D00129

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Recon. Hydrographic Survey

Field No. AHP-10-12-98

Registry No. D00129

LOCALITY

State Virginia

General Locality Chesapeake Bay

Locality Nautilus Shoal

1998

CHIEF OF PARTY
B.A. Link

NOAA FORM 77-28
(11-72)

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

REGISTRY NUMBER:

~~H-10854~~
D00129

HYDROGRAPHIC TITLE SHEET

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 NUMBER:
AHP-10-12-98

State: Virginia

General locality: Chesapeake Bay

Locality: Nautilus Shoal ~~to Middle Ground Shoal~~

Scale: 1: 10,000 Date of survey: September 11 – 18, 1998

Instructions dated: September ~~11~~ 18, 1998 Project Number: S-E901-~~BH~~ AHP

Vessel: NOAA Survey Vessel BAY HYDROGRAPHER (1107)
Chief of Party: Brian Link

Surveyed by: LTJG Shepard Smith, K Callahan, M. Cisternelli

Soundings taken by echo sounder, hand lead-line, or pole: DSF 6000N fathometer, Odom Echotrac

Graphic record scaled by: : LTJG Shepard Smith, K Callahan, M. Cisternelli

Graphic record checked by: : LTJG Shepard Smith, K Callahan, M. Cisternelli

Protracted by: N/A Automated plot by: ~~HP 750C~~ HEWLETT PACKARD DESIGNJET 2500 CP PLOTTER

Verification by: ~~Hydrographic Surveys Branch~~ ATLANTIC HYDROGRAPHIC BRANCH PERSONNEL

Soundings in: Feet: ✓ Fathoms: Meters: (X) at MLW: MLLW: (*) :

Remarks: Time Zone Used, 0 (UTC)

HANDWRITTEN NOTES IN THE DESCRIPTIVE REPORT WERE MADE DURING OFFICE PROCESSING.

AWOIS/SGRF ✓ 11/30/99 SJV

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* FILED WITH THE ORIGINAL FIELD RECORDS.

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
S-E901-~~BH~~ AHP
AHP-10-12-98
H-10854

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

A. PROJECT

A.1 This survey was conducted in accordance with Hydrographic Project Instructions S-E901-~~BH~~ AHP, reconnaissance hydrographic survey, Chesapeake Bay, Nautilus Shoal, Virginia. The survey does not cover Nautilus Shoal itself, but rather a number of shoals south of Nautilus Shoal known as Middle Ground.

A.2 The original instructions are dated September ~~11~~ 18, 1998.

A.3 There were no changes to the original instructions.

A.4 This Descriptive Report covers sheet "A" of S-E901-~~BH~~ AHP.

A.5 Project ~~H-10854~~ D00129 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 Channel. This survey is located approximately 5.0 nautical miles south of Cape Charles, Virginia.

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

1. 37°02'39"N 076°03'07"W
2. 37°01'01"N 076°03'07"W
3. 37°~~5~~6'58'53"N 076°00'14"W
4. 36°58'54"N 075°54'07"W
5. 37°00'52"N 075°54'09"W
6. 37°00'51"N 075°55'12"W
7. 37°02'39"N 075°58'29"W

B.3 Data collection for this survey began on September 11, 1998(DN 254) and ended on September 18,1998 (DN 261).

C. SURVEY VESSELS

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

Vessel	EDP Number	Primary Function
NOAA S/V BAY HYDROGRAPHER	1107	Hydrography

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

D. AUTOMATED DATA ACQUISITION AND PROCESSING

SEE ALSO THE 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 on this survey.

D.2 The SEABIRD SBE-19 sound velocity profile unit was used 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 was accomplished using **Hydrographic Processing System** (HPS), **MapInfo**, and the **HPS_MI** MapBasic application.

E. SONAR EQUIPMENT

E1. No side scan or multibeam sonar was used for this survey.

F. SOUNDING EQUIPMENT

F.1 All hydrographic soundings were acquired using a Raytheon Model 6000N Echosounder (DSF-6000N S/N: A112N).

F.2 This survey is considered a reconnaissance survey to determine any charting deficiencies in the vicinity of Middle Ground. Two-hundred-meter line spacing using the DSF-6000N Echosounder was deemed sufficient to evaluate the current state of the seafloor in this area. Reduced line spacing of 100-meters was used in areas where discrepancies between charted

soundings and surveyed soundings were evident. No side scan operations were required on this project.

F.3 No other sounding equipment was used.

F.4 There were no problems with the sounding equipment that affected the accuracy or quality of the data.

F.5 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

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 using an Odom Digibar 1100 (S/N 168)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	
1	258	36°59'45	076°01'00	254-261

Leadline Comparison

A leadline comparison with the DSF-6000N was conducted alongside Herrington Harbor South Marina, Rose Haven, MD on March 11, 1998 (070).

The leadline comparison was conducted inside a protected harbor while alongside a pier. The water surface was calm and clear, enabling the leadman to make multiple, quick readings. 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.*

* FILED WITH THE ORIGINAL FIELD RECORDS

Static Draft

On June 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.

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 receiver 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.

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 **HPS** data processing.

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, MAC601, MAC602, MAC603, and MAC606 as specified in Project Instructions for S-E901-~~DH~~ AHP. These zones are controlled by one primary gauge - CBBT (863-8863). Preliminary, unverified tides from the CBBT gauge were applied with the proper zones using the HP Tools tide program. Smooth tides were requested from N/OES234 in a letter dated October 19, 1998. APPROVED TIDES AND ZONES WERE APPLIED DURING OFFICE PROCESSING.

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

* FILED WITH THE ORIGINAL FIELD RECORDS

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 THE 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 radio beacon 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:

Unit A	Unit B
Starlink GPS Receiver DNAV-212 Ashtech OEM Sensor II Starlink MRB-2A S/N 835	Ashtech GPS Sensor s/n 700417B1129 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 radio beacons 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.

* FILED WITH THE ORIGINAL FIELD RECORDS

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 3.7 was never exceeded.

I.7 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.*

J. SHORELINE

No shoreline is contained within the boundaries of this survey.

K. CROSS LINES

A total of 23 nautical miles of crosslines were acquired for this survey representing 12% of the 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. 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 in areas of steep bathymetry.

L. JUNCTIONS

D00129
~~H-10854~~ junctions with H-10745 from S-E904-BH, conducted around Nautilus Shoal by the Bay Hydrographer in 1997. Agreement between ~~H-10854~~ D00132 soundings and S-E901-BH was very good. The majority of compared soundings fell within 1 foot of each

* FILED WITH ORIGINAL FIELD RECORDS

other, with only an occasional difference of 2 feet noted along contour lines.

M. COMPARISON WITH PRIOR SURVEYS SEE ALSO THE EVALUATION REPORT

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

N. ITEM INVESTIGATIONS

No items were investigated during the course of this survey.

O. COMPARISON WITH THE CHART SEE ALSO THE EVALUATION REPORT

O.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

CHART 12205
"CAPE HENRY TO PAMLICO Sd.)
INCLUDING ALBEMARLE Sd.
RUDE HEIGHTS"
24th Ed. 15 JUNE 1996

CHART 12222
"CAPE CHARLES TO NORFOLK HARBOR"
39th Ed. 29 AUGUST 1998

O.2 One Danger to Navigation report addressing 5 soundings was submitted for this survey. A copy of the Danger to Navigation report is included in Appendix 1. APPENDED TO THIS REPORT

O.3 a. Overall, the soundings acquired for this survey did not correlate well 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 Soundings acquired in the southeastern area of Middle Ground shoal showed significant movement of the 18-foot curve towards the southeast, encroaching closer to Cape Henry Channel. Soundings acquired in the northeastern area of this project also showed significant movement of the eighteen-foot curve towards the southeast. Line spacing was reduced to one hundred meters in these two areas where there was considerable discrepancies between charted soundings and surveyed soundings. See Appendix I for the Danger to Navigation letter submitted for these discrepancies. APPENDED TO THIS REPORT

P. ADEQUACY OF SURVEY SEE ALSO THE EVALUATION REPORT

This survey is a reconnaissance survey, and is not considered fully adequate to supersede prior survey data within the survey limits. The hydrographer recommends that soundings from the survey which are shoaler than the charted soundings, supersede the charted soundings. Charted soundings that are shoaler than the survey should be retained. Additionally, contours should be adjusted to represent the shoaler soundings.

Q. AIDS TO NAVIGATION

Detached positions (DP's) of navigation aids taken during this survey were compared to positions on chart 12208 using **MapInfo.** All Aids to Navigation appear to serve their intended purpose. The following table lists aids to navigation which fall within the survey limits of H-10854. Due to time limitations, the position of buoy R "7" was not verified.

Name	Latitude	Longitude
G "11"	37°00'56.8 N	76°02'51.45 W
R "12"	37°01'04.1 N	76°02'40.87 W
G "9"	37°00'10.6 N	76°01'50.23 W
R "10"	37°00'19.2 N	76°01'40.87 W
G "5"	36°58'46.8 N	76°02'51.42 W
R "6"	36°59'15.4 N	76°00'17.01 W
R "4a"	37°00'21.87 N	75°55'43.76 W

R. STATISTICS

R.1 a. Number of Positions. 9638

b. Lineal Nautical Miles of Sounding Lines:

	Nautical Miles of Survey with the Use of Side Scan Sonar	0.0
	Nautical Miles of Survey Without the Use of Side Scan Sonar	266.68
R.2	a. Square Nautical Miles of Hydrography	20.8
	b. Days of Production	6
	c. Detached Positions	0
	d. Bottom Samples	0
	e. Tide Stations	1
	g. Velocity Casts	1

S. MISCELLANEOUS SEE ALSO THE EVALUATION REPORT

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

S.2 According to the Project Instructions, no bottom samples were required for this survey.

T. RECOMMENDATIONS

T.1 The data acquired for this survey showed major shoaling and deepening trends within the survey limits. The hydrographer recommends single-beam echosounder coverage be scheduled for the entire hydrographic sheet on a periodic basis. Additionally, the high points of the shoals as defined by this survey should be further investigated with reduced line spacing. Additional recommendations are made in section P. of this report.

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

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 accompanying separates is respectfully submitted.

Monica M. Cisternelli

Monica M Cisternelli
Survey Technician
NOAA Survey Vessel BAY HYDROGRAPHER

LTjg Shepard M Smith, NOAA
Officer in Charge, OIC
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 289 KHz	36°55'37.580"N 076°00'23.884"W
Cape Henlopen, DE 298 KHz	38°46'36.421"N 075°05'15.667"W

S/V BAY HYDROGRAPHER
439 West York St Norfolk, VA
October 21, 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 Middle Ground, Chesapeake Bay Entrance, Virginia , NOAA Survey Vessel BAY HYDROGRAPHER discovered five uncharted shoals, 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 wide line spacing single beam sonar. All positions are NAD 83.

Depths and additions are outlined in the following table .

Item	Latitude	Longitude
16' Sounding	37-01-18.9 N	076-02-28.9 W
17' Sounding	37-00-23.45 N	076-00-18.46 W
18' Sounding	37-00-57.32 N	076-02-10.2 W
19' Sounding	37-00-35.03 N	076-01-17.8 W
12' Sounding	37-01-23.06 N	075-57-29.75 W

Affected Nautical Charts:

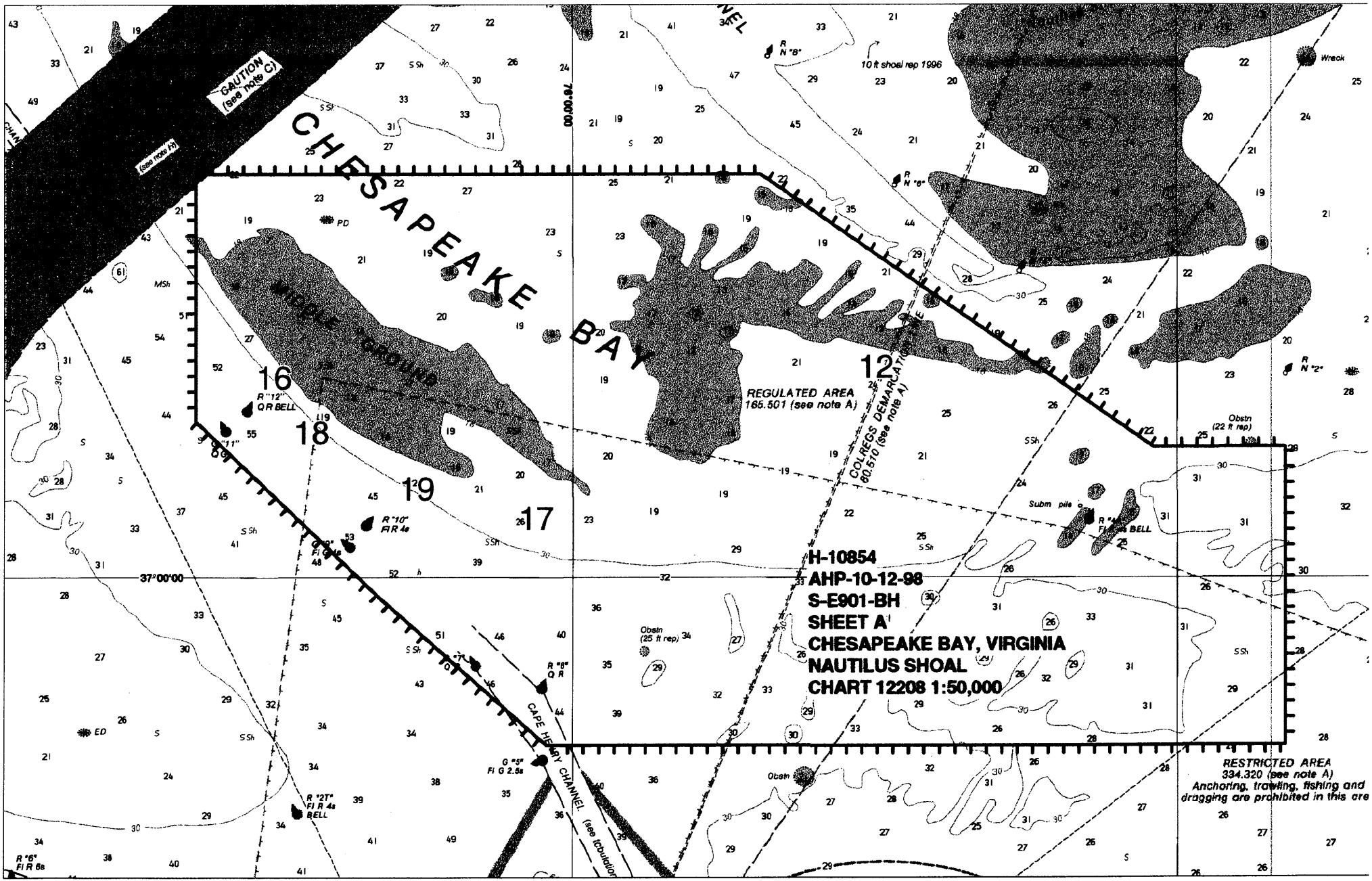
Chart Number	Edition Number	Date	Horizontal Datum
12208	6th	Sept 7, 1996	NAD 83
12221	70th	Sept 12, 1998	NAD 83
12222	39th	Aug 29, 1998	NAD 83
12254	40th	Aug 1, 1998	NAD 83
12220	35th	Sept 4, 1993	NAD 83

The attached charlets from chart 12208 depict the obstructions to be added. Questions concerning this report should be directed to the Atlantic Hydrographic Branch by calling 757-441-6746.

Sincerely,

LTJG Shepard Smith, NOAA
Officer-in-Charge, NOAA S/V Bay Hydrographer

Attachment
cc: NIMA, N/CS26, N/CS31


CHESAPEAKE BAY
CAUTION (see note C)
(see note H)
WRECK GROUND
NAUTILUS SHOAL
10 ft shoal rep 1996
Wreck
REGULATED AREA
185.501 (see note A)
COLREGS DEMARCATION LINE
80.510 (see note A)
Obstn (22 ft rep)
Subm pile
Obstn (25 ft rep)
CAPE HENRY CHANNEL (see tabulation
RESTRICTED AREA
334.320 (see note A)
Anchoring, trawling, fishing and dragging are prohibited in this are
16
18
19
17
12
37°00'00
76°00'00
H-10854
AHP-10-12-98
S-E901-BH
SHEET A
CHESAPEAKE BAY, VIRGINIA
NAUTILUS SHOAL
CHART 12208 1:50,000

APPROVAL SHEET
Reconnaissance Survey
S-E901-AHP
AHP-10-12-98
H-10854
1998

This reconnaissance survey was conducted in accordance with the Project Instructions for S-E901-AHP, the Hydrographic Manual, the Hydrographic Survey Guidelines, and the Field Procedures Manual. All reports, records, and survey sheets were reviewed by the Officer-in-charge of the BAY HYDROGRAPHER. The descriptive report was reviewed and approved by the Chief of Party. The Chief of Party did not directly supervise any part of this survey

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

Brian A. Link

Brian A. Link
Chief, Atlantic Hydrographic Party (acting)

Brian A. Link

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

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: March 1, 1999

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: S-E901-BH
HYDROGRAPHIC SHEET: H-10854

LOCALITY: Nautilus Shoal, Chesapeake Bay, VA

TIME PERIOD: September 11, 1998 - September 18, 1998

TIDE STATION USED: 863-8863 Chesapeake Bay Bridge Tunnel, VA
Lat. 36° 58.0'N Lon. 76° 6.8'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.829 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: MAC601, MAC603, MAC604, MAC605, MAC606, SCB1, SCB2, SCB5, SCB6, SCB7, SCB9, SCB10 & SCB11.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

Thomas N. Neu 3/1/99

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10854

Name on Survey	A ON CHART NO. 12221, 12222	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
CAPE HENRY CHANNEL	X		X							1
CHESAPEAKE BAY	X		X							2
CHESAPEAKE CHANNEL	X		X							3
MIDDLE GROUND	X		X							4
NAUTILUS SHOAL	X		X							5
NORTH ATLANTIC OCEAN	X		X							6
NORTH CHANNEL	X		X							7
VIRGINIA (title)	X		X		Approved:					8
										9
					Dennis J. Romberg					10
					Chief Geographer FEB 12 1999					11
										12
										13
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NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 61-29
(12-71)

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

REFERENCE NO.
N/CS33-87-99

LETTER TRANSMITTING DATA

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

☐ ORDINARY MAIL ☐ AIR MAIL
☐ REGISTERED MAIL ☒ EXPRESS
☐ GBL *(Give number)* _____

TO:

NOAA/National Ocean Service
Chief, Data Control Group, N/CS3x1
SSMC3, Station 6815
1315 East-West Highway
Silver Spring, MD 20910-3282

DATE FORWARDED
11-29-99

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.

D00129

Virginia, Chesapeake Bay, Nautilus Shoal

(ONE) 1 TUBE CONTAINING THE FOLLOWING:

1 Orignial Descriptive Report
1 Smooth Sheet for D00129
1 Drawing History Form (NOAA FORM #76-71) for NOS Chart 12222 (located in back of DR)
1 Record of Application to Chart Form (NOAA FORM #76-96) for survey D00129 (located in back of DR)
1 Mylar H-Drawing for NOS Chart 12222
I Paper Composite Plot for NOS Chart 12222

FROM: *(Signature)* Richard Blevins

Richard Blevins

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Richard Blevins
Atlantic Hydrographic Branch
439 West York Street
Norfolk, VA 23510

NOAA FORM 61-29 SUPERSEDES FORM C & GS 413 WHICH MAY BE USED.

11/24/99

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: D00129

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	9645
NUMBER OF SOUNDINGS	9645

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	60.0	02/04/99
VERIFICATION OF FIELD DATA	170.0	11/15/99
QUALITY CONTROL CHECKS	0.0	
EVALUATION AND ANALYSIS	60.5	
FINAL INSPECTION	27.0	08/12/99
COMPILATION	138.5	11/10/99
TOTAL TIME	456.0	

ATLANTIC HYDROGRAPHIC BRANCH APPROVAL 10/22/99

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR D00129 (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
MicroStation 95, version 5.05
SiteWorks, version 2.01
NADCON, version 2.10
I/RAS B, version 5.01

The smooth sheet was plotted using a Hewlett Packard DesignJet 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). 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 0.524 seconds (16.17 meters or 1.62 mm at the scale of the survey) north in latitude and 1.252 seconds (30.96 meters or 3.10 mm at the scale of the survey) east in longitude.

M. COMPARISON WITH PRIOR SURVEYS

Hydrographic

H4926	(1929)	1:20,000
H8218	(1954)	1:25,000
H9693	(1977)	1:10,000
H9880	(1981)	1:10,000
H9901	(1977)	1:10,000
H9904	(1980)	1:10,000
H9961	(1981)	1:20,000
H10745	(1997)	1:10,000

1) H4926 (1929) covers a portion of the present survey in the vicinity of Latitude 37°01'30"N, Longitude 75°56'30"W. Prior survey depths show a general trend of being 2-7 feet

deeper than present survey depths east of Longitude 75°57'45"W and 1-3 feet shallower west of Longitude 75°57'45"W.

2) H8218 (1954) covers a portion of the present survey in the vicinity of Latitude 37°00'00"N, Longitude 75°56'00"W. Prior survey depths show a general trend of being 1 to 10 feet shallower than the present survey between Latitudes 36°58'50"N and 37°00'40"N and between Latitudes 37°01'45"N and 37°02'20"N while showing a general trend of being 1 to 11 feet deeper then the present survey between Latitude 37°00'40"N and 37°01'45"N. A 28-ft charted depth originating with the prior survey, in Latitude 36°59'26"N, Longitude 075°54'21"W, is not considered disproved by the present survey. The 28-ft depth has been brought forward from the prior survey to supplement the present survey. It is recommended that this sounding be retained as charted.

3) H9693 (1977) covers a portion of the present survey in the vicinity of Latitude 37°01'30"N, Longitude 75°58'00"W. Prior survey depths show a general trend of being 1 to 7 feet shallower north of Latitude 37°01'45"N and 1 to 13 feet deeper south of Latitude 37°01'45"N with the largest differences in the area of Latitude 37°01'30"N, Longitude 75°57'30"W. Numerous charted prior survey depths not considered disproved by the present survey have been brought forward from the prior survey to supplement the present survey. It is recommended that these soundings be retained as charted.

4) H9880 (1981) covers a portion of the present survey in the vicinity of Latitude 37°01'30"N, Longitude 76°02'15"W. Prior survey depths show a general trend of being 1 to 23 feet deeper south of a line drawn from Latitude 37°02'00"N, Longitude 76°03'00"W and Latitude 37°00'45"N, Longitude 76°01'45"W while being 1 to 3 feet shallower north of this line. The greatest differences are in the area of Latitude 37°01'00"N, Longitude 76°02'15"W. Numerous charted prior survey depths not considered disproved by the present survey have been brought forward from the prior survey to supplement the present survey. It is recommended that these soundings be retained as charted.

5) H9901 (1977) covers all portions of the present survey south of Latitude 37°01'30"N with the exception of a small area in the extreme southwestern portion. Prior survey depths are in good agreement with present survey depths in the central and southern portions of the present survey. In the northern and western portions of the present survey the prior survey depths show a general trend of being 1 to 15 feet deeper with the largest differences in the areas of Latitude 37°01'15"N, Longitude 75°57'15"W and Latitude 37°00'30"N and

Longitude 76°01'30"W. Overall, present survey depths show a southwesterly migration of all shoals in the common area when compared with those shown on survey H9901. Numerous charted prior survey depths not considered disproved by the present survey have been brought forward from the prior survey to supplement the present survey. It is recommended that these soundings be retained as charted.

6) H9904 (1980) covers a portion of the present survey in the vicinity of Latitude 37°02'00"N, Longitude 76°01'00"W. Prior survey depths show a general trend of being 1 to 5 feet shallower than the present survey with the largest differences in the area of Latitude 37°02'30"N, Longitude 76°01'30"W. Numerous charted prior survey depths not considered disproved by the present survey have been brought forward from the prior survey to supplement the present survey. It is recommended that these soundings be retained as charted.

7) H10745 (1997) overlaps the northeast edge of the present survey in the vicinity of Latitude 37°01'30"N, Longitude 75°56'30"W. Prior survey depths show a general trend of being plus or minus 1 feet different than present survey depths.

Differences between the present and prior surveys can be attributed to natural changes in the bottom configuration, cultural change, and/or improved hydrographic surveying methods.

The present survey is considered adequate to supplement the prior surveys within the common area, except as noted in this report.

O. COMPARISON WITH CHARTS

12205	**(24th Edition, Jun. 15/96)**
12208	**(7th Edition, Dec. 05/98)**
12221	**(70th Edition, Sep. 12/98)**
12222	**(39th Edition, Aug. 29/98)**
12200	**(45th Edition, Dec. 12/98)**
12280	**(1st Edition, May 25/96)**

Hydrography

The charted hydrography within the common area originates with the previously addressed prior surveys, miscellaneous sources and from sources not readily available. The previously addressed prior surveys require no further consideration. See Descriptive Report sections O.3a and O.3b for a comparison of charted depths and present survey

soundings. Attention is directed to the following:

a. A charted submerged pile, located in Latitude 37°00'28"N, Longitude 75°55'49"W and originating with an unknown source, was neither investigated nor addressed by the hydrographer. It is recommended that this submerged pile be retained as charted.

b. A charted obstruction (25 ft rep) with a danger curve, located in Latitude 36°59'31"N, Longitude 75°59'24"W and originating with an unknown source, was neither investigated nor addressed by the hydrographer. It is recommended that this obstruction (25 ft rep) with a danger curve be retained as charted.

c. A charted sunken wreck PD with a danger curve, located in Latitude 37°02'21"N, Longitude 76°02'02"W and originating with LNM40/71, was neither investigated nor addressed by the hydrographer. It is recommended that this sunken wreck PD with a danger curve be retained as charted.

d. On Chart number 12205 the geographic name should be Linkhorn Bay rather than Linkhorn Bat.

e. The following eight(8)charted depths originate with unknown sources and are not considered disproved by the present survey. It is recommended that these depths be retained as charted.

Depth Ft./M	Latitude	Longitude
21	37°00'51.00"N	075°55'13.00"W
27	36°59'24.00"N	075°57'11.00"W
18	37°01'10.00"N	075°58'18.00"W
16	37°00'52.00"N	075°59'00.00"W
16	37°01'01.00"N	075°59'12.00"W
42	36°59'07.00"N	075°00'06.00"W
29	36°59'07.00"N	075°58'02.00"W
27	36°59'14.00"N	075°54'23.00"W

The present survey is adequate to supplement the charted hydrography in the common area, except as noted in this report.

Danger To Navigation

One Danger to Navigation Report was submitted to the Commander (oan) Fifth Coast Guard District, Portsmouth

Virginia for inclusion in the Local Notice to Mariners, and to the Marine Chart Division, Silver Spring, Maryland. A copy of the report is appended to the Descriptive Report. The following should be noted:

The reported 18 ft sounding, located in Latitude 37°00'57.32"N, Longitude 076°02'10.2"W, should be superceded by a 16 ft sounding from the present survey, located in Latitude 37°00'56.9"N, Longitude 076°01'02.5"W.

The reported 19 ft sounding, located in Latitude 37°00'35.03"N, Longitude 076°01'17.8"W, should be superceded by a 17 ft sounding from the present survey located in Latitude 37°00'37.0"N, Longitude 076°01'10.2"W.

The reported 12 ft sounding in Latitude 37°01'23.06"N, Longitude 075°57'29.75"W was changed to a 13 ft sounding after application of approved tides during office processing.

P. ADEQUACY OF SURVEY

This is an adequate reconnaissance hydrographic survey and should supplement all prior surveys within the common area with the exception of those items noted in this report.

S. MISCELLANEOUS

Chart compilation using the present survey data was done by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compiled data will be forwarded to Hydrographic Survey Division, Silver Spring, Maryland upon completion of the project.

The following chart was used for compilation of the present survey: 12222 (39th Edition, Aug. 29/98)

Marilyn Schlüter

Marilyn L. Schlüter
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
D00129

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.

Richard W. Blevins Date: 7 OCT. 1999

Richard W. Blevins
Cartographer
Atlantic Hydrographic Branch

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 Date: 22 OCT 99

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

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Final Approval:

Approved: Samuel P. De Bow, Jr. Date: 12/22/99

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

NOAA

DRAWING HISTORY

U.S. DEPARTMENT OF COMMERCE
NOAA NATIONAL OCEAN SERVICE
OFFICE OF COAST SURVEY

CHART 12222
DRAWING D00129
EDITION 34th

REMARKS:

NC / RC / NE / NP / RP	To Reproduction Date	ITEMS	DATE COMPILED	COMPILER *(Signature)*	DATE REVIEWED	REVIEWER *(Signature)*
		1	10/08/99	Richard W. Blevins	11/09/99	Richard Whitfield
	Print Date					
	Notice to Mariners (FWD)					
	Source Data (FWD)					

APPLIED		ITEM	SOURCE OF INFORMATION			TYPE OF	LOCALITY	INFORMATION APPLIED
Part	Full	NO.	FILE NO.	DATE	AUTH	INFORMATION	*Lat./Long. and Name*	
	X	1	D00129	9/98	NOS	Hydrography	37°00'30"N, 075°58'30"W Chesapeake Bay Nautilus Shoal	Fully applied curves and soundings from smooth sheet

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. D00129

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
12222	11 NOV 1999	Richard Blevin	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
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED