FE308
SIDE SCAN

Diagram No. 78-3

NOAA-FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey ... Side Scan Sonar

Field No. ... RU-20-2-87

Registery No. ... FE-308SS

LOCALITY

State ... Virginia--Maryland

General Locality ... Chesapeake Bay

Sublocality ... Vicinity of Smith Point and James Island

19 87

CHIEF OF PARTY
LCDR A.D. Anderson

LIBRARY & ARCHIVES

DATE ... December 19, 1988

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

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12228
12231 D
12233
12235
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12230-A 2/8/90 AP
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NOAA FORM 77-28 (11-72)

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

REGISTER NO.

FE-30855

HYDROGRAPHIC TITLE SHEET

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.

RU-20-02-87

State ~~Maryland and~~ Virginia -- MaryLand

General locality ~~Central~~ Chesapeake Bay

Locality ~~Off James Island, Maryland / Off Smith Point, Virginia~~ Vicinity of Smith Point and James Island

Scale 1:20000 Date of survey ~~October / November~~ Aug. 26 - Nov. 24, 1987

Instructions dated December 19, 1986 Project No. OPR-E609-RU/HE-87

Vessel NOAA SHIP RUDE S-590

Chief of party LCDR Alan D. Anderson

Surveyed by Lt. Craig L. Bailey, ENS. Thomas R. Waddington, JST Mark A. Sramek

Soundings taken by ~~[illegible]~~ DSF-6000N Echosounder Pneumofathometer & EG&G Model 260 Sidescan Unit

Graphic record scaled by C.L.B., T.R.W., M.A.S.

Graphic record checked by C.L.B., T.R.W., M.A.S.

Protracted by N/A Automated plot by Bruning-Nicolet ZETA 824 CS Plotter. (Field) Xynetics 1201 Plotter (Office)

Verification by Hydrographic Surveys Branch, Atlantic Marine Center

Soundings in ~~[illegible]~~ feet at ~~MLW~~ MLLW

REMARKS:

Approved 4 OCT 88

M. Hickson, Cartographer

AWOIS / SURF 4/89 LG

Revisions in black ink in the Descriptive Report were made during examination.

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

☆ U.S. G.P.O. 1972-769-565/519 REG.#6

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*=Data removed from the Descriptive Report and filed with the field records.

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*=Data removed from the Descriptive Report and filed with the field records.

DESCRIPTIVE REPORT TO ACCOMPANY
SURVEY FE-308 SS
RU-20-2-87
Scale 1:20,000
NOAA Ship RUDE (S590)
LCDR Alan D. Anderson, Commanding

A. PROJECT DESCRIPTION

This survey was conducted in accordance with Hydrographic Project Instructions OPR-E60987-RU/HE87, Chesapeake Bay, Maryland and Virginia, dated December 19, 1986 as amended by Change No. 1, dated January 29, 1987; Change No. 2, Dated July 24, 1987; and Change No. 3, dated August 24, 1987.

The purpose of this project was to verify or disprove the existence of charted submerged wrecks and obstructions that pose a danger to navigation in the vicinity of the planned Baltimore Harbor and Channels 50-foot dredging project.

The survey involved Side Scan Sonar (SSS) investigations utilizing a EG&G Model 260 slant range corrected Side Scan Sonar and a Model 272, 100/500 khz Side Scan towfish. Side Scan sonification was supplemented by echo-soundings that were obtained from the ship's Raytheon DSF-6000N echo-sounder. Least depths on targets that were found by diver investigation, were taken with a pneumofathometer.

B. PROJECT OVERVIEW

During the course of this project the RUDE and HECK were responsible for both implementing and assisting in the testing of the recently developed Hydrographic Data Acquisition System (HDAS). Although HDAS provided many benefits over the Hydroplot system (e.g., greatly increased data collection capabilities, better interface with various peripheral units, and improved plotting capabilities), the RUDE experienced many of the problems typically encountered when implementing any new system. As HDAS software was being continually modified during this project, the RUDE was often called upon to assist in testing these modifications as well as to evaluate the different versions of the Survey and Post-Processing programs. After having worked with HDAS to process five earlier AWOIS items, we began to understand the capabilities and limitations of HDAS and how we could

work with the system to meet project requirements.
During side scan operations on this project, we periodically experienced problems with large schools of fish in the water column. The dense schools of fish would block the DSF-6000N beam, and cause the side scan to actually lose bottom tracking, and instead track the school of fish. This affect was recorded in our data and on our swath plots, as the side scan height appeared to fall below the minimum height needed to obtain the full effective range. (Side scan height must be at least 8% of the range scale to obtain full range coverage.) Yet during many of these instances, we had a readable side scan trace for the full range, while our on-line swath plot showed only limited coverage due to an HDAS feature which adjusts the swath range based upon side scan height. In these cases, the HDAS system software allowed us to override the on-line swath plot range with the effective range when replotting the data during post-processing. On a few occasions the schools of fish became so thick that side scan operations had to be cancelled for that day on one item and moved to another item in a different area. This problem was very localized and most noticeable on the eastern portion of AWOIS item 3675.

See section 4.6. of the Evaluation Report.

C. AREA SURVEYED

RUDE was issued an AWOIS Listing on January 12, 1987. Subsequent versions of the original AWOIS Listing were dated May 20, 1987 and May 29, 1987. The requirements cited in the AWOIS Listing dated May 29, 1987 have been included below. In addition, we have also included the tug, "Mary L. McAllister" which sank close to our project area in early November. The following item investigations are included in this report:

AWOIS NO.	PRIORITY NUMBER	CHARTED POSITION	REQUIRED SEARCH RADIUS	REQUIRED COVERAGE
2361	7	37/51/46.7 N (NAD 83) 76/09/28.20W	500 meters	200%
3675	6	37/57/10.46N (NAD83) 76/12/22.79W	1 nautical mile	200%
3676	21	37/59/31.46N (NAD 83) 76/10/44.79W	1 nautical mile	400%
4468	19	38/31/00.0 N (NAD27) 76/23/00.0 W	1000 meters	400%
3681	20	38/30/42.0 N (NAD 27) 76/23/27.0 W	500 meters	400%
MARY L McALLISTER		37/46/47.2 N (NAD 83) 76/11/04.0 W	(position at left is reported site of sinking)	

D. SURVEY VESSELS

The following vessels were used during the project:

VESSEL	ELECTRONIC DATA PROCESSING NUMBER	PRIMARY FUNCTION
NOAA Ship RUDE (S590)	9040	Side Scan Operations
RUDE Launch (RU3)		Diving Operations
RUDE Skiff (RU1)		Mini-Ranger Service and Diving Operations

E. SOUNDING EQUIPMENT

E1. Raytheon DSF-6000N

Echo soundings were taken utilizing a Raytheon DSF-6000N Echo-Sounder. The unit was calibrated periodically using an Electronic Depth Simulator Instrument (EDSI) provided by AMC/EEB. DSF-6000N data was collected throughout the project; however this data should be considered for reconnaissance purposes only and was intended strictly for use when attempting to precisely locate a target. It is not now possible to apply tide and velocity corrections to these soundings using HDAS. Soundings were not plotted for this data. Section 6.0 of the Project Instructions specifies Hydrography is not applicable to this survey. See also sections 1.b., 3., & 6. of the Evaluation Report.

E2. EG&G Model 260 Side Scan Sonar

Side Scan coverage was accomplished using an EG&G Model 260 Slant Range Corrected Side Scan Sonar unit with a Model 272, 100/500 khz Towfish. Our confidence in the proper functioning of the EG&G system was assured as the quality of the image displayed on the recorder was critically evaluated before every operation.

During the course of this project, we experienced several side scan problems which disrupted our planned operations. On October 22, 1987 while running mainscheme lines on AWOIS 3676, we lost the entire port side scan trace. The problem was eventually traced to a faulty port circuit board within the side scan tow fish. A new board was obtained from EG&G and the side scan was returned to operation on October 28, 1987. At this point, the side scan fish had to be deployed from an auxiliary cable due to problems with the slip ring assembly (the unit which connects the side scan recorder cable to the winch cable). On November 3, 1987 a replacement slip ring assembly was obtained and the side scan cable was reconnected to the winch cable. However, on this same day while running mainscheme lines on AWOIS 3675, we lost the entire starboard side scan trace. Again, the problem was traced to a faulty circuit board within the fish. Another replacement was obtained from EG&G and the side scan was returned to operation on November 6, 1987.

E3. Pneumofathometer Gauge

Least depths for diver investigated contacts were determined using a pneumofathometer gauge as described in Hydrographic Survey Guideline No. 55. Strong currents and winds in the dive area made systems checks difficult to perform. Pneumofathometer systems checks were conducted in the Patuxent River at Solomons, MD. A bridge abutment sheltered the tape and pneumo hose from the effects of wind and current, thus insuring the tape is vertical. We feel that these systems checks show that the pneumofathometer calibration information is adequate. Pneumofathometer corrector values were determined by taking the average of all systems check corrector values. The correctors are tabulated by the depth to which they are to be applied. These tables are contained in Appendix II. Systems checks taken in the field are often of no use as the tape and pneumo hose reach large angles due to current and/or wind. Systems checks and calibration data is contained in Appendix II.

F. CORRECTIONS TO ECHO SOUNDINGS

F1. Velocity Corrections

Velocity correction and temperature profile data were obtained through periodic MARTEK CTD casts taken in the survey area. MARTEK casts were taken as water conditions appeared to be affecting our side scan trace. The information was used to determine the location of thermoclines and therefore determine an optimal depth at which to fly the towfish. Depending on the survey area, we took both shallow and deep-water MARTEK casts. Because of limitations in HDAS software, velocity corrections were not able to be applied to the sounding data of this survey. Velocity corrections were calculated for all MARTEK casts by using the velocity computation package developed for our IBM PC. The MARTEK casts have been included in Appendix XII. The Martek calibration data is not available at this time. Given that velocity corrections were not applied, the calibrations were not necessary to the project.

F2. Tide Corrections

The operating station at Baltimore, Md. was the reference station used when determining predicted tides for AWOIS items 4468 and 3681. Predicted tides for the remaining four items were computed using Hampton Roads as the reference station. Due to limitations in HDAS software, predicted tidal correctors were not able to be applied to the on-line sounding data compiled throughout the project. Tidal Zoning Correctors were applied to the predicted tides to compute the Least Depths which were obtained using the pneumofathometer. Direct control of Least Depths was provided by the tide stations at Annapolis (857-5512) and Solomons, MD (857-7330). The Annapolis station was leveled on 8 July. Leveling of the Solomons station was conducted on 16 November. The NOAA Ship HECK installed a tide station at Chesapeake Beach, MD in accordance with the project instructions. See Appendix I for a copy of the HECKs field tide note. A request for

smooth tides was made to N\OMA12 on December 15, 1987. The Tide Note and Request for Smooth Tides are included in Appendix I.

The Tidal Zone Correctors (Predicted) were applied to the individual AWOIS Items as follows:

See the Approved Tide Note attached to this Report.

Item Number	Tidal Zone Correctors High Water	Low Water	Height Ratio
	On Hampton Roads, VA		
3675	+3 HR 53 MIN	+4 HR 12 MIN	0.53
3676	+3 HR 53 MIN	+4 HR 12 MIN	0.53
2361	+3 HR 26 MIN	+3 HR 30 MIN	0.49
MARY L McALLISTER	+3 HR 26 MIN	+3 HR 30 MIN	0.49
	On Baltimore, MD		
4468	-4 HR 03 MIN	-4 HR 06 MIN	0.98
3681	-4 HR 03 MIN	-4 HR 06 MIN	0.98

F3. Settlement and Squat

Because the depths recorded in this survey were collected solely for reconnaissance purposes, no settlement and squat corrections were applied to the raw depth data. The static draft of the NOAA Ship RUDE for the Raytheon DSF-6000N transducer is 6.8 feet.

F4. Heave, Roll, Pitch

Heave, roll and pitch were measured by the Datawell B.V. Sensor mounted on the centerline of the ship, amidships, located in the forward stores area on B-Deck. The HDAS software is expected to apply the Heave corrections when sounding data is required. As soundings were not plotted for the side scan work, this feature was not used for the submitted plots. At present the HDAS software is not recording this data on tape.

G. ELECTRONIC POSITIONING SYSTEMS

Positioning information for this survey was provided by the Motorola Mini-Ranger Falcon 484 microwave positioning system. Four control stations were established which provided a good line of position geometry throughout the survey. There were no significant positioning problems experienced in this survey. In limited areas, classical phase cancellation interference was encountered causing the loss of one or more LOP's from the HDAS Least Square solution. An algorithm

incorporated into the HDAS software selectively evaluated all four incoming LOPs along with the heading of the vessel, and used only that data which appeared to be accurate. The Minimum Accepted Signal Strengths (MASS) were predetermined from baseline calibrations and supplied to the HDAS Program in the C-O tables. Any LOP received by HDAS below the programmed MASS would be disregarded and not applied to the positioning algorithm. This greatly reduced the effect of occasional "flyers" and the associated position busts.

All of the Motorola Mini-Ranger (M/R) Falcon 484 codes were calibrated with each of the two Receiver/Transmitter units and with each of the two Range Processing Units on August 11, 1987 in Annapolis, MD. On September 9, 1987 M/R codes 1 and 7 were recalibrated in Annapolis, MD after being replaced with units from AMC. On September 18, 1987 M/R code 2 was recalibrated at Solomons Island, MD after being repaired at AMC. On October 5, 1987 M/R code 1 was again recalibrated after being replaced with a unit from AMC.

A closing baseline calibration was conducted in Norfolk, VA on 18 December and 22 December. Baseline calibration information can be found in Appendix XII.

Weekly critical system checks were computed using the standard three point sextant fix to four known visible landmarks in the survey area. The angles derived from the three point sextant fix were then entered into the HDAS Computer for comparison to the ranges received by the Mini-Ranger system. All of the weekly critical systems checks were within the tolerances specified for a survey of this scale. The HDAS computations of the critical calculations can be found in Appendix XIII. All positioning data used for AWOIS item disproval coverage and least depths was "closed out" by the critical systems checks.

Non-critical systems checks were performed using an HDAS baseline crossing calibration program to derive the computed versus the observed baseline distances. All of these systems checks were within the tolerances set for a survey of this scale. The HDAS Computer printouts for the daily systems checks have been included in Appendix XI.

H. SURVEY SHEETS

All survey sheets were produced aboard the NOAA Ship RUDE using the HDAS Computer and the Bruning-Nicolet ZETA 824A CS Plotter. Each sheet was plotted on the Modified Transverse Mercator Projection. Because this report covers AWOIS items located in two distinct areas, we plotted two separate contact sheets showing all contacts that were deemed significant for investigation. These contact sheets show significant contacts investigated, charted AWOIS items, control stations, and shoreline features. The northern contact sheet (AWOIS 3681 & 4468) was plotted at a 1:40,000 scale and the southern contact sheet (AWOIS 2361, 3675, & 3676 and the "Mary L. McAllister") was plotted at a 1:80,000 scale due to the greater area covered. In

addition to the contact sheets, we have included the on-line swathplots, the post-processing track plots (200% coverage per plot) and the post-processing swath plots (100% coverage per plot) for each AWOIS item as required. (The post-processing plots were only required for AWOIS item disprovals.) All swath plots and track plots were plotted at a scale of 1:10,000 for ease of on-line observations. Refer to Appendix V for the parameters of the AWOIS plotting sheets.

See section 1.c. of the Evaluation Report.

I. HORIZONTAL POSITION CONTROL

The horizontal datum for this project is the North American Datum of 1983. The source for the positions used to control the work on these items was the NGS database listing provided by N/CG241 prior to the start of the survey. Geodetic support to verify established horizontal control in the upper Chesapeake Bay area was provided by the Atlantic Marine Center Photogrammetry Division (N/MOA2222) in accordance with the Project Instructions for Job HC8704, dated 29 January 1987.

On August 11-13, 1987 N/MOA2222 personnel and the NOAA Ship HECK established seven horizontal control positions in the northern survey area. These seven stations are Holland Island Bar Lighthouse #1, Chesapeake Beach Light #1, CEDA, Baker Ecc., NAVY Ecc., CAL POLE #1, and CAL POLE #2. On September 11-12, 1987 N/MOA2222 personnel and the RUDE established two horizontal control positions in the southern survey area which are TP COOK and TP HAWK. Information concerning the methods used to establish these sites is available through N/MOA2222. A printout of preliminary station positions is included in Appendix III. Point Lookout Lighthouse Ecc. was established by RUDE personnel as a forward computation from Point Lookout Lighthouse. The distance was measured with a standard metal tape, and the angle measured by sextant. A sketch and the computations are included in Appendix III. The HDAS control station table is provided in Appendix III which lists all the control stations as entered into HDAS. Appendix III also contains a control station reference list which correlates the HDAS station numbers, the actual geodetic station names, and the geographic positions.

Not 3rd Order

The HDAS system requires that positions of control stations be entered in plane coordinates. All conversions between lat/lon and plane state coordinates were computed using the HDAS utility software, copies of these conversions are included in Appendix III.

J. AUTOMATED DATA PROCESSING

J1. Overview

All data collected during this survey was processed using HDAS. A general description of the steps involved in the data processing sequence is discussed below. In addition, we also present any unique problems which we encountered while working on a particular AWOIS item. Most of the steps involved in the data processing sequence

apply only to those AWOIS items which are disprovals and therefore require accurate post-processing coverage plots. AWOIS items which are investigated and positively identified require only an accurate determination of their detached position and least depth.

When running survey operations on-line, all data was stored on a raw data tape. Concurrently, we were also acquiring side-scan and echosounder traces, an on-line plot of our survey, and a raw data listing of all selected soundings by survey line along with associated data (see raw data listing). At the completion of a day's work, we scanned all side-scan and echosounder traces identifying potential targets and noting any coverage deficiencies, and we manually summarized the data collected in a Daily Data Abstract and a Position Processing Abstract. These abstracts evolved during the course of this project are included in appendices VI through IX.

The Daily Data Abstract summarizes the entire day's work in a single line entry. In instances where multiple tapes were used in a single day there will be multiple entries. The Position Processing Abstracts are grouped by AWOIS item and are a line by line summary of the survey run for that item. In addition to the date and day of year, this abstract includes the reference line run, the raw Data Set Numbers (DSNs) for that line, the fix numbers for that line, the processed DSNs for that line (if it was not rejected), and any remarks about that line. Currently, the only way to access data through HDAS is via the DSN. Additionally, the DSN for a data record changes as it passes through the various data processing stages. This makes accurate tracking of the DSNs very important.

In order to begin post-processing the raw data, we had to transfer the data from the raw data tape onto the hard disk. The HDAS system hard disc is an HP 9133H 20 Megabyte disk drive. The system also includes a three and one half inch floppy drive. Since we had no capability to delete data which we wished to reject, we copied only good or "editable" data onto the hard disk. The HDAS system presently does not store fix data on tape for detached positions which are taken when the system is not in the on-line mode. All detached positions data is on the raw data printout only.

We then obtained a hard disk catalog which listed all the data currently stored on the hard disk along with the renumbered DSNs. We then performed any edits necessary, which at this time consists only of our ability to hard smooth over any positioning busts. Basically, a hard smooth consists of dead-reckoning between two good fixes over any major positioning busts. These edits were noted on the hard disk catalog (by DSN), the raw data printouts (by selected sounding), and on the post-processing trackplots.

After editing, we then smooth plotted the data as required. In order to illustrate our side-scan coverage, we produced multiple 100% swathplots for all areas surveyed. Using an HDAS feature, we were able to vary the effective swath range within plots. For each line that was smooth plotted, we have listed the effective swath range for that line in the left hand column of the Position Processing Abstract.

We derived this effective swath range by examining the side-scan traces and determining the minimum swath range for each line. We feel that the multiple swathplots, when viewed collectively, provide an accurate picture of the side-scan coverage obtained around each AWOIS item.

After the data on hard disk was edited and plotted, it was then transferred back to a tape which became the edited data tape. Because only one tape file could be stored on the hard disk at a time, it was necessary to perform multiple iterations of the data transfer process when all raw data for an AWOIS item could not be dumped onto the hard disk. In some cases we appeared to lose the last fix from a previous edit, when transferring additional data onto the edited tape. These instances are noted under the data processing descriptions for each item. After all edited data had been transferred onto the edited data tape, we obtained a data list of that tape by selected sounding. Using this data list, we then went back to the Position Processing Abstract and entered the processed DSNs for all data which was stored on the edited tape. (Data which was rejected does not have processed DSNs.)

Finally, we loaded the entire edited tape onto the hard disk and obtained a hard disk catalog of this information; this provided a line by line summary of all the data stored on the tape. For unknown reasons, the hard disk catalog and the data list for the same tape did not always agree. The following section discusses the results of the edited data lists and presents any other data processing irregularities associated with the two AWOIS items which required post-processing.

J2. AWOIS 3675

Raw data for this item was stored on Tapes 3675R1 and 3675R2. All data which was hard smoothed is noted on the raw data printouts and the position processing abstract. All edited data was stored on Tape 3675E. We obtained a data list by selected sounding for this tape and have noted the following discrepancies:

1) Line 1275: No header break is shown for this line and it appears to be imbedded within Line 1195. Line 1275 should be defined as follows - Fix No.s: 3719-3729 and DSNs: 7921-8461.

2) Line -1815: After this line, DSNs appear out of sequence in relation to raw data. This reflects the order in which the data was transferred to the edited tape and has no bearing on data quality.

J3. AWOIS 3676

Raw data for this item was stored on Tapes 3676R1 and 3676R2. All data which was hard smoothed is noted on the raw data printouts and the position processing abstract. All edited data was stored on Tape 3676E. We obtained a data list by selected sounding for this tape and no discrepancies were noted.

K. AWOIS ITEM INVESTIGATION REPORTS

See section 7.a.2) of the Evaluation Report.

AWOIS ITEM NUMBER: 3675

I. **Area of Investigation**

(a) State / County: Maryland / Saint Mary's

(b) Sublocality: Mouth of the Potomac River

(c) Method of Positioning: Falcon Mini-Ranger

II. **Description**

AWOIS item 3675 was reported as a 195 foot barge with a least depth of 37 feet at position 37° 57' 10" N, 76° 12' 24" W. The survey required verification and least depth if found, or disproval through 200% side scan sonar investigation of a one nautical mile radius search area.

III. **Procedures**

Main scheme side scan coverage was conducted over a four week period between the 06 October and 24 November 1987. During this period 100% coverage was obtained. AWOIS item 3675 was found along with two other targets. Diving operations were conducted on each of the three targets, the results are documented below.

IV. **Target Investigations**

TARGET: 3675 A - See section 7.a.2) a) of the Evaluation Report.

(a) DIVE SUMMARY: On 20 October, 1987 (DOY: 293) RUDE positioned herself directly over the target using the DSF-6000 and the Falcon Mini-Rangers, deployed a marker buoy and moved away. Divers descended the buoy line and discovered scattered wooden timbers. A ten meter circle search was conducted which lead to discovery of a large steel structure with no discernible shape. This structure appeared to be a jumbled mass of large diameter steel pipe, possibly the mast of a sea going vessel. The marker buoy was moved to the least depth obtained by divers gauge. A 20 meter circle search was conducted at a constant depth of 50 feet about this point. No shallower depths were found. A least depth was taken at this point by pneumofathometer.

(b) DESCRIPTION OF TARGET FOUND:Target 3675A is a large steel structure with no discernible shape. This structure appeared to be a jumbled mass of large diameter steel pipe, possibly the mast of an ocean going vessel. A search of the surrounding bottom showed the area to be littered with timbers and wooden planks. A ships hull which was of wood construction with copper sheet covering was discovered protruding three feet off the bottom in 60 foot of water. There were many copper nails and copper rods protruding from the rotting hull

timbers. Divers believe this vessel to be a very old boat. There were many sections of copper pipe lying among the ruins of the hull.

(c) RECOMMENDATIONS: Target 3675A is not considered to be the item as described in the AWOIS listing. However, this item has the shallowest least depth of the three targets investigated on AWOIS item 3675 and is in the channel used by deep draft vessels. ~~RUDE recommends that target 3675A be charted as a dangerous wreck with a depth of 42 feet in parenthesis, using symbol no. 14, section O of NOAA Chart Number 1.~~ See the Evaluation Report.

(d) LEAST DEPTH:
Taken by pneumofathometer on November 25, 1987 (DOY: 329)
(S/N 8705140N)

1) TIME: 0855 L 1355 Z LEAST DEPTH READING (FT): 40.8
2) TIME: 0855 L 1355 Z LEAST DEPTH READING (FT): 40.8
3) TIME: 0855 L 1355 Z LEAST DEPTH READING (FT): 40.8

AVERAGE LEAST DEPTH (FT) : 40.8

AVERAGE PNEUMO DEPTH (FT) : 40.8
PNEUMO GAGE CORRECTOR (FT) : +1.3
~~PREDICTED~~ Smooth TIDAL ZONE COR (FT) : +0.1[2]
ACTUAL LEAST DEPTH (FT) : 42.2[3]

(e) DETACHED POSITIONS OF TARGET AND FIX NUMBERS:

1) HDAS FIX NO: 3059 E: 42556.0 N: 32993.0
2) HDAS FIX NO: 3061 E: 42556.0 N: 32993.0
3) HDAS FIX NO: 3062 E: 42558.7 N: 32995.3

AVERAGE DP: E: 42556.9 N: 32993.8

CALCULATED GP: Lat: 37° 57' 49.560" N (NAD 83)
Long: 076° 11' 54.695" W

(f) LORAN C RATES: 9960-x: 27347.6
9960-y: 41985.5

TARGET: 3675B

(a) DIVE SUMMARY: On 14 October, 1987 (DOY:257)RUDE positioned herself directly over the target using the DSF-6000 and the Falcon Mini-Rangers, deployed a marker buoy and moved away. Divers descended the buoy line and discovered the deck of a large wooden barge. Four additional dives were made on the item. A thorough search was made about the high point and no higher projections were found. A least depth was obtained by divers on 29 October on a deck cleat.

(b) DESCRIPTION OF TARGET FOUND: Target 3675B is considered to be the item 3675 as described in the AWOIS listing. The item is a large wooden barge projecting 6 to 10 inches above the silt bottom for most of its 150 feet of intact length. One end is broken up and appears to be falling into its own scour. The entire structure is very deteriorated. A steel deck cleat and chalk were the most identifiable items found, which projected 10 inches above the deck of the remains.

50'-58' - See the Evaluation Report.

(c) RECOMMENDATIONS: Target 3675B is considered to be the item 3675 as described in the AWOIS listing. The surrounding depth is the same as that described in the AWOIS listing. Due to strong currents in the bay and out flow of the Potomac River, it appears that this barge is digging and settling into its own scour, which would account for the greater least depth. Additionally, the buoy position marking this wreck as described in Local Notice to Mariners No. 12, 1959 plots closer to target 3675B than to the position of the AWOIS item as charted. The AWOIS listing gives no reason as to why the charted position differs from the buoy position of LNM no. 12, 1959. ~~RUDE recommends the dangerous wreck symbol be removed from the chart and be replaced with symbol 15, Section "O" Page 13 of NOAA Chart No. 1. Symbol 15 should be a sounding over a wreck with no danger circle plotted.~~ See the Evaluation Report.

(d) LEAST DEPTH:
Taken by pneumofathometer on 29 October, 1987 (DOY: 302)
(S/N 8705140N)

1) TIME: 0900(L) 1400(Z) LEAST DEPTH READING (FT): 58.4
2) TIME: 0900(L) 1400(Z) LEAST DEPTH READING (FT): 58.4
3) TIME: 0900(L) 1400(Z) LEAST DEPTH READING (FT): 58.4

AVERAGE LEAST DEPTH (FT) : 58.4

AVERAGE PNEUMO DEPTH (FT) : 58.4
PNEUMO GAGE CORRECTOR (FT) : +1.~~X~~6
~~PREDICTED~~ Smooth TIDAL ZONE COR (FT) : -0.~~X~~8

ACTUAL LEAST DEPTH (FT) : 59.~~X~~2

(e) DETACHED POSITIONS OF TARGET AND FIX NUMBERS:

1) HDAS FIX NO: 3364 E: 42751.3 N: 31225.1
2) HDAS FIX NO: 3365 E: 42752.5 N: 31233.5
3) HDAS FIX NO: 3366 E: 42750.2 N: 31217.7

AVERAGE DP: E: 42751.3 N: 31225.4

CALCULATED GP: Lat: 037° 56' 52.2~~X~~7" N (NAD 83)
Long: 076° 11' 46.4~~X~~8" W

(f) LORAN C RATES: 9960-x: 27354.4
9960-y: 41974.4

TARGET: 3675C – See section 7.a.2)b) of the Evaluation Report.

(a) DIVE SUMMARY: On 16 October, 1987 (DOY:289) RUDE positioned herself directly over the target using the DSF-6000 and the Falcon Mini-Rangers, deployed a marker buoy and moved away. Divers descended the buoy line and began a circle search and discovered large timbers projecting from a large wooden keel on the bottom. Two additional dives were made, to identify and take a least depth on this target. Both of these additional dives were made on 19 October, (DOY:292).

(b) DESCRIPTION OF TARGET FOUND: Target 3675C appears to be the remains of a wooden vessel of approximately 120 feet in length. Divers located structural ribs and side planks projecting four feet above the silt bottom. There are no identifiable or distinguishing marks on this vessel. There were small lumps of coal scattered over the bottom in the vicinity of this target. Divers were not able to determine what type of vessel this target was. A complete search was conducted of the area, thus divers are certain that they have located the least depth on a section of the hull projecting 1 foot above the bottom. – See the Evaluation Report.

(c) RECOMMENDATIONS: Target 3675C is not considered to be the item as described in the AWOIS listing. This target projects 4 feet off the bottom in 55 feet of water. ~~RUDE recommends target 3675C be charted as a wreck, using Symbol 15, Section "O" Page 13, of NOAA Chart No. 1. Symbol 15 should be a sounding over a wreck with a no danger circle plotted.~~ See the Evaluation Report.

(d) LEAST DEPTH:
Taken by pneumofathometer on 19 October, 1987 (DOY: 292)
(S/N 8705140N)

1) TIME: 1154(L) 1654(Z) LEAST DEPTH READING (FT): 51.0
2) TIME: 1154(L) 1654(Z) LEAST DEPTH READING (FT): 51.0
3) TIME: 1154(L) 1654(Z) LEAST DEPTH READING (FT): 51.0

AVERAGE LEAST DEPTH (FT) : 51.0

AVERAGE PNEUMO DEPTH (FT) : 51.0
PNEUMO GAGE CORRECTOR (FT) : +1.5
PREDICTED TIDAL ZONE COR (FT) : -1.~~3~~6

ACTUAL LEAST DEPTH (FT) : ~~51.2~~ 50.9

(e) DETACHED POSITIONS OF TARGET AND FIX NUMBERS:

1) HDAS FIX NO: 3042 E: 42861.5 N: 32855.3
2) HDAS FIX NO: 3043 E: 42857.8 N: 32841.5
3) HDAS FIX NO: 3044 E: 42865.4 N: 32850.0

AVERAGE DP: E: 42861.6 N: 32848.9

CALCULATED GP: Lat: 037° 57' 44.88[illegible]" } NAD83
Long: 076° 11' 42.1[illegible]"

(f) LORAN C RATES: 9960-x: 27356.3
9960-y: 41984.7

AWOIS ITEM 3675 SUMMARY

One hundred percent side scan sonar coverage was completed on AWOIS item 3675. The item as described in the AWOIS listing was located along with two other wrecks that should be charted. In summary it is recommended that the charted symbol for this item be removed from the chart and three new symbols be added (see recommendations above for details). See section 7.a.2) of the Evaluation Report.

See section 7.a.3) of the Evaluation Report.

AWOIS ITEM NUMBER: 3676

I. Area of Investigation

(a) State / County: Maryland / St. Mary's

(b) Sublocality: Pt. Lookout, MD

(c) Method of Positioning: Falcon Mini-Ranger

II. Description

AWOIS item 3676 was reported to be the fishing vessel Marion sunk in 35 feet of water and covered 20 feet. The wreck was first reported in 1950 and is currently charted at position 37° 59'31" N, 76° 10'46" W. The survey required verification and least depth if found, or disproval through 400% side scan coverage at a one nautical mile radius. The eastern portion of the search area was limited by the 30-foot depth contour.

III. Procedures

Initial side scan coverage for AWOIS 3676 was begun on 10/14/87 and continued on 10/20/87 and 10/21/87 (DOY: 287, 293, 294 respectively). These initial survey lines were run along a 000°/180° (i.e., north/south) orientation and were limited to a 50 meter side scan range due to shallow water depths and local water conditions. On 10/22/87 (DOY 295), the survey segment was redefined along a 145°/325° orientation, enabling us to run survey lines parallel to the 30-foot depth contour which ran through the center of the survey area. On 10/22/87, 10/28/87, and 10/29/87 (DOY: 295, 301, 302 respectively) we completed 200% side scan coverage on AWOIS 3676; this was in addition to the earlier lines which were run along the north/south segment. We generally obtained 100 meter range coverage throughout, although we were forced to reduce this range in the vicinity of the 30-foot contour. No significant targets were located during this search, although a scour and shoal area were identified from the fathometer trace. Sounding development lines were run over this area on 10/30/87 and 11/3/87 (DOY 303, 307 respectively). These development lines not only helped describe this area in greater detail, but they also provided RUDE survey personnel with experience in gathering and processing sounding data through HDAS. The area developed appeared only to be a minor shoal area rising less than three feet off the bottom, in 60 feet of water. At this time, we are unable to Post-Process sounding data using HDAS. Time constraints prevented completion of the second 200% side scan coverage.

See the Evaluation Report.

IV. Recommendations

Do not concur

It is recommended that this item be considered disproved and that it be removed from the chart. This is based on the fact that of the 27 items resolved by the RUDE and HECK this year, 100% of the targets determined to be significant were identified in the first 200% of side scan coverage. The additional 200% provides no additional information at considerable cost. We are confident that, given the procedures used by NOS, this equipment would have detected any siginificant items within the first 200% coverage. Note abstracts relating targets located with percentage coverage in Appendix XVI.

See section 7.a.3) of the Evaluation Report.

See section 7.a.1) of the Evaluation Report.

AWOIS ITEM NUMBER: 2361

I. Area of Investigation

(a) State / County: Virginia / Northumberland

(b) Sublocality: 1.8 nm SE Smith Point Light

(c) Method of Positioning: Falcon Mini-Ranger

II. Description

AWOIS Item 2361 was reported to be a large steamer lying in approximately 80 feet of water with a least depth of 51 feet. The wreck was first charted in 1942 and is currently charted at position 37°51'46.7", 76°09'29.4". The survey required verification and least depth if found, or disproval through 200% side scan coverage at a 500 meter radius.

III. Procedures

Side scan coverage for AWOIS 2361 was conducted on 11/18/87 and a significant target was identified during the first line, very close to the charted location of this item. A buoy was deployed over this target and diving operations were begun. A summary of this target investigation follows.

IV. TARGET INVESTIGATION

TARGET: 2361A

(a) DIVE SUMMARY: Dive operations were begun on 11/18/87, however due to strong currents and low visibility divers were unable to locate the target. On 11/19/87 a marker buoy was redeployed and divers descended down this line to a depth of almost 110 feet. Divers proceeded in a southerly direction and swam into the hull of a large steel vessel. Divers swam up the hull and onto the deck investigating potential highpoints. Due to limited bottom time, divers halted their investigation, attached a marker line to a deck fitting and returned to the surface. On 11/20/87 divers proceeded down the marker line and began a sweep search along the deck. Beginning near the bow and swimming in a northwest direction towards the stern, divers remained 20 feet apart connected by the search/marker line. During this search, a large mast was located and the additional marker line was securely fastened to this projection, which showed a depth of 58 feet according to diver's depth gauges. Using a tag line, divers then conducted a 60-foot circle search about this point maintaining a constant 58-foot depth; no hangs or projections were encountered during this circle search. Divers then completed their sweep search

toward the stern, investigating potential highpoints along the way and looking for identifying marks. Divers located a house area and additional masts but no projections more prominent than the first mast located. After completing their search, divers obtained a pneumatic depth gauge least depth from this mast.

(b) DESCRIPTION OF TARGET FOUND: Target 2361A was found to be a large steel vessel lying intact on its keel with a slight starboard list in approximately 85 feet of water. The vessel lies along a southeast/northwest orientation, with the bow pointing towards the southeast. Because of its size and time constraints, divers did not obtain an overall length and breadth of the vessel. However, based upon all side scan records reviewed, the vessel is approximately 270-feet long and has a beam of 45 feet. (This length is 90 feet longer than the length reported by the prior survey, which was also obtained from side scan records.) The fathometer trace shows significant scouring on both sides of the wreck, and divers encountered depths of almost 110 feet just north of the wreck. The wreck itself is largely intact, and many features are still visible on the deck. The forward mast was partially broken off, but was still the most prominent projection encountered; the least depth was taken from this point. Other features identified include a house area, additional masts, various deck openings and an anchor windlass. No positive identifying marks were located on or around the wreck.

(c) RECOMMENDATIONS: The Hydrographer in Charge recommends that Target 2361A be charted as a ~~hazardous~~ dangerous sunken wreck with a known least depth at the prescribed position using symbol No. 15, located in Section "O", page 13 of NOAA Chart No. 1. Because this is a large wreck located within the traffic zone a danger circle should be inscribed around the reported least depth.

(d) LEAST DEPTH:
Taken by pneumofathometer on Nov. 20, 1987 (DOY: 324)
(S/N 8705140N)

1) TIME: 0900(L); 1400(Z) LEAST DEPTH READING (FT): 59.0
2) TIME: 0900(L); 1400(Z) LEAST DEPTH READING (FT): 59.2
3) TIME: 0900(L); 1400(Z) LEAST DEPTH READING (FT): 59.2

AVERAGE LEAST DEPTH (FT): 59.1

AVERAGE PNEUMO DEPTH (FT) : 59.1
PNEUMO GAUGE CORRECTOR (FT) : +1.7
~~PREDICTED~~ Smooth TIDAL ZONE COR (FT) : ~~-0.7~~ -1.0

ACTUAL LEAST DEPTH (FT) : 59.~~8~~8

(e) DETACHED POSITION OF TARGET AND FIX NUMBERS:

1) HDAS FIX NO: 3687 E: 46132.3 N: 21843.Ø
2) HDAS FIX NO: 1167 E: 46131.9 N: 21843.7
3) HDAS FIX NO: 117Ø E: 46130.6 N: 21847.2

AVERAGE D.P.: E: 46131.6 N: 21844.6

Calculated G.P.: Lat: 37° 51' 48.160" N (NAD 83)
Long: Ø76° Ø9' 27.390" W

(f) LORAN C RATES: 9960-x: 27332.Ø
9960-y: 41916.5

V. AWOIS ITEM 2361 SUMMARY

AWOIS Item 2361 was located on the initial side scan survey line, very close to its presently charted position. The least depth was obtained through diver investigations and a detached position was determined for this point. The Hydrographer in Charge recommends that this item remain charted as a ~~hazardous~~ dangerous sunken wreck over which the least depth is known.

See section 7.a.1) of the Evaluation Report.

See section 7.a.6) of the Evaluation Report.

MARY L McALLISTER

I. **Area of Investigation**

(a) State / County: Virginia / Northumberland

(b) Sublocality: Great Wicomico River, VA

(c) Method of Positioning: Falcon Mini-Ranger

II. **Description**

On 2 November 1987 the security watch aboard RUDE intercepted VHF radio traffic that a vessel being towed was taking on water and sinking, in Chesapeake Bay in the vicinity of buoy "48". The security watch copied all pertinent data as to location, depth of water, Loran C rates and the vessels name: MARY L McALLISTER. The following day a phone call was made to USCG Group Milford Haven concerning particulars of the vessel. The chief of the station relayed that the vessel was 90 feet in length with a 22 foot beam, but knew of no plans to salvage the MARY L McALLISTER. A phone call to the operations group of McAllister Brothers Towing of Newport News, VA, confirmed that the owners had no intentions of salvaging the vessel.

III. **Procedures**

The Commanding Officer of the NOAA Ship RUDE determined that a divers investigation of MARY L McALLISTER would be in the best interests of the NOS Charting effort. Mini-Ranger positioning control was already set up for AWOIS item 2361 just five miles north of the reported site of the sinking. This existing control was used in the investigation. A Raytheon DSF 6000 echosounder was used to locate the wreck on 04 November, and on 19 November 1987.

IV. **Dive Investigation**

(a) DIVE SUMMARY: On 04 November, 1987 RUDE positioned herself directly over the target using the DSF-6000 and the Falcon Mini-Rangers, deployed a marker buoy and moved away. Divers descended the buoy line to the bottom at 110 feet. The stern of the vessel was encountered 15 feet from the marker weight. Keeping in close contact with the hull of the vessel, the divers ascended to the bow at 60 feet by divers depth gauge. The name MARY L McALLISTER was clearly visible at the bow. A line was tied to the bow, the divers surfaced and tied a

marker buoy to this line. A detached position was taken on the marker buoy. Due to poor weather conditions diving operations were not conducted again until 19 November, 1987.

The marker buoy was missing ~~on~~ when RUDE prepared for the second dive on 19 November. A new marker buoy was placed on the least depth taken by the DSF-6000. Divers descended this line to the bow of the vessel. A search was conducted with divers depth gauge. A least depth was taken on the bow of the MARY L McALLISTER with a pneumofathometer.

(b) DESCRIPTION OF TARGET FOUND: MARY L McALLISTER is a 90 foot long tug with a 22 foot beam. She lies inverted in 110 feet of water with the bow inclined slightly upward.

(c) RECOMMENDATIONS: ~~RUDE recommends that MARY L McALLISTER be charted as a wreck not dangerous to surface navigation with the least depth of 69 feet plotted in parenthesis, using symbol no. 16, section 0 of NOAA Chart Number 1.~~ The depth by divers depth gauge on DOY 308 was 10 feet shallower than that obtained on DOY 322. Divers believe the wreck to be settling. It is a possibility that this item could change position slightly over the next year. See the Evaluation Report.

(d) LEAST DEPTH:
Taken by pneumofathometer on October 18, 1987 (DOY: 322)
(P/N 255446 22014)

1) TIME: 1215(L) 1615(Z) LEAST DEPTH READING (FT): 68.4
2) TIME: 1215(L) 1615(Z) LEAST DEPTH READING (FT): 68.4
3) TIME: 1215(L) 1615(Z) LEAST DEPTH READING (FT): 70.0

AVERAGE LEAST DEPTH (FT) : 68.9

AVERAGE PNEUMO DEPTH (FT) : 68.9
PNEUMO GAGE CORRECTOR (FT) : +1.4
~~PREDICTED~~ Smooth TIDAL ZONE COR (FT) : -1.1 8
ACTUAL LEAST DEPTH (FT) : 69.2 8 5

(e) DETACHED POSITIONS OF TARGET AND FIX NUMBERS:

1) HDAS FIX NO: 3613 E: 43756.4 N: 12569.5
2) HDAS FIX NO: 3614 E: 43750.8 N: 12561.5
3) HDAS FIX NO: 3617 E: 43570.0 N: 12577.5

AVERAGE DP: E: 43752.4 N: 12569.5

CALCULATED GP: Lat: 037° 46' 47.185" N (NAD 83)
Long: 076° 11' 03.974" W

(f) LORAN C RATES: 9960-x: 27023.7
9960-z: 58689.2

9960-y: 41854.9
9960-z: 58689.2

Summary of MARY L McALLISTER

The MARY L McALLISTER was investigated by divers and is not considered to be a danger to navigation. RUDE recommends the item be added to the chart and the location be reconfirmed in 1988.

See section 7.a.6) of the Evaluation Report.

See section 7.a. 4) & 5) of the Evaluation Report.

AWOIS ITEM NUMBERS: 4468 & 3681

I. **Area of Investigation**

(a) State / County: Maryland / Dorchester

(b) Sublocality: James Island, MD

(c) Method of Positioning: Falcon Mini-Ranger

II. **Description**

AWOIS Item number 4468 was reported to be a 30 ft. cabin cruiser sunk in 50 ft. of water at position 38° 31' 00.00" N, 076° 23' 00.00" W. The survey required verification and least depth if found, or disproval through 400% side scan sonar investigation to a 1000 meter search radius; the eastern portion of the search area was constrained by depth (18 ft. curve).

AWOIS Item number 3681 was reported by the Army Corps of Engineers to be a submerged obstruction covered 38 ft. at MLW west of James Island, MD at position 38° 30' 42.00" N, 076° 23' 27.00" W. The survey required verification and least depth if found, or disproval through 400% side scan sonar investigation to a 500 meter search radius.

III. **Procedures**

Because of the close proximity of AWOIS 4468 to AWOIS 3681, initial side scan investigations for these two items were conducted concurrently on a single plotter sheet. (The 1000 meter search radius required for AWOIS 4468 almost fully encompassed the 500 meter search radius required for AWOIS 3681.) Main scheme side scan operations for these items were conducted on August 31, 1987 (DOY:243), September 1, 1987 (DOY:244), September 3, 1987 (DOY:246), and September 16, 1987 (DOY:259). During these dates, 200% side scan coverage was obtained and from the collected data two significant items were identified for diving investigation; these targets were referred to as Targets 4468A and 3681A. Diving operations were conducted on these targets, with the results documented below.

IV. **Target Investigations**

TARGET: 4468 A - See section 7.a.5) of the Evaluation Report.

(a) DIVE SUMMARY: On September 17, 1987 (DOY:260) the RUDE positioned itself directly over the target using the DSF-6000 and the Falcon Mini-Rangers, deployed a marker buoy and moved away. Divers descended the buoy line and discovered scattered wooden remains. While conducting a 10 meter circle search about this area, divers

located a wooden vessel cockpit projecting approximately four feet off the bottom. A further search about this area revealed additional wreckage, but no more significant projections. The buoy line was secured to the cockpit area, and a least depth was obtained from its high point.

(b) DESCRIPTION OF TARGET FOUND: Target 4468A was found to be a decaying wooden cabin cruiser, broken in two and partially buried in the silt bottom in approximately 58 feet of water. The forward portion of the wreck contained a reasonably intact cockpit area projecting four feet off the bottom from which the least depth was obtained. The vessel appeared to be broken in two just aft of the cockpit area. Forward of the cockpit, the deck extended four feet before disappearing into the silt; the bow was not visible. The forward portion of the wreck was approximately eight feet in length. An after portion of the wreck was located about ten feet from the forward porion, offset by about 30 degrees. This after portion projected only slightly above the silt, although there was significant scour about the transom which made it easily identifiable to divers. The after portion of this wreck was approximately 15 feet in length. No identifying marks were visible anywhere around the wreck.

(c) RECOMMENDATIONS: Target 4468A is considered to be the item 4468 as described in the AWOIS listing. AWOIS 4468 was reported in 1972 which would explain the deteriorated condition of the wooden vessel located. In addition, the vessel found was a cabin cruiser approximately 30 feet in length; because some portions of the wreck were buried, an exact length could not be determined. The Hydrographer in Charge recommends that the wreck be charted at the prescribed position using symbol No. 15, located in Section "O", page 13 of NOAA Chart No.1. Symbol No. 15 should be a sounding over a wreck with no danger curve circumscribed about the Least Depth. The wreck is not considered a hazard to navigation. The standard wreck symbol should not be used, as the symbol would unnecessarily alarm the user's of NOAA charts. See the Evaluation Report.

(d) LEAST DEPTH:
Taken by pneumofathometer on September 17, 1987 (DOY: 260)

1) TIME: 1128(L) 1528(Z) LEAST DEPTH READING (FT): 58.4
2) TIME: 1128(L) 1528(Z) LEAST DEPTH READING (FT): 58.4
3) TIME: 1128(L) 1528(Z) LEAST DEPTH READING (FT): 58.4

AVERAGE LEAST DEPTH (FT) : 58.4

AVERAGE PNEUMO DEPTH (FT) : 58.4
PNEUMO GAGE CORRECTOR (FT) : +1.6
~~PREDICTED~~ Smooth TIDAL ZONE COR (FT) : ~~-0.9~~ -1.6

ACTUAL LEAST DEPTH (FT) : ~~59.2~~ 58.4

(e) DETACHED POSITIONS OF TARGET AND FIX NUMBERS:

1) HDAS FIX NO: 2690 E: 25693.9 N: 93394.8
2) HDAS FIX NO: 7 E: 25692.1 N: 93403.0
3) HDAS FIX NO: 2526 E: 25710.0 N: 93395.0

AVERAGE DP: E: 25698.7 N: 93397.6

CALCULATED GP: Lat: 38° 30' 26.850" N (NAD 83)
Long: 076° 23' 35.750" W

(f) LORAN C RATES: 9960-x: 27498.6
9960-y: 42365.6
9960-z: 58836.0

TARGET: 3681A - See section 7.a.4) of the Evaluation Report.

(a) DIVE SUMMARY: On September 17, 1987 (DOY:260), the RUDE positioned itself directly over the target using the DSF-6000 and the Falcon Mini-Rangers, deployed a marker buoy and moved away. Divers descended the buoy line and quickly located a large steel barge. Divers swam the entire perimeter of the barge and made numerous passes across its beam. During this time, they measured its length and width, and also investigated potential high points using their pressure depth gauges. Based upon these investigations, they identified the high point, secured the buoy line to this point, and obtained a least depth.

(b) DESCRIPTION OF TARGET FOUND: Target 3681A was found to be a large steel barge approximatley 125 feet in length and 22 feet across the beam. Water depth in the area around the barge was generally 58 feet; however, due to scouring on both sides, the barge itself rested in approximately 65 feet of water. From the bottom of the scour, the barge projected almost 20 feet off of the bottom. The barge was inclined slightly down to port, with the starboard portions projecting the highest. The high point was found to be a large deck cleat located on the barge's upward inclined starboard side. The barge hull was intact, although both the bow and stern sections were damaged. No major projections were located anywhere on the barge deck and no identifying marks were visible anywhere on or around the barge.

(c) RECOMMENDATIONS: Target 3681A is considered to be the item 3681 as described in the AWOIS listing. The barge found is located very close to the charted location of the obstruction reported by the Army Corps of Engineers. Although the least depth obtained is greater than the 38 feet reported, this difference could be explained by the barge having settled into the large scour which has developed around it; this possible explanation is reinforced by the diver investigations and side scan and fathometer reconnaissance. The scour depth is exactly equal to the difference between the reported depth and the current depth. The Hydrographer in Charge recommends that Target 3681A be charted as a ~~hazardous~~ dangerous sunken wreck over which the depth is known, with a danger circle inscribed about the symbol. Symbol No. 15

Concur

should be used on the chart, with the least depth included. This symbol is located in Section "O" on page 13 of NOAA Chart No. 1.

See the Evaluation Report.

(d) LEAST DEPTH:
Taken by pneumofathometer on September 17, 1987 (DOY: 260)

1) TIME: 1424(L) 1824(Z) LEAST DEPTH READING (FT): 44.3
2) TIME: 1424(L) 1824(Z) LEAST DEPTH READING (FT): 44.3
3) TIME: 1424(L) 1824(Z) LEAST DEPTH READING (FT): 44.3

AVERAGE LEAST DEPTH (FT) : 44.3

AVERAGE PNEUMO DEPTH (FT) : 44.3
PNEUMO GAGE CORRECTOR (FT) : +1.5
~~PREDICTED~~ TIDAL ZONE COR (FT) : ~~-0.6~~ -1.2
Smooth

ACTUAL LEAST DEPTH (FT) : ~~45.2~~ 44.6

(e) DETACHED POSITIONS OF TARGET AND FIX NUMBERS:

1) HDAS FIX NO: 2693 E: 25784.8 N: 93858.9
2) HDAS FIX NO: 2 E: 25785.4 N: 93867.1
3) HDAS FIX NO: 2516 E: 25758.6 N: 93888.0

AVERAGE DP: E: 25776.3 N: 93871.3

CALCULATED GP: Lat: 38° 30' 42.22~~4~~" N (NAD 83)
Long: 076° 23' 32.6~~29~~ 3" W

f. LORAN C RATES: 9960-x: 27499.2
9960-y: 42368.7
9960-z: 58837.6

V. AWOIS ITEM 4468 & 3681 SUMMARY

Because of the close proximity of AWOIS items 4468 and 3681, these two items were searched for concurrently using a single plotter sheet. During initial side scan coverage of this area, two significant targets were identified. Based upon subsequent diver investigations, it was determined that these targets fit the description of the AWOIS items in question.

See sections 7.a. 4) & 5) of the Evaluation Report.

L. MISCELLANEOUS

This report does not cover all of the items worked by the RUDE during this project. A previously submitted report covered five AWOIS items located in the upper Chesapeake Bay. This report contains some duplicate information from the earlier report as necessary to fully define this project.

This system software represents a substantially different way of "doing business". Numerous advances have been made, the most important of which is the use of multiple lines of position. Current guidelines for Hydrography do not adequately describe how the work should be done with this system on an "Item Investigation Survey". It will most likely take some time to revise those guidelines, OPORDERS, and instructions to reflect the use of this system. Because those guidelines are not yet revised, we have in the name of efficient and practical operations, changed the necessary procedures during the conduct of this project. The most significant change is the form and content of the descriptive report. We have attempted to include all of the information necessary to adequately review the survey and forward critical information for charting.

M. RECOMMENDATIONS

The current "checking load" for the Falcon miniranger system is one critical per week and one non-critical per day. The HDAS system allows more than three lop's to be used at once. The algorithm that computes the position from these multiple lop's and speed and heading information is essentially performing a non-critical system check once per second. The measure of the fix quality and thence the accuracy of the lop's is the standard deviation of the least squares fix and the residuals computed for each fix. This is a reliable measure of lop accuracy as long as the fix geometry is reasonable and the number of lop's used in the solution is more than two. For the HDAS system, it is recommended that the critical system check requirement be reduced to once when the control is first set up to check the minirangers and the control. After that check is performed it should not be necessary to perform a critical until the stations are moved or the hydrographer notices a problem with the on line fix quality. The non-critical checks should be reduced to once per week. This would allow a confidence check in the unlikely event that the control geometry allowed a degrading miniranger to be unnoticed in the standard deviation and residual figures. The reduction in the amount of effort required to check this system can free a tremendous amount of time for production also reducing the amount of time required to handle paper records and abstracts.

The resolution of the EG&G system is good enough for us to have identified and dove on such things as tires, drums, and tree trunks that extend only one to two feet above the bottom in 35 to 50 feet of water. On the items we conducted 400% coverage no additional targets were identified after the first 200% coverage was completed. Abstracts showing items located by percentage of coverage are included in

Appendix X. These abstracts show that in all but the poorest of water column conditions 200% side scan coverage is adequate for disproval of AWOIS items. We are very confident with this system that true hazards to navigation within our search area can be located with the first 200% coverage. During an earlier portion of the project we identified and recommended for charting two items that were outside the prescribed search areas. Given the above statements it seems logical that the chances of finding an item that does exist would be increased by one third if we could decrease coverage requirements to 200% and increase the search radius by one third. This could increase the number of dives also by one third. The time saved by performing fewer miles of side scan sonar could be taken up performing more diving operations. The time and resource requirements should be close to the same either way. It is recommended that the coverage requirements be reduced to 200% for a disproval and the search radius be increased by one third.

Submitted by:

Craig L. Bailey, LT, NOAA
Executive Officer
NOAA Ship RUDE

Thomas R. Waddington, ENS, NOAA
Third Officer
NOAA Ship RUDE

LETTER OF APPROVAL

FIELD NO. RU-20-02-87

OPR-E60987-RU/HE-87

Field operations contributing to the accomplishment of this survey were conducted under my supervision with frequent personal checks of progress and adequacy. This report and field sheets have been closely reviewed and are considered complete and adequate for charting.

Alan D. Anderson

Alan D. Anderson, LCDR, NOAA
Commanding Officer
NOAA Ship RUDE

CONTROL STATION REFERENCE LIST
FOR AWOIS ITEMS # 2361, 3675, & 3676

ALL POSITIONS NAD 83

STATION NAME	STATION NUMBER	GEOGRAPHIC POSITION	TRANSFORMED POSITION
Holland Island Bar Lighthouse, 1897	119	38° 04' 07.34467" ~ 076° 05' 44.92551" ~	X= 51592.6 ~ Y= 44627.3 ~
*Point Lookout Lighthouse ECC.	120	38° 02' 19.631 " ~ 076° 19' 19.290 " ~	X= 31731.2 ~ Field Position Y= 41350.9 ~ Field Position
Smith Point Lighthouse, 1898	121	37° 52' 47.54876" ~ 076° 11' 01.51835" ~	X= 43834.4 ~ Y= 23679.7 ~
Great Wicomico River LH, 1898	123	37° 48' 15.44080" ~ 076° 16' 03.41007"	X= 36432.9 ~ Y= 15308.2 ~
Little Wicomico River Light 1	124	37° 53' 22.78962" ~ 076° 14' 09.03704" ~	X= 39254.7 ~ Y= 24776.5 ~
TP HAWK	207	37° 52' 13.993 " ~ 076° 14' 37.780 " ~	X= 38541.9 ~ Field Position Y= 22657.3 ~ Field Position
TP COOK	208	37° 52' 51.592 " ~ 076° 14' 19.817 " ~	X= 38988.8 ~ Field Position Y= 23815.3 ~ Field Position
Reedville Municipal Tank	209	37° 50' 24.02537" ~ 076° 16' 37.22080" ~	X= 35617.6 ~ Y= 19275.0 ~

* = Not 3rd Order, Class I — see section I. of this report.

CONTROL STATION REFERENCE LIST
FOR AWOIS ITEMS # 4468 & 3681

ALL POSITIONS NAD 83

STATION NAME	STATION NUMBER	GEOGRAPHIC POSITION	TRANSFORMED POSITION
CEDA	107	38° 34' 24.159" 076° 18' 17.744"	X= 33427.7 Field Y= 100685.7 Position
CAL POLE #1, ~~1987~~	109	38° 43' 22.445" 076° 31' 32.437"	X= 14274.1 Field Y= 117371.0 Position
~~Naval Research Laboratory~~ NAVY, 1944	111	38° 39' 40.553" 076° 31' 45.219"	X= 13937.9 Y= 110529.9
Chesapeake Beach LT 1 ~~Light #1, 1987~~	113	38° 41' 30.528" 076° 31' 16.509"	X= 14651.3 Field Y= 113917.7 Position
NAVY ECC~~ENTRIC, 1987~~	115	38° 39' 40.579" 076° 31' 45.116"	X= 13940.4 Field Y= 110531.3 Position
NUT, ~~1987~~	116	38° 40' 14.302" 076° 20' 22.544"	X= 30446.7 Field Y= 111493.0 Position
Cove Point Lighthouse, 1848	117	38° 23' 10.450" 076° 22' 54.361"	X= 26644.2 Y= 79938.0
CAL POLE #2, ~~1987~~	118	38° 43' 30.736" 076° 31' 35.415"	X= 14215.7 Field Y= 117627.0 Position

TARGET ABSTRACT

AWOIS ITEM: 3681 and 4468 PROJECT NO.: E609

DATE/DOY	TARGET TIME	TOWFISH HEIGHT	RANGE TO END OF SHADOW	MAXIMUM SHADOW LENGTH	ESTIMATED TARGET HEIGHT	REMARKS
10/17/87						
243	19:53:44	13.0m	68.0	21.5	ERR	Target No. 3681 A
	20:35:49	10.0m	17.0	3.0	ERR	Target No. 4468 A
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	

TARGET ABSTRACT

AWOIS ITEM: 3675 PROJECT NO.: E609-87

DATE/DOY	TARGET TIME	TOWFISH HEIGHT	RANGE TO END OF SHADOW	MAXIMUM SHADOW LENGTH	ESTIMATED TARGET HEIGHT	REMARKS
10/7/87 280	16:06:00	10.5 m	21.0	1.0	ERR	
	17:30:17	9.0 m	23.0	1.5	ERR	
	~~17:43:59~~	~~9.0 m~~	~~9.0~~	1.5	~~ERR~~	
	17:47:03	9.0 m	23.0	1.5	ERR	
	~~17:52:43~~	~~9.0 m~~	~~23.0~~	2.5	~~ERR~~	
10/8/87 281	16:20:55	14.0 m	23.0	4.5	ERR	Target 3675A dave
	17:09:25	14.0 m	16.0	3.0	ERR	Target 3675B dave
10/9/87 282	14:07:59	13.5 m	85.0	12.0	ERR	Target 3675C dave
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	

TARGET ABSTRACT

AWOIS ITEM: 3676 PROJECT NO.: RU E60987

DATE/DOY	TARGET TIME	TOWFISH HEIGHT	RANGE TO END OF SHADOW	MAXIMUM SHADOW LENGTH	ESTIMATED TARGET HEIGHT	REMARKS
10-14-87 287	15:07:32	4.38	14.38	1.25	ERR	3676A dove
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	
					ERR	

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

NOAA Ship RUDE
439 West York St.
Norfolk, VA 23510

18 December, 1987

TO: Commander (OAN)
Fifth Coast Guard District
431 crawford Street
Portsmouth, VA 13705

FROM: RUDE - Alan D. Anderson

SUBJECT: Notice to Mariners Item

A wreck with a least depth of 42 feet at MLLW was discovered in 60 feet of water 4.7 nautical miles, bearing 022 degrees from Smith Point, VA. Chart 12230 (44 th Edition, May 31,1986) is affected. The Loran-C rates (9960 chain) taken at the site are 27347.6 and 41985.5. Position is 37 degrees 57 minutes 49.6 seconds North, 76 degrees 11 minutes 54.6 seconds West.This position is on the North American Datum of 1983. The item is in the channel used by deep draft vessels and should be considered a hazard to navigation.

Please include this information in the Local Notice to Mariners.

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: August 3, 1988

MARINE CENTER: Atlantic

OPR: E609

HYDROGRAPHIC SHEET: FE-308

LOCALITY: AWOIS Investigation Chesapeake Bay

TIME PERIOD: August 31 - November 13, 1987

TIDE STATION(S) USED: 857-6363 Chesapeake Beach, VA

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 1.23 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.2 ft.

REMARKS: RECOMMENDED ZONING

1. For AWOIS items 3676, 3681, 4468 apply a -0 hr 30 minute time correction to all heights.

Chief Tidal Datum
Quality Assurance Section

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

FE-308 SS

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
CHESAPEAKE BAY (title)	X									1
JAMES ISLAND (title)	X									2
MARYLAND (title)	X									3
SMITH POINT (title)	X									4
VIRGINIA (title)	X									5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
				Approved:						17
										18
				Charles E. Harrington						19
				Chief Geographer - N/CG2x5						20
				AUG 2 1988						21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

10/03/88

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-308

NUMBER OF CONTROL STATIONS	16
NUMBER OF POSITIONS	1945
NUMBER OF SOUNDINGS	7

	TIME-HOURS	DATE COMPLETED
* PREPROCESSING EXAMINATION	40	04/29/88
VERIFICATION OF FIELD DATA	39	06/21/88
QUALITY CONTROL CHECKS	18	
EVALUATION AND ANALYSIS	129	10/03/88
FINAL INSPECTION	8	09/29/88
TOTAL TIME	194	

MARINE CENTER APPROVAL 10/04/88

* Preverification time is not considered as part of total survey time.

NOAA FORM 61-29
(12-71)

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

REFERENCE NO.

LETTER TRANSMITTING DATA

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

☐ ORDINARY MAIL ☐ AIR MAIL

☐ REGISTERED MAIL ☐ EXPRESS

☐ GBL *(Give number)* _____

Hand Carried

DATE FORWARDED

JANUARY 12, 1988

NUMBER OF PACKAGES

1

TO:

Chief, Hydrographic Surveys Branch
Atlantic Marine Center
439 W. York Street
Norfolk, VA 23510

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

1 - Descriptive Report in brown binder. (Original)
1 - Descriptive Report in brown binder. (Copy of Original)
4 - Accordian Files containing raw data (Sonargrams, Fathograms, and Raw Data Printouts, as well as Edited Data Lists.)
6 - Raw data tapes.
2 - Edited data tapes.
1 - Micro-Diskette containing HDAS project parameters.
2 - Brown binders containing Appendices XI and XII
16 - Plotter sheets.

OPR-E609-RU/HE-87

FROM: *(Signature)*

LCDR Alan D. Anderson

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

LCDR Alan D. Anderson
NOAA Ship RUDE
439 W. York Street
Norfolk, VA 23510

NOAA FORM 61-29
(12-71)

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

REFERENCE NO.
MOA23-103-88

LETTER TRANSMITTING DATA

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

☐ ORDINARY MAIL ☐ AIR MAIL

☒ REGISTERED MAIL ☐ EXPRESS

☐ GBL *(Give number)* _____

TO:

Chief, Data Control Branch, N/CG243
Room 151, WSC-1
Hydrographic Surveys Branch
National Ocean Service
Rockville, MD 20852

DATE FORWARDED
8 December 1988

NUMBER OF PACKAGES
two (2)

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

FE-308SS (RU-20-2-87)
OPR-E609, VIRGINIA--MARYLAND, CHESAPEAKE BAY

Pkg. 1: (Envelope)
1 Original Descriptive Report containing four 1:20,000 scale smooth plots, one 1:20,000 scale smooth position overlay/track plot, and three (reduced to 1:20,000 scale) swath plots.

Pkg. 2: (Box)
1 Envelope containing Appendix XI. - System Check Abstract.
1 Envelope containing Appendix XII. - Sound Velocity and Baseline Calibration Data.
1 Envelope containing data removed from the Descriptive Report.
1 Envelope containing four 1:20,000 scale smooth position plots.
1 Envelope of Approved Tides.

FROM: *(Signature)*
Maurice B. Hickson III
Maurice B. Hickson, III

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Chief, Hydrographic Surveys Branch,
N/MOA23
Atlantic Marine Center
439 W. York Street
Norfolk, VA 23510-1114

☆U.S.GPO:1983-0-664-006/1192

NOAA FORM 61-29 (12-71)

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

REFERENCE NO.
MOA23-103-88

LETTER TRANSMITTING DATA

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

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

TO:

Chief, Data Control Branch, N/CG243
Room 151, WSC-1
Hydrographic Surveys Branch
National Ocean Service
Rockville, MD 20852

DATE FORWARDED
8 December 1988

NUMBER OF PACKAGES
two (2)

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

FE-308SS (RU-20-2-87)
OPR-E609, VIRGINIA--MARYLAND, CHESAPEAKE BAY

Pkg. 2: (Box) - Continued

1 Accordian folder containing data (printouts, echograms, and side scan sonargrams) for the investigation of the sunken tug "MARY L. McALLISTER" (Year Days 308, 313, 314, 321, and 323 - labeled 322) and AWOIS Item #2361 (Year Days 300, 322, 323, and 324).

1 Accordian folder containing data (printouts, echograms, and side scan sonargrams) for AWOIS Item #3675 (Year Days 279, 280, 281, 282, 288, 289, 292, 296, 302, 307, 327, 328, and 329).

1 Accordian folder containing data (printouts, echograms, and side scan sonargrams) for AWOIS Item #3676 (Year Days 287, 293, 294, 295, 301, 302, 303, and 307).

1 Accordian folder containing data (printouts, echograms, and side scan sonargrams) for AWOIS Items #3681 and #4468 (Year Days 243, 244, 246, 259, and 260).

FROM: *(Signature)* Maurice B. Hickson, III
Maurice B. Hickson, III

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Chief, Hydrographic Surveys Branch,
N/MOA23
Atlantic Marine Center
439 W. York Street
Norfolk, VA 23510-1114

☆U.S.GPO:1983-0-664-006/1182

ATLANTIC MARINE CENTER
EVALUATION REPORT

SURVEY NO.: FE-308SS FIELD NO.: RU-20-2-87

Virginia--Maryland, Chesapeake Bay, Vicinity of Smith Point and James Island

SURVEYED: August 26, 1987 through November 24, 1987

SCALE: 1:20,000 PROJECT NO.: OPR-E609-RU/HE-87

SOUNDINGS: EG&G Model 260 Side Scan Sonar, Pneumatic Depth Gauge, and RAYTHEON DSF-6000N Echosounder

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

Chief of Party.....A. D. Anderson

Surveyed by.....C. L. Bailey
.....T. R. Waddington
.....M. A. Sramek

1. INTRODUCTION

a. The purpose of this survey is adequately defined in the Descriptive Report and the Project Instructions. Processing of this survey has been modified so that only the wrecks and obstructions found and their least depths have been smooth plotted. A track plot of the investigation of AWOIS Item #3676 was smooth plotted for proof of coverage since this item was not found. This modified processing is considered complete in regard to nautical charting requirements.

b. This is primarily a side scan sonar survey. A Raytheon DSF-6000N echosounder was operated concurrently with the side scan sonar. Echo sounder developments were conducted to search for items found on the sonargrams. The echosounder data was used in positioning the item and in determining an item's significance and approximate depth. The hydrography is considered reconnaissance hydrography and not suitable for charting. Pneumatic depth gauges were used to determine least depths.

c. Four smooth plots at 1:20,000 scale of the wrecks and obstructions found by this survey, accompanying position overlays, and one track plot at 1:20,000 scale were generated during processing. Three field swath plots at 1:10,000 scale of the investigation of AWOIS Item #3676 have been photographically reduced to 1:20,000 scale. These plots are considered the final plots or smooth sheets for this survey. The four smooth plots, the three photographically reduced swath plots, and the smooth track

plot are attached to this report. The accompanying position overlays and the two 1:10,000 scale field swath plots are filed with the field records.

d. Corrections and notes made by the evaluator to the Descriptive Report are denoted in red ink.

2. CONTROL AND SHORELINE

a. Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983. Office processing of this survey is based on these values. All geographic positions listed from other sources are on the North American Datum of 1927. The smooth plots of the wrecks and obstructions found by this survey have been annotated with ticks showing the computed mean shift between the survey datum (NAD 1983) and NAD 1927. To place the investigations of AWOIS Items #3681 and #4468 on the North American Datum of 1927, move the projection lines 0.439 seconds (13.5 meters) north in latitude and 1.168 seconds (28.3 meters) east in longitude. To place the investigations of AWOIS Items #2361, #3675, #3676, and the sunken wreck MARY L. McALLISTER on the North American Datum of 1927, move the projection lines 0.458 seconds (14.1 meters) north in latitude and 1.207 seconds (29.5 meters) east in longitude.

The horizontal control stations listed in the Control Station Reference Lists (Appendix III.) of this survey are of Third Order, Class I accuracy or better. Nine of the sixteen control stations listed are field positions. Positioning methods are adequately discussed in the Descriptive Report. Calibration methods are adequately discussed in the Descriptive Report and adequate calibration data is recorded in the field records.

b. Charted shoreline within the limits of the smooth plots of this survey was not drawn on the smooth plots. Charted shoreline for orientation is not considered necessary for chart application of these survey data.

3. HYDROGRAPHY

The least depths collected on the wrecks and obstructions found during this survey are the only valid soundings for charting. All other soundings collected on this survey are of reconnaissance value only. The investigation of features and the determination of least depths are considered adequate except as noted in this report.

4. CONDITION OF SURVEY

The final field sheets, survey records, and reports adequately conform to the requirements of the HYDROGRAPHIC MANUAL and the PROVISIONAL SIDE SCAN SONAR MANUAL. The only deficiencies noted in this report are those which impact charting recommendations or affect the accuracy, adequacy, or interpretation of this survey. These deficiencies are noted as follows:

a. In general, side scan sonar contacts on the present survey which have a computed height above the bottom of 2 feet or less were considered insignificant by the hydrographer. This practice is generally considered reasonable and acceptable since the majority of side scan surveying is in depths greater than 30 feet. In depths less than 30 feet, contacts having a computed height of 2 feet or less may be significant and are evaluated during processing.

b. The majority of sonargrams for this survey show high concentrations of marine life which degrades the quality of the sonargrams and could possibly obscure a significant contact.

c. It would have been beneficial if local dive groups, dive shops, and professional diving companies within the area were contacted by the hydrographer concerning the assigned AWOIS Items and any other wrecks or obstructions which may not be charted or charted incorrectly.

5. JUNCTIONS

There are no junctions on this survey.

6. COMPARISON WITH PRIOR SURVEYS

a. HYDROGRAPHIC SURVEYS
H-8435 (1956) 1:20,000
H-8283 (1955-56) 1:20,000
H-8280 (1955) 1:20,000
H-7065 (1945) 1:10,000

These prior surveys are common to the entire present survey. Comparisons between present and prior hydrography were not made since all present hydrography, except the detached soundings on items located, is considered reconnaissance hydrography. The present survey reconnaissance hydrography was neither processed nor plotted by the field or office. Sounding correction reductions were not applied for this hydrography. Comparisons between present reconnaissance hydrography and prior soundings were not accomplished. Wrecks and obstructions found by this survey are discussed in section 7.a. of this report.

It is not the intent of the present survey to supersede but only to supplement prior hydrography.

b. WIRE DRAG SURVEY FE-220WD (1979) 1:20,000

This prior wire drag survey is common only to AWOIS Item #2361 and provides source information for this item. Comparisons between the present survey and this prior survey are made in section 7.a.1) of this report. The present survey does supersede this prior survey for AWOIS Item #2361.

7. COMPARISON WITH CHARTS 12264 (22nd Ed., May 28, 1983)
12233 (29th Ed., July 19, 1986)
12231 (21st Ed., Sept. 1, 1984)
12228 (23rd Ed., May 31, 1986)

a. HYDROGRAPHY

The charted hydrography originates with the previously addressed prior surveys supplemented by information from the Coast Guard and the U. S. Army Corps of Engineers. The previously addressed prior surveys require no further consideration. Attention is directed to the following:

1) AWOIS #2361, a charted dangerous sunken wreck with a wire drag clearance of 51 feet in Latitude 37°51'46.2"N, Longitude 76°09'29.4"W, originated with Notice to Mariners No. 15 of 1942 and was later revised by survey FE-220WD (1979). This wreck was described from side scan sonar analysis on FE-220WD as intact, having a gash in its port quarter, oriented 100°T, LOA 180 feet, beam 45 feet, having a starboard list, being of steel construction, and having masts and antennas protruding upward. This sunken wreck was found by the present survey in Latitude 37°51'48.16"N, Longitude 76°09'27.39W. This wreck was investigated by divers and found as described by FE-220WD (1979). This wreck is considered to be AWOIS Item #2361. The divers did not determine the dimensions of this wreck due to limited bottom time. The hydrographer estimated the vessel to be approximately 270 feet in length and 45 feet in width from side scan sonargram analysis. (Office processing estimates are approximately 250 feet LOA and a 40-foot beam.) The divers were unable to identify this vessel. A least depth of 59.8 feet (corrected for smooth tides) was obtained by pneumatic depth gauge. This least depth was taken on the shoalest point of the partially broken forward mast. A thorough search by divers determined that this mast was the most prominent and shoalest feature. The reason for the difference between the present least depth of 59.8 feet and the prior hang depth of 54 feet on FE-220WD (1979) is most probably the partially broken forward mast presently found which may not have been broken in 1979. This wreck

lies in prior (H-8280) depths of 84-85 feet. It is recommended that this wreck be charted in the position determined by the present survey as a wreck over which a least depth of 60 feet is known and surrounded by a danger curve. The presently charted dangerous sunken wreck with a wire drag clearance of 51 feet should be deleted from the chart. No additional field work is recommended on this AWOIS item.

2) AWOIS #3675, a charted dangerous sunken wreck, with a reported depth of 37 feet in Latitude 37°57'10"N, Longitude 76°12'24"W, originated with Notice to Mariners No. 49 of 1958 and was revised by Notices to Mariners No. 12 of 1959 and 10 of 1960. This item was described as being a 195-foot barge sunk on a southeast-northwest heading. A large wooden barge, 150 feet in length, was found intact in Latitude 37°56'52.22"N, Longitude 76°11'46.49"W. This sunken barge in general only extends 6-10 inches above the silt bottom. This wreck was designated contact #3675-B. This wreck is considered to be AWOIS Item #3675 by the hydrographer since it is within the assigned search area, it is a barge, and it is the only barge found within the required search radius of AWOIS Item #3675. Side scan sonar coverage of the assigned search area was 100%. Divers obtained a least depth on this barge of 59.2 feet (corrected for smooth tides) by pneumatic depth gauge. This wreck lies in prior (H-8283) depths of 67-73 feet. It is recommended that this wreck be charted in the position determined by the present survey as a wreck over which a least depth of 59 feet is known and surrounded by a danger curve. The presently charted dangerous sunken wreck, 37 feet reported, should be deleted from the chart. No additional field work is recommended on this AWOIS item. Additional research into the source of this item is recommended since the barge found is 150 feet in length instead 195 feet, the construction is wood, and it has almost buried itself (in a low current area - silt bottom) in less than 30 years. Also it is recommended that the note "shoaling reported 1987" be charted in the vicinity of this sunken barge since present survey data indicates a bottom depth of 61 feet and additional field work to determine the extent of this shoaling is recommended. Two other significant contacts were found during this investigation. These contacts are addressed as follows:

Do not concur. See Addendum. MRK

Do not concur. See Addendum. MRK

a) A large jumbled mass of large diameter pipe, possibly a ship's mast, was found in Latitude 37°57'49.56"N, Longitude 76°11'54.61"W and designated contact #3675-A. Further investigation revealed wreckage in the surrounding area including a ships hull of copper covered wood construction. This contact lies in prior (H-8283) depths of 58 feet. A least depth of 42.3 feet (corrected for smooth tides) was obtained by pneumatic depth gauge. This wreckage is not presently charted. It is recommended that this

wreckage be charted in the position determined by the present survey as wreckage over which a least depth of 42 feet is known and surrounded by a danger curve. No additional field work is recommended on this wreckage.

b) An old wooden wreck, approximately 120 feet in length, was found in Latitude 37°57'44.88"N, Longitude 76°11'42.11"W and designated contact #3675-C. Diver investigation of this entire wreck revealed that only structural ribs and side planks were protruding above the bottom and by only 1-4 feet. A least depth of 50.9 feet (corrected for smooth tides) was obtained by pneumatic depth gauge. The part of the wreck where the 50.9-foot least depth was obtained extended only 1-foot above the bottom and this is in prior (H-8283) depths of 56-57 feet. Shoaling of 5-6 feet is indicated in this area. This wreck is not presently charted. It is recommended that this wreck be charted in the position determined by the present survey as a wreck over which a least depth of 51 feet is known and surrounded by a danger curve. No additional field work is recommended on this wreck. It is recommended that a note "shoaling reported 1987" be charted in the vicinity of this wreck and additional field work to determine the extent of this shoaling is recommended.

Do not concur. See Addendum. MRK

3) AWOIS #3676, a charted dangerous sunken wreck with a reported depth of 20 feet, ED in Latitude 37°59'31"N, Longitude 76°10'46"W, originated with Local Notice to Mariners No. 4 of 1950 and revised by Notice to Mariners No. 5 of 1950. This wreck was identified as the fishing vessel MARION. This item was searched for by side-scan sonar and echosounder. Five contacts were seen on the side scan sonargrams during this item investigation. None of these contacts appeared large enough to be the item and none had a wreck-like appearance. The sonargrams were inspected to determine if any of these contacts were detected on adjacent lines and none were. Therefore, all five contacts were considered insignificant and were not investigated. The side scan sonar coverage required for disproval is 400% for an assigned search radius of one nautical mile. The hydrographer covered only about 50% of the assigned search area and, within the area covered, only 100% coverage could be claimed. During the investigation of this item, significant concentrations of marine life, noise, interference, and adverse water column conditions were present and obscured the side scan sonar returns. Numerous instances are evident where fish concentrations caused the bottom tracking to be lost and the sonargram to be effectively blanked. The possibility exists that because of the lack of information about the size of this AWOIS Item, this wreck or other dangerous objects could have been missed within the area covered due to the fish concentration, noise, interference, and adverse water column conditions. This item has not been disproved and insufficient work has

been accomplished to alter this wreck's charting status. It is recommended that this dangerous sunken wreck, ED, (20 ft rep 1950), AWOIS Item #3676, be retained as presently charted. Additional field work is recommended to verify or disprove the existence of this item. It is recommended that any additional field work be accomplished during a season when the upper Chesapeake Bay does not have high concentrations of marine life.

4) AWOIS #3681, a charted dangerous submerged obstruction, PA, covered by 38 feet in Latitude 38°30'42"N, Longitude 76°23'27"W, originated with Notices to Mariners No. 29 of 1966 and is unidentified. A steel barge, approximately 125 feet in length and 22 feet wide, was found in Latitude 38°30'42.22"N, Longitude 76°23'32.63"W and designated contact #3681-A. This sunken barge extends almost 20 feet off the bottom but it lies in a scour approximately 7 feet deep. A least depth of 44.6 feet (corrected for smooth tides) was obtained by pneumatic depth gauge on the shoalest point on this wreck. This wreck lies in prior (H-7065) depths 58 feet. No name or number could be found on this sunken barge. This wreck is considered to be AWOIS Item ~~#4468~~ #3681 since it is close (approximately 180 meters) to the position provided by the Corps Of Engineers and its identity was never known. It is recommended that this wreck be charted in the position determined by the present survey as a wreck over which a least depth of 44 feet is known and surrounded by a danger curve. The presently charted dangerous submerged obstruction, PA, covered by 38 feet, should be deleted from the chart. No additional field work is recommended on this AWOIS item.

5) AWOIS #4468, a charted dangerous sunken wreck, PA, in Latitude 38°31'00"N, Longitude 76°23'00"W originated with Local Notice to Mariners No. 27 of 1972 and is described as a 30-foot cabin cruiser sunk in 50 feet of water. A decaying wooden cabin cruiser, broken in two and partially buried, was found in Latitude 38°30'26.85"N, Longitude 76°23'35.75"W and designated contact #4468-A. This wreck extended only 4 feet off the bottom at its shoalest point. A least depth of 58.4 feet (corrected for smooth tides) was obtained by pneumatic depth gauge. This wreck lies in prior (H-7065) depths of 59 feet. This wreck is considered to be AWOIS Item #4468 by the hydrographer since it agrees with the listed description of this AWOIS item. Divers could not identify this wreck because of its decayed and partially buried condition. The eastern half of the assigned search area was not covered and is too shoal to cover with side scan sonar. The western half of the assigned search area is the area that was covered and is the area where marine traffic is most likely to transit. It is recommended that this wreck be charted in the position determined by the present survey as a wreck over which a least depth of 58 feet is known. The presently charted

dangerous sunken wreck, PA, should be deleted from the chart. No additional field work is recommended on this AWOIS item.

6) The tugboat MARY L. McALLISTER sank November 2, 1987 in the Chesapeake Bay in the vicinity of Chesapeake Channel Lighted Bell Buoy "48". The NOAA Ship RUDE investigated to determine an accurate position and obtain a least depth on this wreck. This wreck was quickly located by side scan sonar and echosounder search in Latitude 37°46'47.19"N, Longitude 76°11'03.97"W. Divers investigated this wreck and positively identified it as the MARY L. McALLISTER. This vessel was found lying upside down in prior (H-8283) depths of 103 feet. A least depth of 68.5 feet (corrected for smooth tides) was obtained by pneumatic depth gauge. This tugboat is 90 feet long and has a beam of 22 feet. This wreck is not presently charted. It is recommended that this wreck be charted in the position determined by the present survey as a wreck over which a least depth of 68 feet is known. No additional field work is recommended on this wreck.

b. Aids To Navigation

Six fixed aids to navigation were used as horizontal control stations during the present survey. These six fixed aids to navigation are listed in the Descriptive Report (Appendix III. - CONTROL STATION REFERENCE LIST). One other control station listed is an eccentric station from a fixed aid to navigation. No floating aids to navigation were located by this survey. It is recommended that these aids to navigation be charted in accordance with the most current available information.

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with the Project Instructions except as noted in section 4. of this report and as follows:

*a. An incomplete Sonar Contact List (Target Abstract) was provided for this survey. Only contacts for AWOIS Items #3675 and #3676 were abstracted. The Sonar Contact List is required by section 3.1.1.1. of the PROVISIONAL SIDE SCAN SONAR MANUAL and section 7.11. of the Project Instructions.

b. Datum Ticks were not added to the field sheets as required by section 3.1.1. and Change #1 of the Project Instructions.

* Target Abstract for AWOIS items 3681 and 4468 was also provided for the survey.

9. ADDITIONAL FIELD WORK

This is a good side-scan sonar survey for the AWOIS Items resolved by this survey. Additional field work is addressed in section 7.a. of this report.

Deborah A. Bland
Cartographic Technician
Verification of Field Data

Maurice B. Hickson, III
Cartographer
Evaluation and Analysis

Roy G. Cram
Supervisory Cartographic Technician
Verification Check

INSPECTION REPORT
FE-308SS

The data that make up this Side Scan Sonar survey have been inspected to gain insight into its overall completeness regarding survey coverage, presentation of survey results, and the verification or disproval of charted data. This survey, except as noted in the Evaluation Report, is considered complete and adequate to meet National Ocean Service standards. Processing is considered complete. The survey records comply with NOS requirements except as noted in the Evaluation Report.

Inspection

R. D. Sanocki
Chief, Hydrographic Surveys
Processing Section
Hydrographic Surveys Branch

William A. Wert, LCDR, NOAA
Chief, Hydrographic Surveys Branch

Approved October 4, 1988

Ray E. Moses, RADM, NOAA
Director, Atlantic Marine Center

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

AUG 21 1989

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

FROM: George K. Myers, Jr.
Chief, Standards Section

SUBJECT: Examination of Hydrographic Survey FE-308 (1987) SS, Virginia--Maryland, Chesapeake Bay, Vicinity of Smith Point and James Island

Chief of Party	A. D. Anderson
Field Unit	NOAA Ship RUDE
Processed by	Atlantic Marine Center
Examined by	G. K. Myers

An examination of side scan sonar survey FE-308 (1987) SS was accomplished to monitor the survey with respect to data acquisition, conformance with applicable project instructions, determination of least depths, navigational hazards, smooth plotting, decisions made and actions taken by the evaluator, and the cartographic presentation of data.

In general, the survey was found to conform to National Ocean Service standards and requirements as stated in the Evaluation Report, except as noted in the attached N/CG241 memorandum, "Addendum to FE-308 SS Evaluation Report," dated June 16, 1989.

Attachment

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

JUN 16 1989

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

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

SUBJECT: Addendum to FE-308SS Evaluation Report

An AWOIS and SURF check on FE-308SS (1987) has been performed. After re-evaluation of the hydrographer's findings, changes to charting recommendations, as stated in the Evaluation Report, follow for two items:

Evaluation Report, section 7.a.2.

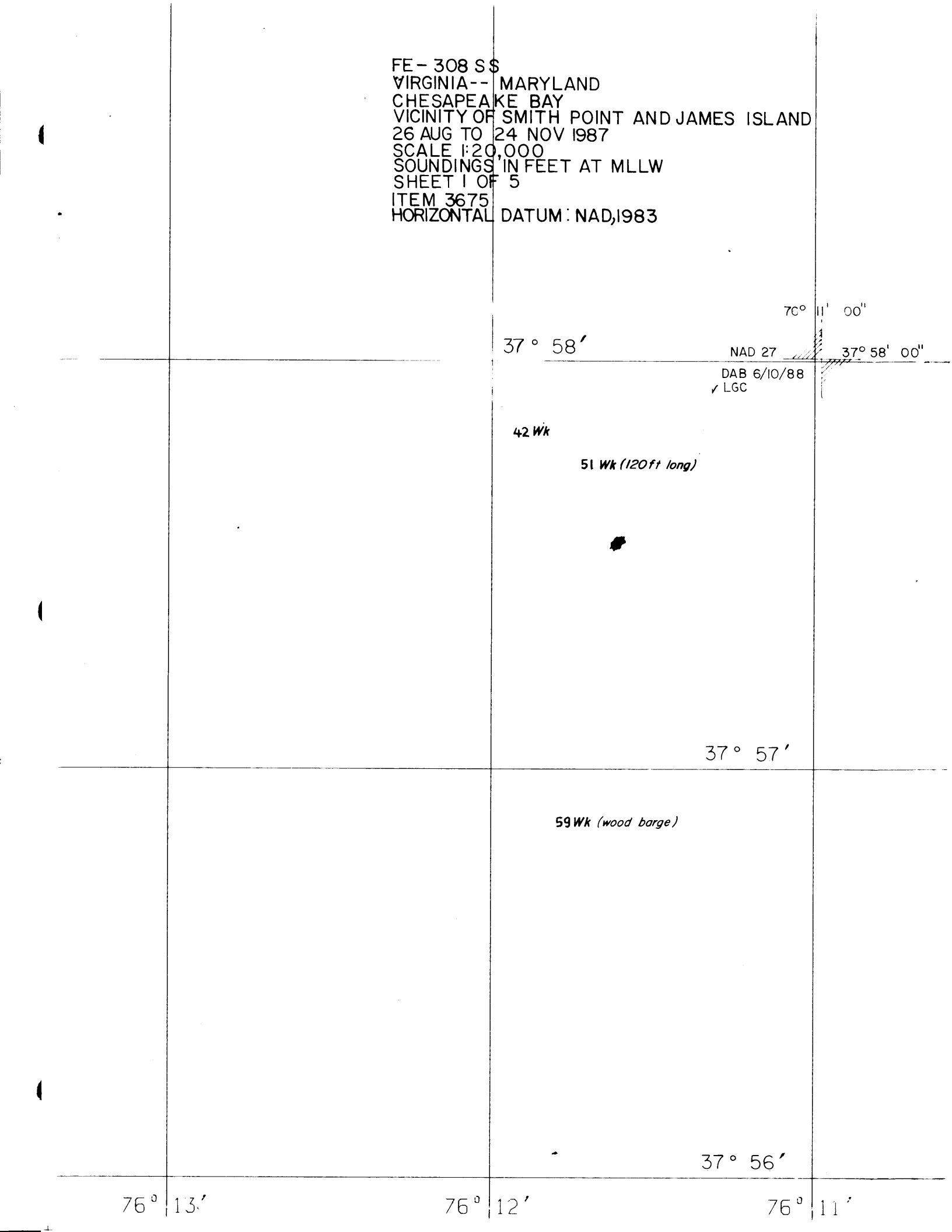
AWOIS item no. 3675, a wreck with a least depth of 59.2 feet, was found to rise only 6 to 10 inches above the silt bottom; therefore, concurring with the hydrographer, it does not constitute a danger to navigation. Given the wreck's height above the bottom, the immediate surrounding depth at the wreck's location can be calculated to be 60 feet, supporting the evaluator's statement that shoaling has occurred in the vicinity. It is recommended that the presently charted dangerous sunken wreck, 37 feet reported, be deleted. At latitude 37°56'52.22"N, longitude 76°11'46.49"W, "59 Wk" without a danger curve should be charted and, in the vicinity, the note "shoaling to 60ft rep 1987" should be charted.

Evaluation Report, section 7.a.2.b.

As recommended in the Evaluation Report, "51 Wk" with a danger curve should be charted at latitude 37°57'44.88"N, longitude 76°11'42.11"W. However, in lieu of the note "shoaling reported 1987", it is recommended that the note "shoaling to 52ft rep 1987" be charted in the vicinity.

cc:
MOA23 - Wert
N/CG22x3 - Dardey

FE-308 S S
VIRGINIA-- MARYLAND
CHESAPEAKE BAY
VICINITY OF SMITH POINT AND JAMES ISLAND
26 AUG TO 24 NOV 1987
SCALE 1:20,000
SOUNDINGS IN FEET AT MLLW
SHEET 1 OF 5
ITEM 3675
HORIZONTAL DATUM: NAD,1983



NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
CHARTING AND GEODETIC SERVICES RADM WESLEY V. HULL DIRECTOR
UPPER CHESAPEAKE BAY
AWOIS 3676 FIELD SHEET

VESSEL NO / PLOTTER SHEET NO / REG. NO / SHEET:	9040 - RU-10-11-87 - -
HORIZONTAL DATUM: NAD 83	PROJECT: E609-RH-87
SOUNDING DATUM: NAD 83	
PROJECTION: MODIFIED UTM PROJECTION	CENTRAL MERIDIAN: 076:00:00.000
SCALE: 1: 10000	SOUNDINGS IN: FEET
SURVEYED BY: NOAA SHIP RUDE S-590 LCDR A. D. ANDERSON	NOVEMBER 1987

N 35000 N 36000 N 37000 N 38000

E 42000 E 43000 E 44000 E 45000 E 46000 E 47000

FE-308 SS
SWATH OVERLAY "A" TO ACCOMPANY
SHEET 2 OF 5 - AWOIS ITEM 3676

NOAA

NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
CHARTING AND GEODETIC SERVICES RADM WESLEY V. HULL DIRECTOR

UPPER CHESAPEAKE BAY
AWOIS 3676 FIELD SHEET

VESSEL NO / PLOTTER SHEET NO / REG. NO / SHEET: 9040 - RU-10-11-87 - -	
HORIZONTAL DATUM: NAD 83	PROJECT: E609-RH-87
SOUNDING DATUM: NAD 83	
PROJECTION: MODIFIED UTM PROJECTION	CENTRAL MERIDIAN: 076:00:00.000
SCALE: 1: 10000	SOUNDINGS IN: FEET
SURVEYED BY: NOAA SHIP RUDE LCDR A. D. ANDERSON	OCTOBER 1987

N

N 35000 N 36000 N 37000 N 38000

E 42000 E 43000 E 44000 E 45000 E 46000 E 47000

FE - 308 SS
SWATH OVERLAY "B" TO ACCOMPANY
SHEET 2 OF 5 - AWOIS ITEM 3676

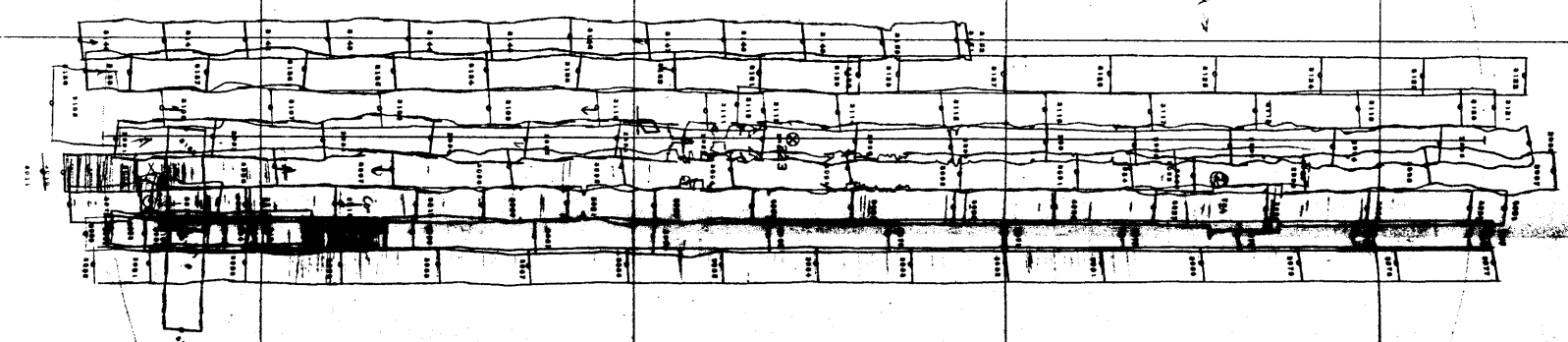
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
CHARTING AND GEODETIC SERVICES RADM WESLET V. HULL DIRECTOR
UPPER CHESAPEAKE BAY
AWOIS 3676 - FIELD SHEET

VESSEL NO / PLOTTER SHEET NO / REG. NO / SHEET: 9040 - RU-10-11-87 - -	
HORIZONTAL DATUM: NAD 83	PROJECT: E609-RH-87
SOUNDING DATUM: NAD 83	
PROJECTION: MODIFIED UTM PROJECTION	CENTRAL MERIDIAN: 076:00:00 000
SCALE: 1: 10000	SOUNDINGS IN: FEET
SURVEYED BY: NOAA SHIP RUDE LCDR A. D. ANDERSON	OCTOBER 1987

N 35000 N 36000 N 37000 N 38000

E 42000 E 43000 E 44000

E 45000 E 46000 E 47000



FE - 308 SS
SWATH OVERLAY "C" TO ACCOMPANY
SHEET 2 OF 5 - AWOIS ITEM 3676

POSITION OVERLAY TO ACCOMPANY FE-308SS
SHEET 2 OF 5
ITEM 3676

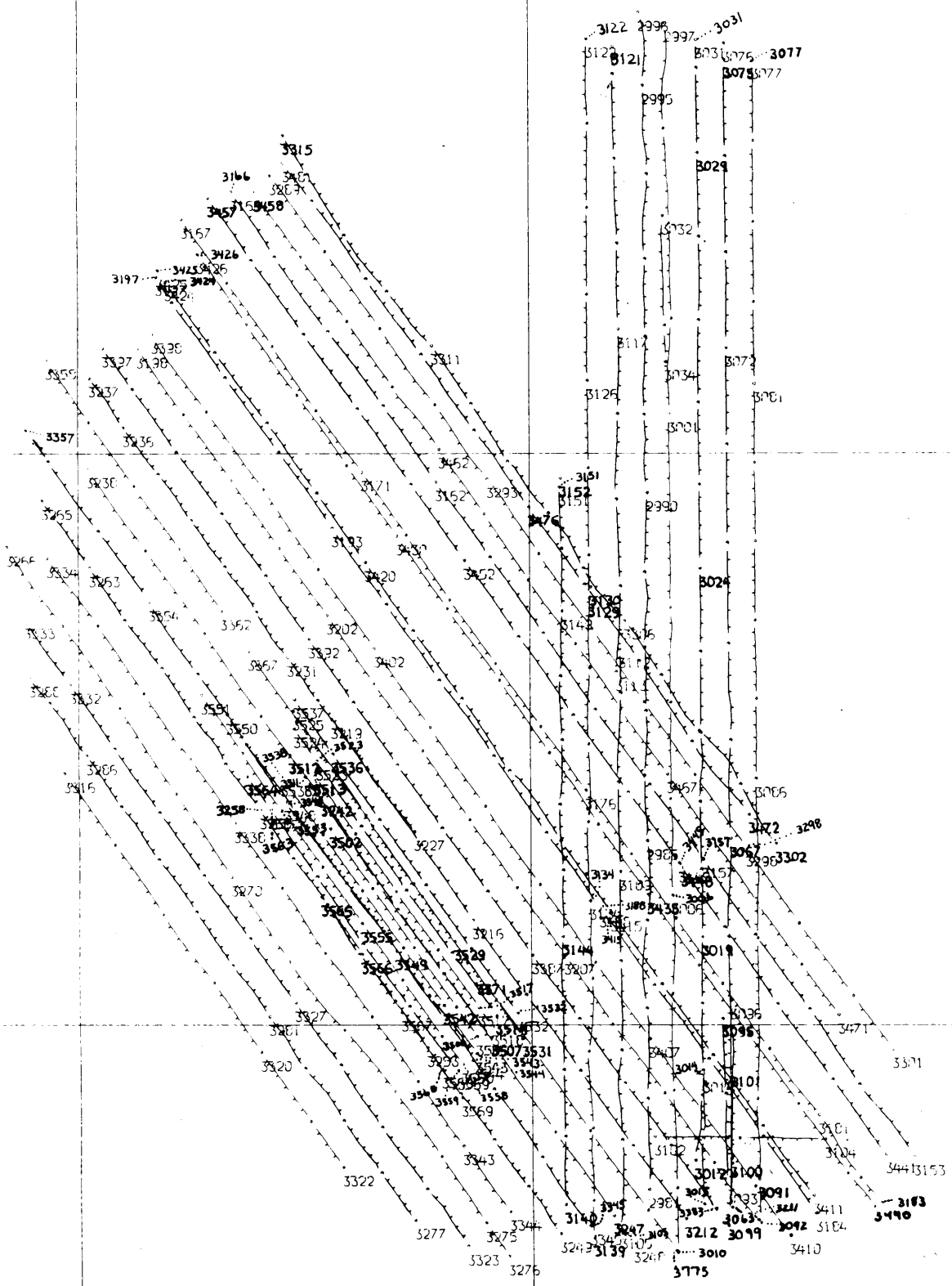
76° 10' 00"

38° 01'

NAD 27

38° 01' 00"

DAB 6/10/88
✓ LGC



38° 00'

37° 59'

76° 12'

76° 11'

76° 10'

76° 10′

76° 09′

FE-308 SS
VIRGINIA-- MARYLAND
CHESAPEAKE BAY
VICINITY OF SMITH POINT AND JAMES ISLAND
~~26 AUG TO 24 NOV 1987~~
SCALE 1:20,000
SOUNDINGS IN FEET AT MLLW
SHEET 3 OF 5
ITEM 2361
HORIZONTAL DATUM: NAD, 1983

37° 53′

37° 52′

60 Wk

76° 10′ 00″

NAD 27

37° 51′ 00″

37° 51′

DAB 6/10/88
✓LGC

76° 12′ 76° 11′ 76° 10′

37° 48′

FE - 308 SS
VIRGINIA -- MARYLAND
CHESAPEAKE BAY
VICINITY OF SMITH POINT AND JAMES ISLAND
26 AUG TO 24 NOV 1987
SCALE 1:20,000
SOUNDINGS IN FEET AT MLLW
SHEET 4 OF 5
ITEM TUG MARY L. McALLISTER
HORIZONTAL DATUM: NAD, 1983

37° 47′

68Wk TUG "MARY L McALLISTER"
(90ft long x 22ft wide)

76° 12' 00"

NAD 27 37° 46' 00"

DAB 6/10/88
/LGC

37° 46′

76° 25′ 76° 24′ 76° 23′

FE- 308 SS
VIRGINIA-- MARYLAND
CHESAPEAKE BAY
VICINITY OF SMITH POINT AND JAMES ISLAND
26 AUG TO 24 NOV 1987
SCALE 1:20,000
SOUNDINGS IN FEET AT MLLW
SHEET 5 OF 5
ITEMS 3681 AND 4468
HORIZONTAL DATUM: NAD, 1983

76° 23' 00"

NAD 27 38° 31' 00" 38° 31′

DAB 6/10/88
✓LGC

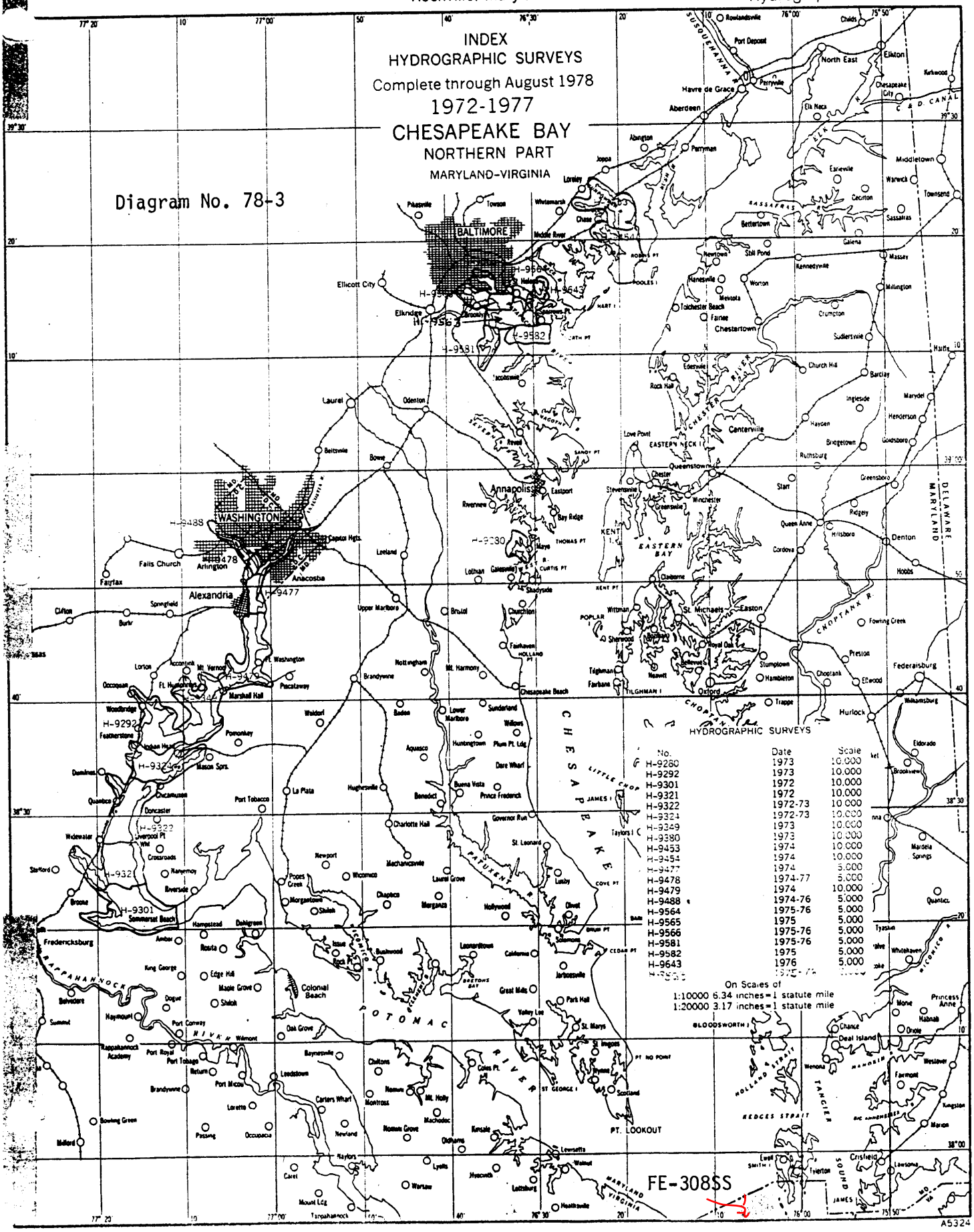
44Wk (steel barge)

58Wk

38° 30′

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

Hydrographic Index No. 68 J



NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-308SS

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
12231	1-27-89	Roy Hammond	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. #30
12285	2-14-89	Warren Hamm	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 29A
12225	9-26-89	Russell Kennedy	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 69
12266	10-5-89	R. A. Lillis	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 37
12220	12-1-89	John Pierce	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 53
12233	2/28/90	Dan Clark	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 44
12230	4-3-90	Pat Boili	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 75
12264	8-9-90	R Kennedy	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 43
12263	2-21-91	Ed Martin	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 69 thru 12260 dwg 37
12260	3-19-91	L. ARKENAU	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 46
12228	3-28-91	John Pierce	Fully Applied to drawing 31
12235	7-30-91	Dan Clark	FULLY APP'D TO DWG. #43

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.