

H10935

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic / Side Scan Sonar

Field No. WH-20-1-99

Registry No. H10935

LOCALITY

State New Jersey

General Locality North Atlantic Ocean

Locality Approaches to Delaware Bay

1999

CHIEF OF PARTY
LCDR Gerd F. Glang

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JUL 24 2000

DATE

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 NUMBER:
WH-20-01-99

State: Delaware Bay, New Jersey

General locality: North Atlantic Ocean

Locality: Approaches to Delaware Bay

Scale: ²⁰1: 10,000 Date of survey: September 29 - October 31, 1999

Instructions dated: July 1, 1999 Project Number: OPR-D392-WH-99

Vessel: NOAA Ship Whiting

Chief of Party: LCDR Gerd F. Glang

Surveyed by: LCDR Gerd F. Glang, LT L. Krepp, ENS G. Imahori, ENS M. Moser, M.J. Annis C. Clemens, U.L. Gardner, C.D. Kemp, P.G. Lewit

Soundings taken by echo sounder, hand lead-line, or pole: ODOM Echotrac DF3200 echosounder

Graphic record scaled by: WHITING Personnel

Graphic record checked by: WHITING Personnel

Protracted by: N/A Automated plot by: HEWLETT PACKARD DESIGNJET 2500 CP (AHC) HP750C (FIELD)

Verification by: ATLANTIC Hydrographic Survey Branch PERSONNEL

Soundings in: Feet: / Fathoms: Meters: at MLW: MLLW: (*):

Remarks: Basic Hydrographic and 200% Side Scan Sonar

UTM Grid Zone 18 Northern Hemisphere

All Times UTC

HAND WRITTEN NOTES IN THE DESCRIPTIVE REPORT
WERE MADE DURING OFFICE PROCESSING

NOOIS/SURF ✓ 5/16/00 STJ

Formerly CGS 1273, 1st Ed., Aug 1977; 2d Ed., 1987; 3d Ed., 1994

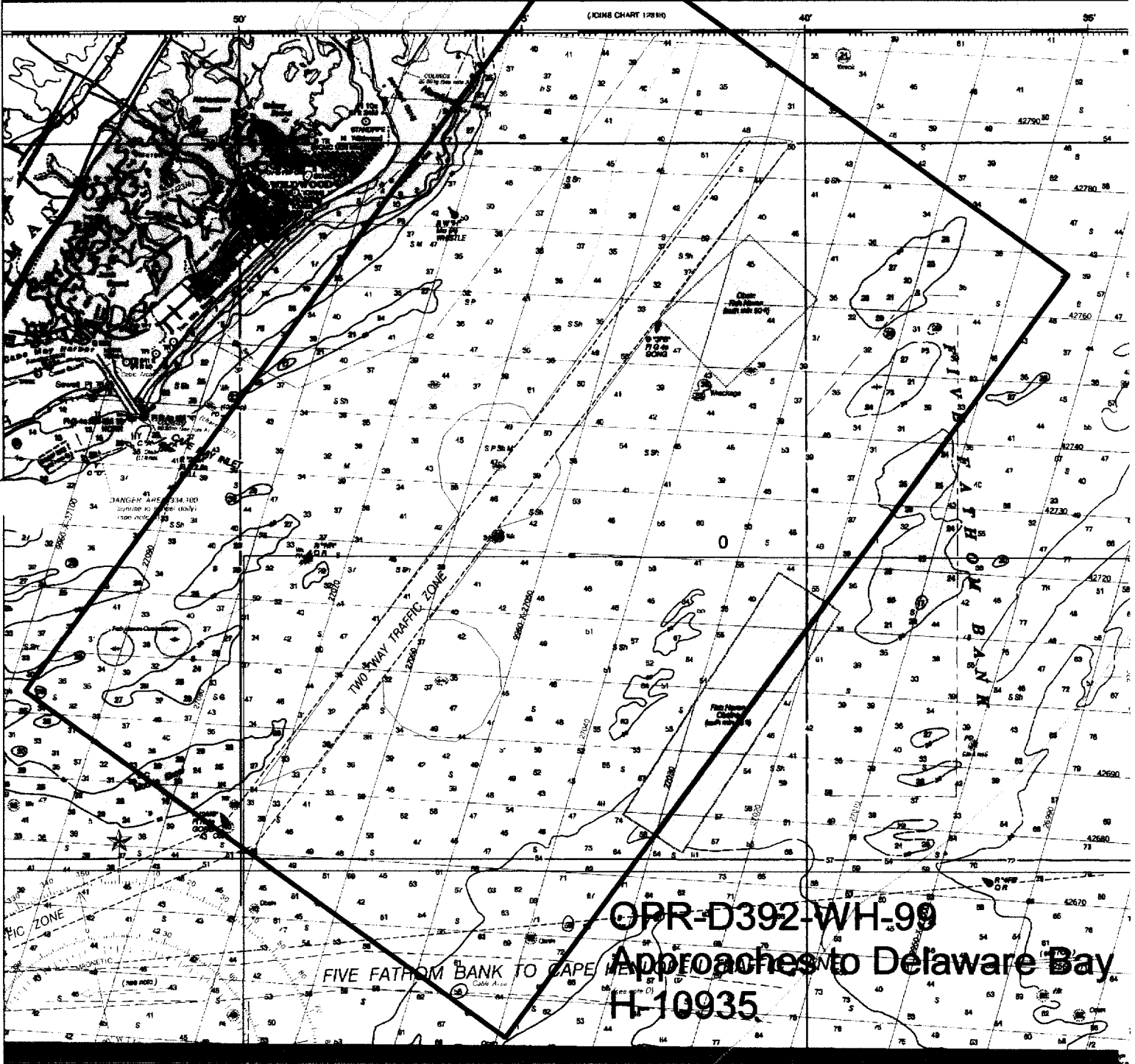
(ICONS CHART 12810)

E

TIDAL INFORMATION

Name	Place (LATA, LONG)	Height referred to datum of source			
		Mean Water	High Water	Low Water	Mean Low Water
Cape May Point	(39°39'N/74°52'W)	5.4	4.9	4.3	C.2
Cape Henlopen	(39°27'N/75°23'W)	4.7	4.3	3.9	C.2
Fenwick Island	(39°27'N/75°03'W)	4.2	3.9	3.5	C.2

(38) Local information available



OPR-D392-WH-99
 Approaches to Delaware Bay
 H-10935

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** DATA FILED WITH ORIGINAL FIELD RECORDS*

A. PROJECT

A.1. This basic hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions OPR-D392-WH-99, Delaware Bay and Approaches, New Jersey - Delaware.

A.2. The original instructions are dated July 1, 1999.

A.3. There is one change to the original project instructions. This change specifies that sheets "E" and "F" are combined into a single 1:20,000 scale survey designated as sheet "E"; sheets "G" and "H" were combined into a single 1:20,000 scale survey designated as sheet "F"; and six sheets "I," "J," "K," "L," "M," and "N," were combined into a single 1:40,000 scale survey designated as sheet "G." At present, no written change has been received from N/CS31.

A.4. This Descriptive Report applies to sheet "E" of OPR-D392-WH, survey registry number H-10935. Survey H-10935 lies 11.0 nautical miles east of Sewell Point, New Jersey. See section B.2 for exact survey boundaries.

A.5. Project OPR-D392-WH responds to requests from The Pilots' Association Bay and River, Delaware, and the Mariners Advisory Committee for the Bay and River, Delaware. Both groups are concerned with routing vessel traffic in and out of Delaware Bay. The acquisition of modern hydrography and the detection or disproval of wrecks and obstructions will provide more options for vessel traffic management.

B. AREA SURVEYED

B.1. This survey covers the approximate eastern third portion of the navigable area of the northeast approaches to Delaware Bay, New Jersey - Delaware.

B.2. Sheet "E" has the following geographic boundaries:

<u>Latitude</u>	<u>Longitude</u>
38°51'00" N	074°49'43" W
38°51'49" N	074°45'49" W
39°00'02" N	074°40'14" W
39°00'04" N	074°41'05" W
38°56'00" N	074°46'20" W

B.3. Data collection for this survey began on September 29, 1999, (DN 272). Data collection ended on October 31, 1999 (DN 304).

C. SURVEY VESSELS

C.1. The following vessels were used during this survey:

Vessel	EDP Number	Operations
NOAA Ship WHITING	2930	Hydrography and Side Scan Operations
NOAA Launch 1014	2932	Hydrography, Dive, and Side Scan Operations
NOAA Launch 1015	2931	Hydrography and Side Scan Operations

C.2. No unusual vessel configurations were used during this survey.

D. AUTOMATED DATA ACQUISITION AND PROCESSING *SEE ALSO THE EVALUATION REPORT.*

D.1. A detailed list of data acquisition and processing software used for this survey can be found in appendix H.

Vertical beam echosounder (VBES) data acquisition was accomplished using Coastal Oceanographics **HYPACK** software. VBES data processing was accomplished using **HPS** (HYDROGRAPHIC PROCESSING SYSTEM) software and assorted utility programs contained on the **HYDROSOFT** version 9.4 compact disk provided by the Systems Support Branch (N/CS32).

All side scan data were acquired digitally using Triton Elics International (TEI) ISIS version 4.31 software. Processed Digital side scan used Universal Systems Limited (USL) CARIS/SIPS version 4.3 (UNIX) software.

The Sea-Bird SBE-19 SEACAT CTD instrument was utilized with **SEASOFT 3.3M** and **SEACAT 2.0** software. The program **VELOCIWIN** (Version 4.0, March 1999) was used to process CTD data and calculate sound velocity corrections.

E. SONAR EQUIPMENT

E.1. WHITING conducted all side scan sonar operations using a 500kHz Klein T-5500 multibeam digital high speed, high resolution side scan sonar (HSHRSSS) system.

Both WHITING launches used the 100kHz Edgetech Model 272-T towfish, configured with an AU32 A/D converter throughout this survey.

E.2. The Klein and Edgetech towfish are configured with a standard 20° below-horizontal beam angle depression.

E.3. The frequencies of 500kHz for the Klein and 100kHz for the Edgetech were used throughout the survey.

E.4(a) A range scale of 100 meters was used with a line spacing of 80 meters throughout the survey area. This range scale was used to obtain complete (200%) area coverage and provide optimal contact detection. The line spacing is in accordance with section 6.4 of the Field Procedures Manual (FPM, dated March 1999). Data collected with an HDOP greater than 4.0 was rejected or smoothed during post-processing. Maximum line spacing was never exceeded.

E.4(b) Periodic confidence checks (usually daily), were conducted during data acquisition. This was done by observing bottom features such as sand waves, scours, and naturally-occurring contrast of sea floor characteristics in the side scan imagery.

E.4(c) Two hundred percent side scan sonar coverage was completed for this survey. Side scan lines were assembled into mosaics using **CARIS/SIPS**. Mosaic rasters were viewed in **MapInfo** to assess sonar coverage after exporting them from **CARIS/SIPS** using the "mosaic2tiff" program developed by SSB. A holiday line plan was compiled over apparent gaps in the mosaic rasters using a **MapBasic** utility program. Then exported as **HYPACK** line files for acquisition.

Any holidays with a length of 200 meters or less not covered with 200% side scan sonar were covered with 100% side scan sonar. All relevant and questionable contacts were investigated using a reduced side scan range scale.

E.4(d) Occasional thermocline problems were observed in the sonar imagery. Affected data was rejected and acquired at a later date after the thermocline dissipated.

E.4(e) Aboard WHITING, the Klein towfish was deployed using a SEA-MAC winch and armored coaxial cable from the stern A-frame. The EdgeTech SSS towfish was similarly deployed from WHITING's stern A-frame using armored cable. On launch 1014 and 1015, the EdgeTech SSS towfish was deployed on a Kevlar-jacketed cable over the vessels' sides using a Superwinch and J-arm.

E.4(f) Cable-out aboard WHITING was determined using an MD-TOTCO digital sheave meter installed on the stern A-frame block. The MD-TOTCO digitized cable-out values were acquired in real-time into **HYPACK** via an RS-232 serial cable. Cable-out aboard the launches was determined manually and entered into **HYPACK** during acquisition.

E.5. Contact investigations were conducted using VBES, reduced-range SSS, or diver methods. Line spacing for VBES or reduced-range SSS investigations was reduced to ensure 100% ensonification coverage for the particular sensor. Detailed descriptions of all investigated contacts are addressed in the Item Investigation Reports found in Section M.

E.6. Sonar coverage determination is described in E.4.c above. Sonar targets were initially evaluated during data acquisition. After ISIS data conversion, sonar targets were evaluated in CARIS/SIPS. Imagery analysis for targets during SIPS processing resulted in contact files and images for each line. These data were then exported into HPS for contact correlation and to rank contact significance using the **CORRELATOR** program. Positions of significant contacts were then exported into **HYPACK** target tables and further investigated using methods discussed in Section E.5.

F. SOUNDING EQUIPMENT

F.1. All hydrographic soundings were acquired using an ODOM ECHOTRAC DF3200 MKII precision survey echosounder. The following ECHOTRAC sounders were used:

Vessel	EDP Number	ECHOTRACK S/N
NOAA Ship WHITING	2930	9656
NOAA Launch 1014	2932	9644
NOAA Launch 1015	2931	9655

F.2. A Diver Least Depth Gauge (DLDG Model D2000, s/n 68338) was used during dive investigations.

F.3. There were no faults in sounding equipment that affected data accuracy or quality.

F.4. Both high (100kHz) and low (24kHz) frequency depths were recorded during data acquisition. The high frequency digitized depths are used throughout this survey.

G. CORRECTIONS TO SOUNDINGS

G.1(a) Velocity of sound through water was determined using SeaBird SBE 19 SeaCat Sound Velocity Profilers (SVP s/n 196093-1060 and SVP s/n 192472-286). SeaCat Data Quality Assurance Tests were conducted IAW with the FPM after each cast. The SeaCat SVP units were calibrated January 14, 1999, by SEA-BIRD ELECTRONICS, INC.

All sound velocity data were processed using **VELOCIWIN** version 4.0. Computed velocity correctors were entered into HPS sound velocity tables and applied during post-processing to both high and low frequency depths.

The following is a list of sound velocity casts which apply to this survey, H-10935:

Table	DN	Vessel	Position Of Cast		DN Period	Cast Depth (M)
			Latitude	Longitude		
29	272	2930	38°57'00"N	074°43'06"W	272-281	20.1
30	272	2931 2932	38°57'00"N	074°43'06"W	272-281	20.1

Table	DN	Vessel	Position Of Cast		DN Period	Cast Depth (M)
			Latitude	Longitude		
36	280	2930	38°49'54"N	074°33'18"W	280-281	31.7
37	280	2931 2932	38°49'54"N	074°33'18"W	280-281	31.7
43	302	2931 2931	38°50'09"N	074°43'51"W	300-304	30.7
44	302	2930	38°50'09"N	074°43'51"W	300-303	30.7

G.1(b) The following dual Lead line comparisons with the ECHOTRAC DF 3200 MKII were conducted for WHITING, launch 1014, and launch 1015 for this project and apply to this survey, H-10935

Vessel	Area	Latitude	Longitude	DN
2930	Delaware Bay	38°55'24"N	075°07'30"W	230
2931	Harbor of Refuge	38°48'37"N	075°07'51"W	223
2931	Harbor of Refuge	38°48'37"N	075°07'24"W	224
2932	Delaware Bay	38°48'48"N	075°05'30"W	224

Weather and sea conditions were calm and proved ideal for the lead line comparisons. No corrections to soundings were needed. Lead lines were calibrated on May 17, 1999. The calibrations confirmed that errors in lead line accuracy were negligible. Refer to the echogram records for the above listed day numbers.

G.1 (c) Static draft corrections for launch 1014 and 1015 were logged on July 28, 1993 (HPS Offset Tables 1 and 2). The static draft correction for WHITING (3.2 meters) was measured on May 3, 1999 at Mayport Naval Station, Florida (HPS Offset Table 9). Static draft correctors were applied during data post-processing for each survey vessel.

G.1(d) Settlement and squat values for WHITING were determined on April 19, 1999 (HPS Offset Table 9). Settlement and squat values for both launches were determined March 16, 1998 (HPS Offset Tables 1 for launch 1015, and HPS Offset Table 2 for launch 1014). The settlement and squat correctors were applied during data processing. Refer to Appendix E.

G.1(e) WHITING and each launch are equipped with a TSS DMS-05 Dynamic Motion Sensor. Heave correctors determined by the DMS-05 sensors were acquired in **HYPACK** during data acquisition and applied to raw data during processing. Serial numbers for these sensors are as follows:

Vessel	EDP Number	DMS-05 S/N
NOAA Ship WHITING	2930	2040
NOAA Launch 1014	2932	2062
NOAA Launch 1015	2931	2068

G.4. No DLDG correctors were used. DLDG gauges were calibrated on February 9, 1999 by PTC Electronics Incorporated. See appendix E for calibration information.

G.5. No other factors were determined to affect corrections to soundings.

G.6(a) The tidal datum for this project is Mean Lower Low Water (MLLW). The operating tide station at Lewes, Delaware (855-7380) served as control for datum determination.

G.6(b) Zoning for this survey is consistent with the project instructions. HPTools were used for Tide table creation and for the application of Preliminary Water Level Data during data processing. The following tide zone was used.

Zone Station	Time Corrector (Minutes)	Range Ratio	Predicted Reference
MAC309	-66	0.99	855-7380

Approved tides for H-10935 were requested by letter to N/OPS1 dated January 6, 2000. See Appendix D. *FILED WITH THE ORIGINAL FIELD RECORDS*
APPROVED TIDES AND ZONES WERE APPLIED DURING OFFICE PROCESSING

H. HYDROGRAPHIC POSITION CONTROL

SEE ALSO THE EVALUATION REPORT.

H.1 The horizontal datum for this survey is North American Datum of 1983 (NAD 83). No horizontal control stations were established for this survey.

H.2. This survey was conducted using the Global Positioning System (GPS) corrected by U.S. Coast Guard (USCG) Differential GPS reference stations.

H.3. USCG DGPS stations used were Cape Henry and Cape Henlopen.

H.4. Not applicable.

H.5. The Horizontal Dilution of Precision (HDOP) and Expected Position Error (EPE) specified by the Draft NOAA Hydrographic Project Instructions were monitored during on-line data collection. If the positioning degraded beyond the acceptable limits while on-line, the data was either smoothed or rejected.

Performance checks for WHITING and both launches were conducted with launches secured in davits using the program **Pcheck** (from the Hydrosoft 9.4 CD-ROM). Differential correctors from the Cape Henry or Cape Henlopen USCG DGPS stations were used to correct GPS signals. Simultaneous **HYPACK** positions on all three platforms were acquired and an offset distance and azimuth computed between the ship and each launch system. The computed offset distances and azimuths were compared to measured values. A summary of the DGPS performance check's is included in Appendix F. All DGPS performance checks confirmed that the equipment was working properly.

H.6. Serial numbers for the Trimble DSM212L receivers are as follows:

Vessel	EDP Number	DSM212L S/N
NOAA Ship WHITING	2930	System 1: 0220159721 System 2: 0220159722
NOAA Launch 1014	2932	0220159716
NOAA Launch 1015	2931	0220159723

Trimble receivers were initialized to the appropriate station and frequency using the **Trimble TSIP Talker** software.

H.7(a) There were no unusual methods used to operate or calibrate electronic positioning equipment.

H.7(b) No equipment malfunctions affected the quality of survey data collected.

H.7(c) No unusual atmospheric conditions affected data quality.

H.7(d) The maximum allowed HDOP value of 4.0 was never exceeded. Weak differential signals or satellite problems did not affect the survey data quality.

H.7(e) There were no detected systematic errors requiring adjustments.

H.7(f) DGPS antenna offsets were measured on April 15, 1999 for WHITING. For VBES data, offsets and laybacks were measured using the high-frequency echosounder transducer as the reference point. Correctors were entered into Offset Table 9. The DGPS antennae were installed on launches 1014 and 1015 on April 2, 1996, directly over the echosounder transducer. Antenna height was also measured on the same respective dates shown above, using the water line as the reference. Correctors were entered into Offset Table 1 for launch 1015 and Table 2 for launch 1014. A minimum of four satellites was used throughout this survey providing altitude-unconstrained positioning.

H.7(g) The SSS offset and layback distances for the launch J-arms were measured on July 28, 1993, and verified on April 15, 1999.

The SSS offset and layback distances for WHITING's A-frame were measured on April 15, 1999.

The offset and layback values were entered into the appropriate CARIS Vessel Configuration Files (VCF) and applied during CARIS/SIPS data processing.

I. SHORELINE

No shoreline is contained within the boundaries of this survey.

J. CROSSLINES

J.1. A total of 13.22 linear nautical miles of crossline hydrography, representing approximately 5.6% of the 233.72 lnm of mainscheme hydrography, was acquired for this survey.

J.2. Mainscheme-to-crossline soundings were compared at their common intersections. Agreement was excellent, with the majority of soundings found to be within one to two feet of each other.

J.3. No significant discrepancies between mainscheme and crossline soundings were observed.

J.4. Vessels acquiring crossline data did not necessarily acquire the mainscheme data.

K. JUNCTIONS *SEE ALSO THE EVALUATION REPORT*

K.1. Survey H-10935 junctions along the southern edge with contemporary survey H-10936. Survey H-10936 is sheet "F" of OPR-D392-WH (1:20000 scale).

K.2. Comparisons of junction soundings between H-10935 and H-10936 showed no significant differences. Agreement was generally excellent, with occasional differences of up to three feet.

K.3. These minor junction discrepancies are likely due to positioning and beam-footprint uncertainties inherent in the VBES systems.

K.4. No recommendations are made.

L. COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys is not required due to the completion of 200% side scan sonar coverage. *CONCUR. SEE MEMORANDUM "CHANGES TO HYDROGRAPHIC SURVEY PROCESSING" DATED MAY 24, 1995*

M. ITEM INVESTIGATION REPORTS *SEE ALSO THE EVALUATION REPORT*

(Appear on the Following pages.)

AWOIS ITEM INVESTIGATION: 1179

Item Description: Barge

Source: Notice to Mariners dated 5/9/32

AWOIS Position: 38°52'30.40" N 074°46'28.59" W

Required Investigation: SD, S2, DI **Radius:** 1500

Charts Affected: 12214 12200 12300 12318 13003

INVESTIGATION

Date(s):

Position Numbers: N/A

Investigation Used: S2

Surveyed Position: N/A

Position Determined by: Differential GPS

Investigation Summary: In the course of survey, AWOIS 1179 an assigned item with a 1500 meter search radius was covered by 200% side scan. The item corresponding to a charted Wreck was disproved with 200% side scan. All contacts within the search radius were insignificant. Unassigned AWOIS items 1174, 1175, 1176 and 1180 also fell within the search radius. (See investigations 274_224_1605_1 and 272_223_1861_1 pages 14,15)

CHARTING RECOMMENDATION

Recommendation: The Hydrographer recommends removing charted Wreck, with danger circle PA located at 38°52'~~29.3~~^{30.40}" N 074°46'~~26.9~~^{28.59}" W. *Codeur. "PA" IS NOT CHARTED*

DELETE (H)

AWOIS ITEM INVESTIGATION: 10400

Item Description: Wreck

Source: H09297/72 WD

AWOIS Position: Lat. 38°54'32.40"N Lon. 074°45'26.60"W

Required Investigation: SD, S2, DI

Radius: 200m

Charts Affected: 12214 12200 12300 12318 13003

INVESTIGATION

Date(s): 30 October 1999 (DOY 303)

Position Numbers: 434

Investigation Used: S2, ES

Surveyed Position: Lat. 38°54'31.63"N Lon. 074°45'27.35"W

Position Determined by: Differential GPS

Investigation Summary: On DOY 303 an echosounder development was performed on contact 275_100_0411_1. The imagery shows wreckage and was covered by 200% side scan over a 200m radius. This corresponds to AWOIS 10400, the "Eleanor Warren" and the charted obstruction. A least depth ~~was~~ of 36.6 ft (11.1 meters) was determined by echosounder.

CHARTING RECOMMENDATION

Recommendation:

The hydrographer recommends removing the wire drag depth and danger circle located at 38°54'32.4" N 074°45'26.6" W and charting a Dangerous Wreck least depth by echosounder only, least depth 36.6ft (11.1m) using ^{APPROVED} preliminary water levels at the surveyed position. *Concur*

DELETE (28) WK . ADD (37) WK

AWOIS ITEM INVESTIGATION: 10401

Item Description: Wreck

Source: Cartographic Letter 347/58

AWOIS Position: Lat. 38°55'30.41"N Lon. 074°45'26.59"W

Required Investigation: SD, S2, DI

Radius: 1500m

Charts Affected: 12214 12200 12300 12318 13003

INVESTIGATION

Date(s): 31 October 1999 (DOY 304)

Position Numbers: 275_110_0250_1

Investigation Used: S2

Surveyed Position: Lat. 38°55'39.62"N

Lon. 074°45'33.40"W

Position Determined by: Differential GPS

Investigation Summary: After 100% side scan was run over assigned AWOIS 10401 at 75 meter range scale, contact 275_110_0250_1 was found. AWOIS 10401 is listed as PA dangerous submerged wreck. The chart does not currently display the PA. The item rises 0.8 meters off the bottom and the imagery shows what looks like the remains of a hull or ribs. No Echosounder development was done. The position and depth are determined by side scan. A depth in close proximity of the item is 48 feet. A scaled depth for the item is 45.3 ft, (13.8 meters) derived from surrounding depth and contact height. The item is considered resolved.

CHARTING RECOMMENDATION

Recommendation: The Hydrographer recommends removing the Dangerous submerged wreck located at 38°55'29.9"N 074°45'25.6"W and charting a "Dangerous submerged wreck, least depth scaled by side scan only", least depth 45.3 ft (13.8m) using preliminary water levels at the surveyed position. *Do NOT CONCUR. SEE SECTION M.1. OF THE EVALUATION REPORT*

CONTACT NO: 274_224_1605_1

Item Description: Obstruction

Source: H10935

AWOIS Position: N/A

Required Investigation: N/A

Radius: N/A

Charts Affected: 12214 12200 12300 12318 13003

INVESTIGATION

Date(s): 30 October 1999 (DOY 303)

Position Numbers: 3

Investigation Used: S2, ES

Surveyed Position: Lat. 38°52'57.89"N Lon. 074°47'25.32"W

Position Determined by: Differential GPS

Investigation Summary: On DOY 303 an echosounder development was run over contact 274_224_1605_1 after being covered by 200% side scan. The imagery shows the appearance of wreckage and lies in a two-way traffic zone. A least depth of 37.6ft, (11.4 meters) was determined by echosounder. The item is characteristic of AWOIS 1179. (See AWOIS Investigation: 1179, pg 13)

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting an ^{APPROVED} Obstruction with least depth, by echosounder (using ~~preliminary~~ water levels) of ~~37.6~~ ^{36.2} ft (11.4 meters) at the surveyed position. *Concur*

CHART (36) OBSTN

CONTACT NO: 272_223_1861_1

Item Description: Wreck

Source: H10935

AWOIS Position: N/A

Required Investigation: N/A

Radius: N/A

Charts Affected: 12214 12200 12300 12318 13003

INVESTIGATION

Date(s): 30 October 1999 (DOY 303)

Position Numbers: 290

Investigation Used: S2, ES

Surveyed Position: Lat. 38°53'08.76"N Lon. 074°47'17.99"W

Position Determined by: Differential GPS

Investigation Summary: On DOY 303 contact 272_223_1861_1 was investigated with an echosounder development after being covered by 200% side scan. The imagery clearly shows an overturned hull and lies in a two-way traffic zone. A least depth of 40.8ft, (12.5 meters) was determined by echosounder. The item is characteristic of AWOIS 1179. (See AWOIS Investigation: 1179, pg 13)

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting a "Dangerous submerged wreck, least depth known by echo-sounding only" with a least depth corrected with preliminary water levels of 40.8 ft (12.5m) at the surveyed position. *APPROVED* *CONCUR.*

CHART 101 WX

CONTACT NO: 272_223_1940_1

Item Description: Obs

Source: H10935

AWOIS Position: N/A

Required Investigation: SD, S2, DI

Radius: 1500m

Charts Affected: 12214 12200 12300 12318 13003

INVESTIGATION

Date(s): 31 October 1999 (DOY 304)

Position Numbers: 510

Investigation Used: S2, ES

Surveyed Position: Lat. 38°55'44.91"N

Lon. 074°44'53.85"W

Position Determined by: Differential GPS

Investigation Summary: After 200% side scan was run, contact 272_223_1940_1 was investigated with an echosounder development on DOY 304. The echo trace displayed very faint hits but corresponded to the height of the side scan contact which has a long thin shadow. The item lies in a two-way traffic zone. A least depth of 31.2 ft, (9.5 meters) was determined by echosounder. The item is within in an AWOIS search radius (see AWOIS Investigation 10401

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting an "Obstruction, least depth known by echo-sounding only" with a least depth corrected with ~~preliminary~~ ^{APPROVED} water levels of 31.2 ft (9.5m) at the surveyed position. ^{CONCLUDE,}

CHART 30 Obstr

CONTACT NO: 274_224_1610_1

Item Description: N/A

Source: H10935

AWOIS Position: N/A

Required Investigation: N/A

Radius: N/A

Charts Affected: 12214 12200 12300 12318 13003

INVESTIGATION

Date(s): 31 October 1999 (DOY 304)

Position Numbers: 697

Investigation Used: S2, ES

Surveyed Position: 38-57-00.12 N 074-43-33.43 W

Position Determined by: Differential GPS

Investigation Summary: On DOY 304 an echosounder development was performed on contact 274_224_1610_1 after 200% side scan. The item was found and near unassigned AWOIS 1221. A least depth of 51.1 feet, (15.5 meters) was determined by echosounder.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting an Obstruction, least depth by echosounder only, of 51.1ft, (15.5⁶ meters) using ^{APPROVED} preliminary water levels at the surveyed position. *CONSIDER CHART A (5') OBSTN*

N. COMPARISON WITH THE CHART *SEE ALSO THE EVALUATION REPORT.*

N.1. Five charts affected by this survey are:

Chart No. 12214
Cape May to Fenwick Island
42nd Ed., September 25, 1999
1:80,000

Chart No. 12200
Cape May to Cape Hatteras
45th Ed., December 12, 1998
1:419,706

Chart No. 12300
Approaches to Nantucket Shoals to Five Fathom Bank
40th Ed., January 30, 1999
1:40,000

Chart No. 12318
Little Egg Inlet to Hereford Inlets
39th Ed., September 18, 1999
1:80000

Chart No. 13003
Cape Sable to Cape Hatteras
44th Ed., October 9, 1999
1:1,200,000

N.2. One Danger to Navigation Reports was issued as a result of this survey.

N.3(a) Survey depths were converted from meters to feet and overlaid on the largest scale raster chart of the area using MapInfo. Surveyed depths in the immediate vicinity of charted soundings were compared. A comparison was also made with transects between charted soundings.

N.3(b) Survey depths were in general deeper than charted. Average differences amounted to two feet. The Surveyed depths, three feet or greater were analyzed by comparing mainscheme sounding lines and side scan imagery data to the charted depth. The following charted soundings are recommended for removal and replaced by representative soundings: *Cancel*

Charted depth 34 ft at position 38°54'30.75" N 074°45'33.61" W

Charted depth 39 ft at position 38°55'21.87" N 074°44'45.77" W

N.3(c) No hydrographic findings of special note are reported.

N.3(d) No maintained channels occur within the limits of this survey.

N.3(e) This survey is inclusive of and approximately bounded by a portion of the two-way traffic zone from buoy R "2MS" to a point 12.5nm northwest of the same. The shoalest depths observed in this survey are 31 feet or deeper, were spread evenly throughout the southern two-thirds of the survey. The soundings on this survey confirm the two way traffic zone boundaries are adequately charted.

N.4(a) All non sounding features within the survey area are adequately charted.

N.4(b) thru N.6(k) These sections are not applicable to this survey.

O. ADEQUACY OF SURVEY *SEE ALSO THE EVALUATION REPORT*

This survey is sufficiently complete and fully adequate to supersede prior survey data within common areas.

P. AIDS TO NAVIGATION

P.1. Not applicable to this survey.

P.2. One floating aid to navigation lies within the limits of H-10935. The charted position of G "3FB" Fl G 4s Gong (Light list no. 105) near the SW corner of a fish haven was compared with a position scaled from side scan sonar imagery. The charted and scaled positions agreed within seventy meters of each other. The color and light characteristics of this floating aid were visually confirmed during the survey operations.

P.3. The position of the G "3FB" Fl G 4s Gong buoy is included in the survey records as contact # 301_128_0856_1.

P.4. Not applicable to this survey.

P.5. Not applicable to this survey.

P.6. There were no non floating aids to navigation included within the limits of this survey.

Q. STATISTICS

	Total number of Non-Rejected Positions	63498.0
Q.1.a.	Linear Nautical Miles of SSS	233.7
Q.1.b.	Linear Nautical Miles of VBES-only	20.8
Q.1.c.	Square Nautical Miles of VBES	10.5
Q.1.d.	Square Nautical Miles of SSS	10.5
Q.2.a.	Days of Data Acquisition	24
Q.2.b.	Total Number of Soundings	7699
Q.2.c.	Number of Soundings on Final Field Sheet	NA
Q.2.d.	Number of Detached Positions	2
Q.2.d.	Number of Bottom Samples	21
Q.2.e.	Number of Velocity Casts	3
Q.2.f.	Number of Tide Stations Installed	1

R. MISCELLANEOUS *SEE ALSO THE EVALUATION REPORT.*

Bottom samples were sent to the Smithsonian Institution per project letter.

S. RECOMMENDATIONS

The following item is to be addressed as a Field Examination in the Whiting 2000 field season. Whiting will determine least depth for contact 272-223-1940-1 Position 510 via divers least depth gage. *SEE PAGE 17 OF THIS REPORT.*

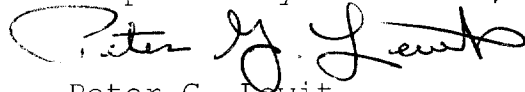
T. REFERRAL TO REPORTS

A Coast Pilot Report will be submitted to N/CS26 at the conclusion of project OPR-D392-WH.

A Tide Station Report for station 855-4399 (Mahon River Entrance) will be submitted to N/OPS1 at the conclusion of project OPR-D392-WH.

This is a multi year project for WHITING and is expected to be complete in September 2000.

Respectfully Submitted,



Peter G. Lewit
Senior Survey Technician
NOAA Ship Whiting

March 29, 2000
Date

APPENDIX K

APPROVAL SHEET

OPR-D392-WH-99
Delaware Bay and Approaches
New Jersey - Delaware

11.0 nm E of Sewell Point, New Jersey
Survey Registry No. H-10935

Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. All field sheets, this Descriptive Report, and all accompanying records and data are approved.

This survey is adequate to supersede all prior surveys in common areas, and for application to the relevant NOS nautical charts.

.Respectfully,



Gerd F. Glang
Lieutenant Commander, NOAA
Commanding Officer
NOAA Ship WHITING

Gerd MARCH 29, 2000
Date



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
Office of Marine and Aviation Operations
NOAA Ship WHITING S-329
439 W. York Street
Norfolk, VA 23510-1114

17 March, 2000

Commander (OAN)
Fifth Coast Guard District
Federal Building
431 Crawford Street
Portsmouth, VA 23704-5004

Dear Sir,

NOAA Ship WHITING identified the following items as danger to navigation during survey operations in Delaware Bay. Items were located using differential GPS NAD83 and all soundings are reduced to Mean Lower Low Water (MLLW) using Preliminary Water Level Data. All depth data are preliminary pending verification.

The following tables lists the items and the charts affected:

Item	Type	Depth Feet	Latitude	Longitude
1	Obstruction	38	38° 52' 58" N	074° 47' 25" W
2	Dangerous Submerged WK	41	38° 53' 09" N	074° 47' 18" W
3	Obstruction	31	38° 44' 54" N	074° 44' 54" W
4	Obstruction	51	38° 54' 00" N	074° 43' 33" W

Chart Number	Edition Number	Date
12214	42 nd	September 25, 1999
12200	45 th	December 12, 1998
12300	40 th	January 30, 1999
12318	39 th	September 18, 1999
13003	44 th	October 9, 1999

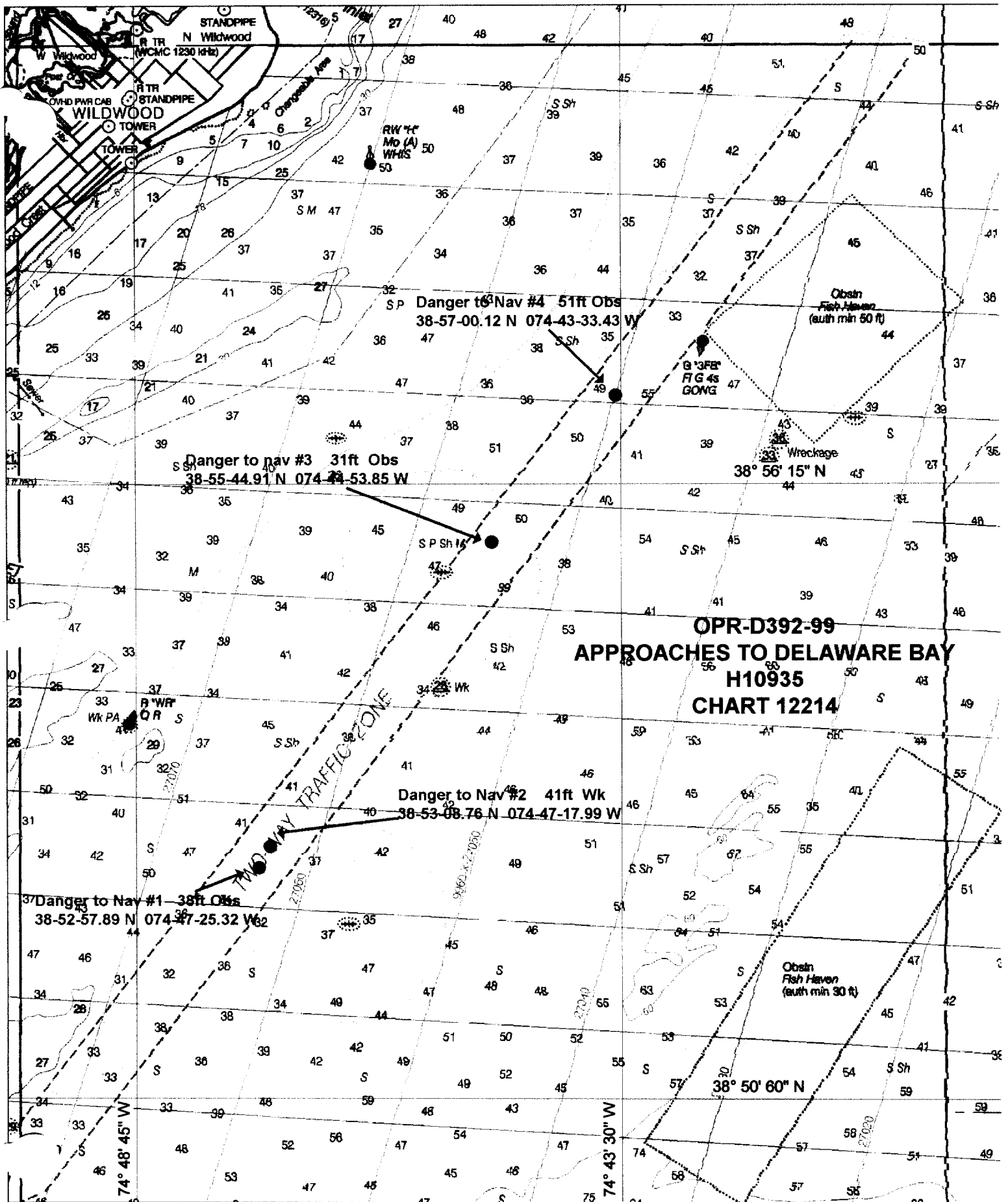
For questions, please call the Atlantic Hydrographic Branch at 757-441-6746.

Sincerely,

Gerd F. Glang
Lieutenant Commander, NOAA
Commanding Officer

Enclosures
cc: NIMA-NIS
N/CS26
N/CS31







UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: March 8, 2000

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-D392-WH-99
HYDROGRAPHIC SHEET: H-10935

LOCALITY: Approaches to Delaware Bay, NJ/DE
Atlantic Ocean

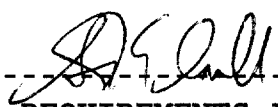
TIME PERIOD: September 29 - October 31, 1999

TIDE STATION USED: 855-7380 Lewes, DE
Lat. 38° 46.9'N Lon. 75° 07.2'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.314 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: ATL524 & ATL525.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

fa  -----
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

GEOGRAPHIC NAMES

H-10935

Name on Survey	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">A ON CHART NO. 1221A</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">B ON PREVIOUS SURVEY NO.</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">C ON U.S. QUADRANGLE MAPS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">D FROM LOCAL INFORMATION</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">E ON LOCAL MAPS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">F P.O. GUIDE OR MAP</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">G RAND McNALLY ATLAS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">H U.S. LIGHT LIST</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">K</div> </div>										
	DELAWARE BAY (title)	X		X							
FIVE FATHOM BANK	X		X								2
NEW JERSEY (title)	X		X								3
NORTH ATLANTIC OCEAN	X		X								4
											5
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Dennis J. Rosenberg
Chief Geographer

APR 11 2000

N/CS33-35-00

LETTER TRANSMITTING DATA

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

- ORDINARY MAIL
- AIR MAIL
- REGISTERED MAIL
- EXPRESS
- GBL (Give number) _____

DATE FORWARDED

5-12-0

NUMBER OF PACKAGES

1 Box and 1 tube

TO:

NOAA, National Ocean Service
 Chief, Data Control Group
 N/CS3x1, Station 6815. SSMC3
 1315 East-West Highway
 Silver Spring, MD 20910

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.

H10935
 New Jersey, North Atlantic Ocean, Approaches to Delaware Bay

One Box containing:

- 1 Original Descriptive Report for survey H10935
- 2 Drawing Histories for H10935 for charts 12214 and 12318

1 Tube containing:

- 1 Original smooth sheet for H10935
- 1 Paper composit plot of survey H10935 for chart 12214
- 1 Paper composit plot of survey H10935 for chart 12318
- 1 Mylar H-Drawing of H10935 for chart 12214
- 1 Mylar H-Drawing of H10935 for chart 12318

FROM: (Signature)


 Richard H. Whitfield

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Branch, N/CS33
 439 West York Street
 Norfolk, Virginia 23510-1114

05/11/2000

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H10935

NUMBER OF CONTROL STATIONS		2
NUMBER OF POSITIONS		7699
NUMBER OF SOUNDINGS		7699
	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	4.0	04/04/2000
VERIFICATION OF FIELD DATA	20.0	04/11/2000
QUALITY CONTROL CHECKS	4.0	
EVALUATION AND ANALYSIS	2.0	
FINAL INSPECTION	39.0	04/25/2000
COMPILATION	41.0	05/11/2000
TOTAL TIME	110.0	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		05/03/2000

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10935 (1999)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

The following software was used to process data at the Atlantic Hydrographic Branch:

Hydrographic Processing System
NADCON, version 2.10
MicroStation 95, version 5.05
I/RAS B, version 5.01

The smooth sheet was plotted using a Hewlett Packard DesignJet 2500CP plotter.

H. CONTROL STATIONS

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. The smooth sheet has been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on the NAD 27, move the projection lines 0.414 seconds (12.769 meters or 0.64 mm at the scale of the survey) north in latitude, and 1.410 seconds (34.036 meters or 1.70 mm at the scale of the survey) east in longitude.

K. JUNCTIONS

H10936 (1999) to the south

A standard junction was effected between the present survey and survey H10936 (1999). There are no junctional surveys to the north, east, and to the west. Present survey depths are in harmony with the charted hydrography to the north, east, and to the west.

M. ITEM INVESTIGATIONS

1. AWOIS Item #10401 is a charted dangerous sunken wreck in Latitude 38°55'30.41"N, Longitude 74°45'26.59"W. The side scan sonar estimated 45-ft depth discussed by the hydrographer is 300 meters NW of the charted wreck. A present survey depth

of 44 feet is located 200 meters ESE of the charted wreck in Latitude 38°55'28.82"N, Longitude 74°45'18.99"W. Additional shoaler present survey depths are in the general vicinity of the AWOIS item. The 0.8 meter (2.6-ft) contact discussed by the hydrographer is considered insignificant. Side scan does not show any further wreckage of any significance in the immediate area. It is recommended that the dangerous sunken wreck be deleted and shoaler present survey soundings be charted as shown on the present survey.

N. COMPARISON WITH CHART 12200 (45th EDITION, DEC 12/98)
12214 (42nd EDITION, SEP 25/99)
12318 (39th EDITION, SEP 18/99)
12300 (40th EDITION, JAN 30/99)
13003 (44th EDITION, OCT 9/99)

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes an adequate chart comparison in section N. of the Descriptive Report. The following should be noted:

The charted lighted red buoy "WR" marking a charted dangerous wreck PA was located by the present survey in Latitude 38°54'11.335"N, Longitude 74°48'48.565"W. The dangerous wreck PA was neither verified nor disproved. It is recommended that the dangerous wreck PA be retained as charted.

N.2. One Danger to Navigation containing four items was submitted to Commander (oan) Fifth Coast Guard District, Federal Building, 431 Crawford St., Portsmouth, Virginia for inclusion to the Local Notice to Mariners. A copy of the report is appended to the Descriptive Report.

During office processing a Danger to Navigation Report was submitted to supersede three of the items previously submitted by the hydrographer. A copy of the Danger to Navigation Report is appended to this report.

Upon further office verification, a second Danger to Navigation Report was submitted superseding one of the three items listed above. A copy of the Danger to Navigation Report is appended to this report.

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

O. ADEQUACY OF SURVEY

This is an adequate hydrographic/side scan sonar survey. Additional work is recommended to determine a least depth on the 30-ft obstruction discussed on page 17 of the Descriptive Report.

R. MISCELLANEOUS

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

The following NOS Charts were used for compilation of the present survey: 12214 (42nd Ed., Sept 25/99)
12318 (39th Ed., Sept 18/99)

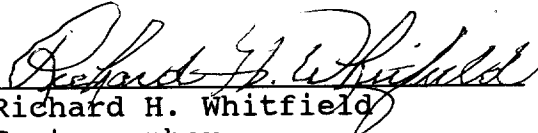
Robert Snow

Robert Snow
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

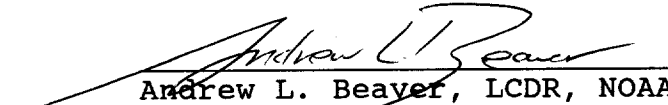
APPROVAL SHEET
H10935 (1999)

Initial Approvals:


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


Richard H. Whitfield
Cartographer
Atlantic Hydrographic Branch
Date: 5/3/00

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


Andrew L. Beaver, LCDR, NOAA
Chief, Atlantic Hydrographic Branch
Date: 5/3/00

Final Approval:

Approved:  Date: July 24, 2000
Samuel P. De Bow, Jr.
Captain, NOAA
Chief, Hydrographic Surveys Division



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE, Office of Coast Survey
Atlantic Hydrographic Branch
439 W. York Street
Norfolk, VA 23510-1114

May 2, 2000

Commander (oan)
Fifth Coast Guard District
Federal Building
431 Crawford Street
Portsmouth VA 23704-5004

Dear Sir,

During office processing of hydrographic survey operations, approaches to Delaware Bay (Project OPR-D392-WH-99, Registry H10935) by NOAA Ship WHITING, one item has been identified as a hazard to navigation. I recommend the item be included in the next Local Notice to Mariners. The item was located using Differential GPS and is based on NAD83 datum. The sounding has been reduced to Mean Lower Low Water (MLLW). All depth data is preliminary pending final office verification.

Object Addressed:

<u>Feature</u>	<u>Latitude</u>	<u>Longitude</u>
30-ft Obstn	38°55'44.91"N,	74°44'53.85"W

Affected Nautical Charts:

<u>Chart</u>	<u>Edition No.</u>	<u>Date</u>
12214	42 nd	Sep 25/99

Questions concerning this report should be directed to the Atlantic Hydrographic Branch, by calling (757) 441-6746.

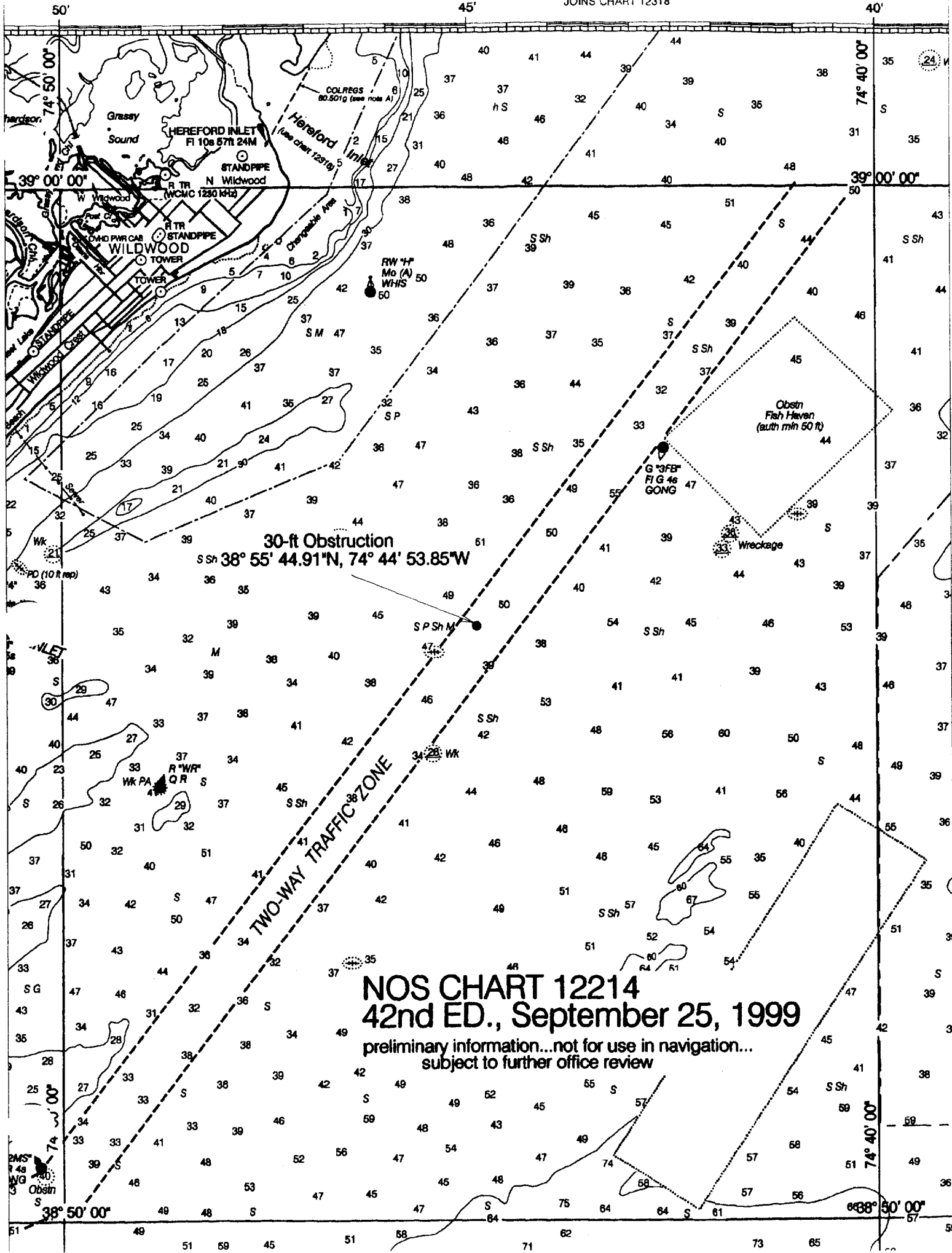
Sincerely,

Andrew L. Beaver, LCDR, NOAA
Chief, Atlantic Hydrographic Branch

Attachments

cc: NIMA-NIS
N/CS26
N/CS31





30-ft Obstruction
 S Sh 38° 55' 44.91"N, 74° 44' 53.85"W

TWO-WAY TRAFFIC ZONE

NOS CHART 12214
42nd ED., September 25, 1999
 preliminary information...not for use in navigation...
 subject to further office review

50'
 45'
 40'
 39° 00' 00"
 38° 50' 00"

74° 40' 00"
 74° 40' 00"
 74° 40' 00"
 74° 40' 00"



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE, Office of Coast Survey
Atlantic Hydrographic Branch
439 W. York Street
Norfolk, VA 23510-1114

April 17, 2000

Commander (oan)
Fifth Coast Guard District
Federal Building
431 Crawford Street
Portsmouth VA 23704-5004

Dear Sir,

This report supersedes the previous danger to navigation report dated April 4, 2000 (See attached copy).

Objects Addressed:

Item 1, an obstruction with a depth of 38 feet in Latitude 38°52'57.89"N, Longitude 74°47'25.32"W was found to be 36 feet at MLLW after application of approved tides during office processing.

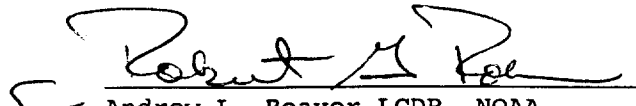
Item 2, a dangerous submerged wreck with a depth of 41 feet in Latitude 38°53'08.76"N, Longitude 74°47'17.99"W was found to be 40 feet at MLLW after application of approved tides during office processing.

Item 3, an obstruction with a depth of 31 feet in Latitude 38°55'44.91"N, Longitude 74°44'53.85"W was disproved during office processing and should not be included as a danger to navigation.

Affected Nautical Charts:	<u>Chart</u>	<u>Edition No.</u>	<u>Date</u>
	12214	42 nd	Sep 25/99
	12200	45 TH	Dec 12/98
	12300	40 th	Jan 30/99
	12318	39 TH	Sep 18/99
	13003	44 th	Oct 09/99

Questions concerning this report should be directed to the Atlantic Hydrographic Branch, by calling (757) 441-6746.

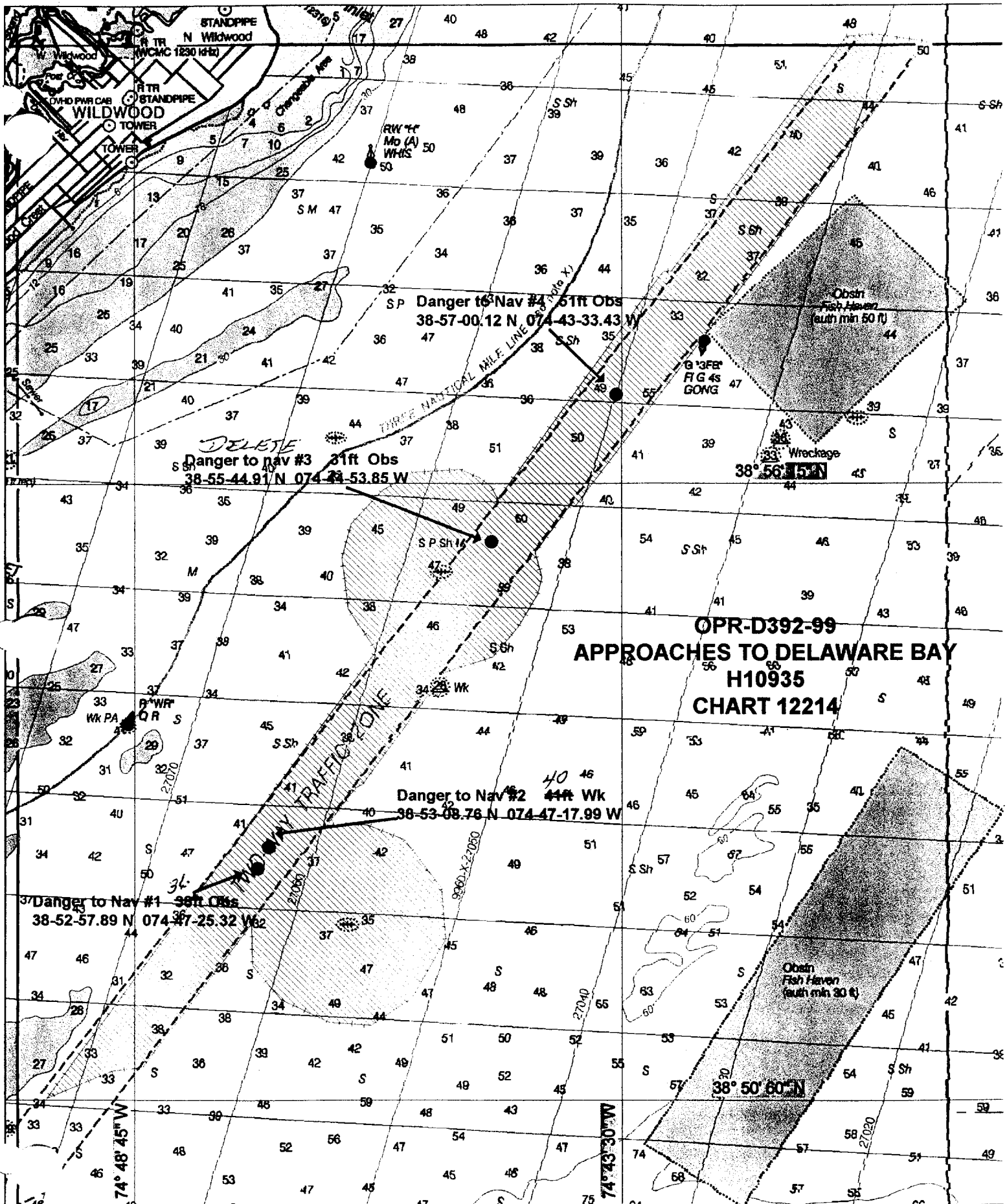
Sincerely,


Andrew L. Beaver, LCDR, NOAA
Chief, Atlantic Hydrographic Branch

Attachments

cc: NIMA-NIS
N/CS26
N/CS31





OPR-D392-99
APPROACHES TO DELAWARE BAY
H10935
CHART 12214

38° 50' 60" N

74° 48' 45" W

74° 43' 30" W



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
Office of Marine and Aviation Operations
NOAA Ship WHITING S-329
439 W. York Street
Norfolk, VA 23510-1114

4 April, 2000

Commander (OAN)
Fifth Coast Guard District
Federal Building
431 Crawford Street
Portsmouth, VA 23704-5004

Dear Sir,

NOAA Ship WHITING identified the following items as danger to navigation during survey operations in Delaware Bay. Items were located using differential GPS NAD83 and all soundings are reduced to Mean Lower Low Water (MLLW) using Preliminary Water Level Data. All depth data are preliminary pending verification.

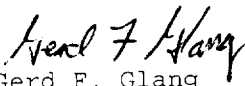
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12318	39 th	September 18, 1999
13003	44 th	October 9, 1999

For questions, please call the Atlantic Hydrographic Branch at 757-441-6746.

Sincerely,


Gerd F. Glang
Lieutenant Commander, NOAA
Commanding Officer

Enclosures
cc: NIMA-NIS
N/CS26
N/CS31



