

CIRCULATION SURVEY - CHESAPEAKE BAY

1981-1983

NATIONAL OCEAN SERVICE

The National Ocean Service (NOS) conducted a circulation survey of the Chesapeake Bay during the years 1981 through 1983. This was a systematic survey that involved collection of current meter, tide, conductivity-temperature-depth (CTD), and meteorological data from the entrance to the Bay to the northern boundary and through the Chesapeake and Delaware (C&D) Canal into the Delaware River. The data collected will be used by NOS to update its tidal current tables and to publish tidal current charts. The data are also available for use by other programs, such as the Environmental Protection Agency sponsored Chesapeake Bay Program. All data except tides are archived at the National Oceanographic Data Center. Tide data are archived in the Sea and Lake Levels Branch of NOS.

The field program was divided into three segments, representing the three years of operations. Field work began in August 1981 and included the area between Smith Point, Maryland, and the Patuxent River. That portion of the program ended in December 1981. The unusual act of beginning the program in the middle of the Bay was to effect a coordinated effort with the U.S. Geological Survey which was conducting a multi-year observational program in the Potomac River. The 1982 and 1983 field seasons began in April and ended in December of each year. The NOAA Ship FERREL was

responsible for the field program. The program involved the Bay proper; none of the tributaries were involved.

In addition to the field effort conducted by the FERREL, there were four long-term current meter stations that were occupied continuously, even through the winter months. Station C40 located in the entrance to the Bay was installed in September 1981. Station C65 located in the Wolf Trap area was installed in December 1981. Station C36 located in mid-Bay off the mouth of the Patuxent River was installed in September 1981. Station C121 located in the trench off Kent Island was installed in November 1982. These stations were maintained through the winter months and during periods when the FERREL was unavailable, by cooperative efforts with the Atlantic Marine Center and Old Dominion University for station C40, with the Virginia Institute of Marine Science for station C65, and with the Maryland Department of Natural Resources for stations C36 and C121.

During the project current meter and CTD data were collected at 132 locations. Tide data were collected at 9 control stations and 36 subordinate stations. Meteorological data were collected at two locations during each season. The station locations are all indicated on the attached chartlets. Tables listing all data files for each location and times of occupation are also attached. Questions concerning this project can be directed to Charles Muirhead or David Browne on 301-443-8501.

INDEX OF CURRENT METER STATIONS

Sta. No.	Location		Water Depth at MLW (ft)		Meter Ht. above bottom (ft)		Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
1	37	52.23	76	11.90	11.5	5.0	09/09/81	09/24/81	15
2T	37	52.75	76	9.12	73.0	58.0	09/09/81	09/22/81	13
2T		"		"	73.7	58.0	09/22/81	10/13/81	20
2T	37	52.63	76	9.08	73.6	58.0	10/13/81	11/02/81	20
2T	37	52.57	76	9.22	75.3	58.0	11/02/81	11/17/81	15
2M	37	52.75	76	9.12	73.0	33.0	09/09/81	09/22/81	13
2M		"		"	73.7	33.0	09/22/81	10/13/81	21
2M	37	52.63	76	9.08	73.6	33.0	10/13/81	11/02/81	20
2M	37	52.57	76	9.22	75.3	33.0	11/02/81	11/17/81	15
2B	37	52.57	76	9.12	73.0	5.0	09/09/81	09/22/81	13
2B		"		"	73.7	5.0	09/22/81	10/13/81	21
2B	37	52.63	76	9.08	73.6	8.0	10/13/81	11/02/81	20
2B	37	52.57	76	9.22	75.3	8.0	11/02/81	11/17/81	15
3T	37	52.65	76	7.08	38.6	24.0	09/09/81	09/22/81	13
3T		"		"	37.9	24.0	09/22/81	10/13/81	21
3B		"		"	38.6	5.0	09/09/81	09/24/81	13
3B		"		"	37.9	5.0	09/22/81	10/13/81	21
4T	37	52.67	76	5.30	29.5	15.0	09/08/81	09/24/81	14
4B		"		"	29.1	5.0	09/22/81	10/09/81	17
5	37	52.83	76	2.65	10.9	5.0	09/08/81	09/24/81	16
6T	37	54.50	75	57.42	94.5	80.0	09/09/81	09/30/81	21
6T		"		"	"	80.0	09/30/81	10/15/81	15
6T	37	54.07	75	57.50	94.9	79.0	10/14/81	11/02/81	19
6M	37	54.50	75	57.42	94.5	55.0	09/09/81	09/30/81	21
6M		"		"	"	55.0	09/30/81	10/15/81	15
6M	37	54.07	75	57.50	94.9	54.0	10/14/81	11/02/81	19
6B	37	54.50	75	57.42	94.5	5.0	09/09/81	09/30/81	21
6B		"		"	"	5.0	09/30/81	10/15/81	15

Sta. No.	Location		Water Depth at MLW		Meter Ht. above bottom		Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
	Lat (N)	Long (W)	(ft)	(ft)	(ft)	(ft)			
7	37 54.87	75 47.92	11.5		5.0		09/02/81	09/29/81	27
8	37 58.12	76 23.50	15.4		5.0		09/24/81	10/14/81	20
9T	37 59.87	76 21.75	37.9		24.0		09/23/81	10/08/81	15
9T	"	"	39.6		24.0		10/08/81	10/28/81	20
9B	"	"	"		5.0		09/23/81	10/08/81	15
9B	"	"	39.6		5.0		10/08/81	10/28/81	20
10T	38 0.80	76 20.62	52.5		38.0		09/08/81	09/21/81	13
10T	"	"	"		"		09/21/81	10/08/81	17
10T	"	"	"		"		09/21/81	10/27/81	19
10T	"	"	53.6		"		10/27/81	11/11/81	15
10T	38 0.76	76 20.82	54.6		"		11/11/81	11/16/81	5
10T	"	"	51.9		"		11/16/81	12/02/81	16
10T	38 0.80	76 20.62	52.5		"		10/14/81	11/02/81	19
10T	38 0.75	76 20.57	52.5		"		11/02/81	11/17/81	15
10B	38 0.80	76 20.62	52.5		5.0		09/21/81	10/08/81	17
10B	"	"	53.6		5.0		10/27/81	11/11/81	15
10B	38 0.76	76 20.82	54.6		5.0		11/11/81	12/02/81	21
11T	38 01.25	76 19.45	47.8		33.0		09/23/81	10/08/81	15
11T	"	"	48.7		33.0		10/08/81	10/27/81	19
11B	"	"	47.8		5.0		09/23/81	10/08/81	15
11B	"	"	48.7		5.0		10/08/81	10/27/81	19
12T	38 2.30	76 17.50	35.2		19.0		10/13/81	10/30/81	17
12T	38 2.30	76 17.50	36.0		19.0		11/16/81	12/02/81	16
12B	"	"	35.2		5.0		10/13/81	10/30/81	17
12B	"	"	36.0		5.0		11/16/81	12/02/81	16
13T	38 00.88	76 12.12	63.5		48.0		10/31/81	10/30/81	17
13T	"	"	64.0		48.0		11/16/81	12/01/81	15

Sta. No.	Location		Water Depth	Meter Ht.	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
	Lat (N)	Long (W)	at MLW (ft)	above bottom (ft)			
13M	38 00.88	76 12.12	64.0	23.0	11/16/81	12/11/81	15
13B	"	"	"	5.0	10/13/81	10/30/81	17
13B	"	"	"	5.0	11/16/81	12/01/81	15
14T	38 00.45	76 7.28	37.0	19.0	10/13/81	10/30/81	17
15T	38 00.05	75 54.52	97.9	83.0	09/09/81	09/30/81	21
15M	"	"	"	58.0	09/09/81	09/30/81	21
15B	"	"	"	5.0	09/09/81	09/30/81	21
16	38 3.45	76 1.93	14.8	5.0	09/25/81	10/14/81	19
17	38 2.93	75 51.45	17.5	5.0	11/12/81	12/01/81	19
18	38 5.82	75 53.48	25.3	5.0	11/12/81	12/01/81	16
19	38 8.43	76 18.13	22.6	5.0	10/29/81	11/13/81	15
20T	38 8.38	76 15.67	44.0	29.0	10/14/81	10/27/81	13
20T	"	"	"	29.0	10/27/81	11/13/81	17
20B	"	"	"	5.0	10/14/81	10/27/81	13
20B	"	"	"	5.0	10/27/81	11/13/81	17
21T	38 8.13	76 13.75	97.0	82.0	10/14/81	10/27/81	13
21T	"	"	99.2	82.0	10/27/81	11/13/81	17
21M	"	"	97.0	57.0	10/14/81	10/27/81	13
21M	"	"	99.2	57.0	10/27/81	11/13/81	17
21B	"	"	97.0	5.0	10/14/81	10/27/81	13
21B	"	"	99.2	5.0	10/27/81	11/13/81	17

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
	Lat (N)	Long (W)					
22	38 81.38	76 9.80	26.0	10.0	10/27/81	11/13/81	17
23	38 8.67	76 6.87	17.8	5.0	11/03/81	11/13/81	10
24T	38 8.45	75 58.33	47.3	32.0	10/30/81	03/06/81	13
24T	"	"	47.0	32.0	11/12/81	12/01/81	19
24B	"		47.3	5.0	10/30/81	11/12/81	13
24B	"		47.0	5.0	11/12/81	12/01/81	19
25	38 13.05	76 3.83	21.0	7.0	11/13/81	11/30/81	17
27	38 12.80	75 54.02	14.8	5.0	11/12/81	11/30/81	18
28T	38 13.48	75 59.37	24.7	10.0	11/12/81	11/30/81	18
28B	"	"	24.7	5.0	11/12/81	11/30/81	18
29T	38 15.80	75 55.43	42.3	24.0	11/12/81	11/30/81	18
29B	"	"	42.3	5.0	11/12/81	11/30/81	18
30B	38 14.82	76 6.97	31.8	5.0	10/29/81	11/13/81	15
31	38 13.25	76 6.20	22.9	8.0	10/29/81	11/13/81	15
36T	38 18.67	76 18.78	54.8	40.0	09/03/81	09/21/81	18
"	"	"	54.6	40.0	09/21/81	09/21/81	17
"	"	"	55.9	40.0	10/08/81	10/27/81	19
"	"	"	57.0	40.0	10/27/81	11/11/81	15
"	38 18.72	76 18.72	55.4	40.0	11/11/81	11/30/81	19
"	38 18.70	76 18.73	55.3	40.0	11/30/81	12/07/81	17
"	"	"	55.3	40.0	12/21/81	02/08/82	49
"	"	"	55.3	40.0	03/01/82	04/13/82	43
"	"	"	55.9	40.0	04/13/82	05/05/82	22
"	"	"	55.9	40.0	05/05/82	05/20/82	15

Sta. No.	Location		Water Depth	Meter Ht.	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
	Lat (N)	Long (W)	at MLW (ft)	above bottom (ft)			
36T	38 18.70	76 18.73	56.7	40.0	05/20/82	06/07/82	18
"	"	76 18.77	57.5	"	06/07/82	06/24/82	17
"	"	"	"	"	07/31/82	07/28/82	15
"	"	"	"	"	07/28/82	08/17/82	20
"	"	"	"	"	08/17/82	08/27/82	10
"	"	"	"	"	08/27/82	09/13/82	17
"	"	"	"	"	09/29/82	10/14/82	15
"	"	"	"	"	10/14/82	10/28/82	14
"	38 18.73	76 18.75	56.0	"	11/09/82	12/08/82	29
"	"	"	"	"	12/08/82	01/10/83	33
"	"	"	55.1	"	02/17/83	03/23/83	34
"	"	"	"	"	05/02/83	05/17/83	15
"	"	"	"	"	06/03/83	06/17/83	14
"	"	"	"	"	06/17/83	07/05/83	18
"	"	"	"	"	07/05/83	07/22/83	17
"	"	"	"	"	08/01/83	08/18/83	17
"	"	"	"	"	08/18/83	09/06/83	19
"	"	"	55.5	"	09/07/83	09/20/83	13
"	"	"	56.4	"	09/20/83	10/07/83	17
"	"	"	56.5	"	10/07/83	10/20/83	13
"	"	"	56.5	"	10/20/83	11/07/83	18
"	"	"	57.1	"	11/07/83	11/15/83	8
"	"	"	57.1	"	11/15/83	12/05/83	20
36B	38 18.67	76 18.78	54.8	5.0	09/03/81	09/21/81	18
"	"	"	54.6	5.0	09/21/81	10/08/81	17
"	"	"	55.9	5.0	10/08/81	10/27/81	19
"	"	"	57.0	5.0	10/27/81	11/11/81	15
"	38 18.72	76 18.72	55.4	5.0	11/11/81	11/30/81	19
"	38 18.70	76 18.73	55.3	5.0	11/30/81	12/07/81	7
"	"	"	"	5.0	12/21/81	01/08/82	17
"	"	"	55.9	8.0	04/13/82	04/27/82	14
"	"	"	55.9	8.0	05/05/82	05/20/82	15
"	"	"	56.7	8.0	05/20/82	06/07/82	18
"	"	76 18.77	57.5	8.0	06/07/82	06/24/82	17
"	"	"	"	8.0	06/24/82	07/13/82	19

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
"	"	"	"	8.0	07/13/82	07/28/82	15
"	"	"	"	8.0	07/28/82	08/17/82	20
"	"	"	"	8.0	08/27/82	09/13/82	17
"	"	"	"	8.0	09/13/82	09/29/82	16
"	"	"	"	8.0	09/29/82	10/14/82	15
"	"	"	"	8.0	12/08/82	01/10/83	33
36B	38 18.73	76 18.75	55.1	8.0	02/17/83	03/23/83	34
36B	"	"	56.9	8.0	03/20/83	04/05/83	13
36B	38 18.72	76 18.73	"	8.0	05/17/83	06/17/83	31
36B	"	"	"	8.0	06/17/83	07/05/83	18
36B	"	"	"	8.0	07/05/83	07/22/83	17
36B	"	"	"	8.0	07/22/83	08/01/83	10
36B	"	"	"	8.0	08/01/83	08/18/83	17
36B	"	"	"	8.0	08/18/83	09/07/83	20
36B	"	"	55.5	8.0	09/07/83	09/20/83	13
36B	"	"	56.4	8.0	09/20/83	10/07/83	17
36B	"	"	56.5	8.0	10/07/83	10/20/83	13
36B	"	"	56.5	8.0	10/20/83	11/07/83	18
36B	"	"	57.1	8.0	11/07/83	12/05/83	28
37	38 4.85	75 58.83	24.7	10.0	05/12/82	06/03/82	22
37	"	"	"	10.0	06/03/82	06/15/82	12
38T	"	"	"	17.1	06/03/82	06/15/82	12
38B	"	"	33.3	8.0	05/12/82	06/03/82	22
38B	"	"	32.2	8.0	06/03/82	06/15/82	12
39	37 1.40	75 59.55	19.9	5.0	05/12/82	06/03/82	22
39	37 1.40	75 59.55	19.3	5.0	06/03/82	06/15/82	12
40T	36 58.77	75 59.98	42.0	27.0	09/15/81	10/21/81	36
"	"	"	"	"	10/21/81	12/17/81	57
"	"	"	"	"	12/17/81	01/18/82	32
"	"	"	"	"	01/29/82	03/11/82	41
"	36 58.78	75 59.93	"	"	03/29/82	04/15/82	17
"	"	"	41.0	"	04/15/82	05/04/82	19

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)	
"	36	58.80	"	41.9	"	05/04/82	05/12/82	8
"	"	"	"	41.7	"	05/12/82	06/03/82	22
"	"	75 59.88	"	41.3	"	06/03/82	06/15/82	12
"	"	"	"	41.0	"	06/15/82	07/02/82	17
"	"	"	"	"	"	07/02/82	07/14/82	12
"	"	"	"	"	"	07/14/82	07/29/82	15
"	"	"	"	"	"	07/29/82	08/13/82	15
"	"	"	"	"	"	08/13/82	08/28/82	15
"	"	"	"	"	"	08/28/82	09/12/82	15
"	"	"	"	"	"	09/12/82	09/28/82	16
"	"	"	"	"	"	09/28/82	10/19/82	21
"	"	"	"	41.4	"	10/19/82	11/03/82	15
"	"	"	"	42.5	"	11/03/82	11/18/82	15
"	"	"	"	42.6	"	11/18/82	11/30/82	12
"	"	"	"	41.8	"	11/30/82	12/22/82	22
"	"	"	"	"	"	12/22/82	01/14/83	23
"	"	"	"	"	"	01/14/83	02/10/83	27
"	"	"	"	"	"	02/10/83	03/04/83	22
"	"	"	"	"	"	03/04/83	03/23/83	19
"	"	"	"	40.7	"	03/23/83	04/21/83	29
"	"	"	"	"	"	04/04/83	05/11/83	20
"	"	"	"	"	"	05/11/83	06/13/83	13
"	"	"	"	"	"	06/13/83	07/11/83	28
"	"	"	"	"	"	07/11/83	08/15/83	35
"	"	"	"	"	"	08/15/83	09/13/83	29
"	"	"	"	"	"	09/13/83	10/17/83	34
"	"	"	"	"	"	10/17/83	11/18/83	32
"	"	"	"	"	"	11/18/83	12/08/83	20
40B	36	58.77	75 59.88	42.0	5.0	09/15/81	10/21/81	36
"	"	"	"	"	5.0	10/21/81	12/17/81	57
"	"	"	"	"	5.0	12/17/81	01/18/82	32
"	"	"	"	"	5.0	01/18/82	02/24/82	37
"	36	58.80	"	41.9	8.0	05/04/82	05/12/82	8
"	"	"	"	41.7	8.0	05/12/82	06/03/82	22
"	"	75 59.88	"	41.3	8.0	06/03/82	06/15/82	12
"	"	"	"	"	8.0	07/02/82	07/14/82	12
"	"	"	"	"	8.0	07/14/82	07/29/82	15
"	"	"	"	"	8.0	07/29/82	08/13/82	15

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)	
40B	36	58.80	75 59.88	41.3	8.0	08/13/82	08/28/82	15
"	"	"	"	"	8.0	08/28/82	09/12/82	15
"	"	"	"	"	8.0	09/12/82	09/28/82	16
"	"	"	"	"	8.0	09/28/82	10/19/82	21
"	"	"	"	42.6	8.0	11/18/82	11/30/82	12
"	"	"	"	41.8	8.0	11/30/82	12/15/82	15
"	"	"	"	"	8.0	12/22/82	01/14/83	23
"	"	"	"	"	8.0	02/10/83	03/04/83	22
"	"	"	"	"	8.0	03/04/83	03/23/83	19
"	"	"	"	40.7	8.0	03/23/83	04/21/83	29
"	"	"	"	"	8.0	04/21/83	05/11/83	20
"	"	"	"	"	8.0	05/11/83	06/13/83	33
"	"	"	"	"	8.0	06/13/83	07/11/83	28
"	"	"	"	"	8.0	07/11/83	08/15/83	35
"	"	"	"	"	8.0	08/15/83	09/13/83	29
"	"	"	"	"	8.0	09/13/83	10/17/83	34
"	"	"	"	"	8.0	11/18/83	12/08/83	20
41T	36	57.53	76 0.63	61.8	47.0	05/12/82	06/03/82	22
41T	"	"	76 0.68	61.7	47.0	06/03/82	06/15/82	12
41M	"	"	76 0.63	61.8	23.0	05/12/82	06/03/82	22
41M	"	"	76 0.68	61.7	23.0	06/03/82	06/15/82	12
41B	"	"	76 0.63	61.8	8.0	05/12/82	06/03/82	22
41B	"	"	76 0.68	61.7	8.0	06/03/82	06/15/82	12
42T	36	56.33	75 59.98	46.1	31.0	05/21/82	06/03/82	22
42B	36	56.33	75 59.88	46.1	8.0	05/21/82	06/03/82	22
42B	36	56.27	76 0.00	45.7	8.0	06/03/82	06/15/82	12
43T	37	6.10	76 0.33	29.8	14.0	05/11/82	06/02/82	22
43B	"	"	"	"	8.0	05/11/82	05/19/82	8
43B	"	"	"	"	8.0	05/19/82	06/02/82	14

Sta. No.	Location		Water Depth at MLW		Meter Ht. above bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
	Lat (N)	Long (W)	(ft)	(ft)				
44T	37	3.40	76	5.58	"	05/27/82	06/02/82	16
44T	37	3.73	76	5.58	46.5	11/03/82	11/18/82	15
44B	37	3.40	76	5.58	42.4	05/11/82	05/27/82	16
44B	37	3.40	76	5.58	42.4	05/27/82	06/02/82	6
45T	37	58.73	76	7.57	53.2	05/11/82	06/02/82	22
45B	"	"	"	"	8.0	05/11/82	06/02/82	22
47	36	56.05	76	10.60	23.1	05/12/82	06/02/82	21
48	37	0.32	76	13.60	"	06/02/82	06/18/82	16
49T	37	0.12	76	17.72	94.0	06/02/82	06/18/82	16
49M	"	"	"	"	46.0	06/02/82	06/18/82	16
49M	"	"	"	"	46.0	06/18/82	07/06/82	18
49B	"	"	"	"	8.0	06/02/82	06/18/82	16
49B	"	"	"	"	8.0	06/18/82	07/06/82	18
50T	36	59.42	76	18.23	51.9	06/16/82	07/06/82	20
50B	"	"	"	"	8.0	06/16/82	07/06/82	20
52T	36	57.03	76	20.32	50.3	06/16/82	06/30/82	14
52B	"	"	"	"	8.0	06/16/82	06/28/82	12
55T	37	7.38	76	9.20	40.5	06/02/82	06/16/82	14
55T	37	7.43	76	9.27	39.8	06/16/82	07/06/82	20
55B	37	7.38	76	9.20	40.5	06/02/82	06/16/82	14
55B	37	7.43	76	9.27	39.8	06/16/82	07/06/82	20
56	37	9.37	76	1.60	22.9	06/17/82	07/06/82	19

Sta. No.	Location		Water Depth		Meter Ht. above bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
	Lat (N)	Long (W)	at MLW (ft)					
57T	37 15.95	76 5.67	101.3		87.0	04/26/82	05/11/82	15
57T	37 15.87	76 5.62	102.5		86.0	11/08/82	11/30/82	22
57M	37 15.95	76 5.67	101.3		62.0	04/26/82	05/11/82	15
57M	37 15.87	76 5.62	102.5		61.0	11/08/82	11/30/82	22
57B	37 15.87	76 5.62	102.5		8.0	11/08/82	11/30/82	22
58T	37 17.40	76 11.45	41.5		26.0	04/26/82	05/11/82	15
58B	"	"	"		8.0	04/26/82	05/11/82	15
59T	37 13.55	76 18.47	37.9		23.0	06/16/82	06/30/82	15
59T	"	"	37.0		23.0	07/22/82	08/09/82	18
60T	37 14.80	76 23.28	53.9		40.0	06/14/82	07/06/82	22
60T	"	"	52.4		40.0	07/06/82	07/21/82	15
60M	"	"	53.9		15.0	06/14/82	07/06/82	22
60M	"	"	52.4		15.0	07/06/82	07/21/82	15
60B	"	"	53.9		5.0	06/23/82	07/16/82	13
60B	"	"	52.4		5.0	07/06/82	07/23/82	15
61T	37 14.28	76 24.13	36.5		22.0	07/06/82	07/21/82	15
61B	"	"	"		8.0	07/06/82	07/04/82	15
62	37 17.70	76 19.25	24.5		9.0	06/15/82	06/30/82	15
63	37 25.00	76 22.90	"		5.0	07/21/82	08/09/82	19
64	37 24.67	76 10.90	32.3		17.0	04/27/82	05/10/82	13
64	"	76 10.57	31.3		16.0	07/07/82	07/21/82	14
64	"	"	"		16.0	07/21/82	08/09/82	19

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)		
65T	37	24.68	76	7.48	41.1	26.0	12/08/81	01/06/82	29
65T		"		"	"	26.0	01/25/82	02/23/82	29
65T		"		"	"	26.0	02/23/82	03/10/82	14
65T	37	24.70	76	7.40	"	26.0	04/08/82	04/26/82	18
65T	37	24.70		"	"	26.0	05/10/82	05/27/82	17
65T		"		"	"	26.0	05/27/82	06/15/82	19
65T		"		"	"	26.0	06/15/82	07/07/82	22
65T	37	24.80		"	"	26.0	07/07/82	07/21/82	14
65T		"		"	40.0	26.0	08/09/82	08/24/82	15
65T		"		"	40.0	26.0	08/24/82	09/11/82	18
65T		"		"	"	26.0	09/11/82	09/27/82	16
65T		"		"	41.4	26.0	09/27/82	10/15/82	18
65T		"		"	41.5	26.0	10/15/82	11/03/82	19
65T		"		"	41.2	26.0	11/18/82	12/01/82	13
65T		"		"	"	26.0	12/01/82	01/06/83	36
65T		"		"	41.1	26.0	01/06/83	01/15/83	9
65T	37	24.80	76	7.40	41.2	26.0	01/06/83	02/03/83	28
65T		"		"	"	26.0	02/24/83	03/30/83	34
65T		"		"	"	26.0	03/30/83	04/04/83	5
65T		"		"	"	26.0	04/04/83	05/11/83	37
65T		"		"	"	26.0	05/11/83	06/09/83	29
65T		"		"	"	26.0	06/09/83	07/13/83	34
65T		"		"	"	26.0	07/13/83	08/09/83	27
65T		"		"	"	26.0	08/09/83	09/06/83	28
65T		"		"	"	26.0	09/06/83	10/03/83	27
65T		"		"	"	26.0	10/03/83	11/01/83	29
65T		"		"	"	26.0	11/01/83	11/17/83	16
65T		"		"	"	26.0	11/17/83	12/07/83	20
65B	37	24.70		"	"	8.0	05/10/82	05/27/82	17
65B		"		"	"	8.0	05/27/82	06/15/82	19
65B		"		"	"	8.0	06/15/82	07/07/82	22
65B	37	24.80		"	"	8.0	07/07/82	07/21/82	14
65B		"		"	40.0	8.0	07/21/82	08/09/82	19
65B		"		"	40.0	8.0	08/09/82	08/24/82	15
65B		"		"	40.0	8.0	08/24/82	09/11/82	18
65B		"		"	40.0	8.0	09/11/82	09/27/82	16
65B		"		"	41.4	8.0	09/27/82	10/15/82	18
65B		"		"	41.2	8.0	11/27/82	11/18/82	15

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
Lat (N)	Long (W)						
65B	"	"	"	8.0	11/18/82	12/01/82	13
65B	"	"	"	8.0	12/01/82	01/06/83	36
65B	"	"	"	8.0	03/30/83	04/04/83	5
65B	37 24.80	76 7.40	41.2	8.0	04/04/83	05/11/83	37
65B	"	"	"	8.0	05/11/83	06/09/83	29
65B	"	"	"	8.0	06/09/83	07/13/83	34
65B	"	"	"	8.0	07/13/83	08/09/83	27
65B	"	"	"	8.0	08/09/83	09/06/83	28
65B	"	"	"	8.0	10/03/83	11/01/83	29
65B	"	"	"	8.0	11/07/83	12/07/83	20
65M	37 24.67	76 7.57	40.3	18.0	04/08/82	04/27/82	19
65M	37 24.70	76 7.60	41.0	18.0	04/27/82	05/10/82	13
65M	37 24.67	76 7.70	39.5	17.0	07/07/82	07/22/82	15
65M	"	"	40.5	17.0	07/22/82	08/09/82	18
65M	37 24.70	76 7.60	41.0	12.0	04/27/82	05/10/82	13
65M	37 24.67	76 7.70	40.5	11.0	07/22/82	08/09/82	18
66T	37 24.50	76 4.80	72.3	56.0	04/08/82	04/22/82	14
66T	"	"	"	56.0	04/22/82	04/26/82	4
66T	"	76 4.85	72.2	57.0	04/26/82	05/10/82	14
66T	"	76 5.00	"	56.0	07/09/82	07/22/82	13
66T	"	"	71.2	56.0	07/22/82	08/09/82	18
66M	37 24.50	76 4.80	72.3	31.0	04/08/82	04/26/82	18
66M	"	76 4.85	72.2	32.0	04/26/82	05/10/82	14
66M	"	76 5.00	71.2	31.0	07/22/82	08/09/82	18
66B	37 24.50	76 4.80	72.3	5.0	04/16/82	04/26/82	10
66B	"	76 4.85	72.2	8.0	04/26/82	05/10/82	14
66B	"	76 5.00	71.0	8.0	07/07/82	07/22/82	15
66B	"	"	71.2	8.0	07/22/82	08/09/82	18
67T	37 24.60	76 3.10	39.5	25.0	04/27/82	05/10/82	13
67T	37 24.50	76 3.83	37.4	23.0	07/07/82	07/22/82	15
67T	"	"	"	23.0	07/22/82	08/09/82	18
67B	37 24.50	76 3.83	"	8.0	07/22/82	08/09/82	18

Sta. No.	Location		Water Depth	Meter Ht.	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
	Lat (N)	Long (W)	at MLW (ft)	above bottom (ft)			
68	37 24.30	76 0.70	"	5.0	04/14/82	04/27/82	13
68	37 24.33	76 0.80	"	5.0	05/04/82	05/10/82	6
68	37 24.20	76 0.78	20.6	5.0	07/07/82	07/22/82	15
68	37 24.20	76 0.78	20.0	5.0	07/22/82	08/09/82	18
69	37 29.97	75 59.37	21.2	8.0	07/21/82	08/10/82	20
70T	37 29.90	76 6.40	37.0	23.0	06/01/82	06/21/82	20
70T	37 29.90	76 6.40	37.0	23.0	06/21/82	07/07/82	16
70T	37 29.70	76 6.50	36.5	23.0	07/07/82	07/21/82	14
70T	"	"	"	23.0	07/21/82	08/10/82	20
70B	37 29.90	76 6.40	37.0	8.0	06/01/82	06/21/82	20
70B	37 29.70	76 6.50	36.5	8.0	07/07/82	07/21/82	14
70B	"	"	"	8.0	07/21/82	08/10/82	20
71	37 30.03	76 14.70	21.6	6.0	07/21/82	08/10/82	20
72	37 32.13	76 18.57	20.4	5.0	04/09/82	04/27/82	18
73	37 34.53	76 17.08	28.2	8.0	08/09/82	08/25/82	16
74T	37 36.00	76 17.50	43.8	28.0	04/09/82	04/16/82	7
74T	"	"	"	"	04/16/82	04/27/82	11
74T	"	"	44.0	"	04/27/82	05/11/82	14
74B	37 36.00	76 17.50	43.8	5.0	04/16/82	04/27/82	11
74B	37 36.00	76 17.50	44.0	8.0	04/27/82	05/11/82	14
75T	37 35.30	76 11.50	43.3	29.0	08/10/82	08/25/82	15
75B	"	"	"	8.0	08/10/82	08/25/82	15
76T	37 34.60	76 3.80	41.2	27.0	08/10/82	08/25/82	15
76B	"	"	"	8.0	08/10/82	08/25/82	15
77	37 35.45	75 58.10	25.5	9.0	08/10/82	08/25/82	15
79T	37 39.85	76 0.52	45.9	33.0	08/11/82	08/26/82	15

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
79B	"	"	"	8.0	08/11/82	08/26/82	15
80B	37 40.70	76 12.25	"	8.0	08/10/82	08/24/82	15
80B	"	"	42.8	8.0	11/01/82	11/16/82	15
83T	37 47.00	76 11.50	100.7	87.0	10/13/82	11/01/82	19
83T	"	"	100.9	87.0	11/01/82	11/16/82	15
83M	"	"	100.7	62.0	10/13/82	11/01/82	19
83M	"	"	100.9	62.0	11/01/82	11/16/82	15
84T	37 47.03	76 5.68	36.0	21.0	11/01/82	11/17/82	16
86T	37 47.25	75 57.83	102.4	86.0	10/14/82	11/02/82	19
86T	"	"	"	86.0	11/02/82	11/17/82	15
86M	"	"	"	61.0	11/02/82	11/17/82	15
86B	"	"	"	8.0	10/14/82	11/02/82	19
88T	37 47.85	75 50.67	90.7	66.0	10/14/82	11/04/82	21
88T	37 47.62	75 50.83	88.7	76.0	11/04/82	11/17/82	13
88M	37 47.85	75 50.67	90.7	41.0	10/14/82	11/04/82	21
88M	37 47.62	75 50.83	88.7	51.0	11/04/82	11/17/82	13
89	37 49.33	76 18.07	20.4	8.0	08/11/82	08/26/82	15
90T	39 0.32	76 22.80	47.7	33.0	07/19/83	08/04/83	16
90T	"	"	46.9	33.0	08/04/83	08/22/83	18
90T	"	"	47.8	33.0	08/22/83	09/07/83	16
90B	"	"	47.7	5.0	07/19/83	08/04/83	16
90B	"	"	46.9	5.0	08/04/83	08/22/83	18
90B	"	"	47.8	5.0	08/22/83	09/07/83	16

Sta. (Days)	No.	Location		Water Depth at MLW		Meter Ht. above Bottom	Series Begins	Series Ends	Length of Series
		Lat (N)	Long (W)	(ft)	(ft)	(Date)	(Date)	(Date)	
100T	38	22.88	76 21.62	47.7	32.0	10/07/83	10/24/83	17	
100T		"	"	48.5	32.0	10/24/83	11/07/83	14	
100T		"	"	47.7	32.0	11/19/83	12/05/83	16	
100B		"	"	48.5	8.0	10/24/83	11/07/83	14	
100B		"	"	47.7	8.0	11/07/83	12/05/83	28	
101T	38	22.80	76 19.52	102.7	88.0	10/20/83	11/07/83	18	
101T		"	"	"	88.0	11/07/83	11/28/83	21	
101M	38	22.80	76 19.52	102.7	63.0	10/24/83	11/07/83	18	
101M		"	"	"	73.0	11/07/83	11/25/83	18	
101B		"	"	"	5.0	10/20/83	11/07/83	18	
101B		"	"	"	5.0	11/07/83	11/28/83	21	
102T	38	38.70	76 28.23	32.6	18.0	09/20/83	10/06/83	16	
102B		"	"	33.4	5.0	11/13/83	11/28/83	20	
103T	38	38.63	76 26.88	39.1	22.0	09/20/83	10/06/83	16	
103T		"	"	39.5	22.0	11/08/83	11/28/83	20	
103B		"	"	39.5	5.0	11/15/83	11/28/83	13	
104T		"	"	82.5	65.0	10/03/83	10/20/83	17	
104M		"	"	81.3	40.0	09/20/83	10/05/83	15	
104M		"	"	82.5	40.0	10/05/83	10/20/83	15	
104M		"	"	82.1	40.0	11/08/83	11/25/83	17	
104B		"	"	81.3	5.0	09/10/83	10/05/83	15	
104B		"	"	82.5	5.0	10/07/83	10/20/83	13	
104B		"	"	82.1	5.0	11/08/83	11/28/83	20	
105	38	36.43	76 20.88	31.7	12.0	09/20/83	10/06/83	16	

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above Bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
	Lat (N)	Long (W)					
106T	38 30.83	76 18.75	50.1	35.0	10/06/83	10/24/83	18
106T	"	"	50.0	35.0	10/24/83	11/15/83	22
106B	"	"	50.0	5.0	10/29/83	11/01/83	8
106B	"	"	50.0	5.0	11/01/83	11/15/83	14
107T	38 37.70	76 9.10	28.8	12.0	10/05/83	10/25/83	20
107B	"	"	"	5.0	10/05/83	10/25/83	20
108T	38 34.78	76 3.67	40.3	22.0	10/25/83	11/10/83	16
108B	"	"	40.3	5.0	10/25/83	11/10/83	16
111	38 45.10	76 29.93	24.7	10.0	09/21/83	10/06/83	15
112T	38 44.98	76 26.73	52.9	38.0	09/21/83	10/06/83	15
112B	"	"	"	5.0	09/21/83	10/06/83	15
113T	38 45.37	76 25.77	97.2	83.0	09/08/83	09/22/83	14
113T	"	"	98.4	83.0	09/22/83	10/18/83	16
113M	38 45.37	76 25.77	97.8	48.0	08/22/83	09/08/83	17
113M	"	"	97.2	48.0	09/08/83	09/22/83	14
113M	"	"	98.4	48.0	09/22/83	10/15/83	23
113B	"	"	97.8	8.0	08/22/83	09/08/83	17
113B	"	"	97.2	8.0	09/08/83	09.22.83	14
113B	"	"	98.4	8.0	09/22/83	10/06/83	14
114T	38 50.33	76 20.25	38.9	24.0	08/04/83	08/22/83	18
114T	"	"	48.3	24.0	08/22/83	09/08/83	17
114B	"	"	38.3	5.0	08/22/83	09/08/83	17
115	38 50.57	76 18.13	23.4	10.0	08/22/83	09/08/83	17

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above Bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
Lat (N)	Long (W)						
116T	38 52.50	76 15.00	41.6	27.0	08/04/83	08/22/83	18
116T	"	76 15.12	41.1	27.0	08/22/83	09/08/83	17
119	38 53.88	76 28.23	16.9	5.0	07/19/83	07/31/83	12
119	38 53.95	76 28.33	16.6	5.0	08/04/83	08/12/83	8
120T	38 53.62	76 25.83	38.4	22.0	07/19/83	08/04/83	16
120B	"	"	38.4	5.0	07/19/83	08/04/83	16
121T	38 53.75	76 23.28	78.5	57.0	11/09/82	12/06/82	27
121T	"	"	"	57.0	12/06/82	01/20/83	35
121T	"	"	"	57.0	01/10/83	02/05/83	36
121T	"	"	"	57.0	02/15/83	03/21/83	34
121T	"	"	"	57.0	03/21/83	04/05/83	15
121T	"	76 23.36	79.5	59.0	04/05/83	04/18/83	13
121T	"	"	"	"	04/18/83	05/06/83	18
121T	"	"	"	"	05/06/83	05/26/83	20
121T	"	"	"	"	06/09/83	06/20/83	11
121T	"	"	"	"	06/20/83	07/05/83	15
121T	"	"	"	"	08/04/83	08/22/83	18
121T	"	"	"	"	08/22/83	09/07/83	16
121T	"	"	"	"	09/07/83	09/22/83	15
121T	"	"	"	"	09/22/83	10/05/83	13
121T	"	"	"	"	10/05/83	10/24/83	19
121T	"	"	"	"	10/24/83	11/08/83	15
121T	"	"	"	"	11/08/83	11/22/83	14
121T	"	"	"	"	11/22/83	12/05/83	13
121M	38 53.75	76 23.28	78.5	39.0	11/09/82	12/06/82	27
121M	"	"	"	39.0	12/06/82	01/10/83	35
121M	"	"	"	39.0	03/01/83	04/05/83	15
121M	"	76 23.36	79.5	41.0	04/05/83	04/18/83	13
121M	"	"	"	41.0	04/18/83	05/06/83	18
121M	"	"	"	41.0	05/06/83	05/26/83	20
121M	"	"	"	41.0	06/09/83	06/20/83	11
121M	"	"	"	41.0	06/20/83	07/05/83	15
121M	"	"	"	41.0	07/05/83	07/19/83	14
121M	"	"	"	41.0	07/19/83	08/04/83	16

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above Bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
Lat (N)	Long (W)						
121M	"	"	"	41.0	08/04/83	08/22/83	18
121M	"	"	"	41.0	08/22/83	09/07/83	16
121M	"	"	"	41.0	09/22/83	10/05/83	13
121M	"	"	"	41.0	10/05/83	10/24/83	19
121M	"	"	"	41.0	01/01/83	11/22/83	14
121M	"	"	"	41.0	11/22/83	12/05/83	13
121B	38 53.75	76 23.28	78.5	8.0	11/09/82	12/06/82	27
121B	"	"	"	8.0	12/06/82	01/10/83	35
121B	"	"	"	5.0	01/10/83	02/15/83	36
121B	"	"	"	5.0	02/15/83	03/21/83	34
121B	"	76 23.36	79.5	8.0	04/05/83	04/18/83	13
121B	"	"	"	8.0	04/18/83	05/06/83	18
121B	"	"	"	8.0	05/06/83	05/26/83	20
121B	"	"	"	8.0	06/09/83	06/20/83	11
121B	"	"	"	8.0	06/20/83	07/05/83	15
121B	"	"	"	8.0	07/05/83	07/19/83	14
121B	"	"	"	8.0	07/19/83	08/04/83	16
121B	"	"	"	8.0	08/22/83	09/07/83	16
121B	"	"	"	8.0	09/22/83	10/05/83	13
121B	"	"	"	8.0	10/05/83	10/24/83	19
121B	"	"	"	8.0	10/24/83	11/08/83	15
121B	"	"	"	8.0	11/08/83	11/22/83	14
121B	"	"	"	8.0	11/22/83	12/05/83	13
122	38 57.63	76 27.05	20.3	5.0	07/20/83	08/04/83	15
123	39 02.05	76 16.07	20.5	5.0	07/19/83	08/03/83	15
123	"	"	"	5.0	08/03/83	08/19/83	16
123	"	"	"	5.0	08/19/83	09/07/83	19
124T	39 0.63	76 10.95	44.9	29.0	07/19/83	08/03/83	15
124B	"	"	"	5.0	07/19/83	08/03/83	15
127	39 5.68	76 23.58	42.0	24.0	07/19/83	08/03/83	15
127	"	"	41.9	25.0	08/03/83	08/19/83	16

Sta. No.	Lat	Location (N)	Long (W)	Water Depth at MLW (ft)	Meter Ht. above Bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
128T	39	6.48	76 18.32	31.8	18.0	07/19/83	08/03/83	15
128T		"	"	31.6	18.0	08/03/83	08/19/83	16
128B		"	"	31.8	5.0	07/19/83	08/03/83	15
128B		"	"	31.6	5.0	08/03/83	08/19/83	16
129	39	8.85	76 19.48	32.2	14.0	06/30/83	07/18/83	18
129		"	"	31.4	14.0	07/18/83	08/03/83	16
130	39	10.70	76 26.65	20.3	5.0	06/15/83	06/29/83	14
130		"	"	20.8	5.0	06/29/83	07/18/83	19
137T	39	13.03	76 14.90	39.4	25.0	06/15/83	06/29/83	14
137T		"	"	40.3	25.0	06/29/83	07/18/83	19
137B		"	"	39.4	5.0	06/15/83	06/29/83	14
137B		"	"	40.3	5.0	06/29/83	07/18/83	19
138	39	14.78	76 17.80	20.7	6.0	06/15/83	06/30/83	15
138		"	"	20.4	6.0	06/30/83	07/18/83	18
139	39	18.70	76 13.00	25.6	8.0	04/06/83	04/11/83	5
139		"	76 13.03	24.8	8.0	06/15/83	06/29/83	14
139		"	76 13.03	24.6	8.0	06/29/83	07/18/83	19
139		"	76 13.03	24.0	6.0	09/07/83	09/22/83	15
140	39	22.23	76 7.80	31.1	16.0	05/13/83	05/31/83	18
143	39	23.78	76 3.02	23.3	9.0	05/13/83	05/31/83	18
143		"	"	22.5	9.0	05/31/83	06/13/83	13
144	39	26.60	76 2.03	14.0	5.0	05/11/83	05/25/83	13
145	39	30.08	76 5.00	14.7	5.0	05/10/83	05/25/83	15
145		"	"	14.1	5.0	05/25/83	06/09/83	15
146	39	32.33	76 4.80	15.0	5.0	04/13/83	04/26/83	13
146	39	32.38	76 4.63	15.3	5.0	04/26/83	05/10/83	14
146		"	"	15.3	5.0	05/10/83	05/25/83	15

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above Bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
	Lat (N)	Long (W)					
151T	39 30.23	75 55.12	38.4	21.0	04/12/83	04/27/83	15
151T	"	"	38.4	21.0	04/27/83	05/11/83	14
151T	"	"	38.8	21.0	05/11/83	05/31/83	20
151T	"	"	39.2	21.0	05/31/83	06/06/83	6
151B	39 30.23	75 55.12	38.4	9.0	04/12/83	04/27/83	15
151B	"	"	"	9.0	04/27/83	05/11/83	14
151B	"	"	38.8	9.0	05/11/83	05/31/83	20
151B	"	"	39.2	9.0	05/31/83	06/14/83	14
152T	39 31.67	75 51.97	34.0	26.0	05/12/83	05/31/83	19
152B	39 31.67	75 51.97	"	9.0	05/18/83	05/31/83	13
152B	39 31.62	75 52.22	38.5	9.0	05/31/83	06/14/83	14
152B	"	"	40.0	9.0	09/07/83	09/22/83	15
153T	39 33.17	75 39.00	43.0	25.0	04/12/83	04/27/83	15
154T	39 33.62	75 34.20	42.6	24.0	04/12/83	04/27/83	15
154T	"	"	"	24.0	05/03/83	05/12/83	9
154T	"	"	37.8	28.0	09/07/83	09/22/83	15
155T	39 33.05	75 32.58	48.7	32.0	04/26/83	05/02/83	6
155T	"	"	44.4	32.0	05/02/83	05/24/83	22
155T	"	"	44.5	32.0	05/24/83	06/14/83	21
155B	39 33.05	75 32.58	"	5.0	04/21/83	04/26/83	5
155B	"	"	44.4	5.0	05/02/83	05/24/83	22
155B	"	"	44.5	5.0	05/24/83	06/11/83	18
159	39 30.88	75 32.97	43.3	30.0	05/11/83	06/01/83	21
159	"	"	43.3	30.0	06/01/83	06/14/83	13
160T	39 34.37	75 33.27	34.8	20.0	04/12/83	04/23/83	11
160T	"	"	36.2	20.0	04/26/83	05/04/83	8
160T	"	"	34.1	20.0	05/04/83	05/24/83	20
160B	"	"	34.8	5.0	04/12/83	04/26/83	14
160B	"	"	36.2	5.0	04/26/83	05/04/83	8

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above Bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)
Lat (N)	Long (W)						
161T	39 32.55	75 42.15	42.6	26.0	04/12/83	04/27/83	15
161T	"	"	"	26.0	04/27/83	05/12/83	15
161B	"	"	"	9.0	04/12/83	04/20/83	8
161B	"	"	"	9.0	04/21/83	04/27/83	6
162T	39 31.67	75 48.43	46.3	20.0	04/12/83	04/12/83	15
162T	"	"	43.4	20.0	04/27/83	05/12/83	15
162B	"	"	46.3	9.0	04/12/83	04/27/83	15
162B	"	"	43.4	9.0	04/27/83	05/12/83	15
163	39 29.30	75 59.85	13.7	5.0	05/12/83	05/28/83	13
164	39 11.47	76 15.95	28.3	13.0	06/15/83	06/29/83	13
164	"	"	27.9	13.0	06/29/83	07/12/83	13
164	"	"	"	13.0	07/12/83	07/18/83	6
165	39 11.57	76 17.22	20.0	5.0	06/29/83	07/12/83	13
166T	39 10.95	76 16.87	35.1	18.0	06/15/83	06/29/83	14
166T	"	"	35.6	18.0	06/29/83	07/18/83	19
166B	"	"	35.1	10.0	06/15/83	06/29/83	14
166B	"	"	25.6	10.0	06/29/83	07/18/83	19
167	38 37.63	76 8.15	35.9	18.0	10/25/83	11/07/83	13
168	38 36.23	76 6.87	12.3	5.0	09/20/83	10/05/83	15
168	"	"	"	5.0	10/05/83	10/25/83	20
169T	38 28.03	76 22.60	71.6	57.0	10/07/83	10/20/83	13
169T	"	"	71.9	57.0	10/20/83	11/07/83	18
169M	"	"	71.6	32.0	10/07/83	10/20/83	13
169M	"	"	71.9	32.0	10/20/83	11/07/83	18
169B	"	"	71.6	5.0	10/07/83	10/20/83	13
169B	"	"	71.9	5.0	10/20/83	11/07/83	18

Sta. No.	Location		Water Depth at MLW (ft)	Meter Ht. above Bottom (ft)	Series Begins (Date)	Series Ends (Date)	Length of Series (Days)		
	Lat (N)	Long (W)							
170	38	22.52	76	17.92	20.7	5.0	10/20/83	11/07/83	18
170	"	"	"	"	"	5.0	11/07/83	11/28/83	21
171T	38	19.08	76	24.07	46.4	33.0	10/07/83	10/24/83	17
171T	"	"	"	"	43.7	33.0	10/24/83	11/07/83	14
171B	38	19.08	76	24.0	46.4	5.0	10/07/83	10/24/83	17
171B	"	"	"	"	43.7	5.0	10/24/83	11/07/83	14
172	39	9.78	76	23.38	21.7	8.0	06/15/83	06/30/83	15
173	39	16.97	76	13.57	21.8	6.0	06/15/83	06/20/83	15
173	"	"	"	"	"	6.0	06/20/83	06/29/83	9
173	"	"	"	"	21.7	6.0	06/29/83	07/18/83	19
174	38	40.43	76	15.45	19.1	5.0	09/21/83	10/06/83	15
175T	39	0.22	76	20.93	45.6	31.0	06/29/83	07/19/83	20
175T	"	"	"	"	"	31.0	07/19/83	08/04/83	16
175B	"	"	"	"	"	5.0	06/29/83	07/19/83	20
175B	"	"	"	"	"	5.0	07/19/83	08/04/83	16
176T	39	2.42	76	22.67	12.6	28.0	07/19/83	08/03/83	15
176B	"	"	"	"	"	5.0	07/19/83	08/03/83	15

INDEX OF TIDE STATIONS

Station ID Number	Tide Station Name	Latitude	Longitude	*Install Date	*Removal Date
8571091	Crisfield, MD	37°58.6N	75°51.8W	04/23/77	12/19/77
8571181	Colbourn Creek, Big Annemessex R, MD	38°02.9N	75°48.2W	10/19/81	11/30/81
8571214	Holland Bar Light, MD	38°04.1N	76°05.8W	08/30/81	12/01/81
8571266	Rumbley, Manokin River, MD	38°05.5N	75°51.7W	10/21/81	11/30/81
8571351	Chance, Nanticoke River, MD	38°10.3N	75°56.7W	07/25/72	07/12/74
8571402	Hooper Strait Lighthouse, MD	38°13.6N	76°04.6W	10/22/81	12/01/81
8571477	Nanticoke, MD	38°16.2N	75°54.8W	10/21/81	12/03/81
8571559	McCreadys Creek, Fishing Bay, MD	38°18.0N	76°00.4W	10/19/81	12/02/81
8571892	Cambridge, MD	38°34.5N	76°04.1W	10/21/80	
8571901	Avalon, Tilganen Island, MD	38°42.6N	76°20.1W	09/28/83	12/08/83
8571979	Ferry Cove, MD	38°46.0N	76°19.5W	07/14/83	10/13/83
8572342	St. Michaels, Miles River, MD	38°47.2N	76°13.3W	07/27/83	09/09/83
8572955	Love Point Pier, Kent Island, MD	39°01.9N	76°18.1W	06/29/71	01/01/73
8573137	Cliff's Wharf, MD	39°06.6N	76°08.3W	06/22/71	11/26/74
8573364	Tolchester, MD	39°12.8N	76°14.7W	06/24/71	08/29/74
8573704	Betterton, Sassafras River, MD	39°22.3N	76°03.8W	06/24/71	07/10/72
8573903	Town Point Wharf, MD	39°30.2N	75°55.0W	10/17/72	05/06/80
8574008	Port Deposit, MD	39°36.2N	76°06.8W	05/04/83	06/23/83
8574070	Harve De Grace, MD	39°32.2N	76°05.4W	11/17/72	
8574680	Baltimore, MD	39°16.0N	76°34.7W	07/01/02	
8574857	North Point, MD	39°11.8N	76°26.7W	06/28/71	11/11/76
8575512	U.S. Naval Academy, Annapolis, MD	38°59.0N	76°28.8W	09/14/78	
8576363	Chesapeake Beach, MD	38°41.0N	76°32.0W	06/27/72	12/18/75
8577330	Solomons Island, MD	38°19.0N	76°27.2W	11/05/37	
8577385	Navy Seaplane Basin Boathouse, MD	38°16.3N	76°23.8W	08/28/81	12/03/81
8578002	Point Lookout, MD	38°02.4N	76°19.4W	10/05/81	12/04/81
8632085	Fishermans Island, VA	37°05.8N	75°59.0W	06/21/77	01/04/78
8632200	Kiptopeke Beach, VA	37°10.0N	75°59.3W	08/22/51	
8632366	Cape Charles HBR (U.S. G. Wharf) VA	37°15.8N	76°01.2W	06/25/47	11/07/52
8632599	Mattawoman Creek, VA	37°23.3N	75°57.8W	03/16/82	12/09/82
8632869	Gaskins Pt., Occohannock Creek, VA	37°33.4N	75°55.0W	08/01/72	07/18/74
8632974	Rappahannock Shoal, VA	37°35.6N	76°01.9W	06/24/83	10/31/83
8633532	Tangier Island, VA	37°49.7N	75°59.5W	08/08/79	05/29/80
8635961	Smith Point, VA	38°53.3N	76°14.5W	08/26/81	10/17/81

Station ID Number	Tide Station Name	Latitude	Longitude	*Install Date	*Removal Date
8636128	Fleet Pt. Great Wicomico River, VA	37°48.8N	76°16.5W	10/21/70	01/18/72
8636580	Wind Mill Marina, VA	37°36.7N	76°16.5W	06/24/70	03/18/75
8636581	Windmill Point, VA (Backup)	57°36.9N	76°18.1W	06/28/83	10/31/83
8637289	New Point, VA	37°20.8N	76°16.4W	04/16/53	06/22/53
8637444	Browns Bay, Mobjack Bay, VA	37°18.0N	76°24.0W	04/28/47	05/22/47
8637589	New Pt. Comfort Shoal, (Backup), VA	37°15.4N	76°13.3W	05/29/81	09/10/81
8637624	Gloucester Point, VA	37°14.8N	76°30.0W	05/16/50	
8637686	Yorktown, York River, VA	37°13.8N	76°26.2W	01/01/72	12/03/73
8638051	Messick Point, Back River, VA	37°06.5N	76°19.1W	06/25/47	08/14/47
8638610	Hampton Roads, Sewells Point, VA	36°56.8N	76°19.9W	07/01/27	
8638863	Chesapeake Bay Bridge Tunnel, VA	36°58.0N	76°06.8W	01/26/76	

*Installation and removal dates do not imply continuous good data or the actual length of the data series.

METEOROLOGICAL STATION INDEX

1981

<u>STATION</u>	<u>LAT.</u>	<u>LONG.</u>	<u>H.T. ABOVE SURFACE (M)</u>	<u>START</u>	<u>STOP</u>	<u>DAYS OF OBSERVATIONS</u>
Point Lookout	38°01'36"	76°19'18"	11	9/3 10/4 11/5	10/4 11/5 12/2	31 32 27
Holland Island Bar Light	38°04'06"	76°05'48"	10.5	8/29 10/4 11/5	10/4 11/5 12/2	36 32 27

1982

<u>STATION</u>	<u>LAT.</u>	<u>LONG.</u>	<u>H.T. ABOVE SURFACE (M)</u>	<u>START</u>	<u>STOP</u>	<u>DAYS OF OBSERVATIONS</u>
York Spit	37°12'36"	76°15'18"	10	5/21 6/14 7/10 8/12 9/7 10/2 11/8	6/14 7/10 8/12 9/7 10/2 11/8 11/24	24 26 33 26 35 27 16
Windmill Pt.	37°35'48"	76°14'12"	13	5/17 6/14 8/8 9/7	6/14 7/10 9/7 9/27	28 26 30 20

1983

<u>STATION</u>	<u>LAT.</u>	<u>LONG.</u>	<u>H.T. ABOVE SURFACE (M)</u>	<u>START</u>	<u>STOP</u>	<u>DAYS OF OBSERVATIONS</u>
Pooles Island	39°15'42"	76°16'42"	10	3/19	4/14	26
				4/14	5/10	26
				5/10	6/2	23
				6/2	7/5	33
				7/5	8/1	27
				8/1	8/31	30
				8/31	9/14	14
				10/31	11/22	22
				11/22	12/2	10
Herring Bay	38°44'21"	76°30'50"	7	3/15	4/18	34
				4/29	5/26	27
				5/26	6/17	22
				6/17	7/12	25
				8/9	8/25	16
				8/25	8/26	1
				8/26	8/30	4
				10/18	11/8	21
				11/8	12/1	23

CTD Field Program

CTD casts were taken twice at all current stations once at slack before flood and once at slack before ebb during current station deployment or recovery operations.

CTD Transects were run to follow the progression of the tidal wave in order to examine the water density structure of the survey area at the two extremes of the tide. CTD Transects consist of casts taken at preselected current station locations (or special CTD cast stations denoted by "ST") forming a line either crossing the Bay or along the longitudinal axis of the Bay. All transects were run at slack water before flood and slack water before ebb.

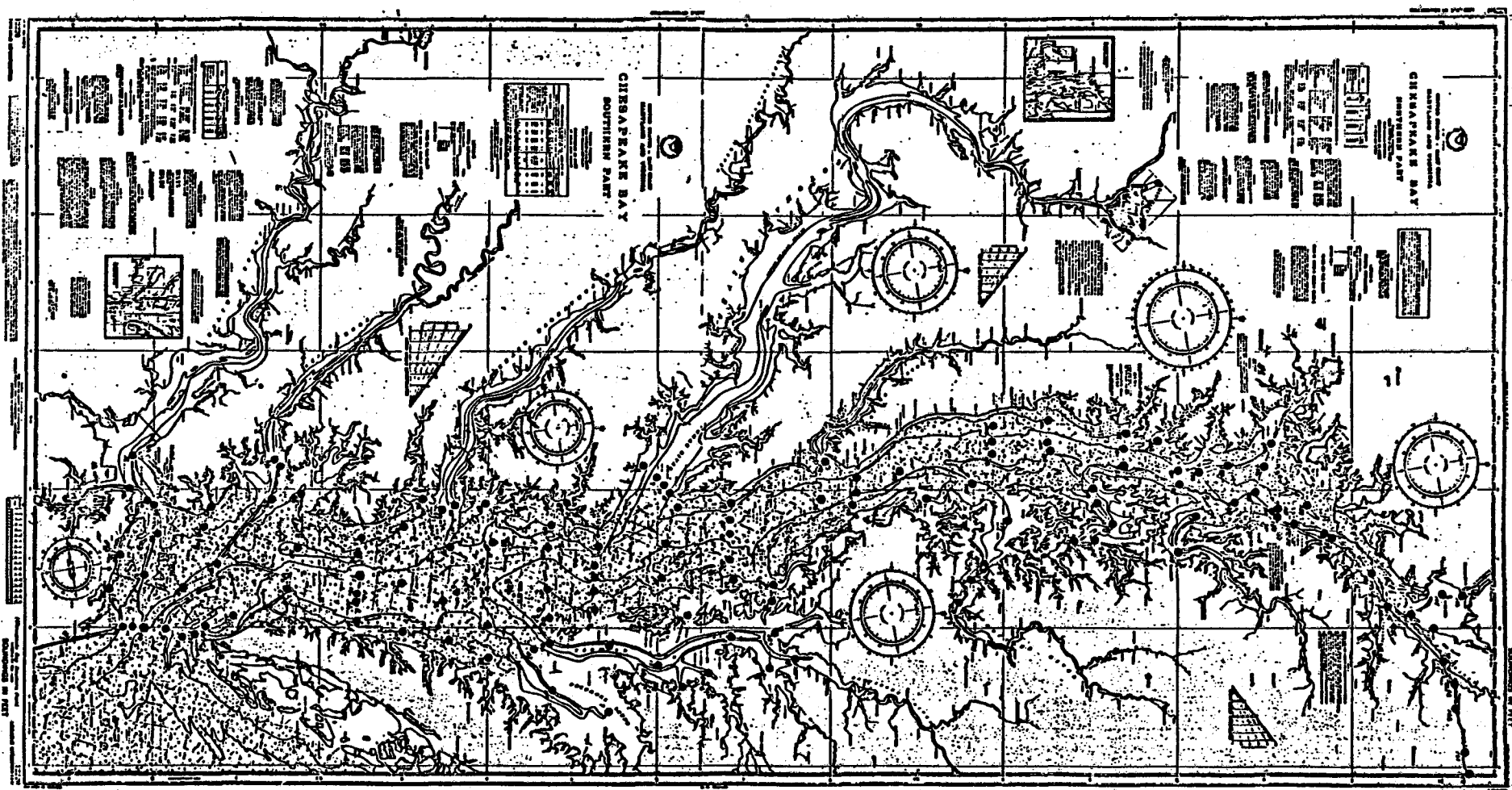
CTD Transects were taken as follows:

<u>Year</u>	<u>Current/CTD Stations</u>
1981	1, 2, 3, 4, 5 2, ST202, 13, ST213, 20, 33, 36 8, 9, 10, 11, ST211 19, 20, 21, 22, 23 6, 15, ST215, 24, 26
1982	63, 64, 65, 66, 67, 68 37, 38, 39, 40, 41, 42 63, 64, 65, 66, 67, 68 40, 44, 55, 58, 65, 65 75, 80, 83, 2 82, 83, 84, 85, 86, 87, 88
1983	159, 155, 154, 153, 161, 162, 152, 151, 143 ST211, ST212, 139, ST213, ST214 127, ST209, 128, ST210 119, ST207, 120, ST208, 121 ST202, ST203, ST204, ST205, ST206 100, ST201, 101, 170

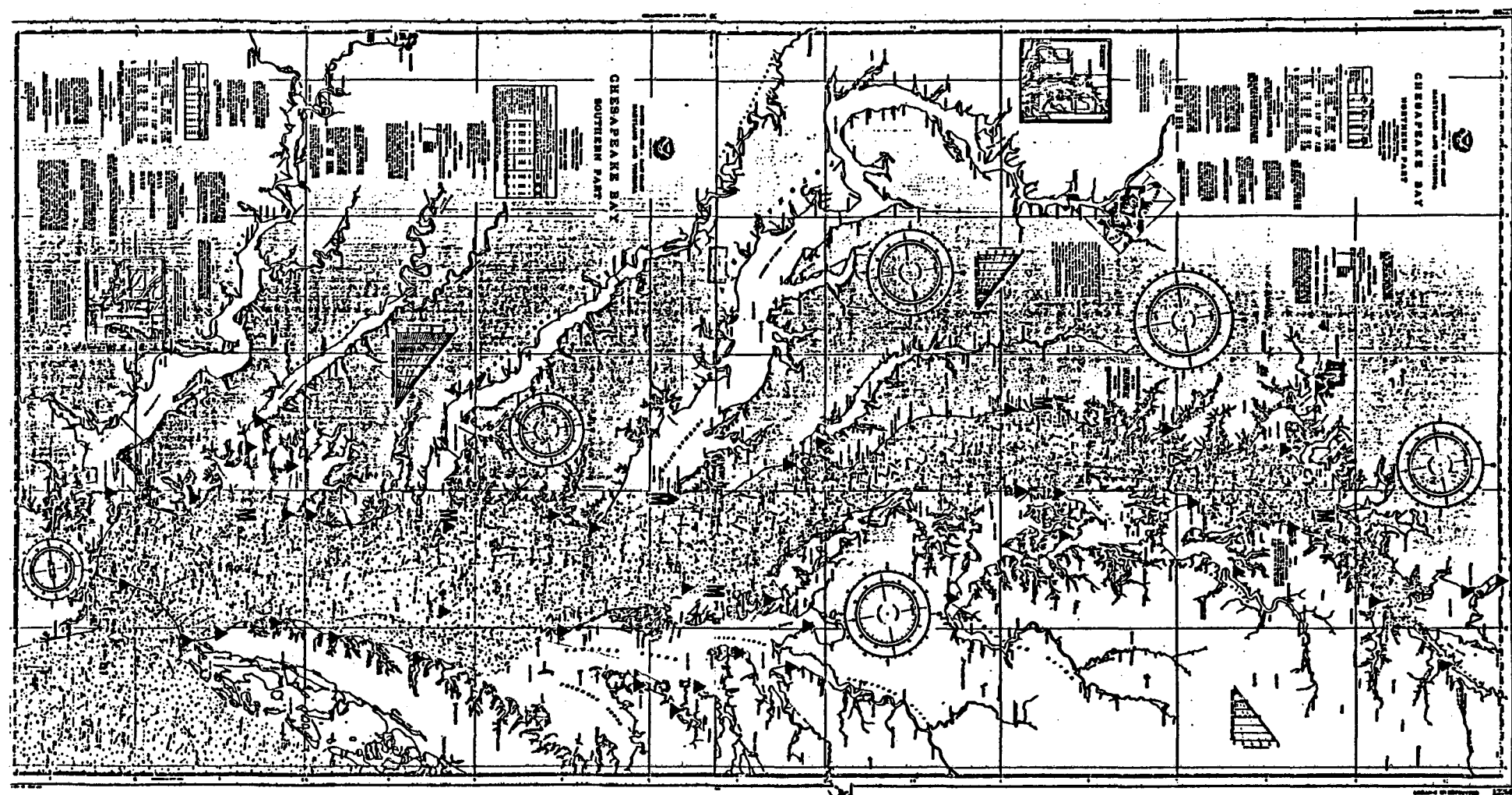
Data from 13-hour time series CTD casts will be used to investigate the tidal influences on the density structure. Each series consists of half-hourly casts from the surface to near bottom depths at one location.

CTD time series casts were taken as follows:

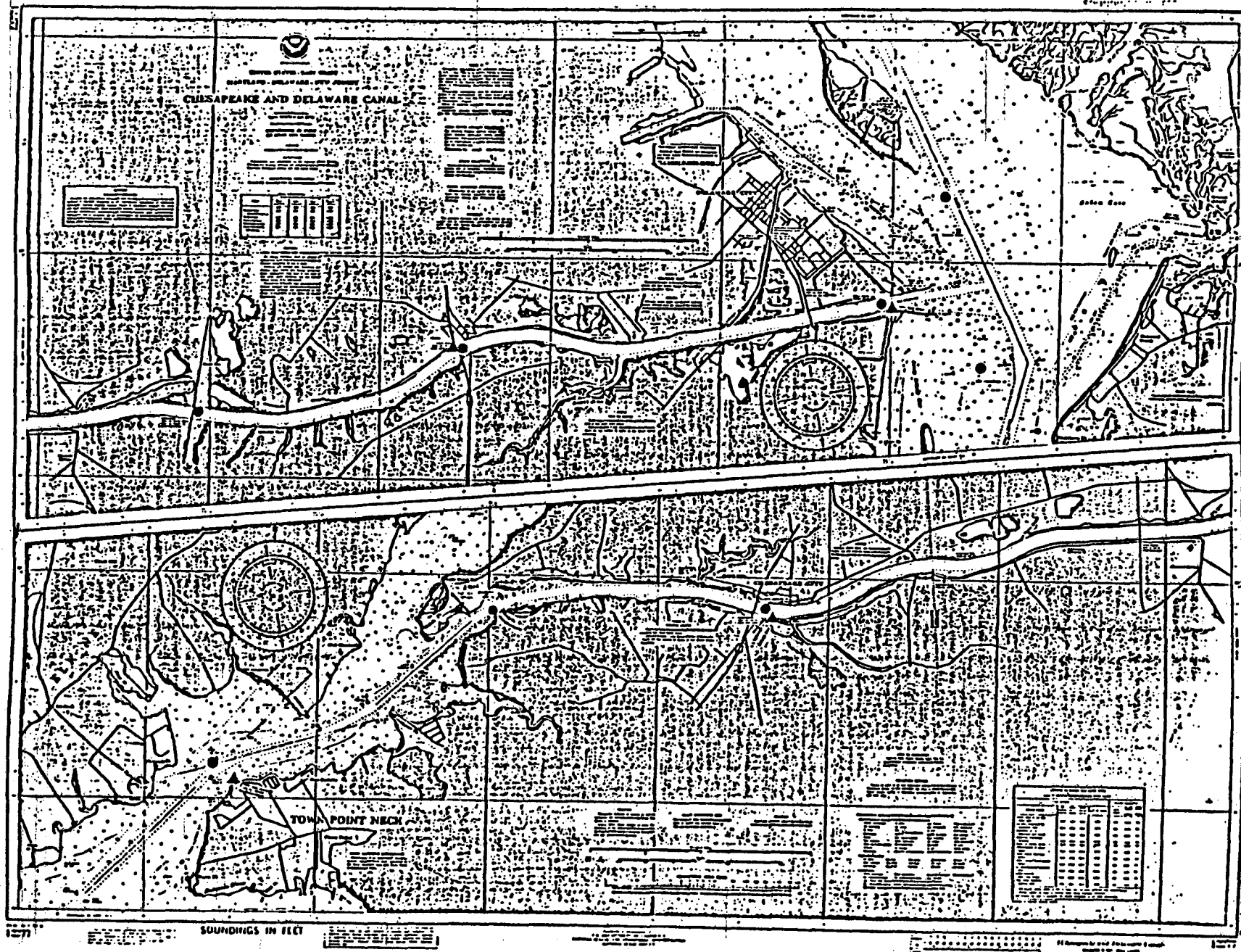
<u>Year</u>	<u>Current (CTD) Station Locations</u>
1981	2, 6, 10, 36
1982	40, 49, 60, 65, 73, 83, 86
1983	36, 121, 139



CHESAPEAKE BAY
1981-1983
Current Meter/CTD Station Location



CHESAPEAKE BAY
1981-1983
Tide (▲) and Meteorological (M) Station Locations



CHESAPEAKE BAY
1981-1983
Current Meter/CTD (●) and Tide (▲) Station Locations