

F00413

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey **HYDROGRAPHIC/
SIDE SCAN SONAR**
Field No. **HE-10-4-95**
Registry No. **FE-413**

LOCALITY

State **VIRGINIA**
General Locality **CHESAPEAKE BAY**
Sublocality **6.5 NM EAST OF
OLD POINT COMFORT**
.....
19 95
CHIEF OF PARTY
..... **LCDR. G. E. WHITE, NOAA**

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DATE **FEB 5 1995**

Ref: BP157530

Products

CP3

12256

12254

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BP157530

HYDROGRAPHIC TITLE SHEET

FE-413SS

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.

HE-10-4-95

State VIRGINIA

General locality CHESAPEAKE BAY

Locality 6.5nm EAST OF OLD POINT COMFORT

Scale 1:10,000 Date of survey 17 March 1995 - 19 May 1995

Instructions dated 01 March 1994 Project No. OPR-E696-HE-95

Vessel NOAA Ship HECK (EDP 9140)

Chief of party George E. White, LCDR, NOAA

Surveyed by LCDR George E. White, LT Gerd Glang, LT Brent Bernard, ENS Larry Krepp, ENS James Crocker, ST Kevin B. Shaver

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

Graphic record scaled by ENS Larry Krepp, ENS James Crocker, ST Kevin B. Shaver

Graphic record checked by ENS James Crocker

Protracted by N/A Automated plot by ENCAD NovaJET (A11B) HDAPS Field

Verification by Atlantic Hydrographic Section, N/CG224

Soundings in ~~XXXXXX~~ ~~XXXX~~ METERS Feet at ~~XXXX~~ MLLW

REMARKS: Notes in the original Descriptive Report were made in red during of fice proceping'

NOAIS/SURV 2/14/95, SJ

Doc FEB 5 1995

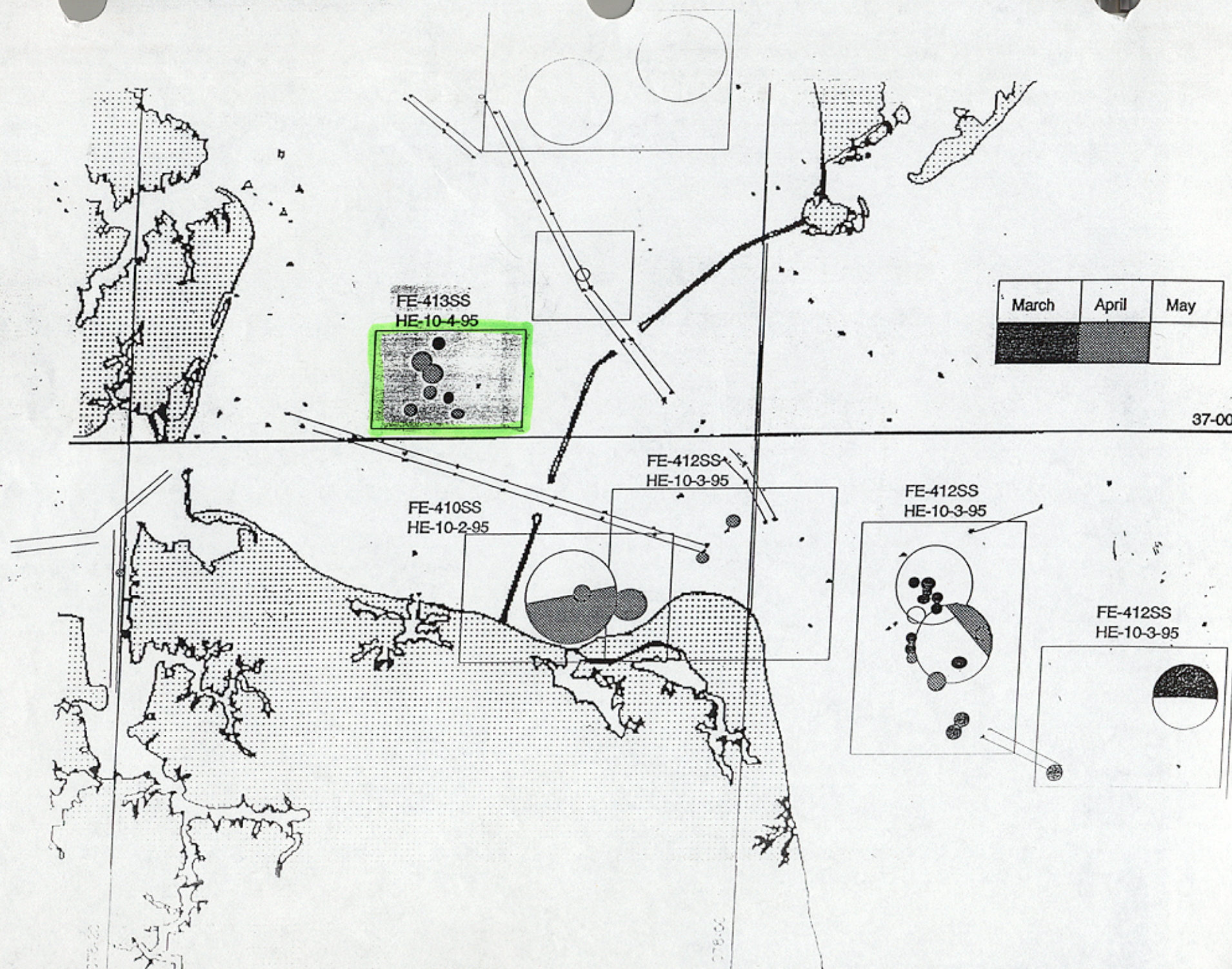


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DESCRIPTIVE REPORT TO ACCOMPANY
SURVEY FE-41388
FIELD NUMBER HE-10-4-95
VIRGINIA
CHESAPEAKE BAY
6.5nm EAST OF OLD POINT COMFORT
Scale 1:10,000
NOAA SHIP HECK S-591
LCDR George E. White, NOAA, CMDG.

A. PROJECT

1. This survey was conducted in accordance with Hydrographic Project Instructions OPR-E696-HE-95, Southern Chesapeake Bay Item Investigations, Virginia.
2. Original project Instructions are dated March 1, 1994.
3. An update to the Project Instructions was assigned and is dated January 26, 1995.
4. This sheet has been designated as Sheet "2".
5. The purpose of this project is to investigate numerous wrecks and obstructions charted in the lower Chesapeake Bay and Approaches. These hazards are hindering the movement of commercial shipping and accurate information regarding these items is considered important to efficient and safe navigation.

B. AREA SURVEYED

1. The survey area, designated as AWOIS items 908, 911, 914, 915, 3099, 7290, and 7292 in the Project Instructions, lies in the southern Chesapeake Bay 6.5 nm east of Old point Comfort.

2. The limits of the AWOIS areas are as follows:

<u>AWOIS NUMBER</u>	<u>CENTER</u>	<u>RADIUS</u>
908	37°00'50.89" N 076°09'55.54" W	100m
911	37°01'04.82" N 076°09'57.77" W	100m
914	37°01'24.52" N 076°10'27.77" W	200m
915	37°01'39.52" N 076°10'16.27" W	100m
3099	37°00'54.52" N 076°10'18.87" W	100m
7290	37°01'17.52" N 076°10'15.77" W	200m
7292	37°01'06.52" N 076°10'12.77" W	100m

3. Survey operations began on March 17, 1995 (DOY 076), and were completed on May 19, 1995 (DOY 139).

C. SURVEY VESSELS

1. Hydrographic and side scan data were collected by NOAA Ship HECK (EDP 9140). All offset and layback information is contained in the offset table located in section IV of the separates. * *

2. No unusual vessel configurations were used.

*D. AUTOMATED DATA ACQUISITION AND PROCESSING *See also Evaluation Report*

1. Survey data acquisition and processing were accomplished utilizing HDAPS hardware and the latest version of the NAVITRONIC NAVISOFT 300 software provided to the ship by N/CG24. A listing of actual programs and versions is appended in Appendix VI. *

2. Program Velocity (version 2.11) was used to determine velocity corrections.

3. No nonstandard automated acquisition or processing methods were used.

* *Data filed with original field records*

E. SONAR EQUIPMENT

1. HECK is equipped with an EG&G model 260 slant range corrected SSS recorder and model 272 single frequency towfish. Serial numbers and dates of usage are as follows:

Towfish	(S/N 016697)	DOY 076 - 139
Recorder	(S/N 0012105)	DOY 076 - 127
	(S/N 0010884)	DOY 128 - 139

2. The beam width and down angle are not adjustable on this unit. The grazing angle dip switches are normally set to 01, unless otherwise noted on the sonargram.

3. All SSS data was collected using 100 Khz frequency.

4. a. Line spacing of 110 meters on the 75 meter scale, 80 meters on the 50 meter scale, and 20 meters on the 25 meter scale were used to maintain the required line overlap as determined by the equation in FPM 7.3.2.2.

b. Confidence checks were obtained, and annotated on the sonargrams, by towing the side scan unit either past known items or linear bottom features. A minimum of two confidence checks were obtained on a daily basis as required.

c. Required proof of sonar coverage is demonstrated through sonar coverage plots produced as HDAPS plots. Quality of bottom coverage to the outer edges of the sonargrams was assured during check scanning to the best of the hydrographers ability.

d. No anomalies were observed.

e. The towfish was deployed from the stern. All offset and layback information is provided in the offset table located in section IV of the separates.*

5. Significant contacts, > 0.6 meters off the bottom, were further investigated by using side scan sonar wagon wheel developments. Echosounder developments were completed on all contacts that still proved significant following SSS developments. Diver investigations were not performed during this survey.

6. The sonar contact list (Side Scan Sonar Manual 3.1.1.1.) is provided through the HECK's side scan survey contact abstract table and the automated HDAPS contact printout that is produced during the computation and logging of contacts. Depths on HDAPS contact printout are raw, however, depths on the side scan survey contact list are manually corrected for

draft (+2.1 meters). Both are located in the separates.

Annotations required by section 2.6 of the Side Scan Sonar manual (ship's speed, ship's head, weather/sea state) are on the sonargrams. This information is located in the digital records and can be examined in the "Depth/Position Edit" sub-routine of the Post-Survey routine. Weather information is in the weather logs found in Appendix VI. * Data filed with original field records'

F. SOUNDING EQUIPMENT

1. The following Raytheon DSF-6000N echosounders were used during this survey:

S/N A116N	DOY 076
S/N A112N	DOY 080, 093
S/N A107N	DOY 104, 123
S/N A111N	DOY 139

2. No dives were conducted as part of this survey. The pneumogauge and MOD III divers least depth gage were not used.

3. The DSF-6000N had failed numerous times during the survey due to electronic motor problems. A change out of the whole unit was the only way to correct the problem. This resulted in some data being rejected when the DSF-6000N would fail. The DSF-6000N failures did not affect the accuracy or quality of sounding data.

4. Both low and high frequency depths were digitized, but only high frequency depths were plotted.

G. CORRECTIONS TO ECHOSOUNDINGS

1. a.1. The following table shows dates and locations of velocity casts conducted using the ODOM Digibar sound velocimeter (S/N 168) for casts 11 and 14. The Sea Bird SEACAT CTD (S/N:1251) was used for cast 23.

<u>TABLE</u>	<u>DATE</u>	<u>LOCATION</u>
11	03/17/95 (DOY 076)	37°01'00"N 076°09'42"W
14	04/03/95 (DOY 093)	37°01'18"N 076°10'06"W
23	05/03/95 (DOY 123)	37°01'36"N 076°09'34"W

The velocity cast data for the Digibar were reduced and velocity corrections calculated using program VELOCITY

version 2.11. Data collected by the SEACAT was downloaded to a PC computer using the latest versions of the CAT program provided by the Nautical Charting Division. Data correctors were then generated using program VELOCITY version 2.11.

The Digibar was checked on January 4, 1995, by ODOM and found to be functioning correctly. Field checks using the prescribed fresh water method were accomplished prior to each cast and recorded on the velocity cast form.

The SEACAT CTD was calibrated on March 17, 1995 by SEA-BIRD Electronics, Inc and found to be functioning correctly. Field checks for the Sea Bird SEACAT CTD were conducted on each cast. The field check consisted of comparing the specific gravity of a surface sea water sample to surface measurements made by the SEACAT using the velocity program.

b. There are no variations in the instrument initial on the DSF-6000N.

c. There are no instrument correctors on the DSF-6000N.

d. On DOY 073 (1995) a dual leadline comparison was conducted on the HECK. A mean difference of 0.04 meter was obtained resulting in a corrector of 0.0 meter.

e. The computed velocity correctors were applied on line to echosounder depths (both high and low frequency) by entering the correction data into the HDAPS sound velocity table.

f. The static draft of 2.10 meters was applied on line to all echosoundings via the HDAPS offset table.

g. Settlement and squat values for NOAA HECK were determined on March 15, 1995 in the vicinity of Craney Island fuel pier in Norfolk, Virginia using the level rod method. These correctors are on file at N/CG244 and are included in separates section IV. * Data filed with original field records
Settlement and squat values were applied on line to hydrographic soundings via the HDAPS offset table located in section IV of the separates.*

h. Heave is measured by a Datawell B.V. (S/N 19110-C) heave, roll, and pitch sensor (HIPPY) located midships near the transducer. The sensor gathers on line data

which is applied to the soundings in near real time. All data have been corrected by applying HIPPY correctors.

2. No unusual methods or instruments for determination of correction to soundings were used.
3. No zoning or special correctors were used.
4. The pneumogauge and the divers least depth gauge were not used during the course of this survey.
5. There were no unusual factors affecting DSF records other than that mentioned in F.4.
6.
 - a. The tidal datum for this survey was mean lower low water (MLLW). The tide station at Chesapeake Bay Bridge Tunnel, VA (863-8863) was the reference station. Opening and closing levels were run by N/OES213 for the Chesapeake Bay Bridge Tunnel. This station is automated and monitored by N/OES213. The tide station at Hampton Roads, VA (863-8610) was the backup tide station. An opening level run was conducted by N/OES213. Closing level run was conducted by HECK Crew on May 24, 1995. No tide stations were established by HECK in support of this survey.
 - b. All hydrographic depths have been corrected for predicted tides. Zone correctors were specified in the project instructions. Tidal correctors were applied on line via the HDAPS predicted tide table. * Approved tides and zoning were applied during office processing
 - c. Zoning was in accordance with project instructions. The time and height correctors for zone 11 are as follows:

Apply a +0:24 minute time correction and a x0.96 range ratio to predicted tides at CBBT.

*H. CONTROL STATIONS *See also Evaluation Report*

1. The horizontal datum for this project is the North American Datum of 1983 (NAD 83).
2. Horizontal control was accomplished using GPS in conjunction with the DGPS beacons at Cape Henry, VA, Cape Henlopen, DE and Alexandria, VA.
3. Coast Guard DGPS beacons were positioned by N/CG241. All control stations were positioned to Third order, Class 1 standards.

4. No horizontal control stations were installed or maintained by HECK.
5. No horizontal control report has been submitted to NOAA Atlantic Hydrographic Section, N/CG244.
6. No known anomalies or unconventional methods of horizontal control were used.

I. HYDROGRAPHIC POSITION CONTROL

1. Position control was by Differential Global Positioning System (DGPS). Control station positions were entered into the HDAPS control station table. The first, and most commonly used, was the Cape Henry beacon (kHz). The Cape Henlopen beacon (298 kHz) and Alexandria beacon (305 kHz) were also used for performance checks and occasionally for primary positioning. The list of the DGPS beacons and their positions appear in Appendix III, LIST OF HORIZONTAL CONTROL STATIONS submitted with this survey.
2. Accuracy requirements were met as specified by the Hydrographic Manual and Field Procedures Manual.
3. Equipment serial numbers appear as part of the header information on each day's data print out. The GPS receivers on board are Ashtech OEM sensors, serial numbers 700417131012 and 70041781195 with 1E89D-P eeproms. The differential receivers are Magnavox MX50R receivers. The serial number for DGPS receiver 1 is 079. The serial number for DGPS receiver 2 is 077.
4. The DGPS beacons used for this survey were the USCG beacons located at Cape Henry, VA (289 kHz), Cape Henlopen, DE (298 kHz) and Alexandria, VA (305 kHz).
5. Performance checks using both DGPS positions (Cape Henry, Cape Henlopen, or Alexandria) were conducted on the HECK using the DIM program version 2.1. These checks compare positions computed by both DGPS beacons and compare their subsequent position differences. The performance checks were sent to Atlantic Hydrographic Section N/CG244 as part of the data.
6. When Differential GPS was used, the maximum allowable HDOP was set at 3.0 for the Cape Henry, Cape Henlopen, and Alexandria beacons to avoid EPE's in excess of the allowable 15 meters for this scale survey. Data not meeting these requirements were examined and either accepted, smoothed or rejected.

7.
 - a. No unusual methods of operating or calibrating electronic equipment were used.
 - b. There were no significant problems with receiving the DGPS signal from either the Cape Henry or Cape Henlopen beacon.
 - c. No unusual atmospheric conditions were noted and did not effect our reception of the DGPS signals.
 - d. The positioning accuracy using the DGPS beacons was not compromised at all during the survey.
 - e. No systematic errors were discovered.
 - f. and g. All survey offsets were applied on-line using the HDAPS Offset Table 1.

J. SHORELINE

Not applicable as per project instructions.

K. CROSSLINES

Not applicable as per project instructions.

L. JUNCTIONS

Not applicable as per Project Instructions (section 6.9).

M. COMPARISON WITH PRIOR SURVEYS

See also Evaluation Report

The Atlantic Hydrographic Section HECK processing team is completing survey comparisons as agreed upon at the start of this project.

N. ITEM INVESTIGATION REPORTS

N1. SUMMARY OF ITEMS INVESTIGATED

AWOIS NO. TGT #	SECTION	STATUS	RECOMMENDATION
908	N2	Found	Delete Wreck
911	N3	Disproved	Delete Obstruction
914	N4	Disproved	Delete Obstruction
915	N5	Disproved	Delete Obstruction
3099	N6	Disproved	Delete Obstruction
7290	N7	Disproved	Delete Obstruction
7292	N8	Disproved	Delete Obstruction
3098	N9	Not Surveyed	Retain As Charted
9428	N10	Not Surveyed	Retain As Charted

N2. AWOIS ITEM 908

1. Area of Investigation

Reported Position:

Latitude: 37°00'50.89" N

Longitude: 076°09'55.54" W

Datum: NAD 83

Depth: 15 feet

Feature: Wreck

2. Description of Item

This item was discovered in 1966 during wire drag investigations. It was hung at 15 ft and cleared to 12 ft, with a diver least depth of 12 ft. The item was described as a body of a crane. In 1982 the item was verified as a sunken crane barge and was retained as charted. The sunken crane barge was verified again in 1983 and charted as a wreck with a leadline least depth of 15 ft.

3. Survey Requirements

Survey requirements specify determining the existence of this item through 400% side scan coverage over a 200 meter radius.

4. Method of Investigation

400% side scan coverage was completed on April 14, 1995 (DOY 104).

5. Results of Investigation

The item was found by side scan sonar on five separate passes during the 400% coverage. All of the sonar contacts plotted with-in meters of each other. The sonar traces for each contact had no shadows to represent any height of the object. No other significant contacts were found within the AWOIS circle limits. These results prove that the sunken crane barge is still where last charted. The results also show that the wreck has no significant height off the bottom and is no longer considered by the hydrographer as a danger to navigation.

Contact	Height	Latitude	Longitude
221.35	0.0	37°00'49.76"N	076°09'56.66"W
227.20	0.0	37°00'49.66"N	076°09'56.61"W
237.34	0.0	37°00'49.67"N	076°09'56.72"W
241.24	0.0	37°00'49.92"N	076°09'56.62"W
243.29	0.0	37°00'50.00"N	076°09'56.67"W

Recommendation: Delete Wreck (15 feet) from chart at
Latitude 37°00'50.89" N, Longitude 076°09'55.54" W. *deleted* *concur*

N3. AWOIS ITEM 911

1. Area of Investigation

Reported Position:
Latitude: 37°01'04.82" N
Longitude: 076°09'57.77" W
Datum: NAD 83
Depth: 15 ft
Feature: Obstruction

2. Description of Item

This item is described as metal debris in a 1982 survey cleared by 15 ft. The obstruction was originally hung in 1977 by wire drag and cleared to 15 ft. The obstruction was not investigated on this hang.

3. Survey Requirements

Survey requirements specify determining the existence of this item through 400% side scan coverage over a 100 meter radius.

4. Method of Investigation

400% side scan coverage was completed on March 21, 1995 (DOY 080).

5. Results of Investigation

This item was not found. No other significant items were found within the survey limits.

Recommendation: Delete Obstruction (15 feet) from the chart at Latitude 37°01'04.82" N, Longitude 076°09'57.77" W. *deleted* *concur*

N4 AWOIS ITEM 914

1. Area of Investigation

Reported Position:
Latitude: 37°01'24.52"
Longitude: 076°10'27.77"
Datum: NAD 83
Depth: 16
Feature: Obstruction

2. Description of Item

The item is described as an unidentified obstruction hung in 1967 at 16 ft and cleared to 16 ft.

3. Survey Requirements

Survey requirements specify determining the existence of this item through 400% side scan coverage over a 200 meter radius.

4. Method of Investigation

400% side scan coverage was completed on April 03, 1995 (DOY 093).

5. Results of Investigation

This item was not found. One contact, 103.30, found and further developed with side scan sonar, proved to be insignificant. No other significant items were found within the survey limits.

Recommendation: Delete Obstruction (16 feet) from the chart at Latitude 37°01'24.52" N, Longitude 076°10'27.77" W. *concur*

N5 AWOIS ITEM 915

1. Area of Investigation

Reported Position:
Latitude: 37°01'39.52"
Longitude: 076°10'16.27"
Datum: NAD 83
Depth: 15
Feature: Obstruction

2. Description of Item

The obstruction is described as scrap metal wreckage that was hung in 1967 at 17 ft and cleared to 15 ft.

3. Survey Requirements

Survey requirements specify determining the existence of this item through 400% side scan coverage over a 100 meter radius.

4. Method of Investigation

400% side scan coverage was completed on March 17, 1995 (DOY 075).

5. Results of Investigation

This item was not found. No other significant items were found within the survey limits.

Recommendation: Delete Obstruction (15 feet) from the chart at Latitude $37^{\circ}01'39.52''$ N, Longitude $076^{\circ}10'16.27''$ W. *concur*

*not on 12254
delete*

N6 AWOIS ITEM 3099

1. Area of Investigation

Reported Position:
Latitude: $37^{\circ}00'54.52''$
Longitude: $076^{\circ}10'18.87''$
Datum: NAD 83
Depth: 16
Feature: Obstruction

2. Description of Item

The item is described as a metal plate extending 1.5 ft off the bottom. The obstruction was hung at 18 ft in 1977 and cleared to 16 ft.

3. Survey Requirements

Survey requirements specify determining the existence of this item through 400% side scan coverage over a 100 meter radius.

4. Method of Investigation

400% side scan coverage was completed on April 14, 1995 (DOY 104).

5. Results of Investigation

This item was not found. No other significant items were found within the survey limits.

Recommendation: Delete Obstruction (15 feet) from the chart at Latitude $37^{\circ}01'39.52''$ N, Longitude $076^{\circ}10'16.27''$ W. *concur*

delete

N7 AWOIS ITEM 7290

1. Area of Investigation

Reported Position:
Latitude: 37°01'17.52"
Longitude: 076°10'15.77"
Datum: NAD 83
Depth: 15
Feature: Obstruction

2. Description of Item

The item is described as an obstruction that was hung in 1945 and 1950 at 15.5 ft and cleared to 15 ft.

3. Survey Requirements

Survey requirements specify determining the existence of this item through 400% side scan coverage over a 200 meter radius.

4. Method of Investigation

400% side scan coverage was completed on April 03, 1995 (DOY 093).

5. Results of Investigation

This item was not found. Outside of the search radius side scan sonar contact 49.00 was found. This contact was further developed with the side scan sonar and the echosounder. These developments proved the contact to be insignificant. No other significant items were found within the survey limits.

Recommendation: Delete Obstruction (15 feet) from the chart at Latitude 37°01'17.52" N, Longitude 076°10'15.77" W. *concur*

deleted

N8 AWOIS ITEM 7292

1. Area of Investigation

Reported Position:
Latitude: 37°01'06.52"
Longitude: 076°10'12.77"
Datum: NAD 83
Depth: 15
Feature: Obstruction

2. Description of Item

This item is described as an obstruction hung at 15 ft and cleared to 14 ft in 1944. In 1977 the obstruction was cleared to 15 ft. 400% side scan sonar survey investigation was made in 1983 and concluded that no evidence of the hang was found. Poor quality of side scan records preclude disproof. Obstruction was retained as charted.

3. Survey Requirements

Survey requirements specify determining the existence of this item through 400% side scan coverage over a 100 meter radius.

4. Method of Investigation

400% side scan coverage was completed on April 03, 1995 (DOY 093).

5. Results of Investigation

This item was not found. No other significant items were found within the survey limits.

Recommendation: Delete Obstruction (15 feet) from the chart at Latitude 37°01'06.52" N, Longitude 076°10'12.77" W. *deleted* **CONCUR**

N9. AWOIS ITEM 3098

1. Area of Investigation

Reported Position:

Latitude: 37°00'58.52" N

Longitude: 076°11'31.27" W

Datum: NAD 83

Depth: 15 feet

Feature: Obstruction

2. Description of Item

In 1976 debris extending three feet off the bottom was hung by wire drag at 15 ft and cleared to 15 ft. The obstruction, described as metal debris, was cleared by 15 ft in 1983.

3. Survey Requirements

Survey requirements specify determining the existence of this item through 400% side scan coverage over a 100 meter radius.

4. Method of Investigation

This item was not investigated.

5. Results of Investigation

N/A

Recommendation: Retain as charted. *concur*

No Cont

N10. AWOIS ITEM 9428

1. Area of Investigation

Reported Position:

Latitude: 37°02'48.00" N

Longitude: 076°09'30.00" W

Datum: NAD 83

Depth: Partially Submerged

Feature: Submerged Pile

2. Description of Item

A partially submerged six inch diameter pile was reported.

3. Survey Requirements

Survey requirements specify determining the existence of this item through 400% side scan coverage over a 500 meter radius.

4. Method of Investigation

This item was not investigated.

5. Results of Investigation

N/A

Recommendation: Retain as charted. *concur*

No Cont

0. COMPARISON WITH THE CHART

See also Evaluation Report

1. The Atlantic Hydrographic Section HECK processing team is completing comparisons with current editions of the following NOS charts as agreed upon at the start of this project:

<u>CHART</u>	<u>EDITION</u>	<u>DATE</u>	<u>SCALE</u>
12256	10th	JUL 93	1:20,000
12254	36th	JUN 93	1:20,000
12222	37th	APR 95	1:40,000
12221	63rd	APR 95	1:80,000

2. No Danger to Navigation reports have been submitted during the course of this survey.

3. a. The charted soundings are consistent with the survey depths.

b. No shoaling or deepening has been observed. The depths from this survey should replace all prior depths in the area.

c. No extraordinary hydrographic features were noted.

d and e. The survey area contained no maintained channels or safety fairways.

4. There are no non-sounding features other than those mentioned in Section N in this survey.

5. No changes are recommended to scale coverage or format of published charts within the survey area.

P. ADEQUACY OF SURVEY

1. This survey meets or exceeds 1:10,000 specifications, and is adequate to supersede all prior surveys for the purposes of charting the depths and hazards to navigation within the survey area.

2. No portion of this survey has been identified as substandard or incomplete.

Q. AIDS TO NAVIGATION

1. No correspondence was initiated with the Coast Guard regarding floating aids to navigation.

2. There were no floating aids to navigation located within the survey area.

3. There were no aids to navigation not shown in the Light List noted in the survey area.

4. No bridges or overhead cables are close to the survey area.

5. No submarine cables, submarine pipelines, or ferry routes were noted.

6. There are no uncharted ferry terminals within this survey area.

R. STATISTICS

<u>ITEM</u>	<u>AMOUNT</u>
a. Square NM Hydrography	0.238 Nmi ²
b. Days of Production	6 Days
c. Detached Positions	0
d. Bottom Samples	0
e. Tide Stations Established	None
f. Current Stations Established	None
g. Velocity Casts Performed	3 Casts
h. Magnetic Stations Established	None
i. XBT Drops	None

S. MISCELLANEOUS

- No unusual silting conditions were observed in the survey area.
 - No unusual submarine features were noted.
 - No unusual tide conditions were observed.
 - No current observations were made. No unusual current conditions were observed.
 - No magnetic anomalies were noted.
- No bottom samples were taken during the course of this survey as per project instructions.

T. RECOMMENDATIONS

- No additional field work is recommended.
- No salvage or dredging operations should interfere with the results of this survey.
- No further investigation of unusual features or sea conditions is recommended.

U. REFERRAL TO REPORTS

- User Evaluation Reports were submitted to N/CG241 and N/CG244.

2. A Coast Pilot Report will be submitted to N/CG244 and N/CG222 by August 1995.

3. No LORAN-C chart verification was conducted as part of this survey since no detached positions were taken.

SUBMISSION

Respectfully Submitted,

A handwritten signature in cursive script, appearing to read "James M. Crocker", written in black ink.

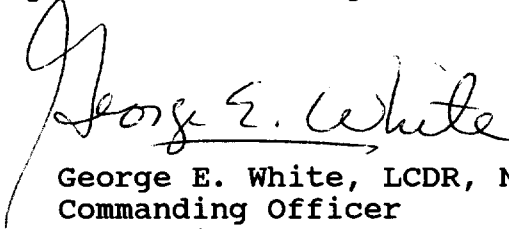
James M. Crocker, ENS, NOAA
NOAA Ship HECK

CONTROL STATION TABLE FOR FE-413

No	Latitude	Longitude	Cart	Name
100	036:55:36.000	076:00:24.000	250	CAPE HENRY DGPS STATION
200	038:46:36.000	075:05:18.000	250	CAPE HENLOPEN DGPS STATION
300	036:51:00.136	076:17:50.869	250	BENCHMARK "CONDO"-NAUTICUS

LETTER OF APPROVAL

Field operations contributing to the accomplishment of this survey were conducted under my direct supervision with daily personal checks of progress and data quality. This report, field sheets, and data records have been closely reviewed and are complete and adequate for charting.

A handwritten signature in cursive script that reads "George E. White". The signature is written in dark ink and is positioned above the typed name and title.

George E. White, LCDR, NOAA
Commanding Officer
NOAA Ship HECK



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: September 27, 1995

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-E696-HE

HYDROGRAPHIC SHEET: FE-413SS

LOCALITY: Virginia, Chesapeake Bay, 6.5 Nautical Miles
East of Old Point Comfort

TIME PERIOD: March 17 - May 19, 1995

TIDE STATION USED: 863-8863 Chesapeake Bay Bridge Tunnel, Va.
Lat. $36^{\circ} 58.0'N$ Lon. $76^{\circ} 06.8'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 24.88 ft.

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

REMARKS: RECOMMENDED ZONING

1. In the area bounded by points:

- 1 $37^{\circ} 03.8'N/76^{\circ} 03.7'W$
- 2 $36^{\circ} 55.5'N/76^{\circ} 09.6'W$
- 4 $37^{\circ} 04.3'N/76^{\circ} 05.0'W$
- 3 $36^{\circ} 56.1'N/76^{\circ} 12.3'W$

Apply a +12 minute time correction and a x0.92 range ratio to heights using Chesapeake Bay Bridge Tunnel, Va. (863-8863).



page 2 of 2 for FE-413SS

2. In the area bounded by points:

1 37° 06.8'N/76° 08.4'W
5 37° 00.5'N/76° 18.0'W
2 37° 05.1'N/76° 07.1'W
3 37° 04.3'N/76° 05.0'W
4 36° 56.1'N/76° 12.3'W

Apply a +24 minute time correction and apply a x0.96 range ratio to heights using Chesapeake Bay Bridge Tunnel, Va. (863-8863).

Notes: 1. Times are tabulated in Greenwich Mean Time.
2. The data is temporarily stored in file #663-8863.

Walter M. Huber
CHIEF, DATUMS SECTION

GEOGRAPHIC NAMES

Name on Survey

A ON CHART NO. 12222, 12254, 12256
B ON PREVIOUS SURVEY NO.
C ON U.S. QUADRANGLE MAPS
D FROM LOCAL INFORMATION
E ON LOCAL MAPS
F P.O. GUIDE OR MAP
G RAND McNALLY ATLAS
H U.S. LIGHT LIST
K

Name on Survey	A	B	C	D	E	F	G	H	K
CHESAPEAKE BAY (title)	X		X						1
OLD POINT COMFORT (title)	X		X						2
VIRGINIA (title)	X		X						3
									4
									5
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Approved:

Chris C. Loy
Chief Geographer

JAN 16 1996

sections N. and O. of the Descriptive Report.

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

P. ADEQUACY OF SURVEY

3. This is an adequate side scan sonar survey, no additional work is recommended. Additional work is recommended on AWOIS Items 3098 and 9428 which were not investigated by the field.

S. MISCELLANEOUS

Chart compilation using the present survey was done by the Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to the Marine Chart Division, Silver Spring, Maryland.

HECK PROCESSING TEAM

Deborah A. Bland for
Douglas V. Mason
Cartographic Technician

Deborah A. Bland
Deborah A. Bland
Cartographer

APPROVAL SHEET
FE-413

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. A final sounding printout of the survey has been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Deborah A. Bland
Deborah A. Bland
Cartographer
Atlantic Hydrographic Branch

Date: 12-22-95

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.

Nicholas E. Perugini
Nicholas E. Perugini,
Commander, NOAA
Chief, Atlantic Hydrographic Branch

Date: 12-22-95

Final Approval:

Approved: Andrew A. Armstrong III

Dated: 2-15-96

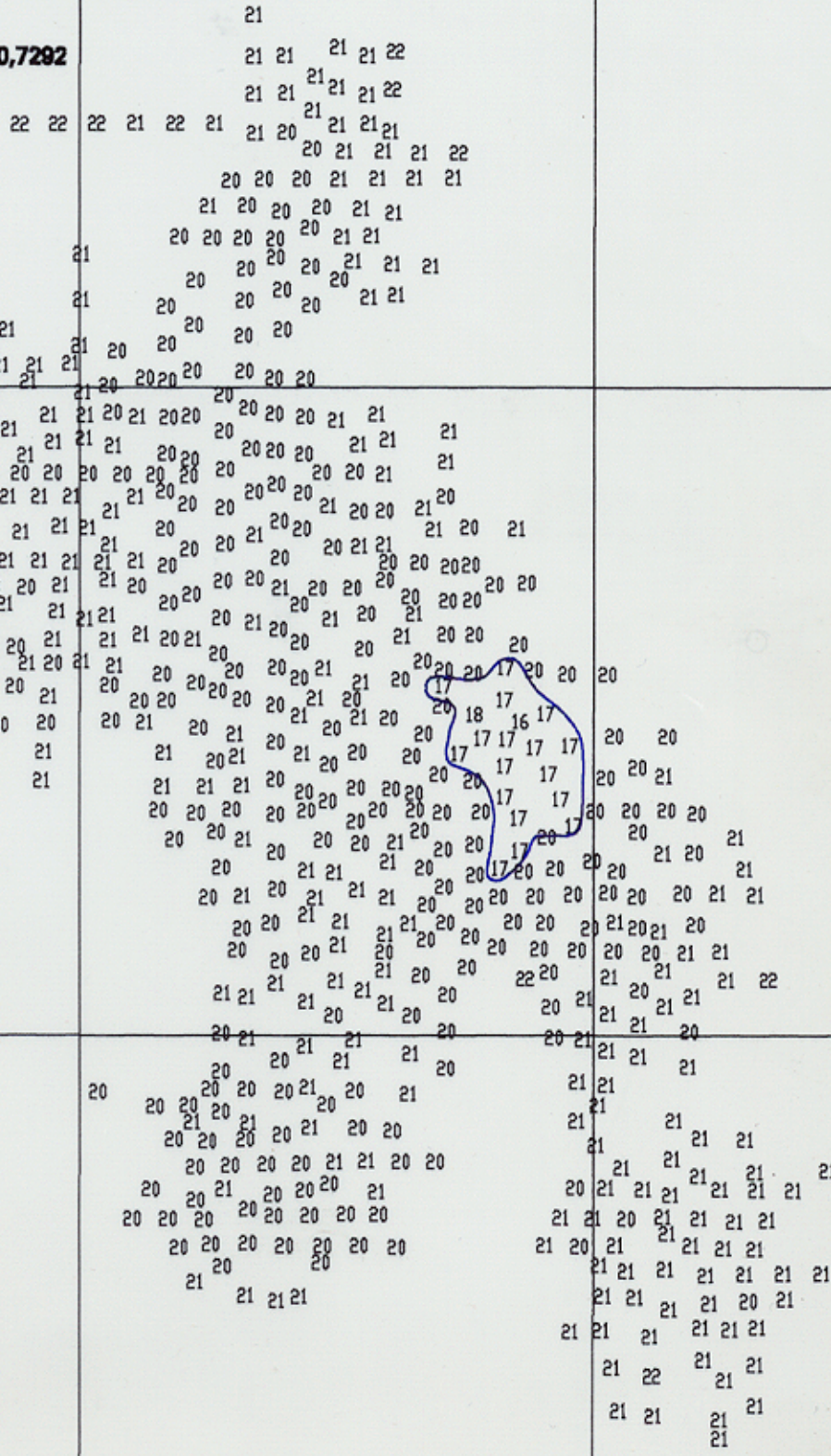
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division

37° 02' 00"

76° 10' 30"

76° 10' 00"

FE-413
VIRGINIA
CHESAPEAKE BAY
6.5 NM EAST OF OLD POINT COMFORT
17 MAR 1995 TO 19 MAY 1995
1:10,000
VERTICAL DATUM: SOUNDINGS IN FEET AT MLLW
HORIZONTAL DATUM: NAD 83
SHEET 1 OF 1
AWOIS ITEMS 908,911,915,3099,7290,7292



37° 01' 30"

37° 01' 00"

