

9758

WIRE DRAG

Diag. Cht. Nos. 1218-2 & 1219-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT (HYDROGRAPHIC)

Type of Survey WIRE DRAG
Field No. RU/HE-20-2-76
Office No. H-9758 W.D.

LOCALITY

State Delaware
General Locality Delaware Bay Entrance
Locality Vicinity of Cape Henlopen

1976

CHIEF OF PARTY
R.A. Ganse

LIBRARY & ARCHIVES

DATE September 13, 1978

9758

WIRE DRAG

Area 2
12304
12200 NC.

HYDROGRAPHIC TITLE SHEET

H-9758 W.D.

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/HE-20-2-76

State DELAWARE

General locality DELAWARE BAY ENTRANCE

EAST COAST INVESTIGATIONS

Locality VICINITY OF CAPE HENLOPEN

ENTRANCE TO DELAWARE BAY

Scale 1:20,000

Date of survey 14 SEPT. - 9 NOV. 1976

Instructions dated June 16, 1976

Project No. OPR-515 - RU/HE - 76

Vessel RUDE (ASV90) & HECK (ASV91)

Chief of party CDR R.A. GANSE

Surveyed by CDR R.A. GANSE, CDR R. CROZIER, LTJG T. RENNINGER, ENS VADNAIS, ENS CROSS

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

Graphic record scaled by _____

Graphic record checked by _____

Protracted by _____

Automated plot by Calcomp-618 platter (AMC)

Soundings penciled by _____

Soundings in ~~fathoms~~ feet at MLW ~~XXXXX~~ USING PREDICTED TIDES

REMARKS: Additional processing as necessary to meet Q.C. requirements was denied. Verification to this survey was limited, no further processing is planned, refer to the attached Verifier's Report / Addendum to the Descriptive Report.

Applied to stars 5/14/79

TABLE OF CONTENTS

- I. SHEET LAYOUT
- II.
 - A. AUTHORITY
 - B. CHARACTERS AND LIMITS OF WORK
 - C. CONTROL
 - D. DATE OF SURVEY
 - E. TIDE REDUCERS
 - F. JUNCTIONS
 - G. SPLITS
 - H. CURRENTS
 - I. WAVES
 - J. DIVING PROCEDURES
 - K. TESTING
 - L. CALCOMP PLOTS
 - M. GENERAL NOTES
 - N. DISCREPANCIES AND COMPARISON WITH RECENT CHARTS
 - O. GYRO ERROR
 - P. PERSONNEL AND EQUIPMENT
 - R. APPROVAL
- III. ITEM 1 & 2
 - A. STATEMENT ON ITEM 1 & 2
 - B. GROUNDINGS AND HANGS
 - C. NOTED OCCURRENCES DURING SURVEY
 - D. SIDE SCAN SONAR
 - E. SUMMARY
 - F. RECOMMENDATIONS
- IV. ITEM 3
 - A. STATEMENT ON ITEM 3
 - B. GROUNDINGS AND HANGS
 - C. NOTED OCCURRENCES DURING SURVEY
 - D. SUMMARY
 - E. RECOMMENDATIONS
- V. ITEM 4
 - A. STATEMENT ON ITEM 4
 - B. GROUNDINGS AND HANGS
 - C. NOTED OCCURRENCES DURING SURVEY
 - D. SUMMARY
 - E. RECOMMENDATIONS

VI. LIST OF ATTACHMENTS

I. CALIBRATION DATA

II. DAILY RAYDIST CORRECTORS

III. STATISTICS

IV. A. LIST OF HANGS
B. DETACHED POSITIONS

V. PARAMETERS
A. BOATSHEET REQUEST
B. ELECTRONIC CONTROL PARAMETERS

VI. LETTERS CONCERNING CHART DISCREPANCIES

✓ VII. PROJECT INSTRUCTIONS

VIII. *Smooth Tide Note & Hourly Heights* ✓

✓ = Misc. items removed and filed with the field records

DESCRIPTIVE REPORT
TO ACCOMPANY
WIRE DRAG FIELD NO. 20-2-76
PROJECT OPR-515-RU/HE-76

A. AUTHORITY

This project was authorized under project instructions OPR-515-RU/HE-76 East Coast Investigations dated 16 June 1976. ✓

B. CHARACTER AND LIMITS OF WORK

The purpose of this project was to investigate 13 items in the Delaware Bay Entrance. This report covers the completion of the first 4 of these items. Project instructions cover a total of 13 items, of these 5 were on boatsheet 20-2-76. The other boatsheets were not started. ✓

C. CONTROL

Raydist stations - Raydist DR-S Range-Range operating at a frequency of 3294.4 was used during this project. Two Raydist stations, GLEN RAYDIST and H-5-76-DL were utilized for control. GLEN RAYDIST located at latitude 38°54'14.4514"N and longitude 75°17'41.2591"W served as the red station. H-5-76-DL located at latitude 38°47'16.1877"N and longitude 75°05'54.7370"W served as the green station. ✓

The raydist frequency was changed from our normal frequency of 3300.4 to prevent interference with an existing net in our area. ✓

D. DATE OF SURVEY

Work on boatsheet 20-2-76 began 14 September and ended 9 November 1976. ✓

E. TIDE REDUCERS

Tide reduction of each days data was completed by using predicted tides. The reference station at Breakwater, time and height ratios differed for the items. ✓

ITEM	TIME		HEIGHT RATIO
	HW	LW	
1, 2		-20 min	1.00
3		0 min	1.00
4	0 min	+20 min	1.22

Note: Smooth Tide Note & Hourly Heights are included and are designated Attachment VIII. of this report.

F. JUNCTIONS

There were no junctions on this boatsheet. *Concur*

G. SPLITS

There were no splits on this boatsheet. *Two splits exist on the Smooth Sheets. See the Verifier's Report, Section 9. a.*

H. CURRENTS

Currents created large problems for all 4 items. Currents were fast, approaching 2 1/2 knots. Slack periods were small in time. Drags were set up to run with the currents or at slacks. Many drags were rejected due to conflicting winds and currents which created lifts. Drags were ruined from current being too strong even for drags run in the direction of the current. Strong currents impeded divers and added to the risk of diving. Several times the wire broke from the strain of the current pulling on a hang.

I. WAVES

Waves were uniform in height in this region. The wave heights reported in the drag information stamps correspond roughly to the average of the upper third waves. There were few rogue waves.

J. DIVING PROCEDURES

Diving procedures for this project consisted of diving on every possible unknown hang. In a few cases temporary hangs prevented diving. Full wet suits were worn. Visibility varied from 1 to 10 feet. Currents created problems for divers. At times diving was impossible until currents somewhat slacked. At other times currents made the dive more dangerous and prevented thorough inspection of obstructions as the divers could not leave the wire.

K. TESTING

1. Results of the tests are recorded in both the rough and smooth tester record volumes. There is one difference in how these values were recorded. In the rough tester records the actual height of the mark on the tester pole was recorded. *(Precision set apart off shown in list of sag calculations) No attention was paid to the depth of the tester except to record it.* In the smooth tender record the test was recorded corrected to the wire depth. The smooth test record shows the actual lift and sag.
2. In the smooth test record launch 20 has an asterisk (*) next to the section ~~they~~ ^{it} tested.
3. Definition of a SAC MISS: a test in which the tester rod has definitely been thrown in ahead of the ground wire, and picked up after the ground wire has passed, yet there are no marks on the pole. The wire has passed underneath the pole. Such a test puts an upper limit on the amount

of lift. This limit is recorded in the smooth tester record preceded by an algebraic less than symbol. When this value reduces the lift or is the sole test in a given section it is assumed to be the lift.

4. Definition of TOB: TOB refers to "tester on bottom". It is a test result that occurs when the tester rod shows signs of having touched the ocean floor. Lifts associated with this type test are generally not accepted because of the uncertainty as to where the ground wire struck the rod. It is likely that if the tester rod is stuck in the ocean floor the ground wire might first ride up the rod until enough force was generated to push the rod away. NOTE: In some cases tests have been validly recorded with both TOB and SAG MISS. This combination is possible in moderate swell and when the ground wire is close to the bottom.

L. CALCOMP PLOTS

Included with the data submitted for this sheet are CalComp plots (computer generated by AMC from tapes prepared by the vessels). These plots have been reviewed onboard. Additional hand draftings have been added for hangs. The plots have been adjusted for the raydist correctors. Hangs have been plotted in by hand. These plots are intended to be used as the finished smooth plot. Only the addition of the effective depth (which must await smooth tides) and the drafting of a composite A&D Sheet remain.

M. GENERAL NOTES

1. Saw Tooth Recorder

- a. At the end of each drag it is important to know that the ships are both moving normally. Before Raydist it was not possible to see if the ships were moving normally at the time of the last fix. The Raydist's saw tooth recorder was checked at the end of each drag to ascertain proper ship movement before the drag was aborted.
- b. The saw tooth strip chart shows the path of the ships between fixes. This fact can be important in cases where it is possible that between fixes the proper overlap may not have been met.
- c. Relative Pen Lengths. In most cases the three pens were not exactly the same length. This means that they cannot be read properly without adjusting for the relative pen lengths. On each days strip chart the relative pen lengths are recorded on a rubber stamp.

2. Ravidist frequency was changed at the beginning of the project as our normal frequency of 3300.4 had interference from another net. The new frequency was 3294.4. Unfortunately the boatsheet ravidist lines were reprinted at a frequency of 3295.3 thus the entire boatsheet is shifted from 0 meters at the stations to up to about 7 meters at the farthest item (no. 4). Most smooth plots have this consistent error in them. Smooth plots after J Day, 6 October use the proper frequency. This command saw no reason to redo the first plots for this small error. We are however recommending that if an area of small overlap comes up then it may be necessary to consider this factor. We see no such problem at this time. *Concur*

3. Smooth plots were made before finalized ravidist correctors were computed. The following changes were made after the plots were done. Therefore they do not appear on the smooth plots. In case of close overlap this factor should be considered.

DAY	VESSEL-HECK	<i>Concur</i> Vaule Used On Plots
B	New Vaule RED(-.11)	RED(-.2)
E	RED(-.14)	RED(-.4)

12216

12304

N. DISCREPANCIES AND COMPARISONS TO RECENT CHARTS

Two corrections were noted concerning the charts C&GS 411, and 1218 that were used for this project. Neither one constitutes a danger to navigation. Both corrections were sent in to Marine Chart Division, Rockville, Md. One correction concerns a 90' sail vessel that went hard aground on Cape Henlopen. The other refers to the local name of an anchorage. Copies of the letters are in the attachments. *Neither correction applies to the surveyed area and are irrelevant to the survey. See Sections 3.c. and 6. of the Verifier's Report.*

O. GYRO ERROR

- a. The gyros functioned properly on both ships for the entire survey. ✓
- b. Gyro error is considered in the computer plots by use of a special notation in column 69 of the parameter sheets. ✓
A copy of that notation and its explanation is listed below.

c. Gyro Error Options

Guide Vessel Options

		1	2	3	
End	1	A	B	C	
Vessels	2	D	Blank	*	✓
Options	3	E	*	*	

* not permissible combination

1, 2, and 3 refer to these 3 conditions.

Condition 1. No gyro error, the gyro has been steady and behaving well. It is more likely that any error is observers fault and not the gyro. ✓

Condition 2. Gyro error is the difference between observed bearing to the other ship and the true bearing determined by the ships computed Raydist positions. This condition is used when ships gyro is in error but all electronic data is assumed to be reliable. ✓

Condition 3. Gyro error is the difference between the ships observed bearing to the other ship, and the other ships reciprocal bearing back to the observing ship. Essentially in this case one is using the other ships gyro. This option is used when both the observing ships gyro and electronic data is questionable. ✓

P. PERSONNEL AND EQUIPMENT

During this survey the RUDE & HECK acted as guide and end vessel respectively. Both vessels are equipped with Raytheon DE-723 fathometers. Both launches were utilized as drag tenders. Bearings to the buoys and opposite vessels were made on Sperry gyro repeaters. Standard wire drag equipment was used throughout this survey. On 4 and 5 November a Klein Side Scan Sonar was used for demonstration and searching purposes. The officers aboard this survey were CDR R.A. Ganse, CDR R. Crozier, LTJG T. Renninger, ENS Vadnais, ENS Gross.

R. APPROVAL

All records of this survey including smooth plotting, except for the addition of the effective depths, (which must await smooth tides) and the drafting of a composite A&D sheet, are hereby approved. The field work was personally supervised by the undersigned. The boatsheet and records were inspected daily. The survey is considered complete and adequate for charting.

Submitted by:

T. L. Renninger

T.L. Renninger
Operations Officer
NOAA Ships RUDE & HECK

R.A. Ganse

R.A. Ganse
Commanding Officer
NOAA Ships RUDE & HECK

III. ITEMS 1 & 2

A. STATEMENTS ON 1 & 2

1. ITEM 1: Item 1 was the scattered wreckage of the GYPSUM PRINCE located at position latitude 38°48'18"N longitude 75°04'06"W. This position came from a 1950 ^(F.E. No. 9) _(Wire Drag) survey and was cleared to 37 feet. The GYPSUM PRINCE was a 357 foot (information from Mr. Heidek - Lewes, Delaware), 1970 ton steel hulled vessel. Our purpose was to determine any change in least depth or position. ✓
2. ITEM 2: Item 2 was presumably the wreck of the 138 foot wooden hulled steam converted to diesel powered B.F. MACOMBER located at position latitude 38°48'46"N longitude 75°04'24"W. This position came from 1950 ^(F.E. No. 9) _(Wire Drag) survey and was cleared to 39 feet. Our purpose was to determine any change in least depth or position. ✓
3. INCREASE OF DRAG STRIPS ABOUT ITEMS 1 & 2: It was originally agreed between this command and AMC (Ganse and CAM1) that items 1, 2, and 3 as reinvestigations could be satisfied by either hanging them within 2 feet of the previous cleared depth or by clearing the item within 2 feet of the present depth. After having begun the investigation the possibility arose that item 1 may have broken up prior to sinking and that item 1 and 2 may both be portions of the GYPSUM PRINCE. Further after reviewing the A&D sheets for the 1950 work it becomes apparent that the rules under which the previous work was accomplished were much more relaxed than the present rules for a new item (at least how this command interprets them). No implication is intended that anything was improper in 1950. It is fully realized that WWII left a big back log of work and that drafts of vessels were markedly less at that time. However as the intact nature of the wreck was not established in 1950 nor at this time, and as the ambient depths are 60 feet and the surrounding area was cleared only to 39 feet it is felt necessary to expand the area somewhat. As concurred with by CAM1 and CDR Ganse the present investigation will not only clear the previous found position to within 2 feet of the present depth but also clear the immediate area much closer to the bottom in order to define the extent of the wreckage. ✓

B. GROUNDINGS AND HANGS

1. A1 drag hung item 1 at position latitude $38^{\circ}48.28^{\prime}$ ⁸N, longitude $75^{\circ}04.07^{\prime}$ W. It was hung at an effective depth of 47 feet. Divers reported the battered remains of a steel hull. ~~It was cleared by drags B1 (38 1/2'), and G1 (41') in the SE direction and B2 (40'), B3 (40') in the NW direction.~~ For clearings see Appendix I of the Verifier's Report.

1A. In attempts to sweep deeply around item 1 to determine the extent of wreckage item 1 was hung several more times. The clearing strips are the same as for A1 drag. Drags and positions for hanging item 1 are listed below.

- a. A2 - latitude $38^{\circ}48.27^{\prime}$, longitude $75^{\circ}04.07^{\prime}$
- b. H1 - latitude $38^{\circ}48.26^{\prime}$, longitude $75^{\circ}04.06^{\prime}$ Drag Rejected - See Section 9. of the Verifier's Report.
- c. P1 - latitude $38^{\circ}48.28^{\prime}$, longitude $75^{\circ}04.06^{\prime}$
- d. P2 - latitude $38^{\circ}48.30^{\prime}$, longitude $75^{\circ}04.06^{\prime}$

Detached positions on Item 1.

- a. G2 - (D.P. 12) latitude $38^{\circ}48.28^{\prime}$ longitude $75^{\circ}04.07^{\prime}$ Position of Item #1
Latitude: $38^{\circ}48.28^{\prime}$ N
Longitude: $75^{\circ}04.07^{\prime}$ W
- b. N1 - (D.P. 13) latitude $38^{\circ}48.26^{\prime}$ longitude $75^{\circ}04.06^{\prime}$
- c. N1 - (D.P. 14) latitude $38^{\circ}48.27^{\prime}$ longitude $75^{\circ}04.07^{\prime}$

2. C2 drag hung between buoys 1-2 at position latitude $38^{\circ}49.15^{\prime}$ N, and longitude $75^{\circ}05.10^{\prime}$ W. This hang was on set out where the wire can dip down to the bottom before strain is out on the wire. This hang on set out was not cleared as it was one - outside the area of search and two, the bottom was so littered with small obstructions that all hangs on set could not be cleared.

2A. ~~A detached position on drag C2 (D.P. 13) revealed the exact same position as the hang on drag C2. See attachments of Detached Positions. There was no D.P. 13 on strip C2. D.P. 14 was a hang on an Anchor Fluke, also located on strip H4.~~

3. C2 had another hang between buoys 6-7. The hang was located at position latitude $38^{\circ}49.28^{\prime}$ N, and longitude $75^{\circ}04.60^{\prime}$ W. Divers reported this to be a mud hang. ~~The hang was cleared by strips K2 (50 1/2 feet) SE direction and drag H4 (49 1/2 feet) NW direction. The drag from H4 did not have sufficient overlap over this mud hang. For clearings see Appendix I of the Verifier's Report.~~

4. E1 drag hung at two places. The hang between buoys N-1 was at position latitude $38^{\circ}48.78'N$ and longitude $75^{\circ}04.43'W$. Divers reported this as extensive steel wreckage. See enclosed sketch tentatively identified by Engineering personnel onboard (from sketch), as steam propulsion gear. Divers also saw steel plates. ~~It was cleared by strips J2 (48') SE direction and G1 (46 1/2'), and H2 (46') in a NW direction.~~ For clearings see Appendix I of the Verifier's Report.

4A. In an attempt to sweep the area about the steel wreckage of item 2 this obstruction was hung again. Drags and positions are listed below.

H3[✓] - latitude $38^{\circ}48.81'$, longitude $75^{\circ}04.51'$ *Position of Item #2-Steel*
 M2[✓] - latitude $38^{\circ}48.73'$, longitude $75^{\circ}04.43'$ *Latitude: $38^{\circ}48.76'N$*
 N3[✓] - latitude $38^{\circ}48.75'$, longitude $75^{\circ}04.42'$ *Longitude: $75^{\circ}04.43'W$*
 Detached Position E1[✓] (D.P. 7) latitude $38^{\circ}48.79'$
 longitude $75^{\circ}04.42'$
 Detached Position E1[✓] (D.P. 8) latitude $38^{\circ}48.75'$
 longitude $75^{\circ}04.45'$

5. E1 drag had another hang between buoys 3-4 at position latitude $38^{\circ}48.78'N$, longitude $75^{\circ}04.08'W$.

Divers reported this wreckage to consist of about 5 wooden rib stubs protruding 2 feet from the bottom. This obstruction has been called "wooden 2" wreckage to distinguish it from the steel two wreckage. ~~It was cleared by strips K2 (50 1/2') SE direction and N3 (48') NW direction.~~ For clearings see Appendix I of the Verifier's Report.

5A. In an attempt to sweep the area about the wooden wreckage, the same obstruction was found. Drags and positions are listed below.

Not Item #2-Wooden; Uninvestigated Hang J3 - latitude $38^{\circ}48.79'$, longitude $75^{\circ}04.15'$
 N1 - latitude $38^{\circ}48.78'$, longitude $75^{\circ}04.09'$ *Position of Item #2-Wooden*
 Detached Position B4 - latitude $38^{\circ}48.78'$ *Latitude: $38^{\circ}48.77'N$*
 longitude $75^{\circ}04.08'$ *Longitude: $75^{\circ}04.08'W$*
Not Item #2-Wooden; Uninvestigated Hang Detached Position J3 - latitude $38^{\circ}48.83'$
 longitude $75^{\circ}04.15'$

C. NOTED OCCURRENCES DURING SURVEY

1. GENERAL NOTE

The area about items 1 and 2 was littered. Currents and weather caused problems throughout this survey. The combination of these factors caused a large number of hangs on set out and picking up. During these times the wire can sink to the bottom when strain is removed, hanging on any small obstruction. Hangs on pick up are

Concur

given a detached position (D.P.). Due to the problems stated above 3 hangs on set out were not cleared as they were outside the area being searched or they were on an anticipated shoal. Drags concerned are C2, ~~H1~~, H4, and P3.

Rejected

2. B3 drag - N buoy upright slipped, corrected at position 25. ✓
3. B4 drag - High lifts caused problems through this drag. ✓
4. C2 drag - Drag hung near shoal on set out in ~~two~~^{three} places. Small anchor fluke and mud hang found. Two detached positions taken. *One hang was not investigated.*
5. D1 drag - Substandard quality caused by strong currents. Will not be used as clearing strip. ✓
6. ~~F1 drag - Hang on set out. This hang was not investigated or cleared as it was outside area, and because the bottom was too littered to properly clear all hangs on set out. Drag Rejected - See Section 9. of the Verifier's Report.~~
7. G2 drag - Drag stopped due to currents. Two detached positions on pick up. ✓
8. ~~H1 drag - Accidentally hung item 1, drag voided. Drag Rejected - See Section 9. of the Verifier's Report.~~
9. H3 drag - Strong currents prevent good "V" up and position as strain causes wire to part. ✓
10. ~~J1 drag - Currents caused problems. Drag was not worked up. Drag Rejected - See Section 9. of the Verifier's Report.~~
11. J3 drag - Double hang, ^{both uninvestigated.} on item 2. Time prevented divers investigating. ^{were} The unknown hangs ^{was} never rehung as all clearing strips passed over. ~~The other of the hangs was the wooden wreckage of item 2.~~
12. K1 drag - This drag was successful, however a good "V" up on item 1 was impossible due to strong currents. ^{position} Hang of Item 1 was rejected due to a hang on a known obstruction and no hangs ^{position} obtained on this strip. ✓
13. N1 drag - Attempt to run radial about hang aborted when high lifts resulted. ✓
14. ~~N3 drag - Item 2 - steel wreckage hung by accident, however no problem caused to clearing strip. Drag Rejected - See Section 9. of the Verifier's Report.~~

15. ~~P1 drag - Currents caused high lifts. Drag voided. Drag Rejected - See Section 9. of the Verifier's Report.~~
16. P3 drag - Hang occurs close to breakwater on anticipated shoal. Drag quickly picked up to prevent drifting into breakwater. Two test results accepted after hang due to consistency. See journal for more details. ✓

D. SIDE SCAN SONAR

On December 4th and 5th a side scan sonar from Klein Associates was tested for possible purchasing. Use of the unit showed an obstruction of some sort between items 1 and 2. Trigonometric analysis of the sonogram indicates an item only protruding a meter or so from the bottom. The location of the item was latitude $38^{\circ}48.58'N$ and longitude $75^{\circ}04.13'W$. It was cleared by strips K2 (50 ~~±~~ feet - SE direction) and H2 (46 feet - NW direction). These clearing strips were never intended for this obstruction but rather for obstructions already hung. Thus all that is known is that it is probably deeper than 50 ~~±~~ feet and definitely deeper than 46 feet. ✓

E. SUMMARY

Strong currents and bad weather plagued the work on items 1 and 2. Three hangs on set out were not fully investigated, (see noted occurrences for item 1 and 2, section D). ✓ The drag area was increased (see section on statements on items 1 and 2). The bottom was found to be littered with small obstructions.

F. RECOMMENDATIONS

1. ITEM 1: The wreck of the GYPSUM PRINCE was relocated in essentially the same position as the charted position. By predicted tides it seems as if the wreck has settled some, deteriorated, or had not been cleared close enough in 1950. This command recommends that the clearing depth be corrected to reflect the data from the present survey using smooth tides. *Concur*
2. ITEM 2: The major change in status of item 2 is that it was cleared several feet closer to the bottom this time and there was the discovery of the ~~two~~ ^{four} additional minor wrecks, one located by wire drag on drag E1 (called wooden 2 for convenience) and the second located by side scan sonar (see section D), ^{the remaining two obstr., uninvestigated hangs on strip J3.} Depending on cartographic limitation these additional wrecks should be independently shown or the danger circle about the major wreckage should be extended to include them. *Concur*

IV. ITEM 3

Ref L-2172/76

A. STATEMENT ON ITEM 3

1. Item 3 is a submerged dangerous wreck (obstruction) located on a 1950 survey at position latitude $38^{\circ}50'43.5''N$, longitude $75^{\circ}06'11.4''W$. It was previously cleared to 45 feet. Our purpose was to determine if any change had taken place.
2. Item 3 was very near the shoal. The shoal made dragging difficult. The area was cleared 1000 feet from the position on the inshore side and 1500 feet on the seaward side. The distance covered in a NW-SE direction was much greater as that is the direction the drags ran.

B. GROUNDINGS AND HANGS

1. Drag L2 - Drag L2 hung on a known shoal when the guide vessel went a little off course. The position of the hang was latitude $38^{\circ}50.35'N$, longitude $75^{\circ}06.0X'W$. The effective depth was about $4X$ feet while the charted depth was $4Y$ feet, hence the hang on a shoal. *Concur*

C. NOTED OCCURRENCES DURING SURVEY

1. L2 drag - Hang on anticipated shoal. Close proximity to dangerous ^{shoal} necessitated picking up quickly.
2. ~~M1 drag - Strong currents caused lifts that prevented getting effective depth needed. Not worked up. Drag Rejected - See Section 9. of the Verifier's Report.~~
3. N2 drag - Section N-1 had a tester on bottom (T.O.B.) test result. This section will be accepted. See journal.

D. SUMMARY

Dragging for item 3 was complicated by the proximity of a dangerous shoal. The position was cleared to $4X$ feet in a NW direction and 36 feet in a SE direction. No obstruction was found.

E. RECOMMENDATIONS.

It is recommended, if no other action is taken, that the clearing depth on this item be increased to reflect the data of this survey after smooth tides have been applied. It is further recommended that consideration be given to removing the item completely in light of the new clearing strips proximity to the bottom and the shoal water. *Concur*
Retain wreck and chart as cleared by 49 ft.

V. ITEM 4

A. STATEMENT ON ITEM 4

Item 4 was a ten-ton anchor with eight shots of chain, lost from the Liberian Tanker BOTANY BAY. The reported position was latitude $38^{\circ}56'42''N$, longitude $75^{\circ}10'30''W$. Our purpose was to determine the position and least depth.

B. GROUNDINGS AND HANGS

1. Drag R1 - Drag R1 had a mud hang on set out between buoys 1-2 at position latitude $38^{\circ}56.65'N$, longitude $75^{\circ}11.22'W$. It was known to be a mud hang as the hang never stabilized and kept slowly pulling along. There was no indication that an object was being pulled along the bottom (certainly not a ten ton one). It was impossible to send divers down. *Mud hang in concurrence with prior survey and charted data, therefore not needed. The drag was rejected - See Section 9. of the Verifier's Report.*
2. Drag R2 - Drag R2 had the same problem as R1, a mud hang. Position latitude $38^{\circ}56.47'N$, longitude $75^{\circ}10.09'W$. The hang never quite stabilized however it was steady enough for divers to investigate. They reported the wire leading into mud. *The mud hang concurs with prior survey and charted data, therefore not needed. However the grounding of "1" buoy shows conflict and is shown on the Smooth Sheets. See Verifier's Report-section 5 a (2)(f).*
3. Drag R3 - Drag R3 hung in two places. One hang was between buoys 3 and 4. This seemed to be the major hang, and divers reported a small metal object coming about 1 1/2 foot off the bottom. Its location was latitude $38^{\circ}57.03'N$, longitude $75^{\circ}10.20'W$. The other hang between buoys 2 and 3, located at latitude $38^{\circ}57.14'N$, longitude $75^{\circ}10.20'W$ was never investigated as the hang slipped off before it was possible. These obstructions were never hung again. ~~They are both cleared by strips T1 (52 feet SE direction) and U1 (54 feet NW direction). Strip U1 does not have the proper overlap on the hang between buoys 2 and 3, and is also considered of substandard quality.~~ *For clearances see Appendix I of the Verifier's Report.*
4. Drag U1 - There was a possible temporary hang during drag U1. Position could only be approximated (± 150 yards). Position latitude $38^{\circ}57.2'N$, longitude $75^{\circ}10.7'W$. Very likely this was never a hang, winds had built up to 30 knots by this point in the drag. The entire drag was considered substandard. ~~The position had previously been cleared to 66 1/2 feet by O1 drag, SE direction. Hang not cleared. Concur with the above, however the possible hang was kept and plotted as this has not been cleared or disproved.~~ *Disregard. Comparable depths shown on H-9202 (1971)*
5. Drags R2 and R3 had small areas of grounding.

C. NOTED OCCURRENCES DURING SURVEY

1. Item 4 is situated in a ravine between two shoals. This made dragging close to the bottom impractical. It also accounts for the numerous mud hangs. If either ship would get off course somewhat a mud hang resulted. ✓
2. Drag U1 was of substandard quality due to weather conditions that came up during this drag. Winds had built to near 40 knots by the end of the drag. However when this drag is coupled with clearing strip T1 it shows that no major wreckage exists from the hang on R3. Also as U1 drag is from the opposite direction as T1 drag doubt is removed about the obstruction from R3 being a sloping mast type obstruction. *Concur - prior survey soundings indicate bottom depth is equal to the estimated hang effective depth.* ✓
3. ~~Drag T1 - Drag T1 was voided between buoys N-4 due to a fouled upright twisted about the nearest toggle on buoy number 2.~~ *disregard this strike-through* ✓
4. ~~Drag T2 - Buoy number 6 was fouled about a toggle. For that reason section 4-P is voided.~~ *Drag Rejected - See Section 9. of the Verifier's Report.* ✓
5. Drag S1 - High winds created lift which terminated drag. ✓

D. SUMMARY

Work on item 4 was difficult due to bad weather and the irregular bottom. The area was swept in a 1/2 mile radius about the given position. No obstruction of any consequence was found. However a small area on the NW side was not covered, (about 3% of total area). All hangs were either temporary or mud hangs. ✓

E. RECOMMENDATIONS

No obstruction was found in the area searched. However, the existence of a modern (flat lying anchor) has by no means been disproved. Considering the anchor and the nature of the bottom (a steep trough) it is probable it would be passed undetected. It is suspected that the item was originally charted for a hazard to a ship's ground tackle rather than to a ship's hull. If so, perhaps a more elucidative symbol could be used. *Concur Chart present survey cleared depth.* ✓

clearance on H-9172 greater than present clearance

ATTACHMENT I

VISUAL CALIBRATION G.P.'S

IVY - FT. MILES OBS. TOWER NO. 7 1962-76
 LAT. 38°46'34.355"W ✓
 LONG. 75°05'35.304"W ✓

^P
 TAX - FT. MILES U.S. NAVY WATER TANK 1962
 LAT. 38°46'07.942"W ✓
 LONG. 75°05'12.236"W ✓

ZOO - FT. MILES OBS. TOWER NO. 8 1962-76
 LAT. 38°47'17.313"W ✓
 LONG. 75°05'42.839"W ✓

HOW - DELAWARE BREAKWATER LIGHTHOUSE 1927-62
 LAT. 38°47'49.215"W ✓
 LONG. 75°06'01.243"W ✓

WHY - ~~FRONT EAST RANGE~~ HARBOR OF REFUGE LIGHTHOUSE (DEL.) 1927
 LAT. 38°48'51.827"W ✓
 LONG. 75°05'33.975"W ✓

NOR - HARBOR OF REFUGE NORTH END LIGHT 1933-62
 LAT. 38°49'57.066"W ✓
 LONG. 75°06'22.188"W ✓

END - DELAWARE BREAKWATER WEST END LIGHT 1933-62
 LAT. 38°48'01.380"W ✓
 LONG. 75°07'01.269"W ✓

FAT - LEWES W. OIL FISH FACTORY CHIMNEY 1962-76
 LAT. 38°46'53.555"W ✓
 LONG. 75°07'00.110"W ✓

ODD - FT. MILES OBS. TOWER NO. 13 1962-76
 LAT. 38°46'45.286"W ✓
 LONG. 75°07'12.799"W ✓

TAN - LEWES ^{MUNICIPAL} WATER TANK 1962-76
 LAT. 38°46'18.861"W ✓
 LONG. 75°08'11.444"W ✓

MAN - LEWES C. GUARD LIFE SAVING STATION MAST 1962-76
 LAT. 38°46'51.058"W ✓
 LONG. 75°07'15.529"W ✓

ATTACHMENT III

DATE	DAY LETTER	STRIP	VOL. #	POSITIONS	L.N.M.	S.N.M.	RED CORR.	GREEN CORR.	LENGTH OF DRAG	SMOOTH PLOT	REMARKS
14 SEPT.	A	1	I	8'	.7	.5			4000		ITEM 1 - HANG ✓
14 SEPT.	A	2	I	10'	1.2	.6			4000		ITEM 1 - HANG ✓
15 SEPT.	B	1	I	16'	1.3	.6			3500		ITEM 1 st - CLEARING ✓
15 SEPT.	B	2	I	6'	1.1	.55			3500		ITEM 1 st - CLEARING ✓
15 SEPT.	B	3	I	7'	1.3	.6			3500		ITEM 1 - CLEARING ✓
15 SEPT.	B	4	I	16'	1.45	.7			3500		ITEM 1 - CLEARING - HIGH LINTS - <i>Item 2 - Wooden - Hang on Pick Up.</i>
21 SEPT.	C	1	I	9'	1.3	.52			3500		ITEM 1 st - CLEARING STRIP ✓
21 SEPT.	C	2	I	3'	0	0			4000		MUD HANG - ANCHOR FLUKER HANG ✓ <i>Uninvestigated Hang</i>
22 SEPT.	D	1	I, II	20'	1.0	.4			3500		ITEM 1 - CLEARING STRIP - NO GOOD ✓
23 SEPT.	E	1	II	6'	.3	.1			3500		DOUBLE HANG - ITEM 2 - <i>Both Uninvestigated (Steel & Wooden)</i>
24 SEPT.	F	1	II	1	0	0			3000		TEMP HANG ON SET OUT #2 Rejected
27 SEPT.	G	1	II	7'	.8	.25			3000		ITEM 2 - CLEARING STRIP ✓
27 SEPT.	G	2	II	4'	.2	.08			3000		ITEM 2 - CLEARING STRIP - NO GOOD <i>Item 1 Hang & Uninvestigated Hang on Pick Up.</i>
29 SEPT.	H	1	II	4	.2	.16			3000		ITEM 2 - HUNG ITEM 1 - Rejected
29 SEPT.	H	2	II	7	1.0	.4			3000		ITEM 2 - CLEAR ITEM 2 - Rejected
29 SEPT.	H	3	II	5'	.6	.21			3000		ITEM 2 - HUNG ITEM 2 - Steel Wreckage
29 SEPT.	H	4	II	8'	1.1	.4			3000		ITEM 2 - CLEARING STRIP - NO GOOD <i>Hang Anchor Fluka on Pick Up</i>
06 OCT.	J	1	II	5	.7	.2			3000		ITEM 2 - NOT WORKED UP - Rejected
06 OCT.	J	2	II	7'	1.2	.5			3600		ITEM 2 - CLEARING STEEL WRECKAGE ✓
06 OCT.	J	3	III	12'	.9	.4			3600		ITEM 2 - WOODEN WRECKAGE - HUNG <i>Double Hang - Both Uninvestigated</i>
07 OCT.	K	1	III	13'	1.0	.6			4800		ITEM 1 - SE of 1, HANG ON - <i>Hang Rejected</i>
07 OCT.	K	2	III	9'	1.8	.8			3000		ITEM 2 - CLEAR WOODEN WRECKAGE ✓
08 OCT.	L	1	III	9'	.9	.4			3000		ITEM 3 - CLEARING NW ✓
08 OCT.	L	2	III	7'	.7	.3			3000		ITEM 3 - CLEARING - REVERSAL - HANG
12 OCT.	M	1	III	8	.7	.3			3000		NOT WORKED UP - Rejected
12 OCT.	M	2	III	5'	.7	.5			4000		ITEM 2 - CLEARED NW SIDE - <i>Hang Steel Wreckage</i>
13 OCT.	N	1	III	12'	.9	.4			4000		ITEM 1 st - NE OF ITEM 1 Hang Wooden Wreckage
13 OCT.	N	2	III	6'	.9	.4			4000		CLEARED ITEM 3 ✓
13 OCT.	N	3	IV	10	1.1	.4			3000		CLEARED ITEM WOODEN 2 - Rejected

DATE

DAY LETTER

STRIP

VOL. #

POSITIONS

L.N.M.

S.N.M.

RED CORR.

GREEN CORR.

LENGTH OF DRAG

SMOOTH PLOT

ATTACHMENT III

REMARKS

19 OCT.	P	1	IV	10	.8	.32			4000		ITEM 1	HANG	EFF. DEPTH ^{Rejected} VOIDED
19 OCT.	P	2	IV	11	.9	.35			4000		SWEEP NE	OF ITEM 1	- HANG ^{Item #1}
19 OCT.	P	3	IV	7	.8	.32			3500		ITEM 1 & 2,	SWEEP SW	✓
27	O	1	IV	11	1.4	1.0			6000		ITEM 4		✓
02 NOV.	R	1	IV	5	.7	.21			3000		ITEM 4	NOT WORKED UP	^{Rejected}
02 NOV.	R	2	IV	6	.7	.28			3000		ITEM 4	HANG MUD SHOAL	✓
02 NOV.	R	3	IV	10	1.0	.5			4000		ITEM 4	DOUBLE HANG	- SMALL ^{metal} OBJECT _{as Uninvestigated object}
03 NOV.	S	1	IV	10	1.1	.4			3000		ITEM 4	SW SIDE	✓
09 NOV.	T	1	V	11	1.0	.5			4000		ITEM 4	NE SIDE	✓
09 NOV.	T	2	V	8	1.2	.6			4000		ITEM 4	NE SIDE	^{Rejected}
10 NOV.	U	1	V	9	1.0	.4			4000		ITEM 4	NE SIDE	- Possible Temporary Hang or Grounding
				Total =	280	X 2 =	560						

Detached Positions

B	4	I	1
C	2	I	2
E	1	II	2
H	4	II	1
J	3	III	1
N	1	III	2

Total = 9

Grand Total of Positions = 569

Appendix I

HANG OR GRD.	STRIP NO.	BUOY NO.	LAT.	LONG.	GROUNDING DEPTH	CLEARED BY STRIP NO.	CLEARED EFF. DEPTH	SS PLOTTED NOT PLOTTED HANG ONLY	CHARTED DEPTH	DIRECTION OF STRIP	REMARKS
H	A1	5-6	38° 48.28'	75° 04.07'	47'			P	37'	NW	Item #1
						B2	40'			NW	
						B3	40'			NW	
						B4	40'			NW	
						G1	40'			SE	
						D1	40'			NW	
						B1	38'			SE	
H	A2	5-6	38° 48.28'	75° 04.07'	(43)			P	37'	SE	Item #1
						Clearings Same as Strip A1					
H	B4	D.B. 46	38° 48.77'	75° 04.08'	-			P	59'	NW	Item #2 - Wooden
						K2	50'			SE	
						H4	49'			NW	Inadequate Overlap
						J2	47'			SE	Inadequate Overlap
						H3	46'			NW	Inadequate Overlap
						A2	42'			SE	Inadequate Overlap
H	C2	1-2	38° 49.15'	75° 05.10'	60' (estimated)			P(N-D)	58'	SE	Uninvestigated Hang on the bottom. Disregard. Shallow depths shown on H-2056000
						Not Cleared					
H	C2	D.B. 14	38° 49.01'	75° 05.03'	60' (estimated)			P(N-D)	55'	SE	Hang on Anchor Flukes
						Not Cleared					
H	C2	D.B. 15 6-7	38° 49.26'	75° 04.60'	60' (estimated)			NP	60'	SE	Hang on Bottom (wood) - No Conflict
						M2	55'				
						K2	50'				
						J2	47'				
						H4	49'				Inadequate Overlap
H	E1	N-1	38° 48.76'	75° 04.43'	57' (estimated)			P(N-D)	39'	NW	Item #2 - Steel
						J2	47'			SE	
						G1	46'			NW	
						A2	42'			SE	
						B2	40'			NW	
						G1	40'			SE	
						B1	38'			SE	
H	E1	3-4	38° 48.77'	75° 04.08'	57' (estimated)			P(N-D)	59'	NW	Item #2 - Wooden
						Clearings Same as Strip B4					
H	G2	D.P. 12	38° 48.28'	75° 04.07'	51' (estimated)			P	37'	NW	Item #1 - Hang on Pick Up
						Clearings Same as Strip A1					

Appendix I

HANG
OR
GRD.

HANG OR GRD.	STRIP NO.	BUOY NO.	LAT.	LONG.	GROUNDING DEPTH	CLEARED BY STRIP NO.	CLEARED EFT DEPTH	SS PLOTTED NOT PLOTTED HANG ONLY	CHARTED DEPTH	DIRECTION OF STRIP	REMARKS
H	G2	D.P. 13 6	38° 48.12'	75° 03.72'	54' (estimated)	(59' wire)		P	59'	NW	Uninvestigated Hang on Pick Up
					K1	54'				NW	
					A1	47'				NW	
					B4	41'				NW	
					B2	40'				NW	
					B3	40'				NW	
					C1	40'				SE	
					D1	39'				NW	
					B1	38'				SE	
H	H3	4-5	38° 48.76'	75° 04.03'	49'			P	39'	NW	Item #2 - Steel
											Clearings Same as Strip E1
H	H4	D.P. 25	38° 49.01'	75° 05.03'	52' (estimated)			P	55'	NW	Hang on Anchor Fluke - Same as G2
											Not Cleared
H	J3	1-2	38° 48.72'	75° 04.20'	50'			P	59'	SE	Uninvestigated Hang
					K2	50'				SE	
					J2	47'				SE	
					G1	46'				NW	
					H3	46'				NW	
					A2	42'				SE	
					C1	40'				SE	
H	J3	D.P. 25 2-3	38° 48.81'	75° 04.17'	50'			P	59'	SE	Uninvestigated Hang
					K2	50'				SE	
					H4	49'				NW	Insufficient Overlap
					J2	47'				SE	Insufficient Overlap
					H3	46'				NW	Insufficient Overlap
					A2	42'				SE	Insufficient Overlap
G	L1	N	38° 50.76'	75° 06.64'	44'			NP	44'	NW	Grounding - No Conflict
											Not Cleared
H	L2	N-2	38° 50.35'	75° 06.06'	46'			NP	45'	SE	Hang on Anticipated Steel - No Conflict
											Not Cleared
H	M2	3-4	38° 48.76'	75° 04.43'	56'			P	39'	SE	Item #2 - Steel
											Clearings Same as Strip E1
H	N1	1-2	38° 48.77'	75° 04.06'	55'			P	59'	SW	Item #2 - Wooden
											Clearings Same as Strip E1

Appendix I

HANG
or
GRD.

HANG or GRD.	STRIP NO.	BUOY NO.	LAT.	LONG.	GROUNDING DEPTH	CLEARED BY STRIP NO.	CLEARED EFF DEPTH	SS PLOTTED NOT PLOTTED HANG ONLY	CHARTED DEPTH	DIRECTION OF STRIP	REMARKS
H	N1	DP. 13 & 14	38° 48.28'	75° 04.07'	56'			P	37'	SW	Item #1 Clearings Same as Strip A1
H	P2	3-4	38° 48.28'	75° 04.07'	54'			P	37'	SW	Item #1 Clearings Same as Strip A1
	P3	F	38° 48.70'	75° 05.26'	53'			NP	53'	NW	Grounding - No Conflict Not Cleared
G	R2	1	38° 56.77'	75° 11.34'	52'			P	58'	SE	Grounding Shows Conflict Not Cleared Disregard hang rejected
H	R2	2-3	38° 56.47'	75° 11.99'	61'			NP	60'	SE	Hang on Bottom (Mud Shoal) No Conflict S1 52'
G	R3	2	38° 57.01'	75° 10.07'	62'			NP	62'	NW	Grounding - No Conflict NW Insufficient Overlap SE Insufficient Overlap U1 54' T1 52'
H	R3	2-3	38° 57.15'	75° 10.20'	62'			P	61'	NW	Uninvestigated Hang SE Insufficient Overlap T1 57'
H	R3	3-4	38° 57.03'	75° 10.20'	62'			P	64'	NW	Small Metal Obstruction SE T1 57'
Hor G	U1	unknown	38° 57.13'	75° 10.75'	66' (estimated)			P	66'	NW	Possible Temporary Hang on Not Cleared Delayed Grounding
			38° 48.58'	75° 04.18'				P	66'		Obstruction (small) located by Side Scan Sonar J2 47' G1 46' A2 42' S1 40' K2 50' R3 41' B2 40' B1 38'
										SE	Insufficient Overlap NW SE SE SE SE Insufficient Overlap NW Insufficient Overlap NW Insufficient Overlap SE Insufficient Overlap

ATTACHMENT VI

NOAA Ships KUDE & HECK
439 W. York Street
Norfolk, Virginia 23510

3 November 1976

Chief, Marine Chart Division
C322

CDR Robert A. Gause
Commanding Officer
NOAA Ships KUDE & HECK

R. A. Gause
Anchorage 110.157

During the course of our operations in Delaware we learned that the Anchorage Area designated 110.157, shown on Chart 1218 at approximately Latitude 39°58'N, Longitude 75°13'W and located in the Delaware Bay, is referred to by local mariners and the Delaware Pilots Association (by radio communication on navigation channel 13) as Big Stone Beach anchorage area. This information could be helpful to transiting vessels, and a valuable addition to the Coast Pilot and Chart 1218.

8 November 1976

Chief, Marine Chart Division
C322

CDR Robert A. Gause
Commanding Officer
NOAA Ships RUDE & HECK

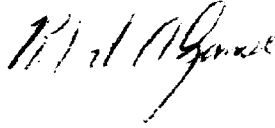
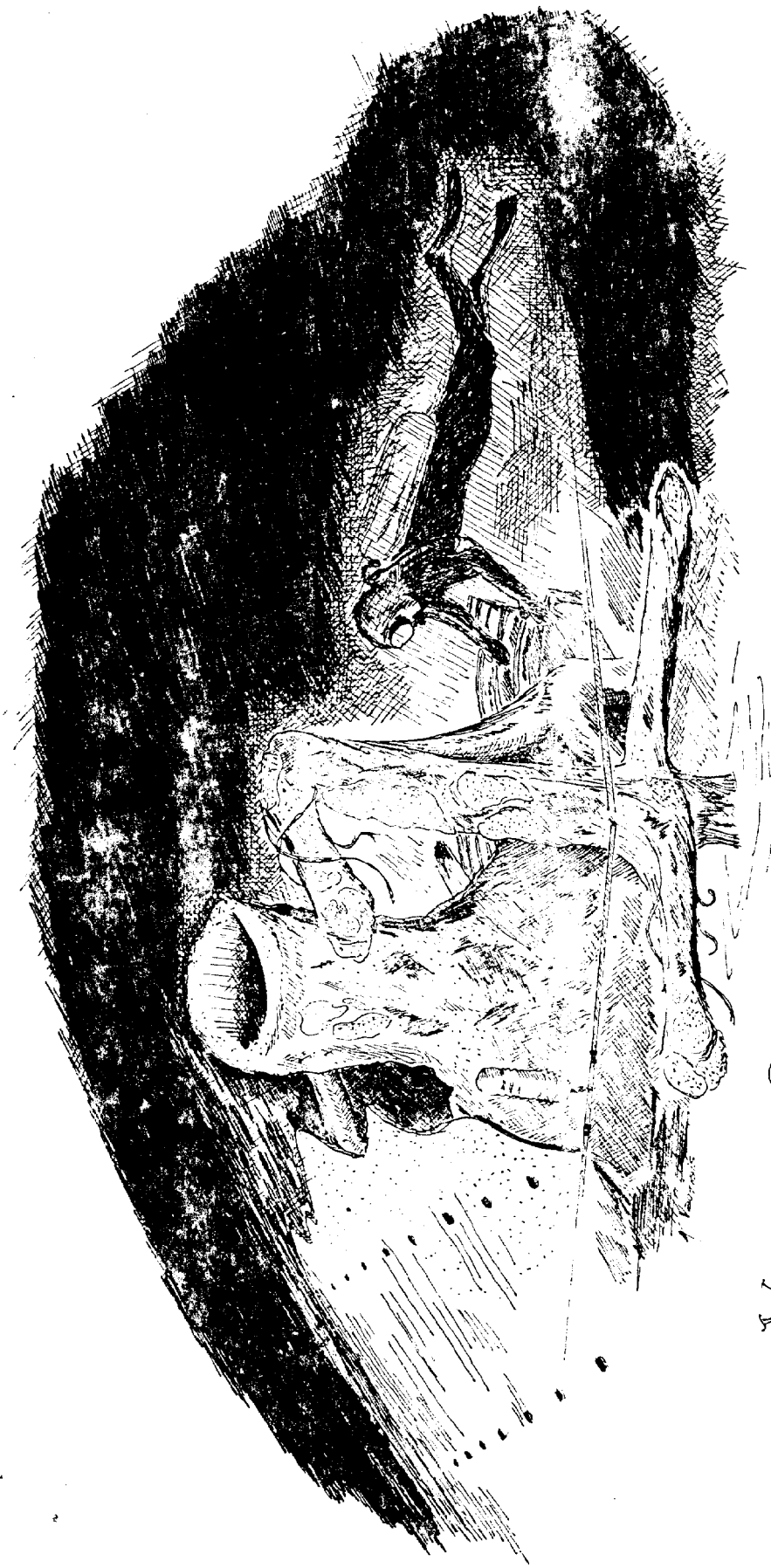


Chart Correction CSOS 411

Recently a sailing vessel SAINT MARGARET II (approximately 90' length) went aground on Cape Henlopen. It presents no threat to navigation as it is well aground, almost on the beach. It is likely the vessel will remain aground until it breaks up. The position of the vessel as of 4 November 1976 is latitude 38°48.22'N, longitude 75°05.56'W, about 3250 feet off Breakwater Harbor Lighthouse @ 043°.



Wreckage Discovered
by RUDÉ, c'ck, in
65 fms. of water off
Harbor of Refuge, Do.
23 September, 1976

November 21, 1977

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): Lewes, Delaware

Period: September 14- November 10, 1976

~~XXXXXXXXXXXXXXXXXXXX~~: RH-20-2-76

OPR: 515

Locality: Delaware Bay

Plane of reference (mean ~~lower~~ low water): 2.49 feetHeight of Mean High Water above Plane of Reference is
4.1 feet

Remarks: Recommended zoning

TIME CORRECTIONS

<u>Item No.</u>	<u>High Water</u>	<u>Low Water</u>	<u>Range Ratio</u>
1 and 2	- 20 min	-20 min.	Direct
3	0 min.	0 min.	Direct
4	0 min.	+ 20 min.	x 1.22

Don M. Spillman

Chief, Tides Branch

GEOGRAPHIC NAMES

H-9758 WD

Name on Survey	Source of Name											
	A	B	C	D	E	F	G	H	K			
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND MCNALLY ATLAS	U.S. LIGHT LIST				
BREAKWATER HARBOR												1
CAPE HENLOPEN												2
DELAWARE BAY												3
HARBOR OF REFUGE												4
LEWES												5
ROOSEVELT INLET												6
												7
												8
												9
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												25

Checked
Chas. G. Harrington
 CHIEF GEOGRAPHER C-378
 8 JAN. 1979

HYDROGRAPHIC SURVEY STATISTICS

H-9758 WD

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET		1	BOAT SHEETS & PRELIMINARY OVERLAYS (BOAT, 1 A & D SHEET)		2	
DESCRIPTIVE REPORT		1	SMOOTH OVERLAYS: POS. ARC, EXCESS		1	
DESCRIP-TION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	1 - Index with data					
VOLUMES	9					
BOXES						

T-SHEET PRINTS (List) 3 envelopes of misc. data
 SPECIAL REPORTS (List) 1 - smooth tender test record, 1 - rough tender test record

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	PRE-VERIFICATION	VERIFICATION	TOTALS
POSITIONS ON SHEET			569
POSITIONS CHECKED		114	
POSITIONS REVISED		9	
SOUNDINGS REVISED		NA	
SOUNDINGS ERRONEOUSLY SPACED		NA	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		0	
	TIME - HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	4		
VERIFICATION OF CONTROL		8	
VERIFICATION OF POSITIONS		10	
VERIFICATION OF SOUNDINGS		41	
COMPILATION OF SMOOTH SHEET		82	
APPLICATION OF TOPOGRAPHY		13	
APPLICATION OF PHOTOBATHYMETRY		NA	
JUNCTIONS		0	
COMPARISON WITH PRIOR SURVEYS & CHARTS		18	
VERIFIER'S REPORT		18	
OTHER		56	
TOTALS	4	246	250

Pre-Verification by M. B. Hickson	Beginning Date 12/20/76	Ending Date 12/21/76
Verification by M. B. Hickson	Beginning Date 12/09/77	Ending Date 04/27/78
Verification Check by R. D. Sanocki	Time (Hours) 164	Date 05/24/78
Marine Center Inspection by HIT	Time (Hours) 12	Date 05/24/78
Quality Control Inspection by <i>R. W. Williams</i>	Time (Hours) 72	Date 1-8-79
Requirements Evaluation by <i>J. Baumgardner</i>	Time (Hours) 4	Date 2-11-79

Completed 23 hrs 2/2/79



7269
UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

C353/GHM

May 25, 1978

TO: Chief, Processing Division, CAM3x1
FROM: *George H. Mastrogianis*
George H. Mastrogianis
Chief, Data Control Branch
Marine Surveys Division

SUBJECT: Assignment of Registry Number

The following hydrographic registry number, H-9758WD, is assigned in accordance with the information listed below:

<u>Registry No.</u>	<u>Field No.</u>	<u>Area</u>	<u>Project No.</u>
H-9758WD	RH-20-2-76	Vicinity Cape Henlopen, Delaware	OPR-515

Information via tel-con CAM3x1, May 25, 1978.

CC:
CAM1
CAM3
CPM3
C35x1

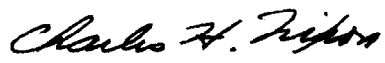



Inspection Report
H-9758 WD

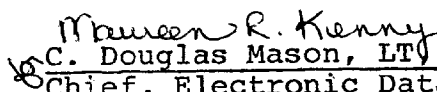
Any verification errors regarding procedures and presentation of survey data detected during inspection by the Hydrographic Inspection Team have been corrected before submission for administrative approval. HIT comments regarding quality of field work, compliance with instructions, and adequacy of the survey have been incorporated within the Verifier's Report.


Examined and Approved:
Hydrographic Inspection Team
Date: 5/24/78


Robert A. Trauschke, CDR, NOAA
Chief, Processing Division

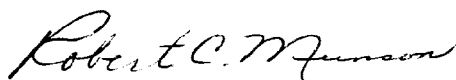

Charles H. Nixon, CAPT, NOAA
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Billy J. Stephenson
Team Leader
Verification Branch

Approved/Forwarded


Robert C. Munson
RADM, NOAA
Director, Atlantic Marine Center

APPROVAL SHEET
FOR
SURVEY H- 9758 WD

The verified smooth sheet and the Area and Depth sheet have been inspected, are complete, and meet the requirements of the Wire Drag Manual. Exceptions are listed in the Verifier's Report.

Date: 10/3/78

Signed: *[Signature]*
Title: Chief, Verification Branch

b. Records

The records are complete and comprehensive for this survey, with the exception of the side scan sonargram which is being retained on board ship for systems evaluation purposes. (See Q.C. Report - item 2)

c. Descriptive Report

The Descriptive Report is complete and comprehensive except as noted below:

(1) There is no section in the Descriptive Report on shoreline.

(2) There is no section in the Descriptive Report on prior surveys.

(3) The section on chart comparisons (N.) does not list ^{the editions of} the chart(s) used in comparison. The two items mentioned in this section are not within the surveyed area and are completely unrelated to the survey. No comparison with charted soundings/data within the wire dragged areas was accomplished.

(4) There is no Request for Smooth Tides note in the Descriptive Report. The field failed to make this request.

d. Field Plotting

Field plotting was not in accordance with Sections 3-14 and 5-6 of the Wire Drag Manual. Only individual strips on individual mylar sheets and a field A & D sheet in black ink on mylar were furnished.

e. Office Plotting (Smooth)

The survey was accurately and neatly smooth plotted in accordance with instructions outlined in the letter of Richard H. Houlder, Associate Director, Office of Marine Surveys and Maps; dated February 23, 1977; "Processing Wire Drag Surveys on Safety Fairways". The smooth sheets differ ^{from} ~~from~~ the standard method of modified processing in that the position number/control overlay is the smooth sheet and the A & D sheet is the accompanying overlay. This was done to expedite processing as the sheets were 65% complete when extreme congestion necessitated obtaining authorization for modified processing. Authorization was obtained from Mr. D. Engle by Mr. R. Sanocki on February 3, 1978 by telephone conversation. (See Q.C. Report - item 3)

4. Junctions

There were no junctions on this survey.

5. Comparison With Prior Surveys

a. Hydrographic Surveys

H-9153 (1970-71) 1:20,000
 H-9154 (1970) 1:10,000
 H-9202 (1971) 1:20,000
 H-9203 (1971) 1:10,000

(See Q.C. Report-item 5)

Surveys H-9154, H-9202, and H-9203 are the most recent hydrographic surveys covering the common area. However, the current charts at the time of this survey did not reflect any data from these surveys. Except as noted below, there is no conflict between the hydrographic surveys and the present wire drag survey.

(1) H-9154 - Item #1

The ^{prior} survey sounding of 4² feet located at latitude 38° 48' 16.8", longitude 75° 04' 03.6" falls on the hang of Item #1 with a least hang effective depth of 43 feet and cleared by 40 feet. This is not a conflict. The 42 ft depth on H-9154 comprises the most valid least depth on the wreckage.

(2) H-9202 - Item #4 (See Q.C. Report-item 6)

(a) The survey sounding of 65 feet located at latitude 38° 57' 04", longitude 75° 10' 38" was cleared by an effective depth of 66 feet.

(b) The survey sounding of 65 feet located at latitude 38° 57' 06", longitude 75° 10' 3²8" was cleared by an effective depth of 66 feet.

(c) The survey sounding of 65 feet located at latitude 38° 57' 08", longitude 75° 10' 3⁶0" was cleared by an effective depth of 66 feet.

(d) The survey sounding of 65 feet located at latitude 38° 57' 0⁸8", longitude 75° 10' 3²2" was cleared by an effective depth of 66 feet.

(e) The survey soundings of 65^{and 66} feet located at latitude 38° 55' 3⁹4", longitude 75° 10' 1⁸2" ^{are} cleared by an effective depth of 67 feet. ^{in the vicinity of}

The above discrepancies are not considered of significant importance in view of bottom characteristics, currents, and drag lift tests.

(f) The wire drag grounding of 52 feet located at latitude 38° 56' 46", longitude 75° 11' 20" where survey soundings indicate depths of 58 feet. *grounding on setting out drag is of questionable validity* Disregard. The effective depth is considered to be somewhat deeper than 52 ft. and therefore comparable to depths on H-9202 (1971)

b. Wire Drag Surveys

F.E. No. 9 WD (1950) 1:40,000
H-9172 WD (1968-70) 1:20,000 (Unverified)

(1) F.E. No. 9 - Items #1, 2, and 3
(See Q.C. Report - item 7)

No conflicts exist between F.E. No. 9 and the present survey, only a refinement and added definition of the items and their surrounding area. The following table shows these differences:

Item #	F.E. No. 9 Data		Present Survey Data	
	Hang	Cleared	Hang	Cleared
1	43 39'	37'	43'	40'
2	NONE	39'	48 ⁷ '	47'
3	50 49'	45'	NONE	49'

(2) H-9172 WD

(a) The southern limits of prior survey H-9172 WD covered a small area of the northern end of the present survey Items #1 and 2 investigations. There is no conflict and the effective depths of the prior survey display a deeper, closer to the bottom sweep.

(b) Prior survey H-9172 WD did touch the north-eastern edge of the Item #3 investigations. There is no conflict and the effective depths of the prior survey display a deeper, closer to the bottom sweep.

(c) Prior survey H-9172 WD covers almost the entire area of Item #4 investigations. One split on the present survey (located at latitude 38° 57.16', longitude 75° 10.42') ¹⁵ ~~was~~ covered by a clearing effective depth of 61 feet by the prior survey. The charted positions of the Item #4 obstruction and the nearby wreck were cleared to 74 feet and 73 feet respectively by the prior survey. Generally the prior survey displays greater clearing effective depths throughout the common area with the exception of a section to the west of the trough where the present survey has increased the maximum cleared effective depths.

6. Comparison With Charts 12216 (15th Edition, October 25, 1975)
12304 (22nd Edition, November 29, 1975)

a. Hydrography

Except as listed below, there is no conflict between wire drag effective depths and the charted soundings. However, harmony between the survey and the chart cannot be claimed due to the many areas of insufficient bottom clearances. (As previously noted the charts do not contain data from the most recent prior surveys.)

(1) Items #1 and 2 investigations had clearing effective depths ranging from 2 feet to 43 feet above charted depths. Both Items #1 and 2 were cleared to a greater effective depth; additionally, several scattered surrounding wreckages/obstructions were located. The charted 44-foot sounding located at latitude 38° 48' 57", longitude 75° 04' 48" borders on an area cleared by 56 feet; however, the 44-foot sounding is considered in the area cleared by 42 feet. *Chart present survey cleared depths.*

(2) Item #3 investigations had clearing effective depths ranging from 0 feet to 15 feet above charted depths. Item #3 was not hung and the charted location was cleared by 4 feet greater than charted. One conflict exists with the charted 48-foot sounding located at latitude 38° 51' 03", longitude 75° 06' 28" which was cleared by an effective depth of 49 feet. *Chart wreck as cleared by 49 ft.*

(3) Item #4 investigations had clearing effective depths ranging from 3 feet to 54 feet above charted depths. The charted obstruction and wreck covered by the Item #4 investigations were not hung, but were cleared by an effective depth of 66 feet. Neither the obstruction nor the wreck had a charted depth.

b. Aids to Navigation

There were no aids to navigation located by this survey.

7. Compliance With Instructions

This survey adequately complies with the Project Instructions, OPR-515-RU/HE-76, Wire Drag, East Coast Investigations; dated June 16, 1976, except as noted below:

a. The investigations of Items #3 and 4 were not in accordance with paragraph 2.3 in regard to the required area of coverage in item investigations.

b. Two splits exist on this survey (see Section 9.a. of this report) which is not in accordance with paragraph 2.4.

c. Not all hangs and groundings were cleared (see Appendix I of this report) which is not in accordance with paragraph 2.4.

d. Standard bottom clearances were not accomplished as required in paragraph 2.4; however, the sections on Items in the Descriptive Report discusses this discrepancy.

e. Several hangs/groundings were not cleared in accordance with Section 2.0 of the Project Instructions and Section 3-20 of the Wire Drag Manual.

Hangs and groundings were not "fully investigated and all discrepancies resolved in the field" as required in paragraph 2.5. Discrepancies are as follows:

C-2 - Hang on set out; uninvestigated; estimated effective depth; not rehung; not cleared

C-2 and H-4 - Hang on Anchor Fluke; estimated effective depth; no least depth; not cleared

G-2 - Hang on pick up; uninvestigated; not rehung; estimated effective depth

J-3 - Two hangs; both uninvestigated; neither was rehung

L-1 - Grounding; not cleared

L-2 - Hang on Anticipated Shoal; not cleared

P-3 - Grounding; not cleared

R-2 - Grounding (conflicting); not cleared

R-3 - Grounding; not sufficiently cleared

R-3 - Hang; uninvestigated; not sufficiently cleared

U-1 - Possible temporary hang/grounding; uninvestigated; estimated effective depth; not cleared.

8. Additional Field Work

This survey is adequate to supersede charted data for Items #1 and 2. Items #3 and 4 however, have neither been proved

nor disproved, only a cleared effective depth obtained over the charted locations. No immediate additional field work is recommended; however, in the future the discrepancy listed in Section 5.a.(2)(f) of this report should be resolved.

9. Miscellaneous

a. There are two splits on this survey. Both are on the Item #4 investigation. These splits are located at latitude $38^{\circ} 57.15'$, longitude $75^{\circ} 10.10'$ and latitude $38^{\circ} 57.16'$, longitude $75^{\circ} 10.42'$.

b. The obstruction located by side scan sonar (refer to Section III D. of the Descriptive Report) was not hung during this survey. Side scan sonar is considered a nonstandard surveying method and the acceptability of this data is questionable. A dashed black circle with no effective depth is plotted for this obstruction on the smooth sheet. The only positional information is the scaled geographic position in the Descriptive Report. Therefore, it is recommended that an obstruction be charted at the scaled position with a "PA" notation and the maximum cleared effective depth of ~~47~~⁵⁰ feet be used. *charted as obstr.*

c. There were 40 strips run on this survey, of which 31 were used in construction of the smooth sheets. Nine strips were rejected, they are as follows:

F1 - Temporary, uninvestigated hang on set out, position approximate, no effective depths, and no tests

H1 - insufficient tests

H2 - excessive lift

J1 - insufficient tests

M1 - excessive lift

N3 - excessive lift

P1 - excessive lift

R1 - Mud hang on a known shoal on set out, no tests

T2 - excessive lift

d. It was necessary to plot all strips on rough plotting overlays so that each strip could be properly evaluated. The rough overlays contain notes of the smooth plotter/verifier

listing the problems encountered and the disposition of these problems. Other notes, comments, corrections, and evaluations may be found in the survey's volumes, the Descriptive Report, and this report.

e. The 31 wire drag strips plotted on the smooth sheets cover 23 hangs and 4 groundings with the maximum clearances.

Some hangs-groundings on known shoals are not plotted.

f. The plotting of individual strips was aided by the automated plot of both vessels' position, the "N" and the "F" buoys' positions, and latitude/longitude grid ticks. The projections, control arcs, distortion points, and stamp on the smooth position number/control sheet and the smooth A & D sheet were also automated plots. All other work was accomplished manually.

g. This survey has been processed in the manner referenced in paragraph 3.e. of this report. With the aforementioned exceptions, modifications, and recommendations, this survey is considered complete and no further processing is planned.

h. The following attachments are included in this report:

(1) Appendix I - Hang/Grounding Abstract replacing Attachment IV A of the Descriptive Report

(2) Sections of Charts 12216 and 12304 used in chart comparisons *(Removed during Q.C. inspection)*

September 29, 1978

CAM3x1/RDS

SUPPLEMENT TO VERIFIER'S REPORT
H-9758 WD

The preceding "VERIFIER'S REPORT" is supplemented with the following:

Section 3, Condition of Survey, subparagraph e. Office Plotting (Smooth) is revised to read:

The smooth sheets differ from the standard method of processing in that the position number/control overlay is the smooth sheet and the A & D sheet is the accompanying overlay. This was done to expedite processing because of congestion.



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

OA/C352:KWW

January 8, 1979

TO: *A. J. Patrick*
A. J. Patrick
Chief, Marine Surveys Division

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman *K. W. Wellman*
Quality Evaluator

SUBJECT: Quality Control Report for H-9758 (1976) W.D., Delaware,
Delaware Bay Entrance, Vicinity of Cape Henlopen

A quality control inspection of H-9758 W.D. was accomplished to monitor the survey for obvious deficiencies with respect to data acquisition, determination of the validity of hangs, groundings, and least depths, validity of cleared effective depths over obstructions in the survey area, A&D sheet, Verifier's Report, decisions and actions by the verifier, and cartographic presentation of data.

In general, the present survey was found to conform to National Ocean Survey standards and requirements except as discussed in the Verifier's Report, the HIT Report, and as follows:

1. Some displacement of the shoreline on the smooth sheet is noted in the vicinity of the northern tip of Cape Henlopen. This is attributed to the inherent difficulty in transferring the shoreline between documents with a 4:1 scale difference. Since the shoreline is shown for reference purposes only, no revision of the present survey shoreline delineation is considered necessary.

Section 2 of the Verifier's Report is supplemented by the following:

The shoreline is shown for guidance only. The true position and greater shoreline detail are shown on the larger scale T-sheets previously mentioned.

2. Section 3-b of the Verifier's Report is supplemented by the following:

a. However, an inconsistency is noted in the recorded information pertaining to the length of the drag on A day. The records show a drag



length of 4,000 feet with ten 500-foot sections (nine intermediate buoys) which result in a drag length of 5,000 feet. The smooth plotted positions of the vessels and the N and F buoys substantiate a drag length of 5,000 feet. Accordingly, the smooth plotted information is considered reliable.

b. Ready reference to the guide vessel volumes was hampered by the lack of alphabetic character day letter identification on the covers of the volumes. (See section 5-5 of the Wire Drag Manual.)

3. A conflict was noted in the vicinity of latitude $38^{\circ}48.72'$, longitude $75^{\circ}04.20'$ where a hang depth of 54 feet was plotted within an area cleared to an effective depth of 56 feet. This conflict should have been reconciled during verification. Further, the records indicate that the two smooth plotted hangs in the area (drag strip 3 of J day) should have been shown as hangs at 53 feet rather than 54 feet. Appropriate revisions were effected during quality control inspection.

4. The estimated hang depth of 60 feet smooth plotted in latitude $38^{\circ}49.15'$, longitude $75^{\circ}05.10'$ is considered superfluous since shoaler depths; i.e., depths of 55 to 59 feet, are shown on H-9154 (1970). Appropriate deletions were effected during quality control inspection.

5. A comparison between the present survey and H-9153 (1970-71) was not accomplished during verification. A comparison completed during the quality control inspection revealed no conflicts with present survey cleared depths.

6. Reference section 5-a(2) of the Verifier's Report:

Minor conflicts of 1 foot are considered consistent with the accuracy limitations of wire-drag survey procedures and do not necessarily invalidate the soundings or indicate a movement of bottom sediments. Such conflicts need not be individually enumerated in the Verifier's Report. A general statement pertaining to the noted minor differences in the referenced section of the Verifier's Report would have been sufficient.

7. Section 5-b(1) of the Verifier's Report is supplemented by the following:

The cleared depths and hang information shown on the F.E., within the present survey area of coverage, is considered of questionable validity due to the probable shift of bottom sediments and dispersal of wreckage during the intervening 26 years. The deeper clearance depths on several wrecks on the present survey indicate a possible deterioration of the wreckage.

A prior survey hang of 39 feet (F.E. No. 9 (1950) W.D.) in the vicinity of latitude $38^{\circ}48.24'$, longitude $75^{\circ}04.11'$ falls within an area cleared

to an effective depth of 40 feet on the present survey. In addition, the indicated wreck was not detected by a present survey drag strip set at an effective depth of 47 feet which hung on the wreckage in the vicinity. The wreckage is considered to have been dispersed over the bottom in the immediate vicinity. The prior survey hang depth of 39 feet is therefore considered no longer valid and should be disregarded. Cleared depths shown on the present survey should take precedence over those originating with F.E. No. 9 (1950) W.D.

8. Geographic names should have been lettered "lightly in pencil" on the smooth sheet during verification. They were added to the smooth sheet during quality control inspection. (See section 7.3.12.3 of the Hydrographic Manual--Fourth Edition.)

9. The hachures delimiting splits are inappropriately inked in black ink. Such hachures should be inked in the same colors as those used to define the adjacent cleared areas. (See section 5-10 of the Wire Drag Manual--Publication 20-1.)

cc:
C35
C351

