744	-15.	14.	1.6	5.1
09-01-81(0000)	09-30-81(2300)	519	-33.	16.	-0.7	7.0	519	-13.	15.	0.6	4.1
10-01-81(0000)	10-31-81(2300)	215	-27.	10.	-8.4	8.1	215	-9.	12.	2.1	3.5
11-01-81(0000)	11-30-81(2300)	720	-32.	16.	-4.8	8.8	720	-26.	18.	0.7	5.2
12-01-81(0000)	12-31-81(2300)	744	-48.	26.	-6.4	12.2	744	-21.	24.	4.1	6.2
01-01-82(0000)	01-31-82(2300)	744	-36.	36.	-4.2	10.0	744	-26.	32.	1.6	6.8
02-01-82(0000)	02-28-82(2300)	386	-35.	13.	-7.5	9.2	386	-25.	16.	2.4	4.9
03-01-82(0000)	03-31-82(2300)	411	-46.	16.	-11.8	13.3	411	-28.	22.	1.6	9.4
04-01-82(0000)	04-30-82(2300)	720	-40.	18.	-9.8	11.4	720	-28.	23.	3.3	8.7

SITE N BOTTOM		TEMPERATURE (C)					SALINITY (PPT)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)										
02-01-81(0000)	02-28-81(2300)										
03-01-81(0000)	03-31-81(2300)										
04-01-81(0000)	04-30-81(2300)	51	24.2	25.7	24.4	0.2	51	27.0	31.0	28.7	1.3
05-01-81(0000)	05-31-81(2300)	744	23.4	27.0	24.6	0.8	744	25.6	32.4	28.8	1.5
06-01-81(0000)	06-30-81(2300)	720	26.5	30.8	28.5	0.9	720	13.2	31.5	24.8	4.2
07-01-81(0000)	07-31-81(2300)	744	27.9	31.2	29.8	0.7	744	15.5	32.5	26.3	3.3
08-01-81(0000)	08-31-81(2300)	744	28.7	31.2	30.4	0.6	744	18.6	29.8	26.7	2.5
09-01-81(0000)	09-30-81(2300)	720	24.9	29.5	27.7	1.4	720	19.2	27.0	24.6	1.5
10-01-81(0000)	10-31-81(2300)	744	19.2	28.0	25.0	3.0	744	18.9	30.4	26.2	2.8
11-01-81(0000)	11-30-81(2300)	720	17.9	20.6	19.4	0.7	720	21.6	30.7	28.7	1.3
12-01-81(0000)	12-31-81(2300)	744	11.7	20.6	15.6	2.8	744	26.4	31.9	30.0	1.0
01-01-82(0000)	01-31-82(2300)	744	7.7	14.4	11.7	1.7	744	24.1	33.0	29.2	2.1
02-01-82(0000)	02-28-82(2300)	672	9.2	16.4	12.2	1.4	672	20.2	31.3	28.0	2.1
03-01-82(0000)	03-31-82(2300)	744	13.9	20.2	16.7	2.0	744	13.7	28.4	24.1	2.7
04-01-82(0000)	04-30-82(2300)	720	17.0	22.5	19.7	1.4	720	12.2	26.7	21.3	2.4

Table A-5. Basic statistics in intervals of one month for the time series data at Site P, top. See introduction to section A.2 for additional information.

SITE P TOP		ALONGPASS (CM/S)					CROSS PASS (CM/S)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)										
02-08-81(0100)	02-28-81(2300)	503	-153	105.	-12.1	59.8	503	-2.	17.	3.6	3.4
03-01-81(0000)	03-31-81(2300)	744	-129	108.	-8.1	59.3	720	-67.	15.	2.7	5.3
04-01-81(0000)	04-30-81(2300)	720	-105	101.	1.0	46.9	720	-14.	30.	2.0	3.4
05-01-81(0000)	05-31-81(2300)	744	-107	112.	-1.3	53.5	744	-18	32.	2.5	3.2
06-01-81(0000)	06-30-81(2300)	720	-119	114.	-15.2	53.6	720	-63.	77.	2.7	11.1
07-01-81(0000)	07-31-81(2300)	596	-137	119.	-12.5	57.8	596	-46.	100.	2.5	9.6
08-01-81(0000)	08-31-81(2300)	744	-130	110.	-4.0	52.0	744	-5.	26.	1.9	3.2
09-01-81(0000)	09-30-81(2300)	720	-106	91.	-4.9	48.3	720	-9.	12.	1.5	2.4
10-01-81(0000)	10-31-81(2300)	652	-116	105.	-3.0	54.2	652	-6.	10.	1.3	2.1
11-01-81(0000)	11-30-81(2300)	310	-94.	94.	-0.5	51.7	310	-3.	8.	1.5	1.6
12-01-81(0000)	12-31-81(2300)	744	-118	108.	-3.5	56.6	744	-37.	30.	2.0	3.5
01-01-82(0000)	01-31-82(2300)	240	-93.	101.	-5.4	49.5	240	-1.	7.	1.8	1.6
02-01-82(0000)	02-28-82(2300)	381	-116	101.	-4.8	56.2	381	-5.	9.	1.3	1.8
03-01-82(0000)	03-31-82(2300)	470	-89.	98.	-3.2	48.7	470	-10.	25.	1.3	3.7
04-01-82(0000)	04-30-82(2300)	720	-117	105.	-4.5	50.0	720	-96.	59.	-3.8	15.2

SITE P TOP		TEMPERATURE (C)					SALINITY (PPT)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)										
02-08-81(0100)	02-28-81(2300)	503	5.7	16.6	11.5	2.4	503	18.2	31.3	26.6	3.2
03-01-81(0000)	03-31-81(2300)	744	14.7	19.8	16.6	1.2	744	19.2	31.2	27.3	2.9
04-01-81(0000)	04-30-81(2300)	720	19.7	26.0	23.1	1.9	720	19.4	29.3	24.3	2.3
05-01-81(0000)	05-31-81(2300)	744	22.1	28.4	24.9	1.2	744	23.6	31.2	27.9	1.6
06-01-81(0000)	06-30-81(2300)	720	26.2	31.9	29.2	1.2	720	9.4	29.5	19.2	5.4
07-01-81(0000)	07-31-81(2300)	744	27.1	32.9	30.4	1.1	744	6.8	30.7	17.3	6.3
08-01-81(0000)	08-31-81(2300)	744	28.0	32.4	30.5	1.0	744	15.7	28.5	23.5	3.3
09-01-81(0000)	09-30-81(2300)	720	22.9	30.6	27.6	1.7	720	17.3	25.1	22.0	1.8
10-01-81(0000)	10-31-81(2300)	652	15.7	28.3	25.0	3.3	652	19.5	29.6	23.2	2.9
11-01-81(0000)	11-30-81(2300)	310	16.5	21.0	19.0	1.2	310	20.3	29.3	26.7	2.5
12-01-81(0000)	12-31-81(2300)	744	8.3	20.2	14.2	2.8	744	21.2	31.5	27.5	2.2
01-01-82(0000)	01-31-82(2300)	744	2.5	15.7	11.1	2.6	744	18.6	30.6	25.4	2.9
02-01-82(0000)	02-28-82(2300)	672	6.4	17.9	12.3	2.3	672	10.9	30.2	23.8	4.6
03-01-82(0000)	03-31-82(2300)	744	10.5	22.8	17.1	2.8	744	9.4	27.1	19.6	4.6
04-01-82(0000)	04-30-82(2300)	720	14.8	23.5	20.0	1.8	720	10.3	23.6	18.0	2.7

Table A-6. Basic statistics in intervals of one month for the time series data at Site P, bottom. See introduction to section A.2 for additional information.

SITE P BOTTOM		ALONGPASS (CM/S)					CROSS PASS (CM/S)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)										
02-08-81(0100)	02-28-81(2300)	320	-105	87	-5.8	49.6	320	-13	7	-1.2	4.1
03-01-81(0000)	03-31-81(2300)	391	-85	80	-1.1	4.5	391	-13	7	-0.7	3.6
04-01-81(0000)	04-30-81(2300)	720	-68	79	-0.6	40.0	720	-12	6	0.6	2.5
05-01-81(0000)	05-31-81(2300)	744	-78	85	-0.4	42.2	744	-11	32	0.6	3.3
06-01-81(0000)	06-30-81(2300)	720	-82	94	-7.7	39.3	720	-33	19	-1.3	6.0
07-01-81(0000)	07-31-81(2300)	744	-113	94	-8.8	44.2	744	-17	44	-1.4	4.8
08-01-81(0000)	08-31-81(2300)	744	-84	85	-0.5	41.5	744	-15	13	-0.8	3.4
09-01-81(0000)	09-30-81(2300)	720	-74	76	-2.9	38.8	720	-9	7	0.1	2.1
10-01-81(0000)	10-31-81(2300)	744	-80	85	-1.0	43.4	744	-10	7	-0.2	2.9
11-01-81(0000)	11-30-81(2300)	720	-78	84	-1.3	45.4	720	-42	47	-0.3	6.1
12-01-81(0000)	12-31-81(2300)	744	-98	97	-1.8	47.7	744	-41	35	0.0	5.4
01-01-82(0000)	01-31-82(2300)	236	-77	87	-4.2	40.1	236	-9	6	-0.2	3.2
02-01-82(0000)	02-28-82(2300)	672	-83	82	-5.1	42.2	672	-35	10	-1.2	4.2
03-01-82(0000)	03-31-82(2300)	579	-77	107	-3.6	39.2	579	-25	6	-0.8	3.7
04-01-82(0000)	04-30-82(2300)	720	-75	83	-3.9	38.7	720	-28	50	-0.3	5.3

SITE P BOTTOM		TEMPERATURE (C)					SALINITY (PPT)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)										
02-08-81(0100)	02-28-81(2300)	320	5.5	13.2	9.9	1.5	320	18.8	30.7	26.8	2.9
03-01-81(0000)	03-31-81(2300)	391	14.2	19.8	17.0	1.4	391	19.5	31.3	27.8	2.7
04-01-81(0000)	04-30-81(2300)	720	19.7	25.9	23.0	1.9	720	20.4	30.1	24.6	2.0
05-01-81(0000)	05-31-81(2300)	744	22.0	28.4	24.8	1.1	744	23.6	31.2	27.8	1.7
06-01-81(0000)	06-30-81(2300)	720	26.1	31.8	29.0	1.2	720	10.0	29.9	19.7	5.1
07-01-81(0000)	07-31-81(2300)	744	27.1	32.6	30.3	1.1	744	7.1	32.2	19.9	7.1
08-01-81(0000)	08-31-81(2300)	744	28.0	32.2	30.5	0.9	744	17.2	29.8	24.3	3.3
09-01-81(0000)	09-30-81(2300)	720	23.0	30.6	27.7	1.7	720	16.9	24.5	21.6	1.7
10-01-81(0000)	10-31-81(2300)	744	15.7	28.3	24.3	3.6	744	19.4	30.0	24.4	3.0
11-01-81(0000)	11-30-81(2300)	720	16.4	21.6	19.1	1.1	720	19.6	29.0	26.4	2.3
12-01-81(0000)	12-31-81(2300)	744	8.6	20.2	14.3	2.8	744	20.6	31.0	27.1	2.2
01-01-82(0000)	01-31-82(2300)	744	2.9	15.8	11.3	2.4	744	18.1	30.4	25.1	2.7
02-01-82(0000)	02-28-82(2300)	672	6.5	18.1	12.4	2.3	672	11.6	30.1	23.8	4.5
03-01-82(0000)	03-31-82(2300)	744	10.9	22.6	17.1	2.6	744	8.9	28.0	19.0	4.6
04-01-82(0000)	04-30-82(2300)	720	14.8	23.4	19.9	1.8	720	10.6	24.0	18.0	2.7

Table A-7. Basic statistics in intervals of one month for the time series data at Site S, top. See introduction to section A.2 for additional information.

SITE S TOP		ALONGSHORE (CM/S)					CROSS SHELF (CM/S)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)										
02-01-81(0000)	02-28-81(2300)										
03-06-81(0000)	03-31-81(2300)	548	-41.	37.	-4.9	13.5	548	-26.	26.	0.0	7.4
04-01-81(0000)	04-30-81(2300)	627	-37.	17.	-10.2	10.0	627	-29.	18.	1.4	7.6
05-01-81(0000)	05-31-81(2300)	744	-40.	22.	-9.7	11.4	744	-21.	26.	0.8	8.2
06-01-81(0000)	06-30-81(2300)	720	-62.	29.	-8.9	15.4	720	-5.6	31.	-2.9	11.4
07-01-81(0000)	07-31-81(2300)	744	-26.	46.	6.6	13.1	744	-49.	25.	-1.3	12.7
08-01-81(0000)	08-31-81(2300)	296	-17.	21.	2.4	8.5	296	-17.	12.	-1.4	5.2
09-01-81(0000)	09-30-81(2300)	651	-39.	22.	-5.1	8.7	651	-16.	37.	3.6	8.0
10-01-81(0000)	10-31-81(2300)	744	-31.	17.	-7.0	9.5	744	-22.	21.	-0.2	6.3
11-01-81(0000)	11-30-81(2300)	409	-33.	12.	-7.4	8.9	409	-18.	22.	-0.9	6.5
12-01-81(0000)	12-31-81(2300)	384	-34.	10.	-9.4	9.0	384	-16.	16.	0.5	5.5
01-01-82(0000)	01-31-82(2300)	744	-36.	52.	-5.7	11.4	744	-21.	26.	-0.6	7.6
02-01-82(0000)	02-28-82(2300)	672	-69.	15.	-13.4	12.6	672	-26.	35.	0.5	8.5
03-01-82(0000)	03-31-82(2300)	744	-55.	30.	-13.0	14.2	744	-32.	26.	-0.8	9.4
04-01-82(0000)	04-30-82(2300)	720	-45.	19.	-14.2	11.0	720	-25.	22.	-1.2	7.7

SITE S TOP		TEMPERATURE (C)					SALINITY (PPT)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)										
02-01-81(0000)	02-28-81(2300)										
03-06-81(1900)	03-31-81(2300)	548	14.4	17.5	15.9	0.6	548	31.1	33.6	32.3	0.6
04-01-81(0000)	04-30-81(2300)	627	18.8	24.8	21.8	1.8	627	29.3	34.4	33.2	1.0
05-01-81(0000)	05-31-81(2300)	744	23.2	26.7	24.5	0.8	744	29.0	34.0	32.5	1.0
06-01-81(0000)	06-30-81(2300)	720	26.0	30.4	28.5	1.1	720	18.8	32.8	28.2	3.0
07-01-81(0000)	07-31-81(2300)	744	28.5	31.7	30.2	0.8	744	20.8	31.0	26.5	1.9
08-01-81(0000)	08-31-81(2300)	296	30.5	31.5	30.9	0.3	296	27.5	30.6	29.3	0.8
09-01-81(0000)	09-30-81(2300)	651	26.4	29.9	28.1	1.1	651	27.3	31.8	28.6	1.1
10-01-81(0000)	10-31-81(2300)	744	21.6	27.8	25.8	2.2	744	26.9	33.4	31.6	1.6
11-01-81(0000)	11-30-81(2300)	720	19.5	22.3	20.9	0.8	720	29.1	34.4	32.7	0.8
12-01-81(0000)	12-31-81(2300)	744	15.2	21.0	17.7	1.7	744	28.3	34.4	32.8	1.2
01-01-82(0000)	01-31-82(2300)	744	11.0	16.2	13.7	1.4	744	30.7	34.6	33.0	0.9
02-01-82(0000)	02-28-82(2300)	672	12.1	15.4	13.3	0.7	672	23.8	34.0	31.5	1.9
03-01-82(0000)	03-31-82(2300)	744	14.2	19.9	17.1	1.8	744	27.9	33.6	30.0	1.3
04-01-82(0000)	04-30-82(2300)	720	18.4	22.6	20.3	1.0	720	27.2	32.7	30.4	1.2

Table A-8. Basic statistics in intervals of one month for the time series data at Site S, bottom. See introduction to section A.2 for additional information.

SITE S BOTTOM		ALONGSHORE (CM/S)					CROSS SHELF (CM/S)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)										
02-17-81(2200)	02-28-81(2300)	266	-5.	10.	0.5	2.9	266	-4.	8.	0.9	2.1
03-01-81(0000)	03-31-81(2300)	744	-27.	27.	-3.1	10.1	744	-14.	22	-1.0	6.1
04-01-81(0000)	04-30-81(2300)	720	-21.	21.	-7.7	6.7	720	-17.	15.	-1.8	5.7
05-01-81(0000)	05-31-81(2300)	744	-34.	18.	-4.7	10.9	744	-21.	18.	-1.0	6.4
06-01-81(0000)	06-30-81(2300)	531	-35.	26.	-4.7	12.9	531	-26.	16.	-3.4	6.8
07-01-81(0000)	07-31-81(2300)										
08-01-81(0000)	08-31-81(2300)	737	-19.	16.	-0.3	6.7	737	-16.	10.	-0.1	3.8
09-01-81(0000)	09-30-81(2300)	720	-28.	13.	-2.3	6.7	720	-13.	11.	0.0	4.0
10-01-81(0000)	10-31-81(2300)	483	-23.	19.	-3.8	8.2	483	-15.	12.	-0.6	4.9
11-01-81(0000)	11-30-81(2300)	292	-17.	18.	-3.3	8.0	292	-13.	23.	-0.3	6.0
12-01-81(0000)	12-31-81(2300)	744	-28.	19.	-5.3	9.2	744	-17.	21.	0.3	5.3
01-01-82(0000)	01-31-82(2300)	744	-38.	38.	-3.2	8.4	744	-13.	22.	-0.6	4.9
02-01-82(0000)	02-28-82(2300)	672	-31.	21.	-4.3	8.5	672	-15.	17.	-0.7	4.9
03-01-82(0000)	03-31-82(2300)	744	-52.	17.	-5.9	11.4	744	-15.	14.	-0.8	4.8
04-01-82(0000)	04-20-82(1100)	468	-29.	20.	-6.5	10.6	468	-14.	15.	-1.0	5.6

SITE S BOTTOM		TEMPERATURE (C)					SALINITY (PPT)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)	744					744				
02-07-81(2200)	02-28-81(2300)	266	11.2	13.3	12.4	0.7	266	33.1	34.6	34.0	0.5
03-01-81(0000)	03-31-81(2300)	744	12.8	17.4	15.4	1.1	744	31.2	34.1	32.9	0.6
04-01-81(0000)	04-30-81(2300)	720	17.4	23.8	21.0	2.0	720	31.4	34.3	33.3	0.7
05-01-81(0000)	05-31-81(2300)	744	23.3	26.0	24.1	0.6	744	31.5	34.1	33.3	0.6
06-01-81(0000)	06-30-81(2300)	720	25.1	28.4	27.4	0.9	720	26.4	34.5	32.1	1.6
07-01-81(0000)	07-31-81(2300)	744	27.9	30.8	28.9	0.8	744	28.3	36.6	32.3	1.7
08-01-81(0000)	08-31-81(2300)	744	29.3	31.1	30.5	0.5	744	28.5	32.2	30.3	1.0
09-01-81(0000)	09-30-81(2300)	720	26.4	29.5	28.3	1.1	720	26.8	31.3	28.8	1.1
10-01-81(0000)	10-31-81(2300)	744	21.5	27.9	25.8	2.3	744	27.7	33.4	32.0	1.1
11-01-81(0000)	11-30-81(2300)	720	19.9	22.2	21.0	0.7	720	31.9	34.4	33.2	0.6
12-01-81(0000)	12-31-81(2300)	744	15.0	21.7	18.0	2.1	744	31.9	34.6	33.3	0.7
01-01-82(0000)	01-31-82(2300)	744	11.0	16.0	13.7	1.4	744	31.3	34.8	33.0	1.0
02-01-82(0000)	02-28-82(2300)	672	12.3	15.3	13.5	0.8	672	30.3	34.6	32.4	0.9
03-01-82(0000)	03-31-82(2300)	744	14.8	19.6	16.9	1.5	744	28.0	33.8	31.3	1.6
04-01-82(0000)	04-20-82(1100)	468	19.1	21.9	19.9	0.6	468	28.1	32.7	30.5	1.2

Table A-9. Basic statistics in intervals of one month for the time series data at Site W, bottom. See introduction to section A.2 for additional information.

SITE W BOTTOM		ALONGSHORE (CM/S)					CROSS SHELF (CM/S)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)	744					744				
02-27-81(0000)	02-28-81(2300)	048	-6.	3.	-0.8	2.5	048	-7	2.	-1.0	2.6
03-01-81(0000)	03-31-81(2300)	459	-25.	34.	-3.4	10.1	459	-15.	28.	1.8	5.9
04-01-81(0000)	04-30-81(2300)	298	-25.	21.	-8.1	8.3	298	-25.	19.	0.5	8.0
05-01-81(0000)	05-31-81(2300)										
06-01-81(0000)	06-30-81(2300)	386	-53	18.	-9.1	13.8	386	-20.	16.	-0.8	6.2
07-01-81(0000)	07-31-81(2300)	687	-29.	24.	-0.1	7.8	687	-20.	27.	0.9	6.0
08-01-81(0000)	08-31-81(2300)	744	-36.	13.	-1.4	6.9	744	-25.	16.	-1.2	5.5
09-01-81(0000)	09-30-81(2300)	720	-21.	13.	-1.0	4.9	720	-15.	17.	0.2	3.9
10-01-81(0000)	10-31-81(2300)	508	-26.	18.	-2.9	8.3	508	-13.	16.	-0.5	4.8
11-01-81(0000)	11-30-81(2300)	288	-21.	40.	-4.1	6.2	288	-16.	24.	0.4	6.1
12-01-81(0000)	12-31-81(2300)	744	-45.	15.	-8.0	10.2	744	-15.	19.	0.9	5.2
01-01-82(0000)	01-31-82(2300)	744	-37.	38.	-4.4	9.6	744	-20.	31.	1.4	6.1
02-01-82(0000)	02-28-82(2300)	672	-48.	20.	-4.2	9.5	672	-14.	23.	1.6	5.4
03-01-82(0000)	03-31-82(2300)	744	-50.	21.	-7.0	12.6	744	-25.	22.	-0.1	8.0
04-01-82(0000)	04-30-82(2300)	720	-48.	19.	-8.3	13.9	720	-33.	23.	-0.4	8.2

SITE W BOTTOM		TEMPERATURE (C)					SALINITY (PPT)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)	744					744				
02-27-81(0000)	02-28-81(2300)	048	11.9	12.2	12.1	0.1	048	31.4	32.2	31.9	0.2
03-01-81(0000)	03-31-81(2300)	744	12.1	17.8	15.4	1.3	744	28.9	32.1	31.1	0.6
04-01-81(0000)	04-30-81(2300)	394	17.3	23.2	20.4	1.3	394	25.3	32.0	29.1	1.6
05-01-81(0000)	05-31-81(2300)										
06-01-81(0000)	06-30-81(2300)	675	26.8	29.8	27.9	0.6	675	22.2	33.5	29.6	2.9
07-01-81(0000)	07-31-81(2300)	744	27.8	30.8	29.4	0.8	744	25.4	32.7	29.4	1.7
08-01-81(0000)	08-31-81(2300)	744	29.2	30.9	30.5	0.5	744	20.4	31.0	28.8	1.9
09-01-81(0000)	09-30-81(2300)	720	25.8	29.4	28.0	1.3	720	25.0	29.4	27.2	1.0
10-01-81(0000)	10-31-81(2300)	508	24.3	27.8	27.0	0.7	508	23.6	29.8	27.7	1.5
11-01-81(0000)	11-30-81(2300)	288	18.7	20.6	19.4	0.5	288	29.6	32.6	30.9	0.6
12-01-81(0000)	12-31-81(2300)	744	12.1	20.9	16.2	2.6	744	27.7	33.4	31.0	1.0
01-01-82(0000)	01-31-82(2300)	744	9.3	14.8	12.3	1.5	744	26.6	33.6	30.8	1.3
02-01-82(0000)	02-28-82(2300)	672	10.7	15.8	12.2	1.0	672	22.0	31.8	29.8	1.9
03-01-82(0000)	03-31-82(2300)	744	13.8	19.4	16.5	1.8	744	20.3	30.7	27.0	1.9
04-01-82(0000)	04-30-82(2300)	720	17.9	21.8	19.8	1.1	720	15.0	28.9	25.5	2.1

Table A-10. Basic statistics in intervals of one month for the time series data at Site W, top. See introduction to section A.2 for additional information.

SITE W TOP		ALONGSHORE (CM/S)					CROSS SHELF (CM/S)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)	---	---	---	---	---	---	---	---	---	---
02-27-81(0000)	02-28-81(2300)	48	-6.	5.	0.3	2.9	48	-7.	0.	-2.6	1.5
03-01-81(0000)	03-31-81(2300)	454	-37.	42.	-7.3	14.8	454	-11.	20.	2.1	5.0
04-01-81(0000)	04-30-81(2300)	---	---	---	---	---	---	---	---	---	---
05-01-81(0000)	05-31-81(2300)	---	---	---	---	---	---	---	---	---	---
06-01-81(0000)	06-30-81(2300)	675	-53.	28.	-6.3	15.4	675	-28.	28.	1.0	8.8
07-01-81(0000)	07-31-81(2300)	744	-23.	36.	2.9	10.7	744	-28.	37.	2.8	7.6
08-01-81(0000)	08-31-81(2300)	744	-46.	22.	-4.1	10.9	744	-24.	18.	0.5	5.6
09-01-81(0000)	09-30-81(2300)	720	-33.	25.	-2.8	8.1	720	-29.	17.	-0.5	6.6
10-01-81(0000)	10-31-81(2300)	508	-37.	17.	-3.9	9.2	508	-21.	18.	-0.9	6.3
11-01-81(0000)	11-30-81(2300)	289	-26.	7.4	-6.1	6.6	289	-10.	18.	1.0	4.1
12-01-81(0000)	12-31-81(2300)	744	-49.	30.	-9.1	13.1	744	-14.	27.	1.7	4.6
01-01-82(0000)	01-31-82(2300)	554	-40.	15.	-6.8	10.0	554	-11.	15.	1.2	4.3
02-01-82(0000)	02-28-82(2300)	269	-74.	35.	-2.8	17.5	269	-17.	20.	-0.2	8.5
03-01-82(0000)	03-31-82(2300)	744	-58.	28.	-13.0	17.1	744	-32.	25.	1.5	8.3
04-01-82(0000)	04-30-82(2300)	720	-68.	25.	-18.1	16.6	720	-22.	23.	4.3	7.0

SITE W TOP		TEMPERATURE (C)					SALINITY (PPT)				
START	STOP	N	MIN	MAX	MEAN	S.D.	N	MIN	MAX	MEAN	S.D.
01-01-81(0000)	01-31-81(2300)	---	---	---	---	---	---	---	---	---	---
02-27-81(0000)	02-28-81(2300)	48	12.7	14.4	13.5	0.6	48	31.1	31.3	31.2	0.1
03-01-81(0000)	03-31-81(2300)	744	14.1	18.5	15.6	1.0	744	28.2	31.8	30.3	0.8
04-01-81(0000)	04-30-81(2300)	77	18.2	19.6	19.0	0.3	77	26.9	31.7	29.5	1.3
05-01-81(0000)	05-31-81(2300)	---	---	---	---	---	---	---	---	---	---
06-01-81(0000)	06-30-81(2300)	675	27.1	30.4	28.3	0.7	675	21.0	33.3	28.4	3.1
07-01-81(0000)	07-31-81(2300)	744	28.5	31.3	30.0	0.7	744	22.9	31.6	27.9	2.3
08-01-81(0000)	08-31-81(2300)	744	29.0	31.3	30.5	0.6	744	19.3	30.4	27.8	1.9
09-01-81(0000)	09-30-81(2300)	720	25.8	29.3	28.0	1.3	720	21.2	29.7	26.9	1.2
10-01-81(0000)	10-31-81(2300)	508	24.3	27.8	27.1	0.8	508	22.6	29.7	27.4	1.6
11-01-81(0000)	11-30-81(2300)	289	18.7	20.6	19.4	0.5	289	28.9	31.8	30.3	0.5
12-01-81(0000)	12-31-81(2300)	744	12.1	21.0	16.0	2.5	744	27.3	32.5	30.4	0.8
01-01-82(0000)	01-31-82(2300)	554	9.3	14.8	12.1	1.6	554	29.0	33.1	30.6	0.9
02-01-82(0000)	02-28-82(2300)	269	11.6	15.7	13.1	1.0	269	21.8	31.7	28.0	2.7
03-01-82(0000)	03-31-82(2300)	744	13.6	19.9	16.7	1.9	744	18.4	29.6	25.7	2.0
04-01-82(0000)	04-30-82(2300)	720	17.7	22.4	19.9	1.1	720	15.6	28.7	24.7	1.9

A.3 Wind and Current Roses and Associated Joint Frequency Tables

Figures A-37 through A-109 show the wind and current roses and their associated joint frequency tables.

The percentage of joint frequency in eight speed ranges and eight direction sectors was computed for each month. The percentages of joint frequency were computed using hourly values of time series which had been filtered with a 3-hour low-pass filter. Prior to filtering, short gaps (on the order of a few hours) in the series were filled by linear interpolation. Gaps of days to weeks in duration were excluded from the computations. The speed ranges were selected so as to provide an optimum resolution in the lower ranges. Calm conditions were defined as speeds less than the threshold of the instrument which is about 2 cm/s for currents (according to manufacturer's specifications) and 0.5 m/s for wind (Bill Beacht (NDBO), personal communication).

Each value in the joint frequency table represents the percentage of observations which fell in a given speed range and direction sector. The total for a given row gives the percentage of observations which fell in that direction sector regardless of speed (e.g., NE is from 22.5' to 67.5'). The average speed for each direction sector (on the far right side of each row) is the arithmetic average speed for all observations in that direction sector. The total for a given column gives the percentage of observations which fell in a given speed range regardless of direction.

For ease in visualizing the tables, a rose diagram has been plotted above each one. Each rose petal corresponds to a direction sector of the table. Each segment of a petal corresponds to a speed

range and the length of each segment is proportional to the percentage expressed in the table. At the tip of each petal the total percentage in that direction is printed. Thus each petal corresponds to a row in the table.

A cumulative speed graph has been plotted below each rose. It expresses the percentage of observations which fell in a given speed range regardless of direction, and it corresponds to the row of totals (second row from the bottom) in the table. The graph runs from 0 to 100 percent. The scale of the graph and the scale of the rose petals are the same. Thus if all the petals of a rose were laid end-to-end the total length would equal the length of the graph less the percent of calms.

The total number of observations on which the percentages are based is printed in the upper half of the center of each rose. (As noted above, hourly observations have been used.) The percent of calms is printed in the lower half of the center of each rose.

Figure A-37. February 1981. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-38. March 1981. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-39. April 1981. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-40. May 1981. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-41. June 1981. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-42. July 1981. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-43. August 1981. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-44. September 1981. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-45. October 1981. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-46. November 1981. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-47. December 1981. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-48. January 1982. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-49. February 1982. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-50. March 1982. Wind (near site D) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-51. April 1982. Wind rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-52. January 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-53. February 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-54. March 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-55. April 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-56. May 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-57. June 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-58. July 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-59. August 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-60. September 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-61. October 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-62. November 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-63. December 1981. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-64. January 1982. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-65. February 1982. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-66. March 1982. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-67. April 1982. Current (site D) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-68. April 1981. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-69. May 1981. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-70. June 1981. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-71. July 1981. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-72. August 1981. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-73. September 1981. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-74. October 1981. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-75. November 1981. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-76. December 1981. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-77. January 1982. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-78. February 1982. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-79. March 1982. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-80. April 1982. Current (site N) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-81. February 1981. Current (site S) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-82. March 1981. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-83. April 1981. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-84. May 1981. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-85. June 1981. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-86. July 1981. Current (site S) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-87. August 1981. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-88. September 1981. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-89. October 1981. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-90. November 1981. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-91. December 1981. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-92. January 1982. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-93. February 1982. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-94. March 1982. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-95. April 1982. Current (site S) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-96. February 1981. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-97. March 1981. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-98. April 1981. Current (site W) rose and associated joint frequency table of speed and direction. See introduction to section A.3 for additional information.

Figure A-99. June 1981. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-100. July 1981. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-101 August 1981. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-102. September 1981. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-103. October 1981. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-104. November 1981. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-105. December 1981. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-106. January 1982. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-107. February 1982. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-108. March 1982. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

Figure A-109. April 1982. Current (site W) roses and associated joint frequency tables of speed and direction. See introduction to section A.3 for additional information.

A.4 Monthly Plots of Wind Velocity, Barometric Pressure and Air Temperature Time Series

Figures A-110 through A-124 show monthly plots of time series of wind velocity, barometric pressure and air temperature which were collected by the NOAA Data Buoy Office (NOAA/NDBO). From February 1981 through March 1982, instrument package 42010 was operational and was located atop (35 feet above the water) an oil company platform (29°39.5' N, 93°23.3' W) about 5 nm east of the diffuser site. Instrument package 42011 was installed in December 1981 atop (32 feet above the water) a specially constructed fixed platform at the diffuser site (29°40.27' N, 93°28.15' W). The data from the period of overlap between the two sensor packages are virtually identical, and so data from 42010 are used through the end of 1981, and beginning January 1, 1981 they are joined to data from 42011 to form continuous series. The data are transmitted hourly via satellite to a ground station. Magnetic tapes of processed, qualified data are sent monthly to Texas A&M University.

The wind velocity data have been converted to Central Standard Time (CST) and oceanographic direction convention (the direction towards which the wind blows), and then decomposed into orthogonal components parallel to the local orientation of the coast (086°T) and perpendicular to it (356°T). Short data gaps (on the order of a few hours) have been filled by linear interpolation. The monthly series were joined to form long series and then filtered with 3-hour and 40-hour symmetric Lanczos filters as described in section 2.4 and Kelly and Randall (1981a).

The top frame in each month's plot shows stick vectors which were

reconstructed at six hour intervals (0000, 0600, 1200, 1800 CST) from the 40-hour low-pass filtered orthogonal components. For each stick vector, the x-axis is oriented north-south and the y-axis is oriented east-west.

In the alongshelf (LS) and cross-shelf (CS) frames, the y-axes are oriented upcoast (086°T) - downcoast (266°T) and onshore (356°T) - offshore (176°T), respectively. Both the 3-hour low-pass filtered and the 40-hour low-pass filtered series are shown in each frame.

The bottom frame shows the 3-hour low-pass filtered series for barometric pressure and air temperature.

The graphics of this section were accomplished by means of the FESTSA (Brooks, 1976) and PLOTS (Reid, 1980) software packages for time series analysis.

NDBO MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-110. February 1981. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

NDBO MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-111. March 1981. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

NDBO MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-112. April 1981. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

NDBO MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-113. May 1981. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

NDBO MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-114. June 1981. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

NDBO MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-115. July 1981. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

NDBO MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-116. August 1981. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

NDBO MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-117. September 1981. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

NDBO MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-118. October 1981. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

NDBO MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-119. November 1981. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

NDBO MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-120. December 1981. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

2011 MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-121. January 1982. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

2011 MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-122. February 1982. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

2011 MET DATA, W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-123. March 1982. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

2011 MET DATA,W. HACK CST & OCEAN DIRECTION CONVENTION

Figure A-124. April 1982. Stick vectors and orthogonal components of wind velocity, barometric pressure and air temperature time series data from the NOAA/NDBO meteorological instruments located atop a platform near site D. See introduction to section A.4 for additional information.

A.5 Monthly Plots of Current Velocity, Salinity, and Temperature Time Series

Tables A-11 through A-15 show the dates of each deployment period for each in situ instrumentation site. A code which indicates any problems which may have occurred is also given.

Figures A-125 through A-256 show monthly plots of time series of current velocity, salinity, and water temperature for the near surface and near bottom instruments at sites D, N (near bottom only), P, S, and W. The location of each of these sites is shown in Figure A-36. The water depth at sites D and W is approximately 9.4 m; at site S it is approximately 12.8 m; and at sites N and P it is approximately 6.4 m. The near surface meter at each site is moored approximately 3.7 m below the surface, and the near bottom meter is approximately 1.8 m above the bottom. The instruments are Environmental Device Corporation Type 174 current meters with conductivity and temperature sensors. Salinity is computed from conductivity and temperature using the formula of Daniel and Collias (1971). Short data gaps were filled by linear interpolation. For further details on the instruments, calibration, deployment/recovery and data processing procedures, see section 2.4 and the West Hackberry Field and Laboratory Procedures Manual (Kelly et al., 1981).

The resulting time series were filtered with 3-hour and 40-hour low-pass filters. Stick vectors were reconstructed from the 40-hour low-pass filtered orthogonal components at 6-hour intervals (0000, 0600, 1200, 1800 (CST)). For each stick vector, the x-axis is oriented north-south and the y-axis is oriented east-west except for site P which has the opposite convention.

The orientation relative to true north of the y-axes in the alongshelf and cross-shelf component plots is shown in each frame, e.g. 086° (upcoast) - 266° (downcoast), 356° (onshore) - 176° (offshore). Both the 3-hour low-pass filtered and the 40-hour low-pass filtered series are shown for each component.

The bottom frame shows the 3-hour low-pass filtered series for temperature and salinity.

The graphics in Figures A-36 through A-89 were accomplished by means of the FESTSA (Brooks, 1976) and PLOTSA (Reid, 1980) software packages for time series analysis.

Table A-11. Deployment periods and data status for Site D.

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*****
* DATA STATUS - ENDECO - WEST HACKBERRY D          ** UPDATED: 09-16-82 *
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FILE NAME	SER NUM	DEPLOYMENT PERIOD	COLL	PROC	FILE NAME	SER NUM	DEPLOYMENT PERIOD	COLL	PROC
DT601211	0214	012181-021781	X	X	DB601211	0217	012181-021781	X	X
DT602171	0209	021781-030681	X	X	DB602171	0200	021781-030681	X	V1
DT603061	0213	030681-040481	X	V1	DB603061	0131	030681-031481	X	M1
DT604041	0130	040481-042881	X	X	DB603141	0200	031481-040481	X	X
DT604281	0128	042881-051281	X	X	DB604041	0123	040481-042881	X	V2
DT605121	0222	051281-062481	X	X	DB604281	0124	042881-051281	X	X
DT606241	0144	062481-070981	X	X	DB605121	0148	051281-062481	X	X
DT607091	0243	070981-072381	X	X	DB606241	0145	062481-070981	X	X
DT607231	0210	072381-081381	X	V2	DB607091	0127	070981-072381	X	X
DT608131	0207	080781-090381	X	X	DB607231	0212	072381-081381	X	X
DT609031	0144	090381-092981	X	X	DB608131	0148	081381-090381	X	X
DT609291	0231	092981-102281	X	X	DB609031	0145	090381-092981	X	X
DT610221	0243	102281-111981	X	X	DB609291	0123	092981-102281	X	X
DT611191	0207	111981-121581	X	X	DB610221	0145	102281-111981	X	X
DT612151	0215	121581-012482	X	S1	DB611191	0200	111981-121581	X	X
DT601242	A025	012482-021782	X	X	DB612151	0125	121581-012482	X	V2
DT602172	0243	021782-031482	X	S1	DB601242	A028	012482-021782	X	X
DT603142	0213	031482-040182	X	X	DB602172	0238	021782-031482	X	X
DT604012	0208	040182-051682	X	V2	DB603142	A028	031482-040182	X	X
DT605162	0231	051682-060182	X	X	DB604012	0204	040182-051682	X	V2
DT606022	0144	060282-062582	X		DB605162	0130	051682-060182	X	X
DT606252	0212	062582-072082	X		DB606022	0200	060282-062582	X	
DT607202	0243	072082-081082	X		DB606252	0145	062582-072082	X	
					DB607202	0217	072082-081082	X	

EXPLANATION OF PROCESSING CODES:

```

M1    METER DAMAGED, NO DATA
M2    METER LOST
V1    TOTAL DATA LOSS, CURRENTS
V2    PARTIAL DATA LOSS, CURRENTS
V3    QUESTIONABLE DATA, CURRENTS
S1    TOTAL DATA LOSS, SALINITY
S2    PARTIAL DATA LOSS, SALINITY
S3    QUESTIONABLE DATA, SALINITY
T1    TOTAL DATA LOSS, TEMPERATURE
T2    PARTIAL DATA LOSS, TEMPERATURE
T3    QUESTIONABLE DATA, TEMPERATURE
H1    TRANSMIT HOLD
X     PROCESSED, NO PROBLEMS

```

Table A-11. Continued.

*****
* DATA STATUS - ENDECO - WEST HACKBERRY D NEARBOT * UPDATED: 09-16-82 *
*****

FILE	SER	DEPLOYMENT	COLL	PROC
NAME	NUM	PERIOD		
DX611191	0206	111481-LOST		M2
DX605162	0128	051682-060182	X	X
DX606252	0211	062582-072082	X	
DX607202	0015	072082-081082	X	

Table A-12. Deployment periods and data status for site N.

*****
 * DATA STATUS - ENDECO - WEST HACKBERRY N BOTTOM ** UPDATED: 09-16-82 *
 *****

FILE NAME	SER NUM	DEPLOYMENT PERIOD	COLL	PROC
NB601211	0218	012181-021781	X	M1
NB602171	0220	021781-LOST		M2
NB604051	0148	040581-042881	X	M1
NB604281	0221	042881-051281	X	X
NB605121	0204	051281-062481	X	X
NB606241	0221	062481-072381	X	X
NB607231	0124	072381-081381	X	X
NB608131	0217	081381-090481	X	X
NB609041	0212	090481-092981	X	V2
NB709291	0200	092981-102281	X	V1
NB610221	0212	102281-111881	X	X
NB611181	0221	111881-121581	X	X
NB612151	0238	121581-012482	X	
NB601242	0215	031482-040182	X	X
NB602172	0145	021782-031482	X	V1
NB603142	0221	012482-021782	X	X
NB604012	0145	040182-051682	X	X
NB605162	0131	051682-060182	X	
NB606012	A028	060182-062582	X	
NB606252	0221	062582-072082	X	
NB607202	0130	072082-081082	X	

Table A-13. Deployment periods and data status for site P.

*****

* DATA STATUS - ENDECO - WEST HACKBERRY P

** UPDATED: 09-16-82 *

*****

FILE NAME	SER NUM	DEPLOYMENT PERIOD	COLL	PROC	FILE NAME	SER NUM	DEPLOYMENT PERIOD	COLL	PROC
PT602071	0219	020781-031581	X	X	PB602071	0222	020781-022381	X	X
PT603151	0210	031581-040481	X	X	PB603151	0222	031581-040481	X	X
PT604041	0208	040481-042981	X	X	PB604041	0219	040481-042981	X	X
PT604291	0230	042981-052081	X	H1	PB604291	0233	042981-052081	X	X
PT605201	0216	052081-062381	X	X	PB605201	0219	052081-062381	X	V3
PT606231	0230	062381-071081	X	V1	PB606231	0233	062381-071081	X	X
PT607101	0216	071081-081381	X	H1	PB607101	0219	071081-081381	X	X
PT608131	0230	081381-090481	X	X	PB608131	0233	081381-090381	X	X
PT609041	0216	090481-092981	X	X	PB609031	0233	090381-092981	X	X
PT609291	0230	092981-102881	X	X	PB609291	0233	092981-102881	X	X
PT610281	0216	102881-LOST		M2	PB610281	0219	102881-111781	X	V3
PT611171	0230	111781-121581	X	X	PB611171	0233	111781-121581	X	X
PT612151	0209	121581-012481	X	V2	PB612151	0219	121581-012482	X	V1
PT601242	0230	012482-021782	X	X	PB601242	0233	012482-021782	X	X
PT602172	0209	021782-031482	X	V1	PB602172	0219	021782-031482	X	V1
PT603142	0230	031482-040182	X	X	PB603142	0233	031482-040182	X	X
PT604012	0209	040182-050582	X	V1	PB604012	0219	040182-050582	X	H1
PT605052	A025	050582-060382	X		PB605052	0233	050582-060382	X	
PT606032	0219	060382-062582	X		PB606032	0209	060382-062582	X	
PT606252	0230	062582-072082	X		PB606252	0233	062582-072082	X	
PT607202	0213	072082-081082	X						

Table A-14. Deployment periods and data status for site S.

*****
 * DATA STATUS - ENDECO - WEST HACKBERRY S ** UPDATED: 09-16-82 *
 *****

FILE NAME	SER NUM	DEPLOYMENT PERIOD	COLL	PROC	FILE NAME	SER NUM	DEPLOYMENT PERIOD	COLL	PROC
ST602171	0211	021782-030682	X	M1	SB702171	0221	021781-031681	X	X
ST603061	0214	030681-040481	X	X	SB603061	0212	030681-040481	X	X
ST604041	0211	040481-042881	X	X	SB604041	0125	040481-042881	X	X
ST604281	0147	042881-052081	X	X	SB604281	0145	042881-052081	X	X
ST605201	0214	052081-062381	X	X	SB605201	0200	052081-062381	X	X
ST606231	0147	062381-072381	X	X	SB606231	0213	062381-072381	X	V1
ST607231	0128	072381-081381	X	X	SB607231	0125	072381-081381	X	V2
		081381-090381			SB608131	0221	081381-090381	X	X
ST609031	0209	090381-092981	X	X	SB609031	0125	090381-092981	X	X
ST609291	0206	092981-102281	X	X	SB609291	0217	092981-102281	X	V2
ST610221	0204	102281-111881	X	X	SB610221	0213	102281-111881	X	V1
ST611181	0208	111881-121581	X	V1	SB611181	0217	111881-121581	X	X
ST612151	0204	121581-012482	X	X	SB612151	0212	121581-012482	X	X
ST601242	0214	012482-021782	X	X	SB601242	0213	012482-021782	X	X
ST602172	0208	021782-031482	X	X	SB602172	0204	021782-031482	X	X
ST603142	0207	031482-040182	X	X	SB603142	0217	031482-040182	X	X
ST604012	0212	040182-051682	X	X	SB604012	0125	040182-051682	X	X
ST605162	0207	051682-053182	X	X	SB605162	0215	051682-053182	X	
ST605312	0243	053182-062582	X		SB605312	0204	053182-062582	X	
ST606252	0208	062582-072082	X		SB606252	0215	062582-072082	X	
ST607202	0207	072082-081082	X		SB607202	0204	072082-081082	X	

Table A-15. Deployment periods and data status for site W.

*****
 * DATA STATUS - ENDECO - WEST HACKBERRY W ** UPDATED: 09-16-82 *
 *****

FILE NAME	SER NUM	DEPLOYMENT PERIOD	COLL	PROC	FILE NAME	SER NUM	DEPLOYMENT PERIOD	COLL	PROC
WT602261	0207	022681-040481	X	V2	WB602261	0204	022681-040481	X	V2
WT604041	0215	040481-LOST		M2	WB604041	0216	040481-060681	X	X
WT606021	0210	060281-070981	X	X	WB606021	0212	060281-070981	X	V2
WT607091	0214	070981-081381	X	X	WB607091	0123	070981-081381	X	X
WT608131	0208	081381-090381	X	X	WB608131	0200	081381-090381	X	X
WT609031	0243	090381-092981	X	X	WB609031	02044	090381-092981	X	V2
WT609291	0214	092981-102281	X	V3	WB609291	0124	092981-102281	X	X
WT610281	0210	102281-LOST		M2	WB610221	0127	102281-LOST		M2
WT611181	0214	111881-121581	X	X	WB611181	0123	111881-121581	X	X
WT612151	0243	121581-012482	X	X	WB612151	0145	121581-012482	X	X
WT601242	0231	012482-021782	X		WB601242	0217	012482-021782	X	X
WT602172	0212	021782-031482	X	X	WB602172	0125	021782-031482	X	X
WT603142	0214	031482-040182	X	X	WB603142	0221	031482-040182	X	X
WT604012	0238	040182-051682	X	X	WB604012	0200	040182-051682	X	X
WT605162	0230	051682-060182	X		WB605162	0221	051682-060182	X	X
WT606182	0214	060182-062582	X		WB606012	0217	060182-062582	X	
WT606252	A025	062582-072082	X		WB606252	0126	062582-072082	X	
WT607202	0231	072082-081082	X		WB607202	0123	072082-081082	X	

SITE D, TOP (CST)

Figure A-125. January 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, TOP (CST)

Figure A-126. February 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, TOP (CST)

Figure A-127 March 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-128. April 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-129. May 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-130. June 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-131. July 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, TOP (CST)

Figure A-132. August 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, TOP (CST)

Figure A-133. September 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, TOP (CST)

Figure A-134. October 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, TOP (CST)

Figure A-135. November 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-136. December 1981. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-137. January 1982. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, TOP (CST)

Figure A-138. February 1982. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, TOP (CST)

Figure A-139. March 1982. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, TOP (CST)

Figure A-140. April 1982. Site D (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-141. January 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-142 February 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-143. March 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-144. April 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, BOTTOM (CST)

Figure A-145. May 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, BOTTOM (CST)

Figure A-146. June 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, BOTTOM (CST)

Figure A-147. July 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, BOTTOM (CST)

Figure A-148. August 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-149. September 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, BOTTOM (CST)

Figure A-150. October 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, BOTTOM (CST)

Figure A-151. November 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-152. December 1981. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, BOTTOM (CST)

Figure A-153. January 1982. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, BOTTOM (CST)

Figure A-154. February 1982. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, BOTTOM (CST)

Figure A-155. March 1982. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE D, BOTTOM (CST)

Figure A-156 April 1982. Site D (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-157. April 1981. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-158. May 1981. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-159. June 1981. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-16Q. July 1981. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-161. August 1981. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-162. September 1981. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-163. October 1981. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-164. November 1981. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-165. December 1981. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-166. January 1982. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-167. February 1982. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N, BOTTOM (CST)

Figure A-168. March 1982. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE N. BOTTOM (CST)

Figure A-169. April 1982. Site N (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-170. February 1981. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-171. March 1981. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-172. April 1981. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-173. May 1981. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-174. June 1981. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-175. July 1981. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-176. August 1981. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-177. September 1981. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-178. October 1981. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-179. November 1981. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-180. December 1981. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-181. January 1982. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-182. February 1982. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-183. March 1982. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, TOP (CST)

Figure A-184. April 1982. Site P (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-185. February 1981. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-186. March 1981. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-187. April 1981. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P. BOTTOM (CST)

Figure A-188. May 1981. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-189. June 1981. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-190. July 1981. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-191. August 1981. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P. BOTTOM (CST)

Figure A-192. September 1981. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-193. October 1981. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-194. November 1981. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-195. December 1981. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-196. January 1982. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-197. February 1982. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-198. March 1982. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE P, BOTTOM (CST)

Figure A-199. April 1982. Site P (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-200. March 1981. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-201. April 1981. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

Figure A-202. May 1981. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, TOP (CST)

Figure A-203. June 1981. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, TOP (CST)

Figure A-204. July 1981. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, TOP (CST)

Figure A-205. August 1981. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, TOP (CST)

Figure A-206. September 1981. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, TOP (CST)

Figure A-207. October 1981. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, TOP (CST)

Figure A-208. November 1981. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, TOP (CST)

Figure A-209. December 1981. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, TOP (CST)

Figure A-210. January 1982. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, TOP (CST)

Figure A-211. February 1982. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, TOP (CST)

Figure A-212. March 1982. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, TOP (CST)

Figure A-213. April 1982. Site S (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S. BOTTOM (CST)

Figure A-214. February 1981. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-215. March 1981. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-216. April 1981. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-217. May 1981. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-218. June 1981. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-219. July 1981. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-220. August 1981. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-221. September 1981. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-222. October 1981. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-223. November 1981. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-224. December 1981. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S. BOTTOM (CST)

Figure A-225. January 1982. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-226. February 1982. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-227. March 1982. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE S, BOTTOM (CST)

Figure A-228. April 1982. Site S (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-229. February 1981. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-230. March 1981. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-231. April 1981. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-232. June 1981. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W. TOP (CST)

Figure A-233. July 1981. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-234. August 1981. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-235. September 1981. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-236. October 1981. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-237. November 1981. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-238. December 1981. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-239. January 1982. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-240. February 1982. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-241. March 1982. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, TOP (CST)

Figure A-242. April 1982. Site W (top) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W. BOTTOM (CST)

Figure A-243. February 1981. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

Figure A-244. March 1981. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

Figure A-245. April 1981. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

Figure A-246. June 1981. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

Figure A-247. July 1981. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

Figure A-248. August 1981. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

Figure A-249. September 1981. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

Figure A-250. October 1981. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

FigureA-251. November 1981. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

Figure A-252. December 1981. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

Figure A-253. January 1982. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

Figure A-254. February 1982. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

Figure A-255. March 1982. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

SITE W, BOTTOM (CST)

FigureA-255. April 1982. Site W (bottom) time series plots of current velocity, temperature and salinity. See introduction to section A.5 for additional information.

A.6 Harmonic Tidal Analysis

The raw data time series of current velocity for each deployment period were filtered with a two-hour low-pass filter and subsampled to half-hourly data as described in section 2.4. The filtered series were then joined end to end, and short gaps filled by linear interpolation. The resulting long time series of current velocity were divided into 29-day intervals with each interval beginning on the first day of each calendar month if possible.

Each 29-day record of half-hourly current velocity was then analyzed using a modified version of the tidal harmonic analysis program of Dennis and Long (1964). The program has been converted to IBM Fortran H and double precision in order to run on the Texas A&M University computer. The program is a computerized version of the method described by Schureman (1941). It determines the amplitude and local epoch of five major tidal constituents (K_1 , O_1 , M_2 , S_2 , N_2), five harmonics (M_4 , M_6 , M_8 , S_4 , S_6) and about 14 smaller constituents. In addition, the parameters of the tidal current ellipse are determined (Doodson and Warburg, 1941) including the amplitudes of the semi-major and semi-minor axes, the orientation of these axes in degrees in a clockwise direction from north, and the eccentricity of the ellipse (distance between the foci divided by the length of the major axis).

The results are shown in Tables A-16 through A-58, for sites D Bottom, D Top, P Bottom, and P Top. Site D has the fewest data gaps and is considered representative of the offshore sites. No analysis was done for months which have data gaps unless the gap is small and occurs at the beginning or end of the month.

Table A-16. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 04-16-81 (0100) THRU 05-15-81 (0030) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	2.23	294.4	3.34	204.1	3.34	179.6	2.23	269.6	0.744	CW
O(1)	2.26	71.6	0.78	261.9	2.38	108.8	0.13	198.8	0.998	CW
M(2)	1.51	222.2	2.38	3.7	2.69	330.6	0.83	240.6	0.951	CCW
N(2)	1.17	224.7	0.45	239.0	1.25	249.5	0.10	159.5	0.997	CCW
S(2)	0.91	251.9	0.89	12.2	1.10	313.6	0.63	223.6	0.819	CCW
M(4)	0.14	68.9	0.20	109.4	0.23	30.8	0.08	300.8	0.943	CCW
M(6)	0.11	183.6	0.17	160.9	0.20	32.8	0.04	122.8	0.983	CW
M(8)	0.10	182.9	0.10	27.7	0.14	313.3	0.03	43.3	0.976	CW
S(4)	0.10	332.4	0.22	45.7	0.22	9.2	0.10	279.2	0.903	CCW
S(6)	0.25	299.4	0.17	166.3	0.29	300.3	0.11	30.3	0.920	CW
J(1)	0.18	225.8	0.06	175.2	0.18	256.8	0.05	346.8	0.967	CW
M(1)	0.16	3.0	0.06	233.0	0.16	103.4	0.04	193.4	0.968	CW
(00)	0.10	157.2	0.03	146.3	0.10	71.2	0.01	161.2	0.998	CW
P(1)	0.74	294.4	1.10	204.1	1.10	179.6	0.74	269.6	0.744	CW
Q(1)	0.44	140.2	0.15	290.8	0.46	107.1	0.07	17.1	0.988	CCW
(20)	0.06	208.8	0.02	319.7	0.06	277.8	0.02	187.8	0.949	CCW
RHO(1)	0.09	130.6	0.03	286.8	0.09	107.8	0.01	17.8	0.992	CCW
K(2)	0.25	251.9	0.24	12.2	0.30	313.6	0.17	223.6	0.819	CCW
L(2)	0.04	219.8	0.07	128.5	0.07	358.7	0.04	88.7	0.774	CW
(2N)	0.16	227.2	0.06	114.2	0.16	279.7	0.05	9.7	0.939	CW
R(2)	0.01	251.9	0.01	12.2	0.01	313.6	0.01	223.6	0.819	CCW
T(2)	0.05	251.9	0.05	12.2	0.06	313.6	0.04	223.6	0.819	CCW
LAM(2)	0.01	236.0	0.02	7.7	0.02	332.7	0.01	242.7	0.921	CCW
NU(2)	0.23	224.4	0.09	255.7	0.24	251.2	0.04	161.2	0.984	CCW

Table A-17. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 05-01-81 (0000) THRU 05-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	1.06	336.4	2.90	221.6	2.93	170.2	0.95	260.2	0.946	CW
O(1)	1.36	30.8	1.68	147.5	1.86	327.5	1.10	237.5	0.809	CCW
M(2)	1.91	237.9	2.01	349.0	2.29	319.3	1.56	229.3	0.730	CCW
N(2)	0.49	223.1	0.39	308.6	0.50	261.2	0.38	171.2	0.634	CCW
S(2)	0.57	239.9	0.86	8.9	0.95	331.9	0.40	241.9	0.907	CCW
M(4)	0.11	234.0	0.07	200.5	0.13	238.7	0.04	328.7	0.962	CW
M(6)	0.15	217.8	0.18	168.1	0.21	218.1	0.10	308.1	0.891	CW
M(8)	0.10	187.6	0.12	53.8	0.15	320.6	0.06	50.6	0.907	CW
S(4)	0.11	122.3	0.18	325.5	0.20	149.8	0.04	239.8	0.984	CW
S(6)	0.11	236.8	0.07	96.1	0.12	301.2	0.04	31.2	0.946	CW
J(1)	0.11	309.2	0.13	258.7	0.16	215.8	0.07	305.8	0.890	CW
M(1)	0.10	3.6	0.12	184.6	0.15	140.9	0.00	230.9	1.000	LIN
(00)	0.06	282.1	0.07	295.7	0.09	218.9	0.01	128.9	0.993	CCW
P(1)	0.35	336.4	0.96	221.6	0.97	170.2	0.32	260.2	0.946	CW
Q(1)	0.26	58.0	0.33	110.5	0.38	35.5	0.18	305.5	0.879	CCW
(2Q)	0.04	85.2	0.04	73.4	0.06	38.9	0.01	128.9	0.995	CW
RHO(1)	0.05	54.2	0.06	115.7	0.07	33.1	0.04	303.1	0.822	CCW
K(2)	0.16	239.9	0.23	8.9	0.26	331.9	0.11	241.9	0.907	CCW
L(2)	0.05	252.7	0.06	29.3	0.07	317.1	0.03	227.1	0.918	CCW
(2N)	0.07	208.2	0.05	268.2	0.07	238.1	0.04	148.1	0.839	CCW
R(2)	0.00	239.9	0.01	8.9	0.01	331.9	0.00	241.9	0.907	CCW
T(2)	0.03	239.9	0.05	8.9	0.06	331.9	0.02	241.9	0.907	CCW
LAM(2)	0.01	238.8	0.01	358.2	0.02	318.1	0.01	228.1	0.813	CCW
NU(2)	0.10	225.0	0.07	314.0	0.10	267.8	0.07	177.8	0.623	CCW

Table A-18. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 06-01-81 (0000) THRU 06-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	3.86	45.0	1.77	281.0	4.00	106.5	1.42	196.5	0.935	CW
Q(1)	1.26	280.3	1.98	232.7	2.19	207.5	0.84	297.5	0.924	CW
M(2)	2.43	206.0	2.14	8.4	3.20	311.2	0.49	221.2	0.988	CCW
N(2)	0.21	79.4	0.36	313.8	0.39	157.6	0.16	247.6	0.912	CW
S(2)	0.08	273.0	2.68	308.5	2.69	181.4	0.05	91.4	1.000	LIN
M(4)	0.16	53.2	0.38	287.1	0.39	164.7	0.12	254.7	0.949	CW
M(6)	0.15	78.5	0.16	315.5	0.19	138.7	0.10	228.7	0.841	CW
M(8)	0.06	150.2	0.09	125.8	0.11	30.8	0.02	120.8	0.981	CW
S(4)	0.12	349.0	0.04	301.2	0.12	254.7	0.03	344.7	0.965	CW
S(6)	0.16	59.3	0.16	50.0	0.22	45.4	0.02	135.4	0.997	CW
J(1)	0.10	107.3	0.16	305.2	0.18	148.2	0.03	238.2	0.990	CW
M(1)	0.09	342.6	0.14	256.8	0.14	184.4	0.09	274.4	0.776	CW
(00)	0.05	169.7	0.09	329.3	0.10	148.3	0.02	58.3	0.987	CCW
P(1)	1.28	45.0	0.59	281.0	1.32	106.5	0.47	196.5	0.935	CW
Q(1)	0.24	218.0	0.38	208.5	0.45	212.2	0.03	302.2	0.997	CW
(2Q)	0.03	155.6	0.05	184.4	0.06	30.9	0.01	300.9	0.973	CCW
RHO(1)	0.05	226.7	0.08	211.9	0.09	212.0	0.01	302.0	0.993	CW
K(2)	0.02	273.0	0.73	308.5	0.73	181.4	0.01	91.4	1.000	LIN
L(2)	0.07	332.7	0.06	62.9	0.07	271.0	0.06	181.0	0.476	CCW
(2N)	0.03	312.7	0.05	259.2	0.05	202.7	0.02	292.7	0.915	CW
R(2)	0.00	273.0	0.02	308.5	0.02	181.4	0.00	91.4	1.000	LIN
T(2)	0.00	273.0	0.16	308.5	0.16	181.4	0.00	91.4	1.000	LIN
LAM(2)	0.02	237.1	0.01	340.6	0.02	300.6	0.01	210.6	0.647	CCW
NU(2)	0.04	96.3	0.07	321.1	0.08	154.8	0.03	244.8	0.941	CW

Table A-19. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 07-01-81 (0000) THRU 07-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT SENSE
	H(A) CM/SEC	KAPPA DEG	H(A) CM/SEC	KAPPA DEG	VEL CM/SEC	DIR DEG	VEL CM/SEC	DIR DEG	ECCEN- TRICITY	
K(1)	2.40	41.3	0.91	278.4	2.46	102.8	0.74	192.8	0.953	CW
O(1)	0.36	8.9	0.94	351.6	1.00	200.1	0.10	290.1	0.995	CW
M(2)	2.69	209.5	2.50	346.7	3.42	312.1	1.34	222.1	0.921	CCW
N(2)	0.58	345.3	1.28	299.6	1.35	199.3	0.39	289.3	0.957	CW
S(2)	1.10	257.0	1.37	305.6	1.61	215.5	0.70	125.5	0.901	CCW
M(4)	0.76	278.7	0.48	191.1	0.76	267.5	0.48	357.5	0.781	CW
M(6)	0.08	223.3	0.07	87.6	0.10	308.8	0.04	38.8	0.917	CW
M(8)	0.18	23.0	0.03	192.5	0.19	100.3	0.01	10.3	0.999	CCW
S(4)	0.30	73.8	0.32	309.0	0.39	137.5	0.20	227.5	0.853	CW
S(6)	0.16	139.6	0.27	49.2	0.27	359.7	0.16	89.7	0.799	CW
J(1)	0.03	57.5	0.07	241.9	0.08	159.2	0.00	249.2	1.000	LIN
M(1)	0.03	25.1	0.07	315.0	0.07	188.4	0.02	278.4	0.937	CW
(00)	0.02	73.7	0.04	205.3	0.04	164.7	0.01	74.7	0.964	CCW
P(1)	0.80	41.3	0.30	278.4	0.81	102.8	0.25	192.8	0.953	CW
Q(1)	0.07	352.7	0.18	28.1	0.19	17.9	0.04	287.9	0.980	CCW
(20)	0.01	336.5	0.02	64.7	0.02	0.8	0.01	270.8	0.925	CCW
RHO(1)	0.01	355.0	0.04	23.0	0.04	19.0	0.01	289.0	0.987	CCW
K(2)	0.30	257.0	0.37	305.6	0.44	215.5	0.19	125.5	0.901	CCW
L(2)	0.08	73.7	0.07	33.8	0.10	47.8	0.03	137.8	0.932	CW
(2N)	0.08	121.1	0.17	252.5	0.18	161.5	0.06	71.5	0.951	CCW
R(2)	0.01	257.0	0.01	305.6	0.01	215.5	0.01	125.5	0.901	CCW
T(2)	0.06	257.0	0.08	305.6	0.10	215.5	0.04	125.5	0.901	CCW
LAM(2)	0.02	231.5	0.02	327.6	0.02	297.6	0.02	207.6	0.478	CCW
NU(2)	0.11	327.1	0.25	305.9	0.27	203.4	0.04	293.4	0.990	CW

Table A-20. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 08-01-81 (0000) THRU 08-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT SENSE
	H(A) CM/SEC	KAPPA DEG	H(A) CM/SEC	KAPPA DEG	VEL CM/SEC	DIR DEG	VEL CM/SEC	DIR DEG	ECCEN- TRICITY	
K(1)	3.53	4.5	3.45	254.1	4.06	133.1	2.82	223.1	0.720	CW
O(1)	2.21	37.9	0.68	216.7	2.31	107.1	0.01	17.1	1.000	LIN
M(2)	2.37	225.4	2.96	359.7	3.51	324.0	1.43	234.0	0.913	CCW
N(2)	0.59	205.0	0.66	340.2	0.82	139.6	0.33	49.6	0.913	CCW
S(2)	0.89	293.1	1.41	294.8	1.66	212.1	0.02	122.1	1.000	LIN
M(4)	0.29	337.0	0.14	125.4	0.31	294.3	0.07	204.3	0.976	CCW
M(6)	0.08	3.6	0.24	294.1	0.24	187.5	0.08	277.5	0.949	CW
M(8)	0.07	112.5	0.18	65.5	0.19	16.7	0.05	106.7	0.962	CW
S(4)	0.16	57.7	0.31	12.7	0.33	22.4	0.11	112.4	0.948	CW
S(6)	0.14	211.3	0.05	67.9	0.15	285.6	0.03	15.6	0.983	CW
J(1)	0.17	347.8	0.05	272.8	0.18	265.0	0.05	355.0	0.956	CW
M(1)	0.16	21.2	0.05	235.4	0.16	104.6	0.03	194.6	0.987	CW
(00)	0.10	331.1	0.03	291.5	0.10	256.2	0.02	346.2	0.983	CW
P(1)	1.17	4.5	1.14	254.1	1.34	133.1	0.93	223.1	0.720	CW
Q(1)	0.43	54.6	0.13	198.1	0.44	104.3	0.08	14.3	0.985	CCW
(20)	0.06	71.3	0.02	179.4	0.06	95.9	0.02	5.9	0.957	CCW
RHD(1)	0.08	52.3	0.03	200.7	0.09	105.0	0.01	15.0	0.989	CCW
K(2)	0.24	293.1	0.38	294.8	0.45	212.1	0.01	122.1	1.000	LIN
L(2)	0.07	245.9	0.08	19.1	0.10	324.2	0.04	234.2	0.908	CCW
(2N)	0.08	184.5	0.09	320.8	0.11	139.5	0.04	49.5	0.918	CCW
R(2)	0.01	293.1	0.01	294.8	0.01	212.1	0.00	122.1	1.000	LIN
T(2)	0.05	293.1	0.08	294.8	0.10	212.1	0.00	122.1	1.000	LIN
LAM(2)	0.02	256.8	0.02	329.6	0.02	206.3	0.01	116.3	0.731	CCW
NU(2)	0.11	207.7	0.13	342.8	0.16	319.6	0.06	229.6	0.913	CCW

Table A-21. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 09-01-81 (0000) THRU 09-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	1.46	78.0	1.13	352.9	1.46	80.7	1.12	170.7	0.643	CW
O(1)	3.23	323.1	2.29	228.0	3.25	277.2	2.27	7.2	0.715	CW
M(2)	2.42	252.6	0.76	336.1	2.42	267.8	0.76	177.8	0.950	CCW
N(2)	0.55	80.7	0.34	344.8	0.55	95.9	0.34	185.9	0.788	CW
S(2)	0.48	238.6	0.82	303.6	0.85	198.2	0.41	108.2	0.874	CCW
M(4)	0.20	280.2	0.48	180.7	0.48	355.1	0.20	85.3	0.912	CW
M(6)	0.14	303.1	0.22	224.4	0.22	191.2	0.13	281.2	0.798	CW
M(8)	0.08	268.6	0.15	280.3	0.17	208.6	0.01	118.6	0.996	CCW
S(4)	0.28	24.4	0.47	295.8	0.47	181.3	0.28	271.3	0.800	CW
S(6)	0.14	38.4	0.16	231.1	0.21	138.9	0.02	228.9	0.994	CW
J(1)	0.26	135.4	0.18	55.4	0.26	77.0	0.18	167.0	0.735	CW
M(1)	0.23	20.6	0.16	290.4	0.23	90.2	0.16	180.2	0.707	CW
(00)	0.14	192.9	0.10	117.8	0.14	251.9	0.09	341.9	0.764	CW
P(1)	0.48	78.0	0.37	352.9	0.48	80.7	0.37	170.7	0.643	CW
Q(1)	0.63	265.7	0.44	165.5	0.64	283.3	0.43	13.3	0.737	CW
(20)	0.08	208.2	0.06	103.0	0.09	288.3	0.06	18.3	0.766	CW
RHO(1)	0.12	273.7	0.09	174.2	0.12	282.5	0.08	12.5	0.733	CW
K(2)	0.13	238.6	0.22	303.6	0.23	198.2	0.11	108.2	0.874	CCW
L(2)	0.07	64.5	0.02	327.5	0.07	92.4	0.02	182.4	0.950	CW
(2N)	0.07	268.7	0.05	353.4	0.07	264.6	0.05	174.6	0.787	CCW
R(2)	0.00	238.6	0.01	303.6	0.01	198.2	0.00	108.2	0.874	CCW
T(2)	0.03	238.6	0.05	303.6	0.05	198.2	0.02	108.2	0.874	CCW
LAM(2)	0.02	246.1	0.01	321.0	0.02	264.9	0.01	174.9	0.953	CCW
NU(2)	0.11	103.7	0.07	343.6	0.11	112.8	0.05	202.8	0.879	CW

Table A-22. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 10-01-81 (0000) THRU 10-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	1.10	135.5	3.53	17.4	3.57	351.1	0.96	81.1	0.964	CW
O(1)	2.69	20.9	1.12	279.9	2.70	95.4	1.10	185.4	0.914	CW
M(2)	2.26	220.6	2.04	356.6	2.82	310.8	1.13	220.8	0.916	CCW
N(2)	0.24	32.7	1.05	338.3	1.06	187.9	0.19	277.9	0.983	CW
S(2)	0.69	232.4	1.27	357.1	1.34	339.3	0.54	249.3	0.916	CCW
M(4)	0.28	342.8	0.06	189.3	0.29	280.2	0.04	10.2	0.992	CW
M(6)	0.17	339.8	0.10	95.2	0.18	289.8	0.09	199.8	0.866	CCW
M(8)	0.06	229.8	0.12	56.5	0.14	332.0	0.01	62.0	0.999	CW
S(4)	0.22	74.4	0.18	43.1	0.27	52.7	0.07	142.7	0.963	CW
S(6)	0.06	227.0	0.13	205.9	0.14	204.5	0.02	294.5	0.990	CW
J(1)	0.21	192.8	0.09	66.2	0.22	285.5	0.07	15.5	0.950	CW
M(1)	0.19	78.2	0.08	328.7	0.19	99.3	0.07	189.3	0.923	CW
(00)	0.12	250.1	0.05	115.0	0.12	287.8	0.03	17.8	0.963	CW
P(1)	0.36	135.5	1.17	17.4	1.18	351.1	0.32	81.1	0.964	CW
Q(1)	0.52	323.6	0.22	231.1	0.52	271.2	0.22	1.2	0.909	CW
(20)	0.07	266.3	0.03	182.4	0.07	266.9	0.03	356.9	0.910	CW
RHO(1)	0.10	331.6	0.04	238.0	0.10	271.8	0.04	1.8	0.909	CW
K(2)	0.19	232.4	0.35	357.1	0.36	339.3	0.15	249.3	0.916	CCW
L(2)	0.06	48.5	0.06	14.8	0.08	48.6	0.02	138.6	0.954	CW
(2N)	0.03	204.8	0.14	320.1	0.14	174.1	0.03	84.1	0.978	CCW
R(2)	0.01	232.4	0.01	357.1	0.01	339.3	0.00	249.3	0.916	CCW
T(2)	0.04	232.4	0.07	357.1	0.08	339.3	0.03	249.3	0.916	CCW
LAM(2)	0.02	226.0	0.01	356.8	0.02	310.4	0.01	220.4	0.891	CCW
NU(2)	0.05	9.6	0.20	340.8	0.21	191.6	0.02	281.6	0.994	CW

Table A-23. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 11-01-81 (0000) THRU 11-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	2.09	68.9	1.09	140.4	2.12	77.8	1.01	347.8	0.879	CCW
O(1)	0.98	119.0	1.67	157.2	1.86	27.2	0.54	297.2	0.956	CCW
M(2)	2.38	219.7	2.77	353.8	3.37	321.1	1.40	231.1	0.909	CCW
N(2)	0.57	231.1	0.34	308.0	0.57	258.3	0.33	168.3	0.819	CCW
S(2)	0.78	199.0	1.33	349.3	1.50	151.4	0.34	61.4	0.974	CCW
M(4)	0.39	292.5	0.25	178.0	0.41	292.1	0.22	22.1	0.841	CW
M(6)	0.04	317.3	0.08	165.4	0.09	336.0	0.02	66.0	0.981	CW
M(8)	0.06	225.9	0.10	108.2	0.10	339.8	0.05	69.8	0.879	CW
S(4)	0.30	92.0	0.08	307.6	0.31	101.8	0.04	191.8	0.990	CW
S(6)	0.14	163.5	0.15	25.1	0.19	316.0	0.07	46.0	0.925	CW
J(1)	0.08	43.8	0.13	132.1	0.13	1.5	0.08	271.5	0.812	CCW
M(1)	0.07	94.0	0.12	148.8	0.13	22.8	0.05	292.8	0.908	CCW
(00)	0.04	18.7	0.07	123.7	0.07	347.7	0.04	257.7	0.837	CCW
P(1)	0.69	68.9	0.36	140.4	0.70	77.8	0.34	347.8	0.879	CCW
Q(1)	0.19	144.1	0.32	165.5	0.37	29.4	0.06	299.4	0.987	CCW
(20)	0.03	169.2	0.04	173.9	0.05	30.3	0.00	300.3	0.999	CCW
RHO(1)	0.04	140.6	0.06	164.4	0.07	29.2	0.01	299.2	0.983	CCW
K(2)	0.21	199.0	0.36	349.3	0.41	151.4	0.09	61.4	0.974	CCW
L(2)	0.07	208.2	0.08	39.7	0.10	319.4	0.01	49.4	0.995	CW
(2N)	0.08	242.6	0.05	262.2	0.09	239.5	0.01	149.5	0.988	CCW
R(2)	0.01	199.0	0.01	349.3	0.01	151.4	0.00	61.4	0.974	CCW
T(2)	0.05	199.0	0.08	349.3	0.09	151.4	0.02	61.4	0.974	CCW
LAM(2)	0.02	210.1	0.02	351.7	0.02	320.5	0.01	230.5	0.939	CCW
NU(2)	0.11	229.6	0.07	314.2	0.11	264.9	0.07	174.9	0.799	CCW

Table A-24. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 12-01-81 (0000) THRU 12-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	1.49	70.2	0.80	144.4	1.51	78.8	0.76	348.8	0.865	CCW
O(1)	0.76	349.7	1.09	157.0	1.32	325.2	0.14	235.2	0.994	CCW
M(2)	1.97	211.1	1.99	324.1	2.34	135.4	1.54	45.4	0.750	CCW
N(2)	0.77	184.3	0.70	332.9	1.00	131.7	0.28	41.7	0.960	CCW
S(2)	0.90	198.8	0.96	344.6	1.25	317.2	0.39	227.2	0.952	CCW
M(4)	0.47	318.9	0.20	171.7	0.50	291.0	0.10	21.0	0.979	CW
M(6)	0.14	355.9	0.11	233.9	0.16	122.5	0.08	212.5	0.851	CW
M(8)	0.08	312.9	0.04	187.6	0.09	287.3	0.03	17.3	0.936	CW
S(4)	0.24	81.2	0.32	311.1	0.37	146.8	0.16	236.8	0.898	CW
S(6)	0.21	43.5	0.24	330.8	0.26	214.1	0.19	304.1	0.694	CW
J(1)	0.06	110.5	0.09	138.2	0.10	33.9	0.02	303.9	0.973	CCW
M(1)	0.05	30.0	0.08	150.7	0.08	332.7	0.04	242.7	0.861	CCW
(00)	0.03	150.8	0.05	131.9	0.06	34.5	0.01	124.5	0.988	CW
P(1)	0.49	70.2	0.26	144.4	0.50	78.8	0.25	348.8	0.865	CCW
Q(1)	0.15	309.4	0.21	163.2	0.25	326.8	0.07	56.8	0.959	CW
(20)	0.02	269.2	0.03	169.5	0.03	347.6	0.02	77.6	0.739	CW
RHO(1)	0.03	315.1	0.04	162.3	0.05	326.1	0.01	56.1	0.974	CW
K(2)	0.24	198.8	0.26	344.6	0.34	317.2	0.10	227.2	0.952	CCW
L(2)	0.06	237.9	0.06	315.4	0.06	224.2	0.05	134.2	0.597	CCW
(2N)	0.10	157.4	0.09	341.6	0.14	132.2	0.00	222.2	0.999	CW
R(2)	0.01	198.8	0.01	344.6	0.01	317.2	0.00	227.2	0.952	CCW
T(2)	0.05	198.8	0.06	344.6	0.07	317.2	0.02	227.2	0.952	CCW
LAM(2)	0.01	205.4	0.01	333.6	0.02	135.3	0.01	45.3	0.874	CCW
NU(2)	0.15	187.9	0.13	331.7	0.19	131.5	0.06	41.5	0.946	CCW

Table A-25. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 01-01-82 (0000) THRU 01-29-82 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	1.50	91.5	0.25	276.1	1.52	99.5	0.02	189.5	1.000	LIN
O(1)	3.08	10.2	2.17	240.2	3.47	120.3	1.48	210.3	0.905	CW
M(2)	1.98	223.2	2.36	339.7	2.64	325.9	1.58	235.9	0.801	CCW
N(2)	0.64	231.4	1.01	288.7	1.08	204.5	0.50	114.5	0.887	CCW
S(2)	1.11	208.6	0.25	285.0	1.12	266.8	0.24	176.8	0.976	CCW
M(4)	0.16	326.2	0.10	164.0	0.19	301.4	0.03	31.4	0.990	CW
M(6)	0.19	76.8	0.03	62.8	0.19	80.0	0.01	170.0	0.999	CW
M(8)	0.12	225.3	0.10	102.5	0.13	304.8	0.07	34.8	0.850	CW
S(4)	0.24	85.8	0.39	4.2	0.39	7.9	0.23	97.9	0.806	CW
S(6)	0.30	9.6	0.13	285.8	0.30	86.8	0.13	176.8	0.908	CW
J(1)	0.24	132.1	0.17	294.0	0.29	124.6	0.04	34.6	0.989	CCW
M(1)	0.22	50.8	0.15	258.2	0.26	123.9	0.06	213.9	0.974	CW
(00)	0.13	172.7	0.09	312.0	0.15	122.3	0.05	32.3	0.939	CCW
P(1)	0.50	91.5	0.08	276.1	0.50	99.5	0.01	189.5	1.000	LIN
Q(1)	0.60	329.6	0.42	222.3	0.62	289.7	0.39	19.7	0.782	CW
(20)	0.08	288.9	0.06	204.3	0.08	262.7	0.06	352.7	0.721	CW
RHO(1)	0.12	335.3	0.08	224.8	0.12	292.0	0.07	22.0	0.801	CW
K(2)	0.30	208.6	0.07	285.0	0.30	266.8	0.07	176.8	0.976	CCW
L(2)	0.06	215.0	0.07	30.8	0.09	320.1	0.00	230.1	0.999	CCW
(2N)	0.09	239.6	0.13	237.6	0.16	212.4	0.00	302.4	1.000	LIN
R(2)	0.01	208.6	0.00	285.0	0.01	266.8	0.00	176.8	0.976	CCW
T(2)	0.07	208.6	0.01	285.0	0.07	266.8	0.01	176.8	0.976	CCW
LAM(2)	0.01	216.5	0.02	314.3	0.02	161.2	0.01	71.2	0.603	CCW
NU(2)	0.12	230.3	0.20	295.5	0.21	200.9	0.11	110.9	0.852	CCW

Table A-26. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 02-01-82 (0000) THRU 03-01-82 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	1.68	342.3	0.74	139.2	1.82	292.6	0.27	202.6	0.989	CCW
O(1)	1.21	58.6	0.30	132.6	1.21	85.9	0.28	355.9	0.972	CCW
M(2)	2.09	205.1	2.79	324.0	3.06	150.6	1.66	60.6	0.839	CCW
N(2)	0.88	182.3	0.55	339.3	1.02	121.2	0.19	31.2	0.983	CCW
S(2)	0.24	233.5	1.10	331.3	1.10	178.2	0.24	88.2	0.976	CCW
M(4)	0.19	280.0	0.20	129.6	0.27	317.3	0.07	47.3	0.964	CW
M(6)	0.20	58.3	0.17	289.0	0.24	128.8	0.11	218.8	0.884	CW
M(8)	0.17	274.2	0.11	120.2	0.20	301.9	0.04	31.9	0.978	CW
S(4)	0.23	280.3	0.23	245.6	0.31	225.0	0.10	315.0	0.950	CW
S(6)	0.46	300.9	0.11	128.5	0.47	283.1	0.01	13.1	1.000	LIN
J(1)	0.10	304.1	0.02	142.4	0.10	283.2	0.01	13.2	0.997	CW
M(1)	0.09	20.4	0.02	135.9	0.09	96.3	0.02	6.3	0.976	CCW
(00)	0.05	265.9	0.01	145.7	0.05	277.4	0.01	7.4	0.978	CW
P(1)	0.56	342.3	0.24	139.2	0.60	292.6	0.09	202.6	0.989	CCW
Q(1)	0.23	96.8	0.06	129.4	0.24	78.1	0.03	348.1	0.992	CCW
(2Q)	0.03	135.0	0.01	126.1	0.03	76.3	0.00	166.3	0.999	CW
RHO(1)	0.05	91.4	0.01	129.8	0.05	78.9	0.01	348.9	0.989	CCW
K(2)	0.07	233.5	0.30	331.3	0.30	178.2	0.07	88.2	0.976	CCW
L(2)	0.06	227.8	0.08	308.7	0.08	194.2	0.06	104.2	0.696	CCW
(2N)	0.12	159.5	0.07	354.6	0.14	121.7	0.02	211.7	0.993	CW
R(2)	0.00	233.5	0.01	331.3	0.01	178.2	0.00	88.2	0.976	CCW
T(2)	0.01	233.5	0.07	331.3	0.07	178.2	0.01	88.2	0.976	CCW
LAM(2)	0.01	218.2	0.02	327.4	0.02	155.8	0.01	65.8	0.771	CCW
NU(2)	0.17	185.3	0.11	337.3	0.20	120.7	0.04	30.7	0.975	CCW

Table A-27. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 03-01-82 (0000) THRU 03-29-82 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	2.09	336.3	4.35	178.9	4.77	335.5	0.73	65.5	0.988	CW
O(1)	1.50	339.6	0.83	212.3	1.60	292.1	0.62	22.1	0.921	CW
M(2)	1.95	226.0	1.77	340.5	2.22	308.5	1.41	218.5	0.771	CCW
N(2)	0.78	98.9	1.07	359.7	1.08	166.7	0.76	256.7	0.714	CW
S(2)	1.06	207.4	0.42	288.5	1.07	265.9	0.42	175.9	0.921	CCW
M(4)	0.15	259.8	0.19	207.3	0.22	214.1	0.11	304.1	0.882	CW
M(6)	0.22	35.3	0.13	233.7	0.25	120.4	0.04	210.4	0.990	CW
M(8)	0.06	113.1	0.05	15.3	0.06	105.2	0.04	195.2	0.643	CW
S(4)	0.44	293.2	0.20	68.5	0.46	290.0	0.13	200.0	0.957	CCW
S(6)	0.07	130.7	0.18	180.1	0.19	14.7	0.05	284.7	0.964	CCW
J(1)	0.12	334.6	0.07	162.2	0.14	299.0	0.01	29.0	0.998	CW
M(1)	0.11	337.9	0.06	195.6	0.12	295.9	0.03	25.9	0.960	CW
(00)	0.06	332.9	0.04	145.5	0.07	299.0	0.00	209.0	0.999	CCW
P(1)	0.69	336.3	1.44	178.9	1.58	335.5	0.24	65.5	0.988	CW
Q(1)	0.29	341.3	0.16	229.0	0.30	285.7	0.15	15.7	0.874	CW
(2Q)	0.04	343.0	0.02	245.7	0.04	275.7	0.02	5.7	0.837	CW
RHO(1)	0.06	341.1	0.03	226.7	0.06	286.8	0.03	16.8	0.881	CW
K(2)	0.29	207.4	0.11	288.5	0.29	265.9	0.11	175.9	0.921	CCW
L(2)	0.05	353.1	0.05	321.3	0.07	228.2	0.02	318.2	0.959	CW
(2N)	0.10	331.8	0.14	18.9	0.16	32.4	0.07	302.4	0.914	CCW
R(2)	0.01	207.4	0.00	288.5	0.01	265.9	0.00	175.9	0.921	CCW
T(2)	0.06	207.4	0.02	288.5	0.06	265.9	0.02	175.9	0.921	CCW
LAM(2)	0.01	217.4	0.01	316.4	0.01	299.2	0.01	209.2	0.556	CCW
NU(2)	0.15	115.9	0.21	357.1	0.23	151.9	0.12	241.9	0.843	CW

Table A-28. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, BOTTOM 04-01-82 (0000) THRU 04-29-82 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	1.33	64.1	2.89	182.2	2.96	165.6	1.14	75.6	0.923	CCW
O(1)	1.48	24.5	0.74	81.1	1.54	72.0	0.59	342.0	0.924	CCW
M(2)	1.41	176.1	3.68	332.9	3.91	160.2	0.52	70.2	0.991	CCW
N(2)	0.97	171.2	1.67	324.3	1.90	151.4	0.39	61.4	0.979	CCW
S(2)	0.63	287.9	0.16	114.1	0.65	284.0	0.02	14.0	1.000	LIN
M(4)	0.23	309.8	0.25	172.6	0.32	318.3	0.12	48.3	0.921	CW
M(6)	0.25	92.3	0.04	336.9	0.25	94.1	0.04	184.1	0.989	CW
M(8)	0.16	209.3	0.07	47.6	0.18	293.4	0.02	23.4	0.993	CW
S(4)	0.29	139.2	0.54	167.2	0.60	26.9	0.12	296.9	0.979	CCW
S(6)	0.40	317.5	0.21	283.7	0.44	245.7	0.10	335.7	0.972	CW
J(1)	0.12	83.9	0.06	232.7	0.13	114.3	0.03	24.3	0.976	CCW
M(1)	0.10	44.3	0.05	131.6	0.10	88.3	0.05	358.3	0.868	CCW
(00)	0.06	103.7	0.03	283.2	0.07	116.4	0.00	26.4	1.000	LIN
P(1)	0.44	64.1	0.95	182.2	0.98	165.6	0.38	75.6	0.923	CCW
Q(1)	0.29	4.7	0.14	30.6	0.32	65.0	0.06	335.0	0.984	CCW
(20)	0.04	344.9	0.02	340.1	0.04	243.6	0.00	333.6	0.999	CW
RHO(1)	0.06	7.5	0.03	37.7	0.06	65.6	0.01	335.6	0.978	CCW
K(2)	0.17	287.9	0.04	114.1	0.18	284.0	0.00	14.0	1.000	LIN
L(2)	0.04	181.1	0.10	341.4	0.11	159.9	0.01	69.9	0.994	CCW
(2N)	0.13	166.2	0.22	315.8	0.25	151.8	0.06	61.8	0.973	CCW
R(2)	0.01	287.9	0.00	114.1	0.01	284.0	0.00	14.0	1.000	LIN
T(2)	0.04	287.9	0.01	114.1	0.04	284.0	0.00	14.0	1.000	LIN
LAM(2)	0.01	228.0	0.03	38.4	0.03	339.2	0.00	249.2	0.998	CCW
NU(2)	0.19	171.8	0.32	325.5	0.37	151.3	0.07	61.3	0.980	CCW

Table A-29. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 02-01-81 (0000) THRU 03-01-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	1.13	329.3	2.86	172.7	3.05	339.7	0.42	69.7	0.990	CW
O(1)	1.65	357.8	1.25	222.8	1.93	123.9	0.76	213.9	0.920	CW
M(2)	2.66	217.3	2.50	357.5	3.43	312.7	1.24	222.7	0.933	CCW
N(2)	0.57	158.8	1.12	324.4	1.25	153.3	0.13	63.3	0.995	CCW
S(2)	0.81	182.7	0.79	343.6	1.11	134.2	0.19	44.2	0.986	CCW
M(4)	0.32	333.3	0.15	198.9	0.34	289.3	0.10	19.3	0.957	CW
M(6)	0.11	264.7	0.15	146.0	0.16	331.2	0.09	61.2	0.839	CW
M(8)	0.07	174.1	0.02	304.6	0.07	100.6	0.01	10.6	0.979	CCW
S(4)	0.42	81.1	0.04	223.8	0.42	94.0	0.02	4.0	0.999	CCW
S(6)	0.07	173.3	0.13	43.1	0.14	337.8	0.05	67.8	0.933	CW
J(1)	0.13	315.0	0.10	147.7	0.16	306.8	0.02	36.8	0.994	CW
M(1)	0.12	343.5	0.09	197.8	0.14	305.4	0.04	35.4	0.956	CW
(00)	0.07	300.7	0.05	122.6	0.09	307.0	0.00	37.0	1.000	LIN
P(1)	0.37	329.3	0.95	172.7	1.01	339.7	0.14	69.7	0.990	CW
Q(1)	0.32	12.1	0.24	247.9	0.36	121.5	0.18	211.5	0.869	CW
(2Q)	0.04	26.3	0.03	272.9	0.05	117.1	0.03	207.1	0.801	CW
RHO(1)	0.06	10.1	0.05	244.4	0.07	121.9	0.03	211.9	0.877	CW
K(2)	0.22	182.7	0.21	343.6	0.30	134.2	0.05	44.2	0.986	CCW
L(2)	0.07	275.9	0.07	30.7	0.09	310.7	0.05	220.7	0.772	CCW
(2N)	0.08	100.2	0.15	291.2	0.17	153.1	0.01	243.1	0.997	CW
R(2)	0.01	182.7	0.01	343.6	0.01	134.2	0.00	44.2	0.986	CCW
T(2)	0.05	182.7	0.05	343.6	0.07	134.2	0.01	44.2	0.986	CCW
LAM(2)	0.02	201.2	0.02	351.1	0.02	312.9	0.01	222.9	0.963	CCW
NU(2)	0.11	166.6	0.22	328.8	0.24	153.5	0.03	63.5	0.992	CCW

Table A-30. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 04-05-81 (0000) THRU 05-03-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	2.20	274.7	1.51	202.4	2.28	251.0	1.39	341.0	0.793	CW
O(1)	0.94	260.2	2.22	209.8	2.31	196.6	0.70	286.6	0.954	CW
M(2)	1.68	199.8	2.20	344.3	2.64	144.3	0.81	54.3	0.952	CCW
N(2)	0.34	123.9	1.69	350.7	1.70	172.0	0.24	262.0	0.990	CW
S(2)	0.95	277.6	0.70	307.7	1.15	235.2	0.29	145.2	0.967	CCW
M(4)	0.21	312.7	0.19	55.8	0.22	302.6	0.17	212.6	0.631	CCW
M(6)	0.27	31.4	0.18	236.4	0.32	121.8	0.06	211.8	0.980	CW
M(8)	0.07	70.6	0.05	186.1	0.08	113.5	0.04	23.5	0.841	CCW
S(4)	0.11	46.1	0.15	145.8	0.15	343.8	0.11	253.8	0.682	CCW
S(6)	0.06	112.6	0.03	234.9	0.06	112.1	0.03	22.1	0.897	CCW
J(1)	0.07	281.9	0.18	198.7	0.18	183.4	0.07	273.4	0.909	CW
M(1)	0.07	267.5	0.16	206.1	0.16	193.1	0.06	283.1	0.935	CW
(00)	0.04	289.2	0.10	195.0	0.10	177.8	0.04	267.8	0.908	CW
P(1)	0.73	274.7	0.50	202.4	0.75	251.0	0.46	341.0	0.793	CW
Q(1)	0.18	253.0	0.43	213.5	0.46	199.2	0.11	289.2	0.971	CW
(20)	0.02	245.7	0.06	217.2	0.06	201.0	0.01	291.0	0.984	CW
RHO(1)	0.04	254.0	0.08	213.0	0.09	198.9	0.02	288.9	0.968	CW
K(2)	0.26	277.6	0.19	307.7	0.31	235.2	0.08	145.2	0.967	CCW
L(2)	0.05	275.7	0.06	337.9	0.07	209.8	0.04	119.8	0.828	CCW
(2N)	0.04	47.9	0.22	357.0	0.23	187.4	0.03	277.4	0.988	CW
R(2)	0.01	277.6	0.01	307.7	0.01	235.2	0.00	145.2	0.967	CCW
T(2)	0.06	277.6	0.04	307.7	0.07	235.2	0.02	145.2	0.967	CCW
LAM(2)	0.01	235.9	0.02	327.3	0.02	177.5	0.01	87.5	0.647	CCW
NU(2)	0.07	134.0	0.33	349.8	0.33	170.6	0.04	260.6	0.993	CW

Table A-31. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 05-01-81 (0000) THRU 05-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT SENSE
	H(A) CM/SEC	KAPPA DEG	H(A) CM/SEC	KAPPA DEG	VEL CM/SEC	DIR DEG	VEL CM/SEC	DIR DEG	ECCEN- TRICITY	
K(1)	1.03	12.5	0.83	270.8	1.06	111.7	0.79	201.7	0.668	CW
O(1)	1.84	4.1	1.79	174.8	2.56	314.2	0.21	224.2	0.997	CCW
M(2)	2.10	209.0	2.31	12.5	3.09	317.9	0.45	227.9	0.990	CCW
N(2)	0.70	236.3	0.65	287.4	0.86	228.2	0.41	138.2	0.880	CCW
S(2)	0.68	225.1	0.66	346.1	0.82	313.1	0.46	223.1	0.825	CCW
M(4)	0.20	319.9	0.08	292.2	0.21	248.6	0.04	338.6	0.985	CW
M(6)	0.18	176.5	0.09	115.1	0.19	74.9	0.07	164.9	0.920	CW
M(8)	0.02	124.1	0.08	121.6	0.08	17.1	0.00	107.1	1.000	LIN
S(4)	0.09	12.1	0.14	9.2	0.17	31.2	0.00	121.2	1.000	LIN
S(6)	0.25	248.7	0.12	255.4	0.28	244.6	0.01	154.6	0.999	CCW
J(1)	0.15	16.7	0.14	318.8	0.18	226.4	0.10	316.4	0.834	CW
M(1)	0.13	8.3	0.13	222.8	0.17	134.1	0.05	224.1	0.951	CW
(00)	0.08	20.9	0.08	6.9	0.11	45.8	0.01	135.8	0.992	CW
P(1)	0.34	12.5	0.27	270.8	0.35	111.7	0.26	201.7	0.668	CW
Q(1)	0.36	359.9	0.35	126.8	0.45	313.7	0.22	223.7	0.866	CCW
(2Q)	0.05	355.7	0.05	78.8	0.05	51.2	0.04	321.2	0.469	CCW
RHO(1)	0.07	0.5	0.07	133.5	0.09	313.9	0.04	223.9	0.901	CCW
K(2)	0.18	225.1	0.18	346.1	0.22	313.1	0.13	223.1	0.825	CCW
L(2)	0.06	181.6	0.06	97.5	0.07	23.6	0.06	113.6	0.496	CW
(2N)	0.09	263.7	0.09	202.3	0.11	229.1	0.06	319.1	0.807	CW
R(2)	0.01	225.1	0.01	346.1	0.01	313.1	0.00	223.1	0.825	CCW
T(2)	0.04	225.1	0.04	346.1	0.05	313.1	0.03	223.1	0.825	CCW
LAM(2)	0.01	216.4	0.02	0.2	0.02	318.4	0.01	228.4	0.946	CCW
NU(2)	0.14	232.7	0.13	298.8	0.16	229.9	0.10	139.9	0.762	CCW

Table A-32. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 06-01-81 (0000) THRU 06-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	2.47	2.2	1.76	239.7	2.72	118.5	1.35	208.5	0.868	CW
O(1)	2.73	318.2	3.87	244.5	4.01	199.1	2.54	289.1	0.773	CW
M(2)	1.02	250.4	1.56	351.0	1.58	168.6	0.99	78.6	0.780	CCW
N(2)	0.99	161.1	1.90	326.5	2.13	152.9	0.22	62.9	0.995	CCW
S(2)	0.93	285.1	0.47	5.0	0.93	263.2	0.46	173.2	0.868	CCW
M(4)	0.09	252.7	0.13	13.3	0.14	331.9	0.07	241.9	0.857	CCW
M(6)	0.12	31.3	0.16	98.2	0.17	27.9	0.10	297.9	0.792	CCW
M(8)	0.11	231.4	0.06	15.8	0.12	296.8	0.03	206.8	0.964	CCW
S(4)	0.14	58.3	0.31	187.8	0.32	162.1	0.10	72.1	0.948	CCW
S(6)	0.21	130.6	0.27	37.6	0.27	353.4	0.21	83.4	0.605	CW
J(1)	0.22	24.2	0.31	237.3	0.36	146.5	0.10	236.5	0.961	CW
M(1)	0.19	340.2	0.28	242.1	0.28	169.1	0.19	259.1	0.728	CW
(00)	0.12	46.1	0.17	234.9	0.20	144.9	0.01	234.9	0.997	CW
P(1)	0.82	2.2	0.58	239.7	0.90	118.5	0.45	208.5	0.868	CW
Q(1)	0.53	296.3	0.75	246.9	0.85	210.7	0.36	300.7	0.907	CW
(2Q)	0.07	274.3	0.10	249.3	0.12	214.3	0.03	304.3	0.978	CW
RHO(1)	0.10	299.3	0.15	246.5	0.16	209.8	0.07	299.8	0.892	CW
K(2)	0.25	285.1	0.13	5.0	0.25	263.2	0.13	173.2	0.868	CCW
L(2)	0.03	339.6	0.04	15.5	0.05	30.7	0.01	300.7	0.957	CCW
(2N)	0.13	71.9	0.25	302.0	0.27	158.7	0.10	248.7	0.935	CW
R(2)	0.01	285.1	0.00	5.0	0.01	263.2	0.00	173.2	0.868	CCW
T(2)	0.05	285.1	0.03	5.0	0.06	263.2	0.03	173.2	0.868	CCW
LAM(2)	0.01	266.5	0.01	357.5	0.01	178.8	0.01	88.8	0.758	CCW
NU(2)	0.19	173.1	0.37	329.8	0.41	153.6	0.07	63.6	0.986	CCW

Table A-33. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 07-01-81 (0000) THRU 07-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	0.92	318.2	2.02	169.4	2.17	337.8	0.44	67.8	0.979	CW
O(1)	1.10	125.3	1.32	39.2	1.32	10.2	1.09	100.2	0.569	CW
M(2)	2.09	210.2	1.65	8.7	2.62	307.8	0.48	217.8	0.983	CCW
N(2)	0.96	70.1	1.21	9.7	1.35	32.2	0.75	122.2	0.834	CW
S(2)	0.69	234.1	0.55	213.6	0.87	231.9	0.15	321.9	0.984	CW
M(4)	0.33	323.9	0.20	201.7	0.35	292.3	0.16	22.3	0.895	CW
M(6)	0.12	307.7	0.14	97.9	0.18	319.8	0.05	229.8	0.965	CCW
M(8)	0.10	6.9	0.06	9.0	0.12	57.4	0.00	327.4	1.000	LIN
S(4)	0.22	10.8	0.05	89.5	0.22	87.4	0.05	357.4	0.976	CCW
S(6)	0.19	139.7	0.09	116.6	0.21	65.7	0.03	155.7	0.988	CW
J(1)	0.09	234.6	0.10	234.6	0.14	219.8	0.00	309.8	1.000	LIN
M(1)	0.08	41.7	0.09	104.3	0.10	34.1	0.06	304.1	0.809	CCW
(00)	0.05	151.0	0.06	299.7	0.07	141.1	0.02	51.1	0.961	CCW
P(1)	0.30	318.2	0.67	169.4	0.72	337.8	0.15	67.8	0.979	CW
Q(1)	0.21	208.8	0.26	334.1	0.30	143.9	0.15	53.9	0.864	CCW
(20)	0.03	292.4	0.03	268.9	0.04	219.3	0.01	309.3	0.979	CW
RHO(1)	0.04	197.1	0.05	343.2	0.06	141.3	0.02	51.3	0.954	CCW
K(2)	0.19	234.1	0.15	213.6	0.24	231.9	0.04	321.9	0.984	CW
L(2)	0.06	350.3	0.05	7.6	0.07	232.0	0.01	142.0	0.989	CCW
(2N)	0.13	290.1	0.16	10.7	0.16	197.2	0.12	107.2	0.661	CCW
R(2)	0.01	234.1	0.00	213.6	0.01	231.9	0.00	321.9	0.984	CW
T(2)	0.04	234.1	0.03	213.6	0.05	231.9	0.01	321.9	0.984	CW
LAM(2)	0.01	221.3	0.01	296.7	0.02	246.7	0.01	156.7	0.709	CCW
NU(2)	0.19	88.9	0.24	9.6	0.24	19.0	0.18	109.0	0.673	CW

Table A-34. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 08-03-81 (0000) THRU 08-31-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	2.17	351.8	2.11	247.5	2.39	132.0	1.86	222.0	0.631	CW
Q(1)	2.61	319.5	1.90	212.2	2.71	291.4	1.74	21.4	0.767	CW
M(2)	1.59	241.2	2.36	348.8	2.44	341.6	1.47	251.6	0.798	CCW
N(2)	0.90	212.6	0.30	327.4	0.91	278.8	0.27	188.8	0.954	CCW
S(2)	0.55	232.6	0.81	324.4	0.81	177.6	0.55	87.6	0.727	CCW
M(4)	0.13	105.0	0.28	203.6	0.28	175.3	0.12	85.3	0.897	CCW
M(6)	0.23	303.7	0.07	211.1	0.23	270.8	0.07	0.8	0.959	CW
M(8)	0.14	155.0	0.09	104.0	0.15	62.2	0.06	152.2	0.907	CW
S(4)	0.27	48.1	0.28	292.5	0.33	137.1	0.21	227.1	0.777	CW
S(6)	0.03	34.5	0.02	135.7	0.03	98.6	0.02	8.6	0.846	CCW
J(1)	0.21	7.9	0.15	265.1	0.21	107.3	0.14	197.3	0.736	CW
M(1)	0.18	335.6	0.13	229.8	0.19	290.1	0.13	20.1	0.757	CW
(00)	0.11	24.0	0.08	282.7	0.11	105.7	0.08	195.7	0.727	CW
P(1)	0.72	351.8	0.70	247.5	0.79	132.0	0.61	222.0	0.631	CW
Q(1)	0.51	303.4	0.37	194.6	0.53	292.5	0.33	22.5	0.777	CW
(20)	0.07	287.3	0.05	177.0	0.07	293.6	0.04	23.6	0.788	CW
RHO(1)	0.10	305.7	0.07	197.1	0.10	292.4	0.07	22.4	0.776	CW
K(2)	0.15	232.6	0.22	324.4	0.22	177.6	0.15	87.6	0.727	CCW
L(2)	0.04	269.8	0.07	10.2	0.07	347.9	0.04	257.9	0.762	CCW
(2N)	0.12	184.1	0.04	306.0	0.12	281.0	0.03	191.0	0.961	CCW
R(2)	0.00	232.6	0.01	324.4	0.01	177.6	0.00	87.6	0.727	CCW
T(2)	0.03	232.6	0.05	324.4	0.05	177.6	0.03	87.6	0.727	CCW
LAM(2)	0.01	237.2	0.02	337.5	0.02	168.1	0.01	78.1	0.762	CCW
NU(2)	0.17	216.5	0.06	330.3	0.18	278.5	0.05	188.5	0.953	CCW

Table A-35. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 09-01-81 (0000) THRU 09-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	0.34	220.8	1.31	191.1	1.34	192.9	0.16	282.9	0.993	CW
O(1)	3.72	321.6	2.51	217.0	3.81	286.1	2.38	16.1	0.782	CW
M(2)	2.13	224.5	1.21	7.6	2.36	296.6	0.66	206.6	0.961	CCW
N(2)	0.62	302.0	0.37	261.9	0.69	242.7	0.22	332.7	0.951	CW
S(2)	0.64	226.9	0.79	315.1	0.79	184.6	0.64	94.6	0.577	CCW
M(4)	0.17	249.5	0.25	141.6	0.26	339.7	0.16	69.7	0.785	CW
M(6)	0.08	170.1	0.09	139.3	0.11	42.0	0.03	132.0	0.962	CW
M(8)	0.17	87.7	0.06	61.6	0.18	70.7	0.03	160.7	0.989	CW
S(4)	0.27	85.7	0.08	306.7	0.28	102.5	0.05	192.5	0.984	CW
S(6)	0.15	289.8	0.20	237.3	0.23	210.9	0.10	300.9	0.890	CW
J(1)	0.29	170.5	0.20	178.2	0.35	56.0	0.02	326.0	0.998	CCW
M(1)	0.26	271.2	0.18	204.1	0.28	248.0	0.16	338.0	0.826	CW
(00)	0.16	120.1	0.11	165.3	0.18	59.8	0.07	329.8	0.926	CCW
P(1)	0.11	220.8	0.43	191.1	0.44	192.9	0.05	282.9	0.993	CW
Q(1)	0.72	12.0	0.49	228.9	0.83	121.5	0.26	211.5	0.950	CW
(2Q)	0.10	62.4	0.07	242.8	0.12	124.1	0.00	214.1	1.000	LIN
RHO(1)	0.14	4.9	0.10	228.1	0.16	120.6	0.06	210.6	0.934	CW
K(2)	0.17	226.9	0.21	315.1	0.21	184.6	0.17	94.6	0.577	CCW
L(2)	0.06	147.0	0.03	113.4	0.07	62.8	0.02	152.8	0.967	CW
(2N)	0.08	19.5	0.05	156.2	0.09	116.6	0.03	26.6	0.942	CCW
R(2)	0.01	226.9	0.01	315.1	0.01	184.6	0.01	94.6	0.577	CCW
T(2)	0.04	226.9	0.05	315.1	0.05	184.6	0.04	94.6	0.577	CCW
LAM(2)	0.01	225.6	0.01	343.2	0.02	288.9	0.01	198.9	0.887	CCW
NU(2)	0.12	291.6	0.07	276.1	0.14	239.7	0.02	329.7	0.993	CW

Table A-36. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 10-01-81 (0000) THRU 10-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	0.38	98.3	1.59	61.2	1.62	11.0	0.22	101.0	0.990	CW
O(1)	1.93	340.4	0.57	173.4	2.01	286.2	0.12	16.2	0.998	CW
M(2)	1.69	217.2	2.69	1.8	3.05	330.3	0.86	240.3	0.960	CCW
N(2)	0.12	243.6	0.26	357.9	0.26	346.3	0.11	256.3	0.908	CCW
S(2)	0.94	234.3	0.60	2.6	1.03	296.6	0.43	206.6	0.908	CCW
M(4)	0.28	264.4	0.19	104.7	0.33	303.9	0.06	33.9	0.986	CW
M(6)	0.08	320.6	0.09	51.2	0.09	357.3	0.08	267.3	0.441	CCW
M(8)	0.17	183.4	0.08	26.4	0.19	294.2	0.03	24.2	0.988	CW
S(4)	0.71	52.4	0.42	285.8	0.76	113.5	0.31	203.5	0.912	CW
S(6)	0.11	155.9	0.06	320.1	0.13	118.3	0.02	28.3	0.993	CCW
J(1)	0.15	157.2	0.05	5.1	0.16	105.0	0.02	195.0	0.992	CW
M(1)	0.14	39.3	0.04	117.3	0.14	86.1	0.04	356.1	0.957	CCW
(00)	0.08	216.2	0.02	309.0	0.08	270.9	0.02	180.9	0.955	CCW
P(1)	0.13	98.3	0.53	61.2	0.53	11.0	0.07	101.0	0.990	CW
Q(1)	0.37	281.5	0.11	229.6	0.38	259.0	0.09	349.0	0.974	CW
(20)	0.05	222.5	0.01	285.7	0.05	261.8	0.01	171.8	0.965	CCW
RHO(1)	0.07	289.7	0.02	221.7	0.07	263.1	0.02	353.1	0.962	CW
K(2)	0.26	234.3	0.16	2.6	0.28	296.6	0.12	206.6	0.908	CCW
L(2)	0.05	190.7	0.08	5.7	0.09	327.9	0.00	237.9	0.999	CCW
(2N)	0.02	270.1	0.03	354.1	0.03	183.8	0.02	93.8	0.879	CCW
R(2)	0.01	234.3	0.00	2.6	0.01	296.6	0.00	206.6	0.908	CCW
T(2)	0.06	234.3	0.04	2.6	0.06	296.6	0.03	206.6	0.908	CCW
LAM(2)	0.01	225.1	0.02	2.2	0.02	331.7	0.01	241.7	0.939	CCW
NU(2)	0.02	240.1	0.05	358.5	0.05	344.6	0.02	254.6	0.917	CCW

Table A-37. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 11-01-81 (0000) THRU 11-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	1.31	54.6	1.18	149.7	1.33	111.3	1.16	21.3	0.483	CCW
O(1)	0.15	82.0	1.11	208.5	1.11	175.3	0.12	85.3	0.994	CCW
M(2)	2.28	215.6	2.29	1.7	3.09	315.1	0.94	225.1	0.952	CCW
N(2)	0.52	219.1	0.34	352.7	0.58	299.2	0.22	209.2	0.924	CCW
S(2)	1.11	198.1	1.27	17.4	1.69	319.0	0.01	229.0	1.000	LIN
M(4)	0.43	257.2	0.13	193.9	0.44	262.1	0.11	352.1	0.967	CW
M(6)	0.01	105.1	0.09	109.7	0.09	4.2	0.00	274.2	1.000	LIN
M(8)	0.05	156.3	0.03	157.4	0.06	55.1	0.00	325.1	1.000	LIN
S(4)	0.21	78.7	0.16	336.1	0.22	109.5	0.15	199.5	0.709	CW
S(6)	0.15	266.2	0.08	26.4	0.15	287.6	0.06	197.6	0.912	CCW
J(1)	0.01	40.9	0.09	120.4	0.09	1.5	0.01	271.5	0.991	CCW
M(1)	0.01	68.3	0.08	179.1	0.08	357.2	0.01	267.2	0.992	CCW
(00)	0.01	27.2	0.05	91.0	0.05	3.5	0.01	273.5	0.992	CCW
P(1)	0.43	54.6	0.39	149.7	0.44	111.3	0.38	21.3	0.483	CCW
Q(1)	0.03	95.7	0.21	237.8	0.22	173.8	0.02	83.8	0.997	CCW
(20)	0.00	109.4	0.03	267.2	0.03	172.7	0.00	82.7	0.999	CCW
RHO(1)	0.01	93.8	0.04	233.7	0.04	174.0	0.00	84.0	0.996	CCW
K(2)	0.30	198.1	0.35	17.4	0.46	319.0	0.00	229.0	1.000	LIN
L(2)	0.06	212.1	0.06	10.7	0.09	315.1	0.02	225.1	0.982	CCW
(2N)	0.07	222.6	0.05	343.7	0.07	295.3	0.04	205.3	0.873	CCW
R(2)	0.01	198.1	0.01	17.4	0.01	319.0	0.00	229.0	1.000	LIN
T(2)	0.07	198.1	0.08	17.4	0.10	319.0	0.00	229.0	1.000	LIN
LAM(2)	0.02	207.5	0.02	9.0	0.02	315.1	0.00	225.1	0.987	CCW
NU(2)	0.10	218.6	0.07	353.9	0.11	299.6	0.04	209.6	0.930	CCW

Table A-38. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 12-01-81 (0000) THRU 12-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	1.22	34.0	0.93	181.8	1.48	125.9	0.41	35.9	0.961	CCW
O(1)	1.66	330.8	1.19	182.0	1.98	304.3	0.52	34.3	0.965	CW
M(2)	2.29	222.8	2.45	349.7	3.00	318.1	1.49	228.1	0.868	CCW
N(2)	0.75	163.3	0.65	336.3	0.99	130.6	0.06	40.6	0.998	CCW
S(2)	1.30	179.6	1.49	6.8	1.98	318.9	0.12	48.9	0.998	CW
M(4)	0.51	273.3	0.10	295.0	0.52	259.5	0.04	169.5	0.997	CCW
M(6)	0.12	56.3	0.07	238.7	0.14	118.5	0.00	208.5	1.000	LIN
M(8)	0.07	99.5	0.09	40.9	0.10	32.3	0.05	122.3	0.847	CW
S(4)	0.58	72.7	0.23	295.4	0.60	107.5	0.15	197.5	0.969	CW
S(6)	0.25	44.6	0.10	342.7	0.25	77.0	0.09	167.0	0.934	CW
J(1)	0.13	65.5	0.09	181.7	0.14	116.3	0.08	26.3	0.830	CCW
M(1)	0.12	2.4	0.08	181.9	0.15	125.7	0.00	35.7	1.000	LIN
(00)	0.07	97.1	0.05	181.6	0.07	82.1	0.05	352.1	0.706	CCW
P(1)	0.40	34.0	0.31	181.8	0.49	125.9	0.13	35.9	0.961	CCW
Q(1)	0.32	299.3	0.23	182.1	0.35	296.8	0.19	26.8	0.836	CW
(20)	0.04	267.7	0.03	182.2	0.04	263.4	0.03	353.4	0.703	CW
RMQ(1)	0.06	303.7	0.05	182.1	0.07	298.6	0.04	28.6	0.861	CW
K(2)	0.35	179.6	0.41	6.8	0.54	318.9	0.03	48.9	0.998	CW
L(2)	0.06	282.2	0.07	3.2	0.07	213.8	0.06	123.8	0.538	CCW
(2N)	0.10	103.9	0.09	322.9	0.12	129.5	0.04	219.5	0.937	CW
R(2)	0.01	179.6	0.01	6.8	0.02	318.9	0.00	48.9	0.998	CW
T(2)	0.08	179.6	0.09	6.8	0.12	318.9	0.01	48.9	0.998	CW
LAM(2)	0.02	202.8	0.02	357.6	0.02	317.0	0.01	227.0	0.975	CCW
NU(2)	0.15	171.3	0.13	338.1	0.19	130.5	0.02	40.5	0.993	CCW

Table A-39. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 02-01-82 (0000) THRU 03-01-82 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	0.17	142.6	0.93	132.9	0.94	10.1	0.03	100.1	1.000	LIN
O(1)	3.10	77.6	1.71	335.3	3.13	99.4	1.65	189.4	0.849	CW
M(2)	1.78	229.3	3.13	356.7	3.35	337.2	1.32	247.2	0.919	CCW
N(2)	0.83	216.5	1.12	320.4	1.15	161.0	0.78	71.0	0.738	CCW
S(2)	0.17	151.9	1.07	349.2	1.08	171.3	0.05	261.3	0.999	CW
M(4)	0.12	264.8	0.44	194.7	0.44	185.6	0.11	275.6	0.967	CW
M(6)	0.18	33.4	0.17	17.4	0.24	47.1	0.03	137.1	0.990	CW
M(8)	0.13	274.1	0.16	171.5	0.16	337.3	0.12	67.3	0.679	CW
S(4)	0.25	235.5	0.09	3.4	0.26	283.1	0.07	193.1	0.965	CCW
S(6)	0.20	309.6	0.17	252.0	0.23	234.3	0.12	324.3	0.846	CW
J(1)	0.24	175.1	0.13	211.7	0.27	244.1	0.07	154.1	0.963	CCW
M(1)	0.22	110.1	0.12	54.1	0.23	69.2	0.10	159.2	0.912	CW
(00)	0.13	207.6	0.07	290.6	0.13	264.5	0.07	174.5	0.839	CCW
P(1)	0.06	142.6	0.31	132.9	0.31	10.1	0.01	100.1	1.000	LIN
Q(1)	0.60	45.1	0.33	256.4	0.67	116.8	0.15	206.8	0.973	CW
(2Q)	0.08	12.6	0.04	177.6	0.09	118.4	0.01	28.4	0.994	CCW
RHO(1)	0.12	49.7	0.06	267.5	0.13	115.7	0.04	205.7	0.960	CW
K(2)	0.05	151.9	0.29	349.2	0.29	171.3	0.01	261.3	0.999	CW
L(2)	0.05	242.0	0.09	33.0	0.10	332.1	0.02	242.1	0.976	CCW
(2N)	0.11	203.7	0.15	284.2	0.15	194.1	0.11	104.1	0.708	CCW
R(2)	0.00	151.9	0.01	349.2	0.01	171.3	0.00	261.3	0.999	CW
T(2)	0.01	151.9	0.06	349.2	0.06	171.3	0.00	261.3	0.999	CW
LAM(2)	0.01	193.3	0.02	353.2	0.02	151.2	0.00	61.2	0.989	CCW
NU(2)	0.16	218.2	0.22	325.3	0.23	158.2	0.15	68.2	0.761	CCW

Table A-40. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 03-01-82 (0000) THRU 03-29-82 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	3.78	269.7	3.95	176.0	4.01	332.1	3.71	62.1	0.381	CW
O(1)	0.41	267.4	1.43	241.0	1.48	194.7	0.18	284.7	0.993	CW
M(2)	2.56	241.1	2.98	2.0	3.44	323.4	1.91	233.4	0.832	CCW
N(2)	0.58	258.5	0.32	57.0	0.65	297.8	0.10	207.8	0.987	CCW
S(2)	1.31	204.8	1.03	352.3	1.61	306.9	0.45	216.9	0.960	CCW
M(4)	0.37	261.8	0.37	191.0	0.43	225.4	0.31	315.4	0.703	CW
M(6)	0.05	168.7	0.18	107.8	0.18	8.1	0.04	98.1	0.971	CW
M(8)	0.11	275.3	0.03	12.5	0.11	271.8	0.03	181.8	0.971	CCW
S(4)	0.23	351.6	0.30	176.0	0.37	322.7	0.01	52.7	0.999	CW
S(6)	0.31	107.2	0.04	219.2	0.31	92.6	0.03	2.6	0.994	CCW
J(1)	0.03	270.9	0.11	143.5	0.12	349.6	0.03	79.6	0.975	CW
M(1)	0.03	268.6	0.10	208.5	0.10	188.7	0.03	278.7	0.970	CW
(00)	0.02	272.0	0.06	111.0	0.06	344.7	0.01	74.7	0.996	CW
P(1)	1.25	269.7	1.31	176.0	1.33	332.1	1.23	62.1	0.381	CW
O(1)	0.08	266.2	0.28	273.6	0.29	195.9	0.01	105.9	0.999	CCW
(20)	0.01	265.1	0.04	306.1	0.04	192.7	0.01	102.7	0.984	CCW
RHO(1)	0.02	266.4	0.05	269.0	0.06	196.0	0.00	106.0	1.000	LIN
K(2)	0.36	204.8	0.28	352.3	0.44	306.9	0.12	216.9	0.960	CCW
L(2)	0.07	223.8	0.08	307.0	0.08	198.8	0.07	108.8	0.568	CCW
(2N)	0.08	275.9	0.04	112.1	0.09	298.2	0.01	28.2	0.993	CW
R(2)	0.01	204.8	0.01	352.3	0.01	306.9	0.00	216.9	0.960	CCW
T(2)	0.08	204.8	0.06	352.3	0.09	306.9	0.03	216.9	0.960	CCW
LAM(2)	0.02	224.3	0.02	357.5	0.03	321.4	0.01	231.4	0.905	CCW
NU(2)	0.11	256.2	0.06	49.7	0.13	297.2	0.02	207.2	0.981	CCW

Table A-41. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE D, TOP 4-01-82 (0000) THRU 4-29-82 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	1.55	138.8	2.49	194.2	2.69	204.5	1.18	114.5	0.898	CCW
O(1)	0.84	274.8	1.32	172.3	1.34	347.7	0.81	77.7	0.800	CW
M(2)	2.16	212.9	2.92	345.0	3.35	147.3	1.39	57.3	0.909	CCW
N(2)	1.00	169.0	1.03	332.9	1.42	136.0	0.20	46.0	0.990	CCW
S(2)	0.20	258.6	0.71	335.6	0.71	183.9	0.19	93.9	0.963	CCW
M(4)	0.19	315.9	0.48	263.6	0.50	195.2	0.15	285.2	0.954	CW
M(6)	0.31	142.3	0.18	79.4	0.32	69.7	0.16	159.7	0.874	CW
M(8)	0.06	173.9	0.12	192.7	0.13	204.6	0.02	114.6	0.992	CCW
S(4)	0.41	74.1	0.32	66.2	0.52	51.7	0.04	141.7	0.998	CW
S(6)	0.51	329.1	0.02	311.4	0.51	268.4	0.00	358.4	1.000	LIN
J(1)	0.07	70.7	0.10	205.1	0.12	152.1	0.04	62.1	0.930	CCW
M(1)	0.06	206.8	0.09	183.2	0.11	211.3	0.02	301.3	0.982	CW
(00)	0.04	2.7	0.06	216.0	0.07	149.8	0.02	239.8	0.964	CW
P(1)	0.51	138.8	0.83	194.2	0.89	204.5	0.39	114.5	0.898	CCW
Q(1)	0.16	342.9	0.26	161.4	0.30	327.7	0.00	237.7	1.000	LIN
(20)	0.02	50.9	0.03	150.5	0.03	350.3	0.02	260.3	0.790	CCW
RHO(1)	0.03	333.3	0.05	162.9	0.06	327.8	0.00	57.8	0.997	CW
K(2)	0.05	258.6	0.19	335.6	0.19	183.9	0.05	93.9	0.963	CCW
L(2)	0.06	256.8	0.08	357.1	0.03	344.9	0.06	254.9	0.712	CCW
(2N)	0.13	125.1	0.14	320.9	0.19	136.0	0.03	226.0	0.990	CW
R(2)	0.00	258.6	0.01	335.6	0.01	183.9	0.00	93.9	0.963	CCW
T(2)	0.01	258.6	0.04	335.6	0.04	183.9	0.01	93.9	0.963	CCW
LAM(2)	0.02	234.1	0.02	340.6	0.02	158.6	0.01	68.6	0.756	CCW
NU(2)	0.19	174.9	0.20	334.5	0.27	136.0	0.05	46.0	0.984	CCW

Table A-42. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, BOTTOM 04-01-81 (0000) THRU 04-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	0.91	81.1	33.47	288.3	33.48	178.6	0.42	268.6	1.000	LIN
O(1)	0.76	83.7	31.19	269.2	31.20	178.6	0.07	268.6	1.000	LIN
M(2)	0.81	257.5	32.20	93.4	32.21	358.6	0.22	88.6	1.000	LIN
N(2)	0.77	196.5	9.52	42.9	9.55	355.8	0.34	85.8	0.999	CW
S(2)	0.69	261.0	12.24	74.5	12.26	356.8	0.08	266.8	1.000	LIN
M(4)	0.09	232.9	2.18	132.2	2.18	359.6	0.09	89.6	0.999	CW
M(6)	0.05	253.8	0.38	140.5	0.38	357.2	0.04	87.2	0.994	CW
M(8)	0.02	33.8	0.21	171.8	0.21	355.5	0.01	265.5	0.998	CCW
S(4)	0.16	172.7	0.78	271.9	0.78	178.0	0.16	88.0	0.979	CCW
S(6)	0.11	2.7	0.40	93.3	0.40	359.8	0.11	269.8	0.960	CCW
J(1)	0.06	79.9	2.46	297.9	2.46	178.9	0.04	268.9	1.000	LIN
M(1)	0.05	82.4	2.21	278.7	2.22	178.7	0.02	268.7	1.000	LIN
(00)	0.03	78.6	1.34	307.5	1.34	179.1	0.02	269.1	1.000	LIN
P(1)	0.30	81.1	11.08	288.3	11.08	178.6	0.14	268.6	1.000	LIN
O(1)	0.15	84.9	6.05	259.6	6.05	178.6	0.01	88.6	1.000	LIN
(20)	0.02	86.2	0.81	250.0	0.81	178.7	0.01	88.7	1.000	LIN
RHO(1)	0.03	84.8	1.19	260.9	1.19	178.6	0.00	88.6	1.000	LIN
K(2)	0.19	261.0	3.33	74.5	3.33	356.8	0.02	266.8	1.000	LIN
L(2)	0.02	318.5	0.90	144.0	0.90	358.6	0.00	88.6	1.000	LIN
(2N)	0.10	135.5	1.27	352.4	1.27	176.3	0.06	266.3	0.999	CW
R(2)	0.01	261.0	0.10	74.5	0.10	356.8	0.00	266.8	1.000	LIN
T(2)	0.04	261.0	0.72	74.5	0.72	356.8	0.00	266.8	1.000	LIN
LAM(2)	0.01	259.2	0.23	84.7	0.23	358.6	0.00	88.6	1.000	LIN
NU(2)	0.15	204.7	1.85	49.7	1.85	355.8	0.06	85.8	0.999	CW

Table A-43. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, BOTTOM 05-01-81 (0000) THRU 05-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	0.53	117.4	29.56	291.1	29.57	179.0	0.06	89.0	1.000	LIN
O(1)	0.77	104.2	29.06	267.3	29.07	178.5	0.22	88.5	1.000	LIN
M(2)	0.42	258.3	29.77	93.2	29.77	359.2	0.11	89.2	1.000	LIN
N(2)	0.54	187.3	7.75	52.0	7.76	357.2	0.38	87.2	0.999	CW
S(2)	0.69	224.9	13.28	80.3	13.29	357.6	0.40	87.6	1.000	LIN
M(4)	0.09	116.8	2.12	108.0	2.12	2.4	0.01	92.4	1.000	LIN
M(6)	0.04	255.9	0.77	147.5	0.77	359.1	0.04	89.1	0.999	CW
M(8)	0.03	22.4	0.05	84.4	0.05	19.9	0.02	289.9	0.883	CCW
S(4)	0.14	339.8	0.29	85.6	0.30	350.2	0.14	260.2	0.885	CCW
S(6)	0.03	145.0	0.23	297.8	0.23	173.5	0.01	83.5	0.998	CCW
J(1)	0.06	124.0	2.30	303.0	2.30	178.5	0.00	88.5	1.000	LIN
M(1)	0.05	110.8	2.06	279.2	2.06	178.5	0.01	88.5	1.000	LIN
(00)	0.03	130.6	1.25	314.8	1.25	178.5	0.00	268.5	1.000	LIN
P(1)	0.18	117.4	9.79	291.1	9.79	179.0	0.02	89.0	1.000	LIN
Q(1)	0.15	97.6	5.64	255.4	5.64	178.6	0.06	88.6	1.000	LIN
(2Q)	0.02	90.9	0.76	243.5	0.76	178.6	0.01	88.6	1.000	LIN
RHO(1)	0.03	98.5	1.10	257.1	1.10	178.6	0.01	88.6	1.000	LIN
K(2)	0.19	224.9	3.61	80.3	3.61	357.6	0.11	87.6	1.000	LIN
L(2)	0.01	329.3	0.83	134.5	0.83	359.2	0.00	269.2	1.000	LIN
(2N)	0.07	116.3	1.03	10.7	1.03	358.9	0.07	88.9	0.998	CW
R(2)	0.01	224.9	0.11	80.3	0.11	357.6	0.00	87.6	1.000	LIN
T(2)	0.04	224.9	0.78	80.3	0.78	357.6	0.02	87.6	1.000	LIN
LAM(2)	0.00	242.8	0.21	87.2	0.21	359.3	0.00	89.3	1.000	LIN
NU(2)	0.10	196.8	1.50	57.5	1.51	357.0	0.07	87.0	0.999	CW

Table A-44. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P. BOTTOM 06-01-81 (0000) THRU 06-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	1.38	277.4	27.56	279.0	27.59	182.9	0.04	92.9	1.000	LIN
O(1)	1.78	301.1	20.93	252.3	20.96	183.2	1.33	273.2	0.998	CW
M(2)	1.44	72.4	24.83	89.7	24.87	3.2	0.43	273.2	1.000	LIN
N(2)	0.58	184.1	10.80	77.7	10.80	359.1	0.56	89.1	0.999	CW
S(2)	1.87	63.4	6.58	26.4	6.76	13.1	1.10	103.1	0.987	CW
M(4)	0.35	294.9	1.86	145.2	1.89	350.8	0.17	80.8	0.996	CW
M(6)	0.09	313.8	0.96	197.1	0.96	177.6	0.08	267.6	0.997	CW
M(8)	0.12	298.3	0.22	212.6	0.22	183.2	0.12	273.2	0.845	CW
S(4)	0.44	198.0	1.29	279.9	1.29	183.1	0.43	93.1	0.943	CCW
S(6)	0.10	161.8	0.69	38.5	0.69	355.4	0.08	85.4	0.993	CW
J(1)	0.14	265.6	1.65	292.4	1.66	184.3	0.06	94.3	0.999	CCW
M(1)	0.13	289.3	1.49	265.7	1.49	184.5	0.05	274.5	0.999	CW
(00)	0.08	253.8	0.90	305.8	0.90	183.0	0.06	93.0	0.998	CCW
P(1)	0.46	277.4	9.12	279.0	9.13	182.9	0.01	92.9	1.000	LIN
Q(1)	0.34	312.9	4.06	239.0	4.06	181.4	0.33	271.4	0.997	CW
(20)	0.05	324.7	0.54	225.6	0.54	179.2	0.05	269.2	0.996	CW
RHO(1)	0.07	311.3	0.80	240.9	0.80	181.6	0.06	271.6	0.997	CW
K(2)	0.51	63.4	1.79	26.4	1.84	13.1	0.30	103.1	0.987	CW
L(2)	0.04	325.7	0.70	101.7	0.70	357.4	0.03	267.4	0.999	CCW
(2N)	0.08	295.8	1.44	65.7	1.44	358.0	0.06	268.0	0.999	CCW
R(2)	0.01	63.4	0.05	26.4	0.05	13.1	0.01	103.1	0.987	CW
T(2)	0.11	63.4	0.39	26.4	0.40	13.1	0.06	103.1	0.987	CW
LAM(2)	0.01	68.2	0.17	60.3	0.17	3.3	0.00	93.3	1.000	LIN
NU(2)	0.11	169.2	2.09	79.3	2.09	0.0	0.11	90.0	0.999	CW

Table A-45. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, BOTTOM 07-01-81 (0000) THRU 07-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	0.45	56.7	31.08	266.7	31.09	179.3	0.23	269.3	1.000	LIN
Q(1)	0.73	306.5	27.75	261.9	27.76	181.1	0.52	271.1	1.000	LIN
M(2)	0.54	343.8	28.90	92.7	28.90	359.7	0.52	269.7	1.000	LIN
N(2)	0.27	325.5	9.15	83.7	9.15	359.2	0.24	269.2	1.000	LIN
S(2)	0.55	355.9	5.60	96.6	5.60	358.9	0.54	268.9	0.995	CCW
M(4)	0.75	301.9	1.01	117.3	1.26	323.4	0.05	233.4	0.999	CCW
M(6)	0.11	188.0	1.20	181.3	1.21	185.2	0.01	275.2	1.000	LIN
M(8)	0.06	1.0	0.39	281.9	0.39	181.6	0.06	271.6	0.989	CW
S(4)	0.46	118.9	0.62	161.0	0.72	34.0	0.26	304.0	0.932	CCW
S(6)	0.35	262.4	0.95	251.4	1.01	199.8	0.06	289.8	0.998	CW
J(1)	0.06	111.8	2.19	269.2	2.19	178.6	0.02	88.6	1.000	LIN
M(1)	0.05	1.6	1.97	264.3	1.97	179.8	0.05	269.8	1.000	LIN
(00)	0.03	166.9	1.19	271.6	1.19	179.6	0.03	89.6	1.000	LIN
P(1)	0.15	56.7	10.29	266.7	10.29	179.3	0.07	269.3	1.000	LIN
Q(1)	0.14	251.4	5.38	259.5	5.39	181.5	0.02	91.5	1.000	LIN
(2Q)	0.02	196.3	0.72	257.1	0.72	180.7	0.02	90.7	1.000	LIN
RHO(1)	0.03	259.1	1.05	259.8	1.06	181.5	0.00	91.5	1.000	LIN
K(2)	0.15	355.9	1.52	96.6	1.52	358.9	0.15	268.9	0.995	CCW
L(2)	0.02	2.1	0.81	101.7	0.81	359.8	0.02	269.8	1.000	LIN
(2N)	0.04	307.3	1.22	74.7	1.22	359.0	0.03	269.0	1.000	LIN
R(2)	0.00	355.9	0.04	96.6	0.04	358.9	0.00	268.9	0.995	CCW
T(2)	0.03	355.9	0.33	96.6	0.33	358.9	0.03	268.9	0.995	CCW
LAM(2)	0.00	349.4	0.20	94.5	0.20	359.7	0.00	269.7	1.000	LIN
NU(2)	0.05	328.0	1.78	84.9	1.78	359.2	0.05	269.2	1.000	LIN

Table A-46. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, BOTTOM 08-01-81 (0000) THRU 08-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	0.52	326.4	32.78	274.1	32.78	180.6	0.41	270.6	1.000	LIN
O(1)	1.15	17.1	31.51	273.7	31.52	179.5	1.12	269.5	0.999	CW
M(2)	0.56	186.7	35.54	91.4	35.54	359.9	0.56	89.9	1.000	LIN
N(2)	0.65	231.4	9.16	65.6	9.18	356.1	0.16	86.1	1.000	LIN
S(2)	0.56	265.5	9.14	96.4	9.16	356.5	0.11	86.5	1.000	LIN
M(4)	0.52	357.8	4.17	148.0	4.20	353.8	0.26	263.8	0.998	CCW
M(6)	0.18	333.1	0.52	95.7	0.53	348.9	0.15	258.9	0.962	CCW
M(8)	0.14	47.5	0.25	127.4	0.25	8.4	0.14	278.4	0.830	CCW
S(4)	0.26	243.9	0.89	123.5	0.90	351.0	0.22	81.0	0.969	CW
S(6)	0.06	239.1	0.27	288.0	0.28	187.9	0.04	97.9	0.988	CCW
J(1)	0.09	301.0	2.49	274.3	2.49	181.9	0.04	271.9	1.000	LIN
M(1)	0.08	351.8	2.24	273.9	2.24	180.4	0.08	270.4	0.999	CW
(00)	0.05	275.7	1.36	274.5	1.36	182.1	0.00	272.1	1.000	LIN
P(1)	0.17	326.4	10.85	274.1	10.85	180.6	0.14	270.6	1.000	LIN
Q(1)	0.22	42.5	6.11	273.6	6.12	178.7	0.17	268.7	1.000	LIN
(20)	0.03	67.9	0.82	273.4	0.82	178.1	0.01	268.1	1.000	LIN
RHO(1)	0.04	38.9	1.20	273.6	1.20	178.8	0.04	268.8	1.000	LIN
K(2)	0.15	265.5	2.49	96.4	2.49	356.5	0.03	86.5	1.000	LIN
L(2)	0.02	142.1	1.00	117.1	1.00	0.8	0.01	90.8	1.000	LIN
(2N)	0.09	276.1	1.22	39.9	1.22	357.7	0.07	267.7	0.998	CCW
R(2)	0.00	265.5	0.07	96.4	0.07	356.5	0.00	86.5	1.000	LIN
T(2)	0.03	265.5	0.54	96.4	0.54	356.5	0.01	86.5	1.000	LIN
LAM(2)	0.00	223.3	0.25	93.7	0.25	359.4	0.00	89.4	1.000	LIN
NU(2)	0.13	225.4	1.78	69.1	1.78	356.3	0.05	86.3	1.000	LIN

Table A-47. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, BOTTOM 09-01-81 (0000) THRU 09-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	2.60	81.7	33.85	278.8	33.94	175.8	0.76	265.8	1.000	LIN
O(1)	1.63	93.2	30.06	288.3	30.10	177.0	0.42	267.0	1.000	LIN
M(2)	1.68	277.8	31.86	116.9	31.90	357.1	0.55	87.1	1.000	LIN
N(2)	0.49	270.2	7.77	124.3	7.78	357.0	0.28	87.0	0.999	CW
S(2)	0.76	260.5	11.26	84.8	11.29	356.2	0.06	86.2	1.000	LIN
M(4)	0.44	103.4	3.09	206.8	3.09	178.1	0.43	88.1	0.990	CCW
M(6)	0.05	241.7	0.39	280.5	0.39	186.0	0.03	96.0	0.997	CCW
M(8)	0.05	74.9	0.57	313.5	0.57	177.1	0.05	267.1	0.997	CW
S(4)	0.05	75.4	1.00	46.1	1.00	2.3	0.02	92.3	1.000	LIN
S(6)	0.09	27.8	0.11	228.7	0.14	139.6	0.03	229.6	0.983	CW
J(1)	0.13	76.0	2.37	274.1	2.38	177.0	0.04	267.0	1.000	LIN
M(1)	0.12	87.5	2.13	283.5	2.14	177.0	0.03	267.0	1.000	LIN
(00)	0.07	70.2	1.29	269.4	1.29	177.1	0.02	267.1	1.000	LIN
P(1)	0.86	81.7	11.20	278.8	11.23	175.8	0.25	265.8	1.000	LIN
Q(1)	0.32	99.0	5.83	293.0	5.84	177.0	0.08	267.0	1.000	LIN
(2Q)	0.04	104.8	0.78	297.7	0.78	177.0	0.01	267.0	1.000	LIN
RHO(1)	0.06	98.2	1.14	292.3	1.14	177.0	0.02	267.0	1.000	LIN
K(2)	0.21	260.5	3.06	84.8	3.07	356.2	0.02	86.2	1.000	LIN
L(2)	0.05	285.4	0.89	109.5	0.89	357.0	0.00	87.0	1.000	LIN
(2N)	0.07	262.5	1.03	131.7	1.03	357.6	0.05	87.6	0.999	CW
R(2)	0.01	260.5	0.09	84.8	0.09	356.2	0.00	86.2	1.000	LIN
T(2)	0.04	260.5	0.66	84.8	0.67	356.2	0.00	86.2	1.000	LIN
LAM(2)	0.01	269.8	0.22	102.0	0.22	357.0	0.00	87.0	1.000	LIN
NU(2)	0.10	271.2	1.51	123.3	1.51	356.9	0.05	86.9	0.999	CW

Table A-48. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, BOTTOM 10-01-81 (0000) THRU 10-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	1.07	87.6	40.78	280.0	40.79	178.5	0.23	268.5	1.000	LIN
O(1)	0.69	52.0	33.81	270.1	33.81	179.1	0.42	269.1	1.000	LIN
M(2)	0.49	218.8	28.54	94.2	28.54	359.4	0.40	89.4	1.000	LIN
N(2)	0.15	211.8	6.61	73.3	6.61	359.0	0.10	89.0	1.000	LIN
S(2)	0.39	241.8	13.81	85.8	13.81	358.5	0.16	88.5	1.000	LIN
M(4)	0.12	71.0	1.89	123.9	1.89	2.1	0.09	272.1	0.999	CCW
M(6)	0.09	70.8	1.22	136.0	1.22	1.8	0.08	271.8	0.998	CCW
M(8)	0.07	17.8	0.22	340.4	0.22	195.9	0.04	285.9	0.981	CW
S(4)	0.20	107.5	0.83	192.5	0.83	181.3	0.20	91.3	0.971	CCW
S(6)	0.07	130.2	0.42	55.0	0.42	2.4	0.07	92.4	0.988	CW
J(1)	0.05	105.4	2.67	285.0	2.67	178.8	0.00	88.8	1.000	LIN
M(1)	0.05	69.8	2.40	275.1	2.40	178.9	0.02	268.9	1.000	LIN
(00)	0.03	123.3	1.45	289.9	1.45	178.9	0.01	88.9	1.000	LIN
P(1)	0.35	87.6	13.50	280.0	13.50	178.5	0.08	268.5	1.000	LIN
Q(1)	0.13	34.2	6.56	265.2	6.56	179.3	0.10	269.3	1.000	LIN
(20)	0.02	16.3	0.88	260.2	0.88	179.5	0.02	269.5	1.000	LIN
RHO(1)	0.03	36.6	1.28	265.9	1.28	179.2	0.02	269.2	1.000	LIN
K(2)	0.11	241.8	3.76	85.8	3.76	358.5	0.04	88.5	1.000	LIN
L(2)	0.01	225.8	0.80	115.0	0.80	359.7	0.01	89.7	1.000	LIN
(2N)	0.02	204.8	0.88	52.5	0.88	358.9	0.01	88.9	1.000	LIN
R(2)	0.00	241.8	0.11	85.8	0.11	358.5	0.00	88.5	1.000	LIN
T(2)	0.02	241.8	0.81	85.8	0.81	358.5	0.01	88.5	1.000	LIN
LAM(2)	0.00	229.4	0.20	90.3	0.20	359.3	0.00	89.3	1.000	LIN
NU(2)	0.03	212.7	1.28	76.1	1.28	359.1	0.02	89.1	1.000	LIN

Table A-49. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, BOTTOM 11-01-81 (0000) THRU 11-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	0.54	339.4	34.64	284.2	34.65	180.5	0.44	270.5	1.000	LIN
O(1)	1.05	289.2	29.10	273.4	29.12	182.0	0.28	272.0	1.000	LIN
M(2)	1.09	86.1	28.79	90.5	28.81	2.2	0.08	272.2	1.000	LIN
N(2)	0.67	72.9	5.45	71.6	5.49	7.0	0.02	97.0	1.000	LIN
S(2)	0.78	140.1	13.05	73.6	13.05	1.4	0.71	91.4	0.998	CW
M(4)	0.15	200.8	2.66	102.8	2.66	359.5	0.15	89.5	0.998	CW
M(6)	0.05	124.9	0.75	133.1	0.75	3.9	0.01	273.9	1.000	LIN
M(8)	0.08	191.3	0.07	56.8	0.10	306.8	0.04	36.8	0.913	CW
S(4)	0.21	166.9	2.35	119.3	2.36	3.5	0.16	93.5	0.998	CW
S(6)	0.18	106.9	0.35	278.4	0.39	152.4	0.02	62.4	0.998	CCW
J(1)	0.08	4.6	2.30	289.6	2.30	180.5	0.08	270.5	0.999	CW
M(1)	0.07	314.3	2.07	278.8	2.07	181.7	0.04	271.7	1.000	LIN
(00)	0.04	29.7	1.25	295.0	1.25	179.8	0.04	269.8	0.999	CW
P(1)	0.18	339.4	11.47	284.2	11.47	180.5	0.15	270.5	1.000	LIN
Q(1)	0.20	264.1	5.65	268.0	5.65	182.1	0.01	92.1	1.000	LIN
(2Q)	0.03	239.0	0.76	262.6	0.76	181.9	0.01	91.9	1.000	LIN
RHO(1)	0.04	267.6	1.11	268.7	1.11	182.1	0.00	92.1	1.000	LIN
K(2)	0.21	140.1	3.55	73.6	3.55	1.4	0.19	91.4	0.998	CW
L(2)	0.03	99.3	0.81	109.3	0.81	2.1	0.01	272.1	1.000	LIN
(2N)	0.09	59.8	0.73	52.7	0.73	6.9	0.01	96.9	1.000	LIN
R(2)	0.01	140.1	0.10	73.6	0.10	1.4	0.01	91.4	0.998	CW
T(2)	0.05	140.1	0.77	73.6	0.77	1.4	0.04	91.4	0.998	CW
LAM(2)	0.01	111.2	0.20	82.7	0.20	1.9	0.00	91.9	1.000	LIN
NU(2)	0.13	74.7	1.06	74.1	1.07	7.0	0.00	97.0	1.000	LIN

Table A-50. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, BOTTOM 12-01-81 (0000) THRU 12-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	0.42	233.6	33.51	279.6	33.52	180.5	0.30	90.5	1.000	LIN
O(1)	0.18	132.1	25.22	270.0	25.22	179.7	0.12	89.7	1.000	LIN
M(2)	0.77	265.5	28.03	92.6	28.04	358.4	0.10	88.4	1.000	LIN
N(2)	0.49	154.1	8.64	60.0	8.64	359.8	0.48	89.8	0.998	CW
S(2)	1.02	97.1	11.32	51.7	11.35	3.6	0.72	93.6	0.998	CW
M(4)	0.20	228.4	2.47	104.1	2.48	357.4	0.17	87.4	0.998	CW
M(6)	0.09	258.4	0.95	172.5	0.95	0.4	0.09	90.4	0.995	CW
M(8)	0.01	65.0	0.34	134.8	0.34	0.5	0.01	270.5	1.000	LIN
S(4)	0.33	254.7	1.76	74.8	1.79	349.5	0.00	79.5	1.000	LIN
S(6)	0.35	30.4	0.60	173.0	0.67	153.1	0.19	63.1	0.959	CCW
J(1)	0.01	284.3	1.99	284.5	1.99	180.4	0.00	90.4	1.000	LIN
M(1)	0.01	182.8	1.79	274.8	1.79	180.0	0.01	90.0	1.000	LIN
(00)	0.01	335.0	1.08	289.3	1.08	180.3	0.01	270.3	1.000	LIN
P(1)	0.14	233.6	11.09	279.6	11.09	180.5	0.10	90.5	1.000	LIN
Q(1)	0.03	81.3	4.89	265.2	4.89	179.6	0.00	269.6	1.000	LIN
(2Q)	0.00	30.6	0.66	260.4	0.66	179.7	0.00	269.7	1.000	LIN
RHO(1)	0.01	88.4	0.96	265.9	0.96	179.6	0.00	89.6	1.000	LIN
K(2)	0.28	97.1	3.08	51.7	3.09	3.6	0.20	93.6	0.998	CW
L(2)	0.02	17.0	0.78	125.3	0.78	359.5	0.02	269.5	1.000	LIN
(2N)	0.06	42.6	1.15	27.4	1.15	3.1	0.02	93.1	1.000	LIN
R(2)	0.01	97.1	0.09	51.7	0.09	3.6	0.01	93.6	0.998	CW
T(2)	0.06	97.1	0.67	51.7	0.67	3.6	0.04	93.6	0.998	CW
LAM(2)	0.01	187.4	0.20	73.6	0.20	359.4	0.00	89.4	1.000	LIN
NU(2)	0.09	169.0	1.68	64.4	1.68	359.2	0.09	89.2	0.999	CW

Table A-51. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, BOTTOM 02-01-82 (0000) THRU 03-01-82 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	1.09	7.4	26.75	272.5	26.75	179.8	1.08	269.8	0.999	CW
O(1)	0.76	329.7	30.68	271.6	30.69	180.7	0.64	270.7	1.000	LIN
M(2)	0.81	157.2	31.03	84.8	31.03	0.5	0.77	90.5	1.000	LIN
N(2)	0.78	196.0	7.48	42.6	7.51	354.7	0.35	84.7	0.999	CW
S(2)	0.01	112.8	9.60	105.9	9.60	0.1	0.00	90.1	1.000	LIN
M(4)	0.28	351.9	2.83	128.4	2.84	355.8	0.10	265.8	0.998	CCW
M(6)	0.27	271.7	0.53	105.2	0.59	333.9	0.06	63.9	0.996	CW
M(8)	0.07	222.4	0.33	183.4	0.34	188.8	0.04	278.8	0.993	CW
S(4)	0.15	311.8	0.42	35.5	0.42	2.4	0.14	272.4	0.940	CCW
S(6)	0.21	332.7	0.63	46.2	0.64	6.0	0.20	276.0	0.948	CCW
J(1)	0.06	26.3	2.42	273.0	2.42	179.4	0.05	269.4	1.000	LIN
M(1)	0.05	348.5	2.18	272.1	2.18	180.3	0.05	270.3	1.000	LIN
(00)	0.03	45.1	1.32	273.5	1.32	179.1	0.02	269.1	1.000	LIN
P(1)	0.36	7.4	8.85	272.5	8.85	179.8	0.36	269.8	0.999	CW
O(1)	0.15	310.8	5.95	271.1	5.95	181.1	0.09	271.1	1.000	LIN
(20)	0.02	292.0	0.80	270.6	0.80	181.3	0.01	271.3	1.000	LIN
RHO(1)	0.03	313.5	1.17	271.2	1.17	181.0	0.02	271.0	1.000	LIN
K(2)	0.00	112.8	2.61	105.9	2.61	0.1	0.00	90.1	1.000	LIN
L(2)	0.02	118.4	0.87	127.1	0.87	1.5	0.00	271.5	1.000	LIN
(2N)	0.10	234.7	0.99	0.4	1.00	356.5	0.08	266.5	0.996	CCW
R(2)	0.00	112.8	0.08	105.9	0.08	0.1	0.00	90.1	1.000	LIN
T(2)	0.00	112.8	0.57	105.9	0.57	0.1	0.00	90.1	1.000	LIN
LAM(2)	0.01	136.6	0.22	94.6	0.22	1.1	0.00	91.1	1.000	LIN
NU(2)	0.15	190.8	1.45	48.3	1.46	355.3	0.09	85.3	0.998	CW

Table A-52. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, BOTTOM 04-01-82 (0000) THRU 04-29-82 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	1.09	255.6	32.24	287.9	32.25	181.6	0.58	91.6	1.000	LIN
O(1)	0.51	20.5	22.67	266.4	22.67	179.5	0.47	269.5	1.000	LIN
M(2)	0.53	67.4	24.00	87.6	24.01	1.2	0.18	271.2	1.000	LIN
N(2)	0.69	222.9	4.20	111.2	4.21	356.4	0.64	86.4	0.988	CW
S(2)	0.90	155.7	8.84	47.5	8.84	358.1	0.86	88.1	0.995	CW
M(4)	0.50	172.4	1.22	141.8	1.30	20.0	0.24	110.0	0.983	CW
M(6)	0.15	310.1	0.49	153.7	0.51	344.4	0.06	74.4	0.994	CW
M(8)	0.04	261.8	0.53	184.4	0.53	180.9	0.04	270.9	0.998	CW
S(4)	0.25	157.5	0.58	85.5	0.58	9.2	0.24	99.2	0.914	CW
S(6)	0.18	152.9	0.46	34.1	0.47	348.1	0.16	78.1	0.945	CW
J(1)	0.04	193.2	1.79	298.6	1.79	179.7	0.04	89.7	1.000	LIN
M(1)	0.04	318.1	1.61	277.1	1.61	181.0	0.02	271.0	1.000	LIN
(00)	0.02	130.8	0.97	309.4	0.98	178.7	0.00	88.7	1.000	LIN
P(1)	0.36	255.6	10.67	287.9	10.67	181.6	0.19	91.6	1.000	LIN
O(1)	0.10	82.9	4.40	255.6	4.40	178.7	0.01	88.7	1.000	LIN
(20)	0.01	145.3	0.59	244.8	0.59	179.8	0.01	89.8	1.000	LIN
RHO(1)	0.02	74.2	0.86	257.1	0.86	178.7	0.00	268.7	1.000	LIN
K(2)	0.25	155.7	2.40	47.5	2.41	358.1	0.23	88.1	0.995	CW
L(2)	0.01	272.0	0.67	64.0	0.67	358.9	0.01	268.9	1.000	LIN
(2N)	0.09	18.3	0.56	134.8	0.56	355.7	0.08	265.7	0.989	CCW
R(2)	0.01	155.7	0.07	47.5	0.07	358.1	0.01	88.1	0.995	CW
T(2)	0.05	155.7	0.52	47.5	0.52	358.1	0.05	88.1	0.995	CW
LAM(2)	0.00	108.4	0.17	69.0	0.17	1.0	0.00	91.0	1.000	LIN
NU(2)	0.13	202.0	0.81	108.0	0.81	359.3	0.13	89.3	0.986	CW

Table A-53. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, TOP 03-01-81 (0000) THRU 03-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	3.72	138.4	52.66	284.0	52.75	176.7	2.10	86.7	0.999	CCW
O(1)	2.88	107.7	40.50	285.3	40.60	175.9	0.12	85.9	1.000	LIN
M(2)	2.45	284.1	41.54	97.9	41.61	356.6	0.27	266.6	1.000	LIN
N(2)	1.05	304.3	10.22	80.2	10.24	355.7	0.73	265.7	0.997	CCW
S(2)	0.62	300.5	12.03	107.8	12.05	357.1	0.14	267.1	1.000	LIN
M(4)	0.42	276.8	2.78	155.7	2.78	355.5	0.36	85.5	0.992	CW
M(6)	0.28	189.8	1.13	85.5	1.13	356.3	0.27	86.3	0.971	CW
M(8)	0.06	223.5	0.32	333.8	0.32	176.4	0.05	86.4	0.986	CCW
S(4)	0.34	259.4	1.46	59.0	1.50	347.6	0.12	257.6	0.997	CCW
S(6)	0.22	91.3	0.95	287.5	0.97	167.5	0.06	257.5	0.998	CW
J(1)	0.23	153.8	3.20	283.3	3.20	177.4	0.18	87.4	0.999	CCW
M(1)	0.20	123.1	2.88	284.6	2.88	176.1	0.06	86.1	1.000	LIN
(00)	0.12	169.1	1.74	282.7	1.74	178.4	0.11	88.4	0.998	CCW
P(1)	1.23	138.4	17.43	284.0	17.46	176.7	0.69	86.7	0.999	CCW
Q(1)	0.56	92.4	7.86	285.9	7.88	176.0	0.13	266.0	1.000	LIN
(20)	0.07	77.0	1.05	286.6	1.05	176.5	0.04	266.5	0.999	CW
RHO(1)	0.11	94.5	1.54	285.9	1.54	176.0	0.02	266.0	1.000	LIN
K(2)	0.17	300.5	3.27	107.8	3.28	357.1	0.04	267.1	1.000	LIN
L(2)	0.07	264.0	1.16	115.5	1.16	357.1	0.04	87.1	1.000	LIN
(2N)	0.14	324.4	1.36	62.6	1.36	359.1	0.14	269.1	0.995	CCW
R(2)	0.00	300.5	0.10	107.8	0.10	357.1	0.00	267.1	1.000	LIN
T(2)	0.04	300.5	0.71	107.8	0.71	357.1	0.01	267.1	1.000	LIN
LAM(2)	0.02	291.7	0.29	102.5	0.29	356.7	0.00	266.7	1.000	LIN
NU(2)	0.20	301.6	1.98	82.6	1.99	355.4	0.13	265.4	0.998	CCW

Table A-54. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, TOP 03-31-81 (0000) THRU 04-28-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	3.63	124.0	38.42	295.6	38.59	174.7	0.53	84.7	1.000	LIN
Q(1)	3.98	107.1	36.24	270.1	36.44	174.0	1.16	84.0	0.999	CCW
M(2)	3.43	280.4	38.34	98.1	38.50	354.9	0.14	264.9	1.000	LIN
N(2)	0.58	246.7	11.03	52.3	11.04	357.1	0.15	267.1	1.000	LIN
S(2)	0.74	278.5	14.93	73.3	14.94	357.4	0.31	267.4	1.000	LIN
M(4)	0.29	273.2	2.36	141.7	2.37	355.4	0.21	85.4	0.996	CW
M(6)	0.12	272.4	0.36	165.6	0.36	354.1	0.11	84.1	0.952	CW
M(8)	0.18	247.0	0.18	116.0	0.23	315.9	0.10	45.9	0.891	CW
S(4)	0.32	143.6	0.75	261.5	0.77	167.1	0.27	77.1	0.934	CCW
S(6)	0.13	289.2	0.98	109.0	0.99	352.4	0.00	262.4	1.000	LIN
J(1)	0.31	132.4	2.86	308.4	2.88	173.7	0.02	83.7	1.000	LIN
M(1)	0.28	115.6	2.57	282.8	2.59	173.9	0.06	83.9	1.000	LIN
(00)	0.17	140.8	1.56	321.1	1.57	173.7	0.00	263.7	1.000	LIN
P(1)	1.20	124.0	12.72	295.6	12.77	174.7	0.17	84.7	1.000	LIN
Q(1)	0.77	98.7	7.03	257.3	7.07	174.1	0.28	84.1	0.999	CCW
(20)	0.10	90.3	0.94	244.6	0.95	174.3	0.04	84.3	0.999	CCW
RHO(1)	0.15	99.9	1.38	259.1	1.38	174.1	0.05	84.1	0.999	CCW
K(2)	0.20	278.5	4.06	73.3	4.06	357.4	0.09	267.4	1.000	LIN
L(2)	0.10	314.2	1.07	143.9	1.08	355.0	0.02	85.0	1.000	LIN
(2N)	0.08	213.0	1.47	6.5	1.47	357.3	0.03	267.3	1.000	LIN
R(2)	0.01	278.5	0.12	73.3	0.12	357.4	0.00	267.4	1.000	LIN
T(2)	0.04	278.5	0.88	73.3	0.88	357.4	0.02	267.4	1.000	LIN
LAM(2)	0.02	279.5	0.27	86.6	0.27	355.0	0.01	265.0	1.000	LIN
NU(2)	0.11	251.3	2.14	58.5	2.14	357.0	0.03	267.0	1.000	LIN

Table A-55. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, TOP 06-01-81 (0000) THRU 06-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	6.42	121.6	38.11	278.4	38.57	171.2	2.50	81.2	0.998	CCW
O(1)	7.23	72.0	29.22	255.7	30.10	166.1	0.45	256.1	1.000	LIN
M(2)	4.77	253.1	30.99	98.3	31.29	352.0	2.01	82.0	0.998	CW
N(2)	2.55	306.5	10.39	74.0	10.51	351.2	2.00	261.2	0.982	CCW
S(2)	2.69	305.7	11.35	47.3	11.37	357.1	2.63	267.1	0.973	CCW
M(4)	0.38	31.1	2.01	169.8	2.03	351.7	0.25	261.7	0.992	CCW
M(6)	0.51	149.1	0.62	233.3	0.63	193.4	0.50	103.4	0.600	CCW
M(8)	0.18	262.3	0.15	263.2	0.24	229.6	0.00	139.6	1.000	LIN
S(4)	0.69	244.3	1.79	308.8	1.82	190.6	0.61	100.6	0.941	CCW
S(6)	0.87	27.5	0.52	102.3	0.88	77.0	0.49	347.0	0.830	CCW
J(1)	0.57	146.4	2.31	289.8	2.35	168.5	0.33	78.5	0.990	CCW
M(1)	0.51	96.8	2.07	267.0	2.14	166.3	0.08	76.3	0.999	CCW
(00)	0.31	171.2	1.26	301.1	1.27	170.6	0.24	80.6	0.983	CCW
P(1)	2.13	121.6	12.61	278.4	12.77	171.2	0.83	81.2	0.998	CCW
Q(1)	1.40	47.2	5.67	244.3	5.83	166.6	0.40	256.6	0.998	CW
(20)	0.19	22.5	0.76	233.0	0.78	167.8	0.09	257.8	0.993	CW
RHO(1)	0.27	50.7	1.11	245.9	1.14	166.5	0.07	256.5	0.998	CW
K(2)	0.73	305.7	3.09	47.3	3.09	357.1	0.72	267.1	0.973	CCW
L(2)	0.13	199.7	0.87	122.5	0.87	2.0	0.13	92.0	0.989	CW
(2N)	0.34	360.0	1.38	49.8	1.40	9.3	0.26	279.3	0.983	CCW
R(2)	0.02	305.7	0.09	47.3	0.09	357.1	0.02	267.1	0.973	CCW
T(2)	0.16	305.7	0.67	47.3	0.67	357.1	0.16	267.1	0.973	CCW
LAM(2)	0.03	277.5	0.22	74.6	0.22	351.9	0.01	261.9	0.998	CCW
NU(2)	0.49	299.4	2.02	77.3	2.05	349.4	0.33	259.4	0.987	CCW

Table A-56. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, TOP 08-01-81 (0000) THRU 08-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT SENSE
	H(A) CM/SEC	KAPPA DEG	H(A) CM/SEC	KAPPA DEG	VEL CM/SEC	DIR DEG	VEL CM/SEC	DIR DEG	ECCEN- TRICITY	
K(1)	2.94	112.2	40.08	278.4	40.18	175.9	0.70	85.9	1.000	LIN
O(1)	2.96	109.3	38.71	278.0	38.82	175.7	0.58	85.7	1.000	LIN
M(2)	3.20	275.5	44.26	96.1	44.37	355.9	0.03	85.9	1.000	LIN
N(2)	1.62	267.1	12.55	80.8	12.65	352.7	0.18	262.7	1.000	LIN
S(2)	0.81	299.2	10.61	101.3	10.64	355.8	0.25	265.8	1.000	LIN
M(4)	0.17	162.4	4.37	158.9	4.38	2.2	0.01	92.2	1.000	LIN
M(6)	0.10	201.3	0.34	293.9	0.34	179.1	0.10	89.1	0.954	CCW
M(8)	0.20	226.8	0.13	150.5	0.21	256.1	0.13	346.1	0.796	CW
S(4)	0.18	21.7	1.26	175.1	1.27	352.9	0.08	262.9	0.998	CCW
S(6)	0.10	202.3	0.28	39.2	0.29	341.6	0.03	71.6	0.996	CW
J(1)	0.23	113.6	3.06	278.7	3.07	175.8	0.06	85.8	1.000	LIN
M(1)	0.21	110.7	2.75	278.2	2.76	175.7	0.05	85.7	1.000	LIN
(00)	0.13	115.1	1.66	278.9	1.67	175.8	0.04	85.8	1.000	LIN
P(1)	0.97	112.2	13.27	278.4	13.30	175.9	0.23	85.9	1.000	LIN
Q(1)	0.57	107.8	7.51	277.8	7.53	175.7	0.10	85.7	1.000	LIN
(20)	0.08	106.3	1.01	277.6	1.01	175.7	0.01	85.7	1.000	LIN
RHO(1)	0.11	108.0	1.47	277.8	1.48	175.7	0.02	85.7	1.000	LIN
K(2)	0.22	299.2	2.89	101.3	2.89	355.8	0.07	265.8	1.000	LIN
L(2)	0.09	284.0	1.24	111.4	1.24	355.9	0.01	85.9	1.000	LIN
(2N)	0.22	258.7	1.67	65.5	1.68	352.8	0.05	262.8	1.000	LIN
R(2)	0.01	299.2	0.08	101.3	0.09	355.8	0.00	265.8	1.000	LIN
T(2)	0.05	299.2	0.63	101.3	0.63	355.8	0.01	265.8	1.000	LIN
LAM(2)	0.02	286.5	0.31	98.5	0.31	355.9	0.00	265.9	1.000	LIN
NU(2)	0.32	268.2	2.43	82.9	2.45	352.7	0.03	262.7	1.000	LIN

Table A-57. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, TOP 12-01-81 (0000) THRU 12-29-81 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST H(A) CM/SEC	KAPPA DEG	NORTH-SOUTH H(A) CM/SEC	KAPPA DEG	MAJOR VECTOR VEL CM/SEC	DIR DEG	MINOR VECTOR VEL CM/SEC	DIR DEG	ELLIPSE ECCEN- TRICITY	ROT SENSE
K(1)	3.40	108.9	39.71	281.0	39.85	175.2	0.46	85.2	1.000	LIN
O(1)	2.83	100.2	28.99	270.9	29.13	174.5	0.46	84.5	1.000	LIN
M(2)	2.95	266.4	32.47	94.3	32.60	354.9	0.40	84.9	1.000	LIN
N(2)	0.49	238.4	10.16	61.1	10.17	357.2	0.02	87.2	1.000	LIN
S(2)	1.32	243.3	13.22	55.9	13.28	354.3	0.17	264.3	1.000	LIN
M(4)	0.29	317.3	2.86	103.7	2.86	355.2	0.16	265.2	0.998	CCW
M(6)	0.24	296.4	0.95	163.4	0.96	350.1	0.17	80.1	0.984	CW
M(8)	0.07	78.6	0.44	125.7	0.45	6.2	0.05	276.2	0.993	CCW
S(4)	0.47	256.9	1.84	63.6	1.89	346.1	0.10	256.1	0.998	CCW
S(6)	0.24	20.1	0.61	175.6	0.65	339.6	0.09	249.6	0.989	CCW
J(1)	0.22	113.2	2.29	286.0	2.30	174.5	0.03	84.5	1.000	LIN
M(1)	0.20	104.5	2.06	275.9	2.07	174.5	0.03	84.5	1.000	LIN
(00)	0.12	117.5	1.25	291.1	1.25	174.5	0.01	84.5	1.000	LIN
P(1)	1.12	108.9	13.14	281.0	13.19	175.2	0.15	85.2	1.000	LIN
Q(1)	0.55	95.9	5.62	265.9	5.65	174.5	0.10	84.5	1.000	LIN
(2Q)	0.07	91.6	0.75	260.8	0.76	174.5	0.01	84.5	1.000	LIN
RHO(1)	0.11	96.5	1.10	266.6	1.11	174.5	0.02	84.5	1.000	LIN
K(2)	0.36	243.3	3.59	55.9	3.61	354.3	0.05	264.3	1.000	LIN
L(2)	0.08	294.3	0.91	127.4	0.91	354.9	0.02	84.9	1.000	LIN
(2N)	0.07	210.5	1.35	28.0	1.35	357.2	0.00	267.2	1.000	LIN
R(2)	0.01	243.3	0.11	55.9	0.11	354.3	0.00	264.3	1.000	LIN
T(2)	0.08	243.3	0.78	55.9	0.78	354.3	0.01	264.3	1.000	LIN
LAM(2)	0.02	255.7	0.23	76.5	0.23	354.8	0.00	84.8	1.000	LIN
NU(2)	0.10	242.2	1.97	65.6	1.97	357.2	0.01	87.2	1.000	LIN

Table A-58. 29-DAY HARMONIC TIDAL ANALYSIS
FOR SITE P, TOP 04-01-82 (0000) THRU 04-29-82 (2330) CST.
SEE INTRODUCTION TO SECTION A.6 FOR ADDITIONAL INFORMATION.

CON- STITUENT	EAST-WEST		NORTH-SOUTH		MAJOR VECTOR		MINOR VECTOR		ELLIPSE	ROT
	H(A)	KAPPA	H(A)	KAPPA	VEL	DIR	VEL	DIR	ECCEN- TRICITY	SENSE
	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG	CM/SEC	DEG		
K(1)	3.03	129.7	39.27	285.2	39.37	176.0	1.25	86.0	0.999	CCW
O(1)	4.18	109.1	33.44	275.6	33.68	173.1	0.97	83.1	1.000	LIN
M(2)	2.05	276.5	22.81	81.5	22.90	355.0	0.53	265.0	1.000	LIN
N(2)	1.63	183.9	9.69	70.5	9.72	356.1	1.50	86.1	0.988	CW
S(2)	0.33	307.8	4.34	80.2	4.35	357.0	0.25	267.0	0.998	CCW
M(4)	1.37	8.4	2.08	138.5	2.31	331.8	0.95	241.8	0.912	CCW
M(6)	0.59	122.4	0.36	163.8	0.66	62.2	0.21	332.2	0.946	CCW
M(8)	0.30	194.9	0.56	197.5	0.64	208.5	0.01	118.5	1.000	LIN
S(4)	1.25	274.9	0.85	182.9	1.25	272.5	0.85	2.5	0.729	CW
S(6)	0.45	18.0	1.73	261.6	1.74	173.1	0.40	263.1	0.974	CW
J(1)	0.33	140.0	2.64	289.9	2.66	173.8	0.16	83.8	0.998	CCW
M(1)	0.30	119.4	2.37	280.4	2.39	173.3	0.10	83.3	0.999	CCW
(00)	0.18	150.3	1.44	294.7	1.45	174.2	0.10	84.2	0.997	CCW
P(1)	1.00	129.7	13.00	285.2	13.03	176.0	0.41	86.0	0.999	CCW
Q(1)	0.81	98.9	6.49	270.9	6.54	172.9	0.11	82.9	1.000	LIN
(20)	0.11	88.6	0.87	266.1	0.88	172.9	0.00	82.9	1.000	LIN
RHO(1)	0.16	100.3	1.27	271.5	1.28	173.0	0.02	83.0	1.000	LIN
K(2)	0.09	307.8	1.18	80.2	1.18	357.0	0.07	267.0	0.998	CCW
L(2)	0.06	9.0	0.64	92.5	0.64	0.6	0.06	270.6	0.996	CCW
(2N)	0.22	91.4	1.29	59.5	1.30	8.2	0.11	98.2	0.996	CW
R(2)	0.00	307.8	0.03	80.2	0.03	357.0	0.00	267.0	0.998	CCW
T(2)	0.02	307.8	0.26	80.2	0.26	357.0	0.01	267.0	0.998	CCW
LAM(2)	0.01	291.0	0.16	80.9	0.16	355.5	0.01	265.5	0.999	CCW
NU(2)	0.32	196.3	1.88	72.0	1.89	354.5	0.26	84.5	0.990	CW

A.7 Plots of Near Bottom Current Velocity, Temperature and Salinity During Plume Tracking Cruises

Figures A-257 through A-265 are expanded-scale plots of the near bottom current velocity, temperature and salinity data from Site D (diffuser site) for each day on which the brine plume was mapped. A plume tracking operation (see Chapter 4. Volume I) takes six to ten hours to complete. Computer modelling indicates that the major axis of the plume is oriented with the current and responds quickly to shifts in the direction of the current. Thus, a truly synoptic picture of the plume probably cannot be obtained on days during which there are significant shifts in the direction of the current, and it may be useful to those assessing the extent and effect of the plume to have a more detailed picture of the currents during each day of plume tracking.

In these next nine figures, hourly values of the 3-hour low-pass filtered data have been plotted for the indicated day. The stick vectors have been reconstructed from the hourly values of orthogonal components. For each stick vector the x-axis is oriented perpendicular to the coast ($356^{\circ} - 176^{\circ}$) and the y-axis is oriented parallel to the coast.

The orientations of the axes of the orthogonal component plots are the same as in sections A.4 and A.5.

The graphics in this section were done with the FESTA (Brooks, 1976) and PLOTSA (Reid, 1980) software packages for time series analysis.

SITE D, BOTTOM (CST) PLUME TRACK DAY

Figure A-257. Hourly stick vectors, orthogonal components of current velocity, temperature and salinity time series for June 9, 1981 from the near bottom instrument at site D (diffuser site). The x-axis of the stick plot is approximately perpendicular to the coast ($356^{\circ}\text{T} - 176^{\circ}\text{T}$). See introduction to section A.7 for additional explanation.

SITE D, BOTTOM (CST) PLUME TRACK DAY

Figure A-258. Hourly stick vectors, orthogonal components of current velocity, temperature and salinity time series for June 17, 1981 from the near bottom instrument at site D (diffuser site). The x-axis of the stick plot is approximately perpendicular to the coast (356°T - 176°T). See introduction to section A.7 for additional explanation.

SITE D, BOTTOM (CST) PLUME TRACK DAY

Figure A-259. Hourly stick vectors, orthogonal components of current velocity, temperature and salinity time series for June 30, 1981 from the near bottom instrument at site D (diffuser site). The x-axis of the stick plot is approximately perpendicular to the coast (356°T-176°T). See introduction to section A.7 for additional explanation.

SITE D,BOTTOM (CST) PLUME TRACK DAY

Figure A-260. Hourly stick vector, orthogonal components of current velocity, temperature and salinity time series for August 12, 1981 from the near bottom instrument at site D (diffuser site). The x-axis of the stick plot is approximately perpendicular to the coast (356°T-176°T). See introduction to section A.7 for additional explanation.

SITE D,BOTTOM (CST) PLUME TRACK DAY

Figure A-261. Hourly stick vectors, orthogonal components of current velocity, temperature and salinity time series for October 28, 1981 from the near bottom instrument at site D (diffuser site). The x-axis of the stick plot is approximately perpendicular to the coast (356°T-176°T). See introduction to section A.7 for additional explanation.

Figure A-262. Hourly stick vectors, orthogonal components of current velocity, temperature and salinity time series for November 25, 1981 from the near bottom instrument at site D (diffuser site). The x-axis of the stick plot is approximately perpendicular to the coast ($356^{\circ}\text{T} - 176^{\circ}\text{T}$). See introduction to section A.7 for additional explanation.

SITE D, BOTTOM (CST) PLUME TRACK DAY

Figure A-263. Hourly stick vectors, orthogonal components of current velocity, temperature and salinity time series for December 16, 1981 from the near bottom instrument at site D (diffuser site). The x-axis of the stick plot is approximately perpendicular to the coast ($356^\circ\text{T} - 176^\circ\text{T}$). See introduction to section A.7 for additional explanation.

Figure A-264. Hourly stick vectors, orthogonal components of current velocity, temperature and salinity time series for February 14, 1981 from the near bottom instrument at site D (diffuser site). The x-axis of the stick plot is approximately perpendicular to the coast ($356^{\circ}\text{T} - 176^{\circ}\text{T}$). See introduction to section A.7 for additional explanation.

Figure A-265. Hourly stick vectors, orthogonal components of current velocity, temperature and salinity time series for April 30, 1981 from the near bottom instrument at site D (diffuser site). The x-axis of the stick plot is approximately perpendicular to the coast (356°T-176°T). See introduction to section A.7 for additional explanation.

A.8 Spectral Analyses Plots

The autospectra, cross spectrum, phase and coherence-squared have been computed for various combinations of time series of current and wind stress. Wind stress was computed from the NDBO hourly wind data using the equation of Wu (1980) for the drag coefficient. The hourly values of wind stress were then filtered with a forty-hour low-pass filter, subsampled at six-hour intervals, and the mean subtracted. Similar operations were performed on the currents. In some cases where frequencies above 0.5 cycles per day are studied, the series were filtered with a three-hour low-pass filter, and hourly values were used in the spectral computations. The results are shown in Figures A-266 through A-293.

Spectral analysis routines in the FESTA library were used (Brooks, 1976). Spectra were computed by the method of Fourier transforming the autocovariance function (Blackman and Tukey, 1958). The maximum number of lags for the autocovariance function was chosen to optimize the trade-off between variance and bandwidth (Jenkins and Watts, 1968). In a number of cases the spectral estimate using two different maximum lags is included in order to show some of the spectral structure which is lost when a wider bandwidth is used to reduce the variance in the spectral estimate. Typically, the maximum lag number is about 10% (and in some cases, 20%) of the total number of points in the series. The time period covered by the data and the total number of points in the series are shown in parentheses below the figures. It should be obvious whether the sample interval is hourly or six-hourly. A Tukey spectral window has been used in all cases.

The horizontal line marking the 95% significance level for coherence squared is the level below which would fall 95% of the coherence estimates between truly uncorrelated variables. (Note: the significance level is not a confidence interval.) Negative phase means the "y" series lags the "x" series.

a. $X_{(DT\ ALS)} VS Y_{(WT\ ALS)} (07JUN81-18OCT81, 533, 3)$

Figure A-266. Autospectra, cross spectrum, phase and coherence squared for D, top, alongshore (X) versus W, top, alongshore (Y) for the period June 7 through October 18, 1981 with a) 50 lags and b) 100 lags. Ordinate units are $cm^2/s^2/cycle/day$. Negative phase means Y lags X.

b. $X_{(DT\ ALS)}\ VS\ Y_{(WT\ ALS)}\ (07JUN81-18OCT81, 533, 3)$

Figure A-266. Continued.

a. $X(DT\ ALS)$ VS $Y(WT\ ALS)$ (23NOV81-20JAN82,233, 3)

Figure A-267. Autospectra, cross spectrum, phase and coherence squared for D, top, alongshore (X) versus W, top, alongshore (Y) for the period November 23, 1981 through January 20, 1982 with a) 25 lags and b) 50 lags. Ordinate units are $cm^2/s^2/cycle/day$. Negative phase means Y lags X.

b. $X_{(DT\ ALS)}\ VS\ Y_{(WT\ ALS)}\ (23NOV81-20JAN82, 233, 3)$
 Figure A-267. Continued.

a. $X_{(DT\ ALS)} \text{ VS } Y_{(WT\ ALS)} \text{ (22FEB82-12MAY82, 317, 3)}$

Figure A-268. Autospectra, cross spectrum, phase and coherence squared for D, top, alongshore (X) versus W, top, alongshore (Y) for the period February 22 through May 12, 1982 with a) 32 lags and b) 64 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle/day}$. Negative phase means Y lags X.

b. $X_{(DT\ ALS)} \text{ VS } Y_{(WT\ ALS)}$ (22FEB82-12MAY82, 317, 3)
 Figure A-268. Continued.

a.

$X(DT\ ALS)$ VS $Y(ST\ ALS)$ (09APR81-09AUG81, 489, 3)

Figure A-269. Autospectra, cross spectrum, phase and coherence squared for D, top, alongshore (X) versus S, top, alongshore (Y) for the period April 9, through August 9, 1982 with a) 50 lags and b) 100 lags. Ordinate units are $cm^2/s^2/cycle/day$. Negative phase means Y lags X.

b. $X_{(DT\ ALS)}\ VS\ Y_{(ST\ ALS)}\ (09APR81-09AUG81, 489, 3)$
Figure A-269. Continued.

a. $X(DT\ ALS)$ VS $Y(ST\ ALS)$ (20DEC81-12MAY82, 573, 3)

Figure A-270. Autospectra, cross spectrum, phase and coherence squared for D, top, alongshore (X) versus S, top, alongshore (Y) for the period December 20, 1981 through May 12, 1982 with a) 60 lags and b) 120 lags. Ordinate units are $cm^2/s^2/cycle/day$. Negative phase means Y lags X.

b. $X_{(DT\ ALS)} \text{ VS } Y_{(ST\ ALS)} (20DEC81-12MAY82, 573, 3)$
 Figure A-270. Continued.

a.

X(DB ALS) VS Y(WB ALS) (14JUL81-18OCT81, 385, 3)

Figure A-271. Autospectra, cross spectrum, phase and coherence squared for D, bottom, alongshore (X) versus W, bottom, alongshore (Y) for the period July 14 through October 18, 1981 with a) 40 lags and b) 80 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle}/\text{day}$. Negative phase means Y lags X.

b. $X_{(DB\ AL5)}\ VS\ Y_{(WB\ AL5)}\ (14JUL81-18OCT81, 3)$
 Figure A-271. Continued.

a. $X_{(DB\ ALS)}\ VS\ Y_{(WB\ ALS)}\ (23NOV81-29APR82, 629, 3)$

Figure A-272. Autospectra, cross spectrum, phase and coherence squared for D, bottom, alongshore (X) versus W, bottom, alongshore (Y) for the period November 23, 1981 through April 29, 1982 with a) 60 lags and b) 120 lags. Ordinate units are $cm^2/s^2/cycle/day$. Negative phase means Y lags X.

b. $X_{(DB\ ALS)}\ VS\ Y_{(WB\ ALS)}\ (23NOV81-29APR82, 629, 3)$
 Figure A-272. Continued.

a.

$X(\text{DB ALS})$ VS $Y(\text{NB ALS})$ (03MAY81-18SEP81, 555, 3)

Figure A-273. Autospectra, cross spectrum, phase and coherence squared for D, bottom, alongshore (X) versus N, bottom, alongshore (Y) for the period May 3 through September 18, 1981 with a) 60 lags and b) 120 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle/day}$. Negative phase means Y lags X.

b. $X_{(DB\ AL5)}\ VS\ Y_{(NB\ AL5)}\ (03MAY81-18SEP81, 555, 3)$

Figure A-273. Continued.

a.

$X(08 \text{ ALS})$ VS $Y(08 \text{ ALS})$ (27OCT81-13FEB82, 436, 3)

Figure A-274. Autospectra, cross spectrum, phase and coherence squared for D, bottom, alongshore (X) versus N, bottom, alongshore (Y) for the period October 27, 1981 through February 13, 1982 with a) 44 lags and b) 88 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle/day}$. Negative phase means Y lags X.

b. $X_{(DB\ AL5)}\ VS\ Y_{(NB\ AL5)}\ (27OCT81-13FEB82, 436, 3)$
 Figure A-274. Continued.

a.

$X_{(DB\ ALS)} \text{ VS } Y_{(SB\ ALS)} \text{ (05AUG81-17OCT81, 291, 3)}$

Figure A-275. Autospectra, cross spectrum, phase and coherence squared for D, bottom, alongshore (X) versus S, bottom, alongshore (Y) for the period August 5 through October 17, 1981 with a) 28 lags and b) 56 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle/day}$. Negative phase means Y lags X.

b. $X_{(DB\ ALS)}\ VS\ Y_{(SB\ ALS)}\ (05AUG81-17OCT81, 291, 3)$
 Figure A-275. Continued.

a.

$X(DS\ ALS)$ VS $Y(SB\ ALS)$ (23NOV81-16APR82, 578, 3)

Figure A-276. Autospectra, cross spectrum, phase and coherence squared for D, bottom, alongshore (X) versus S, bottom, alongshore (Y) for the period November 23, 1981 through April 16, 1982 with a) 60 lags and b) 120 lags. Ordinate units are $cm^2/s^2/cycle/day$. Negative phase means Y lags X.

b. $X_{(DB\ ALS)}\ VS\ Y_{(SB\ ALS)}\ (23NOV81-16APR82, 3)$
 Figure A-276. Continued.

a.

X(DT CS) VS Y(WT CS) (07JUN81-18OCT81,533, 3)

Figure A-277. Autospectra, cross spectrum, phase and coherence squared for D, top, cross shelf (X) versus W, top, cross shelf (Y) for the period June 7, through October 18, 1981 with a) 50 lags and b) 100 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle}/\text{day}$. Negative phase means Y lags X.

b. X(DT CS) VS Y(WT CS) (07JUN81-18OCT81,533, 3)
Figure A-277. Continued.

a.

X(DT cs) VS Y(WT cs) (23NOV81-20JAN82,233, 3)

Figure A-278. Autospectra, cross spectrum, phase and coherence squared for D, top, cross shelf (X) versus W, top, cross shelf (Y) for the period November 23, 1981 through Hanuary 20, 1982 with a) 25 lags and b) 50 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle/day}$. Negative phase means Y lags X.

b. $X_{(DT\ cs)} \text{ VS } Y_{(WT\ cs)} \text{ (23NOV81-20JAN82, 233, 3)}$

Figure A-278. Continued.

a. $X(DT \text{ cs})$ VS $Y(WT \text{ cs})$ (22FEB82-12MAY82, 317, 3)

Figure A-279. Autospectra, cross spectrum, phase and coherence squared for D, top, cross shelf (X) versus W, top, cross shelf (Y) for the period February 22 through May 12, 1982 with a) 32 lags and b) 64 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle/day}$. Negative phase means Y lags X.

b. $X(\text{DT CS}) \text{ VS } Y(\text{WT CS})$ (22FEB82-12MAY82, 317, 3)
Figure A-279. Continued.

a.

$X(t \text{ cs})$ VS $Y(t \text{ cs})$ (09APR81-09AUG81, 489, 3)

Figure A-280. Autospectra, cross spectrum, phase and coherence squared for D, top, cross shelf (X) versus S, top, cross shelf (Y) for the period April 9 through August 9, 1981 with a) 50 lags and b) 100 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle}/\text{day}$. Negative phase means Y lags X.

b. $X_{(DT\ CS)} \text{ VS } Y_{(ST\ CS)}$ (09APR81-09AUG81, 489, 3)

Figure A-280. Continued.

a. $X(DT_{\lambda} CS)$ VS $Y(ST CS)$ (20DEC81-12MAY82, 573, 3)

Figure A-281. Autospectra, cross spectrum, phase and coherence squared for D, top, cross shelf (X) versus S, top, cross shelf (Y) for the period December 20, 1981 through May 12, 1982 with a) 60 lags and b) 120 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle/day}$. Negative phase means Y lags X.

b. $X_{(DT\ CS)} \text{ VS } Y_{(ST\ CS)}$ (20DEC81-12MAY82, 573, 3)

Figure A-281. Continued.

a. X(08 cs) VS Y(W8 cs) (14JUL81-18OCT81, 385, 3)

Figure A-282. Autospectra, cross spectrum, phase and coherence squared for D, bottom, cross shelf (X) versus W, bottom, cross shelf (Y) for the period July 14 through October 18, 1981 with a) 40 lags and b) 30 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle}/\text{day}$. Negative phase means Y lags X.

b. $X_{(DB\ cs)} \text{ VS } Y_{(WB\ cs)}$ (14JUL81-18OCT81, 385, 3)
 Figure A-282. Continued.

a. $X(D8 \text{ cs}) \text{ VS } Y(W8 \text{ cs})$ (23NOV81-29APR82, 629, 3)

Figure A-283. Autospectra, cross spectrum, phase and coherence squared for D, bottom, cross shelf (X) versus W, bottom, cross shelf (Y) for the period November 23, 1981 through April 29, 1982 with a) 60 lags and b) 120 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle}/\text{day}$. Negative phase means Y lags X.

b. $X(\text{DB CS})$ VS $Y(\text{WB CS})$ (23NOV81-29APR82, 629, 3)
Figure A-283. Continued.

a. $X_{(DB\ CS)} \text{ VS } Y_{(NB\ CS)} (03MAY81-18SEP81, 555, 3)$

Figure A-284. Autospectra, cross spectrum, phase and coherence squared for D, bottom, cross shelf (X) versus N, bottom, cross shelf (Y) for the period May 3 through September 18, 1981 with a) 60 lags and b) 120 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle}/\text{day}$. Negative phase means Y lags X.

b. $X_{(DB\ CS)} \text{ VS } Y_{(NB\ CS)} (03MAY81-18SEP81, 555, 3)$

Figure A-284. Continued.

a. $X_{(DB\ CS)} \text{ VS } Y_{(NB\ CS)} \text{ (27OCT81-13FEB82, 436, 3)}$

Figure A-285. Autospectra, cross spectrum, phase and coherence squared for D, bottom, cross shelf (X) versus N, bottom, cross shelf (Y) for the period October 27, 1981 through February 13, 1982 with a) 44 lags and b) 88 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle}/\text{day}$. Negative phase means Y lags X.

b. $X_{(DB\ CS)} \text{ VS } Y_{(NB\ CS)} (27OCT81-13FEB82, 436, 3)$

Figure A-285. Continued.

a. $X(08 \text{ cs})$ VS $Y(38 \text{ cs})$ (05AUG81-17OCT81, 291, 3)

Figure A-286. Autospectra, cross spectrum, phase and coherence squared for D, bottom, cross shelf (X) versus S, bottom, cross shelf (Y) for the period August 5 through October 17, 1981 with a) 28 lags and b) 56 lags. Ordinate units are $\text{cm}^2/\text{s}^2/\text{cycle/day}$. Negative phase means Y lags X.

b. $X_{(DB\ CS)} \text{ VS } Y_{(SB\ CS)} (05AUG81-17OCT81, 291, 3)$

Figure A-286. Continued.

a. $X_{(DB\ cs)}\ VS\ Y_{(SB\ cs)}\ (23NOV81-16APR82, 578, 3)$
 Figure A-287. Autospectra, cross spectrum, phase and coherence squared for D, bottom, cross shelf (X) versus S, bottom, cross shelf (Y) for the period November 23, 1981 through April 16, 1982 with a) 60 lags and b) 120 lags. Ordinate units are $cm^2/s^2/cycle/day$. Negative phase means Y lags X.

b. $X(\text{DB cs})$ VS $Y(\text{SB cs})$ (23NOV81-16APR82, 578, 3)

Figure A-287. Continued.

a. $X(\text{STRS ALS})$ VS $Y(\text{DT ALS})$ (24JUN81-25APR82,1224,3)

Figure A-288. Autospectra, cross spectrum, phase and coherence squared for wind stress, alongshore (X) versus D, top, alongshore (Y) for the period June 24, 1981 through April 25, 1982 with a) 60 lags, b) 120 lags, and c) 240 lags. Ordinate units are $\text{dynes}^2/\text{cm}^4/\text{cycle}/\text{day}$ and $\text{cm}^2/\text{s}^2/\text{cycle}/\text{day}$. Negative phase means Y lags X.

b.

$X(\text{STRS ALS})$ VS $Y(\text{DT ALS})$ (24JUN81-25APR82,1224,3)

Figure A-288. Continued.

c. $X_{(STRS\ ALS)}\ VS\ Y_{(DT\ ALS)}\ (24JUN81-25APR82,1224,3)$
 Figure A-288. Continued.

X(STRS ALS) VS Y(DB ALS) (24JUN81-25APR82,1224,3)

Figure A-289. Autospectra, cross spectrum, phase and coherence squared for wind stress, alongshore (X) versus D, bottom, alongshore (Y) for the period June 24, 1981 through April 25, 1982 with 60 lags. Ordinate units are dynes²/cm⁴/cycle/day and cm²/s²/cycle/day. Negative phase means Y lags X.

X(STRS ALS) VS Y(DT CS) (24JUN81-25APR82,1224,3)

Figure A-290. Autospectra, cross spectrum, phase and coherence squared for wind stress alongshore (X) versus D, top, cross shelf (Y) for the period June 24, 1981 through April 25, 1982 with 60 lags. Ordinate units are dynes²/cm⁴/cycle/day and cm²/s²/cycle/day. Negative phase means Y lags X.

X(STRS ALS) VS Y(DB CS) (24JUN81-25APR82,1224,3)

Figure A-291. Autospectra, cross spectrum, phase and coherence squared for wind stress, alongshore (X) versus D, bottom, cross shelf (Y) for the period June 24, 1981 through April 25, 1982 with 60 lags. Ordinate units are dynes²/cm⁴/cycle/day and cm²/s²/cycle/day. Negative phase means Y lags X.

X(STRS CS) VS Y(DT ALS) (24JUN81-25APR82,1224,3)

Figure A-292. Autospectra, cross spectrum, phase and coherence squared for wind stress, cross shelf (X) versus D, top, alongshore (Y) for the period June 24, 1981 through April 25, 1982 with 60 lags. Ordinate units are dynes²/cm⁴/cycle/day and cm²/s²/cycle/day. Negative phase means Y lags X.

X(STRS CS) VS Y(DB ALS) (24JUN81-25APR82,1224,3)

Figure A-293. Autospectra, cross spectrum, phase and coherence squared for wind stress, cross shelf (X) versus D, bottom, alongshore (Y) for the period June 24, 1981 through April 25, 1982 with 60 lags. Ordinate units are dynes²/cm⁴/cycle/day and cm²/s²/cycle/day. Negative phase means Y lags X.

Appendix B
A Volumetric Temperature-Salinity Census for the
Upper Texas-Louisiana Continental Shelf

William F. Ulm

The principal objectives of this study are: 1) to describe the temperature-salinity characteristics of the waters on the Texas-Louisiana shelf by means of volumetric censuses for the seasons; and 2) to describe the relationship of the shelf waters to fresh waters from land and to waters of the open Gulf. These volumetric censuses will help provide a more complete description of the hydrography of the upper Texas-Louisiana Louisiana shelf by quantifying the temperature-salinity characteristics. The effects of fresh waters from land and open Gulf waters can then be better evaluated.

The approach is similar to that used by Wright and Parker (1967) for their temperature-salinity census of the Mid-Atlantic Bight. The region of interest is that part of the shelf north of 28° N and 89.5° W and 95° west. It includes water to a depth of 200 meters. The seaward extent of the region is taken as the nearest half degree parallel seaward of the 200 meter depth contour. Inshore boundaries excluded bays and other estuarine regions.

The procedure followed was to divide the entire region into quadrangles, 30 minutes of latitude by 30 minutes of longitude. Data were obtained from the National Marine Fisheries Service, National Oceanographic Data Center, and Texas A&M University. Because of the scarcity of data for the region of interest for any one month, the Gus III data (Temple, et al., 1977) obtained from the National Marine Fisheries Service comprise the majority of data used for this census.

It should be noted that the salinities determined from the Gus III water samples are on the average slightly greater than those determined to be normal for the region by Nowlin and McLellan (1971). Those values which were obviously wrong were ignored. No effort was made to correct the salinity values since no clear pattern was evident. Because this study was concerned primarily with large scale features, the higher salinities were not considered a significant problem.

Once the data had been chosen, they were entered into computer files. Temperature-depth and salinity-depth plots were made for each quadrangle and for each month. Mean curves were fitted through the plotted data. Depth intervals of the various temperature-salinity classes were then determined.

The volume of a particular temperature-salinity class occurring in a quadrangle, then, is simply the depth interval of the water class multiplied by the area of the quadrangle. The total volume of a particular water class occurring during a particular month in the waters over the shelf is just the sum of the volumes of that class in each of the quadrangles for that same month.

The total volume for each temperature-salinity class for each month was entered on a temperature-salinity grid. If gaps or unusual water classes occurred on the graphs, their source was identified. Subsequently, volume calculations were re-checked as well as the mean temperature-depth and/or salinity-depth curve fits. If necessary, volumes were re-computed and graphed again. The temperature-salinity relationship presented by Nowlin and McLellan (1971) was used as a standard for the waters of the Gulf of Mexico.

The volumes are presented in Figures B-1 through B-6 on pairs of

Figure B-2. Volumetric temperature-salinity census for the month of March.

Figure B-3. Volumetric temperature-salinity census for the month of May.

Figure B-4. Volumetric temperature-salinity census for the month of July.

graphs for the odd months. The upper graph in each set has a coarse salinity scale of 1 o/oo and will be referred to as the coarse scale graph. This coarse scale is necessary in order to present conveniently the small volumes of low salinity water found in spring and early summer. However, this scale obscures the more detailed features at higher salinities. Expanding the scale in the 34 - 37 o/oo range by using a 0.2 o/oo increment permits the more detailed features to be seen.

Volumes are expressed in km^3 and have been rounded to the nearest 0.1 km^3 . However, even the first digit to the left of the decimal can not be considered significant as 10.0 km^3 represents a layer only 4.16 m thick in a quarter-degree square.

The totals for the temperature-salinity classes containing the greatest volumes are summed in each of the graphs. Those yielding at least 50% of the total volume are enclosed with a heavy line and are referred to as major modes, those yielding at least 75% are encircled with a light line. Within the latter boundary are some secondary modes. These modes are at times elongated over a range of temperatures or salinities and constitute ridges.

Marginal totals for temperature and salinity are also entered for each figure. They can help identify major trends in both temperature and salinity. Marginal temperature totals are found along the bottoms of each of the graphs while salinity totals are to the right of the graphs.

Before discussing the figures in detail, it is helpful to have in mind some important aspects of the structure of the Texas-Louisiana shelf waters which obviously will influence the volume censuses. They are the low salinity, nearshore water and mixed layers which evolve through the annual cycles of heating and cooling. Nearshore or coastal waters are strongly

affected by river runoff and have typically low salinities within a rather thin wedge close to the coast. Salinities are lowest near the Mississippi Delta in March or April at the start of the spring runoff season (Harrington, 1972). Salinities gradually increase toward the west as coastal currents transport the fresher water down the coast (Smith et al, 1977). By late June or early July, nearshore salinities begin to increase. This is due to upwelling and upcoast currents which are induced along the Texas coast by the prevailing winds and a decrease in river outflow (Kelly et al, 1981, 1982). Nearshore salinities continue to increase through the remaining seasons and reach a maximum in February.

Offshore, a warm surface layer forms when spring warming begins. Highest temperatures are reached in August. In September, the surface layer begins to cool. Throughout the fall months, cold fronts and northers become more frequent and intense, and lead to stronger cooling of the layer. By December, the layer has become cooler and moderately saline, reaching the bottom over much of the shelf except nearshore where the brackish wedge is present. During winter months this mixed layer continues to cool and deepen at the outer edge of the shelf.

Spring warming heats the upper parts of the mixed layer forming a thin, warm surface layer. A remnant of the original mixed layer remains at greater depths unaffected by the warming because of the insulative effects of the thermocline formed beneath the warm surface mixed layer. Warming may also result from up-coast advection from the southern and western parts of the continental shelf.

In the fine scale diagram for January (Figure 1), a ridge of water can be seen extending from 14°C, 35.8 o/oo to 21°C, 36.8 o/oo. This ridge includes two peaks, a warmer peak extending from 17°C, 36.4 o/oo to 21°C,

36.8 o/oo, and a smaller, cooler peak between 14°C, 36.2 o/oo and 16°C, 35.8 o/oo. The warmer peak is made up of the deep, mixed layer which is deepening and cooling as winter progresses. The smaller peak is comprised of both the cold water at depth over the continental slope and a band of water nearer to shore, lying approximately between the 30 m and 70 m depth contours, paralleling the surface isotherms. This wall of shallower water stretches along the entire Texas-Louisiana shelf. The location of this wall of water is indicated by Gus III sections (Harrington, 1972).

Waters shoreward of the 30 m depth contour are typically less saline during January and extend over a broad range of temperatures depending upon their location on the upper Texas-Louisiana shelf. The coldest waters are those farthest west and north towards Galveston Bay and Cameron. These shallow waters are strongly affected by evaporative and sensible heat transfer. The warmer, nearshore waters lie farther east near the Mississippi Delta, where the shelf is deeper and less affected by cold fronts.

By March, the warmer peak, which has persisted since January, has cooled further to join with the smaller, cooler peak to form part of a ridge which is slightly more saline and colder than the ridge seen in January. This new ridge extends from 15°C, 36.0 o/oo to 20°C, 36.6 o/oo. These waters are found over the outer shelf. The most striking feature in the March diagram, however, is the presence of very low salinities seen on the coarse scale diagram. The feature is evidently caused by the spring runoff, mainly from the Mississippi and Atchafalaya river systems. It corresponds to the thin coastal wedge of low-salinity water described above. This brackish water lies in a shallow, relatively narrow band and so is represented by the comparatively small volumes seen in the diagram.

These shallow waters have already begun to warm.

Low salinities continue to be a primary feature through May, but with salinities now only as low as 20 o/oo. The volumes of brackish, nearshore waters become greater as currents transport the fresher waters down the coast, mixing them with more saline, offshore waters. These waters are also substantially warmer due to vernal warming which rapidly increases temperatures in the shallow low-salinity layer. The ridge seen in March has warmed and lies between 15°C, 36.0 o/oo and 26°C, 36.8 o/oo. A new, small, separate peak has appeared between 24°C and 26°C apparently representing a developing surface mixed layer over the slope and shelf beyond the coastal, brackish wedge.

The ridge seen in May is stretched simultaneously into warmer temperatures and lower salinities during June and July. The deeper mixed layer beyond the coastal, brackish wedge and the surface layer warm as up-coast currents advect warmer, down-coast water into the region. Nearshore waters are transported to the east and offshore. The warmest waters are those nearshore and in the warm surface layer, with those in the warm surface layer more saline. An increase is seen in the volumes between 17°C and 18°C and may be attributed to upwelling (Kelly et al, 1981, 1982).

By September a ridge of water between 27°C, 36.0 o/oo and 29°C, 34.8 o/oo has been created. Mixing of the low-salinity waters in the coastal wedge with saline offshore waters, and advection of more saline, down-coast waters have formed a wall-like volume of water stretching from the Mississippi Delta westward, along the shelf roughly paralleling the coast. This wall of water is, also, indicated by the Gus III sections (Harrington, 1972). A second ridge of water appearing in the fine scale diagram extends from 15°C, 36.0 o/oo to 29°C, 36.8 o/oo. This more saline ridge includes

both a warmer, more saline peak and a cooler, fresher peak. The warmer peak depicts the warmer, surface layer over the outer shelf and slope and is separated from the nearshore waters by a halocline. The cooler peak, representing the deeper, mixed layer over the outer shelf and slope, has cooled and freshened since July.

By November, the single ridge seen in earlier diagrams has divided in two forming a cold ridge and a warm ridge. The cold ridge, smaller than in September and October, extends from 13°C, 36.0 o/oo to 19°C, 36.6 o/oo and represents the deeper, mixed layer. The warm ridge extends from 21°C, 36.8 o/oo to 25°C, 36.2 o/oo and results from the cooling and mixing of the surface layer. A thermocline separates the cooling, surface layer from the deeper mixed layer.

A single, bi-modal ridge exists between 14°C, 35.8 o/oo and 21°C, 36.8 o/oo by January. Further heat loss has cooled and deepened the surface layer. This is the deep, mixed layer discussed in the earlier paragraph on January. The smaller, cold peak in the ridge is a remnant of the cold ridge seen in previous months and represents the remains of the deeper, mixed layer. The volumes with coolest temperatures seen on the diagram depict the coldest waters found nearest shore, to the north.