H10917

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-10-9-99

Registry No. H10917

LOCALITY

State DELAWARE

General Locality NORTH ATLANTIC OCEAN

Locality CAPE HENLOPEN

1999

CHIEF OF PARTY
LCDR GERD F. GLANG

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DATE October 18, 2001

NOAA FORM 77-28
(11-72)

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

REGISTRY NUMBER:

HYDROGRAPHIC TITLE SHEET

H-10917

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-10-09-99

State: Delaware

General locality: ~~Delaware Bay~~ North Atlantic Ocean

Locality: ~~North Atlantic Ocean~~ Approaches

Scale: 1: 10,000 Date of survey: August 3 – October 16, 1999

Instructions dated: ~~August 26, 1996~~ 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, U.L. Gardner, P.G. Lewit, M. Annis, C.H. Clemens, C.D. Kemp

Soundings taken by echo sounder, hand lead-line, or pole: Odom Echotrac DF200MKIIr

Graphic record scaled by: Whiting Personnel

Graphic record checked by: Whiting Personnel

Protracted by: N/A Automated plot by: ~~HP 750C~~ HP DesignJet 2500CP

Verification by: ~~Hydrographic Surveys Division~~ Atlantic Hydrographic Branch

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

Remarks: **Time Zone Used, 0 (UTC)**

Basic Hydrographic and Klein T-5500 Side Scan Sonar

Hand written notes in the Descriptive Report were made during office processing.

AWOIS/SURF 9/11/01, SJV

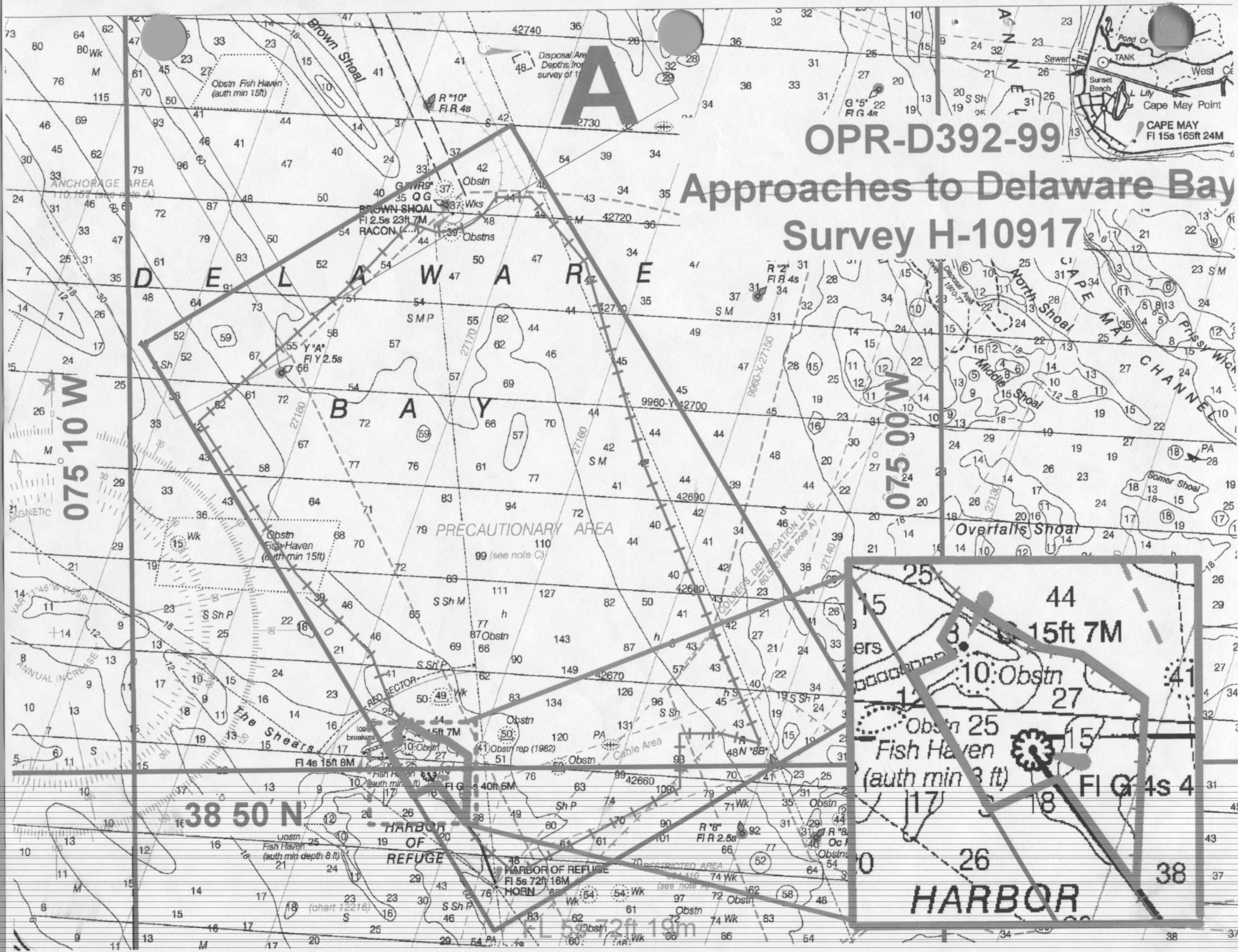

OPR-D392-99
Approaches to Delaware Bay
Survey H-10917
A
DELAWARE BAY
075 10 W
075 00 W
38 50 N
PRECAUTIONARY AREA
CAPE MAY CHANNEL
Cape May Point
CAPE MAY
Fl 15s 165ft 24M
Brown Shoal
BROWN SHOAL
Fl 2.5s 23ft 7M
RACON
North Shoal
Middle Shoal
Overfalls Shoal
Somer Shoal
Prissy Wick
The Shears
HARBOR OF REFUGE
HARBOR OF REFUGE
Fl 5s 72ft 16M
HORN
ANCHORAGE AREA
Obstn Fish Haven
(auth min 15ft)
Fish Haven
(auth min 8 ft)
FI G 4s 4
15ft 7M
HARBOR

TABLE OF CONTENTS

A. PROJECT

A.1. This basic hydrographic survey was conducted in accordance with Basic Hydrographic Survey Letter Instructions OPR-D392-WH-99, Approaches to Delaware Bay, 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" be 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 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 "A" of OPR-D392-WH-99 Registry Number H-10917. H-10917 lies 0.2NM north of Cape Henlopen. See section B.2 for exact survey boundaries.

A.5. Project OPR-D392-WH-99 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 center portion of the entrance to Delaware Bay, northwest of the line between Cape May and Cape Henlopen to Brown Shoal light. The limits of this survey were extended west by the Hydrographer to include the north entrance to the Harbor of Refuge (See inset of sheet layout).

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

Latitude	Longitude
38°56'10.7" N	075°05'16.6" W
38°50'29.0" N	075°01'00.9" W
38°48'25.8" N	075°05'34.0" W
38°59'06.5" N	075°09'49.4" W

B.3 Data collection for this survey began on August 3, 1999, (DN 215). Data collection ended on October 16, 1999 (DN 289).

C. SURVEY VESSELS

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

Vessel	EPD Number	Primary Function
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 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 MAX** 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 was acquired digitally using Triton Elics International (TEI) **ISIS** version 4.31 software. Digital side scan data was processed using 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.

* Data filed with the original field records

E. SONAR EQUIPMENT

E.1. The WHITING conducted side scan sonar operations on DN 236-251 using a 100kHz Edgetech Model 272-T side scan sonar (SSS) configured with an AU32 A/D converter. All previous and subsequent days, WHITING conducted 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). Maximum line spacing was never exceeded.

E.4(b) Periodic (usually daily) confidence checks were conducted during data acquisition 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; and 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 re-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 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 **MAPINFO** 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 echo sounder.

Vessel	EDP Number	ECHOTRAC 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 re-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-10917:

Table	DN	Vessel	Position Of Cast		DN Period	Cast Depth (M)
			Latitude	Longitude		
05	215	2930	38°50'42"N	075°04'18"W	215-224	43.8
06	215	2931-2932	38°50'42"N	075°04'18"W	215-224	43.8
07	225	2930	38°51'00"N	075°04'18"W	225-230	42.9
08	225	2931-2932	38°51'00"N	075°04'18"W	225-230	42.9
17	252	2931-2932	38°53'00"N	075°06'06"W	252 dive	15.6
18	254	2930	39°50'48"N	075°04'24"W	254-258	40.6
19	254	2931-2932	39°50'48"N	075°04'24"W	254-258	40.6
27	263	2930	38°50'48"N	075°04'18"W	262-281	42.6

Table	DN	Vessel	Position Of Cast		DN Period	Cast Depth (M)
			Latitude	Longitude		
28	263	2931-2932	38°50'48"N	075°04'18"W	262-281	42.6
35	278	2931-2932	38°51'06"N	075°04'30"W	278-281	39.0

G.1(b) The following dual Leadline 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-10917:

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 leadline comparisons. No corrections to soundings were needed. Leadlines were calibrated on May 17, 1999; and the calibrations confirmed that leadline errors 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 measured on July 28, 1993 (HPS Offset Tables 1 and 2). The static draft correction for WHITING 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 Separate I.*

* Data filed with the original field records

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** was used for Tide table creation and was used for the application of Preliminary Water Level Data during data processing. The following tide zone was used:

Zone Station	Time Corrector (Minutes)	Range Ratio	Reference
DB4	-6.0	1.04	855-7380

Approved tides for H-10917 were requested by letter to N/OPS1 dated October 26, 1999. See Appendix D.

Approved tides and zoning were applied during office processing

* Data filed with the original field records

H. HYDROGRAPHIC POSITION CONTROL

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) 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 checks is included in Appendix G. 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.

* Data filed with the original field records

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) No systematic errors were detected which required 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 were 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 was 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.

* Data filed with the original field record

J. CROSSLINES

J.1. A total of 24.4 linear nautical miles of crosslines hydrography, representing approximately 4.51% of the 541.4 lnm mainscheme hydrography, were 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 1 to 2 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 Evaluation Report

K.1. Survey H-10917 junctions along the northeast with contemporary survey H-10926. Survey H-10926 is sheet "B" of OPR-D392-WH (1:10000 scale).

K.2. A comparisons of junction soundings between H-10917 and H-10926 in general showed no significant differences. Agreement was generally good, with occasional differences of up to five feet.

K.3. These junction discrepancies are likely due to positioning and beam-footprint uncertainties inherent in the VBES systems, as well as the tide zone corrections selected for surveys H10917 and H10926.

K.4. No recommendations are made.

L. COMPARISON WITH PRIOR SURVEYS See Also Evaluation Report

A comparison with prior surveys is not required due to the completion of 200% side scan sonar coverage.

M. ITEM INVESTIGATION REPORTS

AWOIS Number: 8425

Item Description: Obstruction

Source: N/A

AWOIS Number: 8425

AWOIS Position: 38°51'21.15"N 075°05'32.81"W

Required Investigation: S4, DI, SD **Radius:** 500

Charts Affected: 12214, 12304, 12216

INVESTIGATION

Date(s): August 3 & 5, 1999 (DN 215 & 217)

Position Numbers: N/A

Investigation Used: n/A

Surveyed Position: N/A

Positioning Determined By: Differential GPS

Investigation Summary: During mainscheme 400% side scan sonar, no significant contacts were found within the assigned search radius.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing the 87ft charted obstruction with danger circle at 38°51'21.15"N 075°05'32.81"W and chart representative soundings.

Concur

AWOIS Number: 1163

Item Description: Wreck

Source: N/A

AWOIS Number: 1163

AWOIS Position: 38°50'43.91"N 075°06'10.04"W

Required Investigation: SD, S2,DI Radius: 500

Charts Affected: 12214, 12304, 12216

INVESTIGATION

Date(s): August 4, 5 & 10 , 1999 (DN 216, 217 & 222)

Position Numbers: N/A

Investigation Used: N/A

Surveyed Position: N/A

Positioning Determined By: Differential GPS

Investigation Summary: During mainscheme 200% side scan sonar, no significant contacts were found within the assigned search radius.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing the 49ft charted wreck with danger circle (wire drag)at 38°50'43.91"N 075°06'10.04"W and chart representative soundings. Concur

AWOIS Number: 2500

Item Description: Obstruction

Source: N/A

AWOIS Number: 2500

AWOIS Position: 38°50'12.40"N 075°05'40.65"W

Required Investigation: S2,DI, ES Radius: 500

Charts Affected: 12214, 12304, 12216

INVESTIGATION

Date(s): August 4 & 5, 1999, September 20, 1999 (DN 216, 217 & 263)

Position Numbers: N/A

Investigation Used: ES

Surveyed Position: N/A

Positioning Determined By: Differential GPS

Investigation Summary: During mainscheme 200% side scan sonar, no significant contacts were found within the assigned search radius.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing the 41ft charted ~~wreck~~ and danger circle at 38°50'12.40"N 075°05'40.65"W and chart representative soundings.

obstruction

Concur

AWOIS Number: 9572

Item Description: Obstruction

Source: N/A

AWOIS Number: 9572

AWOIS Position: 38°55'08.05"N 075°06'0~~0.57~~3.07"W

Required Investigation: NONE Radius: NONE

Charts Affected: 12214, 12304

INVESTIGATION

Date(s): August 5 & 10, 1999 (DN 217 & 222)

Position Numbers: N/A

Investigation Used: N/A

Surveyed Position: N/A

Positioning Determined By: Differential GPS

Investigation Summary: During mainscheme 200% side scan sonar no significant contacts were found within the assigned search radius. All of the AWOIS was covered in this survey. The northwest portion was covered by sheet B (H-10926 of OPR-D392-WH-99). No significant contacts were found.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removal of charted 39ft obstruction with danger circle at 38°55'08.05"N 075°06'00.57"W and chart representative soundings.

Concur

AWOIS Number: 9935

Item Description: Submerged wreck

Source: N/A

AWOIS Number: 9935

AWOIS Position: 38°50'12.0"N 075°04'06.0"W

Required Investigation: SD, S2, D1 **Radius:** 1000

Charts Affected: 12214, 12304, 12216

INVESTIGATION

Date(s): September 11, 1999 (DN 254)

Position Numbers: 5481.1

Investigation Used: ES

Surveyed Position: Lat. 38°50'38.45"N Long. 075°04'31.01"W

Position Determined By: Differential GPS

Investigation Summary: On September 09, 1999 (DN 252) AWOIS #9935 was investigated and target #51396 was found during mainscheme hydrography at 38°50'38.45" N 075°04'31.01"W. An echosounder development was conducted on DN 254 to verify the contact's position and height. A least depth of 102.4ft (31.2m) was determined via echosounder.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing a charted wreck (known as Star Dust in AWOIS listing) at 38°50'12.0"N 075°04'06.0"W and charting a "Non-dangerous wreck, least depth known by sounding of 102.4ft (31.2m)" (corrected with ~~preliminary~~ smooth water levels) at the surveyed position. Concur

Chart 102 WK at Lat 38°50'38.45"
Long 75°04'31.61"

AWOIS Number: 1160

Item Description: Obstruction

Source: N/A

AWOIS Number: 1160

AWOIS Position: 38°49'59.4"N 075°04'46.64"W

Required Investigation: SD, S2, DI **Radius:** 100

Charts Affected: 12214, 12304, 12216

INVESTIGATION

Date(s): September 19, 1999 (DN 262)

Position Numbers: 26728

Investigation Used: ES

Surveyed Position: Lat. 38°50'00.11"N Long. 075°04'42.26"W

Position Determined By: Differential GPS

Investigation Summary: On August 3, 1999 (DN 215) Awois #1160 was investigated and contact # 215_072_1429_1 was found during mainscheme hydrography at 38°50'00.11"N 075°04'42.26"W. An echosounder development was conducted on DN 262 to verify the contact's position and height. A least depth of 61.6 ft (18.8m) was determined via echosounder. However, the surrounding area consisted of a 59ft sounding approximately 50m NE of the item.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing 59ft wire drag obstruction and danger circle located at 38°50'00.65"N 075°04'45.51"W and chart representative soundings at the surveyed position.

Concur

Contact Number: 217_055_1118_1

Item Description: Obstruction

Source: H-10917

AWOIS Position: N/A

Required Investigation: N/A **Radius:** None

Charts Affected: 12214, 12304

INVESTIGATION

Date(s): August 27, 1999 (DN 239)

Position Numbers: 51006.0

Investigation Used: ES

Surveyed Position: Lat. 38°51'06.64"N Long. 075°04'30.96"W

Position Determined By: Differential GPS

Investigation Summary: During mainscheme hydrography, contact number 217_055_1118_1 was found on August 4, 1999 (DN 216). An echosounder development was conducted on DN 239 to verify the contact's position and height. A least depth of 139.3ft (42.5m) was determined via echosounder.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting an "Obstruction, least depth known by sounding of 139.3ft (42.5m)", (corrected with ~~preliminary~~ Smooth water levels) at the surveyed position. Do not Concur

Chart present survey depths in this vicinity

Contact Number: 216_040_2126_2

Item Description: Wreck

Source: H-10917

AWOIS Position: N/A

Required Investigation: N/A **Radius:** N/A

Charts Affected: 12214, 12304

INVESTIGATION

Date(s): September 9, 1999 (DN 252)

Position Numbers: 26311.0

Investigation Used: DI

Surveyed Position: Lat. 38°53'23.92"N Long. 075°05'33.67"W

Position Determined By: Differential GPS

Investigation Summary: On August 5, 1999 (DN 217) contact 216_040_2126_2 was found using mainscheme hydrography. On day 252 divers investigated this contact and found the remains of a wreck. A Least depth of 50.9ft (15.5m) was taken on the shoalest portion of the wreck.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting a "Wreck, least depth known by diver of 50.9ft (15.5m)", (corrected with ~~preliminary~~ smooth water levels) at the surveyed position. Concur

Chart 50 WK

Contact Number: 239_092_1723_1

Item Description: Obstruction

Source: H-10917

AWOIS Position: N/A

Required Investigation: N/A **Radius:** N/A

Charts Affected: 12214, 12304

INVESTIGATION

Date(s): October 16, 1999 (DN 289)

Position Numbers: 27216

Investigation Used: ES

Surveyed Position: Lat. 38°51'44.00"N Long. 075°03'30.46"W

Position Determined By: Differential GPS

Investigation Summary: During mainscheme hydrography, contact number 239_092_1723_1 was found August 4, 1999 (DN 216). An echosounder development was conducted on DN 289 to verify the contact's position and height. A least depth of 38.6ft (11.8m)was determined via echosounder.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting an "Obstruction, least depth known by sounding of 38.6ft (11.8m)", (corrected with ~~preliminary~~ smooth water levels) at the surveyed position. Concur

Chart 1 39: Obstn

Contact Number: 216_036_2335_6

Item Description: Obstruction

Source: H-10917

AWOIS Position: N/A

Required Investigation: N/A **Radius:** N/A

Charts Affected: 12214, 12304

INVESTIGATION

Date(s): October 16, 1999 (DN 289)

Position Numbers: 27304

Investigation Used: ES

Surveyed Position: Lat. 38°53'25.68"N Long. 075°05'20.49"W

Position Determined By: Differential GPS

Investigation Summary:. On August 4,1999 (DN 216),contact number 216_036_2335_6 was found during mainscheme hydrography. An echosounder development was conducted on DN 289 to verify the contact's position and height. A least depth of 64ft (19.5m) was determined via echosounder.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting an "Obstruction, least depth known by sounding of 64ft (19.5m)", (corrected with ~~preliminary~~ water levels) at the surveyed position. Concur Smooth

Chart: 64: Obstn

Contact Number: 44179.6

Item Description: Obstruction

Source: H-10917

AWOIS Position: N/A

Required Investigation: N/A **Radius:** N/A

Charts Affected: 12214, 12304

INVESTIGATION

Date(s): October 4, 1999 (DN 277)

Position Numbers: 44179

Investigation Used: ES

Surveyed Position: Lat. 38°53'12.70"N Long. 075°05'14.39"W

Position Determined By: Differential GPS

Investigation Summary: During mainscheme hydrography, contact number 44179.6 was found on August 4, 1999 (DN 217). An echosounder development was conducted on DN 277 to verify the contact's position and height. A least depth of 55.3ft (16.9m) was determined via echosounder.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting an "Obstruction, least depth known by sounding of 55.3ft (16.9m)", (corrected with ~~preliminary~~ smooth water levels) at the surveyed position. Do not Concur

Show present survey depths in this vicinity

Contact Number: 216_046_1822_1

Item Description: Obstruction

Source: H-10917

AWOIS Position: N/A

Required Investigation: N/A **Radius:** N/A

Charts Affected: 12214, 12304

INVESTIGATION

Date(s): October 4, 1999 (DN 277)

Position Numbers: 5830

Investigation Used: ES

Surveyed Position: Lat. 38°52'38.84"N Long. 075°05'23.15"W

Position Determined By: Differential GPS

Investigation Summary: During mainscheme hydrography, contact number 216_046_1822_1 was found on August 3, 1999. An echosounder development was conducted on DN 277 to verify the contact's position and height. A least depth of 82.4ft (25.1m) was determined via echosounder.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting an "Obstruction, least depth known by sounding of 82.4ft (25.1m)", (corrected with ~~preliminary~~ smooth water levels) at the surveyed position.

Do not Concur

Show present survey depths in this vicinity

Contact Number: 239_013_1515_1

Item Description: Obstruction

Source: H-10917

AWOIS Position: N/A

Required Investigation: N/A **Radius:** N/A

Charts Affected: 12214, 12216, 12304

INVESTIGATION

Date(s): September 20, 1999 (DN 263)

Position Numbers: ~~5552.3~~ 5566+1.

Investigation Used: ES

Surveyed Position: Lat. 38°49'~~48.45~~49.833"N Long. 075°05'~~16.17~~18.242"W

Position Determined By: Differential GPS

Investigation Summary: During mainscheme hydrography, contact number 239_013_1515_1 was found on August 4, 1999 (DN 216) (approximately 7.5m x 21.2m). An echosounder development was conducted on DN 263 to verify the contact's position and height. A least depth of 59.7ft(18.2m)was determined via echosounder.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting an "Obstruction, least depth known by sounding of ~~59.7ft~~ 55ft (18.2m)", (corrected with ~~preliminary~~ smooth water levels) at the surveyed position. Concur

Chart .55. Obstn

Contact Number: 215_66_1825_1

Item Description: Obstruction

Source: H-10917

AWOIS Position: N/A

Required Investigation: N/A **Radius:** N/A

Charts Affected: 12214, 12304

INVESTIGATION

Date(s): September 9, 1999 (DN 252)

Position Numbers: 26341

Investigation Used: ES

Surveyed Position: Lat. 38°53'29.12" N Long. 075°07'23.79"W

Position Determined By: Differential GPS

Investigation Summary: During mainscheme hydrography, contact number 215_66_1825_1 was found on August 3, 1999 (DN 215). An echosounder development was conducted on DN 252 to verify the contact's position and height. A least depth of 63.6ft (19.4m)was determined via echosounder.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting an "Obstruction, least depth known by sounding of 63.6ft (19.4m)", (corrected with ~~preliminary~~ smooth water tides) at the surveyed position.

Do not Concur

Show present survey depths in this vicinity

Contact Number: 217_081_1516_2

Item Description: Obstruction

Source: H-10917

AWOIS Position: N/A

Required Investigation: N/A **Radius:** N/A

Charts Affected: 12214, 12304

INVESTIGATION

Date(s): October 4, 1999 (277)

Position Numbers: 5774

Investigation Used: ES

Surveyed Position: Lat. 38°52'41.36" N Long. 075°07'44.36"W

Position Determined By: Differential GPS

Investigation Summary: During mainscheme hydrography, contact number 217_081_1516_2 was found August 04, 1999 (DN 216). An echosounder development was conducted on DN 277 to verify the contact's position and height. A least depth of 61.8ft (18.9m) was determined via echosounder.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting an "Obstruction, least depth known by sounding of 61.8ft (18.9m)", (corrected with ~~preliminary~~ smooth water levels) at the surveyed position. Do not Concur

Show present survey depths in this vicinity

The following SSS contacts were developed using the VBES with 10m line spacing, and subsequently determined to be insignificant:

Contact Number	Position		Dev Day#
222_073_1503_1	38°49'50.6"N	075°04'37.8"W	226
217_051_0711_2	38°49'26.8"N	075°03'37.7"W	252
217_065_1652_1	38°50'02.8"N	075°04'16.0"W	238
222_094_1744_1	38°51'43.6"N	075°07'33.0"W	277
224_088_1555_1	38°49'24.8"N	075°05'13.0"W	262
227_040_1801_1	38°52'37.7"N	075°04'57.8"W	253

N. COMPARISON WITH THE CHART See Also Evaluation Report

N.1 Three charts are affected by this survey (H-10917):

Chart 12214
"Cape May to Fenwick Island"
42nd Ed., September 25, 1999
Scale 1:80,000

Chart 12216
"Cape Henlopen to Indian River Inlet"
25th Ed., Jun. 15, 1996
Scale: 1:40,000

Chart 12304
"Delaware Bay"
40th Ed., Feb. 20, 1999
Scale: 1:80,000

N.2(a) There is one danger to navigation report for this area. See Appendix A.

N.2(b) The following items listed below are items identified as dangers to navigation. Item 1 depicts a 20ft. sounding 0.34nmi SSE from the Delaware Bay East Icebreaker light (Light List No. 2055). Items 2-6 are shoal soundings indicating the possible migration of the 18ft and 30ft depth curves to the east of the charted ice breakers.

Corr. Depths

Item No.	Fix No.	Depth	Latitude	Longitude	
1	5024	20	38° 50' 01" N	075° 06' 25" W	18
2	24054	16	38° 50' 26" N	075° 06' 29" W	14
3	23163	15	38° 50' 21" N	075° 06' 20" W	15
4	25248	19	38° 50' 20" N	075° 06' 13" W	16
5	23157	24	38° 50' 14" N	075° 06' 13" W	24
6	23953	18	38° 50' 05" N	075° 05' 57" W	17

N.3(a) Survey depths were converted from meters to feet and overlaid on the largest scale raster chart of the area using MapInfo. In general, survey depths agreed well with charted soundings. Any survey depths found to be more than three feet deeper than the charted soundings were investigated with single beam echosounder at 40-meter line spacing.

N.3(b) Significant shoaling trends were observed in this survey. In comparison to previous surveys and present charted soundings, soundings from this survey using VBES showed possible movement of shoals outside of and in between the Harbor of Refuge breakwater and the icebreakers. See Appendix A.

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 northern traffic area (Cape Henlopen to Brown Shoal Light). During the course of this survey, the hydrographer observed inbound deep-draft vessels, typically laden tankers, with drafts of up to 55 feet. The shoalest depths observed on this survey of 7 feet or deeper were confined to the extreme southwestern edge of the survey.

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

N.4(b) The hydrographer recommends removing the 50ft charted obstruction with danger circle at position 38°50'18.83"N 075°05'23.45"W. No significant contacts were found within the area during the course of mainscheme hydrography.

Concur

N.4(c)thru N.4(g) These sections not applicable to this survey.

N.4(h) Lewes-Delaware Ferry routes extend from the Northwest and Southeast entrance into the Harbor of Refuge breakwater to Cape May, NJ.

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

O. ADEQUACY OF SURVEY See Also 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. There are three aids to navigation within the survey limits These aids appear to adequately serve their establish ed purpose.

P.3. One floating aid to navigation lies within the limits of H-10917. The charted position of the yellow buoy "A", (Y "A" Fl Y 2.5s), (Light List No. 2180), was positioned by contact number 227_072_1454 from side scan sonar imagery. The charted and scaled position agreed within eighty meters of each other. The color and light characteristics of this floating aid were visually confirmed during the survey operations.

There were two fixed aids to navigation, the Delaware Bay west ice breaker light (Fl 4s 15ft 8M), (Light List No. 2060) and the Delaware Bay east ice breaker light (Q 15 ft 7M), (Light List No. 2055). Equipment was not available to locate these 2 fixed aids. WHITING regularly used these lights to confirm her anchorage in the Harbor of Refuge. Both lights appear to be adequately located. Observed light characteristic correspond to their published description. No "Landmarks and Nonfloating Aids to Navigation List" (NOAA Form 76-40) is required in Appendix B.

P.4. Not applicable to this survey.

P.5. Not applicable to this survey.

P.6. Not applicable to this survey (see last sentence in P.3.)

Q. STATISTICS

Total number of Non-Rejected Positions . 25,126

Q.1.a.	Linear Nautical Miles of SSS	541.41
Q.1.b	Linear Nautical Miles of VBES-only	33.46
Q.1.c.	Square Nautical Miles of VBES	27.1
Q.1.d.	Square Nautical Miles of SSS	27.1
Q.2.a.	Days of Data Acquisition	19
Q.2.b.	Total Number of Soundings	30,049
Q.2.c.	Number of Soundings on Final Field Sheet	NA
Q.2.d.	Number of Detached Positions	1
Q.2.d.	Number of Bottom Samples	32
Q.2.e.	Number of Velocity Casts	10
Q.2.f.	Number of Tide Stations Installed	0

R. MISCELLANEOUS

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

S. RECOMMENDATIONS

S.1 The hydrographer recommends investigating Item No. 1 from the Danger to Navigation section N.2(b) with multibeam as a field examination item in the WHITING 2000 field season.

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,

Gretchen A. Imahori
Ensign, NOAA
Junior Officer
NOAA Ship WHITING

March 15, 2000
Date

APPENDIX A

DANGER TO NAVIGATION REPORTS

One danger to navigation report was issued as a result of this survey. See attached.

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

February 17, 2000

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

Dear Sir,

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

Item No. 1 depicts a 20ft sounding 0.34nmi SSE from the Delaware Bay East Icebreaker Light (LL No. 2055). Item Nos. 2-6 are shoal soundings indicating the possible migration of the 18ft and 30ft depth curves eastward of the charted ice breakers.

Item No.	Depth (ft)	Latitude	Longitude
1	20	38° 50′ 01″ N	075° 06′ 25″ W
2	16	38° 50′ 26″ N	075° 06′ 29″ W
3	15	38° 50′ 21″ N	075° 06′ 20″ W
4	19	38° 50′ 20″ N	075° 06′ 13″ W
5	24	38° 50′ 14″ N	075° 06′ 13″ W
6	18	38° 50′ 05″ N	075° 05′ 57″ W

Affected Charts:

Chart Number	Edition Number	Date
12214	41st	March 7, 1998
12216	25th	June 15, 1996
12304	40th	February 20, 1999

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

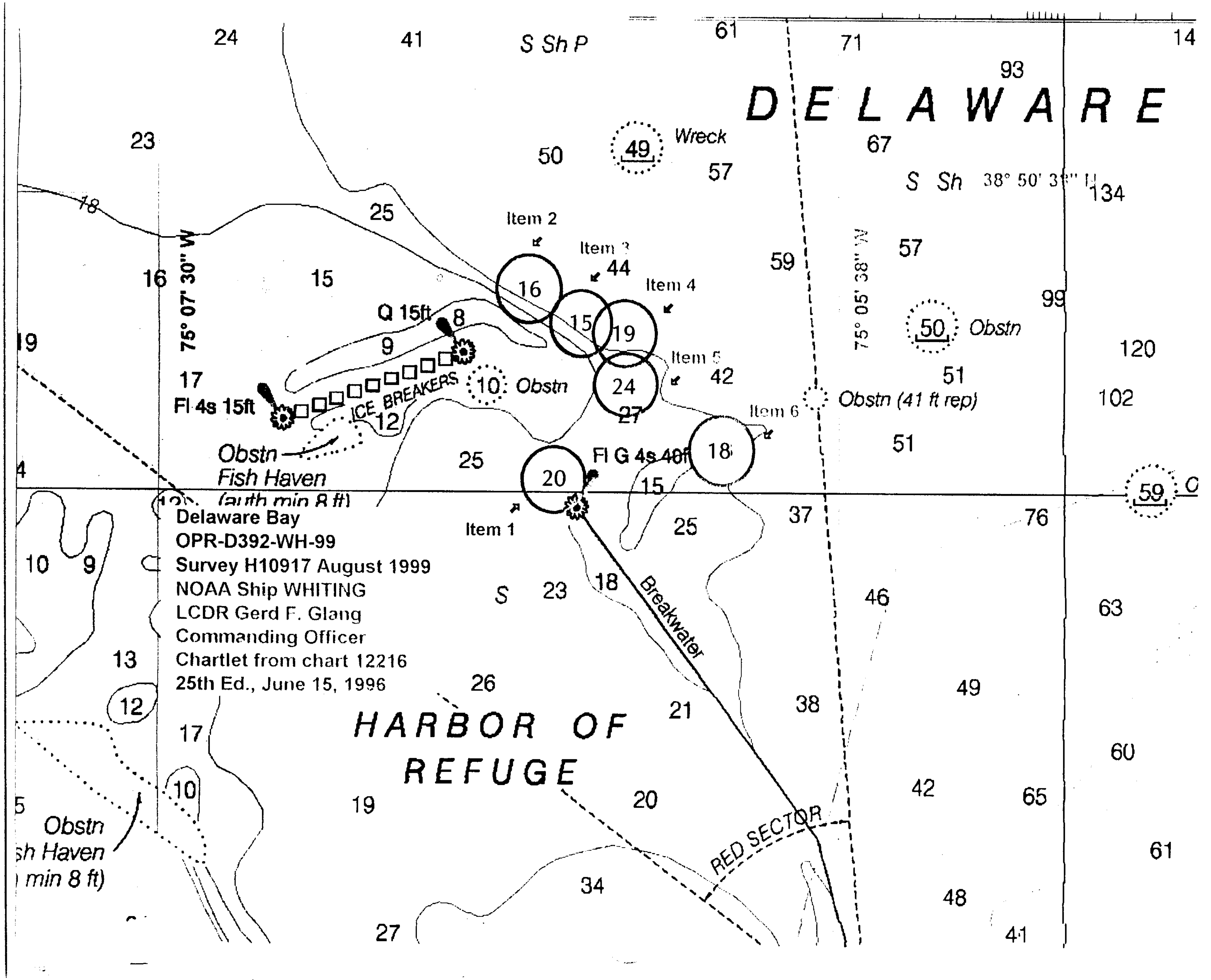
Sincerely,

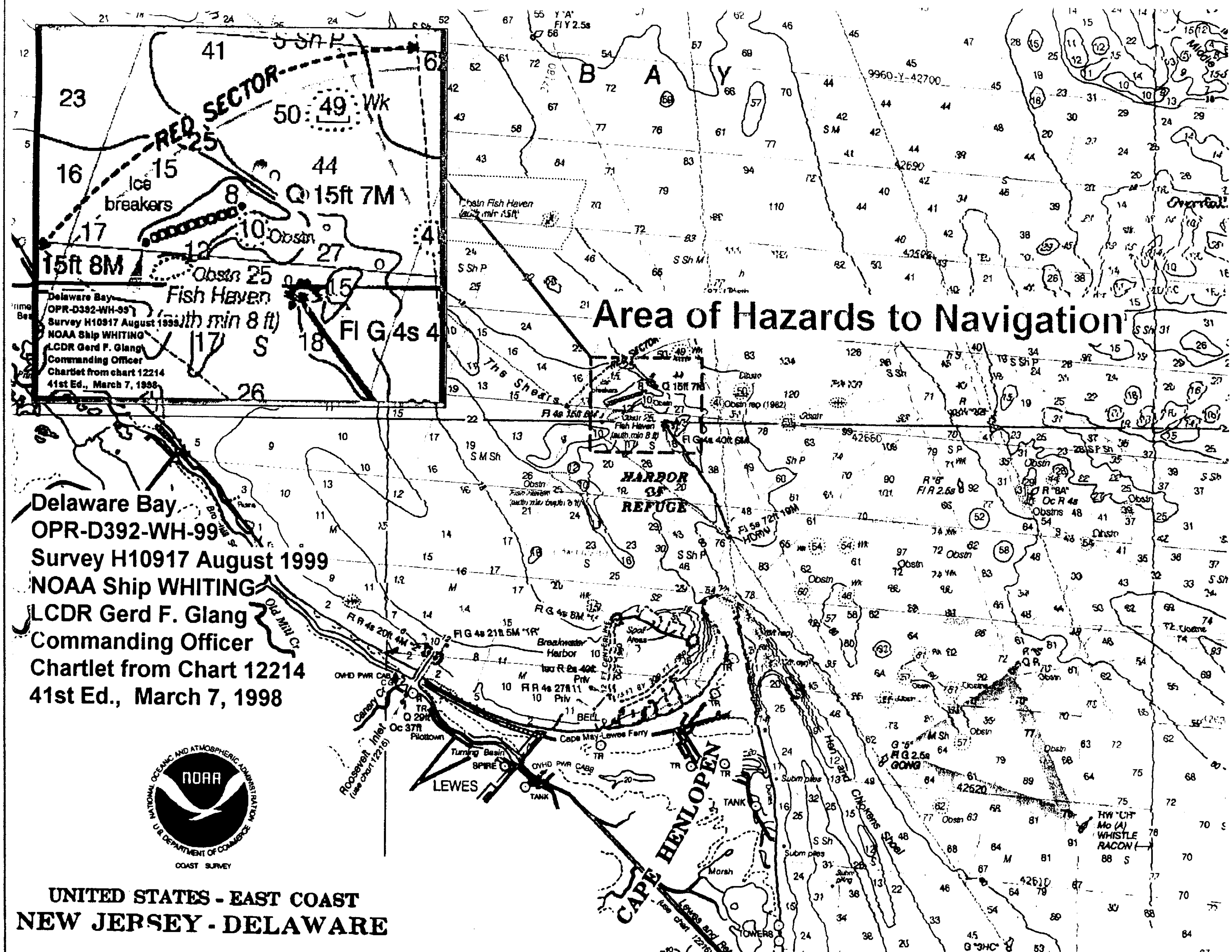
Gerd F. Glang

Gerd F. Glang, LCDR, NOAA
Commanding Officer

Enclosures

cc: NIMA-NIS
N/CS26
N/CS31


DELAWARE
HARBOR OF REFUGE
Delaware Bay
OPR-D392-WH-99
Survey H10917 August 1999
NOAA Ship WHITING
LCDR Gerd F. Glang
Commanding Officer
Chartlet from chart 12216
25th Ed., June 15, 1996
Item 1
Item 2
Item 3
Item 4
Item 5
Item 6
Wreck
Obstn
Obstn (41 ft rep)
Obstn
Fish Haven
(auth min 8 ft)
ICE BREAKERS
Q 15ft
Fl 4s 15ft
Fl G 4s 40ft
Breakwater
RED SECTOR
S Sh P
S Sh
75° 07' 30" W
75° 05' 38" W
38° 50' 3



Area of Hazards to Navigation
RED SECTOR
Ice breakers
Q 15ft 7M
15ft 8M
Obstn
Fish Haven (auth min 8 ft)
Fl G 4s 4
Delaware Bay
OPR-D392-WH-99
Survey H10917 August 1999
NOAA Ship WHITING
LCDR Gerd F. Glang
Commanding Officer
Chartlet from chart 12214
41st Ed., March 7, 1998
B A Y
HARBOR OF REFUGE
The Shears
Hen and Chickens Shoal
CAPE HENLOPEN
LEWES
Breakwater Harbor
Cape May-Lewes Ferry
Roosevelt Inlet (use chart 12216)
Old Mill Cr
HW "CH" Mo (A) WHISTLE RACON
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE
COAST SURVEY
UNITED STATES - EAST COAST
NEW JERSEY - DELAWARE

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

February 29, 2000

Navigation Information & Services
ST D 44
NIMA Hydrographic/Topographic Center
4600 Sangamore Road
Bethesda, MD 20816-5003

Dear Sir:

Enclosed is a copy of a Danger To Navigation report issued by the NOAA Ship WHITING to the Fifth Coast Guard District Commander in Portsmouth, Virginia.

Sincerely,

Gerd F. Glang
Lieutenant Commander, NOAA
Commanding Officer

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

February 29, 2000

MEMORANDUM FOR: Lynn Preston
Chief, Nautical Data Branch, Coast Survey
Marine Chart Division, NCS26

FROM: Lieutenant Commander Gerd F. Glang, NOAA
Commanding Officer

SUBJECT: Danger To Navigation Report

Attached is a copy of a Danger To Navigation report issued by the NOAA Ship WHITING to the Fifth Coast Guard District Commander in Portsmouth, Virginia. A copy of the report was also sent to the NIMA Hydrographic/Topographic Center in Bethesda, MD and Chief, Operations Branch N/CS31.

Attachments

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

February 29, 2000

MEMORANDUM FOR: Lieutenant Commander Donald W. Haines, NOAA
Chief, Operations Branch, Coast Survey
Hydrographic Surveys Division, N/CS31

FROM: Lieutenant Commander Gerd F. Glang, NOAA
Commanding Officer

SUBJECT: Danger To Navigation Report

Attached is a copy of a Danger To Navigation report issued by the NOAA Ship WHITING to the Fifth Coast Guard District Commander in Portsmouth, Virginia. A copy of the report was also sent to the NIMA Hydrographic/Topographic Center in Bethesda, MD and Chief, Nautical Data Branch N/CS31.

Attachments

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

February 29, 2000

Captain Vaughn
Director of Operations
Pilots Association for the
Bay and River Delaware
41 Cape Henlopen Dr.
Lewes, Delaware 19958

Dear Captain Vaughn:

Enclosed is a copy of a Danger To Navigation report issued by NOAA Ship WHITING to the Fifth Coast Guard District Commander in Portsmouth, Virginia.

Sincerely,

Gerd F. Glang
Lieutenant Commander, NOAA
Commanding Officer

APPENDIX K

APPROVAL SHEET

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

0.2 nmi NE of Cape Henlopen, Delaware
Survey Registry No. H-10917

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

MARCH 30, 2000
Date

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: March 8, 2000

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-D392-WH-99
HYDROGRAPHIC SHEET: H-10917

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

TIME PERIOD: August 3 - October 16, 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: ATL540, ATL541, DB3, DB4, DB5, DB6, DB8, DB9 & DB10.

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.

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10917

Name on Survey	A ON CHART NO. 12214, 12216	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND McNALLY ATLAS	H U.S. LIGHT LIST	K	
DELAWARE (title)	X		X							1
DELAWARE BAY	X		X							2
HARBOR OF REFUGE	X		X							3
HENLOPEN, CAPE (title)	X		X							4
NORTH ATLANTIC OCEAN (title)	X		X							5
THE SHEARS	X		X							6
										7
										8
										9
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										25

JUL 26 2000

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 61-29
(12-71)

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

REFERENCE NO.
N/CS33-46-01

LETTER TRANSMITTING DATA

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

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

TO:

CHIEF, DATA CONTROL GROUP, N/CS3x1
NOAA / NATIONAL OCEAN SERVICE
STATION 6815, SSMC3
1315 EAST-WEST HIGHWAY
SILVER SPRING, MARYLAND 20910-3282

DATE FORWARDED
08/31/2001

NUMBER OF PACKAGES
1

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.

H10917

DELAWARE, NORTH ATLANTIC OCEAN, CAPE HENLOPEN

ONE TUBE CONTAINING THE FOLLOWING:

1 SMOOTH SHEET FOR SURVEY H10917
1 ORIGINAL DESCRIPTIVE REPORT
1 DRAWING HISTORY FORM (NOAA FORM #76-71) FOR NOS CHART 12216
1 DRAWING HISTORY FORM (NOAA FORM #76-71) FOR NOS CHART 12304
1 RECORD OF APPLICATION TO CHART FORM (NOAA FORM #75-96)
1 H-DRAWING ON MYLAR FOR NOS CHART 12216
1 H-DRAWING ON MYLAR FOR NOS CHART 12304
1 COMPOSITE DRAWING ON PAPER FOR CHART 12216
1 COMPOSITE DRAWING (in two parts) ON PAPER FOR CHART 12304

FROM: (Signature) Robert R. Field

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

NOAA \ NATIONAL OCEAN SERVICE
ATLANTIC HYDROGRAPHIC BRANCH N/CS33
439 WEST YORK STREET
NORFOLK, VA. 23510-1114

NOAA FORM 61-29 SUPERCEDES FORM C AND GS 413 WHICH MAY BE USED.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1988 - 554-006-61309

08/30/2001

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H10917

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	25127
NUMBER OF SOUNDINGS	25127

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	46.0	04/21/2000
VERIFICATION OF FIELD DATA	284.0	04/26/2001
QUALITY CONTROL CHECKS	81.0	
EVALUATION AND ANALYSIS	35.0	
FINAL INSPECTION	9.0	11/02/2000
COMPILATION	181.0	07/13/2001
TOTAL TIME	636.0	

ATLANTIC HYDROGRAPHIC BRANCH APPROVAL 12/13/2000

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10917 (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 0.404 seconds (12.460 meters or 1.25 mm at the scale of the survey) north in latitude, and 1.348 seconds (32.496 meters or 3.25 mm at the scale of the survey) east in longitude.

K. JUNCTIONS

H10926 (1999) to the north

A standard junction was effected between H10926 (1999) and the present survey.

There are no junctional surveys to the west, east or south. Present survey depths are in harmony with the charted hydrography to the west, east and south.

L. COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not done during office processing in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

N. COMPARISON WITH CHART 12216 (25th Edition, JUN 15/96) 12304 (40th Edition, FEB 20/99)

Hydrography

The charted hydrography originates with the prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in sections N. and O. of the Descriptive Report. Attention is directed to the following:

A charted dangerous submerged obstruction, with a least depth of 10 ft, in Latitude 38°50'13.5"N, Longitude 75°06'35.2"W, originates with an unknown source. This feature was investigated by the field unit; however, the disposition was not addressed in the Descriptive Report. An office examination of field records show only sand waves in the vicinity of the charted obstruction. It is recommended that the charted dangerous submerged obstruction, with a least depth of 10 ft, be deleted from the chart.

Dangers to Navigation

One Danger to Navigation Report was submitted to Commander(OAN), Fifth Coast Guard District, Portsmouth, Virginia for inclusion in the Local Notice to Mariners, and to the Marine Chart Division, N/CS3x1, Silver Spring, Maryland. A copy of this report are appended to the Descriptive Report. Attention is directed to the following:

Depths shown in the table on page 28 of the Descriptive Report have been revised during office processing. Depths listed in the Danger To Navigation Letter appended to the Descriptive Report have not been revised. The revised depths in the table on page 28 are shown on the Smooth Sheet and have been used for chart compilation where applicable.

Except as noted above, 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. No additional work is recommended.

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 National Ocean Survey Charts were compiled using the present survey:

12216 (26th Edition, MAY 12/01)
12304 (41st Edition, APR 22/00)

Franklin L. Saunders
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H10917

Initial Approvals:

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

Robert R. Hill Jr. Date: 12/13/00

Robert R. Hill Jr.
Cartographer
Atlantic Hydrographic Branch

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.

Robert A. Robertson Date: 13 DECEMBER 2000

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

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Final Approval:

Approved: Samuel P. De Bow, Jr. Dated: October 18, 2001

Samuel P. De Bow, Jr.
Captain, NOAA
Chief, Hydrographic Surveys Division

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H10917

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
12216	8-6-01	Robert Hill	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No.
12304	8-7-01	Robert Hill	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED