

H10745

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC
Field No. AHP-10-3-97
Registry No. H10745

LOCALITY

State VIRGINIA
General Locality CHESAPEAKE BAY
Sublocality NAUTILUS SHOAL

19 97

CHIEF OF PARTY

LT. J. A. ILLIG, NOAA

LIBRARY & ARCHIVES

DATE JUN 18 1998

HYDROGRAPHIC TITLE SHEET

H-10745

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-10-03-97

State Virginia

General locality Chesapeake Bay

Locality Nautilus Shoal

Scale 1 : 10000

Date of survey April 30, 1997 to May 14, 1997

Instructions dated 4-25-97

Project No. S-E904-AHP

Vessel NOAA Vessel BAY HYDROGRAPHER

Chief of party LT James Illg, NOAA

Surveyed by R.T. Brennan, M.J. Annis, C.E. Parker

Soundings taken by echo sounder, hand lead, pole Echosounder

Graphic record scaled by RTB, MJA, CEP

Graphic record checked by RTB, MJA, CEP

Protracted by N/A

Automated plot by N/A Hewlett Packard
Design Jet 350C (Plotter - AHP)

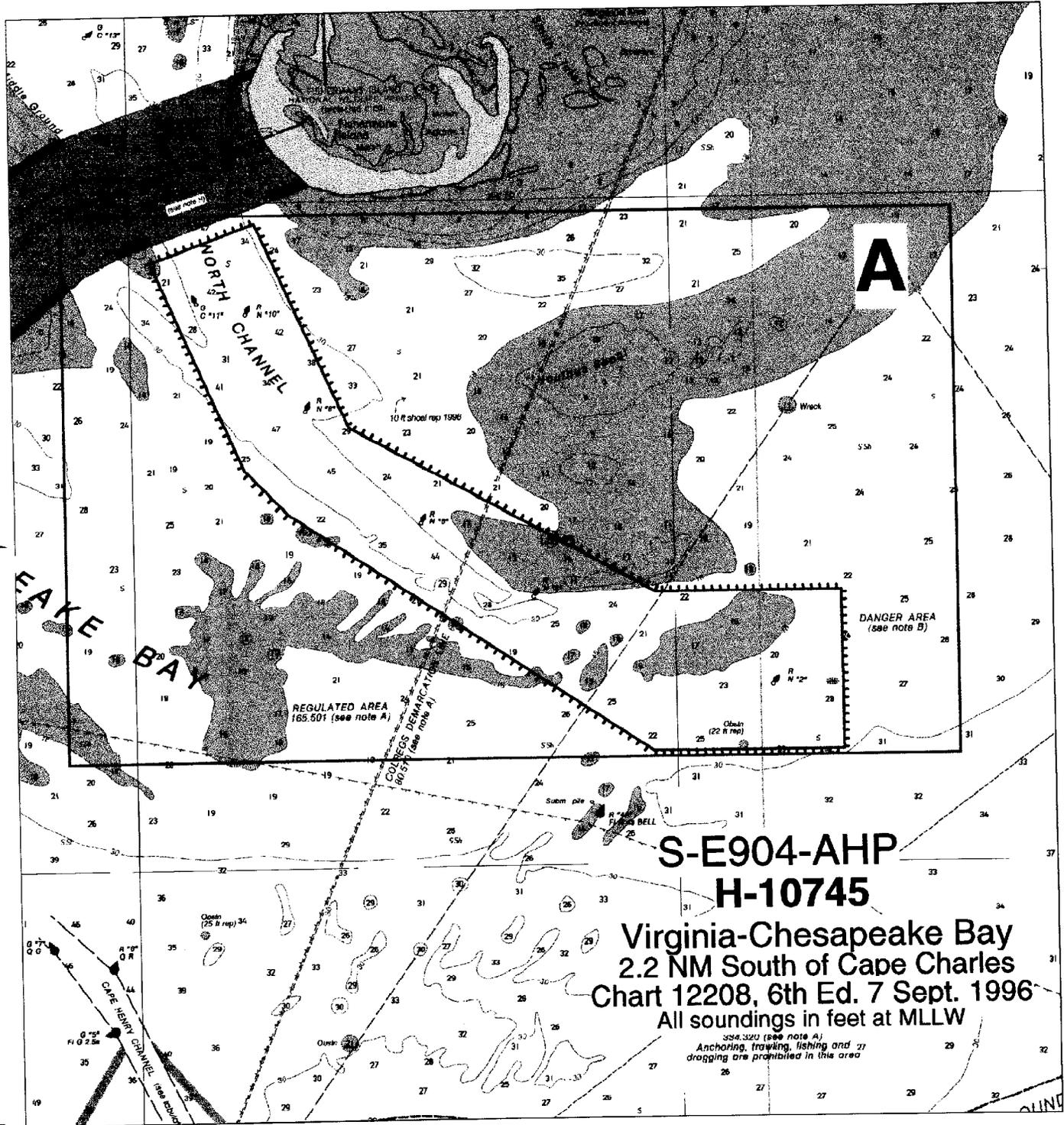
Verification by N/A

Soundings in meters xxxxxx at xxxxxx MLLW

REMARKS: All times recorded in UTC

Notes in the Descriptive Report were made in red during office processing.

ANNIS/SURF ✓ 6/15/98 SJV



**S-E904-AHP
H-10745**

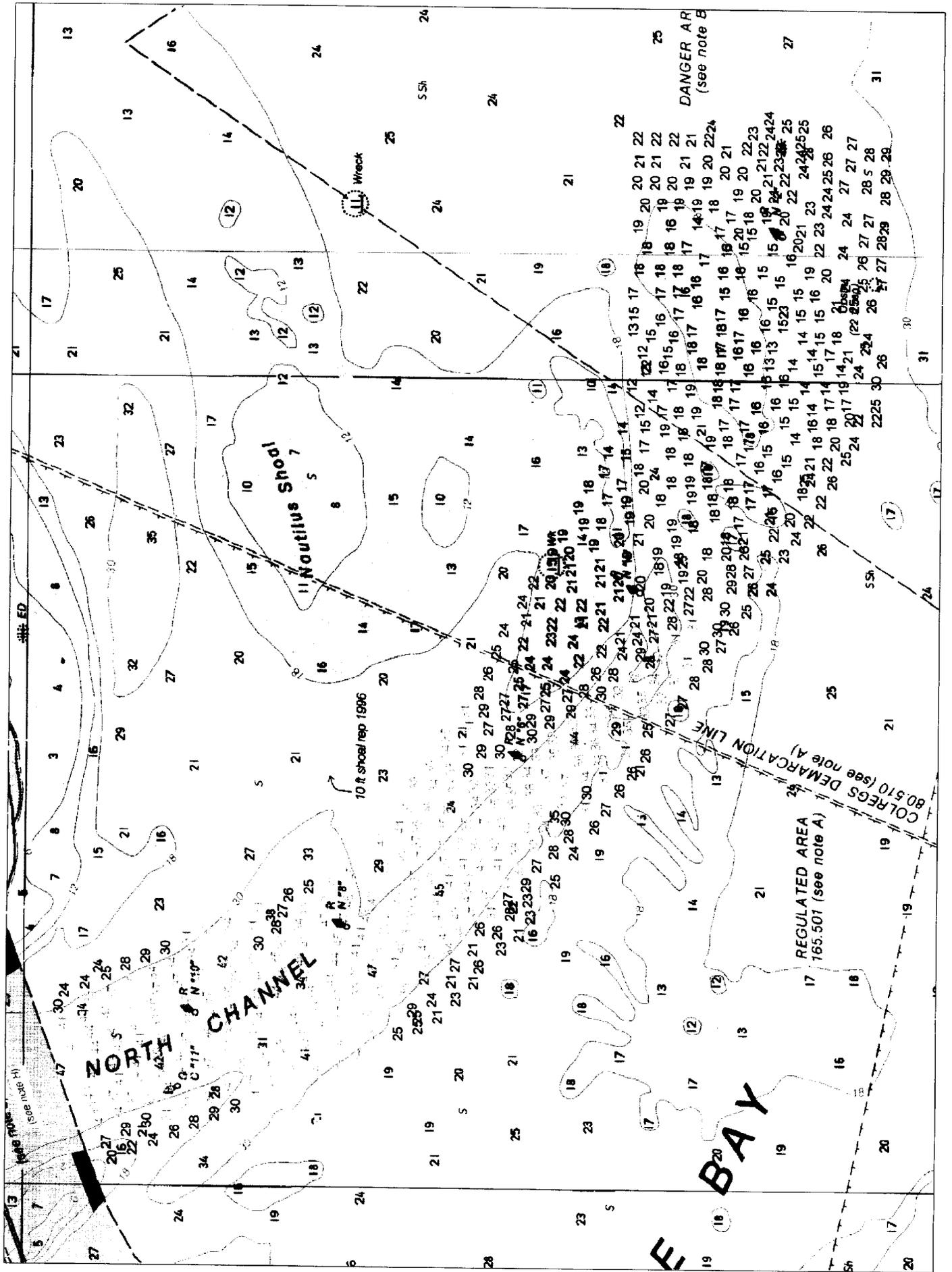
**Virginia-Chesapeake Bay
2.2 NM South of Cape Charles
Chart 12208, 6th Ed. 7 Sept. 1996
All soundings in feet at MLLW**

334.320 (see note A)
Anchoring, trawling, fishing and
dredging are prohibited in this area

TABLE OF CONTENTS

	<u>Page</u>
A. PROJECT	2
B. AREA SURVEYED	2
C. SURVEY VESSELS.	3
D. AUTOMATED DATA ACQUISITION AND PROCESSING	3
E. SONAR EQUIPMENT	4
F. SOUNDING EQUIPMENT.	5
G. CORRECTIONS TO SOUNDINGS.	5
H. CONTROL STATIONS.	7
I. HYDROGRAPHIC POSITION CONTROL	8
J. SHORELINE	9
K. CROSSLINES.	9
L. JUNCTIONS	9
M. COMPARISON WITH PRIOR SURVEYS	10
N. ITEM INVESTIGATION REPORTS.	11
O. COMPARISON WITH THE CHART	12
P. ADEQUACY OF SURVEY.	14
Q. AIDS TO NAVIGATION.	14
R. STATISTICS.	15
S. MISCELLANEOUS	15
T. RECOMMENDATIONS	15
U. REFERRAL TO REPORTS	16
* APPENDICES	
* SEPARATES	

*Data filed with field records



A. PROJECT

A.1 This survey was conducted in accordance with Hydrographic Project Instructions S-E904-AHP, basic hydrographic survey, Chesapeake Bay, Nautilus Shoal, Virginia.

A.2 The original instructions are dated April 25, 1997.

A.3 There have been no changes to the original instructions.

A.4 This Descriptive Report covers sheet "A" of S-E904-AHP. This sheet lies 2.2 nautical miles south of Cape Charles, Virginia. See section B.2 for exact survey boundaries.

A.5 Project S-E904-AHP responds to reported charting deficiencies in the vicinity of Nautilus Shoal at the entrance to the Chesapeake Bay, just east of the Chesapeake Bay Bridge tunnel.

B. AREA SURVEYED

B.1 This survey covers the navigable area of the North Channel entrance to the Chesapeake Bay, from Nautilus Shoal to the Chesapeake Bay Bridge Tunnel. This survey is located approximately 2.2 nautical miles south of Cape Charles, Virginia.

B.2 The survey comprises one sheet with the following boundaries, starting at the SE corner and proceeding clockwise:

1. 37°00'50"N 075°53'28"W
2. 37°00'50"N 075°55'13"W
3. 37°02'39"N 075°58'34"W
4. 37°02'59"N 075°58'58"W
5. 37°04'33"N 075°59'49"W
6. 37°04'50"N 075°58'51"W
7. 37°03'18"N 075°58'00"W
8. 37°02'02"N 075°55'11"W
9. 37°02'02"N 075°53'28"W

B.3 Data collection for this survey began on April 30, 1997 (DN 120) and ended on May 14, 1997 (DN 134).

C. SURVEY VESSELS

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

Vessel	EDP Number	Primary Function
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 HYPACK for Windows version 6.4 was used exclusively for data acquisition on this survey. Section D.3 discusses post processing using the Hydrographic Processing Software (HPS). The HSD UTILITIES version 4.25 and 6.11 provided by Hydrographic Surveys Division (N/CS32) was used to transfer data to a format that was useable by the Hydrographic Processing System (HPS).

D.2 The SEABIRD SBE-19 sound velocity profile unit was utilized with SEASOFT 3.3M and SEACAT 2.0 software. The program VELOCITY (Version 2.11, September 21, 1994) was used to process the collected data and calculate velocity corrections.

D.3 Post processing was accomplished using HPS version 1.22, designed by the Atlantic Hydrographic Branch.

E. SONAR EQUIPMENT

- E.1 The BAY HYDROGRAPHER conducted all side scan sonar operations using an EG&G Model 260 image-corrected side scan sonar recorder (S/N 016673) and a 100 kHz Model 272-T towfish (S/N 016696).
- E.2 The towfish was configured with a 20° beam depression, which is the normal setting and yields the optimum beam correction.
- E.3 The 100 kHz frequency was used throughout the survey.
- E.4 a. During survey preparation, it was determined that the depth of water in the survey area would require line spacing of 70 meters with the use of the 50-meter range scale. This range scale was 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). Data collected with an EPE of 15 or greater was rejected or smoothed during post-processing, so the maximum line spacing was never exceeded.
- E.4 b. Confidence checks were obtained during passes by the anchor for buoy RN "2". This feature was annotated on the sonargram.
- E.4 c. Two hundred percent side scan coverage was completed for the 250-meter search radius assigned to AWOIS item 913. As stated in the Hydrographic Project Instructions, side scan sonar was used to supplement echo-sounding information and investigate any assigned AWOIS items only. No mainscheme side scan sonar was obtained during this survey. All side scan coverage was checked with smooth plots to ensure proper overlap between adjoining lines.
- E.4 d. There were no degraded data returns collected during this survey.
- E.4 e. The towfish was deployed exclusively from the stern.
- E.5 No significant sonar contacts were found during this survey.

E.6 At this time there is no way to check overlap coverage on-line with HYPACK. All overlap was checked and holidays identified during post processing using MapInfo software version 4.0.

F. SOUNDING EQUIPMENT.

F.1 All hydrographic soundings were acquired using a Raytheon Model 6000N Digital Survey Echosounder (DSF-6000N S/N: A109N).

F.2 No other sounding equipment was used.

F.3 There were no problems with the sounding equipment that affected the accuracy or quality of 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 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.

Cast Number	Day Number	Position of Cast		Days Covered
		Latitude	Longitude	
01	120	37°00'36"N	075°53'30"W	120 - 122
02	127	37°03'18"N	075°57'53"W	127 - 129
03	134	37°02'37"N	075°57'42"W	134

b. Leadline Comparison

A dual leadline comparison with the DSF-6000N was conducted during special project S-E902-AHP on:

DN 122 at 36°54'25"N and 076°05'22"W (9 ft depths)
DN 128 at 36°54'25"N and 076°05'22"W (9 ft depths)
DN 134 at 36°54'25"N and 076°05'22"W (9 ft depths)

See the fathometer record on the above listed days for actual DSF 6000N readings.

The leadline comparison for this survey was conducted alongside the pilot station pier inside Lynnhaven Inlet. Although there was a swift current, the water was clear, enabling the leadman to make multiple, quick readings. The unusually calm water also provided a steady fathometer reading. These ideal conditions were an excellent check on the accuracy of the fathometer as well as the vessel's offsets. Data from these comparisons can be found in Separate IV.*

c. Static Draft

After taking possession of the BAY HYDROGRAPHER from the Navy, it underwent a brief yard period to prepare it for service. At this time a survey was conducted by LT Guy Noll to determine the exact position of the vessels transducers. An exact vertical distance was calculated from the transducer face to a permanent bolt (transducer reference mark) on the starboard side of the vessel. Once the vessel was re-floated, the distance from the transducer reference mark to the water's surface was measured. The vessel's static draft was calculated to be exactly 0.84 meter (2.8 feet). Refer to Separate IV* for data records. This draft corrector was applied to all sounding data through the HPS offset table.

d. Dynamic Draft (Settlement and Squat Correctors)

Settlement and squat correctors for the BAY HYDROGRAPHER were determined on the Elizabeth River, Norfolk, VA on November 21, 1995. An observer, stationed with a level on a pier, measured changes in relative height by sighting to a staff held at the longitudinal position of the vessel's transducer. The vessel ran directly toward and then away from the observer. The values obtained from the toward and away runs were averaged and 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 HSD Utilities conversion process.

f. Tide Correctors

The tidal datum for this project is Mean Lower Low Water. The operating tide station at Chesapeake Bay Bridge Tunnel (CBBT) (863-8863) served as control for datum determination.

The project area for this survey encompasses tidal zones SCB1, SCB2, SCB3, SCB4, SCB5, SCB6 and ECB4 as specified in the Project Instructions for S-E904-AHP. These zones are controlled by one primary gauge; CBBT (863-8863). Due to the limitations of HPS and for ease of data processing, zone SCB2 correctors (time corrector +0 mins, range corrector x1.26) were applied to all data using the predicted tides utility in HPS. All proper zones will be applied by the Atlantic Hydrographic Branch upon receipt of smooth tides from N/OES234.

Smooth tides were requested from N/OES234 in a letter dated June 10, 1997. **Approved tides and zoning were applied during office processing.*

The BAY HYDROGRAPHER employed no 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. Zoning for this project is consistent with the Project Instructions.

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>
Ashtech GPS Sensor	Ashtech GPS Sensor
s/n 700417B1182	s/n 700417B1012
Firmware Version 1E89D-P	Firmware Version 1E89D-P
Magnavox MX50R	Magnavox MX50R
DGPS Receiver s/n 316	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 b. There were no equipment malfunctions.

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

I.7 d. No systematic errors were detected which required adjustments.

I.7 e. The maximum allowed HDOP value of 3.75 was never exceeded.

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 online. These offsets, along with the cable length, towfish height, and depth of water, were used by the HPS system to compute the position of the towfish.

J. SHORELINE

This was a navigable area survey. No shoreline verification was required.

K. CROSS LINES.

A combined total of 12.5 nautical miles of crosslines were acquired for this survey representing 11.1% of the 112.6 nautical miles of mainscheme hydrography.

A plot of all main scheme soundings in feet, superimposed with cross lines, was used to conduct main scheme to cross line comparisons. Soundings at intersections were compared to all other soundings within a 5mm (50-meter) radius. Based on this procedure, agreement between main scheme and cross line soundings was found to be excellent. The majority of compared soundings fell within 1 foot of each other, with only an occasional difference of 2 feet noted along contour lines.

L. JUNCTIONS

L.1 This sheet does not junction with any surveys.

M. COMPARISON WITH PRIOR SURVEYS. *See 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

AWOIS NO: 913

Item Description: Seaplane

Source: LNM31/50, LNM33/50

AWOIS Position: Lat. 37°01'20.52"N Lon. 075°53'33.73"W

Required Investigation: SD, S2, DI **Radius:**250

Charts Affected: 12200, 12208, 12221, 13003

INVESTIGATION

Date(s): 05/09/97 (DN: 129)

Position Numbers: 4655 - 4845

Investigation Used: S2

Position Determined By: Differential GPS

Investigation Summary: AWOIS item 913 was covered with 200% side scan sonar during project S-E904-AHP. No significant contacts were found within the search radius.

CHARTING RECOMMENDATION

Recommendation: Based on the results of this survey, the hydrographer recommends removal of the dangerous wreck symbol and charting depths in this area based on the current survey. *CONCURE*

O. COMPARISON WITH THE CHART See also Evaluation Report

0.1 Four charts are affected by this survey:

Chart 12200
"Cape May to Cape Hatteras"
43rd Ed. 22 July 1995
Scale: 1:419,706

Chart 12208
"Approaches to Chesapeake Bay"
6th Ed. 7 September 1996
Scale: 1:50,000

Chart 12221
"Chesapeake Bay Entrance"
66th Ed. 7 September 1996
Scale: 1:80,000

Chart 12280
"Chesapeake Bay"
1st Ed. 25 May 1996
Scale: 1:200,000

0.2 No Danger to Navigation reports were submitted for this survey. Due to the extensive change in bathymetry in this area, any necessary danger to navigation reports will be generated by AHB (N/CS33).

0.3 a. Overall, the soundings acquired for this survey did not correlate with charted depths. Survey depths were overlaid on the largest scale chart of the area using MapInfo software. Survey depths were converted from meters to feet within MapInfo. Depending on geographic area, depths showed significant shoaling and deepening when compared to charted soundings.

0.3 b. The northwest half of the survey area showed various trends towards deepening and shoaling that cannot be described in general terms. Soundings acquired in the southeast half of the survey area showed significant movement of the 18-foot curve associated with Nautilus Shoal. This shoal area seems to be moving towards the south-southeast, as shown in the figure below. Note: the green contour line in figure 0.3b-1 is approximate.

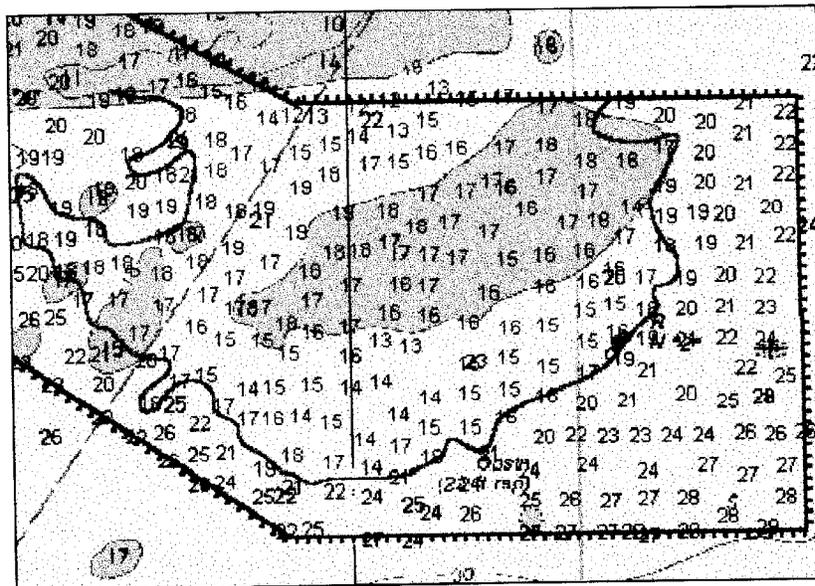


Fig. O.3b-1

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 six aids to navigation, as listed in the table below.

Detached Positions		
Nav. Aid	Latitude	Longitude
R N "2"	37°01'19.746"N	75°54'06.121"W
R N "4"	37°02'01.435"N	75°56'18.125"W
R N "6"	37°02'34.674"N	75°57'18.352"W
R N "8"	37°03'24.649"N	75°58'22.019"W
R N "10"	37°04'10.621"N	75°58'55.151"W
G C "11"	37°04'14.412"N	75°59'20.838"W

Light List Positions			
Nav. Aid	Latitude	Longitude	Description
R N "2"	37°01'18.000"N	75°54'06.000"W	Red nun
R N "4"	Not listed	Not listed	Red nun
R N "6"	Not listed	Not listed	Red nun
R N "8"	Not listed	Not listed	Red nun
R N "10"	Not listed	Not listed	Red nun
G C "11"	Not listed	Not listed	Green can

Detached positions (DP's) of navigation aids taken during this survey were compared to positions on chart 12208 using MapInfo. All DP's were within 50 meters of their charted position. No adjustments to these charted positions are recommended. *These aids to navigation appear adequate to serve their intended purposes.*

R. STATISTICS.

R.1 a.	Number of Positions	5547
b.	Linear Nautical Miles of Sounding Lines:	
	Nautical Miles of Survey With the Use of Side Scan Sonar	4.5
	Nautical Miles of Survey Without the Use of Side Scan Sonar	111.8
R.2 a.	Square Nautical Miles of Hydrography per 100% of Coverage	5.9
b.	Days of Production	7
c.	Detached Positions	6
d.	Bottom Samples	12
e.	Tide Stations	1
g.	Velocity Casts.	3

S. MISCELLANEOUS. See also Evaluation Report

S.1 a. No evidence of silting was found during this survey.

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. Samples were examined for composition and consistency, then discarded.

T. RECOMMENDATIONS.

T.1 The data acquired for this survey showed major shoaling and deepening trends within the survey limits. Due to the limited area covered, the hydrographer recommends that single-beam echosounder coverage be scheduled for the portions of the hydrographic sheet not covered by this survey.

T.2 No present or planned construction or dredging should affect the results of this survey.

T.3 Aside from the items mentioned in section T.1, no further investigation of the survey area is recommended.

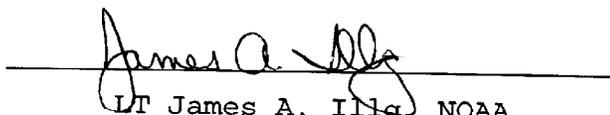
U. REFERRAL TO REPORTS

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

This report and the accompanying field sheets are respectfully submitted.



Michael J. Annis
Survey Technician
NOAA Survey Vessel BAY HYDROGRAPHER



LT James A. Illg, NOAA
Chief, AHP

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	076°00'23.884"W
Cape Henlopen, DE	38°46'36.421"N
298 KHz	075°05'15.667"W

APPENDIX VII

APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NO. H-10745

Field operations contributing to the accomplishment of this Navigable Area survey were conducted under my direct supervision with frequent personal checks of progress and adequacy. All field sheets and reports were reviewed in their entirety and all supporting records were checked as well.

This survey is more than adequate to supersede ALL prior surveys in common areas. The survey is considered complete and adequate for nautical charting.



Richard T. Brennan, LTJG, NOAA
Officer-in-Charge
NOAA Survey Vessel BAY HYDROGRAPHER



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: July 18, 1997

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: S-E904-AHP

HYDROGRAPHIC SHEET: H-10745

LOCALITY: Virginia, Chesapeake Bay, Nautilus Shoal

TIME PERIOD: April 30 - May 14, 1997

TIDE STATION USED: 863-8863 Chesapeake Bay Bridge Tunnel, VA
Lat. 36° 58.0'N Lon. 76° 06.8'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 m

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.829 m

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: ECB4, SCB1, SCB2, SCB3, SCB4,
SCB5, SCB6 & SCB8

Refer to attachment(s) for zoning information.

Note: Provided time series data are tabulated in metric
units (meters) and on Greenwich Mean Time.



CHIEF, TIDAL ANALYSIS BRANCH



Final tide zone node point locations for OPR E904-AHP-97.

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 ECB4			
-75.81151 36.322991	863-8863	-42	1.28
-75.771651 36.574628			
-75.665753 37.249684			
-75.617638 37.561641			
-75.916667 37.111667			
-75.978333 36.861667			
-75.81151 36.322991			
Zone SCB1			
-75.978333 36.861667	863-8863	-30	1.26
-76 36.923333			
-75.973333 37.033333			
-75.938333 37.021667			
-75.978333 36.861667			
Zone SCB2			
-75.916667 37.111667	863-8863	0	1.26
-75.961667 37.085			
-75.973333 37.033333			
-75.938333 37.021667			
-75.916667 37.111667			
Zone SCB3			
-76.04 36.93	863-8863	-18	1.23
-76 36.923333			
-75.973333 37.033333			
-76 37.041667			
-76.04 36.93			
Zone SCB4			
-75.98 37.098333	863-8863	+6	1.23
-76 37.041667			
-75.973333 37.033333			
-75.961667 37.085			
-75.98 37.098333			
Zone SCB5			
-76.04 36.93	863-8863	-12	1.06
-76.045082 36.917592			

-76.083612 36.908546
-76.115 36.913333
-76.026667 37.053333
-76 37.041667
-76.04 36.93

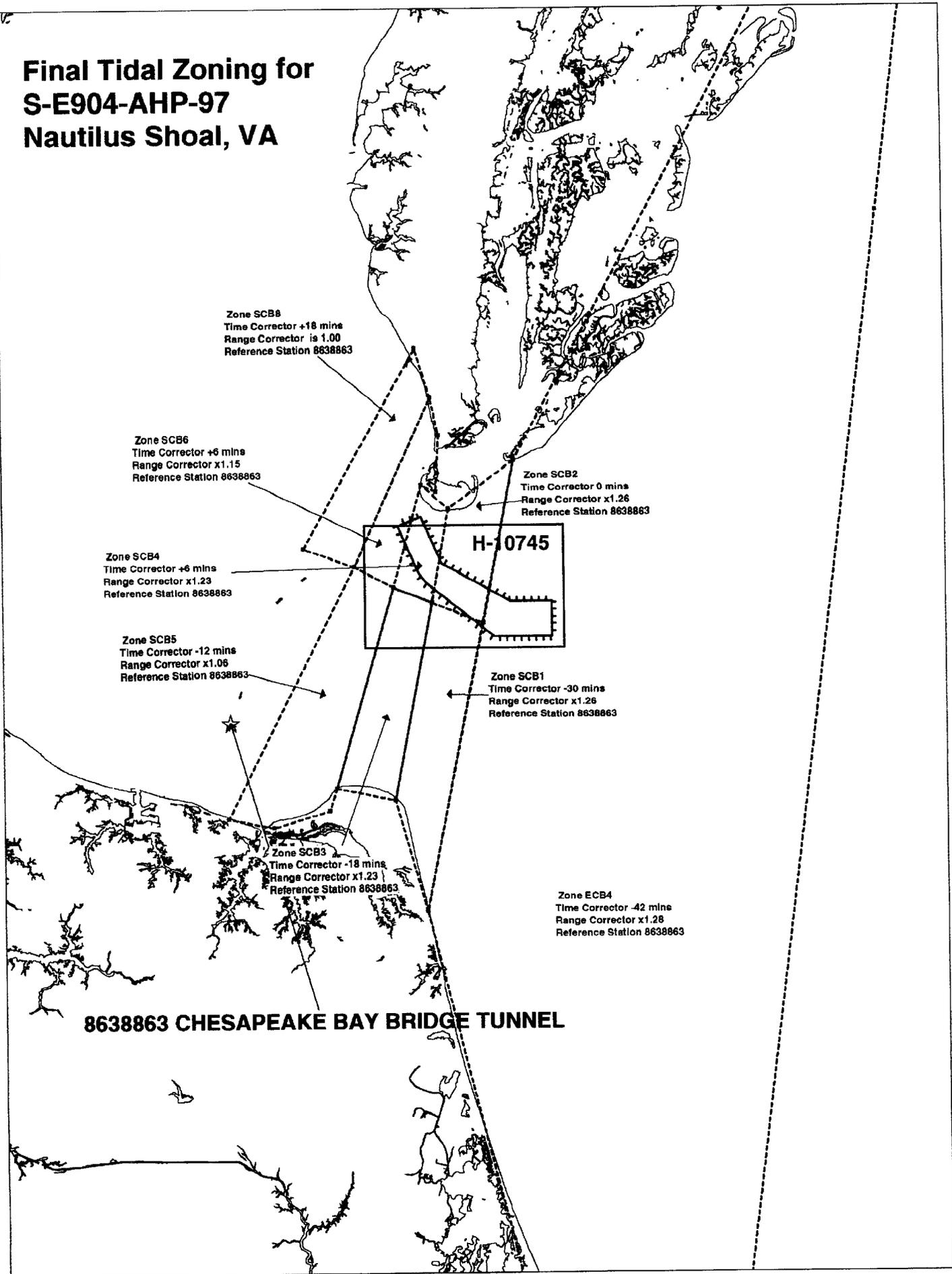
Zone SCB6

-76.026667 37.053333	863-8863	+6	1.15
-76 37.041667			
-75.98 37.098333			
-75.970224 37.094261			
-75.967957 37.125604			
-75.973333 37.146667			
-76.026667 37.053333			

Zone SCB8

-75.973333 37.146667	863-8863	+18	1.00
-75.983886 37.174067			
-76.061667 37.063333			
-76.026667 37.053333			
-75.973333 37.146667			

Final Tidal Zoning for S-E904-AHP-97 Nautilus Shoal, VA



NOAA FORM 76-155 (11-72)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION					SURVEY NUMBER H-10745		
GEOGRAPHIC NAMES									
Name on Survey	<div style="text-align: center;"> <p>ON START NO. 12224, 12225, 12280</p> <p>ON PREVIOUS SURVEY NO.</p> <p>CON U.S. QUADRANGLE MAPS</p> <p>FROM LOCAL INFORMATION</p> <p>ON LOCAL MAPS</p> <p>P.O. GUIDE OR MAP</p> <p>RAND McNALLY ATLAS</p> <p>U.S. LIGHT LIST</p> </div>								
	A	B	C	D	E	F	G	H	K
CHESAPEAKE BAY	X		X						1
NAUTILUS SHOAL	X		X						2
NORTH ATLANTIC OCEAN	X		X						3
NORTH CHANNEL	X		X						4
VIRGINIA (title)	X		X						5
									6
									7
									8
									9
									10
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									23
									24
									25

Approved

Christa G. Boy
 Chief Geographer

SEP 9 1997

LETTER TRANSMITTING DATA

N/CS33-52-98

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

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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 12, 1998

NUMBER OF PACKAGES

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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.

H-10745
 VIRGINIA, CHESAPEAKE BAY, NAUTILUS SHOAL

1 (ONE) TUBE CONTAINING THE FOLLOWING:

- 1 SMOOTH SHEET FOR SURVEY H-10745
- 1 ORIGINAL DESCRIPTIVE REPORT
- 2 DRAWING HISTORY FORMS (NOAA FORM #76-71) 1 EACH FOR NOS CHARTS 12208 AND 12222
- 1 RECORD OF APPLICATION TO CHART FORM (NOAA FORM #75-96) FOR SURVEY H-10745
- 1 H-DRAWING FOR NOS CHART 12208
- 1 H-DRAWING FOR NOS CHART 12222
- 1 COMPOSITE DRAWING FOR NOS CHART 12208
- 1 COMPOSITE DRAWING FOR NOS CHART 12222

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

06/12/98

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H10745

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	5547
NUMBER OF SOUNDINGS	5547

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	40	08/22/97
VERIFICATION OF FIELD DATA	80	12/11/97
EVALUATION AND ANALYSIS	25	
FINAL INSPECTION	19	05/11/98
COMPILATION	71	06/05/98
TOTAL TIME	235	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		05/21/98

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10745 (1997)**

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, version 2.01
MicroStation 95, version 5.05
I/RAS B, version 5.01

The smooth sheet was plotted using a Hewlett Packard DesignJet 350C 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 0.522 seconds (16.095 meters or 1.61 mm at the scale of the survey) north in latitude, and 1.257 seconds (31.063 meters or 3.11 mm at the scale of the survey) east in longitude.

All geographic positions listed in this report are on NAD 83 datum unless otherwise specified.

M. COMPARISON WITH PRIOR SURVEYS

Hydrographic

H09693	(1977)	1:10,000
<u>H09901</u>	<u>(1980)</u>	<u>1:10,000</u>

The prior surveys listed above cover the present survey area in its entirety. The hydrographer did not compare this survey with the prior surveys listed above, see section M of the Descriptive Report.

H09693 (1977) covers the survey area in all areas except the southeast. Present survey depths differ from prior survey depths plus or minus (\pm) 0-10 feet (0-3m). There is no pattern to shoaling and deepening. In some areas, prior survey depths are deeper than present survey depths, and in other areas prior survey depths are shoaler than present survey depths.

H09901 (1980) covers the southeastern portion of the present survey. Present survey depths differ from prior survey depths plus or minus (\pm) 0-12 feet (0-3⁶m). Again, there is no pattern to shoaling and deepening. In some areas, prior survey depths are deeper than present survey depths, and in other areas prior survey depths are shoaler than present survey depths.

Differences between the present survey and charted depths can be attributed to natural and cultural change, storms, and improved hydrographic surveying methods and equipment.

Except as noted the present survey is considered adequate to supersede the charted hydrography in the common area.

- O. COMPARISON WITH CHART 12208 (6th Edition, Sep 7/96)
12221 (67th Edition, Mar 29/97)
12222 (38th Edition, Aug 31/96)

Hydrography

The charted hydrography originates with the prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in sections N. and O. of the Descriptive Report. The following should be noted:

1) A dangerous submerged obstruction with a 22-foot reported depth charted in latitude 37°00'53.5"N, longitude 75°54'23"W originates with an unknown source. The present survey found depths of 24 feet to 26 feet in the vicinity of this obstruction. The charted obstruction was neither verified nor disproved by the present survey. It is recommended that this item be retained as charted.

2) A sunken wreck with a 15-foot wire drag clearance depth, charted in latitude 37°02'26.6"N, longitude 75°56'09.6"W, originates with a wire drag survey, which was unavailable for review in the office. This item was

neither investigated nor disproved by the hydrographer. It is recommended that this item be retained as charted.

Except as noted, the present survey is adequate to supersede the charted hydrography within the common area.

P. ADEQUACY OF SURVEY

This is an adequate hydrographic survey. No additional work is recommended.

Q. Aids to Navigation

The hydrographer located six (6) aids to navigation on the present survey. Five are nun buoys, and one is a can buoy. 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 Marine Chart Division, Silver Spring, Maryland.

H10745

HECK PROCESSING TEAM

Douglas V. Mason

Douglas V. Mason
Cartographic Technician
Verification of Field Data

APPROVAL SHEET
H10745

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 May 98

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.

Nicholas E. Perugini

Nicholas E. Perugini
Commander, NOAA
Chief, Atlantic Hydrographic Branch

Date: 21 May 98

Final Approval:

Approved: Andrew A. Armstrong III

Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division

Date: June 19, 1998

