

FE369

Diagram No. 1222-5

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey ... Field Examination
Field No. AHP2-5-1-91
Registry No. FE-369

LOCALITY

State Virginia
General Locality .. Elizabeth River
Sublocality NOAA-AMC Ship Base

19 91

CHIEF OF PARTY
LT T.R. Waddington

LIBRARY & ARCHIVES

DATE September 22, 1992

FE369

EC/G
PRODUCTS
12253
12206 A
12222
CP4

HYDROGRAPHIC TITLE SHEET

FE-369

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.

AHP2-5-1-91

State Virginia

General locality Elizabeth River

Locality ~~AMC Ship Base~~ NOAA-AMC SHIP BASE

Scale 1:5,000

✓ Date of survey Dive: 13 April 1992
Sept. 19 to Sept. 20, 1991

Instructions dated ~~None~~ Sept. 17, 1991

✓ Project No. S-E936-AHP2

Vessel NOAA Launch 1292

Chief of party Lt. Thomas R. Waddington, NOAA

Surveyed by Brian A. Link

Soundings taken by echo sounder, hand lead, pole echo sounder

Graphic record scaled by BAL, JLB, RLK

Graphic record checked by Jan L. Budlong

Protracted by N/A

✓ Automated plot by Xytrics 1201 Plotter (AHS)
Bruning Zeta 824 (Field)

Verification by Atlantic Hydrographic Section

Soundings in METERS fathoms at MLW at MLLW

REMARKS: BAL - Brian A. Link

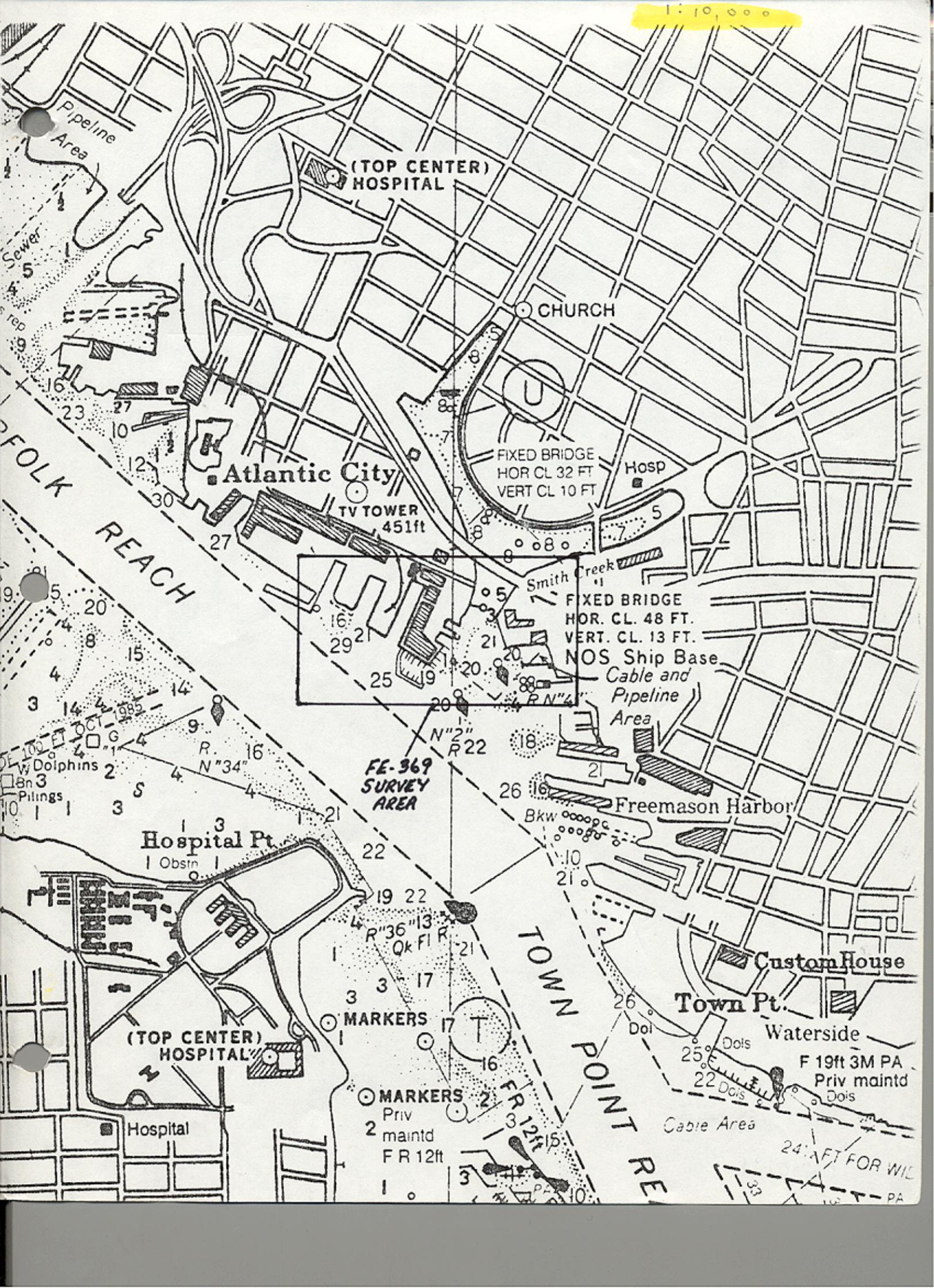
JLB - Jan L. Budlong

RLK - Reginald L. Keene

Planimetry by R.R. Hill & M. Fetterly of AHS.

RWW

1:10,000



(TOP CENTER) HOSPITAL

CHURCH

Atlantic City

TV TOWER
451ft

FIXED BRIDGE
HOR CL 32 FT
VERT CL 10 FT

Hosp

Smith Creek

FIXED BRIDGE
HOR. CL. 48 FT.
VERT. CL. 13 FT.

NOS Ship Base
Cable and
Pipeline
Area

FE-969
SURVEY
AREA

Freemason Harbor

Hospital Pt.
| Obsn

Custom House

Town Pt.

Waterside

F 19ft 3M PA
Priv maintd

(TOP CENTER) HOSPITAL

Hospital

MARKERS

MARKERS

Priv
maintd
FR 12ft

Cable Area

24' FT FOR WIL

DESCRIPTIVE REPORT TO ACCOMPANY
FE-369 ✓
AHP-5-1-91 ✓
S-E936-AHP2 ✓
Scale: 1:5,000 ✓
Atlantic Hydrographic Party Two ✓
Chief of Party: LT. Thomas R. Waddington, NOAA ✓
1991 ✓

A. PROJECT

No project instructions were issued for this field examination. The survey was requested by the Director, Atlantic Marine Center. *Project Instructions dated Sept. 17, 1991*

The purpose of project S-E936-AHP2 is to provide updated hydrographic data of the waters surrounding the National Ocean Service's, Atlantic Marine Center Ship Base. The data will be used to evaluate the course into and berth choices for future NOS ships.

B. AREA SURVEYED

The area surveyed for FE-369 is the Elizabeth River adjacent to the Atlantic Marine Center Ship Base, the west half of the center of three slips just west of the base on the north side of the Elizabeth River, and Smith Creek northeast to the Brambleton Avenue Bridge. The area is bounded by the following geographic points:

Northwest - Latitude 36°51'15"N, Longitude 076°18'10"W ✓
Southwest - Latitude 36°51'04"N, Longitude 076°18'10"W ✓
Northeast - Latitude 36°51'15"N, Longitude 076°17'50"W ✓
Southeast - Latitude 36°51'04"W, Longitude 076°17'50"W ✓

This survey was conducted on September 19th and 20th, 1991 (DN's 262 and 263).

C. SURVEY VESSELS

NOAA launch 1292 (EDP No. 1292), a 21-foot MonArk, was used to collect all data on this survey. No problems were encountered with the vessel.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Hewlett-Packard HDAPS Programs:

| <u>Program</u> | <u>Version</u> | <u>Date</u> |
|----------------|----------------|-------------|
| Survey | 5.00 | 02/15/91 |
| Postsur | 5.00 | 02/20/91 |
| Printout | 2.24 | 02/15/91 |
| Baseline | 1.04 | 02/15/91 |
| Backup | 2.00 | 02/15/91 |
| Quick | 1.04 | 11/28/90 |
| Diagnostic | 2.70 | 02/15/91 |
| Point | 1.30 | 02/15/91 |
| Plotall | 1.80 | 02/15/91 |
| Loadnew | 1.27 | 02/15/91 |
| Convert | 2.37 | 02/15/91 |
| Filesys | 2.00 | 02/15/91 |
| Inverse | 1.23 | 02/15/91 |
| Bigabst | 1.01 | 02/20/91 |
| Listawois | 1.20 | 02/15/91 |
| Reject | 1.00 | 02/15/91 |
| Carto | 1.11 | 02/20/91 |
| DP Editor | 1.00 | 02/20/91 |
| Global | 1.01 | 02/15/91 |
| Disc_Util | 1.00 | 02/15/91 |
| Makefix | 1.00 | 02/15/91 |
| Reapply | 1.01 | 02/15/91 |
| Backold | 1.04 | 02/15/91 |
| Newcont | 1.01 | 02/15/91 |
| Predict | 1.00 | 02/15/91 |
| Readprojs | 1.04 | 02/15/91 |
| Softcheck | 1.00 | 02/15/91 |
| Manu_Data | 1.00 | 02/15/91 |

PC-DAS programs, in the NOAAEXE directory, Version 4.0 were used for on line data acquisition on the survey vessel. This new version adds DGPS capabilities.

In addition to the HDAPS and PC-DAS software, the following computer programs were used:

| | |
|------------------------------------|------------------------|
| VELOCITY (IBM PC) | Version 1.11 (3/9/90) |
| MTEN 3 with enhancements (IBM PC) | Version 6/88 |
| NADCON | Version 1.01 (1/9/89) |
| Wordperfect | Version 5.1 |
| Volkswriter Deluxe | Release 2.0 |
| Ashtech Multi-Site Mission Planner | Version 2.0, 1990,1991 |

E. SONAR EQUIPMENT

Not Applicable.

F. SOUNDING EQUIPMENT

An Innerspace depth sounder, model 448, serial number 188, was used for data collection for the entire survey. No problems were encountered with the depth sounder.

Depths on this survey ranged from 1-~~1~~^{10⁵} meters.

G. CORRECTIONS TO SOUNDINGS

The average of lead line comparisons conducted for this survey, one each on days 262 and 263, to determine an instrument corrector was 0.05 meters for depth sounder S/N 188. No instrument corrector was applied on the final field sheet. The lead line calibrated in meters, was checked on 7/11/91. No lead line corrections were necessary. A lead line comparison form, as well as the lead line calibration form, can be found in the "Separates to be Included With Survey Data".

Survey ^{HYDROGRAPHIC MANUAL} records were scanned by AHP-2 employees in accordance with the ~~hydrographic manual~~. With the digital reading taking precedence over the analog trace, significant peaks and deeps which occurred between selected soundings, missed depths, incorrectly digitized soundings, and effects of sea and swell action were inserted or corrected, as appropriate, while scanning.

The depth sounder was calibrated for a speed of sound through water of 1500 m/sec. Corrections for the speed of sound through water were computed from data obtained with Odom Hydrographic Systems, Inc. DIGIBAR electronic speed of sound probe serial number 154. Data quality assurance tests were performed prior to the casts. Program "Velocity" version 1.11 was used for the speed of sound corrections computations.

A Digibar cast taken on day 262 was used to determine the speed of sound for this survey. The cast records and computations as well as a copy of the velocity table is in the "Separates to be Included With Survey Data".

Speed of sound corrections were applied to the final field sheet soundings using the HDAPS "Reapply Depth Correctors" function of the "Post-Survey" program as required by the "Field Procedures Manual".

A static draft of 0.3 meters was applied to the final field sheet soundings using the HDAPS "Reapply Depth Correctors" function of the "Post-Survey" program as required by the "Field Procedures Manual". The draft was measured from a punch mark on the side of launch 1292, 0.6 meters above the transducer, to the water surface, then subtracting the difference. ✓

Settlement and squat measurements for vessel 1292 were performed on August 28, 1991 (day 240). The level method was used. Settlement and squat correctors were applied to the final field sheet soundings using the HDAPS "Reapply Depth Correctors" function of the "Post-Survey" program as required by the "Field Procedures Manual". Data from the settlement and squat test are included in the "Separates to be Included With Survey Data". ✓

The final field sheet was plotted using actual heights from station 863-8660, Norfolk Naval Shipyard, Portsmouth, Virginia for hydrography run on day 262 and with predicted tides from station 863-2521, Sewell's Point, Virginia for hydrography run on day 263. ✓

Actual tide heights were requested from the Sea and Lake Levels Branch, N/OMA12, in a letter dated October 4, 1991. A copy of the letter is included in the appendices of this report. ✓

Approved tides were applied during survey processing at the AHS.

H. CONTROL STATIONS

The horizontal control datum for this project is the North American Datum of 1983. Station 102 was used as the base station antenna site for the Global Positioning System (GPS). ✓

Station 10²~~X~~, Bole 1961 RM 2 is ^{not} a published NGS station. ✓

Note: Other stations were used for the Range-Azimuth surveying. See the final control listing.

I. HYDROGRAPHIC POSITION CONTROL

Differential Global Positioning System (DGPS) was used as the method of positioning for all hydrographic data on this survey. Ashtech model XII receivers, serial numbers 700270C1075 and 700270C1076, were used as the base and remote stations respectively. ✓

To meet the requirement for a daily system check the following procedure was recommended by LCDR. David H. Minkel, NOAA, from the Nautical Charting Research and Development Laboratory, in a memorandum to Captain Dean R. Seidel, NOAA, dated 12 July 1991. ✓

Using the DGPS positioning system on board the sounding vessel a reference position is established at a convenient location. This position must be determined under the following conditions; 1) there are 5 or more satellites being used to determine the reference position, 2) there are DGPS correctors for all satellites being used to determine the position, and 3) the HDOP of the position solution is less than 2.0. This position should be established as soon as practicable upon arrival in the survey area. The position agreement criteria used for DGPS should conform to the requirements prescribed for the scale of the survey. ✓

The daily system check should be performed under similar GPS conditions (5 satellites, low HDOP) at least once daily. Due to the 4 minute precession of the GPS constellation, the time of day when these system checks can be performed will change. ✓

While this method can not insure that all positional data will be within survey specifications, it can detect degradation of the performance of the GPS sub-system. This procedure is recommended for use until a data integrity monitoring system, appropriate for hydrographic survey operations, is developed. ✓

~~The above recommended procedure was not adopted on this survey because of time constraints, the short duration of the survey, and the many obstructions,~~ ^{OK} discussed later in this section. The only system integrity check used was the monitoring of the HDOP values during data acquisition. *

As directed by DGPS operating specifications, the horizontal dilution of precision (HDOP) value for 1:5,000 scale surveys should not exceed 1.5. Because of a high rise condominium forming an horizon obstruction to the west, the Atlantic Marine Center buildings to the north, as well as the NOAA Ships Mt. Mitchell and Peirce, HDOP values only met the 1.5 value tolerance for 1:5,000 scale surveys on 24% of soundings and detached positions taken. The HDOP value was maintained below a value of 1.8 on 72% of soundings and detached positions obtained. When necessary, the affected data was smoothed using the HDAPS. *

Data with suspicious positioning were rejected, at the beginning of the cross line run, position 344 up to but not including 345. While the HDOP values are within tolerances, the sounding agreement is poor. Other than poor positioning, probably caused by multi-path because of the antennas proximity to the NOAA Ships Mt. Mitchell and PEIRCE, no other cause could be determined for this sounding disagreement. This lends credence to the need for some sort of position integrity monitoring software. The monitoring of HDOP only reflects the geometry of the constellation being used at the time of positioning and does not indicate the quality of each measurement being received. *

* The discussions in these paragraphs are adequate to explain the positioning difficulties and the field's inability to adhere to established and recommended procedures.

Because of the requested line spacing, 5 meters, most of the sounding lines appear to be off line and cross each other. This was caused by the extreme difficulty in keeping the sounding vessel within the 5 meter tolerance with the winds that prevailed on the days of hydrography. ✓

J. SHORELINE — See section 2.b. of the Evaluation Report.

Shoreline detail shown in red on the final field sheet was transferred by hand, based on the detached positions taken on the survey. Shoreline shown in brown is for reference only, and is applied from the shoreline shown on a prior tag-line survey from 1983, with the exception of the boathouse at latitude 36°51'07"N, longitude 076°17'51"W, which was applied from a 1:1,250 scale enlargement of chart 12253. ✓

Detached positions were taken on the pier on the west side of the approach to the NOS Ship Base as well as the newly constructed extension to the pier immediately adjacent to the south of the NOS Ship Base. These are discussed in more detail in section N of this report. ✓

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

One cross line totaling 3.5% of the main scheme hydrography was run out of Smith Creek crossing hydrography run west and southwest of the NOS Ship Base. The agreement is within ±0.2 meters. While not technically run as crosslines, the area on the south side of the ship base was developed in both directions. Agreement in this area was also within ±0.2 meters. ✓

L. JUNCTIONS

Not Applicable. ✓

M. COMPARISON WITH PRIOR SURVEYS — See also section 6. of the Evaluation Report:

This survey was compared with an unregistered tag-line survey by the NOAA Ship Whiting from 1983. No pre-survey review items were assigned as part of this survey. ✓

In the area between the south wharf of the Atlantic Marine Center and latitude 36°51'09"N, and east of longitude 76°17'54.3"W, depths agree within ±0.3 meters. In all other common areas south of latitude 36°51'14"N, depths are 0.9 - 1.2 meters shallower than the prior while north of latitude 36°51'14"N, to the Brambleton Avenue Bridge, depths agree within ±0.3 - 0.6 meters with depths on the current survey are generally shallower.

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

This survey was compared with a page size enlargement to 1:1250 scale of chart 12253, 37th ed., May 25th, 1991.

No dangers to navigation were identified nor were any AWOIS items investigated in conjunction with this survey.

Results of a comparison of soundings charted in the common area with this survey are listed in the table which follows:

| ‡ | | Charted Depth | Surveyed Depth |
|---------------|---------------|------------------|-------------------------------|
| Latitude(N) | Longitude(W) | | |
| 36°51'13.5" ✓ | 76°17'55.0" ✓ | 5 ft | 5.9m (19.4') ✓ |
| 36°51'12.0" ✓ | 76°17'55.5" ✓ | 3 ft | 6.5m (21.3') ^{20'} ✓ |
| 36°51'10.0" ✓ | 76°17'56.0" ✓ | 21 ft | 6.6m (21.6') ✓ |
| 36°51'09.0" ✓ | 76°17'54.0" ✓ | 20 ft | 6.0m (19.7') ^{20'} ✓ |
| 36°51'08.5" ✓ | 76°17'59.5" ✓ | 14 ft | 5.4m (17.7') ^{16'} ✓ |
| 36°51'08.0" ✓ | 76°17'59.5" ✓ | 20 ft | 6.3m (20.7') ^{20'} ✓ |
| 36°51'07.0" ✓ | 76°18'02.0" ✓ | 19 ft | 6.5m (21.3') ✓ |
| 36°51'05.5" ✓ | 76°17'53.5" ✓ | 4 ft | 1.6m (5.2') * ✓ |
| 36°51'05.0" ✓ | 76°18'00.0" ✓ | 20 ft | 6.9m (22.6') ^{21'} ✓ |

The pier charted at latitude 36°51'08.5"N, longitude 076°17'52.3"W (offshore end), has been extended 15 meters, and has a larger "T" end than charted. The offshore end is now at latitude 36°51'08.5"N, 076°17'53.5"W (position 275)⁵¹⁹. This pier should be charted as shown on the final field sheet for FE-369. - Concur

The pier currently charted, centered at latitude 36°51'07"N, longitude 076°17'51"W, shown as a large boathouse with a cluster of four piles, now extends to latitude 36°51'06.6"N, 076°17'53.6"W, with a "T" on the end (position 397)⁵¹². This pier should be charted as shown on the final field sheet for FE-369. Finger piers exist along the length of the pier on both sides, where the four piles are currently charted. The scale of chart 12253 does not allow for showing the detail of the finger piers. The four piles should be deleted. - Do not concur - These piles are still there and more have been added.

Concur
These two sentences belong with the above paragraph.

The marina development charted in the vicinity of latitude 36°51'07.5"N, longitude 076°18'02.5"W, was located by detached positions at the southwest corner (position 284)⁵³⁶ and the southeast corner (position 282)⁵⁰⁹. These surveyed positions agreed well with the currently charted representation of this area. - However, more finger piers exist than are charted. Chart as shown on the present survey.

O. ADEQUACY OF SURVEY

This field examination survey is adequate to update nautical chart 12253, for the area described in section B of this report.

‡ = These positions were scaled from Chart 12253.

* = The present survey is not actually common to this charted sounding but present depths in the vicinity are 1³ meters (4 feet).

P. AIDS TO NAVIGATION

Two floating aids to navigation lie within the survey area and were located by detached position at: ✓

| <u>NAVAID</u> | <u>LATITUDE(N)</u> | <u>LONGITUDE(W)</u> |
|---------------|--------------------|---------------------|
| RN "2" ✓ | 36°51'06.0" | 076°17'58.8" |
| RN "4" ✓ | 36°51'08.4" | 076°17'55.8" |

Comparison was made between the charted positions and the surveyed positions. Buoy RN "2" (position 280) was found ~~within 6 meters (southwest) of the~~ charted position, while buoy RN "4" (position 279) was found ~~within 15 meters (south-southwest) of the~~ charted location. They adequately mark the shoal (5 meter depth curve) which extends westward from shore, south of the Atlantic Marine Center. — *Additionally a mooring buoy was located by this survey. See section 7.b. of the Evaluation Report.* ✓

Q. STATISTICS

Description

| | |
|-----------------------------------|-----|
| Total Positions Taken | 398 |
| Detached Positions | 14 |
| Rejected Positions | 53 |
| Omitted Positions | 6 |
| Total Miles of Hydrography | 5.9 |
| Sq. Nautical Miles of Hydrography | 0 |
| Bottom Samples | 0 |
| Total Miles of Bottom Drag | 0 |
| Velocity Casts | 1 |
| Water Level Stations | 0 |
| Days of Production | 2 |

R. MISCELLANEOUS

None. ✓

S. RECOMMENDATIONS

None. ✓

T. REFERRAL TO REPORTS

Submitted by: Brian A. Link, Launch Hydrographer in Charge ✓

Descriptive Report Appendices
for
FE-369

I. DANGER TO NAVIGATION REPORTS

No dangers to navigation were identified on this survey.

II. NON-FLOATING AIDS AND LANDMARKS FOR CHARTS

No non-floating aids to navigation lie within the area surveyed.

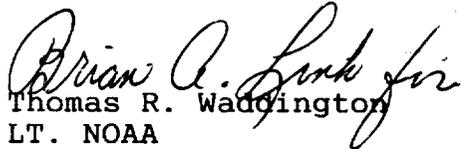
III. LIST OF HORIZONTAL CONTROL STATIONS

VII. APPROVAL SHEET

Approval Letter
Field Examination Survey
S-E936-AHP2
AHP2-5-1-91
FE-369

This field examination survey was conducted in accordance with the hydrographic manual, the hydrographic survey guidelines, and the field procedures manual. The survey data and reports were completed and reviewed in their entirety and all supporting records were also checked.

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



Thomas R. Waddington
LT. NOAA
Chief, Atlantic Hydrographic Party Two



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Rockville, Maryland 20852

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: June 22, 1992

MARINE CENTER: Atlantic

OPR: S-E936-AHP2

HYDROGRAPHIC SHEET: FE-369

LOCALITY: AMC Ship Base, Elizabeth River, Virginia

TIME PERIOD: April 13, 1992

TIDE STATION USED: 863-8610 Hampton Roads, Virginia
Lat. $36^{\circ} 56.8'N$ Lon. $76^{\circ} 19.8'W$

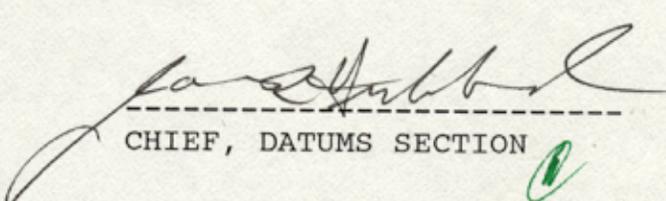
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 4.01 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.6 ft.

REMARKS: RECOMMENDED ZONING

Apply a +6 minute time correction and a X1.12 range ratio to Hampton Roads, Virginia (863-8610).

Note: Times are tabulated in Eastern Standard Time.


CHIEF, DATUMS SECTION





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE
Rockville, Maryland 20852

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: October 24, 1991

MARINE CENTER: Atlantic

OPR: S-E936-AHP

HYDROGRAPHIC SHEET: FE-369

LOCALITY: AMC Ship Base, Elizabeth River, VA

TIME PERIOD: September 19 - 20, 1991

TIDE STATIONS USED: 863 8610 Hampton Roads, VA
Lat. 36° 56.8'N Lon. 76° 19.8'W

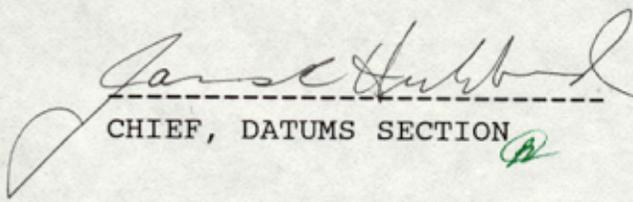
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 4.01 feet

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.6 feet

REMARKS: RECOMMENDED ZONING

Apply a +00 hr 06 min correction to all times, and a X1.13 range ratio to all heights.

NOTE: Hourly heights are tabulated on Eastern Standard Time.



CHIEF, DATUMS SECTION *B*



GEOGRAPHIC NAMES

FE-369

| Name on Survey | Source | | | | | | | | | | | |
|--|--------------|------------------------|--------------------------|------------------------|---------------|-------------------|---------------------|-----------------|---|--|--|----|
| | A | B | C | D | E | F | G | H | K | | | |
| | ON CHART NO. | ON PREVIOUS SURVEY NO. | CON U.S. QUADRANGLE MAPS | FROM LOCAL INFORMATION | ON LOCAL MAPS | P.O. GUIDE OR MAP | GRAND McNALLY ATLAS | U.S. LIGHT LIST | | | | |
| ELIZABETH RIVER (title) | | | | | | | | | | | | 1 |
| NOAA-AMC SHIP BASE (title- cultural feature) | | | | | | | | | | | | 2 |
| | | | | | | | | | | | | 3 |
| VIRGINIA (title) | | | | | | | | | | | | 4 |
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Approved

Charles E. Harrington
Chief Geographer - N / CG2x5

AUG - 5 1992

09/18/92

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-369

| | | |
|--|------------|----------------|
| NUMBER OF CONTROL STATIONS | | 9 |
| NUMBER OF POSITIONS | | 399 |
| NUMBER OF SOUNDINGS | | 2253 |
| | TIME-HOURS | DATE COMPLETED |
| PREPROCESSING EXAMINATION | 27 | 11/29/91 |
| VERIFICATION OF FIELD DATA | 198 | 06/08/92 |
| ELECTRONIC DATA PROCESSING | 78 | |
| QUALITY CONTROL CHECKS | 45 | |
| EVALUATION AND ANALYSIS | 78 | 09/17/92 |
| FINAL INSPECTION | 2 | 09/12/92 |
| TOTAL TIME | 428 | |
| ATLANTIC HYDROGRAPHIC SECTION APPROVAL | | 09/17/92 |

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

SURVEY NO.: FE-369

FIELD NO.: AHP2-5-1-91

Virginia, Elizabeth River, NOAA-AMC Ship Base

SURVEYED: September 19, 1991 through April 13, 1992

SCALE: 1:5,000

PROJECT NO.: S-E396-AHP2

SOUNDINGS: INNERSPACE Model 448 Echosounder and Tape Measure

CONTROL: Ashtech Model XII Differential Global Positioning System
(Hydrographic Positioning) and Topcon Total Station and Wild T-2
Theodolite (Planimetric Survey Positioning)

Chief of Party.....T. R. Waddington

Surveyed by.....B. A. Link

1. INTRODUCTION

- a. The purpose of this survey and the areas surveyed are adequately discussed in the Descriptive Report.
- b. This survey is smooth plotted at the scale of 1:1,250 for clarity.
- c. The two smooth sheets are attached to this report. The accompanying overlays (position and excess sounding) are filed with the field records.
- d. No unusual problems were encountered during the processing of this survey.
- e. Notes in the Hydrographer's report were made in red during office processing.

2. CONTROL AND SHORELINE

- a. Horizontal control for the present survey is discussed in sections H. and I. of the Hydrographer's report.

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. The smooth sheet of this survey has been annotated with ticks showing the computed mean shift between the present survey datum, NAD 83, and NAD 27. To place this survey on the NAD 1927, move the projection lines 0.532 seconds (16.41 meters or 13.13 mm at the smooth plotted scale of the survey) north in latitude and 1.212 seconds (30.03 meters or 24.02 mm at the smooth plotted scale of the survey) east in longitude.

- b. Shoreline for this survey is drawn on the smooth sheet from the present survey's planimetric survey of the area. Shoreline in red represents the present surveys findings of the High Water Line (HWL) and shoreline in black represents floating features, features in ruins, features seaward of the HWL (piles), and building outlines. (Note: Additional piles have been driven and dock structures have been constructed within the common area of this survey in the time between data acquisition and processing. It is recommended that the chart compiler review U.S. Army Corps of Engineers construction permits and drawings of this area.) The digitized shoreline (L-File) for this survey contains the cartographic codes that describe the features common to this survey but not as portrayed on the smooth sheets. Hydrographer revised

bulkheads, piers, buildings, bridge, and bridge fenders are not available cartographic code options.

3. HYDROGRAPHY

a. There is only one crossline, however, there is a development in one area and there are places where sounding lines do cross. Where crossings do occur, there is adequate agreement.

b. Depth curves were drawn at the standard intervals. Two brown curves were added in areas where the bottom topography is not adequately depicted by the standard depth curves.

c. The development of the bottom configuration and investigation of features and least depths is considered adequate except:

1) In the report of the dive conducted on April 13, 1992 on an obstruction, a second obstruction was also noted by the dive team and is described as "2nd pipe (approx. 2 ft. off bottom) found further north of first pipe". They provided a detached position and a least depth on the first pipe but did not provide information to position or assign a depth on the second pipe. It is recommended that additional field work be accomplished at an opportune time to obtain an accurate position and least depth on this second obstruction.

2) Vessels berthed along the bulkheads were in the way of surveying and for whatever reason, were not moved to accommodate the hydrographer. Thus holidays exist in the survey area. No soundings were taken along the faces of the bulkheads at the detached slip to the northwest of the AMC complex nor along two of the three bulkheads at the AMC complex. Even with vessels being berthed along the bulkheads, leadline soundings could have been taken along the faces of these bulkheads. See section 4.5.12. of the HYDROGRAPHIC MANUAL. It is recommended that additional field work be accomplished at an opportune time to fill in these gaps or holidays.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records, and reports adequately conform to the applicable requirements except as noted in section 3.c. of this report. The deficiencies noted in this report are those which impact charting recommendations or affect accuracy, adequacy, or interpretation of this survey.

5. JUNCTIONS

This survey does not junction with any other survey. There were no junctional requirements.

6. COMPARISON WITH SURVEYS PRIOR SURVEYS

NOAA Ship PEIRCE Reconnaissance Survey (1985) 1:1,000
 NOAA Ship WHITING Reconnaissance Survey (1983) 1:500
 Reconnaissance Survey (1965) 1:1,200
FE-163 (1958) 1:1,200

A reconnaissance survey of the AMC Ship Base was accomplished in 1985 by the NOAA Ship PEIRCE at the scale of 1:1,000. This is the most recent available prior survey and is common to the entire present survey. Present and prior depths compare well, generally being within 0³-0⁶ meters (1-2 feet) in the surveyed area of the main ship base. Significant shoaling is evident

however in the area in the vicinity of latitude 36°51'13.5"N, longitude 76°17'56.5"W where present depths are up to 2¹ meters (7 feet) shoaler. This prior survey covers the areas adjacent to the bulkhead faces where the present survey left holidays. A page-sized Xerographic copy of a section of this prior survey for these holiday areas (at the present survey scale) is included with this report. The detached facility (a boat slip/pier facility) to the northwest of the main ship base was surveyed by the present survey but by only three lines. This area shows a shoaling trend with the present survey soundings being 0-1⁵ meters (0-5 feet) shoaler in the slip. However at the mouth of the slip, the present soundings are slightly deeper. The prior survey shows a small shoal at the west slip entrance which is now essentially gone.

In 1983 the NOAA Ship Whiting conducted a unregistered reconnaissance survey of the AMC Ship Base at the scale of 1:500. The present survey is shoaler by approximately 0³-meter (1-foot) in the southernmost berthing area of the base and shoaler by 0⁶-1² meters (2-4 feet) along the southwest and northwest berthing areas. Present soundings within the common area of the detached facility (boat slip/pier facility) to the northwest of the main ship base range from 0³-2⁷ meters (1-9 feet) shoaler but are in general 0⁹-1² meters (3-4 feet) shoaler than prior hydrography. Considering the differences between this prior survey, the other prior surveys and the present survey, it is suspected that a sounding corrector has been misapplied to this prior survey, causing all soundings to be too deep.

A reconnaissance survey accomplished in 1965 (scale 1:1,200) appears to be an after-dredging condition survey. There is no information as to who conducted this survey. This prior survey is plotted on the Virginia Plane Coordinate projection. The soundings are in feet at MLW. Within the center of the area that appears to be the dredging area (surrounded by dashed lines on the prior survey), present hydrography is shoaler than prior hydrography by approximately 0³-0⁶ meters (1-2 feet). At the edges of the dredged area differences up to 2⁴ meters (8 feet) were found with the most noticeable area of difference or encroachment being along the northwest boundary of the dredged area where Smith Creek flows into the area. Outside of the dredged areas, present and prior hydrography agree generally within 0³-0⁶ meters (1-2 feet). This prior survey is not common to the detached facility (a boat slip/pier facility) to the northwest of the main ship base.

FE-163 (1958) is the only registered prior survey available for comparison with the present survey. This prior survey was conducted prior to dredging of the area. Thus differences of up to 5² meters (17 feet) were found. In areas outside but adjacent to the dredged area, the bottom configuration remains similar with present hydrography generally being 0³-0⁶ meters (1-2 feet) deeper than prior hydrography. This prior survey is not common to the detached facility (a boat slip/pier facility) to the northwest of the main ship base.

The differences that exist between the present and prior surveys are attributed primarily to the transference of bottom material (silting) which can be expected in these areas. Where the present survey shows deeper soundings, it is attributed to dredging of adjacent areas.

Numerous and significant changes in shoreline features have occurred since these prior surveys, particularly in regard to piers, piles, and areas of ruins. The shoreline shown on the present survey is the most accurate representation presently available, but as stated (section 2.b. of this report), this area has had additional construction of features subsequent to the present survey.

Neither the obstruction found or the other obstruction which was only noted by the diver was evident on any of the prior surveys.

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

7. COMPARISON WITH CHART 12253 (37th Ed., May 25, 1991)

a. HYDROGRAPHY

1) The charted hydrography within the common area is nine soundings. The origin of these nine soundings is uncertain. The charted hydrography is, in general, shoaler than the present survey. Seven of the nine soundings vary from 0-0⁷ meters (0-2 feet) shoaler than present depths. The other two charted soundings, are at the northern part of the common area and are significantly shoaler than present depths. These two soundings are:

- a) A charted 3-foot sounding in present depths of 6² meters.
- b) A charted 5-foot sounding in present depths of 6 meters.

2) An uncharted dangerous submerged obstruction was found by this survey in latitude 36°51'9.75"N, longitude 76°17'59.03"W with a least depth of 4³ meters (14 feet). It is recommended that this dangerous submerged obstruction be charted in accordance with the results of the present survey. A second uncharted obstruction is noted in the dive report but no depth or position was provided [see section 3.c.1) of this report].

3) The shoreline shown on the present survey is the most accurate representation presently available, but as stated (section 2.b. of this report), this area has had additional construction of features subsequent to the present survey. It is recommended that the shoreline within the common area be charted in accordance with the present survey and any subsequent information available.

4) There is a cable and pipeline area charted within the common area of this survey. No indications of these features were found by this survey and no notes were made by the hydrographer pertaining to these features. It is recommended that these features be retained as charted.

5) A fixed bridge is the northern boundary of the present survey. The charted horizontal and vertical clearances were not discussed by the hydrographer and are therefore recommended to be retained as presently charted.

6) Although, the present survey covers the entry to Smith Creek from the Elizabeth River, there is no maintained channel into Smith Creek.

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

b. AIDS TO NAVIGATION

No fixed aids are common to the present survey. There are two floating aids to navigation common to the present survey and are plotted on the smooth sheet. These two aids to navigation are on station and appear to be adequately serving their intended purpose. An uncharted mooring buoy was found by the present survey in latitude 36°51'05.2"N, longitude 76°17'53.6". This buoy is smooth plotted as a privately maintained mooring buoy. It is recommended that this mooring buoy not be charted since it on a shoal area and

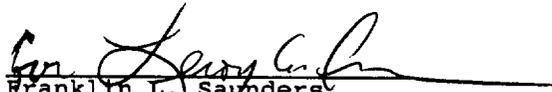
the shoal soundings are more critical to the mariner. The purpose of this mooring buoy is unknown but may be intended to mark this shoal area.

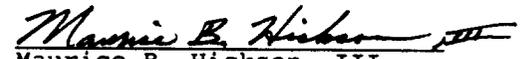
8. COMPLIANCE WITH INSTRUCTIONS

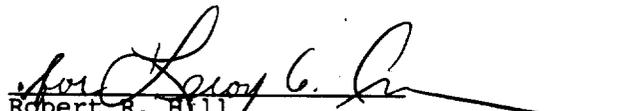
This survey adequately complies with the Project Instructions and the HYDROGRAPHIC MANUAL except as noted elsewhere in this report.

9. ADDITIONAL FIELD WORK

This survey is adequate to supersede charted and prior survey data within the common area as noted in this report. See section 3.c. of this report for recommended additional field work.


Franklin L. Saunders
Cartographic Technician
Verification of Field Data


Maurice B. Hickson, III
Cartographer
Evaluation and Analysis


Robert R. Hill
Senior Cartographic
Technician
Verification Check

APPROVAL SHEET
FE-369

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

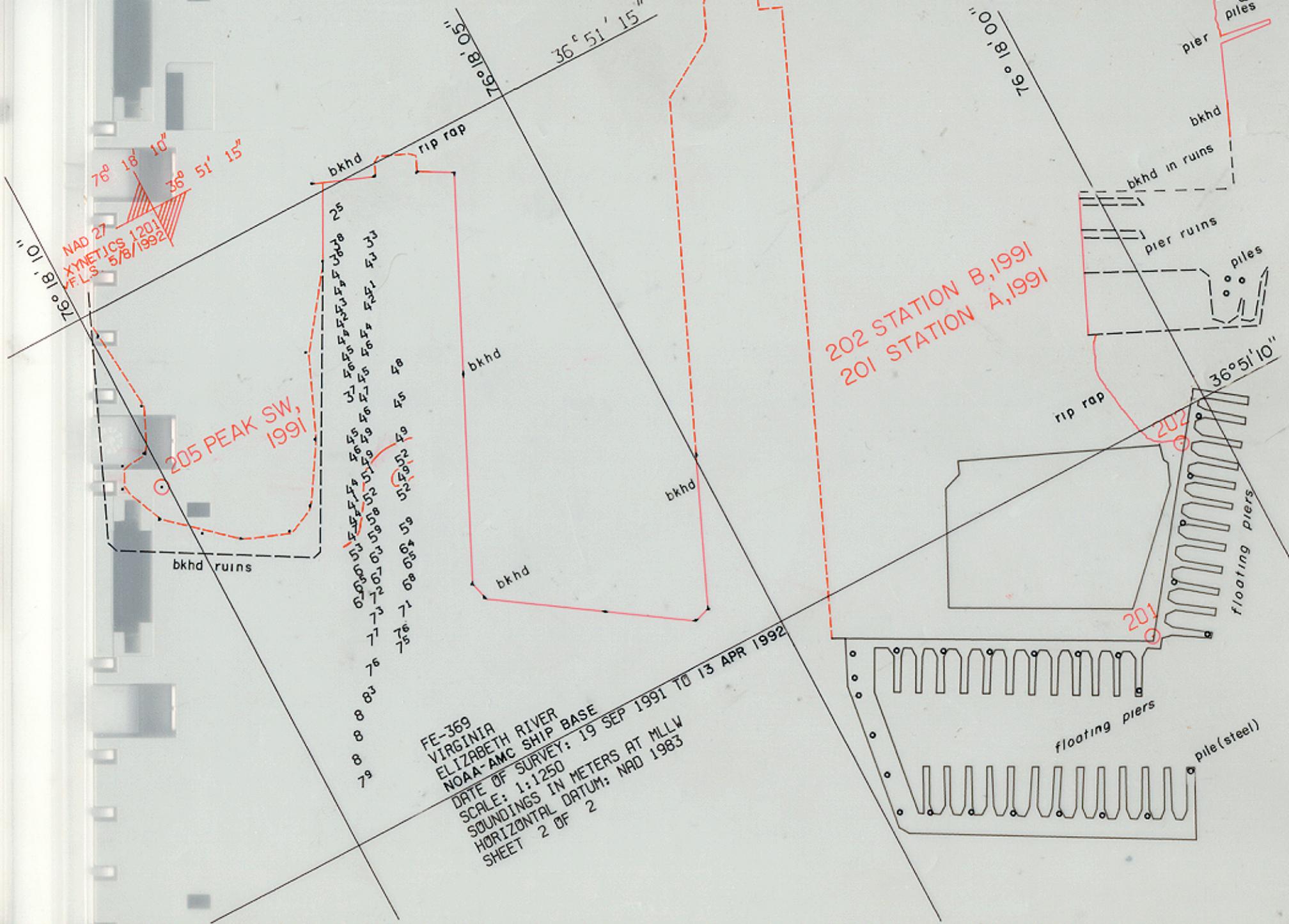
R. D. Sanocki Date: 9-17-92
R. D. Sanocki
Chief, Hydrographic Processing Unit
Atlantic Hydrographic Section

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Christopher B. Lawrence Date: 9-17-92
Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

Final Approval:

Approved: J. Austin Yeager Date: 5/18/94
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic
Survey



76° 18' 10"
 NAD 27
 XYMETRICS 1201
 V.F.L.S. 5/8/1992

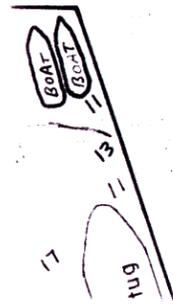
205 PEAK SW,
 1991

202 STATION B, 1991
 201 STATION A, 1991

79
 8
 8
 8
 8
 76
 75

FE-369
 VIRGINIA RIVER
 ELIZABETH SHIP BASE
 NOAA-AMC SURVEY: 19 SEP 1991 TO 13 APR 1992
 DATE OF SURVEY: 19 SEP 1991 TO 13 APR 1992
 SCALE: 1:1250
 SOUNDINGS IN METERS AT MLLW
 HORIZONTAL DATUM: NAD 1983
 SHEET 2 OF 2

202
 201



36° 51' 15"

76° 18' 00"

76° 17' 55"

Area of Holiday on FE-369 (1991)

36° 51' 10"

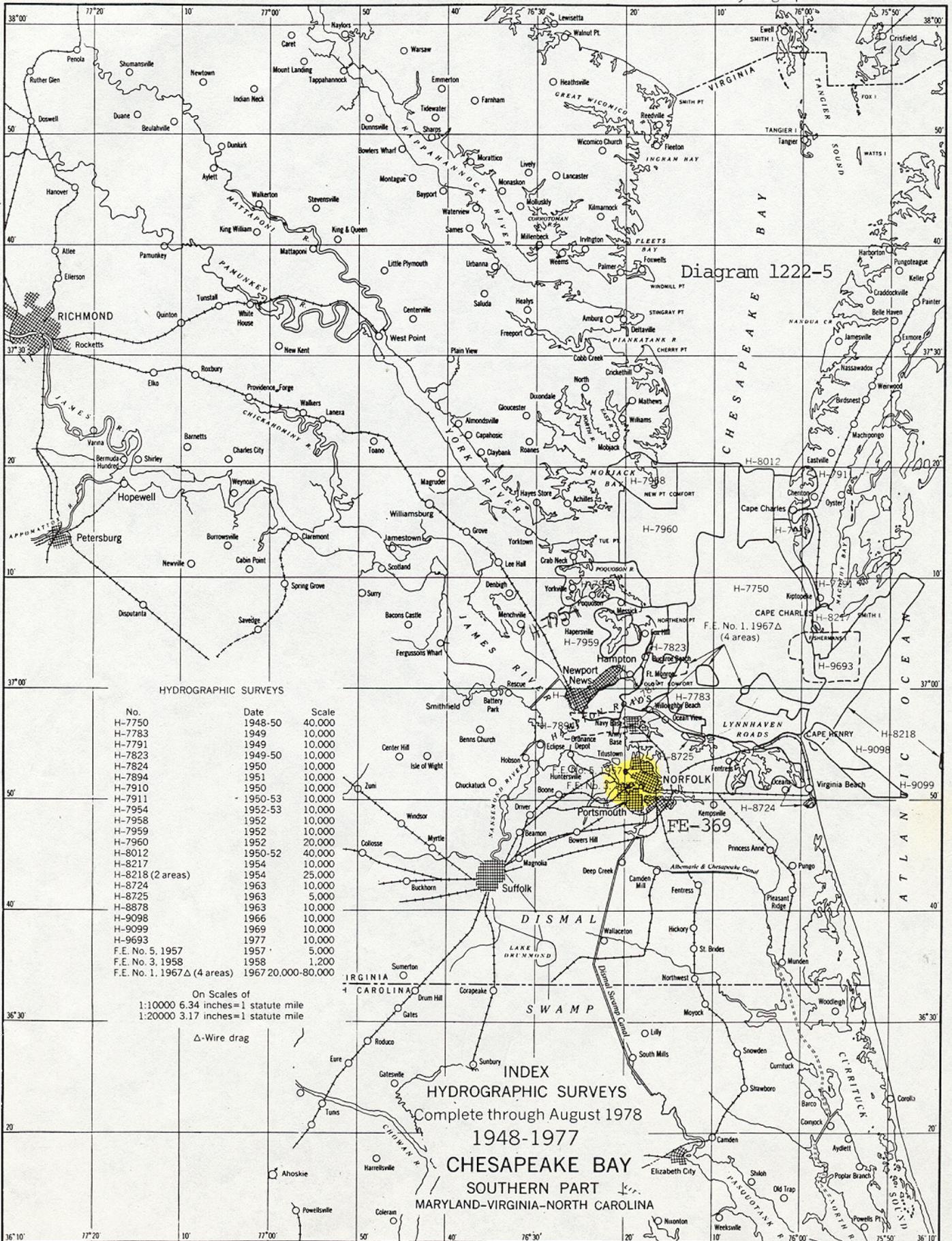


and 35
likthead

Xerox Copy of PEIRCE Reconnaissance Survey of
1985 of the NOS Ship Facilities.
Scale of this copy is approx. 1:1,250.
The Horizontal datum is apparently NAD 27.
Soundings in feet at MLLW.

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

Hydrographic Index No. 70 M



HYDROGRAPHIC SURVEYS

| No. | Date | Scale |
|-----------------------------|---------|---------------|
| H-7750 | 1948-50 | 40,000 |
| H-7783 | 1949 | 10,000 |
| H-7791 | 1949 | 10,000 |
| H-7823 | 1949-50 | 10,000 |
| H-7824 | 1950 | 10,000 |
| H-7894 | 1951 | 10,000 |
| H-7910 | 1950 | 10,000 |
| H-7911 | 1950-53 | 10,000 |
| H-7954 | 1952-53 | 10,000 |
| H-7958 | 1952 | 10,000 |
| H-7959 | 1952 | 10,000 |
| H-7960 | 1952 | 20,000 |
| H-8012 | 1950-52 | 40,000 |
| H-8217 | 1954 | 10,000 |
| H-8218 (2 areas) | 1954 | 25,000 |
| H-8724 | 1963 | 10,000 |
| H-8725 | 1963 | 5,000 |
| H-8878 | 1963 | 10,000 |
| H-9098 | 1966 | 10,000 |
| H-9099 | 1969 | 10,000 |
| H-9693 | 1977 | 10,000 |
| F.E. No. 5, 1957 | 1957 | 5,000 |
| F.E. No. 3, 1958 | 1958 | 1,200 |
| F.E. No. 1, 1967Δ (4 areas) | 1967 | 20,000-80,000 |

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

Δ-Wire drag

INDEX
HYDROGRAPHIC SURVEYS

Complete through August 1978
1948-1977

CHESAPEAKE BAY

SOUTHERN PART
MARYLAND-VIRGINIA-NORTH CAROLINA

