

10343

Diagram No. 1222-5

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. .... WH-10-4-90  
Registry No. .... H-10343

LOCALITY

State ..... Virginia  
General Locality ..... Atlantic Ocean  
Sublocality ..... 1.5 NM Northeast of  
..... Cape Henry

1990

CHIEF OF PARTY  
CDR R.P. Floyd

LIBRARY & ARCHIVES

DATE ..... November 19, 1991

10343

EC/G

PRODUCTS

- 1 2222 ✓
- 1 2208 ✓
- 1 2207 ✓
- 1 2221 ✓
- 1 2220 ✓
- 1 2200 ✓
- 1 2254 ✓
- 1 2205A ✓

HYDROGRAPHIC TITLE SHEET

H-10343

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.

WH-10-4-90

State Virginia

General locality Atlantic Ocean

Locality 1.5 NM Northeast of Cape Henry

Scale 1 : 10,000 Date of survey 30 May - 6 June 1990

Instructions dated 19 March 1990 Project No. OPR-D111-WH-90

Vessel NOAA SHIP WHITING S329 (EDP 2930)

Chief of party CDR. Richard P. Floyd  
Kathy Timmons, Richard B. Koehler, Nancy L. Crews, Lee M. Cohen

Surveyed by Matthew J. Wingate, Kim T. McDonough, Katharine A. McNitt, Kelly G. Taggart

Soundings taken by echo sounder, ~~hand level~~ DSF 6000N

Graphic record scaled by Officers, Survey Technicians and AMC Cartographic Technicians

Graphic record checked by Officers, Survey Technicians and AMC Cartographic Technicians

Protracted by \_\_\_\_\_ Automated plot by BRUNNING ZETA 936

Verification by ATLANTIC HYDROGRAPHIC SECTION PERSONNEL  
*XYNETIC 1241 PLOTTER (AHS)*

Soundings in ~~fathoms~~ meters ~~at~~ MLLW

REMARKS: Junctions with H-10340

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

*AWOIS/SURF ✓ 1/28/92 SJ ✓*

*SP-1-30-97*

*X.W.W. 12/14/91*

+ 37° 00'  
75° 45'

+ 37° 00'  
76° 00'

H-10343 (199Φ)



⊙ 211  
⊙ 212  
⊙ 203  
⊙ 208  
⊙ 213

⊙ 202

+ 36° 50'  
76° 00'

⊙ 201

⊙ 206

H-10340

H-10341

H-10337



+ 36° 50'  
75° 45'

Legend	April	May	June
Soundings (nm)	389.0	575.0	272.9
Area (sq. nm)	10.0	21.5	9.0
STD cast	1	2	0
Bottom Samples	24	64	0

Scale 1:160,000  
from HDAPS  
planning sheet

**PROGRESS SKETCH, OPR-D111-WH-90**  
Entrance to Chesapeake Bay, Virginia  
NOAA SHIP WHITING  
Richard P. Floyd, Commander, NOAA  
Commanding Officer

## TABLE OF CONTENTS

A. PROJECT.....	1
B. AREA SURVEYED.....	1
C. SURVEY VESSELS.....	2
D. AUTOMATED DATA ACQUISITION AND PROCESSING.....	2
E. SONAR EQUIPMENT.....	2
F. SOUNDING EQUIPMENT.....	4
G. CORRECTIONS TO SOUNDINGS.....	4
H. CONTROL STATIONS.....	6
I. HYDROGRAPHIC POSITION CONTROL.....	6
J. SHORELINE.....	7
K. CROSSLINES.....	7
L. JUNCTIONS.....	7
M. COMPARISON WITH PRIOR SURVEYS.....	8
N. COMPARISON WITH THE CHART.....	12
O. ADEQUACY OF SURVEY.....	13
P. AIDS TO NAVIGATION.....	13
Q. STATISTICS.....	13
R. MISCELLANEOUS.....	13
S. RECOMMENDATIONS.....	14
T. REFERRAL TO OTHER REPORTS.....	15

## APPENDICES

- I. DANGER TO NAVIGATION
  - \* II. NON-FLOATING AIDS AND LANDMARKS FOR CHARTS
  - III. LIST OF HORIZONTAL CONTROL STATIONS
  - IV. GEOGRAPHIC NAMES
  - \* V. TIDES AND WATER LEVELS
  - \* VI. SUPPLEMENTAL CORRESPONDENCE
  - VII. APPROVAL SHEET
- \* DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

## SEPARATES

- \* I. HYDROGRAPHIC SHEETS AND PARAMETERS
- \* II. BOTTOM SAMPLES
- \* III. HORIZONTAL POSITION CONTROL AND CORRECTIONS TO POSITION DATA
- \* IV. SOUNDING EQUIPMENT CALIBRATIONS AND CORRECTIONS
- \* V. SIDE SCAN SONAR DATA
- VI. ITEM INVESTIGATION DATA

\* DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

**DESCRIPTIVE REPORT TO ACCOMPANY  
HYDROGRAPHIC SURVEY  
OPR-D111-WH-90  
FIELD NUMBER WH-10-04-90  
REGISTRY NUMBER H-10343  
NOAA SHIP WHITING  
Commander Richard P. Floyd, Commanding Officer**

**A. PROJECT**

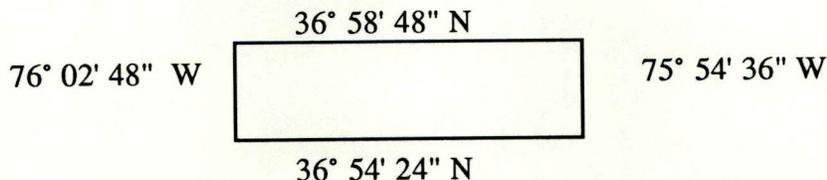
Project OPR-D111-WH-90 was an unclassified, basic hydrographic survey of the Chesapeake Bay entrance. In addition to traditional hydrographic requirements, 200% coverage of the bottom was obtained using side scan sonar. Survey operations conformed with the OPR-D111-WH-90 Hydrographic Project Instructions and Changes No. 1 and 2 to the Instructions, dated 28 March, 2 May, and 25 May 1990 respectively. The following references were consulted for additional direction: the Hydrographic Manual, Fourth Edition (corrected through Change No. 3,) the Hydrographic Survey Guidelines, the February, 1989 Side Scan Sonar Manual, and the April, 1990 Field Procedures Manual.

Data from this survey were requested by the Fifth Coast Guard District following a Port Access Route Study and will be used to compile a new 1:40,000-scale chart.

This survey, H-10343, was designated sheet "E" in the project instructions.

**B. AREA SURVEYED**

Survey H-10343 was located at the junction of the northern and the southern approaches to the Chesapeake Bay and was bounded by the following limits:



Data were collected on eight days between Day 150 (30 May, 1990) and Day 157 (06 June, 1990).

### C. SURVEY VESSEL

The NOAA ship WHITING S-329, EDP number 2930, was the only sounding vessel used to gather data for this survey.

### D. AUTOMATED DATA ACQUISITION AND PROCESSING

The Hydrographic Data Acquisition and Processing System (HDAPS) was used to collect and process data for H-10343. HDAPS software is programmed using the Hewlett Packard (HP) BASIC computer language. The following programs were used:

"POST SURVEY"	version 4.14
"CONSTAT"	version 2.05
"PLOTALL"	version 1.65
"FILE SYSTEM"	version 1.55
"SURVEY"	version 4.33
"ABST"	version 3.05

Version 1.01 of the IBM program NADCON was used to convert the positions of AWOIS items and navigational buoys from NAD 27 to NAD 83, and to apply the datum shift to master overlays. The average magnitude of shift when converting NAD 27 to NAD 83 was 35.5 meters to the southwest.

All sound velocity corrections were determined using version 1.11 of the program VELOCITY, dated 09 March, 1990. This program has been authorized for use with all single and multi-beam surveys.

### E. SIDE SCAN SONAR EQUIPMENT

The WHITING maintained 24-hour per day shipboard data acquisition and/or processing throughout the survey. An EG&G model 272-T dual-channel tow fish (Serial Number 0011904) was towed at a speed of 6 knots from a custom-made block, which was attached to an A-frame support on the fantail of WHITING. The operating frequency of the side scan sonar was 100 kHz and the range scale was 100 meters on both the starboard and port channels, resulting in a swath width of 200 meters. Consequently, 200% bottom coverage and a swath overlap of 2 millimeters at the scale of the survey was obtained by running sounding lines at 85-meter intervals.

Data were recorded by an EG&G model 260 Image Correcting Side Scan Sonar System. The serial numbers and days of use are as follows:

<u>DAY</u>	<u>Recorder Serial Number</u>
150 - 151	0012105
151 - 152	0012106
152 - 153	0012105
153 - 156	0012106
156 - 157	0012105

The sonargrams were examined for significant returns, and rejected if the background trace appeared as though it might obscure possible targets. Most "hard" or dark returns were considered to be contacts. Contacts were considered "significant" if they had a shadow length of 1 meter or more, and if they appeared on adjacent track lines. Contacts worthy of further investigation are included in Separate V. DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

To prove that WHITING had achieved 200% bottom coverage, two 100% sonar swath plots were made by including every other sounding line on each plot. Areas with tentatively questionable *overlap* are due to the ship steering off-line and are located between the following fix numbers:

<u>DAY</u>	<u>Fix Number(s)</u>	<u>Reference Line</u>
150	153 - 154	- 2145 *
152	1126 - 1127	- 1125 **
153	1630 - 1632	- 3335 **
153	1662 - 1664	- 3335 *
156	2733 - 2737	- 3845 **
156	2752 - 2753	- 3930 **

\* These two gaps were unavoidable due to the location of navigation buoys "2CH" and "CBJ" respectively. A LINE RUN PERPENDICULAR TO THE MAIN SCHEME HYDROGRAPHY WOULD HAVE DELETED THE GAP. \*\*

\*\* A thorough review of the swath plot indicate that these are the only locations that there is an actual gap in coverage. Gaps in reference lines -1125 and -3930 were due to the ship being offline. Gaps in reference lines -3335 and -3845 were due to rejected sonar data. These two gaps were at the beginning of the line. Therefore, there is only 100% coverage instead of 200% coverage. There were no contacts within the area in question.

\*\* THIS DOES NOT SIGNIFICANTLY DEGRADE THE OVERALL QUALITY OF THE PRESENT SURVEY.

The HDAPS on-line swath plot reduces the effective scanning swath whenever the height of the fish is less than 8% of the range scale in use. In areas where the tow fish height was 8 meters (100-meter range scale), the swath plots were examined to ensure that adequate coverage was maintained. In areas that were too shallow to acquire adequate swath coverage, data was rejected. Fix numbers 2206 - 2344 were rejected because the water was too shallow to maintain adequate coverage.

Confidence checks were performed to test the reliability of the side scan sonar equipment. This was accomplished by towing the side scan tow fish within 70 - 90 meters from a known object and observing the return on the sonagram. Navigational buoys were primarily used for confidence checks, however, bottom features such as sand waves and scours were also used as confidence checks. Two passes were made by a navigational buoy, testing both the port and starboard channels. Bottom features were good on-line checks. Confidence checks were conducted at least once per 24-hour period and whenever changes were made to the sonar equipment.

No developments or diver investigations were performed during survey H-10343.

#### F. SOUNDING EQUIPMENT

A Raytheon Digital Survey Fathometer (DSF) 6000<sup>N</sup> echo sounder (S/N A122N) was the only sounding equipment used to determine water depth during the survey. The echogram recorded both the high frequency (100 kHz) and a low frequency (24 kHz) depth trace. The high frequency soundings were incorporated during acquisition into the HDAPS system. The analog and digital values were compared during post processing. The analog values were used if the soundings differed by more than 0.2 meters.

The accuracy of the DSF- 6000N was tested daily by the electronic technicians.

#### G. CORRECTIONS TO ECHO SOUNDINGS

A velocity cast was performed on Day 150. A SEACAT Salinity, Temperature, and Depth (STD) profiler (S/N 286) was lowered to a depth of 16.1 meters. The STD was calibrated on September 1, 1989. The location of the cast is as follows:

<u>DAY</u>	<u>Latitude</u>	<u>Longitude</u>
150	36° 57' 12" N	76° 00' 28" W

The velocity program picked ten significant depths to define a sound velocity profile through the water column. However, the velocity cast showed no correctors needed to be applied within the depth limits of survey H-10343 and no HDAPS velocity table was created for this cast. Therefore, there were no corrections to echo soundings due to sound velocity applied to the data during either acquisition or post-processing.

On Day 159 the DSF-6000N echosounder was tested against a leadline in a water depth of 17.4 meters, and a -0.06 meter instrument correction was computed for the narrow and wide beams. Data from this vertical cast are included in Separate IV. \* \*

WHITING's static draft correction was 3.2 meters, an historical value.

Settlement and Squat was determined on April 26, 1990 (Day 116) near Thimble Shoals Channel between the Chesapeake Bay Bridge Tunnel and Buoy 12. These values were determined by sailing the ship past a marker buoy at various speeds and measuring the water depth with the DSF-6000N. The values are included in Separate IV.\*\*

A Heave, Pitch and Roll sensor (HIPPY) was unable to be interfaced with HDAPS. Therefore, all analog traces from the echograms were scanned to remove sea action.

Tidal datum for project OPR-D111-WH-90 was Mean Lower Low Water. Predicted tides from NOAA Tide Tables, Hampton Roads, Virginia (station number 863-8610) were used as reference for this project. The time and height correctors were entered into the HDAPS "Tide Tables" and were applied to final sounding plots.\*Time and height correctors were: \* APPROVED TIDES APPLIED DURING OFFICE PROCESSING.

	Time Correctors	Height Correctors
High Water	-1 hr 30 min	x1.35
Low Water	-1 hr 30 min	x1.35

Verbal contact was made with Mr. Jim Dixon of the Atlantic Operations Group (N/OMA1213) before transiting to the work area. Mr. Dixon confirmed that the Hampton Roads tide gage as well as the Chesapeake Bay Bridge Tunnel (station number 863-8863) tide gage were working properly.

The Chesapeake Bay Bridge Tunnel station was the control for actual tide datum determination. Third-order levels were run from this station to five benchmarks on April 16, 1990 (Day 106). Closing levels were run on June 11, 1990 (Day 162) and a difference of 1 millimeter between opening and closing levels was observed. Closing tolerances were within the acceptable limits for a run under 500 feet. However, due to the instability of the

\*\* DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

fishing pier, the tide staff showed an increase in elevation of approximately 0.1 feet. Field tide notes are included in Appendix V. DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

#### H. CONTROL STATIONS

All geodetic positions are referenced to the North American Datum 1983 (NAD 83) geodetic datum. Four horizontal control stations were occupied with Mini-Ranger positioning equipment operating in the range-range mode.

Station descriptions and Geographical Positions (GP) are included for each site in Appendix III. The control station DAM NECK BOQ 1981 did not have a published GP in the Geodetic Control Data. However, the Atlantic Marine Center Coastal Surveys Unit, N/CG 23322, provided WHITING with a GP from previous surveys in the area.

#### I. HYDROGRAPHIC POSITION CONTROL

The Falcon Miniranger 484 microwave positioning system was used for project OPR-D111-WH-90. The ship's position was determined by the intersection of ranges from three or more remote transponders.

The following Miniranger equipment was used during survey H-10343:

<u>Equipment</u>	<u>Serial Number</u>
Range Processing Unit (RPU)	D0004
Control Display Unit (CDU)	E0013
Receiver Transmitter (RT)	E2914
Remote Transponder, Code 3	G3571
Remote Transponder, Code 5	F3292
Remote Transponder, Code 6	F3296
Remote Transponder, Code 7	E2889
Remote Transponder, Code 8	F3244

An opening baseline calibration was performed on 18 April 1990, (Day 108) at the Atlantic Marine Center (AMC), Norfolk, Virginia to define electronic correctors for all combinations of remote transponders and RT/RPU's. Code 8 was calibrated on May 29, 1990 (Day 149) at AMC. Baseline calibrations were performed to the standards of the AMC OORDER 86 (Falcon 484 Calibration Procedures and Standard Forms). The cor-

records were entered into HDAPS "C-O" (corrected-observed) table before survey operations began.

The critical systems checks were performed by using multiple lines-of-positions (MLOP's) and navigational sextant fixes (Weems & Plath sextants: S/N's T2989, T3743, and 72976).

A closing baseline calibration was determined to be unnecessary.

RT antenna offset was determined to be 2.04 meters, and antenna layback was 2.87 meters. The tow fish A-frame offset was 1.35 meters; its layback: 23.30 meters. These values were obtained and entered into the HDAPS system before operations began. Data from these investigations are included in Separate III. DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

HDAPS records include the transponder codes used for each position fix, as well as an error circle radius, which can be used as a measure of reliability for each fix. Positioning busts appeared on the rough track plot as "fliers", and if reliable positions appeared on either side of the flier, the questionable position was "smoothed" during post processing. This was accomplished by assuming that the ship's actual track was a straight line between the reliable fixes and adjusting the position accordingly.

J. SHORELINE SEE SECTION 2.D. OF THE EVALUATION REPORT.

No shoreline existed in the survey area.

K. CROSS-LINES SEE ALSO SECTION 3.A. OF THE EVALUATION REPORT.

A total of 60.1 nautical miles of crosslines were run on "E" sheet. This is equal to 21.5% of the main-scheme hydrography acquired. All soundings at cross lines agreed to within one-half meter.

L. JUNCTIONS SEE SECTION 5. OF THE EVALUATION REPORT.

Survey H-10343, scale 1:10,000, junctioned with contemporary survey H-10340 (sheet "C"). The survey junctioned along the longitude 75° 56' 00" W, between latitudes 36° 54' 30" N and 36° 56' 30" N. Compared depths ranged from 15.8 meters to 20.1 meters. The survey also junctioned along the latitude 36° 56' 20" N, between longitudes 75° 55' 00" W and 75° 56' 00" W. Compared depths ranged from 12.6 meters to 21.1 meters. The junction showed excellent agreement with the difference in depth varying from 0.0 meters to 0.5 meters.

M. COMPARISONS WITH PRIOR SURVEYS

SEE ALSO SECTION 6. OF THE EVALUATION REPORT.

A comparison with prior surveys showed excellent agreement with H-10343. Four prior surveys were compared with soundings in H-10343 sheet area. The prior surveys compared were:

<u>Registry Number</u>	<u>Scale</u>	<u>Year Surveyed</u>
H-9098	1:10,000	1969
H-9814	1:10,000	1980
H-9871WD	1:20,000	1976
H-9901	1:10,000	1980

The four prior surveys were plotted using NAD 1927. Survey H-10343 was plotted using NAD 83, therefore for comparison purposes a datum shift was applied to H-10343.

Thirty soundings from survey H-10343 were selected and compared to the same positions on prior surveys H-9098, H-9914, and H-9901. No soundings were compared to survey H-9871 because it was a wire drag survey. All soundings were in agreement from 0.0 to 0.8 meters.

AWOIS 833

AWOIS item #833 is listed as the barge WESTMORELAND located at 36° 56' 45" N, 75° 57' 36" W in a depth of 86 feet. The wreck was cleared at 50 feet and echo soundings of 55.5 ft were obtained by the HILGARD & WAINWRIGHT during project CS-313. Project instructions required 200% side scan sonar coverage for a radius of 100 meters.

A significant contact with wreck-like characteristics was located on Day 152 at fix #1577.25, Lat. 36° 56' 45.70" N, Long. 75° 57' 31.02" W, (contact table #40, index #4). The wreck has calculated height of 13 meters (42.8 feet) above the bottom in 26.6 meters (87.2 feet) of water. A fathometer depth of 22<sup>5</sup> meters was obtained in Latitude 36° 56' 45.83" N, Longitude 75° 57' 29.91" W.

The hydrographer recommends that a diver investigation and a least depth determination be accomplished by a future field unit to fully resolve this item. -Concur. An estimated depth of 21<sup>6</sup> meters is shown on the present survey in Latitude 36° 56' 45.74" N, Longitude 75° 57' 31.42" W. It is recommended that the charted wreck be retained as charted pending the disposition of this item in the report for H-14372 (1994).

AWOIS 839

AWOIS item #839, located at 36° 57' 18" N, 75° 59' 18" W, is listed as an obstruction. The obstruction was reported removed in NM30/52. The 1980 survey H-9901 found

no indication of obstruction and recommended that the wreck symbol be expunged from the chart. Project instructions required 200% side scan sonar coverage for a radius of 1000 meters.

There were several significant and insignificant contacts within the search radius. The two significant contacts (fix #1776.33 and #1867.37) nearest the AWOIS position warrant further investigation. Additional information and recommendations can be found in Separate V.

*FILED WITH FIELD RECORDS. The non-dangerous sunken wreck originating with N/M 347/58 is shown on chart 12221 and not shown on chart 12222. A later edition of chart does not show the wreck. It is recommended that this wreck not be charted.*

#### AWOIS 848

AWOIS item #848 is listed as the pilot boat CARMINA located at 36° 57' 36" N, 76° 01' 18" W that sank in 1938 in a depth of 57 feet. The 1945 wire drag survey H-7028 cleared the wreck at 40 feet (MLW). The 1980 survey H-9901 stated that the item was not investigated and recommended that the item be retained as charted. Project instructions required 200% side scan sonar coverage for a radius of 200 meters.

A significant contact with wreck-like characteristics was located on Day 152 at fix #1542.01, Lat. 36° 57' 34.48"<sup>63</sup> N, Long. 76° 01' 20.74"<sup>16.53</sup> W, (contact table #39, index #21). The wreck has calculated height of 3.8 meters (12.6 feet) above the bottom in 22.7 meters (74.5 feet) of water.<sup>5</sup> *The present survey shows an estimated depth of 15 meters in Latitude 36° 57' 34.63" N, Longitude 76° 01' 16.53" W.*

The hydrographer recommends that a diver investigation and a least depth determination be accomplished by a future field unit to fully resolve this item. *Concur. No change in charting status is recommended pending final disposition of the item in the report for survey H-14372 (1994).*

#### AWOIS 855

AWOIS item #855 is listed as the fishing trawler WILLIAM D. SANNER located at 36° 57' 36" N, 76° 00' 30" W in a depth of 42 feet. The 1976 wire drag survey, H-9871, swept in one direction to 38 feet. The 1980 survey H-9901 stated that the survey depths in the area were 61-64 feet and recommended that the wreck be retained as chart. Project instructions required 200% side scan sonar coverage for a radius of 2000 meters.

Even though there were several significant and insignificant contacts within the search radius, there were no contacts near the listed AWOIS position. Additional information and recommendations for further investigation can be found in Separate V. *DATA SUBMITTED FILED WITH FIELD RECORDS. This wreck is not charted. No change in charting status is recommended pending final disposition of the item in the report for survey H-14372 (1994).*

## AWOIS 857

AWOIS item #857 is listed as the freighter CHILORE which was sunk by submarine on July 15, 1942 at position 36° 57' 38" N, 76° 00' 39" W in 60 feet of water. The 1944 wire drag survey CL809 reported a wire hang at 31.5 feet which cleared to 30 feet at the position of the wreck. The 1980 survey H-9901 found that depths shoaled to 51 feet in 60 feet of water and recommended that it be retained as charted. Project instructions required 200% side scan sonar coverage for a radius of 250 meters.

A significant contact with wreck-like characteristics was located on Day 154 at fix #2505.05, Lat. 36° 57' <sup>37.16</sup>39.15" N, Long. 76° 00' <sup>38.65</sup>36.88" W, (contact table #43, index #25). The wreck has calculated height of 5.0 meters (16.5 feet) above the bottom in 17.6 meters (57.7 feet) of water.

The hydrographer recommends that a diver investigation and a least depth determination be accomplished by a future field unit to fully resolve this item. - Concur, No change in charting status is recommended pending final disposition of the item in the report for survey H-14372(1994).

## AWOIS 892

AWOIS item #892 is listed as shoaling to 73 feet in 80 feet of water located at position 36° 57' 24.8" N, 75° 59' 33.87" W. The 1980 survey H-9901 located the peak with an echo sounder and stated that an investigation found no shoaler soundings. The survey also recommended further investigation. Project instructions required 200% side scan sonar coverage for a radius of 100 meters.

A significant contact was located on Day 153 at fix #1830.43, Lat. 36° 57' 40.21" N, Long. 75° 59' 32.23" W, (contact table #42, index #11). The contact has a calculated height of 3.7 meters (12.3 feet) above the bottom in <sup>24</sup>23.0 meters (<sup>78.9</sup>75.4 feet) of water.

The hydrographer recommends that a diver investigation and a least depth determination be accomplished by a future field unit to fully resolve this item. Concur. An estimated depth of 24 meters is shown on the present survey in Latitude 36° 57' 40.21" N, Longitude 75° 59' 32.23" W. No change in charting status is recommended pending final disposition of the item in the report for survey H-14372(1994).

## AWOIS 2902

AWOIS item #2902, located at 36° 57' 21" N, 75° 58' 12" W, is listed as an obstruction. The obstruction is described as a submerged steel hydro experimental structure which extends 5 feet above the bottom. The 1980 survey H-9901 found no indication of obstruction or shoaling using an echo sounder. They recommended that it be retained as charted

and be assigned to RUDE and HECK for further investigation. No search radius was specified in the project instructions AWOIS list. No significant contacts were located near the reported area. *Originates with N/M 29/57. An obstruction with an estimated depth of 24<sup>5</sup> meters was located in latitude 36° 57' 23.99" N, longitude 75° 58' 13.52" W. No change in charting status is recommended pending final disposition of the item in the report for survey H-16372 (1996)*

#### AWOIS 7553

AWOIS item #7553, located at 36° 57' 40" N, 76° 00' 47" W, is listed as an obstruction. The 1945 wire drag survey, H-7028, hung on an obstruction at 42 feet and cleared it at 40 feet. The 1980 survey H-9901 found depths of 60-62 feet within the area. It was recommended to be retained as charted. Project instructions required 200% side scan sonar coverage for a radius of 200 meters.

There were several significant contacts towards the southeast within 150 meters of the listed AWOIS position. Additional information and recommendations for further investigation can be found Separate V. *DATA SUBMITTED WITH FIELD RECORDS. This AWOIS item lies ~~SW~~ of AWOIS Item # 857. This is probably an erroneous position on AWOIS Item # 857. It is recommended that this feature be deleted from the chart.*

#### AWOIS 7554

AWOIS item #7554 is an unknown object located at 36° 57' 32" N, 76° 00' 45" W. The 1954 survey CL540, done by USCGS Ship BOWEN, found no indication of a wreck. It was recommended to delete the dangerous wreck symbol from the chart. Project instructions required 200% side scan sonar coverage for a radius of 2000 meters.

There were significant contacts within the search radius. The one nearest the AWOIS position (fix #1663.18) was within 90 meters. Additional information and recommendations for further investigation can be found Separate V. *DATA SUBMITTED WITH FIELD RECORDS. This item is not charted; no change in charting status is recommended. This item is considered disproved by the present survey.*

#### AWOIS 7556

AWOIS item #7556, located at 36° 56' 42" N, 76° 02' 04.8" W, is listed as an obstruction. The 1971 wire drag survey, H-9255, had no hangs or groundings in vicinity of obstruction and a maximum clearance of 38 feet was obtained. The 1980 survey, H-9814, found a clearance depth of 36 feet. Project instructions required 200% side scan sonar coverage for a radius of 500 meters.

A significant contact was located on Day 151 at fix #1784.3, Lat. 36° 56' 50.35" N, Long. 76° 02' 02.96" W, (contact table #38, index #9). The contact has calculated height of 1.0 meters (3.3 feet) above the bottom in 13.0 meters (42.6 feet) of water.

The hydrographer recommends that a diver investigation and a least depth determination be accomplished by a future field unit to fully resolve this item. - Concur. This item is shown on the present survey as an obstruction with an estimated depth of 4 meters in latitude 36° 56' 54.35" N, Longitude 76° 02' 02.96" W. No change in charting status is recommended pending final disposition in the report for H-10343 (1994).

In addition, a hazard to navigation was found at position 36° 56' 58.97" N, 76° 01' 20.87" W, approximately 25 meters east of navigation buoy "1TS". The wreck had a depth of 17.1 meters (56.1 feet) in surrounding water depths of 19.3 meters (63.3 feet). A radio message was sent to the 5th USCG District on June 6, 1990. The hydrographer recommends that a diver investigation and a least depth determination be accomplished by a future field unit to fully resolve this item.

*AWAIS #835 55V 1/28/92*

N. COMPARISON WITH THE CHART SEE ALSO SECTION 7. OF THE EVALUATION REPORT.

Twenty-five soundings from survey H-10343 were compared to the 1:80,000-scale chart 12221, 57th edition, January 28, 1989. Soundings were in general agreement with a difference ranging from 0.2 - 0.8 meters with the exception of three soundings located at:

<u>Chart Depth (meters)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Chart - Survey Depth Difference (meters)</u>
20.7	36° 56' 30" N	75° 57' 36" W	-1.0
18.3	36° 56' 14" N	75° 58' 24" W	-1.1
17.1	36° 56' 18" N	75° 59' 06" W	-1.8

Close examination of the smooth sounding plot showed that the surveyed soundings in these three areas were consistent with one another. The differences in sounding depths between the chart and the survey can be best explained by the differences in the scale because the charted soundings were near an area of the survey that the soundings would agree.

### O. ADEQUACY OF SURVEY

This hydrographic survey is adequate to supercede prior surveys of the area. No part of this survey is considered to be substandard.

Side scan sonar data is not complete in that no investigations were performed during this survey, as directed per project instructions.

### P. AIDS TO NAVIGATION SEE SECTION 7.C. OF THE EVALUATION REPORT.

Although floating aides to navigation were located in the survey area project instructions, section 4.2, stated data on the aids was not applicable to survey H-10343.

### Q. STATISTICS

Number of Positions	2780
Nautical Miles of Main-Scheme Sounding Lines	279.6
Nautical Miles of Cross-Line Sounding Lines	60.1
Square Nautical Miles Surveyed	0
Days of Production	8
Detached Positions	0
Bottom Samples	0
Tide Stations	1
Current Stations	0
Number of STD Casts	1
Magnetic Stations	0

### R. MISCELLANEOUS

The length of time allotted to WHITING to conduct this survey was far too short. Several factors might have been considered in estimating the time needed. These include:

1. It has been two years since WHITING conducted this type of survey.  
Corporate knowledge was lacking and equipment did not operate properly.  
Substantial time was needed to learn and perfect procedures, and to restore the side scan sonar system to a properly functioning condition.

2. In water depths of 11 meters or less, the ship must run at a slower speed and/or the side scan sonar range must be reduced. Both of these measures cause a substantial decrease in the rate of production.
3. Vessel traffic in the survey area was very congested. This required that special schemes be utilized to run with the general flow of traffic. The schemes required more time to complete a given area than the usual "mowing the grass" method. Heavy traffic also caused WHITING to abort survey lines and to veer off line in order to comply with Nautical Rules of the Road.

Side scan sonar operations are limited to a speed of 6 knots or slower. WHITING's main engines were not designed to run for prolonged periods under such a light load. Excessive engine wear results, as well as a heavy build up of oil in the exhaust piping, which increases the chance of a stack fire. For this reason, WHITING suspended side scan operations twice daily to run the engines under a full load. All of this time was used to advantage in such tasks as running crosslines, repairing equipment, transiting, and processing data.

Project instructions did not provide a clear and accurate objective of the project. Priorities were indicated by survey sheet layout, rather than by the actual areas of importance (i.e., about 1/2 mile either side of the mid channel buoys for the southeast sea lane, and the pilotage and precautionary areas).

Data processing takes an enormous amount of time. The ratio of processing to acquisition time is on the order of 3:1.

#### S. RECOMMENDATIONS

In estimating the time required to complete this type of survey, consider not only the size of the area, but also:

1. Start-up time
2. Depth of water
3. Traffic density
4. Extra days at sea needed for post processing.

If 24-hour per day acquisition is expected, the vessel will need two independent processing systems and more people to run the survey. Otherwise a 12-hour acquisition and processing period followed by a 12-hour processing period (or similar routine) will be needed. WHITING was very fortunate to have personnel from the Atlantic Hydrographic Section and from the Mapping and Charting Branch who assisted with data acquisition and processing.

T. REFERRAL TO OTHER REPORTS

The following reports will be submitted as part of OPR-D111-WH-90.

Electronic Control Report (N/CG233)

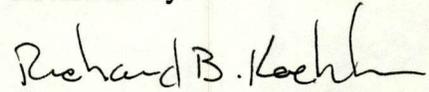
Horizontal Control Report (N/OMA1212)

Submitted By:



Lt. Lee M. Cohen, NOAA

Reviewed By:



Lt. Richard B. Koehler, NOAA  
Field Operations Officer  
NOAA Ship WHITING

Approved By:



Cdr. Richard P. Floyd, NOAA  
Commanding Officer  
NOAA Ship WHITING

No	Type	CONTROL STATIONS				Freq	Vel	Code	MM/DD/YY
		Latitude	Longitude	H	Cart				
201	F	036:47:18.059	075:57:33.735	15	250	0.0	0.0	5	06/04/90
<del>202</del>	<del>F</del>	<del>036:52:58.936</del>	<del>075:59:04.040</del>	<del>20</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>6</del>	<del>04/19/90</del>
203	F	036:55:34.911	076:00:25.834	47	250	0.0	0.0	7	04/19/90
<del>206</del>	<del>F</del>	<del>036:46:14.233</del>	<del>075:57:50.724</del>	<del>40</del>	<del>139</del>	<del>0.0</del>	<del>0.0</del>		<del>05/07/90</del>
<del>207</del>	<del>F</del>	<del>036:55:34.865</del>	<del>076:00:25.973</del>	<del>47</del>	<del>139</del>	<del>0.0</del>	<del>0.0</del>		<del>05/07/90</del>
<del>208</del>	<del>F</del>	<del>036:55:32.862</del>	<del>076:00:29.270</del>	<del>30</del>	<del>139</del>	<del>0.0</del>	<del>0.0</del>		<del>05/07/90</del>
209	F	037:05:36.757	075:58:16.308	10	250	0.0	0.0	3	05/28/90
210	F	036:54:30.677	076:05:49.850	40	250	0.0	0.0	8	05/28/90
212	F	036:55:50.100	076:01:52.823	20	250	0.0	0.0	5	05/28/90
213	F	036:55:34.832	076:00:26.079	47	250	0.0	0.0	6	05/30/90

- 201 DAM NECK BOQ, 1977
- ~~202 RAMADA~~
- 203 DEL NORTE SITE AT CAPE HENRY LTHO, 1977
- ~~206 DAM NECK MILLS NAVY TANK~~
- ~~207 CAPE HENRY LIGHTHOUSE 1887~~
- ~~208 CAPE HENRY LIGHTHOUSE OLD~~
- 209 FEN, 1960
- 210 H 55 VA, 1980
- 212 H 52 VA, 1980
- 213 CAPE HENRY LH ECC SW, 1980

061700 June  
P 241300Z MAY 90  
FM NOAA S WHITING  
TO CCGDFIVE PORTSMOUTH VA  
INFO NOAAOMO ROCKVILLE MD  
NOAAMO A NORFOLK VA  
BT  
UNCLAS  
AMC128

KT

H-10343  
"E"

SUBJ: NOTICE TO MARINERS INFO FOR CHES. BAY ENTRANCE  
HAZARD TO NAVIGATION

PLEASE PASS TO COMMANDER, 5TH USCG DISTRICT THE FOLLOWING INFO.

DURING HYDROGRAPHIC OPERATIONS, THE NOAA SHIP WHITING HAS FOUND  
THE FOLLOWING HAZARD TO NAVIGATION:

OBJECT - WRECK

LOCATION: 36/56/58.97N, 76/01/20.87W (NAD 83 DATUM)  
WRECK LOCATED 25 METERS EAST OF NAVIGATION BUOY 1TS

DEPTH: 17.1 METERS (56.1 FEET)  
SURROUNDING WATER DEPTHS ARE 19.3 METERS (63.3 FEET)  
DEPTHS ARE REFERENCED TO MEAN LOWER LOW WATER.

CHARTS AFFECTED: 12205, 12221, 12222, 12254

BT  
# 128

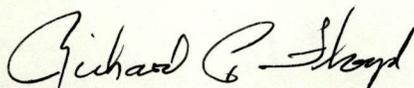
NNNN

**APPROVAL SHEET**

**HYDROGRAPHIC AND  
SIDE SCAN SONAR SURVEY  
OPR-D111-WH-90  
WH-10-04-90  
H-10343**

This combined hydrographic and side scan sonar survey was conducted in accordance with the Project Instructions for OPR-D111-WH-90, the Hydrographic Manual (through change #3), AMC OPODERS, Hydrographic Survey Guidelines (through #69), the Side Scan Sonar Manual (dated Feb 6, 1989) and the Field Procedures Manual for Hydrographic Surveying (dated May 1, 1990). The survey and reports were completed under daily supervision. All boat sheets and final transmitted sheets were reviewed in their entirety and all supporting records were checked as well.

This survey is complete for the intended purposes of indentifying items requiring further investigation by a different field unit.



Richard P. Floyd, CDR, NOAA  
Commanding Officer  
NOAA Ship WHITING

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: July 25, 1990

MARINE CENTER: Atlantic

OPR: D111-WH-90

HYDROGRAPHIC SHEET: H-10343

LOCALITY: Chesapeake Bay Entrance, VA.

TIME PERIOD: May 30 - June 6, 1990

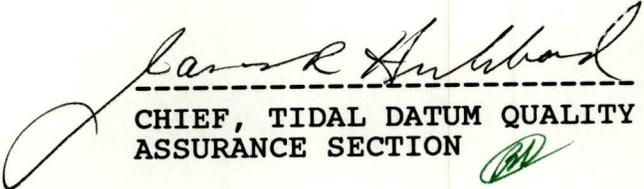
TIDE STATION USED: 863 8863 Chesapeake Bay Bridge Tunnel, VA.

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = 24.84 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 2.7 ft.

REMARKS: RECOMMENDED ZONING

East of longitude 75 59.0'W, apply a x1.23 range ratio to all heights, and a -0 hr. 30 min. time correction, and west of longitude 75 59.0'W apply a x1.23 range ratio to all heights, and a -0 hr 15 min time correction for Chesapeake Bay Bridge Tunnel.

  
-----  
CHIEF, TIDAL DATUM QUALITY  
ASSURANCE SECTION 

GEOGRAPHIC NAMES

Name on Survey	ON CHART NO. 12222 ON PREVIOUS SURVEY ON U.S. QUADRANGLE MAPS FROM LOCAL INFORMATION ON LOCAL MAPS P.O. GUIDE OR MAP RAND McNALLY ATLAS U.S. LIGHT LIST											
	A	B	C	D	E	F	G	H	K			
ATLANTIC OCEAN	X											1
HENRY, CAPE	X											2
VIRGINIA	X											3
												4
												5
												6
												7
												8
												9
												10
												11
												12
												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25

Approved:

*Charles E. Harrington*  
Chief Geographer - N/CG 2x5

JUL 29 1991

11/06/91

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NUMBER: H-10343

NUMBER OF CONTROL STATIONS

0

NUMBER OF POSITIONS

0

NUMBER OF SOUNDINGS

0

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	17	03/04/91
VERIFICATION OF FIELD DATA	243	07/11/91
ELECTRONIC DATA PROCESSING	66	
QUALITY CONTROL CHECKS	79	
EVALUATION AND ANALYSIS	172	11/06/91
FINAL INSPECTION	22	10/23/91
TOTAL TIME	599	
ATLANTIC HYDROGRAPHIC SECTION APPROVAL		11/06/91

N/CG244-78-91

LETTER TRANSMITTING DATA

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

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

TO:

Chief, Data Control Section, N/CG243  
 NOAA/National Ocean Service  
 Room 151, WSC-2  
 Rockville, MD 20852

DATE FORWARDED

12 November 1991

NUMBER OF PACKAGES

1 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.

H-10343  
Virginia, Atlantic Ocean  
1.5 NM Northeast of Cape Henry

- Final Smooth Sheet
- Final Position Overlay
- Final Excess Sounding Overlays
- Original Descriptive Report
- Final Field Sheet

\*\*\*\*\* ADDITIONAL FIELD DATA TO FOLLOW AT A LATER DATE \*\*\*\*\*

FROM: (Signature)

Norris A. Wike

RECEIVED THE ABOVE  
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Section, N/CG24411  
 439 W. York Street  
 Norfolk, VA 23510-1114

D. S. Clark  
 11/19/91

**COAST AND GEODETIC SURVEY  
ATLANTIC HYDROGRAPHIC SECTION  
EVALUATION REPORT**

SURVEY NO.: H-10343

FIELD NO.: WH-10-4-90

Virginia, Atlantic Ocean, 1.5 NM Northeast of Cape Henry

SURVEYED: 30 May through 6 June 1990

SCALE: 1:10,000

PROJECT NO.: OPR-D111-WH-90

SOUNDINGS: RAYTHEON DSF-6000N Fathometer, EG&G Model 260 Side Scan Sonar

CONTROL: MOTOROLA Falcon 484 Mini-Ranger (Range/Range)

Chief of Party.....R. P. Floyd

Surveyed by.....K. A. Timmons  
.....R. B. Koehler  
.....N. L. Crews  
.....L. M. Cohen  
.....M. J. Wingate  
.....K. T. McDonough  
.....K. A. McNitt  
.....K. G. Taggart

Automated Plot by.....XYNETICS 1201 Plotter (AHS)

1. INTRODUCTION

a. This is a combined basic hydrographic/side scan sonar survey. Side scan sonar was operated simultaneously with the fathometer during survey operations. Side scan sonar contacts located by the field unit during hydrographic operations were not investigated by the field unit. In cases where the side scan sonar was used to determine the estimated depth of an item or object, the item is shown on the present survey with the upper case letter 'A' in parenthesis. This note is shown on the present survey smooth sheet in proximity to the title block. See also the memorandum titled: "Showing Estimated Side Scan Sonar Depths on Smooth Sheets":, dated 23 February 1989, for an explanation of the note shown on the survey smooth sheet. Depths on these obstructions were estimated by scaling heights off the bottom from side scan sonar records. Positions were determined by computing offsets from the vessel's track. This survey has been processed before the results of the recommended additional investigations are available. The Descriptive Report and Evaluation Report for survey H-10372 (1990) will provide definitive information concerning these features.

b. No unusual problems were encountered during office processing.

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

## 2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections H., I., and T. of the Descriptive Report.

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 survey datum and the North American Datum of 1927 (NAD 27). To place this survey on the NAD 27 datum move the projection lines 0.529 seconds (16.30 meters or 1.63 mm at the scale of the survey) north in latitude, and 1.253 seconds (30.01 meters or 3.00 mm at the scale of the survey) east in longitude.

All geographic positions listed from sources other than the present survey are on NAD 27 datum unless otherwise specified. All inverse distance computations are made after geographic positions have been converted to the present survey datum. Any data brought forward from prior surveys to supplement the present survey have been converted to the present survey datum.

b. There is no shoreline within the area surveyed.

## 3. HYDROGRAPHY

a. Soundings at crossings are in excellent agreement and comply with the criteria found in sections 4.6.1. and 6.3.4.3. of the HYDROGRAPHIC MANUAL.

b. The standard fifteen (15), twenty (20), twenty-five (25), and thirty (30) meter depth curves were drawn in there entirety. Some dashed curves were also drawn to show additional bottom relief.

c. The development of the bottom configuration and determination of least depths is considered adequate with the following exceptions:

Additional work was recommended for the contacts listed below. The additional work was accomplished on survey H-10372 (1990).

<u>Item</u>	<u>(M)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
15 <sup>6</sup>	Obstr (A)	36°56'06.33"	75°57'18.03"
18 <sup>2</sup>	Obstr (A)	36°55'54.54"	75°56'29.14"
18 <sup>2</sup>	Obstr (A)	36°56'22.01"	75°58'46.89"
18 <sup>4</sup>	Obstr (A)	36°56'25.48"	75°57'16.62"
16 <sup>5</sup>	Obstr (A)	36°56'53.12"	76°01'31.59" <sup>12214</sup>
17 <sup>9</sup>	Obstr (A)	36°55'57.89"	75°57'34.48"
13 <sup>8</sup>	Obstr (A)	36°57'22.54"	76°01'33.57" <i>Deleted thru LNM 22/92 6-2-92</i>
17 <sup>6</sup>	Obstr (A)	36°56'29.64"	75°58'04.38"
14	Obstr (A)	36°56'50.35"	76°02'02.96"
15 <sup>4</sup>	Obstr (A)	36°56'48.10"	76°01'43.38"
12 <sup>9</sup>	Obstr (A)	36°56'24.90"	76°00'22.00"
13 <sup>7</sup>	Obstr (A)	36°55'32.10"	75°57'47.65"
12 <sup>3</sup>	Obstr (A)	36°56'12.12"	75°55'10.18"
18 <sup>8</sup>	Obstr (A)	36°57'31.72"	76°00'29.15"
21 <sup>9</sup>	Obstr (A)	36°57'08.23"	75°58'42.45"
14 <sup>6</sup>	Obstr (A)	36°57'42.86"	76°01'02.11"
12	Obstr (A)	36°56'32.95"	75°55'29.73"
22	Obstr (A)	36°57'26.47"	75°59'32.23"
→ 25 <sup>2</sup>	Obstr (A)	36°57'12.90"	75°58'15.82"
27 <sup>2</sup>	Obstr (A)	36°57'20.06"	75°58'21.04"
16 <sup>4</sup>	Obstr (A)	36°56'38.29"	76°00'42.88"
→ 11 <sup>7</sup>	Obstr (A)	36°56'27.59"	75°55'29.61"
15 <sup>9</sup>	Obstr (A)	36°57'49.23"	76°00'36.98"
25 <sup>2</sup>	Obstr (A)	36°57'28.23"	75°58'27.22"
24 <sup>5</sup>	Obstr (A)	36°57'23.99"	75°58'13.52"
10 <sup>6</sup>	Obstr (A)	36°57'57.88"	75°59'07.92"
12 <sup>2</sup>	Obstr (A)	36°58'12.45"	75°59'51.35"

It is recommended that further discussion and charting recommendations for the items listed above be deferred until the completion of office processing of survey H-10372 (1990) and final disposition of the investigated items has been made.

#### 4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports conform to the requirements of the HYDROGRAPHIC MANUAL and the SIDE SCAN SONAR MANUAL.

#### 5. JUNCTIONS

H-10340 (1990)	1:10,000	to the southeast
H-10356 (1990)	1:10,000	to the northeast
H-10372 (1990)	1:10,000	to the north

Adequate junctions were effected with junctional surveys H-10340 (1990) and H-10356 (1990).

There is a discrepancy between the present survey and survey H-10372 (1990) in the vicinity of Latitude 36°56'50"N, Longitude 76°02'05"W. This discrepancy will be addressed in the Evaluation Report for H-10372 (1990).

There is no contemporary junctional survey to the south of the present survey. Charted hydrography is in harmony with the present survey.

## 6. COMPARISON WITH PRIOR SURVEYS

### a. Hydrographic

H-9098	(1969)	1:10,000
H-9814	(1980)	1:10,000
H-9901	(1980)	1:10,000
H-9905	(1980)	1:10,000
H-9922	(1980)	1:20,000

1) Prior survey depths from H-9098 (1969) show a general trend of varying plus or minus ( $\pm$ ) 0<sup>3</sup> meter from the present survey soundings.

2) Prior survey depths from H-9814 (1980) show a general trend of varying plus or minus ( $\pm$ ) 0<sup>2</sup> meter from the present survey soundings. There are some scattered depths from H-9814 (1980) that are 0<sup>3</sup> to 0<sup>5</sup> meters deeper than present survey soundings.

3) Prior survey depths from H-9901 (1980) show a general trend of being 0<sup>1</sup> to 0<sup>5</sup> meters deeper than present survey soundings. In the following areas the depths from survey H-9901 (1980) are 2 to 3<sup>6</sup> meters shoaler than present survey soundings.

<u>Latitude (N)</u>	<u>Longitude (W)</u>
36°58'35"	76°00'03"
36°58'15"	75°59'51"
36°58'11"	75°59'36"

Junctional survey H-10372 (1990) is in substantial agreement (0<sup>2</sup> meters) with present survey soundings in the above areas. It is recommended that the areas be charted as shown on the present survey.

4) Prior survey depths from H-9905 (1980) show a general trend of being 0<sup>1</sup> to 0<sup>3</sup> meter deeper than present survey soundings.

5) Prior survey depths from H-9922 (1980) show a general trend of varying plus or minus ( $\pm$ ) 0<sup>2</sup> meter from the present survey soundings. There are scattered depths from survey H-9922 (1980) that are 0<sup>4</sup> meter shoaler than the present survey soundings.

Except as noted above the present survey is adequate to supersede the above prior surveys in the common areas.

The differences between the above prior surveys and the present survey depths may be attributed to natural changes, dredging, and improved hydrographic surveying methods and equipment.

b. Wire Drag

H-6976WD	(1945-47)	1:20,000
H-7028WD	(1944-50)	1:40,000
FE-233WD	(1969)	1:20,000
H-9255WD	(1971-72)	1:20,000
H-9293WD	(1972)	1:20,000
<u>H-9871WD</u>	<u>(1976)</u>	<u>1:20,000</u>

1) Comparison between the present survey and survey H-6976WD (1945-47) reveals one (1) hang within the common area. The hang has been assigned an AWOIS number #833 and is discussed in section M., page 8, of the Descriptive Report.

There are no conflicts between H-6976WD (1945-47) effective depths and present survey depths.

2) There are five (5) hangs that originate with H-7028WD (1944-50) and fall within areas common to the present survey. Each hang has been assigned an AWOIS number and is discussed in section M., pages 8-12, of the Descriptive Report.

A 47-ft (14<sup>3</sup> meter) hang with a wire drag clearance depth of 40 feet (12<sup>2</sup> meters), in Latitude 36°57'06"N, Longitude 76°01'54"W (NAD 27) originates with H-7028WD (1944-50). During survey operations, no contacts were located in the vicinity of the 47 ft (14<sup>3</sup> meters) hang. Surrounding depth in the vicinity of the 47 ft (14<sup>3</sup> meters) hang range from 14<sup>0</sup> meters to 15<sup>2</sup> meters. It is recommended that the hang not be charted.

There are no conflicts between H-7028WD (1944-50) effective

depths and present survey depths.

3) Comparison between the present survey and survey FE-233WD (1969) reveals no hangs or groundings within the common area. There are no conflicts between FE-233WD (1969) effective depths and the present survey depths.

4) Comparison between the present survey and survey H-9255WD (1971-72) reveals no hangs or groundings within the common area. There are no conflicts between H-9255WD (1971-72) effective depths and the present survey depths.

5) Comparison between the present survey and survey H-9293WD (1972) reveals no hangs or groundings within the common area. There are no conflicts between H-9293WD (1972) effective depths and the present survey depths.

6) Comparison between the present survey and H-9871WD (1976) reveals one hang within the common area. There are no conflicts between H-9871WD (1976) effective depths and the present survey depths.

7. COMPARISON WITH CHART 12221 (57th Ed., 28 January 1989)  
12222 (31st Ed., 28 February 1987)  
12254 (32nd Ed., 4 October 1986)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys. The previously discussed prior surveys require no further consideration. The hydrographer makes adequate chart comparisons in section N. of the Descriptive Report.

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

b. Dangers to Navigation

One (1) danger to navigation was submitted by the field unit. No dangers were noted during office processing.

c. Aids to Navigation

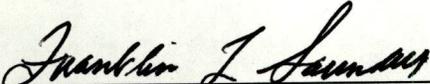
There were no fixed or floating aids to navigation verified or located within the limits of the present survey.

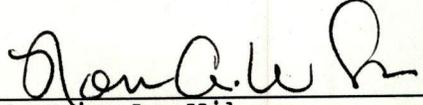
8. COMPLIANCE WITH INSTRUCTIONS

This survey complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is a good basic hydrographic/side scan sonar survey; additional field work is recommended on the items listed in section 3.c. of this report.

  
\_\_\_\_\_  
Franklin L. Saunders  
Cartographic Technician  
Verification of Field Data

  
\_\_\_\_\_  
Norris A. Wike  
Cartographer  
Evaluation and Analysis

  
\_\_\_\_\_  
Robert R. Hill  
Senior Cartographic Technician  
Verification Check

APPROVAL SHEET  
H-10343

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 disapproval 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 magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Robert G. Roberson  
Robert G. Roberson  
Chief, Evaluation and Analysis Team  
Atlantic Hydrographic Section

Date: 6 November 1991

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.

Christopher B. Lawrence  
Christopher B. Lawrence, CDR, NOAA  
Chief, Atlantic Hydrographic Section

Date: 6 November 1991

\*\*\*\*\*

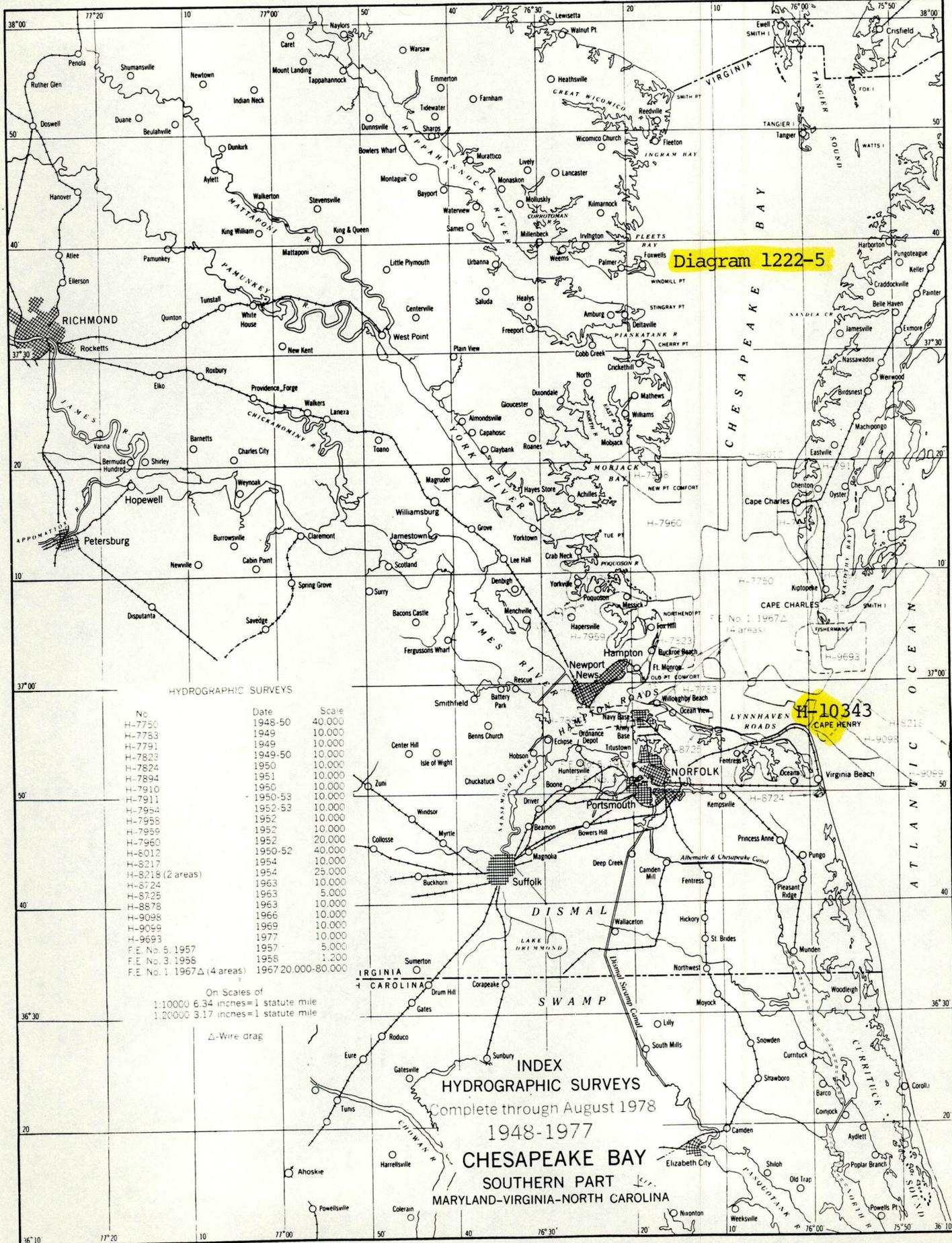
Final Approval:

Approved: J. Austin Yeager  
J Austin Yeager  
Rear Admiral, NOAA  
Director, Coast and Geodetic Survey

Date: 11/22/91

DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Ocean Survey  
Rockville, Maryland

Hydrographic Index No. 70 M



HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-7750	1948-50	40,000
H-7753	1949	10,000
H-7791	1949	10,000
H-7823	1949-50	10,000
H-7824	1950	10,000
H-7894	1951	10,000
H-7910	1950	10,000
H-7911	1950-53	10,000
H-7954	1952-53	10,000
H-7958	1952	10,000
H-7959	1952	10,000
H-7960	1952	20,000
H-8012	1950-52	40,000
H-8217	1954	10,000
H-8218 (2 areas)	1954	25,000
H-8724	1963	10,000
H-8725	1963	5,000
H-8878	1963	10,000
H-9098	1966	10,000
H-9099	1969	10,000
H-9693	1977	10,000
F.E. No. 5, 1957	1957	5,000
F.E. No. 3, 1958	1958	1,200
F.E. No. 1, 1967 Δ (4 areas)	1967	20,000-80,000

On Scales of  
1:10000 6.34 inches = 1 statute mile  
1:20000 3.17 inches = 1 statute mile

Δ-Wire drag

INDEX  
HYDROGRAPHIC SURVEYS  
Complete through August 1978  
1948-1977  
CHESAPEAKE BAY  
SOUTHERN PART  
MARYLAND-VIRGINIA-NORTH CAROLINA

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

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10343

**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
<del>12207</del>	3/3/92	L. ARKENAN	<del>Full Part Before</del> After Marine Center Approval Signed Via Drawing No. 26
<del>12222</del>	3/5/92	L. ARKENAN	<del>Full Part Before</del> After Marine Center Approval Signed Via Drawing No. 34
12221	3/5/92	L. ARKENAN	<del>Full Part Before</del> After Marine Center Approval Signed Via Drawing No. 87 <i>Considered fully app'd. (scale)</i>
12208	6/19/92	J. ROBINSON	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. 11 <i>Reconstruction</i>
12254	11/9/92	D. BLACK	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. 60
12222	11/10/92	D. BLACK	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. 35
12220	1/26/93	L. ARKENAN	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. 55, APPD Thru cht 12221
12200	1/28/93	L. ARKENAN	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. 54, APPD Thru cht 12220
12207	1/28/93	L. ARKENAN	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. 27, APPD Thru cht 12221
12205	7/7/93	R.A. LILLIS	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. 23 App'd thru cht 12221
12221	8-14-95	R. B. BASS	Full <i>completion</i>