

9904

Diagram# = 122-4

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-10-4-80

Office No. H-9904

LOCALITY

State Virginia

General Locality Chesapeake Bay Entrance

Locality Middle Ground to Nine Foot

Shoal

1980

CHIEF OF PARTY
CDR D.E. Nortrup & CDR C.D. North

LIBRARY & ARCHIVES

DATE April 20, 1982

9904

AREA 2

CHARTS

12221 ✓ 80,000

12222 ✓ 40,000

12220 ✓ 200,000

12254 ✓ 20,000

12200 ✓ 419,706

HYDROGRAPHIC TITLE SHEET

H-9904

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-10-4-80

State VIRGINIA

General locality CHESAPEAKE BAY ENTRANCE

Locality ~~NAUTILUS SHOAL~~ MIDDLE GROUND TO NINE FOOT SHOAL

Scale 1:10,000 Date of survey 28 August 1980 to 15 Oct. 1980

Instructions dated 20 February 1980 Project No. OPR-D103-MI/PE-80

Vessel NOAA Ship PEIRCE S-328

Chief of party CDR C. D. North, Sept. 1980, CDR Donald E. Nortrup

Surveyed by T.W. Ruzsala, E.J. Fields, W.T. Dewhurst, L.F. Simoneaux, J.W. Bailey, J.T. Rodstein

Soundings taken by echo sounder, ~~rock bottom~~ Ross Model 5000

Graphic record scaled by EJF, WTD, LFS, JWB, WRM, RTH, JTR,

Graphic record checked by EJF, JWB, RTH Verification Branch (AMC)

Protracted by _____ Automated plot by Lyneics 1201 Plotter (AMC)

Verification by Verification Branch (AMC)

Soundings in ~~NAUTICAL~~ STATUTE feet at MLW ~~LOW~~

REMARKS: All times recorded in this survey are Greenwich Mean Time.

Changes and notes made in red ink by verifier during verification.

STANDARDS CK'D 8-3-83
C.loy

Descriptive Report
To Accompany
Hydrographic Survey H-9904
Field Number PE-10-4-80

A. PROJECT

This survey is part of OPR-D103-MI/PE-80, Atlantic Seaboard Area Project, DELMARVANC Phase. This portion of the project was conducted in compliance with the Project Instructions dated 20 February 1980. The following amendments and changes were issued:

- Change #1 ----- Supplement to Project Instructions
on 27 March 1980
- Change #2 ----- Supplement to Project Instructions
on date 8 May 1980
- Change #3 ----- Amendment to Project Instructions
on date 23 June 1980
- Change #4 ----- Supplement to Project Instructions
on date 12 August 1980
- Change #5 ----- Supplement to Project Instructions
on date 15 August 1980
- Change #6 ----- Supplement to Project Instructions
on date 2 September 1980

B. AREA SURVEYED

This survey was conducted at the Chesapeake Bay Entrance in the vicinity of Nautilus Shoals. The northern limit extends northeast along the Chesapeake Bay Bridge Tunnel for one nautical mile. The survey extended from the ~~eastern~~ ^{western} most limit of $76^{\circ}01'51''$ ~~west~~ ^{east} to the ~~western~~ ^{eastern} most limit of $75^{\circ}59'20''$. The survey borders the $37^{\circ}01'30''$ N parallel to the south.

B. AREA SURVEYED (Cont.'d)

Due to junctioning discrepancies on the northern portion of the survey the limits in this area had to be extended. The limits were extended to include the twelve foot curve. It was at this point that junctioning agreements were apparent. ~~See Verification Report, section 5~~

This survey was performed between the dates 28 August 1980 and 15 October 1980. The entire survey took 17 days to complete.

Investigation of three presurvey items were conducted during this time frame. However, all three items were in fact, outside of these particular survey limits. Presurvey items and information are as follows:

| <u>Item</u> | <u>Date</u> | <u>J.D.</u> | <u>Latitude</u> | <u>Longitude</u> | <u>VesNo.</u> |
|---|--------------|-------------|-----------------|------------------|---------------|
| #69 <i>Car in</i> <i>78 feet of water</i> | 4 Oct. '80 | 278 | 37/05/17 N | 75/59/23 W | 2837 |
| #70 <i>2nd cabin</i> <i>crusier</i> <i>LNM 44192</i> | 15 Oct. '80 | 289 | 37/05/18 N | 75/58/42 W | 2837 |
| #72 <i>wreck</i> <i>Anglo-African</i> <i>sunk in 1919,</i> <i>H-6438 W.D.</i> <i>H-9693</i> | 25 Sept. '80 | 269 | 37/03/24.6 N | 75/54/00 W | 2837 |
| | 2 Oct. '80 | 276 | | | 2837 |
| | 5 Oct. '80 | 279 | | | 2837 |
| | 7 Oct. '80 | 281 | | | 2837/ 2839 |

C. SOUNDING VESSEL

This survey was performed by the ship's type one aluminum Launch 1017 (VesNo 2837). The launch was fully equipped with hydroplot system.

D. SOUNDING EQUIPMENT

The entire survey was conducted by Launch 1017 (VesNo. 2837), utilizing the Ross Model 5000 fathometer serial number 1078.

The fathometer was maintained at a zero initial with complete phase checks being taken at the end of each line and partial checks taken

D. SOUNDING EQUIPMENT (Cont'd)

while running on line. Corrections to the soundings were computed and calculated for the following factors.

The corrections to the velocity of sound were calculated by a comparison of TDC cast, and direct comparisons. A Nansen Cast was also performed to confirm the accuracy of the previous data.

TDC cast #12 was taken to a depth of 60 feet at position 37°02'12" N, 76°03'42" W. The TDC casts were performed by a Martek Mark VII, Model #167-10, water quality instrument with Martek Sensor Model 167-20. All calibrations to the instrument were computed at the factory prior to the ships usage.

After careful comparisons with respect to the TDC cast, Nansen cast and direct comparisons, it was concluded that TDC #12 best represented the velocity correction of sound for this survey period.

Due to inclement weather conditions few bar checks were taken. The shortness of the actual running time to complete the survey also had an effect upon the low number of bar checks.

Settlement and Squat Corrections were determined at Little Creek Naval Base Harbour on 18 July 1980. Speed changes, during the survey, were noted in all Sounding Volumes, and Settlement and Squat Correctors were tabulated on the Sounding Correction Abstract. These abstracts and TC/TI Tape Listing are appended to this report. Settlement and squat test data and calculations are included in Supplement Data Reports.

The following is a list of stations observed for Velocity Corrections:

| <u>Type of Station</u> | <u>VesNo.</u> | <u>J.D.</u> | <u>Latitude(N)</u> | <u>Longitude(W)</u> |
|------------------------|---------------|-------------|--------------------|---------------------|
| Bar Check | 2837 | 241 | 36°56'40" | 76°01'30" |
| " | 2837 | 247 | 37°03'06" | 76°04'42" |
| " | 2837 | 249 | 36°57'00" | 76°02'00" |
| " | 2837 | 250 | 36°56'06" | 76°02'00" |
| " | 2837 | 252 | 37°02'42" | 76°04'00" |

D. SOUNDING EQUIPMENT (Cont'd)

| <u>Type of Station</u> | <u>VesNo.</u> | <u>J.D.</u> | <u>Latitude(N)</u> | <u>Longitude(W)</u> |
|------------------------|---------------|-------------|--------------------|---------------------|
| TDC Cast | 2830 | 253 | 37°02'12" | 76°03'42" |
| Bar Check | 2837 | 265 | 36°57'00" | 75°58'30" |
| " | 2837 | 276 | 36°58'30" | 76°07'00" |

E. HYDROGRAPHIC SHEETS

The field sheet for this survey was constructed and drawn up on board the NOAA Ship PEIRCE. The sheet was prepared by using digital PDP 8/E computer and complot system. Program RK 201, Grid, Signal and Lattice Plot was used for the GP and XY grid initialization.

There were two sheets drawn up at a scale of 1:10,000 with a Skew of 90, 16, 25; the first of which was used for the plotting of the main-scheme hydrography; the second is an overlay sheet used in conjunction with Developments, Crosslines, and Bottom Samples.

Two additional larger scale sheets were also drawn up on board the ship in a similar manner. Both sheets were drawn up at a 1:2500 scale. The first sheet was constructed for the investigation of presurvey review item #72, Skew 90, 16, 21. The second sheet with a Skew of 90, 21, 32, was used for presurvey review item #69. The purpose for the larger scale sheets was for the delimitation and investigation of these items at a closer line spacing. 1:2500 blow-up sheets are appended.

NOT SENT
TO
ROCKVILLE
035Z

The smooth sheet will be drawn up by the Atlantic Marine Center. All appropriate data and records will be forwarded to AMC for final verification and smooth plot.

F. CONTROL STATIONS

This survey required the use of seven different control stations. Three of the seven stations were occupied by electronic control stations. One of which, station 019 (2-75 Raydist) was also used several times as a visual calibration object. The stations are listed as follows:

F. CONTROL STATIONS (Cont'd)

| <u>Station Number</u> | <u>Name</u> | <u>Reference</u> |
|-----------------------|------------------------------|-----------------------------|
| 001 | FEN 1960, Fisherman's Island | AMC (Electronic) |
| 003 | Cape Henry Lighthouse 1887 | NGS (Visual) |
| 006 | H-51-VA-80 | AMC (Visual) |
| 007 | H-52-VA-80 | AMC (Visual) |
| 013 | Cape Henry Lighthouse (Old) | NGS (Visual) |
| 019 | 2-75 Raydist | AMC (Visual/ Electronic) |
| 025 | H-56-VA Fort Monroe | AMC (Electronic) |

NOT ON
SMOOTH
SHEET

All stations listed meet the requirements for third order class I accuracy or better. A complete list of all signals is included in Section "F" of the Appendix. ✓

G. HYDROGRAPHIC POSITION CONTROL

Throughout this survey the Argo, (Automatic Ranging Grid Overlay), system was in operation in the Range/Range mode. The Argo system was operating at a frequency of 1677.5 Khz. While on line three stations were operational, two of which were fixed shore stations and the third the mobile station on Launch 1017, (VesNo. 2837). The station equipment and the serial numbers of each are as follows: ✓

| <u>Fixed Stations</u> | <u>Power Supply</u> | <u>Serial Numbers</u> | |
|-----------------------|---------------------|-----------------------|------------|
| | | <u>RPU</u> | <u>ALU</u> |
| 025 | V0478101 | R047855 | A047859 |
| 019 | V0379119 | R047844 | A047847 |
| 001 | V0379110 | R0379117 | A0379120 |

G. HYDROGRAPHIC POSITION CONTROL (Cont'd)

| <u>Mobile Stations</u> | <u>VesNo.</u> | <u>Serial No.</u> | <u>J.D.</u> |
|----------------------------|---------------|-------------------|-------------|
| RPU(Range Processing Unit) | 2837 | R0379115 | 241-281 |
| CDU(Control Display Unit) | 2837 | C047825 | 241-249 |
| | 2837 | C047823 | 249-281 |
| ALU (Antenna Loading Unit) | 2837 | A0379109 | 241-281 |

Throughout the survey operations the launch was running with a smoothing code of 02 and in time slots 02, 06, 00, 00. Once the system was brought on line the control and positioning were accurate. Numerous and varied problems were experienced throughout the survey period. Due to the newness of the entire system many of these problems could not be quickly remedied. A frequent problem with the system was the detuning of the antenna. This detuning occurred because of heavy seas and spray on the antenna. As the spray and seas increased, hence wetting the antenna the tune decreased substantially. The detuning and signal loss were readily apparent on the strip chart recorder in the form of edits. When these edits were detected lane checks and or recalibrations were instituted to verify the presence of lane losses or gains.

A minimum of two calibrations were taken daily: One prior to the running of hydrography to set lanes into the system; the second occurred at the finish of the day to confirm the accuracy of the partial correctors. These calibrations were performed by 3 point sextant fixes with a check fix. Program RK 561 was used for calibrations. Correctors and inverse distances were monitored with respect to the Hydrographic Manual. A copy of the corrector abstract is appended.

H. SHORELINE

There was no shoreline within the survey limits. Although the northern most section of the survey is bordered by the Chesapeake Bay Bridge Tunnel for approximately one nautical mile. *There are no contemporary shoreline maps delineating the Chesapeake Bay Bridge Tunnel; therefore, the bridge tunnel was not shown on the survey.*

I. CROSSLINES

Throughout the survey a total of (twelve decimal four) 12.4 nautical ✓
miles of crosslines were run. This constitutes 7.7 percent of the
total mainscheme hydrography. After careful comparison with crossline
overlay and mainscheme sheets the agreement was most adequate. The
variations and discrepancies were all noticed to be within a two foot
range. (These two foot disagreements may be corrected when the actual
tides are applied and the final Smooth Sheet is drawn up). All
crosslines were observed and run with the same vessel and vessel
equipment as were the mainscheme lines (VesNo. 2837, Launch 1017).
See Verification Report (section 3.a.)

J. JUNCTIONS *See Verification Report, section 5.*

This survey junctions with the following surveys:

| <u>Survey Registry No.</u> | <u>Scale</u> | <u>Date</u> | <u>Position</u> |
|----------------------------|--------------|-------------|-----------------|
| H-9693 | 1:10,000 | 1977 | East |
| H-9901 | 1:10,000 | 1980 | South |
| H-9880 | 1:10,000 | 1980 | West |

The limits of this survey had to be extended to make junctioning ✓
possible with H-9693. The survey limits were extended to the twelve
foot curve. The agreements were within two feet at the twelve foot
curve. This area is located in a continuously changing shoal area.
Frequent sand waves and bottom shifts are common.

Once outside of the twelve foot curve agreement and junctioning is good. ✓

Junctioning with respect to H-9901 and H-9880 were within a two foot ✓
range.

With the exception of the one area, which was extended, the junction ✓
agreements were within a two foot range. It is recommended that this
survey supercede the prior surveys for this area.

K. COMPARISON WITH PRIOR SURVEYS

See Verification Report, section 6.

The following presurvey review items were investigated during the survey period. All of the presurvey items were located on survey sheet H-9693 and are not located on this particular survey H-9904. This survey for which the report is being written and submitted is the extension of survey H-9693, hence the need for the presurvey item investigations and reports.

The presurvey items were obtained from Pre-Survey Review dated 21 April 1980. The items are listed with the pertinent information as follows:

Pre-Survey Review Item #69 (Submerged Obstruction PA).

This item has been described as a vehicle in seventy eight feet of water at an approximate position of 37°05'17" N latitude, 75°59'23" W longitude.

Due to extensive shoaling and scouring the object was impossible to locate. The scours and sand waves ranged from five feet to as much as fifty-one feet. Due to the extensive bottom irregularities, it was concluded that diving and or a wire drag operations would prove futile. It has been noted in this and other surveys of this area of the continuous presence of large shoaling sand waves along the Chesapeake Bay Bridge Tunnel. This is primarily due to rapid currents, changeable sandy bottom, and the presence of the bridge tunnel itself.

A least depth of 26 feet was recorded via fathogram search. It is recommended that this item be deleted from future charts. *See Verification Report, section 7. a. 1) DO NOT CONTACT.*

Pre-Survey Item #72 (Dangerous Sunken Wreck)

Presurvey item number seventy two is described as being a sunken wreck with a reported depth of seven feet, at position of 37°03'23" north latitude, 75°53'58" west longitude. *SEE Quality Control Report*

This presurvey item was investigated very thoroughly via fathogram search, wire drag, and diver investigations. The fathogram search extended in both north-south and east-west directions with a ten meter spacing for approximately one half mile in either direction. The wire drag operations were conducted by launches 1017 and 1009. The wire drag dimensions are as follows:

| | | |
|----------------|-------|------------------------|
| Length | ----- | 500 feet |
| Sections | ----- | 5 @ 100 foot/section |
| Floats | ----- | 5 @ 100 foot intervals |
| Upright Height | ----- | 20 foot |

K. COMPARISON WITH PRIOR SURVEYS (Cont'd)

Detached positions were taken at the apex of the hang and also at each individual marked buoy for accurate location of the wreck. ✓

Diving investigation was conducted the same day as was the wire drag operations, J.D. 281. Due to the lack of visibility actual dimensions of the wreck were difficult to obtain. ✓

The least depth was obtained by the divers with a leadline, depth guage, and fathogram analog comparisons. The least depth in the area was concluded to be $20\frac{1}{6}$ feet in surrounding 27-30 foot depths. ✓

It is recommended that this presurvey item be charted as before and that it be assigned for conventional wire drag. Divers report found in Appendix L. *concur Do Not Concur - see Quality Control Report.*

Pre-Survey Item #70 (Dangerous Sunken Wreck)

Presurvey item number seventy is described as being a twenty four foot Cabin Cruiser sunk in four feet of water at a position of 37°05'18" north latitude, 75°58'42" west longitude. ✓

A portion of the wreck is thought to have been located and verified via field investigation. The cabin section was located at 37°05'19" north latitude, 75°58'24" west longitude via three point sextant fixes. This section of the wreck is blue in color, 14 feet long, 9 feet wide, and almost totally submerged in sand. The hull section of the wreck was not located or verified. Digging to a depth of three feet around the cabin section of the wreck proved that the hull section was not attached. It is believed that the cabin section of the wreck broke loose from the hull and drifted to shore. Due to the shallowness of the wreck, launch investigation was not conducted. ✓

It is recommended that this presurvey item remain as previously charted. ✓ *concur*

*Note: Picture of Cabin section is attached.

Comparisons were made with the following prior survey. ✓

| <u>Survey Registry No.</u> | <u>Scale</u> | <u>Date</u> |
|-----------------------------|---------------------------------|--|
| H-7750 H-9693 | 1:40,000 1:10,000 | 1948-1950 1977 <i>Functional</i> |

Comparison with survey H-7750 showed a general agreement within a three foot margin. The area to the northwest section of the survey



PSR ITEM # 90

K. COMPARISON WITH PRIOR SURVEYS (Cont'd)

indicated substantial disagreement. Differences up to and as much as sixteen feet were noted. These discrepancies are primarily due to the constant changing sand bottom. This area is known for its alterations and shifting of shoal areas.

L. COMPARISON WITH THE CHART See *Verification Report, section 7.*

This survey is being compared with Chart 12222, 24th Edition, March 8, 1980 at a scale of 1:40,000. After careful comparisons three differences were noted. These three discrepancies are to the shoal areas at the eighteen foot curve. These suggested differences are again due to the bottom characteristics and apparent movement of them.

The nine foot shoal to the north, along the Chesapeake Bay Bridge Tunnel has shifted to the south. Survey limits had to be extended as previously stated in Section B, in this area to ^{obtain proper} ~~junctioning~~ _{attempt}.

The second shift is to the un-named shoals to the southwest ^{east} of the survey area. This shoal in the vicinity of ^{37° 00' 20" north} ~~latitude~~ _{37° 00' 20" north}, 75° 59' 30' west longitude has shifted to the ^{south} ~~north~~.

The final change occurs with the Middle Ground Shoal. This shoal has shifted to the south-southwest. See sketch for clarity.

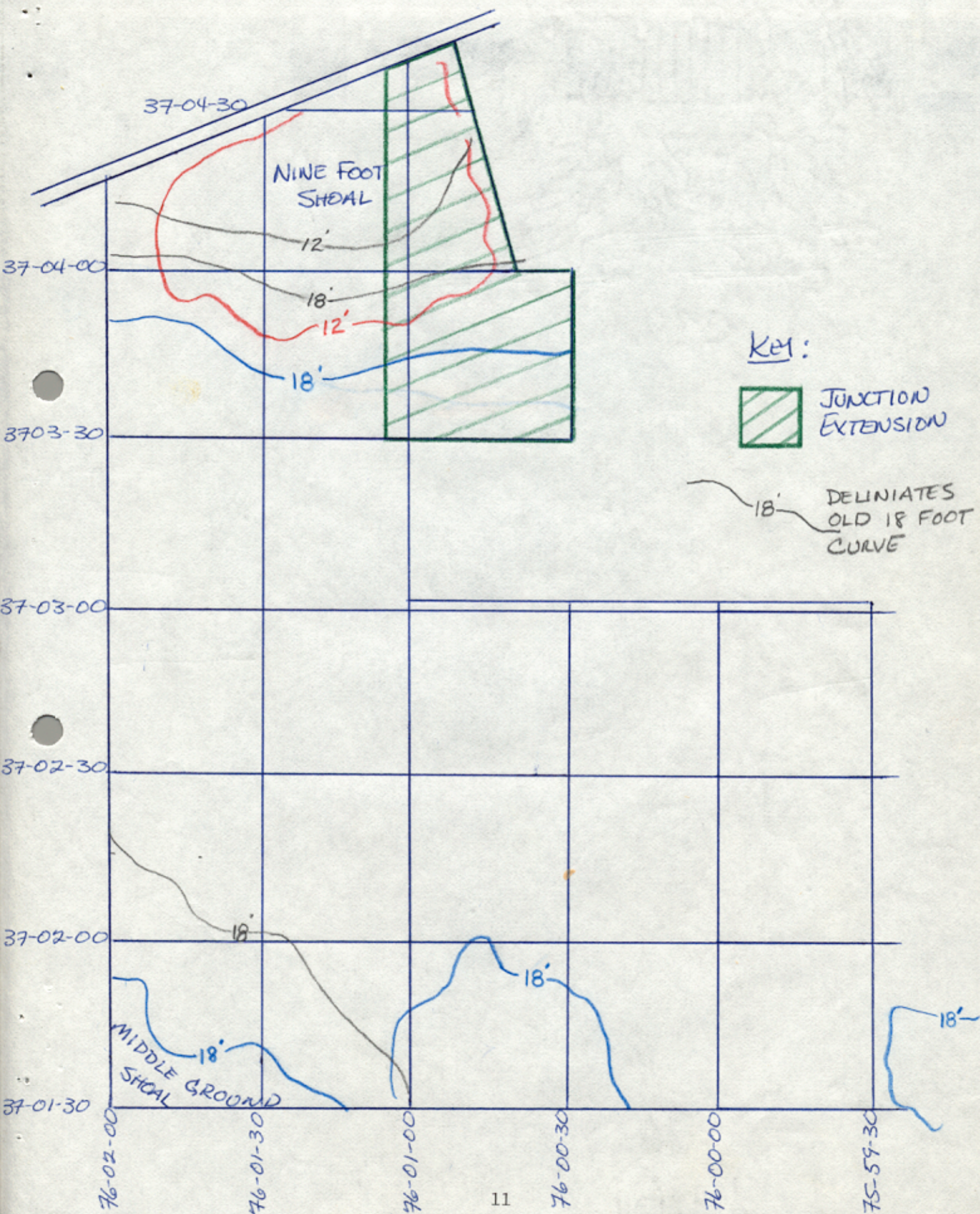
The remaining items, shoals and PSR items, unless previously stated in Section "K" should be charted as indicated by this survey.

Five developments were run in this survey to delineate depth curves and investigate shoal and deep soundings.

The developments are as follows: *Least depths are uncorrected sdgs.*

| <u>Development</u> | <u>Position No.</u> | <u>J.D.</u> | <u>VesNo.</u> | <u>Remarks</u> |
|--------------------|---------------------|-------------|---------------|---|
| A | 930-962 | 252 | 2837 | Investigation of a 20 ¹⁹ foot sounding. Least depth obtained, 19 foot. Recommend charted depth be superseded. |
| | 1207-1218 | 265 | | |
| B | 963-977 | 252 | 2837 | Investigation of ²⁰ 25 foot sounding, least ^{no such} charted _{depth} depth obtained, 19 foot. Recommend charted depths be superseded. <i>concur</i> |
| | 1005-1015 | 253 | 2837 | |
| | 1219-1230 | 265 | 2837 | |

1. COMPARISON WITH THE CHART.



L. COMPARISON WITH THE CHART (Cont'd)

| <u>Development</u> | <u>Position No.</u> | <u>J.D.</u> | <u>VesNo.</u> | <u>R e m a r k s</u> |
|--------------------|---------------------|-------------|---------------|---|
| C | 1016-1036 | 253 | 2837 | Investigation of 18 foot shoal sounding from survey H-9693 least depth obtained, 18'. Recommend charted depth be superseded. <i>concur</i> |
| | 1195-1206 | 262 | 2837 | |
| D | 1037-1057 | 253 | 2837 | Investigation of 14 foot shoal sounding from survey H-9693, least depth obtained, 16 foot. Recommend charted depth be superseded. <i>concur</i> |
| | 1183-1194 | 262 | 2837 | |
| E | 1058-1078 | 253 | 2837 | Investigation of 14 foot shoal sounding from survey H-9693, least depth obtained, 16 foot. Recommend charted depth be superseded. <i>concur</i> |
| | 1167-1182 | 253 | 2837 | |

M. ADEQUACY OF SURVEY *Also see Verification Report, section 9.*

This survey is complete and adequate to supersede the presently charted soundings and prior surveys for this area. *concur*

N. AIDS TO NAVIGATION

There are no fixed or floating aids to navigation in this survey area. The survey borders the Chesapeake Bay Bridge Tunnel to the north with a vertical clearance of twenty one feet and a horizontal clearance of seventy feet. These clearances were obtained from Chart 12222, 24th Edition, 8 March 1980. *concur*

O. STATISTICS

| | | |
|-------------------------------|-------|-------|
| Positions | ----- | 1559 |
| Nautical Miles | ----- | 149.2 |
| Square Miles (nautical miles) | ----- | 4.0 |
| Crosslines (nautical miles) | ----- | 12.4 |
| Bottom Samples | ----- | 22 |
| Direct Comparisons | ----- | 10 |
| TDC Cast | ----- | 1 |
| Nansen Cast | ----- | 0 |

P. MISCELLANEOUS

Twenty two bottom samples were taken in compliance with the Hydrographic Manual. A copy of the Oceanographic Log Sheet-M is included within Appendix H.

Q. RECOMMENDATIONS

It is recommended that pre-survey and chart comparison changes be instituted as previously stated. *See Quality Control comments*

R. AUTOMATED DATA PROCESSING

| <u>Program No.</u> | <u>Program Name</u> | <u>Version Date</u> |
|--------------------|---------------------------------------|---------------------|
| RK 112 | Range/Range Hyperbolic Real Time Plot | 6/15/80 |
| RK 201 | Grid, Signal and Lattice Plot | 4/18/75 |
| RK 212 | Range/Range Sounding Plot | 1/15/76 |

R. AUTOMATED DATA PROCESSING (Cont'd)

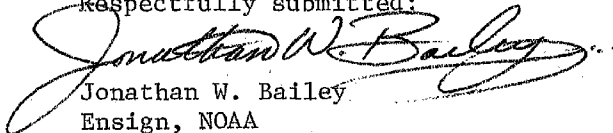
| <u>Program No.</u> | <u>Program Name</u> | <u>Version Date</u> |
|--------------------|---|---------------------|
| RK 300 | Utility Computations | 2/05/76 |
| RK 330 | Data Reformat and Check | 5/04/76 |
| RK 360 | Electronic Corrector Abstract | 2/02/76 |
| AM 500 | Predicted Tide Generator | 11/10/72 |
| RK 530 | Velocity Correction Computations | 5/10/76 |
| RK 561 | Hyperbolic and Range/Range Geodetic Calibrations | 2/19/75 |
| AM 602 | Extended Line Oriented Editor | 5/20/75 |
| AM 606 | Paper Tape Duplicator | 8/22/74 |

S. REFERENCE TO REPORTS

This ship's personnel installed one tide gage during this survey (see Field Tide Note, appended). This report, levelling records and monthly tide records have been submitted to the Tides and Water Levels Branch, Rockville, Maryland. Additionally, an Electronic Control and Velocity Correction Report will be submitted at the end of the field season.

See Verification Report, section 4.

Respectfully submitted:


Jonathan W. Bailey
Ensign, NOAA

DIVER REPORT

DIVER REPORT: OPR-D103-PE-80/DV5

DIVE DATE: 5 & 7 October 1980

I. AREA OF INVESTIGATION

- A. Location - East of Nautilus Shoal, 4 nm approximately due south of Cape Charles Light House.
- B. Position - Latitude: 37°03'23" N
Longitude: 75°53'58" W
- C. Sheet - PE-10-4-80

II. PURPOSE

To locate and investigate PSR Item #72, given as the SS Anglo-African, a 4, 186 GT vessel sunk in 1909. A least depth of ~~11~~¹⁴ feet was determined in 1939 by wire drag (H-6438 WD).

III. SURVEY PROCEDURE

A. On 5 October the wreck was relocated by Argo and a general development of the site made to determine the area of least depth. A weighted buoy was deployed atop this site and divers descended to the wreck. Depths were recorded along the bottom and entire topside. Visual examination was made of the wreck.

B. On 7 October the area of least depth was again determined and a marker deployed. A chain drag was then run from west to east, centered on this marker. The drag was 440 feet in length (4 sections at 110 feet each) and set at 21 feet. Upon hanging the wreck, the drag was brought around to a single point east of the wreck. The chain was held in place under a constant strain by one launch, while the second launch conducted fathometer soundings along the inside and outside of the drag, around the intermediate buoys and diagonally crisscrossing inside the bight. This was done to determine the approximate extent of wreckage within the drag bight.

C. Divers proceeded down the intermediate buoy No. 1 and northward for about 10 feet along the bottom chain at which point contact was made with the wreck. The procedure was to examine the sides and around the top, swimming to the opposite side over 10 feet then back over to the original side. This method was repeated until the entire

DIVER REPORT (Cont'd)

topside of the wreck was covered. Divers then proceeded to the first point of contact, continue along the ground chain to intermediate buoy No. 2 and repeated the process. This second over the top survey was redundant to the latter part of the first. The wreck extended for about 35 feet from intermediate Buoy 2 towards Buoy 3. At this point there was no wreck or discernible wreckage.

D. Depths were recorded along all topside surfaces. Calibrated gauge least depths were compared with a lead line sounding.

IV. DIVE DATA

| | <u>5 October 1980</u> | <u>7 October 1980</u> |
|------------------|------------------------|-------------------------|
| Divers ----- | T. Ruzsala/J. Rodstein | T. Ruzsala/L. Simoneaux |
| Time ----- | 1136-1214 = 38 min. | 1438-1524 = 46 min. |
| Depth ----- | 32 ft. maximum | 28 feet maximum |
| Current ----- | Ebb @ 0.5 Kts. | Ebb @ 0.5 Kts. |
| Visibility ----- | 0 - 1 foot | 0 - 1 ft. |

V. RESULTS

A. Wreck is orientated in a NE-SW direction with greatest concentration in SW area.

B. The wreck is approximately 145 feet in length and 20 wide. Height from scoured bottom to top is about 11 feet.

C. The least depth obtained was 19 feet on 7 October 1980 at 1445 (20 + 4) - not corrected for tides.

D. No part of this wreck was found to be less than 19 feet.

E. The wreck is of steel construction, all of which is heavily encrusted with marine growth.

DIVER REPORT (Cont'd)

F. This section appears to be the bow end of the vessel.

G. Complete ascertainment of the area was not possible due to the currents and extremely limited visibility.

VI. RECOMMENDATIONS

A. The existence of previously recorded least depths have not been verified or accounted for, however, such depths have not been disproven either.

B. Recommend item remains charted as is and be considered for conventional wire drag. *Least depth and location plotted on page size sheet and inserted in this report.*
Do Not Concur - see Quality Control Report.

75° 54' 30"

75° 54' 00"

37° 04' 00"

37° 04' 00"

37° 03' 30"

37° 03' 30"

WRECK CLEARED BY LIFT FROM H-6438(1930) W.D.

~~WRECK~~ "ANGLO-AFRICAN"

See Quality Control Report

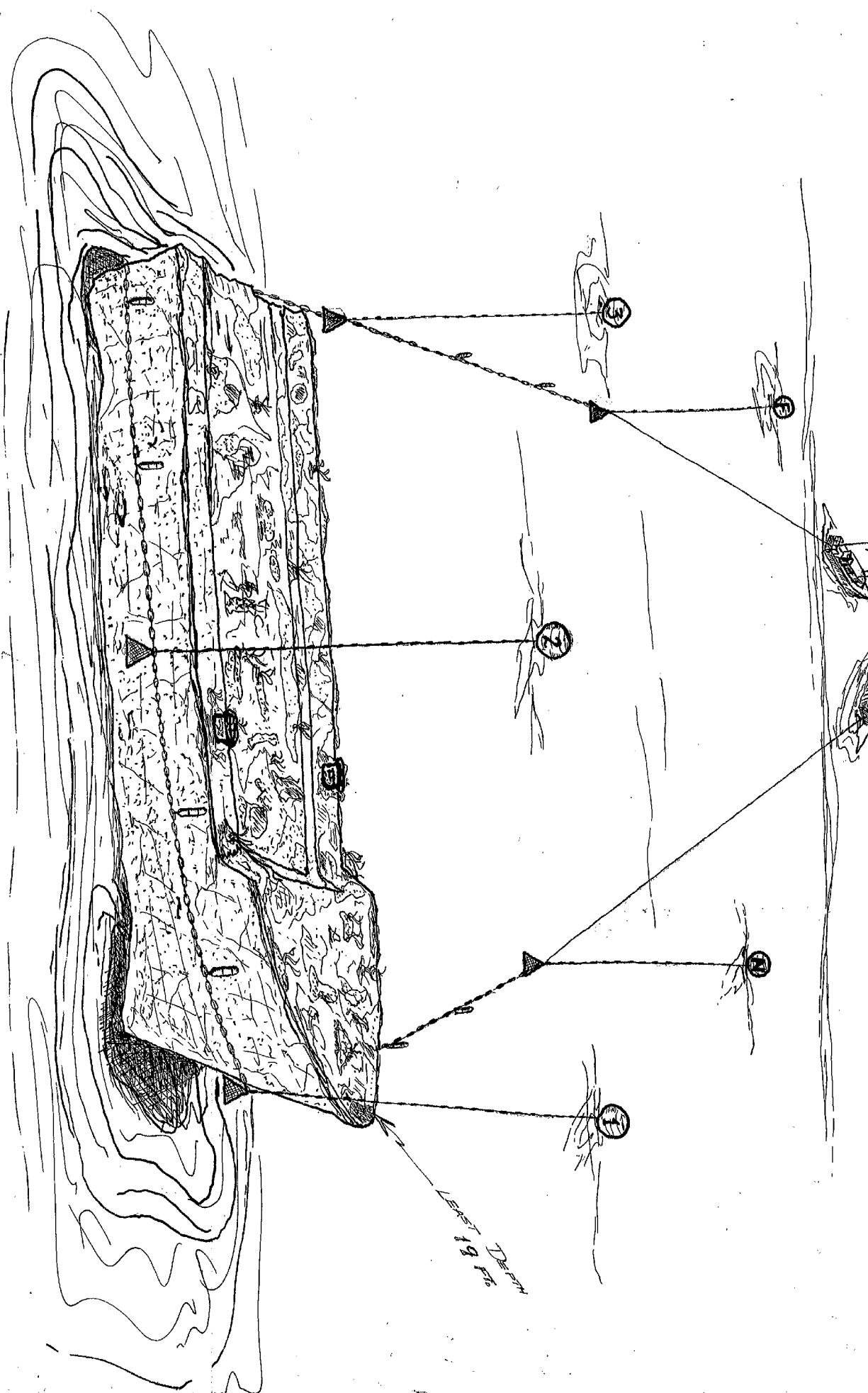
H-9904 (H-996)
SCALE: 1:10,000

75° 54' 30"

75° 54' 00"

37° 03' 00"

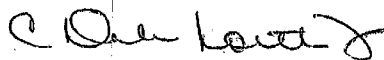
PSR 72



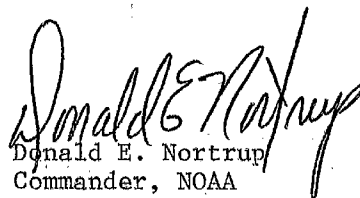
LEAST DEPTH
1 to 5 ft

APPROVAL SHEET

The field work on this Basic Survey, Registry No. H-9904, Field No. PE-10-4-80, was accomplished under my daily supervision. This report and field records have been reviewed by me on a routine basis. The survey is complete and adequate for the area investigated.



C. Dale North Jr.
Commander, NOAA
Commanding Officer
NOAA Ship PEIRCE S-328



Donald E. Nortrup
Commander, NOAA
Commanding Officer
NOAA Ship PEIRCE S-328

LIST OF SIGNALS

See Description of stations list.

OPR-D-103 ATLANTIC COAST NAUTILUS SHOAL

H-9904 PE-10-4-80 17 OCTOBER 1980

001 7 37 05 36243 075 58 17556 250 0050 167750

~~002 7 36 55 57125 076 10 35961 250 0070 000000~~

003 3 36 55 34335 076 00 27216 250 0050 000000

~~004 3 36 54 58985 076 05 23774 139 0000 000000~~

~~005 4 36 55 34302 076 00 27323 250 0050 000000~~

006 6 36 55 49332¹ 076 01 0334⁴ 250 0001 000000

007 6 36 55 49573² 076 01 540⁶⁷ 250 0000 000000

~~008 6 36 55 31272⁰ 076 02 392⁰⁸ 250 0000 000000~~

~~009 6 36 54 5901⁰⁸ 076 03 3275⁴⁸ 250 0000 000000~~

~~010 6 36 54 30153⁴ 076 05 51093⁶ 250 0000 000000~~

~~011 6 36 54 1700⁸ 076 07 140⁰¹ 139 0000 000000~~

012 6 36 55 14934⁶ 075 59 46481 250 0001 000000

~~013 6 36 55 32330 076 00 30516 139 0000 000000~~

~~014 6 36 52 08381 075 59 02012 139 0000 000000~~

~~015 3 36 55 06190 076 11 22544 139 0000 000000~~

~~016 3 36 55 14382 076 09 42063 139 0000 000000~~

~~017 3 36 54 31740 076 08 53000 139 0000 000000~~

~~018 3 37 02 44530 076 03 46565 250 0000 000000~~

019 3 36 55 49585 076 01 01393 250 0000 167750

~~020 3 37 07 22007 075 54 24576 250 0000 000000~~

~~021 3 36 56 51663 076 15 33886 250 0000 000000~~

~~022 3 36 59 51427 076 05 59605 250 0000 000000~~

~~023 3 37 08 03976 075 57 04192 250 0000 000000~~

~~024 3 37 08 02246 075 57 04291 250 0000 000000~~

025 3 37 01 26366 076 17 49680 250 0000 167750

TC/TI

OPR-D-103 PE-10-4-80 17 OCTOBER 80

| | | | | | | |
|--------|---|------|------|-----|--------|--------|
| 141209 | Ø | 1004 | 0001 | 241 | 283700 | 001980 |
| 143919 | Ø | 1004 | 0001 | 247 | 283700 | 001980 |
| 150531 | Ø | 1002 | | | | |
| 152939 | Ø | 0000 | | | | |
| 170501 | Ø | 1004 | | | | |
| 182640 | Ø | 1004 | 0001 | 248 | 283700 | 001980 |
| 140536 | Ø | 1004 | 0001 | 249 | 283700 | 001980 |
| 192628 | Ø | 1004 | 0001 | 250 | 283700 | 001980 |
| 141154 | Ø | 1004 | 0001 | 251 | 283700 | 001980 |
| 142423 | Ø | 1004 | 0001 | 252 | 283700 | 001980 |
| 150424 | Ø | 1004 | 0001 | 253 | 283700 | 001980 |
| 141806 | Ø | 1004 | 0001 | 254 | 283700 | 001980 |
| 144301 | Ø | 0000 | | | | |
| 195356 | Ø | 1004 | 0001 | 262 | 283700 | 001980 |
| 200611 | Ø | 1004 | 0001 | 265 | 283700 | 001980 |
| 151915 | Ø | 0002 | 0001 | 269 | 283700 | 001980 |
| 165337 | Ø | 0002 | 0001 | 276 | 283700 | 001980 |
| 181227 | Ø | 0002 | 0001 | 278 | 283700 | 001980 |
| 175641 | Ø | 0000 | 0001 | 281 | 283700 | 001980 |

VELOCITY TAPE LISTING

OPR-D-103 ATLANTIC COAST NAUTILUS SHOALS

H-9904 PE-10-4-80 17 OCTOBER 1980

000033 0 0000 0001 000 283900 009904

000067 0 0002

000099 0 0004

000130 0 0006

000160 0 0008

000189 0 0010

000220 0 0012

000249 0 0014

000281 0 0016

000315 0 0018

000347 0 0020

000376 0 0022

000404 0 0024

000433 0 0026

999999 0 0026

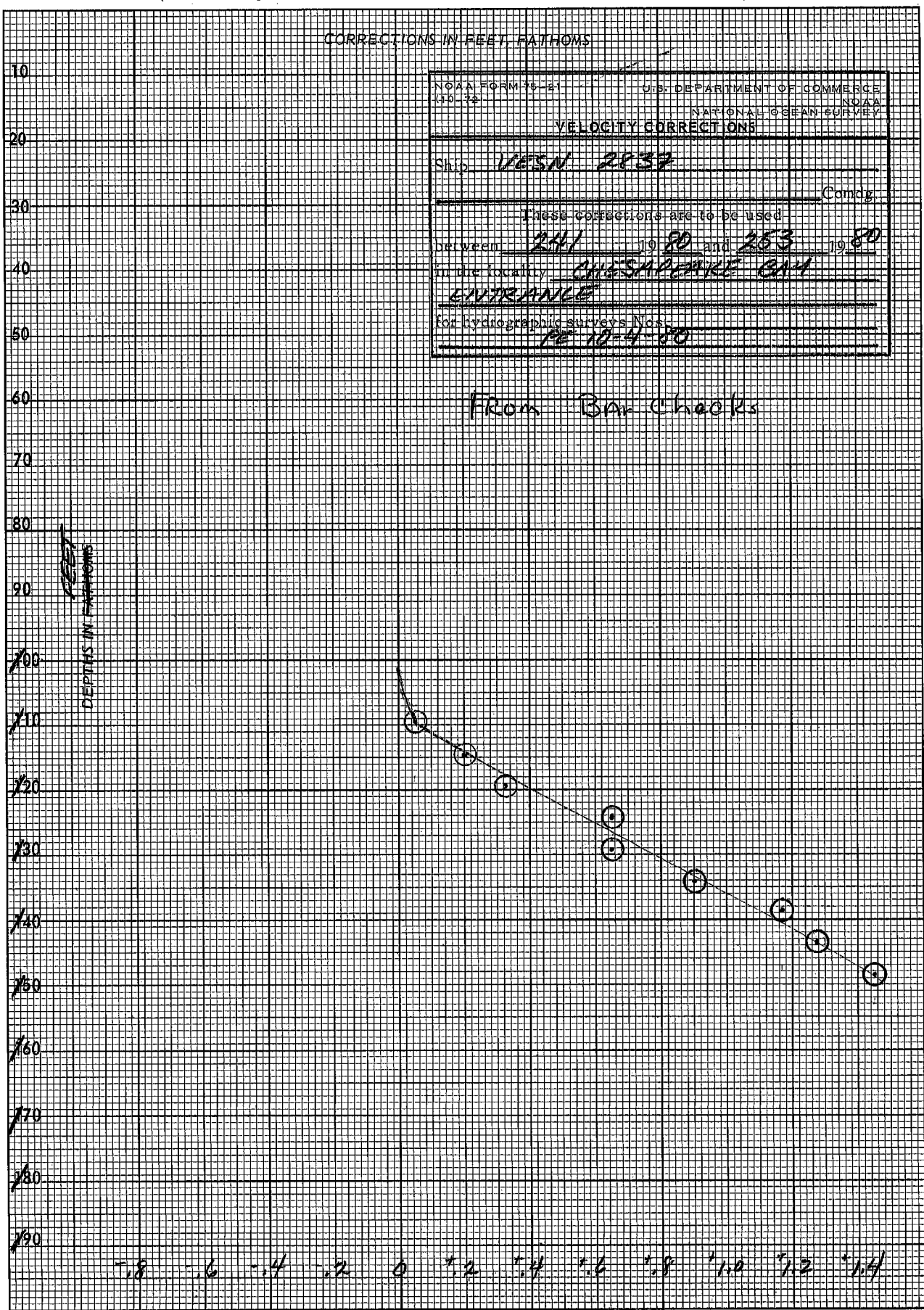
(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

CORRECTIONS IN FEET-FATHOMS

| | |
|---|--|
| NOAA FORM 16-21 (10-72) | U.S. DEPARTMENT OF COMMERCE NOAA NATIONAL OCEAN SURVEY |
| VELOCITY CORRECTIONS | |
| Ship <u>USNS 2037</u> | Comdg. |
| These corrections are to be used | |
| between <u>241</u> 19 <u>80</u> and <u>253</u> 19 <u>80</u> | |
| in the locality <u>CHESAPEAKE BAY</u> <u>ENTRANCE</u> | |
| for hydrographic surveys Nos. <u>10-4-80</u> | |

From Bar Checks

(For deep water add a 0 to these figures)



46 1240

20 X 20 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER
MADE IN U.S.A.



FIELD TIDE NOTE

Field Tide Reduction of soundings was based on predicted tides from Hampton Roads, Virginia and were interpolated by the PDP 8/E computer utilizing AM 500. All times of both predicted and recorded tides are GMT. A Wetzel Bubblers Gage was installed in the project area. Location and period of operation are as follows:

| <u>Site</u> | <u>Location</u> |
|--------------------|----------------------------|
| Fisherman's Island | 37°05'06" N 75°57'36" W |

The Fisherman's Island tide gage was installed and began operation on 12 May 1980. Due to the gages exposure to the elements many orifice and tubing problems were experienced. The gage was operational up to 18 September 1980. It was at this time that repairs during rough weather caused a one foot difference in staff and marigram comparisons. The staff reading was one foot higher than that of the marigram. Several days later the gage and staff were destroyed by a storm. The gage was removed after the storm with the consent of the Tides and Water Levels Branch in Rockville, Maryland.

Levels: Leveling was impossible due to the destruction of bench marks and tide staff discrepancies.

Zoning: A scheme similar to the one prescribed in the Project Instructions should be used in applying smooth tides to the survey.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
NOAA Ship PEIRCE S-328
439 West York Street
Norfolk, Virginia 23510

December 10, 1980

TO: Chief, Water Levels Branch (C234)

FROM: *Donald E. Murphy*
Commanding Officer
NOAA Ship PEIRCE S-328

SUBJECT: Request for Verified Hourly Heights of Tides.

Please provide hourly heights of tides and the value of MLW on the tide staff for the period of hydrography on H-9904, OPR-D103 as follows:

Period of Hydrography: 5 September 1980 (JD 249)
thru 7 October 1980 (JD 281)

Control Station: Chesapeake Bay Bridge Tunnel,
Virginia (863-8863)

Supplementary Station: Fisherman's Island
South (863-2065)

Please forward the requested information directly to the Atlantic Marine Center, ATTN: CAM 33.

Attachment: Progress Sketch

cc: CAM 1
CAM 2



5/11/81

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 863-8863 Chesapeake Bay Bridge Tunnel, VA

Period: September 5, October 7, 1980

HYDROGRAPHIC SHEET: H-9904

OPR: D103

Locality: Chesapeake Bay Entrance

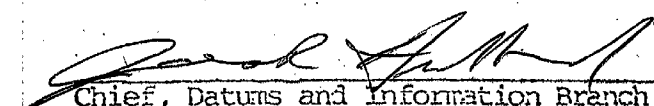
Plane of reference (mean ~~LOW~~ low water): 24.75 ft.

Height of Mean High Water above Plane of Reference is 2.62 ft.

REMARKS: Recommended Zoning:

Using latitude $37^{\circ}06.5'$ as the northern limit and $37^{\circ}01.0'$ as the southern limit of the H-sheet

From longitude $76^{\circ}02.0'$ east to $75^{\circ}59.0'$ apply x 1.08 range ratio


Chief, Datums and Information Branch

GEOGRAPHIC NAMES

| Name on Survey | SOURCE | | | | | | | | | | | |
|---|--|-------|---|---|---|---|---|---|---|--|--|----|
| | A | B | C | D | E | F | G | H | K | | | |
| Chesapeake Bay | <small>ON CHART NO. 12222 & 12221 ON PREVIOUS SURVEY CON U.S. QUADRANGLE MAPS FROM LOCAL INFORMATION ON LOCAL MAPS P.O. GUIDE OR MAP GRAND MCNALLY ATLAS U.S. LIGHT LIST</small> | | | | | | | | | | | |
| Nautilus Shoal | | | | | | | | | | | | 1 |
| Fishermans Island | | | | | | | | | | | | 2 |
| Chesapeake Bay Bridge and Tunnel | | | | | | | | | | | | 3 |
| Chesapeake Channel | | | | | | | | | | | | 4 |
| Trail of the Horseshoe | | | | | | | | | | | | 5 |
| Thimble Shoal Channel | | | | | | | | | | | | 6 |
| Lynnhaven Roads | | | | | | | | | | | | 7 |
| Lynnhaven Tidal | | | | | | | | | | | | 8 |
| Cape Henry | | | | | | | | | | | | 9 |
| Cape Henry Channel | | | | | | | | | | | | 10 |
| Nine Foot Shoal | | 12222 | | | | | | | | | | 11 |
| Middle Ground | | 12222 | | | | | | | | | | 12 |
| Chesapeake Bay | | 12222 | | | | | | | | | | 13 |
| | | | | | | | | | | | | 14 |
| | | | | | | | | | | | | 15 |
| | | | | | | | | | | | | 16 |
| | | | | | | | | | | | | 17 |
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| | | | | | | | | | | | | 19 |
| | | | | | | | | | | | | 20 |
| | | | | | | | | | | | | 21 |
| | | | | | | | | | | | | 22 |
| | | | | | | | | | | | | 23 |
| | | | | | | | | | | | | 24 |
| | | | | | | | | | | | | 25 |

Approved:

Chas. E. Harrington
Chief Geographer - C3x5

22 Nov. 1982

APPROVAL SHEET
FOR
SURVEY H-9904

- A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position printout has ~~XXXXXX~~ been made. A new final sounding printout has ~~XXXXXX~~ been made.
- B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the HYDROGRAPHIC MANUAL. Exceptions are listed in the Verification Report.
- Date: 15 Mar 1982


Chief, Verification Branch

REGISTRY NO. H-9904

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

HYDROGRAPHIC SURVEY STATISTICS

H-9904

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

| RECORD DESCRIPTION | | AMOUNT | RECORD DESCRIPTION | | AMOUNT | |
|--------------------|---------------|----------------------|--|----------------------|---------------|----------------------------|
| SMOOTH SHEET | | 1 | BOAT SHEETS & PRELIMINARY OVERLAYS | | 2 | |
| DESCRIPTIVE REPORT | | 1 | SMOOTH OVERLAYS: POS ¹ & ARC, EXCESS ² | | 3 | |
| DESCRIP-TION | DEPTH RECORDS | HORIZ. CONT. RECORDS | PRINTOUTS | TAPE ROLLS | PUNCHED CARDS | ABSTRACTS/SOURCE DOCUMENTS |
| ENVELOPES | X | | X | | | |
| CAHIERS | | | 1 | Row Plo & Fathograms | | |
| VOLUMES | X | | | | | |
| BOXES | | | 1-Sou Vol. Smooth Plo, misc | | | |

T-SHEET PRINTS (List)

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

| PROCESSING ACTIVITY | AMOUNTS | | |
|---|------------------|--------------|--------|
| | PRE-VERIFICATION | VERIFICATION | TOTALS |
| POSITIONS ON SHEET | | | 1559 |
| POSITIONS CHECKED | | 15 | |
| POSITIONS REVISED | | | |
| SOUNDINGS REVISED | | 30 | |
| SOUNDINGS ERRONEOUSLY SPACED | | | |
| SIGNALS (CONTROL) ERRONEOUSLY PLOTTED | | | |
| | TIME - HOURS | | |
| CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION) | 19 | | |
| VERIFICATION OF CONTROL | | | |
| VERIFICATION OF POSITIONS | | 38 | |
| VERIFICATION OF SOUNDINGS | | 94 | |
| COMPILATION OF SMOOTH SHEET | | 162 | |
| APPLICATION OF TOPOGRAPHY | | | |
| APPLICATION OF PHOTOBATHYMETRY | | | |
| JUNCTIONS | | 3 | |
| COMPARISON WITH PRIOR SURVEYS & CHARTS | | 16 | |
| VERIFIER'S REPORT | | 10 | |
| OTHER | | | |
| | | 2 | |
| TOTALS | 19 | 328 | 347 |

| | | | | | |
|-------------------------------|---------------|----------------|---------|-------------|---------|
| Pre-Verification by | JBW, DVM | Beginning Date | 1/23/81 | Ending Date | 1/26/81 |
| Verification by | RWW, MWH, LGC | Beginning Date | 9/15/81 | Ending Date | 3/1/82 |
| Verification Check by | GFT | Time (Hours) | 10 | Date | 2/8/82 |
| Marine Center Inspection by | HIT | Time (Hours) | 10 | Date | 3/8/82 |
| Quality Control Inspection by | L. Guinlan | Time (Hours) | 66 | Date | 6/15/82 |
| Requirements Evaluation by | Joseph J. May | Time (Hours) | 5.0 | Date | 5/10/83 |

J. Mayers 11/4/82 8 hrs

ATLANTIC MARINE CENTER
VERIFICATION REPORT

REGISTRY NO.: H-9904

FIELD NO.: PE-10-4-80

Virginia, Chesapeake Bay Entrance, Middle Ground to Nine Foot Shoal

SURVEYED: August 28 through October 15, 1980

SCALE: 1:10,000

PROJECT NO.: OPR-D103

SOUNDINGS: Ross Digital Echo Sounder

CONTROL: ARGO (Range-Range)

Divers
Chief of Party D. E. Nortrup
Surveyed by T. W. Ruzala (*Diver*)
..... E. J. Fields
..... W. T. Dewhurst
..... L. F. Simoneaux (*Diver*)
..... J. W. Bailey
..... J. T. Rodstein (*Diver*)
Automated Plot by Xynetics 1201 Plotter (AMC)

1. INTRODUCTION

- a. There were no unusual problems encountered on this survey.
- b. Notes and changes were made in red ink in the Descriptive Report.

2. CONTROL AND SHORELINE

- a. The source of control is adequately described in sections F & G of the Descriptive Report.
- b. No contemporary shoreline was available for this survey.

3. HYDROGRAPHY

- a. The agreement of crosslines on this survey is adequate, depths agree within the limits prescribed by the Hydrographic Manual.
- b. The standard depth curves could be drawn in their entirety. Dashed curves, the 36-ft. supplemental curve and brown curves were used to better delineate some features.
- c. This survey is considered adequate to delineate the basic bottom and to determine least depths with one exception: It would have been desirable for the field to have run two or three short lines to better delineate the extent of the shoal indication in the vicinity of Latitude $37^{\circ}01'56''$, Longitude $75^{\circ}59'38''$. *concur*

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports comply with the requirements of the Hydrographic Manual with the following exceptions.

a. The sounding correctors (velocity, TC/TI, Settlement and Squat) were not included with this survey's field records as required by section 5.3.5.D of the Hydrographic Manual.

b. The non-floating aids or landmarks for charts forms (76-40) were not complete nor do any of the items listed fall within this survey's limits.

c. The positional and sounding data for the three Presurvey Review Items (69, 70, 72) located by this survey but outside the survey limits were confusing and at times not possible to verify.

5. JUNCTIONS

| | | | |
|--------|--------|--------------|---|
| H-9880 | (1980) | to the west | <i>Junction completed by Rockville (QC)</i> |
| H-9901 | (1980) | to the south | <i>Not in Rockville 11/4/82</i> |

The junction with H-9901 was made and the junctional curves on H-9901 (1980) are complete and require no further consideration. The penciled junction with H-9880 was made; however, the junctional curves on H-9880 (1980) will have to be inked in agreement with the present survey as this survey (H-9880) is in Rockville.

It is noted that survey H-9693 (1977) was not considered as a junctional survey, (contemporary) and is discussed under the prior survey section of this report.
Butt junction made by QC.

There are no contemporary junctional surveys to the east or northwest of the present survey (H-9904). Charted depths in this area are not in harmony with the present survey as considerable change has taken place. *QC considers H-9693 contemporary.*

6. COMPARISON WITH PRIOR SURVEYS

| | | | |
|--------|----------|---------|--|
| H-7750 | 1:40,000 | 1948-50 | <i>Butt junction done with H-9693 during QC.</i> |
| H-9693 | 1:10,000 | 1977 | |

These are the most recent prior surveys in this area that provide complete coverage.

In general the depths from the prior surveys are in agreement with H-9904 (1980) from ± 1 to 4 feet. There are differences of up to 20 feet with the present survey being shoaler by that amount. These larger amounts of difference occur on the prior survey H-7750 (1948-50).

The comparison with H-7750 (1948-50) reveals that there has been a considerable movement of shoals and deep areas. The feature charted as "Nine Foot Shoal" has shifted to the southwest approximately 3/4 of a mile. The feature charted as "Middle

Ground" has moved to the south also, by approximately ½ mile. The intervening deep areas between these two features appears to be deeper now by from 2 to 10 feet. Another shoal in the vicinity of Latitude 37°01'40", Longitude 75°59'20", appears to be shifting to the south. ✓

The comparison with H-9693 (1977) covers only limited areas on the present survey. The comparison with this survey (H-9693) shows differences of +1 to 4 feet with some shifting of features. The feature "Middle Ground" appears to have shifted to the southeast by approximately 75 meters. The shoal area in the vicinity of Latitude 37°01'40", Longitude 75°59'20", appears to be shifting slightly to the west. The field developed this area (Development D & E) looking for the charted 14 foot depths. There appears to be some sand waves in this area and the shallowest depths found were 16 feet. *H-9693 considered contemporary by QC.*

It is reasonable to attribute some of the changes that occurred on the earlier prior survey (H-7750) to cultural changes (Chesapeake Bay Bridge and Tunnel) and to a greater degree the natural changes and improved survey methods. The changes that have occurred on the most recent ^{earlier} prior survey (H-9693) are attributed to natural causes. It is noted that this area is subject to a great deal of shifting of features and is highly unstable.

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

7. COMPARISON WITH CHART #12222 (24th Edition, March 8, 1980)

a. All of the charted hydrography appears to originate with the prior survey# previously discussed and are adequately discussed under that comparison. *Charted sedgs also originate with H-9693.*

Three Presurvey Review Items (69, 70 and 72) were investigated by the field. All of these Items fall outside the survey limits of this survey. The Descriptive Report (section K) addresses these items and additional information is as follows:

1) Presurvey Review Item #69, submerged obstruction located in approximate Latitude 37°05'17", Longitude 75°59'23", originates with Local Notice to Mariners No. 24 of 1972. It is described as a vehicle in 78 feet of water. Survey H-9693 (1977) found depths of 50 to 93 feet in the vicinity of this item. Charted depths are from 48 to 51 feet in this area. The present survey investigated the item on day 278, position #1520 to 1552 and rejected this data, no fathograms or positional information were turned in by the field unit for this investigation. This item is not believed to be a danger to navigation. *Retain as charted*

2) Presurvey Review Item #72, dangerous sunken wreck located in latitude 37°03'22.54", Longitude 75°53'58.46", originating with H-6438 W.D. (1939) and cleared by 11 feet was also found on H-9693 (1977). The depth of 9 14 feet from 6438 W.D. (1939) was carried forward to that prior survey (H-9693). The present survey found a least depth (by divers) of 16 feet in Latitude 37°03'22.54", Longitude 75°53'58.46", and a plot of this depth and position ~~was~~ included in the Descriptive Report. This item is addressed in more detail in sections K and appendix L of the Descriptive Report. *See Quality Control Rep.*

*PSR #72
only on
chart 12221.*


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

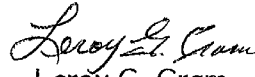
8. COMPLIANCE WITH INSTRUCTIONS

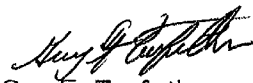
This survey adequately complies with the Project Instructions with the exceptions listed elsewhere in this report.

9. ADDITIONAL FIELD WORK

This is considered a good basic survey, no additional work is recommended on this survey. It would be desirable, however, to further investigate the Presurvey Review Items as discussed by the hydrographer. *See Quality Control Report.*


Maurice W. Holloway
Cartographic Technician
Verification of Data

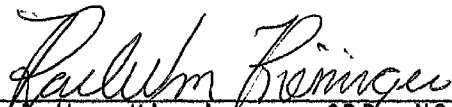

Leroy G. Cram
Cartographer
Evaluation and Analysis
March 1, 1981


Guy F. Trefethen
Senior Cartographic Technician
Verification Check

INSPECTION REPORT
H-9904

The completed survey has been inspected by the Hydrographic Inspection Team with regard to survey coverage, delineation of depth contours, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The Verification Report has presented the facts accurately and properly, the procedures used were appropriate, and the recommendations are logical and justifiable. The survey complies with National Ocean Survey requirements except as noted in the Verification Report. The survey records comply with NOS requirements except where noted in the Verification Report. The Hydrographic Inspection Team concurs with the verifier's findings, actions, and recommendations.

Examined and Approved
Hydrographic Inspection Team



Karl Wm. Kieninger, CDR, NOAA
Chief, Processing Division



R. D. Sanocki
Chief, Verification Branch
Processing Division



James C. Gardner, Jr., LTJG, NOAA
Chief, EDP Branch
Processing Division

Approved/Forwarded
March 11, 1982



Richard H. Houlder, RADM, NOAA
Director, Atlantic Marine Center



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

C352:LQ

June 15, 1982

TO: Glen R. Schaefer *G. Schaefer*
Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch *qm*

FROM: Lisa Quinlan *Lisa Quinlan*
Quality Evaluator

SUBJECT: Quality Control Report for H-9904 (1980), Virginia, Chesapeake Bay
Entrance, Middle Ground to Nine Foot Shoal

A quality control inspection of H-9904 was accomplished to monitor the survey for adequacy with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, smooth plotting, decisions made and actions taken by the verifier, and the cartographic presentation of data. Revisions and additions to the smooth sheet, plus helpful comments made to the verifier, are identified on a one-half scale copy of the survey to be furnished the verifier. In general, the survey was found to conform to the National Ocean Survey's standards and requirements except as stated in the Verifier's Report. Additional information is provided as follows:

The dangerous sunken wreck (7 ft rep) presently charted at latitude 37°03'23"N, longitude 75°53'58"W is from a questionable echo trace at a depth of 7 feet on H-9693 (1977). The original source of the wreck was not ascertained. However, wire-drag survey H-6438 (1939) WD verified its existence at a least depth of 14 feet. The wreck was cleared by an effective drag depth of 11 feet on that survey and charted as such on chart 12221 (1222) in the early 1940's. A diver's investigation during the course of the present survey obtained a least depth of 16 feet at the wreck site. The Diver Report states, however, that a complete ascertainment of the area was not possible due to the currents and extremely limited visibility. As a result, the 14-foot depth was brought forward to the present survey from survey H-6438 during the quality control inspection. The present investigation is considered sufficient to discredit the 7-foot questionable echo trace. It is also believed that the 11-foot clearance obtained on the 1939 wire-drag survey continues to be valid. Hence, the feature should now be charted as a wreck cleared by 11 feet, located at the position found on the present survey. No further investigation of this wreck is considered necessary.

cc:
C351





**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

~~NATIONAL OCEAN SURVEY~~
~~ROCKVILLE, MD 20852~~
National Ocean Service
CHARTING AND GEODETIC SERVICES
Rockville, Md. 20852

JUL 6 1983

N/CG241:SJV

TO: N/MOA - Richard H. Houlder

FROM: *for* N/CG2 - C. William Hayes *James B. Hayes*

SUBJECT: H-9904 (1980), Virginia, Chesapeake Bay Entrance, Middle Ground to
Nine Foot Shoal, Report of Compliance with Project Instructions

The smooth sheet and Descriptive Report for the subject survey have been examined. This survey, except as noted in the Quality Control Report, dated June 15, 1982 (copy attached), and the Hydrographic Survey Inspection Team Report, dated March 11, 1982, is complete and adequate for the purposes intended and is in compliance with Project Instructions OPR-D103-MI/PE-80, dated February 20, 1980.

Attachment

cc:
N/CG242 w/o att.



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

Hydrographic Index No. 70 M

