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TECHNICAL REPORT HL-90-7

# MISSISSIPPI RIVER-GULF OUTLET, LOUISIANA

## Field Data Report

by

T. L. Fagerburg

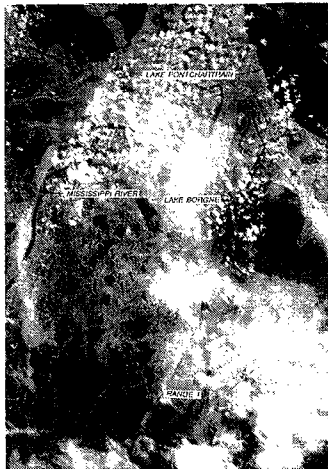
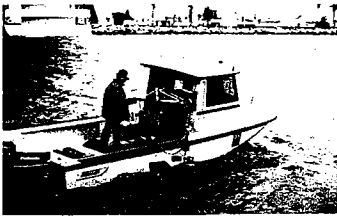
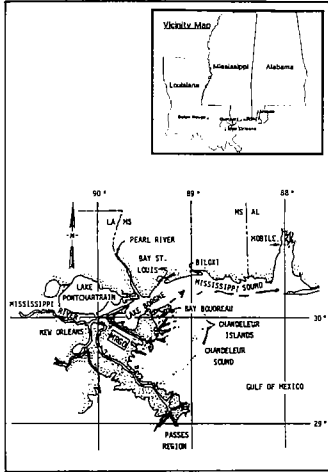
Hydraulics Laboratory

DEPARTMENT OF THE ARMY

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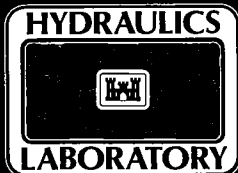
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Final Report

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## PREFACE

The field investigation reported herein was conducted during the period 26 October through 27 November 1988 by the US Army Engineer Waterways Experiment Station (WES), Vicksburg, MS, to provide the necessary data for support of the Mississippi River-Gulf Outlet Channel Project, New Orleans, LA. This effort was funded by the US Army Engineer District, New Orleans (LMN), under the project management of Mr. Bill Garrett, LMN.

Personnel of the WES Hydraulics Laboratory (HL), Estuaries Division (ED), Estuarine Processes Branch (EPB), performed the work under the general supervision of Messrs. F. A. Herrmann, Jr., Chief, HL; R. A. Sager, Assistant Chief, HL; W. H. McAnally, Jr., Chief, ED; and G. M. Fisackerly, Chief, EPB. The data collection program was designed by Messrs. Fisackerly, T. L. Fagerburg, H. A. Benson, and J. W. Parman, EPB. Data reduction was performed by Ms. C. J. Coleman, EPB, and Mr. Fagerburg. Laboratory analysis of water samples was performed by Mr. L. G. Caviness, EPB. This report was prepared by Mr. Fagerburg and edited by Mrs. Marsha C. Gay, Information Technology Laboratory, WES.

Commander and Director of WES during preparation of this report was COL Larry B. Fulton, EN. Technical Director was Dr. Robert W. Whalin.

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CONVERSION FACTORS, NON-SI TO SI (METRIC)  
UNITS OF MEASUREMENT

Non-SI units of measurements used in this report can be converted to SI (metric) units as follows:

<u>Multiply</u>	<u>By</u>	<u>To Obtain</u>
feet	0.3048	metres
inches	25.4	millimetres
miles (US statute)	1.609347	kilometres
ounces (US fluid)	0.02957353	cubic decimetres

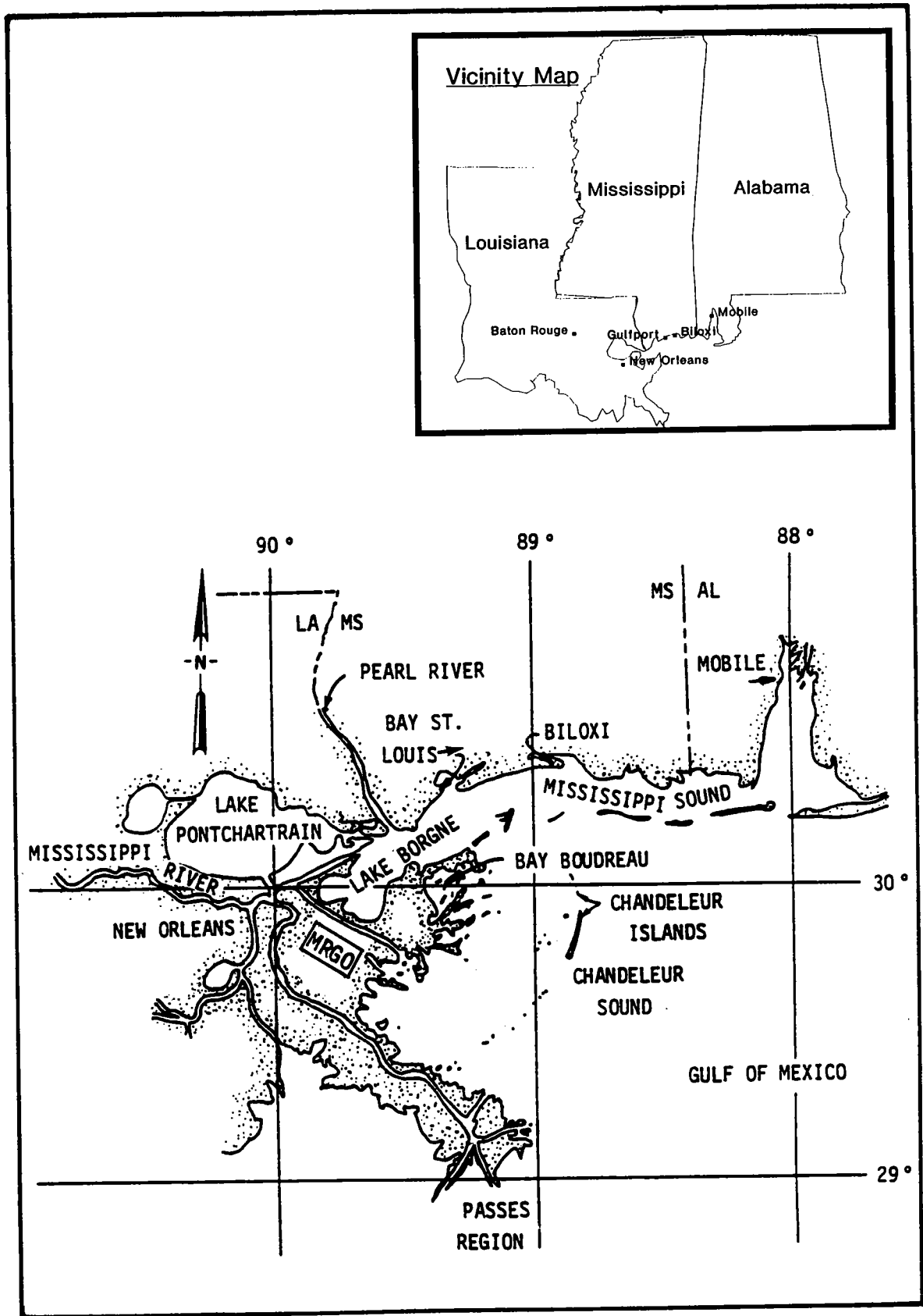


Figure 1. Location and vicinity maps

# MISSISSIPPI RIVER-GULF OUTLET, LOUISIANA

## Field Data Report

### PART I: INTRODUCTION

#### Project Description

1. The Mississippi River-Gulf Outlet (MRGO) Canal, as shown in Figure 1, is a 66-mile\*-long deepwater channel that extends northwest from deep water in the Gulf of Mexico to New Orleans, LA. The Federal project provides for a 40-ft-deep (mean low Gulf datum) channel for approximately 32 miles where it joins the Gulf Intracoastal Waterway and thence for about 5 miles to a turning basin at its junction with the Inner Harbor Navigation Canal at New Orleans. The project was completed in 1968 to provide a shortcut from New Orleans to the Gulf for ship and barge traffic. The original project channel width was constructed to 650 ft; but due to the wave wash and drawdown from ships transiting the channel, the unstable marsh bank line has eroded to create a channel width of 1,500 ft.

#### Purpose and Scope

##### Purpose

2. The primary purpose of this investigation was to obtain information on the water levels, current speeds and directions, salinity concentrations, and suspended sediment concentrations within the MRGO, Lake Borgne, and the connecting channel areas between these two areas. This information was then to be used in a numerical model to determine the expected rates of shoaling in MRGO if the breached bank areas were to widen to a maximum of 5,000 ft. A secondary purpose was to correlate suspended sediment data with satellite thematic mapper data.

##### Approach and scope

3. Three 8-hr surveys were conducted to collect synoptic field data

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\* A table of factors for converting non-SI units of measurement to metric (SI) units is found on page 3.

during peak flow periods in conjunction with LANDSAT satellite overflights of the MRGO study area. The surveys were timed to establish ground truth sediment concentrations for the satellite information. Measurements consisted of the following:

- a. Water levels recorded at six locations.
- b. Current speed and direction at three ranges.
- c. Suspended sediment and salinity profile samples at each range.
- d. Discrete water samples taken automatically at two locations.
- e. Thematic mapper tapes from the LANDSAT satellite.
- f. Wind speed and direction in the study area.

4. This report describes the field investigation methods used to collect the field data and presents the results of the data reduction efforts.



PART II: DATA COLLECTION EQUIPMENT, PROCEDURES,  
AND CONDITIONS

Data Collection Equipment

Current speed and direction

5. Each of the boats used in the surveys was equipped to deploy instruments over the side using the portable equipment setup shown in Figure 2.

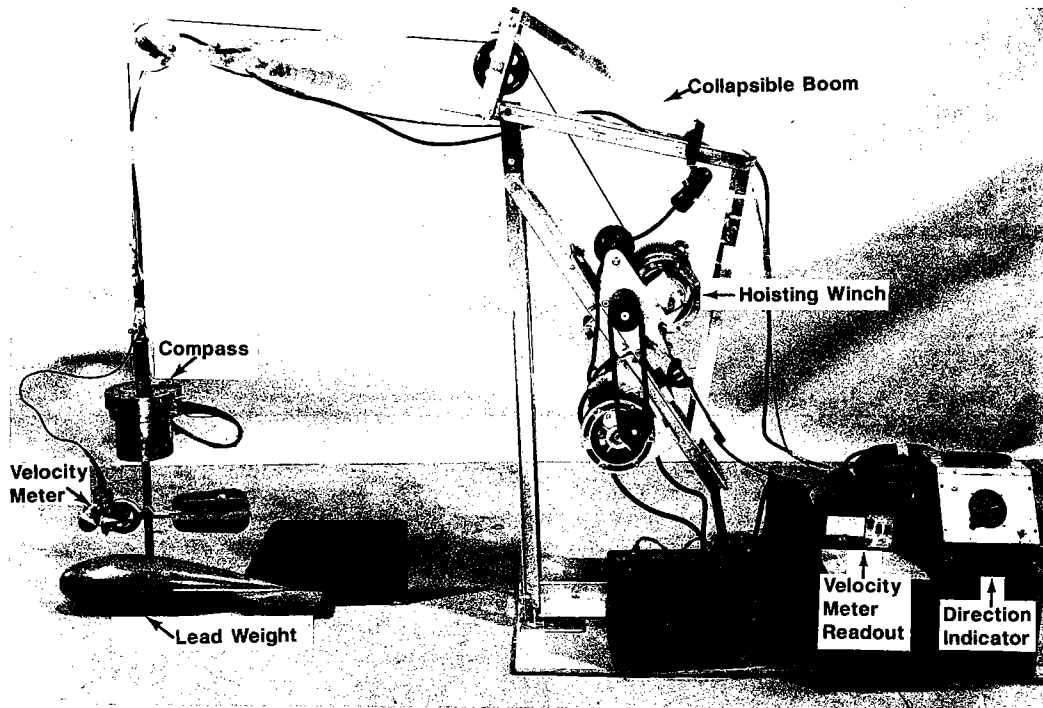


Figure 2. Components of the field instrument assembly

Collapsible aluminum frames were used to support the equipment, and winches with 1/8-in. wire rope were used to raise and lower the velocity and direction equipment. An indicator on the winch displayed the depth of the instruments below the water surface. A Gurley Model 665 velocity meter with vertical axis cup-type impeller and direct velocity readout capabilities was used to measure the current speeds. These meters have a threshold speed of less than 0.2 fps and an accuracy of  $\pm 0.1$  fps for velocities less than 1 fps. Current directions were monitored with a magnetic directional indicator mounted above the velocity meter on a solid suspension bar. This entire assembly was connected to a streamlined lead weight that held the sensors in a vertical position and oriented them into the direction of the flow. The signal cables from each instrument were raised and lowered with the equipment and connected to the

display units located on the deck of the boat.

#### Suspended sediment and salinity water samples

6. Water samples for analysis of salinities and total suspended solids were obtained at each depth at which a velocity reading was taken by pumping the sample from the depth to the surface collection point. The pumping system consisted of a 1/4-in.-ID plastic tubing attached to the current meter signal cables for support. The opening of the sampling tubing was attached to the solid suspension bar at the same elevation as the current meter and was pointed into the flow. A 12-v d-c pump was used to pump the sample from the depth of the meter through 50 ft of the tubing to the deck of the boat where each sample was then collected in individual 8-oz plastic bottles. The pumps and tubing were flushed for approximately 1 min at each depth before the sample was collected.

#### Automatic water samplers

7. Discrete water samples taken automatically during each survey period and during the periods between the individual periods were obtained using ISCO Model 2700 automatic water samplers, as shown in Figure 3. A typical field installation of these water samplers is shown in Figure 4. The samplers operated from a 12-v d-c battery power source. Samples were collected in 1-l plastic bottles located inside the sampler. The samplers are fully programmable for obtaining any volume of sample desired up to the maximum size of the bottle, for obtaining composite samples, for setting different intervals between samples, and for setting times to begin the sampling routine. When the sampling period was complete, the sample bottles were replaced with empty bottles to begin a new sampling period.

8. Two samplers were used in this study to obtain water samples at the Martello Castle and Shell Beach locations, AWS-2 and AWS-1, respectively, in Lake Borgne as shown in Figure 5. At the locations where these samplers were installed, the intake line from each sampler was positioned at a depth of 3 ft above the bottom for retrieval of the samples. The samplers were programmed to collect one sample per bottle every 373 min during each of the 8-hr survey periods. For the sampling periods between the individual surveys, the samplers were programmed to collect two samples per bottle every 6.25 hr during the peak flood and ebb tides and the slack-water periods.

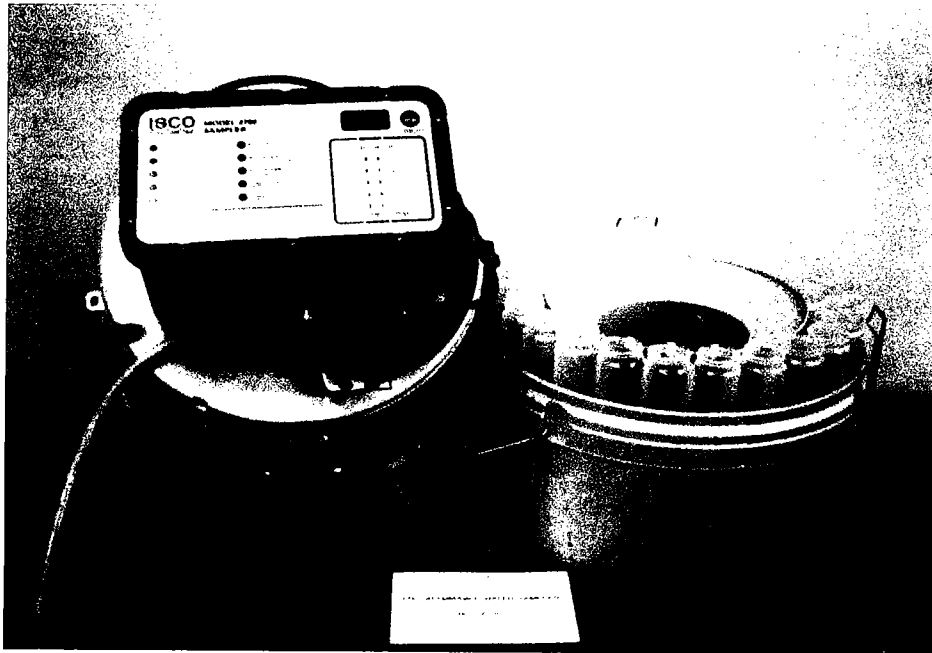


Figure 3. Automatic water samplers

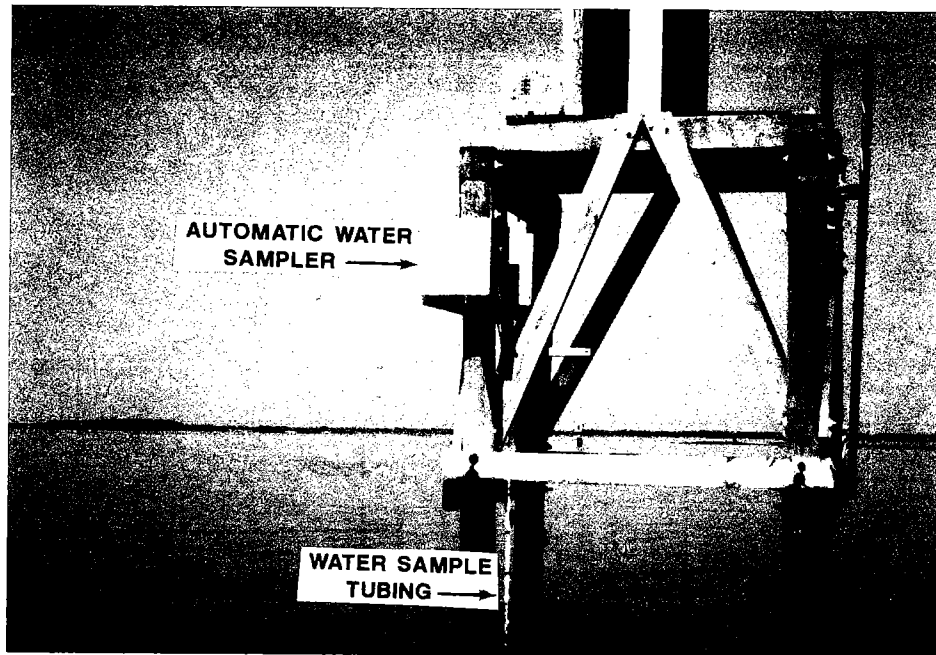


Figure 4. Typical field installation of the automatic water samplers

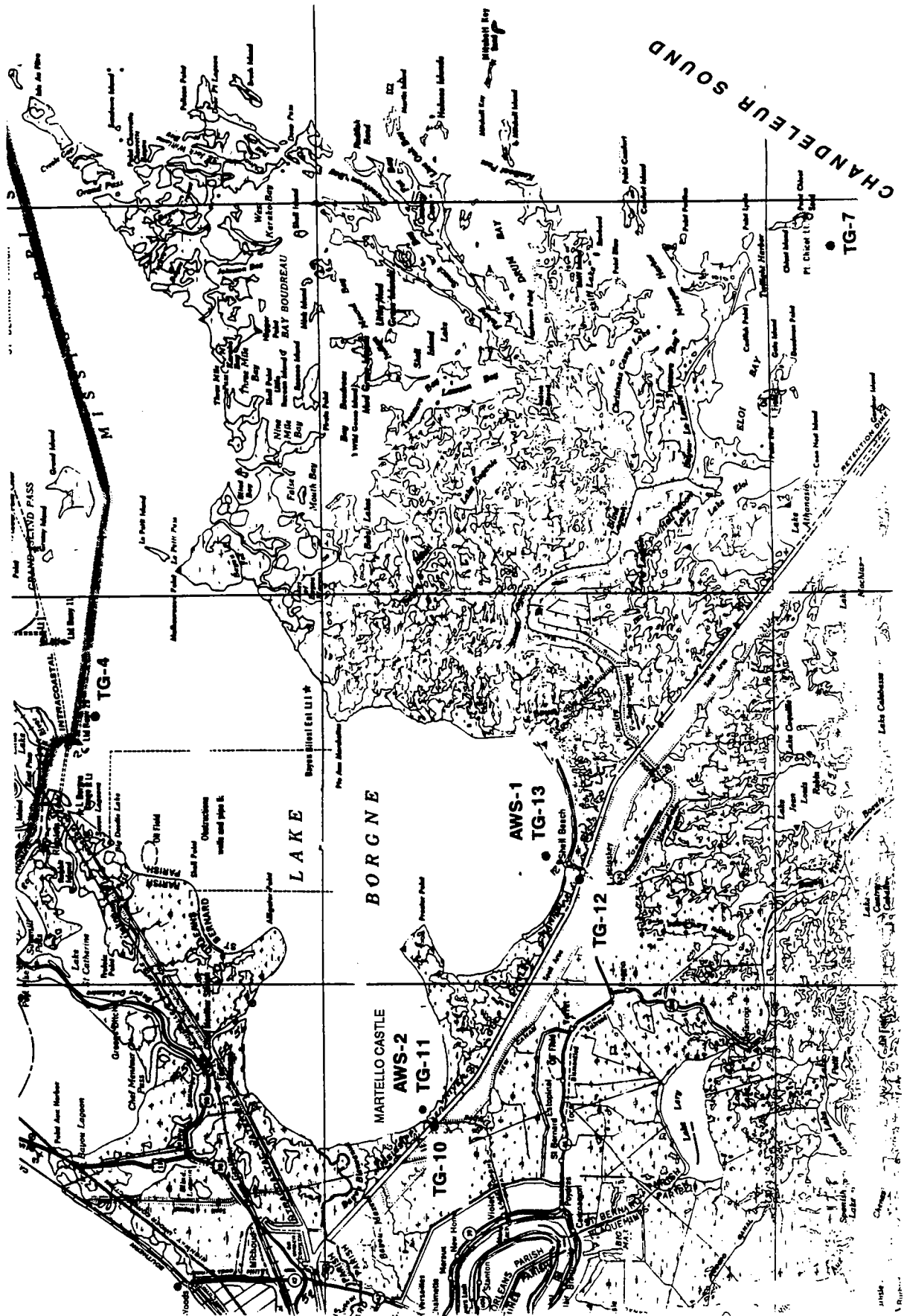


Figure 5. Sampling locations

## Tide level recorders

9. Water levels were recorded using ENDECO Model 1029 and Model 1152 solid-state water level recorders similar to those shown in Figure 6. The

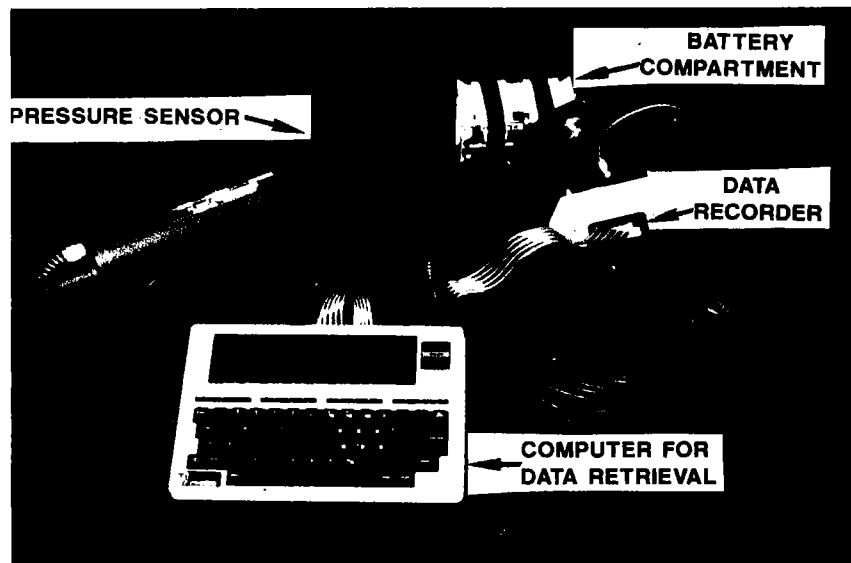


Figure 6. Water level recorder

ENDECO recorders contained a strain gage type pressure transducer in a submersible case that is used to record the absolute pressure of the column of water above the case. This pressure transducer was vented to the atmosphere by a small tube in the signal cable that compensated for any changes in barometric pressure. The Model 1152 was similarly equipped, but in addition it has a conductivity sensor for monitoring salinity. The recording time intervals for the tide level data were set for 10–15 min. The data from each recorder were stored on a solid-state EPROM cartridge in the waterproof housing above the surface, which also contained the d-c power supply. The accuracy of these recorders is 0.1 percent (or  $\pm 0.05$  ft over the full scale of the recorder). The pressure was measured for 49 sec of each minute of the recording interval with a frequency of 5–55 kHz to filter out surface waves, therefore eliminating the need for a stilling well.

10. Six recorders were used for this study to obtain water-surface elevation measurements at different locations in the study area. These locations are shown in Figure 5. One recorder, TG-4, was located on a channel marker in the Intracoastal Waterway at the northeast end of Lake Borgne. Recorder TG-7 was located on a navigational structure in Chandeleur Sound near Point Chicot. These two locations were identical to those used in another

study; therefore, the previous station numbering system was used. Recorders TG-10 and TG-12 were located on channel markers in the MRGO near the Martello Castle and Shell Beach entrances into Lake Borgne. Recorders TG-11 and TG-13 were located on abandoned piling structures within Lake Borgne close to these same entrances. The recorders were operated continuously throughout the entire study period.

#### Wind speed and direction

11. The wind conditions at the time of each 8-hr survey were recorded using a WeatherMaster Model No. 132 hand-held anemometer. The directions of the prevailing winds were determined from the compass heading of the anemometer giving the highest speed indication. Periodic maximum wind speeds were recorded at various times throughout each of the surveys. No wind conditions were monitored during the intervals between the individual surveys. Wind data at New Orleans for all periods were obtained from the National Weather Service, but are not presented here.

#### Procedures

12. For each of the 8-hr data collection periods in the MRGO study area, a total of three ranges were selected that would probably yield the information most applicable to the problem statement. The general locations of these ranges are shown in Figure 7. Range 1, located within the MRGO at mile marker 27.0, had three stations across the channel. Sta 1-B was located at the channel center line and sta 1-A and 1-C were located at the channel prism lines. A fourth station, sta 1-X, located 1.5 miles below range 1, was monitored only during the scheduled times of the LANDSAT satellite overflights. Range 2, located at MRGO mile marker 41.0 and at the Shell Beach entrance to Lake Borgne, had three stations that were monitored. Sta 2-B and 2-C were located within the MRGO channel, at the channel center line and prism line, respectively, at MRGO mile marker 41.0. Sta 2-A of this range was located approximately 150 ft inside the entrance of the Shell Beach access channel to Lake Borgne. A fourth station, 2-X, located at channel marker 2 in Lake Borgne, was monitored only during the scheduled period of satellite overflights. Range 3, located near MRGO mile marker 51.0, had four stations which were monitored. Sta 3-C and 3-D were located in the MRGO at the channel center line and prism line, respectively. Sta 3-A and 3-B were located across

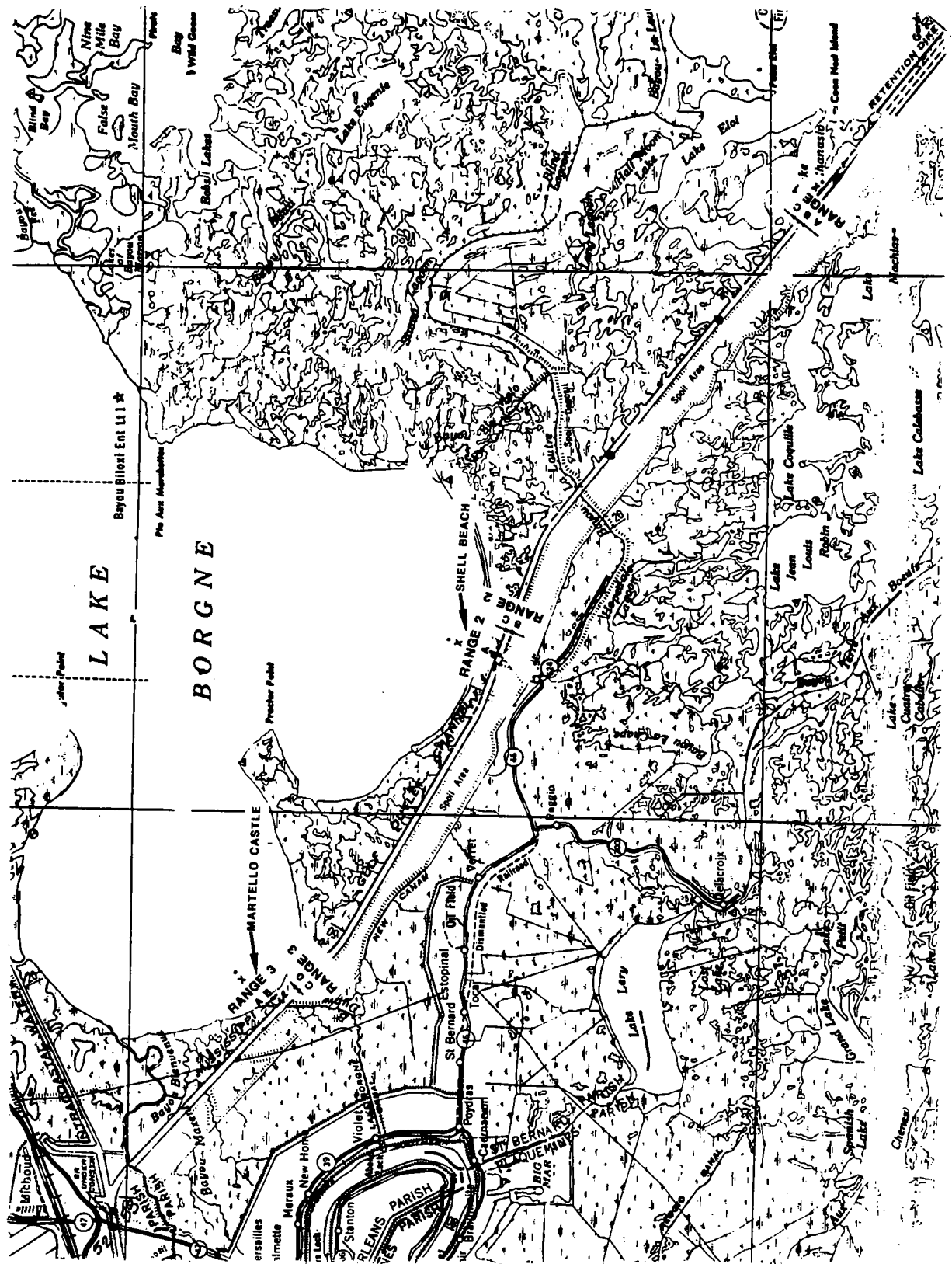


Figure 7. Survey data collection ranges and stations

the entrance from MRGO into Lake Borgne at the Martello Castle area and equally spaced across the width of the channel. A fifth station, 3-X, located at channel marker 2 in Lake Borgne, was monitored only during the scheduled periods of satellite overflights.

13. Before the beginning of each survey, anchors and mooring lines were deployed at each of the stations. The mooring lines were attached to large inflated buoys. The boat moved into position at each of the buoys and used the anchored line to hold a steady position in the current while data collection was being performed. With the exception of the X stations, the velocity data and water samples were collected at three depths: bottom, middepth, and surface. The bottom measurement was made at a distance of 2 ft above the actual bottom. The middepth measurement was obtained at the actual middepth point. The surface measurement was obtained at 3 ft below the top of the water surface. At sta 1-X, 2-X, and 3-X, only bottom and surface measurements were obtained. Data collected at each depth included current speed, current direction, and a pumped water sample. The data at each station were obtained once per hour except during the scheduled period of satellite overflights. During the overflight periods, data were collected at each station, including the X stations, on 1/2-hr intervals beginning 1/2 hr prior to and extending to 1/2 hr following the scheduled passing of the satellite.

#### Laboratory analysis of suspended sediments and salinities

14. The samples collected by the automatic water samplers and those obtained at the individual sampling stations during the survey were analyzed in the Hydraulics Laboratory at the US Army Engineer Waterways Experiment Station. Total suspended materials were determined by filtration of the samples. Nuclepore polycarbonate filters with 0.4- $\mu$  pore size were used. They were desiccated and preweighed, then a vacuum system was used to draw the sample through the filter. After the filters and holders were washed with distilled water, the filters were dried at 105° C for 1 hr and reweighed. The total suspended materials were calculated based on the weight of the filter and volume of the filtered sample.

15. The water samples were also measured for salinities in the laboratory. A Beckman Model RA5 salinometer with automatic temperature compensation was used for these analyses. The salinometer was calibrated with standard seawater (34 ppt) and was accurate to within  $\pm 0.2$  ppt.



Conditions of the survey

16. Each 8-hr data collection survey was conducted during a slightly different tide condition. The maximum tidal ranges were observed to be 2.45 ft in the upper reaches of Lake Borgne and 2.5 ft near Point Chicot. The cloud conditions were variable during each survey. The survey conducted on 26 October 1988 appeared to be excellent for the satellite overflights (no large cloud formations). Extreme cloud cover existed at the time of the 11 and 27 November 1988 data collection surveys. The wind conditions were variable for each survey ranging from slight breezes to strong winds of 17 mph.

### PART III: DATA PRESENTATION

#### Tide Data

17. The variations observed in the water-surface elevation data are tabulated in Tables 1-9. The water-surface data for periods of 12 hr prior to and following each of the survey period dates are shown in Plates 1-9. Water level recorders TG-4, TG-7, TG-10, TG-11, TG-12, and TG-13 appeared to function properly during each of the surveys. However, some difficulties were encountered at location TG-10 during the interval between the first and second surveys. This problem was corrected prior to the second survey conducted on 11 November. The tide phase and ranges observed on all the recorders appeared to be consistent with each other.

18. The data from water level recorders TG-10 and TG-11 were compared to determine the presence of a head differential at the Martello Castle opening from Lake Borgne to the MRGO. The information obtained from these recorders is listed in Tables 4-6. The data from the additional water level recorders TG-12 and TG-13 were also compared in a similar manner to determine the head differential occurring at the Shell Beach opening from Lake Borgne to the MRGO and are listed in Tables 7-9. To determine the head differential that existed at each location, a representative datum had to be determined. It was assumed that the relative proximity of the pairs of recorders to each other was close enough that the time of occurrence of the slack water at each location would be the same. From the water level data recorded at each of these locations and the velocity data, the offset of one of the gages could be adjusted up or down depending on the change in direction indicated by the velocity data. The mean water level reading from each recorder was used as the datum for plotting the data. The maximum water-surface differential observed at TG-10 and TG-11, the Martello Castle opening, was 0.154 ft and occurred on 11 November. The maximum water-surface differential observed at TG-12 and TG-13, the Shell Beach opening, was 0.93 ft occurring on 27 November. It should be noted here that the extreme water-surface differential that occurred at the Shell Beach location was caused by the effects of a very strong cold front advancing in a southward direction. Associated with this advancing front were very strong winds, which created very high waves in the southern end of Lake Borgne, particularly at the Shell Beach area. The

plots of the water surface at the Martello Castle and Shell Beach openings are shown in Plates 4-9. The period of time plotted for each water level recorder represents the length of time required to complete each survey and includes a 12-hr period immediately preceding and following the survey. In every case, the measured flow velocity through the openings into Lake Borgne was in the direction of the measured water level gradient.

19. The water level recorder at location TG-7 was used as a reference station for comparison with the data from the other stations to estimate tidal phase and range differences between location TG-4 at Point Chicot and the upper reaches of Lake Borgne. This comparison illustrated that the maximum tidal range observed was 2.5 ft at location TG-4 and 2.4 ft at location TG-7 on 11 November 1988. The comparison also reflected that the phase differences in these tide ranges differed as much as 1-1/2 hr between locations TG-7 and TG-4. The plots of these water surface elevations are shown in Plates 1-3.

#### Velocity Data

20. Tables 10-42 and Plates 10-42 are the time series listings and plots, respectively, of the velocity data obtained at the three ranges as described in paragraph 12. At each station the current speed and direction were measured at three depths: near bottom, middepth, and near surface. The maximum velocity observed at the lower range, range 1, in the channel of the MRGO was 3.6 fps occurring on 26 October 1988. The maximum velocity observed in the MRGO channel at range 2 was 2.7 fps occurring on 27 November 1988. The maximum velocity in the channel at range 3 was 2.9 fps occurring on 27 November. In the Martello Castle opening into the MRGO (sta 3-A and 3-B), currents generally flowed out of Lake Borgne, indicated by the ebb direction, during this period. The maximum currents observed in the center of the opening (sta 3-B) were near 3.2 fps on 27 November. In the Shell Beach opening into the MRGO (sta 2-A), the maximum velocity was found to be 3.6 fps occurring on 27 November. The flows during this period were predominantly out of Lake Borgne into the MRGO as indicated by the ebb direction. Within the main MRGO channel between these two openings, at sta 3-C, the maximum current speed was found to be 2.9 fps during the November 27 survey. At the lower end of the MRGO, range 1, the maximum currents measured were predominantly in the channel. The maximum velocity observed was 3.6 fps at sta 1-B during the

October 26 survey. These maximum velocities were found to occur mainly in the center of the channel and near the middepth.

21. The majority of the flows within the channel of the MRGO, particularly at ranges 2 and 3, were in a southeast direction. The two major entrances into Lake Borgne (the Martello Castle and Shell Beach openings) and other openings along the MRGO contributed to the flow in the channel. As a result, there were no large variations, other than tidal, in the magnitude and direction of the currents. Eddies and unusual flow circulation patterns created by change in the tidal periods were not always observed to be present in the velocity data. These are highly dynamic processes and represent changes that are created by tidal as well as climatic factors. Several of the surveys illustrated that the changes within the system were not always detectable using hourly observation periods. However, the data set does provide sufficiently detailed information for model verification.

#### Salinity Data

22. The results of the sample analysis for salinities at each sample station during each survey are listed in Tables 43-51. Plates 43-47 are the plots of the salinities for representative stations within the MRGO and at each of the openings into Lake Borgne. The salinities for the samples obtained from the automatic water samples are listed in Tables 52-56 and plotted in Plate 48. The salinity values at the sampling locations within the MRGO indicate that ranges 2 and 3 represent a partly to well-mixed flow system while range 1 is generally well mixed. At sta 2-A, 3-A, and 3-B, the changes in the observed salinity values indicated the change in direction of the measured flow through the openings. Increases in salinity values at these stations indicated flow from the MRGO into Lake Borgne. Low or decreasing values of salinity at these stations indicated flow from Lake Borgne into the MRGO.

#### Total Suspended Material Data

23. The results of the sample analysis for total suspended material at each sample station monitored during each survey are shown in Tables 57-65. Plates 49-53 are plots of the suspended sediment concentrations for representative stations within the MRGO channel and at each of the openings into

Lake Borgne. The majority of the samples containing the greatest concentrations of suspended sediment were generally found near the bottom of the channel. The suspended sediment concentrations within the openings tended to be slightly different from those observed in the channel, especially when the flow within the opening was predominantly from Lake Borgne into the MRGO. If the flow was from Lake Borgne into the MRGO, then the suspended sediment concentrations were dependent upon the surface conditions within the lake. If the water surface was relatively calm, then the sediment concentrations were generally low throughout the depth profile. If the water surface was rough, with a wind that prevailed toward the southern end of the lake, the suspended sediment concentrations were noticeably greater at the various depths sampled. This condition is illustrated well in Plate 50 during the 27 November survey period.

24. The results of the analyses of total suspended materials from the automatic water samplers are listed in Tables 66-70 and are also plotted in Plate 54. The concentrations were found to vary from 300 mg/l at the Martello Castle location (AWS-2) during the November 27 survey to a minimum of less than 10 mg/l during the October 26 survey.

#### LANDSAT Information

25. The time of the year that this study was performed was not conducive to weather patterns and conditions that create the proper atmospheric condition for accurate LANDSAT information and pictures. The advancing weather fronts and the scheduled overflights of the satellite were synchronous and produced unsuccessful overflight data collection efforts. The sample satellite image shown in Figure 8 was the least amount of cloud cover that was present during each of the survey periods. Attempts were made to establish a relationship between the satellite imagery and the analysis of the suspended sediment samples collected in the field. It was hoped that a comparison could be made of the methodology used in this study with that used in a similar study on the Yangtze River in China\*. However, the correlation value could not be made from the satellite data because of the complications created by

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\* Yie Xiusheng. 1987. "The Application of Satellite Pictures in the Analysis of Estuarine Processes of the Yangtze Estuary," The Journal of Sediment Research, Vol 4, pp 93-97.

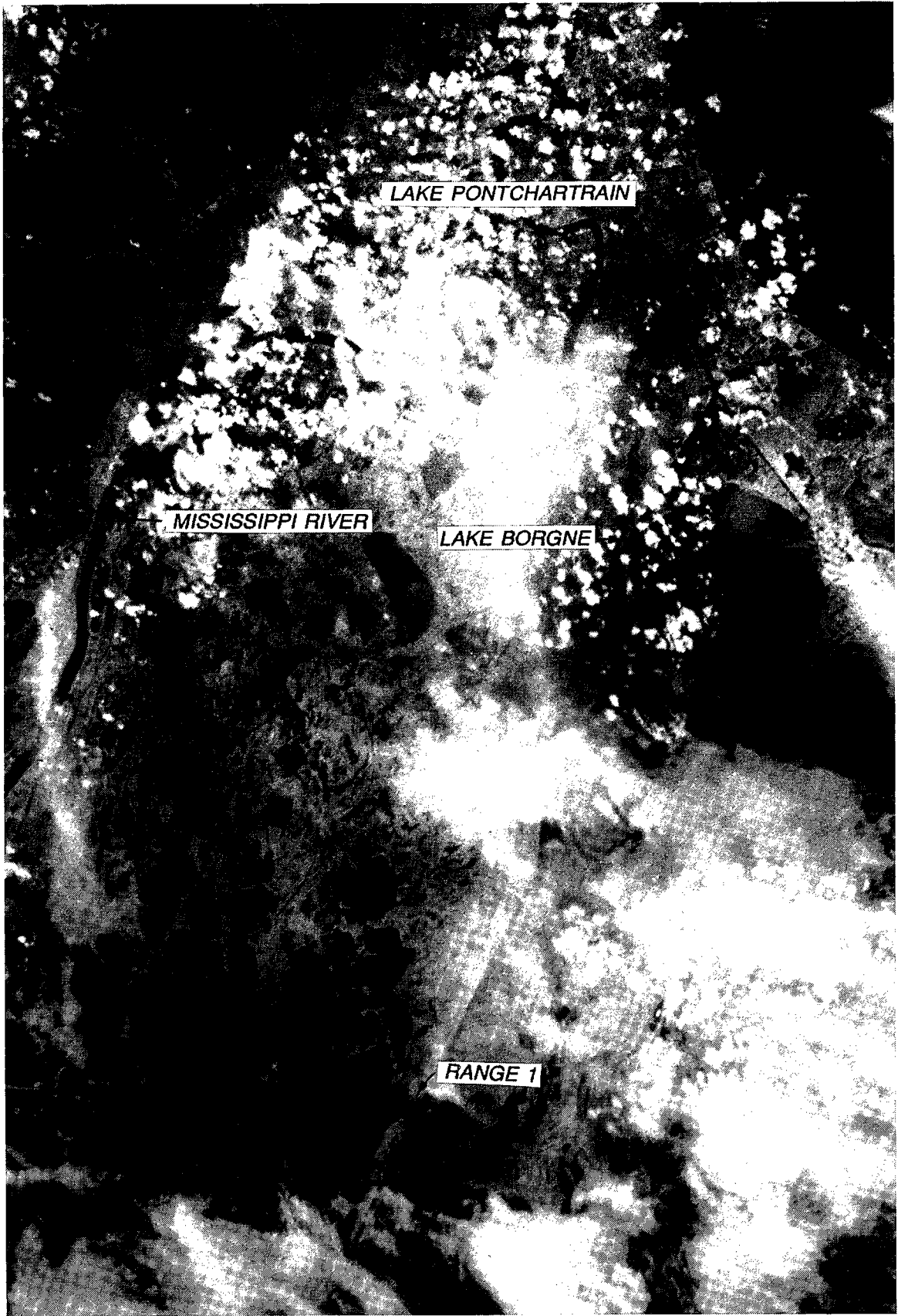


Figure 8. LANDSAT composite photograph of MRGO survey area

the clouds and interference with the analysis. As a result, no ground truth verification of the satellite image with field sample concentrations at the various locations could be attempted.

#### PART IV: SUMMARY

26. The data presented herein were collected from the intensive survey and longer term sampling efforts within the MRGO study area. The following observations were made of the data:

- a. There appears to be a slight decrease in the maximum range of water-surface elevation (0.12 ft) from the Chandeleur Sound location (TG-7) to the upper reaches of Lake Borgne (TG-4).
- b. The maximum velocities observed during the surveys occurred at the strength of flood periods. The maximum observed velocity was 3.6 fps at sta 1-B on 26 October.
- c. Suspended sediment concentrations within the MRGO channel were found to be generally greater near the bottom during the strength of flood periods. The suspended sediment concentrations within Lake Borgne were high (106 to 283 mg/l) during windy periods and low (5 to 63 mg/l) during calm periods.
- d. Salinity values indicated that the lower portion of the MRGO could be described as being partly mixed to well mixed, while the upper portions could be described as being generally well mixed.
- e. Correlation of suspended sediment data with satellite data was not successful due to cloud cover during the periods data were obtained.



Table 1  
Water-Surface Elevation Fluctuations  
TG-4 and TG-7, 25-26 October 1988

Time CST	Water Surface Elevation, ft*		Time CST	Water Surface Elevation, ft*	
	TG-4	TG-7		TG-4	TG-7
<u>25 October 1988</u>			<u>26 October 1988 (Continued)</u>		
1900	0.4217	0.6532	0040	0.7187	0.5642
1910	0.4407	0.6682	0050	0.6867	0.5452
1920	0.4657	0.6962	0100	0.6687	0.5032
1930	0.4857	0.7012	0110	0.6357	0.4692
1940	0.5047	0.7222	0120	0.6127	0.4352
1950	0.5197	0.7402	0130	0.5777	0.3962
2000	0.5557	0.7572	0140	0.5417	0.3712
2010	0.5667	0.7922	0150	0.5167	0.3292
2020	0.5667	0.7832	0200	0.4807	0.2572
2030	0.6027	0.8322	0210	0.4397	0.2102
2040	0.6207	0.8332	0220	0.4097	0.1842
2050	0.6407	0.8312	0230	0.3667	0.1162
2100	0.6707	0.8522	0240	0.3377	0.0742
2110	0.6967	0.8572	0250	0.2967	-0.0008
2120	0.7187	0.8702	0300	0.2507	-0.0478
2130	0.7477	0.8632	0310	0.2127	-0.1168
2140	0.7507	0.8782	0320	0.1767	-0.1528
2150	0.7677	0.8622	0330	0.1197	-0.2048
2200	0.7747	0.8872	0340	0.0787	-0.2528
2210	0.7927	0.8712	0350	0.0347	-0.3158
2220	0.8077	0.8652	0400	-0.0203	-0.3698
2230	0.8297	0.8582	0410	-0.0523	-0.4268
2240	0.8327	0.8372	0420	-0.0893	-0.4898
2250	0.8317	0.8372	0430	-0.1443	-0.5568
2300	0.8347	0.8182	0440	-0.1873	-0.5978
2310	0.8417	0.7912	0450	-0.2393	-0.6518
2320	0.8277	0.7762	0500	-0.2883	-0.7038
2330	0.8267	0.7562	0510	-0.3563	-0.7648
2340	0.8097	0.7382	0520	-0.3853	-0.8198
2350	0.8057	0.7152	0530	-0.4433	-0.8708
<u>26 October 1988</u>			0540	-0.4823	-0.9248
0000	0.7967	0.6952	0550	-0.5313	-0.9668
0010	0.7887	0.6772	0600	-0.5883	-1.0368
0020	0.7757	0.6422	0610	-0.6243	-1.0798
0030	0.7477	0.6202	0620	-0.6913	-1.1218

(Continued)

\* Mean water level reading used as a datum.

(Sheet 1 of 3)

Table 1 (Continued)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-4	TG-7		TG-4	TG-7
<u>26 October 1988 (Continued)</u>			<u>26 October 1988 (Continued)</u>		
0630	-0.7283	-1.1588	1310	-1.1773	-0.8388
0640	-0.7713	-1.1888	1320	-1.1483	-0.7848
0650	-0.8223	-1.2288	1330	-1.1083	-0.7458
0700	-0.8343	-1.2608	1340	-1.0653	-0.7098
0710	-0.8723	-1.2958	1350	-1.0343	-0.6638
0720	-0.9113	-1.3278	1400	-0.9863	-0.6308
0730	-0.9303	-1.3418	1410	-0.9353	-0.5898
0740	-0.9753	-1.3628	1420	-0.8903	-0.5518
0750	-1.0143	-1.3868	1430	-0.8513	-0.5078
0800	-1.0443	-1.3968	1440	-0.8173	-0.4698
0810	-1.0703	-1.4228	1450	-0.7613	-0.4408
0820	-1.1073	-1.4268	1500	-0.7203	-0.3908
0830	-1.1333	-1.4368	1510	-0.6843	-0.3308
0840	-1.1523	-1.4498	1520	-0.6373	-0.2868
0850	-1.1783	-1.4328	1530	-0.5883	-0.2538
0900	-1.1973	-1.4338	1540	-0.5493	-0.2188
0910	-1.2123	-1.4178	1550	-0.5213	-0.1878
0920	-1.2413	-1.4098	1600	-0.4923	-0.1498
0930	-1.3343	-1.4128	1610	-0.4563	-0.1438
0940	-1.3383	-1.3848	1620	-0.4213	-0.0988
0950	-1.3633	-1.3878	1630	-0.3873	-0.0848
1000	-1.3643	-1.3918	1640	-0.3473	-0.0398
1010	-1.3483	-1.3738	1650	-0.3073	-0.0178
1020	-1.3413	-1.3588	1700	-0.2733	0.0072
1030	-1.3423	-1.3448	1710	-0.2263	0.0542
1040	-1.3413	-1.3188	1720	-0.1953	0.0502
1050	-1.3393	-1.2898	1730	-0.1653	0.0852
1100	-1.3343	-1.2658	1740	-0.1363	0.1272
1110	-1.3243	-1.2308	1750	-0.1073	0.1692
1120	-1.3333	-1.2148	1800	-0.0733	0.2072
1130	-1.3423	-1.1948	1810	-0.0473	0.2602
1140	-1.3513	-1.1768	1820	-0.0083	0.3032
1150	-1.3153	-1.1388	1830	0.0187	0.3692
1200	-1.3043	-1.1138	1840	0.0707	0.3782
1210	-1.2883	-1.0608	1850	0.1027	0.4302
1220	-1.2763	-1.0138	1900	0.1437	0.4602
1230	-1.2683	-0.9698	1910	0.1777	0.5052
1240	-1.2503	-0.9308	1920	0.2067	0.5192
1250	-1.2313	-0.8938	1930	0.2337	0.5602
1300	-1.2043	-0.8748	1940	0.2727	0.5952

(Continued)

(Sheet 2 of 3)

Table 1 (Concluded)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-4	TG-7		TG-4	TG-7
<u>26 October 1988 (Continued)</u>			<u>27 October 1988 (Continued)</u>		
1950	0.3007	0.6322	0020	1.0197	0.9402
2000	0.3337	0.6752	0030	1.0187	0.9082
2010	0.3657	0.7282	0040	1.0057	0.8902
2020	0.4107	0.7692	0050	0.9957	0.8512
2030	0.4597	0.7912	0100	0.9637	0.8132
2040	0.5077	0.8192	0110	0.9457	0.7862
2050	0.5507	0.8442	0120	0.9077	0.7502
2100	0.5777	0.8942	0130	0.8837	0.7052
2110	0.6197	0.9182	0140	0.8547	0.6722
2120	0.6487	0.9552	0150	0.8207	0.6302
2130	0.6877	0.9952	0200	0.7787	0.5842
2140	0.7187	1.0152	0210	0.7337	0.5592
2150	0.7457	1.0102	0220	0.6847	0.4882
2200	0.7967	1.0222	0230	0.6437	0.4352
2210	0.8227	1.0192	0240	0.6067	0.3592
2220	0.8497	1.0242	0250	0.5577	0.3042
2230	0.8747	1.0402	0300	0.5097	0.3052
2240	0.9137	1.0362	0310	0.4867	0.2262
2250	0.9287	1.0532	0320	0.4487	0.2042
2300	0.9587	1.0602	0330	0.4197	0.1772
2310	0.9577	1.0762	0340	0.3847	0.0942
2320	0.9827	1.0792	0350	0.3337	0.0742
2330	0.9857	1.0262	0400	0.2867	0.0142
2340	1.0007	1.0312	0410	0.2437	-0.0408
2350	0.9977	0.9942	0420	0.2127	-0.0968
	<u>27 October 1988</u>		0430	0.1777	-0.1468
0000	1.0137	0.9802	0440	0.1577	-0.1768
0010	1.0207	0.9512	0450	0.1207	-0.2398
			0500	0.0877	-0.2988

Table 2  
Water-Surface Elevation Fluctuations  
TG-4 and TG-7, 10-12 November 1988

Time CST	Water Surface Elevation, ft*		Time CST	Water Surface Elevation, ft*	
	TG-4	TG-7		TG-4	TG-7
<u>10 November 1988</u>			<u>11 November 1988 (Continued)</u>		
1900	-0.1308	0.1030	0040	0.4882	0.3660
1910	-0.0988	0.1440	0050	0.4822	0.3260
1920	-0.0668	0.1720	0100	0.4682	0.2980
1930	-0.0398	0.2260	0110	0.4602	0.2980
1940	0.0002	0.2520	0120	0.4272	0.2400
1950	0.0352	0.2920	0130	0.3702	0.2010
2000	0.0762	0.3010	0140	0.3642	0.1690
2010	0.1042	0.3450	0150	0.3282	0.1060
2020	0.1372	0.3650	0200	0.2682	0.1290
2030	0.1682	0.4040	0210	0.2272	0.0720
2040	0.2092	0.4250	0220	0.1832	0.0450
2050	0.2382	0.4360	0230	0.1642	0.0180
2100	0.2882	0.4580	0240	0.1232	0.0010
2110	0.3122	0.4830	0250	0.1032	-0.0250
2120	0.3322	0.4870	0300	0.0762	-0.0930
2130	0.3642	0.4990	0310	0.0512	-0.1760
2140	0.3872	0.5060	0320	0.0102	-0.2250
2150	0.4162	0.5020	0330	-0.0198	-0.3030
2200	0.4462	0.5520	0340	-0.0518	-0.3330
2210	0.4722	0.5260	0350	-0.0948	-0.3730
2220	0.4962	0.5420	0400	-0.1118	-0.4030
2230	0.5272	0.5510	0410	-0.1358	-0.4620
2240	0.5472	0.5540	0420	-0.1768	-0.5000
2250	0.5562	0.5370	0430	-0.2378	-0.5360
2300	0.5822	0.5480	0440	-0.2758	-0.5790
2310	0.5832	0.5220	0450	-0.2928	-0.6450
2320	0.5842	0.4980	0500	-0.3328	-0.6880
2330	0.5782	0.4920	0510	-0.3738	-0.7360
2340	0.5822	0.4700	0520	-0.4318	-0.7870
2350	0.5812	0.4360	0530	-0.4518	-0.8110
<u>11 November 1988</u>			0540	-0.4728	-0.8600
0000	0.5642	0.4040	0550	-0.5298	-0.8880
0010	0.5412	0.3960	0600	-0.5818	-0.9160
0020	0.5392	0.3970	0610	-0.6278	-0.9750
0030	0.5232	0.3660	0620	-0.6718	-1.0090

(Continued)

\* Mean water level reading used as datum.

Table 2 (Continued)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-4	TG-7		TG-4	TG-7
<u>11 November 1988 (Continued)</u>			<u>11 November 1988 (Continued)</u>		
0630	-0.7098	-1.0240	1310	-0.9568	-0.7740
0640	-0.7298	-1.0540	1320	-0.9028	-0.7330
0650	-0.7588	-1.0600	1330	-0.8808	-0.6840
0700	-0.8048	-1.0880	1340	-0.8488	-0.6740
0710	-0.8538	-1.1220	1350	-0.8208	-0.6190
0720	-0.8968	-1.1430	1400	-0.7838	-0.5780
0730	-0.9238	-1.1660	1410	-0.7678	-0.5360
0740	-0.9558	-1.1710	1420	-0.7408	-0.5150
0750	-0.9948	-1.1870	1430	-0.6978	-0.4910
0800	-1.0128	-1.2230	1440	-0.6628	-0.4420
0810	-1.0328	-1.2340	1450	-0.6148	-0.3990
0820	-1.0158	-1.2090	1500	-0.5798	-0.3570
0830	-1.0448	-1.2280	1510	-0.5468	-0.3230
0840	-1.0498	-1.2320	1520	-0.5038	-0.2860
0850	-1.0988	-1.2210	1530	-0.4858	-0.2540
0900	-1.1198	-1.2510	1540	-0.4618	-0.2080
0910	-1.1108	-1.2320	1550	-0.4458	-0.1800
0920	-1.1418	-1.2410	1600	-0.4178	-0.1400
0930	-1.1648	-1.2810	1610	-0.3898	-0.0970
0940	-1.1568	-1.2440	1620	-0.3638	-0.0720
0950	-1.1668	-1.2540	1630	-0.3288	-0.0240
1000	-1.1858	-1.2170	1640	-0.2968	0.0080
1010	-1.2018	-1.2150	1650	-0.2658	0.0330
1020	-1.1778	-1.2000	1700	-0.2358	0.0730
1030	-1.1738	-1.1500	1710	-0.2108	0.0990
1040	-1.1718	-1.1370	1720	-0.1768	0.1260
1050	-1.1788	-1.0950	1730	-0.1438	0.1670
1100	-1.1998	-1.0990	1740	-0.1148	0.1960
1110	-1.1878	-1.1140	1750	-0.0878	0.2190
1120	-1.1828	-1.1000	1800	-0.0498	0.2470
1130	-1.1828	-1.0880	1810	-0.0238	0.2850
1140	-1.1588	-1.0520	1820	0.0122	0.3100
1150	-1.1378	-1.0340	1830	0.0372	0.3490
1200	-1.1018	-0.9980	1840	0.0592	0.3740
1210	-1.0948	-0.9700	1850	0.0812	0.3980
1220	-1.0918	-0.9390	1900	0.1182	0.4460
1230	-1.0728	-0.9180	1910	0.1332	0.4790
1240	-1.0488	-0.8660	1920	0.1702	0.5130
1250	-1.0278	-0.8560	1930	0.1912	0.5350
1300	-0.9838	-0.7970	1940	0.2352	0.5710

(Continued)

(Sheet 2 of 3)

Table 2 (Concluded)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-4	TG-7		TG-4	TG-7
<u>11 November 1988 (Continued)</u>			<u>12 November 1988 (Continued)</u>		
1950	0.2472	0.6010	0020	1.0512	1.0380
2000	0.2742	0.6270	0030	1.0592	1.0350
2010	0.3052	0.6670	0040	1.0722	1.0230
2020	0.3412	0.6840	0050	1.0672	1.0090
2030	0.3872	0.7140	0100	1.0702	1.0090
2040	0.4392	0.7520	0110	1.0702	0.9840
2050	0.5092	0.7670	0120	1.0732	0.9580
2100	0.5442	0.8040	0130	1.0872	0.9210
2110	0.5822	0.8360	0140	1.0752	0.9070
2120	0.6102	0.8860	0150	1.0622	0.8800
2130	0.6312	0.9190	0200	1.0632	0.8380
2140	0.6642	0.9410	0210	1.0552	0.8050
2150	0.6982	0.9670	0220	1.0382	0.7820
2200	0.7222	1.0130	0230	1.0372	0.7350
2210	0.7512	1.0280	0240	1.0152	0.6710
2220	0.7822	1.0390	0250	0.9952	0.6280
2230	0.8312	1.0600	0300	0.9842	0.5880
2240	0.8442	1.0730	0310	0.9522	0.5470
2250	0.8672	1.0760	0320	0.9222	0.5200
2300	0.8952	1.0750	0330	0.8852	0.4590
2310	0.9172	1.0810	0340	0.8672	0.4060
2320	0.9462	1.0900	0350	0.8442	0.3750
2330	0.9652	1.0980	0400	0.8112	0.3280
2340	0.9812	1.1110	0410	0.7722	0.2950
2350	1.0002	1.0970	0420	0.7402	0.2390
	<u>12 November 1988</u>		0430	0.6972	0.1910
0000	1.0232	1.0710	0440	0.6492	0.1350
0010	1.0342	1.0530	0450	0.5812	0.0840
			0500	0.5262	0.0120

Table 3  
Water-Surface Elevation Fluctuations  
TG-4 and TG-7, 26-28 November 1988

Time CST	Water Surface Elevation, ft*		Time CST	Water Surface Elevation, ft	
	TG-4	TG-7		TG-4	TG-7
<u>26 November 1988</u>			<u>27 November 1988 (Continued)</u>		
1900	0.0821	0.1091	0040	1.1851	1.0011
1910	0.1041	0.1381	0050	1.1991	0.9741
1920	0.1291	0.1751	0100	1.2041	0.9741
1930	0.1601	0.1891	0110	1.2041	0.9691
1940	0.1821	0.2111	0120	1.1951	0.9551
1950	0.2041	0.2491	0130	1.1961	0.9341
2000	0.2571	0.3151	0140	1.2001	0.9271
2010	0.2881	0.3441	0150	1.1921	0.8731
2020	0.3061	0.3861	0200	1.1801	0.8671
2030	0.3381	0.4351	0210	1.1711	0.8521
2040	0.3641	0.4541	0220	1.1591	0.7971
2050	0.4131	0.5051	0230	1.1401	0.8041
2100	0.4451	0.5261	0240	1.1311	0.7531
2110	0.4771	0.5501	0250	1.0961	0.7241
2120	0.5311	0.6111	0300	1.0651	0.7111
2130	0.5691	0.6291	0310	1.0151	0.6761
2140	0.6051	0.6761	0320	1.0071	0.6031
2150	0.6431	0.7041	0330	0.9901	0.5541
2200	0.6781	0.7621	0340	0.9531	0.5291
2210	0.7401	0.7851	0350	0.9101	0.4821
2220	0.7791	0.8581	0400	0.8771	0.4711
2230	0.8341	0.8791	0410	0.8441	0.4111
2240	0.8581	0.9201	0420	0.7991	0.3981
2250	0.9051	0.9531	0430	0.7701	0.3251
2300	0.9411	0.9661	0440	0.7361	0.2691
2310	0.9901	0.9941	0450	0.6811	0.2491
2320	0.9811	0.9901	0500	0.6441	0.1981
2330	1.0651	1.0431	0510	0.6001	0.1761
2340	1.1041	1.0041	0520	0.5461	0.1141
2350	1.1261	1.0391	0530	0.4941	0.0481
<u>27 November 1988</u>			0540	0.4551	-0.0029
0000	1.1351	1.0351	0550	0.4061	-0.0389
0010	1.1481	1.0401	0600	0.3401	-0.1049
0020	1.1661	1.0441	0610	0.3261	-0.1559
0030	1.1681	1.0251	0620	0.2691	-0.1959

(Continued)

\* Mean water level reading used as a datum.

(Sheet 1 of 3)

Table 3 (Continued)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-4	TG-7		TG-4	TG-7
<u>27 November 1988 (Continued)</u>			<u>27 November 1988 (Continued)</u>		
0630	0.2121	-0.2719	1300	-0.9999	-0.8669
0640	0.1561	-0.3169	1310	-0.9919	-0.8499
0650	0.1301	-0.3609	1320	-0.9769	-0.8639
0700	0.0821	-0.4169	1330	-0.9929	-0.9059
0710	0.0321	-0.4529	1340	-0.9739	-0.8969
0720	-0.0099	-0.5069	1350	-0.9839	-0.8309
0730	-0.0439	-0.5529	1400	-0.9879	-0.8119
0740	-0.0959	-0.6049	1410	-0.9879	-0.7849
0750	-0.1299	-0.6599	1420	-0.9949	-0.7709
0800	-0.1709	-0.7079	1430	-1.0109	-0.7499
0810	-0.2159	-0.7489	1440	-1.0019	-0.7519
0820	-0.2569	-0.7639	1450	-0.9999	-0.721
0830	-0.3019	-0.7929	1500	-1.0029	-0.6869
0840	-0.3509	-0.8389	1510	-1.0039	-0.6909
0850	-0.3839	-0.8789	1520	-0.9879	-0.6829
0900	-0.4249	-0.9029	1530	-0.9749	-0.6449
0910	-0.4669	-0.9149	1540	-0.9309	-0.6659
0920	-0.4899	-0.9329	1550	-0.9069	-0.6379
0930	-0.5279	-0.9599	1600	-0.8699	-0.6319
0940	-0.5669	-0.9669	1610	-0.8389	-0.6109
0950	-0.5959	-0.9909	1620	-0.8189	-0.6009
1000	-0.6039	-0.9839	1630	-0.7929	-0.5709
1010	-0.6779	-1.0079	1640	-0.8019	-0.5559
1020	-0.6829	-1.0169	1650	-0.7769	-0.5479
1030	-0.7329	-1.0439	1700	-0.7679	-0.5539
1040	-0.8209	-1.0369	1710	-0.7679	-0.5199
1050	-0.8789	-1.0559	1720	-0.7339	-0.5249
1100	-0.8919	-1.0199	1730	-0.6999	-0.4629
1110	-0.8829	-1.0159	1740	-0.6629	-0.4449
1120	-0.8849	-1.0159	1750	-0.6439	-0.3959
1130	-0.8009	-0.9719	1800	-0.6109	-0.3469
1140	-0.8629	-0.9979	1810	-0.5869	-0.2789
1150	-0.9079	-0.8759	1820	-0.5739	-0.2329
1200	-1.0529	-0.8999	1830	-0.5879	-0.2629
1210	-1.0989	-0.8929	1840	-0.5539	-0.1879
1220	-1.1089	-0.9039	1850	-0.5319	-0.2209
1230	-1.0819	-0.8899	1900	-0.5079	-0.1779
1240	-1.0889	-0.8879	1910	-0.5009	-0.1569
1250	-1.0409	-0.8889	1920	-0.4909	-0.1709

(Continued)

(Sheet 2 of 3)



Table 3 (Concluded)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-4	TG-7		TG-4	TG-7
	<u>27 November 1988 (Continued)</u>			<u>28 November 1988 (Continued)</u>	
1930	-0.4559	-0.1239	0010	0.2491	0.5201
1940	-0.3959	-0.0379	0020	0.2621	0.4931
1950	-0.3539	0.0051	0030	0.2871	0.4761
2000	-0.3599	0.0641	0040	0.2891	0.4831
2010	-0.3579	0.0611	0050	0.2881	0.4071
2020	-0.3469	0.1161	0100	0.2751	0.3801
2030	-0.3509	0.1351	0110	0.2831	0.3281
2040	-0.3199	0.2401	0120	0.2671	0.3141
2050	-0.2749	0.2481	0130	0.2571	0.3171
2100	-0.2229	0.3061	0140	0.2501	0.3101
2110	-0.1679	0.3521	0150	0.2351	0.2981
2120	-0.1489	0.3821	0200	0.2351	0.2821
2130	-0.1269	0.3991	0210	0.2201	0.2651
2140	-0.1039	0.4321	0220	0.1971	0.2311
2150	-0.0589	0.3931	0230	0.1521	0.1911
2200	-0.0319	0.4131	0240	0.1061	0.1551
2210	0.0011	0.4531	0250	0.0601	0.1161
2220	0.0191	0.5141	0300	0.0251	0.0521
2230	0.0601	0.5391	0310	0.0201	0.0241
2240	0.0871	0.5801	0320	-0.0119	0.0091
2250	0.1191	0.5761	0330	-0.0549	-0.0349
2300	0.1441	0.6031	0340	-0.0929	-0.0799
2310	0.1571	0.5411	0350	-0.1389	-0.1399
2320	0.1821	0.6061	0400	-0.1719	-0.1759
2330	0.1871	0.5811	0410	-0.1979	-0.2189
2340	0.2101	0.5831	0420	-0.2129	-0.2639
2350	0.2211	0.5991	0430	-0.2319	-0.3019
	<u>28 November 1988</u>		0440	-0.2779	-0.3229
0000	0.2391	0.5851	0450	-0.3149	-0.3429
			0500	-0.3459	-0.3639

Table 4

Water-Surface Elevation FluctuationsTG-10 and TG-11, 25-27 November 1988

Time CST	Water Surface Elevation, ft*		Time CST	Water Surface Elevation, ft*	
	TG-10	TG-11		TG-10	TG-11
<u>25 November 1988</u>			<u>26 November 1988 (Continued)</u>		
1900	0.1627	0.1920	0330	0.6247	0.4920
1915	0.1877	0.1950	0345	0.5407	0.4650
1930	0.1947	0.2140	0400	0.4347	0.5060
1945	0.2197	0.2300	0415	0.4447	0.4310
2000	0.2287	0.2390	0430	0.3567	0.3250
2015	0.2437	0.2510	0445	0.3477	0.2820
2030	0.2467	0.2660	0500	0.2847	0.2440
2045	0.2587	0.2680	0515	0.2157	0.1640
2100	0.2837	0.2870	0530	0.1947	0.1390
2115	0.2987	0.3020	0545	0.0737	0.0210
2130	0.3037	0.3230	0600	0.0177	-0.0150
2145	0.3237	0.3330	0615	-0.0523	-0.0720
2200	0.3497	0.3540	0630	-0.0873	-0.1000
2215	0.3757	0.3760	0645	-0.1343	-0.2110
2230	0.3727	0.4010	0700	-0.2103	-0.2480
2245	0.3537	0.4270	0715	-0.2753	-0.2620
2300	0.4197	0.4540	0730	-0.3513	-0.3510
2315	0.4397	0.4700	0745	-0.3943	-0.3850
2330	0.4707	0.4810	0800	-0.4383	-0.4590
2345	0.4867	0.5040	0815	-0.4863	-0.5080
<u>26 November 1988</u>			0830	-0.5433	-0.5550
0000	0.5167	0.5330	0845	-0.5753	-0.6020
0015	0.5477	0.5560	0900	-0.6253	-0.6450
0030	0.5817	0.5860	0915	-0.6723	-0.6640
0045	0.5967	0.6120	0930	-0.7043	-0.7190
0100	0.6047	0.6080	0945	-0.7533	-0.7430
0115	0.6187	0.6240	1000	-0.7993	-0.7790
0130	0.6317	0.6340	1015	-0.8353	-0.8180
0145	0.6397	0.6310	1030	-0.8713	-0.8560
0200	0.6427	0.6310	1045	-0.9093	-0.8940
0215	0.6317	0.6360	1100	-0.9363	-0.9220
0230	0.6227	0.6240	1115	-0.9633	-0.9620
0245	0.6347	0.5860	1130	-0.9953	-0.9880
0300	0.6157	0.5590	1145	-1.0283	-1.0120
0315	0.5947	0.5300	1200	-1.0343	-1.0360

(Continued)

\* Mean water level reading used as a datum.

Table 4 (Concluded)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-10	TG-11		TG-10	TG-11
<u>26 November 1988 (Continued)</u>			<u>26 November 1988 (Continued)</u>		
1215	-1.0603	-1.0510	2100	0.0847	0.1160
1230	-1.0543	-1.0560	2115	0.1307	0.1610
1245	-1.0553	-1.0370	2130	0.1517	0.1950
1300	-1.0623	-1.0590	2145	0.2117	0.2110
1315	-1.0643	-1.0540	2200	0.2397	0.2500
1330	-1.0513	-1.0510	2215	0.2697	0.2920
1345	-1.0383	-1.0260	2230	0.2837	0.3330
1400	-1.0353	-1.0180	2245	0.3307	0.3520
1415	-1.0173	-1.0050	2300	0.3667	0.4020
1430	-1.0013	-1.0170	2315	0.4027	0.4430
1445	-1.0283	-1.0170	2330	0.4477	0.4890
1500	-0.9833	-1.0090	2345	0.4787	0.5170
1515	-0.9783	-0.9790	<u>27 November 1988</u>		
1530	-0.9573	-0.9680	0000	0.5177	0.5440
1545	-0.9243	-0.9320	0015	0.5497	0.5640
1600	-0.8763	-0.8970	0030	0.5867	0.6090
1615	-0.8543	-0.8710	0045	0.6187	0.6340
1630	-0.8083	-0.8220	0100	0.6567	0.6790
1645	-0.7533	-0.7700	0115	0.6837	0.7180
1700	-0.6923	-0.7140	0130	0.7167	0.7420
1715	-0.6143	-0.6300	0145	0.7327	0.7780
1730	-0.5393	-0.4970	0200	0.7577	0.8050
1745	-0.4343	-0.4980	0215	0.7967	0.8410
1800	-0.2623	-0.3590	0230	0.8197	0.8650
1815	-0.2203	-0.2940	0245	0.8437	0.8760
1830	-0.2153	-0.1660	0300	0.8647	0.8980
1845	-0.2123	-0.1410	0315	0.8687	0.8820
1900	-0.1443	-0.1590	0330	0.8567	0.8720
1915	-0.1433	-0.1800	0345	0.8547	0.8530
1930	-0.1483	-0.1850	0400	0.8267	0.8270
1945	-0.1253	-0.1310	0415	0.7227	0.7060
2000	-0.0923	-0.0950	0430	0.8487	0.7420
2015	-0.0503	-0.0690	0445	0.7557	0.6840
2030	-0.0353	-0.0040	0500	0.6877	0.6660
2045	0.0017	0.0410			

Table 5  
Water-Surface Elevation Fluctuations  
TG-10 and TG-11, 10-12 November 1988

Time CST	Water Surface Elevation, ft*		Time CST	Water Surface Elevation, ft*	
	TG-10	TG-11		TG-10	TG-11
<u>10 November 1988</u>			<u>11 November 1988 (Continued)</u>		
1900	-0.5365	-0.5458	0040	0.3035	0.3592
1910	-0.4875	-0.5118	0050	0.3215	0.3622
1920	-0.4625	-0.4788	0100	0.3255	0.3882
1930	-0.4395	-0.4638	0110	0.3525	0.3882
1940	-0.4105	-0.4278	0120	0.3685	0.4082
1950	-0.3865	-0.3958	0130	0.3875	0.4462
2000	-0.3595	-0.3658	0140	0.4165	0.4772
2010	-0.3505	-0.3558	0150	0.4475	0.4992
2020	-0.3435	-0.3408	0200	0.4645	0.5042
2030	-0.3105	-0.2998	0210	0.4785	0.5352
2040	-0.2805	-0.2858	0220	0.4815	0.5492
2050	-0.2445	-0.2638	0230	0.4805	0.5552
2100	-0.2405	-0.2428	0240	0.5085	0.5792
2110	-0.2245	-0.2278	0250	0.5175	0.6022
2120	-0.2055	-0.1988	0300	0.5445	0.6212
2130	-0.1675	-0.1818	0310	0.5625	0.6362
2140	-0.1375	-0.1488	0320	0.5595	0.6362
2150	-0.1345	-0.1348	0330	0.5555	0.6312
2200	-0.1115	-0.1388	0340	0.5575	0.6052
2210	-0.0155	-0.0718	0350	0.5385	0.5992
2220	-0.1255	-0.0448	0400	0.5255	0.5862
2230	-0.0565	-0.0788	0410	0.5235	0.5832
2240	0.0755	0.0362	0420	0.5075	0.5592
2250	0.0385	-0.0458	0430	0.4665	0.5232
2300	0.0665	0.0412	0440	0.4555	0.5132
2310	0.0565	0.0772	0450	0.4485	0.5092
2320	0.0665	0.0782	0500	0.4365	0.4662
2330	0.1015	0.1252	0510	0.4125	0.4362
2340	0.1325	0.1402	0520	0.3775	0.3982
2350	0.1495	0.1742	0530	0.3585	0.3652
<u>11 November 1988</u>			0540	0.3255	0.3472
0000	0.1795	0.1792	0550	0.2875	0.2992
0010	0.2085	0.2342	0600	0.2605	0.2602
0020	0.2455	0.2712	0610	0.2085	0.2272
0030	0.2685	0.3062	0620	0.1955	0.1832

(Continued)

\* Mean water level reading used as a datum.

Table 5 (Continued)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-10	TG-11		TG-10	TG-11
<u>11 November 1988 (Continued)</u>			<u>11 November 1988 (Continued)</u>		
0630	0.1495	0.1542	1300	-0.9065	-0.9398
0640	0.0955	0.1182	1310	-0.9105	-0.9488
0650	0.0795	0.0972	1320	-0.9135	-0.9518
0700	0.0245	0.0582	1330	-0.8945	-0.9438
0710	-0.0085	0.0102	1340	-0.8915	-0.9298
0720	-0.0395	-0.0178	1350	-0.8895	-0.9208
0730	-0.0715	-0.0448	1400	-0.8745	-0.9108
0740	-0.1205	-0.0848	1410	-0.8765	-0.8848
0750	-0.1445	-0.1268	1420	-0.8535	-0.8848
0800	-0.1885	-0.1728	1430	-0.8585	-0.8848
0810	-0.2235	-0.2178	1440	-0.8455	-0.8838
0820	-0.2675	-0.2668	1450	-0.8325	-0.8608
0830	-0.3205	-0.3168	1500	-0.8175	-0.8458
0840	-0.3505	-0.3458	1510	-0.7915	-0.8308
0850	-0.3755	-0.3658	1520	-0.7695	-0.7928
0900	-0.4015	-0.3918	1530	-0.7495	-0.7758
0910	-0.4365	-0.4368	1540	-0.7305	-0.7548
0920	-0.4695	-0.4658	1550	-0.7035	-0.7328
0930	-0.4955	-0.5018	1600	-0.6745	-0.6948
0940	-0.5515	-0.5368	1610	-0.6525	-0.6678
0950	-0.5725	-0.5668	1620	-0.6255	-0.6298
1000	-0.5865	-0.5948	1630	-0.5935	-0.6098
1010	-0.6195	-0.6218	1640	-0.5635	-0.5788
1020	-0.6445	-0.6538	1650	-0.5345	-0.5448
1030	-0.6555	-0.6708	1700	-0.4905	-0.4998
1040	-0.6755	-0.6918	1710	-0.4505	-0.4708
1050	-0.6905	-0.7188	1720	-0.4225	-0.4258
1100	-0.7075	-0.7408	1730	-0.3915	-0.3968
1110	-0.7235	-0.7618	1740	-0.3615	-0.3608
1120	-0.7535	-0.7938	1750	-0.3475	-0.3338
1130	-0.7805	-0.8218	1800	-0.3155	-0.3148
1140	-0.7945	-0.8228	1810	-0.2875	-0.2968
1150	-0.8115	-0.8538	1820	-0.2745	-0.2668
1200	-0.8385	-0.8698	1830	-0.2515	-0.2258
1210	-0.8565	-0.8968	1840	-0.2145	-0.2118
1220	-0.8645	-0.9158	1850	-0.1915	-0.1848
1230	-0.8705	-0.8968	1900	-0.2105	-0.1678
1240	-0.8775	-0.9228	1910	-0.1765	-0.1618
1250	-0.8925	-0.9208	1920	-0.1565	-0.1398

(Continued)

(Sheet 2 of 3)

Table 5 (Concluded)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-10	TG-11		TG-10	TG-11
<u>11 November 1988 (Continued)</u>			<u>12 November 1988 (Continued)</u>		
1930	-0.1385	-0.1038	0010	0.5805	0.5912
1940	-0.1385	-0.0858	0020	0.5985	0.6122
1950	-0.0785	-0.0708	0030	0.6035	0.6102
2000	-0.0485	-0.0568	0040	0.6425	0.6382
2010	-0.0385	-0.0348	0050	0.6565	0.6542
2020	0.0015	-0.0108	0100	0.6775	0.6662
2030	0.0085	0.0102	0110	0.6985	0.6842
2040	0.0375	0.0422	0120	0.7185	0.7042
2050	0.0625	0.0482	0130	0.7375	0.7332
2100	0.0805	0.0872	0140	0.7605	0.7592
2110	0.1115	0.0972	0150	0.7795	0.7792
2120	0.1285	0.1222	0200	0.8105	0.8202
2130	0.1395	0.1242	0210	0.8365	0.8362
2140	0.1605	0.1402	0220	0.8535	0.8582
2150	0.1645	0.1472	0230	0.8675	0.8782
2200	0.1935	0.1772	0240	0.8965	0.8992
2210	0.2205	0.1902	0250	0.9095	0.9112
2220	0.2395	0.2072	0300	0.9385	0.9192
2230	0.2455	0.2222	0310	0.9285	0.9472
2240	0.2885	0.2662	0320	0.8995	0.9212
2250	0.3165	0.3152	0330	1.0255	0.9032
2300	0.3545	0.3652	0340	1.0195	0.9232
2310	0.3765	0.3762	0350	0.9645	0.9332
2320	0.4215	0.4322	0400	0.9815	0.9092
2330	0.4605	0.4612	0410	1.0025	0.9472
2340	0.4865	0.4912	0420	0.9105	0.9092
2350	0.5255	0.5282	0430	0.9445	0.8942
	<u>12 November 1988</u>		0440	0.9625	0.8922
0000	0.5515	0.5602	0450	0.9295	0.8842
			0500	0.9315	0.8612
			0510	0.9055	0.8632

Table 6

Water-Surface Elevation FluctuationsTG-10 and TG-11, 26-28 November 1988

Time CST	Water Surface Elevation, ft*		Time CST	Water Surface Elevation, ft*	
	TG-10	TG-11		TG-10	TG-11
<u>26 November 1988</u>			<u>27 November 1988 (Continued)</u>		
1900	-0.4774	-0.5548	0040	0.4486	0.4222
1910	-0.4554	-0.4968	0050	0.4906	0.4632
1920	-0.3824	-0.4698	0100	0.5176	0.5062
1930	-0.3744	-0.4048	0110	0.5516	0.5252
1940	-0.3364	-0.4028	0120	0.5826	0.5542
1950	-0.3134	-0.3788	0130	0.6076	0.6032
2000	-0.2714	-0.3358	0140	0.6396	0.6362
2010	-0.2494	-0.2728	0150	0.6696	0.6592
2020	-0.2084	-0.2408	0200	0.7016	0.6922
2030	-0.1924	-0.2048	0210	0.7326	0.7312
2040	-0.1564	-0.2148	0220	0.7626	0.7162
2050	-0.1354	-0.1618	0230	0.7486	0.7472
2100	-0.1074	-0.1368	0240	0.7776	0.7612
2110	-0.0764	-0.1448	0250	0.7886	0.7932
2120	-0.0574	-0.1118	0300	0.8196	0.8122
2130	-0.0554	-0.0628	0310	0.8436	0.8512
2140	-0.0194	-0.0628	0320	0.8576	0.8632
2150	-0.0094	-0.0288	0330	0.8766	0.8662
2200	0.0026	0.0002	0340	0.8806	0.8822
2210	0.0646	0.0582	0350	0.9006	0.8912
2220	0.0886	0.0942	0400	0.9126	0.9062
2230	0.1146	0.1082	0410	0.9136	0.9132
2240	0.1356	0.1262	0420	0.9276	0.9232
2250	0.1656	0.1642	0430	0.9316	0.9282
2300	0.1766	0.1512	0440	0.9246	0.9192
2310	0.1866	0.1712	0450	0.9126	0.9012
2320	0.2216	0.1882	0500	0.9126	0.8872
2330	0.2486	0.2262	0510	0.9246	0.8712
2340	0.2606	0.2552	0520	0.8816	0.9302
2350	0.3086	0.2912	0530	0.9106	0.8132
<u>27 November 1988</u>			0540	0.8706	0.7672
0000	0.3406	0.3142	0550	0.7726	0.7692
0010	0.3596	0.3372	0600	0.7396	0.7722
0020	0.3896	0.3522	0610	0.7466	0.7202
0030	0.4126	0.3902	0620	0.7026	0.6632

(Continued)

\* Mean water level reading used as a datum.

(Sheet 1 of 3)

Table 6 (Continued)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-10	TG-11		TG-10	TG-11
27 November 1988 (Continued)			27 November 1988 (Continued)		
0630	0.6646	0.6102	1300	-0.4744	-0.4158
0640	0.6246	0.5552	1310	-0.4524	-0.3888
0650	0.5736	0.5352	1320	-0.4194	-0.3468
0700	0.5156	0.4872	1340	-0.4644	-0.3328
0710	0.4776	0.4312	1350	-0.4584	-0.3378
0720	0.4266	0.3902	1400	-0.4694	-0.3658
0730	0.3756	0.3502	1410	-0.5124	-0.4158
0740	0.3566	0.3022	1420	-0.5264	-0.4188
0750	0.3216	0.2582	1430	-0.5234	-0.4268
0800	0.3366	0.2452	1440	-0.5114	-0.4298
0810	0.2786	-0.4968	1450	-0.5214	-0.4218
0820	0.0976	0.1592	1500	-0.5484	-0.4778
0830	0.0476	0.0682	1510	-0.5534	-0.4648
0840	0.0596	-0.0128	1520	-0.5634	-0.4878
0850	0.0386	-0.0588	1530	-0.5714	-0.4768
0900	-0.0454	-0.1338	1540	-0.5824	-0.4798
0910	-0.1394	-0.1718	1550	-0.5844	-0.4818
0920	-0.1894	-0.2118	1600	-0.5644	-0.4828
0930	-0.1994	-0.2748	1610	-0.5674	-0.4728
0940	-0.1964	-0.2168	1620	-0.5634	-0.4678
0950	-0.1534	-0.1908	1630	-0.5754	-0.4968
1000	-0.2364	-0.1778	1640	-0.5854	-0.4918
1010	-0.0334	-0.1718	1650	-0.5514	-0.4428
1020	-0.2034	-0.1978	1700	-0.5384	-0.4408
1030	-0.2414	-0.2098	1710	-0.5614	-0.4798
1040	-0.2764	-0.3378	1720	-0.5504	-0.4568
1050	-0.3904	-0.4698	1730	-0.5394	-0.4648
1100	-0.4194	-0.4728	1740	-0.5734	-0.5398
1110	-0.4184	-0.3998	1750	-0.5984	-0.5738
1120	-0.3634	-0.3438	1800	-0.6124	-0.5948
1130	-0.3304	-0.3598	1810	-0.5994	-0.5588
1140	-0.3644	-0.3708	1820	-0.5764	-0.5648
1150	-0.3714	-0.3708	1830	-0.5704	-0.5588
1200	-0.4094	-0.3738	1840	-0.5624	-0.5638
1210	-0.4384	-0.3718	1850	-0.5724	-0.5508
1220	-0.4204	-0.3518	1900	-0.5634	-0.5548
1230	-0.3794	-0.3108	1910	-0.5534	-0.5328
1240	-0.5054	-0.6008	1920	-0.5304	-0.5208
1250	-0.5284	-0.3878	1930	-0.5224	-0.4798

(Continued)

(Sheet 2 of 3)



Table 6 (Concluded)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-10	TG-11		TG-10	TG-11
<u>27 November 1988 (Continued)</u>			<u>28 November 1988 (Continued)</u>		
1940	-0.5064	-0.4778	0020	-0.0034	0.0072
1950	-0.5054	-0.4698	0030	0.0296	0.0512
2000	-0.5004	-0.4658	0040	0.0776	0.1122
2010	-0.4694	-0.4598	0050	0.1076	0.1542
2020	-0.4664	-0.4538	0100	0.1276	0.1832
2030	-0.4304	-0.4268	0110	0.1226	0.2152
2040	-0.4194	-0.4128	0120	0.1786	0.2592
2050	-0.3804	-0.3938	0130	0.1836	0.2752
2100	-0.3774	-0.4018	0140	0.2266	0.3072
2110	-0.3574	-0.3978	0150	0.2286	0.2992
2120	-0.3454	-0.3838	0200	0.2466	0.3162
2130	-0.3454	-0.3788	0210	0.2636	0.2942
2140	-0.3454	-0.3808	0220	0.2346	0.2872
2150	-0.3264	-0.3438	0230	0.2466	0.2542
2200	-0.3144	-0.3188	0240	0.2446	0.2672
2210	-0.2724	-0.2728	0250	0.2506	0.2442
2220	-0.2264	-0.2318	0300	0.2316	0.2222
2230	-0.2224	-0.2248	0310	0.2266	0.2052
2240	-0.2064	-0.1948	0320	0.2166	0.2032
2250	-0.1744	-0.2048	0330	0.2036	0.1962
2300	-0.1694	-0.1838	0340	0.1966	0.1882
2310	-0.1674	-0.1568	0350	0.1976	0.1952
2320	-0.1514	-0.1618	0400	0.1896	0.1872
2330	-0.1264	-0.1348	0410	0.1736	0.1692
2340	-0.1074	-0.1108	0420	0.1576	0.1432
2350	-0.0774	-0.0978	0430	0.1376	0.1122
	<u>28 November 1988</u>		0440	0.1006	0.0902
0000	-0.0604	-0.0748	0450	0.0926	0.0462
0010	-0.0434	-0.0448	0500	0.0466	0.0122
			0510	0.0136	-0.0138

Table 7  
Water-Surface Elevation Fluctuations  
TG-12 and TG-13, 25-27 October 1988

<u>Date</u>	<u>Time CST</u>	<u>TG-12 Water Surface* ft</u>	<u>Date</u>	<u>Time CST</u>	<u>TG-13 Water Surface* ft</u>
10/25/88	1900	0.2928	10/25/88	1900	0.1936
10/25/88	1910	0.2908	10/25/88	1915	0.2136
10/25/88	1920	0.2998	10/25/88	1930	0.2426
10/25/88	1930	0.3288	10/25/88	1945	0.2486
10/25/88	1940	0.3288	10/25/88	2000	0.2506
10/25/88	1950	0.3388	10/25/88	2015	0.2766
10/25/88	2000	0.3578	10/25/88	2030	0.2976
10/25/88	2010	0.3658	10/25/88	2045	0.3256
10/25/88	2020	0.3838	10/25/88	2100	0.3236
10/25/88	2030	0.3978	10/25/88	2115	0.3316
10/25/88	2040	0.4108	10/25/88	2130	0.3486
10/25/88	2050	0.4228	10/25/88	2145	0.3726
10/25/88	2100	0.4418	10/25/88	2200	0.3836
10/25/88	2110	0.4438	10/25/88	2215	0.4066
10/25/88	2120	0.4508	10/25/88	2230	0.4126
10/25/88	2130	0.4598	10/25/88	2245	0.4326
10/25/88	2140	0.4718	10/25/88	2300	0.4666
10/25/88	2150	0.4838	10/25/88	2315	0.4826
10/25/88	2200	0.4938	10/25/88	2330	0.5206
10/25/88	2210	0.5118	10/25/88	2345	0.5496
10/25/88	2220	0.5138	10/26/88	0000	0.5636
10/25/88	2230	0.5278	10/26/88	0015	0.5846
10/25/88	2240	0.5138	10/26/88	0030	0.6126
10/25/88	2250	0.5498	10/26/88	0045	0.6356
10/25/88	2300	0.5588	10/26/88	0100	0.6266
10/25/88	2310	0.5708	10/26/88	0115	0.6576
10/25/88	2320	0.5738	10/26/88	0130	0.6496
10/25/88	2330	0.5828	10/26/88	0145	0.6456
10/25/88	2340	0.5948	10/26/88	0200	0.6456
10/25/88	2350	0.6098	10/26/88	0215	0.6196
10/26/88	0000	0.6108	10/26/88	0230	0.6156
10/26/88	0010	0.6198	10/26/88	0245	0.5786
10/26/88	0020	0.6298	10/26/88	0300	0.5686
10/26/88	0030	0.6308	10/26/88	0315	0.5246
10/26/88	0040	0.6368	10/26/88	0330	0.5146

(Continued)

\* Mean water level reading used as a datum.

Table 7 (Continued)

TG-12			TG-13		
Date	Time CST	Water Surface ft	Date	Time CST	Water Surface ft
10/26/88	0050	0.6468	10/26/88	0345	0.4776
10/26/88	0100	0.6478	10/26/88	0400	0.4216
10/26/88	0110	0.6458	10/26/88	0415	0.3596
10/26/88	0120	0.6508	10/26/88	0430	0.3076
10/26/88	0130	0.6488	10/26/88	0445	0.2446
10/26/88	0140	0.6408	10/26/88	0500	0.1846
10/26/88	0150	0.5858	10/26/88	0515	0.1446
10/26/88	0200	0.4998	10/26/88	0530	0.0786
10/26/88	0210	0.5858	10/26/88	0545	0.0006
10/26/88	0220	0.6008	10/26/88	0600	-0.0534
10/26/88	0230	0.5928	10/26/88	0615	-0.1254
10/26/88	0240	0.5408	10/26/88	0630	-0.1974
10/26/88	0250	0.5348	10/26/88	0645	-0.2704
10/26/88	0300	0.5348	10/26/88	0700	-0.3104
10/26/88	0310	0.4968	10/26/88	0715	-0.3514
10/26/88	0320	0.5018	10/26/88	0730	-0.3944
10/26/88	0330	0.4798	10/26/88	0745	-0.4714
10/26/88	0340	0.4208	10/26/88	0800	-0.5124
10/26/88	0350	0.4148	10/26/88	0815	-0.5614
10/26/88	0400	0.3968	10/26/88	0830	-0.6054
10/26/88	0410	0.3248	10/26/88	0845	-0.6594
10/26/88	0420	0.2918	10/26/88	0900	-0.7104
10/26/88	0430	0.2338	10/26/88	0915	-0.7464
10/26/88	0440	0.2088	10/26/88	0930	-0.7804
10/26/88	0450	0.1658	10/26/88	0945	-0.7964
10/26/88	0500	0.1258	10/26/88	1000	-0.8124
10/26/88	0510	0.0758	10/26/88	1015	-0.8304
10/26/88	0520	0.0278	10/26/88	1030	-0.8544
10/26/88	0530	-0.0212	10/26/88	1045	-0.8654
10/26/88	0540	-0.0522	10/26/88	1100	-0.8814
10/26/88	0550	-0.1002	10/26/88	1115	-0.9124
10/26/88	0600	-0.1522	10/26/88	1130	-0.9424
10/26/88	0610	-0.1972	10/26/88	1145	-0.9644
10/26/88	0620	-0.2492	10/26/88	1200	-0.9844
10/26/88	0630	-0.3162	10/26/88	1215	-1.0004
10/26/88	0640	-0.3842	10/26/88	1230	-0.9844
10/26/88	0650	-0.4172	10/26/88	1245	-1.0114
10/26/88	0700	-0.4282	10/26/88	1300	-1.0094
10/26/88	0710	-0.4862	10/26/88	1315	-0.9954
10/26/88	0720	-0.5572	10/26/88	1330	-0.9894

(Continued)

(Sheet 2 of 6)

Table 7 (Continued)

<u>Date</u>	<u>Time CST</u>	<u>TG-12 Water Surface ft</u>	<u>Date</u>	<u>Time CST</u>	<u>TG-13 Water Surface ft</u>
10/26/88	0730	-0.5982	10/26/88	1345	-0.9964
10/26/88	0740	-0.6402	10/26/88	1400	-1.0034
10/26/88	0750	-0.7142	10/26/88	1415	-0.9844
10/26/88	0800	-0.7252	10/26/88	1430	-1.0014
10/26/88	0810	-0.7772	10/26/88	1445	-1.0094
10/26/88	0820	-0.8152	10/26/88	1500	-1.0204
10/26/88	0830	-0.8642	10/26/88	1515	-1.0204
10/26/88	0840	-0.9112	10/26/88	1530	-1.0104
10/26/88	0850	-0.9112	10/26/88	1545	-0.9854
10/26/88	0900	-0.9532	10/26/88	1600	-0.9194
10/26/88	0910	-0.9812	10/26/88	1615	-0.8504
10/26/88	0920	-1.0052	10/26/88	1630	-0.7804
10/26/88	0930	-1.0312	10/26/88	1645	-0.7004
10/26/88	0940	-1.0852	10/26/88	1700	-0.7844
10/26/88	0950	-1.0612	10/26/88	1715	-0.6194
10/26/88	1000	-1.0802	10/26/88	1730	-0.5894
10/26/88	1010	-1.1342	10/26/88	1745	-0.6034
10/26/88	1020	-1.1252	10/26/88	1800	-0.5884
10/26/88	1030	-1.1502	10/26/88	1815	-0.4754
10/26/88	1040	-1.1852	10/26/88	1830	-0.3804
10/26/88	1050	-1.1922	10/26/88	1845	-0.3844
10/26/88	1100	-1.1822	10/26/88	1900	-0.2224
10/26/88	1110	-1.2302	10/26/88	1915	-0.1474
10/26/88	1120	-1.2132	10/26/88	1930	-0.1334
10/26/88	1130	-1.2382	10/26/88	1945	-0.0414
10/26/88	1140	-1.2222	10/26/88	2000	0.0376
10/26/88	1150	-1.2442	10/26/88	2015	0.0106
10/26/88	1200	-1.2382	10/26/88	2030	0.0226
10/26/88	1210	-1.2552	10/26/88	2045	0.0666
10/26/88	1220	-1.2292	10/26/88	2100	0.0856
10/26/88	1230	-1.2362	10/26/88	2115	0.1176
10/26/88	1240	-1.2212	10/26/88	2130	0.1946
10/26/88	1250	-1.2072	10/26/88	2145	0.2646
10/26/88	1300	-1.2102	10/26/88	2200	0.3096
10/26/88	1310	-1.1982	10/26/88	2215	0.3856
10/26/88	1320	-1.1702	10/26/88	2230	0.4316
10/26/88	1330	-1.1512	10/26/88	2245	0.4646
10/26/88	1340	-1.1282	10/26/88	2300	0.5016
10/26/88	1350	-1.1042	10/26/88	2315	0.5166
10/26/88	1400	-1.0902	10/26/88	2330	0.5276

(Continued)

(Sheet 3 of 6)

Table 7 (Continued)

TG-12			TG-13		
Date	Time CST	Water Surface ft	Date	Time CST	Water Surface ft
10/26/88	1410	-1.0372	10/26/88	2345	0.5496
10/26/88	1420	-0.9812	10/27/88	0000	0.5886
10/26/88	1430	-0.9582	10/27/88	0015	0.6186
10/26/88	1440	-0.9282	10/27/88	0030	0.6666
10/26/88	1450	-0.8982	10/27/88	0045	0.6956
10/26/88	1500	-0.8812	10/27/88	0100	0.7296
10/26/88	1510	-0.8492	10/27/88	0115	0.7786
10/26/88	1520	-0.8362	10/27/88	0130	0.8016
10/26/88	1530	-1.0212	10/27/88	0145	0.8076
10/26/88	1540	-0.7482	10/27/88	0200	0.8296
10/26/88	1550	-0.7252	10/27/88	0215	0.8586
10/26/88	1600	-0.6812	10/27/88	0230	0.8776
10/26/88	1610	-0.6422	10/27/88	0245	0.8846
10/26/88	1620	-0.6042	10/27/88	0300	0.8836
10/26/88	1630	-0.5562	10/27/88	0315	0.8576
10/26/88	1640	-0.5132	10/27/88	0330	0.8396
10/26/88	1650	-0.5072	10/27/88	0345	0.8006
10/26/88	1700	-0.3822	10/27/88	0400	0.7776
10/26/88	1710	-0.5372	10/27/88	0415	0.7516
10/26/88	1720	-0.3222	10/27/88	0430	0.6946
10/26/88	1730	-0.4212	10/27/88	0445	0.6526
10/26/88	1740	-0.3522	10/27/88	0500	0.6166
10/26/88	1750	-0.3152			
10/26/88	1800	-0.2932	End of data for TG-13		
10/26/88	1810	-0.2502			
10/26/88	1820	-0.2012			
10/26/88	1830	-0.1332			
10/26/88	1840	-0.1122			
10/26/88	1850	-0.0272			
10/26/88	1900	-0.0232			
10/26/88	1910	0.0338			
10/26/88	1920	0.0908			
10/26/88	1930	0.1098			
10/26/88	1940	0.1348			
10/26/88	1950	0.1728			
10/26/88	2000	0.1818			
10/26/88	2010	0.2128			
10/26/88	2020	0.2208			
10/26/88	2030	0.2468			
10/26/88	2040	0.2698			

(Continued)

(Sheet 4 of 6)

Table 7 (Continued)

<u>Date</u>	<u>Time CST</u>	<u>TG-12 Water Surface ft</u>	<u>Date</u>	<u>Time CST</u>	<u>TG-13 Water Surface ft</u>
10/26/88	2050	0.2978			
10/26/88	2100	0.3098			
10/26/88	2110	0.3348			
10/26/88	2120	0.3478			
10/26/88	2130	0.3788			
10/26/88	2140	0.3938			
10/26/88	2150	0.4228			
10/26/88	2200	0.4388			
10/26/88	2210	0.4698			
10/26/88	2220	0.4768			
10/26/88	2230	0.4968			
10/26/88	2240	0.5168			
10/26/88	2250	0.5368			
10/26/88	2300	0.5588			
10/26/88	2310	0.5818			
10/26/88	2320	0.6068			
10/26/88	2330	0.6128			
10/26/88	2340	0.6378			
10/26/88	2350	0.6518			
10/27/88	0000	0.6608			
10/27/88	0010	0.6808			
10/27/88	0020	0.6978			
10/27/88	0030	0.7058			
10/27/88	0040	0.7168			
10/27/88	0050	0.7318			
10/27/88	0100	0.7538			
10/27/88	0110	0.7628			
10/27/88	0120	0.7808			
10/27/88	0130	0.7908			
10/27/88	0140	0.7888			
10/27/88	0150	0.8018			
10/27/88	0200	0.8058			
10/27/88	0210	0.8098			
10/27/88	0220	0.8168			
10/27/88	0230	0.8118			
10/27/88	0240	0.8118			
10/27/88	0250	0.8068			
10/27/88	0300	0.8028			
10/27/88	0310	0.8028			
10/27/88	0320	0.8188			

(Continued)

(Sheet 5 of 6)

Table 7 (Concluded)

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<u>Date</u>	<u>Time CST</u>	TG-12 Water Surface <u>ft</u>	<u>Date</u>	<u>Time CST</u>	TG-13 Water Surface <u>ft</u>
10/27/88	0330	0.3508			
10/27/88	0340	0.7468			
10/27/88	0350	0.7418			
10/27/88	0400	0.7268			
10/27/88	0410	0.6858			
10/27/88	0420	0.6258			
10/27/88	0430	0.6328			
10/27/88	0440	0.5858			
10/27/88	0450	0.5568			
10/27/88	0500	0.5318			
10/27/88	0510	0.4928			

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Table 8  
Water Surface Elevation Fluctuations  
TG-12 and TG-13, 10-12 November 1988

Time CST	Water Surface Elevation, ft*		Time CST	Water Surface Elevation, ft*	
	TG-12	TG-13		TG-12	TG-13
<u>10 November 1988</u>			<u>11 November 1988 (Continued)</u>		
1900	-0.3320	-0.4673	0030	0.3010	0.3947
1910	-0.3620	-0.4303	0040	0.3130	0.4177
1920	-0.2900	-0.4163	0050	0.3010	0.4347
1930	-0.2560	-0.4133	0100	0.3100	0.4617
1940	-0.2620	-0.3663	0110	0.3320	0.5047
1950	-0.2210	-0.3283	0120	0.3410	0.5567
2000	-0.1890	-0.3403	0130	0.3430	0.5847
2010	-0.1680	-0.2893	0140	0.3560	0.5947
2020	-0.1380	-0.2573	0150	0.3550	0.6117
2030	-0.1060	-0.2073	0200	0.3620	0.6157
2040	-0.0800	-0.1803	0210	0.3690	0.6077
2050	-0.0600	-0.1233	0220	0.3700	0.6137
2100	-0.0370	-0.1283	0230	0.3820	0.5947
2110	0.0010	-0.1073	0240	0.3890	0.6087
2120	0.0320	-0.0593	0250	0.3800	0.5867
2130	0.0370	-0.0273	0300	0.3700	0.5907
2140	0.1650	-0.0973	0310	0.3740	0.5687
2150	-0.0380	0.0177	0320	0.3750	0.5967
2200	0.1410	0.0677	0330	0.3670	0.6137
2210	0.1440	0.0557	0340	0.3740	0.5847
2220	0.1680	0.0907	0350	0.3510	0.5677
2230	0.1600	0.0917	0400	0.3450	0.5487
2240	0.1740	0.0917	0410	0.3300	0.5267
2250	0.2040	0.1127	0420	0.3050	0.4907
2300	0.2450	0.1747	0430	0.2870	0.4537
2310	0.2320	0.1817	0440	0.2650	0.4387
2320	0.3040	0.1687	0450	0.2480	0.4447
2330	0.2170	0.2307	0500	0.2390	0.4297
2340	0.2490	0.2557	0510	0.1990	0.4067
2350	0.2780	0.2817	0520	0.1690	0.3837
<u>11 November 1988</u>			0530	0.1340	0.3617
0000	0.2790	0.2907	0540	0.0940	0.3297
0010	0.2720	0.3117	0550	0.0650	0.3117
0020	0.2960	0.3467	0600	0.0240	0.2727

(Continued)

\* Mean water level reading used as a datum.



Table 8 (Continued)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-12	TG-13		TG-12	TG-13
11 November 1988 (Continued)			11 November 1988 (Continued)		
0610	-0.0180	0.2317	1250	-0.9850	-0.9423
0620	-0.0640	0.1487	1250	-0.9650	-0.9233
0630	-0.1020	0.1437	1300	-0.9650	-0.9293
0640	-0.1580	0.0847	1310	-0.9390	-0.9573
0650	-0.2140	0.0487	1320	-0.9410	-0.9473
0700	-0.2550	-0.0303	1330	-0.9150	-0.9453
0710	-0.2840	-0.0793	1340	-0.9140	-0.9473
0720	-0.3290	-0.0993	1350	-0.9020	-0.9493
0730	-0.3790	-0.1483	1400	-0.8930	-0.9523
0740	-0.4260	-0.1923	1410	-0.8760	-0.9323
0750	-0.4600	-0.2213	1420	-0.8570	-0.9233
0800	-0.5050	-0.2523	1430	-0.8380	-0.9253
0810	-0.5380	-0.2603	1440	-0.8120	-0.9093
0820	-0.5690	-0.2893	1450	-0.8030	-0.9083
0830	-0.6070	-0.3273	1500	-0.7770	-0.8893
0840	-0.6510	-0.3923	1510	-0.7400	-0.8673
0850	-0.6930	-0.4553	1520	-0.7260	-0.8223
0900	-0.7260	-0.4923	1530	-0.6820	-0.7913
0910	-0.7640	-0.5103	1540	-0.6390	-0.7583
0920	-0.7890	-0.5633	1550	-0.5940	-0.7343
0930	-0.8090	-0.5873	1600	-0.5710	-0.6953
0940	-0.8340	-0.6303	1610	-0.5220	-0.6623
0950	-0.8530	-0.6373	1620	-0.4810	-0.6493
1000	-0.8830	-0.6473	1630	-0.4530	-0.6203
1010	-0.9000	-0.6773	1640	-0.4030	-0.5793
1020	-0.9210	-0.7303	1650	-0.3690	-0.5263
1030	-0.9450	-0.7613	1700	-0.3390	-0.5063
1040	-0.9530	-0.7823	1710	-0.3090	-0.4853
1050	-0.9700	-0.8103	1720	-0.2760	-0.4693
1100	-0.9710	-0.8303	1730	-0.2510	-0.4353
1110	-0.9790	-0.8393	1740	-0.2200	-0.4053
1120	-0.9790	-0.8743	1750	-0.1890	-0.3843
1130	-0.9830	-0.8823	1800	-0.1540	-0.3623
1140	-0.9880	-0.8663	1810	-0.1290	-0.3323
1150	-0.9910	-0.8673	1820	-0.1030	-0.3073
1200	-0.9890	-0.8913	1830	-0.0690	-0.2763
1210	-0.9970	-0.9133	1840	-0.0480	-0.2373
1220	-0.9860	-0.9363	1850	-0.0230	-0.2083
1230	-0.9840	-0.9253	1900	0.0020	-0.1683

(Continued)

(Sheet 2 of 3)

Table 8 (Concluded)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-12	TG-13		TG-12	TG-13
<u>11 November 1988 (Continued)</u>			<u>12 November 1988 (Continued)</u>		
1910	0.0350	-0.1493	0010	0.7030	0.5267
1920	0.0600	-0.1223	0020	0.7210	0.5567
1930	0.0880	-0.1123	0030	0.7470	0.5947
1940	0.1060	-0.0913	0040	0.7530	0.6197
1950	0.1230	-0.0693	0050	0.7810	0.6497
2000	0.1450	-0.0343	0100	0.7980	0.6847
2010	0.1580	-0.0123	0110	0.8080	0.7037
2020	0.1880	0.0077	0120	0.8260	0.7407
2030	0.2070	0.0217	0130	0.8430	0.7657
2040	0.2320	0.0277	0140	0.8470	0.7777
2050	0.2500	0.0437	0150	0.8610	0.7947
2100	0.2790	0.0467	0200	0.8710	0.8057
2110	0.2920	0.0507	0210	0.9080	0.8197
2120	0.3200	0.0607	0220	0.7610	0.8227
2130	0.3460	0.0727	0230	0.9260	0.8537
2140	0.3790	0.1097	0240	0.8950	0.8327
2150	0.3970	0.1367	0250	0.8910	0.8427
2200	0.4150	0.1387	0300	0.9030	0.8437
2210	0.4450	0.1777	0310	0.8870	0.8467
2220	0.4600	0.1997	0320	0.9620	0.8477
2230	0.4710	0.2517	0330	0.8450	0.8977
2240	0.5010	0.3177	0340	0.9380	0.9087
2250	0.5280	0.3647	0350	0.8900	0.9027
2300	0.5450	0.3857	0400	0.9310	0.9197
2310	0.5720	0.4247	0410	0.9080	0.9127
2320	0.5940	0.4437	0420	0.8840	0.9077
2330	0.6160	0.4697	0430	0.8740	0.9037
2340	0.6390	0.4797	0440	0.8480	0.8887
2350	0.6700	0.4797	0450	0.8330	0.8777
	<u>12 November 1988</u>		0500	0.7950	0.8627
0000	0.6850	0.4987	0510	0.7640	0.8417

Table 9  
Water Surface Elevation Fluctuations  
TG-12 and TG-13, 26-28 November 1988

Time CST	Water Surface Elevation, ft*		Time CST	Water Surface Elevation, ft*	
	TG-12	TG-13		TG-12	TG-13
<u>26 November 1988</u>			<u>27 November 1988 (Continued)</u>		
1900	-0.2720	-0.9252	0030	0.5950	0.3328
1910	-0.2420	-0.8432	0040	0.6260	0.3608
1920	-0.2160	-0.8042	0050	0.6470	0.3808
1930	-0.1970	-0.7662	0100	0.6770	0.3928
1940	-0.1670	-0.6962	0110	0.6150	0.4188
1950	-0.1390	-0.6462	0120	0.7100	0.4598
2000	-0.1040	-0.6062	0130	0.7340	0.4748
2010	-0.0840	-0.5312	0140	0.7390	0.5048
2020	-0.0500	-0.4882	0150	0.7770	0.5418
2030	-0.0380	-0.4522	0200	0.7920	0.5538
2040	-0.0220	-0.4052	0210	0.8100	0.5898
2050	0.0020	-0.3752	0220	0.8220	0.6298
2100	0.0090	-0.3382	0230	0.8450	0.6648
2110	0.0400	-0.3102	0240	0.8660	0.6818
2120	0.0610	-0.2822	0250	0.8790	0.6938
2130	0.0940	-0.2522	0300	0.8900	0.7128
2140	0.1160	-0.2052	0310	0.8900	0.7228
2150	0.1340	-0.1972	0320	0.8940	0.7378
2200	0.1590	-0.1792	0330	0.9060	0.7328
2210	0.1830	-0.1542	0340	0.9030	0.7378
2220	0.2280	-0.1182	0350	0.9120	0.7358
2230	0.2470	-0.1002	0400	0.9170	0.7468
2240	0.2720	-0.0562	0410	0.8330	0.7408
2250	0.3060	-0.0252	0420	0.8990	0.7378
2300	0.3220	0.0118	0430	0.8570	0.7368
2310	0.3740	0.0508	0440	0.8690	0.6968
2320	0.3960	0.1198	0450	0.8660	0.6958
2330	0.4240	0.1338	0500	0.8430	0.6878
2340	0.4680	0.1808	0510	0.8230	0.6628
2350	0.4810	0.2178	0520	0.7960	0.6338
<u>27 November 1988</u>			0530	0.7780	0.6238
0000	0.5000	0.2578	0540	0.7500	0.5818
0010	0.5450	0.2888	0550	0.7260	0.5668
0020	0.5720	0.3068	0600	0.6820	0.5448

(Continued)

\* Mean water level reading used as a datum.

Table 9 (Continued)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-12	TG-13		TG-12	TG-13
27 November 1988 (Continued)			27 November 1988 (Continued)		
0610	0.6520	0.5168	1240	-0.7430	-0.0482
0620	0.6010	0.4878	1250	-0.7530	-0.0912
0630	0.5720	0.4458	1300	-0.7590	-0.1712
0640	0.5300	0.4008	1310	-0.7640	-0.2122
0650	0.4820	0.3618	1320	-0.7850	-0.2302
0700	0.4380	0.3408	1330	-0.9960	-0.1792
0710	0.4050	0.2798	1340	-0.8240	-0.2292
0720	0.3370	0.2178	1350	-0.7630	-0.2522
0730	0.2960	0.1608	1400	-0.8070	-0.2542
0740	0.2250	0.0928	1410	-0.8080	-0.2832
0750	0.1800	0.0168	1420	-0.7890	-0.1332
0800	0.1350	-0.0382	1430	-0.7760	-0.1702
0810	0.0700	-0.0942	1440	-0.7970	-0.1452
0820	0.0240	-0.1532	1450	-0.7860	-0.1992
0830	-0.0100	-0.1452	1500	-0.7840	-0.1522
0840	-0.0670	-0.1922	1510	-0.7780	-0.1512
0850	-0.2160	-0.2462	1520	-0.7560	-0.1602
0900	-0.2420	-0.3152	1530	-0.7570	-0.1702
0910	-0.2860	-0.3432	1540	-0.7570	-0.2082
0920	-0.3220	-0.4072	1550	-0.7430	-0.2752
0930	-0.4830	-0.4342	1600	-0.7400	-0.3392
0940	-0.4060	-0.4862	1610	-0.7380	-0.3922
0950	-0.4890	-0.5652	1620	-0.7430	-0.4962
1000	-0.5290	-0.6042	1630	-0.7300	-0.5432
1010	-0.5400	-0.6072	1640	-0.6950	-0.5332
1020	-0.5540	-0.3122	1650	-0.6570	-0.5362
1030	-0.5520	-0.3232	1700	-0.6490	-0.5462
1040	-0.5130	-0.1602	1710	-0.6230	-0.5422
1050	-0.4960	-0.0772	1720	-0.5990	-0.5422
1100	-0.5130	0.0288	1730	-0.5780	-0.4622
1110	-0.5570	-0.0012	1740	-0.5540	-0.4492
1120	-0.6320	-0.0872	1750	-0.5550	-0.4732
1130	-0.6750	-0.2112	1800	-0.5450	-0.4272
1140	-0.7210	-0.0942	1810	-0.5260	-0.4352
1150	-0.6990	-0.0092	1820	-0.5370	-0.4602
1200	-0.7000	-0.0152	1830	-0.5320	-0.4602
1210	-0.7000	-0.1082	1840	-0.5330	-0.5372
1220	-0.7210	-0.2322	1850	-0.5180	-0.5222
1230	-0.7380	-0.1982	1900	-0.5160	-0.5172

(Continued)

(Sheet 2 of 3)

Table 9 (Concluded)

Time CST	Water Surface Elevation, ft		Time CST	Water Surface Elevation, ft	
	TG-12	TG-13		TG-12	TG-13
<u>27 November 1988 (Continued)</u>			<u>28 November 1988 (Continued)</u>		
1910	-0.4900	-0.5182	0010	0.1830	0.4168
1920	-0.4740	-0.5492	0020	0.1950	0.4048
1930	-0.4670	-0.5832	0030	0.1940	0.3608
1940	-0.4340	-0.5742	0040	0.1970	0.3348
1950	-0.3980	-0.5482	0050	0.1820	0.3088
2000	-0.3460	-0.5152	0100	0.1830	0.2858
2010	-0.3050	-0.4912	0110	0.1860	0.2508
2020	-0.2810	-0.4552	0120	0.1880	0.2638
2030	-0.2390	-0.3722	0130	0.2140	0.2878
2040	-0.2020	-0.2912	0140	0.1980	0.2788
2050	-0.1750	-0.2482	0150	0.2110	0.3028
2100	-0.1530	-0.2472	0200	0.2110	0.3138
2110	-0.1280	-0.2162	0210	0.2240	0.3628
2120	-0.1060	-0.1542	0220	0.2360	0.3968
2130	-0.0990	-0.1472	0230	0.2390	0.4008
2140	-0.0630	-0.1252	0240	0.2400	0.4058
2150	-0.0550	-0.1402	0250	0.2350	0.3958
2200	-0.0400	-0.1342	0300	0.2420	0.3968
2210	-0.0190	-0.0922	0310	0.2470	0.3918
2220	0.0090	-0.0682	0320	0.2410	0.3698
2230	0.0360	0.0048	0330	0.2360	0.2948
2240	0.0500	0.0198	0340	0.2380	0.2318
2250	0.0760	0.0508	0350	0.2280	0.2078
2300	0.1080	0.0828	0400	0.2200	0.1738
2310	0.1210	0.1558	0410	0.2210	0.1358
2320	0.1550	0.2248	0420	0.2030	0.0588
2330	0.1610	0.2718	0430	0.1820	0.0458
2340	0.1730	0.3528	0440	0.1790	0.0448
2350	0.1750	0.3468	0450	0.1570	0.0188
			0500	0.1360	-0.0332
			0510	0.1140	-0.0412
	<u>28 November 1988</u>				
0000	0.1770	0.4078			

Table 10  
Current Data Observed at Sta 1-A, 26 October 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0732	3.0	2.8	282
0804	3.0	3.2	295
0848	3.0	3.0	312
0918	3.0	3.0	292
0949	3.0	2.9	285
1029	3.0	2.6	320
1103	3.0	2.4	305
1204	3.0	2.4	315
1304	3.0	1.5	305
1402	3.0	1.1	325
1504	3.0	0.3	125
1559	3.0	0.3	126
<u>Middepth</u>			
0731	19.4	3.3	282
0803	19.5	2.6	295
0847	18.7	3.2	310
0917	19.1	2.2	290
0948	19.5	2.6	280
1028	18.6	1.8	285
1102	19.3	1.7	268
1202	19.6	1.4	330
1303	19.4	1.0	305
1401	18.5	0.6	295
1502	9.3	0.3	30
1557	9.0	0.6	124
<u>Bottom†</u>			
0730	36.8	1.4	280
0801	37.1	1.2	295
0845	35.5	1.5	310
0916	36.3	1.6	290
0947	37.0	1.1	270
1027	35.3	1.0	290
1100	36.7	1.0	260
1200	37.3	0.9	360
1300	36.9	0.3	260
1400	34.9	0.6	135
1500	16.6	0.1	145
1555	16.0	0.4	35

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 11  
Current Data Observed at Sta 1-B, 26 October 1988

<u>Hour GST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0812	3.0	3.4	309
0854	3.0	3.2	310
0926	3.0	3.2	290
1004	3.0	3.2	300
1037	3.0	3.1	310
1109	3.0	3.2	290
1211	3.0	2.8	310
1310	3.0	2.1	308
1408	3.0	1.5	328
1511	3.0	0.8	322
1606	3.0	0.5	20
<u>Middepth</u>			
0811	23.2	3.6	310
0853	23.0	3.6	309
0925	23.1	3.2	280
1001	23.5	3.0	300
1035	23.0	2.9	280
1108	17.8	2.5	290
1210	22.8	2.3	340
1308	22.6	1.4	312
1407	22.6	0.6	310
1510	21.2	0.5	280
1605	22.5	0.9	246
<u>Bottom†</u>			
0810	44.3	1.2	320
0852	44.0	1.0	304
0924	44.2	0.6	252
0951	45.8	1.1	280
1034	44.0	1.1	270
1107	33.7	0.7	270
1213	43.7	0.5	60
1307	43.2	0.6	60
1406	43.3	0.5	135
1508	42.3	2.5	302
1603	43.1	0.2	270

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 12  
Current Data Observed at Sta 1-C, 26 October 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0743	3.0	1.6	288
0820	3.0	2.1	230
0900	3.0	2.3	308
0932	3.0	2.7	300
1010	3.0	2.6	310
1044	3.0	2.5	290
1115	3.0	2.5	315
1218	3.0	1.9	310
1319	3.0	1.5	308
1414	3.0	1.0	330
1517	3.0	0.5	300
1613	3.0	0.3	130
<u>Middepth</u>			
0742	18.2	1.2	288
0818	20.2	2.9	310
0859	18.1	2.4	309
0931	17.1	2.3	295
1010	18.2	2.3	295
1043	16.5	2.1	290
1114	19.8	1.4	330
1216	18.1	0.8	345
1318	18.7	1.0	315
1413	20.0	0.9	328
1516	15.9	0.6	245
1611	17.5	0.3	130
<u>Bottom†</u>			
0740	34.4	0.8	290
0816	38.7	0.6	10
0858	34.3	0.8	320
0930	32.2	1.0	282
1009	34.5	0.5	360
1042	31.0	1.5	275
1113	37.7	0.2	60
1215	34.2	0.5	330
1315	35.4	0.1	270
1412	38.0	0.5	330
1514	29.8	0.5	175
1610	25.0	1.1	142

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.



Table 13

Current Data Observed at Sta 1-X, 26 October 1988

<u>Hour</u> <u>CST</u>	<u>Depth</u> <u>ft</u>	<u>Speed</u> <u>fps</u>	<u>Direction</u> <u>deg*</u>
		<u>Surface**</u>	
0835	3.0	0.8	320
0905	3.0	2.1	320
0939	3.0	1.5	320
1019	3.0	1.6	300

Middepth

(No current data collected at this depth)

Bottom†

0904	11.0	1.2	310
0938	11.0	1.1	320
1018	11.0	0.7	285

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 14  
Current Data Observed at Sta 2-A, 26 October 1988

<u>Hour</u> <u>CST</u>	<u>Depth</u> <u>ft</u>	<u>Speed</u> <u>fps</u>	<u>Direction</u> <u>deg*</u>
<u>Surface**</u>			
0735	3.0	1.4	20
0817	3.0	1.8	20
0846	3.0	1.8	28
0916	3.0	1.7	24
0947	3.0	2.1	30
1023	3.0	2.1	30
1116	3.0	2.0	32
1218	3.0	1.7	30
1319	3.0	1.5	32
1418	3.0	0.9	38
1517	3.0	1.2	212
1549	3.0	1.4	210
<u>Middepth</u>			
0734	5.4	1.6	18
0816	5.2	1.8	8
0845	5.8	1.8	18
0915	5.0	1.8	22
0946	5.5	1.9	36
1022	5.5	2.2	20
1115	6.2	1.9	22
1217	5.5	1.6	28
1318	5.5	1.6	28
1417	5.0	1.1	30
1516	6.1	1.2	208
1548	6.1	1.5	208
<u>Bottom†</u>			
0733	8.8	0.9	22
0815	8.4	1.1	6
0844	9.6	1.0	358
0914	8.0	1.5	30
0945	9.0	1.3	40
1021	9.0	1.9	30
1114	10.5	1.2	30
1216	9.0	1.4	28
1317	9.0	1.1	22
1416	8.0	0.7	2
1515	10.2	1.1	212
1547	10.2	1.2	210

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 15  
Current Data Observed at Sta 2-B, 26 October 1988

<u>Hour</u> <u>CST</u>	<u>Depth</u> <u>ft</u>	<u>Speed</u> <u>fps</u>	<u>Direction</u> <u>deg*</u>
<u>Surface**</u>			
0719	3.0	1.2	300
0800	3.0	1.4	308
0832	3.0	1.2	304
0902	3.0	1.5	290
0933	3.0	1.7	306
1004	3.0	1.5	294
1102	3.0	1.9	308
1203	3.0	1.6	304
1303	3.0	1.7	300
1404	3.0	1.0	294
1502	3.0	0.5	290
1532	3.0	0.4	266
<u>Middepth</u>			
0717	17.8	1.1	294
0759	16.5	1.3	298
0831	18.3	1.5	284
0901	18.7	1.7	288
0932	19.1	2.1	288
1003	18.7	1.4	290
1101	19.2	1.9	302
1202	19.1	1.6	300
1302	18.8	1.7	296
1403	18.2	1.7	290
1501	11.4	0.6	306
1531	14.2	1.0	290
<u>Bottom†</u>			
0714	33.6	0.4	234
0758	31.0	0.2	318
0830	34.6	0.6	222
0900	35.4	0.4	186
0931	36.2	0.2	244
1002	35.4	0.4	102
1100	36.4	1.0	300
1201	36.2	0.7	254
1301	35.6	0.5	240
1402	34.3	0.2	242
1500	20.8	0.4	314
1530	26.5	0.7	282

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 16  
Current Data Observed at Sta 2-C, 26 October 1988

<u>Hour GST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0726	3.0	1.4	306
0809	3.0	1.3	308
0838	3.0	1.9	302
0907	3.0	1.7	302
0939	3.0	1.4	308
1015	3.0	1.7	302
1109	3.0	1.8	306
1211	3.0	2.2	300
1312	3.0	2.0	304
1410	3.0	1.8	304
1508	3.0	1.3	292
1540	3.0	0.9	300
<u>Middepth</u>			
0725	19.3	0.8	304
0808	17.0	0.9	300
0837	16.7	1.0	306
0906	18.8	1.4	306
0938	18.6	1.7	302
1014	17.8	1.7	296
1108	17.8	2.3	300
1210	17.7	1.7	300
1311	18.3	1.5	308
1409	18.8	1.8	302
1507	17.2	1.4	302
1539	17.1	0.6	294
<u>Bottom†</u>			
0724	36.6	0.4	340
0807	32.0	0.4	310
0836	31.4	0.2	76
0905	35.6	0.1	36
0937	35.2	0.5	20
1013	33.5	0.5	164
1107	33.6	0.2	18
1209	33.4	0.4	300
1310	34.7	0.3	306
1408	35.3	0.3	296
1506	32.3	0.2	312
1538	32.2	0.6	230

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 17

Current Data Observed at Sta 2-X, 26 October 1988

<u>Hour</u> <u>GST</u>	<u>Depth</u> <u>ft</u>	<u>Speed</u> <u>fps</u>	<u>Direction</u> <u>deg*</u>
<u>Surface**</u>			
0854	3.0	0.3	150
0922	3.0	0.3	250
0953	3.0	0.4	186
<u>Middepth</u>			
0853	4.1	0.3	150
0921	4.2	0.3	274
0952	4.0	0.4	190
<u>Bottom†</u>			
0853	6.2	0.3	162
0921	6.4	0.2	270
0951	6.0	0.4	180

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 18  
Current Data Observed at Sta 3-A, 26 October 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0706	3.0	1.7	246
0805	3.0	0.5	290
0840	3.0	0.4	351
0917	3.0	0.5	25
0952	3.0	1.1	28
1017	3.0	0.9	32
1102	3.0	1.1	24
1202	3.0	1.4	30
1302	3.0	1.8	30
1403	3.0	1.8	35
1502	3.0	1.3	35
1534	3.0	0.6	39
<u>Middepth</u>			
0705	13.0	0.6	280
0804	14.8	0.4	348
0839	15.0	0.5	300
0916	16.5	0.4	65
0951	12.8	0.8	40
1016	14.0	0.8	48
1101	13.0	1.0	50
1201	13.0	1.4	46
1301	13.0	1.8	46
1401	14.0	1.6	29
1501	14.5	1.0	45
1533	14.8	0.6	60
<u>Bottom†</u>			
0704	24.0	0.2	326
0803	27.5	0.1	5
0838	28.0	0.3	245
0915	29.0	0.3	40
0950	23.5	0.4	52
1015	26.0	0.3	88
1100	24.0	0.2	110
1200	24.0	1.2	48
1300	24.0	1.2	44
1400	26.0	1.1	47
1500	27.0	0.6	84
1532	27.5	0.4	35

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 19  
Current Data Observed at Sta 3-B, 26 October 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0717	3.0	1.7	241
0808	3.0	1.5	235
0846	3.0	0.3	332
0922	3.0	0.4	10
0957	3.0	0.9	70
1024	3.0	1.0	44
1107	3.0	1.2	37
1208	3.0	1.4	40
1308	3.0	1.4	52
1408	3.0	1.5	50
1507	3.0	1.2	37
1539	3.0	0.6	40
<u>Middepth</u>			
0715	9.2	0.8	210
0807	9.0	1.1	230
0845	9.3	0.8	268
0921	10.2	0.2	264
0956	8.4	0.6	56
1023	8.7	0.8	46
1106	8.8	1.1	47
1207	8.5	1.6	44
1307	8.8	1.6	46
1407	8.8	1.6	45
1506	8.8	1.0	44
1538	9.0	0.6	36
<u>Bottom†</u>			
0714	16.3	0.2	64
0806	16.0	0.2	135
0844	16.5	0.4	254
0920	18.3	0.3	283
0955	14.8	0.7	12
1022	15.4	0.3	36
1105	15.5	0.8	48
1206	15.0	1.3	58
1306	15.5	1.1	36
1406	15.5	1.3	32
1505	15.5	0.9	51
1537	16.0	0.5	42

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 20  
Current Data Observed at Sta 3-C, 26 October 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0728	3.0	0.6	342
0817	3.0	1.0	303
0856	3.0	1.7	330
0930	3.0	2.0	326
1005	3.0	2.2	326
1030	3.0	2.5	324
1116	3.0	2.4	321
1218	3.0	2.4	326
1316	3.0	2.6	325
1417	3.0	2.1	320
1515	3.0	1.6	320
1548	3.0	1.3	319
<u>Middepth</u>			
0727	18.3	0.3	306
0816	19.0	0.6	307
0855	16.0	1.5	333
0929	19.1	1.6	322
1004	18.3	2.0	320
1029	18.5	1.9	320
1115	18.3	2.0	324
1217	18.0	2.3	320
1315	18.0	2.3	322
1416	18.3	2.3	319
1514	18.4	2.0	318
1547	18.0	1.3	315
<u>Bottom†</u>			
0726	34.5	0.3	325
0815	36.0	0.4	359
0854	30.0	0.7	340
0928	36.2	0.5	340
1003	34.5	0.3	344
1028	35.0	0.3	343
1114	34.5	0.4	328
1216	34.1	0.6	326
1314	34.1	0.3	300
1415	34.5	0.4	308
1513	34.8	0.2	340
1546	34.0	0.4	303

- \* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.



Table 21

Current Data Observed at Sta 3-D, 26 October 1988

<u>Hour</u> <u>CST</u>	<u>Depth</u> <u>ft</u>	<u>Speed</u> <u>fps</u>	<u>Direction</u> <u>deg*</u>
<u>Surface**</u>			
0736	3.0	0.7	310
0822	3.0	0.9	298
0900	3.0	1.4	330
0930	3.0	2.3	330
1010	3.0	2.4	327
1037	3.0	2.7	345
1121	3.0	2.5	323
1224	3.0	2.6	325
1323	3.0	2.4	323
1422	3.0	2.1	325
1520	3.0	1.7	322
1553	3.0	1.2	330
<u>Middepth</u>			
0735	11.5	0.7	313
0821	18.8	0.5	270
0859	15.5	1.2	320
0935	19.5	1.6	322
1009	19.3	2.0	316
1036	19.0	1.9	344
1120	19.3	1.7	322
1223	19.2	1.9	327
1322	19.3	2.0	321
1421	19.0	1.9	320
1519	18.3	1.6	317
1552	18.3	1.6	316
<u>Bottom†</u>			
0734	21.0	0.1	302
0820	35.5	0.4	240
0858	29.0	0.8	329
0934	37.0	0.5	345
1008	36.5	0.5	341
1035	36.0	0.5	342
1119	36.5	0.4	310
1222	36.4	0.3	355
1321	36.5	0.2	334
1422	36.0	0.2	342
1518	34.5	0.4	330
1551	34.5	0.2	325

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 22  
Current Data Observed at Sta 3-X, 26 October 1988

<u>Hour GST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
		<u>Surface**</u>	
0833	3.0	0.6	242
0910	3.0	0.5	258
0945	3.0	0.6	172

Middepth

(No current data collected at this depth)

Bottom†

0832	5.8	0.6	265
0909	6.0	0.4	265
0944	5.5	0.4	218

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\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 23

Current Data Observed at Sta 1-A, 11 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0734	3.0	2.4	300
0810	3.0	2.5	290
0904	3.0	2.3	290
1005	3.0	2.0	290
1104	3.0	1.7	285
1203	3.0	1.2	290
1307	3.0	1.0	300
1404	3.0	0.6	340
1504	3.0	0.3	160
1606	3.0	0.6	135
<u>Middepth</u>			
0732	19.3	2.2	284
0808	19.9	2.5	290
0903	19.5	2.0	290
1002	19.1	1.5	290
1102	19.6	1.5	295
1202	16.4	1.0	270
1305	10.1	0.8	285
1402	8.5	0.7	285
1503	11.0	0.5	160
1604	11.7	0.4	130
<u>Bottom</u>			
0730	36.7	1.2	278
0806	36.8	1.2	270
0901	37.1	1.2	270
1001	36.2	0.8	270
1100	37.2	0.4	240
1200	30.8	0.5	260
1304	18.2	0.7	300
1400	15.0	0.3	300
1501	20.0	0.3	155
1601	21.4	0.6	130

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 24  
Current Data Observed at Sta 1-B, 11 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0744	3.0	2.7	287
0818	3.0	2.5	290
0915	3.0	3.0	285
1013	3.0	2.5	285
1112	3.0	1.9	285
1210	3.0	1.4	300
1316	3.0	1.0	305
1411	3.0	0.8	280
1513	3.0	0.3	160
1618	3.0	0.6	120
<u>Middepth</u>			
0742	23.5	2.4	286
0817	23.1	2.5	290
0913	23.3	2.6	290
1011	23.1	2.3	290
1111	22.8	2.0	285
1208	22.7	1.5	290
1314	22.7	1.0	290
1410	23.0	1.0	270
1511	22.2	0.7	315
1616	22.8	0.6	120
<u>Bottom†</u>			
0741	45.0	1.1	278
0815	44.3	1.0	270
0911	44.6	0.8	260
1009	44.2	1.0	270
1109	43.5	0.5	230
1207	43.5	0.5	240
1312	43.4	0.5	230
1407	44.0	0.6	280
1508	42.3	0.5	245
1614	43.6	0.3	170

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 25

Current Data Observed at Sta 1-C, 11 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0754	3.0	1.8	300
0827	3.0	2.2	290
0922	3.0	2.0	295
1020	3.0	1.4	290
1121	3.0	1.5	290
1219	3.0	1.3	287
1326	3.0	1.2	300
1419	3.0	1.0	310
1522	3.0	0.4	175
1630	3.0	0.6	120
<u>Middepth</u>			
0752	18.8	2.0	290
0825	18.6	2.2	290
0921	19.7	1.8	292
1019	17.4	1.6	280
1119	18.6	1.2	280
1217	18.1	1.0	290
1323	18.6	0.8	285
1417	19.2	0.7	230
1520	19.9	0.4	155
1628	22.8	0.6	120
<u>Bottom†</u>			
0750	35.6	0.4	360
0824	35.3	1.2	270
0920	37.4	0.5	290
1017	32.8	0.9	270
1118	35.2	0.8	275
1215	34.2	0.8	270
1321	35.2	0.2	195
1415	36.5	0.3	205
1518	37.8	0.2	155
1626	43.6	0.3	170

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 26  
Current Data Observed at Sta 2-A, 11 November 1988

<u>Hour GST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0744	2.0	1.6	25
0824	2.0	1.8	30
0924	2.0	1.4	30
1022	2.0	1.6	30
1124	2.0	1.4	30
1228	3.0	0.9	30
1324	2.0	0.7	25
1427	2.0	0.2	240
1519	2.0	1.0	190
1624	2.0	1.3	210
<u>Middepth</u>			
0742	4.0	1.3	25
0822	5.0	1.5	20
0922	3.5	1.3	25
1020	3.5	1.4	32
1123	3.5	1.2	30
1226	5.0	0.9	25
1322	3.5	0.7	20
1425	3.5	0.2	230
1517	4.0	1.2	210
1622	5.0	1.2	210
<u>Bottom†</u>			
0740	6.0	1.4	10
0820	8.0	1.1	10
0920	5.5	0.8	50
1018	6.0	1.1	30
1121	5.5	1.2	40
1224	8.0	0.5	25
1320	5.5	0.5	25
1423	6.0	0.1	250
1515	6.5	0.5	160
1620	9.0	0.6	200

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 27

Current Data Observed at Sta 2-B, 11 November 1988

<u>Hour GST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0726	3.0	1.1	290
0804	3.0	1.0	300
0904	3.0	1.4	295
1004	3.0	0.6	295
1104	3.0	0.4	295
1206	3.0	0.3	300
1304	3.0	0.2	240
1404	3.0	0.3	315
1504	3.0	0.8	140
1604	3.0	0.6	120
<u>Middepth</u>			
0724	11.0	1.2	290
0802	10.5	1.1	290
0902	10.5	1.2	300
1002	11.0	1.0	300
1102	12.5	1.0	300
1204	11.0	1.3	300
1302	11.0	1.1	300
1402	13.5	1.1	300
1502	17.0	1.0	300
1602	17.0	0.4	300
<u>Bottom†</u>			
0722	22.0	0.9	290
0800	22.0	0.9	310
0900	21.0	0.7	300
1000	22.0	0.4	290
1100	25.0	0.8	300
1202	22.0	1.0	310
1300	22.0	0.4	320
1400	22.7	0.5	310
1500	34.0	0.3	250
1600	34.0	0.0	0

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 28  
Current Data Observed at Sta 2-C, 11 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0734	3.0	1.2	290
0814	3.0	1.2	305
0910	3.0	1.0	295
1012	3.0	1.1	290
1110	3.0	1.0	290
1214	3.0	1.1	300
1315	3.0	0.8	290
1416	3.0	0.4	215
1511	3.0	0.3	230
1614	3.0	0.5	90
<u>Middepth</u>			
0732	13.5	1.5	290
0812	17.5	1.5	300
0908	13.0	1.9	295
1010	16.5	1.4	295
1108	15.0	0.6	305
1212	17.5	1.7	300
1313	17.5	1.8	300
1414	18.0	1.4	295
1509	16.0	0.8	280
1612	17.0	0.3	290
<u>Bottom†</u>			
0730	27.0	1.0	270
0810	35.0	0.8	290
0906	26.0	1.1	280
1008	23.0	1.1	290
1106	30.0	1.2	290
1210	35.0	0.9	310
1311	35.8	0.7	290
1412	36.0	0.9	290
1507	32.0	1.0	285
1610	34.0	0.1	30

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.



Table 29

Current Data Observed at Sta 3-A, 11 November 1988

<u>Hour</u> <u>CST</u>	<u>Depth</u> <u>ft</u>	<u>Speed</u> <u>fps</u>	<u>Direction</u> <u>deg*</u>
<u>Surface**</u>			
0706	3.0	1.4	40
0802	3.0	1.8	42
0904	3.0	1.7	40
0949	3.0	1.2	40
1022	3.0	1.3	30
1103	3.0	1.4	18
1202	3.0	1.0	44
1302	3.0	1.0	34
1402	3.0	1.2	30
1502	3.0	1.1	30
1602	3.0	1.1	32
<u>Middepth</u>			
0705	13.1	1.3	20
0801	13.1	1.5	24
0903	12.9	1.8	34
0948	12.9	1.4	22
1021	12.8	1.5	30
1102	13.0	1.4	30
1201	12.9	1.0	34
1301	12.7	0.9	10
1401	12.8	1.0	18
1501	12.6	1.1	18
1601	12.7	1.1	12
<u>Bottom†</u>			
0704	24.2	0.5	38
0800	24.2	0.4	44
0900	23.8	0.4	320
0946	23.8	0.3	314
1020	23.6	0.4	302
1100	24.0	0.3	264
1200	23.8	0.2	236
1300	23.4	0.3	326
1400	23.6	0.4	320
1500	23.2	0.3	326
1600	23.4	0.2	310

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 30  
Current Data Observed at Sta 3-B, 11 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0712	3.0	1.4	44
0808	3.0	1.8	44
0908	3.0	1.8	36
0953	3.0	1.3	34
1027	3.0	1.2	40
1108	3.0	1.5	30
1207	3.0	0.9	50
1308	3.0	0.9	30
1408	3.0	1.0	32
1511	3.0	1.0	30
1607	3.0	1.1	40
<u>Middepth</u>			
0711	8.7	1.4	42
0807	8.8	1.8	36
0907	8.3	1.8	34
0952	8.5	1.2	36
1026	8.6	1.3	30
1107	8.7	1.3	28
1206	8.4	0.8	48
1307	8.5	0.8	22
1407	8.4	1.1	30
1509	8.6	1.1	22
1606	8.6	1.1	24
<u>Bottom†</u>			
0710	15.4	0.8	38
0806	15.6	1.4	40
0906	14.6	1.6	42
0951	15.0	1.2	32
1025	15.2	1.2	34
1106	15.4	1.4	26
1205	14.8	0.7	42
1306	15.0	0.7	32
1406	14.8	0.9	34
1505	15.2	0.6	22
1605	15.2	1.1	22

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 31  
Current Data Observed at Sta 3-C, 11 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0730	3.0	1.4	324
0817	3.0	1.3	316
0916	3.0	1.4	318
1000	3.0	1.8	312
1036	3.0	1.9	316
1116	3.0	2.1	320
1217	3.0	1.9	312
1317	3.0	1.8	306
1417	3.0	1.3	306
1522	3.0	0.8	306
1617	3.0	0.7	308
<u>Middepth</u>			
0728	16.7	0.4	322
0816	16.8	0.6	334
0915	17.0	0.7	314
0959	16.8	0.6	322
1035	16.8	0.5	310
1115	16.9	0.5	326
1216	16.7	0.5	308
1316	16.9	1.1	320
1416	16.8	0.9	310
1520	17.3	0.8	318
1616	16.2	0.7	310
<u>Bottom†</u>			
0727	31.4	0.4	318
0815	31.6	0.6	290
0914	32.0	0.5	312
0958	31.6	0.4	302
1034	31.6	0.3	320
1114	31.8	0.3	340
1215	31.4	0.2	278
1315	31.8	0.2	280
1415	31.6	0.2	294
1518	32.6	0.3	260
1615	30.4	0.5	290

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 32  
Current Data Observed at Sta 3-D, November 11, 1988

<u>Hour</u> <u>GST</u>	<u>Depth</u> <u>ft</u>	<u>Speed</u> <u>fps</u>	<u>Direction</u> <u>deg*</u>
<u>Surface**</u>			
0737	3.0	2.0	330
0826	3.0	2.0	322
0922	3.0	2.0	316
1006	3.0	1.8	320
1042	3.0	1.9	314
1122	3.0	2.1	328
1223	3.0	2.1	312
1323	3.0	1.5	314
1424	3.0	1.3	312
1536	3.0	1.0	296
1623	3.0	0.8	302
<u>Middepth</u>			
0736	19.5	0.6	322
0825	19.7	0.5	330
0921	19.2	0.6	320
1004	19.1	0.9	310
1041	19.1	0.8	320
1121	19.0	1.1	342
1222	19.2	1.1	322
1322	19.3	1.5	320
1423	19.2	1.4	320
1535	19.1	1.1	306
1622	19.6	1.2	300
<u>Bottom†</u>			
0734	37.8	0.4	320
0824	37.4	0.5	318
0921	36.4	0.5	280
1004	36.2	0.4	296
1040	36.2	0.7	300
1120	36.0	0.4	314
1221	36.4	0.2	272
1321	36.6	0.2	280
1422	36.4	0.4	294
1533	36.2	0.3	268
1621	37.2	0.5	262

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 33  
Current Data Observed at Sta 1-A, 27 November 1988

<u>Hour GST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0745	3.0	1.4	320
0805	3.0	1.7	296
0904	3.0	1.7	292
1003	3.0	1.7	310
1103	3.0	1.8	298
1205	3.0	1.6	296
1304	3.0	1.4	290
1402	3.0	2.4	298
1503	3.0	1.6	294
<u>Middepth</u>			
0743	13.0	1.6	296
0804	16.5	1.5	302
0902	18.0	1.8	294
1002	17.2	1.7	312
1102	17.7	1.2	272
1204	10.0	1.2	282
1303	9.0	1.5	282
1401	9.7	1.5	284
1502	10.1	1.6	286
<u>Bottom†</u>			
0742	23.9	1.3	294
0803	31.0	0.4	296
0901	34.0	0.7	250
1001	32.5	0.3	270
1101	33.4	0.3	274
1203	28.0	0.4	310
1302	16.0	0.9	262
1400	17.4	0.7	274
1501	18.2	1.1	276

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 34  
Current Data Observed at Sta 1-B, 27 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0753	3.0	2.0	296
0811	3.0	2.1	294
0912	3.0	2.2	292
1008	3.0	2.0	294
1112	3.0	2.3	292
1210	3.0	2.4	286
1309	3.0	2.6	280
1406	3.0	2.1	292
1512	3.0	2.2	312
<u>Middepth</u>			
0751	23.2	2.1	300
0810	23.2	2.3	294
0911	23.4	2.8	290
1007	23.0	2.6	294
1111	22.5	2.4	282
1209	22.7	2.3	286
1308	22.6	2.2	282
1405	22.4	1.5	274
1511	21.7	1.1	296
<u>Bottom†</u>			
0750	44.5	1.0	302
0809	44.5	0.8	296
0910	44.7	0.7	254
1006	44.0	1.0	292
1110	43.0	1.1	264
1208	43.5	1.0	276
1307	43.1	1.0	274
1404	42.8	0.8	264
1510	41.4	0.7	294

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 35

Current Data Observed at Sta 1-C, 27 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0758	3.0	1.4	296
0816	3.0	1.6	300
0918	3.0	1.8	294
1016	3.0	1.4	298
1118	3.0	2.1	290
1216	3.0	2.2	294
1315	3.0	2.0	292
1411	3.0	2.1	284
1520	3.0	1.9	288
<u>Middepth</u>			
0757	20.2	1.8	302
0815	20.0	1.8	304
0917	20.0	2.0	304
1015	19.0	1.5	304
1117	20.8	2.3	290
1215	21.0	2.2	284
1314	21.3	2.2	284
1410	21.0	1.3	290
1519	20.5	1.5	288
<u>Bottom†</u>			
0756	28.3	0.3	20
0814	38.0	0.3	22
0916	38.0	0.6	326
1014	36.0	0.9	322
1116	39.6	0.8	300
1214	40.1	0.9	268
1313	40.6	0.7	260
1409	40.1	0.4	268
1518	39.0	0.6	282

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 36  
Current Data Observed at Sta 2-A, 27 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0739	2.0	1.3	30
0819	2.0	1.1	30
0920	2.0	1.2	10
1020	2.0	1.2	30
1124	2.0	3.4	30
1226	2.0	3.2	30
1319	2.0	3.3	30
1419	2.0	3.1	30
1502	2.0	3.6	25
<u>Middepth</u>			
0737	4.5	1.2	25
0817	4.0	0.7	30
0918	4.5	1.1	20
1018	4.6	1.9	25
1122	5.0	3.4	30
1224	5.0	2.9	30
1317	4.0	3.3	35
1417	4.6	3.1	25
1500	4.8	3.0	20
<u>Bottom</u>			
0735	8.0	0.2	30
0815	7.1	0.6	90
0916	7.7	1.2	50
1016	8.2	1.3	40
1120	9.0	2.9	30
1222	8.6	2.1	27
1315	6.8	3.2	20
1415	8.2	2.8	30
1458	8.6	3.2	27

\* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.



Table 37

Current Data Observed at Sta 2-B, 27 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0724	3.0	0.4	305
0804	3.0	0.7	310
0904	3.0	0.8	310
1005	3.0	1.2	300
1110	3.0	1.8	300
1208	3.0	1.0	300
1304	3.0	1.0	315
1404	3.0	1.4	300
1508	3.0	1.2	310
<u>Middepth</u>			
0722	18.2	0.3	275
0802	18.9	0.6	295
0902	17.3	0.9	305
1003	18.0	1.0	285
1108	10.5	1.0	300
1206	8.5	0.9	320
1302	8.5	1.0	300
1402	10.5	0.8	280
1506	9.5	1.0	290
<u>Bottom†</u>			
0719	35.3	0.0	0
0800	36.9	0.1	175
0900	34.5	0.3	300
1001	35.0	0.1	205
1106	19.8	1.2	300
1204	16.0	0.1	280
1300	16.0	0.3	300
1400	20.0	0.6	280
1504	18.0	0.4	290

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 38  
Current Data Observed at Sta 2-C, 27 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0730	3.0	0.8	335
0811	3.0	0.7	325
0912	3.0	1.2	10
1011	3.0	1.1	300
1114	3.0	2.1	300
1216	3.0	2.3	305
1312	3.0	2.5	305
1412	3.0	2.7	305
1515	3.0	2.4	310
<u>Middepth</u>			
0728	13.7	0.3	320
0809	15.1	0.6	330
0910	11.8	0.9	305
1009	11.5	0.7	290
1113	18.5	1.7	305
1214	18.5	1.9	310
1310	18.5	2.4	305
1410	18.6	2.4	310
1513	18.6	2.5	310
<u>Bottom†</u>			
0726	27.4	0.0	0
0807	29.2	0.0	0
0908	22.6	0.2	320
1007	22.1	0.6	325
1111	36.1	0.8	310
1212	36.0	0.9	310
1308	36.0	0.9	290
1408	36.6	1.2	270
1511	36.5	1.4	280

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- \* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 39

Current Data Observed at Sta 3-A, 27 November 1988

<u>Hour</u> <u>GST</u>	<u>Depth</u> <u>ft</u>	<u>Speed</u> <u>fps</u>	<u>Direction</u> <u>deg*</u>
<u>Surface**</u>			
0716	3.0	1.2	214
0802	3.0	1.7	230
0902	3.0	2.0	214
1455	3.0	3.1	26
<u>Middepth</u>			
0715	13.8	1.6	240
0801	13.9	1.5	234
0901	11.9	1.7	208
1001	10.2	1.4	250
1454	12.7	3.2	50
<u>Bottom†</u>			
0714	25.6	1.4	240
0800	25.8	1.3	240
0900	21.8	1.7	250
1000	18.4	1.1	250
1453	23.4	2.2	60

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 40

Current Data Observed at Sta 3-B, 27 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0727	3.0	1.4	236
0808	3.0	1.8	236
0908	3.0	1.8	240
1502	3.0	3.2	30
<u>Middepth</u>			
0726	9.5	1.5	242
0807	9.1	1.6	236
0907	9.2	1.6	242
1501	8.2	3.0	40
<u>Bottom†</u>			
0725	17.0	1.0	240
0806	16.2	1.3	240
0906	16.4	1.1	226
1500	14.4	1.9	52

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 41

Current Data Observed at Sta 3-C, 27 November 1988

<u>Hour</u> <u>GST</u>	<u>Depth</u> <u>ft</u>	<u>Speed</u> <u>fps</u>	<u>Direction</u> <u>deg*</u>
<u>Surface**</u>			
0743	3.0	0.5	118
0823	3.0	0.6	60
0916	3.0	0.2	260
1047	3.0	2.2	324
1132	3.0	2.2	326
1232	3.0	2.6	330
1332	3.0	2.9	326
1434	3.0	2.7	330
1517	3.0	2.6	310
<u>Middepth</u>			
0742	20.3	0.6	100
0822	20.2	1.0	78
0915	20.1	0.5	116
1046	18.3	0.7	346
1131	18.0	1.0	334
1231	18.4	1.4	330
1331	18.7	2.0	320
1433	18.3	2.1	322
1516	18.7	2.2	310
<u>Bottom†</u>			
0741	38.6	0.3	112
0820	38.4	0.3	110
0914	38.2	0.3	128
1045	34.6	0.1	22
1130	34.0	0.1	330
1230	34.8	0.7	312
1330	35.4	0.3	20
1430	34.6	0.3	342
1515	35.4	0.1	312

\* Direction from true north from which the current is flowing.

\*\* Surface measurement obtained at 3.0 ft below top of water surface.

† Bottom measurement obtained at 2.0 ft above actual bottom.

Table 42  
Current Data Observed at Sta 3-D, 27 November 1988

<u>Hour CST</u>	<u>Depth ft</u>	<u>Speed fps</u>	<u>Direction deg*</u>
<u>Surface**</u>			
0750	3.0	0.7	110
0829	3.0	0.4	90
0923	3.0	0.1	70
1056	3.0	1.9	328
1140	3.0	2.3	328
1237	3.0	2.6	322
1344	3.0	2.9	324
1444	3.0	2.8	310
1525	3.0	2.6	314
<u>Middepth</u>			
0749	17.5	0.7	96
0828	18.7	0.6	80
0923	17.3	0.1	134
1055	17.7	0.9	334
1139	20.1	0.7	338
1236	20.2	1.5	320
1343	20.3	1.8	322
1443	20.3	1.9	304
1524	20.6	1.7	306
<u>Bottom†</u>			
0748	33.0	0.5	94
0827	35.4	0.2	58
0922	32.6	0.2	130
1054	33.4	0.2	32
1138	38.2	0.2	342
1235	38.4	0.3	324
1342	38.6	0.3	44
1440	38.6	0.1	40
1523	39.2	0.6	324

- \* Direction from true north from which the current is flowing.  
 \*\* Surface measurement obtained at 3.0 ft below top of water surface.  
 † Bottom measurement obtained at 2.0 ft above actual bottom.

Table 43

Salinity Data Observed at Range 1, 26 October 1988

Hour CST	Sta No.	Salinity, ppt		
		Surface	Middepth	Bottom
731	A	-	-	26.8
742	C	-	-	26.5
803	A	20.6	22.1	26.9
811	B	20.6	22.2	26.8
818	C	21.5	21.8	26.5
835	X	20.1	-	-
847	A	20.9	22.4	26.4
853	B	20.6	22.6	26.8
859	C	20.8	21.2	25.8
904	X	21.4	-	-
917	A	20.9	22.0	26.1
925	B	20.9	22.4	26.4
931	C	20.4	21.2	26.1
939	X	21.4	-	-
948	A	20.9	21.6	26.1
1001	B	21.0	22.7	26.2
1010	C	20.8	21.1	25.8
1019	X	21.4	-	-
1028	A	20.7	21.1	25.4
1035	B	20.8	21.9	26.0
1043	C	20.7	20.9	24.4
1102	A	20.7	20.8	25.2
1108	B	20.6	21.2	25.6
1114	C	20.5	21.4	25.6
1202	A	20.2	20.9	24.8
1210	B	20.1	22.3	25.4
1216	C	20.3	20.4	24.9
1303	A	19.8	20.6	24.9
1308	B	19.7	22.1	25.2
1318	C	19.8	20.7	25.0
1401	A	19.6	22.2	24.9
1407	B	19.6	23.8	25.4
1413	C	19.7	23.8	25.2
1502	A	20.0	19.7	20.1
1510	B	19.1	21.7	25.3
1516	C	19.2	20.0	24.9
1557	A	19.4	19.7	-
1605	B	19.4	24.1	25.4
1611	C	19.5	21.6	25.2
1740	C	-	-	26.5

Note: - = no sample.

Table 44

Salinity Data Observed at Range 2, 26 October 1988

Hour GST	Sta No.	Salinity, ppt		
		Surface	Middepth	Bottom
717	B	15.6	21.2	27.4
725	C	16.7	27.4	27.4
734	A	10.2	10.2	10.2
759	B	15.6	20.0	27.4
808	C	16.3	23.1	27.3
816	A	10.2	10.2	10.3
831	B	15.5	20.6	10.2
837	C	16.4	27.4	27.4
845	A	10.2	10.0	16.1
854	X	9.8	-	-
901	B	16.1	25.4	26.5
906	C	14.9	21.3	26.6
915	A	10.3	10.1	10.1
922	X	9.7	-	-
932	B	14.0	20.6	26.0
938	C	14.8	25.7	20.9
946	A	10.5	10.1	10.1
953	X	9.8	-	-
1003	B	14.1	20.1	25.6
1014	C	15.8	19.6	26.1
1022	A	10.4	10.4	10.2
1101	B	14.3	20.8	25.9
1108	C	15.5	18.2	25.7
1115	A	10.9	10.2	10.2
1202	B	13.9	19.4	25.3
1210	C	15.7	18.6	25.9
1217	A	10.2	10.7	10.1
1302	B	13.6	20.2	25.5
1311	C	15.6	19.8	25.8
1318	A	10.7	10.0	9.9
1403	B	13.0	17.4	25.3
1409	C	15.7	18.7	25.5
1417	A	10.6	9.9	9.8
1501	B	13.5	16.0	20.6
1507	C	15.8	17.7	24.7
1516	A	16.2	15.8	15.9
1531	B	14.9	16.0	23.1
1539	C	15.7	17.7	25.0
1548	A	16.4	15.9	15.2

Note: - = no sample



Table 45

Salinity Data Observed at Range 3, 26 October 1988

Hour CST	Sta No.	Salinity, ppt		
		Surface	Middepth	Bottom
705	A	No data	22.9	24.5
715	B	14.3	19.2	22.9
727	C	-	18.6	25.7
735	D	15.0	15.8	20.4
804	A	13.7	21.2	24.2
807	B	13.9	17.7	20.8
816	C	14.7	18.6	25.5
821	D	13.9	19.1	25.5
832	X	12.6	-	14.9
839	A	19.2	20.2	23.8
845	B	13.5	19.7	19.4
855	C	17.9	25.6	25.9
859	D	13.9	16.2	16.8
909	X	12.0	-	15.5
916	A	11.5	19.1	24.4
921	B	11.4	14.4	18.4
929	C	13.6	19.2	25.6
935	D	14.0	24.1	25.7
944	X	12.2	-	11.9
951	A	11.8	16.0	19.0
956	B	11.9	12.9	14.3
1004	C	14.2	18.0	23.6
1009	D	13.8	21.8	25.7
1016	A	11.0	12.9	19.1
1023	B	11.0	11.0	13.7
1029	C	12.9	18.6	25.6
1036	D	13.4	21.0	25.4
1101	A	11.0	11.4	17.7
1106	B	10.6	10.7	11.2
1115	C	12.5	19.4	24.6
1120	D	12.7	19.2	24.7
1201	A	11.0	11.0	13.8
1207	B	10.8	10.8	11.4
1217	C	12.3	17.2	24.2
1223	D	12.3	20.1	25.0
1301	A	10.6	11.1	11.8
1307	B	11.2	11.9	12.0
1315	C	11.7	17.7	24.2
1322	D	12.3	23.5	24.8
1401	A	10.7	10.8	11.2

(Continued)

Note: - = no sample.

Table 45 (Concluded)

<u>Hour</u> <u>CST</u>	<u>Sta</u> <u>No.</u>	<u>Salinity, ppt</u>		
		<u>Surface</u>	<u>Middepth</u>	<u>Bottom</u>
1407	B	11.0	11.3	11.2
1416	C	11.8	23.6	23.6
1421	D	11.7	19.3	24.4
1501	A	11.1	12.7	22.4
1506	B	10.9	10.9	11.7
1514	C	12.0	18.7	23.7

Table 46

Salinity Data Observed at Range 1, 11 November 1988

<u>Hour CST</u>	<u>Sta No.</u>	<u>Salinity, ppt</u>		
		<u>Surface</u>	<u>Middepth</u>	<u>Bottom</u>
732	A	24.2	25.7	29.2
742	B	24.7	27.6	29.9
752	C	24.7	25.6	29.2
808	A	24.8	25.3	28.8
817	B	24.7	26.6	29.2
825	C	24.8	25.1	28.7
903	A	24.8	26.3	28.7
913	B	24.7	26.5	28.8
921	C	24.9	25.4	28.3
1002	A	24.3	25.7	27.9
1011	B	24.6	26.5	28.3
1019	C	24.8	24.9	27.9
1102	A	24.5	25.1	27.9
1111	B	24.5	25.9	27.9
1119	C	24.7	24.8	27.3
1202	A	24.4	24.4	27.2
1208	B	24.3	24.8	27.5
1217	C	24.4	24.5	27.0
1305	A	24.1	24.1	24.3
1314	B	23.9	25.3	27.4
1323	C	23.0	24.2	27.0
1402	A	24.0	23.9	23.9
1410	B	23.8	24.8	27.3
1417	C	24.0	24.1	26.9
1503	A	24.0	23.9	24.2
1511	B	23.9	24.3	27.4
1520	C	24.1	24.3	26.8
1604	A	24.1	24.0	24.5
1616	B	24.0	24.8	27.4
1616	C	24.1	24.9	26.8

Table 47

Salinity Data Observed at Range 2, 11 November 1988

Hour GST	Sta No.	Salinity, ppt		
		Surface	Middepth	Bottom
724	B	20.1	22.5	24.2
732	C	21.5	24.4	24.5
742	A	11.8	11.3	15.5
802	B	14.6	21.5	23.7
812	C	18.6	24.0	24.3
822	A	11.9	11.4	11.5
902	B	15.2	20.9	23.6
908	C	17.4	22.4	24.0
922	A	12.0	11.6	11.5
1002	B	18.4	22.0	23.3
1010	C	15.9	22.9	23.8
1020	A	12.0	11.6	11.6
1102	B	17.7	22.0	23.4
1108	C	16.0	22.4	23.6
1123	A	12.0	11.6	11.6
1204	B	16.6	20.4	22.8
1212	C	22.7	22.7	23.5
1226	A	11.9	11.5	11.5
1302	B	16.5	20.8	22.6
1313	C	20.5	22.0	23.3
1322	A	11.9	11.6	12.5
1402	B	16.9	20.8	22.5
1414	C	16.8	20.5	23.1
1425	A	15.2	15.1	17.9
1502	B	16.9	20.5	22.8
1509	C	17.8	20.5	20.9
1517	A	17.8	19.4	18.8
1602	B	17.4	20.2	22.8
1612	C	17.7	20.5	23.0
1622	A	17.8	18.2	18.0

Table 48

Salinity Data Observed at Range 3, 11 November 1988

Hour CST	Sta No.	Salinity, ppt		
		Surface	Middepth	Bottom
705	A	11.8	19.3	23.2
711	B	11.9	11.6	13.1
728	C	12.7	23.0	23.4
736	D	13.5	22.9	23.5
801	A	11.9	11.9	23.0
807	B	11.8	11.4	11.5
816	C	13.3	22.0	23.3
825	D	14.3	22.7	23.3
903	A	11.7	11.5	22.7
907	B	12.0	11.6	11.8
915	C	13.2	22.8	23.3
921	D	13.2	22.6	23.3
948	A	11.4	11.7	20.0
952	B	11.9	11.6	11.6
959	C	12.6	22.6	23.2
1004	D	22.4	22.9	23.3
1021	A	11.3	11.3	22.4
1026	B	11.9	11.4	11.4
1035	C	12.3	22.6	23.1
1041	D	16.4	22.1	23.1
1102	A	11.7	11.4	22.5
1107	B	11.8	11.4	11.5
1115	C	13.5	22.5	23.1
1121	D	13.3	21.1	22.9
1201	A	11.7	11.5	22.2
1206	B	11.7	11.4	11.8
1216	C	12.9	21.8	23.0
1222	D	13.1	21.6	23.0
1301	A	11.8	11.5	20.9
1307	B	11.7	11.8	11.9
1316	C	12.9	20.7	22.7
1322	D	12.8	19.9	22.9
1401	A	11.8	11.6	20.9
1407	B	11.6	11.4	11.7
1416	C	12.6	20.4	22.4
1423	D	12.8	20.2	22.8
1501	A	11.9	11.6	21.4
1509	B	11.7	11.8	11.9
1520	C	12.4	19.4	22.3
1535	D	12.7	20.0	22.6

(Continued)

Table 48 (Concluded)

<u>Hour</u> <u>CST</u>	<u>Sta</u> <u>No.</u>	<u>Salinity, ppt</u>		
		<u>Surface</u>	<u>Middepth</u>	<u>Bottom</u>
1601	A	11.8	11.6	21.9
1606	B	11.6	12.1	12.3
1616	C	12.2	18.5	22.3
1623	D	12.9	19.8	22.6

Table 49

Salinity Data Observed at Range 1, 27 November 1988

Hour GST	Sta No.	Salinity, ppt		
		Surface	Middepth	Bottom
743	A	21.3	21.7	23.3
751	B	20.3	22.5	25.9
757	C	20.8	22.4	25.5
804	A	20.8	22.1	24.4
810	B	21.0	22.4	25.5
815	C	20.6	22.6	25.2
902	A	21.2	22.2	24.2
911	B	20.7	23.2	24.8
917	C	20.7	22.8	24.4
1002	A	21.3	22.1	23.4
1007	B	21.1	22.7	23.9
1015	C	20.7	22.3	23.6
1102	A	21.3	21.9	23.4
1111	B	21.1	22.4	23.3
1117	C	20.9	22.4	23.2
1204	A	21.4	21.3	22.4
1209	B	21.3	22.3	22.9
1215	C	21.3	22.0	22.9
1303	A	21.4	21.3	22.2
1308	B	21.1	21.9	22.6
1314	C	21.2	21.8	22.6
1401	A	21.0	21.3	21.3
1405	B	20.9	21.2	22.3
1410	C	20.7	21.2	22.3
1502	A	20.4	20.4	20.5
1511	B	20.2	20.6	21.6
1519	C	20.3	20.5	21.8

Table 50

Salinity Data Observed at Range 2, 27 November 1988

Hour GST	Sta No.	Salinity, ppt		
		Surface	Middepth	Bottom
722	B	19.8	21.2	21.5
728	C	17.8	20.9	21.4
737	A	13.8	14.0	17.8
802	B	18.7	21.1	21.4
809	C	17.5	21.0	21.4
817	A	13.3	13.6	18.8
902	B	19.3	22.6	21.3
910	C	17.0	20.6	21.3
918	A	13.4	13.1	14.9
1003	B	18.8	20.5	21.1
1009	C	17.3	19.8	20.8
1003	A	13.5	13.2	13.2
1108	B	16.6	19.6	20.0
1113	C	17.8	20.1	20.8
1122	A	13.4	13.2	13.2
1206	B	16.6	18.1	19.4
1214	C	17.8	19.4	20.6
1224	A	13.5	13.2	13.1
1302	B	16.7	17.5	19.7
1310	C	17.9	19.1	20.4
1317	A	13.2	12.9	12.9
1402	B	16.5	17.4	18.9
1410	C	17.3	18.7	19.9
1417	A	13.3	13.0	13.0
1500	A	13.3	13.1	13.0
1506	B	16.3	17.3	17.2
1513	C	17.4	18.2	19.5



Table 51

Salinity Data Observed at Range 3, 27 November 1988

Hour CST	Sta No.	Salinity, ppt		
		Surface	Middepth	Bottom
715	A	-	-	17.3
801	A	16.1	17.3	17.5
807	B	15.7	15.9	17.5
822	C	16.9	17.8	17.9
828	D	16.7	17.9	18.0
901	A	15.8	16.6	17.6
907	B	15.6	15.9	17.5
915	C	16.8	17.7	18.0
923	D	15.9	17.9	18.0
1001	A	-	16.2	17.6
1046	C	14.0	16.7	17.8
1055	D	14.1	16.1	17.9
1131	C	13.6	16.5	17.8
1139	D	13.6	17.0	18.0
1231	C	13.6	15.6	17.5
1236	D	13.6	15.6	17.7
1331	C	13.5	14.1	17.0
1343	D	13.3	14.3	17.3
1433	C	13.1	13.5	15.5
1443	D	13.0	13.6	17.1
1454	A	12.6	13.6	15.3
1501	B	12.6	13.8	15.7
1516	C	12.8	13.2	13.5
1524	D	12.5	13.4	13.7

Note: - = no sample.

Table 52

Automatic Sampler Salinity Data for 26 October 1988

<u>Hour</u> <u>CST</u>	<u>Salinity, ppt</u>	
	<u>AWS-2</u>	<u>AWS-1</u>
0700	15.0	10.2
0730	13.5	10.0
0800	12.9	10.0
0830	13.4	10.0
0900	13.5	10.0
0930	13.0	9.9
1000	11.6	9.9
1030	11.2	9.9
1100	11.3	9.9
1130	11.4	9.9
1200	11.4	9.9
1230	11.4	9.8
1300	11.4	9.8
1330	11.3	9.8
1400	11.2	9.8
1430	11.1	9.7
1500	11.0	9.7
1530	11.0	9.7
1600	11.0	10.0
1630	11.1	12.6
1700	11.1	14.1
1730	11.1	14.5
1800	11.1	14.8
1830	11.1	15.9

Table 53

Automatic Sampler Salinity Data28 October-9 November 1988

<u>Hour</u> <u>CST</u>	<u>Salinity, ppt</u>	
	<u>AWS-2</u>	<u>AWS-1</u>
10/28	10.7	13.2
10/29	12.8	12.8
10/29	10.7	12.3
10/30	11.6	10.6
10/30	10.5	11.0
10/31	10.7	11.6
10/31	10.2	10.5
11/01	10.9	11.2
11/01	10.4	10.3
11/02	10.2	9.6
11/02	10.7	9.5
11/03	11.1	9.6
11/03	12.2	11.6
11/04	13.3	11.7
11/04	14.0	13.9
11/05	15.3	18.1
11/05	15.7	11.6
11/06	16.6	12.7
11/06	15.2	11.6
11/07	17.1	16.1
11/07	20.0	15.7
11/08	21.5	18.3
11/08	22.5	14.6
11/09	19.0	14.2

Table 54

Automatic Sampler Salinity Data for 11 November 1988

Hour <u>CST</u>	<u>Salinity, ppt</u>	
	<u>AWS-2</u>	<u>AWS-1</u>
0700	11.9	12.2
0730	11.8	11.9
0800	11.7	11.9
0830	11.6	11.8
0900	11.5	11.7
0930	11.4	11.6
1000	11.4	11.5
1030	11.3	11.5
1100	11.3	11.5
1130	11.3	11.4
1200	11.4	11.3
1230	11.4	11.3
1300	11.4	11.4
1330	11.4	11.4
1400	11.4	11.5
1430	11.4	11.7
1500	11.4	11.5
1530	11.4	11.6
1600	11.4	11.9
1630	11.5	12.8
1700	11.6	13.2
1730	11.5	15.5
1800	11.4	16.0
1830	11.4	15.5

Table 55  
Automatic Sampler Salinity Data for  
13-25 November 1988

Hour <u>GST</u>	Salinity, ppt	
	<u>AWS-2</u>	<u>AWS-1*</u>
11/13	16.2	
11/14	14.4	
11/14	11.4	
11/15	12.3	
11/15	12.0	
11/16	13.0	
11/16	14.4	
11/17	13.9	
11/17	12.4	
11/18	12.1	
11/18	12.7	
11/19	12.1	
11/19	11.8	
11/20	12.3	
11/20	13.7	
11/21	13.3	
11/21	12.7	
11/22	11.7	
11/22	11.2	
11/23	10.6	
11/23	11.2	
11/24	10.6	
11/24	11.0	
11/25	10.9	

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\* No samples available due to instrument malfunction.

Table 56

Automatic Sampler Salinity Data for 27 November 1988

Hour <u>CST</u>	<u>Salinity, ppt</u>	
	<u>AWS-2</u>	<u>AWS-1</u>
0700	13.8	13.5
0730	15.3	12.9
0800	15.7	12.7
0830	15.6	12.7
0900	16.2	12.9
0930	16.2	13.1
1000	16.1	13.1
1030	16.1	13.2
1100	15.8	13.2
1130	15.3	13.1
1200	15.0	13.1
1230	14.5	12.7
1300	14.1	12.6
1330	14.5	12.5
1400	14.8	12.5
1430	14.6	12.5
1500	14.7	12.5
1530	14.2	12.4
1600	13.3	12.4
1630	12.6	12.4
1700	12.1	12.4
1730	11.8	12.4
1800	11.6	12.4
1830	11.6	12.4

Table 57

Suspended Sediment Concentration Data Observed at  
Range 1, 26 October 1988

Hour CST	Sta No.	Concentration, mg/l		
		Surface	Middepth	Bottom
731	A	13	68	314
742	C	17	36	192
803	A	20	55	348
811	B	15	14	636
818	C	13	34	476
835	X	17	-	-
847	A	16	29	252
853	B	9	16	672
859	C	24	36	2160
904	X	25	-	-
917	A	13	30	242
925	B	13	18	712
931	C	30	31	191
939	X	24	-	-
948	A	19	30	352
1001	B	20	24	344
1010	C	22	21	544
1019	X	19	-	-
1028	A	15	35	196
1035	B	14	22	240
1043	C	18	23	95
1102	A	16	29	132
1108	B	13	19	182
1114	C	13	26	148
1202	A	14	22	103
1210	B	15	16	115
1216	C	17	27	224
1303	A	23	19	37
1308	B	11	19	49
1318	C	12	13	22
1401	A	10	15	28
1407	B	12	16	30
1413	C	11	18	38
1502	A	15	14	17
1510	B	9	14	27
1516	C	12	16	29
1557	A	17	14	-
1605	B	11	17	99
1611	C	10	16	18
1740	C	-	-	-

Note: - = No sample taken.

Table 58  
Suspended Sediment Concentration Data Observed at  
Range 2, 26 October 1988

Hour CST	Sta No.	Concentration, mg/l		
		Surface	Middepth	Bottom
717	B	8	9	73
725	C	7	38	56
734	A	14	11	21
759	B	10	10	58
808	C	7	13	46
816	A	15	19	41
831	B	11	13	16
837	C	9	27	176
845	A	13	15	10
854	X	6	-	-
901	B	11	81	219
906	C	11	33	81
915	A	11	16	18
922	X	5	-	-
932	B	7	9	80
938	C	8	9	206
946	A	13	11	17
953	X	5	-	-
1003	B	9	13	250
1014	C	10	12	76
1022	A	13	14	21
1101	B	8	16	194
1108	C	7	13	96
1115	A	21	15	25
1202	B	9	14	135
1210	C	7	16	60
1217	A	9	12	12
1302	B	7	16	137
1311	C	5	12	71
1318	A	10	10	11
1403	B	6	9	68
1409	C	7	8	37
1417	A	13	15	13
1501	B	6	9	18
1507	C	4	7	18
1516	A	10	9	8
1531	B	7	7	13
1539	C	4	5	55
1548	A	8	7	8

Note: - = No sample taken.



Table 59

Suspended Sediment Concentration Data Observed at  
Range 3, 26 October 1988

Hour CST	Sta No.	Concentration, mg/l		
		Surface	Middepth	Bottom
705	A	13	25	16
715	B	8	15	18
727	C	7	8	28
735	D	14	8	11
804	A	8	7	13
807	B	7	6	35
816	C	5	6	13
821	D	2	5	29
832	X	5	-	8
839	A	7	8	11
845	B	7	6	7
855	C	8	12	17
859	D	4	5	7
909	X	5	-	8
916	A	4	14	18
921	B	6	8	7
929	C	7	14	28
935	D	8	14	36
944	X	6	-	5
951	A	6	17	50
956	B	10	8	8
1004	C	11	11	24
1009	D	8	11	28
1016	A	5	7	32
1023	B	8	4	14
1029	C	6	10	25
1036	D	16	8	30
1101	A	4	6	27
1106	B	5	3	7
1115	C	6	11	28
1120	D	5	8	46
1201	A	3	4	12
1207	B	4	4	6
1217	C	6	7	38
1223	D	7	12	52
1301	A	5	4	10
1307	B	8	6	7
1315	C	4	9	41
1322	D	6	37	43

(Continued)

Note: - = No sample taken.

Table 59 (Concluded)

<u>Hour</u> <u>CST</u>	<u>Sta</u> <u>No.</u>	<u>Concentration, mg/l</u>		
		<u>Surface</u>	<u>Middepth</u>	<u>Bottom</u>
1401	A	5	4	10
1407	B	11	10	9
1416	C	8	29	35
1421	D	8	11	40
1501	A	5	9	35
1506	B	9	8	19
1514	C	5	11	30
1519	D	6	9	28
1533	A	5	21	25
1538	B	5	9	23
1547	C	8	27	24
1552	D	19	7	29

Table 60  
Suspended Sediment Concentration Data Observed at  
Range 1, 11 November 1988

<u>Hour</u> <u>CST</u>	<u>Sta</u> <u>No.</u>	<u>Concentration, mg/l</u>		
		<u>Surface</u>	<u>Middepth</u>	<u>Bottom</u>
732	A	25	12	80
742	B	13	24	515
752	C	12	48	238
808	A	15	25	24
817	B	11	16	455
825	C	15	12	186
903	A	29	129	194
913	B	26	11	380
921	C	12	23	196
1002	A	11	23	202
1011	B	5	24	250
1019	C	17	20	124
1102	A	13	17	222
1111	B	9	15	107
1119	C	15	17	86
1202	A	17	29	70
1208	B	15	17	46
1217	C	17	14	35
1305	A	13	15	20
1314	B	14	22	36
1323	C	13	15	27
1402	A	14	13	13
1410	B	12	16	26
1417	C	12	15	112
1503	A	12	14	17
1511	B	13	16	24
1520	C	16	17	24
1604	A	11	7	13
1616	B	12	22	15
1616	C	8	14	18

Table 61  
Suspended Sediment Concentration Data Observed at  
Range 2, 11 November 1988

<u>Hour</u> <u>CST</u>	<u>Sta</u> <u>No.</u>	<u>Concentration, mg/l</u>		
		<u>Surface</u>	<u>Middepth</u>	<u>Bottom</u>
724	B	21	19	43
732	C	19	38	40
742	A	72	76	79
802	B	25	18	55
812	C	14	31	88
822	A	86	91	93
902	B	27	23	72
908	C	23	19	74
922	A	90	88	90
1002	B	30	39	56
1010	C	29	31	188
1020	A	97	99	90
1102	B	19	35	110
1108	C	22	25	125
1123	A	62	66	64
1204	B	66	25	19
1212	C	48	17	168
1226	A	61	64	73
1302	B	16	19	62
1313	C	11	15	41
1322	A	26	32	65
1402	B	17	87	37
1414	C	12	14	19
1425	A	20	23	29
1502	B	13	14	49
1509	C	13	31	99
1517	A	15	17	12
1602	B	10	15	23
1612	C	11	13	33
1622	A	14	13	14

Table 62

Suspended Sediment Concentration Data Observed at  
Range 3, 11 November 1988

Hour CST	Sta No.	Concentration, mg/l		
		Surface	Middepth	Bottom
705	A	26	30	21
711	B	57	40	66
728	C	18	20	21
736	D	16	18	20
801	A	28	59	24
807	B	58	56	79
816	C	19	16	19
825	D	21	16	19
903	A	54	15	19
907	B	56	60	51
915	C	14	17	20
921	D	21	18	17
948	A	49	49	32
952	B	60	81	92
959	C	38	17	20
1004	D	16	18	34
1021	A	61	49	42
1026	B	61	90	106
1035	C	19	22	27
1041	D	23	19	20
1102	A	30	47	41
1107	B	57	74	101
1115	C	19	21	23
1121	D	23	32	36
1201	A	57	42	33
1206	B	50	59	72
1216	C	19	22	26
1222	D	20	25	42
1301	A	39	32	24
1307	B	50	47	62
1316	C	16	19	21
1322	D	19	15	23
1401	A	38	30	35
1407	B	62	37	65
1416	C	16	34	23
1423	D	15	17	112
1501	A	31	27	46
1509	B	61	36	58
1520	C	16	34	38
1535	D	14	12	18
1601	A	42	36	18
1606	B	53	31	29
1616	C	24	21	126
1623	D	14	13	17

Table 63  
Suspended Sediment Concentration Data Observed at  
Range 1, 27 November 1988

<u>Hour</u> <u>CST</u>	<u>Sta</u> <u>No.</u>	<u>Concentration, mg/l</u>		
		<u>Surface</u>	<u>Middepth</u>	<u>Bottom</u>
743	A	22	21	44
751	B	16	13	147
757	C	22	14	172
804	A	13	20	113
810	B	9	15	335
815	C	15	17	265
902	A	15	36	363
911	B	8	19	454
917	C	10	32	247
1002	A	20	33	216
1007	B	4	13	320
1015	C	10	32	72
1102	A	25	39	144
1111	B	12	40	308
1117	C	14	27	312
1204	A	48	78	148
1209	B	17	34	236
1215	C	20	34	228
1303	A	47	46	106
1308	B	22	38	262
1314	C	21	37	189
1401	A	31	52	58
1405	B	21	38	180
1410	C	43	24	167
1502	A	21	28	39
1511	B	17	30	68
1519	C	15	17	54

Table 64

Suspended Sediment Concentration Data Observed atRange 2, 27 November 1988

Hour GST	Sta No.	Concentration, mg/l		
		Surface	Middepth	Bottom
722	B	8	16	26
728	C	8	12	15
737	A	9	10	13
802	B	7	23	22
809	C	8	16	46
817	A	5	9	12
902	B	12	17	22
910	C	9	11	29
918	A	25	25	21
1003	B	16	45	126
1009	C	11	22	44
1003	A	21	12	16
1108	B	19	22	40
1113	C	21	72	138
1122	A	190	184	224
1206	B	50	104	450
1214	C	36	32	124
1224	A	120	214	224
1302	B	58	76	280
1310	C	60	70	101
1317	A	247	243	245
1402	B	110	122	155
1410	C	61	43	190
1417	A	204	197	200
1500	A	259	250	252
1506	B	75	172	210
1513	C	58	46	243

Table 65

Suspended Sediment Concentration Data Observed at  
Range 3, 27 November 1988

Hour CST	Sta No.	Concentration, mg/l		
		Surface	Middepth	Bottom
715	A	14	22	38
726	B	14	41	53
742	C	13	22	129
749	D	16	19	24
801	A	12	15	32
807	B	14	12	46
822	C	13	200	1630
828	D	13	30	438
901	A	38	43	100
907	B	25	31	156
915	C	14	38	71
923	D	49	40	156
1001	A	-	29	53
1046	C	20	44	87
1055	D	27	44	71
1131	C	24	40	69
1139	D	25	38	57
1231	C	24	34	54
1236	D	28	35	44
1331	C	54	99	127
1343	D	39	202	131
1433	C	43	84	107
1443	D	48	144	122
1454	A	82	63	88
1501	B	82	68	104
1516	C	33	77	223
1524	D	29	95	242



Table 66

Automatic Sampler Suspended Sediment ConcentrationData, 26 October 1988

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Hour CST	Suspended Sediment Concentration, mg/l	
	<u>AWS-2</u>	<u>AWS-1</u>
0700	8	8
0730	5	6
0800	8	8
0830	7	7
0900	7	9
0930	7	7
1000	5	8
1030	5	10
1100	4	9
1130	6	8
1200	6	10
1230	6	8
1300	5	11
1330	6	12
1400	8	16
1430	9	37
1500	10	63
1530	9	37
1600	7	52
1630	7	28
1700	8	22
1730	8	22
1800	8	40
1830	6	40

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Table 67

Automatic Sampler Suspended Sediment Concentration  
Data, 28 October-9 November 1988

<u>Date</u>	<u>Suspended Sediment</u> <u>Concentration, mg/l</u>	
	<u>AWS-2</u>	<u>AWS-1</u>
10/28	7	12
10/29	8	12
10/29	2	11
10/30	4	8
10/30	3	20
10/31	7	8
10/31	2	59
11/01	21	81
11/01	3	115
11/02	41	96
11/02	6	30
11/03	7	22
11/03	5	35
11/04	11	19
11/04	5	18
11/05	32	57
11/05	3	46
11/06	5	61
11/06	5	151
11/07	8	92
11/07	14	25
11/08	4	81
11/08	7	15
11/09	2	22

Table 68

Automatic Sampler Suspended Sediment ConcentrationData, 11 November 1988

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Hour CST	Suspended Sediment Concentration, mg/ℓ	
	<u>AWS-2</u>	<u>AWS-1</u>
0700	50	177
0730	51	150
0800	60	165
0830	54	171
0900	62	161
0930	77	186
1000	80	163
1030	71	154
1100	74	163
1130	75	139
1200	62	123
1230	66	133
1300	66	118
1330	57	107
1400	45	118
1430	57	119
1500	62	122
1530	62	108
1600	61	110
1630	62	80
1700	58	75
1730	64	83
1800	58	69
1830	55	69

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Table 69  
Automatic Sampler Suspended Sediment Concentration  
Data, 14-25 November 1988

<u>Date</u>	<u>Suspended Sediment Concentration, mg/l</u>	
	<u>AWS-2</u>	<u>AWS-1*</u>
11/13	7	
11/14	4	
11/14	14	
11/15	9	
11/15	25	
11/16	7	
11/16	20	
11/17	12	
11/17	61	
11/18	100	
11/18	111	
11/19	91	
11/19	44	
11/20	27	
11/20	45	
11/21	74	
11/21	211	
11/22	112	
11/22	140	
11/23	117	
11/23	59	
11/24	42	
11/24	33	
11/25	22	

\* No samples available due to instrument malfunction.

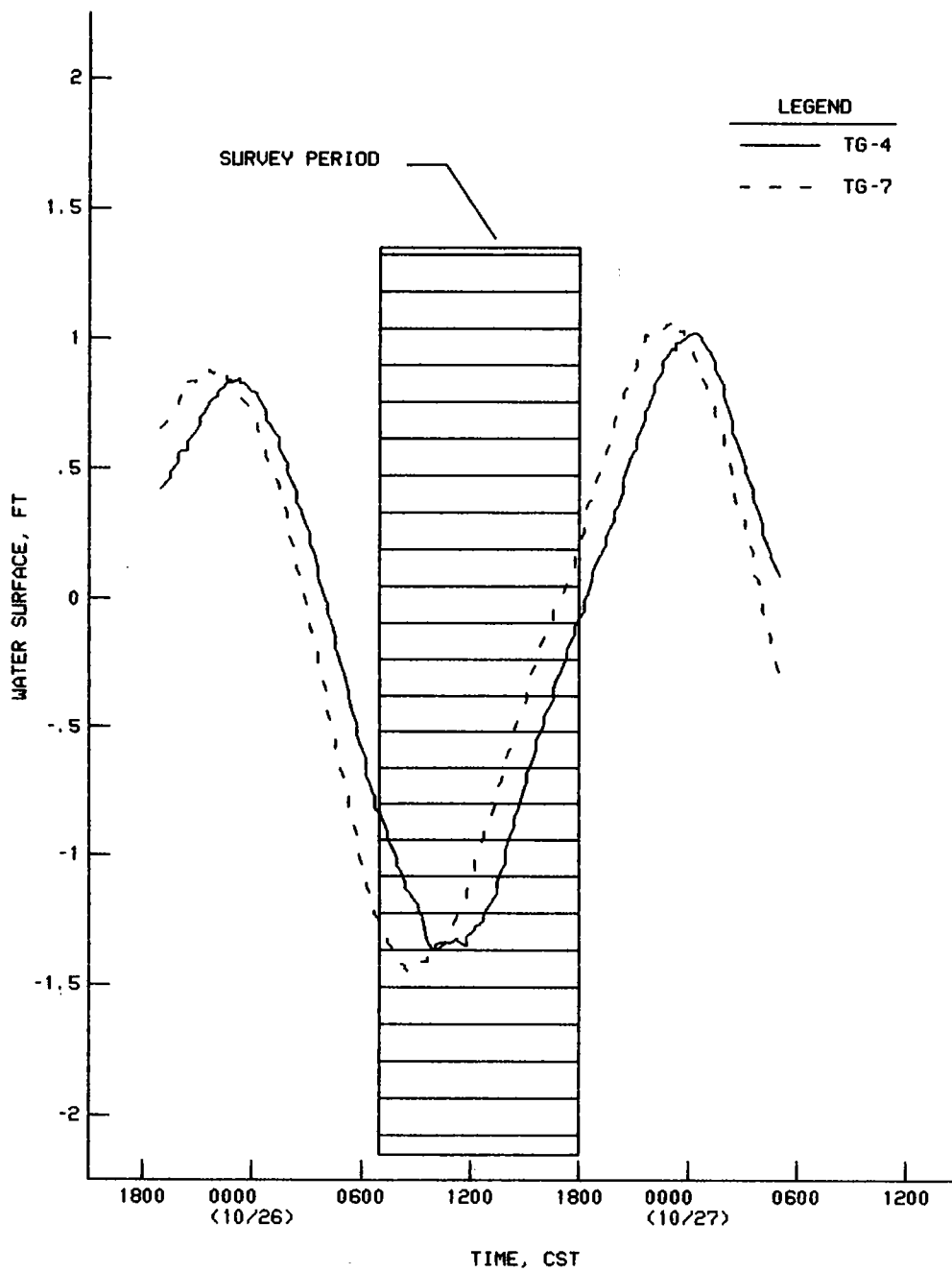
Table 70

Automatic Sampler Suspended Sediment ConcentrationData, 27 November 1988

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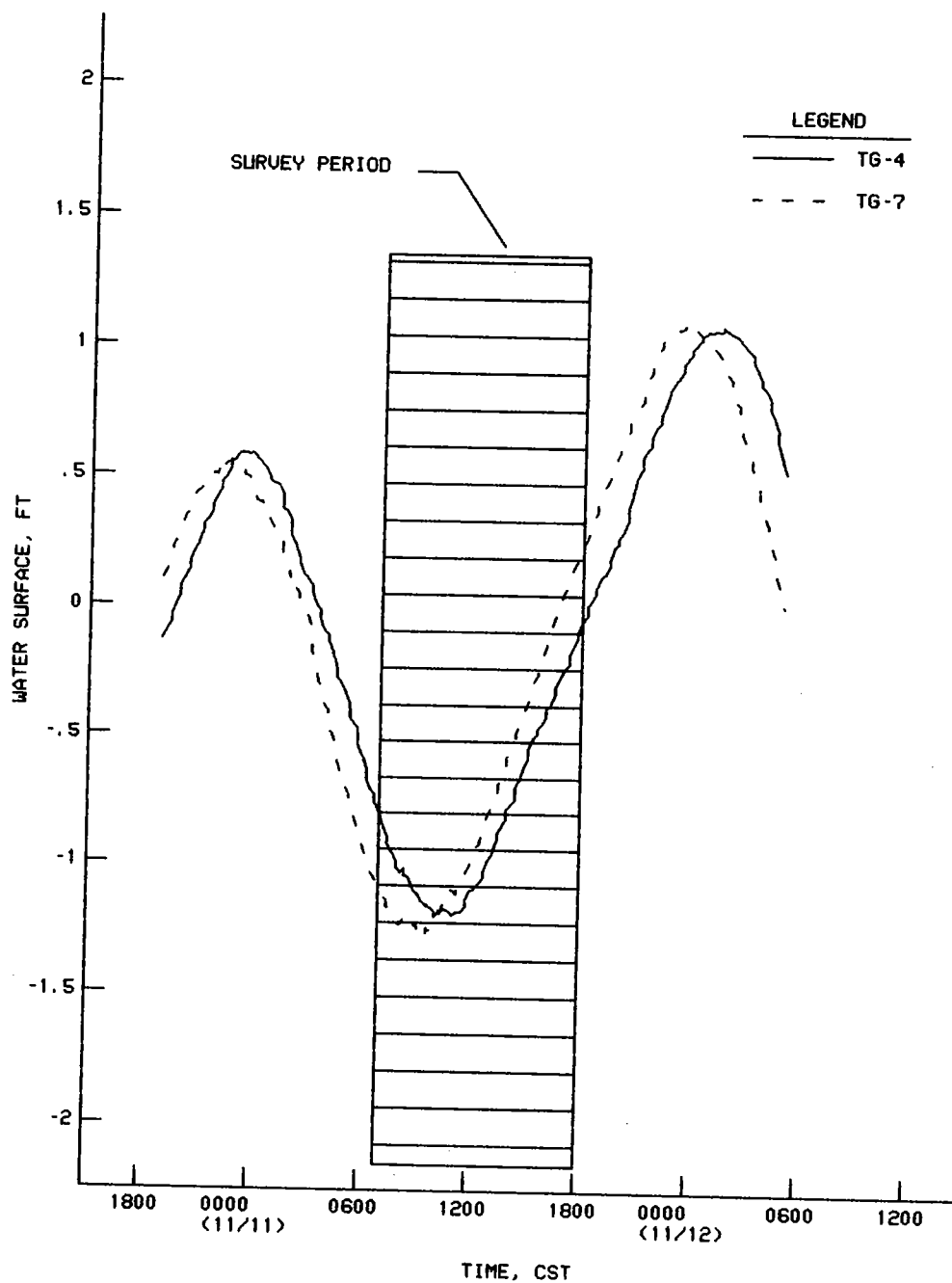
Hour CST	Suspended Sediment Concentration, mg/l	
	<u>AWS-2</u>	<u>AWS-1</u>
0700	4	34
0730	1	48
0800	1	52
0830	13	41
0900	24	73
0930	8	68
1000	22	44
1030	18	49
1100	151	53
1130	227	83
1200	202	78
1230	283	88
1300	233	81
1330	223	91
1400	190	106
1430	192	94
1500	230	88
1530	187	90
1600	232	81
1630	213	79
1700	213	80
1730	199	85
1800	193	66
1830	189	59

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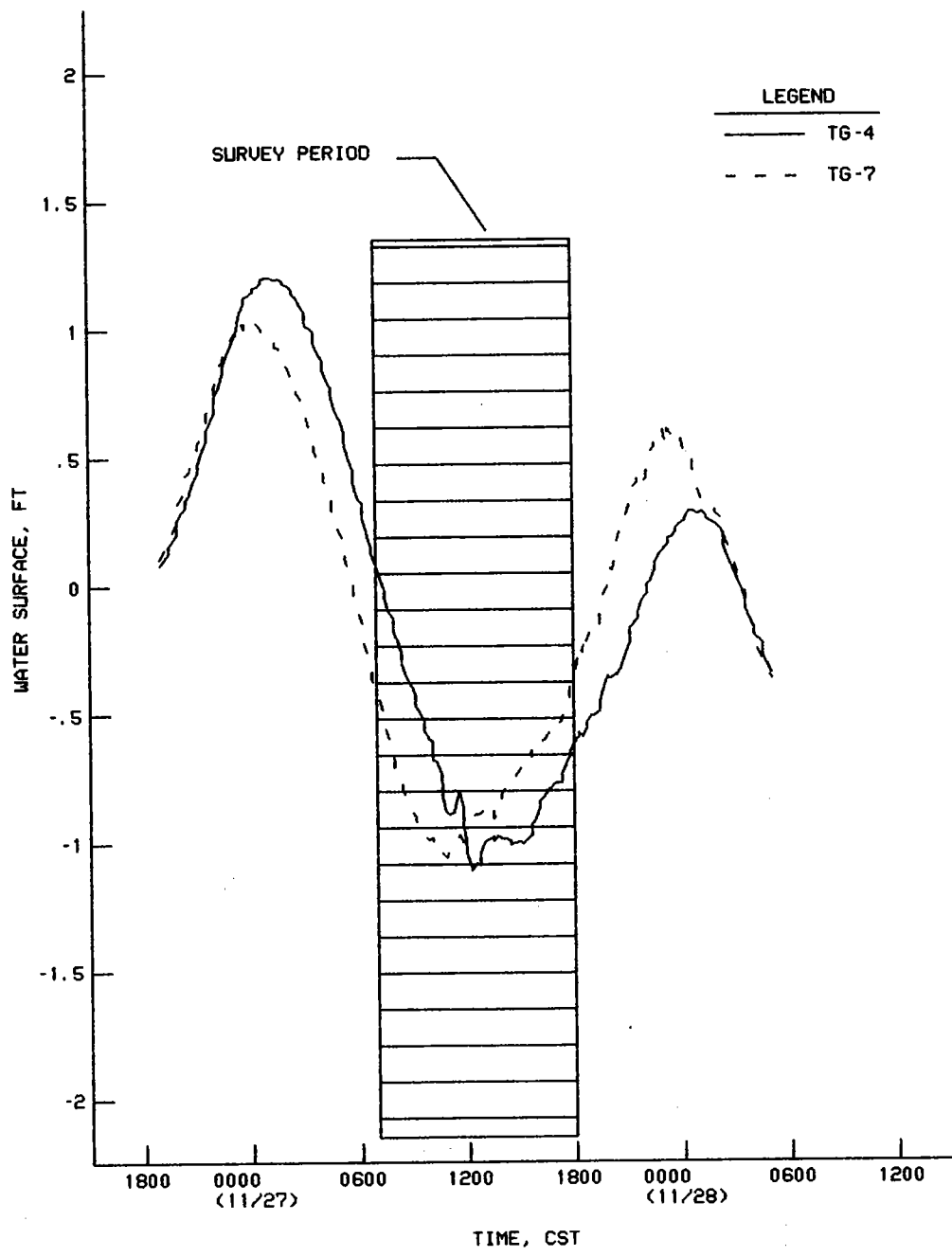
NOTE: MEAN WATER LEVEL READING USED AS DATUM

**WATER-SURFACE ELEVATIONS  
GAGES TG-4 AND TG-7  
25-27 OCTOBER 1988**



NOTE: MEAN WATER LEVEL READING USED AS DATUM

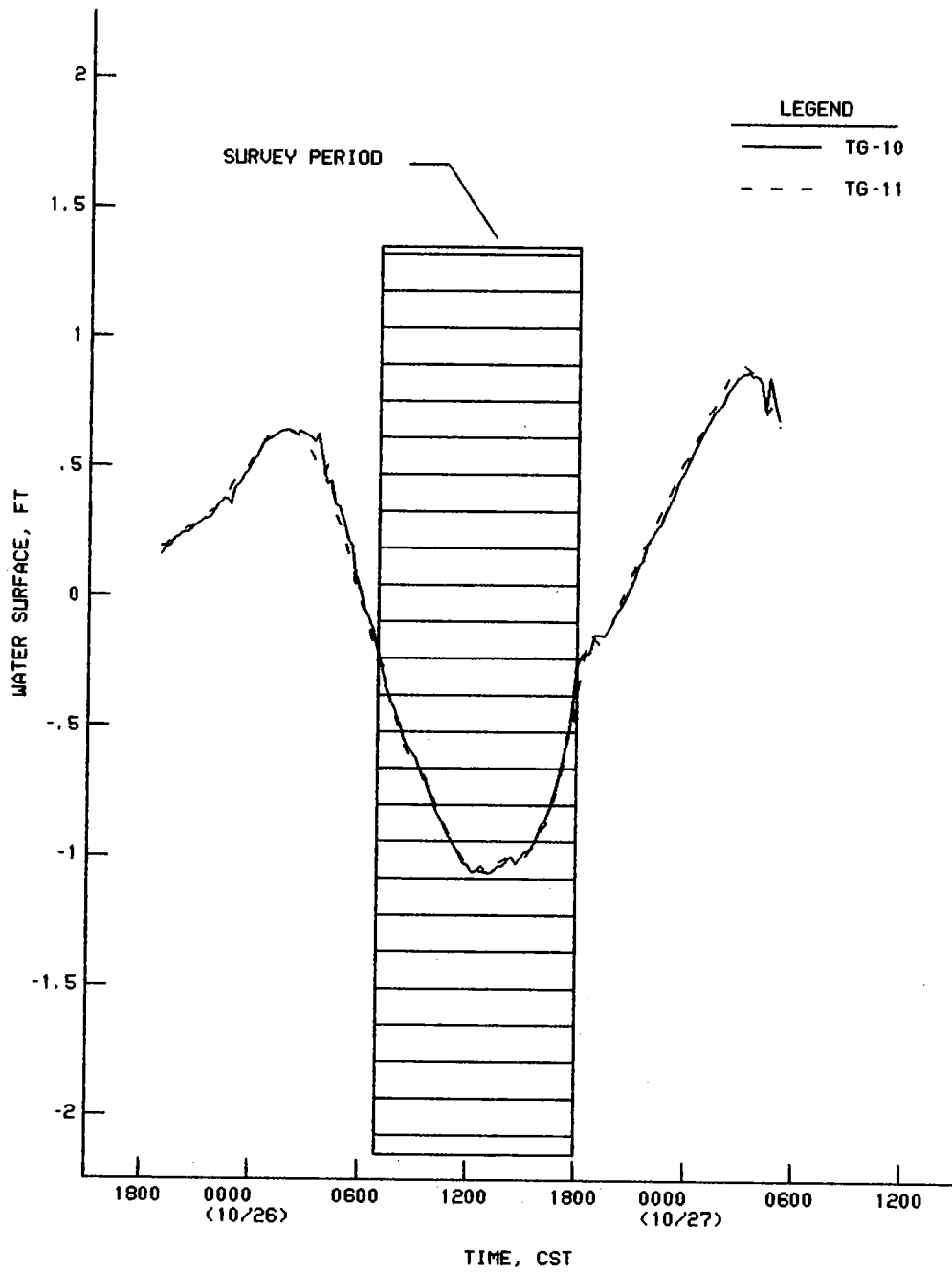
**WATER-SURFACE ELEVATIONS  
 GAGES TG-4 AND TG-7  
 10-12 NOVEMBER 1988**



NOTE: MEAN WATER LEVEL READING USED AS DATUM

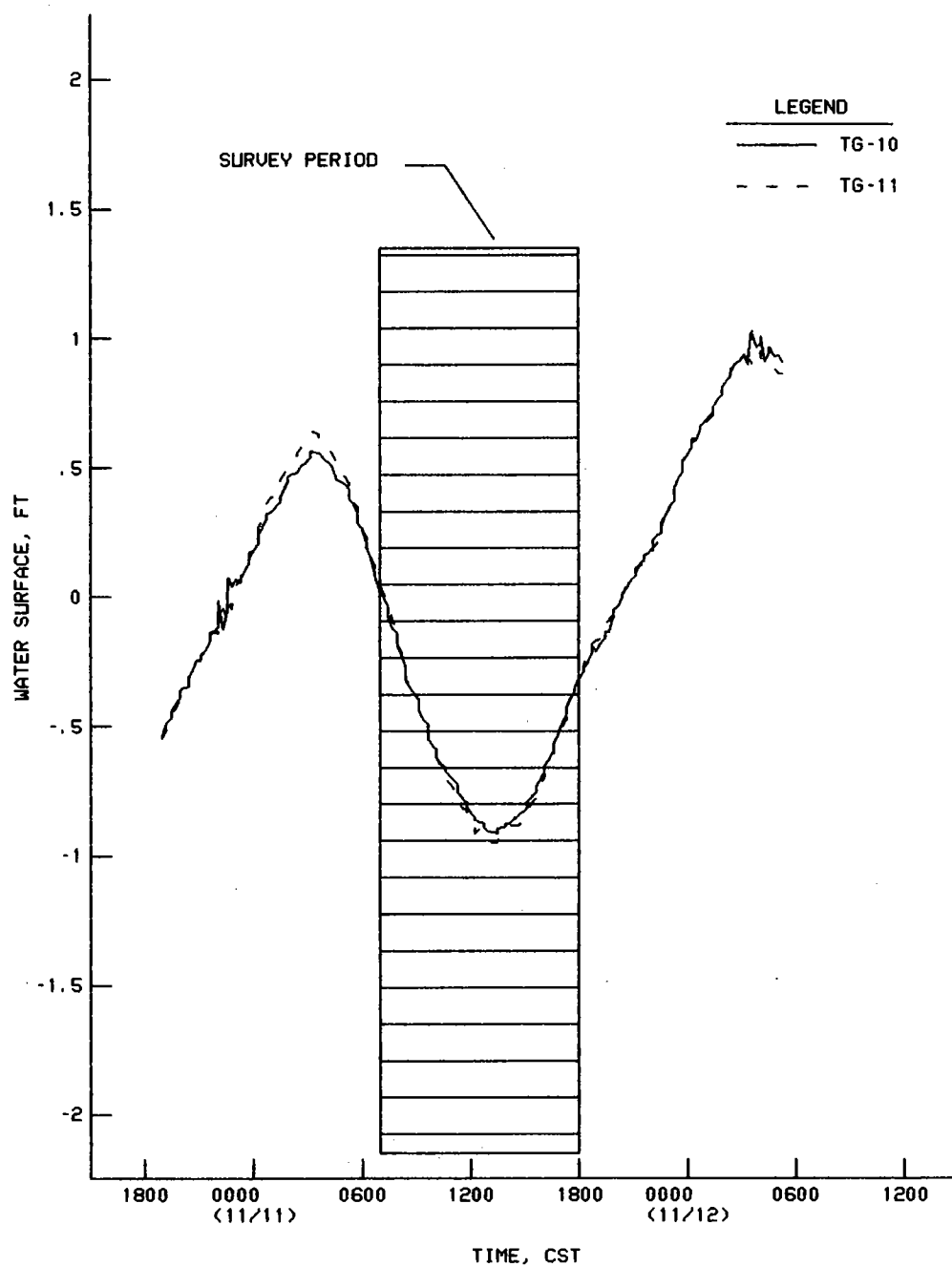
**WATER-SURFACE ELEVATIONS  
 GAGES TG-4 AND TG-7  
 26-28 NOVEMBER 1988**





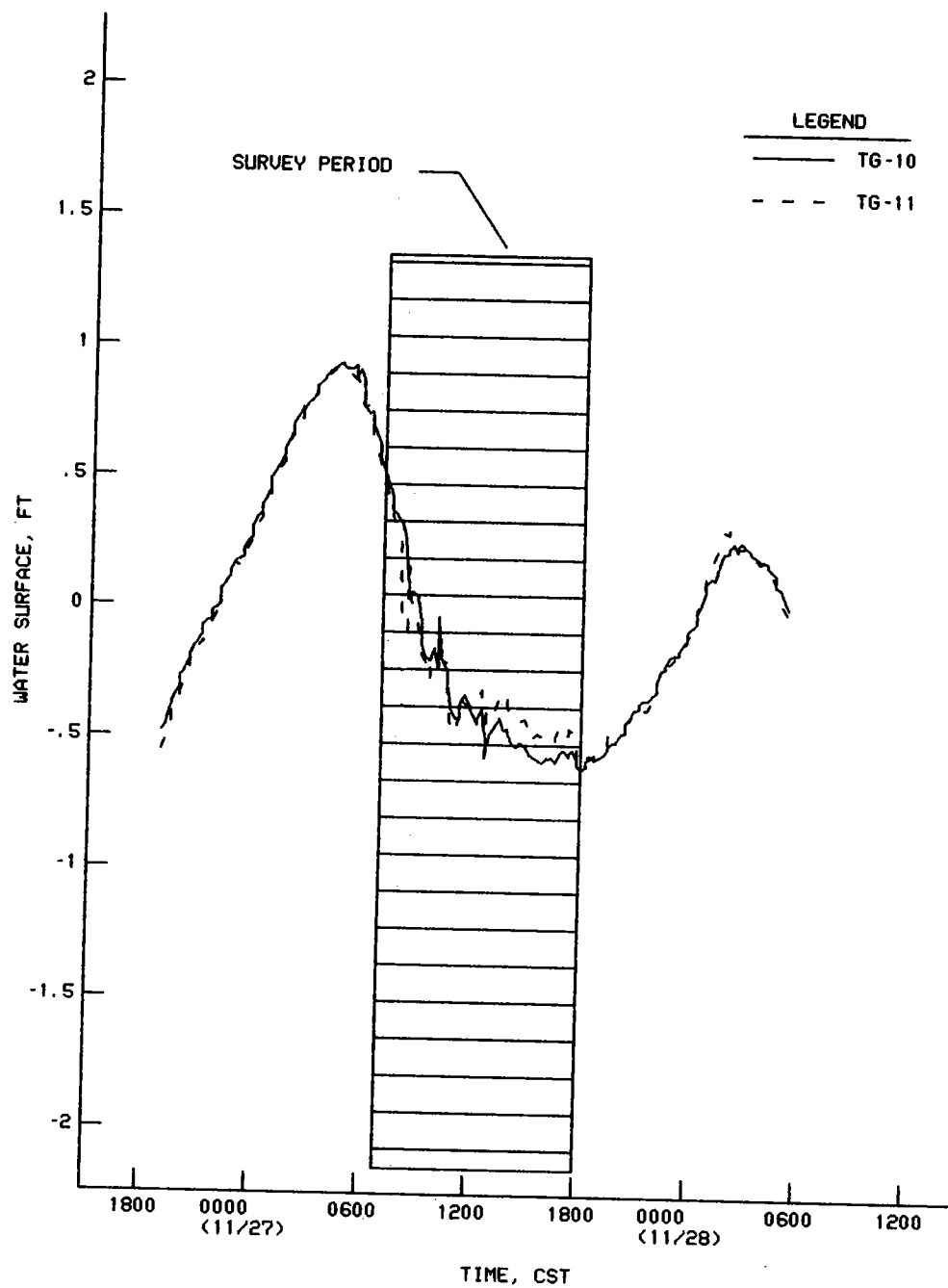
NOTE: MEAN WATER LEVEL READING USED AS DATUM

**WATER-SURFACE ELEVATIONS  
 GAGES TG-10 AND TG-11  
 25-27 OCTOBER 1988**



NOTE: MEAN WATER LEVEL READING USED AS DATUM

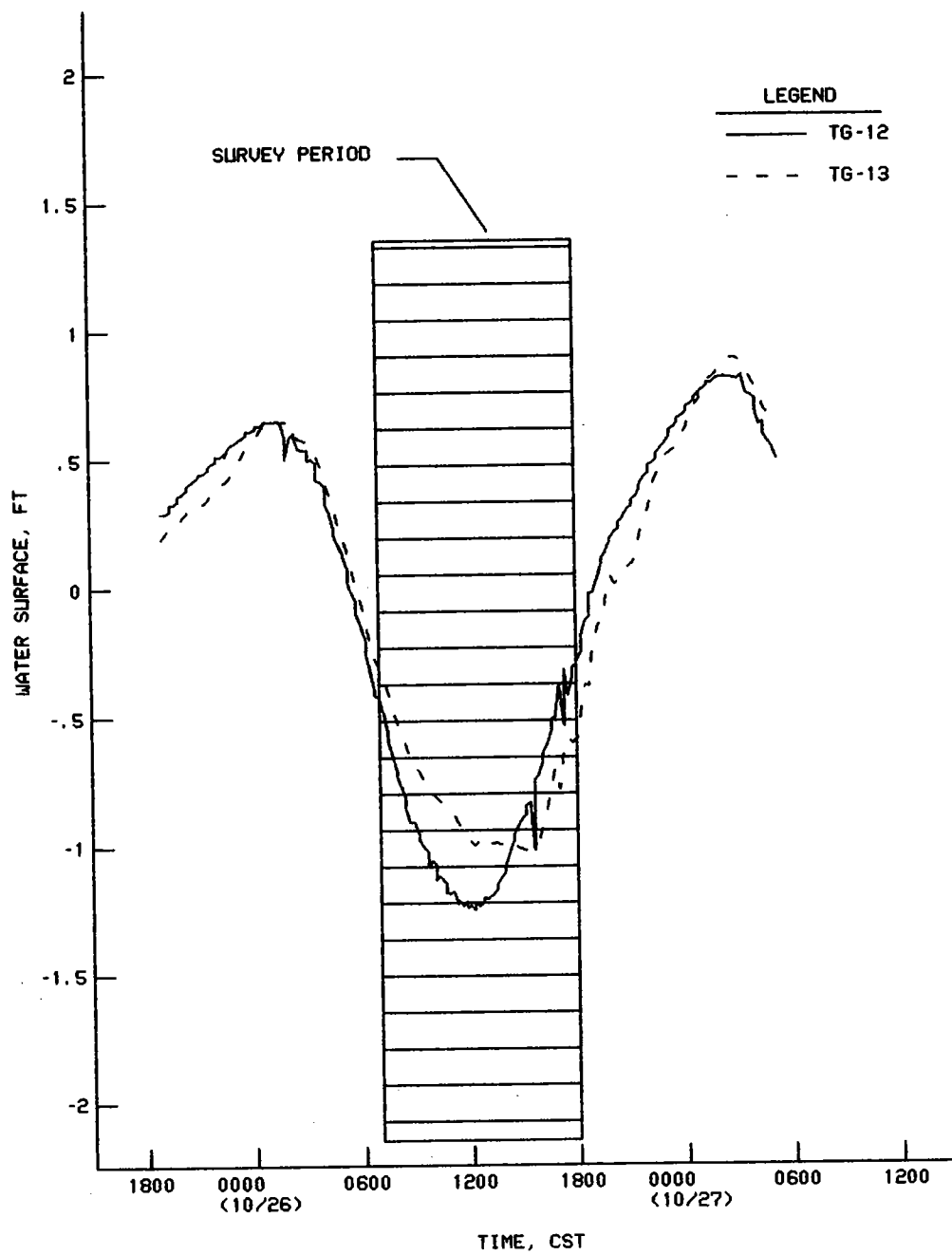
**WATER-SURFACE ELEVATIONS  
 GAGES TG-10 AND TG-11  
 10-12 NOVEMBER 1988**



NOTE: MEAN WATER LEVEL READING USED AS DATUM

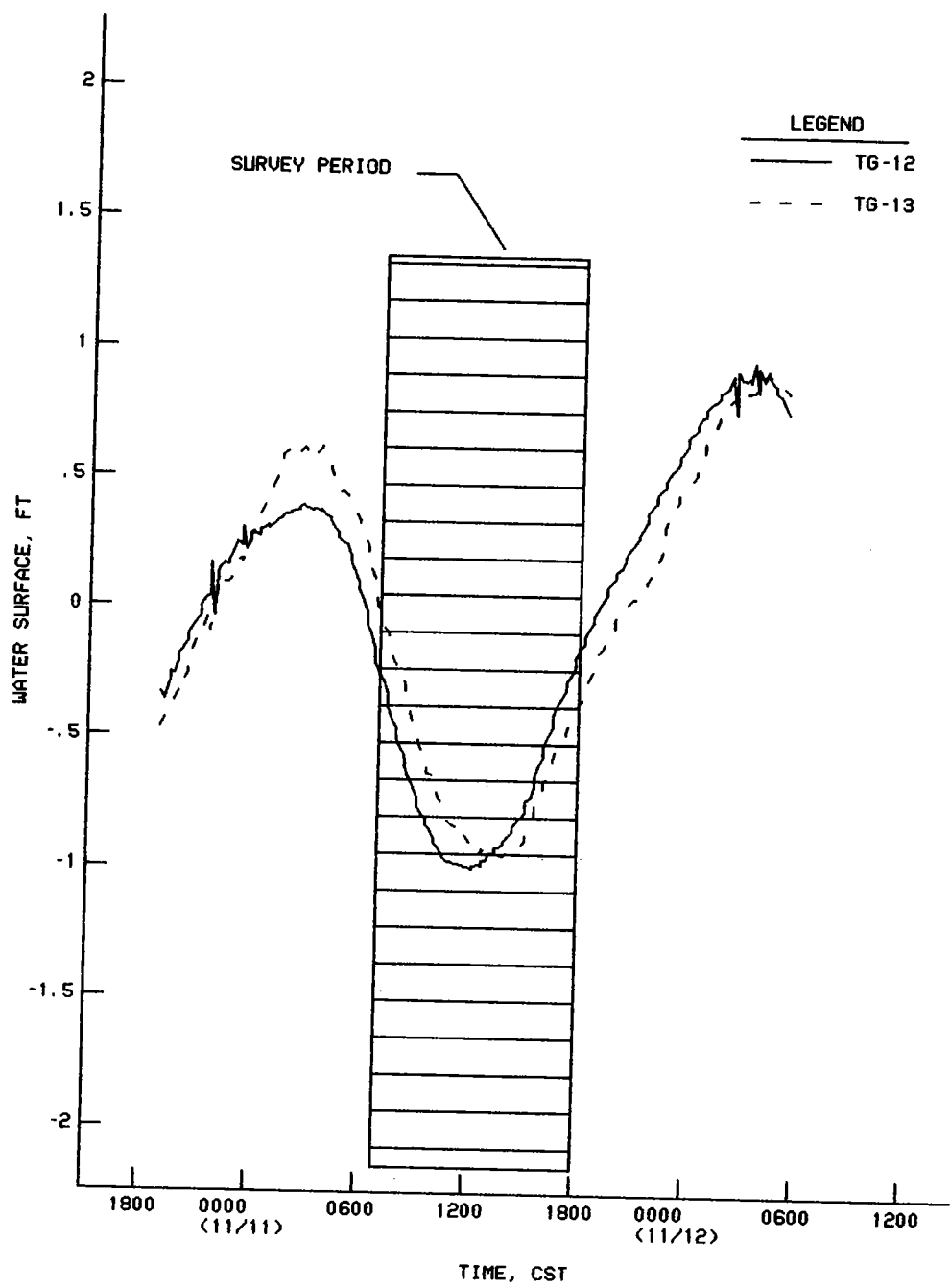
**WATER-SURFACE ELEVATIONS  
 GAGES TG-10 AND TG-11**

**26-28 NOVEMBER 1988**



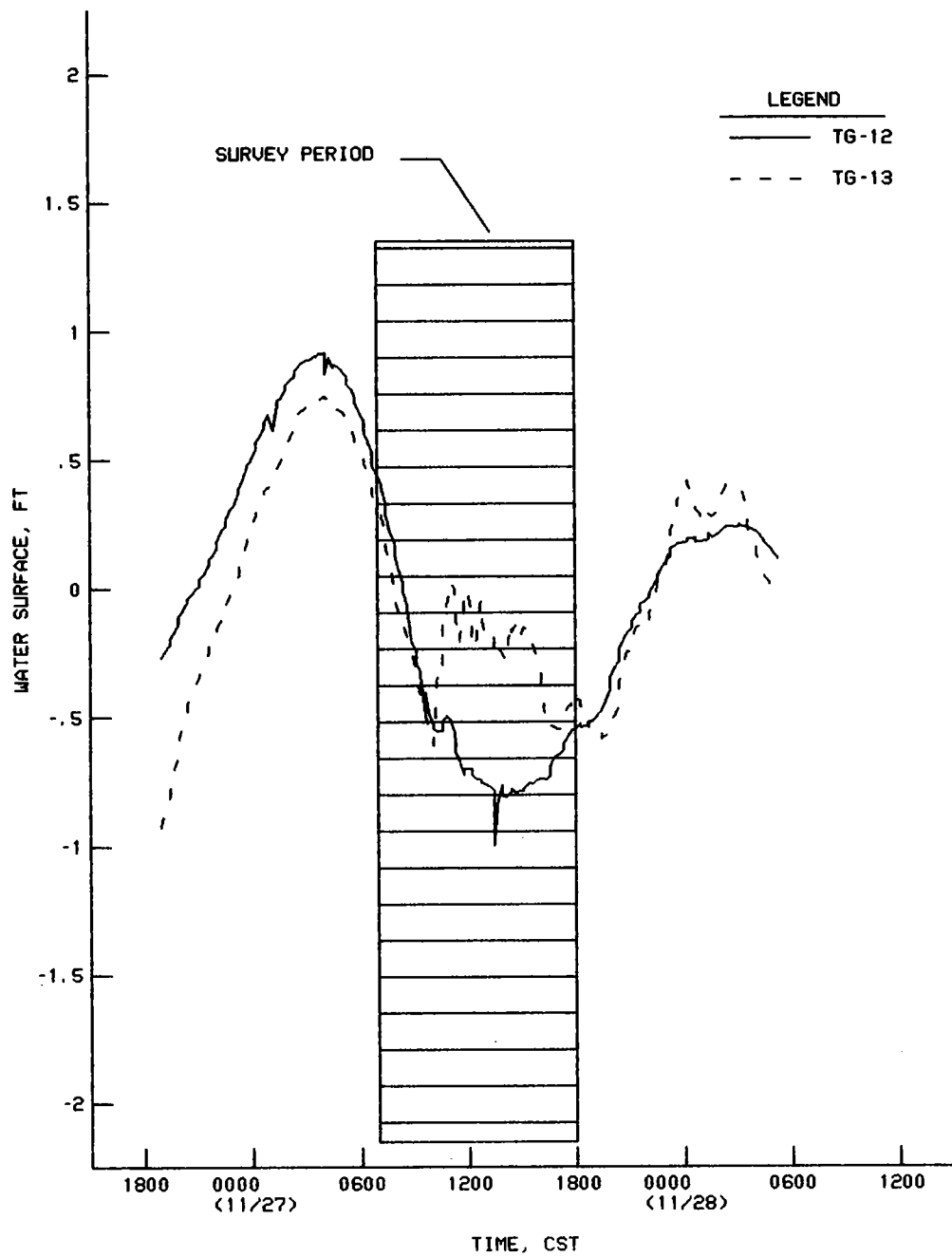
NOTE: MEAN WATER LEVEL READING USED AS DATUM

**WATER-SURFACE ELEVATIONS  
 GAGES TG-12 AND TG-13  
 25-27 OCTOBER 1988**



NOTE: MEAN WATER LEVEL READING USED AS DATUM

**WATER-SURFACE ELEVATIONS  
GAGES TG-12 AND TG-13  
10-12 NOVEMBER 1988**



NOTE: MEAN WATER LEVEL READING USED AS DATUM

**WATER-SURFACE ELEVATIONS  
GAGES TG-12 AND TG-13  
26-28 NOVEMBER 1988**

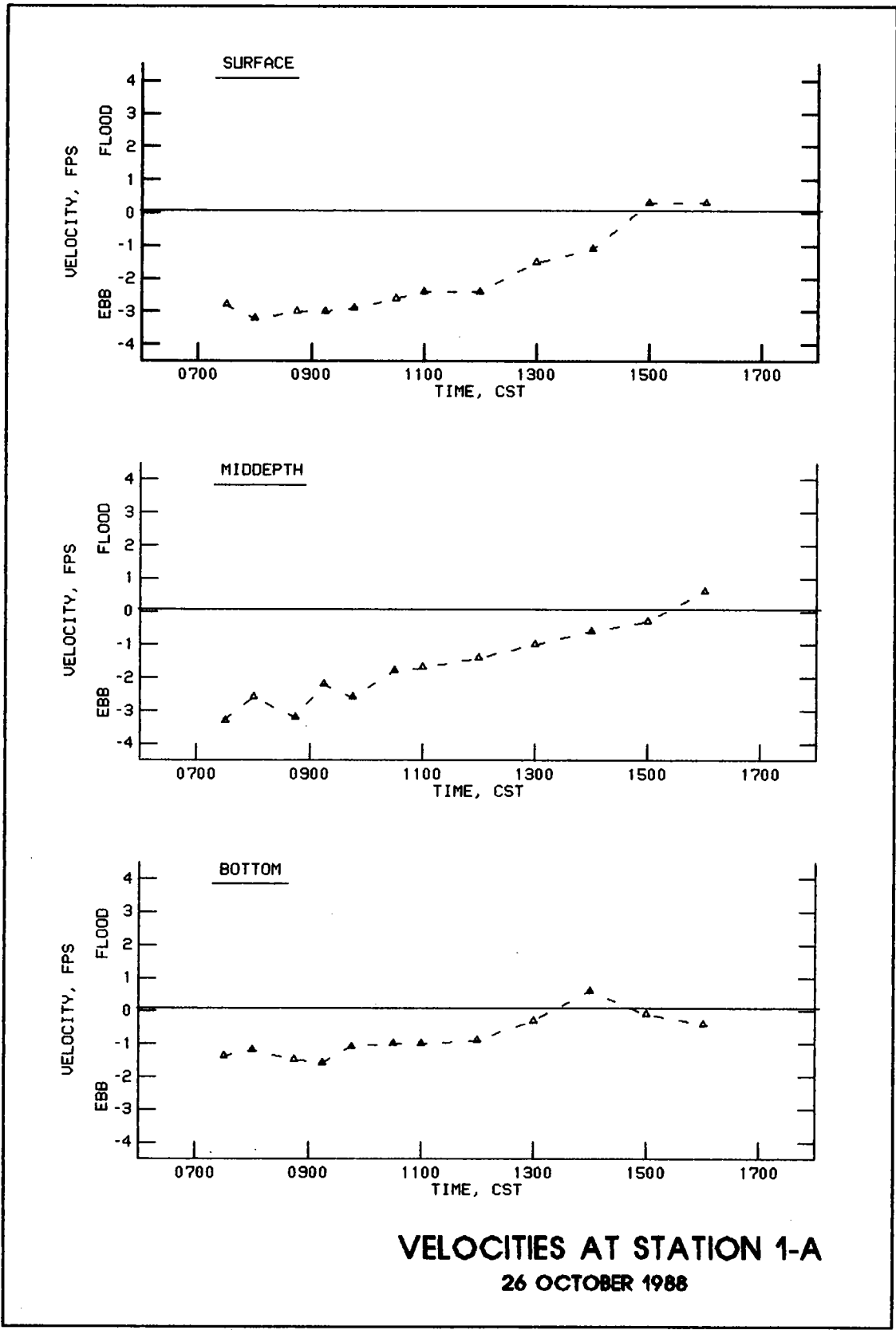
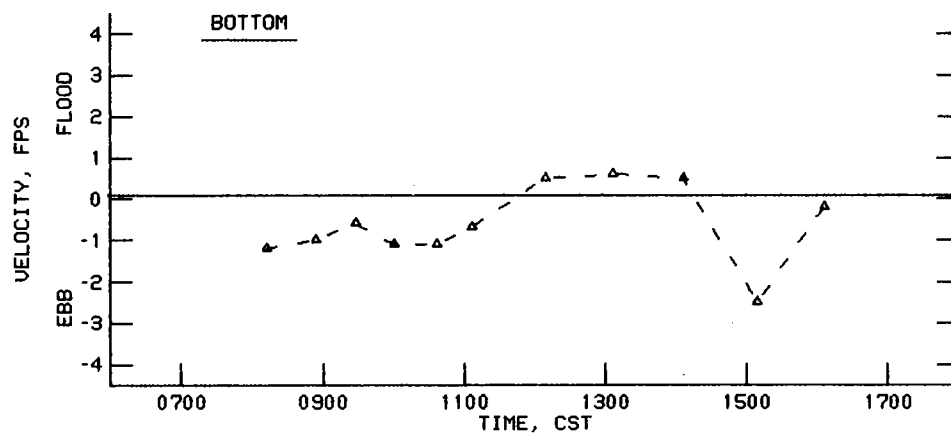
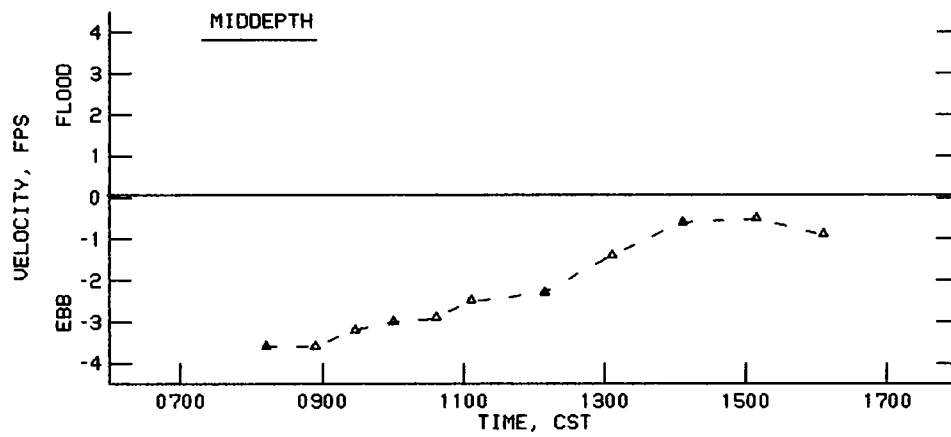
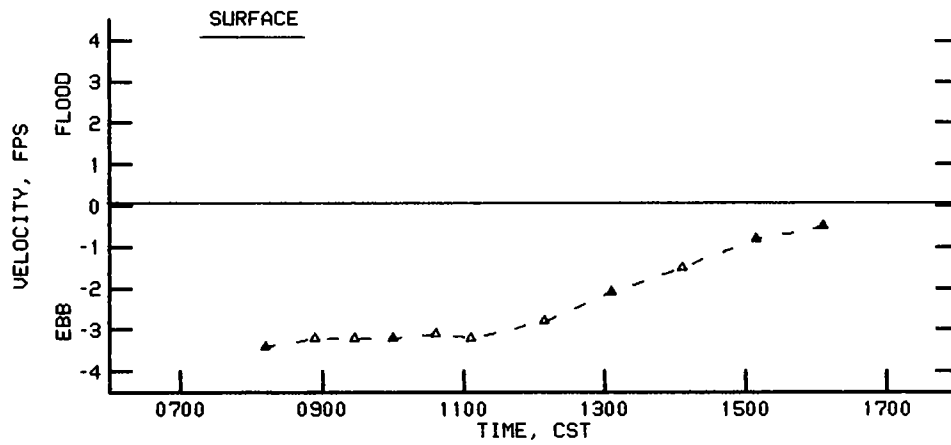
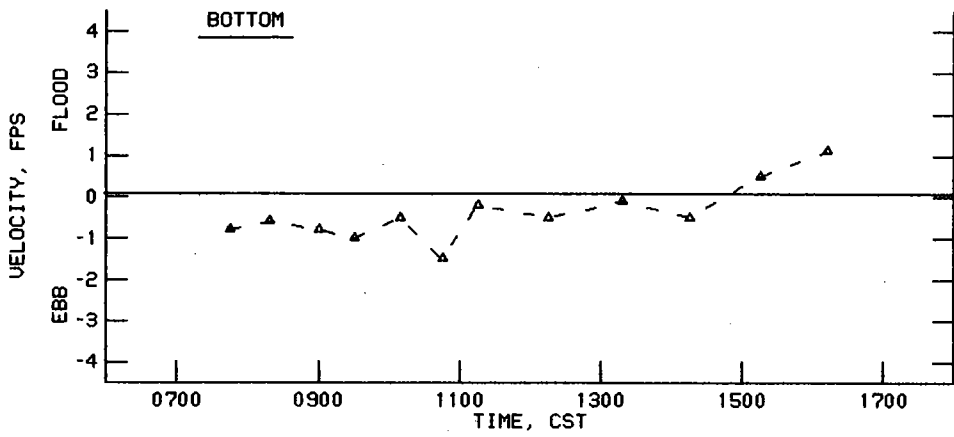
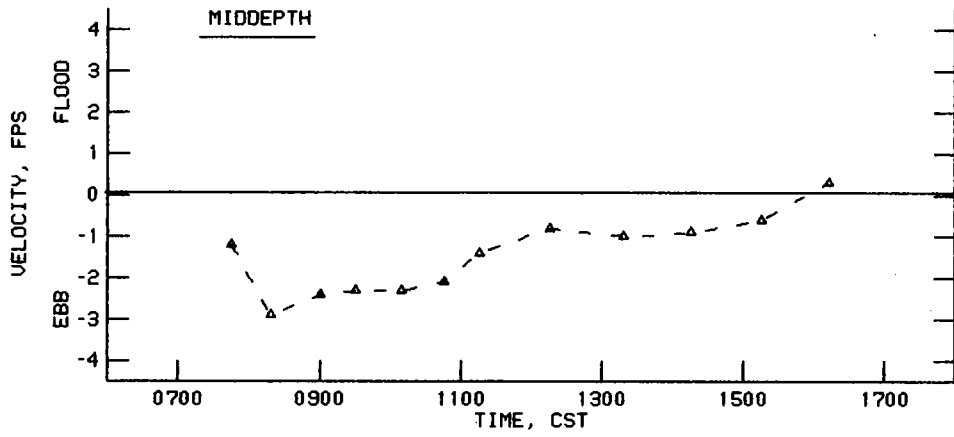
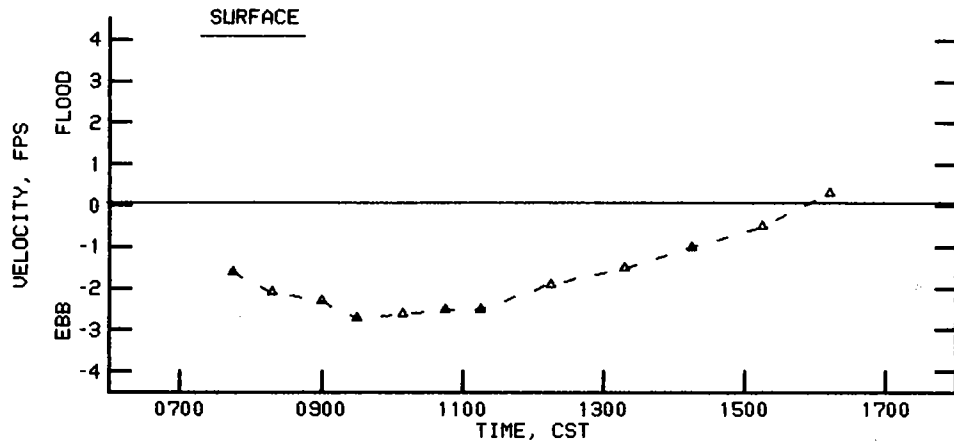


PLATE 10

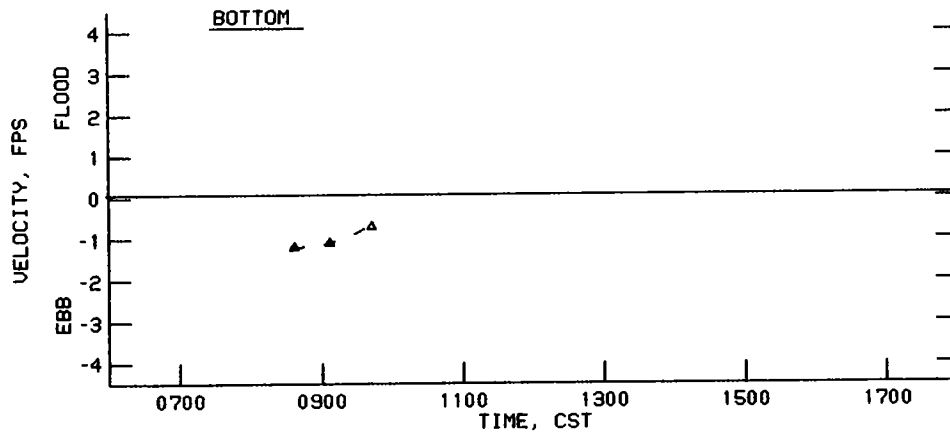
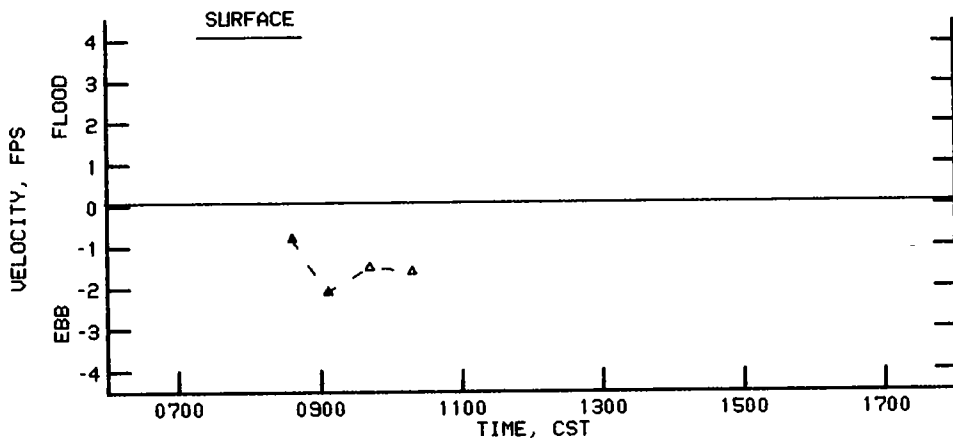


**VELOCITIES AT STATION 1-B  
26 OCTOBER 1988**

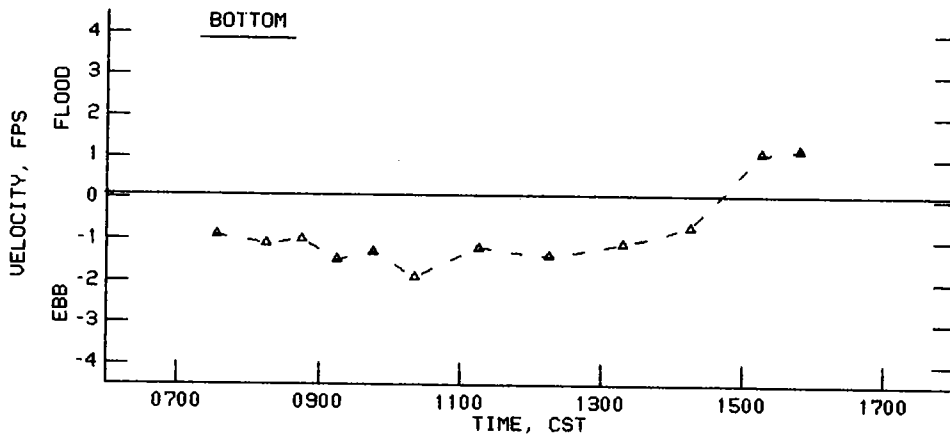
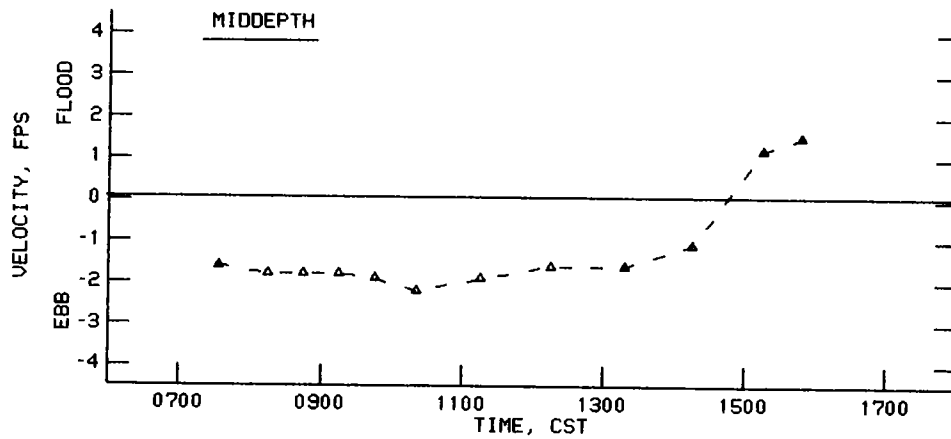
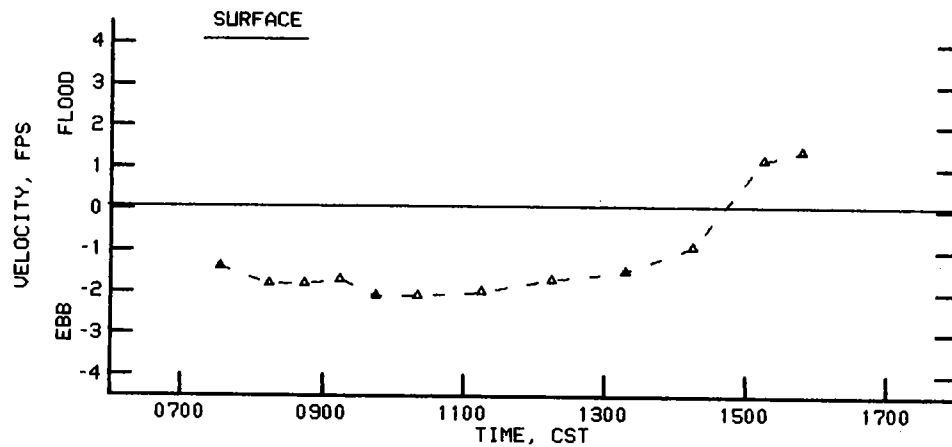




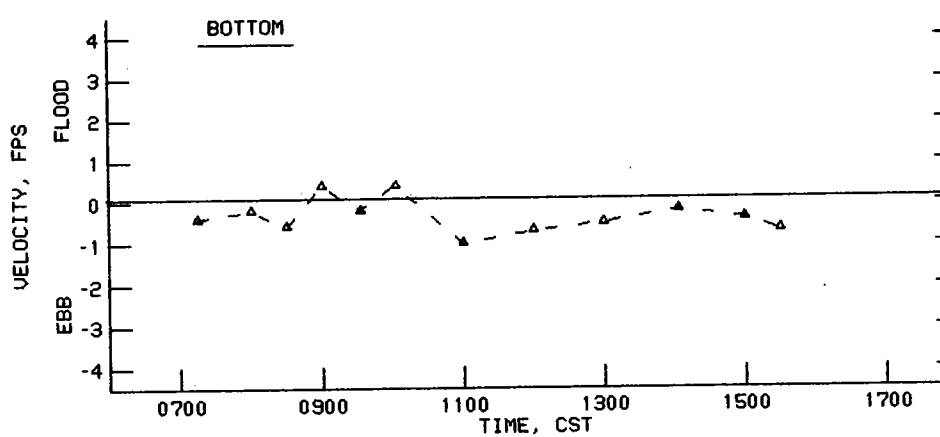
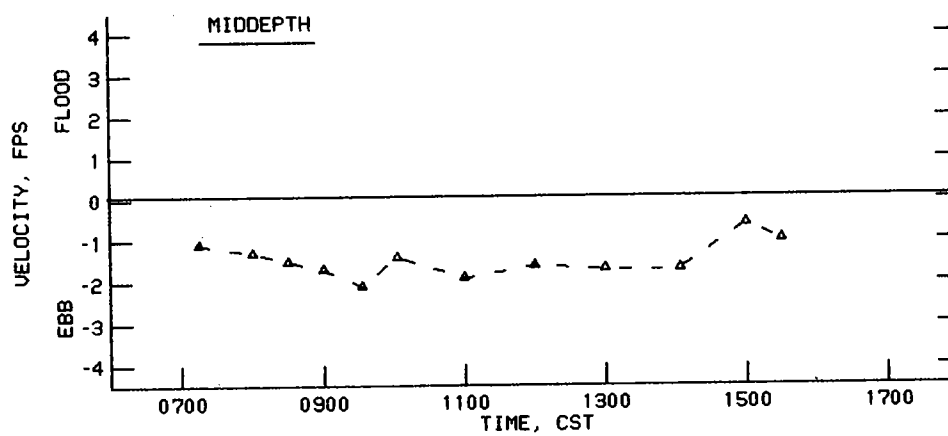
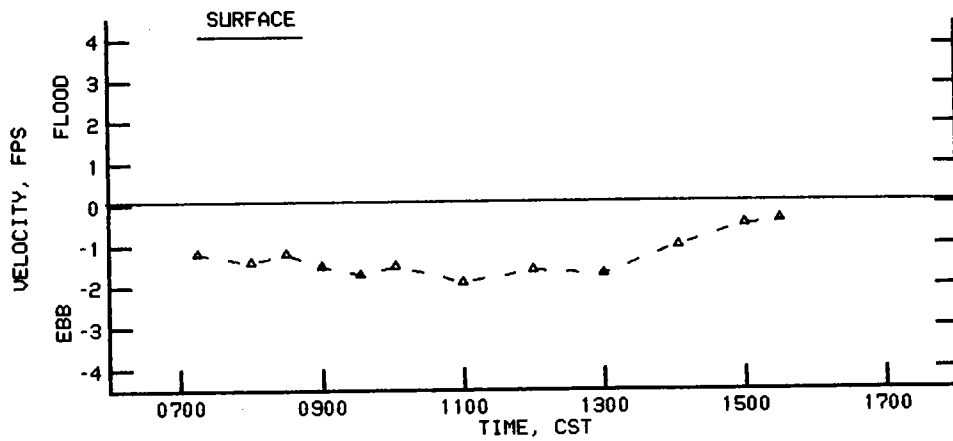
**VELOCITIES AT STATION 1-C**  
26 OCTOBER 1988



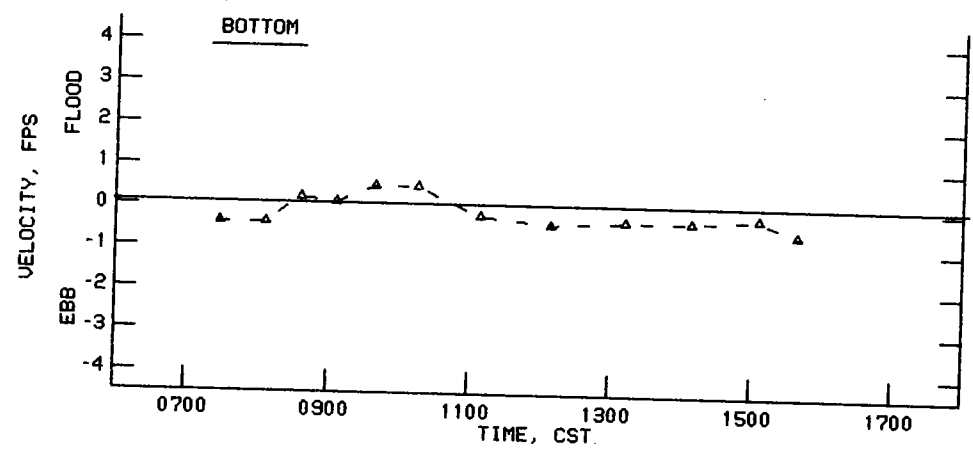
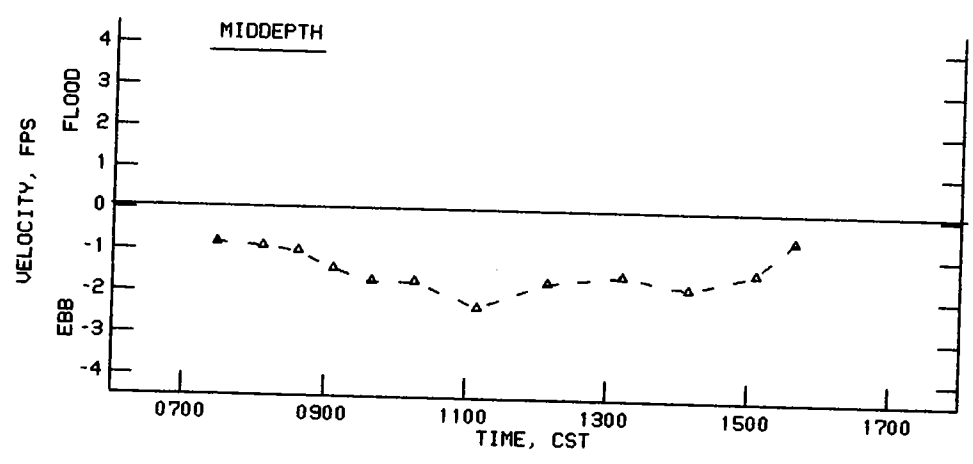
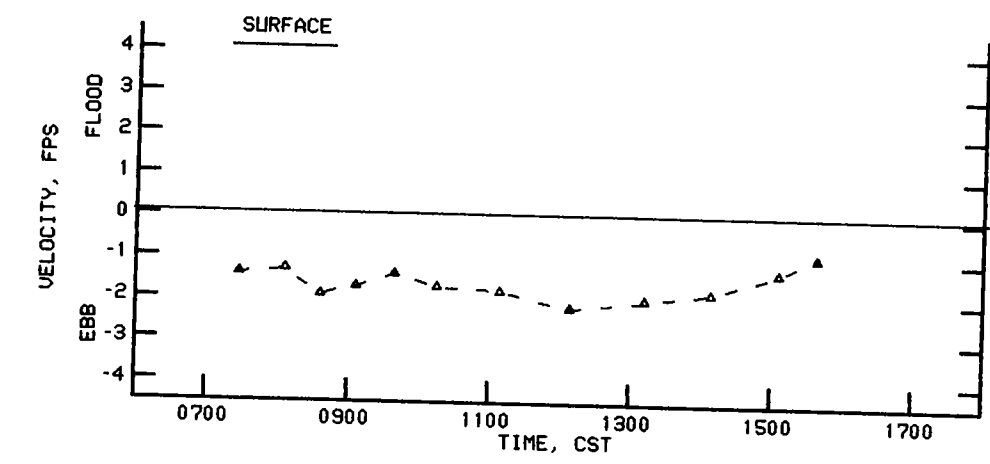
**VELOCITIES AT STATION 1-X**  
**26 OCTOBER 1988**



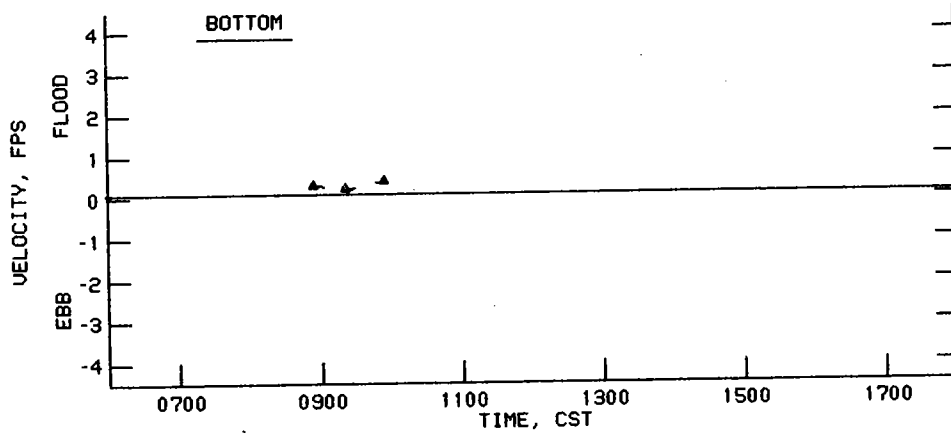
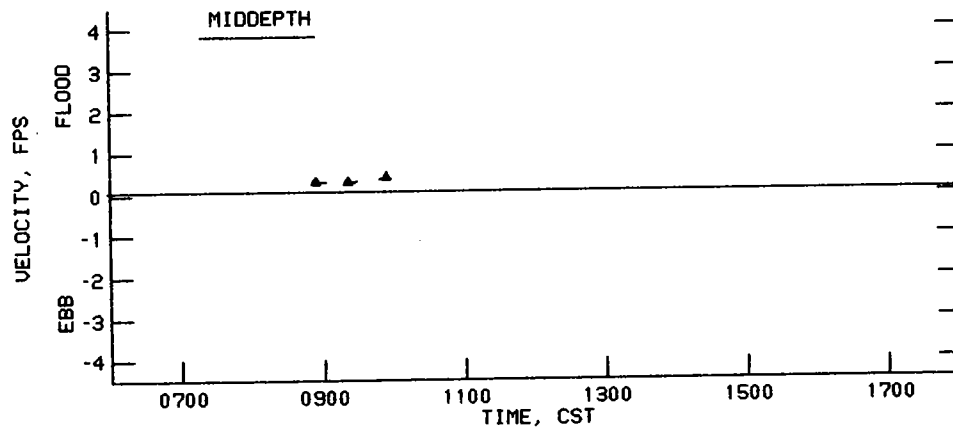
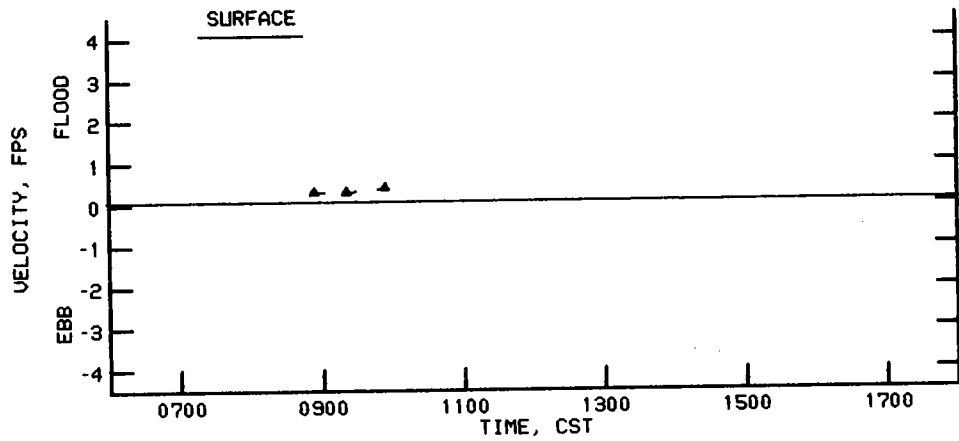
**VELOCITIES AT STATION 2-A**  
26 OCTOBER 1988



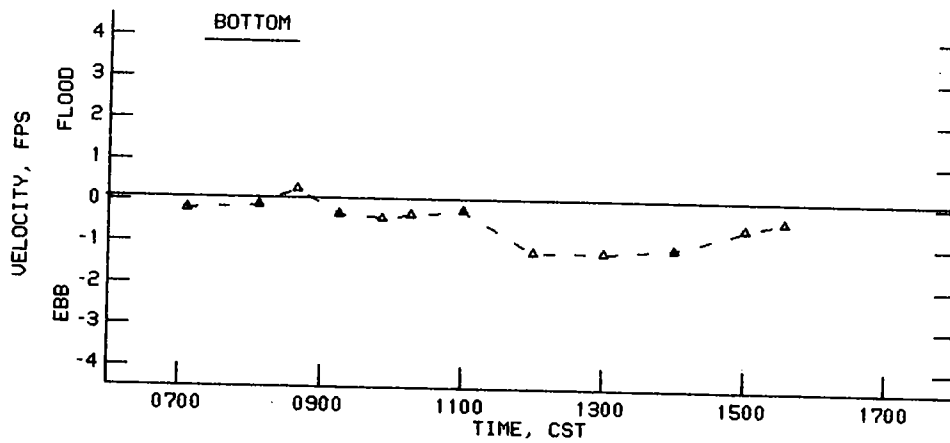
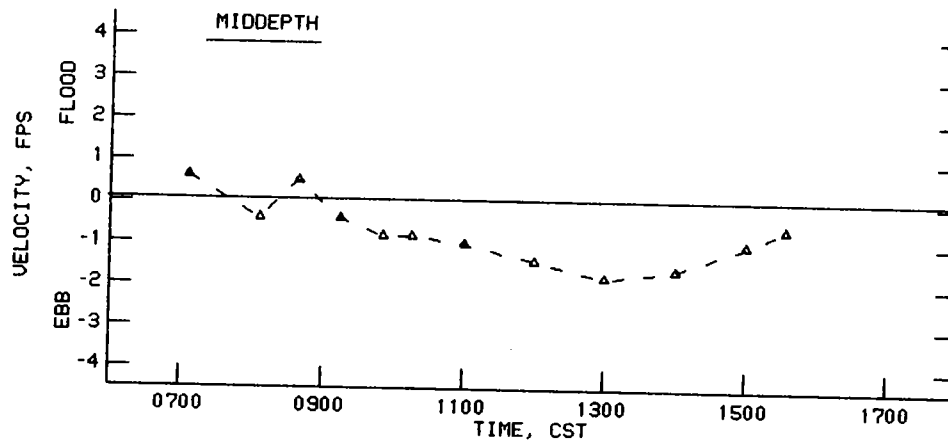
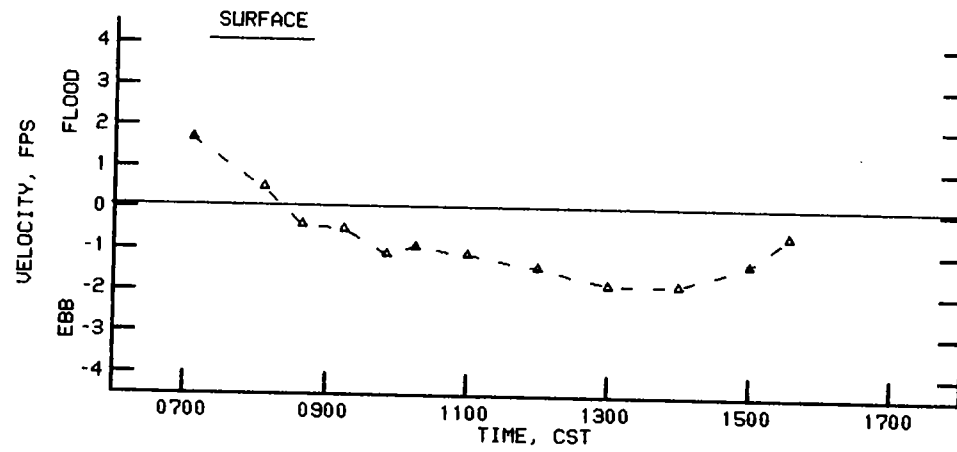
**VELOCITIES AT STATION 2-B**  
26 OCTOBER 1988



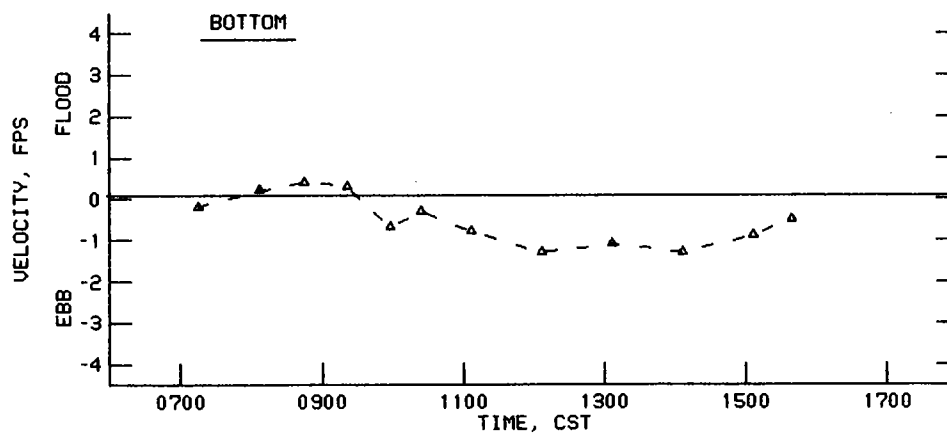
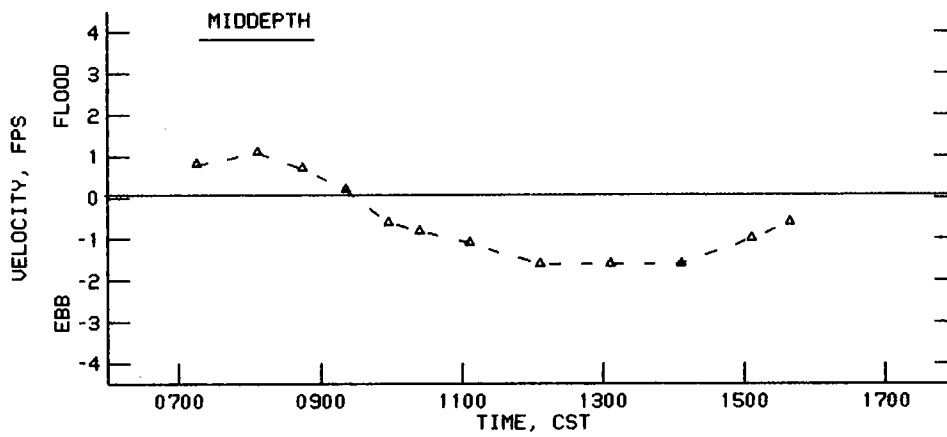
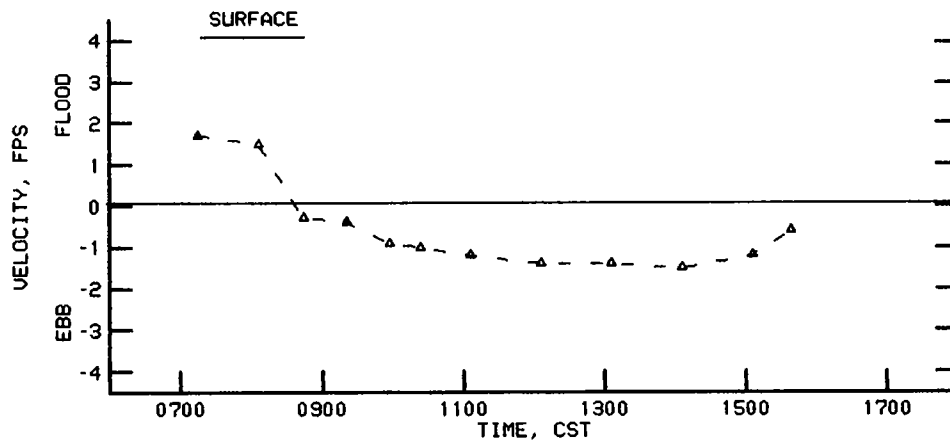
**VELOCITIES AT STATION 2-C**  
26 OCTOBER 1988



**VELOCITIES AT STATION 2-X**  
26 OCTOBER 1988

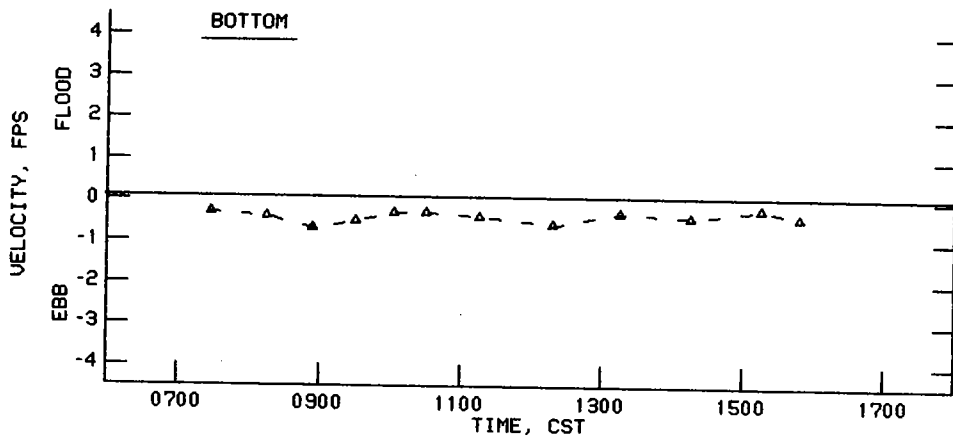
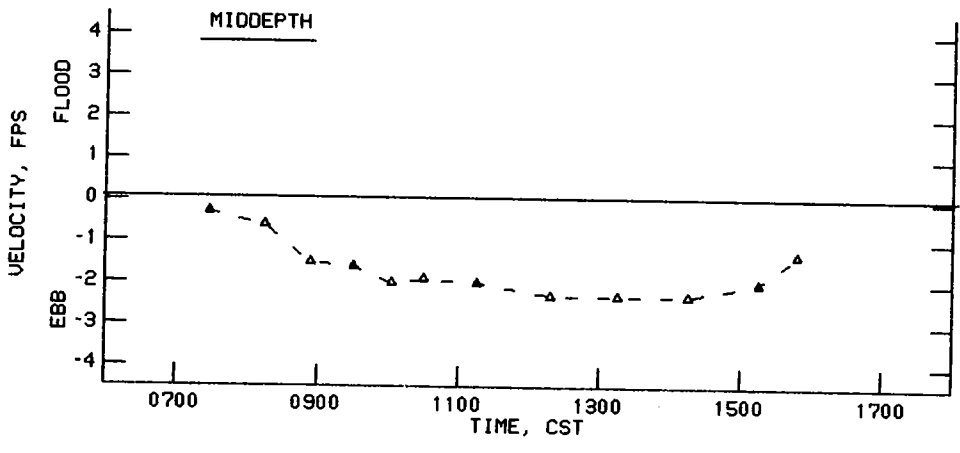
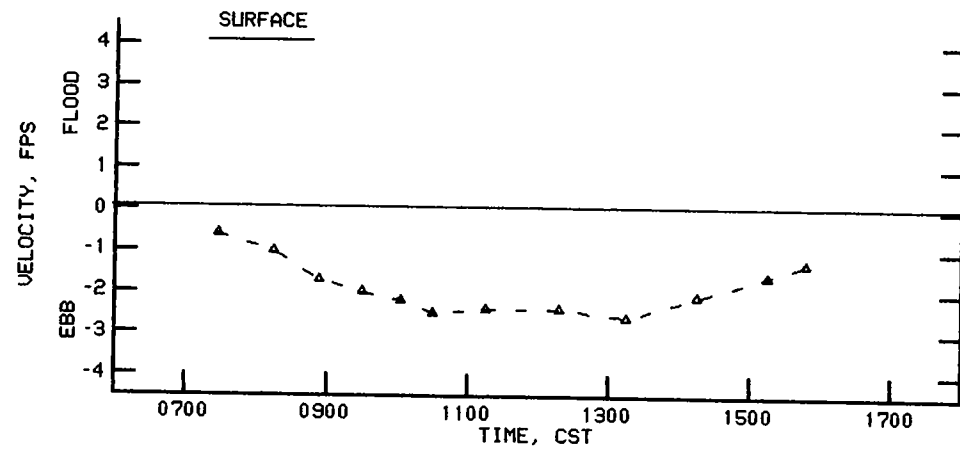


**VELOCITIES AT STATION 3-A**  
26 OCTOBER 1988

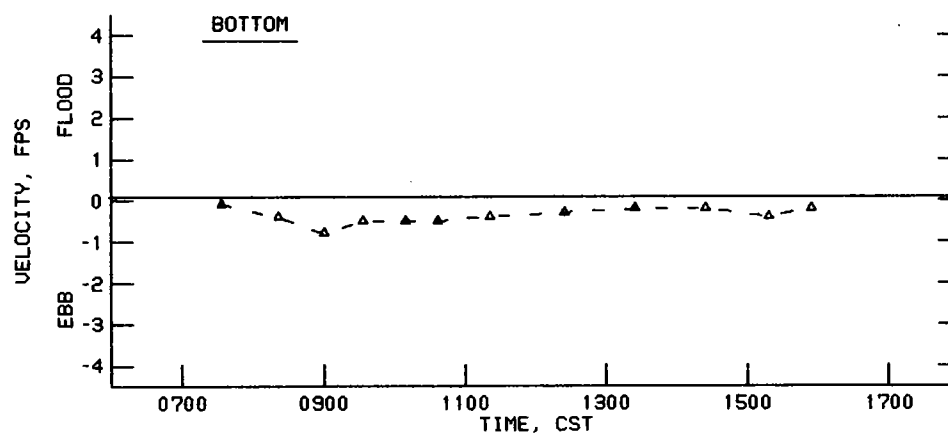
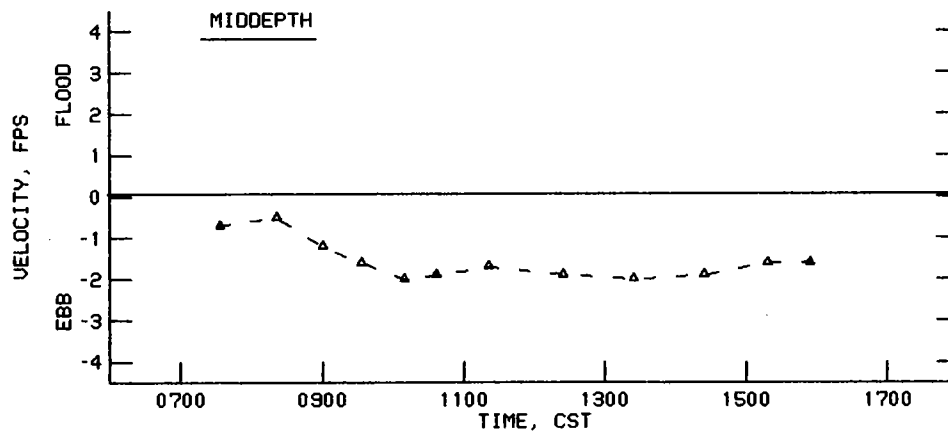
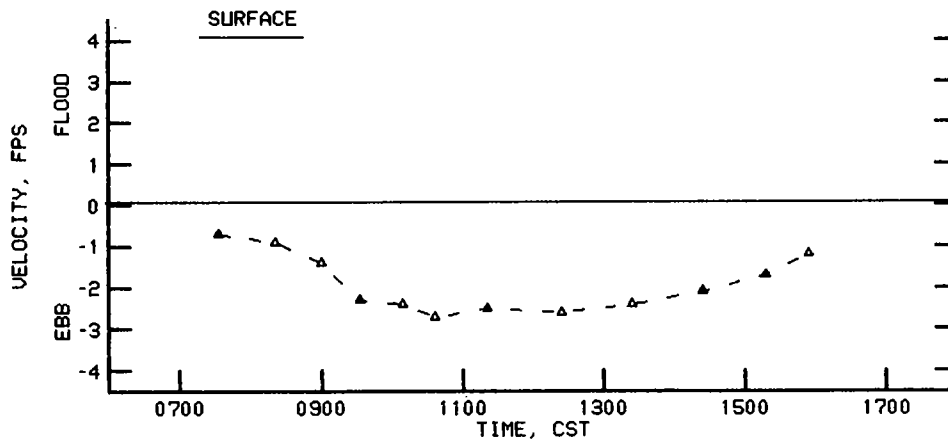


**VELOCITIES AT STATION 3-B**  
26 OCTOBER 1988

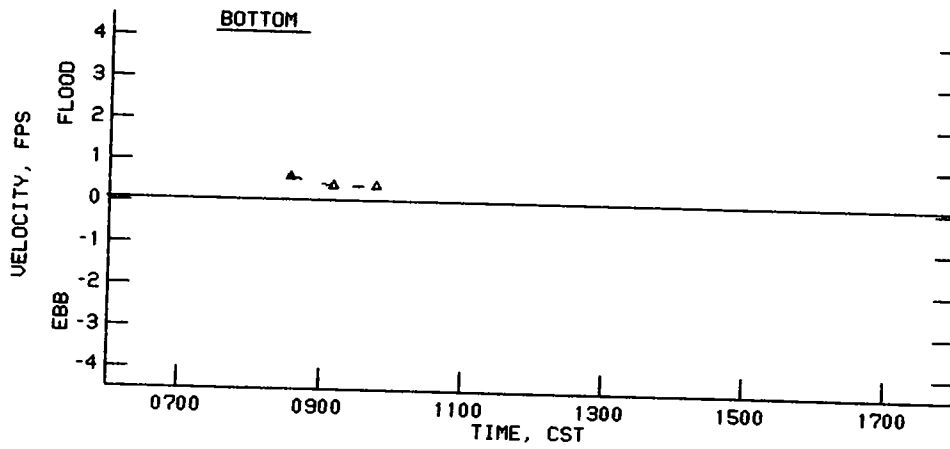
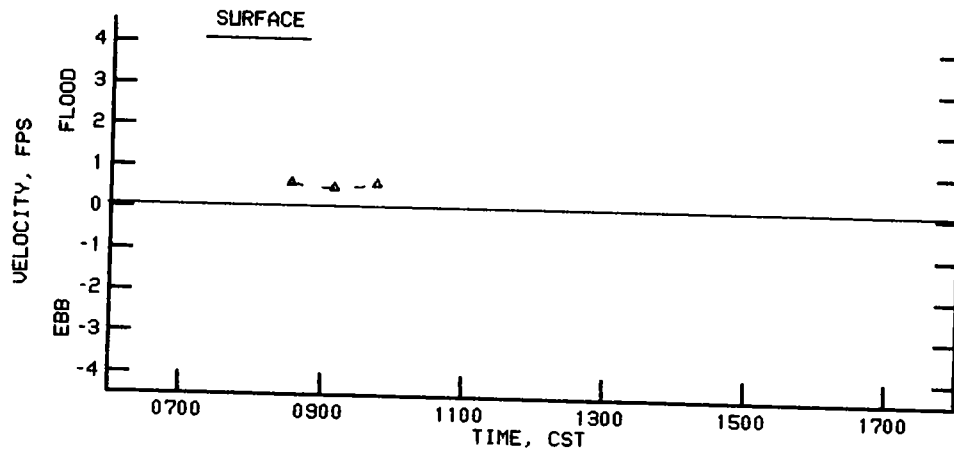




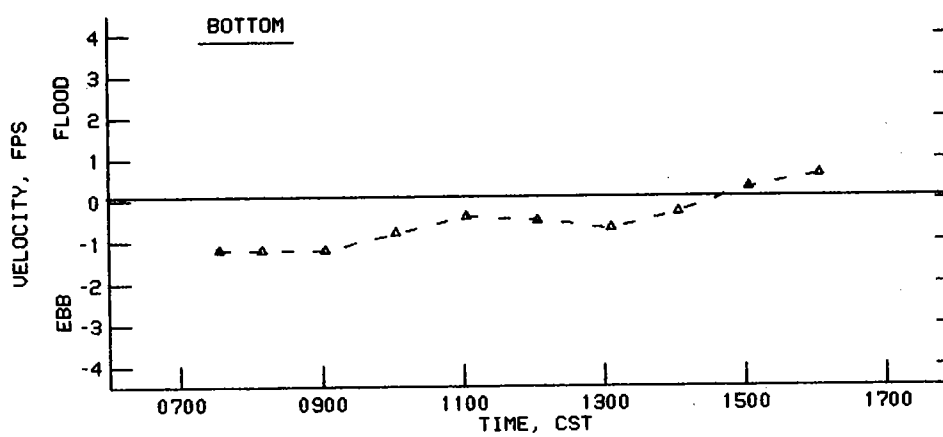
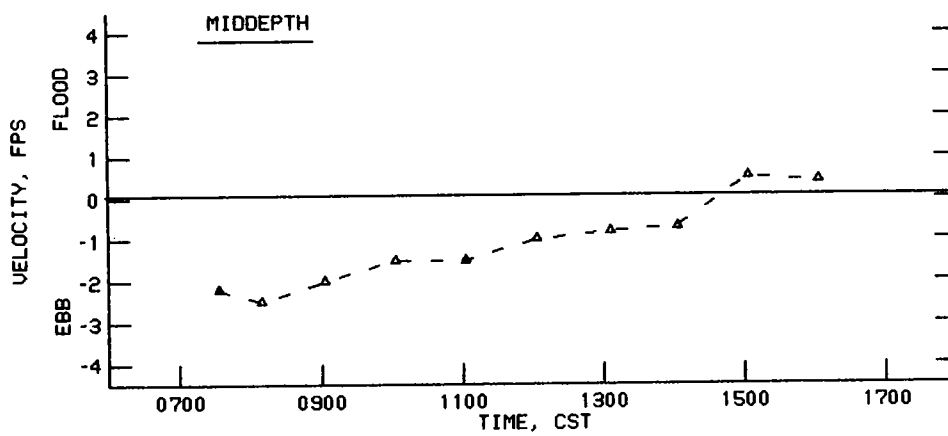
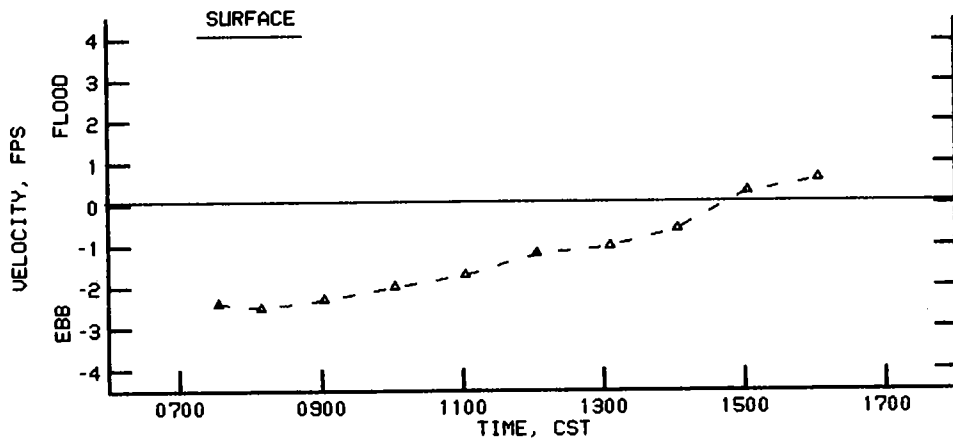
**VELOCITIES AT STATION 3-C**  
26 OCTOBER 1988



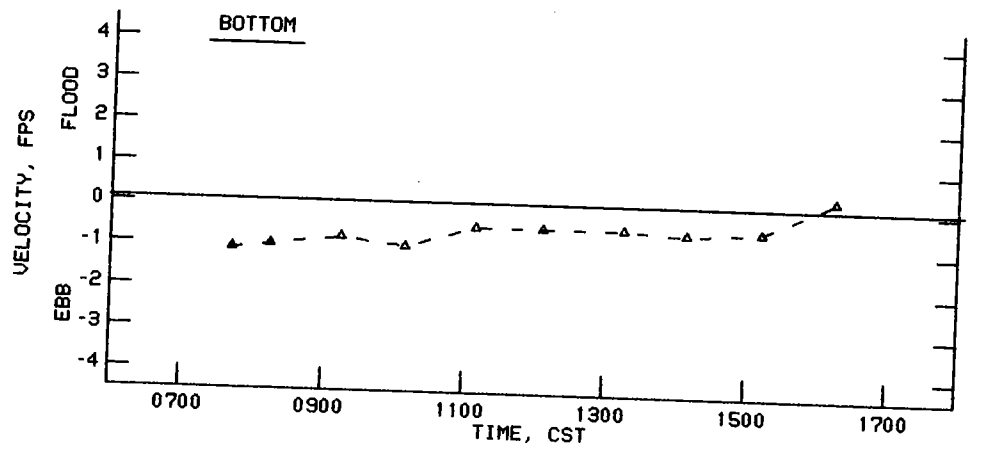
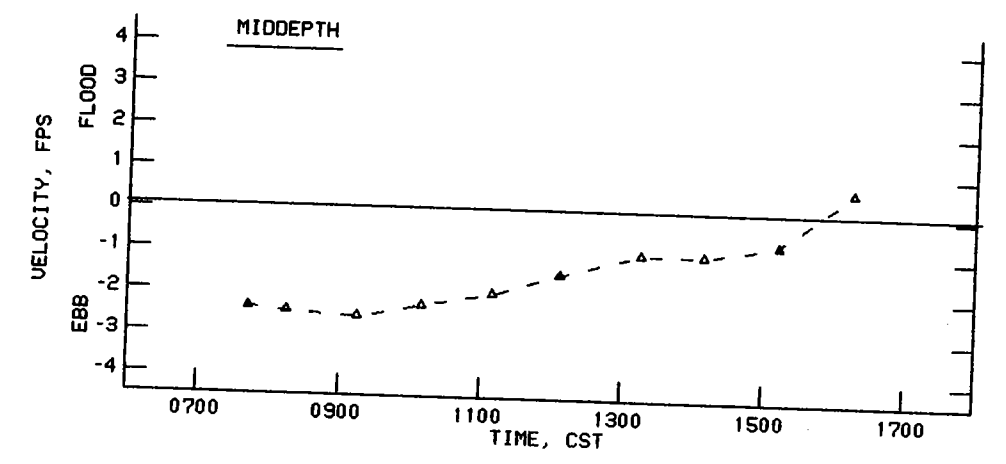
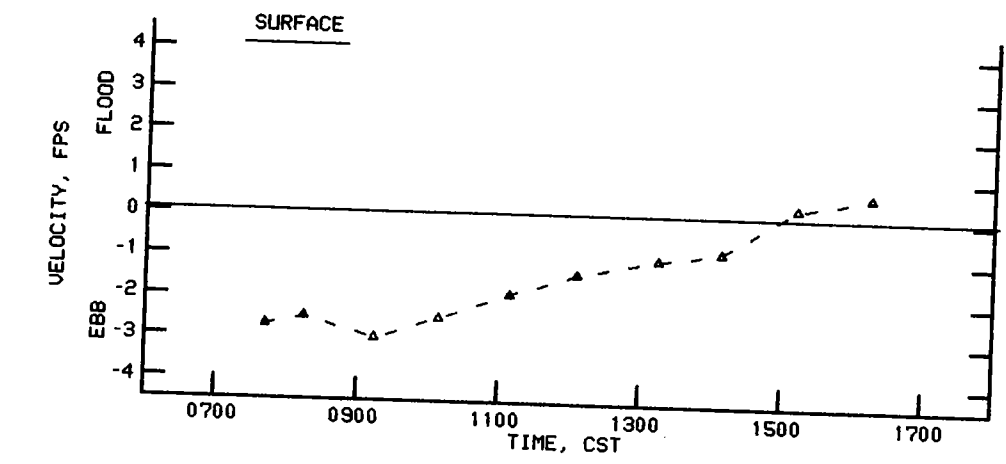
**VELOCITIES AT STATION 3-D**  
**26 OCTOBER 1988**



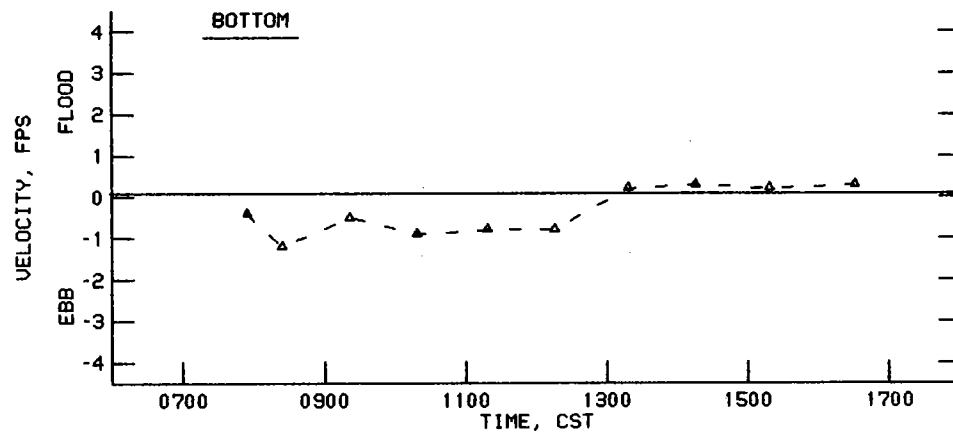
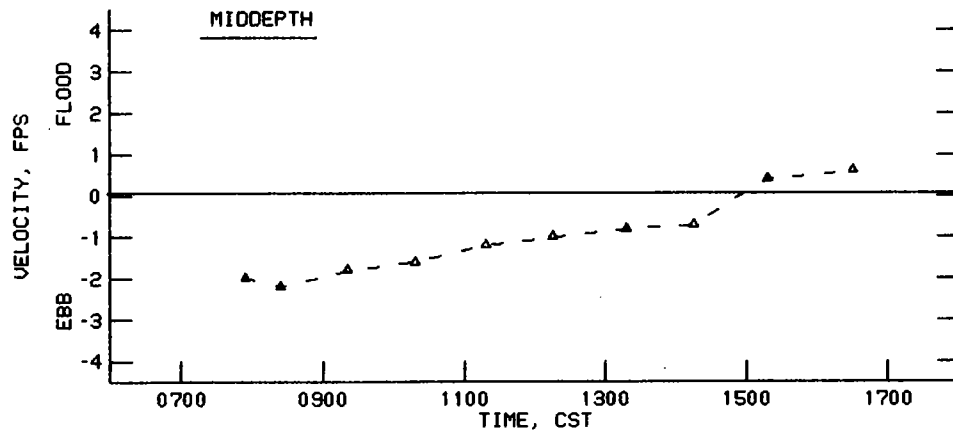
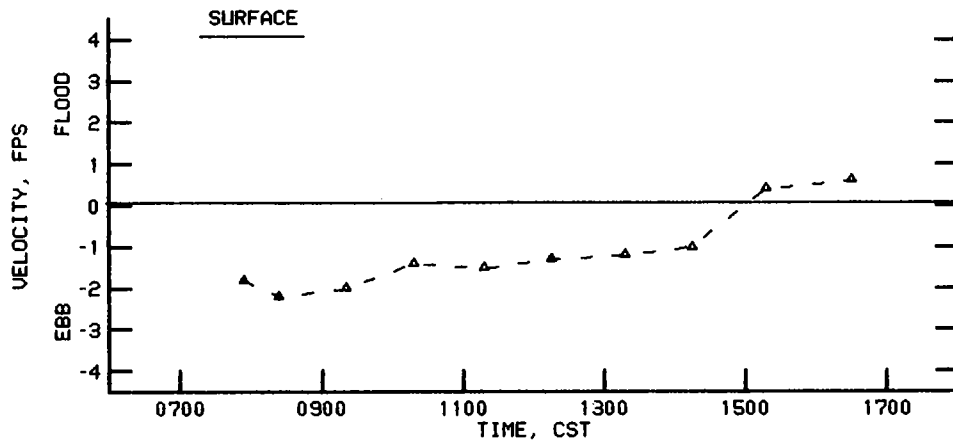
**VELOCITIES AT STATION 3-X**  
26 OCTOBER 1988



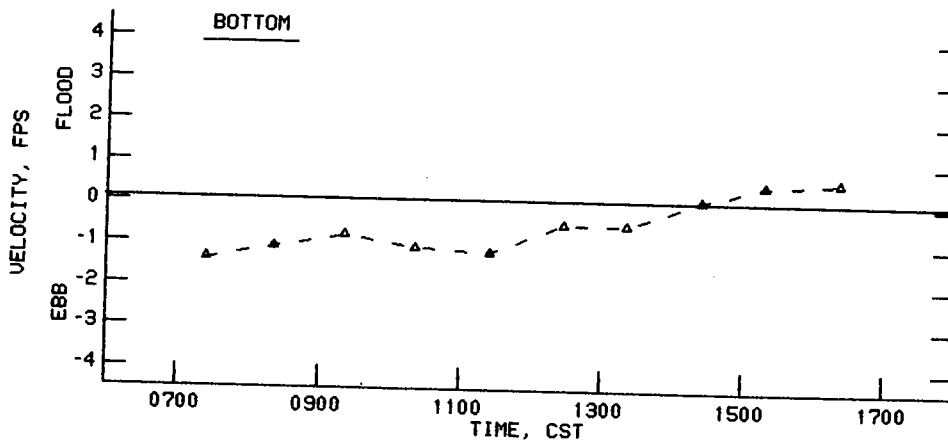
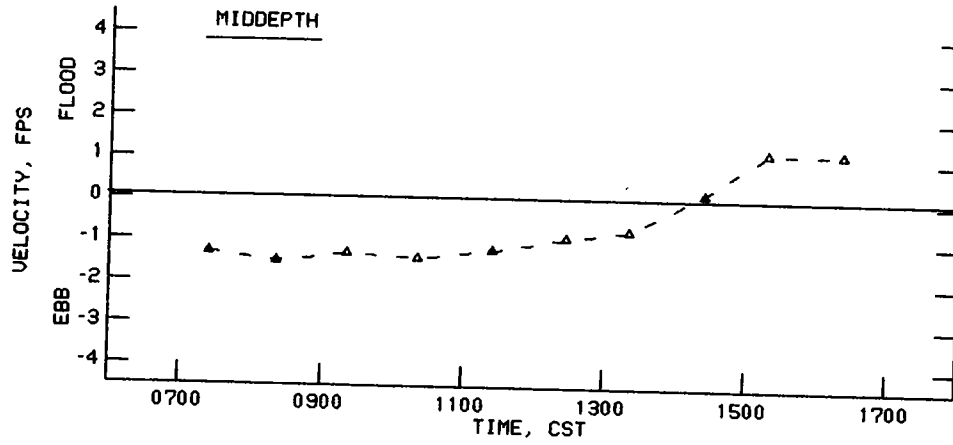
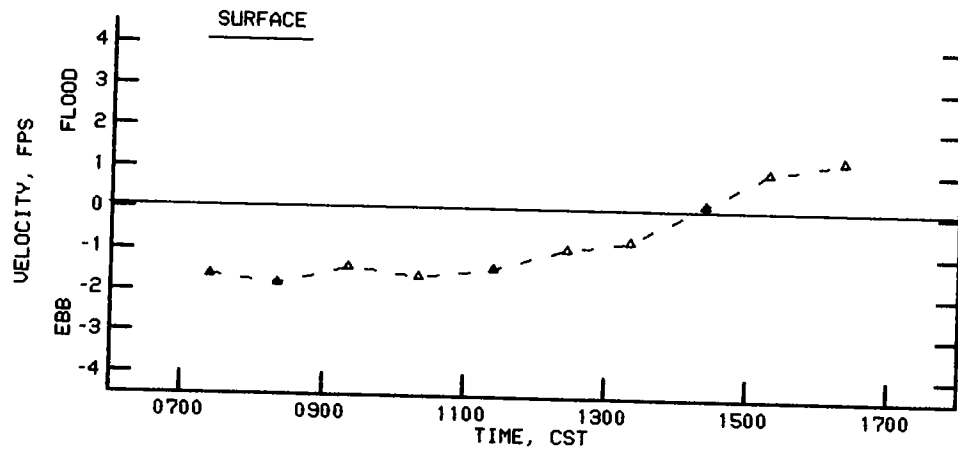
**VELOCITIES AT STATION 1-A**  
11 NOVEMBER 1988



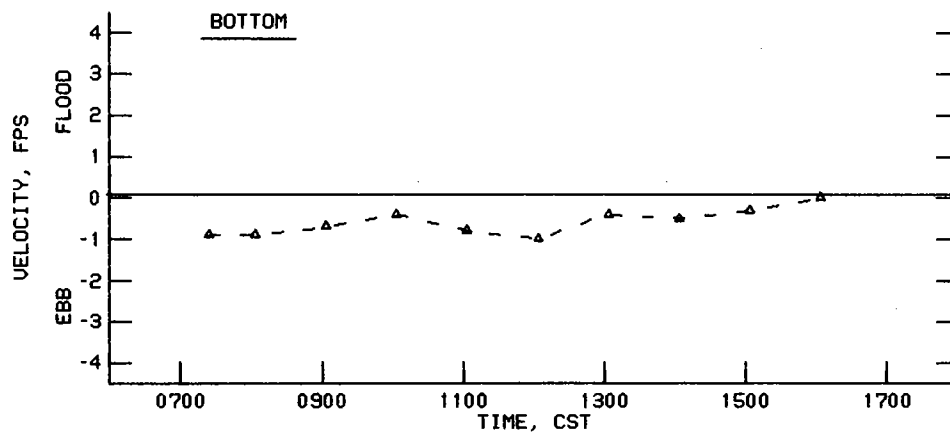
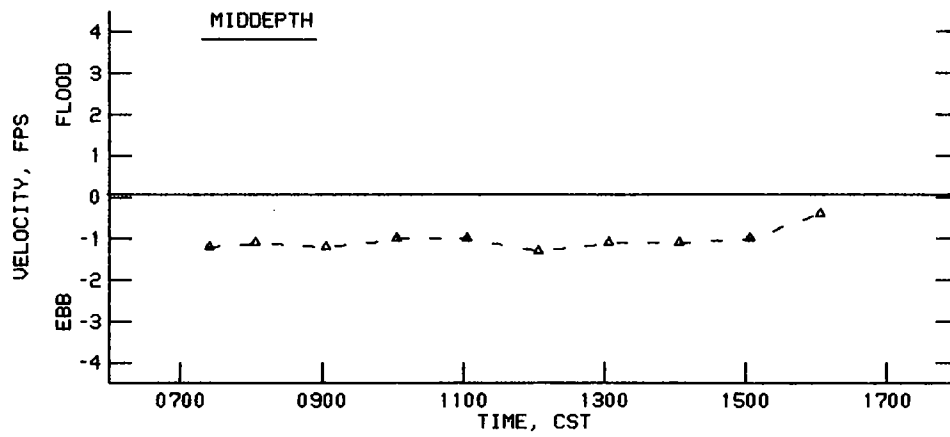
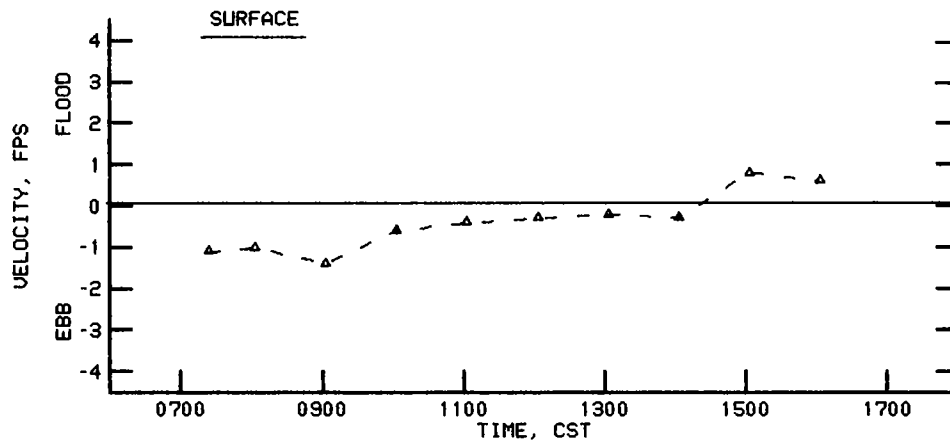
**VELOCITIES AT STATION 1-B**  
11 NOVEMBER 1988



**VELOCITIES AT STATION 1-C  
11 NOVEMBER 1988**

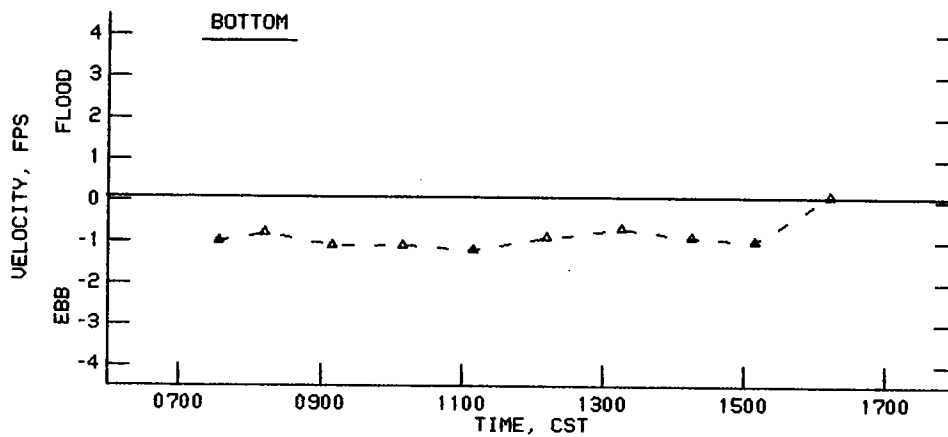
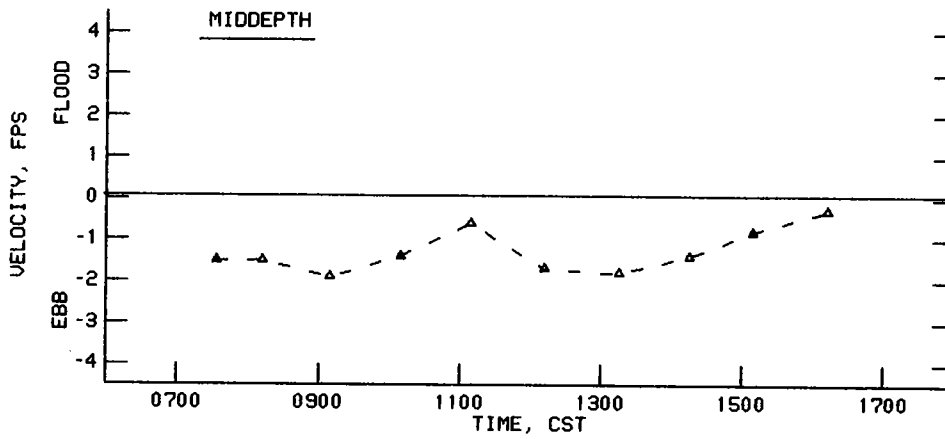
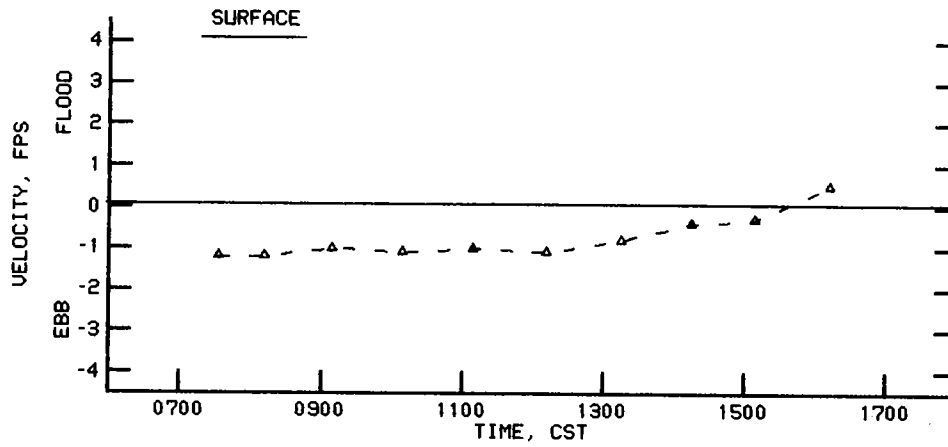


**VELOCITIES AT STATION 2-A**  
11 NOVEMBER 1988

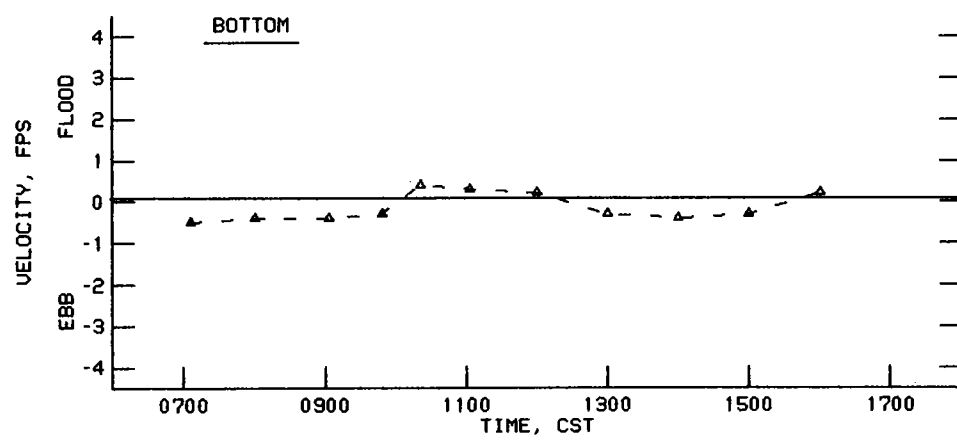
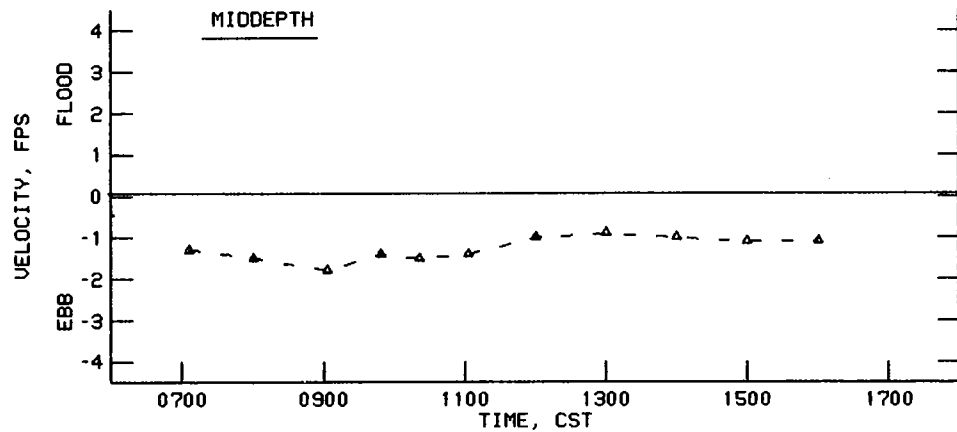
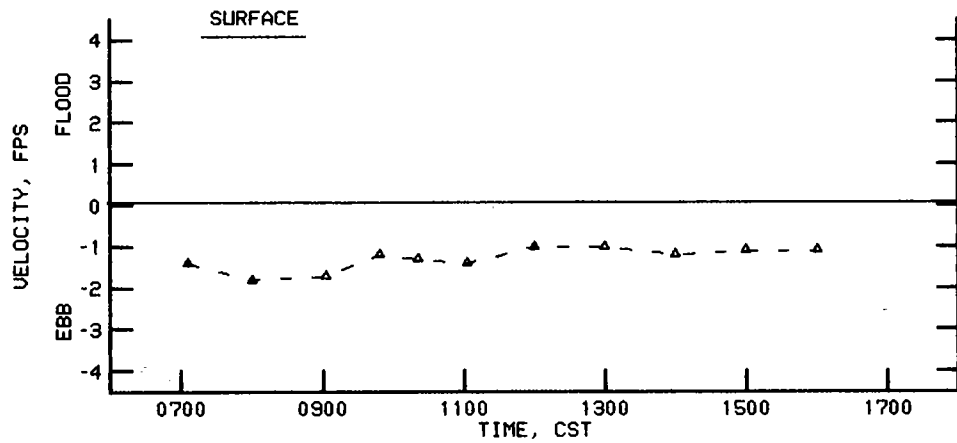


**VELOCITIES AT STATION 2-B**  
11 NOVEMBER 1988

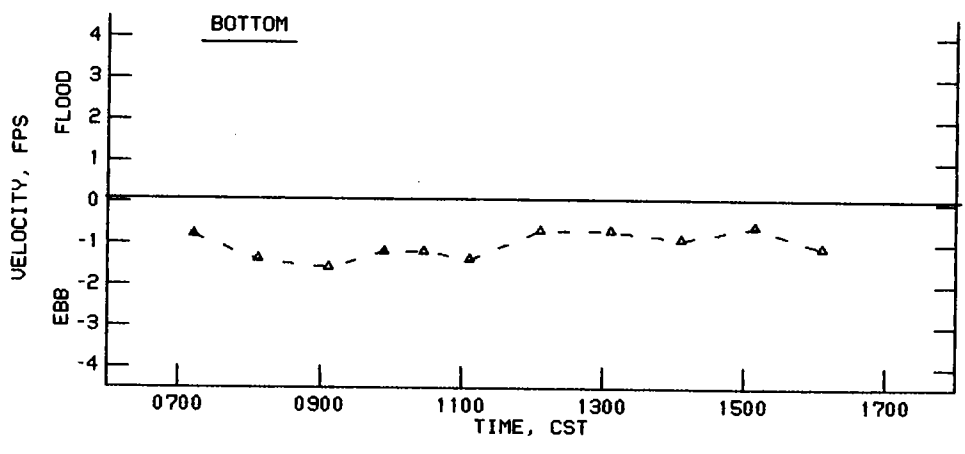
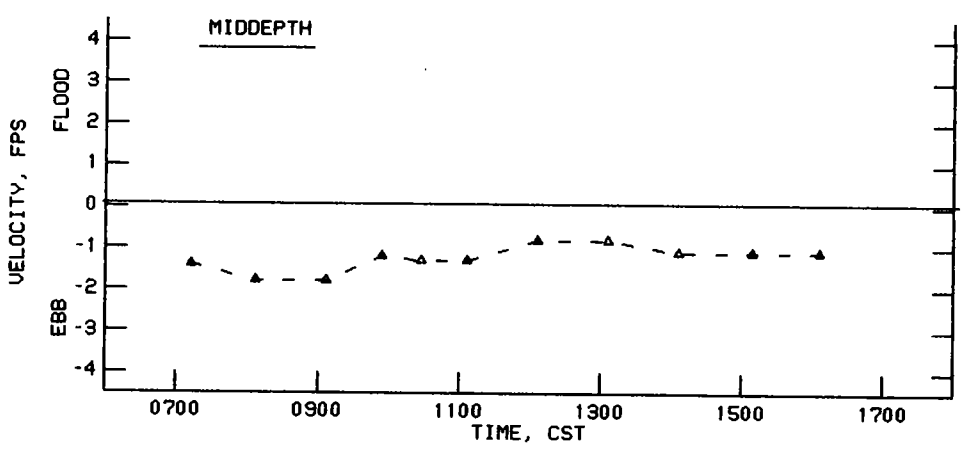
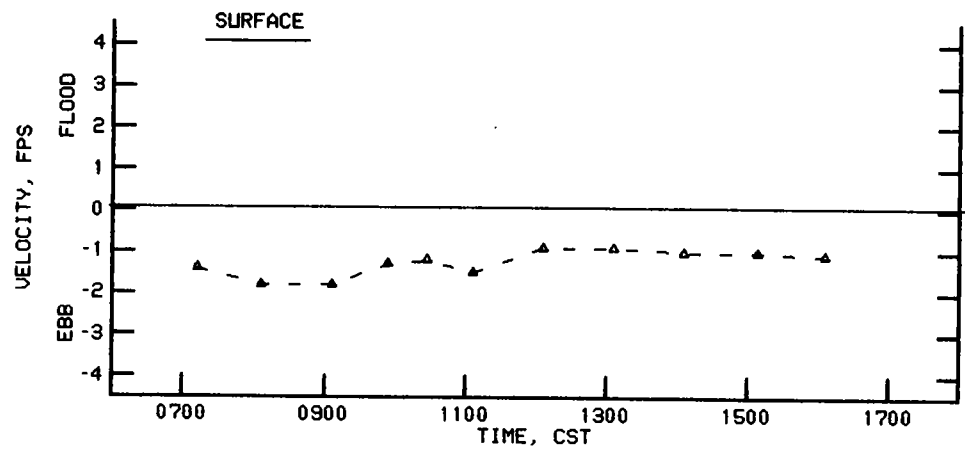




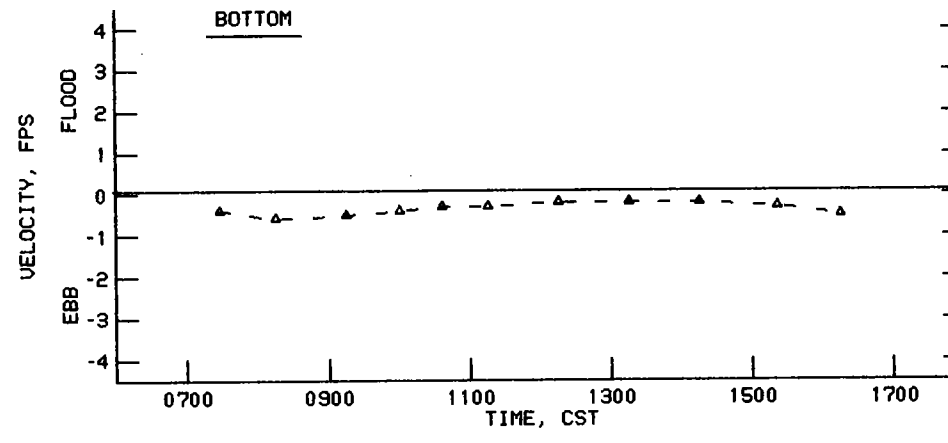
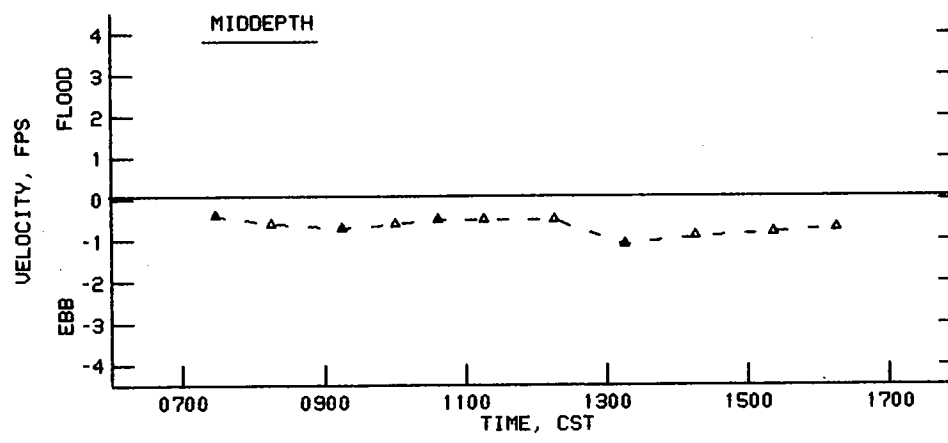
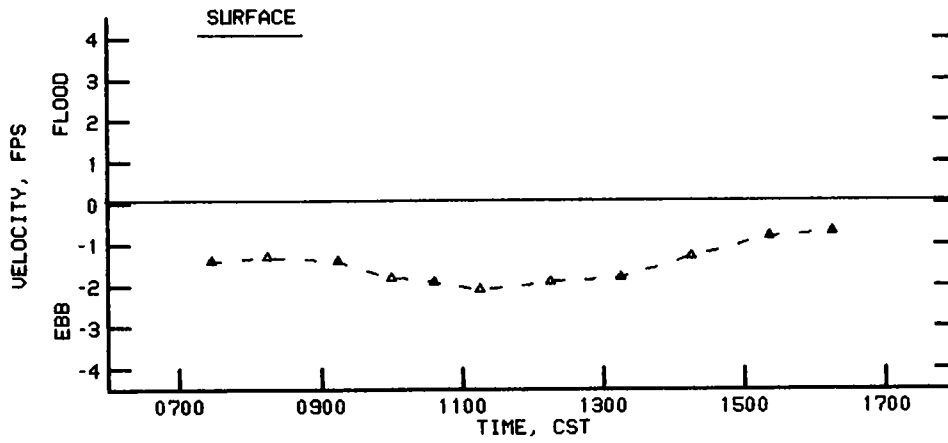
**VELOCITIES AT STATION 2-C**  
11 NOVEMBER 1988



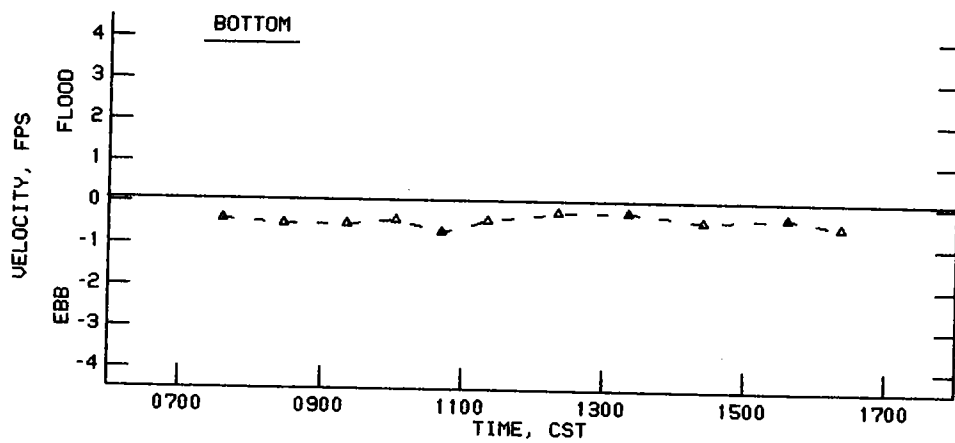
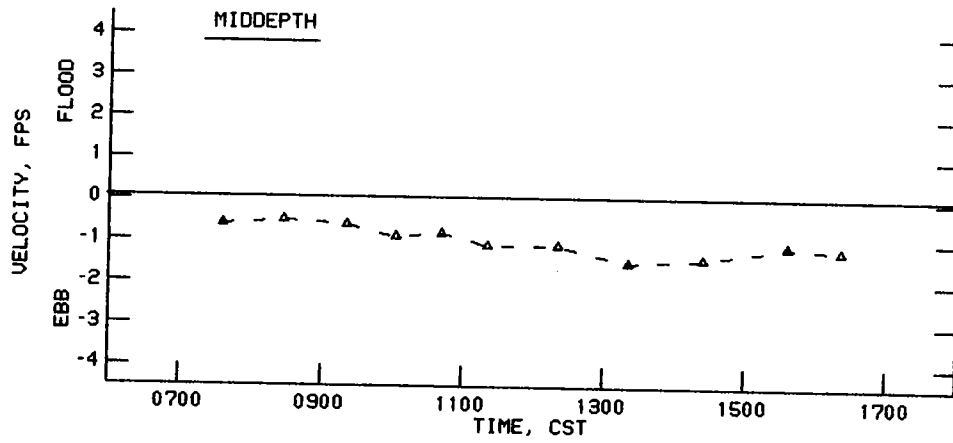
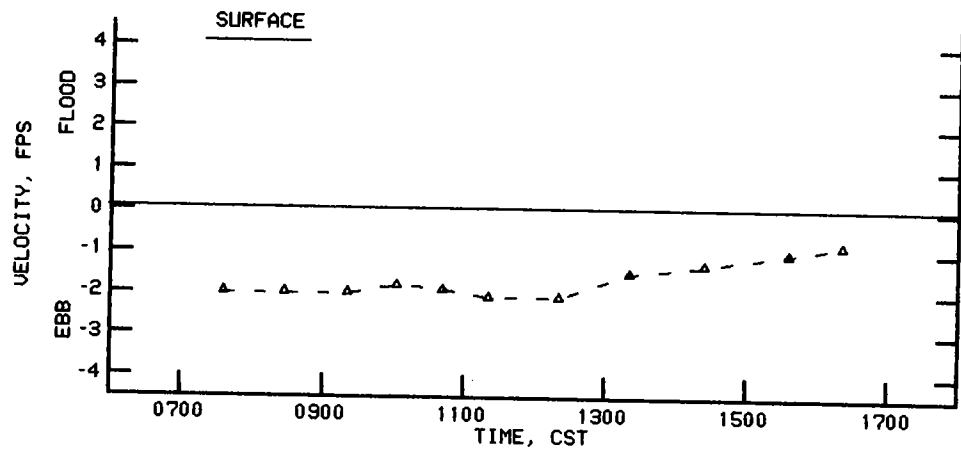
**VELOCITIES AT STATION 3-A**  
11 NOVEMBER 1988



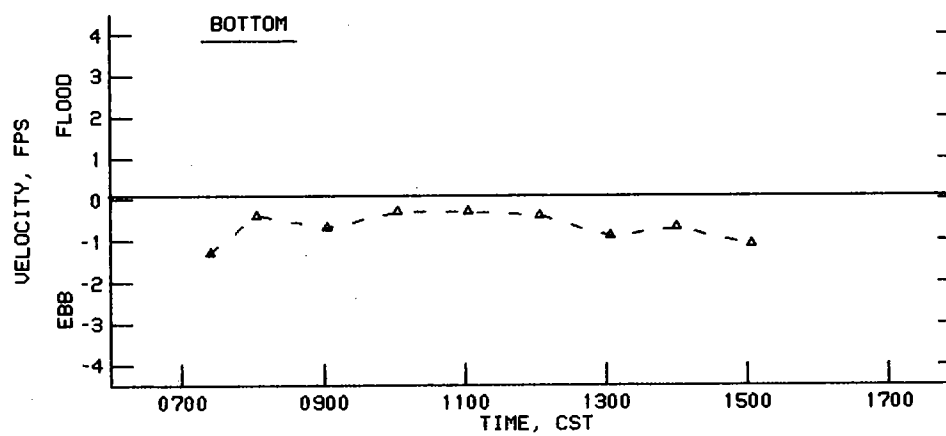
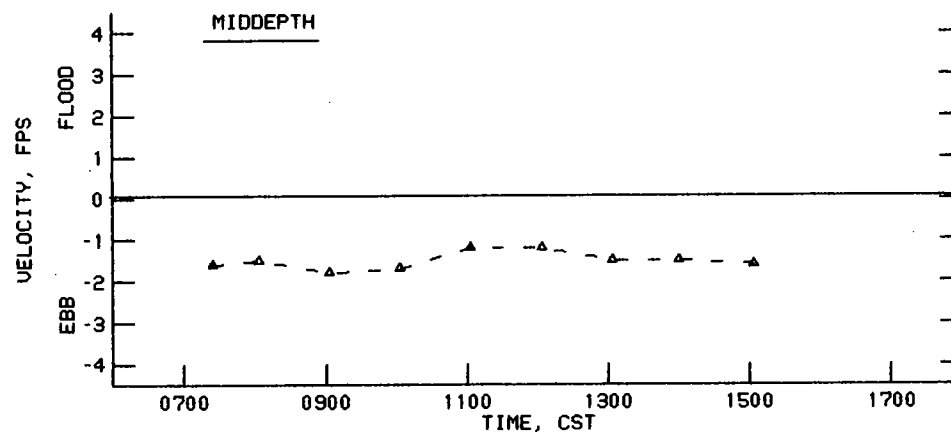
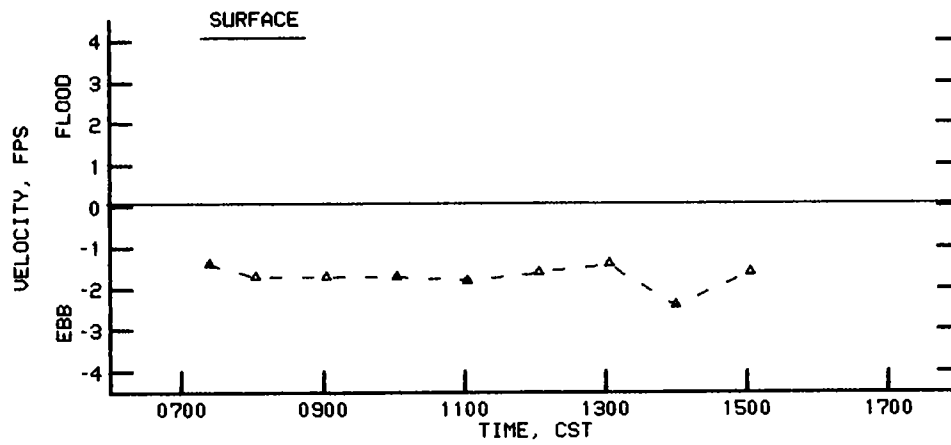
**VELOCITIES AT STATION 3-B**  
11 NOVEMBER 1988



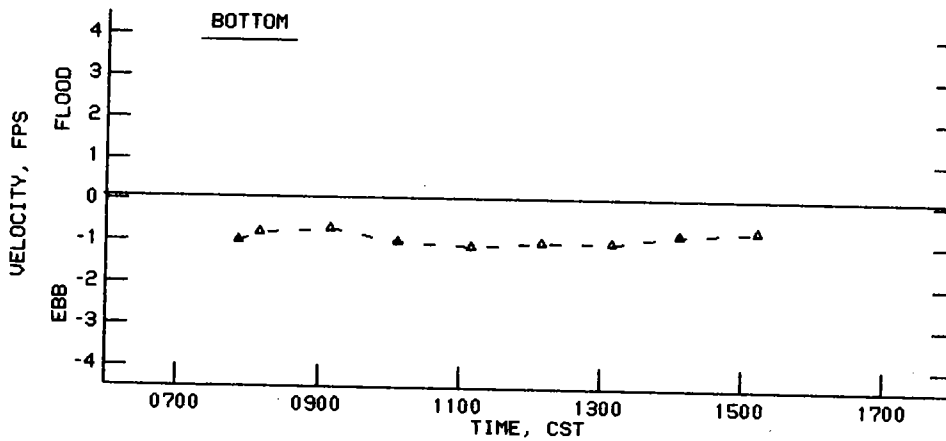
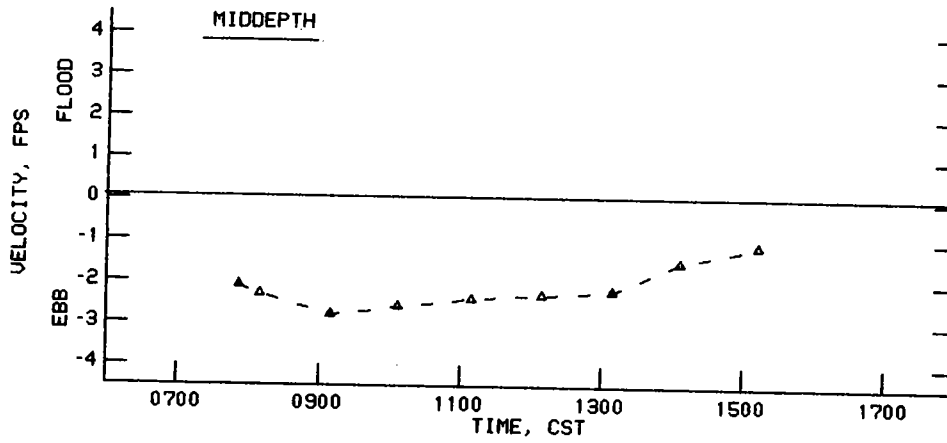
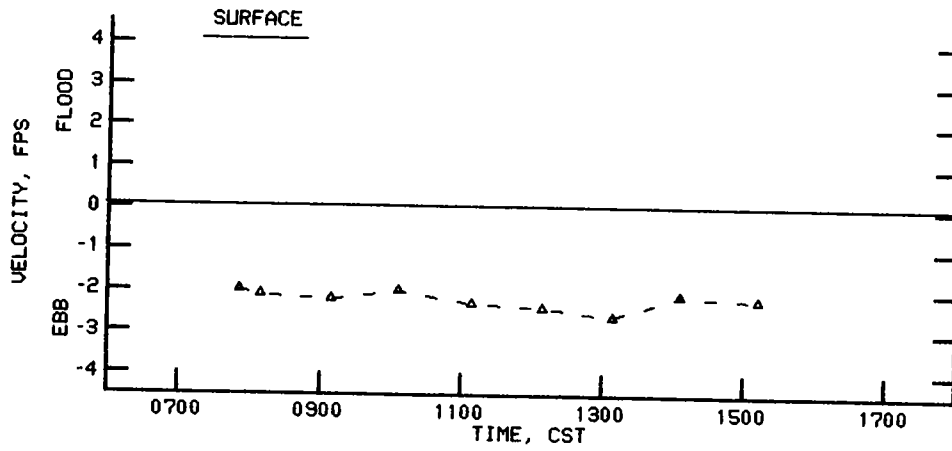
**VELOCITIES AT STATION 3-C**  
**11 NOVEMBER 1988**



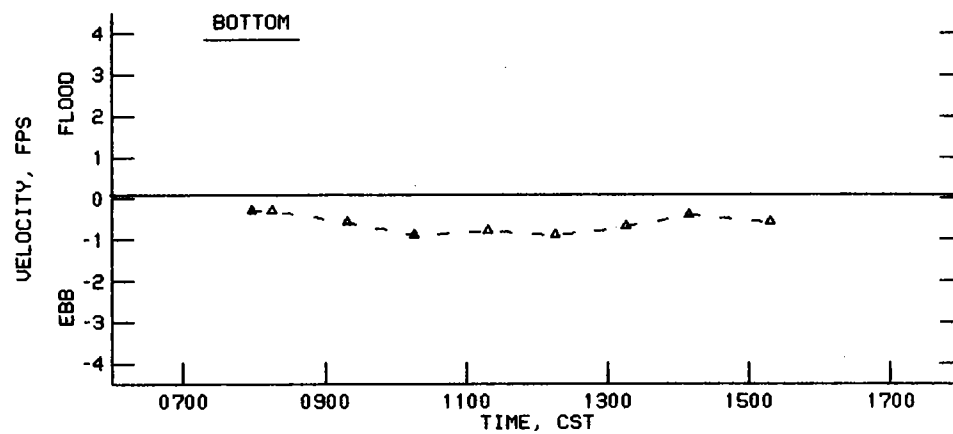
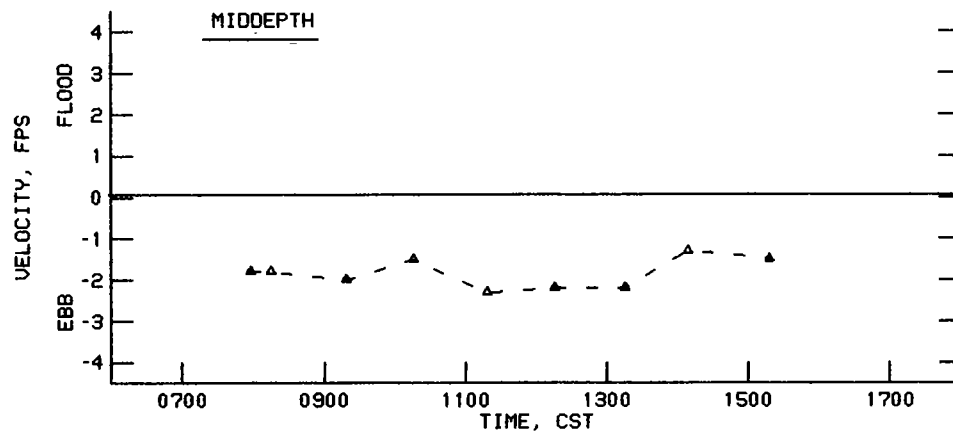
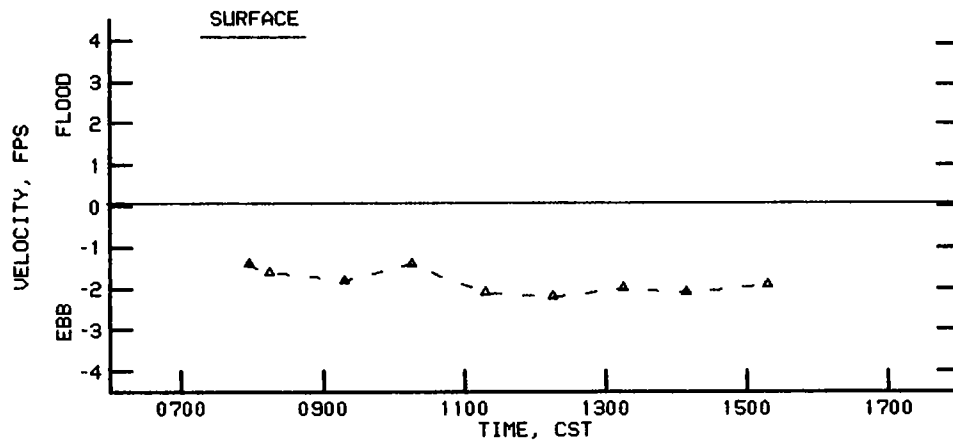
**VELOCITIES AT STATION 3-D**  
11 NOVEMBER 1988



**VELOCITIES AT STATION 1-A  
27 NOVEMBER 1988**

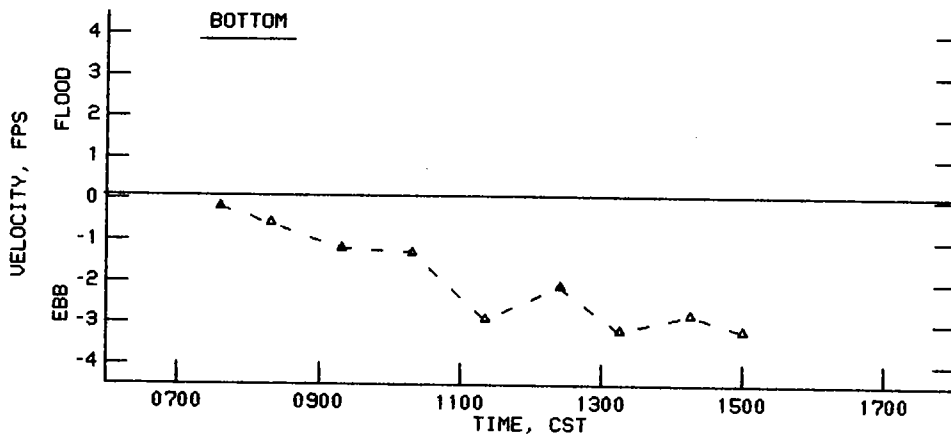
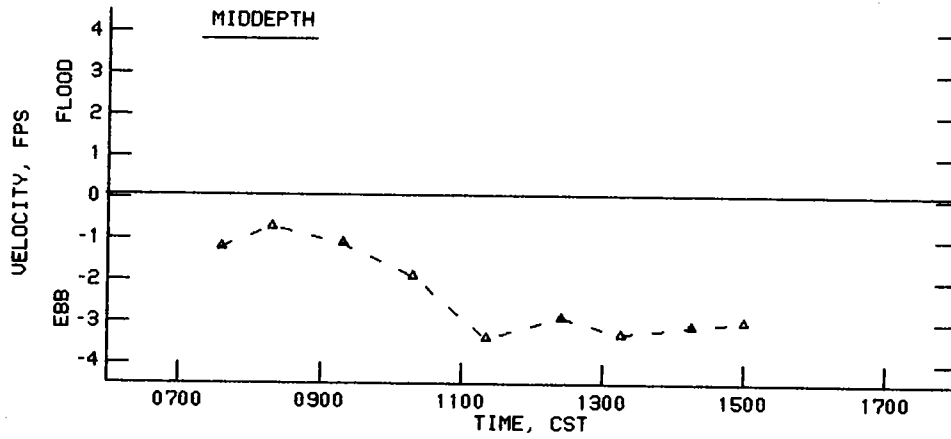
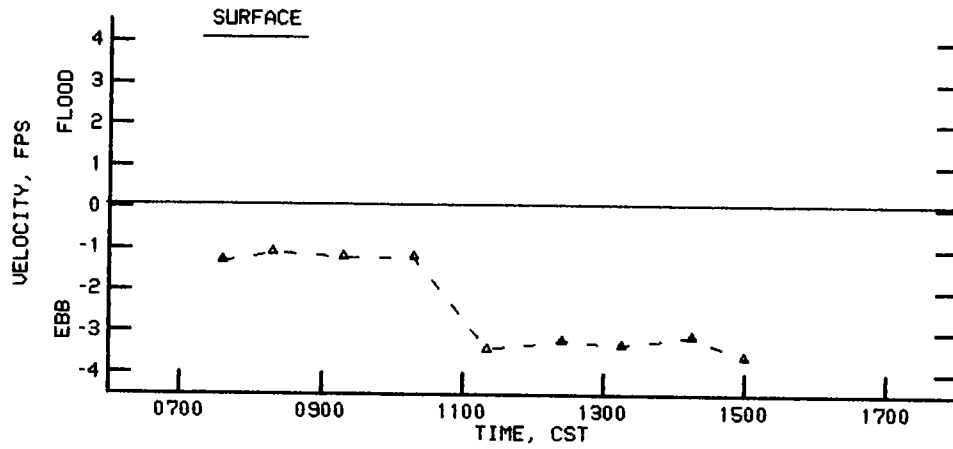


**VELOCITIES AT STATION 1-B**  
27 NOVEMBER 1988

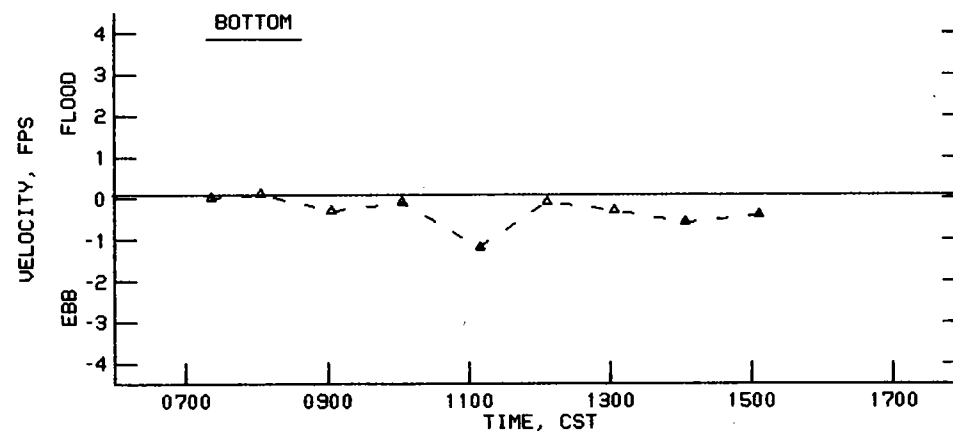
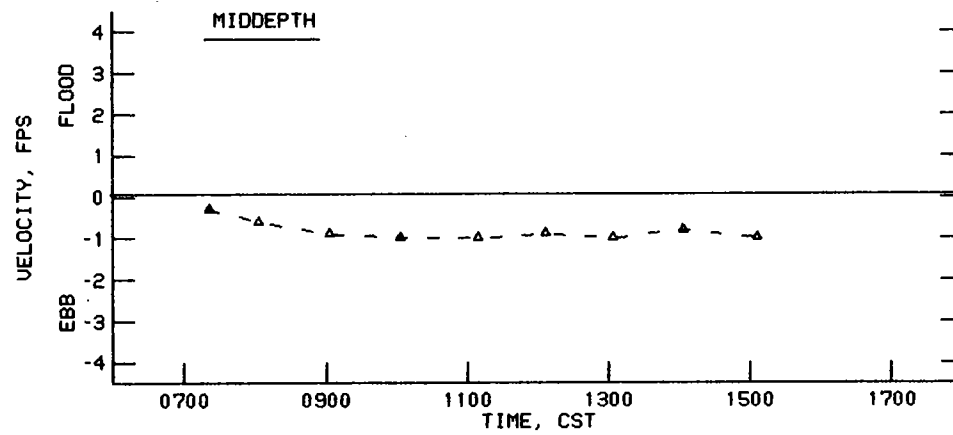
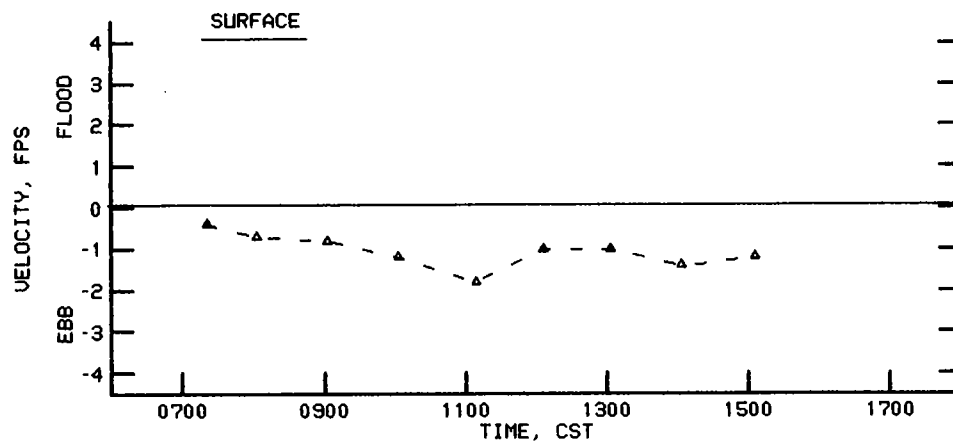


**VELOCITIES AT STATION 1-C  
27 NOVEMBER 1988**

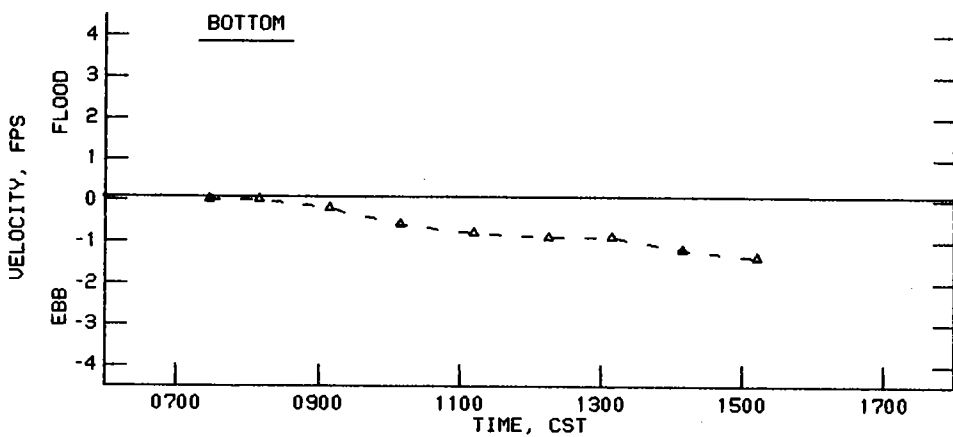
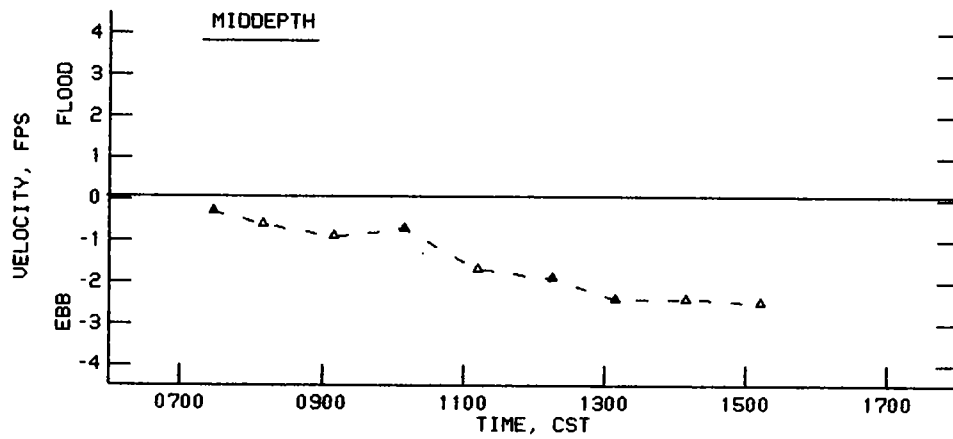
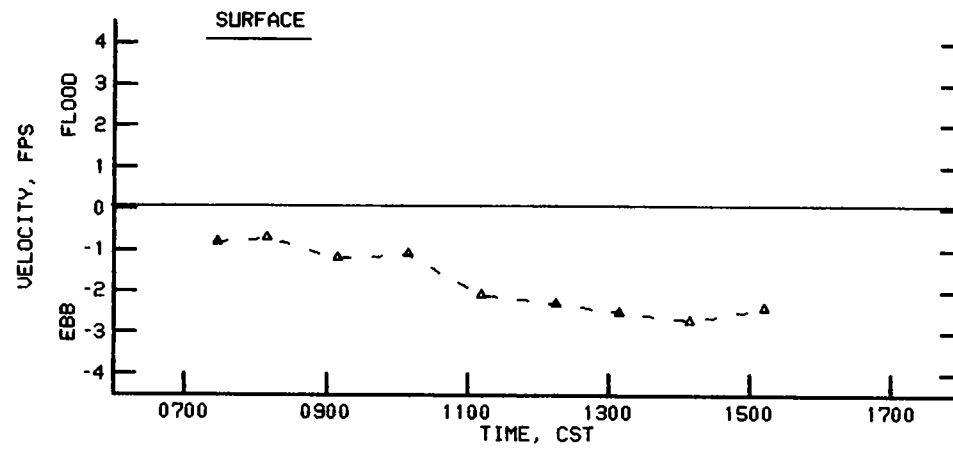




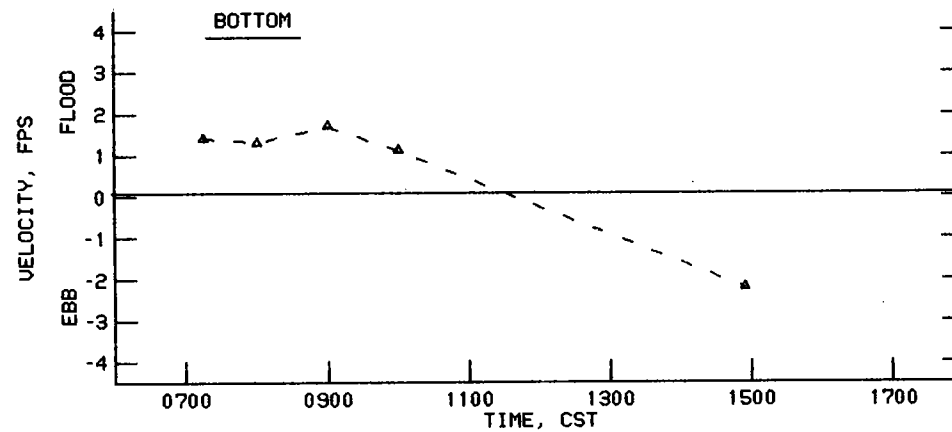
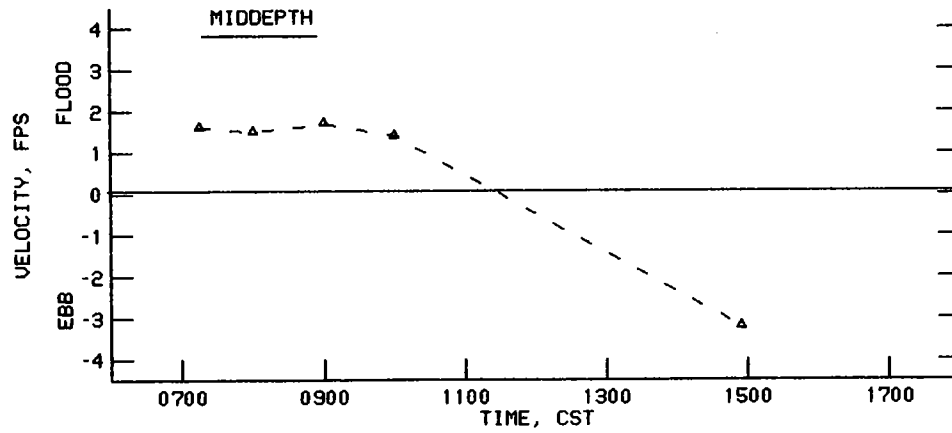
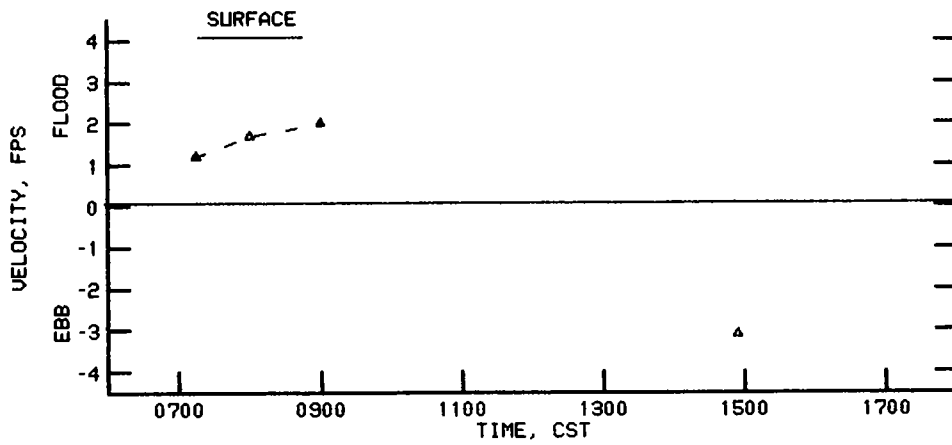
**VELOCITIES AT STATION 2-A**  
27 NOVEMBER 1988



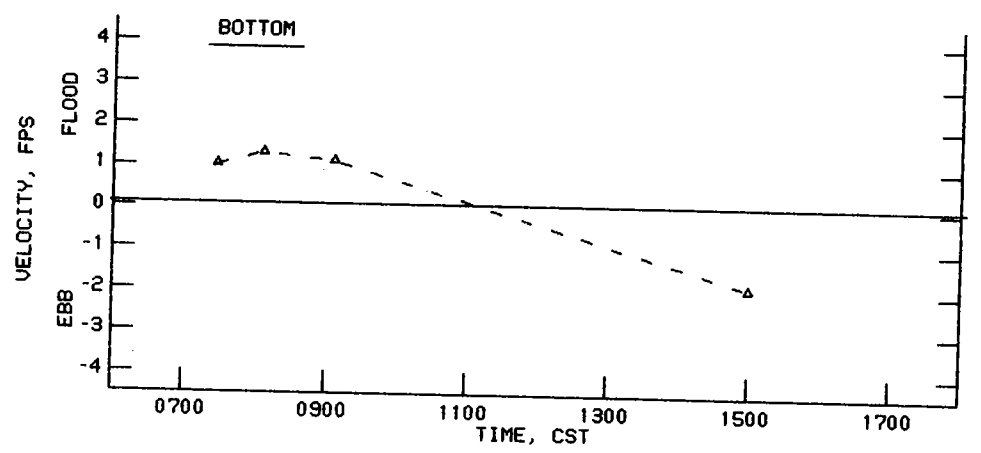
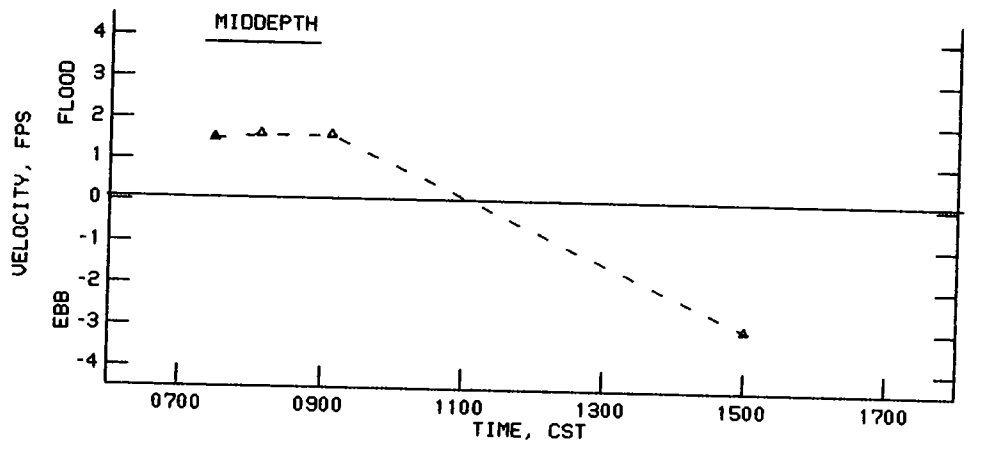
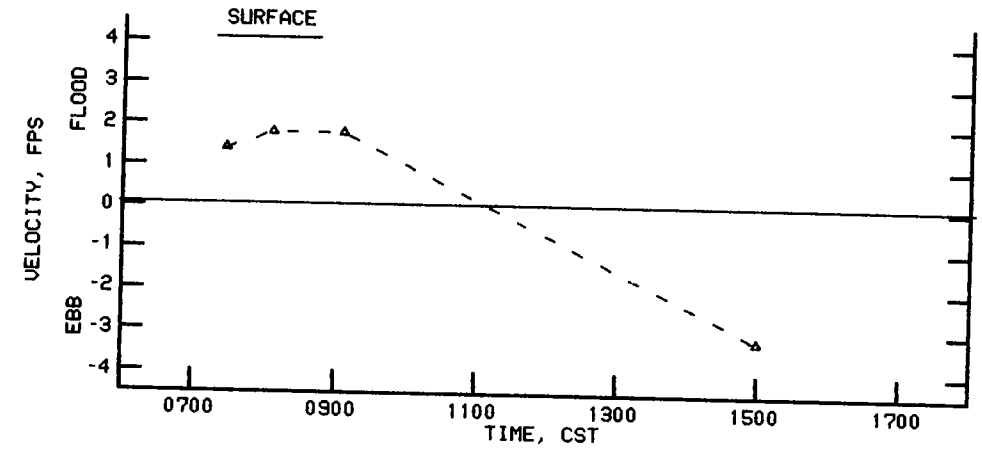
**VELOCITIES AT STATION 2-B  
27 NOVEMBER 1988**



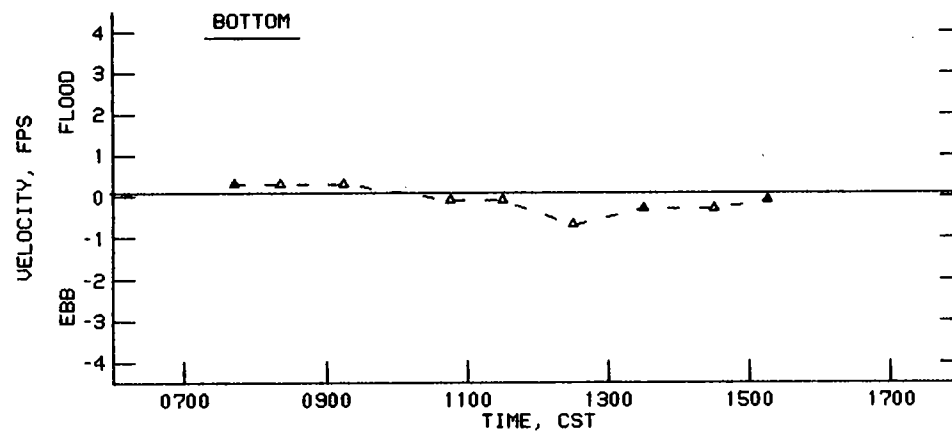
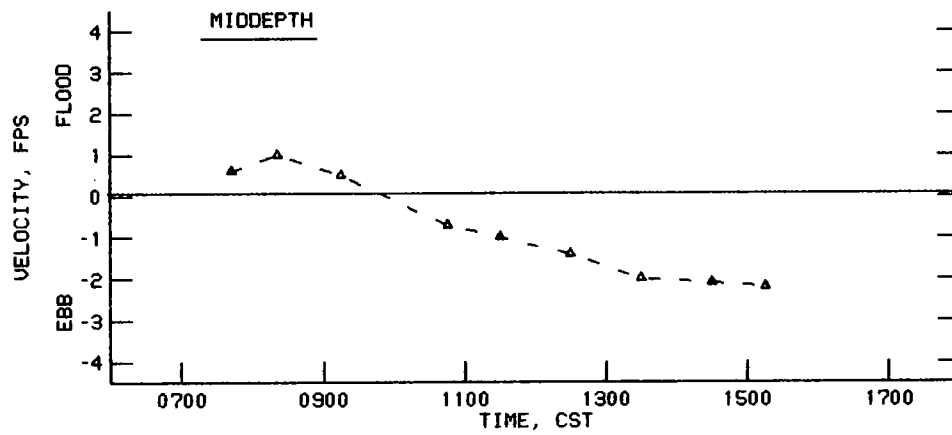
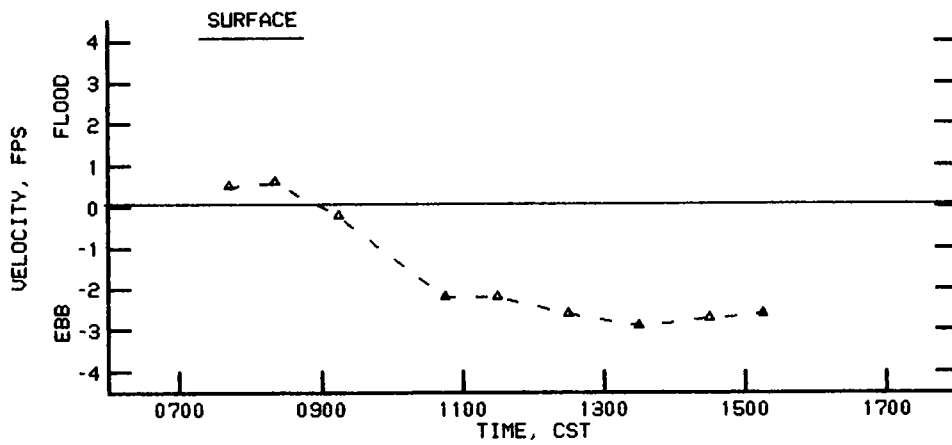
**VELOCITIES AT STATION 2-C**  
27 NOVEMBER 1988



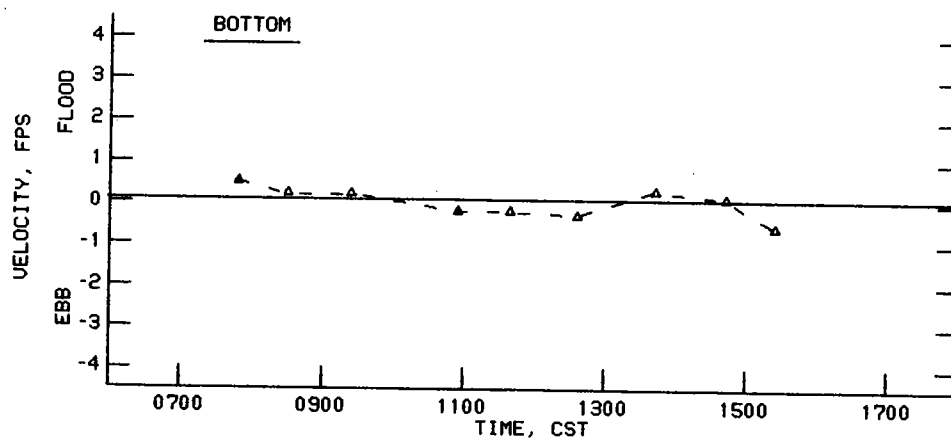
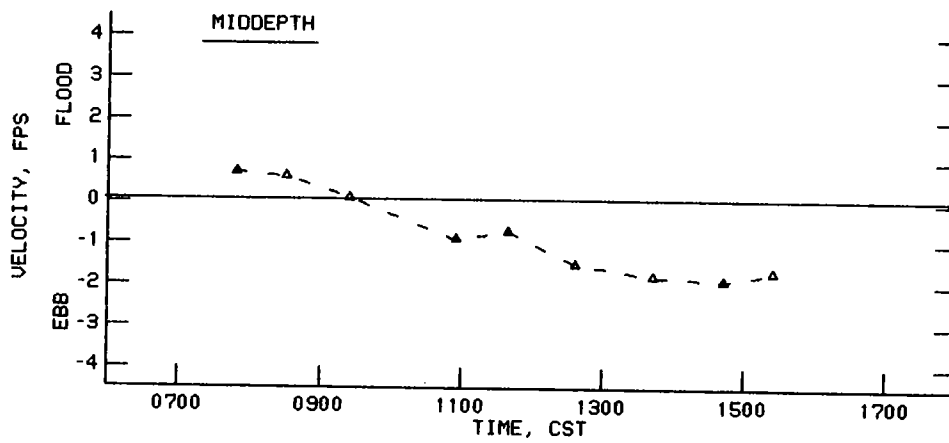
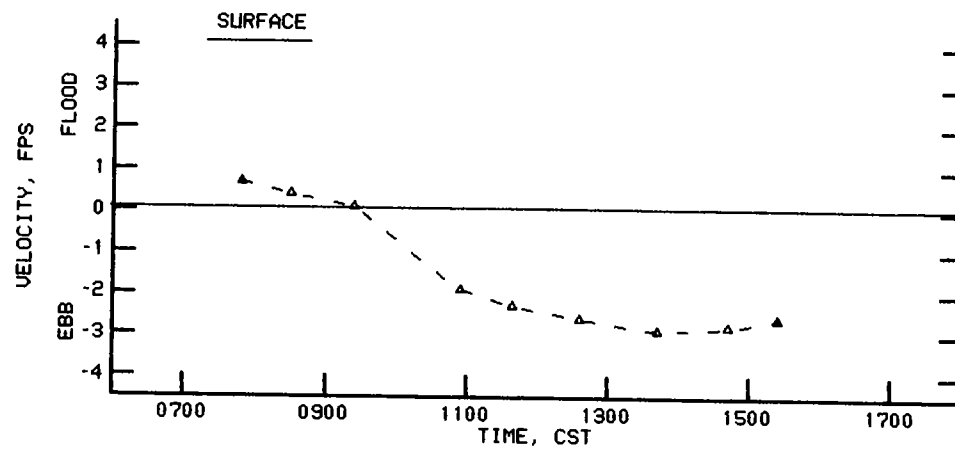
**VELOCITIES AT STATION 3-A**  
27 NOVEMBER 1988



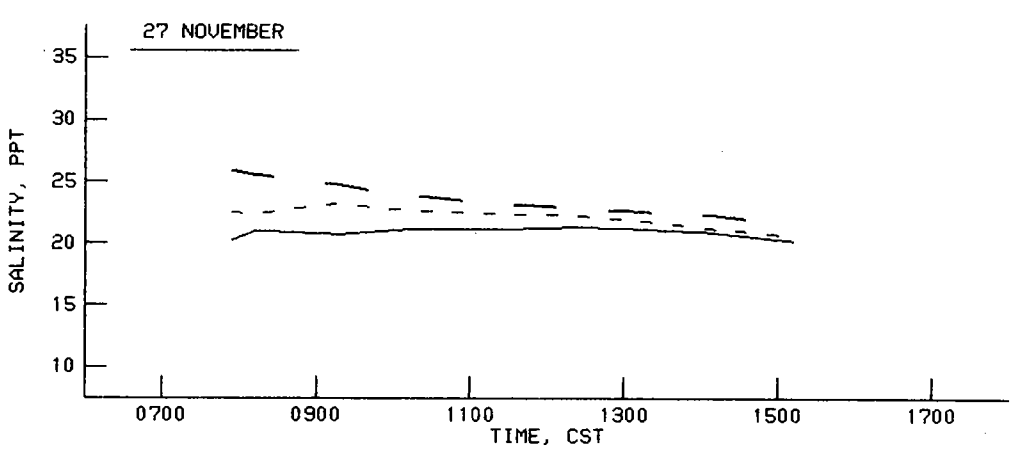
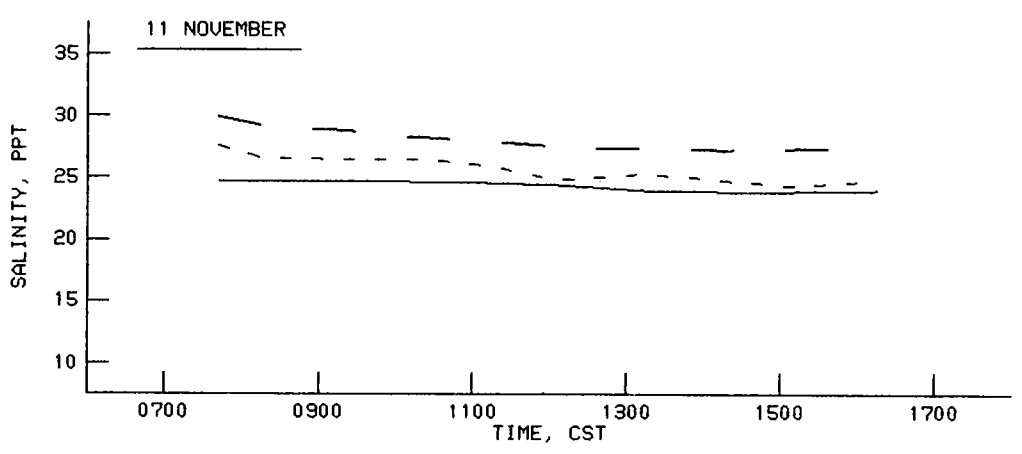
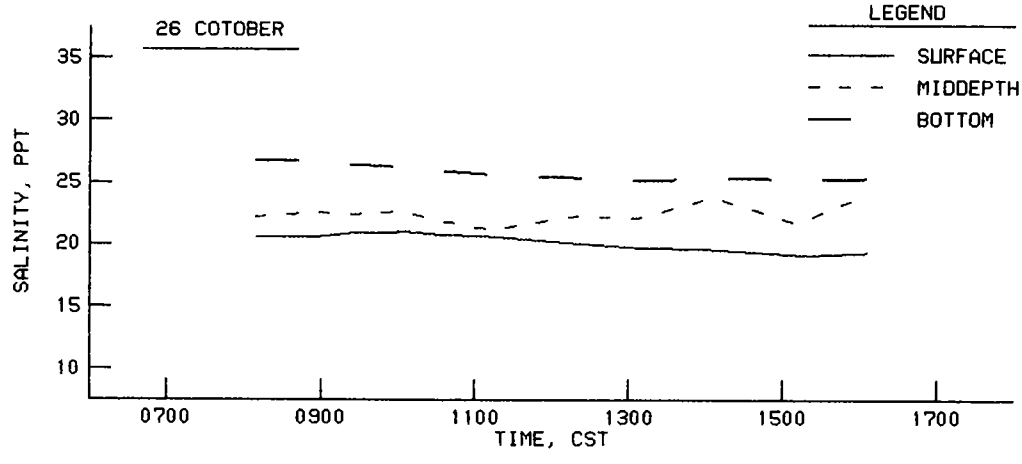
**VELOCITIES AT STATION 3-B**  
27 NOVEMBER 1988



**VELOCITIES AT STATION 3-C**  
27 NOVEMBER 1988

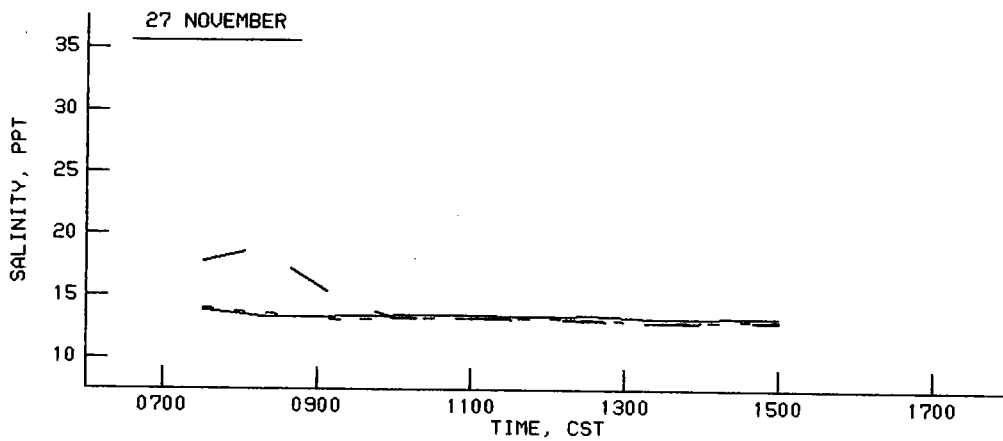
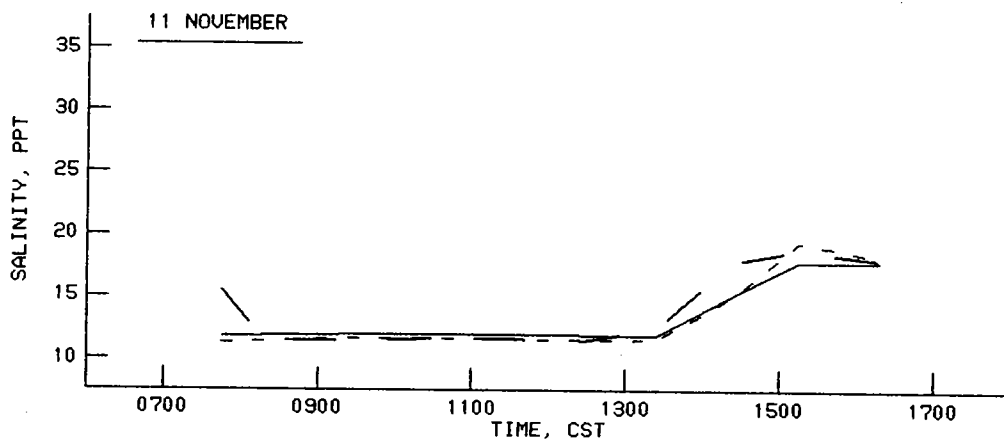
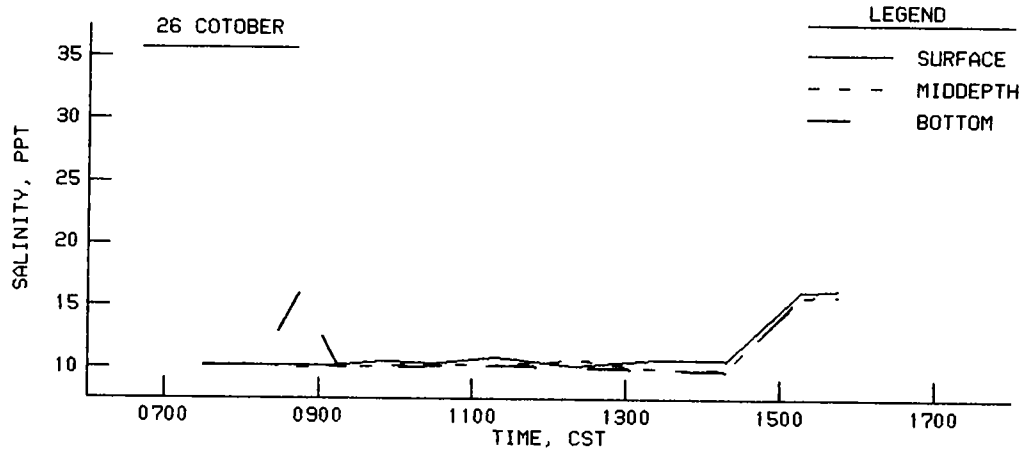


**VELOCITIES AT STATION 3-D**  
27 NOVEMBER 1988

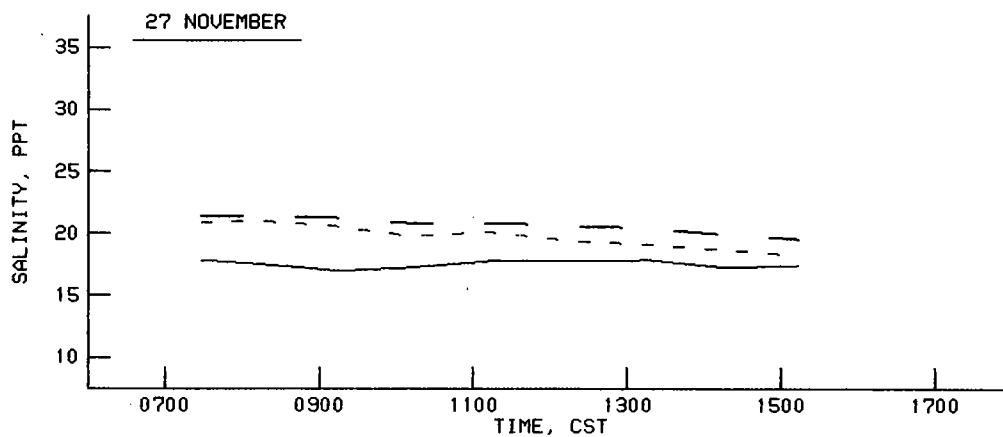
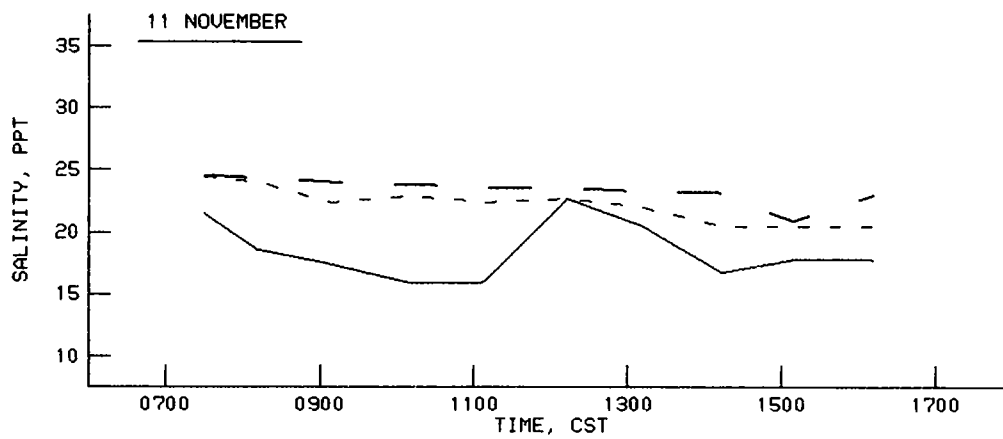
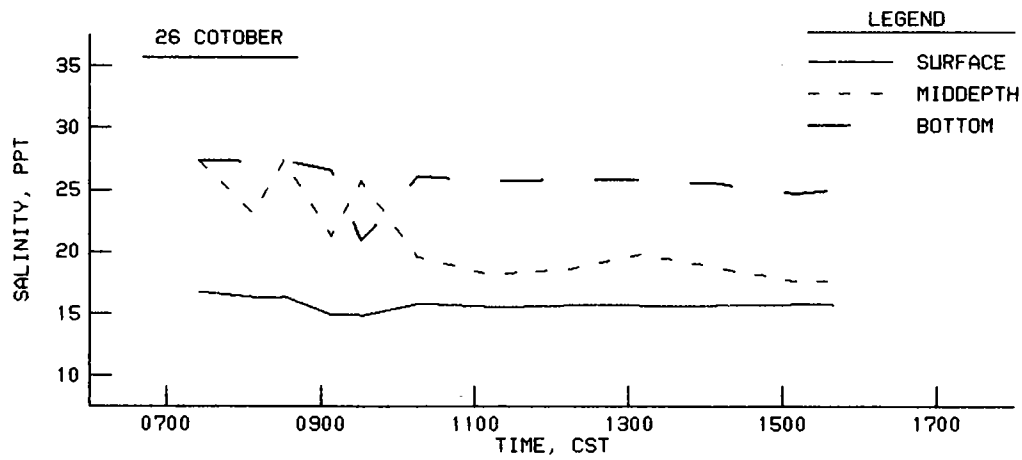


**SALINITY CONCENTRATIONS  
STATION 1-B  
OCTOBER - NOVEMBER 1988**

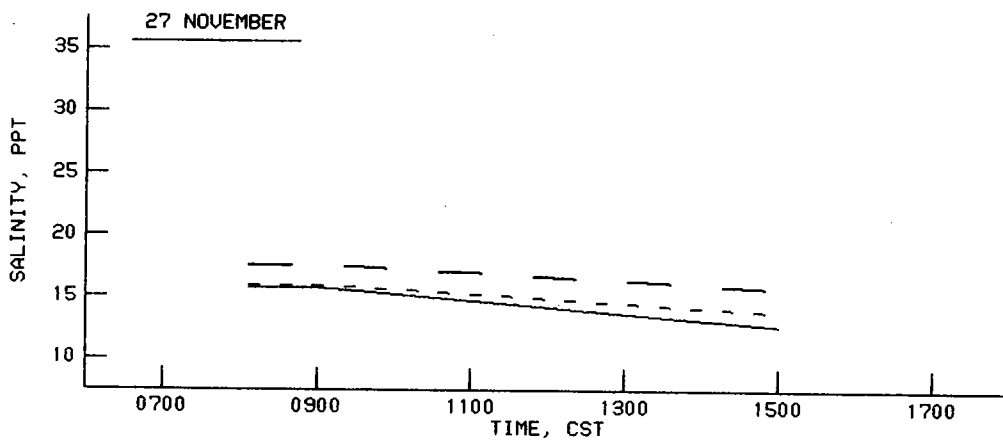
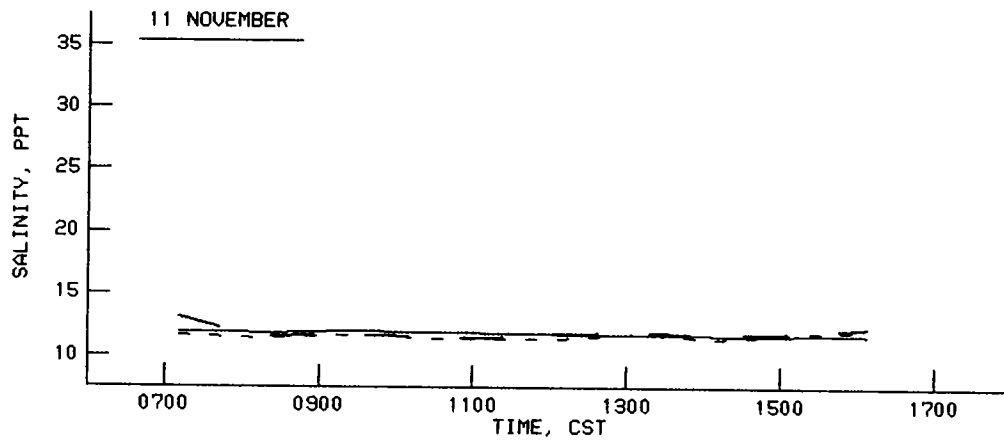
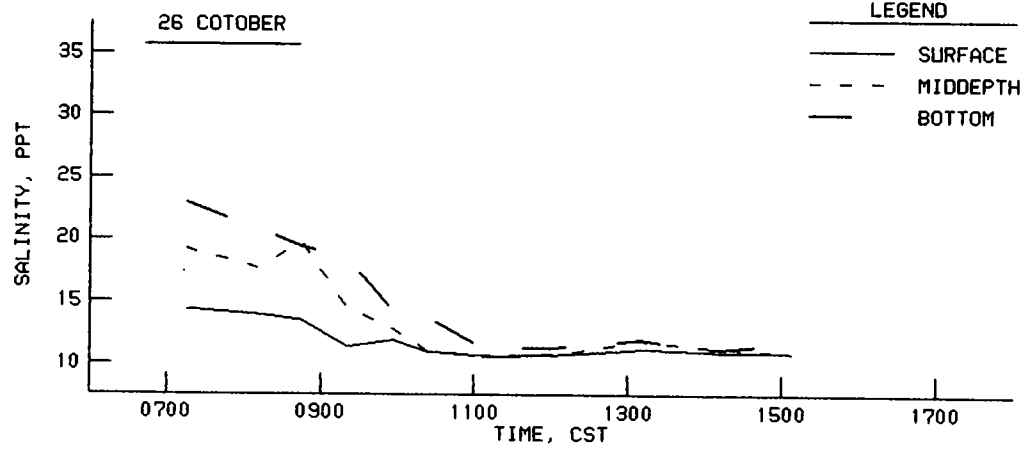




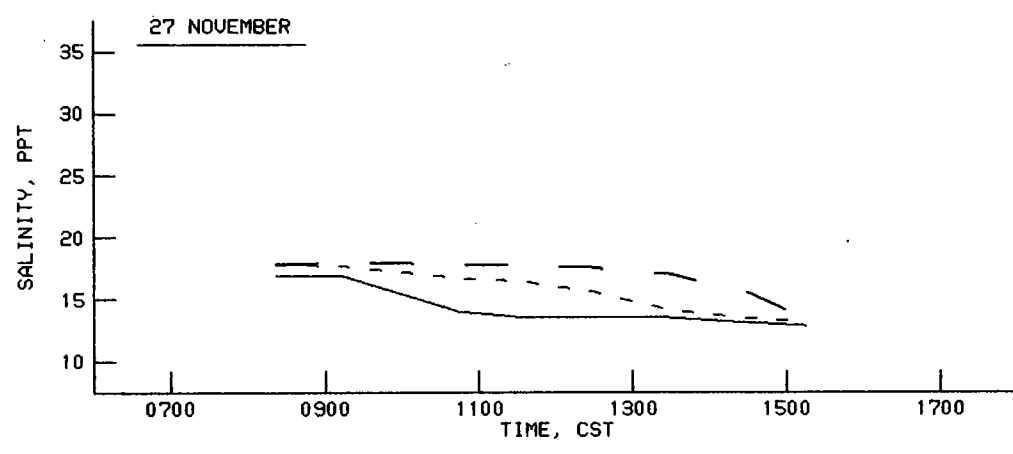
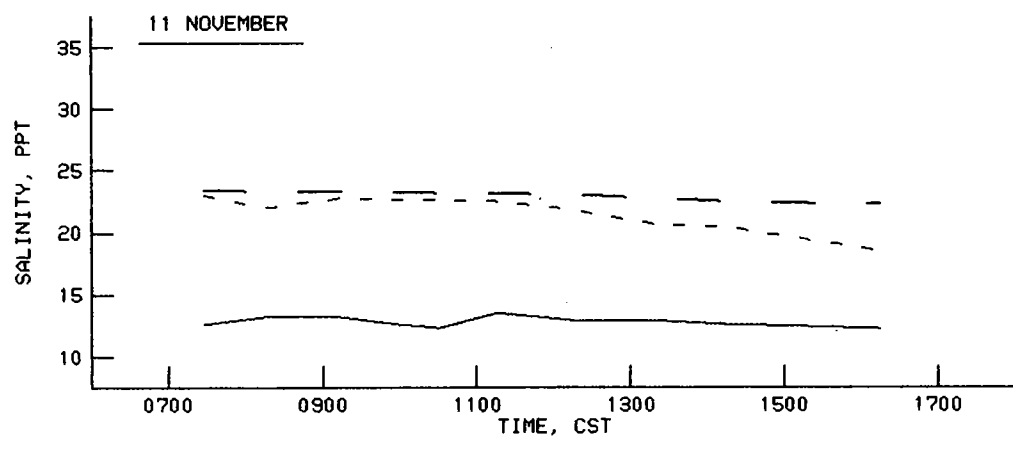
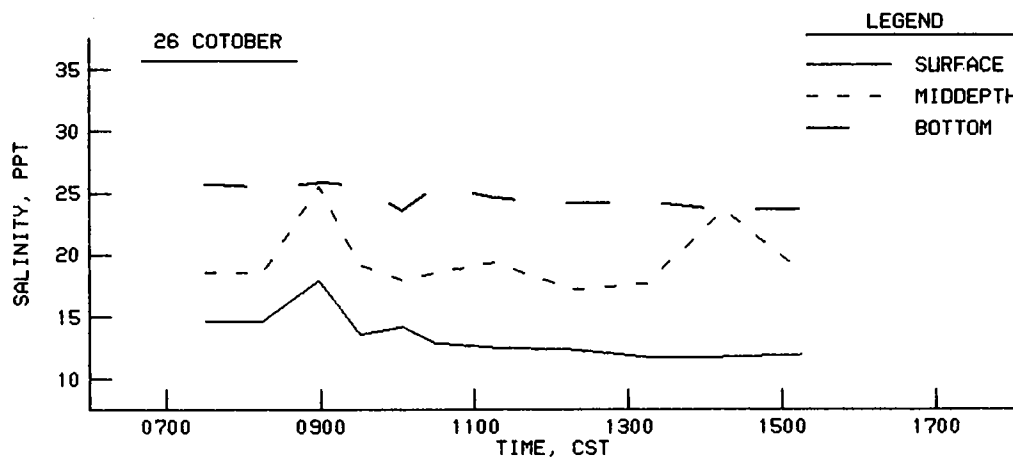
SALINITY CONCENTRATIONS  
 STATION 2-A  
 OCTOBER - NOVEMBER 1988



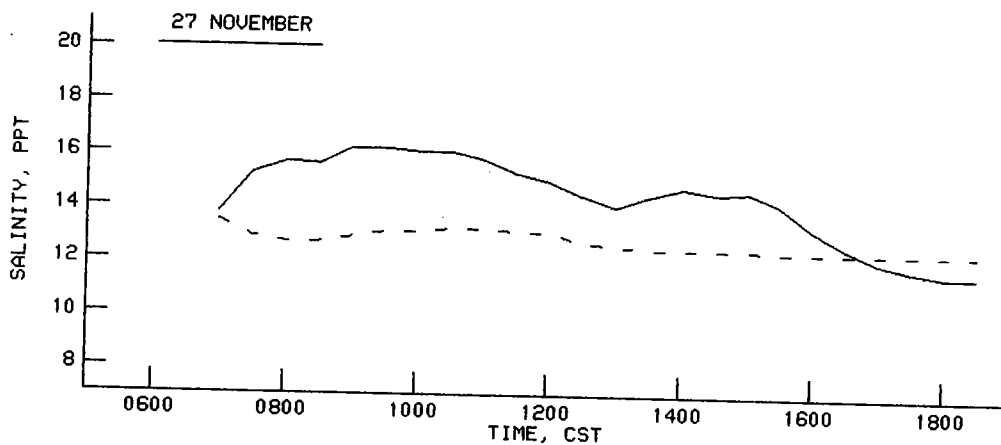
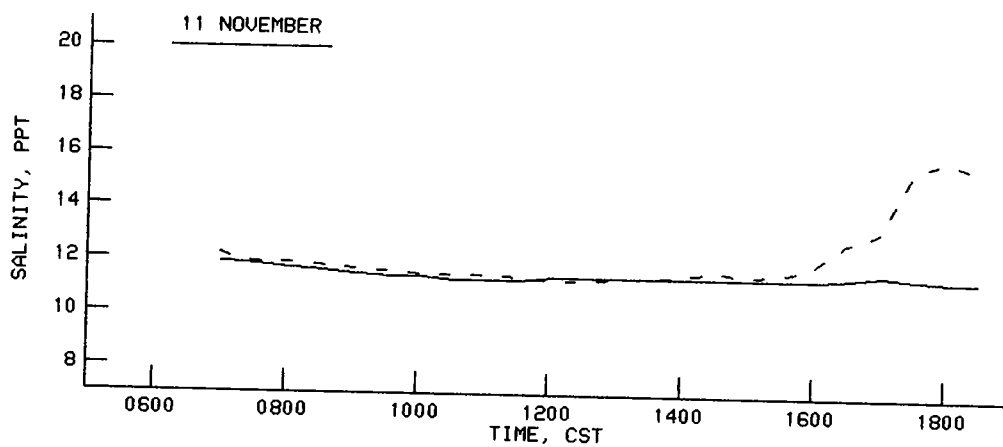
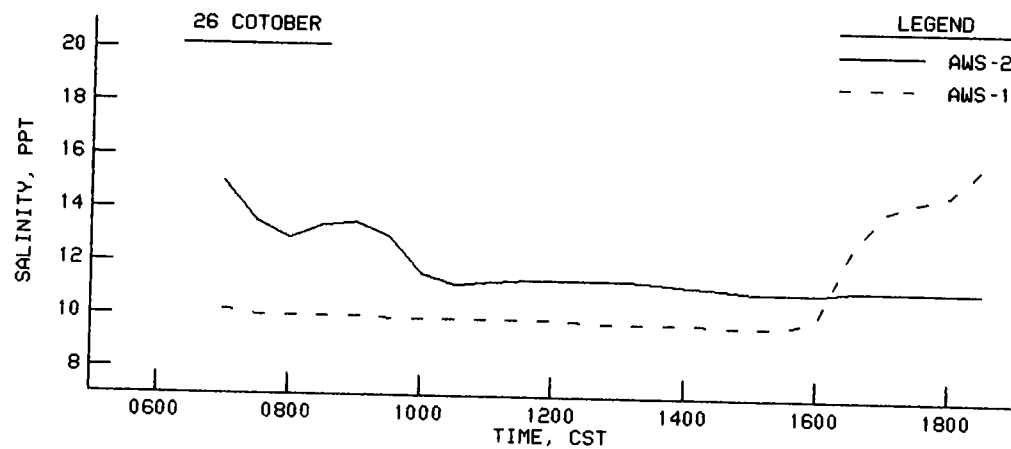
**SALINITY CONCENTRATIONS  
STATION 2-C  
OCTOBER - NOVEMBER 1988**



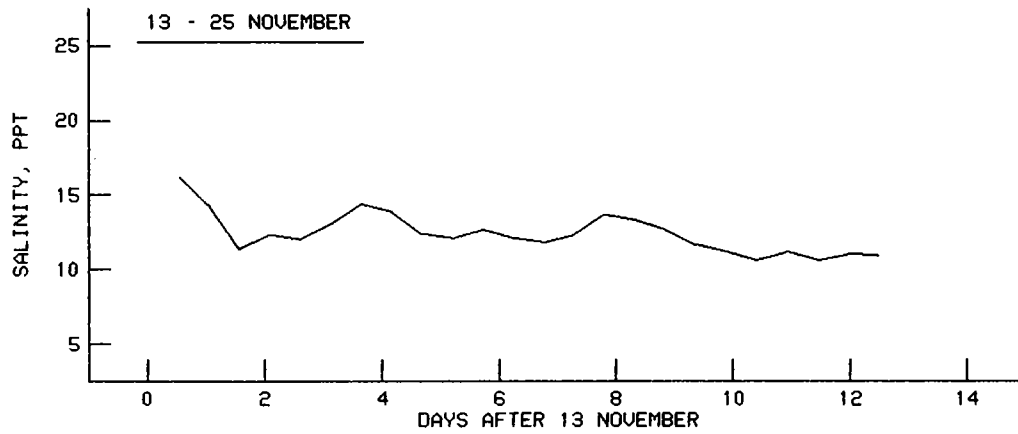
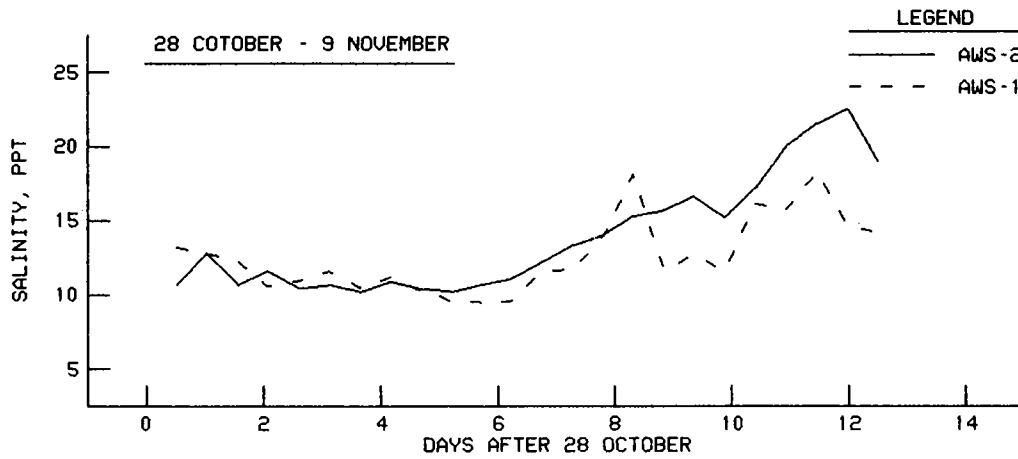
SALINITY CONCENTRATIONS  
 STATION 3-B  
 OCTOBER - NOVEMBER 1988



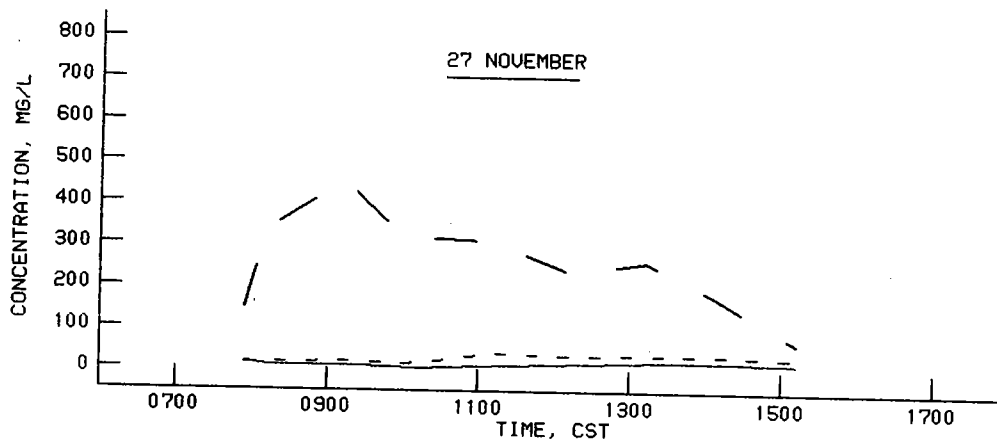
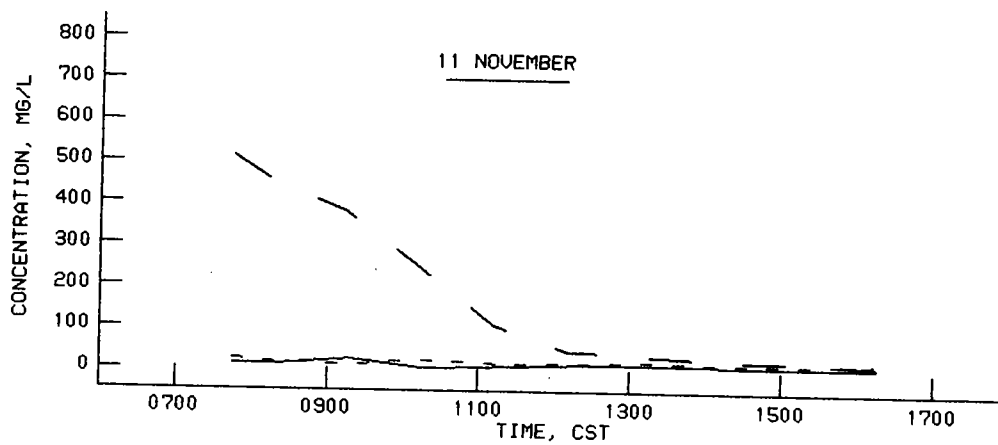
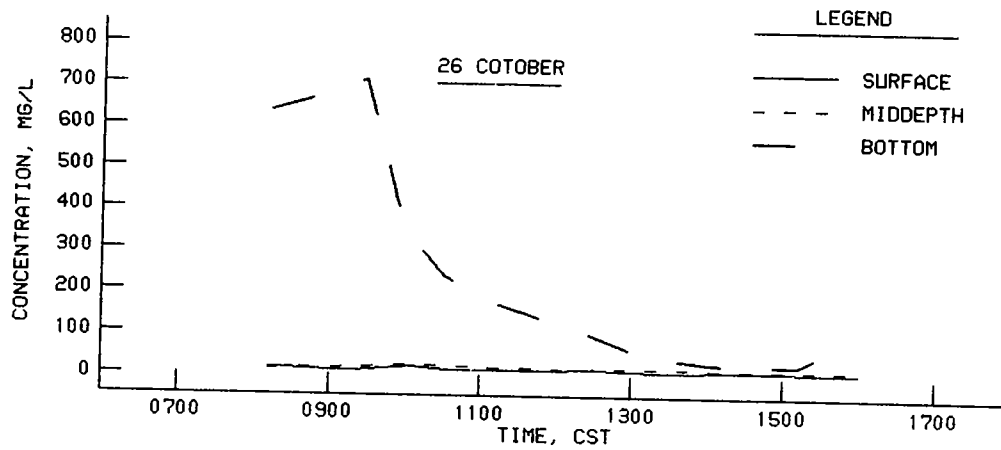
**SALINITY CONCENTRATIONS  
STATION 3-C  
OCTOBER - NOVEMBER 1988**



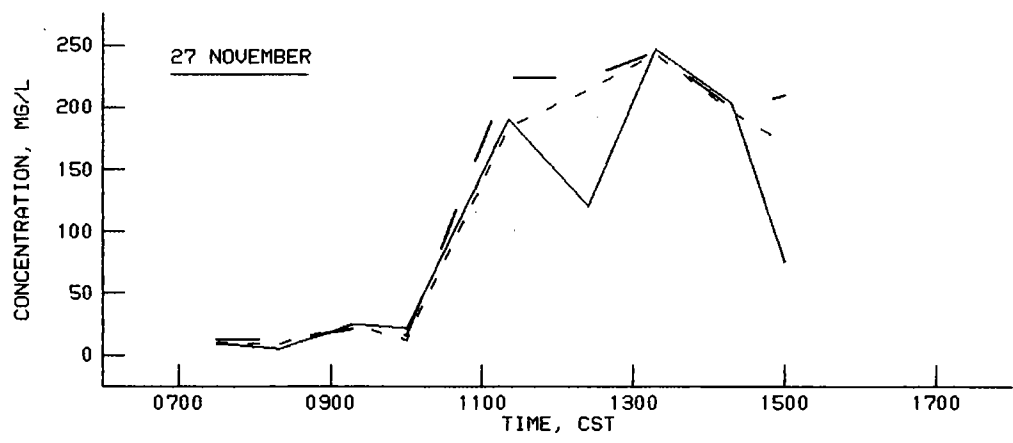
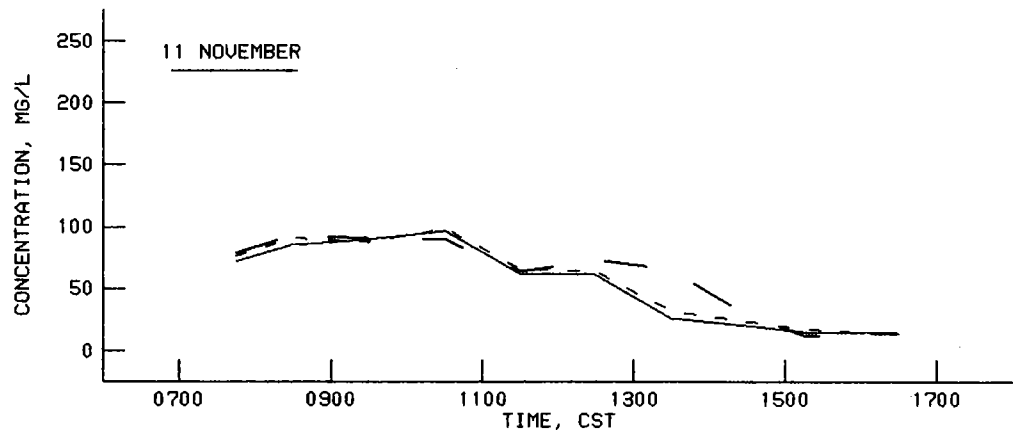
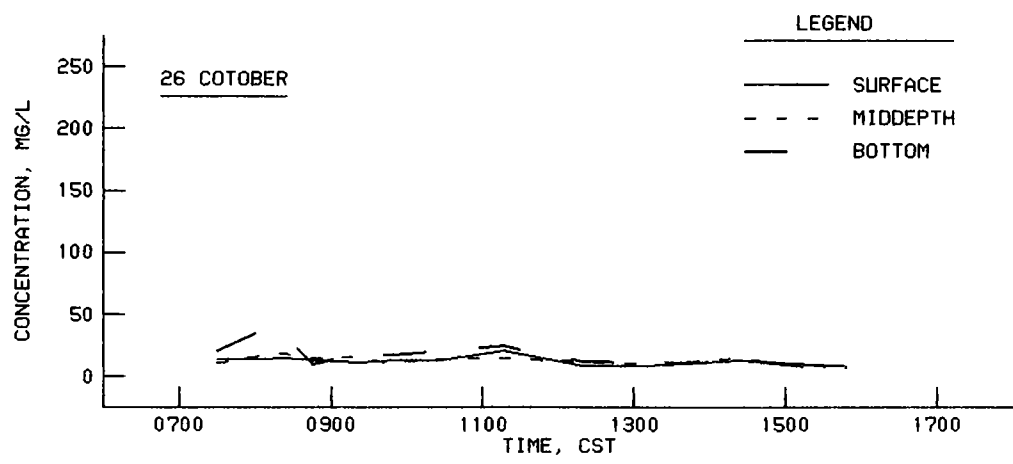
**SALINITY CONCENTRATIONS  
 AUTOMATIC SAMPLERS  
 OCTOBER - NOVEMBER 1988**



**SALINITY CONCENTRATIONS  
 AUTOMATIC SAMPLERS  
 OCTOBER - NOVEMBER 1988**

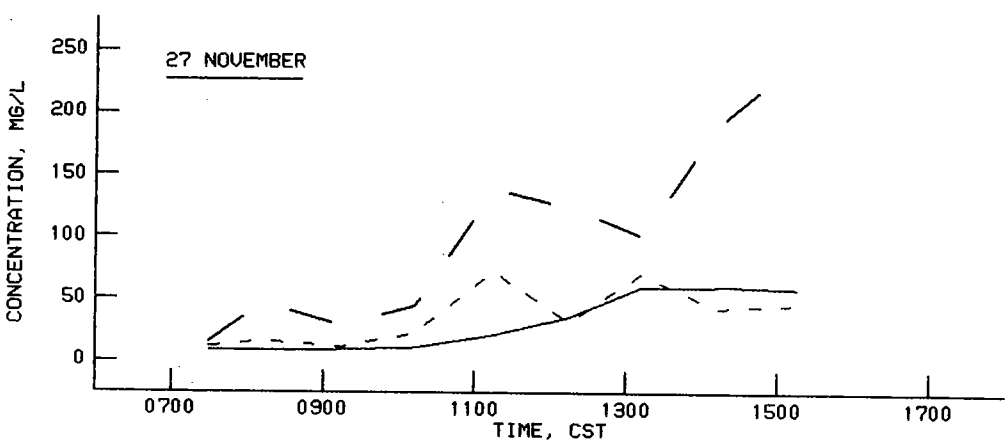
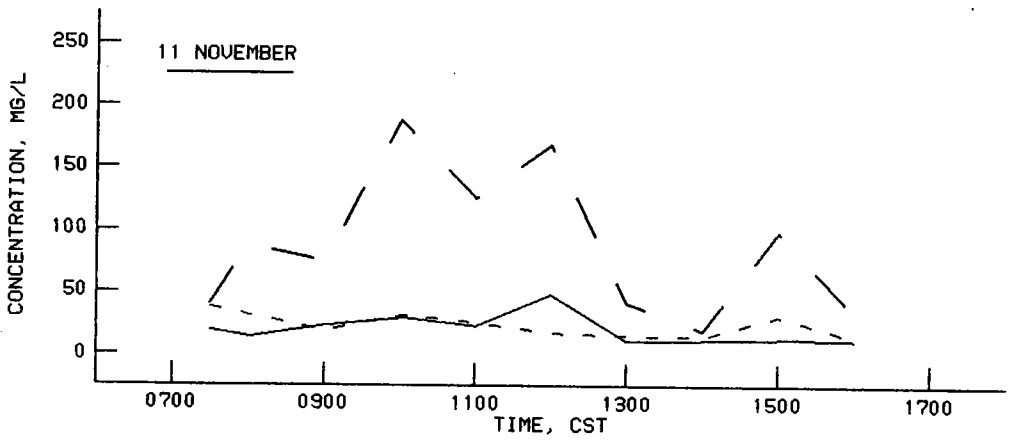
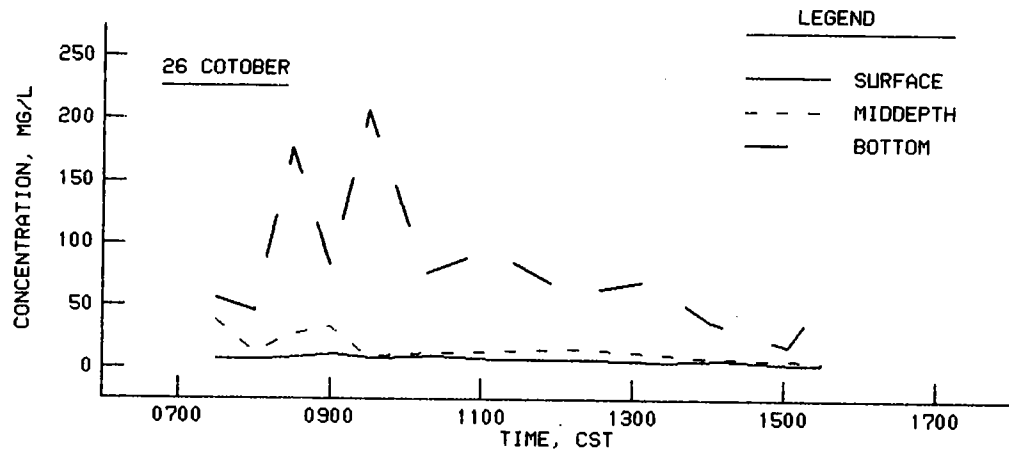


**SUSPENDED SEDIMENT CONCENTRATIONS  
STATION 1-B  
OCTOBER - NOVEMBER 1988**

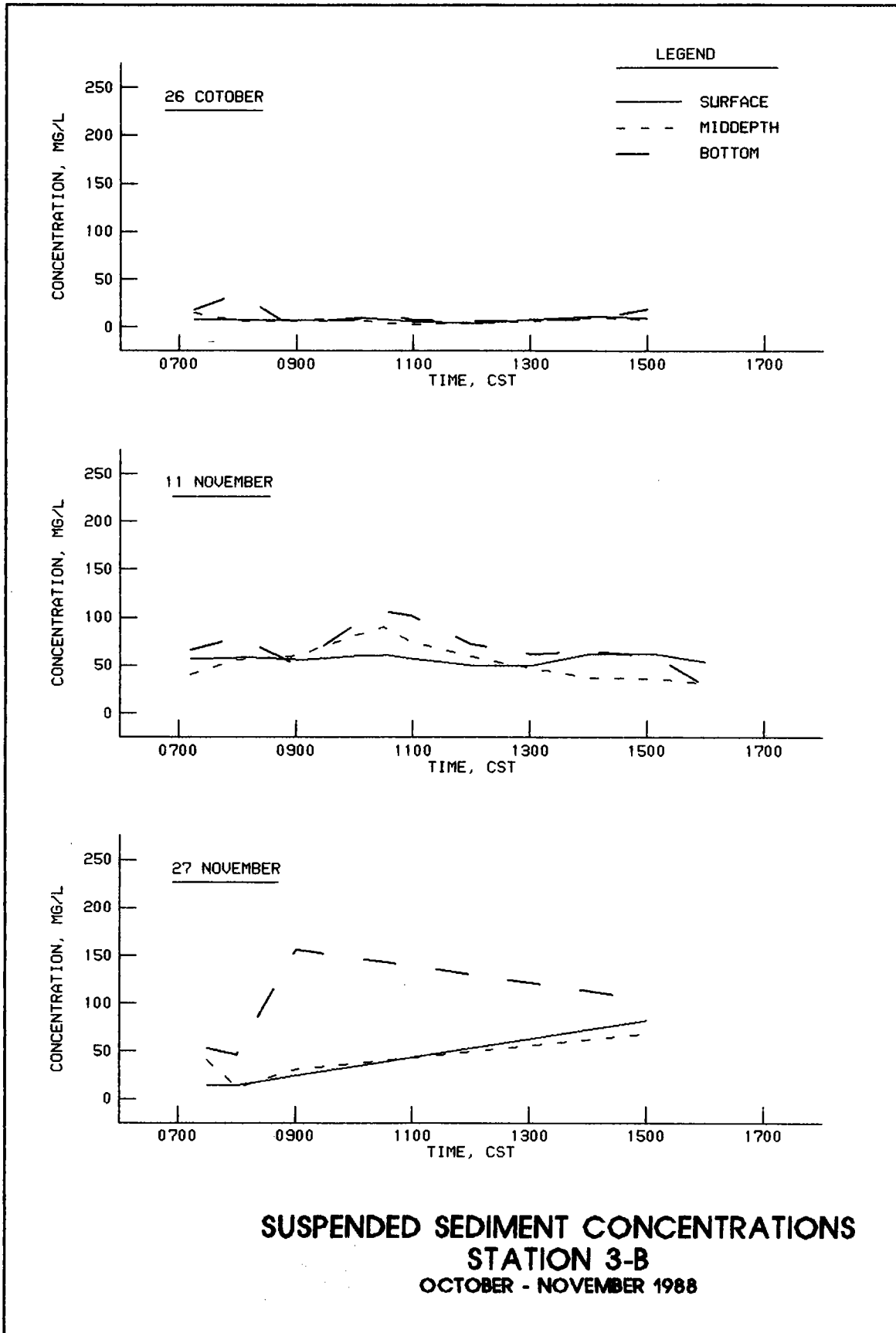


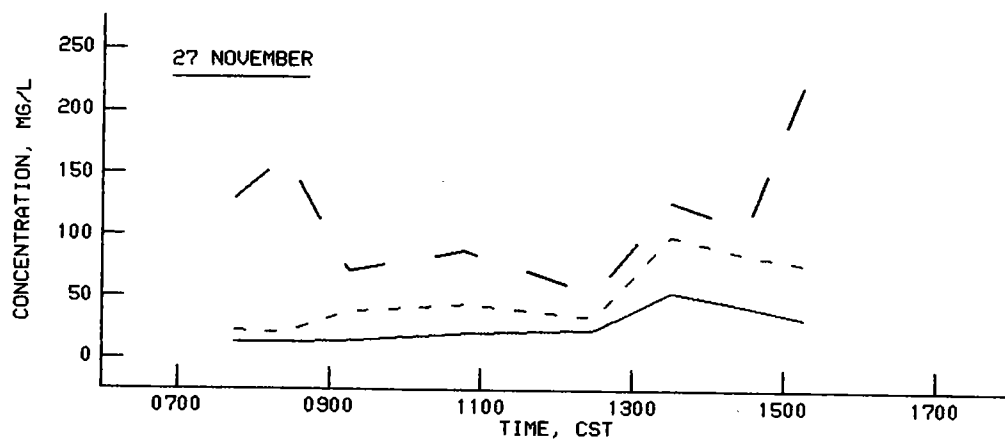
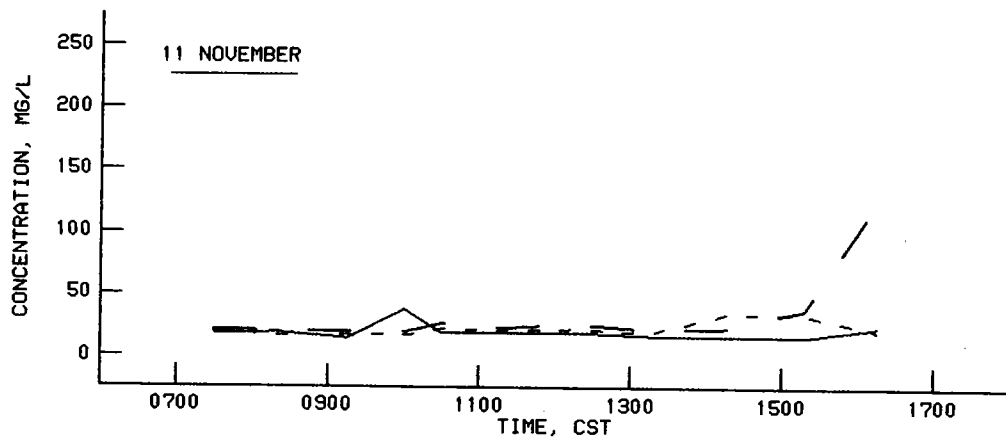
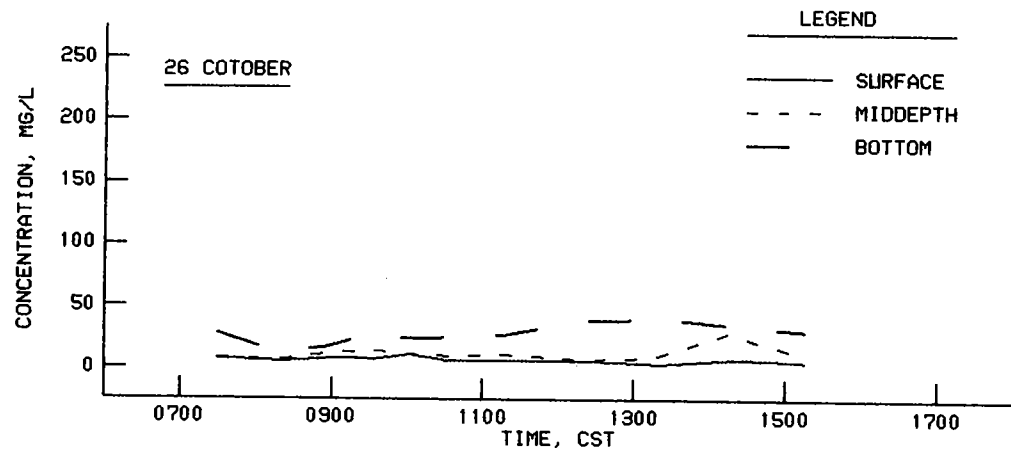
**SUSPENDED SEDIMENT CONCENTRATIONS  
STATION 2-A  
OCTOBER - NOVEMBER 1988**



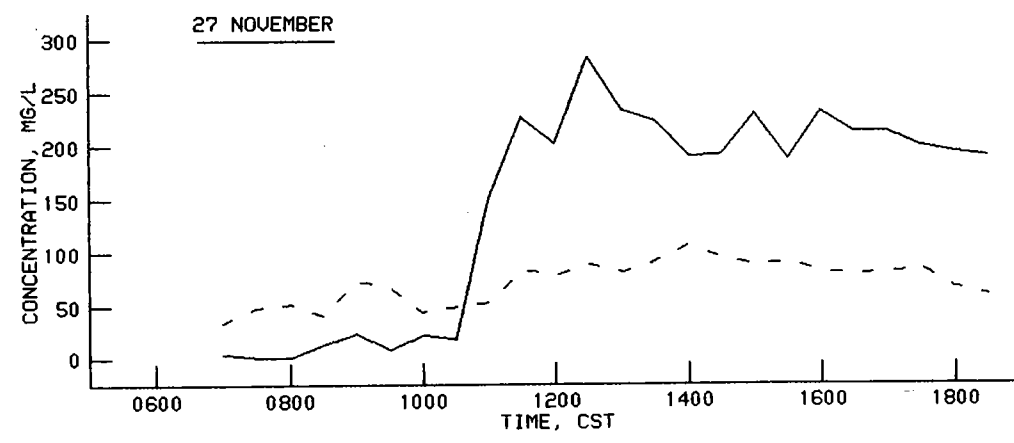
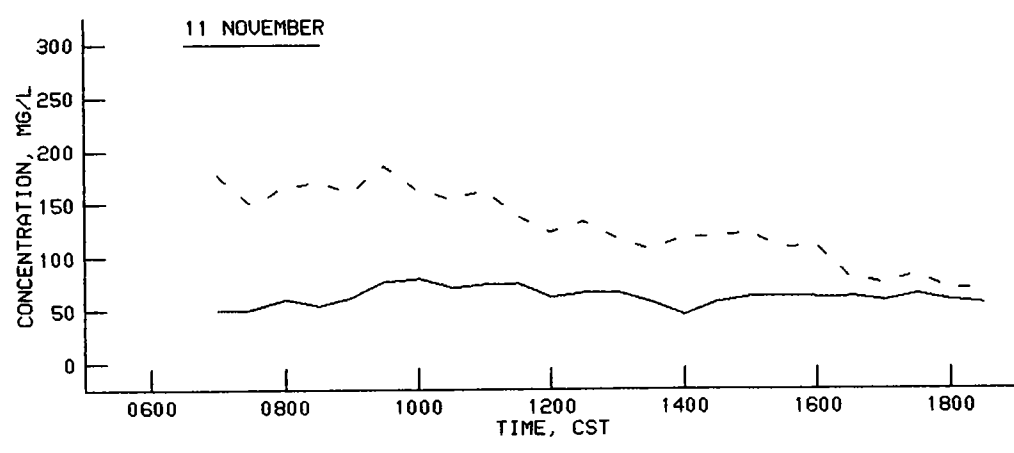
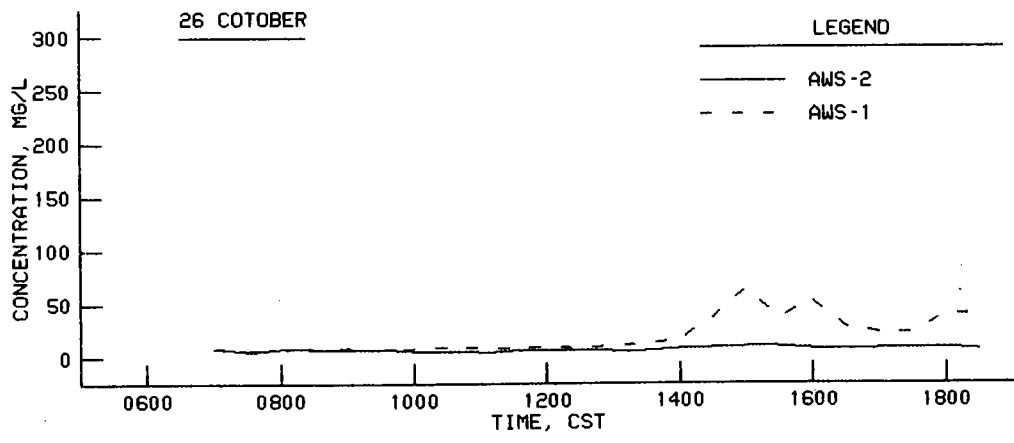


**SUSPENDED SEDIMENT CONCENTRATIONS  
STATION 2-C  
OCTOBER - NOVEMBER 1988**

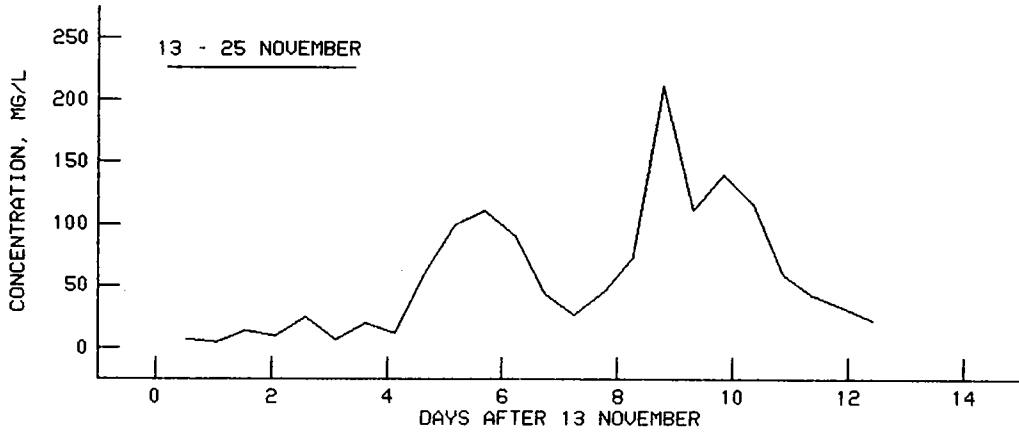
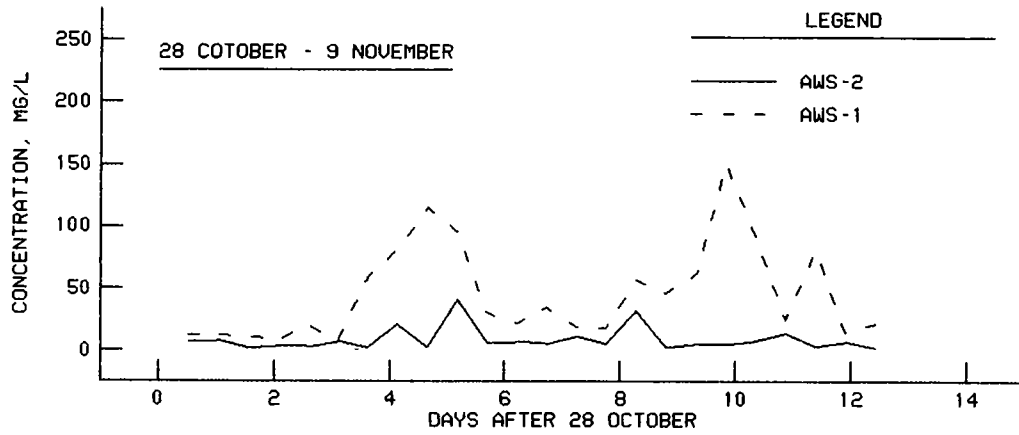




**SUSPENDED SEDIMENT CONCENTRATIONS  
STATION 3-C  
OCTOBER - NOVEMBER 1988**



**SUSPENDED SEDIMENT CONCENTRATIONS  
 AUTOMATIC SAMPLERS  
 OCTOBER - NOVEMBER 1988**



**SUSPENDED SEDIMENT CONCENTRATIONS  
 AUTOMATIC SAMPLERS  
 OCTOBER - NOVEMBER 1988**