

10127

Diagram No. 1222-4

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey ... Hydrographic
Field No. PE-10-1-84
Office No. H-10127.....

LOCALITY

State Virginia
General Locality .. Chesapeake Bay
Locality Middle Ground to Latimer
..... Shoal

19 84

CHIEF OF PARTY

..... CRD. W. S. Simmons

LIBRARY & ARCHIVES

DATE September 8, 1986

☆U.S. GOV. PRINTING OFFICE: 1980-766-230

10127

Area!

CHT
1224
1222 } CARTON
1221 } SIGN OFF ON
1220 } FM. IN CASE

HYDROGRAPHIC TITLE SHEET

H-10127 ✓

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.

PE 10-1-84 ✓

State Virginia ✓

General locality Chesapeake Bay ✓

Locality Latimer Shoal Middle Ground to Latimer Shoal

Scale 1:10,000 ✓

Date of survey 15 March to 26 June 1984 ✓

Instructions dated April 15, 1983 ✓

Project No. OPR-D103-PE-84 ✓

Vessel Launches PE-1 (2831), PE-2 (2832), PE-3 (2833), PE-4 (2834)

Chief of party Cdr. Walter S. Simmons ✓

Surveyed by Lt. Ross, Lt. Jg Conricote, Ens. Maddox, Ens. Barnum
V.D. M.P. J.H. V.A.

Soundings taken by echo sounder, ~~back log, etc~~ Raytheon DSF 6000N ✓

Graphic record scaled by MPC, JM, BM, IPR, VAB, MHB, DR

Graphic record checked by MPC, DAW, IPR

Protracted by _____ Automated plot by Hydroplot (PEIRCE)
XYNETICS 1201 Plotter (AMC)

Verification by _____

Soundings in ~~X00000~~ feet at ~~MLW~~ ~~X00000~~ MLLW

REMARKS: All times are in Coordinated Universal Time.

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

STANDARDS CK'D 9-16-86

Clay

SA 4-16-97

AWOIS and SURF, 3/89 SERB

LEGEND

MAR	APR	MAY	JUN
06	182	60	1.5
280	2350	3840	1900
1200	730	2825	800
42.8	404.2	4023	131.8
0	24	38	11
0	0	0	0
1	0	0	0
0	1	3	0
0	1	0	0
0	0	0	0

76°05'

76°00'

37°10'

CHESAPEAKE BAY

CAPE CHARLES

PE-D-1-84
H-10127

APRIL

MAR

MAY

37°05'

H-10127
PE 10-1-84

CHESAPEAKE BAY BRIDGE
TUNNEL

PROGRESS SKETCH

OPR - D103

ATLANTIC SEABOARD AREA PROJECT (ASAP)

DELMARVANC PHASE

NOAA SHIP PEIRCE S-328

WALTER S. SIMMONS, CDR, NOAA

COMMANDING

From Chart 12221

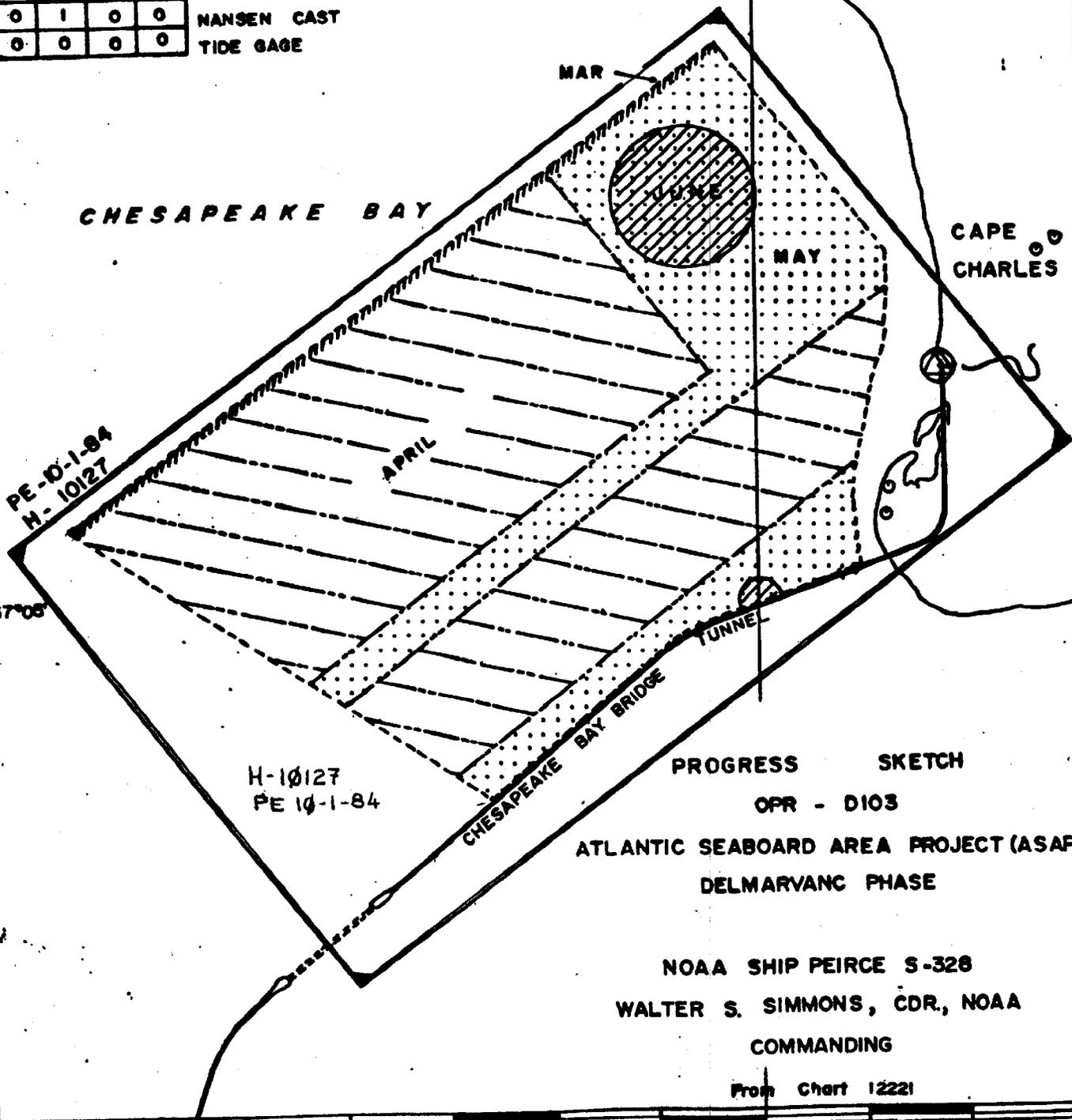


TABLE OF CONTENTS

Hydrographic Title Sheet

Progress Sketch

- A. Project
- B. Area Surveyed
- C. Sounding Vessel
- D. Sound Equipment and Corrections to Echo Soundings
- E. Hydrographic Sheets
- F. Control Stations
- G. Hydrographic Position Control
- H. Shoreline
- I. Crosslines
- J. Junctions
- K. Comparison With Prior Surveys
- L. Comparison With The Chart
- M. Adequacy of Survey
- N. Aids to Navigation
- O. Statistics
- P. Miscellaneous
- Q. Recommendations
- R. Automated Data Processing
- S. Referral to Reports

Appendices A - J

Approval Sheet

DESCRIPTIVE REPORT
TO ACCOMPANY HYDROGRAPHIC SURVEY
H-10127 (Field No. PE-10-1-84)✓
1:10,000 Scale 1984 ✓

NOAA Ship PEIRCE (S-328)✓
CDR WALTER S. SIMMONS, NOAA ✓
CHIEF OF PARTY

A. PROJECT

This basic survey is a continuation of OPR-D103-WH-83. The project instructions were dated ~~August 5, 1983~~ ^{APRIL 15, 1983} with change No. 1 dated August 5, 1983 and change No. 2 dated September 23, 1983. Change No. 3, dated January 6, 1984, transferred the project to the NOAA Ship PEIRCE.✓

B. AREA SURVEYED - See diagram in front of Descriptive Report.

The area surveyed is in the southeastern part of Chesapeake Bay. The area is bounded to the northwest by a line running from 37°05'43.5"N, 076°06'45.0"W to 37°09'43.5"N, 076°00'16.5"W. To the northeast the sheet is bounded by a line running along an azimuth of 052° from 37°09'43.5"N, 076°00'16.5"W, until this line intersects the eighteen foot depth curve. This eighteen foot depth curve then bounds the survey until its intersection with the Chesapeake Bay Bridge Tunnel to the southeast, the Chesapeake Bay Bridge Tunnel bounds the survey area between the eighteen foot curve and 37°00'30.0"N, 076°02'45.0"W. To the southwest, the area is bounded by a line running from 37°00'30.0"N, 076°02'45.0"W to 37°05'43.5"N, 076°06'45.0"W.

C. SOUNDING VESSELS

Soundings were taken with the ships two type 1 aluminum survey launches, PE-1 (VESNO 2831)* and PE-2 (VESNO 2832)** Bottom samples were taken by both launches. Chain drag operations were conducted using the two above launches, plus a 17 foot Monark (PE-3), and an 18 foot Boston Whaler (PE-4). No soundings were obtained with PE-3 and PE-4. Side scan operations were conducted from Launch PE-2 (VESNO 2832)**
* VESNO 3281 ** VESNO 3283 *** VESNO 3283 **** VESNO 3284

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Each launch was equipped with a Raytheon DSF 6000N echo sounder; Launch PE-1 (VESNO 2831)* used S/N A-132 on JD 87 to JD 153, then used S/N A-115N on JD 155 to JD 158; Launch PE-2 (VESNO 2832)** used S/N A-115N on JD 75 to JD 123, S/N A-105 on JD 124 to 153, and S/N A-119 on JD 177 to JD 178. These echo sounders were used in water from 3 feet to 88 feet. The echo sounder initial was kept at 0.0 through out the survey. The draft correction applied on line was 1.6 feet for both launches. A measurement of the actual launch transducer draft was made on 5 August, 1984, and was found to be 1.78 feet. All corrector tapes, therefore, now include a +1.8 foot draft correction.* The final field sheets were plotted using a draft correction of +1.6 feet. - See teletype message dated 19 October 1984. A 1.6 foot draft was used to process the survey data.

* VESNO 3281
** VESNO 3281

This survey was plagued with problems caused by the new Raytheon DSF 6000N echo sounder. Excessive noise in the water column, multiple echos, numerous stray soundings, and jumps in the bottom trace made it necessary to reject two full days sounding and many partial days. The problem was partially solved on May 16, 1984 when all sounder units were reduced in sensitivity to accomodate the shallow water conditions of the working area. The data collected after this date were greatly improved over previous data, though still not perfect.

Corrections for sound velocity were determined from Martek casts and checked against bar checks. Bar checks were attempted each day by both launches but were not always possible due to rough seas and strong currents and were generally of fair quality. Bar checks were taken at five foot intervals over the maximum depth range possible for weather and sea conditions. This exceeds the requirements of the Provisional Operating and Processing Instructions for the DSF-6000N echo sounder, which only require one 2-fathom check per day. Bar check correctors showed a marked tendency to vary as deeper depths were reached, which was probably caused by excessive movement of the bar at deep depths. Abstracts of all bar check data are included in the survey records. *See sections 4.e., 4.f. and 4.i. of the Evaluation Report.*

Martek correctors showed a progressive change in velocity correction with time, which is to be expected as the bay waters warm during the spring and early summer months during which this survey was conducted. The following table lists the dates and positions of the Martek stations observed for this survey.

<u>Date (JD)</u>	<u>STATION</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>
19 Apr 84 (110)	Martek #1	37°10.8'N	076°01.3'W
2 May 84 (234)	Martek #2	37°10.4'N	076°02.5'W
18 May 84 (139)	Martek #3	37°10.5'N	076°02.2'W
2 Jun 84 (154)	Martek #5	37°09.4'N	076°00.3'W

All Martek casts were taken from the NOAA Ship PEIRCE (VESNO 2830).^{***} The Martek is a Model 167, S/N 177, which was calibrated on February 22, 1984. It was compared with a Nansen cast in the project area on April 19, 1984, with good results. The Nansen and Martek raw data sheets are included in Appendix D. *- See section 4.g. of the Evaluation Report.*

A separate velocity table was created from each Martek cast. The velocity corrector graphs, tape listings, sounding correction abstracts, and Martek calibrations for the above operations are in Appendix D. No unusual methods or instruments were used to determine velocity corrections.

Settlement and squat tests for the launches were run on March 7, 1984. The test were conducted at Hospital Point, on the Elizabeth River using a Zeiss self-leveling level (S/N 18946) positioned on the pier and a Philadelphia rod positioned over the transducer of each launch. Settlement and squat correctors have not been used in the final field plot. The settlement and squat report and TC/TI tables can be found in Appendix D.

*** VESNO 3284

E. HYDROGRAPHIC SHEETS (FIELD)

Hydrographic data are presented on four sheets. All mainscheme hydrography is presented on two sheets which are labeled "north sheet" and "south sheet". Overlay sheets for both the north and south sheet depict crosslines, mainscheme splits, and bottom samples. These sheets are at a scale of 1:10,000 with a skew of 38, 21, 54. Field sheets were prepared on the hydroplot system calcomp DP-3 plotter. Field records will be sent to the Atlantic Marine Center for verification and smooth plotting.

F. CONTROL STATIONS

The following third order stations were used to control this survey:

<u>SIGNAL</u>	<u>STATION NAME</u>	<u>SOURCE</u>	<u>USE</u>
001	Thimble Shoal Lighthouse, 1919	CGS	MR
002	H-55 VA, 1980	AMC	MR
003	Cape Charles New Lighthouse, ECC. 1939	CGS	MR
004	Old Plantation Lighthouse, 1984	AMC	MR
013	Cheapside USE, 1939 ^{FLATS LIGHT}	CE	CAL
017	Fisherman Island Navy Water Tank, 1959	CGS	CAL
018	Fisherman Island Navy Shoran Tower, 1959	CGS	CAL
026	Cheapside USE ECC, 1984	AMC	MR
027	Latimer, 1984	AMC	MR
048	Plantation, 1984	AMC	MR

All horizontal control data used in this survey are based on the North American Datum of 1927. A complete List of Signals is located in Appendix F of this report.

G. HYDROGRAPHIC POSITION CONTROL - See section 4.a., 4.b., 4.c., 4.d., 4.s., and 4.u. of the Evaluation Report.

Hydrographic position control was accomplished using the Mini-Ranger Falcon 484 system. Only range - range positioning was used.

The following electronic equipment was used:

<u>VESNO</u>	<u>EQUIPMENT</u>	<u>S/N</u>	<u>JULIAN DATE</u>
2831*	Range Processing Unit	D0019	087 - 159
	Control Display Unit	D0062	087 - 159
	Receiver/Transmitter	D2128	087 - 113
	Receiver/Transmitter	C2000	114
	Receiver/Transmitter	D2128	115 - 159
2832***	Range Processing Unit	D0018	075 - 178
	Control Display Unit	D0057	075 - 178
	Receiver/Transponder	C2096	075 - 178

* 2831 = 3281
2832 = 3282

REFERENCE STATIONS:

Code 1	C2058	075 - 178
Code 2	C2059	075 - 115
Code 3	C2075	075 - 178
Code 4	C2065	115 - 178
Code 5	C2067	075 - 178
Code 6	C2061	115 - 178

The Mini-Ranger Falcon 484 positioning system was generally checked once daily using the fixed point method or by obtaining a three point sextant fix with a check fix. The final field sheet was plotted using the mean of the base line calibrations. Base line calibrations were performed on March 5, April 25 - 27, and July 3 - 5, 1984.

All data pertaining to the calibrations are included in the supplemental data folder. A copy of the abstract of corrections to Electronic Position Control is included in Appendix E.

The Falcon 484 system has many internally stored parameters and care must be taken that the correct values are used. For range - range data acquisition, default values were used as shown on Table 3-5, in the Mini-Ranger Falcon 484 Positioning System User's Manual. The "Cal. Table" was cleared during all system startups to assure that correctors were applied via the normal hydroplot method rather than via the Falcon system.

H. SHORELINE - See section 2.b. of the Evaluation Report

There is no shoreline included within the limits of this survey.

i. CROSSLINES - See section 3.2. of the Evaluation Report

A total of 87.9 nautical miles of crosslines were run on this survey. This is 9.7 % of the total mainscheme mileage. Crossline soundings agree very well with the mainscheme hydrography. Most disagreements between mainscheme and crossline hydrography were less than two feet.

J. JUNCTIONS - See section 5 of the Evaluation Report.

This survey junctions with contemporary surveys H-10116, H-9880, H-9693, and H-9904.

H-10116 (1983) 1:10,000 Scale

This survey junctions with H-10116 to the west. There was excellent agreement of overlapping soundings between the surveys with 100% of the soundings agreeing to within two feet. The present survey was compared only to the final field sheet of H-10116. This survey was completed by the NOAA Ship WHITING in the fall of 1983 and is not listed in the project instructions as one of the required junction surveys.

H-9880 (1980) 1:10,000 Scale

This survey junctions with H-9880 to the south. There was good agreement of overlapping soundings with most agreeing to within two feet.

This survey found depths shoaler than survey H-9880 between fixes 3283 and 3284 where it was found to be seven feet shoaler and between fixes 3276 and 3277 where it was found to be four feet shoaler. These changes probably reflect actual changes in the bottom caused by swift currents around pilings of the Chesapeake Bay Bridge Tunnel.

H-9904 (1980) 1:10,000 Scale

This survey junctions with H-9904 to the south. There is excellent agreement of overlapping soundings agreeing to within two feet.

H-9693 (1977) 1:10,000 Scale

This survey junctions with H-9693 to the south. There was good agreement with most of the overlapping soundings agreeing within two feet. This survey found depths deeper than survey H-9693 between fixes 3267 and 3269 where it was found to be 13 feet deeper, between fixes 3292 and 3294 where it was found to be 13 feet deeper, and between fixes 3295 and 3296 where it was found to be five feet deeper. These changes probably reflect actual bottom changes since the prior survey. This area has swift currents passing around the pilings of the Chesapeake Bay Bridge Tunnel.

K. COMPARISON WITH PRIOR SURVEYS - *See section 6. of the Evaluation Report*

This survey was compared with two prior surveys, H-7791 and H-7750. There were three presurvey review items in this survey (AWOIS Items 3093, 3094, and 3097).

Prior survey H-7791 was done in 1949 by the U.S. Coast and Geodetic Survey at a scale of 1:10,000. This prior survey covers the near shore area along the eastern shore and Fishermans Island, and the Inner Middle Ground. The flat bottom areas have good comparison with this survey. The near shore area has become deeper since this prior survey. The slope along the shore has become steeper because of this. The shoal at Inner Middle Ground was not as shoal as was found in the prior survey. The shoalest depth on the prior survey was three feet while the shoalest depth on this survey was found to be five feet.

Prior survey H-7750 was done between 1948 and 1950 by the U.S. Coast and Geodetic Survey at a scale of 1:40,000. This prior survey covers the entire survey area. There are many discrepancies between the prior survey and this survey. From this survey Latimer Shoal appears to have moved to the south. The prior least depth on the shoal was found to be twelve feet while the current survey found a least depth of five feet. This size of the shoal itself has increased while the axis of the shoal has stayed the same. A small area to the southeast part of this survey was found to be as deep as 90 feet while the deepest sounding

found by the prior survey was only 40 feet deep. This is also true in the southwest part of this survey, where soundings were found to be approximately ten to twenty feet deeper than the prior survey. The deep channel to the east of Nine Foot Shoal has shifted to the west. The slope on the western side of Nine Foot Shoal was found to be a much gentler slope than was found in the prior survey.

✓ P.S.R. No. 3093 was a submerged pile located just to the north of the Chesapeake Bay Bridge-Tunnel, at reported position 37°05'10"N, 076°00'00"W. The pile first appeared on the 1964 edition of chart 12222. Its exact origin is unknown. This item was investigated using 400% side scan coverage in a 250m radius of its charted position. No trace of the pile was ever found. It is recommended that the charted symbol for a submerged pile be removed from the chart. No search for the pile was conducted on the south side of the Chesapeake Bay Bridge-Tunnel. - See section 7.2. of the Evaluation Report

in the vicinity of Lat. 37°02'02"N, Long. 75°59'37"W (by PLNM 42/81 and C/L 945/83-USCG)
✓ P.S.R. No. 3094 was the reported shoaling of Latimer Shoal to a depth of seven feet. The complete shoal was developed using an echo sounder at a spacing of 50 meters. The investigation has shown that the shoal has risen to a least depth of five feet. It is recommended that the depths found on this survey supercede the depths on the chart. - Concur

✓ P.S.R. No. 3097 was a 32 foot work boat sunk in 20 feet of water, at the reported position of 37°08'18"N, 076°00'42"W. This item was investigated using side scan sonar, and chain drag in waters too shallow for the side scan sonar. Approximately 395% bottom coverage was achieved, using the coverage estimation guidelines contained in the draft (dated 4/12/83) instructions for side scan sonar investigations. The shallow water of the search area necessitated a 25 meter line spacing over most of the ½ mile search area. The hydrographer has good confidence that the wreck does not lie in the search area, since many small objects such as crab pots were detected by the sonar. It is recommended that the charted wreck symbol, PA, be removed from the chart, since no trace of the wreck was found. - Concur - See section 7.2. of the Evaluation Report

The search for this item continued into the shallow water of Latimer Shoal using chain drag techniques. Two small boats, PE-3 (17 foot Monark) and PE-4 (Boston Whaler) were used. A 300 foot length of chain with a 15 pound mushroom anchor at each end was used. Marker buoys were attached to each anchor. A 150 foot nylon tow line was also attached to the end of the chain. Position control was by manually recorded Mini-Ranger Falcon 484 located in the Monark (VESNO 2833). There was no control on the Whaler (VESNO 2834) after day 157 because of Mini-Ranger equipment failure. Sextant fixes were obtained from each boat to each buoy on day 157, making possible the plotting of each buoy's position. This plot is seen on AWOIS 3097 sheet #1. These positions show the boats moving erratically toward and away from each other, and consequently the buoy positions show a widely varying sweep width. This was the result of the boat operators being unfamiliar with steering a drag on this first day of operation. On all subsequent days the boats were able to steer much straighter lines and the buoys swept out an even swath. True north/south or east/west lines were steered

CHART # 12222, 12221, 12220

AWACS ITEM # 3093

ITEM DESCRIPTION: Submerged pile

SOURCE: unknown, first appeared on 1964 ed. of chart 12222

INVESTIGATION DATE: 7 June 1984
JD 159

TIME:

VESSEL: 2832

OIC: ENS Maddox

REFERENCES:

Position No.: 6067 to 6116

Volume: NA

Sounding Correctors Applied: NA

Tides (Predicted/Actual) NA

GEODETTIC POSITION

Latitude

Longitude

Charted: 37° 05' 10" N

076° 00' 00" W

Observed: NA

NA

POSITION DETERMINED BY: Side scan search controlled by Miniranger Falcon 484.

METHOD OF ITEM INVESTIGATION:

400% side scan coverage was achieved in that part of a 250m radius circle about the reported position that lies north of the Chesapeake Bay Bridge-Tunnel. No trace of the pile was found, while the piles of the bridge-tunnel could be clearly seen.

CHARTING RECOMMENDATION: - See section 7.2.2) of the Evaluation Report.

~~Remove the charted symbol for a submerged pile from the chart.~~

Walter S. Simmons, CDR, NOAA
Commanding Officer

Compilation Use Only

CHART

APPLIED AS

DATE

COMPILER

CHART # 12224, 12221, 12220

AWOIS ITEM #3097

ITEM DESCRIPTION: Dangerous submerged wreck, PA, of a 32 foot workboat.

SOURCE: LNM 06/81, 5th CG District (as listed in AWOIS 3097 of 16 Sep 83)

INVESTIGATION DATE: 6 May to 7 June 84

VESSEL: 2832, 2833,
2834

OIC: LT Waltz

REFERENCES:

Position No.:

Volume:

Sounding Correctors Applied: NA

Tides (Predicted/Actual) NA

GEODETTIC POSITION

Latitude

Longitude

Charted: 37° 08' 18" N

076° 00' 42" W

Observed: NA

NA

POSITION DETERMINED BY: All control by Miniranger Falcon 484.

METHOD OF ITEM INVESTIGATION:

This wreck was searched for by side scan sonar and chain drag methods in a one-half mile radius circle centered on the above position. The shallow water of the search area required that 25m line spacing be used for the side scan work. Chain drag was used in areas too shallow for side scan. Although 400% side scan coverage was not fully achieved (about 395% was covered) no trace of the wreck was found. Many small objects on the bottom were seen and positively identified (crab pots and small boat anchors) which provided good confidence checks on the sonar system.

CHARTING RECOMMENDATION:

Remove the charted wreck symbol, PA, from the chart.

Concur


Walter S. Simmons, CDR, NOAA
Commanding Officer

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CHART

APPLIED AS

DATE

COMPILER

instead of arcs, using the x-y position feature of the Mini-Ranger Falcon 484.

The coverage estimated for this configuration was 75 meters per sweep. The Whaler (VESNO 2834) was always kept abeam of the Monark guide vessel, and the crew quickly learned to keep the chain as taut as possible. On day 157 an apparent hang occurred at positions 8043 and 8044 (VESNO 283). The hydrographer believes this not to be a true hang. A plot (sheet #1) of the two boats shows them gradually diverging and then drawing the chain tight between them. An immediate examination of the area was made with the side scan sonar, and nothing was seen but the chain lying on the bottom. See side scan sonar position numbers 5849-5852 on day 157.

Side scan and chain drag coverage of item 3097 is shown at 1:2,500 scale. This required nine boatsheets as follows:

- Sheet #1: east sheet (north/south lines) (chain drag)
- Sheet #2: west sheet (north/south lines)
- Sheet #3: west sheet (north/south lines)
- Sheet #4: east sheet (north/south lines)
- Sheet #5: north sheet (east/west lines)
- Sheet #6: south sheet (east/west lines)
- Sheet #7: south sheet (east/west lines)
- Sheet #8: north sheet (east/west lines)
- Sheet #9: east sheet (chain drag)

On JD 156 a ¹⁵16 foot spike_A was found on the north sheet between positions 4006 and 4007. This line was rerun on day 178 between positions 6281 - 6293 of VESNO 2832. No further trace of the spike could be found. This spike is the only unusual sounding on an otherwise clean fathogram. It is believed that this was a stray sounding. Due to a time constraint, a more thorough investigation could not be done. It is therefore recommended that a more complete investigation, such as a chain drag or side scan, be done and that the surveyed depth be placed on the chart until such time. - See section 3.3.c. of the Evaluation Report.

L. COMPARISON WITH THE CHART - See also section 7.2. of the Evaluation Report.

Comparisons were made with chart 12222, 29th Ed., June 11, 1983; chart 12224, 16th, Ed., May 23, 1981; and chart 12224, 17th Ed., February 4, 1984. All of the charts are at a scale of 1:40,000.

Of the 116 charted soundings on chart 12222 that fell within the survey area, 46 charted soundings were found to agree within two feet, and 76 charted soundings disagreed by more than two feet. Most of the discrepancies occurred in the area of Latimer Shoal, Inner Middle Ground, and Nine Foot Shoal. Very little change was found in the flat bottom areas. Latimer Shoal was found to be shifted to the southwest. The shoal is now shoaler and broader than is shown on the chart. The axis of the shoal is still the same. Inner Middle Ground has also shifted to the southwest. The shoal was found to be less shallow and of less extent than is shown on the chart. The deep water found between the shoals has also shifted to the southwest. Nine Foot Shoal was found to

be shifted to the northeast. The deep water between Nine Foot Shoal and Inner Middle Ground was found to be deeper but in a smaller area.

As was stated in the project instructions, this survey was compared to the 16th Edition of chart 12224. Of the 205 charted soundings that were compared, 106 charted soundings were within two feet of the survey depths while 99 charted soundings disagreed by greater than two feet. Most of the discrepancies were found in the area of Latimer Shoal. As with chart 12222 the shoal was found to be shifted to the southwest. This shoal displacement was partly rectified on the 17th Edition of chart 12224. The only difference between the two charts in the survey area was depth changes over Latimer Shoal. These changes came from a reconnaissance survey done by the NOAA Ship WHITING in 1983. These new changes to the chart agree with the PEIRCE survey.

M. ADEQUACY OF SURVEY - See section 9. of the Evaluation Report.

This survey is complete and adequate to supercede presently charted soundings and prior surveys of this area. It is recommended that presently charted depths be replaced completely with depths from this survey.

N. AIDS TO NAVIGATION - See section 7. c. of the Evaluation Report.

Light "270" was the only fixed aid to navigation to be verified within the survey limits. Its position was determined to third-order standards and is listed on NOAA Form 76-40. The four U.S. Coast Guard floating aids to navigation within the area of this survey were checked and entered into the hydrographic record. All of the fixed and floating aids were found to be on station and to adequately serve the purpose for which they were intended. The positions and characteristics of these aids have been checked against the data in the 1984 Edition of the U.S. Coast Guard Light List.

O. STATISTICS

	<u>3280</u>	<u>3281</u>	<u>3282</u>	<u>TOTAL</u>
Total Number of Positions		1952	3232	5184
Nautical Miles of Sounding Lines		364.2	539.1	903.3
Square Miles of Hydrography		9.7	11.5	21.3
Bottom Samples		36	24	6067
Tide Stations				3
Martek Casts	4			4

P. MISCELLANEOUS

Q. RECOMMENDATIONS

It is recommended that this survey supercede all previously existing charted soundings and prior surveys. Specific recommendations were made in sections K, L and M of this report. No additional field work is required, except as noted in section K. - See also section 9. of the Evaluation Report

R. AUTOMATED DATA PROCESSING

<u>PROGRAM</u>	<u>PROGRAM NAME</u>	<u>VERSION</u>
112	Hyperbolic R/R Hydroplot	10/12/83
116	Range/Azimuth Hydroplot	10/12/83
201	Grid, Signal, and Lattice Plot	4/18/75
211	Range/Range Non-Real Time Plot	2/02/81
216	R/AZ Non-Real Time Plot	2/09/81
300	Utility Computations	10/21/80
330	Reformat and Data Check	5/04/76
360	Electronic Corrector Abstract	2/02/76
407	Geodetic Inverse/Direct Computation	9/25/78
500	Predicted Tide Generator	11/10/72
530	Layer Correction for Velocity	5/10/76
561	H/R Geodetic Calibration	12/01/82
602	Elinore - Extended Line Oriented Editor	12/08/82
612	Line Printer List	3/22/78

S. REFERRAL TO REPORTS

Coast Pilot Report, OPR-D103-PE-84

Horizontal Control Report, OPR-D103-PE-84

Respectfully submitted:

Martin P. Conricote, LTJG, NOAA

APPENDICES

- A. ELECTRONIC CONTROL PARAMETERS *
- B. FIELD TIDE NOTE *
- C. GEOGRAPHIC NAMES LIST (FIELD) *
- D. ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS *
- E. ABSTRACT OF CORRECTIONS TO ELECTRONIC POSITION CONTROL *
- F. LIST OF STATIONS
- G. ABSTRACT OF POSITIONS *
- H. BOTTOM SAMPLES *
- I. LANDMARKS FOR CHARTS
- J. APPROVAL SHEET

* Removed from original Descriptive Report - Filed with original survey data.

APPENDIX F
LIST OF STATIONS

001	7	37	00	51712	076	14	25075	250	0017	0000000	THIMBLE SHOAL LIGHTHOUSE, 1919
002	7	36	54	30 144 ¹⁵¹	076	05	51 000 ⁰⁹¹	250	0003	0000000	H-55VA, 1980
003	2	37	07	21951	075	54	24675	250	0052	0000000	CAPE CHARLES NEW LIGHTHOUSE FCC., 1939
004	2	37	13	43 199 ¹⁴⁶	076	02	50 256 ²⁴⁶	250	0007	0000000	FLATS LIGHT OLD PLANTATION LIGHTHOUSE, 1984
013	2	37	11	19428	075	59	54063	139	0000	0000000	CHEAPSIDE USE, 1939
017	2	37	06	04124	075	58	43436	139	0000	0000000	FISHERMAN ISLAND NAVY WATER TANK, 1959
018	2	37	05	51122	075	58	45459	139	0000	0000000	FISHERMAN ISLAND NAVY SHORAN TOWER, 1959
026	7	37	11	19319	075	59	54720	250	0000	0000000	CHEAPSIDE USE 1932 FCC, 1984
027	7	37	05	58 017 ⁰¹⁶	075	58	45 675 ⁶⁰⁷	250	0000	0000000	LATIMER, 1984
048	2	37	13	43 106 ¹¹³	076	02	50 100 ¹¹⁰	250	0003	0000000	PLANTATION, 1984
049	37	06	57875	473	50	49954	139	0416			VIRGINIA INSIDE PASSAGE LT 270, 1904

NOAA FORM 76-40
(8-74)

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

ORIGINATING ACTIVITY

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

Replaces C&GS Form 567.

- TO BE CHARTED
- TO BE REVISED
- TO BE DELETED

REPORTING UNIT
(Field Party, Ship or Office)

STATE

LOCALITY

DATE

NOAA Ship PEIRCE

Virginia

Chesapeake Bay

19 July 84

- HYDROGRAPHIC PARTY
- GEODETIC PARTY
- PHOTO FIELD PARTY
- COMPILATION ACTIVITY
- FINAL REVIEWER
- QUALITY CONTROL & REVIEW GRP.
- COAST PILOT BRANCH

The following objects HAVE HAVE NOT been inspected from seaward to determine their value as landmarks.

(See reverse for responsible personnel)

CHARTING NAME	DESCRIPTION <small>(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)</small>	POSITION				METHOD AND DATE OF LOCATION <small>(See instructions on reverse side)</small>		CHARTS AFFECTED
		LATITUDE		LONGITUDE		OFFICE	FIELD	
		° / ' // "	D.M. Meters	° / ' // "	D.P. Meters			
FL 4sec * 35ft. 4M	(Old Plantation Lighthouse, 1984) Rebuilt (Destroyed 1985)	37°13'	43.138 146	076°02'	50.256 246		F-2-6-L	12224
FL R 2.5sec "270"	(Lt. 270) Improved Position	37°06'	59.895	075°58'	49.950 952		F-2-6-L	12222
	* Old Plantation Flats Light, LL No. 2704							
	* (Old Plantation Flats Light, 1984)							
	** Virginia Inside Passage Light 270, L.L. No. 3599.11 2621.11							
	Lt (Virginia Inside Passage Light 270, 1984)							
	Note in Light List states that the light is removed if endangered by ice.							

(58) 602-7

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	Walter S. Simmons Commanding Officer, NOAA Ship PEIRCE <i>Walt Simmons</i>	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	Atlantic Marine Center, MOA2x1 personnel	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

<p>OFFICE</p> <p>I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75</p> <p>FIELD</p> <p>I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field P - Photogrammetric L - Located Vis - Visually V - Verified 1 - Triangulation 5 - Field identified 2 - Traverse 6 - Theodolite 3 - Intersection 7 - Planetable 4 - Resection 8 - Sextant</p> <p>A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>	<p>FIELD (Cont'd)</p> <p>B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982</p> <p>II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75</p> <p>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75</p> <p>**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p>
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APPENDIX I
LANDMARKS FOR CHART

APPENDIX J
APPROVAL SHEET

APPROVAL SHEET

H-10127

Field work on this survey was conducted under my supervision with frequent personal examination of the field sheet and records. This report and final field sheet have been reviewed and found to represent a complete and adequate survey.

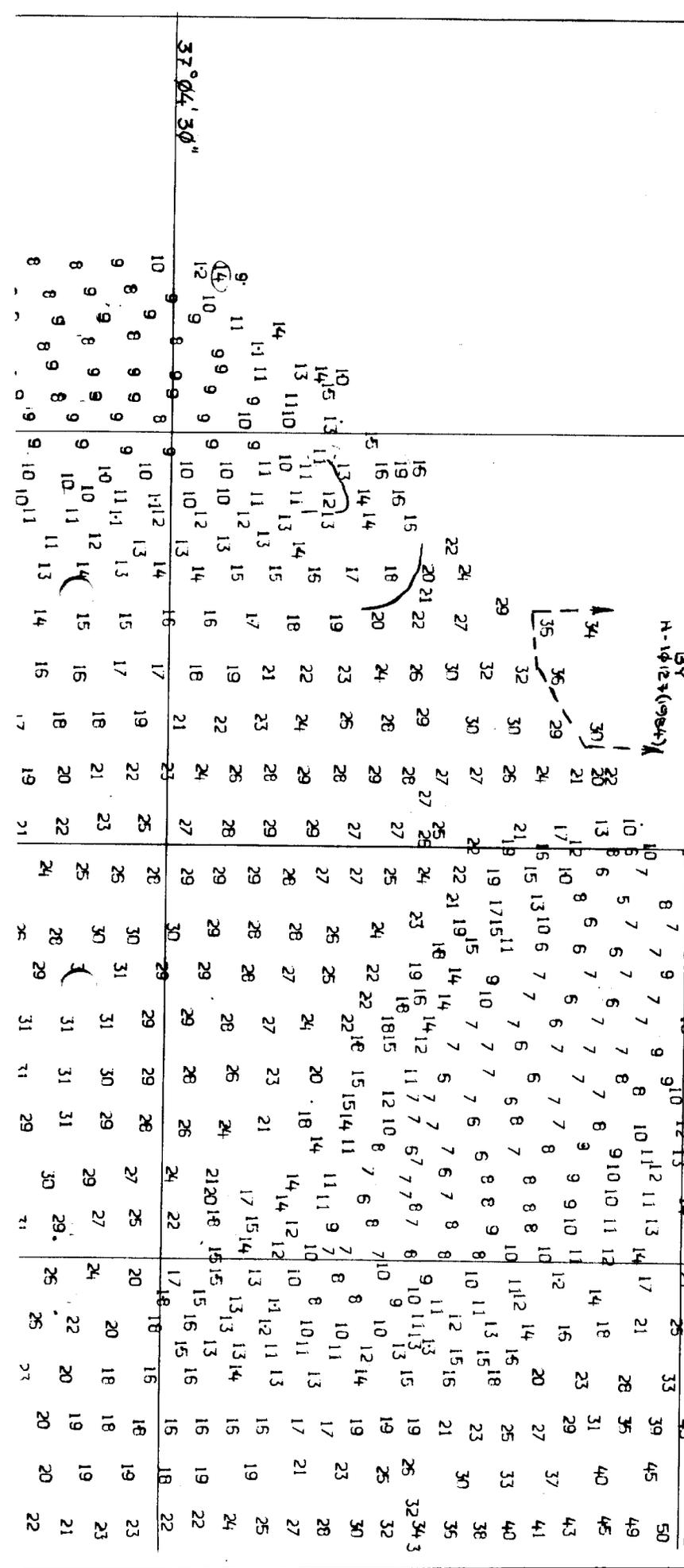
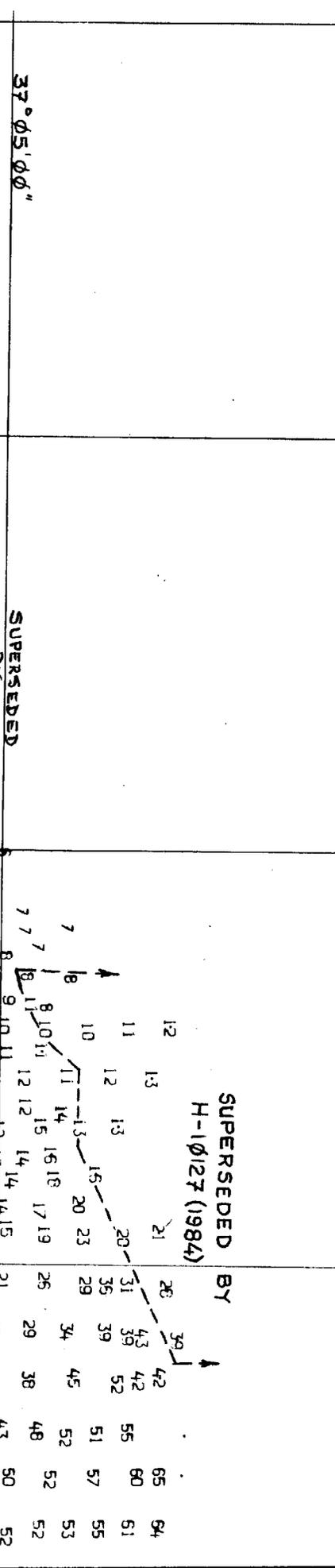
Additional field work is required to resolve the ¹⁵16 foot sounding discussed in section K. This survey should supercede all prior surveys and charted information in the common areas. - See also the Evaluation Report.



Walter S. Simmons
Commander, NOAA
Commanding Officer
NOAA Ship PEIRCE

01' 30" 76° 01' 00" 76° 00' 30" 76° 00' 00"

H - 9693 (1977)
Scale: 1:10,000



HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NO.: H-10127

Number of positions	3489
Number of soundings	20349
Number of control stations	11

	<u>TIME-HOURS</u>	<u>DATE COMPLETED</u>
Preprocessing Examination	45	20 DEC 84
Verification of Field Data	188	24 JUL 85
Quality Control Checks	94	
Evaluation and Analysis	142	18 FEB 86
Final Inspection	12	12 FEB 86
TOTAL TIME	630	
Marine Center Approval		18 FEB 86

Transmittal letter of survey and survey records will be included in the Descriptive Report to identify the records accompanying the survey.

DATE: 9/24/84

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Atlantic

OPR: D103

Hydrographic Sheet: H-10127

Locality: Chesapeake Bay

Time Period: March 15 - June 26, 1984

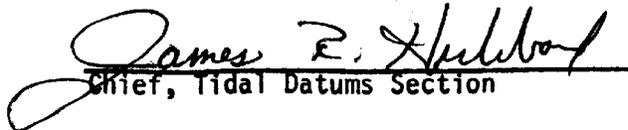
Tide Station Used: 863-2200, Kiptopeke Beach, Virginia

Plane of Reference (Mean Lower Low Water): 3.29 ft.

Height of Mean High Water Above Plane of Reference: 2.8 ft.

Remarks: Recommended Zoning:

1. East of $76^{\circ}02.0'$.
 - a. north of latitude $37^{\circ}05.0'$ zone direct.
 - b. south of latitude $37^{\circ}05.0'$ apply -10 minute time correction and x1.04 range ratio.
2. West of $76^{\circ}02.0'$.
 - a. north of latitude $37^{\circ}05.0'$ apply -10 minute time correction.
 - b. south of latitude $37^{\circ}05.0'$ apply -20 minute time correction.


Chief, Tidal Datums Section

7607

7602

37 10 30

75 59

4

- 10

1

Direct

37 05

37 05

- 10

- 20

X 1.04

2

3

7607

7602

37 02 30

75 57

James F. Schubert
Chief, Tidal Datum Section

GEOGRAPHIC NAMES

Name on Survey	Source of Name											
	A	B	C	D	E	F	G	H	K			
	ON CHART NO.	ON PREVIOUS SURVEY No.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST				
BEACH CHANNEL	X											1
CHESAPEAKE BAY	X											2
FISHERMANS ISLAND	X											3
INNER MIDDLE GROUND	X											4
LATIMER SHOAL	X											5
MIDDLE GROUND (title)	X											6
NINE FOOT SHOAL	X											7
NORTH CHANNEL	X											8
VIRGINIA (title)	X											9
WISE POINT	X											10
												11
												12
												13
												14
												15
												16
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												24
												25

Approved:

Charles B. Hamilton
Chief Geographer - N/CG 2 x 3

NOV 19 1985

ATLANTIC MARINE CENTER
EVALUATION REPORT

SURVEY NO.: H-10127

FIELD NO.: PE-10-1-84

Virginia, Chesapeake Bay, Middle Ground to Latimer Shoal

SURVEYED: 15 March through 26 June 1984

SCALE: 1:10,000

PROJECT NO.: OPR-D103-PE-84

SOUNDINGS: RAYTHEON DSF-6000N
Survey Fathometer

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

Chief of Party.....W. S. Simmons

Surveyed by.....V. D. Ross
.....M. P. Conricote
.....J. H. Maddox
.....V. A. Barnum

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

1. INTRODUCTION

a. No unusual problems were encountered during office processing.

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

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections F., G., and S. of the Descriptive Report.

b. Shoreline for this survey originates with 1980 NOS-CERC Cooperative Shoreline Movement Mapping Program, map 231. This is digital shoreline data and is shown in black on the present survey and is for orientation purposes only. There were several discrepancies in the digital shoreline. These discrepancies were changed on the present survey; however, the digital file still contains these discrepancies.

3. HYDROGRAPHY

a. Soundings at crossings are in excellent agreement and meet the requirements found in sections 4.6.1. and 6.3.4.3. of the HYDROGRAPHIC MANUAL.

b. The standard depth curves could not be drawn in their entirety. The six (6) foot curve could not be drawn in its entirety because the Project Instructions only required the

hydrography to go to the eighteen (18) foot curve. The 36-foot curve was drawn on the present survey to correspond to the charted 36 foot curve. Some dashed and brown curves were drawn to emphasize bottom features.

c. Development of the bottom configuration and determination of least depths is considered adequate except for the following:

Several anomalous depths were found in the survey records. An examination of the depths and consideration of the problems the field unit encountered with the operation of the DSF-6000N fathometer it was concluded that the soundings were strays. The following soundings were rejected:

	Latitude	Longitude	Depth
1)	37°07'19.16"N	76°00'27.56"W	15
2)	37°07'05.22"N	76°01'56.03"W	18
3)	37°06'58.92"N	76°03'05.06"W	17

It would have been prudent for the field to have employed its side scan sonar equipment to ascertain the validity of these three (3) depths.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports are adequate and conform to the requirements of the HYDROGRAPHIC MANUAL with the following exceptions:

a. Daily system check data for the electronic control was not submitted for vessel number (VESNO) 3281 for days 157 and 159 and VESNO 3282 for day 178.

b. Daily system checks were performed "once daily". This does not meet with the requirement of two (2) daily system checks for this type of positioning system. AMC OPORDER 79 recommends two (2) daily system checks.

c. Eight (8) days of hydrography were run with the baseline calibration data and the daily system check data varying by a greater amount than that specified in section M of PMC OPORDER 3-03.08.

d. Numerous soundings with erroneous positional data were submitted. The soundings were subsequently "time and coursed" during office processing. It is the hydrographer's responsibility to ensure that the data submitted is correct and requires a minimum of corrections during office processing.

e. Velocity graphs and tables were redrafted and abstracted during office processing.

f. The data used to determine the velocity correctors was not sufficient to completely compute the information used to construct the velocity graphs and tables. AMC OPORDER 09, dated 15 August 1984, requires TDC or Nansen cast data to 66% of the deepest depths in the survey area. In this case, the deepest survey depth is 95 feet. The deepest TDC cast was 50 feet, and the deepest Nansen cast was approximately 40 feet. These depths do not meet the criteria cited above.

g. The original data for the TDC and Nansen casts was not submitted with the survey data package. Also the printouts of the computations used to determine velocity correctors were not included in the survey data package.

h. The field unit duplicated 246 position numbers, 2001 through 2246. Section 1.4.5.2. of the HYDROGRAPHIC MANUAL outlines the criteria for numbering consecutive position numbers. Duplication of a large group of position numbers should be avoided.

i. The hydrographer did not take twice daily bar checks required by section 1.4.2. of the HYDROGRAPHIC MANUAL. Seventeen (17) out of a possible fifty (50) bar checks were taken; however, the provisional manual for the DSF-6000N fathometer does not require two (2) daily bar checks.

j. The survey data package was not received at the marine center within the six (6) week time allowed between completion of survey data acquisition and submission. This criteria is found in section 6.14. of the Project Instructions and section 1.7.3. of the HYDROGRAPHIC MANUAL. The data package was received ten (10) weeks after the completion of field work on the survey.

k. The overall quality of the sonargrams submitted by the field unit was poor. This poor quality casts doubt on the claimed 400% coverage of the search area for AWOIS item 3097.

l. The hydrographer did not obtain daily confidence checks with the side scan sonar equipment. This type of check provides the user with the necessary information about the system performance on a daily basis. This type of check should be preformed if a suitable target is available.

m. The hydrographer did not submit a negative report on dangers to navigation in section L of the Descriptive Report as required by section 6.13. of the Project Instructions.

n. The hydrographer did not evaluate the fixed aids to navigation and landmarks in the project area as required by sections 4.2.2.1. and 4.2.2.2., nor was the discussion found in

section N of the Descriptive Report adequate. The requirement for the proper discussion of fixed aids and landmarks is found in section 4.2.2.4. of the Project Instructions.

o. The hydrographer did not take bottom samples on the two (2) large shoals developed in the survey area, Latimer Shoal and Nine Foot Shoal, as required by section 8.1. of the Project Instructions and section 4.5.9.2. of the HYDROGRAPHIC MANUAL.

p. The hydrographer located piles in the survey area and neglected to provide an elevation for the piles.

q. Final corrector tape printouts were not generated by the field unit. These printouts provide the personnel processing the survey data with assurance that all the necessary corrections have been done by the field unit.

r. Neither a current report or negative report on currents was submitted by the hydrographer. Section 8.2.2. of the Project Instructions provides the requirements for reporting currents.

s. The field unit did not submit the raw data obtained when performing their baseline calibrations. Additionally, the field unit did not perform two (2) of their baseline calibrations over the minimum distance of 700 meters. This distance is found in Appendices M and S of PMC OORDER 3-03.08 dated 15 June 1983. It does not appear that the overall quality of the survey was effected because these criteria were not met.

t. The hydrographer did not address the major positional discrepancy concerning the hydrography surrounding the Chesapeake Bay Bridge and Tunnel on the present survey. It is important that the hydrographer recognize and alert the personnel processing the survey of a problem of this type. In this case, the hydrographer had the bridge drawn correctly on the final field sheet in brown and never mentioned the positional discrepancy in section L. of the Descriptive Report. See section 7.a.1) of this report for a complete discussion of the discrepancy.

u. The hydrographer failed to recognize the problems that could be encountered using the positioning equipment available for hydrographic operations when operating close to and behind a structure such as the Chesapeake Bay Bridge and Tunnel. It is apparent that this is the reason for the faulty location of the sounding lines on the field sheets. See section 7.a.1) of the this report for additional discussion.

v. The hydrographer did an excellent job of recordkeeping with the side scan sonargrams. The records were well marked with the essential information for complete office processing.

w. The hydrographer did an excellent job of detecting and resolving instrument error with the RAYTHEON DSF-6000N fathometer.

x. Sounding line orientation was excellent and the plotting of the smooth field sheet was very good.

5. JUNCTIONS

H-9693 (1977) to the southeast
H-9880 (1980) to the southeast
H-9904 (1980) to the southeast
H-10116 (1983) to the south

An adequate junction was effected with survey H-10116 (1983) to the south.

A standard junction could not be made with surveys H-9693 (1977), H-9880 (1980), or H-9904 (1980). A partial butt junction was effected with survey H-9693 (1977) and a copy of the area where the butt junction was effected has been inserted in the Descriptive Report of the present survey. Surveys H-9880 (1980) and H-9904 (1980) are archived and any desired adjustments to junctional curves will have to be made at NOS Headquarters in Rockville, Maryland. Any differences in the junctional areas should be reconciled by the chart compiler on the chart.

There are no contemporary surveys to the north, west, or east; however, the charted depths are in general harmony with the present survey depths to the north and west. The area to the east falls in depths of eighteen (18) feet and less alongshore. This area is dynamic and will not junction smoothly with charted depths.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-7750 (1948-50) 1:40,000
H-7791 (1949) 1:10,000

The above prior hydrographic surveys taken together cover the area of the present survey in its entirety.

H-7750 (1948-50) covers the majority of the present survey area. The most significant change in the area common to the present survey is the apparent consolidation of Nine Foot Shoal and Inner Middle Ground. A discussion of Inner Middle Ground is found in the comparison with survey H-7791 (1949) below. Prior survey least depth on Nine Foot Shoal is seven (7) feet. Present survey least depth in the area of Nine Foot Shoal is seven (7) feet. Nine Foot Shoal has apparently moved to the

northeast and merged into the larger shoal of Inner Middle Ground. This merger forms a shoal with a "V" shape with its vertex to the north in Latitude 37°05'08"N, Longitude 76°01'24"W, with a deep to thirty-two (32) feet in the center of the "V" in Latitude 37°04'51"N, Longitude 76°00'18"W. The Chesapeake Bay Bridge and Tunnel provides an impediment to the trends in the previous natural bottom change processes in the area. Nine Foot Shoal and Inner Middle Ground have been dissected by the bridge and tunnel. The general southwesterly migration of these shoals has caused a deepening trend in the area northeast and west of the present shoal. Present survey depths in these areas that were formerly shoal areas are three (3) to nineteen (19) feet deeper than the prior survey depths.

Latimer Shoal has migrated to the southwest approximately 400 meters and has shoaled to an echo sounder least depth of five (5) feet along the highest point on the axis of the shoal.

Beach Channel has deepened two (2) to ten (10) feet and has migrated in a westerly direction.

In the area adjacent to the navigational opening in Trestle C of the Chesapeake Bay Bridge and Tunnel in Latitude 37°05'19"N, Longitude 75°59'18"W a large depression due to scouring is visible with present survey depths ranging from 61 to 100 feet. Prior survey depths in this area are 32 to 40 feet.

A trough with depths of 37 to 41 feet that runs along a line from Latitude 37°04'05"N, Longitude 76°02'30"W to Latitude 37°06'30"N, Longitude 76°04'00"W on the prior survey has migrated to the southwest approximately 700 meters. Present survey depths in the depression, which extends from Latitude 37°05'30"N, Longitude 76°04'00"W to Latitude 37°03'41"N, Longitude 76°02'24"W, are from 37 to 56 feet.

Generally there is no consistent pattern of shoaling and/or deepening in the area common to the present and prior survey except along the northwest edge of the present survey where the bottom has deepened one (1) to three (3) feet. Areas not specifically addressed above on the present survey vary from twenty (20) feet shoaler to thirty (30) feet deeper.

H-7791 (1949) covers the area adjacent to Fishermans Island and the shoal at Inner Middle Ground. There have been extensive changes in the bottom configuration in the area.

Inner Middle Ground has migrated to the southwest approximately 750 meters. An echo sounder least depth on Inner Middle Ground found on the present survey is four (4) feet in Latitude 37°05'13.38"N, Longitude 76°00'50.63"W and Latitude 37°04'59.78"N, Longitude 76°00'30.80"W. The least depth found on the prior survey was two (2) feet in Latitude 37°05'15.6"N, Longitude 76°00'21.2"W. Present survey depths in the former

vicinity of the prior survey least depth are 19-21 feet. Along the axis of the shoal as shown on the prior survey, from Latitude 37°05'03"N, Longitude 76°00'09"W to Latitude 37°06'03"N, Longitude 76°01'24"W, the depths ranged from the above mentioned two (2) feet to six (6) feet. Present survey depths along this axis are thirteen (13) to twenty-eight (28) feet.

Depths in the common area near Fishermans Island show no general trend of shoaling or deepening; however, there has been significant change in the bottom configuration. Present survey depths near the shore are 8 to 13 feet deeper than the prior survey out to the 30 foot curve. Seaward of the 30-foot depth curve the present survey is up 20 feet shoaler in the vicinity of Latitude 37°05'50"N, Longitude 75°59'15"W.

North of Wise Point the bottom has remained relatively stable with a slight deepening trend.

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

7. COMPARISON WITH CHART 12222 (29th Edition, June 11/83)
12224 (17th Edition, Feb. 4/84)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys, junctional survey H-9693 (1977), and miscellaneous sources. The following should be noted:

1) The charted position of the Chesapeake Bay Bridge and Tunnel, Trestle C falls in the area of hydrography run. Sounding lines were run on each side of the trestle. The lines were inconsistent with the charted position of the bridge and tunnel. A telephone call to the Chesapeake Bay Bridge and Tunnel Commission office of Mr. Robert East, (804) 464-3511, provided this office with an accurate position of the High Level Bridge, Latitude 37°05'20"N, Longitude 76°59'17"W. This position for the bridge is in good agreement with the charted position of the bridge. A copy of the drawing submitted to Nautical Chart Branch in Rockville, Maryland was obtained and the state plane coordinates for several points on the structure were converted to geographic positions (GP's). The GP's were plotted and the resulting graphic compared with the present survey lines of hydrography. The charted location and the graphic produced from the GP's of the structure agree. It was concluded that the positioning system failed for these three lines of hydrography because of signal interference from the trestle. As a result of an analysis three (3) lines of hydrography were rejected during office processing. It is recommended that the charted bridge and tunnel be retained as charted. It may be desirable to locate the Chesapeake Bay

Bridge and Tunnel by either geodetic or photogrammetric methods at a later date in order to insure that the chart compiler is provided with the best possible position for charting.

2) AWOIS item 3093, a charted submerged pile, in Latitude 37°05'10"N, Longitude 76°00'00"W, was searched for by the hydrographer with negative results. The area to be searched was not covered because the trestle C precluded a search south of the trestle. The original pile was first charted on a 1964 edition of chart 12222 from an unknown source. It is recommended that the submerged pile be retained in the charted position with the notation ED. The above conclusion is based on the quality of the sonargrams, and the poor acoustic reflective properties of wood.

3) AWOIS item 3097, a charted dangerous sunken wreck, PA, in Latitude 37°08'18"N, Longitude 76°00'42"W, originates with Local Notice to Mariners 6 of 1981 and was searched for by the hydrographer with negative results. The entire search area was covered by the hydrographer using side scan sonar and two (2) launch wire drag techniques. A telephone conversation with Mr. Mark Harrell of the U. S. Army Corps of Engineers, Norfolk District, Permits Section, (804) 441-3656, concluded that the wreck was salvaged and does not exist at the above location. With the above information it is unlikely that any wreck exists. It is recommended that the wreck be removed from all effected charts.

4) A charted, Piles rep, in Latitude 37°06'06"N, Longitude 75°58'54"W, was not investigated by the hydrographer. Two (2) lines of hydrography bracket the area with no mention of the piles on the fathogram or the raw data printout. This note should be retained as charted.

5) Several fish traps exist on the west side of Fishermans Island. These traps are not charted and do not fall inside a designated fish trap area. It is recommended that these fish traps be charted.

6) A charted pier, in Latitude 37°05'48"N, Longitude 75°58'57"W, was verified by the hydrographer; however, the pier is now in ruin. It is recommended that the pier ruin be charted as shown on the present survey.

The present survey except as noted above is adequate to supersede the charted hydrography in the common area.

b. Controlling Depths

The western end of the channel running into the Virginia Inside Passage is in the survey area; it appears that the present survey depths and the reported depths are not in conflict. The hydrographer did not run the center line of the channel, apparently because most of the channel falls outside

of the limit of hydrography found in paragraph 2. of Change No. 1 to the Project Instructions, dated 5 August 1983.

c. Aids to Navigation

The hydrographer located one (1) fixed aid and four (4) floating aids to navigation in the survey area. The aids appear to be adequate to serve their intended purpose.

8. COMPLIANCE WITH INSTRUCTIONS

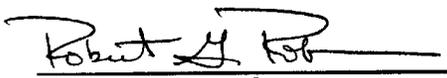
This survey complies with the Project Instructions except as noted in other sections of this report.

9. ADDITIONAL FIELD WORK

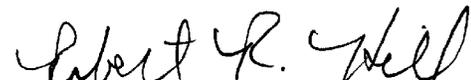
This is an adequate basic survey; no additional field work is recommended. Consideration should be given to surveying the alongshore area north of Fishermans Island and the area along the Chesapeake Bay Bridge and Tunnel, Trestle C, if an adequate system for position control can be set up.



Douglas V. Mason
Cartographic Technician
Verification of Field Data



Robert G. Roberson
Supervisory Cartographer
Evaluation and Analysis



Robert R. Hill
Senior Cartographic Technician
Verification Check

INSPECTION REPORT
H-10127

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 complies with National Ocean Service requirements except as noted in the Evaluation Report. The survey records comply with NOS requirements except where noted in the Evaluation Report.

Inspected

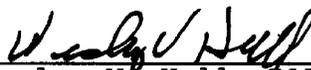


R. D. Sanocki
Chief, Hydrographic Surveys
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David B. MacFarland, Jr., CDR, NOAA
Chief, Hydrographic Surveys Branch

Approved: 18 February 1986



Wesley V. Hull, RADM, NOAA
Director, Atlantic Marine Center

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

Hydrographic Index No. 70 M

