

H10790

NOAA FORM 76-35A	
U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE	
DESCRIPTIVE REPORT	
Type of Survey	HYDROGRAPHIC/SIDE SCAN SONAR
Field No.	AHP-10-7-97
Registry No.	H10790
LOCALITY	
State	MARYLAND
General Locality	CHESAPEAKE BAY
Sublocality	COACHES ISLAND TO DEEP COVE CREEK
19 98	
CHIEF OF PARTY BRIAN LINK	
LIBRARY & ARCHIVES	
DATE	JUL 14 1999

**HYDROGRAPHIC TITLE SHEET**

H-10790

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

AHP-10-7-97

State Maryland

General locality Chesapeake Bay

Locality Coaches Island to Deep Cove Creek

Scale 1:10,000

Date of survey March 13-June 30, 1998

Instructions dated 4-17-95

Project No. OPR-E346-AHP

Vessel NOAA Vessel BAY HYDROGRAPHER

Chief of party Brian Link

Surveyed by LTJG Shepard M. Smith, Monica M. Cisternelli

Soundings taken by echo sounder, hand lead, pole Raytheon DSF-6000N and Odom Echotrac Echosounders

Graphic record scaled by LTJG Shepard M. Smith, Monica M. Cisternelli

Graphic record checked by LTJG Shepard M. Smith, Monica M. Cisternelli

Protracted by N/A

Automated plot by N/A HP 25000P Plotter

Verification by AHB Personnel

Soundings in Meters (feet) at ~~MLLW~~ Feet at MLLW ~~(feet)~~

REMARKS: All times are recorded in UTC

Notes in the Descriptive Report were made in red during of file processing.

DESCRIPTIVE REPORT TO ACCOMPANY  
HYDROGRAPHIC SURVEY  
OPR-E346-AHP  
AHP-10-7-97  
H-10790

Atlantic Hydrographic Party  
NOAA S/V BAY HYDROGRAPHER  
LTjg SHEPARD SMITH, OFFICER IN CHARGE

**A. PROJECT**

A.1 This basic hydrographic survey was conducted in accordance with Hydrographic Project Instructions OPR-E346-AHP, Northern Chesapeake Bay - Baltimore Harbor, Maryland

A.2 The original instructions are dated April 17, 1995

A.3 There have been four changes to the original instructions:

- Change No. 1 dated April 25, 1996
- Change No. 2 dated March 31, 1997
- Change No. 3 dated January 15, 1998
- Change No. 4 dated March 25, 1998

A.4 This Descriptive Report covers sheet "J" of OPR-E346-AHP. This sheet lies between Coaches Island and Deep Cove Creek, Maryland. See section B.2 for exact survey boundaries.

A.5 Project OPR-E346-AHP responds to requests from Maryland Port Authority, Association of Maryland Pilots, U.S. Army Corps of Engineers, and the U.S. Coast Guard for modern hydrographic surveys.

**B. AREA SURVEYED**

B.1 This survey covers the navigable area between Coaches Island and Deep Cove Creek, Chesapeake Bay.

B.2 This sheet has the following boundaries

1. SW Corner 38°44'55"N 076°31'<sup>44</sup>~~39~~"W
2. NW Corner 38°48'<sup>03</sup>~~03~~"N 076°29'<sup>14</sup>~~17~~"W
3. SE Corner 38°44'54"N 076°23'54"W
4. NE Corner 38°48'03"N 076°21'<sup>56</sup>~~55~~"W

B.3 Data collection for this survey began on November 1997 and was subsequently rejected due to poor side scan imagery. Data collection resumed on March 13, 1998 (DN 072) and ended on June 30, 1998 (DN 181).

### C. SURVEY VESSELS

C.1 The following vessel was used during this survey:

<u>Vessel</u>	<u>EDP Number</u>	<u>Primary Function</u>
NOAA Survey Vessel BAY HYDROGRAPHER	1107	Hydrography and Side Scan Operations

C.2 No unusual vessel configurations were used during this survey.

### D. AUTOMATED DATA ACQUISITION AND PROCESSING - See also Evaluation Report

D.1 All sounding data acquisition software and data processing software versions are found on the **Hydrosoft** CD, version 8.2. **HYPACK** software was used exclusively for data acquisition; no processing modules were used.

D.2 The SEABIRD SBE-19 sound velocity profile unit was utilized with **SEASOFT 3.3M** and **SEACAT 3.1** software. The program **VELOCITY** (Version 3.1) was used to process the collected data and calculate velocity corrections.

D.3 Post processing of sounding data was accomplished using **HPS** (Hydrographic Processing System), **MapInfo**, and the **HPS\_MI** MapBasic application.

D.4 ISIS Version 3.00 was used for digital side scan sonar acquisition. The digital data was logged as **XTF** files (Extended Triton Format). The first hundred percent was logged with a sample size of 16 bits per pixel. For the

second hundred percent, downsampling was used and was logged with a sample size of 8 bits per pixel.

D.5 Caris **SIPS** (Sonar Image Processing System) was used to process the digital side scan sonar data. Sips was used to check bottom tracking quality, towfish navigation, slant-range correct the image, pick contacts, measure contact heights, and create mosaics.

D.6 Software and hardware problems were encountered periodically in running the Klein 5000 sonar system in conjunction with the Isis digital sonar acquisition system. The following is a summary of the problems and solutions:

PROBLEM ENCOUNTERED	SOLUTION
During acquisition, most notable during acquisition with the 100m range scale, a hardware reset occurred and approximately 2 seconds of digital data is missed during each reset, leaving gaps in the imagery.	More memory added to Isis computer (64 Mb). All questionable data is rerun to fulfill 200% coverage requirement.
During acquisition, white streaking occurs across the entire image.	A new cable with a larger diameter is installed. All questionable data is rejected and rerun.
Backup/restore jobs performed on the server while Isis is online, bogs the Isis system down, leaving small gaps in the imagery.	Refrain from file management activity on the server while in acquisition mode. Questionable data is rerun to fulfill 200% coverage requirement.

#### **E. SONAR EQUIPMENT.**

E.1 The BAY HYDROGRAPHER conducted all side scan sonar operations using a Klein system 5000 sonar T5100 (S/N 101). This integrated system includes the high resolution, multiple beam side scan sonar towfish, and the T5100 Sonar Transceiver module (for output of sonar data and trigger).

The towfish is configured with a 40° beam depression at 455 KHz frequency.

E.2 The 455 kHz frequency was used throughout the survey.

E.4 a. Because of the varying water depth throughout the survey, it was determined that the survey area would require line spacing of 40 meters with the use of the 50-meter range scale, 60 meter line spacing with the use of the 75-meter range scale, and 80 meter line spacing for the 100-meter range scale. These range scales were used to obtain complete area coverage and provide optimal contact resolution. The line spacing is in accordance with the value specified in section 7.3.2.1 of the Field Procedures Manual (FPM).

E.4 b. Side scan sonar operations were limited to a speed-over-ground of 10 knots. Confidence checks were performed by noting changes in linear bottom features extending to the outer edges of the digital side scan image, and by passing aids to navigation. These features were identified, and labeled on the digital sonar image during post-processing in Caris **SIPS**.

E.4 c. Two hundred percent side scan sonar coverage was completed for this survey. Side scan sonar coverage was checked using MapInfo generated swath "A" and "B" plots to ensure proper overlap between adjoining lines. Side scan sonar coverage was also determined by using mosaics generated in SIPS and imported into MapInfo. Any deficiencies in the side scan sonar data were found, and a holiday line file was created from these mosaics and swath plots to complete the 200 percent requirement.

E.4 d. All contacts were digitized in Caris **Sips**. Digitizing a contact included measuring apparent height, and creating a "snapshot" of each image. All contacts were added to the HPS contact database. Snapshots for each contact were also integrated into the HPS data structure. Contacts appearing significant were further investigated by Side Scan Sonar, and final positioning of significant items was determined with echosounder development.

All information concerning a contact was displayed in the **Correlator**, including comparisons between contacts and AWOIS item positions, surrounding depths and contact cross references. Correlator chartlets for each contact are

included in Separates V.

E.4 e. The towfish was deployed exclusively from the stern.

**F. SOUNDING EQUIPMENT.**

F.1 A Raytheon Model 6000N Digital Survey Fathometer (DSF-6000N S/N: A109N) was used to measure water depths during this survey from March 13, 1998 (DN 072) to May 12, 1998 (DN 132) and from June 18 (DN 169) to June 30 (DN 181).

F.2 The Odom Echotrac echosounder S/N 9551 100Khz was installed on May 13, 1998 (DN 133) and was used as the primary echosounder until June 17 (DN 168), 1998.

F.3 The Odom Echotrac frequently mis-digitized. Numerous depth edits were required to correct the data.

F.4 Both high (100 kHz) and low (24 kHz) frequency sounding data were recorded during data acquisition. Only high frequency soundings were edited and plotted.

**G. CORRECTIONS TO SOUNDINGS.**

G.1 a. Sound Velocity Correctors

The velocity of sound through water was measured using a Sea-Bird SBE 19 Seacat Profiler (s/n 285). Seacat Data Quality Assurance Tests were conducted after each respective velocity cast to ensure that the unit was operating within tolerance.

All sound velocity data were processed using program **VELOCITY**. Computed velocity correctors were entered into the HPS sound velocity table and re-applied during post-processing to both high and low frequency soundings.

<u>Cast</u>	<u>DN</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Days Covered</u> <u>(DN)</u>
01	078	38°48'00"N	076°24'45"W	072-084 103
02	104	38°47'24"N	076°25'04"W	104 096-107 126
03	127	38°47'20"N	076°24'56"W	127 118-139 140
04	152	38°46'55"N	076°25'14"W	152 140-167 169
05	170	38°47'07"N	076°24'44"W	170 168-175 181

b. Leadline Comparison

The leadline comparison for this survey was conducted alongside Herrington Harbor South Marina, Rose Haven, MD on March 11, 1998 (DN 070). The water was calm, enabling the leadman to make multiple readings, and provided a steady fathometer reading. Data from these comparisons can be found in \*Separate IV. A leadline comparison was taken after the installation of the Odom Echotrac on May 13, 1998 (DN 133).

c. Static Draft

On Jun 14, 1997, while the Bay Hydrographer was out of the water for repairs, LT(jg) Shep Smith and ST Mike Annis painted draft markings every tenth of a meter from the transducer on the side of the vessel. Refer to \*Separate IV for the vessel's Offset Table #1 entered in HPS.

d. Dynamic Draft (Settlement and Squat Correctors)

Settlement and squat correctors for the BAY HYDROGRAPHER were determined on the Elizabeth River, Norfolk, VA in February, 1998 using on the fly GPS for relative measurements. An Ashtech M12 receiver was set up on a benchmark at building 3 in Norfolk, VA and a second was setup on the Bay Hydrographer. Both receivers logged data for two continuous hours as the ship ran a series of runs and their reciprocal courses at varying speeds. The data was then run through a GPS processing program to yield a relative vertical change versus time and speed table. The values obtained were applied to soundings through the HPS Offset Table #1. Refer to \*Separate IV for data records.

e. Heave, Roll, and Pitch Correctors

A TSS DMS-05 (S/N 002040) dynamic motion sensor collected heave, roll and pitch data. Heave correctors were collected during data acquisition and applied to raw data during the **HPS** conversion process.



#### f. Tide Correctors

The tidal datum for this project is Mean Lower Low Water. The operating tide station at Annapolis, MD (857-5512) served as control for datum determination. Correctors (time corrector -24 mins, range corrector x0.9) were applied to all data using the reapply DPAS tides utility in HPS. Upon completion of H-10790, preliminary actual tides were applied using Kent Point (857-2467).

The BAY HYDROGRAPHER employed no additional, unusual or unique methods or instruments to correct echo soundings.

All sounding correctors were applied to both the narrow (100 kHz) and wide (24 kHz) DSF-6000N beams.

#### **H. CONTROL STATIONS.** - See also Evaluation Report.

The horizontal datum for this survey is the North American Datum of 1983 (NAD 83). No horizontal control stations were used or established for this survey.

#### **I. HYDROGRAPHIC POSITION CONTROL.**

I.1 This survey was conducted exclusively using the Global Positioning System (GPS) corrected by the U.S. Coast Guard Differential GPS reference station network. Differential correctors were supplied from USCG radiobeacon transmitters, precluding the need for shore-based horizontal control stations.

I.2 Accuracy requirements were met as specified by the Hydrographic Manual and Field Procedures Manual (FPM). The Horizontal Dilution of Precision (HDOP) and Expected Position Error (EPE) specified by the FPM were monitored during on-line data collection. If the positioning degraded beyond the acceptable limits while on-line, the data were either smoothed or rejected, depending on the extent of the affected data.

I.3 Differential GPS Equipment:

<u>Unit A</u>	<u>Unit B</u>
Starlink GPS Receiver DNAV-212	Ashtech GPS Sensor s/n 700417B1129
Ashtech OEM Sensor II Starlink MRB-2A s/n 835	Firmware Version 1E89D-P Magnavox MX50R DGPS Receiver s/n 315

I.4 Correctors were received from the Cape Henry, VA, and Cape Henlopen, DE radiobeacons for the entire survey.

I.5 Daily performance checks were conducted using the Shipboard Data Integrity Monitor program ("**SHIPDIM**", Version 2.1), according to section 3.4.5 of the FPM. See SHIPDIM PERFORMANCE CHECKS in\*Separate III for daily system checks.

I.6 The application of calibration data to the raw positioning data was not required, since DGPS was the primary positioning system.

I.7 a. There were no unusual methods used to operate or calibrate electronic positioning equipment.

I.7 c. No unusual atmospheric conditions affected data quality.

I.8 f. Antenna positions were corrected for offset and layback, and referenced to the position of the DSF-6000N echo sounder transducer. These correctors are located in HPS Offset Table #1, and were applied online. A copy of Offset Table #1 is contained in\*Separate III.

I.9.g. Offset and layback distances for the A-frame (tow point) are located in HPS Offset Table #1 and were applied on-line. Offset, layback, and height corrections were measured on November 10, 1997 after the installation of the T-5000 A-Frame.

J. SHORELINE. - *See also Evaluation Report*

No shoreline is contained within the boundaries of this survey.

**K. CROSS LINES.**

A combined total of 30.3 nautical miles of crosslines were acquired for this survey representing 10% of the 300.5 nautical miles of mainscheme hydrography.

Agreement between main scheme and cross line soundings was found to be acceptable, in accordance with Section 4.6.1 of the Hydrographic manual, 4<sup>th</sup> Ed.

**L. JUNCTIONS** - See also Evaluation Report

L.1 This sheet junctions with H-10<sup>752</sup>~~572~~, sheet "I", to the north. Agreement between H-10<sup>752</sup>~~572~~ soundings and H-10790 soundings is acceptable. The majority of compared soundings fell within 1 foot of each other, with only an occasional difference of 2 feet noted in steeper bathymetry.

**M. COMPARISON WITH PRIOR SURVEYS.** - See also Evaluation Report

A comparison with prior surveys will be performed by the Atlantic Hydrographic Branch as part of the office verification process.

**N. ITEM INVESTIGATION REPORTS**

See Correlator sheets included in <sup>\*</sup>Separates V for all contact investigation information.

N1. - AWOIS NO: 4694

Item Description: Wreck "Levin<sup>J</sup> Marvel"

Source: NM36/55

AWOIS Position: Lat. 38°45'23.28"N Lon. 076°31'26.25"W

Required Investigation: SD, S2, DI Radius: 100 M

Charts Affected: 12270, 12263

**INVESTIGATION**

**Date(s):** 06/09/98 (DN: 160)

**Position Numbers:** Echosounder fixes: 27303-27306  
Side scan contact # 083\_069\_2020\_4

**Investigation Used:** HSS 200/Echosounder

**Position Determined By:** Differential GPS

**Investigation Summary:** AWOIS item 4694 was covered with 200% side scan sonar during project H-10790. A significant contact with an apparent height of 2M was located within the 100-meter circle search radius. Echosounder development using 5-meter line spacing was run over the contact to determine a least depth of <sup>1.6</sup>/<sub>1.7</sub> ft (5.1 meters MLLW).

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends ~~retaining the charted~~ <sup>NC</sup> a dangerous wreck symbol and depth at lat 38°45'23.<sup>28</sup>"N, lon 076°31'26.<sup>25</sup>"W. *Concur. Delete (16) WK Add (17) WK in present survey location.*

N.2. - **AWOIS NO: 4696**

**Item Description:** Yacht

**Source:** LNM28/73

**AWOIS Position:** Lat. 38°46'33.42"N Lon. 076°29'22.83"W

**Required Investigation:** SD, S2, DI **Radius: 1000 M**

**Charts Affected:** 12270,12263

**INVESTIGATION**

**Date(s):** 06/09/98 (DN: 160)

**Position Numbers:** Echosounder fix range: 27370-27373  
Side Scan contact # 096\_706\_1820\_1

**Investigation Used:** HSS 200/Echosounder

**Position Determined By:** Differential GPS

**Investigation Summary:** AWOIS item 4696 was covered with 200% side scan sonar during this survey. No significant contacts were located at the charted position. A significant contact that resembled a wreck on the side scan imagery was located approximately 900 meters southwest of the charted position, just within the 1000-meter search radius. Echosounder development using 5-meter line spacing was used to determine the least depth of 25 ft (7.7 meters).

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends deleting the charted wreck and "basket" and charting a dangerous wreck with a least depth of 25 ft at the following position: *concur*

Lat: 38°46'05.97"N ✓  
Lon: 076°29'36.26W ✓

*Chart (25) Wk in present survey location*  
*Delete (22) Wk*

**N.3. - AWOIS NO: 4463**

**Item Description:** Sailboat

**Source:** NM32/68

**AWOIS Position:** Lat. 38°45'02.56"N Lon. 076°26'54.79"W

**Required Investigation:** SD, S2, DI **Radius:**

**Charts Affected:** 12270, 12263

#### INVESTIGATION

**Date(s):** 06/18/98 (DN: 169)

**Position Numbers:** Echosounder Fix: 28872-28879  
Side Scan contact#: 119\_051\_1441\_1

**Investigation Used:** HSS 200/Echosounder

**Position Determined By:** Differential GPS

**Investigation Summary:** AWOIS item 4463 was covered with 200% side scan sonar during this survey. A small contact was located within the 100-meter search radius. Because a dive was not done on the object, hydrographers could not

verify that this was a sailboat. Echosounder development using 5 meter line spacing provided a least depth of ~~47~~ ft (14.4 M) <sup>44</sup>  
13.4

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends retaining the charted dangerous wreck symbol and charted depth of ~~46~~ ft. at lat 38°45'02.56"N, lon 076°26'54.79"W. <sup>Diver contact</sup> ~~44~~  
32 56.00 Delete (46) WK

Add (44) WK in present survey location

N.4. - AWOIS NO: 4462

**Item Description:** Wreck "Blair"

**Source:** LNM1/82

**AWOIS Position:** Lat. 38°47'45.42"N Lon. 076°25'57.83"W

**Required Investigation:** SD, S2, DI **Radius:** 1000 M

**Charts Affected:** 12270,12263

#### INVESTIGATION

**Date(s):** 05/03/98 (DN: 133)

**Position Numbers:** Echosounder fix range: 20197-20200  
Side Scan contact #107\_045\_1616\_1

**Investigation Used:** HSS 200, DI

**Position Determined By:** Differential GPS

**Investigation Summary:** AWOIS item 4462 was covered with 200% side scan sonar during this survey. No significant contacts were located within the 1000-meter search radius. A large contact closely resembling a wreck on the side scan imagery was located approximately 900-1000 meters west of the charted position, outside of the search radius. Diver's verified the contact to be a wreck laying on its side but the boat's name could not be confirmed. A least depth of 29 ft (8.3 meters) was obtained with Echosounder development. See Danger to Navigation report for this item in ~~Appendix~~ **Appendix I.**

\* Data appended to this Report

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends deleting the charted dangerous wreck symbol and charting a dangerous wreck symbol with a depth of 29 ft at the following position: *Concur*

Lat: 38°47'40.09"N  
Lon: 76°26'54.34"W

*Delete (H) PD  
Chart (29) WK in present survey  
location.*

N.5. - AWOIS NO: 9843

**Item Description:** Submerged Piles

**Source:** CL1387/78

**AWOIS Position:** Lat. 38°47'00.42"N Lon. 076°29'46.83"W

**Required Investigation:** SD, S2, DI **Radius:** 500

**Charts Affected:** 12270,12263

#### INVESTIGATION

**Date(s):** 05/03/98 (DN: 133)

**Position Numbers:** 27431-27504

**Investigation Used:** HSS 200

**Position Determined By:** Differential GPS

**Investigation Summary:** AWOIS item 9843 was covered with 200% side scan sonar during this survey. Numerous small contacts were located in the area of the charted submerged piles. Least depths were not determined. Side scan development (40-meter line spacing) was run over the charted, blue tinted area to redefine the extent of the piles. After overlaying chart 12770 with the contacts thought to be piles, the hydrographer believes the charted area accurately describes the extent of the piles.

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends retaining the submerged piles as charted. *Concur - Retain as charted*

N.6. - AWOIS NO: 9842

**Item Description:** Submerged Piles

**Source:** CL1387/78

**AWOIS Position:** Lat. 38°47'18.42"N Lon. 076°29'14.43"W

**Required Investigation:** SD, S2, DI **Radius:** 500

**Charts Affected:** 12270,12263

#### INVESTIGATION

**Date(s):** 05/03/98 (DN: 133)

**Position Numbers:** 27505-27605

**Investigation Used:** HSS 200

**Position Determined By:** Differential GPS

**Investigation Summary:** AWOIS item 9842 was covered with 200% side scan sonar during this survey. Numerous small contacts were located in the area of the charted submerged piles. Least depths were not determined. Side scan development (40- meter line spacing) was run over the charted area to redefine the extent of the piles. After overlaying chart 12770 and the contacts believed to be piles, the hydrographer deemed the current charted area to be inaccurate, as several piles were discovered outside the area. See chartlet below. (The red limits on the chartlet below encompass only those contacts believed to be piles on the side scan imagery. The remainder of contacts that fall outside the new boundaries were believed to not be piles on the side scan imagery.)

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends deleting the charted submerged pile area, and charting new boundaries at the following positions: *Concur*

**NW Corner:** Lat:38°47'25.23 Lon:76°29'27.13

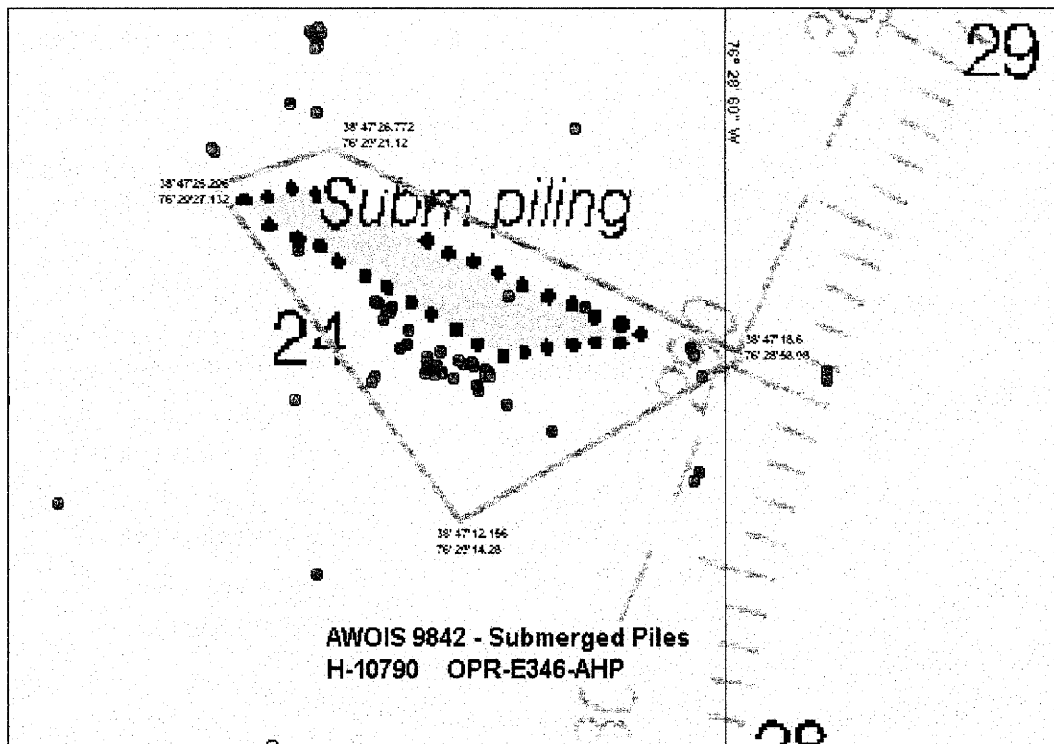
**NE Corner:** Lat:38°47'26.77 Lon:76°29'21.12

**SE Corner:** Lat:38°47'18.60 Lon:76°28'58.98

**SW Corner:** Lat:38°47'12.15 Lon:76°29'14.28

*Revise limits.*





N.7. - AWOIS NO: 9849

**Item Description:** Cabin Cruiser

**Source:** CL896/63

**AWOIS Position:** Lat. 38°44'54.42"N Lon. 076°30'58.83"W

**Required Investigation:** SD, S2, DI **Radius:** 1000

**Charts Affected:** 12270,12263

#### INVESTIGATION

**Date(s):** 06/09/98 (DN: 160)

**Position Numbers:** Echosounder fix range: 27260-27283  
Side Scan Item #082\_074\_1853\_2

**Investigation Used:** HSS 200, Echosounder

**Position Determined By:** Differential GPS

**Investigation Summary:** AWOIS item 9849 was covered with 200% side scan sonar during this survey. No significant contacts were located within the 500-meter search radius. A large contact resembling a wreck on the side scan imagery was located approximately 650 meters west of the charted position, outside of the search radius. Echosounder development was used to acquire a least depth of 18 ft (5.6 meters) corrected to MLLW.

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends deleting the charted dangerous wreck symbol and least depth and charting a dangerous wreck symbol with a least depth of 18ft at the following position: *Cenaur*

Lat 38°45'04.75"N  
Lon 76°31'21.78"W

*Delete #1 PA (17ft rep 1963)  
Add 18ft in present survey location.*

N.8. - **AWOIS NO: 9848** - See DR for H10823

This AWOIS item will be covered on Sheet "K" (H10823)

N.9. - **Contact # 119\_044\_1615\_1**

**Item Description:** Obstruction

#### **INVESTIGATION**

**Date(s):** 06/18/98 (DN: 169)

**Position Numbers:** 28824-28837

**Investigation Used:** HSS 200/ Echosounder

**Position Determined By:** Differential GPS

**Investigation Summary:** Contact 119\_044\_1615\_1 was located while running 200% side scan sonar during this survey. A significant contact was discovered with an apparent height of 1.9 meters. There appeared to be scattered debris in the area of the contact. Echosounder development with 5-meter line spacing was used to obtain a least depth of 10.2 meters (33 ft) corrected to MLLW. Surrounding depths are 38

ft. Since no diving operations were conducted on the contact, additional fieldwork is recommended by the hydrographer to verify its identity. This contact was included in an attached Danger to Navigation report in **Appendix I**.

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends charting a dangerous obstruction with a least depth of 33 ft at the following position: *Concur*

*Add (33) obstrn in present  
Survey location*

Lat: 38°45'34.26"N  
Lon: 76°27'33.23"W

**N.10. - Contact # 118\_063\_1555\_1**

**Item Description:** Obstruction

**INVESTIGATION**

**Date(s):** 06/19/98 (DN: 170)

**Position Numbers:** 28978-28980

**Investigation Used:** HSS 200/ Echosounder

**Position Determined By:** Differential GPS

**Investigation Summary:** Contact 118\_063\_1555\_1 was located while running 200% side scan sonar on this survey. A significant contact resembling a wreck on the side scan imagery was discovered with an apparent height of 2.7 meters. Echosounder development with 5-meter line spacing was used to obtain a least depth of ~~17.0~~<sup>17.9</sup> meters (55 ft) corrected to MLLW. The contact was located on a slope, with surrounding depths from 64 - 58ft. Since no diving operations were conducted on the contact, additional fieldwork is recommended by the hydrographer to verify its identity. This contact was included in an attached Danger to Navigation report in **Appendix I**.

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends charting a least depth

*to be recorded to the report*

of 55 ft in a blue tinted danger circle with "wk", at the following position: *Concave*

Lat: 38°47'39.24"N

Lon: 76°24'45.64"W

*Add 55' wk in present Survey location*

N.11. - Contact # 118\_056\_1847\_1

**Item Description:** Obstruction

#### INVESTIGATION

**Date(s):** 06/19/98 (DN: 168)

**Position Numbers:** 28784-28800

**Investigation Used:** HSS 200/ Echosounder

**Position Determined By:** Differential GPS

**Investigation Summary:** Contact 118\_056\_1847\_1 was located while running 200% side scan sonar on this survey. A significant contact resembling a wreck on the side scan imagery was discovered, with an apparent height of 1.2 meters. Echosounder development with 5-meter line spacing was used to obtain a least depth of  $67^{66}$  ft (20.5<sup>3</sup> M) corrected to MLLW. Surrounding depths are 70-71 ft. Since no diving operations were conducted on the contact, additional fieldwork is recommended by the hydrographer to verify its identity.

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends charting a non-dangerous wreck symbol with a least depth of  $67^{66}$  ft at the following position: *Concave*

Lat: 38°46'40.41"N

Lon: 76°25'52.33"W

*Add 66 wk at present Survey position*

N.12. - Contact # 082\_074\_1855\_2

**Item Description:** Obstruction

#### INVESTIGATION

**Date(s):** 06/16/98 (DN:167)

**Position Numbers:** 28713-28717

**Investigation Used:** HSS 200/ Echosounder

**Position Determined By:** Differential GPS

**Investigation Summary:** Contact 082\_074\_1855\_2 was located while running 200% side scan sonar on this survey. A significant contact with an apparent height of 1.1 meters was discovered. Echosounder development with 5-meter line spacing was used to obtain a least depth of 20 ft (6.2 M) corrected to MLLW. Surrounding depths are 22-23 ft. Since no diving operations were conducted on the contact, additional fieldwork is recommended by the hydrographer to verify its identity. This contact was included in an attached Danger to Navigation report in **Appendix I.\***

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends charting an obstruction symbol with a least depth of 20 ft at the following position: *Concur*

Lat: 38°47'31.24"N  
Lon: 76°29'21.92"W

*Add 20' Obstrn in present Survey location*

**N.13. - Contact # 155\_240\_1615\_1**

**Item Description:** Obstruction

**INVESTIGATION**

**Date(s):** 06/30/98 (DN:181)

**Position Numbers:** 29597-29601

**Investigation Used:** HSS 200/ Echosounder

**Position Determined By:** Differential GPS

**Investigation Summary:** Contact 155\_240\_1615\_1 was located while running 200% side scan sonar on this survey. A significant contact with an apparent height of 2.3 meters was discovered. Echosounder development with 5-meter line spacing was used to obtain a least depth of 50 ft (15.2 M)

*↓ Data appended to this report.*

corrected to MLLW. Surrounding depths are 57-58 ft. Since no diving operations were conducted on the contact, additional fieldwork is recommended by the hydrographer to verify its identity. This contact was included in an attached Danger to Navigation report in **Appendix I**.\*

**Charting Recommendation:** Based on the results of this survey, the hydrographer recommends charting an obstruction symbol with a least depth of 50 ft at the following position: *Concur*

Lat: 38°46'57.09"N  
Lon: 76°26'13.34"W

*Add 50' Obstrn in present survey location.*

**O. COMPARISON WITH THE CHART** - *See also Evaluation Report*

0.1 Three charts are affected by this survey:

Chart 12270  
"Eastern Bay and South River"  
*29<sup>th</sup> 28<sup>rd</sup> Ed. 19 July 1997 2 May 1998*  
Scale: 1:40,000

Chart 12263  
"Cove Point to Sandy Point"  
48th Ed. 11 October 1997  
Scale: 1:80,000

Chart 12266  
"Choptank and Herring Bay"  
26<sup>th</sup> Ed. 2 April 1994  
Scale: 1:40,000

0.2 Two Danger to Navigation reports were submitted for this survey.\* See **Appendix I** for copies of the reports.

0.3 a. Comparisons were made between H-10790 and chart 12270. In general, agreement between charted soundings and surveyed soundings was adequate, with most charted depths agreeing with survey soundings to within 3 ft. The overall trend appears to be shoaling throughout the survey area. This trend was most noticeable in the deeper water of the

main channel, on the Eastern edge of the sheet where surveyed soundings of over 100 ft were shoaler by as much as 14 ft.

9

The following were also noted:

- ◆ A 15 ft sounding was found near a charted 20 ft sounding on the western side of Poplar Island. Development lines were run to verify the sounding. The hydrographer recommends survey depths be charted in the area. This sounding was included in an attached Danger to Navigation report in **Appendix I.**
- ◆ There are some discrepancies between charted soundings and surveyed soundings close to Poplar Island. Some surveyed soundings were found to be deeper by as much as 4 ft, indicating migrating shoals.

**P. ADEQUACY OF SURVEY** - See also Evaluation Report

This survey is complete and fully adequate to supersede prior survey data within common areas.

**Q. AIDS TO NAVIGATION** - See also Evaluation Report

The survey limits for this project contain five aids to navigation, as listed in the table below. During 200% side scan operations, all Aids to Navigation were picked off as contacts in **Caris Sips**. They were then added to the HPS contact database and overlaid on Chart 12270. All Aids to Navigation appear to serve their intended purpose. No new aids were found.

Nav. Aid	Side Scan Item Number
R "84"	118_065_1617_1
R "84A"	097_010_1749_1, 134_208_1545_1
GC"83A"	096_704_1651_1, 138_311_1820_1
G "83"	119_053_1403_2, 155_240_1616_2
WOr"A"	124_707_1328_2, 138_296_1753_2

\*Data appended to this report.

**R. STATISTICS.**

R.1 a.	Number of Positions . . . . .	.27879
b.	Linear Nautical Miles of Sounding Lines: Nautical Miles of Survey with the Use of Side Scan Sonar . . . . .	584.65
	Nautical Miles of Survey Without the Use of Side Scan Sonar . . . . .	.96.97
R.2 a.	Square Nautical Miles of Hydrography per 100% of Coverage . . . . .	.17.23
b.	Days of Production . . . . .	36
c.	Detached Positions . . . . .	1
d.	Bottom Samples . . . . .	24
e.	Tide Stations . . . . .	2
g.	Velocity Casts. . . . .	5

**S. MISCELLANEOUS. - See also Evaluation Report**

S.1 b. No evidence of anomalous tides or tidal current conditions was found during this survey.

S.2 Bottom samples were taken at 1000-meter intervals. Additional samples were collected to confirm bottom characteristics that were evident on the side scan mosaics. All samples were retained and shipped to the Smithsonian Institute in Washington, D.C.

**T. RECOMMENDATIONS.**

T.1 No present or planned construction or dredging should affect the results of this survey.

T.3 Due to the limitations of singlebeam development and the impracticality of diving in limited visibility, the hydrographer recommends that new least depths be acquired on all items in **Section N** when multibeam becomes available.

**U. REFERRAL TO REPORTS**

No reports or data are referred to in this Descriptive Report that are not included with this survey.



This report is respectfully submitted.

Monica M. Cisternelli

Monica M. Cisternelli  
Survey Technician  
NOAA Survey Vessel BAY HYDROGRAPHER

Shepard M. Smith

LTJG Shepard M. Smith, NOAA  
Officer-in-Charge,  
NOAA Survey Vessel BAY HYDROGRAPHER

### APPENDIX III

#### LIST OF HORIZONTAL CONTROL STATIONS

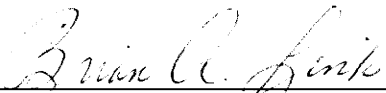
No horizontal control stations were needed for this survey since Differential GPS was employed exclusively for all positioning control. The geographic positions for the two Differential GPS radio beacons used during this survey are as follows:

Cape Henry, VA	36°55'37.580"N
289 KHz	76°00'23.884"W
Cape Henlopen, DE	38°46'36.421"N
298 KHz	75°05'15.667"W

**APPROVAL SHEET**  
**Basic Hydrographic Survey**  
**OPR-E346-AHP**  
**AHP-10-7-97**  
**H-10790**  
**1997-98**

This basic hydrographic survey was completed in accordance with the Project Instructions for OPR-E346-AHP, the Hydrographic Manual, the Hydrographic Survey Guidelines, and the Field Procedures Manual. All reports, records, and survey plots were reviewed by LT(jg) Shepard Smith, Officer-in-charge of the BAY HYDROGRAPHER. The Descriptive Report was also reviewed by the Chief, AHP. The chief of party did not directly supervise any part of this survey.

This survey is a complete basic hydrographic survey for the area described in Section B of this report.



---

Brian A. Link  
Chief, Atlantic Hydrographic Party

---

LT(jg) Shepard Smith, NOAA  
Officer-in-charge, NOAA BAY HYDROGRAPHER

January 26, 1999

Commander, First Coast Guard District  
Aids To Navigation Office  
Federal Building  
431 Crawford Street  
Portsmouth, Va. 23704-5004

Dear Sir,

This report supersedes the previous danger to navigation report dated June 4, 1998 (see attached copy).

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number....H10790  
State.....Maryland  
General Locality.....Chesapeake Bay  
Locality.....Deep Cove Creek to Coaches Island  
Project Number.....OPR-E346-97  
Surveyed by.....NOAA Vessel BAY HYDROGRAPHER

Object Addressed:


1. The submerged wreck with a least depth of 30 feet based on predicted tides located in Latitude 38°47'40.17"N Longitude 76°26'54.52"W (NAD83) has been updated after office verification of the field's data to the following: the submerged wreck is located in Latitude 38°47'40.09"N Longitude 76°26'54.34"W (NAD83) with a least depth of 8 meters (27 feet) based on actual tides. The wreck was positioned using differential GPS.<sup>29</sup>

Affected Nautical Charts:

CHART NUMBER	EDITION NUMBER	DATE	HORIZ DATUM	SCALE	GEOGRAPHIC POSITION	
					LATITUDE	LONGITUDE
12263	48 <sup>th</sup>	OCT 11/97	NAD83	1:80,000	38°47'40.09"N	76°26'54.34"W
12266	26 <sup>th</sup>	Apr 02/94	NAD83	1:40,000	"	"
12270	28 <sup>th</sup>	Jul 19/97	NAD83	1:40,000	"	"

Questions concerning this report should be directed to the Office of Charting and Geodetic Services, Atlantic Hydrographic Section, by calling 757 441-6746.

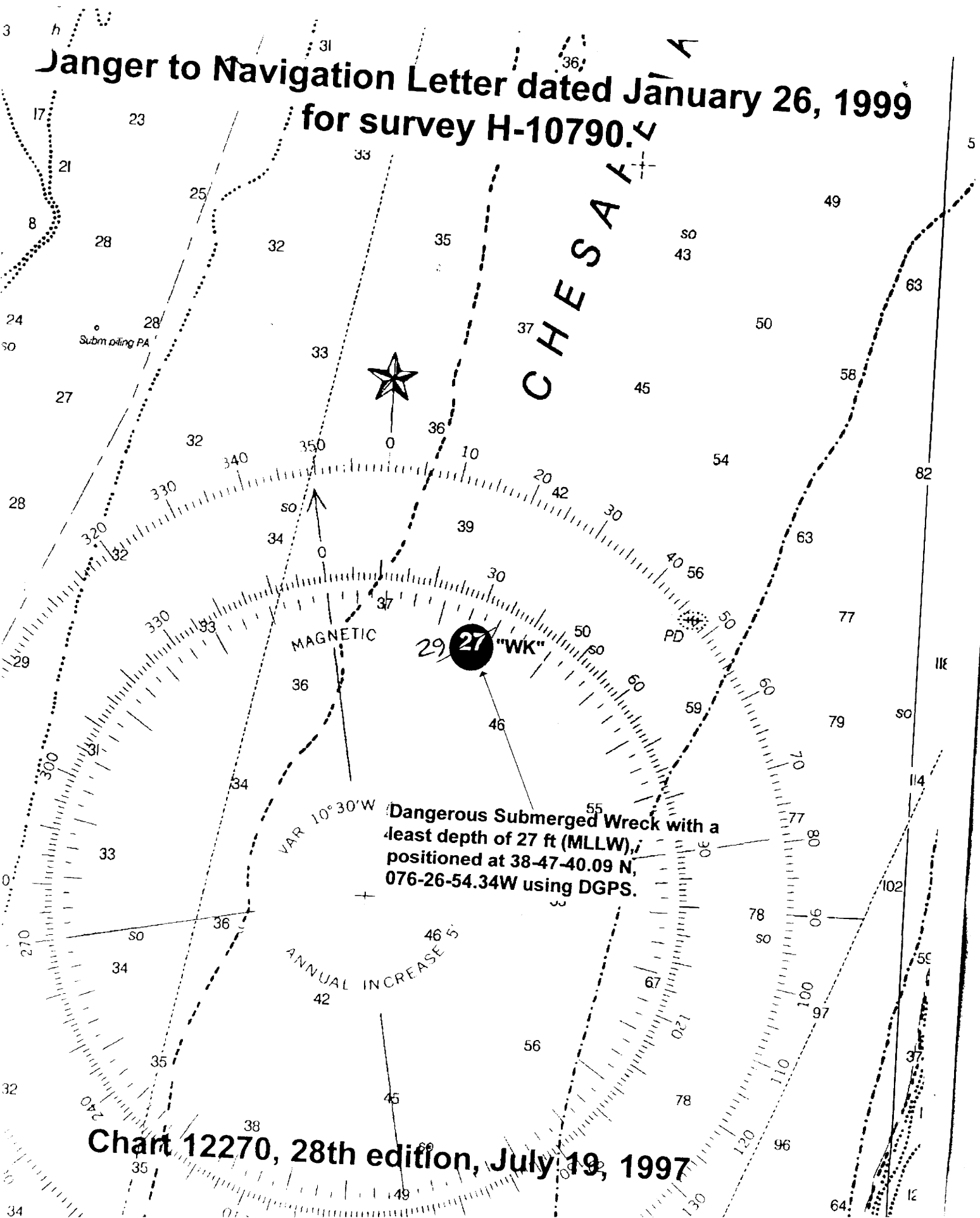
Sincerely,



Andrew L. Beaver, LCDR NOAA  
Chief, Atlantic Hydrographic Section

Attachment

**Warning to Navigation Letter dated January 26, 1999  
for survey H-10790.**



**Chart 12270, 28th edition, July 19, 1997**

July 31, 1998

Commander  
Fifth Coast Guard District  
Federal Building  
431 Crawford Street  
Portsmouth, Virginia 23704-5004

Dear Sir,

While conducting a hydrographic survey in the vicinity of Poplar Island, Chesapeake Bay, Maryland, NOAA Survey Vessel *Bay Hydrographer* discovered four (4) uncharted obstructions and one uncharted shoal, which should be considered dangers to navigation. It is requested that information concerning these items be published in the Local Notice to Mariners. All items were investigated with 200% side scan sonar coverage.

Updated depths and additions are outlined in the following table.

Item	Latitude	Longitude
33' Obstruction chart at	38°45'34.26"N	76°27'33.23"W
55' Wreck chart at	38°47'39.24"N	76°24'45.64"W
20' Obstruction chart at	38°47'31.24"N	76°29'21.92"W
50' Obstruction chart at	38°46'57.09"N	76°26'13.34"W
15' Sounding chart at	38°45'16.1"N	76°24'57.6"W

Affected Nautical Charts:

<u>Chart</u> <u>Number</u>	<u>Edition</u> <u>Number</u>	<u>Date</u>	<u>Horizontal</u> <u>Datum</u>
12660	30th	03/19/94	NAD 83
12663	48th	10/11/97	NAD 83
12270	28th	7/19/97	NAD 83

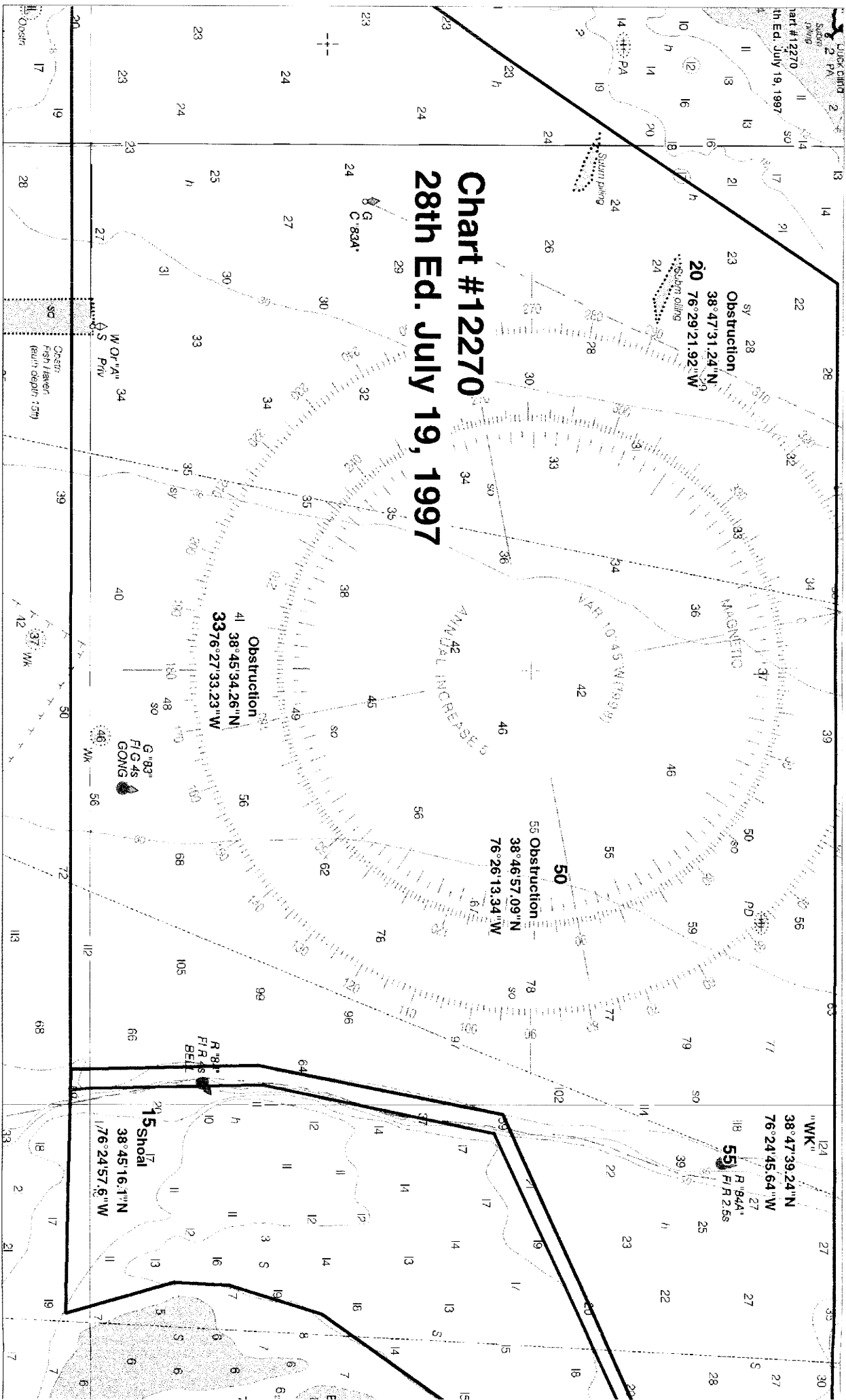
The attached chartlets from chart 12270 depict the obstructions to be added. Questions concerning this report should be directed to the Atlantic Hydrographic Branch by calling 757-441-6746.

Sincerely,

Shepard Smith, LTJG NOAA  
Commanding Officer, NOAA Bay Hydrographer

Attachment  
cc: NIMA  
N/CS26  
N/CS31

# Chart #12270 28th Ed. July 19, 1997





U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration

439 West York Street  
Norfolk, VA 23510

June 4, 1998

Commander  
Fifth Coast Guard District  
Federal Building  
431 Crawford Street  
Portsmouth, VA 23704-5004

Dear Sirs:

NOAA Survey Vessel *BAY HYDROGRAPHER* is conducting survey operations in the vicinity of Poplar Island, Chesapeake Bay, Maryland. During our survey, we discovered a dangerous wreck, which should be considered as a danger to navigation. It is requested that information concerning this item be published in the *Local Notice to Mariners*.

Updated depths and additions are outlined in the table found in this report.

The survey soundings were determined during preliminary hydrographic investigation using Odom Echotrac DF3200 echo sounder and a diver depth gauge. The depths have been reduced to Mean Lower Low Water (MLLW) by applying predicted tides based upon NOAA tide gauge #857-5512 located in Annapolis, Maryland. All geographic positions were collected using differential GPS. The horizontal datum is NAD 83.

The investigation was performed in support of the following hydrographic survey.

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number:.....H-10790  
State:.....Maryland  
General Locality.....Poplar Island  
Project Number.....OPR-E346-AHP  
Survey by.....NOAA Launch *BAY HYDROGRAPHER*





**ADD THESE FEATURES TO THE FOLLOWING CHARTS**

12660 (30 ed. 19 March 1994)  
Chart Scale: 1:197,250

12663 (48 ed. 11 October 1997)  
Chart Scale: 1:80,000

12270 (28<sup>th</sup> ed. 19 July 1997)  
Chart Scale: 1:40,000

DEPTH (MLLW)	LATITUDE	LONGITUDE
30 ft Dangerous Wreck	38°47'40.17"N	076°26'54.52"W

Contact either of the following personnel for further information.

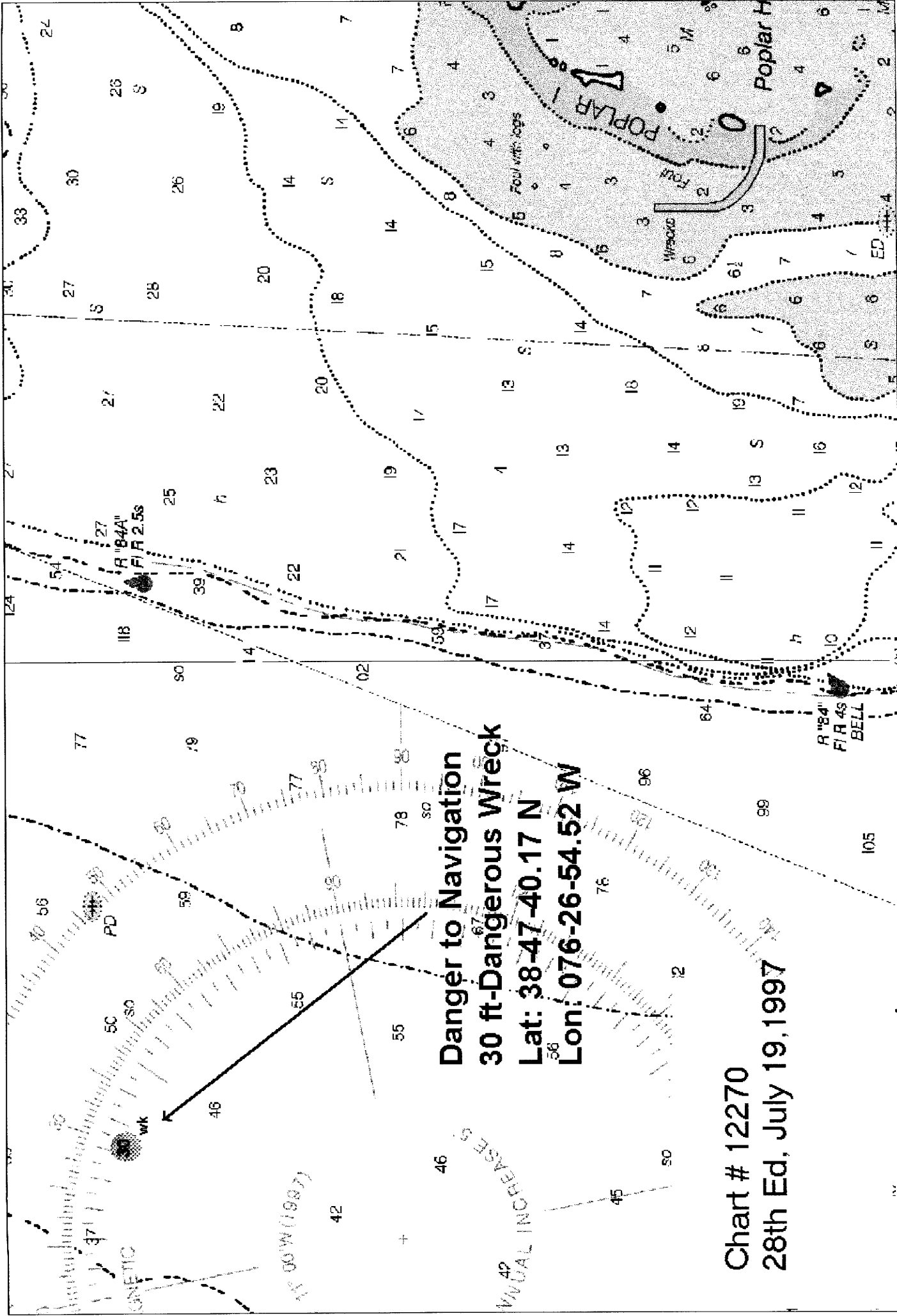
Chief, Atlantic Hydrographic Branch  
Atlantic Marine Center  
439 West York Street  
Norfolk, VA 23510  
757-441-6746

Officer In Charge  
NOAA Launch *BAY HYDROGRAPHER*  
439 West York Street  
Norfolk, VA 23510  
410-960-1723

Sincerely,

*LTJG Shepard Smith, NOAA*

LTJG Shepard Smith, NOAA  
Officer In Charge  
NOAA Launch *BAY HYDROGRAPHER*



**Danger to Navigation**  
**30 ft-Dangerous Wreck**  
**Lat: 38-47-40.17 N**  
**Lon: 076-26-54.52 W**

**Chart # 12270**  
**28th Ed, July 19, 1997**

## **APPENDIX II**

### **NON-FLOATING AIDS AND LANDMARKS FOR CHARTS**

There are no new non-floating aids or landmarks existing within the confines of survey H-10790.



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL OCEAN SERVICE  
Silver Spring, Maryland 20910

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE:** December 21, 1998

**HYDROGRAPHIC BRANCH:** Atlantic

**HYDROGRAPHIC PROJECT:** OPR E346-AHP  
**HYDROGRAPHIC SHEET:** H-10790

**LOCALITY:** Chesapeake Bay, Coaches Island to Deep Cove Creek, MD.

**TIME PERIOD:** March 13, 1998 - August 6, 1998

**TIDE STATION USED:** 857-2467 Kent Point, MD.  
Lat.  $38^{\circ} 50.2'N$  Lon.  $76^{\circ} 22.4'W$   
**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 m  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 0.400 m

**REMARKS: RECOMMENDED ZONING**

Use zone(s) identified as: CB79 & CB80

Refer to attachment(s) for zoning information.

**Note:** Provided time series data are tabulated in metric units (meters), relative to MLLW on Greenwich Mean Time.

*Joseph M. Weir for Tom Mero*  
-----  
**CHIEF, REQUIREMENTS AND ENGINEERING BRANCH**



Final tide zone node point locations for OPR-E346-AHP-98,  
Sheet H-10790.

Format: Longitude in decimal degrees (negative value denotes  
Longitude West),  
Latitude in decimal degrees  
Tide Station (in recommended order of use)  
Average Time Correction (in minutes)  
Range Correction

		Tide Station Order	AVG Time Correction	Range Correction
Zone CB79				
-76.508159	38.811225	857-2467	-18	1.03
-76.531832	38.721895			
-76.337533	38.737095			
-76.30122	38.809621			
-76.508159	38.811225			
Zone CB80				
-76.568609	38.822501	857-2467	-18	0.84
-76.578873	38.704686			
-76.531832	38.721895			
-76.508159	38.811225			
-76.568609	38.822501			

# Final zoning for OPR E346-AHP-97 Chesapeake Bay - Sheet H-10790

OPR-E346-AHP  
Sheet "J"  
H-10790  
AHP-10-7-97

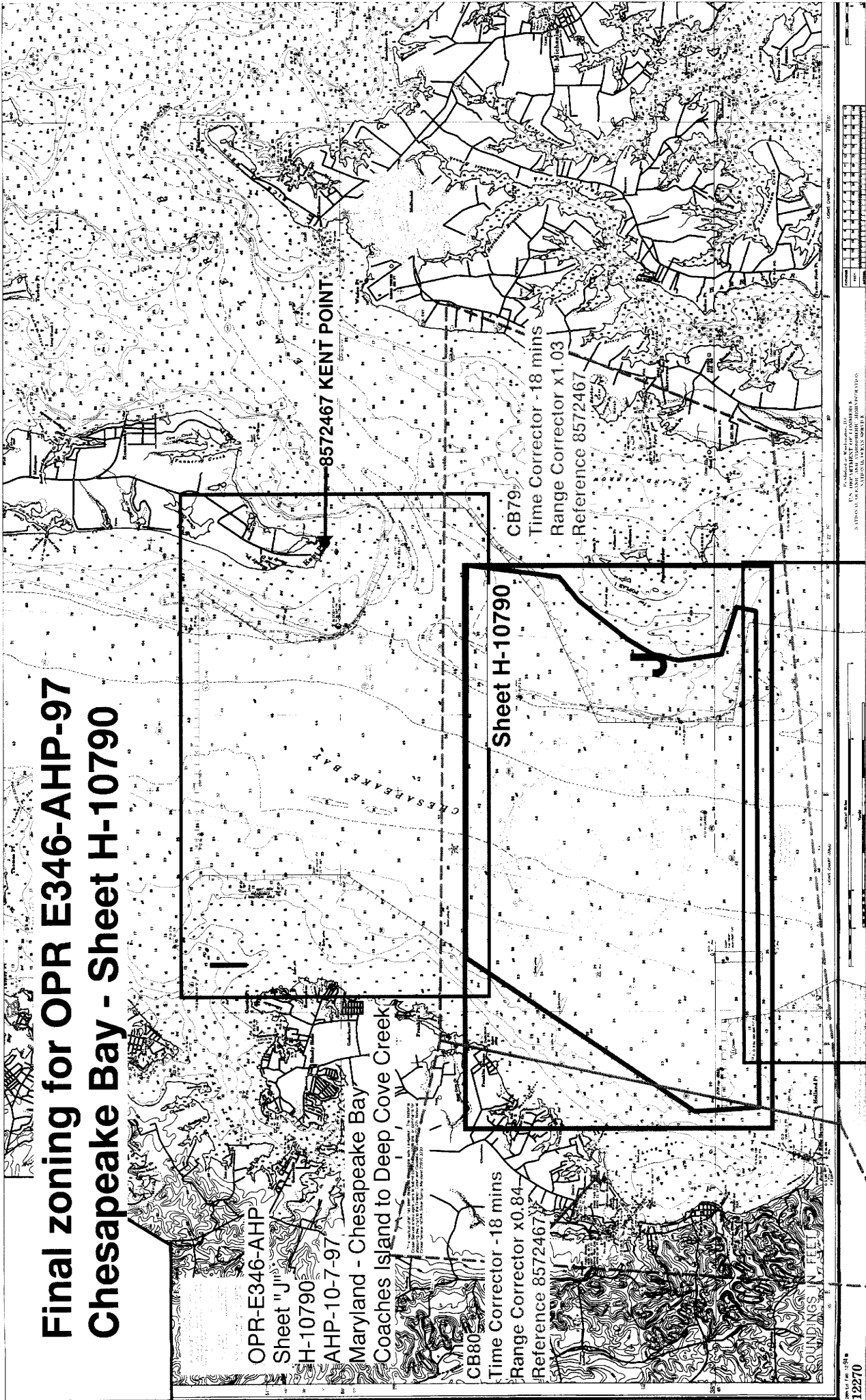
Maryland - Chesapeake Bay  
Coaches Island to Deep Cove Creek

CB80  
Time Corrector - 18 mins  
Range Corrector x0.84  
Reference 8572467

Sheet H-10790

CB79  
Time Corrector - 18 mins  
Range Corrector x1.03  
Reference 8572467

8572467 KENT POINT



GEOGRAPHIC NAMES

H-10790

Name on Survey	ON CHART NO. 12265, 12266, 12270 ON PREVIOUS SURVEY NO.										
	A	B	C	D	E	F	G	H	K		
	CON U.S. QUADRANGLE MAPS FROM LOCAL INFORMATION ON LOCAL MAPS P.O. GUIDE OR MAP GRAND McNALLY ATLAS U.S. LIGHT LIST										
BATTEES POINT	X		X								1
BROADWATER CREEK	X		X								2
CHESAPEAKE BAY	X		X								3
COACHES ISLAND	X		X								4
DEEP COVE CREEK	X		X								5
FRANKLIN MANOR	X		X								6
JEFFERSON ISLAND	X		X								7
MARYLAND (title)	X		X								8
NORTH POINT	X		X								9
POPLAR HARBOR	X		X								10
POPLAR ISLAND	X		X								11
SOUTH BAR POINT	X		X								12
VALLIANT POINT	X		X								13
											14
											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25

Approved

*Dennis J. Remington*  
 Chief Geographer  
 SEP 2 1998

LETTER TRANSMITTING DATA

N/CS33-52-99

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY  
(Check):

- ORDINARY MAIL
- AIR MAIL
- REGISTERED MAIL
- EXPRESS
- GBL (Give number) \_\_\_\_\_

TO:

CHIEF, DATA CONTROL GROUP, N/CS3x1  
 NOAA/NATIONAL OCEAN SERVICE  
 STATION 6815, SSMC3  
 1315 EAST-WEST HIGHWAY  
 SILVER SPRING, MARYLAND 20910-3282

DATE FORWARDED

JUNE 25, 1999

NUMBER OF PACKAGES

ONE TUBE

**NOTE:** A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H10790

MARYLAND, CHESAPEAKE BAY, COACHES ISLAND TO DEEP COVE CREEK

(ONE) TUBE CONTAINING THE FOLLOWING:

- 1 SMOOTH SHEET FOR SURVEY H10790
- 1 ORIGINAL DESCRIPTIVE REPORT
- 1 DRAWING HISTORY FORM (NOAA FORM #76-71) FOR NOS CHART 12270
- 1 RECORD OF APPLICATION TO CHART FORM (NOAA FORM #75-96) FOR SURVEY H10790
- 1 H-DRAWING FOR NOS CHART 12270
- 1 COMPOSITE DRAWING FOR NOS CHART 12270

FROM: (Signature)

DEBORAH A. BLAND

RECEIVED THE ABOVE

(Name, Division, Date)

Return receipted copy to:

ATLANTIC HYDROGRAPHIC BRANCH  
 N/CS33  
 439 WEST YORK STREET  
 NORFOLK, VA 23510-1114



06/24/99

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NUMBER: H10790

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	27879
NUMBER OF SOUNDINGS	27879

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	22	08/05/98
VERIFICATION OF FIELD DATA	220	01/27/99
EVALUATION AND ANALYSIS	21	
FINAL INSPECTION	7	05/27/99
COMPILATION	44.50	06/22/99
TOTAL TIME	315	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		06/18/99

**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR H10790 (1997-1998)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

**D. AUTOMATED DATA ACQUISITION AND PROCESSING**

The following software was used to process data at the Atlantic Hydrographic Branch:

Hydrographic Processing System (HPS)  
NADCON, version 2.10  
SITEWORKS 02.01  
MicroStation 95, version 5.05  
I/RAS B, version 5.01

The smooth sheet was plotted using a HEWLETT-PACKARD 2500CP plotter.

**H. CONTROL STATIONS**

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. The smooth sheet has been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on the NAD 27 datum move the projection lines 0.422 seconds (13.010 meters or 1.30 mm at the scale of the survey) north in latitude, and 1.166 seconds (28.137 meters or 2.81 mm at the scale of the survey) east in longitude.

**J. SHORELINE**

Brown shoreline originates with National Ocean Service (NOS) chart 12270 (29<sup>th</sup> Edition, May 2, 1998) and is for orientation purposes only.

**L. JUNCTIONS**

H10752	(1997)	1:10,000	to the north
H10823	(1998)	1:10,000	to the south

A standard junction was effected between the present survey and survey H10823 (1998).

A standard junction could not be made with survey H10752 (1997). The smooth sheet for the junctional survey is archived at NOS headquarters, Silver Spring, Maryland. In this case the note "ADJOINS" has been shown on the present survey smooth sheet. Any adjustments to the depth curves in the junctional area will have to be made in Silver Spring during chart compilation.

**M. COMPARISON WITH PRIOR SURVEYS**

A comparison with prior surveys was not performed. This is in accordance with section 4. of the memorandum titled, "Changes to Hydrographic Survey Processing," dated May 24, 1995.

**O. COMPARISON WITH CHART 12263 (48<sup>th</sup> Edition, Oct 11/97)  
12266 (26<sup>th</sup> Edition, Apr 02/94)  
12270 (28<sup>th</sup> Edition, Jul 19/97)**

**Hydrography**

The charted hydrography originates with prior surveys and miscellaneous sources. The hydrographer makes adequate chart comparisons in Sections N. and O. of the Descriptive Report. The following should be noted:

**O.2.** Three Danger to Navigation Reports containing six items were submitted to Commander (oan), Fifth Coast Guard District, 431 Crawford Street, Portsmouth, Virginia for inclusion in the Local Notice to Mariners, and to the Marine Chart Division, Silver Spring, Maryland. A copy of the reports is Appended to the Descriptive Report.

The six items listed in the Danger to Navigation Report are not presently charted on any of the latest editions of charts within the common area.

The present survey is adequate to supercede the charted hydrography within the common area.

**P. ADEQUACY OF SURVEY**

This is an adequate hydrographic survey. No additional work is recommended except as noted in the Descriptive Report in Section T.3.

**Q. AIDS TO NAVIGATION**

The hydrographer located five floating aids to navigation within the limits of the present survey. These aids appear adequate to serve their intended purpose.

**S. MISCELLANEOUS**

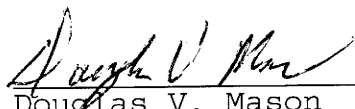
Chart compilation using the present survey was done by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data has been forwarded to the Marine Chart Division, Silver Spring, Maryland.

The following NOS chart was used for compilation of the present survey:

12270

(29<sup>th</sup> Edition, May 2/98)

1:40,000



---

Douglas V. Mason  
Cartographic Technician  
Verification of Field Data  
Evaluation and Analysis

APPROVAL SHEET  
H10790

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Deborah A. Bland  
Deborah A. Bland  
Cartographer,  
Atlantic Hydrographic Branch

Date: 8 June 99

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Andrew L. Beaver  
Andrew L. Beaver  
Lieutenant Commander, NOAA  
Chief, Atlantic Hydrographic Branch

Date: 6/18/99

\*\*\*\*\*

Final Approval:

Approved: Samuel P. De Bow, Jr.

Date: July 12, 1999

Samuel P. De Bow, Jr.  
Commander, NOAA  
Chief, Hydrographic Surveys Division

MARINE CHART BRANCH  
**RECORD OF APPLICATION TO CHARTS**

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 110790

**INSTRUCTIONS**

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
12.7.70	6-23-99	Deborah A. Blum	Full <del>Chart</del> After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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