FE382

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Field Examination

Field No. WH-20-2-93

Registry No. FE-382SS

LOCALITY

State New Jersey

General Locality Atlantic Ocean

Sublocality 15 NM East-Southeast of Cape May

1993

CHIEF OF PARTY
CDR A.A. Armstrong

LIBRARY & ARCHIVES

DATE August 24, 1993

A/G

☆U.S. GOV. PRINTING OFFICE: 1987—756-980

PRODS

CP-3
12214
12300
12200
13003

A- Crowe, NCC 9/7/93, CA

FE382

NOAA FORM 77-28 (11-72)

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

REGISTER NOS.

FE-382SS

HYDROGRAPHIC TITLE SHEET

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in completely as possible, when the sheet is forwarded to the Office.

FIELD NO.
WH-20-2-93

State: NEW JERSEY

General locality: ~~APPROACHES TO DELAWARE BAY~~ ATLANTIC OCEAN

Locality: 15 NAUTICAL MILES EAST-SOUTHEAST OF CAPE MAY, NEW JERSEY

Scale: 1:20,000 Date of Survey: May 5 - 7, 1993

Instructions dated: February 23, 1993 Project No.: OPR-D368-WH

Vessel: NOAA Ship WHITING S-329 EDP # 2930

Chief of party: Commander Andrew A. Armstrong, III

Suveyed by: A.A. Armstrong, C.B. Greenawalt, J.S. Verlaque, J.G. Clayton, J.L. Riley, N.O. Silverman, M.P.Zipperer J.A. Seitz, F.R. Cruz, E.A. Myers, S.R. Parker

Soundings taken by echo sounder: DSF-6000N

Graphic record scaled by: WHITING survey personnel

Graphic record checked by: WHITING survey personnel

Protracted by: N/A Automated plot by: XYNETICS 1201 PLOTTER (AHS) HP 7959B, Bruning (FIELD)

Verification by: ATLANTIC HYDROGRAPHIC SECTION

Soundings in MLLW: Meters

REMARKS: Field examination on contacts located during H-10439

Registered as a 1:20,000 scale survey. The data meets the accuracy standards for 1:10,000 scale survey and are plotted at 1:10,000 scale.

Time zone used, 0 (UTC)

200% side scan sonar coverage

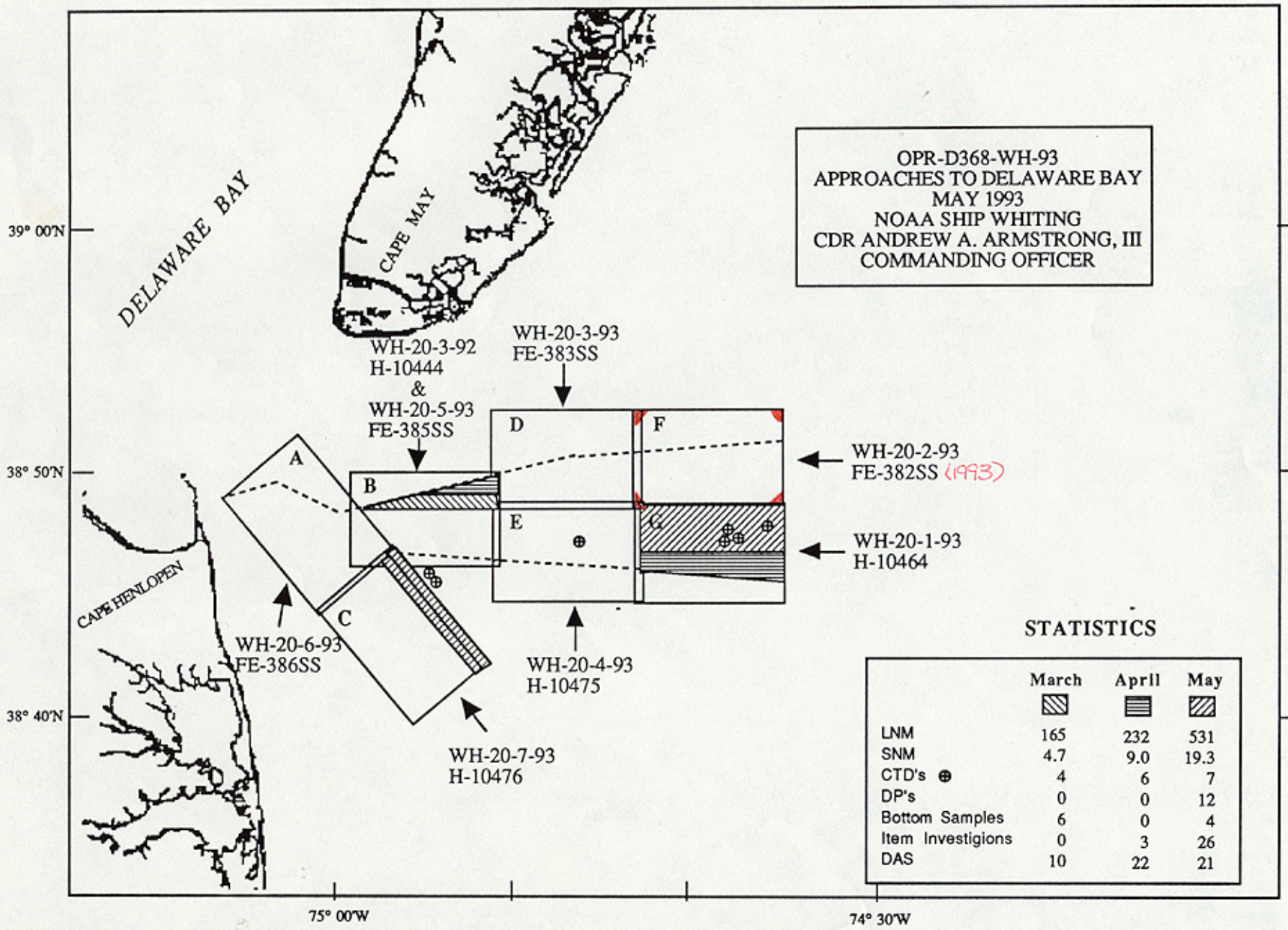
NOTES IN THE DESCRIPTIVE REPORT WERE MADE IN RED DURING OFFICE PROCESSING.

NOS/SURF ✓ 8/31/93 SJV

KWW

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

NOAA SHIP WHITING
PROGRESS SKETCH



DESCRIPTIVE REPORT TO ACCOMPANY
FIELD EXAMINATION SURVEY
OPR-D368-WH
1993
WH-20-2-93
FE-382SS

NOAA SHIP WHITING
CDR Andrew A. Armstrong, III, NOAA
Commanding Officer

A. PROJECT

This survey was conducted in accordance with Hydrographic Project Instructions OPR-D368-WH, Delaware Bay, dated February 23, 1993 and Change No. 1, dated May 13, 1993. Although this survey is registered as a 1:20,000 scale, all data acquired meet the accuracy requirements for a 1:10,000 scale survey.

The purpose of this survey is to investigate and resolve contacts located by the NOAA Ship WHITING during hydrographic survey operations on H-10439 (1992).

B. AREA SURVEYED

Field Examination FE-382SS (1993) is 15 nautical miles east southeast of Cape May, New Jersey at the eastern approaches to Delaware Bay.

Survey operations began on May 5, 1993 (DOY 125) and ended on May 7, 1993 (DOY 127).

C. SURVEY VESSEL

NOAA Ship WHITING, vessel identification number 2930, was used for all side scan sonar and sounding data acquisition. Launch 1021 was used as a dive platform for least depth determination and for acquiring a position on each item investigated.

No unusual vessel configurations were used nor were any problems encountered.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Survey data acquisition and processing were accomplished using the HDAPS system with the following software:

PROGRAM NAME	VERSION	DATE INSTALLED
AUTOST	3.00	24-Sep-92
BACKUP	2.00	24-Sep-92
BASELINE	1.13	24-Sep-92
BIGABST	2.03	10-Nov-92
BLKEDIT	2.01	04-Nov-92
CARTO	2.05	03-Mar-93
CONTACT	2.02	04-Nov-92
CONVERT	3.52	04-Nov-92
DAS_SURV	6.33	02-Mar-93
DIAGNOSE	3.01	24-Sep-92
DISC_UTIL	1.00	24-Sep-92
DP	2.13	02-Mar-93
EXCESS	4.10	24-Sep-92
FILESYS	3.02	04-Nov-92
FILESYS	3.05	04-May-93
GRAFEDIT	1.01	02-Mar-93
HIPSTICK	1.01	24-Sep-92
HPRAZ	1.26	24-Sep-92
INSTALL	4.00	24-Sep-92
INVERSE	2.00	24-Sep-92
LISTDATA	1.00	24-Sep-92
LOADNEW	2.02	04-Nov-92
LSTAWOIS	3.02	04-Nov-92
MAINMENU	1.00	24-Sep-92
MAN_DATA	2.00	24-Sep-92
NEWPOST	6.00	24-Sep-92
PLOTALL	2.08	02-Mar-93
POINT	2.10	24-Sep-92
PRESURV	7.01	02-Mar-93
PREDICT	2.00	24-Sep-92
PRINTOUT	4.02	04-Nov-92
QUICK	2.03	02-Mar-93
RAMSAVER	1.01	24-Sep-92
REAPPLY	2.01	24-Sep-92
RECOMP	2.02	24-Sep-92
SCANNER	1.00	24-Sep-92
SELPRINT	2.02	24-Sep-92
SHEETSPLIT	1.02	04-Nov-92
ZOOMEDIT	2.11	04-Nov-92

SHIPDIM (Version 9-22-92 for the Gateway 2000 microcomputer) was also used for DGPS performance checks.

Sound velocity corrections were determined using version 2.00 of program CAT and version 2.00 of VELOCITY.

All field sheets were made on board WHITING with automated Bruning 936 plotters driven by the HDAPS system. No final field sheets were prepared. All on-line plots for the surveyed area were transmitted to AHS. There were no irregularities in projection or scale during post processing of this survey. All field records and supporting data were sent to AHS per the Processing Partnership Agreement.

E. SIDE SCAN SONAR EQUIPMENT

Side scan sonar (SSS) operations were conducted using an EG&G model 260 slant-range corrected SSS recorder and an EG&G 272-T dual-channel (single frequency) towfish. The towfish was operated on the 100 kHz frequency and was configured with a 20° beam depression. The following sonar equipment was used throughout the survey:

Type	S/N
Towfish	11902
260 Recorder	11443

The towfish was deployed from a Reuland winch (model number 8377-XF5461A, S/N 814861A-1) on the stern of WHITING. The SSS towfish was towed with armored cable which was connected to the recorder cabling with a slip-ring assembly. The SSS towfish was maintained at a height off the bottom of 8 to 20 percent of the range scale. SSS operations were limited to a speed of 5 knots or slower.

Offsets and laybacks for the A-frame used to tow the SSS towfish were measured on July 27, 1992 using the forward 100 kHz (high frequency) transducer as the reference. The A-frame height was measured from the water line on the same date. All offset, layback, and height data were applied as required by the HDAPS Manual. These data are on file at the Atlantic Hydrographic Section (AHS). DATA FILED WITH FIELD RECORDS.

All side scan sonar data was collected using the 75 meter range scale and 100 Khz frequency.

Confidence checks were performed on a routine basis, primarily by noting changes in bottom texture on the outer edges of the sonargram. Confidence checks were also taken on buoys or wrecks when convenient.

F. SOUNDING EQUIPMENT

A RAYTHEON Digital Survey Fathometer (DSF) 6000N echo sounder (S/N B053N) was used to determine water depths during the survey. The DSF-6000N produced a graphic record of the high frequency (100 kHz) and low frequency (24 kHz) depth. The high and low frequency digital depths were recorded by the HDAPS acquisition system. The high frequency depths were selected as the primary depths for sounding plot purposes.

Echograms were carefully reviewed for significant features along the track line. Any features on the graphic record that were not selected as primary soundings were manually selected. Electronic technicians performed daily accuracy checks and preventive maintenance on the DSF-6000N.

Diver determined least depths were measured with a pneumatic depth gauge. The WHITING's pneumatic depth gauge (S/N 13892130) is built according to Hydrographic Guidelines No. 55. The gauge was calibrated on January 25, 1993. System checks were performed prior to every dive to ensure the pneumatic depth gauge was in tolerance.

G. CORRECTIONS TO SOUNDINGS

Sound velocity profiles of the water column were determined using a Seacat Conductivity, Temperature and Depth (CTD) profiler (model SBE 19, s/n 286). The profiler was calibrated on December 16, 1992 during WHITING's winter inport period. A copy of the calibration report is on file at AHS.

The CTD, mounted in a cage, was lowered through the water column to obtain data for sound velocity corrections. Programs CAT and VELOCITY were used to process the data, select significant data points, and create a corrector table. The velocity correctors were manually entered into an HDAPS velocity table. The correctors were applied to both high and low frequency beams during acquisition. Velocity profile data can be found in the separates submitted with this survey.

Data Quality Assurance (DQA) for the Seacat was performed by using a hydrometer and a thermometer to measure the density and temperature of a surface water sample taken during the CTD cast. The program CAT compared these values to the CTD surface values, and confirmed that the velocity probe was working properly.

A summary of sound velocity casts follows:

DOY	Vel.Table#	Latitude	Longitude	Depth
125	12	38°46'06"N	074°36'54"W	33.7m
127	13	38°45'41"N	074°37'42"W	39.0m

The correction for WHITING's static draft was 3.2 meters, a historical value that WHITING divers confirmed by pneumatic depth gauge on October 28, 1991. The Transducer Depth Determination Report is on file at AHS. A transducer depth determination conducted on May 20, 1993 confirmed the draft measurement of 3.2 meters. These data are on file at AHS. DATA FILED WITH FIELD RECORDS.

Settlement and squat measurements were conducted and correctors determined on August 5, 1991. Correctors based on this determination were applied in real time throughout the survey. Settlement and squat correctors are on file at AHS.

The HDAPS data acquisition computer logged, in real-time, heave data from a Heave, Roll, and Pitch sensor (HIPPY, s/n 19109-C). Heave correctors were applied in post-processing.

The tidal datum for this project was Mean Lower Low Water. The operating tide station at Breakwater Harbor (Lewes), Delaware (855-7380) served as direct control for datum determination. Mr. Larry Nieson, Atlantic Operations Group, N/OES213, confirmed the proper operation of the tide station during the survey. This station also served as the reference station for predicted tides. Time and height correctors for the project were as follows:

	Time Correction	Height Ratio
High Water:	-1 hr 00 min	x0.94
Low Water:	-1 hr 00 min	x0.94

Tidal data used during data acquisition were taken from table 2 of the East Coast of North and South America Tide Tables and were applied on-line to the digital data using HDAPS software. The tidal data, in digital form, were received on floppy disk from N/CG24, Hydrographic Surveys Branch. Request for smooth tides was submitted to Products and Services Branch, Datum Section, N/OES231 on May 28, 1993. APPROVED TIDES WERE APPLIED DURING OFFICE PROCESSING.

The tide station at Breakwater Harbor was leveled on March 8, 1993. The levels confirmed that the tide staff and marks were undisturbed.

All sounding corrections, except heave, were applied on-line to both the narrow (100 kHz) and wide (24 kHz) DSF-6000N beams. Heave corrections were applied in post-processing.

New leadlines were made on April 10, 1993. Calibrations performed on April 26, 1993 confirmed the leadline error was negligible. A leadline comparison with the DSF-6000N was performed on April 3, 1993 (DOY 113). The difference between the leadline and the high frequency reading was -0.07 meter and the difference between the leadline and the low frequency reading was -0.18 meter. These differences may be attributable to the soft mud bottom at the comparison site. No correction for this difference was applied to the survey.

Depths were determined by pneumatic gauge on the dive investigations. The calibration reports for the pneumatic gauge are on file at AHS.* Predicted tide correctors were applied to the least depths. APPROVED TIDES WERE APPLIED DURING OFFICE PROCESSING.
* DATA FILED WITH FIELD RECORDS.

H. CONTROL STATIONS SEE ALSO SECTION 2.9. OF THE EVALUATION REPORT.

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Two B-order horizontal control stations were used as DGPS reference stations for this survey; one at Cape Henlopen and one at Cape Henry. The adjusted NAD83 positions, computed by GPS methods, were provided by Lieutenant Jeffrey Ferguson of the Hydrographic Surveys Branch, N/CG24, on April 3, 1992. The positions are as follows:

	Latitude	Longitude	Frequency
Cape Henry	36°55'37.580"N	076°00'23.884"W	289 kHz
Cape Henlopen	38°46'36.421"N	075°05'15.667"W	298 kHz

The horizontal control station list is on file at AHS. DATA APPENDED TO THIS REPORT.

I. HYDROGRAPHIC POSITION CONTROL SEE ALSO SECTION 2.9. OF THE EVALUATION REPORT.

A Differential Global Positioning System (DGPS) was used as the primary navigation system for this survey. WHITING monitored two U.S. Coast Guard DGPS beacons: Cape Henlopen, Delaware and Cape Henry, Virginia. WHITING used two Ashtech Sensor GPS receivers for DGPS navigation with two Magnavox MX50R differential radio receivers supplying correctors to the Ashtech receivers. Both MX50R and Ashtech receivers were initialized by HDAPS, with only the primary receiver sending navigational output to HDAPS.

The serial numbers of the Ashtech Sensor and MX50R receivers were as follows:

Item	Serial Number
Primary System:	
Ashtech Sensor	700417B1055
Magnavox MX50R	168
Secondary System:	
Ashtech Sensor	700417B1129
Magnavox MX50R	169

Launch 1021 was used as the dive platform for the two item investigations. A Magnavox 4200 DGPS receiver (S/N 537) with a Magnavox MX50R (S/N 060) differential radio receiver was used to obtain the positions on items investigated. Modified performance checks on launch 1021 were conducted by first acquiring a position on the least depth with the Cape Henlopen beacon and then the position with the Cape Henry beacon. The two positions were compared to ensure the inverse distance was within acceptable limits. Generally, the inverse distance was less than 5 meters between the two least depth positions.

Satellite coverage during this survey period allowed WHITING to operate in the non-altitude constrain mode continuously. The Cape Henlopen DGPS receiver system was used for all data acquisition.

Horizontal Dilution of Precision (HDOP) limits were computed for each station as required in section 3.4.2 of the Field Procedures Manual (FPM) for Hydrographic Surveying. The HDOP limit for a 1:20,000-scale survey for the Cape Henlopen and Cape Henry beacons were 7.5 and 6.2, respectively. The HDOP limit for a 1:10,000 scale survey for the Cape Henlopen and Cape Henry beacons is 3.7 and 3.1, respectively. No data were acquired at HDOP values exceeding the 1:10,000 thresholds.

DGPS positioning was accomplished in accordance with the FPM, section 3.4. When the beacon signal was lost for more than 30 seconds, the survey line was broken and the line was rerun where control had been unacceptable.

~~DGPS positioning was accomplished in accordance with the FPM, section 3.4. When the beacon signal was lost for more than 30 seconds, the survey line was broken and the line was rerun where control had been unacceptable~~. Cape Henry was used as the check station when acquiring performance checks to ensure proper operation of the Cape Henlopen beacon. Performance checks were conducted on a Gateway 2000 386/33c microcomputer (S/N 402208) using program SHIPDIM. SHIPDIM uses the two reference station method as described in FPM section 3.4.5. All DGPS performance checks confirmed that the DGPS positioning systems were operating properly and accurately. A summary of the DGPS performance checks may be found in the separates data cahier submitted with this survey. SEE PAGE 7.

DGPS antenna offsets and laybacks were re-measured on March 19, 1993 as WHITING converted from Magnavox to Ashtech receivers and antennas. Offsets and laybacks were measured using the forward 100 kHz (high frequency) echo-sounder transducer as the reference. Antenna heights were measured from the waterline on the same date. Offsets and laybacks were applied by HDAPS on line. All offset, layback, and height data are on file at AHS. DATA FILED WITH FIELD RECORDS

L. SHORELINE SEE ALSO SECTION 2.b. OF THE EVALUATION REPORT.

There is no shoreline in the vicinity of the present survey.

K. CROSSLINES

Crosslines were not required; however, where crossings occur, agreement is adequate.

L. JUNCTIONS SEE ALSO SECTION 5. OF THE EVALUATION REPORT.

There are no junctional requirements for this survey.

M. COMPARISONS WITH PRIOR SURVEYS SEE ALSO SECTION 6. OF THE EVALUATION REPORT.
Comparison to prior surveys for items investigated, appear in section N of this report.

N. ITEM INVESTIGATIONS

Summary of items investigated:

CONTACT NO.	SECTION	STATUS
363.54S	N1	Located
554.66P	N2	Located

N1. Contact #363.54S

Reported Latitude:	38°47'49.61" N
Reported Longitude:	074°35'07.63" W
Datum:	NAD 83
Depth:	17^{3} m side scan sonar estimated depth
Feature:	dangerous submerged obstruction (*Obstn (A)*)

Contact #363.54S originates with prior survey H-10439 (1992) and is shown on the prior survey as a dangerous submerged obstruction with a side scan sonar estimated depth of 17^{3} meters (17^{3} *Obstn (A)*).

Survey requirements were to verify or disprove 17^{3} *Obstn (A)* located during survey operations of prior survey H-10439 (1992).

Contact #363.54S was investigated by side scan sonar on the 75 meter range scale. Once the item was located, a position and least depth were determined during dive operations.

The item was located near its reported position by side scan sonar. A dangerous submerged obstruction was located in latitude 38°47'49.58" N, longitude 074°35'07.07" W with a pneumatic gauge least depth of ~~19.0~~ 18.9 meters (corrected for ~~predicted~~ tides (MLLW)). The object is an anchor block (1.2 m x 1.5 m) and a submerged buoy (5.5 m x 1.5 m). The surrounding depths are 18.9 to ~~19.3~~ 19.2 meters.

WHITING recommends that the 17^{3} *Obstn (A)* be deleted and an obstruction with a known least depth by diver of ~~19.0~~ 18.9 meters* be charted at the position determined on this survey. CONCUR

* 62 FT, (18⁹ OBSTN), AND A DANGER CURVE,

To Rev. 62 ft Obstn deleted reported.

N2. Contact #554.66P

Reported Latitude:	38°48'08.39" N
Reported Longitude:	074°35'48.65" W
Datum:	NAD83
Depth:	17^{6} m side scan sonar estimated depth
Feature:	dangerous submerged obstruction (*Obstn (A)*)

Contact #554.66P originates with prior survey H-10439 (1992) and is shown on the prior survey as a dangerous submerged obstruction with a side scan sonar estimated depth of 17.6 meters, (17⁶ *Obstn (A)*).

Survey requirements were to verify or disprove a 17⁶ *Obstn (A)* located during survey operations of prior survey H-10439 (1992).

Contact #554.66P was investigated by side scan sonar on the 75-meter range scale. Once the item was located, a position and least depth were determined during dive operations.

The item was located near its reported position by side scan sonar. A dangerous sunken wreck was located in latitude 38°48'04.45"N, longitude 074°35'47.23"W, with a pneumatic gauge least depth of 17.6 meters (corrected for ~~predicted~~ tides - MLLW). The surrounding depths are 18.4 to 18.8 meters.

Revised to 56 ft w/ chartrep

WHITING recommends that the 17⁶ *Obstn (A)* be deleted and a wreck with a known least depth by diver of 17.6 meters* be charted at the position determined on this survey. CONCUR

* 56 FT, (17³ MK), AND A DANGER CURVE.

O. COMPARISON WITH THE CHART SEE ALSO SECTION 7.9. OF THE EVALUATION REPORT.

Chart#	Scale	Edition #	Date
12214	1:80,000	37	June 27, 1992

The charted hydrography originates with prior surveys previously discussed in the Evaluation Report for H-10439 (1992) and requires no further consideration.

There were no previously unknown dangers to navigation located during this survey.

P. ADEQUACY OF SURVEY SEE ALSO SECTION 9. OF THE EVALUATION REPORT.

This survey is complete and adequate to resolve all items assigned for the purpose of supplementing survey H-10439 (1992) and updating the charts of the survey area.

Q. AIDS TO NAVIGATION

There are no aids to navigation within the limits of the present survey.

R. STATISTICS

Number of Positions	15
Main-scheme Sounding Lines (Nautical Miles)	1
Crosslines (Nautical Miles)	None
Square Nautical Miles Surveyed	None
Days of Production	2
Detached Positions	2
Bottom Samples	None
Tide Stations Installed	None
Current Stations	None
Number of CTD Casts	2
Magnetic Stations	None

S. MISCELLANEOUS

No anomalies in either tide or current and/or unusual magnetic variations were encountered in the survey area. No bottom samples were taken.

T. RECOMMENDATIONS

Recommendations concerning specific items are located in section N of this report. The data meets the 1:10,000 scale accuracy requirements and can be used on charts requiring that accuracy.

U. REFERRAL TO OTHER REPORTS

The following reports will be submitted to N/CG244 and forwarded to N/CG243 as part of OPR-D368-WH-93:

Coast Pilot Report
Chart Inspection Report
User Evaluation Report

ITEM INVESTIGATION REPORT

SURVEY WH-20-1-92
Item Number N/A — Danger to Nav. Letter Issued (Y/N) N
Charted (Y/N) N
Chart No. (largest scale) 12214 — Edition 37th — Date 6/27/92

DESCRIPTION/SOURCE: SUNKEN ANCHOR AND BUOY; 363.54s (92) H-10439.

HISTORICAL POSITION: Latitude 38°47'49.6"N — SSS POSITION: Lat 38°47'49.~~8~~5"N
Longitude 74°35'07.5"W — 363.54s — Long 74°35'07.~~2~~4"W
Datum NAD 83 — 3.60P ↗

SURVEY REQUIREMENTS: DIVER INVESTIGATION

METHOD OF INVESTIGATION:
Echosounder ____ Side Scan ✓ Diver ✓ Other (specify) ____

DIVE DATA: Divers RILEY; ~~SEITZ~~; VERLAQUE
Time of Dive: Commenced ~~1035~~ 1435Z — Completed ~~1055~~ 1455Z
Current 0.0 KTS — Visibility 15' HOR, 20' VER — Bottom Type SAND

RESULTS OF INVESTIGATION: DIVERS DESCENDED PINGER BUOY & LOCATED ANCHOR BLOCK 8M SE OF PINGER BUOY ~~[illegible]~~ WEIGHT. ANCHOR DIMENSIONS 4'x5' TAPERING INTO SAND ON NORTH SIDE. ANCHOR BLOCK 2' OFF BOTTOM. HAWSER SNAGGED ON ANCHOR BLOCK TENDED 200° PMC. HAWSER LED TO SUBMERGED BUOY, BOTH ENDS TAPERING INTO SAND, TWO PADEYES VISIBLE. APPROX DIMENSION IN VIEW, 18'x5'. CYLINDRICAL. SUSPECT CAN BUOY. NEXT TO BUOY, END OF HAWSER ATTACHED TO NET FILLED w/ FISH. LEAST DEPTH TAKEN ON ANCHOR BLOCK, DP 1&4 ON BLOCK; DP 2&3 ON BUOY LAYING ON OCEAN FLOOR; ONLY 1' OFF BOTTOM. DIVER DEPTH GAUGE ON BUOY 64'.

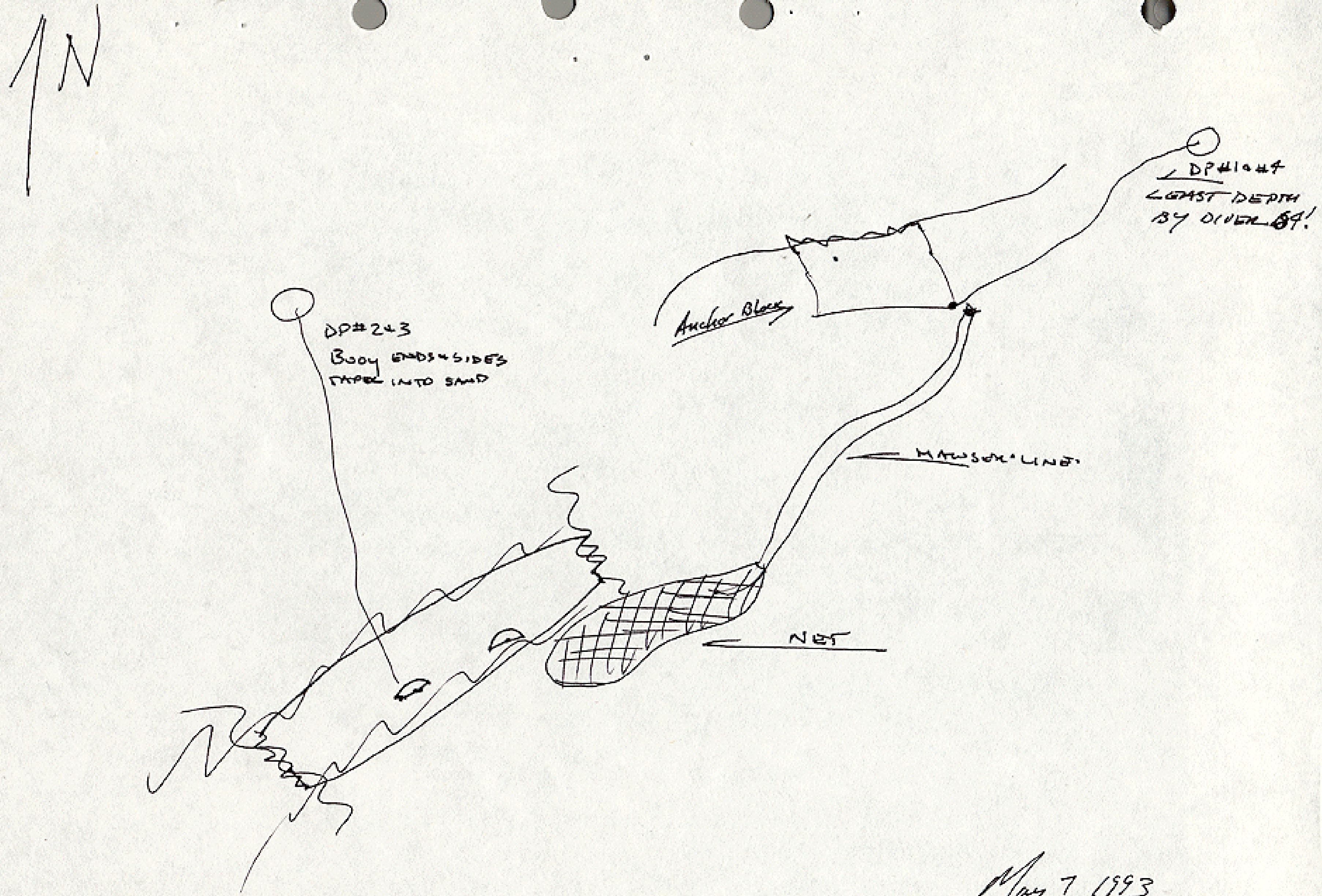
POSITION: Date (M/D/Y) 5/7/93 — Time (UTC) ~~1440~~ 1539 — Position No. ~~DP #1 (2,3,4)~~ POS #13
Latitude 38°47.~~8263~~'N 49.38" — Longitude 74°35.~~1178~~'W 07.07"
LORAN-C: GRI (9960) S/N W: ~~15764.9~~ 15694.9 CYC — X: 26981.1 (760) — Y: 42653.4 (820) — Z: 59300.5 CYC

LEAST DEPTH: Date (M/D/Y) 5/7/93 — Time (UTC) 1440Z
Method of Least Depth: PNEUMATIC DEPTH GAUGE
Measured Least Depth: 1. 65.2 2. 65.8 3. 65.4 Avg. 65.5 Units FT
Corrected Least Depth ~~19.0~~ 20.0 Units METERS (predicted tides)
~~19.0~~ NAW
18.9 NAW

CHARTING RECOMMENDATION

CHART AN OBSTRUCTION, LEAST DEPTH KNOWN BY DIVER OF ~~19.0M~~ ~~20.0~~ ~~19.0~~ 18.9 NAW AND A DANGER CURVE. Chart No. 1, # 42, SECTION K.

NAW



May 7, 1993
DN 127
DIVE INVESTIGATION ON 363.54S
(H-10439; 92)
Sunken Buoy & Anchor.

ITEM INVESTIGATION REPORT

SURVEY "F"-SHEET
Item Number N/A
Danger to Nav. Letter Issued (Y/N) N
Charted (Y/N) N
Chart No. (largest scale) 12214 Edition 37th Date 6/27/92

DESCRIPTION/SOURCE: SUNKEN PIPE; WK? 554.66 P (H#10439; 92)

HISTORICAL POSITION: Latitude 38° 48' 06.2"N
Longitude 074° 35' 48.9"W
Datum NAD83

SSS POSITION: Lat 38° 48' 05.0"N Long 74° 35' 48.9"W
6.01 P ('93)
8.56 P ('93)
(38° 48.~~083~~ 049 N)
(74° 35.~~800~~ W.)
48.00

SURVEY REQUIREMENTS: DIVE INVESTIGATION

METHOD OF INVESTIGATION:
Echosounder ___ Side Scan ✓ Diver ✓ Other (specify) ___

DIVE DATA: Divers RILEY, VERLAQUE
Time of Dive: Commenced ~~1307~~ 1707Z Completed ~~1324~~ 1724Z
Current 0.5E Visibility 15' HORIZONTAL Bottom Type SAND

RESULTS OF INVESTIGATION: DIVERS DESCENDED DOWN BUOY LOCATED ON CENTER OF WRECK (BARGE-WOODEN; 115'x 12'). DIVERS DRAGGED ANCHOR BUOY TO SOUTH-EAST END OF WRECK (LEAST DEPTH - DIVER GAUGE 57 ft ~~56~~; PNEUMO 57.9' UNCORR). DIVERS SWAM TO NORTH WEST END AND DEPLOYED YELLOW INFLATABLE BUOY (DIVE GAUGE 58'). WRECK STOOD 2' OFF BOTTOM. ORIENTATION SE-NW DIRECTION. RIBS IN SIGHT, 18" APART. ENDS & SIDES OF BARGE TAKEN INTO SAND.

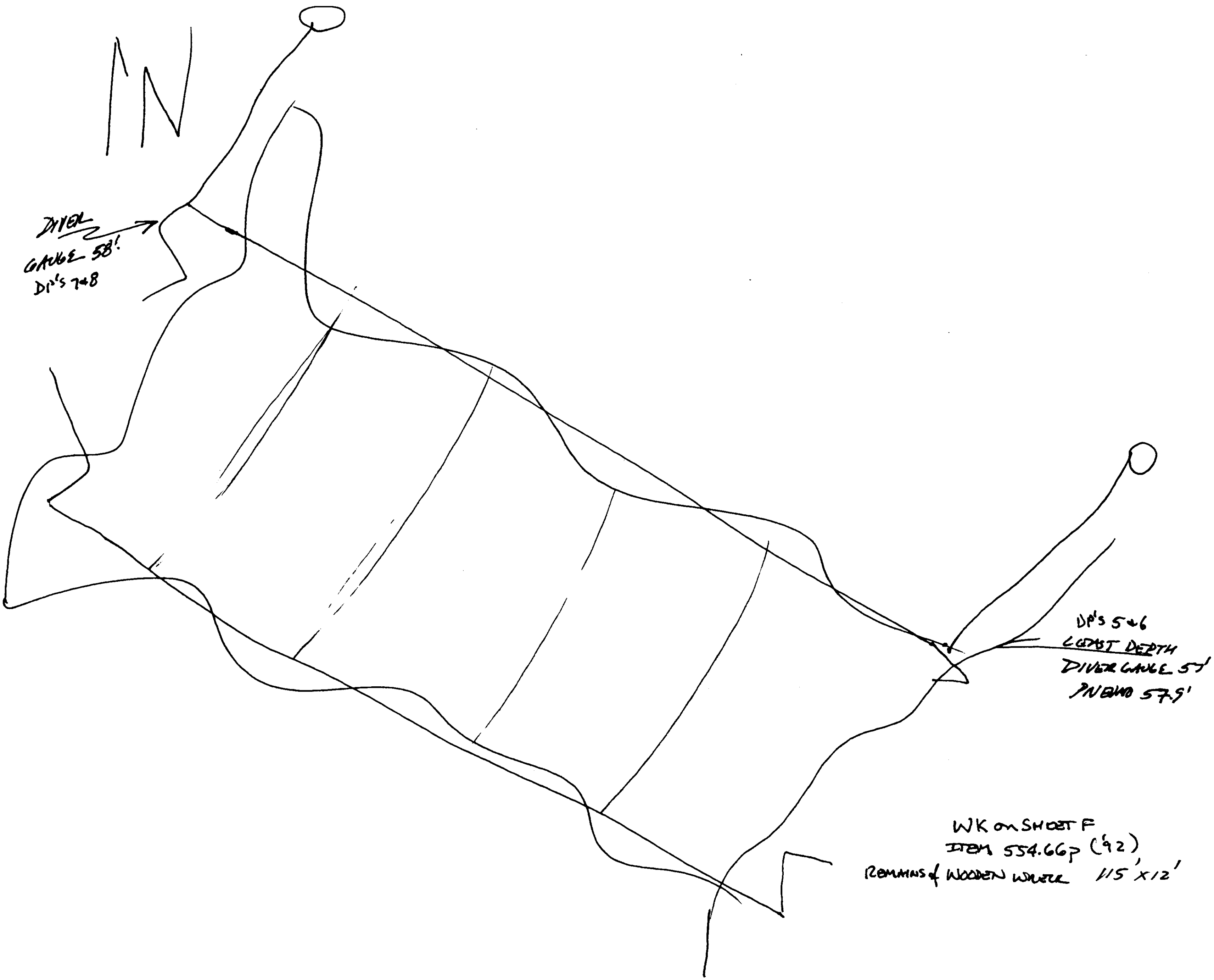
POSITION: Date (M/D/Y) 5/7/93 Time (UTC) 180405 Position No. ~~DP#3~~ POS #15 (~~4,5,6~~) (6,7,8)
Latitude 38° 48. ~~0744~~'N 04.45" Longitude 074° 35. ~~787~~'W 47.23"
LORAN-C: GRI (9960) W: 15708.5 X: 26987.5 Y: 42635.7 Z: 57302.5
*(LORAN-C: CYCLING)

LEAST DEPTH: SOUTH-EAST END
Date (M/D/Y) 5/7/93 Time (UTC) 1716Z
Method of Least Depth: PNEUMATIC DEPTH GAUGE
Measured Least Depth: 1. 58.0 2. 58.0 3. 57.6 Avg. 57.9 Units FT
Corrected Least Depth ~~17.6~~ 17.3 Units M (predicted tides)

CHARTING RECOMMENDATION

CHART A WRECK, DIVER LEAST DEPTH OF 17.~~6~~3 METERS, Chart No. 1 SECTION K. # 27. WITH A DANGER CURVE

✓NAW


N
DIVER
GAUGE 58'
DP's 7+8
DP's 5+6
LEAST DEPTH
DIVER GAUGE 57'
PNEUMO 57.9'
WK on SHEET F
ITEM 554.66p ('92)
Remains of WOODEN WRECK 115' x 12'

Station No ?

No	Type	Lat	Lon	H	Cart	Freq	Vel Code	MM/DD/YY	Station Name
1	G	038:46:36.421	075:05:15.667	0	250	298.0	0	09/03/92	CAPE HENLOPEN (DGPS)
2	G	036:55:37.580	075:00:23.884	0	250	289.0	0	09/03/92	CAPE HENRY (DGPS)
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	
		000:00:00.000	000:00:00.000	0	0	0.0	0	03/01/91	

Control Station Table saved to disk

NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Rockville, Maryland 20852

APR 3 1992

TO: Mike McKinney

FROM: Lieutenant Jeffrey Ferguson, NOAA
Operations Section
Hydrographic Surveys Branch

SUBJECT: Cape Henlopen DGPS reference position

The position of the GPS antenna mount at the Cape Henlopen beacon site is:

38° 46' 36.42091" N
75° 05' 15.66618" W
Ellipsoidal Height = -6.01 meters.

The position was determined by observing the vector between station GPS S 5 and the antenna mount with two Trimble 4000SST GPS receivers. As a data quality check, vectors were also observed between station GPS S 5 A and the antenna mount, and between station GPS S 5 and station GPS S 5 A. The three vectors formed a 7.9 km loop that closed to 0.027 meters.

GPS S 5 and GPS S 5 A were existing stations in the NGS data base, descriptions and positions of these stations are attached.

The manufacturer of the survey poles I used is,
Hixon Mfg. and Supply Company
1400 Webster Ave
Fort Collins, CO 80524
(303) 482-0111
They call the item the "Constant Height Global Positioning System Survey Pole".

If any additional information is needed please call me at 301-443-8752.

National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Rockville, Maryland 20852

NOV 25 1992

MEMORANDUM FOR: The Record

FROM: Lieutenant Jeffrey Ferguson, NOAA
Operations Section
Hydrographic Surveys Branch

SUBJECT: Cape Henry DGPS Reference Station

On June 9 and June 10, 1992, Lieutenant Commander David Minkel and Lieutenant Jeffrey Ferguson of the Nautical Charting Division positioned the reference station at the Cape Henry beacon. The final NAD83 position for the reference station follows:

Cape Henry, Virginia
36° 55' 37.580" N
76° 00' 23.884" W
Ellipsoidal Height = -17.2 Meters

The survey was conducted using two Ashtech M-XII geodetic receivers. A total of three vectors were observed. One second order horizontal control station (NORF), a B order horizontal control station (HENRY) and the Cape Henry antenna mount (CAPE) were occupied.

All vectors were reduced using Ashtech post processing software LINECOMP version 4.0.01. Fixed integer solutions were obtained in all cases.

As a data quality check, program SHOOTER was used to compute a loop closure. The loop (NORF-HENRY-CAPE-NORF) had a length of 20 km and a closure of 1.6 ppm.

Program FILLNET version 2.0 was used to perform a 3-D least squares adjustment and compute a final position for the antenna mount. The horizontal and vertical constraints were station NORF.

APPROVAL SHEET

FIELD EXAMINATION SURVEY
OPR-D368-WH
1993
WH-20-2-93
FE-382SS

The data for this survey were acquired and checked under my daily supervision. Position and sounding accuracy meet the requirements specified in the Hydrographic Manual, the Hydrographic Survey Guidelines, and the Field Procedures Manual for Hydrographic Surveying. This survey is complete and adequate for the intended purpose of resolving items located in 1992 during H-10439.

Approved By:

Andrew A. Armstrong, III
Commander, NOAA
Commanding Officer

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: July 23, 1993

MARINE CENTER: Atlantic

HYDROGRAPHIC PROJECT: OPR-D368-WH

HYDROGRAPHIC SHEET: FE-382SS

LOCALITY: Approaches to Delaware Bay

TIME PERIOD: May 5- 7, 1993

TIDE STATION USED: 855-7380 Lewes (Ft. Miles), Breakwater Harbor, Delaware Lat. 38° 46.9'N Lon. 75° 07.2'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 2.51 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.3 ft.

REMARKS: RECOMMENDED ZONING

Apply a -1 hr 00 min time correction and a x0.94 range ratio to Lewes Breakwater Harbor, Delaware (855-7380).

Note: Times are tabulated in Eastern Standard Time.

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

FE-382 SS

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ATLANTIC OCEAN (title)										1
MAY, CAPE (title)										2
NEW JERSEY (title)										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
				Approved:						16
				Charles A. Harrington						17
				Chief Geographer - N/CG245						18
										19
				MAY 24 1993						20
										21
										22
										23
										24
										25

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/CG244-103-93

LETTER TRANSMITTING DATA

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

☐ ORDINARY MAIL ☐ AIR MAIL

☐ REGISTERED MAIL ☐ EXPRESS

☐ GBL *(Give number)* _____

TO:

Chief, Data Control Section, N/CG243
NOAA/National Ocean Service
Station 6813, SSMC3
1315 East-West Highway
Silver Springs, Maryland 20910

DATE FORWARDED
17 August 1993

NUMBER OF PACKAGES
1 Box

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

FE-382 SS (1993)
New Jersey, Atlantic Ocean
15 NM East Southeast of Cape May

Pkg. 1 Box

1 Original Descriptive Report with smooth sheet and overlay
1 Accordion file containing Fathograms, Data Printouts, and Side Scan Sonargrams for VESNO 2930 for JD's 125, 127 no sonargrams
1 Binder containing data removed from original Descriptive Report
1 Cahier containing FINAL POSITION PRINTOUT, FINAL SOUNDING PRINTOUT
1 Envelope containing Data removed from FINAL PRINTOUTS

FROM: *(Signature)*
Norris A. Wike

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Section, N/CG24411
439 W. York Street
Norfolk, VA 23510-1114

NOAA FORM 61-29 SUPERSEDES FORM C&GS 413 WHICH MAY BE USED.

☆U.S.GPO:1983-0-664-006/1192

08/16/93

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-382SS

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

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	11	07/12/93
VERIFICATION OF FIELD DATA	5	08/05/93
ELECTRONIC DATA PROCESSING	4	
QUALITY CONTROL CHECKS	0	
EVALUATION AND ANALYSIS	18	08/12/93
FINAL INSPECTION	3	08/12/93
TOTAL TIME	41	

ATLANTIC HYDROGRAPHIC SECTION APPROVAL 08/12/93

COAST AND GEODETIC SURVEY
ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT

SURVEY NO.: FE-382SS **FIELD NO.:** WH-20-2-93

New Jersey, Atlantic Ocean, 15 NM ESE of Cape May

SURVEYED: 5 through 7 May 1993

SCALE: 1:20,000 **PROJECT NO.:** OPR-D368-WH-93

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

CONTROL: MAGNAVOX MX4200 Satellite Receiver/MAGNAVOX MX50R Beacon Receiver (Differential Global Positioning System)

Chief of Party.....A. A. Armstrong III

Surveyed by.....C. B. Greenawalt
.....J. S. Verlaque
.....J. G. Clayton
.....J. L. Riley
.....N. O. Silverman
.....M. P. Zipperer
.....J. A. Seitz
.....F. R. Cruz
.....E. A. Myers
.....S. R. Parker

Automated Plot by.....XYNETICS 1201 Plotter (AHS)

1. INTRODUCTION

a. The purpose of this survey was to verify or disprove contacts located by NOAA Ship WHITING during the 1992 field season.

b. This is a side scan sonar survey. A RAYTHEON DSF-6000N Fathometer was operated concurrently with the side scan sonar. A pneumatic depth gauge was used to determine least depths during dive operations.

c. A 1:10,000 scale page size plot was generated during office processing and is attached to this report.

d. No unusual problems were encountered during office processing.

e. Notes in the Descriptive Report were made in red during office processing.

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections H. and I. of the Descriptive Report.

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 sheets have 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 NAD 27 move the projection lines 0.409 seconds (12.6 meters or 0.63 mm at the scale of the survey) north in latitude, and 1.427 seconds (34.4 meters or 1.72 mm at the scale of the survey) east in longitude.

b. There is no shoreline within the limits of this survey.

3. HYDROGRAPHY

Determination of least depths of items located and shown on the smooth plot is considered adequate.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records, and reports are adequate and conform to the requirements of the HYDROGRAPHIC MANUAL, SIDE SCAN SONAR MANUAL, and FIELD PROCEDURE MANUAL.

5. JUNCTIONS

There are no contemporary junctional surveys.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-10439 (1992) 1:20,000

The prior survey listed above covers the present survey area in its entirety. Additional work items from survey H-10439 (1992) were investigated by the present survey. A discussion of each item and charting recommendation can be found in section N., pages 8 through 11 of the Descriptive Report.

The present survey is adequate to supersede the prior survey in the common areas.

7. COMPARISON WITH CHARTS 12214 (37th Edition, June 27/92)

a. Hydrography

The charted hydrography originates with prior surveys superseded by survey H-10439 (1992) and require no discussion in this report.

The present survey is adequate to supplement the charted hydrography in the common areas.

b. Dangers to Navigation

There were no dangers to navigation submitted by the field unit. No dangers were discovered during office processing.

8. COMPLIANCE WITH INSTRUCTIONS

This survey complies with the Project Instructions.

9. ADDITIONAL WORK

This is an adequate side scan sonar survey. No additional field work is recommended.

WHITING Processing Team
Verification and Evaluation and Analysis

Franklin L. Saunders
Cartographic Technician

Norris A. Wike
Cartographer

APPROVAL SHEET
FE-382SS

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 magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Leroy G. Cram Date: 08/12/93
Leroy G. Cram
Chief, Hydrographic Processing Team B
Atlantic Hydrographic Section

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

Nicholas E. Perugini Date: 8/12/93
Nicholas E. Perugini, LCDR, NOAA
Chief, Atlantic Hydrographic Section

****

Final Approval:

Approved: Thomas W. Richards for Date: 12/8/94
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

74° 36′ 00″

74° 35′ 30″

17[3] Wk (barge)

38° 48′ 00″

18[9] Obstr (anchor block/ buoy)

74° 36′ 00″

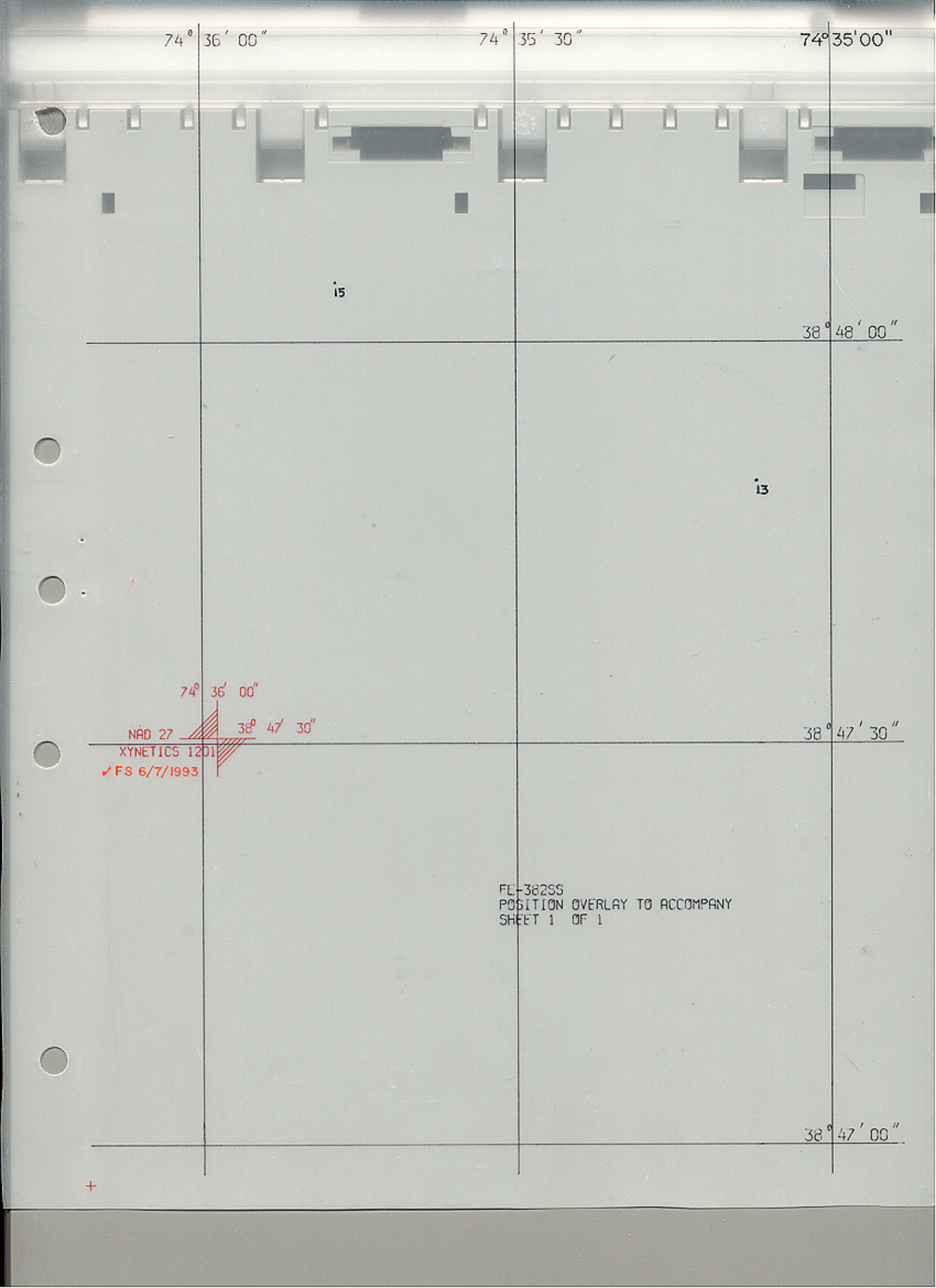
NAD 27 38° 47′ 30″

XYNETICS 1201
FS 8/7/1993

38° 47′ 30″

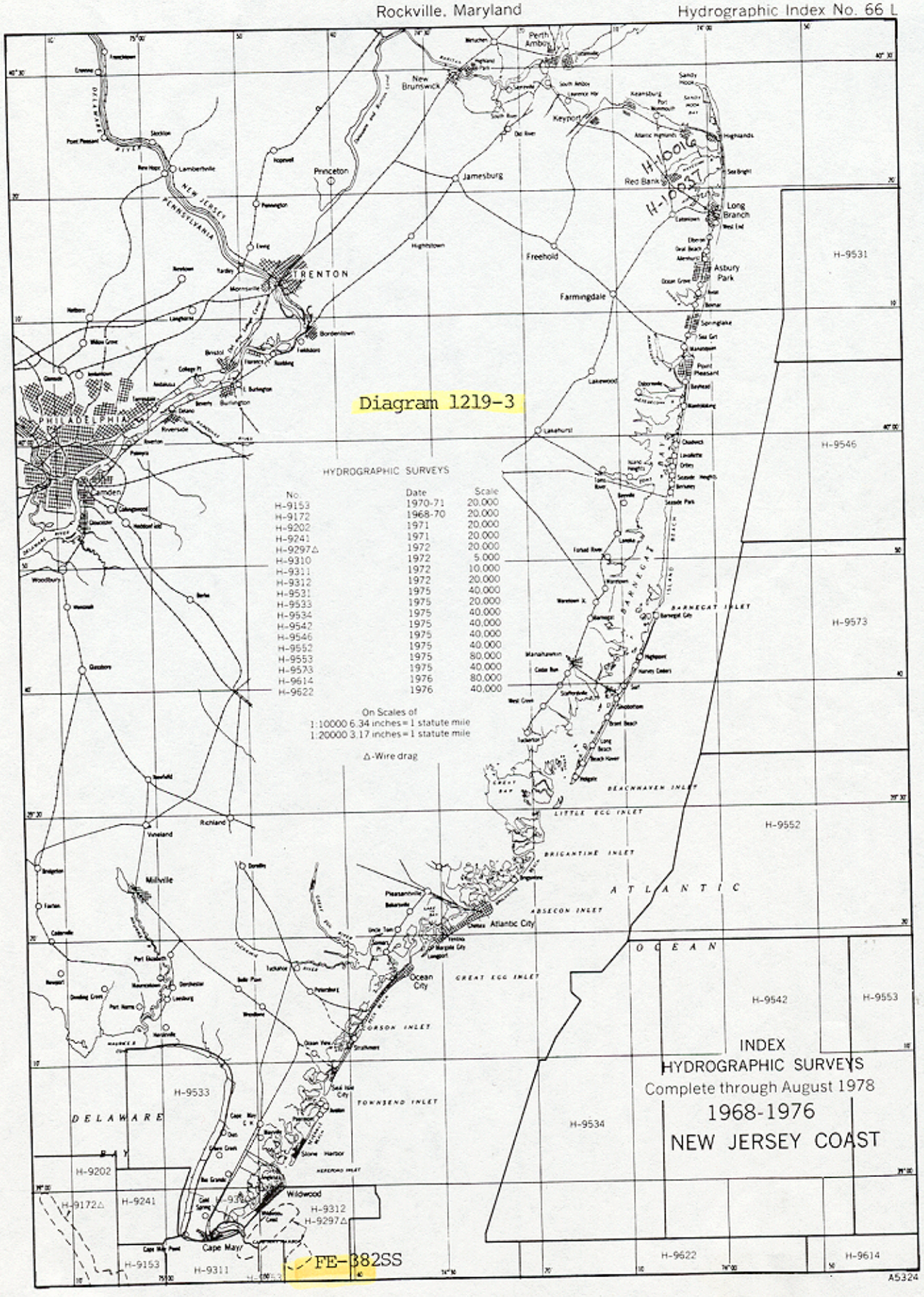
FE-382SS
NEW JERSEY
APPROACHES TO DELAWARE BAY
15NM EAST-SOUTHEAST OF CAPE MAY
DATE OF SURVEY: 05 MAY 1993 TO 17 MAY 1993
SCALE: 1:10000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 1 OF 1
CONTACT ITEM NUMBERS 363.54S, 554.66P

38° 47′ 00″


74° 36' 00"
74° 35' 30"
74°35'00"
15
38° 48' 00"
13
74° 36' 00"
NAD 27
38° 47' 30"
XYNETICS 1201
✓FS 6/7/1993
38° 47' 30"
FL-382SS
POSITION OVERLAY TO ACCOMPANY
SHEET 1 OF 1
38° 47' 00"

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

Hydrographic Index No. 66 L



NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-382SS

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
12214	2-17/94	Ralph B Kaar	Full Part Before After Marine Center Approval Signed Via
		"	Drawing No. 50 appld in full after application of H-10439 in full.
12200	3-11-94	John Barber	Full Part Before After Marine Center Approval Signed Via
			Drawing No. 55 Appl'd thru cht 12214
13003	4/21/95	D. Stanley	Full Part Before After Marine Center Approval Signed Via
			Drawing No. 64 Appd thru Cht 12200
12300	6-25-95	D. Stanley	Full Part Before After Marine Center Approval Signed Via
			Drawing No. 57 Appd thru Cht 12214 #50
			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
			Drawing No.
			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
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED