

10284

Diagram No. 1215-4

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. WH-10-1-88
Registry No. H-10284

LOCALITY

State New Jersey
General Locality . Atlantic Ocean
Sublocality Offshore Highlands to
..... Monmouth Beach

1988

CHIEF OF PARTY
CDR D.R. Seidel

LIBRARY & ARCHIVES

DATE May 8, 1991

10284

CHTS ECC
12324A
12326
12300
13003
13006

HYDROGRAPHIC TITLE SHEET

H-10284

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

FIELD NO.

WH-10-1-88

State NEW JERSEY

General locality ATLANTIC OCEAN

Locality OFFSHORE HIGHLANDS TO MONMOUTH BEACH

Scale 1:10,000

Date of survey 7 September
~~29 August~~ - 1 November, 1988

Instructions dated August 22, 1988

Project No. OPR-C147-WH-88

Vessel NOAA Ship WHITING S329 (~~Edp~~ ^{EDP} # 2930)

Chief of party CDR Dean R. Seidel, NOAA

Surveyed by Dean R. Seidel, Todd A. Baxter, Samuel P. DeBow, James S. Verlaque, Mark P. Skarbek, Jeffrey D. Bear, Peter C. Stauffer

Soundings taken by echo sounder, ~~hand lead, pole~~ DSF 6000

Graphic record scaled by Gale A. Variot, Patricia Wiggins, Nicholas Perugini, Andrew L. Beaver, Debbie A. Bland

Graphic record checked by SPD, JSV, MPS, JDB, PCS, ME, FRC, GAV, PW, NP, ALB, DAB

Protracted by _____ Automated plot by Bruning - Nicollet Zeta 824 (WHITING) XYNETICS 12φ1 Plotter (AHS)

Verification by Atlantic Hydrographic Section Personnel

Soundings in ~~fathoms~~ feet at ~~MLW~~ MLLW _____

REMARKS: Junctions with H-10285 and H-10286

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

AW015/SURF MSD 7/1/91

SC 129-96

XWW 6-28-91

74° 00'

73° 50'

PROJECT PROGRESS SKETCH

OPR-C147-WH
OFFSHORE NEW JERSEY COAST
NEW JERSEY

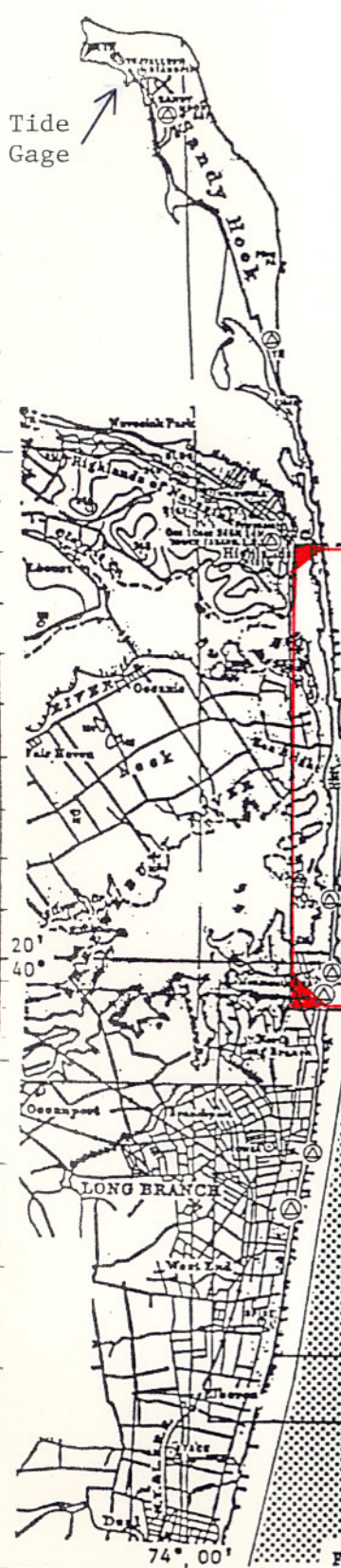
NOAA SHIP WHITING

CDR. DEAN R. SEIDEL
Commanding

30'
40'

30'
40'

Tide
Gage



A
WH-10-3-88
H-10286

B
WH-10-1-88
H-10284

C
WH-10-2-88
H-10285

D
WH-10-4-88
H-10287

LEGEND:

	1988	Aug	Sept	Oct	Nov
LNM Sounding Line	10.0	826.5	757.9		
SNM Sounding Coverage	0.1	39.8	25.5		
LNM Side Scan Sonar Line	0	752.0	665.5		
SNM S S Sonar Coverage	0	39.8	25.5		
Control Sta. Set Up	△	6	0	3	
Tide Sta. Inspected		1	1	0	
TDC Cast		1	3	2	
Nansen Cast		0	0	0	
Bottom Samples		0	29	42	
Surveyed Area					

20'
40'

20'
40'

74° 00'

73° 50'

From NOAA Chart No. 12326

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- A. HYDROGRAPHIC SHEET PROJECTION AND ELECTRONIC CONTROL *
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- C. GEOGRAPHIC NAMES LIST (FIELD) *
- D. ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS *
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- G. ABSTRACT OF POSITIONS *
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- I. BOTTOM SAMPLES *
- J. LANDMARKS FOR CHARTS *
- K. SIDE SCAN SONAR RECOMENDATIONS *
- L. REQUEST FOR APPROVED TIDES *
- M. DANGERS TO NAVIGATION
- N. APPROVAL SHEET

* *Removed from original Descriptive Report; filed with the survey data.*

SUPPLEMENTALS SUBMITTED WITH THE DATA

1. PROJECT INSTRUCTIONS
 - A. HYDROGRAPHIC PROJECT INSTRUCTIONS
 - B. AWOIS LISTING
 - C. NAD 83 CONVERSIONS
2. CORRESPONDENCE
3. CORRECTIONS TO ECHO SOUNDINGS SUPPORT DATA
 - A. SETTLEMENT AND SQUAT
 - B. VELOCITY CORRECTORS
 - C. VERTICAL CAST DATA
 - D. HDAPS OFFSET TABLE
 - E. PREDICTED TIDES TABLE
4. HYDROGRAPHIC POSITION CONTROL
5. SIDE SCAN SONAR DATA
6. CHART INSPECTION REPORT
7. CHART SALES AGENT REPORT
8. COAST PILOT REPORT
9. USER EVALUATION REPORT
10. DANGER TO NAVIGATION REPORT
11. HORIZONTAL CONTROL REPORT
12. SOUNDING VOLUME

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
OPR-C147-WH
1988
WH-10-1-88
H-10284
NOAA SHIP WHITING
CDR Dean R. Seidel
Commanding Officer

A. PROJECT

1. General

The purpose of project OPR-C147-WH, sheet B, was to accomplish complete side scan sonar coverage with identification of contacts over a large area along the New Jersey coast. Verification of charted wrecks and obstructions had been requested by the New York and New Jersey Sandy Hook Pilots' Associations and masters of vessels calling in New York and Newark Harbors. Because prior basic surveys in this area were conducted in 1934, contemporary survey data are required to update existing charts.

The survey was conducted in accordance with Hydrographic Project Instructions OPR-C147-WH, issued August 22, 1988, and changes No.1 and No.2, issued September 26 and November 22, 1988. Charted wrecks and obstructions will be detected or disproven with 200 or 400 percent side scan sonar coverage. The WHITING processed the data to the extent that recommendations were made as to which obstructions warrant further investigations and least depth determinations. A compilation of recommendations for further work has been included in this report. The recommended investigations will be performed by a different field party at a later time (see section 7.1, Project Instructions OPR-C147-WH). The data acquired for this survey affects charts 12324, 12326, and 12300.

2. Survey of Methods

In order to accomplish the project WHITING was outfitted with the new Hydrographic Data Acquisition and Processing System (HDAPS) for on-line data collection and post processing. The HDAPS system is a semi-automated data acquisition system whose main advantage lies in its ability to acquire and store vast quantities of sounding and sonar data, utilize multiple lines of position (MLOP) for precise positioning, and combine all data input into an easily workable format.

HDAPS consists of the following system components:
a Hewlett Packard (HP) 9000 Model 310 computer, two HP 35471 Color Monitors, an HP 9153B Disk Drive with a Winchester hard disk storage capacity of 20 Mbytes, a Bruning-Nicolett ZETA 824 plotter, an HP 82906A printer, and a M4 Data Model 9800 Tape Streamer. The

interface between the computer and the hydrographic sensors is with a Navitronic Hyflex 1000 Hydrographic Data Handler. A Navitronic Path Guidance Unit (PGU) functions both as remote steering display for the helm, and as a remote control for the HDAPS. All software programs are written in HP BASIC.

HDAPS determines a hydrographic position by using the Houtenbos algorithm which basically computes a least squares adjustment of the vessel's position. Up to four lines of position, in addition to the vessel acceleration and gyro compass information, are utilized in the algorithm for position computations. Erroneous range data are excluded from the real time position computation by a range editor. FALCON Mini-Ranger ranges which fall below the minimal accepted signal strength are not used in the solution.

The acquisition of MLOP have significantly increased data quantity and quality. The quantity of data has increased since the positioning algorithm has reduced the number of "flyers" obtained on-line. As a result survey lines need not be rerun due to positional errors. Data quality has increased dramatically since the least squares adjustment of the lines of position allows the hydrographer to ascertain the overall accuracy and precision of each sounding. The accuracy of each line of position determined from the algorithm are presented as "residuals". Residuals are the theoretical corrections to be applied to each LOP in order to make the observations intersect at the least squares position. The overall precision of each position is given as size of the 95% confidence circle (ECR). With these tools the hydrographer can readily assess the quality of the survey.

In the data acquisition mode, HDAPS is capable of recording side scan sonar, echo sounder, and positioning data every two seconds. All soundings are corrected, on-line, for predicted tides, velocity corrections, and dynamic draft (static draft plus Settlement and Squat correction). As a result the field hydrographer has, for the first time, the capability of comparing on line "almost" smooth soundings with charted and prior survey soundings. HDAPS also has the capability to accept real time tides, when they are available. Both the High and Low frequency digitized depth are recorded. All LOP are corrected for the baseline calibration correctors entered in the C-0 table. Any one of the following On-line plots can be produced: Depth plot, Trackline plot, or Side Scan Sonar Swath plot. All mainscheme lines were plotted as Swath Plots to ensure that adequate overlap between adjacent swaths was maintained. Depth Plots were used exclusively for crosslines.

Data are archived on 7-inch magnetic tape reels read on the M4 Data Tape Streamer. Data tapes are labeled with a five digit code designating the day, number of tape for that day and a "0" for a raw, or master tape, or a "1" for an edited tape. For example, the second master tape on Day 285 would be coded as 28520. Likewise, the first edited tape of Day 247 would be 24711.

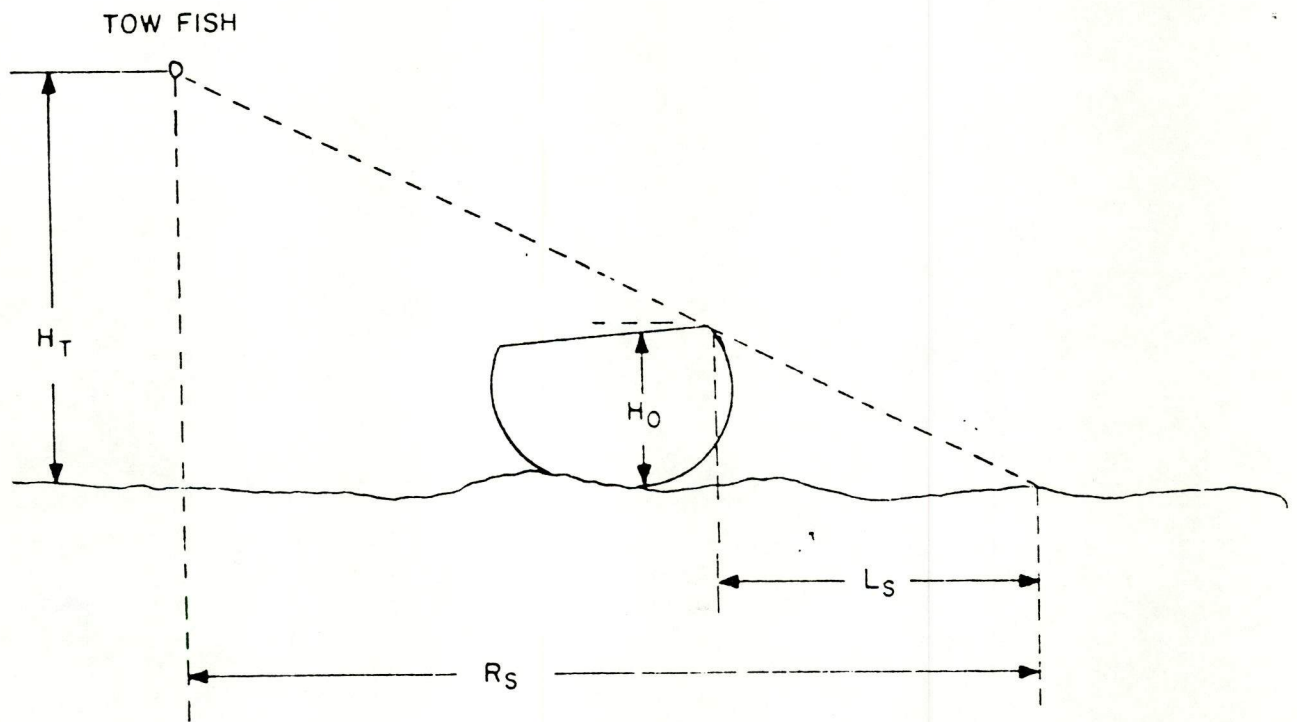
On-line operations were conducted exclusively from WHITING. Twenty-four hour shipboard data acquisition and processing was the mode of operations. In order to ensure that 200% side scan sonar coverage was obtained, sounding lines were run at 80 meter line spacing for the 100 meter range scale, and 130 meter line spacing for the 150 meter range scale. This line spacing ensured that the required effective swath overlap of 2.0 mm at the scale of the survey, per the Provisional Side Scan Sonar Manual, dated April 25, 1986, was maintained. An EG&G model 260 dual channel image correcting side scan sonar unit, towed behind WHITING, was the only unit used for the survey. The use of a heavier towing cable reduced the number snags on lobster pot lines, resulting in less down time. All significant contacts located were plotted and their height off the bottom determined as shown on figure 1. Items deemed significant enough for further investigation are included in Section Q.

The Project Instructions dictated the inshore limits of the survey to be the 30-foot depth curve. This 30-foot inshore limit was not adhered to because of safe limits for navigation or side scan coverage limitations. In most cases adequate side scan sonar coverage was not obtainable in less than 35 feet of water. In 30 feet of water (9.1 meters) the minimal height of the sonar fish off the bottom is 8 meters (8% of the 100 meter range scale). This would mean the fish had to be towed 1.1 meters below the water surface. Since WHITING has a draft of 10.6 feet (3.2 meters) cavitation from the screws would degenerate the sonar trace. Consequently, it was found that by varying towing speeds and cable lengths WHITING could adequately obtain sonar coverage in depths 35 feet or greater. The HDAPS on-line swath plot reduces the effective scanning swath whenever the fish is less than 8% of the range scale in use. In areas where the effective swath is plotted as less than 8%, the sonargrams were examined to ensure adequate coverage was maintained.

B. AREA SURVEYED

The project area for "B" sheet extends from offshore Highlands, New Jersey on the north edge (latitude 40-23-45²⁵ N) southward to approximately offshore Monmouth Beach, New Jersey (latitude 40-19-25⁵⁰ N), and junctions to the east with H-9531 (longitude 73-51-55²³ W). The western limit is the limit of safe navigation, or the minimum effective side scan tow depth of 35 feet. The survey was run from August 29, 1988 through November 1, 1988.

September 7



$$H_0 = \frac{L_S}{R_S} H_T$$

For example:

If, Shadow length (L_S) = 15 Meters

Shadow range (R_S) = 50 Meters

Tow fish height (H_T) = 20 Meters

Then, Object height (H_0) = 6 Meters

Figure 1. Object height determination.

C. SOUNDING VESSELS

The NOAA Ship WHITING was used as the sounding vessel for this survey.

<u>EDP#</u>	<u>Vessel</u>	<u>Hull No.</u>	<u>Days (1988)</u>
2930	WHITING	S329	244 - 245 251 - 256 258 - 259 263 - 265 283, 300, 302, 306

D. SOUNDING EQUIPMENT AND CORRECTION TO ECHO SOUNDINGS

1. SOUNDING EQUIPMENT

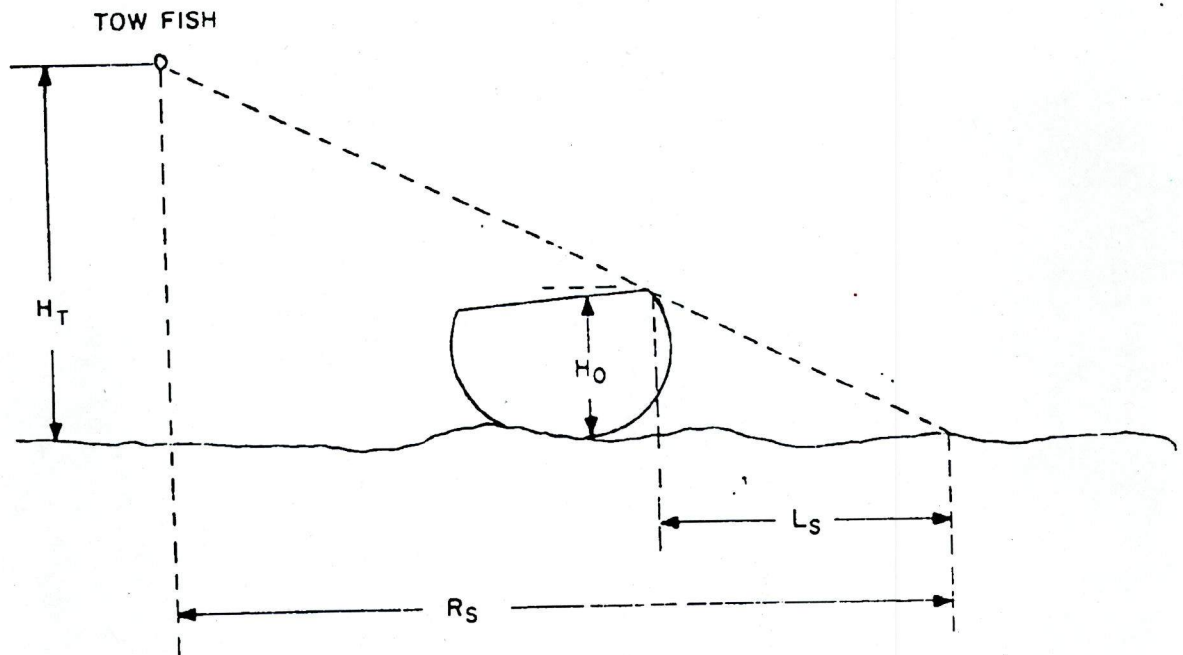
The ship was equipped with an EG&G model 260 dual channel image correcting side scan sonar unit. A listing of serial numbers and days of use follows:

<u>EDP#</u>	<u>Vessel</u>	<u>Type</u>	<u>S/N</u>	<u>Days (1988)</u>
2930	WHITING S329	EG&G Recorder 260	0012102	251 - 256 258 - 259 263 - 265 283
		Towfish	0011902	251 - 256 258 - 259 263 - 265 283

A Raytheon DSF 6000N echo sounder was the only sounding equipment used during the survey. The following is a list of serial numbers, and days of use:

<u>EDP#</u>	<u>Vessel</u>	<u>Type</u>	<u>S/N</u>	<u>Days (1988)</u>
2930	WHITING S329	DSF 6000N	A116N	244 - 245 251 - 256 258 - 259 263 - 265 283, 300, 302, 306

In accordance with the Project Instructions, section 6.6.1, the depths recorded with the DSF 6000N echo sounders were measured in feet with a calibrated velocity of sound through water of 1463.04 m/s.



$$H_0 = \frac{L_S}{R_S} H_T$$

For example:

If, Shadow length (L_S)	= 15 Meters
Shadow range (R_S)	= 50 Meters
Tow fish height (H_T)	= 20 Meters
Then, Object height (H_0)	= 6 Meters

Figure 1. Object height determination.

Survey records were scanned by NOAA Commissioned Officers, Survey Technicians, and Cartographic Technicians. Upon scanning the DSF 6000N analog records, any significant peaks or deeps which occurred between soundings, as well as any missed depths on the records, were inserted during Post Processing on the HDAPS system, and any incorrectly digitized soundings were corrected. The effect of sea and swell action on the echograms were also corrected.

Figures 2 and 3 depict the Mini-Ranger antenna positions, the transducer positions, and the layback configuration of the side scan sonar towfish for the WHITING. All of these corrections are incorporated in the "Offset" table for the HDAPS, Supplemental 3E. By HDAPS convention the "Offset" is defined as the left/right displacement of the sensor, positive to the right when facing the bow of the vessel. "Layback" is defined as the fore/aft displacement of the sensor, positive aft. "Height" is the up/down displacement of the sensor from the static waterline, positive down. The location of the high frequency DSF-6000N transducer was used as the starting point (0,0) for the on-board coordinate system.

2. SIDE SCAN SONAR

Side scan operations were performed by the ship by fitting a custom made pulley block and A-frame support to the after deck. A heavily armored side scan sonar towing cable was used for this project which reduced the number of times the fish snagged on lobster pot lines, and also allowed for deeper towing depths.

Numerous mainscheme lines had to be rerun due to the side scan sonar recorder continually stopping. This was caused by the HDAPS computation for the vessel speed which in turn is used by the EG&G to compute the slant range correction. Erroneous speeds of 0.0 and 12.5 knots would be sent to the EG&G recorder, this caused the swath plot to misrepresent the actual bottom coverage.

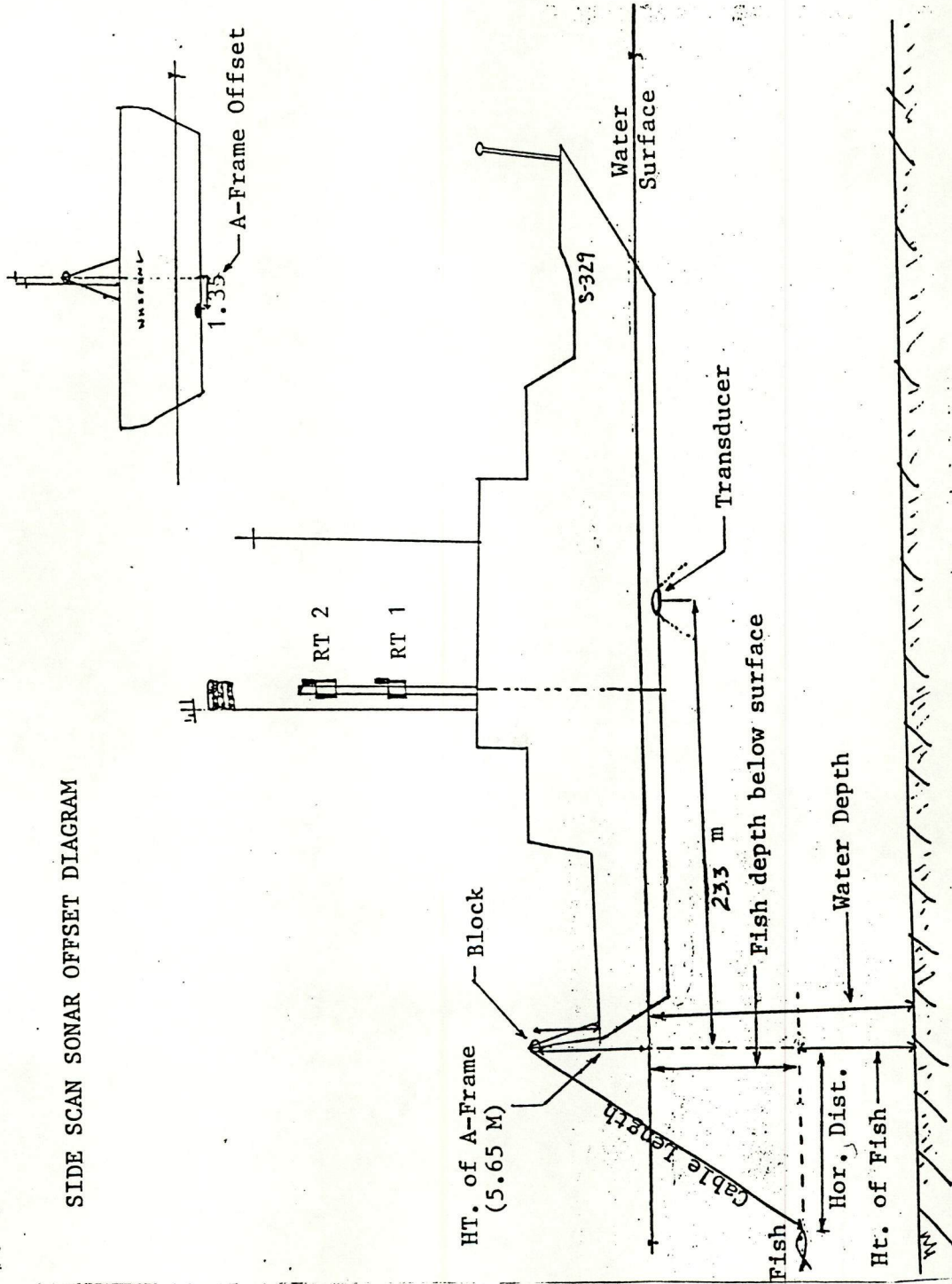
Methods of Investigation

Side Scan Sonar operations were run at a speed of less than 6 knots with the 100 meter range scale, in depths less than 60 feet, and at less than 4 knots with the 150 meter range scale in greater depths. Sonar swath plots were generated on-line to insure the required swath coverage (2 mm at the scale of the survey) was obtained. Off-line swath plots were plotted for each 100% of coverage obtained, one set each on a separate sheet, so that analysis of the data was clearer.

Processing Procedures

Inspection of the sonargrams was the initial step of processing the side scan sonar. Inspection involved checking the records for complete annotation and identifying and numbering each of the significant contacts (contacts with computed heights rising above the bottom at least 10% of the depth in water depths greater than 66

SIDE SCAN SONAR OFFSET DIAGRAM



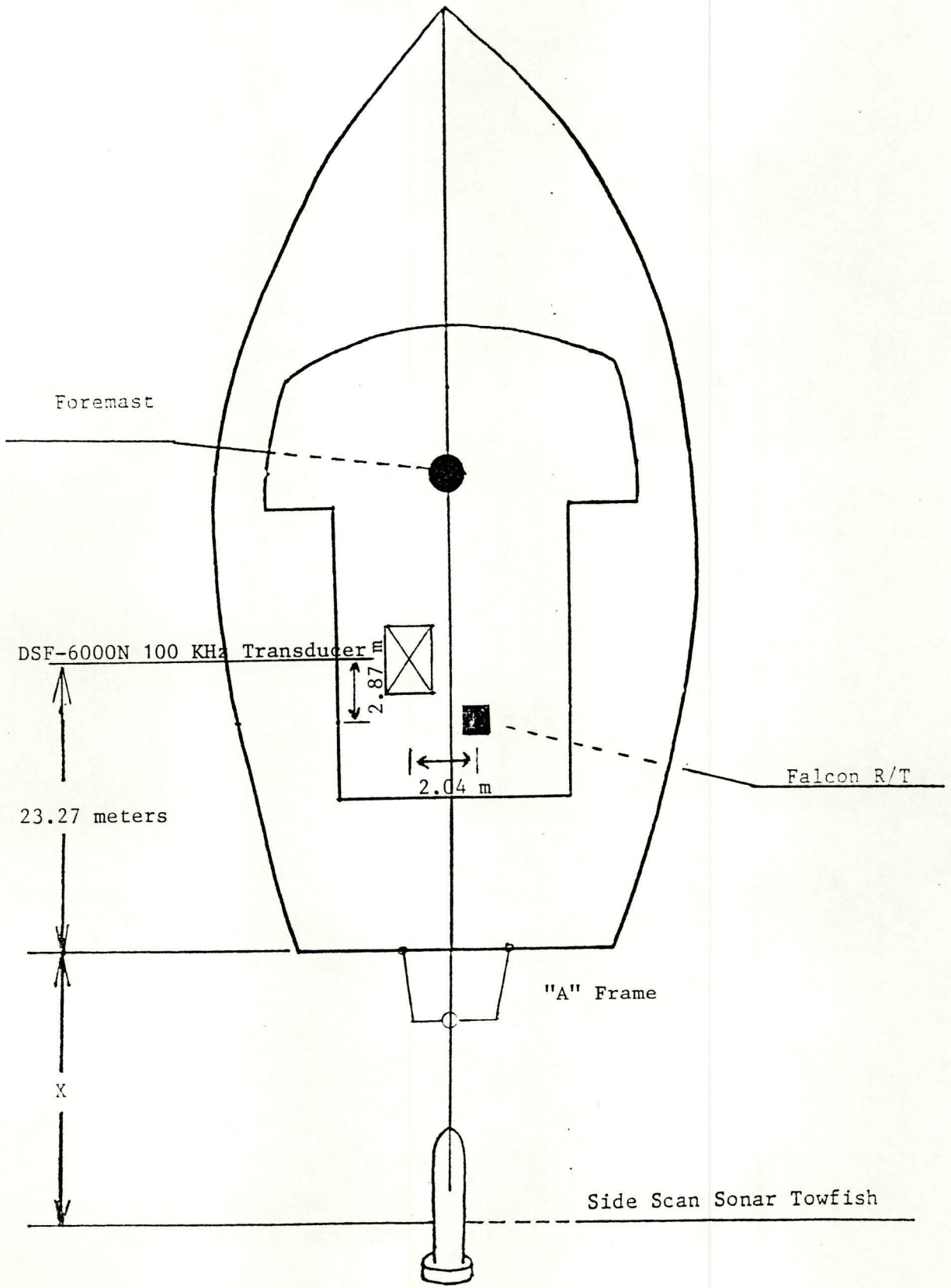


Figure 3

feet and contacts with computed heights of at least 1 meter in less than 66 feet). Other views of the same contact from adjacent lines were determined by hand plotting the significant contact on the Trackline plot, then determining where other views of the same contact should be seen on the sonargrams. All adjacent views were inspected to ensure that they were in fact the same contact. Per section 7.1.1. of the Project Instructions only the most dangerous contact need be investigated if contacts are closer than 3.3 mm apart using the largest scale chart of the area. Since the largest scale chart of the area is 1:40,000, this would mean that if the adjacent views of the same contact fall within 1.3 cm at the survey scale, only the most significant contact needs to be addressed. Adjacent views of the significant contacts were not numbered but roughly compared on the trackline plot.

After being identified and numbered on the sonargram, only the significant contacts were listed in the Side Scan Sonar Preprocessing Contact List. The list itemizes the day, the contact number, the contact name (relative to the position number of the contact), the time, the offset from the reference line (negative to Port and positive to Starboard), the shadow length, and the item description and adjacent views. All of this information is necessary as entering parameters for the "Contact Utility Program" in the HDAPS Post Processing Program. The program generates the true contact height off the bottom and the contact position. With this information, contacts were incorporated into a HDAPS signal list and plotted on the Side Scan Sonar Contact plot.

Since the purpose of this project was to identify significant side scan sonar contacts for further investigation by another field unit, a Sonar Contact Examination Record was not completed. Instead a form titled "Recommended Sonar Contacts for Further Investigation" was created and can be found in Separate K. This form lists the contact number, contact name, Easting, Northing, Latitude, Longitude, Height, Water Depth, and Recommendations or Remarks for further investigation.

3. VELOCITY CORRECTIONS

Corrections for sound velocity in water were calculated from data obtained from a Martek Mark VII TDC module and sensor assembly, s/n 101. Program "Velocity" was used for velocity correction computations.

The velocity casts were conducted in the same area where hydrographic data was obtained for the period the computed correctors were to be used. The data collected from each velocity cast was used directly to construct the corresponding velocity table. For example, during the period between days 263 and 268, hydrographic data was collected for sheets B and C. Therefore, on day 263, velocity cast #2 was performed on the border between sheets B and C so that velocity correctors could be obtained for both sheets B and C. The temperature and conductivity values given by

cast #2 were used in computing velocity table #2. This velocity table was used until Day 268, when velocity cast #3 was performed and velocity table #3 computed. Likewise, velocity cast #4 yielded velocity table #4, etc.. No averaging of any values between two different casts occurred or was required.

The general trend of correctors decreasing throughout the project period corresponds to the seasonal cooling of the water column. The most radical shift occurred between days 283 (velocity cast #5) and 300 (velocity cast #6) when the velocity correctors decreased from 2.2 feet in 85 feet of water to 1.6 feet in 85 feet of water. The water column stabilized sometime between day 308 and 325 as evidenced by the near identical velocity correctors obtained by casts #7 and #8.

All velocity tables were applied on-line by the HDAPS system and are found in Supplemental 3B.

<u>Table</u>	<u>Cast</u>	<u>Day</u>	<u>Depth</u>	<u>Time</u>	<u>Location</u>	<u>Days Applied</u>
1	TDC 1	244	26.0 m	16:37Z	40-22-18 N 73-22-18 W	244 - 262
2	TDC 2	263	28.0 m	16:20Z	40-22-30 N 73-52-42 W	263 - 267
4	TDC 4	268	24.0 m	17:00Z	40-16-24 N 73-53-12 W	268 - 306

Velocity Cast 1 was taken prior to the commencement of hydrographic operations in order to be incorporated as the Velocity correction in the HDAPS Velocity table. Velocity corrections were applied automatically by the HDAPS system. All on-line soundings were corrected for velocity during the survey.

On day 325, Nansen 1 was conducted simultaneously with TDC 8 for comparison purposes. The resulting correctors of the separate casts agreed within 0.1 feet, ensuring proper functioning of the Martek TDC (s/n 101) for the project period. Since the Nansen cast served only as a check, the correctors resulting from the cast were not applied to any hydrographic data.

4. BAR CHECKS

No bar checks were taken from the WHITING. Daily echo simulator checks were performed so that the narrow and wide beam returns compared within one-tenth of a foot.

5. VERTICAL CASTS

Shipboard echo sounder/pneumatic depth gauge comparisons were conducted on Day 268, while the ship was at anchor off Sandy Hook, New Jersey.

A pneumatic depth gauge (s/n 545-22HBC) was placed on the bottom directly under the transducers and the depth readings recorded concurrently with the analog readings from the DSF-6000N echo sounder (s/n A116N). Readings from the echo sounder and the pneumatic depth gauge were compared, the results (in feet) are as follows:

Pneumo Depth	Pneumo Corr.	Pneumo Depth + Corr	Draft by Pneumo	Pneumo - Draft	Echo Sounder Depth + 0.4 Vel Corr	DSF 6000 Inst. Error
33.0	+0.2	33.2	10.6	22.6	22.9	-0.3
33.2	+0.2	33.4	10.6	22.8	22.8	+0.0
33.2	+0.2	33.4	10.6	22.8	22.8	+0.0
33.2	+0.2	33.4	10.6	22.8	22.7	+0.1
33.2	+0.2	33.4	10.6	22.8	22.7	+0.1
----	----	----	----	----	----	----
33.2	+0.2	33.4	10.6	22.8	22.8	+0.0

The average instrument error with velocities applied is +0.0 feet.

The pneumatic depth gauge was bench calibrated on 8 June, 1988 and field calibrated against a lead line on Day 268 and a corrector of +0.2 feet was applied to all pneumo readings.

6. DRAFT CORRECTION

The depth of the transducers was measured by divers with the pneumatic depth gauge and found to be 10.6 ft., which agrees with historical data. However, a draft corrector of 10.5 ft. was applied to all sounding data for this project.

7. SETTLEMENT AND SQUAT

Settlement and squat correctors for the WHITING (VESNO 2930) were obtained from historical data determined on 4 April 1985 at Puerto Castilla, Honduras (OPR303-MI/WH-85). No major ship alterations have been completed that would affect the accuracy of these settlement and squat correctors. A 0.1 foot corrector was determined for all engine speeds between all ahead "2's" and all ahead "5's". A 0.2 foot corrector was determined for all ahead "6's" and a 0.5 foot corrector was determined for all ahead "7's".

All data was collected by the ship at speeds between all ahead "2's" and all ahead "7's". This historical settlement and squat data was applied to all soundings obtained by the WHITING. Historical data is included in Supplemental 3A.

8. TIDE CORRECTORS

Predicted tide correctors were applied on-line by HDAPS to all soundings that were acquired with the DSF 6000N, except as noted in the Field Tide Note, Separate B.* All echo sounding data plotted on the final field sheet were plotted with predicted tide correctors.

The tidal datum for the project was mean lower low water. The operating tide station at Sandy Hook, New Jersey (853-1680), served as control for datum determination. Third-order levels were run from the tide staff to five bench marks on 6 September, 1988, and 28 November, 1988. No secondary tide stations were established.

Predicted tides were calculated using Sandy Hook, New Jersey, as the reference station. The time and height correctors were given in the Project Instructions, section 5.9, for the project area (a -30 minute time correction, and a 0.94 range ratio, north of latitude 40-10.0 N). The predicted tide tables have Mean Low Water listed as the tidal datum in the 1988 edition.

Smooth tides were requested from Chief, Sea and Lake Levels Branch, N/OMA12, in a letter dated 16 November, 1988. A copy of the letter is included in Separate B.L.* The Field Tide Note is also included in Separate B.*

E. HYDROGRAPHIC SHEETS

The assigned survey scale was 1:10,000. All sheets were produced on board the WHITING with the HDAPS system on the Bruning-Nicolett ZETA plotter. Sheets will be submitted to the Hydrographic Surveys Branch, Atlantic Marine Center. A list of submitted sheets for H-10284 follows:

<u>Sheet</u>	<u>Scale</u>	<u>Quantity</u>
On Line Swath	1:10,000	6
Raw Trackline	1:10,000	4
Edited Trackline	1:10,000	2
Edited Soundings	1:10,000	5
Edited Swath	1:10,000	4
SSS Contact Plot	1:10,000	2
Semi Smooth Swath	1:10,000	4
Smooth Sounding Plot	1:10,000	4
Master Overlay	1:10,000	2
Bottom Samples	1:20,000	1

* Removed from original Descriptive Report; filed with survey records.

F. CONTROL STATIONS

The horizontal control datum for this project was the North American Datum of 1983. The following stations were used as Falcon Mini-Ranger shore stations during this survey.

<u>No.</u>	<u>Name</u>	<u>Source</u>	<u>Year</u>
001	AMBROSE LIGHT (ECC)	AMC	1988
002	SANDY HOOK LT. (ECC)	AMC	1986
003	SPERMACETI COVE, CG CUPOLA (see figure 4)	AMC	1940
004	SEA CLUB 2	AMC	1988**
005	SEA CLUB 1	AMC	1988
006	ADMIRAL	AMC	1988
010	IMPERIAL	AMC	1988
027	MONMOUTH NJMP WIND VANE	AMC	1988

For more information concerning the recovery of the geodetic stations used, refer to the Horizontal Control Report which can be found within Separate L.*

G. HYDROGRAPHIC POSITION CONTROL

Hydrographic position control was accomplished using the Mini-Ranger Falcon 484 system which provided accuracy adequate to exceed 1:10,000 scale survey requirements. Only range/range positioning, using 4 stations simultaneously, was used during this project. A survey network was set up to allow four reference stations to be accessed simultaneously by HDAPS. The following MOTOROLA Mini-Ranger equipment was used:

<u>VESNO</u>	<u>Equipment</u>	<u>S/N</u>	<u>DAYS</u>
2930	RPU*	E0138	244 - 306
	CDU	F0201	244 - 306
	R/T	2967	251 - 263**
	R/T	2960	253**, 264 - 265, 283, 300, 302, 306

* RPU - Range Processing Unit
 CDU - Control Display Unit
 R/T - Receiver/Transmitter

** - Day 253 from time 142926 to 171147 Falcon system in space diversity mode.

* Separate L. contains the request for smooth tides. The Horizontal Control Report is filed with the survey records.

** Not used for this survey.

FALCON REMOTE LOCATION

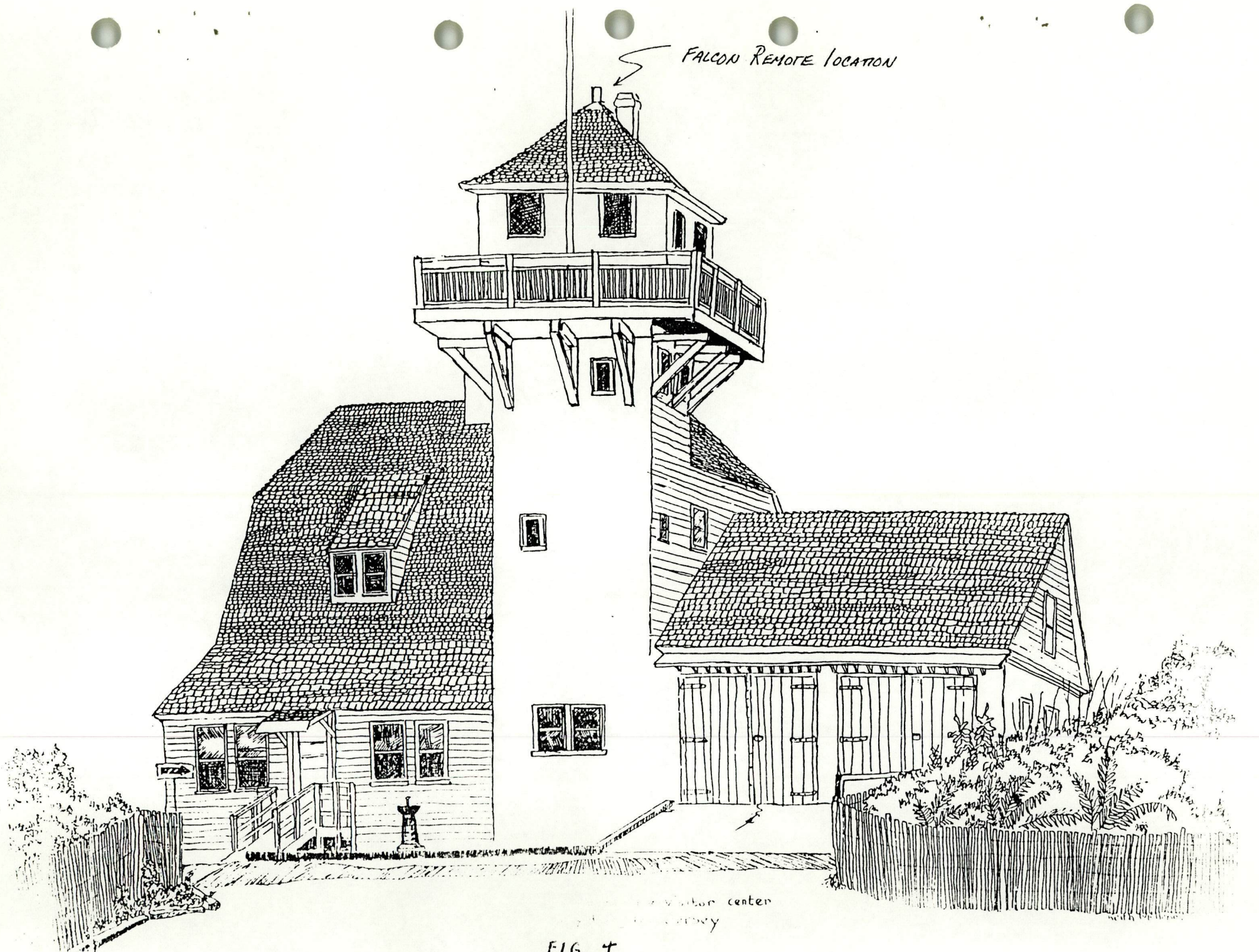


FIG. 4

Visitor center
Garage

1. Remote Reference Stations

<u>Code</u>	<u>S/N</u>	<u>Station</u>	<u>Days (1988)</u>
2	E2959	001	254 - 265, 302, 306
3	E2075	003	244 - 265, 283, 302
4	G3571	004 + 002	244 - 265, 283, 300, 302, 306
5	E2976	005	244 - 265, 283
6	F3290	006	244 - 265, 283, 302, 306
7	F3241	027	251 - 253
9	E2979	010	300 - 306

2. Critical System Check

An EDM range/azimuth calibration, using a HP9810 Total Station (serial # 1929A00355), was performed on 15 September, 1988 (Day 259) for codes 2,3,4,5,6,and 7 using RPU E0138 and RT E2967 from station Sea Club 1. Results of the calibration are included in Supplemental 4.

A 3 point sextant fix system calibration was performed using sextants (sn's T2989, T2976, T2990), RT 2960 and stations 1, 2, 3, and 5 on day 269. Comparisons of observed and computed lines of position resulted in residuals of less than 5.0 for all four stations. A 3 point sextant system calibration using RT 2960 and stations 10, 12, 16, and 19 was performed on day 287, with resultant residuals of less than 5.0 for all stations.

3. Non-critical System Check

Non-critical system checks were performed twice daily. Per Attachment A of the Project Instructions, noncritical checks were documented by stopping the vessel and invoking the DUMP GRAPHICS and DUMP ALPHA commands in "Page 3" of the "SURVEY" program. Screen dumps of "Page 3" are included with the on-line printout in the daily records. An abstract of the observed residuals can be found in supplemental 4.

4. Mini-Ranger Falcon Calibration

Baseline calibrations were performed to the standards of the AMC OPORDER 86 (Falcon 484 Calibration Procedures and Standard Forms) and Attachment A in the Project Instructions. Opening baseline calibrations were performed on 17 & 18 August, 1988 at Fort Monroe, Virginia, and on 29 August & 6 September, 1988 at Sandy Hook, New Jersey. Only the values computed over the Sandy Hook baseline were utilized as correctors in the HDAPS C-O table, and should be utilized as the final correctors to hydrographic data. All records of these calibrations are included with the survey records in Supplemental 4.

Per Attachment A of the Project Instructions, a closing baseline calibration was not performed. The critical system check performed on Day 259 was within tolerance and MLOP were used 100% of the time on the project.

H. SHORELINE - *See also section 2.b. of the Evaluation Report.*

No shoreline lies within the project boundaries or field sheet boundaries. Therefore, delineation of shoreline detail was not applicable to this survey. Shorelines were transferred from a 1:10,000 scale enlargement of chart 12326, Ed. 38, February 22, 1986, to the field sheets for orientation only. Per Change #1 to the Project Instructions, charted landmarks were verified during the course of the survey by taking visual cuts from the ship's Alidades and checking their position of the chart. All charted landmarks were found to be adequately positioned on charts 12324 and 12326.

I. CROSSLINES - *See also section 3.a. of the Evaluation Report.*

A total of 28.9 linear nautical miles of crosslines were run on "B" sheet and amounted to 9% of the mainscheme hydrography acquired. All soundings at crossings agreed to within 1-2 feet.

J. JUNCTIONS - *See also section 5. of the Evaluation Report.*

This sheet had no junctions with previous surveys. Survey lines were run to the limits shown on the sheet limits sent with the project instructions. Junctions with sheets A (H-10286) and C (H-10285) were compared with this survey and soundings were found to agree within 1-2 feet.

K. COMPARISON WITH PRIOR SURVEYS - *See also sections 6.a., 6.b. and 6.c. of the Evaluation Report.*

Soundings from this sheet were compared with the following surveys:

<u>Registry #</u>	<u>Scale</u>	<u>Year Surveyed</u>
H-6463 WD	1:40,000	1939
H-6190	1:40,000	1936
FE101 <i>WD</i>	1:40,000	1950
H-5638	1:10,000	1934
H-5616	1:10,000	1934

Representative soundings from these previous surveys were transferred to an overlay and checked against soundings from this survey. Depths were found to be in agreement within 1-3 ft. This difference in survey depths should not be considered unusual for the following reasons:

1. The prior surveys were performed when positioning consisted of visual cuts using sextants and soundings were taken by leadline. Modern survey methods are much more accurate. - *Concur*

2. The Sandy Hook area is known as an area of constantly shifting shoals and sand bottoms, hence, bottom configurations could have easily changed since the surveys were completed.

In common areas, the soundings from the current survey should be utilized to update the existing charts.

The shoal area East of Shrewsbury Rocks between buoys "SR" and "1" was developed by running 40 meter splits of the mainscheme lines which were run at 80 meter line spacing. A 26 ft. sounding was recorded adjacent to the reported position of AWOIS 4294, and is believed to be the item reported in the AWOIS listing. *26 Ft sounding is approximately 25 meters SW of charted 1221 PK.*

A star pattern was run and a bottom sample was taken on an obstruction on day 300. The least depth by echosounder was found to be 28.5 feet in 38.0 feet of water at lat 40-22-09 N, long 73-57-18 W. The bottom sample indicated that the feature was of a rocky nature. Because this item is an uncharted feature, a danger to navigation report was written and can be found in supplemental 10. *A 27 Obstr (A) lies approximately 5 meters to the NW.*

AWOIS 1562 - *See also section 6.b.1) of the Evaluation Report.*

AWOIS 1562 is listed as an unknown obstruction and wreckage found in lat 40-21-24 N, long 73-56-12 W with the shoalest depth of 38 feet. The item was reported wire drag cleared to 35 feet by an unknown source in 1950. Project instructions required 200% side scan sonar coverage for a radius of 100 meters.

A significant wreck was located within the 100 meter search radius on day 255, position # 2126.2s, in lat 40-21-25.945 N, long 73-56-10.228 W (contact # 16). The wreck has a calculated height off the bottom of 18.7 feet in 57.5 feet of water. The size and character of the wreck are consistent with the description of AWOIS 1571, Subchaser 60, a 77 ton Coast Guard vessel sunk in 1918. - *37 Wk (A)*

The hydrographer recommends that diver investigation and least depth determination be accomplished by a future field unit to fully resolve this item. - *Concur.*

AWOIS 1563 - *See also section 6.b.2) of the Evaluation Report.*

AWOIS 1563 is listed as an unknown obstruction and wreckage found in lat 40-21-18 N, long 73-56-06 W with the shoalest depth of 38 feet. The item was reported wire drag cleared to 35 feet by U.S.C. & G.S. in September 1939. Project instructions required 400% side scan sonar coverage for a radius of 100 meters.

Although no significant contacts were located with 200% side scan sonar coverage in the 100 meter search radius, a significant wreck with barge like characteristics was located 150 meters from

the reported position, at position # 2034.0p, lat 40-21-18.785 N, long 73-56-00.245 W (contact # 8). The wreck has a calculated height off the bottom of 7.3 feet in 58.7 feet of water. The wreck is believed to be the "POCONO", AWOIS 1568, which was not assigned.

51 Wk(A)

The hydrographer recommends that diver investigation and least depth determination be accomplished by a future field unit to fully resolve this item. *-Concur*

AWOIS 1570 - *See also section 7.2.1) of the Evaluation Report.*

AWOIS 1570 is listed as the wreck of the NAUTILUS, a 47 ft. tug reported sunk in about 60 feet of water at PA lat 40-22 N, long 73-55 W by LNM37/71. Project instructions required 200% side scan sonar coverage for a radius of 3000 meters.

A significant contact with wreck like characteristics was located on day 251 at position # 336.5p+s, lat 40-22-20.928 N, long 73-55-07.573 W (contact # 1), approximately 675 meters from the reported position. The wreck has a calculated height off the bottom of 16.1 feet in 67.9 feet of water. *47 Wk(A)* *AWOIS # 8071*

The hydrographer recommends that diver investigation and least depth determination be accomplished by a future field unit to fully resolve this item. *-Concur.*

AWOIS 1572 - *See also section 6.b.3) of the Evaluation Report.*

AWOIS 1572 is listed as an obstruction believed to be scattered wreckage in a soft bottom found in lat 40-22-24 N, long 73-56-36 W with the shoalest depth of 36 feet. The item was reported wire drag cleared to 34 feet through H.O. chart records, dated 1950. Project instructions required 400% side scan sonar coverage for a radius of 100 meters.

No significant contacts with wreck like characteristics were located with 400% side scan sonar coverage in the 100 meter search radius. A significant contact was located just outside the 100 meter search radius (position # 2517.7p, contact # 28), but this item has the characteristics of a long ridge and does not appear to be the item described in the AWOIS listing.

The hydrographer recommends that diver investigation and least depth determination be accomplished on the ridge feature by a future field unit to fully resolve this item. *4ø Obstr in the vicinity. Concur.*

AWOIS 4293 - *See also section 6.b.4) of the Evaluation Report.*

AWOIS 4293 is listed as an obstruction believed to be a rock on which a 28 ft. sounding was obtained in lat 40-20-24 N, long 73-56-36 W. The item was reported wire drag cleared to 25 feet by

H6463/39WD. Project instructions required 200% side scan sonar coverage for a radius of 100 meters.

A shoal area was located throughout the 100 meter search radius, but this area showed no singularly significant side scan sonar contacts. This shoal area was developed by running 40 meter splits of the mainscheme lines. A 31^φ ft. echosounder depth was recorded at position # ~~1810+1~~, lat 40-20-21.978 N, long 73-56-38.527 W.
34φ3 2φφ 83φ

The hydrographer recommends that diver investigation and least depth determination of the 31^φ ft. sounding be accomplished by a future field unit to fully resolve this item. -Recommend echo sounder investigation.

AWOIS 4294 - See also section 6.b.5) of Evaluation Report.

AWOIS 4294 is listed as an obstruction believed to be a rock on which a 24 ft. sounding was obtained in lat 40-20-53.4 N, long 73-56-19.8 W. The item was reported wire drag cleared to 22 feet by H6190/36. Project instructions required 200% side scan sonar coverage for a radius of 100 meters.

A shoal area was located throughout the 100 meter search radius, but this area showed no singularly significant side scan sonar contacts. This shoal area was developed by running 40 meter splits of the mainscheme lines. A 26 ft. echosounder depth was recorded at position # 3675+5, lat 40-20-50.398 N, long 73-56-23.431 W.
49φ 5φφ

The hydrographer recommends that diver investigation and least depth determination of the 26 ft. sounding be accomplished by a future field unit to fully resolve this item. -Concur

AWOIS 4600 - See also section 6.b.6) of Evaluation Report.

AWOIS 4600 is listed as an unknown obstruction and wreckage found in lat 40-22-36 N, long 73-56-24 W with the shoalest depth of 37 feet. The item was reported wire drag cleared to 34 feet by H6463/39WD. An additional 37 ft. sounding was reported in lat 40-22-30 N, long 73-56-30 W by H6463/39WD. This item was also cleared to 34 feet.* Project instructions required 400% side scan sonar coverage for a radius of 100 meters. *AWOIS 1571

Although no significant contacts were located with 400% side scan sonar coverage in the 100 meter search radius, a significant number of contacts with wreck like characteristics were located approximately 500 meters North of the reported position.

A significant side scan sonar contact was located on day 255, at position # 2382.1p, in lat 40-22-29.222 N, long 73-56-29.003 W (contact # 25), which corresponds to the additional position - 33 Obstr (A)

reported in the listing for AWOIS 4600. The wreckage has a calculated height off the bottom of ~~12.1~~^{6.9} feet in 41.6 feet of water.

The hydrographer recommends that diver investigation and least depth determination be accomplished by a future field unit to fully resolve this item. - Concur

Recommendations for items requiring additional investigation are included in Section Q.

L. COMPARISON WITH THE CHART - See also section 7.2. of the Evaluation Report.

Comparison of data from the present survey was made during the course of data acquisition with Chart 12324, 24th edition, dated November 15, 1986, and with a 1:10,000 scale enlargement of Chart 12326, 38th edition, dated February 22, 1986 per section 6.11 of the Project Instructions. All soundings agreed within 1-3 feet with the charts.

AWOIS items 1562, 1563, 1570, 1572, 4293, 4294, and 4600 are all located at positions other than the charted positions. Refer to Section K for additional positioning information. Least depths and accurate positioning for the depths will have to be determined by a future field unit as the WHITING conducted no diver item investigations. - See also section 6.b. of the Evaluation Report.

A danger to navigation report was submitted on a previously unreported obstruction with a least depth of ~~30.3~~^{26.9} feet in 40 feet of water at latitude 40-22-09 N, longitude 73-57-18 W. - 27 Obstr (A)

M. ADEQUACY OF SURVEY

This survey was conducted in accordance with the Project Instructions, Hydrographic Survey Guidelines, AMC OPORDERS, and the Hydrographic Manual. This survey is a complete basic hydrographic survey with the exception that contacts identified by 200 % side scan coverage have been left for further investigation and least depth determination by a different field unit.

N. AIDS TO NAVIGATION

Visual cuts were taken from the ships gyroscopic alidade which confirmed that the landmark position of the church spire at Sea Bright is adequately and accurately charted.

1. Floating Aids to Navigation - See also sections 4.a. and 7.b. of Evaluation Report.

The following Floating Aids to Navigation were determined to be adequately charted during the survey. Both aids were bracketed by 80 meter spaced mainscheme lines. The buoys were found to serve the purpose for which they were intended.

Buoy	Light List #	G.P.(NAD 27)	Dipfile G.P.(NAD 27)
Shrewsbury Rocks Lighted Buoy "1"	765	40-20.5 N 73-55.6 W	40-20-27.5 N 73-55-36.0 W
Shrewsbury Rocks Can Buoy "1SR"	N/A	N/A	40-20-31.7 N 73-56-45.5 W

2. Non-Floating Aids to Navigation

The only non-floating aid to navigation nearby the survey area was Ambrose Light (Light List # 730) which was positioned to third order accuracy for survey H-10224 in 1986 (See Horizontal Control Report submitted with H-10224, 1986).

O. STATISTICS

No. of Positions	3756
No. of Side Scan Positions	3427
No. of Crossline Positions	207
No. of Development Positions	122
No. of Rejected Positions	89
Linear NM of Sounding Lines	361.4
Linear NM of Side Scan Inv.	310.0
Square NM of Hydrography	12.4
Bottom Samples	21
Detached Positions	1
Omitted Positions	370
Duplicated Positions	0
Dive Investigations	0

Additional Statistics

TDC Casts	4
Nansen Casts	0
Tide Stations Leveled	1
Days of Production	20

P. MISCELLANEOUS

1. Shipboard Hydrography

Twenty-four hour mainscheme hydrographic operations were advantageous in obtaining the complete coverage of the survey area.

However, there were several factors which impeded operations significantly. The area was densely populated with lobster traps ("pots") which occasionally entangled the side scan sonar cable so that operations had to be delayed until the lines entangling the sonar could be severed. The entanglement of the towfish put considerable strain on the side scan connector cable which resulted in damage to the cable requiring it to be "repotted". Heavy traffic within the work area also presented problems. Operations were occasionally delayed due to traffic situations. Finally, numerous survey lines had to be rerun due to side scan sonar coverage busts.

Shrewsbury Rocks is the most significant hydrographic feature on the survey. Although the Project Instructions stated that the inshore limit for hydrography was the 30-foot depth curve, this was not feasible in the vicinity of Shrewsbury Rocks. Buffer zones were established around the perimeter of the shoal within which WHITING could safely work. It was found that as the depth approached 30 feet, adequate side scan sonar coverage was not obtainable. Since WHITING's draft is 10.6 feet (3.2 meters) and the minimal accepted height off the sea floor is 8 meters (8% of the 100 meter range scale) the cavitation of the ship's screws would deteriorate the sonar record.

2. Bottom Samples

Bottom samples were taken for submission to the Smithsonian Institution, as directed in Section 6.7 of the Project Instructions and section 5 of Change No. 1. Twenty bottom samples were transmitted on September 23, 1988, and one bottom sample was transmitted on November 11, 1988. Due to a HDAPS software deficiency, Detached Positions cannot be digitally recorded on the magnetic tape, so the positions were recorded only on the master printout and plotted on the smooth sheets by hand. - *Since repaired.*

3. Anomalous Currents

No anomalous currents were observed in the survey area, per section 8.1 of the project instructions.

Q. RECOMMENDATIONS

The hydrographer recommends that the area blocked off around Shrewsbury Rocks and not investigated by WHITING due to shallow water, be further investigated by another field unit capable of working in shallow water. Densely spaced sounding lines run in a north-south direction, which junction with the current survey, should be run to adequately delineate the shoal. - *Concur.*

The following side scan sonar contacts are recommended for further investigation:

<u>Contact #</u>	<u>Position #</u>	<u>Contact #</u>	<u>Position #</u>
1	336.5p+s	23	2367.9s
3	1709.1p	24	2389.9p
5	1741.6s	25	2382.1p
6	1746.4s	27	2438.1s
8	2034.0p	28	2517.7p
11	2063.3p	29	2523.9p
15	2157.9p	30	2570.6p
16	2126.2s	32	2697.4p
17	2127.3s	33	2763.9p
22	2329.9p	39	3428.4p

Descriptive and positioning information on these contacts can be found in separate K.

A copy of the final smooth sheets should be sent to the following personnel who greatly supported survey operations:

Mr. Guy Wilbanks
P.O. Box 3066
Sea Bright, NJ 07760

R. AUTOMATED DATA PROCESSING

In addition to the HDAPS system, the following non-HDAPS computer programs were used:

VELOCITY	Velocity Computations (IBM PC)	01/01/87
RK 300	Utility Computations	

S. REFERRAL TO REPORTS

<u>Title</u>	<u>Transmittal Information</u>
Descriptive Report To Accompany Surveys H-10285 + H-10286	Hydrographic Surveys Branch Atlantic Marine Center N/MOA23 Transmittal WH-OPS-77-88 Dated: December 7, 1988
Horizontal Control Report	Photogrammetry Branch Atlantic Marine Center N/MOA22 Written by: C.M. Middleton Jr.

Chart Sales Agent Report

Field Surveys Section, N/MOA222
Mr. Kenneth H. Moyer
N/CG33

Transmittal WH-OPS-63-88
Dated: November 7, 1988

User Evaluation Report

Program Planning & Requirement
Atlantic Marine Center
N/MOA23

Transmittal WH-OPS-64-88
Dated: November 7, 1988

Chart Inspection Report

Mr. Rudolph D. Sanocki
Atlantic Marine Center
N/MOA232

Transmittal WH-OPS-73-88
Dated: December 5, 1988

Danger to Navigation Report

Chart Information Section
N/CG222

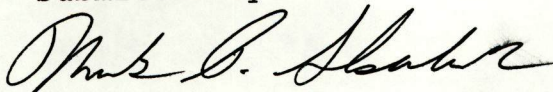
Transmittal WH-OPS-66-88
Dated: November 10, 1988

Coast Pilot Report

Mr. Rudolph D. Sanocki
Atlantic Marine Center
N/MOA232

Transmittal WH-OPS-76-88
Dated: December 6, 1988

Submitted By:



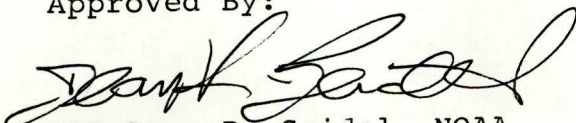
ENS Mark P. Skarbek, NOAA

Reviewed By:



LT Samuel P. DeBow, NOAA
Field Operations Officer

Approved By:



CDR Dean R. Seidel, NOAA
Commanding Officer

SEPARATE F

LIST OF STATIONS

STATION LIST
 DPR-C147-WH
 1988
 WH-10-1-88
 H-10284

No.	Lat	Long	Cart	H	Code	Frequency
001	040:27:35. 263 ³²²	073:49:49.99 8 ¹	250	45	2	000000
002	040:27:42.189	074:00:07.236	250	26	4	000000
003	040:25:36.085	073:59:03.27 066	250	15	3	000000
004	040:21:55.966	073:58:22.996	250	13	4	000000 *
005	040:21:53.497	073:58:22.585	250	12	5	000000
006	040:19:51.98 5 ⁵	073:58:27.117	250	48	6	000000
010	040:16:41.19 76	073:59:01.833	250	56	9	000000
012	040:13:43.310	073:59:53.48 12	250	81	-	000000 *
016	040:11:08.351	074:00:34.846	250	9	-	000000 *
019	040:08:11.868	074:01:38.854	250	15	-	000000 *
027	040:20:31.751	073:58:27.051	250	13	7	000000
028	040:22:49.632	073:58:27.337	139	6	-	000000 *
031	040:21:56.502	073:58:30.569	139	9	-	000000 *

No.	Name	Source	Year
001	AMBROSE LIGHT (ECC)	AMC	1988
002	SANDY HOOK LT. (ECC)	AMC	1986
003	SPERMACETI COVE CG CUPOLA	AMC	1940 1926
004	SEA CLUB 2	AMC	1988 *
005	SEA CLUB 1	AMC	1988
006	ADMIRAL	AMC	1988
010	IMPERIAL	AMC	1988
012	ASBURY T	AMC	1988 *
016	BELFISH	AMC	1988 *
019	GIRTY	AMC	1988 *
027	MONMOUTH NJMP WIND VANE	AMC	1988
028	SEA WALL	AMC	1988 *
031	SEA BRIGHT	AMC	1981 *

* Not used for this survey.

SEPARATE M

DANGERS TO NAVIGATION

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H-10284

Survey Title:

State: New Jersey
General Locality: Atlantic Ocean
Sublocality: Offshore New Jersey, Highlands to Monmouth Beach

Project Number: OPR-C147-WH

Field Number: WH-10-1-88

NOAA Ship WHITING

The following item was discovered during hydrographic survey operations:

Object Discovered: Unknown obstruction

Covered by 30.3 ft. corrected to MLW using predicted tides

AFFECTED NAUTICAL CHARTS:

CHART NUMBER	EDITION		CHARTED HORIZ. DATUM
	NO.	DATE	
12324	24th	Nov. 15, 1986	NAD 27
12326	38th	Feb. 22, 1986	NAD 27
12300	32nd	Mar. 23, 1985	NAD 27

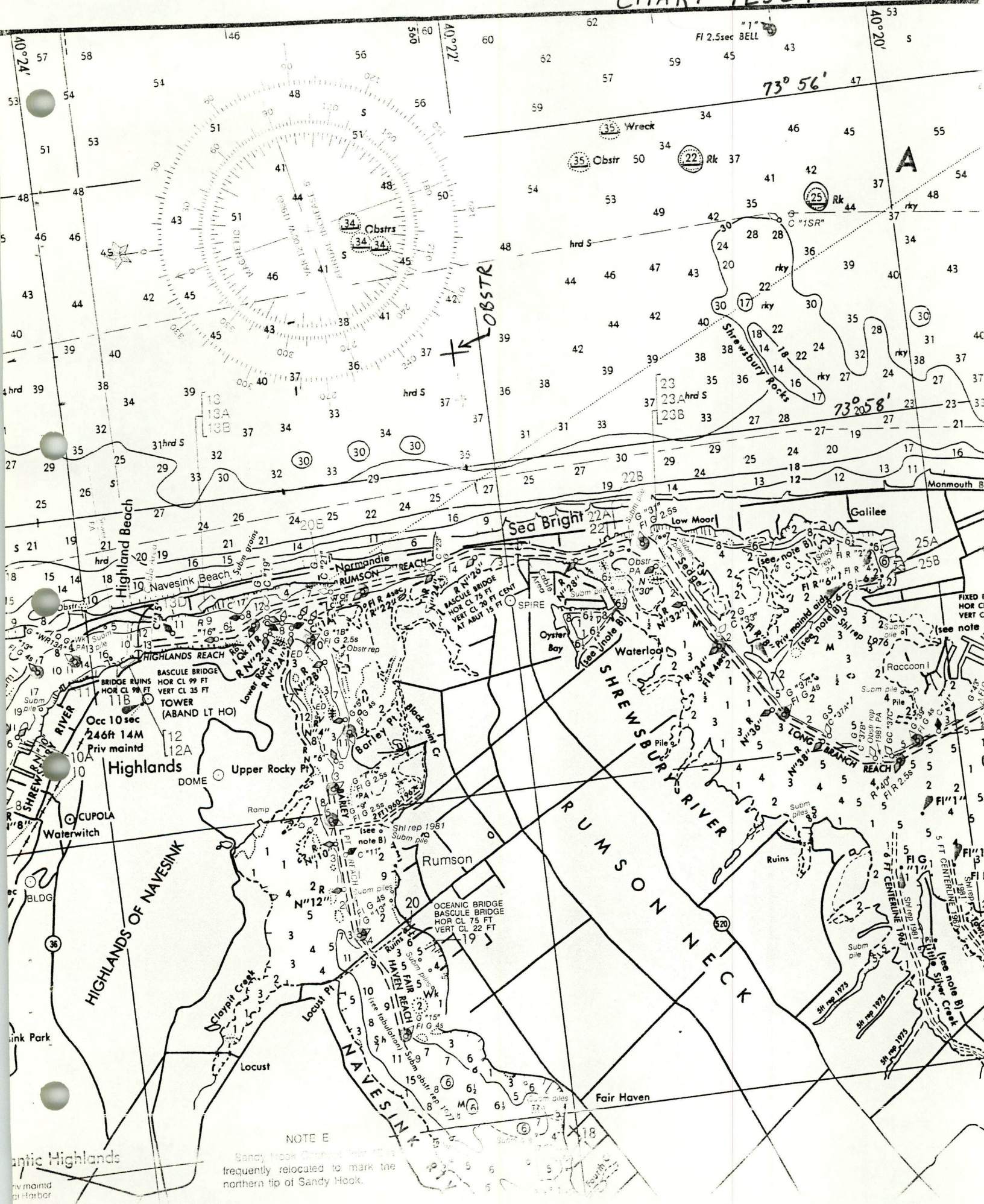
GEOGRAPHIC POSITION (NAD 83)

LATITUDE LONGITUDE
40° 22' 09" 73° 57' 18"

REPORTED DEPTH - 30.3 ft.

Questions concerning this report should be directed to the Atlantic Marine Center at (804) 441-6776.

CHART 12324



NOTE E
Sandy Hook Light has been frequently relocated to mark the northern tip of Sandy Hook.

CHART 12326

NOTE F
Hook Channel light 15 is frequently used to mark the northern tip of Sandy Hook Channel light 15 is frequently used to mark the northern tip of Sandy

CABLE AREAS
Cable areas that fall within the limits of this chart are shown in the larger scale charts and are not repeated on this chart.



There have been callings on the use of aids to marine in the U.S. Coast Defense Mapping Center arrangements to commercial vessels are subject to error. (approximate location)

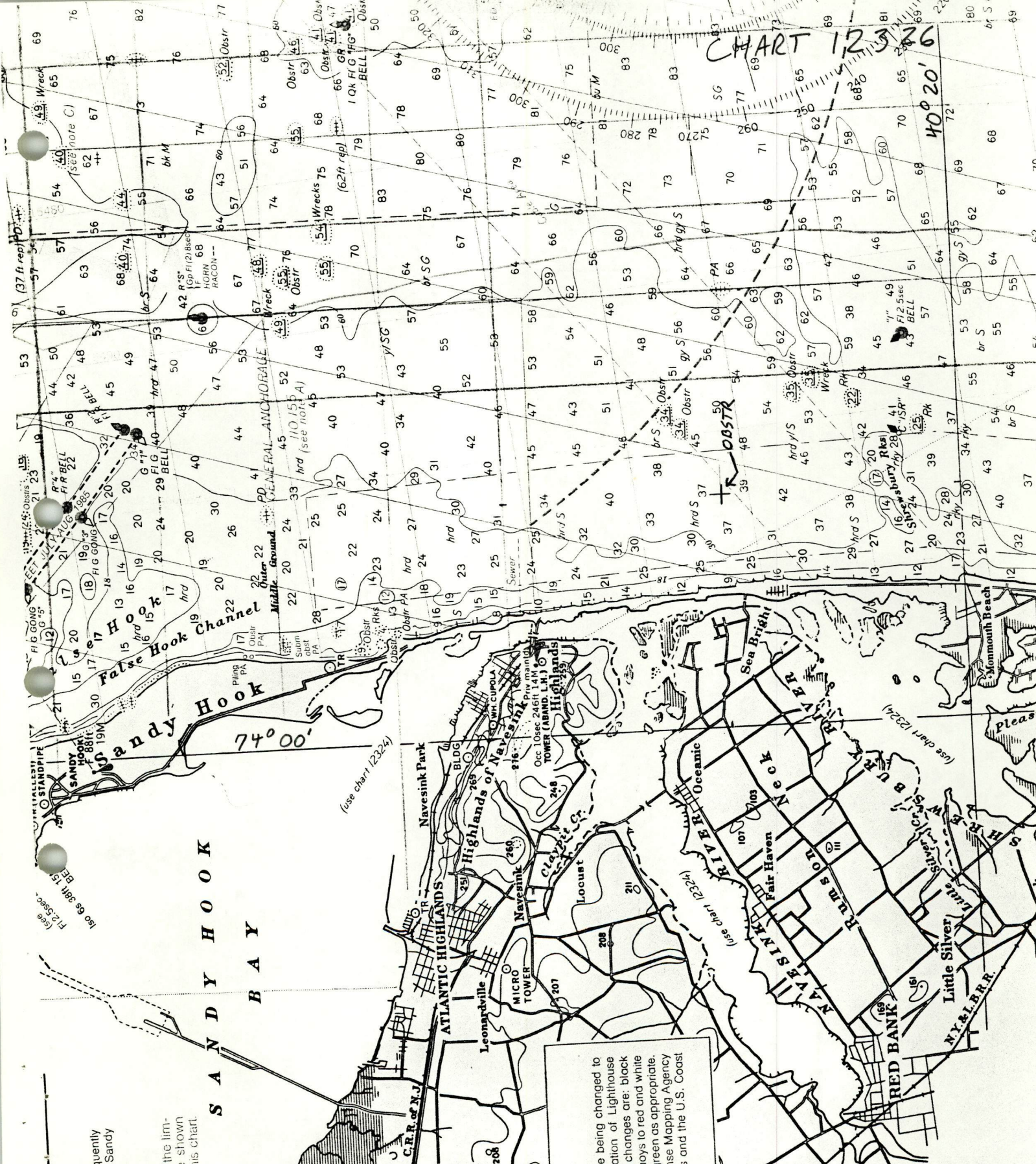
COAST BUOYAGE
Changes to navigation are being changed to the International Association of Lighthouse Buoys. Significant changes are: black and white vertically striped buoys to red and white lights. Light colors white to red or green as appropriate. (Notice in the Defense Mapping Agency publications.) Notice to Mariners and the U.S. Coast

RADIO BROADCASTS
Service stations listed as marine weather reception is variable, usually 20 to 40 miles

162.55 MHz
162.475 MHz

GRAPHY
Hydrographic surveys of this chart were made by the U.S. Navy Hydrographic Office, under Joseph W. Dropp.

REPORTS
Oil and hazardous substances, or to the nearest U.S. telephone communication center.



3637

3638

3639

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00 FT

0 10 FT

10 FT

10 FT

ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW

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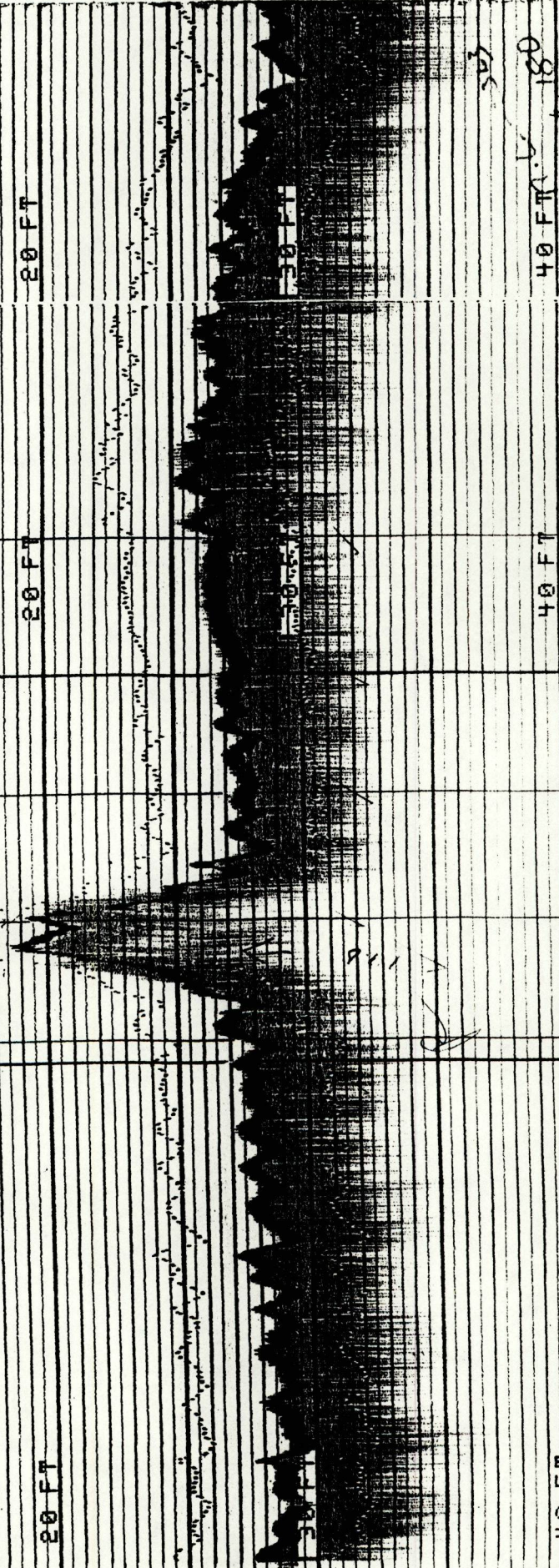
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ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW

503

180



SEPARATE N


APPROVAL SHEET

APPROVAL SHEET

HYDROGRAPHIC AND
SIDE SCAN SONAR SURVEY
OPR-C147-WH
1988
WH-10-1-88
H-10284

This combined hydrographic and side scan sonar survey was conducted in accordance with the Project Instructions for OPR-C147-WH, the Hydrographic Manual, the AMC OPORDERS, and the Hydrographic Survey Guidelines. The survey and reports were completed under daily supervision. All boat sheets and final transmitted sheets were reviewed in their entirety and all supporting records were checked as well.

This survey is a complete basic hydrographic survey with the exception that contacts identified by 200% side scan coverage have been left for further investigation and least depth determination by a different field unit. - *Concur - see memorandum dated 15 May 1989 From N/CG 241.*


Dean R. Seidel, CDR NOAA
Commanding Officer
NOAA Ship WHITING



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

ATLANTIC MARINE CENTER
439 West York Street
Norfolk, VA 23510-1114

May 15, 1989

MEMORANDUM FOR: Lieutenant Commander Maureen R. Kenny, NOAA
Chief, Operations Section
R. D. Sanocki
FROM: R. D. Sanocki
Chief, Hydrographic Processing Section (AMC)
SUBJECT: Review of Side Scan Sonar Records and Contacts
for Surveys H-10284, H-10285, and H-10286

SURVEY H-10284

The hydrographer initially identified 39 contacts, 20 of which were recommended for further investigation. No additional contacts were identified during this review; however, three contacts not recommended by the hydrographer for further investigation are recommended to be investigated (contacts 7, 20, & 38). Five contacts recommended for further investigation in the area of a US Army C of E permit (discussed below) were deleted (contacts 11, 15, 17, 23, & 39).

A U.S. Army C of E permit establishes an area within the above survey which permits the construction of patch reefs. See copy of attached permit. Because of the permit's provision defining an area with a authorized minimum clearance of 40 feet at MLW five contacts recommended for further investigation of eleven contacts in the reef area need not be investigated.

Considering the criteria defined in section 7 of the Project Instructions for OPR-C147-WH, dated August 22, 1988 the remaining significant side scan sonar contacts recommended for further investigation are listed below (positions are on NAD83).

<u>CONTACT NUMBER</u>	<u>FEATURE</u>	<u>OBJECT HEIGHT</u>	<u>SURVEY DEPTHS</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>
1 *	Wreck	16'	61-64'	40-22-20.9	73-55-07.6
3	Obstr	5'	48-49'	40-22-56.7	73-55-33.0
5	Obstr	13'	56-59'	40-19-57.8	73-55-37.2
6	Obstr	10'	48-49'	40-20-32.1	73-55-36.9
7	Obstr	3'	44-45'	40-20-38.5	73-55-35.8
8 **	Wreck	7'	58-59'	40-21-18.8	73-56-00.2
16 ***	Wreck	19'	54-57'	40-21-25.9	73-56-10.2
20 +	Shoal	-	26'+	40-20-29.7	73-56-25.4
22 ++	Wreck	4'	48-51'	40-22-58.7	73-56-24.4



24	Obstr	4'	45-47'	40-22-51.4	73-56-26.8
25	+++ Obstr	7'	40-43'	40-22-29.2	73-56-29.0
27	Obstr	4'	37-38'	40-22-25.5	73-57-28.6
28	# Obstr	5'	43-48'	40-22-21.5	73-56-36.7
29	Obstr	6'	48-49'	40-23-08.3	73-56-37.7
30	Obstr	5'	41-45'	40-22-36.2	73-56-44.9
32	## Shoal	6'	35'##	40-22-29.4	73-57-10.6
33	### Shoal	12'	27'###	40-22-09.7	73-57-19.0
38	Obstr	3'	33-35'	40-21-20.6	73-57-44.7

* Probably AWOIS item 1570. Contact number one which appears to be a wreck was found 670 meters to the NNW of the AWOIS item.

** Probably AWOIS item 1563. Contact number 8 was found 100 meters to the east of the AWOIS item. 400% side scan sonar coverage was required; however, only 200% was achieved. It is most likely that contact number 8 is the item. Additional 200% side scan sonar coverage is not required.

*** Probably AWOIS item 1562. Contact number 16 was located 55 meters to the north from the AWOIS item.

+ Probably AWOIS item 4294 - a rocky shoal area on which a depth of 26 feet was obtained by the WHITING. It is recommended that an area about this shoal centered in Latitude 40-20-51 N, Longitude 73-56-15 W, 800 meters square (oriented NS-EW) be developed with 25 meter east-west sounding lines.

++ Probably AWOIS item 4600. Contact number 22, identified as a possible wreck, was located 700 meters north from the AWOIS item.

+++ This may also be AWOIS item 4600. Contact number 25 was located 270 meters to the SW from the item and contact number 39 which was not considered significant, was located 270 meters to the WSW from the item. 400% side scan sonar coverage about a 100 meter radius of the item was required; however, only 300% was achieved. Considering the quality of the SSS record, the probability of another significant contact within the search radius is unlikely and no further SSS coverage is recommended.

Probably AWOIS item 1572. Contact number 28 was located 125 meters to the SW from the item. Also, contact number 25 was located 195 meters to the NE from the item. 400% SSS coverage about a 100 meter radius of the item was required and was achieved.

The WHITING obtained a depth of 35 feet on this shoal.

The WHITING obtained a depth of 27 feet on this shoal. It is recommended that an area about this shoal centered in Latitude 40-22-07 N, Longitude 73-57-19 W, 250 meters square (oriented NS-EW) be developed with 25 meter east-west sounding

lines.

AWOIS item 4293, a 28-foot sounding taken on a rock and cleared by 25 feet by survey H-6463WD (1939) in Latitude 40-20-24 N, Longitude 73-56-36 W was not considered resolved by the WHITING. The WHITING obtained a 30-foot echo sounder depth in Latitude 40-20-21.98 N, Longitude 73-56-38.53 W. An echo sounder development of this feature is recommended which would cover a 100 meter radius about the 30-foot depth with 20 meter east-west lines.

These features should generally be resolved by obtaining diver least depths. The shoals should be investigated by a system of 25 meter east - west sounding lines to determine their extent and one or two lines along their axis to assure the least depth has been obtained.

SURVEY H-10285

The hydrographer initially identified 23 contacts, 17 of which were recommended for further investigation. Three additional contacts (contacts 24, 25, & 26) were identified during this review. The three were considered to require further investigation but fall in an area recommended for echo sounded development. The hydrographer also identified several extensive areas which he described as being rocky in which five of the contacts (contacts 14, 15, 18, 21, & 22). Three contacts recommended for further investigation were deleted (contacts 1, 5, & 6). One contact (contact 13) not recommended was considered to be significant but falls in an area recommended for echo sounder development.

Considering the criteria defined in section 7 of the Project Instructions for OPR-C147-WH, dated August 22, 1988 the remaining significant side scan sonar contacts recommended for further investigation are listed below (positions are on NAD83).

<u>CONTACT NUMBER</u>	<u>FEATURE</u>	<u>OBJECT HEIGHT</u>	<u>SURVEY DEPTHS</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>
2	Obstr	8'	78'	40-16-29.4	73-52-20.3
8 *	Wreckage	7'	47-48'	40-18-23.2	73-56-33.1
9 **	Wreckage	2'	57-58'	40-16-07.9	73-56-35.2
11 ***	Obstr	6'	45-47'	40-18-19.8	73-56-43.2
12 +	Obstr	8'	55'	40-16-58.4	73-56-49.6
13 ++	Rocky	4-10'	38-47'	(see footnote)	
17	Obstr	6'	39'	40-17-56.2	73-58-05.2
19 +++	Obstr	-	44'	40-19-29.1	73-57-01.9
20 #	Rock	8'	47'	40-18-18.2	73-56-55.2
21 ##	Rocky	7-17'	32-45'	(see footnote)	
23 ###	Wreck	5'	61-62'	40-17-02.0	73-56-26.5

* Contact number 8 which falls 110 meters to the west of AWOIS item 1543 may be the item. This item was described as an obstruction located in Latitude 40-18-24 N, Longitude 73-56-30 W, with a sounding of 36 feet, cleared to 34 feet by survey H-6463WD (1939). An echo sounding of 41 feet was obtained by survey H-10285 in the vicinity in surrounding depths of 47 to 48 feet. 200% side scan sonar coverage was obtained over the item but 400% was required for verification or disproval. It is most likely that contact number 8 is the item. Additional 200% side scan sonar coverage is not required. A diver identification of the contact is required and least depth is needed. If it is determined that the contact is not wreckage but a rocky outcrop an echo sounder development over the extent of the feature is required to assure a least depth has been obtained.

CONC UR

** Contact number 9 may be AWOIS item 1531 a 44-foot sounding on an unknown obstruction, cleared by 42 feet in Latitude 40-16-12 N, Longitude 73-56-30 W from survey H-6463WD (1939). The contact found by the present survey H-10285 is 210 meters southwest of the AWOIS item position. 400% side scan sonar coverage about a 175 meter radius was achieved over the item. A diver investigation and least depth is needed.

*** Contact number 11 appears to be a rocky outcrop and a 41-foot echo sounding was obtained on it by the present survey. A diver investigation and least depth is needed.

+ Contact number 12 may be AWOIS item 1538 a 43-foot sounding on an unknown obstruction, cleared to 42 feet in Latitude 40-17-00 N, Longitude 73-57-00 W from survey H-6463WD (1939). The contact found by the present survey is 220 meters ESE of the AWOIS item position. A 47-foot echo sounding depth was obtained on the feature by survey H-10285. Also, 400% side scan sonar coverage about a 150 meter radius of the item was achieved. A diver investigation and least depth is needed.

++ Contact number 13 is one of several (contacts 13,14,15,16,18, and 22) found in areas of rocky outcrops. Survey depths from H-10285 of the surrounding bottom range from 38 to 47 feet. The contacts range in height from four to 10 feet off the bottom. It is recommended that an area bounded by the points listed below be developed with a system of east-west 25 meter sounding lines to ascertain depths in the area.

	<u>Latitude</u>	<u>Longitude</u>
a.	40-17-15 N	73-58-14 W
b.	40-17-15 N	73-57-44 W
c.	40-17-02 N	73-57-44 W
d.	40-17-02 N	73-58-14 W

+++ Contact number 19 shows no shadow but is of a distinct

rectangular shape. It is recommended that additional high resolution side scan sonar lines be run over it to ascertain its significance.

Contact number 20 is probably AWOIS item 4291 a 40-foot sounding obtained over boulders by survey H-6463WD (1939). The contact is 85 meters east of the AWOIS item. It falls in an area defined by the hydrographer on survey H-10285 as being rocky. An echo sounder development or diver least depth is needed.

Contact number 21 is one of several (contacts 21,24,25, and 26) found in an area of rocky outcrops. These contact heights range from 8 to 17 feet in survey H-10285 bottom depths of 32 to 45 feet. It is recommended that an area bounded by the points listed below be developed with a system of 25 meter east-west sounding lines to ascertain depths in the area. The bounded area also contains AWOIS items 4288 and 4289 which are a 26-foot sounding and 29-foot grounding on rocks, respectively.

<u>Latitude</u>	<u>Longitude</u>
a. 40-16-54 N	73-58-38 W
b. 40-16-54 N	73-57-56 W
c. 40-16-34 N	73-57-56 W
d. 40-16-34 N	73-58-38 W

Contact number 23 which was found 265 meters to the NNW of AWOIS item 1537 is probably the item; identified as wreckage located by survey H-6463WD (1939). The present survey H-10285, obtained an echo sounder indication on the contact rising 5 feet off the surrounding bottom. A diver investigation and least depth is needed.

AWOIS item 4290 was searched for using 400% side scan sonar coverage of the recommended search radius (actual SSS coverage was 180 meter radius) and no significant contacts were found. However, several contacts were found to the south and southwest (see contact number 13 above) which appear to be rocky outcrops. An echo sounder development was recommended above (contact 13) over the contacts. Also included in the development area is the location of AWOIS item 1539. No further field work is recommended in the search radius of AWOIS item 4290.

AWOIS item 4292 was not found with 200% side scan sonar coverage over the 3000 meter search radius. Contacts found during the search do not appear to have the characteristics of the wreck. No further investigation is recommended on this item.

SURVEY H-10286

The hydrographer identified 21 contacts for which he recommended

further investigation. Of the 21, 4 (contacts 1, 5, 27, & 34) are not recommended to be further investigated. Also, three additional contacts (contacts 17, 24, & 42) were identified during the office review; however, upon further review one (contact 42) of the three is not recommended for further investigation. This leaves a total of 19 contacts to be further investigated.

Considering the criteria defined in section 7 of the Project Instructions for OPR-C147-WH, dated August 22, 1988 the remaining significant side scan sonar contacts recommended for further investigation are listed below (positions are on NAD83).

<u>CONTACT NUMBER</u>	<u>FEATURE</u>	<u>OBJECT HEIGHT</u>	<u>SURVEY DEPTHS</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>
3	Obstr	4'	30'	40-24-15.5	73-57-32.8-
6	Obstr	4'	48'	40-23-45.2	73-56-27.1-
10	Obstr	6'	36'	40-27-26.3	73-56-20.1-
12	Obstr	4'	45'	40-26-53.2	73-56-09.1-
13	Obstr	5'	46'	40-26-49.1	73-56-06.8-
14	Obstr	6'	38'	40-26-45.3	73-56-36.7-
15	Obstr	6'	47'	40-26-49.5	73-55-54.4-
16	Obstr	8'	41'	40-27-30.0	73-56-03.8-
17	Obstr	5'	53'	40-26-21.9	73-55-50.6-
18	Obstr	3'	47'	40-27-25.1	73-55-49.4-
19	Obstr	5'	48'	40-28-12.2	73-55-48.6-
20	Obstr	4'	54'	40-27-39.7	73-55-39.1-
22	Obstr	4'	49'	40-28-03.3	73-55-33.9-
23	Wreck	4'	59'	40-28-51.1	73-55-16.3-
24 *	Obstr	2'	47'	40-28-57.5	73-54-30.9-
25	Obstr	5'	39'	40-28-56.6	73-55-58.5-
30	Obstr	9'	77'	40-23-37.9	73-53-30.3-
40	Obstr	5'	31-32'	40-28-49.2	73-56-13.8-
41	Obstr	4'	30'	40-28-22.9	73-56-08.7-

The above features should generally be resolved by obtaining diver least depths.

* Contact number 24 falls within Ambrose Channel which has a controlling depth of 45 feet. If a diver least depth is not possible, 100% echo sounder insonification will be necessary to assure a least depth has been obtained.

Plots of the contacts at 1:10,000 scale, a Side Scan Sonar Contact Data report which includes the lists of contacts, pertinent copies of the sonargrams showing the contacts, and applicable excerpts from the WHITING Descriptive Report will be forwarded to the CO, NOAA Ship HECK by the Hydrographic Surveys Branch, MOA23.

N/CG244-29-91

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
 Room 151, WSC-1
 Rockville, MD 20852

DATE FORWARDED

02 May 1991

NUMBER OF PACKAGES

three (3)

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.

H-10284

(WH-10-1-88) OPR-C147

New Jersey, Atlantic Ocean, Offshore Highlands to Monmouth Beach

Package #1 (tube):

- 1 Smooth Sheet
- 1 Smooth Position Overlay
- 2 Excess Overlays (level 1/3 and level 2&3/3)
- 4 Smooth Field Sounding Plots
- 4 Field Swath Plots
- Original Descriptive Report

Package #2 (box):

- 1 Folder containing "Correction to Echo Soundings Support Data"
- 1 Folder containing "Hydrographic Position Control"
- 1 Folder containing "Side Scan Sonar Data"
- 1 Folder containing "Chart Inspection Report", "Chart Sales Agent Report", "Coast Pilot Report", "User Evaluation Report", and "Danger to Navigation Report"
- 1 Folder containing "Horizontal Control Report"

FROM: (Signature)

Robert G. Roberson

Return receipted copy to:

Atlantic Hydrographic Section, N/CG244
 439 W. York Street
 Norfolk, VA 23510-1114

RECEIVED THE ABOVE
(Name, Division, Date)

D. S. Clark
 5-8-91

N/CG244-29-91

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
 Room 151, WSC-1
 Rockville, MD 20852

DATE FORWARDED

02 May 1991

NUMBER OF PACKAGES

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H-10284

(WH-10-1-88) OPR-C147

New Jersey, Atlantic Ocean, Offshore Highlands to Monmouth Beach

Package #2 (continued):

- † Accordion file containing fathograms, sonargrams, and printouts for the following DOY's: 254, 255, 256, 258, 259 (no sonargram), 263 (no sonargram).
- † Accordion file containing fathograms, sonargrams, and printouts for the following DOY's: 264, 265, 283, 300 (no sonargram), 302 (no sonargram), and 306 (no sonargram).
- † Cahier containing Final Sounding Listing and Line File Listing
- † Folder titled "Sounding Volume"

Package #3 (box):

- † Cahier containing Final Position Listing and Control Listing
- † Accordion file containing fathograms, sonargrams, and printouts for the following DOY's: 244 (no sonargram), 245 (no sonargram), 251, 252, 253.
- † Envelope containing "Corrections to Echo Sounding"
- † Envelope containing "Material Removed from Original Descriptive Report"

FROM: (Signature)

Robert G. Roberson

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Section, N/CG244
 439 W. York Street
 Norfolk, VA 23510-1114

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: February 22, 1989

MARINE CENTER: Atlantic

OPR: C147

HYDROGRAPHIC SHEET: H-10284

LOCALITY: New Jersey, Offshore Highlands to Monmouth Beach

TIME PERIOD: September 7, 1988 - November 1, 1988


TIDE STATION(S) USED: 853-1680 Sandy Hook, NJ

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 2.27 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.9 ft.

REMARKS: RECOMMENDED ZONING

1. Apply a -0 hr 30 minute time correction and a X0.94 range ratio to all heights.


CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

GEOGRAPHIC NAMES

Name on Survey												
	A	B	C	D	E	F	G	H	K			
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST				
ATLANTIC OCEAN (title)	X											1
HIGHLANDS (title)	X											2
MONMOUTH BEACH (title)	X											3
NEW JERSEY (title)	X											4
												5
												6
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OFFICE OF CHARTING AND GEODETIC SERVICES
ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT

SURVEY NO.: H-10284

FIELD NO.: WH-10-1-88

New Jersey, Atlantic Ocean, Offshore Highlands to Monmouth Beach

SURVEYED: 7 September through 1 November 1988

SCALE: 1:10,000

PROJECT NO.: OPR-C147-WH-88

SOUNDINGS: RAYTHEON DSF-6000N Fathometer, EG&G Model 260 Side Scan Sonar

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

Chief of Party.....D. R. Seidel

Surveyed by.....T. A. Baxter
.....S. P. DeBow
.....J. S. Verlaque
.....M. P. Skarbek
.....J. D. Bear
.....P. C. Stauffer

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

1. INTRODUCTION

a. No unusual problems were encountered during office processing.

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

c. This is a basic hydrographic survey. Side scan sonar was operated simultaneously with the fathometer during survey operations. Side scan sonar contacts located by the field unit during hydrographic operations were investigated by the field unit and resolved using side scan sonar and/or fathometer for least depth determination. In cases where the side scan sonar was used to determine the estimated depth of an item or object, the item is shown on the present survey with a slanted upper case letter 'A' in parenthesis. An appropriate note will also be appended to the present survey smooth sheet in proximity to the title block. See also the memorandum titled: "Showing Estimated Side Scan Sonar Depths on Smooth Sheets", dated 23 February 1989, for an explanation of the note shown on the survey smooth sheet. Refer to FE-330SS (1989) for more definitive information concerning some

of these features.

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections F., G., and S. of the Descriptive Report.

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

c. Horizontal control used for this survey is based on the North American Datum of 1983 (NAD83). Office processing of the present survey is based on these values. The smooth sheet has been annotated with ticks showing the computed mean shift between the present survey datum and the North American Datum of 1927 (NAD27). To place the present survey on the NAD27 datum move the projection line 0.385 seconds (11.9 meters or 1.19 mm at 1:10,000 scale) north in latitude and 1.509 seconds (35.5 meters or 3.55 mm at 1:10,000 scale) east in longitude.

d. AWOIS item geographic positions listed in the Descriptive Report and the Evaluation Report are referenced to NAD27. Geographic positions of AWOIS items are converted to the present survey datum before inverse distance computations were made during office processing.

3. HYDROGRAPHY

a. Soundings at crossing are in excellent agreement and comply with the criteria found in sections 4.6.1 and 6.3.4.3. of the HYDROGRAPHIC MANUAL.

b. The standard depth curves were drawn in their entirety. The supplemental 36 foot curve, some dashed, and brown curves were drawn to better delineate bottom topography.

c. The development of the bottom configuration and determination of least depth 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 and PROVISIONAL SIDE SCAN SONAR MANUAL. The following should be noted:

a. The hydrographer did not adequately locate the charted floating aids to navigation in the survey area. The

HYDROGRAPHIC MANUAL requires that a detached position be taken on each floating aid to navigation. Running sounding lines that "bracket" the aids is not considered an appropriate method for obtaining detached positions.

b. The field unit did not determine settlement and squat correctors for the NOAA ship WHITING during the field season. The settlement and squat correctors used for this project were conducted in Honduras in 1985. Regardless of the absence of ship configuration changes the field unit should determine the settlement and squat correctors more frequently than once every three (3) years.

5. JUNCTIONS

H-10285 (1988) to the south
H-10286 (1988) to the north

Standard junctions were made with junctional surveys H-10285 (1988) and H-10286 (1988) to the south and north, respectively. There are no contemporary surveys to the east and west of the present survey; charted hydrography to the east and west of the present survey is in general harmony with present survey depths.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-5616 (1934) 1:10,000
 H-5638 (1934) 1:10,000
H-6190 (1936) 1:40,000

The above surveys taken together cover the present survey area in its entirety.

H-5616 (1934) covers a small portion of the northwestern edge of the present survey. The surveys compare favorably in the common area. Present survey depths are generally one (1) foot deeper than prior survey depths.

H-5638 (1934) covers a small portion of the southwestern edge of the common area. Present survey depths generally vary plus or minus (+/-) one (1) to two (2) feet from prior survey depths.

H-6190 (1936) covers the present survey in its entirety. The surveys compare favorably. Present and prior survey depths vary plus or minus (+/-) two (2) feet.

The present survey is adequate to supersede the above prior hydrographic surveys in the common area except as may be noted in the hydrographer's report or this report.

b. Wire Drag

FE-101WD (1950) 1:40,000
H-6463WD (1939) 1:40,000

There are no charted wrecks or obstructions originating with prior survey FE-101WD (1950) in the area common to the present survey. There are no conflicts between present survey depths and the effective depths shown on prior survey FE-101WD (1950).

There are ten (10) hangs that originate with prior survey H-6463WD (1939) within the limits of the present survey. Six (6) of the items that originate with prior survey H-6463WD (1939) in the present survey area are listed as AWOIS items.

1) AWOIS Item #1562, a charted dangerous submerged obstruction with a wire drag clearance of 35 feet, in Latitude 40°21'24"N, Longitude 73°56'12"W (NAD 27), originates with prior survey H-6463WD (1939). The obstruction was previously hung at a depth of 38 feet and subsequently cleared by a depth of 35 feet. The present survey found a wreck with an estimated depth of 37 feet in Latitude 40°21'25.9"N, Longitude 73°56'10.2"W. This wreck is 47 meters north of the charted AWOIS item. It is believed that the wreck found by the present survey is the AWOIS item. It is recommended that the presently charted wreck remain on the chart pending the results of survey FE-330SS (1989). ✓

2) AWOIS Item #1563, a charted dangerous sunken wreck with a wire drag clearance of 35 feet, in Latitude 40°21'18"N, Longitude 73°56'06"W (NAD 27), originates with prior survey H-6463WD (1939). The wreck was previously hung at a depth of 42 feet and subsequently cleared by a depth of 35 feet. The present survey found a wreck with an estimated depth of 51 feet in Latitude 40°21'18.8"N, Longitude 73°56'00.2"W. This wreck is 102 meters east of the charted AWOIS item. It is believed that the wreck found by the present survey is the AWOIS item. It is recommended that the presently charted wreck remain on the chart pending the results of survey FE-330SS (1989). ✓

3) AWOIS Item #1572, a charted dangerous submerged obstruction with a wire drag clearance of 34 feet, in Latitude 40°22'25"N, Longitude 73°56'37"W (NAD 27), originates with

prior survey H-6463WD (1939). The obstruction was previously hung at a depth of 36 feet and subsequently cleared by a depth of 34 feet. The present survey found an obstruction with an echo sounder depth of 40 feet in Latitude 40°22'24.91"N, Longitude 73°56'31.09"W. This obstruction is 105 meters east of the charted AWOIS item. It is believed that this obstruction is the AWOIS item. It is recommended that the charted AWOIS item be removed from the chart, and a dangerous submerged obstruction with a least depth of 40 feet (40 *Obstr*) be charted in the location determined by the present survey. ✓

4) AWOIS Item #4293, a charted dangerous submerged rock with a wire drag clearance of 25 feet, in Latitude 40°20'24"N, Longitude 73°56'36"W (NAD 27), originates with prior survey H-6463WD (1939). The rock was previously hung at a depth of 28 feet and subsequently cleared by a depth of 25 feet. Present survey results did not locate any obstructions in the vicinity of the charted feature. The feature is charted in the area of a shoal that was developed by the present survey. The shoalest depth found by the present survey is 30 feet in the vicinity of Latitude 40°20'20.41"N, Longitude 73°56'38.57"W. The line spacing used during the development of the shoal did not insonify 100% of the bottom. The information is not sufficient to conclude that the shoalest depth was found by the present survey. The shoalest depth found by the present survey is 156 meters SW of the charted AWOIS item. It is recommended that the charted feature be retained as charted. ✓

5) AWOIS Item #4294, a charted dangerous submerged rock with a wire drag clearance of 22 feet, in Latitude 40°20'53.4"N, Longitude 73°56'19.8"W (NAD 27), originates with prior survey H-6463WD (1939). The rock was previously hung at a depth of 24 feet and subsequently cleared by a depth of 22 feet. Present survey results did not locate any obstructions in the vicinity of the charted feature. The feature is charted in the area of a shoal that was developed by the present survey. The shoalest depth found by the present survey are 26 feet in Latitude 40°20'50.49"N, Longitude 73°56'23.50"W. It is recommended that the presently charted feature be retained on the chart pending the results of survey FE-330SS (1989). ✓

6) AWOIS Item #4600, a charted dangerous submerged obstruction with a wire drag clearance of 34 feet, in Latitude 40°22'36"N, Longitude 73°56'24"W (NAD 27), originates with prior survey H-6463WD (1939). The item was previously hung at a depth of 37 feet and subsequently cleared by a depth of 34 feet. The present survey found an obstruction with an

estimated depth of 33 feet in Latitude 40°22'29.20"N, Longitude 73°56'29.00"W. The obstruction is 269 meters SW of the charted AWOIS item. It is believed that this obstruction may be the charted AWOIS item. There are other obstructions in the vicinity of the AWOIS item that were located by the present survey. This item is the most significant item near the AWOIS item and has an estimated depth that is close to the charted information. It is recommended that the charted AWOIS item be removed from the chart, and an obstruction be charted in the location determined by the present survey in accordance with Cartographic Order 004/89, dated 3 July 1989. ✓

7) Three (3) uncharted boulders were located on prior survey H-6463WD (1939) in Latitude 40°20'04.4"N, Longitude 73°56'36.0"W (NAD 27), Latitude 40°19'59.3"N, Longitude 73°56'49.5"W (NAD 27), and Latitude 40°19'56.0"N, Longitude 73°56'00.0"W (NAD 27) with hang depths of 37 feet, 37 feet, and 34 feet, respectively. An obstruction with an echosounder depth of 33 feet was located in Latitude 40°20'04.85"N, Longitude 73°56'32.00"W by the field unit. This obstruction is 59 meters east of the northernmost of the three (3) boulders. It is believed that the obstruction is the same object found by the prior survey. These three (3) boulders are not charted as boulders on either chart 12324 or 12326. On chart 12324 these features are shown as soundings of 37-ft, 37-ft, 34-ft, and the bottom characteristic rky. On chart 12326 the area is shown as soundings of 37-ft, 34-ft, and the bottom characteristic rky. During office processing the side scan sonograms and fathograms were thoroughly examined with no indication of boulders or rock outcrops. It is recommended that the bottom characteristic rky be deleted from the chart. It is also recommended that the obstruction with a depth of 33 feet (33 Obstr) be charted as shown on the present survey, and present survey results charted in the other areas addressed in this section. #3069

8) A charted obstruction with a wire drag clearance of 34 feet, in Latitude 40°22'30.4"N, Longitude 73°56'30.8"N (NAD 27), apparently unassigned AWOIS Item #1571, originates with prior survey H-6463WD (1939). The obstruction was previously hung at a depth of 37 feet and subsequently cleared by a depth of 34 feet. This obstruction is only shown on chart 12324. An obstruction with an estimated depth of 33 feet was located by the present survey in Latitude 40°22'29.20"N, Longitude 73°56'29.00"W. The obstruction found by the present survey is 81 meters SW of the prior survey obstruction. It is believed that the obstruction found by the present survey is the same one located by the prior survey. See also AWOIS Item #4600 in section 6.b.6) of this report. It is recommended that the obstruction be removed from chart

12324, and the obstruction with an estimated depth of 33 feet be charted in the position determined by the present survey in accordance with Cartographic Order 004/89, dated 3 July 1989.

There are no conflicts between the present survey depths and the effective depths shown on H-6463WD (1939).

c. Subsequent Surveys

FE-330SS (1989) 1:10,000

FE-330SS (1989) was completed subsequent to the present survey. A cursory examination of the survey data for FE-330SS (1989) performed during the preprocessing phase at the Atlantic Marine Center determined that eighteen (18) of the contacts discussed in the hydrographer's report and/or evaluation report for the present survey were investigated and resolved by FE-330SS (1989). AWOIS Item #4294 was also investigated by FE-330SS (1989). FE-330SS (1989) has not been sufficiently processed to provide additional information.

7. COMPARISON WITH CHART 12324 (24th Edition, Nov. 15/86)
12326 (38th Edition, Feb. 22/86)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and unascertainable sources. The following should be noted:

1) AWOIS Item #1570, a charted dangerous sunken wreck, PA in Latitude 40°22'00"N, Longitude 73°55'00"W, originates with Local Notice to Mariners 37 of 1971 (LNM 37/71). An obstruction with an echosounder depth of 59 feet was located by the present survey in Latitude 40°22'01.23"N, Longitude 73°55'06.47"W. This obstruction is 190 meters W of the charted AWOIS item. Additionally, a wreck with an estimated depth of 47 feet was located in Latitude 40°22'20.90"N, Longitude 73°55'07.60"W. This wreck is 668 meters NNW of the charted AWOIS item. A thorough examination of the fathograms and side scan sonograms during office processing determined that the wreck located NNW of the AWOIS item is most likely to be the AWOIS item. This determination was made because the charted AWOIS item is "position approximate" and the obstruction found by the present survey was not seen on the side scan sonograms. This obstruction was only seen on the echogram. It is recommended that the obstruction with an echosounder depth of 52-ft be charted as an obstruction with a known depth (52 Obstr). It is also recommended that the wreck with an estimated depth of 47 feet

be charted in accordance with Cartographic Order 004/89, dated 3 July 1989.

2) A considerable number of uncharted wrecks and obstructions were located by the field unit during field operations. The field records that show these features were carefully examined during office processing. These features are portrayed on the present survey. It is recommended that the chart compiler use his/her discretion in the application of these features to future chart editions.

The present survey is adequate to supersede the charted information except as noted in the hydrographer's report or this report.

b. Aids to Navigation

There are no fixed aids to navigation in the survey area. Two (2) floating aids to navigation are charted in the survey area. The adequacy of the aids to serve their intended purpose could not be determined during office processing. See also section N.1. of the Descriptive Report and section 4. of this report for additional discussion of the floating aids to navigation in the survey area.

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with project instructions.

9. ADDITIONAL FIELD WORK

This is a good basic survey; additional field work is recommended on AWOIS Item #4293.

Franklin L. Saunders

Franklin L. Saunders
Cartographic Technician
Verification of Field Data

Robert G. Roberson

Robert G. Roberson
Supervisory Cartographer
Evaluation and Analysis

Robert R. Hill

Robert R. Hill, Jr.
Cartographic Technician
Verification Check

APPROVAL SHEET
H-10284

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 disapproval 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.

R. D. Sanocki Date: 3-18-91
R. D. Sanocki
Chief, Hydrographic Processing Unit
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.

Christopher B. Lawrence Date: 3-25-91
Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

Final Approval:

Approved: J. Austin Yeager Date: 6/21/91
J. Austin Yeager
Rear Admiral, NOAA
Director, Charting and Geodetic Services

APPROVAL SHEET
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Christopher B. Lawrence Date: 3-25-91
Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

Final Approval:

Approved: J. Austin Yeager Date: 6/21/91
J. Austin Yeager
Rear Admiral, NOAA
Director, Charting and Geodetic Services

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

Hydrographic Index No. 66 L

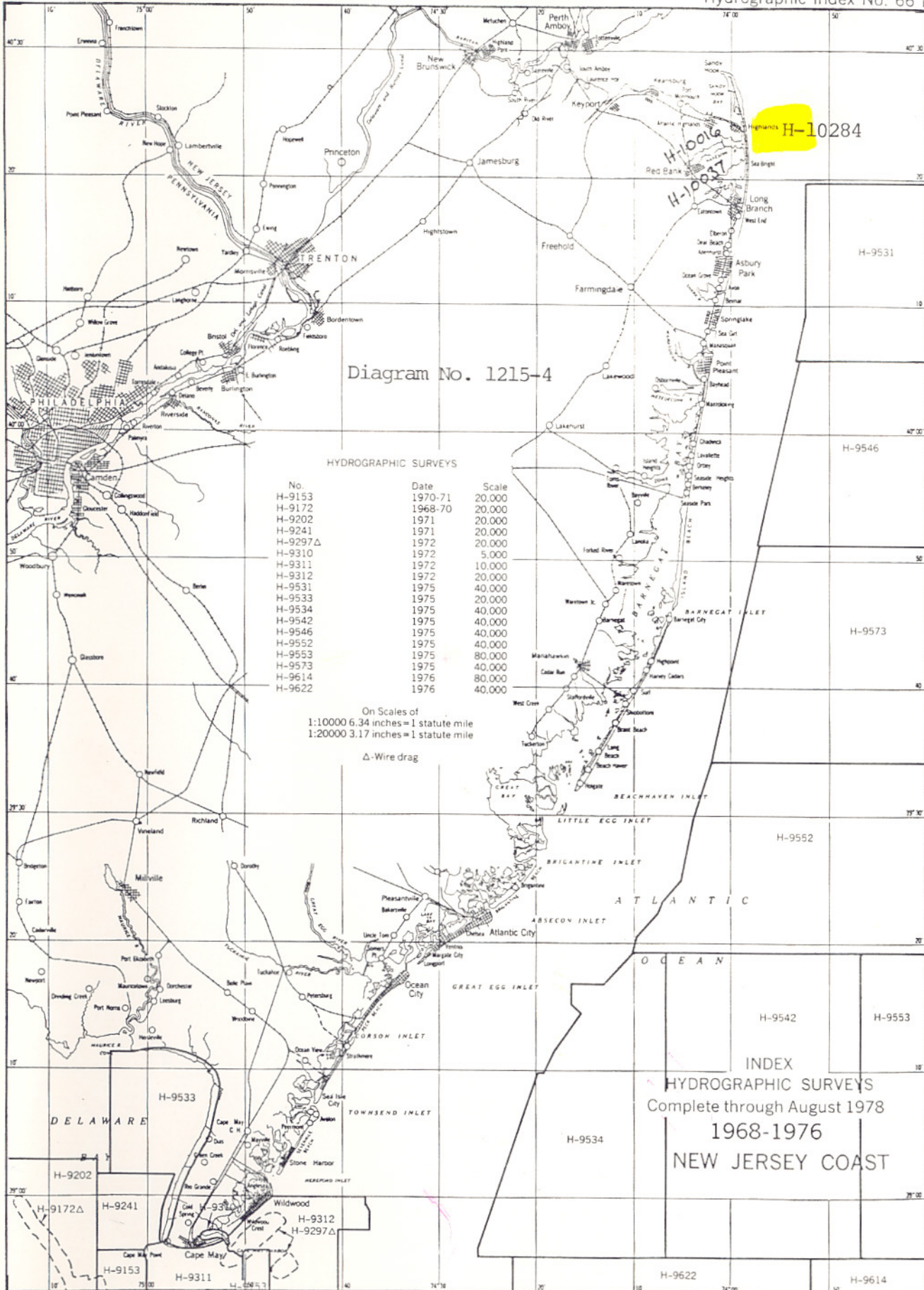


Diagram No. 1215-4

HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-9153	1970-71	20,000
H-9172	1968-70	20,000
H-9202	1971	20,000
H-9241	1971	20,000
H-9297Δ	1972	20,000
H-9310	1972	5,000
H-9311	1972	10,000
H-9312	1972	20,000
H-9531	1975	40,000
H-9533	1975	20,000
H-9534	1975	40,000
H-9542	1975	40,000
H-9546	1975	40,000
H-9552	1975	40,000
H-9553	1975	40,000
H-9573	1975	80,000
H-9614	1976	80,000
H-9622	1976	40,000

On Scales of
1:10000 6.34 inches = 1 statute mile
1:20000 3.17 inches = 1 statute mile

Δ-Wire drag

INDEX
HYDROGRAPHIC SURVEYS
Complete through August 1978
1968-1976
NEW JERSEY COAST

