10337

Diagram No. 1227-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Side Scan Sonar

Field No. WH-10-1-90

Registery No. H-10337

LOCALITY

State Virginia

General Locality Atlantic Ocean

Sublocality 8.5 NM Southeast of Cape Henry

1990

CHIEF OF PARTY
CDR R.P. Floyd

LIBRARY & ARCHIVES

DATE September 17, 1991

☆U.S. GOV. PRINTING OFFICE: 1985—566-054

10337

EC/G

CHTS
12208
12221
12220
12207
12200
13003 N/C

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.: H-10337

FIELD NO.: WH-10-1-90

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

State: Virginia

General locality: Atlantic Ocean

Locality: 8.5 NM Southeast of Cape Henry

Scale: 1:10000 Date of survey: 20 April - 20 May 1990

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

Vessel: NOAA Ship Whiting 2930

Chief of party: CDR Richard P. Floyd

Surveyed by: Kathy Timmons, Richard B. Koehler, Nancy L. Crews, Lee M. Cohen, Matthew J. Wingate, Kim T. MCDonough, Katharine A. MCNitt, Kelly G. Taggart

Soundings taken by echo sounder, hand lead, pole: DSF 6000N & EG+G MODEL 260 SIDE SCAN SONAR

Graphic record scaled by: Officers, Survey Technicians and AMC Cartographers and Technicians

Graphic record checked by: Officers, Survey Technicians and AMC Cartographers and Technicians

Protracted by: KYNETICS 1201 Plotter (AHB) Automated plot by: BRUNNING ZETA 936 (FIELD)

Verification by: Atlantic Hydrographic Section Personnel

Soundings in ~~fathoms~~ ~~feet~~ meters at ~~MLW~~ MLLW

REMARKS: Junctions with H-10340, H-10341

Notes in red were made during office processing

AWOIS/SURF 11/4/91, SS

SC 1-30-97

~~M/C/91~~ KWW

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
OPR-D111-WH-90
FIELD NUMBER WH-10-01-90
REGISTRY NUMBER H-10337
NOAA SHIP WHITING

Commander Richard P. Floyd, Commanding Officer

A. PROJECT

Project OPR-D111-WH-90 was an unclassified, basic hydrographic survey of the entrance to the Chesapeake Bay. 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 19 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.

This survey was assigned registry number H-10337 and designated sheet "B" in the Project Instructions.

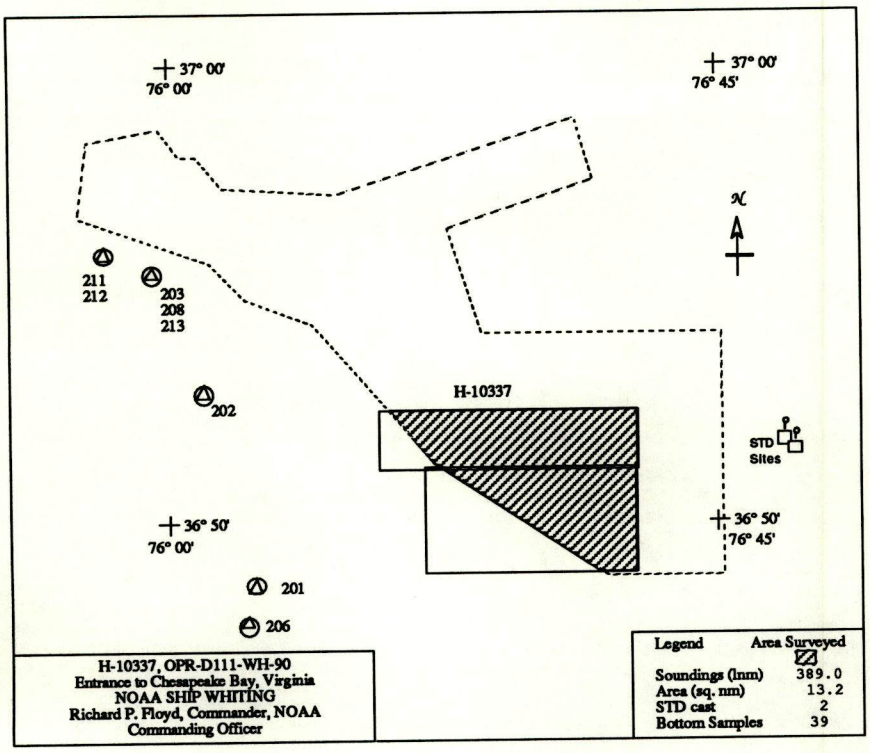
Data from this survey were requested by the Fifth Coast Guard District following a Port Access Route Study and will be used to compile a new 1:40,000-scale chart .

B. AREA SURVEYED

Survey H-10337 was located in the Atlantic Ocean, 8.5 nautical miles southeast of Cape Henry, Virginia.

Northern limit:	36° 52' 30"
Southern limit:	36° ~~49' 00"~~ 48' 45"
Eastern limit:	75° 47' 45"
Westernmost point:	75° 54' ~~00"~~ 15"

Because of plotter sheet size limitations, sheet "B" was further divided into "B North" and "B South" at latitude 36° 51' 30".



Data were collected on fifteen days between DOY 110 (20 April, 1990) and DOY 140 (20 May, 1990:)

Day 110 - Day 114 (Days 115, 116: port call, Little Creek, for water)

Day 117 - Day 120 (Days 121 - 126: in port for HYDRO '90 conference)

Day 127 - Day 128 (Days 129 - 133: data acquisition, adjoining surveys)

Day 134 - Day 136 (Days 137 - 139: data acquisition, adjoining surveys)

Day 140

C. SURVEY VESSEL

The NOAA ship WHITING S-329, EDP number 2930, was the only sounding vessel used during Project OPR-D111-WH.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

The Hydrographic Data Acquisition and Processing System (HDAPS) was used to

collect and process data for H-10337. HDAPS software is programmed using the Hewlett Packard (HP) BASIC computer language. The following programs were used:

"POSTSUR"	version 4.14
"CONSTAT"	version 2.05
"PLOTALL"	version 1.65
"FILESYS"	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 9 March, 1990. This program has been authorized for use with all single and multi-beam surveys.

E. SIDE SCAN SONAR EQUIPMENT

The WHITING maintained continuous shipboard data acquisition and/or processing throughout the survey. An EG&G model 272-T dual channel Tow Fish (Serial Number 011905) was towed at a speed of six knots from a custom-made block, which was attached to an A-frame support on the fantail of the WHITING. A second tow fish (S/N 011904) was used on Day 140. The operating frequency of the side scan sonar was 100 kHZ and the range scale was 100 meters on both the port and starboard channels, resulting in a swath width of 200 meters. Consequently, 200% bottom coverage and a swath overlap of two millimeters at the scale of the survey was obtained by running sounding lines at eighty meter intervals.

Data were recorded by an EG&G model 260 Image Correcting Side Scan Sonar System, two of which were used interchangeably:

DOY	Recorder Serial Number:
117 - 134	0012106
134 - 136	0012105
136 - 140	0012106

The sonargrams were examined for significant returns, and rejected if the background trace looked 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 one meter or more, and if they appeared on adjacent track lines. Contacts worthy of further investigation are included in Separate V.* filed with the original field records.

To prove that the 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:

	DOY	Fix Number(s)	Reference Line
B SOUTH:	112	1036 - 1037	400
	113	1306	960
	113	1315	960
	113	1371 - 1372	2800
	117	2070 - 2072 *	160
	117	2101 - 2104	160
	117	2313 - 2314	1280
B NORTH:	113	1712	80
	118	2609 - 2611	640
	119	3026 - 3027	1360
	119	3046 - 3048	1360
	119	3089 - 3090**	1520
	135	3580 - 3581	800
	136	3917	1600

* A thorough review of the records showed that this is the only location where there remains an actual gap in side scan coverage. The tow fish height was less than 8 meters off of the bottom, and when the height is less than 8% of the swath range, swath efficiency is impaired. Most of the resulting gap has been filled with data from fix numbers 3390 - 3392. These are listed at the beginning of reference line #80 (80 meters from the origin.) During these two fixes, however, the ship was actually 120 meters from the origin, or 40 meters off-line from line #160. This was not discovered until after the survey because the swath from the rerun line, when plotted, fit so well with reference line #160.

** This gap was unavoidable due to the presence of navigational buoy "CBE."

The WHITING performed "confidence checks" to test the reliability of the side scan equipment. This was accomplished by towing the side scan tow fish within 70 to 90 meters from a known object and observing the return on the sonargram. Objects used for confidence checks included navigational buoys and the Chesapeake Light Tower. The WHITING passed each object twice, testing both the port and starboard sonar channels. Confidence checks were performed at least once per 24-hour period and whenever changes were made to sonar equipment.

No developments or diver investigations were performed during survey H-10337.

F. SOUNDING EQUIPMENT

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

Electronics Technicians tested the accuracy of the DSF 6000N daily.

G. CORRECTIONS TO ECHO SOUNDINGS

Velocity casts were performed on Days 110 and 127. Two SEACAT Salinity, Temperature, and Depth profilers (S/N 286, 284) were lowered to a depth of 22 meters:

DOY	Latitude	Longitude
110	36° 51' 44" N	75° 43' 54" W
127	36° 51' 38" N	75° 43' 59" W

The VELOCITY computer program used data collected at twenty significant depths to define a sound velocity profile through the water column. The resulting correctors were entered into HDAPS "Velocity Tables" and applied to the sounding data during post processing.

On Day 159 the DSF-6000N echosounder was tested against a leadline in a water depth of 17.4 meters, and a -.06 meter instrument correction was computed for the narrow and wide beams of the echosounder. Data from this vertical cast are included in Separate IV.

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

Historical values for dynamic draft were entered into the HDAPS Offset Table in meters per second. On Day 116 the WHITING measured settlement and squat values by sailing past a marker buoy at varying speeds and measuring water depth with the DSF 6000N. These values are included in Separate IV. *

Tidal datum for project OPR-D111-WH was Mean Lower Low Water. Values for predicted tides were taken from the 1990 Tide Tables, using the Hampton Roads Station (863-8610) as a reference. Erroneous values were accidentally applied to the DSF-6000N soundings during data acquisition until Day 134, when these values were readjusted and entered into the HDAPS as "Tide Tables" No. 1 and 2. All echo sounding data plotted on the final smooth sheet were plotted with the corrected values applied. Time and height correctors for the survey area were as follows:

	Time Corrector	Range Ratio
High Tide:	-1 hour, 40 minutes	x 1.35
Low Tide:	-1 hour, 40 minutes	x 1.35

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 gage at tide station 863-8863, Chesapeake Bay Bridge Tunnel, was working properly.

The Bridge Tunnel station was the control for *actual* tide datum determination. Third order levels were run from this station to five benchmarks on Day 106. Closing levels were run on Day 162 and a difference of 1 millimeter between opening and closing levels was observed. Field tide notes are included in Appendix V.* Approved tides were applied during office processing.

The WHITING's heave, roll, and pitch sensor could not be incorporated into the HDAPS and was therefore not used for this survey. Echograms were visually scanned for sand waves and sea action during post processing.

H. CONTROL STATIONS

See also section 2. a. of the Evaluation Report

All geodetic positions are referenced to the North American Datum (NAD) 1983. MINIRANGER transponders were placed at four of the horizontal control stations for Range/Range electronic positioning of the WHITING.

Station descriptions and Geographical Positions (GPs) are included for each site in Appendix III. The GP for Control station DAM NECK BOQ 1981 was not published in the Geodetic Control Data; however, the Atlantic Marine Center Coastal Surveys Unit,

* filed with the original field records.

N/CG 23322, provided the WHITING with an historical value.

I. HYDROGRAPHIC POSITION CONTROL

The MINIRANGER FALCON 484 short range positioning system was used for project OPR-D111-WH. The ship's position was determined by the intersection of ranges from three or more transponders.

The following MINIRANGER equipment was used during survey H-10337:

	Serial Number
Range Processing Unit (RPU)	D0004
Control Display Unit	E0013
Receiver Transmitter (RT)	E2914
Transponder, Code 4	C2901
Transponder, Code 5	F3292
Transponder, Code 6	F3296
Transponder, Code 7	E2889

An opening baseline calibration was performed on Day 108 at the Atlantic Marine Center in Norfolk, Virginia to define electronic correctors for all combinations of shore transponders and RT/ RPU's. Baseline calibrations were performed to the standards of the AMC OPORDER 86 (Falcon 484 Calibration Procedures and Standard Forms.) These correctors were entered into the HDAPS as "C-O values" (corrected-observed) before survey operations began.

The critical systems checks were performed using multiple LOP's and, occasionally, navigational sextant fixes (Weems & Plath sextants, S/N T2989, T3743, and 72976.)

A closing baseline calibration was deemed 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 before operations began. Data from these investigations are included in Separate III.

HDAPS records include the transponder codes used for each positioning fix, as well as an error circle radius, which can be used as a measure of how reliable each fix is. Positioning busts appeared on the track plot as fliers, and if reliable positions existed on either side of a flier, the position in question 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 also section 2.b. of the Evaluation Report.

No shoreline existed in the survey area.

K. CROSSLINES See also section 3. a. of the Evaluation Report

A total of 38.5 nautical miles of crosslines were run on sheet "B." This is equal to 11% of the 349.4 nautical miles of main-scheme hydrography acquired. All crossline soundings agreed with main-scheme soundings within one-half meter.

L. JUNCTIONS See also section 5. of the Evaluation Report

This survey junctions with two other contemporary WHITING surveys: H-10340 (sheet "C") to the north, at latitiude 36° 52' 30" N, and H-10343 (sheet "A") to the east, at longitude 75° 47' 45" W. Soundings at these junctions were compared, and all agreed within one-half meter.

M. COMPARISONS WITH PRIOR SURVEYS See also section 6. of the Evaluation Report.

There was excellent sounding agreement with survey H-9922, scale 1:20,000, 1980.

AWOIS item #2940 was described as "half of a navigational buoy" located at 36° 51' 18.70 N, 075° 51' 05.90" W, which may have been salvaged by the Coast Guard tender MADRONA. Although the buoy may have been salvaged, the contact that appeared on the sonargram was very similar to the buoy moorings observed during confidence checks, and another aspect is recommended. Concur. See also section 7. a. 1) of the Evaluation Report

AWOIS item #7527, located at 36° 52' 06.00" N, 75° 50' 36.00" W, is listed as a dispersed wreck. The WHITING obtained four aspects of a wreck-like feature, as well as returns from several small contacts in the surrounding area, confirming this description. Although this wreck was not considered to be a danger to navigation, further investigation and determination of a least depth is recommended. Concur. See also section 7. a. 2) AND 3) of the Evaluation Report.

N. COMPARISON WITH THE CHART See also section 7. of the Evaluation Report.

H-10337 was compared to chart 12221, 57th edition, January 28, 1989, and chart

12205, 20th edition, January 21, 1989. Agreement was excellent, with all three sources showing slight shoaling along the northern and western edges of the survey area. The western edge of this survey is inshore of the southeast sea lane, two miles off of Virginia Beach. Shoaling along the northern edge lies east of the sealane and is clearly labeled on the charts.

O. ADEQUACY OF SURVEY

This hydrographic survey is adequate to supersede prior surveys of the area. No part of the hydrography is considered to be substandard. See section 7. of the Evaluation Report.

Side scan sonar data is only incomplete in that no investigations were performed during this survey. Coverage is complete except for those areas described in Section E.

P. AIDS TO NAVIGATION See also section 7.b. of the Evaluation Report

Although floating aids to navigation existed within survey H-10337 limits, section 4.2 of the Project Instructions stated that data on the aids were not required as part of the survey. Aids to Navigation are to be located during investigations conducted by NOAA ship HECK

The location of buoy "CBE," although charted correctly, was listed incorrectly in the Light List. The charted position is approximately 36° 52' 14" N, 075° 52' 11" W. The position in the light list is several meters to the east, at 36° 52' 18" N, 075° 51' 12" W.

Q. STATISTICS

Number of Positions	4167
Nautical Miles of Main-Scheme Sounding Lines	349.4
Nautical Miles of Cross-Line Sounding Lines	38.4
Square Nautical Miles Surveyed	13.2
Days of Production	15
Bottom Samples	39
Tide Stations	1
Velocity Casts	2

R. MISCELLANEOUS

Because H-10337 was the first survey of Project OPR-D111-WH, many obstacles had

to be overcome concerning side scan sonar operations. Inexperience was a large factor in equipment downtime and sonargram rejection. Bugs in the HDAPS post processing software and problems with the tow fish cable were encountered, and their resolution required several hours of shipboard time.

Traffic congestion in the survey area forced the WHITING to plan reference lines that conformed with the flow of traffic, which resulted in a significant increase in transit time.

Side scan sonar operations are limited to a speed of six knots. The WHITING's main engines are 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 stack fire. For this reason, the WHITING interrupted operations twice daily to run the engines under a full load.

Data processing requires an enormous amount of time. The ratio of processing to acquisition time was approximately 3:1.

All bottom samples from H-10337 were submitted to the Smithsonian Institution. Bottom samples were obtained during tow fish downtime or whenever normal survey operations were not possible. The oceanographic logsheet is located in Separate II.

No unusual submarine features or tidal currents were observed during H-10337.

S. RECOMMENDATIONS

In estimating the time required to complete this type of survey, consider factors such as: familiarization with the equipment, traffic density, number of people available, and extra sea days needed for data processing.

T. REFERRAL TO OTHER REPORTS

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

Horizontal Control Report (N/CG 233)
Tides and Water Levels Station Report (N/OMA 1212)

Submitted By:

Katharine A McNitt

ENS Katharine A. McNitt, NOAA

Reviewed By:

Richard B Koehler

LT Richard B. Koehler, NOAA
Field Operations Officer
NOAA ship WHITING

Approved By:

Richard P. Floyd

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

CONTROL STATIONS

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY
201	F	036:47:18.062	075:57:33.734	15	250	0.0	0.0	5	06/04/90
202	F	036:52:58.963	075:59:04.039	20	250	0.0	0.0	6	04/19/90
203	F	036:55:34.911	076:00:25.834	47	250	0.0	0.0	7	04/19/90
205	F	036:54:16.696	075:42:45.856	24	250	0.0	0.0	4	04/21/90
~~206~~	~~F~~	~~036:46:14.233~~	~~075:57:50.724~~	~~40~~	~~139~~	~~0.0~~	~~0.0~~		~~05/07/90~~
~~207~~	~~F~~	~~036:55:34.865~~	~~076:00:25.973~~	~~47~~	~~139~~	~~0.0~~	~~0.0~~		~~05/07/90~~
~~208~~	~~F~~	~~036:55:32.862~~	~~076:00:29.270~~	~~30~~	~~139~~	~~0.0~~	~~0.0~~		~~05/07/90~~

201 DAM NECK BOQ, 1981

202 RAMADA, 1980

203 DEL NORTE SITE at Cape Henry Lighthouse, 1977

205 CHESAPEAKE LIGHT, 1966

~~206 DAM NECK MILLS NAVY TANK~~

~~207 CAPE HENRY LIGHTHOUSE 1887~~

~~208 CAPE HENRY LIGHTHOUSE OLD~~

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

APR 5 1989

RLA

MEMORANDUM FOR: Commander Russell C. Arnold, NOAA
Chief, Hydrographic Surveys Branch

FROM: Lieutenant Commander Maureen R. Kenny, NOAA
Chief, Operations Section

SUBJECT: Charting Recommendation for Obstruction - FE-248WD

A dangerous submerged obstruction (AWOIS item no. 2940), located in latitude 36°51'18.7"N, longitude 75°51'05.9"W, was investigated with a wire drag and a diver investigation during survey FE-248WD (1983). The hydrographer commented in his field notes that, although the obstruction was hung, a reliable clearance could not be obtained due to the erratic lifts and sags of the wire. The divers, however, stated they had excellent visibility and were able to describe and sketch the obstruction as well as obtain a least depth using the pneumatic depth gage. Because of the significant discrepancy between the hang depth and the divers' least depth, the evaluator recommended charting the obstruction according to the results of prior survey H-9871WD (1976).

After a reevaluation of the field data, a decision has been made to accept the diver investigation data, and recommend charting the obstruction with a least depth of 47 feet.

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-10337

LOCALITY: Chesapeake Bay Entrance, VA.

TIME PERIOD: April 20 - May 21, 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

Apply a x1.26 range ratio to all heights, and a -0 hr. 40 min. time correction for Chesapeake Bay Bridge Tunnel.

James R. Hubbard

CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10337

Name on Survey	A ON CHART NO.	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	
ATLANTIC OCEAN (title										1
CAPE HENRY (title)										2
VIRGINIA (title)										3
										4
										5
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NOAA FORM 61-29
(12-71)

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

LETTER TRANSMITTING DATA

REFERENCE NO.
N/CG244-63-91

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

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

DATE FORWARDED
10 September 1991

NUMBER OF PACKAGES
2 boxes, 1 tube

TO:

Chief, Data Control Section, N/CG243
NOAA/National Ocean Service
Room 151, WSC-1
Rockville, MD 20852

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-10337

Virginia, Atlantic Ocean 8.5 NM Southeast of Cape Henry

1 Tube containing:
- 1 **Original Descriptive Report**
- 1 Smooth Sheet for H-10337
- 1 Smooth Position Overlay
- 2 Smooth Excess Overlays
- 4 Smooth Field Sheets

1 Box containing:
- 1 Cahier with Line File Data and Sounding printout
- 1 Folder containing miscellaneous data removed from the original descriptive report
- 1 Folder (IV) Sounding Equipment Calibrations and Corrections
- 1 Folder (V) Side Scan Sonar Data
- 2 Accordian folders containing fathograms and daily printouts and side scan sonorgrams for:
  VESNO 2930 JD's: 110 (2 w/X-lines), 110-111, 111 (5 parts), 112 (5 parts), 113 (7 parts), 114 (2 parts), 117 (4 parts), 118 (2 parts).

FROM: *(Signature)* R. H. Whitfield
Richard H. Whitfield

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Section, N/CG244
439 W. York Street
Norfolk, VA 23510-1114

☆U.S.GPO:1983-0-664-006/1192

NOAA FORM 61-29
(12-71)

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

LETTER TRANSMITTING DATA

REFERENCE NO.

N/CG244-63-91

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

☐ ORDINARY MAIL ☐ AIR MAIL

☒ REGISTERED MAIL ☐ EXPRESS

☐ GBL *(Give number)* _____

DATE FORWARDED

10 September 1991

NUMBER OF PACKAGES

2 boxes, 1 tube

TO:

Chief, Data Control Section, N/CG243
NOAA/National Ocean Service
Room 151, WSC-1
Rockville, MD 20852

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-10337

Virginia, Atlantic Ocean 8.5 NM Southeast of Cape Henry

1 Box containing:
1 Cahier with Position printout and Control Listing
1 Envelope with supplemental data removed from the printouts
2 Accordian folders containing fathograms and daily printouts and side scan sonorgrams for:
VESNO 2930 JD's: 118 (3 parts), 119 (2 parts), 120 (1 part), 120 (B.S.), 127 (B.S.), 134, 135 (6 parts), 136 (2 parts), and 140 (2 parts)

FROM: *(Signature)* R. H. Whitfield

Richard H. Whitfield

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Section, N/CG244
439 W. York Street
Norfolk, VA 23510-1114

☆U.S.GPO:1983-0-664-006/1192

09/09/91

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H-10337

NUMBER OF CONTROL STATIONS		4
NUMBER OF POSITIONS		2831
NUMBER OF SOUNDINGS		11858
	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	42	03/04/91
VERIFICATION OF FIELD DATA	143	03/21/91
ELECTRONIC DATA PROCESSING	65	
QUALITY CONTROL CHECKS	46	
EVALUATION AND ANALYSIS	130	09/06/91
FINAL INSPECTION	10	08/02/91
TOTAL TIME	436	
ATLANTIC HYROGRAPHIC SECTION APPROVAL		09/06/91

COAST AND GEODETIC SURVEY
ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT

SURVEY NO.: H-10337 FIELD NO.: WH-10-1-90

Virginia, Atlantic Ocean, 8.5 NM Southeast of Cape Henry

SURVEYED: 20 April through 20 May 1990

SCALE: 1:10,000 PROJECT NO.: OPR-D111-WH-90

SOUNDINGS: RAYTHEON DSF-6000N Fathometer and 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. 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. 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 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 present survey smooth sheet. This survey has been processed before the results of the recommended additional investigations were available. Refer to subsequent survey FE-354SS (1990) for more definitive information on these features assigned for investigation.

b. Geographic positions of items from prior sources that are transferred and applied to the present survey have been converted to the North American Datum of 1983 (NAD83).

c. No unusual problems were encountered during office processing.

d. Notes in red were made in the Descriptive Report 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 (NAD83). 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 (NAD27). To place this survey on the NAD27 datum, move the projection lines .539 seconds (16.6 meters or 1.66 mm at the scale of the survey) north in latitude, and 1.276 seconds (31.6 meters or 3.16 mm at the scale of the survey) east in longitude.

All geographic positions listed from sources other than the present survey are on the NAD27 unless otherwise specified.

b. There is no shoreline within the area surveyed.

3. HYDROGRAPHY

a. Soundings at crossings agree within the criteria stated in sections 6.5. and 6.6 of the Project Instructions.

b. The standard 15 meter curve could be drawn in its entirety. Dashed curves were added to better show bottom topography.

c. Development of bottom configuration and determination of least depths is considered adequate.

4. CONDITION OF SURVEY

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

5. JUNCTIONS

H-10340 (1990) to the northwest

H-10341 (1990) to the east

Excellent junctions were effected between the present survey and the junctional surveys.

There are no contemporary surveys to the southwest and northwest of the present survey. The charted depths and present survey depths are in harmony to the southwest and northwest.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-9922 (1980) 1:20,000

Prior survey H-9922 (1980) covers the entire area of the present survey. The prior survey is in good agreement with the present survey with soundings agreeing within plus or minus (+/-) 1-foot (0^3 m). The following should be noted:

An uncharted obstruction with a depth of 46-feet (13^7 m) in Latitude 36°51'59.4"N, Longitude 75°50'57.8"W (NAD83) originating with the prior survey was not investigated by the hydrographer. No indication of the obstruction can be seen on the side scan sonargrams in the surrounding area. It is believed that the obstruction originated as a stray sounding from the prior survey. An uncharted wreck-like feature with an estimated depth of 10^7 meters (35 ft) was located in Latitude 36°51'51.24"N, Longitude 75°50'53.05"W by the present survey 280 meters to the southeast of the obstruction. No further investigation or change in charting status is recommended. See also section 7.a.2) of this report.

The present survey is adequate to supersede the prior survey in the common area.

b. Wire Drag

H-6976WD (1945-47) 1:40,000
H-9871WD (1976) 1:20,000
FE-248WD (1983) 1:20,000

One (1) hang originating with the prior survey H-9871WD (1976) is in the area of the present survey and is presently charted. The following should be noted:

AWOIS item #7526 is a charted obstruction, in Latitude 36°51'48.0"N, Longitude 75°48'01.8"W, with a wire

drag clearance depth of 52 feet (15^{8} m). The AWOIS item originates with the prior wire drag survey as a hang on an uninvestigated obstruction at 56 feet and subsequent clearance to 52 feet. During hydrographic and side scan sonar operations no significant contacts were found with 200% side scan sonar insonification accomplished. The obstruction (AWOIS #7526) in all probability does not exist; however, the obstruction is not considered resolved by the present survey and should be retained as charted. A hang of 17^{1} meters (56 ft) in present survey depths of 17 to 17^{2} meters was brought forward to supplement the present survey from the prior wire drag survey. The obstruction (AWOIS #7526) is included in the recommendation for additional investigation. No change in charting status is recommended at this time.

With the exception of the wreck discussed in section 7.a.2) and 3) of this report, and subsequent to prior wire drag survey H-6976WD (1945-47), there are no conflicts between prior wire drag surveys effective depths and the present survey.

7. COMPARISON WITH CHARTS 12221 (57th Ed., Jan. 28/89) 12205 (20th Ed., Jan. 21/89)

a. Hydrography

The charted soundings originate with prior surveys and unknown sources not discussed in this report. The charted soundings are in good agreement with the present survey with charted soundings generally 0^{5} meter shoaler than the present survey. A few scattered charted soundings are 1-meter shoaler that the present survey.

The following should be noted:

1) AWOIS item #2940 is a charted dangerous submerged obstruction with a wire drag clearance depth of 44 feet (13^{4} m) in Latitude 36°51'19.8"N, Longitude 75°51'06.0"W. The obstruction was first reported by Notice to Mariners No. 7 of 1944 and was subsequently located and cleared by H-9871 (1976). The item was verified by FE-248WD (1983). An addendum to the report of FE-248WD (1983) dated April 5, 1989, accepted the diver's pneumatic depth gauge least depth of 47 feet on the obstruction in Latitude 36°51'18.7"N, Longitude 75°51'05.9"W. The memorandum is appended to the Descriptive Report. A dangerous submerged obstruction with a depth of 47 feet is charted on the latest edition of NOS chart 12221 (58th Ed., Sept. 15/90). A side scan sonar contact was also found by the present survey 56 meters northeast in Latitude

36°51'19.49"N, Longitude 75°51'05.63"W with an estimated depth of 14^5 meters (47 ft). The dangerous submerged obstruction with a depth of 47 feet was brought forward to supplement the present survey as a dangerous submerged obstruction with a depth of 14^3 meters (14^3 *Obstr*). No change in charting status is recommended at this time. A charting recommendation for this item (AWOIS #2940) is deferred until completion of office processing of survey FE-354SS (1990), and a final disposition of the investigated item has been made.

2) An uncharted wreck-like feature with an estimated depth of 10^7 meters was located by the present survey in Latitude 36°51'51.24"N, Longitude 75°50'53.05"W. Surrounding present survey depths are 15^4 to 15^7 meters. The feature is 655 meters southwest of AWOIS item #7527; however, it is not considered to be the AWOIS item because the estimated depth exceeds the wire drag clearance depth of 44 feet by H-6976 (1945-47). See also section 7.a.3) of this report. This feature is included in the list recommending additional investigations. It is recommended that a wreck with an estimated depth of 10^7 (10_7 *Wk Rep 1990*) be charted until completion of office processing of survey FE-354SS (1990) and a final disposition of the investigated item has been made.

AWOIS 8188 SJV 11/4/91

3) AWOIS item #7527 is a charted dangerous submerged obstruction with a wire drag clearance depth of 44 feet (13^4 m) in Latitude 36°52'06.0"N, Longitude 75°50'36.0"W. The obstruction was first reported by Notice to Mariners No. 4 of 1944 and was subsequently cleared by H-6976 (1945-47). Additionally, no evidence was found of an obstruction by the present survey in the location of the AWOIS item. The following statement should be noted from section 5.c. of the Review of Hydrographic Survey H-6976WD (1945-47): reference Item 2 (wreck), "Before this wreck could be charted, H. O. Notice to Mariners No. 5 (1944) reported it as dispersed. The present investigation of 1945 confirmed this information." It is recommended that the dangerous submerged obstruction with a wire drag clearance depth of 44 feet (13^4 m), AWOIS item #7527, be deleted from the chart.

4) AWOIS item #3329 is a charted non-dangerous sunken wreck in Latitude 36°50'24.0"N, Longitude 75°49'12.0"W. The wreck originates with Wreck List number 1312; reported from 1944 Coast and Geodetic Survey information (reference number not ascertainable) which was subsequently cleared to 48 feet by H-9871WD (1976) without a hang. The item has a positional accuracy of 1 to 3 miles. No evidence of the wreck was found at the location of the item by the present survey.

No additional contacts identified as a wreck were found within a radius of 3000 meters of the AWOIS item. Approximately two-thirds of the search radius is covered by the present survey and H-10341 (1990). No evidence of this wreck exists in the buoyed approach area to the Chesapeake Bay. It is recommended that the non-dangerous sunken wreck (AWOIS item #3329) be deleted from the chart.

5) Four (4) additional contacts located by the hydrographer are shown on the present survey. These contacts have been recommended for further investigation and are listed as follows:

Depth (meters)/Feature	Latitude (N)	Longitude (W)
13^{1} *Obstr (A)*	36°51'42.72"	75°52'45.81"
14^{9} *Obstr (A)*	36°51'21.93"	75°50'54.48"
14^{3} *Obstr (A)*	36°51'20.55"	75°50'50.87"
14^{7} *Obstr (A)*	36°50'16.64"	75°48'10.71"

It is recommended that charting recommendations for these four (4) items be deferred until completion of office processing of survey FE-354SS (1990) and the final disposition of the investigated items can been made.

Except as noted elsewhere in this report, the present survey is adequate to supersede the charted hydrography in the common area.

b. Aids to Navigation

Four (4) floating aids to navigation are in the area of the present survey. These aids were not located by the present survey. The charted aids to navigation appear adequate to serve their intended purposes.

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with the Project Instructions.

9. ADDITIONAL WORK

This is a good basic hydrographic/side scan sonar survey. With the exception of the items listed in section 7 of this report, no additional field work is recommended.

Franklin L. Saunders
Cartographic Technician
Verification of Field Data

Richard H. Whitfield
Cartographer
Evaluation and Analysis

Leroy G. Cram
Supervisory Cartographic Technician
Verification Check

APPROVAL SHEET
H-10337

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 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.

for R. O. Samuelson Date: 8-29-91
Robert G. Roberson
Chief, Evaluation and Analysis Team
Atlantic Hydrographic Section

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 Date: 9/6/91
Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

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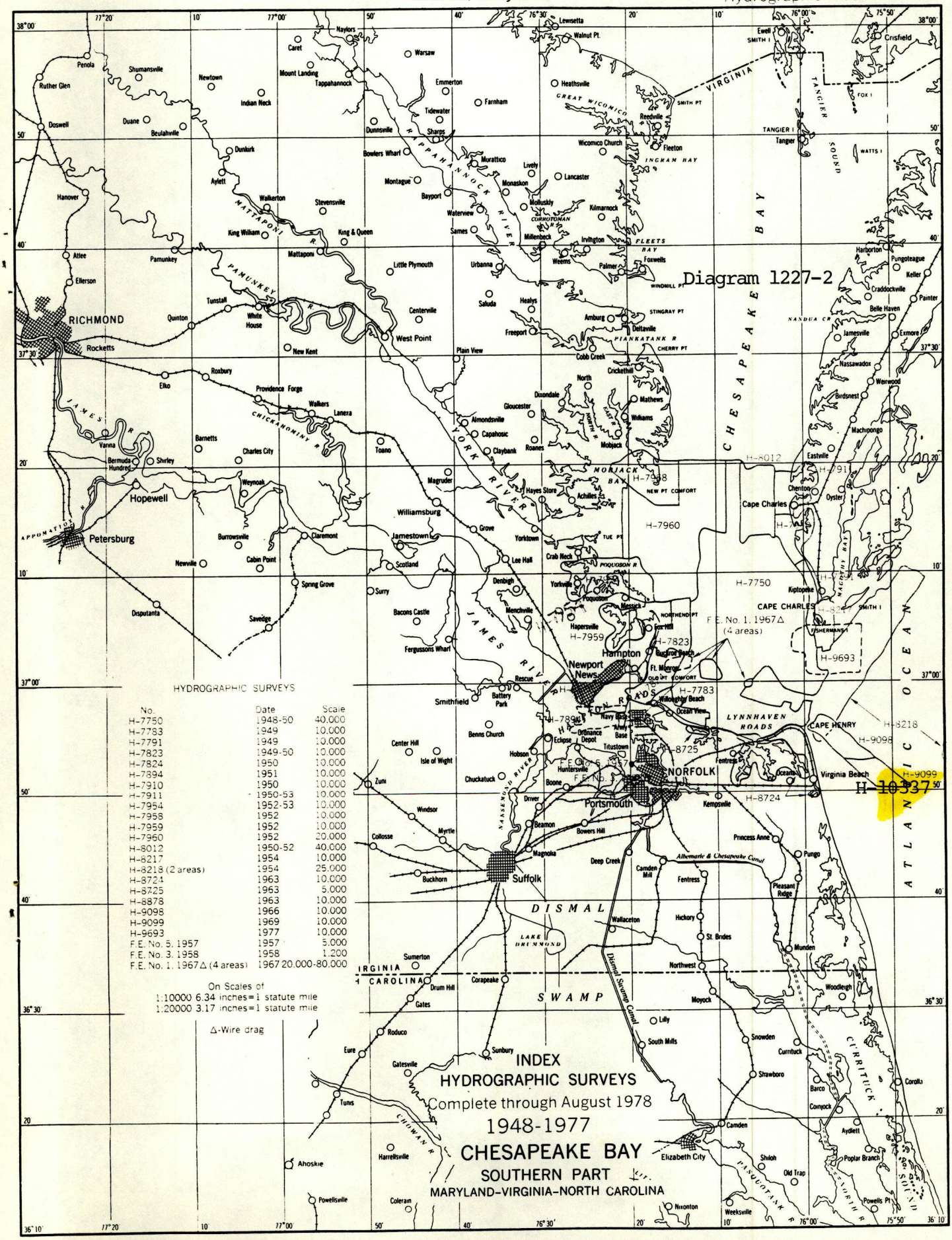
Final Approval:

Approved: J. Austin Yeager Date: 10/25/91
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

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

Hydrographic Index No. 70 M



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. H-10337

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
12208	6/19/92	J. Robinson	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. VI Reconstruction
12221	12/16/92	L. Ackman	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 88, APPD Thru Cht 12208
12220	1/26/93	L. Ackman	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 55, APPD Thru Cht 12221
12200	1/27/93	L. Ackman	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 54, APPD Thru Cht 12220
12207	1/28/93	L. Ackman	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 27, APPD Thru cht 12221
12205A	7/7/93	R. A. Lillis	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 23 Appl'd thru cht 12221
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.