

FE327 SIDE SCAN

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 . Side Scan Sonar
Field No. HE-10-7-89
Registry No. ... FE-327SS

LOCALITY

State New Jersey
General Locality Atlantic Ocean
Sublocality Offshore Sandy Hook to
..... Highlands

1989

CHIEF OF PARTY

..... LCDR S.R. Iwamoto

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DATE June 7, 1991

FE327 SIDE SCAN

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** Filed with the original field data*

DESCRIPTIVE REPORT TO ACCOMPANY
SURVEY FE-327SS
FIELD NUMBER HE-10-7-89
NEW JERSEY
ATLANTIC OCEAN
OFFSHORE SANDY HOOK TO HIGHLANDS
Scale 1:10000
NOAA SHIP HECK S-591
LCDR Stanley R. Iwamoto, CMDG

A. PROJECT DESCRIPTION

A1. Project Authorization

This survey was conducted in accordance with Hydrographic Project Instructions OPR-C147-HE, Offshore New Jersey Coast, dated June 20, 1989.

A2. Project Purpose

In 1988, the NOAA Ship WHITING conducted basic hydrographic surveys and completed 200 percent side scan sonar coverage of the project area. Per instructions, WHITING did not investigate or resolve assigned items or new contacts at that time. The purpose of this project was to provide rapid resolution of all items noted for additional investigation.

B. PROJECT OVERVIEW

B1. General

This report includes the results of all contact investigations performed in order to resolve items originally identified by WHITING in survey H-10286. Survey H-10286 was reviewed by personnel at the Atlantic Hydrographic Section (N/CG244). Items to be addressed by HECK were specified in a memorandum from Mr. R.D. Sanocki to LCDR Maureen R. Kenny, dated May 15, 1989. This memorandum was forwarded to HECK as an attachment to the Project Instructions. All items listed in the memorandum were resolved by HECK during this survey.

Horizontal control recovery and installation of navigation units began on June 27, 1989. Hydrographic survey operations began on June 28, 1989, and continued until July 20, 1989.

B2. METHODOLOGY

This survey was conducted according to procedures dictated in the Hydrographic Manual Fourth Edition; the Field Procedures Manual

for Hydrographic Surveying; the Side Scan Sonar Manual; and the Hydrographic Guidelines.

Survey data acquisition and processing were accomplished utilizing the HDAPS system and the latest version of the NAVITRONIC NAVISOFT 300 software provided to the ship by N/CG24. The specific survey instrumentation utilized is discussed in Sections F through H of this text.

HECK chose to set up the HDAPS survey project parameters exactly as the WHITING had done. This decision allowed the HECK to survey in the same MTM coordinate system as WHITING.

The standard field survey procedure was to navigate to the coordinates provided by WHITING and to acquire fifty meter range scale imagery over the reported position of the contact. This imagery was compared against the photocopies of the 100 meter range scale images which had been provided as part of the project package. The 50 meter range scale images were obtained in order to provide a higher resolution view of the contact before making a decision as to the proper technique for resolving the item. The imagery was also used to refine the coordinates of the contact before conducting further work.

Contacts fell into one of three categories: diver investigation required for resolution; hydrographic development required for resolution; or insignificant contact requiring no further work. Generally, HECK chose to dive on any discrete point contact which appeared to be wreckage, localized rock outcrops, or small dredge spoils. Any broad shoal areas were resolved by hydrographic development.

Each contact was addressed individually and is discussed in section K of this text. Problems with the HDAPS system caused the loss of some digital hydrographic and side scan sonar data. However, all online analog records are submitted. The nature of the HDAPS problem is discussed fully in section I. Approval to submit the survey without some digital data was granted in a memorandum from the Chief, Atlantic Hydrographic Section, dated 24 August 1989.

C. AREA SURVEYED

This survey lies along the New Jersey coast between Sandy Hook and Highlands. The offshore limit of the survey is approximately six miles east of the New Jersey coastline. The entrances to Ambrose and Sandy Hook Channels are covered.

D. SURVEY VESSELS

All hydrographic and side scan sonar data were collected by the NOAA Ship HECK (EDPN 9140).

A 17 foot Boston Whaler skiff was used for installation and maintenance of MINI-RANGER shore stations and for general utility work.

A 23 foot SISU launch was used as a dive support boat. All diver least depths were measured by leadline or pneumofathometer.

E. SURVEY SHEETS (FIELD)

All survey sheets submitted in this report were generated using the Preplot Plotter Sheet utility of the Presurvey menu of the NAVISOFT 300 software on the HDAPS system. A Brunning 824 CS Plotter (S/N 15237) was used as the plotting device. All sheets are Modified Transverse Mercator projections and are plotted on the North American Datum of 1983 (NAD 83).

Two 1:10000 field survey sheets are submitted in this survey. Additionally, four 1:5000 scale hydrographic development smooth sheets are submitted. Each sheet is briefly described in the following text. See APPENDIX V, PROJECT and PLOTTER SHEET PARAMETERS,* for the technical specifications on each sheet.

* Filed with the original field records.

E1. HE-10-7-89W

This sheet is a 1:10000 plot oriented North-South. The sheet covers the western portion of the survey. Data acquired on this sheet are submitted on raw data tapes 17910 and 20110, and smooth data tapes 17920 and 20120.

Two copies of HE-10-7-89W are submitted:
1 field contact swath/depthplot on mylar
1 smooth contact swathplot on mylar

E2. HE-10-7-89E

This sheet is a 1:10000 plot oriented North-South. The sheet covers the eastern portion of the survey. Contact 30 was the only contact assigned on this sheet. Data acquired on this sheet was not written to tape due to an HDAPS failure and could therefore not be smooth plotted.

One copy of HE-10-7-89E is submitted:
1 field contact swath/depthplot on mylar

E3. HE-5-7-89A

This sheet is a 1:5000 plot oriented East-West and is centered on contact 10. The sheet was generated in order to show a reduced scale plot of the line spacing achieved over the contact.

Contact 10 was resolved by hydrographic development.

One copy of HE-5-7-89A is submitted:
1 smooth trackplot on mylar

E4. HE-5-7-89B

This sheet is a 1:5000 plot oriented North-South and is centered on contact 19. The sheet was generated in order to show a reduced scale plot of the line spacing achieved over the contact. Contact 19 was resolved by hydrographic development.

One copy of HE-5-7-89B is submitted:
1 smooth trackplot on mylar

E5. HE-5-7-89C

This sheet is a 1:5000 plot oriented North-South and is centered on contact 40. The sheet was generated in order to show a reduced scale plot of the line spacing achieved over the contact. Contact 40 was resolved by hydrographic development.

One copy of HE-5-8-89C is submitted:
1 smooth trackplot on paper

E6. HE-5-7-89D

This sheet is a 1:5000 plot oriented North-South and is centered on contact 41. The sheet was generated in order to show a reduced scale plot of the line spacing achieved over the contact. Contact 41 was resolved by hydrographic development.

One copy of HE-5-8-89D is submitted:
1 smooth trackplot on mylar

F SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

F1. Raytheon DSF 6000N Echosounder

All hydrographic soundings for this survey were acquired using a Raytheon DSF echosounder. System performance was checked daily with an Electronic Depth Simulator Instrument (EDSI) provided by AMC's EEB. The daily tests are included as part of each day's raw data records.

Both low and high frequency depths were digitized, but only the high frequency depths were used for survey operations. The automatic gain function was utilized. Operations were conducted using both 40 and 80 range scale settings. The auto phase function was used. The digitizing gate was set at 10 percent of depth.

F2. EG&G Model 260 Side Scan Sonar

The HECK is equipped with an EG&G Model 260 slant corrected Side Scan Sonar recorder (S/N 0011443) and a model 272 dual frequency towfish (S/N 0011591).

The towfish is led through a fairlead block over the stern and towed astern at speeds of 2 to 5 knots. Fish height over bottom is controlled by a combination of cable out and ship speed. The paper speed on the recorder was set manually. The operator made frequent checks of vessel speed and adjusted the paper speed as necessary. This procedure eliminated paper "speed jumps" caused by spikes in the navigation LOPs and insured that targets were depicted in their correct size and shape.

Side scan operations were conducted in accordance with the Side Scan Sonar Manual dated September 1988. Periodic confidence checks were performed by either towing the fish by a previously located contact, or by noting recognizable bottom characteristics at the edges of the sonar range scale in use. The side scan sonar system worked very well for the duration of the survey.

F3. Leadline and Pneumofathometer

The HECK is equipped with two precision depth gauges, a 0 - 70 FSW depth gauge and a 0 - 140 FSW gauge. The HECK's pneumofathometer is built and operated according to procedures specified in Hydrographic Guideline 55. Both gauges were most recently calibrated 05 JAN 1989. Copies of these calibrations are provided in APPENDIX I.G. **Filed with the original field records*

Pneumofathometer system checks were conducted by testing the gauges against a leadline on the following dates:

14 June 1989 (DOY 165)
16 June 1989 (DOY 167)
07 July 1989 (DOY 188)
13 July 1989 (DOY 194)
24 August 1989 (DOY 236)

These checks proved that the system was operating within tolerances. The results of the checks are included in Appendix I.G.

Due to a failure of the ship's pneumofathometer caused by overpressurization on 14 July (DOY 195), many diver determined least depths were measured with a leadline. This leadline was constructed and used in accordance with Hydrographic Manual section AF.1.

G CORRECTIONS TO ECHO SOUNDINGS

G1. Velocity Correctors

The following table shows the dates and locations that velocity correction data were obtained by making direct readings of sound velocity using the ODDM Digibar sound velocimeter:

<u>DATE</u>	<u>LOCATION</u>
6/28/89 (DOY 179)	40° 27' 42"N ; 73° 51' 42"W
7/13/89 (DOY 194)	40° 27' 12"N ; 73° 55' 00"W
7/27/89 (DOY 208)	40° 22' 30"N ; 73° 54' 48"W

The velocity cast data were reduced and velocity corrections calculated using program VELOCITY. The computed velocity correctors were then applied online to echosounder depths by entering the correction data into the HDAPS sound velocity table. Reference APPENDIX I.A, VELOCITY CORRECTION DATA, for listings of the cast data and output from the VELOCITY software. HDAPS velocity table listings are also shown in APPENDIX I.A.*

Velocity correctors were verified by conducting a dual leadline comparison of echosounder and leadline depths on DOY 194. Digital depths agreed with leadline depths within one half foot. Results of the comparison are included in APPENDIX I.C., LEADLINE COMPARISONS.*

G2. Tide Corrections

The tidal datum for this project is mean lower low water. The operating tide station at Sandy Hook, NJ will serve as control for datum determination. This station was also used for predicted tides. No tide stations were established by the HECK in support of this survey. Verification Third-order levels were conducted at the tide station on June 28, 1989 (DOY 179) and at the end of the project on August 31, 1989 (DOY 243).

All hydrographic and diver determined depths have been corrected for predicted tides. The tidal values were taken from Tide Tables 1989 High and Low Water Predictions, East Coast of North and South America. Correctors for time and height were taken from the project instructions.

**Filed with the original field records*

Tidal correctors were applied online by entering the appropriate values into the HDAPS predicted tide tables. Two predicted tide tables were used. These tables are included in APPENDIX I.D., HDAPS PREDICTED TIDES TABLES.

A Request for Approved Tides was mailed to Chief, Sea and Water Levels Branch, on October 2, 1989. A copy of this letter is enclosed in Appendix VI.A.* *Approved tides were applied to the data during office processing*

63. Settlement and Squat Correctors

Settlement and squat correctors for the HECK were determined on March 10, 1989 (DOY 69), at Craney Island fuel pier in Norfolk, Virginia. An observer was put ashore with a level instrument, and changes in relative height were measured as the ship passed by the observer while running at various speeds. (Reference APPENDIX I.E, SETTLEMENT AND SQUAT DATA)*

Settlement and squat values were applied online to hydrographic soundings by entering the observed values into the HDAPS offset table. A copy of this table is included in APPENDIX I.F, HDAPS OFFSET TABLE.*

64. Heave, Roll, Pitch Sensor and Correctors

Heave is measured by a Datawell B.V. (S/N 19110-C) heave, roll, and pitch sensor (HIPPY) located midships near the transducer. The sensor gathers online data which is applied to the soundings in near real time.

All data acquired in the echosounder mode have been corrected by applying HIPPY correctors.

65. Vessel Draft Corrector

During a February 1988 drydock period, an exact measurement of 19.0 feet was taken from the DSF transducers to a fixed point on each bridge wing of the ship. After refloating the ship, the height above the waterline was determined for this point. The ship's static draft was calculated to be exactly 6.9 feet (2.10 meters).

This draft was applied online to hydrographic soundings by entering the value of 2.1 meters as the high frequency transducer height in the HDAPS offset table. See APPENDIX I.F, HDAPS OFFSET TABLE.*

H. HORIZONTAL CONTROL *See section 2.a. of the Evaluation Report.*

H1. Survey Navigation

Vessel survey navigation was accomplished by the range-range method, utilizing the Motorola MINI-RANGER Falcon 484 system.

The MINI-RANGER system is interfaced to the HDAPS system in such a way that only the ranges and signal strengths are recorded; the position computation capability of the Falcon system is not utilized. Vessel position is computed by a least squares predictor/corrector algorithm within the NAVITRONIC NAVISOFT 300 software.

The hydrographer must specify each of three interactive parameters which "tune" the positioning algorithm. The following parameters were entered into the Offset Table :

- 1) acceleration limit 0.2 meters second⁻²
- 2) angle limit 0.3 degrees second⁻¹
- 3) crabbing limit 0.4 degrees

The algorithm simultaneously uses up to four electronic lines of position (LOPs). Additionally, the ship's gyro heading and speed are used to predict a position. Whenever more than two acceptable LOPs are measured, the position computation is mathematically overdetermined. In order to utilize all available information, a least squares adjusted position is computed.

Three measures of the quality of this adjusted position are: the magnitude of the residuals on each range; the size and orientation of the error ellipse; and the radius of the 95% confidence error circle. HDAPS provides the hydrographer with a continuous graphic display of these data as well as a rough graphic of survey geometry. The required survey navigation positional accuracies are specified in terms of the maximum residual and the error circle radius. These requirements are stated in the Project Instructions.

Acceptable MINI-RANGER navigation system performance was verified by comparing individual range-range fixes to simultaneous sextant three-point-fixes. Critical systems checks were conducted on 29 June 1989 (DOY 180) and on 8 August 1989 (DOY 220). Non-critical navigation system checks were performed daily to insure that the instrumentation was functioning within specifications. The critical systems check data are included in APPENDIX II.D, RESULTS OF SURVEY NAVIGATION SYSTEMS CHECKS. **Filed with the original field records.*

The MINI-RANGER transponder at Rockaway Jetty Beacon (Station 36) had residuals greater than 5 meters on the DOY 180 calibrations. This residual was caused by an offset in placement of the transponder of about 2 meters. The vessel position at the time of the critical calibration augmented the effect of the offset. However, the offset did not adversely affect survey navigation; the LOP was within the 5.0 meter maximum residual criteria throughout survey operations. Acceptable residuals were obtained during the DOY 220 critical calibration.

Field Procedures Manual Memorandum #89-01, dated 08 August 1989, negated the requirement for sextant fixes when HDAPS is routinely operated in the multiple LOP mode and when positional accuracies are within specified tolerances. The HECK routinely conducted surveying operations using four MINI-RANGER LOPs, although occasionally one or more ranges were automatically rejected from the solution due to poor signal strength. At no time during this project did the maximum residual consistently exceed 0.5 mm at the survey scale (5 meters). The 95% confidence error circle radius very rarely exceeded 1.5 mm at the survey scale (15 meters).

A pre-project baseline calibration (BLC) of the MINI-RANGER system was conducted at Fentress Airforce Base on January 31, 1989. A mid-season BLC was conducted at Port Jefferson, New York, on May 20, 1989. During these calibrations, the range correctors were determined for each combination of transponder and shipboard R/T and RPU. A minimum acceptable signal strength (MASS) was also determined for each transponder. All data in this survey utilized correctors determined during the Baseline Calibration of May 20, 1989. Reference APPENDIX II.B, MINI-RANGER BASELINE CALIBRATION DATA,* for the results of this calibration. BLC raw data, computations, and graphs are included in Electronic Control Report DPR-B660-HE-89, which is submitted under separate cover.

The range corrector and MASS for each MINI-RANGER code was entered into the HDAPS system using the Pre-Survey C-0 Table Utility. This table provides the mechanism by which HDAPS automatically applies the proper range corrector and removes from the position computation those LOPs with signal strengths below MASS. Reference APPENDIX II.C, HDAPS C-0 TABLES,* for the C-0 table used during this survey.

MINI-RANGER shore station installations were placed directly over Third Order Class I or better geodetic stations. Control station positions were entered into the HDAPS Control Station Tables using the Pre-Survey menu. (See APPENDIX II.A, LIST OF HORIZONTAL CONTROL STATIONS). The appropriate MINI-RANGER codes were attached to the station number on this table. Each time the survey navigation configuration was altered, the control station table was modified so that it reflected the correct MINI-RANGER code placement. APPENDIX III, HDAPS DAILY DATA ACQUISITION AND PROCESSING ABSTRACTS,* correlates control stations, MINI-RANGER codes, position numbers and dates of use.

H2. GEODETTIC CONTROL

The horizontal datum for this project is the North American Datum of 1983 (NAD 83). All stations were either established or recovered by WHITING with the exception of Rockaway Jetty Beacon which was recovered by HECK. A recovery for this station is included in a horizontal control report submitted under a separate cover. All coordinates were taken from WHITING's

control station table except for Rockaway Jetty Beacon which was taken from the NGS Geodetic Control Data for New York.

I. AUTOMATED DATA PROCESSING

Hydrographic and side scan sonar data acquisition and processing were accomplished using the HDAPS hardware and the most recent version of the Navitronic NAVISOFT 300 software provided to the ship. This software is still under development and some problems do exist:

- 1) The positioning algorithm occasionally generates a "flyer" which causes the plotter sheet to scroll in an unpredictable manner. HECK personnel tried unsuccessfully to edit these "flyers" in the nightly processing. Therefore, the plotter continued to scroll even in the off-line data processing mode.
- 2) Coordinates for control stations are altered by the software after they have been entered. This problem is most likely caused by rounding errors in the GP > MTM > GP conversion process. The potential errors are quite small (decimeter). However, the reader must be aware that the error is introduced by the software and that the coordinates were originally entered correctly.
- 3) Data transfer problems sometimes created the necessity to reject data because the data could not be transferred to the hard disk from the raw data tape. This problem occurred whenever there was an abnormal interrupt of a survey line; the final data set number (DSN) was not written to the raw data tape. If this interrupt occurred, the entire line was irretrievable. One known source of this problem was the delay in writing HIPPI data to the tape. If the HDAPS system is taken off-line before waiting out the HIPPI delay, then the survey line cannot be written to the hard disk for editing. Not all such problems were caused by HIPPI delay. Occasionally data could not be transferred from the raw tape and the problem could not be identified.

Problems were encountered with data logging and transfer procedures on DOY 198, DOY 199, and DOY 200. Various amounts of side scan sonar and hydrographic data were not retrievable from the raw data tape (tape 17910) and could not be edited. On DOY 200, none of the day's data was written to the raw data tape. On DOY 201 the raw data was lost on the raw data tape during processing. However, the edited data for fixes 426 - 445 were saved on tape 20112. The loss of these data was not critical to the resolution of any contact. Contacts 6, 16, 30, and 40 were affected. All analog records are submitted and the specific data are discussed in the contact investigation reports in Section K of this text.

Positions 329 through 323 were accidentally duplicated. They were first used on DOY 195 while conducting hydrographic development of contact 41. They were later used again on DOY 198 while conducting SSS operations on contact 16.

Edited data tape 17920 contains positions 2 through 386. Positions 314 through 331 were written to the end of tape unnecessarily. Therefore, these data are on the tape twice. The last DSN which should be used on this tape is DSN 6082.

DIGIBAR velocity cast data was processed on the ship's IBM-PC XT using program VELOCITY.

Geodetic computations were performed on the ship's IBM-PC XT using the MTEN ENHANCEMENTS routines which were obtained from the National Geodetic Survey

J. COMPARISON WITH CHARTS AND PRIOR SURVEYS *See sections 6, and 7 of the Evaluation Report.*

Hydrographic soundings from this survey were compared against the following charts:

NOS CHART 12326	12327
FIRE ISLAND LIGHT TO SEA GIRT	NEW YORK HARBOR
1:80000	1:40000
38TH ED 22FEB86	81ST ED 15MAR86

12324SC
SANDY HOOK TO LITTLE EGG HARBOR
1:40000
~~38~~TH ED 15NOV86
24

This survey was also compared against prior survey:

H-10286
NEW JERSEY, ATLANTIC OCEAN
SANDY HOOK TO HIGHLANDS
1:10000
1988

The chart and prior survey comparisons were conducted by plotting the position of the contacts directly on the chart or survey. Specific details of the comparisons are discussed in section K of this report, under the item investigation report for each contact.

No dangers to navigation were reported to Coast Guard as a result of this survey.

K. CONTACT INVESTIGATION REPORTS *See also section 7. of the Evaluation Report*

Nineteen contacts were investigated during this survey. Each item is discussed individually in the remaining text. Side scan sonar imagery covering each contact is abstracted on the target abstract for the individual contacts. (see appendix IV.) The contact investigation reports are organized in the following manner:

- 1) Text describing the search area, search technique, and result of investigation
- 2) MTM to LAT-LONG conversion and tide corrector determination
- 3) Diver's sketch on contact of contact (if appropriate)
- 4) Photographic copy of fathometer image at time of detached position
- 5) Photographic copy of the SSS image obtained by the HECK
- 6) Photographic copy of the SSS image obtained by the WHITING
- 7) Dive operations summary (if appropriate)

<u>CONTACT</u>	<u>STATUS</u>	<u>RECOMMENDATIONS</u>	
✓3	Resolved	Shoal sounding on isolated rocks, 26 ⁵ ft	✓
✓6	<i>Not</i> Resolved	Insignificant - <i>investigation not over contact - see sect. 7. a. 1)</i>	✓
✓10	Resolved	Shoal sounding on isolated rocks, 32 ft	✓
✓12	Resolved	Sunken wreck, Danger, 38 ¹ ft	✓
✓13	Resolved	Insignificant <i>44 Obstr found</i>	✓
✓14	Disproved	<i>See page 46 of TL's report</i>	✓
✓15	Resolved	Sunken wreck, Danger, 44 ft	✓
✓16	Resolved	Wreckage, Danger, 38 ⁵ ft	✓
✓17	Resolved	Insignificant <i>52 Obstr</i>	✓
✓18	Resolved	Sounding, 42 ¹ ft	✓
✓19	Resolved	Shoal sounding on isolated rocks, 42 ¹ ft	✓
✓20	Resolved	Insignificant	✓
✓22	Resolved	Sunken wreck, Danger, 47 ft	✓
✓23	Resolved	Sunken wreck, Danger, 52 ft	✓
✓24	Resolved	Insignificant	✓
✓25	Disproved	<i>- Do not Concur. Contact was not recognized by field unit.</i>	✓
✓30	Resolved	Sounding, 73 ft on Obstr	✓
✓40	<i>Not</i> Resolved	Sounding, 31 ft - <i>investigation by FE-32753 is inconclusive</i>	✓
✓41	Resolved	Sounding, 24 ft on Obstr	✓

NC ✓
K 1. INVESTIGATION REPORT FOR CONTACT 3

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: One mile east of Highlands, NJ
Latitude: 40° 24' 15.5" N
Longitude: 73° 57' 32.8" W
Reported Depth: 26 feet (from H-10286) *26 Obst- (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 187 and 198
Diver Investigations: DOY 199
Echo Sounder Investigation: NA
Contacts: One

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. HECK first located the contact at position 211.25P; however, better imagery was obtained at position 359.40S. Divers investigated the contact and placed the buoy on the high point. Fix 365 was taken directly over the contact when the dive buoy was deployed.

DIVER INVESTIGATION SUMMARY : Ens Bonnah and ST Sramek descended the marker buoy to a rocky bottom in about 35 feet of water. The divers then performed a 30 meter circle search and located a pile of rocks rising about 5 feet off the bottom. The highest rock was located visually. Visibility in the vicinity of the contact was about 5 feet. Ens Bonnah ascended with a leadline and made the measurement while ST Sramek held the weight on the high point.

CONTACT DESCRIPTION : Divers located a shoal area of large rocks which rises about 5 feet above a hard bottom. The divers stated that the shoal area appears to be dredge spoil.

LEAST DEPTH DETERMINATION :

Date of measurement: 18 July 1989 (DOY 199)
Time (UTC): 1850

Average leadline depth: 26.5
~~PREDICTED~~ tidal corrector: - ~~0.5-1.0~~

Least depth: 26.0
5

POSITION DETERMINATION :

Fix number: 365
Number of LOP's: 4
Maximum residual: 4.8
Error circle radius: 6.1

Easting: 24210.1
Northing: 37488.0

Latitude: $40^{\circ} 24' 15.42''$ N
Longitude: $73^{\circ} 57' 33.49''$ W
50

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	15504.3	26961.1	43676.2	59844.7

RECOMMENDATIONS : The contact lies approximately one mile offshore and is immediately seaward of the 30 foot contour. The HECK witnessed considerable commercial traffic in the area, the largest of which were tugs running along the New Jersey shore. However, no vessels of 26 foot draft or deeper were observed. Shoaler charted depths lie just north of the obstruction and would prevent deep draft traffic from approaching Sandy Hook channel from this position.

The HECK recommends that the contact be charted as a shoal sounding on isolated rocks, with a known depth of 24^5 feet. The sounding should be charted at the position determined in this survey and shown on charts 12324, 12326, and 12327. *Concor.*

*Chart as 25 Rks. Do not chart the 26 Obstr (A) shown on H-10286 (1988)
See sheet 1 of 15*

K 2. INVESTIGATION REPORT FOR CONTACT 6

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8082

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: One mile east of Highlands, New Jersey
Latitude: 40° 23' 45.2" N
Longitude: 73° 56' 27.1" W
Reported Depth: 44 feet (from H-10286) *#4 Obstr (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 187
Diver Investigations: none
Echo Sounder Investigation: DOY 199
Contacts: one

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. HECK located the contact at position 208.29P.

CONTACT DESCRIPTION : A very clear side scan image shows a linear object lying on a flat bottom. Although the WHITING had computed a height for this contact of 3.6 feet, the HECK found that the object rose only about 1.5 feet above the bottom. Four reconnaissance sounding lines were run over the contact. Digital data for positions 368 - 377 could not be transferred from the raw data tape, but all analog records are submitted. The contact is visible on the echosounder records at position 373.3F. It did not meet the criteria for significance set forth in the project instructions.

RECOMMENDATIONS : The contact lies about 1.3 miles offshore from Highlands, NJ., and is just on the western border of the charted fish trap area in about 45 feet of water. ~~This contact is insignificant and should not be charted.~~ *See section 7. a. 1) of the Evaluation Report*

NC



K 3. INVESTIGATION REPORT FOR CONTACT 10

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: Entrance to Sandy Hook Channel
Latitude: 40° 27' 26.3" N
Longitude: 73° 56' 20.1" W
Reported Depth: 30 feet (from H-10286) *30 Obaf (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 186
Diver Investigations: none
Echo Sounder Investigation: DOY 188
Contacts: One

A fifty meter range scale SSS search was performed over the coordinates provided by WHITING. The contact was located by the HECK at position 128.55P.

The item was resolved by running a series of east-west development hydrographic lines over the coordinates computed from the HECK's SSS image.

CONTACT DESCRIPTION : The SSS records depict a localized shoal area which is about 70 meters long by 20 meters wide and rises about four to five feet above the bottom. The shape of the contact suggests that it may be dredge spoils or other debris dropped from a barge. Due to poor visibility in the area, a diver investigation was not conducted. Therefore, the exact nature of the contact was not determined.

LEAST DEPTH DETERMINATION : The least depth was determined by echosounder development. Fifteen meter line spacing was achieved over the immediate area of the contact. The most significant sounding was found at position 216.2F. The results of this hydrographic development are shown on sheet HE-5-7-89A.

Date of measurement: 07 July 1989 (DOY 188)
Time (UTC): 1302

Echosounder depth:	27.0
Draft:	6.9 7.2
Velocity:	1.0
PREDICTED tidal corrector:	2.7 3.2
<i>HIP:</i>	.4
Least depth:	32.24

POSITION DETERMINATION :

Fix number: 216.2F
Number of LOP's: 3
Maximum residual: 3.6
Error circle radius: 6.0

Easting: 25905.1
Northing: 43399.4

Latitude: $40^{\circ} 27' 27.072''$ N
Longitude: $73^{\circ} 56' 21.585''$ W

RECOMMENDATIONS : This contact lies immediately north of Sandy Hook Channel near buoy "2". The area is not charted accurately; charted depths are shallower than survey soundings by as much as 9 feet. The contact was plotted as a 30 foot sounding on prior survey H-10286. Surrounding soundings on survey H-10286 are consistent with the results of this survey.

The HECK recommends that depths in the area be recharted using soundings from prior survey H-10286 and that the contact be shown as a shoal sounding on isolated rocks, dangerous to surface navigation, with a known depth of 32 feet. This data affects charts 12324, 12326, and 12327. *Concur. Chart AS 32/Rk. It is not recommended that the 30 Obstr.(A) shown on H-10286 (1958) be charted. See also Sheet 3 of 15.*

K 4. INVESTIGATION REPORT FOR CONTACT 12

AW015
8083
✓

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: Entrance to Sandy Hook Channel
Latitude: 40° 26' 53.2" N
Longitude: 73° 56' 09.1" W
Reported Depth: 41 feet (from H-10286) #1 Obstr (A)

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 186
Diver Investigations: DOY 199
Echo Sounder Investigation: NA
Contacts: One

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. HECK located the contact at position 169.28S. Divers investigated the contact and placed the buoy on the high point. Fix 366 was taken directly over the contact when the HECK was maneuvered alongside the dive buoy.

DIVER INVESTIGATION SUMMARY : LT Tuell and ENS Weiner descended the marker buoy and began a 40 meter circle search on a hard sandy bottom. Visibility was about 5 feet. The divers found the wreck about 20 meters from the buoy. They moved the marker buoy to the wreck and then swam along the wreckage to visually identify the highest point. The marker buoy weights were placed on the high point. ENS Weiner ascended with the leadline to make the least depth reading while LT Tuell held the leadline weight on the high point.

CONTACT DESCRIPTION : Divers found steel wreckage of undetermined nature. The largest piece of the wreckage was about four feet above the bottom.

LEAST DEPTH DETERMINATION :

Date of measurement: 18 July 1989 (DOY 199)
Time (UTC): 1424

Average leadline depth: 42.0
~~PREDICTED~~ tidal corrector: - 3.22

Least depth: 38.78

POSITION DETERMINATION :

Fix number: 366
Number of LOP's: 4
Maximum residual: 4.5
Error circle radius: 5.3

Easting: 26212.6
Northing: 42346.7

Latitude: $40^{\circ} 26' 52.944''$ N
Longitude: $73^{\circ} 56' 08.544''$ W

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	-----	-----	-----	-----
	15494.7	26957.8	43701.2	59858.2

RECOMMENDATIONS : This wreck lies about 0.25 miles southeast of buoy "1" at the entrance to Sandy Hook Channel.

The HECK recommends that this wreck be charted on charts 12324, 12326, and 12327 as sunken wreckage, dangerous to surface navigation, with a known depth of 38⁹ feet. *Concur. Chart as 39 Wk (steel).*

Do not chart the 41 Obstr. (A) shown on the prior survey H-10296 (1988). See sheet # 0 of 15.

K 5. INVESTIGATION REPORT FOR CONTACT 13

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: Entrance to Sandy Hook Channel
Latitude: 40° 26' 49.4" N
Longitude: 73° 56' 06.8" W
Reported Depth: 41 feet (from H-10286) *41 Obstr (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 186
Diver Investigations: DOY 194
Echo Sounder Investigation: NA
Contacts: One

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. The HECK located the contact at positions 175.40F and 197.26P. However, these data were rejected due to navigation problems. The 100 KHz pinger was attached to the dive marker buoy and deployed at position 299. SSS imagery was obtained showing the pinger resting very close to the contact. Divers placed the marker buoy directly on the wreck. Fix 302 was taken when the HECK was maneuvered alongside the dive buoy.

DIVER INVESTIGATION SUMMARY : ENS Bonnah and ENS Weiner descended the marker buoy in about 55 feet of water and found the contact immediately.

CONTACT DESCRIPTION : The divers discovered a flat, linear, segmented object of undetermined origin. The object was hard and covered with coral. It is probably made of concrete and may have been part of a bridge. The divers reported that the object rises about 1 foot above a flat sandy bottom and supports an abundance of sea life.

LEAST DEPTH DETERMINATION :

Date of measurement: 13 July 1989 (DOY 194)
Time (UTC): 2031

Average pneumofathometer depth:	49.4
PREDICTED tidal corrector:	- 4.88
Least depth:	44.52

POSITION DETERMINATION :

Fix number: 302
Number of LOP's: 3
Maximum residual: 0.4
Error circle radius: 6.0

Easting: 26264.1
Northing: 42267.5

Latitude: 40° 26' 50.37~~3~~" N
Longitude: 73° 56' 06.35~~6~~" W

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	-----	-----	-----	-----
	15494.7	26957.4	43700.7	59858.0

RECOMMENDATIONS : This contact lies about 0.25 miles southeast of buoy "1" at the entrance to Sandy Hook Channel. The nearest charted depth to this ~~wreck~~^{Obstr} is 48 feet. It was shown on prior survey H-10286 as a sounding of 41 feet.

The contact does not rise significantly off the bottom and does not represent a danger to navigation. Its depth of 48⁴ feet is consistent with the surrounding depths shown on prior survey H-10286. The contact lies approximately 120 meters from contact 12, which has been recommended for charting. Therefore, HECK recommends that contact 13 not be charted. *Concur. It is also not recommended the the 41 Obstr (A) shown on prior survey H-10286 (1988) be charted.*

K 6. INVESTIGATION REPORT FOR CONTACT 14

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: One mile east of Highlands, New Jersey
Latitude: 40° 26' 45.3" N
Longitude: 73° 56' 36.7" W
Reported Depth: 32 Feet (from H-10286) *32 Obstr (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 186, DOY 187, and DOY 198
Diver Investigations: none
Echo Sounder Investigation: none
Contacts: none

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. Imagery obtained by HECK reveals a "spotted" bottom type with no protrusions above the general trend of the bottom. HECK was unable to locate the contact shown on the WHITING's SSS record.

RECOMMENDATIONS : Although a danger to navigation report was submitted for this contact by Hydrographic Surveys Branch, HECK was unable to locate it after a thorough search. No obstructions or dangers to navigation exist within the search area. This contact is **DISPROVED**. *Concur. Do NOT chart the 32 Obstr (A) shown on H-10286 (1988). See also sheet 5 of 15. See also correspondence between the HECK and AMC following the hydrographer's report under the cover of this Descriptive Report.*

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K 7. INVESTIGATION REPORT FOR CONTACT 15

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: Entrance to Sandy Hook Channel
Latitude: 40° 26' 49.5" N
Longitude: 73° 55' 54.4" W
Reported Depth: 41 feet (from H-10286) *41 Obst (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 186
Diver Investigations: DOY 187
Echo Sounder Investigation: NA
Contacts: One

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. The HECK located the contact at position 162.385. Divers investigated the wreck and placed the marker buoy on the high point. Fix 202 was taken when the HECK was maneuvered alongside the dive buoy.

DIVER INVESTIGATION SUMMARY : LT Tuell and ENS Weiner descended the marker buoy to the bottom in about 60 feet of water. Visibility was about 10 feet. The divers began a 30 meter circle search and found the wreck 15 meters from the buoy weights. The divers swam the length of the wreck to identify the high point. The least depth measurement was made by pneumofathometer. The instrument was operated by ABS Lewis and ST Sramek from the dive boat.

CONTACT DESCRIPTION : The divers found a 45 foot steel wreck resting keel up on a hard, sandy bottom. The wreck was intact but no name or markings could be located. The highest point of the wreck was at the stern on one of the two skegs. The twin props remain on the wreck. The wreck rises four feet off the bottom.

LEAST DEPTH DETERMINATION :

Date of measurement: 06 July 1989 (DOY 187)
Time (UTC): 1654

Average pneumofathometer depth:	47.6
PREDICTED tidal corrector:	- 3.26
Least depth:	<u>44.34</u>

POSITION DETERMINATION :

Fix number: 202
Number of LOP's: 3
Maximum residual: 4.5
Error circle radius: 5.9

Easting: 26548.0
Northing: 42223.1

Latitude: $40^{\circ} 26' 48.932''$ N
Longitude: $73^{\circ} 55' 54.308''$ W

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	-----	-----	-----	-----
	15393.4	26955.7	43700.2	59858.2

RECOMMENDATIONS : This contact lies about 0.4 miles southeast of buoy "1" at the entrance to Sandy Hook Channel. The nearest charted depth to this wreck is 45 feet. It was shown on prior survey H-10286 as a sounding of 41 feet.

This wreck lies near the entrance to Sandy Hook Channel. It rises 4 feet off the bottom but does not affect the controlling depth for the channel. The HECK recommends that the wreck be charted on charts 12324, 12326, and 12327 as a submerged wreck, dangerous to surface navigation, with a known depth of 44 feet.

Concur. Chart as a 44 Wk (steel). Do not chart the 41 Obstk (A) shown on prior survey H-10286 (1988). See also sheet 4 of 15.

K 8. INVESTIGATION REPORT FOR CONTACT 16

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: Entrance to Sandy Hook Channel
Latitude: 40° 27' 30.0" N
Longitude: 73° 56' 03.8" W
Reported Depth: 33 feet (from H-10286) *33 Obstr (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 186 and 198
Diver Investigations: DOY 200 and DOY 201
Echo Sounder Investigation: 200
Contacts: three

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. HECK found three contacts in the area, but none of them could positively be identified as the one found by WHITING. Fixes 390 - 423 were not written to a raw data tape.

Diver investigations were conducted contacts located at 152.36S and 134.55P. The contact located at 133.15 was found to be insignificant (see position 402).

DIVER INVESTIGATION SUMMARY CONTACT 152.36S : The HECK was navigated to the coordinates determined by SSS and a marker buoy was deployed at position 390. Ens Weiner and ST Sramek descended the marker buoy and immediately found a large rock. The marker buoy was moved onto the rock and a 15 meter circle search was completed. No other protrusions above the bottom were found. ST Sramek ascended with the leadline and made the measurement while ENS Weiner held the leadline weight on the rock. Fix 395 was taken when the ship was maneuvered alongside the dive buoy.

CONTACT DESCRIPTION CONTACT 152.36S : A second image of the contact was obtained at position 335.04S. The images show a contact similar in shape to the one identified by WHITING. The divers located a single large boulder rising about 5 feet off the bottom.

LEAST DEPTH DETERMINATION CONTACT 152.36S :

Date of measurement: 19 July 1989 (DOY 200)
Time (UTC): 1440

Average leadline depth: 44.5
~~PREDICTED~~ tidal corrector: - 3.8
Least depth: 40.7

*38 RK by Echosounder.
See Section 7. a. 2) of
The Evaluation Report.*

POSITION DETERMINATION CONTACT 152.36S :

Fix number: 395
Number of LOP's: 4
Maximum residual: 4.2
Error circle radius: 5.2

Easting: 26229.9
Northing: 43419.8

Latitude: $40^{\circ} 27' 27.731''$ N
Longitude: $73^{\circ} 56' 07.757''$ W

Loran-C Rates: not taken

RECOMMENDATIONS CONTACT 152.36S : Contact 134.55P is located about 150 meters from this contact and is two feet shoaler. Therefore, HECK recommends that this contact not be charted.

*Concur. See also section 7.2.2 of the Evaluation Report.
Do not chart the 33 Obstr (A) shown on prior survey H-10286 (1986)
see page 64 of the Descriptive Report see also H-10286*

DIVER INVESTIGATION SUMMARY CONTACT 134.55P :

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#5085*

CONTACT DESCRIPTION CONTACT 134.55P :

LEAST DEPTH DETERMINATION CONTACT 134.55P :

Date of measurement: 20 July 1989 (DOY 201)
Time (UTC): 1619

Average leadline depth: 42.0
~~PREDICTED~~ tidal corrector: - ~~2.1-2.8~~

*35 Obstr (wreckage)
See Section 7.a.2) of
The Evaluation Report*

Least depth: ~~38.9~~ 39.2

POSITION DETERMINATION CONTACT 134.55P :

Fix number: 448
Number of LOP's: 4
Maximum residual: 3.1
Error circle radius: 5.2

Easting: 26290.2
Northing: 43563.4

Latitude: 40° 27' 32.³87" N
Longitude: 73° 56' 05.⁷239" W

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	-----	-----	-----	-----
	15494.1	26959.2	43707.7	59861.2

RECOMMENDATIONS CONTACT 134.55P : This contact was charted through a Notice to Mariners from the prior survey as an obstruction with a known depth of 32 feet. HECK recommends that the contact be charted as wreckage, dangerous to surface navigation, with a known depth of 38⁵ feet. *Concur. See also section 7.a.2) of the Evaluation Report.*

K 9. INVESTIGATION REPORT FOR CONTACT 17

Awois
#8086

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: Vicinity Sandy Hook Channel
Latitude: 40° 26' 22.3" N } ?
Longitude: 73° 55' 52.1" W } ?
Reported Depth: 47 Feet (from H-10286) #1 Obstr (A)

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 187
Diver Investigations: DOY 192 and DOY 193
Echo Sounder Investigation: none
Contacts: One

A fifty meter range scale SSS search was performed over the coordinates listed in the Project Instructions. The contact was located by the HECK at position 205.54P. Divers investigated the contact and moved the marker buoy onto it. The HDAPS printer was accidentally switched off during FIX 272, which was taken after the divers placed the buoy over the contact. Fix 271 was taken when the marker buoy was deployed and is submitted as the position of the contact.

DIVER INVESTIGATION SUMMARY : Three dives were performed on the contact. Two dives were made on DOY 192, but the divers were unable to locate the contact. On DOY 193, ENS Weiner and ST Sramek performed a 30 meter circle search around the buoy position and located the object. Visibility was about 20 feet. The marker buoy was placed on the contact. The least depth was measured by pneumofathometer by LT Tuell and OF Dupont from the dive boat.

CONTACT DESCRIPTION : The divers found a 20 foot long linear object rising 2.5 feet above a hard sandy bottom. The object had no markings or identifying features and was flat and parallel to the bottom. Although visibility was excellent, the divers could not determine what the function of the object had been. It is probably made of wood but is covered with marine growth.

LEAST DEPTH DETERMINATION :

Date of measurement: 12 July 1989 (DOY 193)
Time (UTC): 1920

Pneumofathometer depth: 56.5
~~PREDICTED~~ tidal corrector : - 4.46

Least depth: ~~52.1~~
51.9

POSITION DETERMINATION :

Fix number: 271
Number of LOP's: 3
Maximum residual: 4.9
Error circle radius: 6.6

Easting: 26594.4
Northing: 41418.8

Latitude: $40^{\circ} 26' 22.856''$ N
Longitude: $73^{\circ} 55' 52.347''$ W

*52 Obstr found. see
sheet 4 of 18.*

RECOMMENDATIONS : This contact rises less than 3 feet off the bottom and lies in water depths of 55 feet. It is insignificant for navigational purposes. The HECK recommends that the contact not be charted. *Concur. Do NOT Chart the 47 Obstr (A) shown on Prior survey H-10286 (1988)*

K 10. INVESTIGATION REPORT FOR CONTACT 18

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: Vicinity Sandy Hook Channel
Latitude: 40° 27' 25.1" N
Longitude: 73° 55' 49.4" W
Reported Depth: 42 Feet (from H-10286) *42 Obsta (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 186
Diver Investigations: DOY 194
Echo Sounder Investigation: none
Contacts: One

A fifty meter range scale SSS search was performed over the coordinates provided by WHITING. The contact was located by the HECK at position 159.30P. Divers investigated the contact and placed the marker buoy at the high point. Fix 295 was taken when the HECK was maneuvered alongside the marker buoy.

DIVER INVESTIGATION SUMMARY : LT Tuell and ST Sramek descended the marker buoy to the bottom in about 50 feet. Visibility was about 10 feet. A 20 meter circle search was performed and the contact was located about 5 meters from the buoy weights. The weights were moved onto the contact. The least depth was measured by pneumofathometer.

CONTACT DESCRIPTION : The divers found several mounds of a red clay-like substance which appeared to have been dredge spoil. The highest mound rises about 4 feet above the sandy bottom. The substance was soft and interspersed in it were small stones and pieces of wood. It is soft enough so that it collapsed under the weight of the divers.

LEAST DEPTH DETERMINATION :

Date of measurement: 13 July 1989 (DOY 194)
Time (UTC): 1730

Pneumofathometer depth: 45.0
~~PREDICTED~~ tidal corrector : - ~~2.9~~ *3.4*

Least depth: ~~43.1~~
41.6

POSITION DETERMINATION :

Fix number: 295
Number of LOP's: 4
Maximum residual: 5.6
Error circle radius: 5.3

Easting: 26644.7
Northing: 43370.6

Latitude: $40^{\circ} 27' 26.134''$ N
Longitude: $73^{\circ} 55' 50.194''$ W

RECOMMENDATIONS : This contact lies 0.3 miles northeast of buoy "2" at the entrance to Sandy Hook Channel. It is three feet shoaler than the nearest charted depth of 45 feet. However, due to the soft nature of the contact it is not a danger to navigation. The HECK recommends that this contact be charted as a SOUNDING of 43 feet. *Concur. Chart as 41 ft. Do not chart the 42 Obstr (A) shown on prior survey H-10286 (1988) See sheet 6 of 15*

K 11. INVESTIGATION REPORT FOR CONTACT 19

AREA OF INVESTIGATION :

State: New Jersey ✓
County: Monmouth
Locality: One mile NE of entrance to Sandy Hook Channel
Latitude: 40° 28' 12.2" N
Longitude: 73° 55' 48.6" W
Reported Depth: 4²/₃ Feet (from H-10286) 43 *Obstr (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 181
Diver Investigations: none
Echo Sounder Investigation: DOY 193
Contacts: One

A fifty meter range scale SSS search was performed over the coordinates provided by WHITING. The contact was located by the HECK at position 95.2P. Although the image is very good, this data was later rejected because the digital data could not be retrieved from the raw data tape for editing. The contact was also located at position 101P. Another problem was encountered here in that the event marks were not written to the sonagram. However, the operator annotated the sonar image as the towfish passed by the target.

The item was resolved by running a series of east-west development hydrographic lines over the coordinates computed from the HECK's SSS image.

CONTACT DESCRIPTION : The SSS records depict a localized shoal area which is about 100 meters long by 30 meters wide and rises about four to five feet above the bottom. Comparison of the HECK's SSS image with the copy provided by WHITING shows that both images are of the same target. The HECK's image is oriented 90° to that of the WHITING and is at twice the scale. Due to poor visibility in this area and to the extensive length of the shoal, a diver investigation was not conducted.

LEAST DEPTH DETERMINATION : The least depth was determined by echosounder development. Twelve meter line spacing was achieved over the immediate area of the contact located by HECK. The most significant sounding was found at position 255.16F. The results of this hydrographic development are shown on sheet HE-5-7-89B.

Date of measurement: 12 July 1989 (DOY 193)
Time (UTC): 1701

Echosounder depth: 36.9
Draft: ~~6.9~~ 7.2
Velocity: 1.20
~~PREDICTED~~ tidal corrector: - ~~2.5~~ 3.6
Least depth: ~~42.5~~
1

POSITION DETERMINATION :

Fix number: 255.16F
Number of LOP's: 4
Maximum residual: 5.7
Error circle radius: 5.3

Easting: 26685.0
Northing: 44751.2

Latitude: 40° 28' 10.⁹¹~~873~~" N
Longitude: 73° 55' 48.²⁵~~471~~" W

RECOMMENDATIONS : This contact lies in the approach to Swash Channel and is about 1 mile northeast of the entrance to Sandy Hook Channel. The nearest charted depth is 44 feet. This contact is shown on prior survey H-102⁸~~96~~ as a sounding of 4³~~2~~ feet. Surrounding soundings on H-102⁸~~96~~ are 2 to 3 feet deeper than charted depths.

HECK recommends that the area be recharted using depths from prior survey H-102⁸~~96~~. The contact should be shown as a shoal sounding on isolated rocks with a known depth of 4² feet. The symbol should be placed at the coordinates determined in this survey. This data affects charts 12324, 12326 and 12327. *CONCUR*
Chart as 41 Rks. Do not chart the 43 Obstr (A) shown on prior survey
H-10286 (1986) See sheet 7 of 15.

K 12. INVESTIGATION REPORT FOR CONTACT 20

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 0.6 miles NE of entrance to Sandy Hook Channel
Latitude: 40° 27' 39.7" N
Longitude: 73° 55' 39.1" W
Reported Depth: 44 Feet (from H-10286) *44 Obstr (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 181
Diver Investigations: none
Echo Sounder Investigation: none
Contacts: one

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. HECK located the contact at position 114.21S.

CONTACT DESCRIPTION : Comparison of the 50 meter scale image obtained by HECK with the 100 meter scale image obtained by WHITING shows that the contact has no significant height above the bottom. The very clear side scan image obtained at 114.21S shows a ring-shaped contact which seems to be a group of several small rocks or other protrusions. On the 100 meter scale these rocks appear as a single, larger rock giving the impression of greater height above bottom.

RECOMMENDATIONS : This contact ^{*44 Obstr (A)*} is insignificant for navigational purposes and should not be charted. *Concur. See sheet 8 of 15*

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K 13. INVESTIGATION REPORT FOR CONTACT 22

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 1 mile NE of entrance to Sandy Hook Channel
Latitude: 40° 28' 03.3" N
Longitude: 73° 55' 33.9" W
Reported Depth: 48 Feet (from H-10286) *48 Obstr (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 181
Diver Investigations: DOY 193
Echo Sounder Investigation: NA
Contacts: One

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. HECK first located the contact at position 106.25S. A dive buoy was deployed at position 253. Divers investigated the wreck and placed the buoy on it. Fix 254 was taken when the HECK was maneuvered alongside the dive buoy.

DIVER INVESTIGATION SUMMARY : Three dives were made on this wreck. LT Tuell and ENS Bonnah descended the buoy line and began a 40 meter circle search. Divers ran low on air and had to abort the dive. Tuell and Bonnah located the wreck on their second dive and moved the marker buoy to the high point. ENS Weiner and ST Sramek descended the marker buoy and made the depth measurement. LT Tuell and OF DuPont operated the pneumofathometer from the dive support boat.

CONTACT DESCRIPTION : The divers found the remains of a large wooden ship or barge. The wreck was completely collapsed upon itself. A large pile of blocks which resembled ballast blocks remains. The least depth measurement was made atop the pile of blocks.

LEAST DEPTH DETERMINATION :

Date of measurement: 12 JULY 1989 (DOY 193)
Time (UTC): 1612

Average pneumofathometer depth:	49.8
PREDICTED tidal corrector:	- 2.48
Least depth:	<u>47.40</u>

POSITION DETERMINATION :

Fix number: 254
Number of LOP's: 3
Maximum residual: 5.2
Error circle radius: 6.2

Easting: 27030.4
Northing: 44522.9

Latitude: $40^{\circ} 28' 03.489''$ N
Longitude: $73^{\circ} 55' 33.811''$ W

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	15490.6	26956.6	43712.2	59864.1

RECOMMENDATIONS : This wreck lies in the approach to Swash Channel. It rises five feet off the bottom in depths of 53 feet. HECK recommends that it be charted as a sunken wreck, dangerous to surface navigation, with a known depth of 47 feet. It should be charted on charts 12324, 12326, and 12327. *Concur. Chart as A 47 WK*

The 47 WK found by the present survey is 16 meters NW of the 44 Obstr shown on survey H-10224 (1986-88); therefore, it is recommended that the 47 WK shown on the present survey supersede the charting recommendation of the 44 Obstr in the Descriptive Report for H-10224 (1986-88). See sheet 9 of 15

AW015
8088

K 14. INVESTIGATION REPORT FOR CONTACT 23

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 1 mile SE of entrance to Ambrose Channel
Latitude: 40° 28' 51.1" N
Longitude: 73° 55' 16.3" W
Reported Depth: 54 feet (from H-10286) *53 Obstr (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 180
Diver Investigations: DOY 188
Echo Sounder Investigation: none
Contacts: One

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. HECK first located the contact at position 40.4P. A dive buoy was deployed at position 241 with the 100 Khz active pinger attached. SSS imagery was obtained showing the pinger resting very close to the contact. Divers investigated the wreck and moved the buoy onto it. Fix 244 was taken when the HECK was manuevered alongside the dive buoy.

DIVER INVESTIGATION SUMMARY : LT Tuell and ENS Weiner descended the marker buoy to a sandy bottom in 70 feet of water. The visibility was 10 - 15 feet. The divers swam about 10 meters to the north and immediately found the wreck. They moved the marker buoy to the wreck and conducted a 30 meter circle search. No other contacts were found. The least depth was measured by pneumofathometer by ST Sramek and ABS Lewis from the dive boat.

CONTACT DESCRIPTION : The divers found a mast-like object rising about 5 feet out of a sandy bottom. Most of the wreckage appeared to have been buried in the sand. The entire wreck was covered with trawl nets and could not be examined closely.

LEAST DEPTH DETERMINATION :

Date of measurement: 07 JULY 1989 (DOY 188)
Time (UTC): 1705

Average pneumofathometer depth:	56.0
PREDICTED tidal corrector:	- 3.9 <i>4.0</i>
Least depth:	<u>52.10</u>

POSITION DETERMINATION :

Fix number: 244
Number of LOP's: 3
Maximum residual: 2.2
Error circle radius: 6.3

Easting: 27452.8
Northing: 46059.8

Latitude: $40^{\circ} 28' 53.311''$ N
Longitude: $73^{\circ} 55' 15.859''$ W

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	-----	-----	-----	-----
	15488.4	26956.6	43720.1	59868.1

RECOMMENDATIONS : This wreck lies about 1 mile southeast of the entrance to Ambrose Channel. It rises 5 feet off the bottom in depths of 57 feet. HECK recommends that this contact be charted as a submerged wreck, dangerous to surface navigation, with a known depth of 52 feet. The wreck should be charted on charts 12324, 12326, and 12327. *Concor. Chart as a 52 Wk*

*Do not chart the 53 Obstr (A) shown on prior survey H-10286 (1986)
See also sheet 10 of 15.*

K 15. INVESTIGATION REPORT FOR CONTACT 24

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: Ambrose Channel
Latitude: 40° 28' 57.5" N
Longitude: 73° 54' 30.9" W
Reported Depth: 45 Feet (from H-10286) *45 Obst (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 179 and DOY 180
Diver Investigations: none
Echo Sounder Investigation: none
Contacts: one

A 50 meter range scale SSS investigation was conducted over the coordinates listed in the Project Instructions. HECK located the contact at position 4.03F. Excellent SSS images were also obtained at positions 16.2P and 19.2P.

CONTACT DESCRIPTION : A copy of WHITING's SSS image was not provided in the project package. Contact 4.03F was the only contact found near the coordinates specified. The maximum scaled height from any of the images of this contact obtained by HECK is 1.5 feet above bottom. The HECK passed directly over the contact at position 4.0 and no protrusions above the bottom were noted. The image obtained at position 16.2P shows no measurable height, therefore, the contact may be a scour. The contact may also be a small, linear piece of debris from the wreck of the Fort Victoria, which is visible at position 21.0.

RECOMMENDATIONS : This contact lies on the southern boundary of Ambrose Channel. It is about 0.1 mile west of the wreck of the Fort Victoria which is charted through a notice to mariners. The contact is insignificant for navigational purposes and should not be charted. *Concur. See sheet 11 of 15*

AWOIS
#8089



K 16. INVESTIGATION REPORT FOR CONTACT 25

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 0.6 miles S of buoy "1" Ambrose Channel
Latitude: 40° 28' 56.6" N
Longitude: 73° 55' 58.5" W
Reported Depth: 37 Feet (from H-10286) *37 Obstr (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 180
Diver Investigations: none
Echo Sounder Investigation: none
Contacts: one

A 50 meter range scale SSS investigation was conducted over the coordinates determined by WHITING. HECK obtained four clear images over the area but no contacts were found.

CONTACT DESCRIPTION : The area investigated by HECK shows a smooth bottom which shoals toward the west. Changes in bottom texture as well as sand ripples can be seen on the images. No protrusions above the bottom are visible.

RECOMMENDATIONS : The contact was not found at the coordinates submitted by WHITING. The contact is **DISPROVED**. *Do Not Concern*
See section 7.a.3) of the Evaluation Report

AW015
#8090

K 17. INVESTIGATION REPORT FOR CONTACT 30

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 3.5 miles east of Highlands, New Jersey
Latitude: 40° 23' 37.9" N
Longitude: 73° 53' 30.3" W
Reported Depth: 68 feet (from H-10286) *68 Obstr (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 199
Diver Investigations: none
Echo Sounder Investigation: none
Contacts: one

A 50 meter range scale SSS investigation was conducted over the coordinates determined by WHITING. Two excellent images were obtained of the target; the first was at position 382.1P and the second was at position 384.7P. (SSS positions 364 - 386 could not be transferred from the raw data tape for editing.) The HECK was maneuvered over the coordinates determined from these SSS images. Fix 387 was taken when the contact was visible on the fathometer.

CONTACT DESCRIPTION : The SSS images clearly show a single contact rising from a flat bottom. The contact height is about 5 feet off the bottom. Pronounced sand ripples can also be seen on the otherwise flat bottom.

LEAST DEPTH DETERMINATION :

Date of measurement: 18 July 1989 (DOY 199)
Time (UTC): 1705

Echosounder depth:	65.5
Draft:	6.9
Velocity:	2.4 1.8
Predicted tidal corrector:	-0.9 1.0
Least Depth:	73.9 73.2



POSITION DETERMINATION :

Fix number: 387
Number of LOP's: 3
Maximum Residual: 2.0
Error circle radius: 6.1

Easting: 29950.7
Northing: 36338.3

Latitude: $40^{\circ} 23' 38.095''$ N
Longitude: $73^{\circ} 53' 30.375''$ W

RECOMMENDATIONS : The contact did not meet the criteria set for significance. It is not a danger to navigation. The HECK recommends that the contact be charted as an ~~sounding~~ ^{obstruction} of 73 feet.

Concur. Chart as a 73 Obstr. Do not chart the 68 Obstr (A) shown on prior survey H-19286 (1968) see sheet 13 of 15.

AW015
#8091

K 18. INVESTIGATION REPORT FOR CONTACT 40

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 0.7 miles S of buoy 1 Ambrose Channel
Latitude: 40° 28' 49.2" N
Longitude: 73° 56' 13.8" W
Reported Depth: 26 Feet (from H-10286) *26 Obstr (A)*



SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 180 and DOY 194
Diver Investigations: none
Echo Sounder Investigation: DOY 194 and DOY 201
Contacts: Two

A fifty meter range scale SSS search was performed over the coordinates provided by WHITING. The contact was located by the HECK at position 65.38P and again at positions 75.2S and 79.0S. However, a more significant contact was located at position 78.17P; this contact was developed hydrographically.

CONTACT DESCRIPTION : The contact that had been originally located by WHITING was found to be insignificant. A different contact with a scaled height above bottom of 4 feet was found nearby at positions 78.17P and 280.35S. SSS imagery shows a localized shoal which rises about 4 feet off the bottom and is probably dredge spoil.

LEAST DEPTH DETERMINATION : The least depth was determined by echosounder development. Ten meter line spacing was achieved over the immediate area of contact 78.17P. The most significant sounding was found at position 284.15F. The results of this hydrographic development are shown on sheet HE-5-7-89C.

Date of measurement: 13 July 1989 (DOY 194)
Time (UTC): 1402

Echosounder depth:	24.6
Draft:	4.9 7.0
Velocity:	0.8
PREDICTED tidal corrector:	-1.10 324
<i>HIP:</i>	.2
Least depth:	31.26 314

POSITION DETERMINATION :

Fix number: 284.15F
Number of LOP's: 3
Maximum residual: 0.8
Error circle radius: 7.1

Easting: 26206.1
Northing: 45841.5

Latitude: $40^{\circ} 28' 46.244''$ N
Longitude: $73^{\circ} 56' 08.793''$ W

RECOMMENDATIONS : The contact lies 0.7 miles south of buoy "1" at the entrance to Ambrose Channel. It rises two feet off the bottom in depths of 33 feet. The nearest charted depth to the contact is 31 feet. The contact does not represent a danger to navigation. The HECK recommends that the contact be plotted as a sounding of 31 feet. *Do not Concur. See section 7.2.4) of the Evaluation Report.* ✓

AW015
#8092

K 19. INVESTIGATION REPORT FOR CONTACT 41

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 1.2 miles S of buoy 1 Ambrose Channel
Latitude: 40° 28' 22.9" N
Longitude: 73° 56' 08.7" W
Reported Depth: 26 Feet (from H-10286) *26 Obstr (A)*

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 180
Diver Investigations: none
Echo Sounder Investigation: DOY 195
Contacts: one

A fifty meter range scale SSS search was performed over the coordinates provided by WHITING. The contact was located by the HECK at position 83.1F. The least depth was determined by conducting a series of hydrographic development lines over the area. The results of the hydrographic development are shown on sheet HE-5-7-89D.

CONTACT DESCRIPTION : The SSS imagery shows a linear shoal area about 100 meters long by 30 meters wide. Maximum scaled heights from the sonargrams are 2 feet. The bottom is sloping east-west with significant natural shoaling immediately to the west of the contact. The most significant sounding was acquired at position 307. However, this peak is only 1 foot higher than the depths of the general trend of the bottom located 25 meters to the west.

LEAST DEPTH DETERMINATION : The least depth was determined by echosounder development. Ten meter line spacing was achieved over the immediate area of contact 83.1P. The least depth was found at position 307.

Date of measurement: 14 July 1989 (DOY 195)
Time (UTC): 1351

Echosounder depth:	18.5
Draft:	6.9 7.0
Velocity:	0.6
PREDICTED tidal corrector:	-1.6
<i>HIP:</i>	-0.1
Least depth:	<u>24.4</u>

POSITION DETERMINATION :

Fix number: 307F 306^{TL}
Number of LOP's: 2
Maximum residual: 0.1
Error circle radius: 9.4

Easting: 26170.6
Northing: 45154.5

Latitude: 40⁰ 28' 23.971³" N
Longitude: 73⁰ 56' 10.305^{09.91}" W

RECOMMENDATIONS : The contact lies 1.2 miles south of buoy "1" at the entrance to Ambrose Channel in an area of sloping bottom. The nearest charted depth to the contact is 29 feet and the 30 foot curve is presently charted through the position of the contact. The contact does not represent a danger to navigation. The HECK recommends that the contact be plotted as a ^{obstruction} sounding of 24 feet. *Concur. Chart as a 24 Obstr. Do not chart the 26 Obstr shown on prior survey H-10286 (1988). See sheet 15 of 15*

Grady H. Tuell

Submitted by: Grady H. Tuell, LT, NOAA
Executive Officer
NOAA Ship HECK

L. LETTER OF APPROVAL

Field operations contributing to the accomplishment of this survey were conducted under my direct supervision with frequent personal checks of progress and data quality. This report, field sheets, and data records have been closely reviewed and are complete and adequate for charting.

Stanley R. Iwamoto

Stanley R. Iwamoto, LCDR, NOAA
Commanding Officer
NOAA Ship HECK



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
~~ROCKVILLE, MARYLAND 20852~~

Atlantic Hydrographic Section
439 West York Street
Norfolk, VA 23510-1114

November 21, 1989

Commander, First Coast Guard District
Aids to Navigation Office
408 Atlantic Avenue
Boston, Massachusetts 02210-2209

Dear Sir,

During side scan sonar survey operations conducted by the NOAA Ship HECK in the approaches to New York Harbor four dangers to navigation were located. These items are as follows:

ITEM	REPORTED LEAST DEPTH	POSITION	
		NAD 1983	NAD 1927
Wreck	38.7 ft, 6.4 fm	40°26'52.91" 073°56'08.54"	40°26'52.52" 073°56'10.05"
Wreck	44.1 ft, 7.3 fm	40°26'48.93" 073°55'54.31"	40°26'48.54" 073°55'55.82"
Wreck	47.4 ft, 7.9 fm	40°28'03.49" 073°55'33.81"	40°28'03.10" 073°55'35.32"
Shoal	24.4 ft, 4.1 fm	40°28'23.97" 073°56'10.30"	40°28'23.58" 073°56'11.81"

All depths are corrected to Mean Lower Low Water (MLLW) using predicted tides. This data affects NOAA Charts 12300, 12326, 12327, and 13006.

These items originate from survey FE-327SS, New Jersey, Atlantic Ocean, Offshore--Sandy Hook to Highlands conducted under project OPR-C147.

For additional information concerning these items please contact me at (804) 441-6746.

Sincerely,

Commander Christopher B. Lawrence, NOAA
Chief, Atlantic Hydrographic Section

Attachment



Local> R 617
Msg # 617 Stat:Y To: KVHA From: WTEY Date: 18-Jul/0948
Subject: VARIOUS
From: WTEY@KVHA

ZNR UUUUU
R 181340Z JUL 89
FM NOAAAS HECK
TO NOAAAMDA NORFOLK VA
BT

UNCLAS
FOR OPS

1. BUNK SPACE IS AVAILABLE ON HECK FOR L. SINGLETON ON 21 JULY.
2. CELLULAR PHONE NUMBER IS 201 618 1058.

FOR MOA 23 CDR LAWRENCE

1. HECK HAS INVESTIGATED CONTACT NO. 14 FROM H-10286 ON OPR-C-147 AND HAS FOUND NO SIGNIFICANT CONTACT. DURING THE INVESTIGATION THE BOTTOM APPEARED DIFFERENT FROM WHAT THE WHITING FOUND AND WE REQUEST THE LOCATION REPORTED BY THE WHITING FOR ITEM 14 BE RE-EXAMINED.

Examination of three SSS strips over "contact" ~~only~~ reveals contact to be visible on one strip (pos 403-404). The other two strips (pos 2482-3 & pos 466-467) reveals these records to be obscure. Position provided to HECK from WH appears to be correct. Because only one aspect from three SSS records recorded ~~to~~ contact there is some doubt as to the contacts validity. It was probably selected because the other two strips could not verify or disprove its existence.

7-19-89

ROS

P.S. A high resolution (500kHz) pass ^{recorded} over contact location by ~~the~~ the HECK should be sufficient to consider the contact disproved in addition to HECK's investigation. The difference in the appearance of the bottom cannot be evaluated at this point.

JUL 19 1989

R 1800Z 19 JUL 89
FM NOAA MOA NORFOLK VA
TO NOAAAS HECK
BT
UNCLAS
REF: MESSAGE 181340 JUL 89

REVIEW OF WHITING SIDE SCAN SONAR RECORDS IN VICINITY OF CONTACT NO. 14
INDICATES VERY QUESTIONABLE CONTACT ON ONE OF THREE PASSES. SUGGEST ONE
SLOW PASS AT 50 METER RANGE. IF NOTHING EVIDENT CONSIDER DISPROVED.
BT

HORIZONTAL CONTROL STATIONS

STAT #	NAME	LAT	LON
001	AMBROSE LT ECC	40-27-35.263 ✓	73-49-49.999 ✓
002	SANDY HOOK LT ECC	40-27-42.189 ✓	74-00-07.226 ✓
003	SPERMACEITI COVE C-G CUPOLA	40-25-36.085 ✓	73-59-03.266 ✓
004	SEA CLUB 2	40-21-55.966 ✓	73-58-22.996 ✓
022	NAVISINK LIGHT NORTH	40-23-47.640 ✓	73-59-09.034 ✓
024	SANDYHOOK LTHSE FINL	40-27-42.186 ✓	74-00-07.310 ✓
036	ROCKAWAY JETTY	40-32-25.190 ✓	73-56-26.826 ✓
037	ROMER SHOAL	40-30-46.822 ✓	74-00-48.676 ✓

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: NOVEMBER 1, 1989

MARINE CENTER: Atlantic

OPR: C147-HE-89

HYDROGRAPHIC SHEET: FE-327-SS

LOCALITY: Offshore Sandy Hook to Highlands, New Jersey

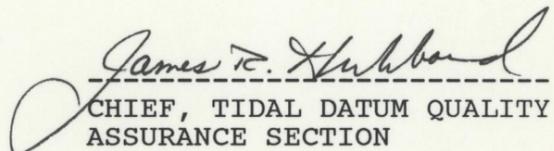
TIME PERIOD: June 28 - July 20, 1989

TIDE STATION USED: 853-1680 Sandy Hook, N.J.

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

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

REMARKS: RECOMMENDED ZONING - east of Lon. 73 57.5'W Apply a x0.98
range ratio to all heights, and a - 0 hr. 10 min. time
correction for Sandy Hook and west of Lon. 73 57.5'W,
run direct on Sandy Hook.


CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

GEOGRAPHIC NAMES

FE-327SS

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

Name on Survey	A	B	C	D	E	F	G	H	K
HIGHLANDS (title)									1
NEW JERSEY (title)									2
SANDY HOOK (title)									3
									4
									5
									6
									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									21
									22
									23
									24
									25

05/30/91

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-327SS

NUMBER OF CONTROL STATIONS	4
NUMBER OF POSITIONS	301
NUMBER OF SOUNDINGS	1159

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	28	11/09/89
VERIFICATION OF FIELD DATA	81	03/22/90
ELECTRONIC DATA PROCESSING	1	
QUALITY CONTROL CHECKS	23	
EVALUATION AND ANALYSIS	102	05/29/91
FINAL INSPECTION	18	04/22/91
TOTAL TIME	253	
ATLANTIC HYROGRAPHIC SECTION APPROVAL		05/30/91

N/CG244-40-91

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU
BY (Check): ORDINARY MAIL AIR MAIL REGISTERED MAIL EXPRESS GBL (Give number) _____

DATE FORWARDED

04 June 1991

NUMBER OF PACKAGES

1 boxe

TO:

Chief, Data Control Section, N/CG243
NOAA/National Ocean Service
Room 151, WSC-1
Rockville, MD 20852

L

J

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.

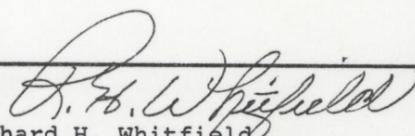
FE-327SS

New Jersey, Atlantic Ocean, Offshore Sandy Hook to Highlands

1 Box containing:

- 1 Original Descriptive Report
- 1 Envelope containing position and excess sounding overlays
- 1 Envelope containing Velocity tables and sounding abstract
- 1 Envelope containing 1. catalog of tape 17910 (raw data), 2. Listing of data from tape 17920 (edited data), and 3. Listing of data from tape 20112 (edited data)
- 1 Cahier with Sounding and Position printouts, Control Listing, and Line File
- 1 Envelope containing miscellaneous data removed from the original descriptive report
- 1 Envelope containing supplemental data removed from printouts
- 15 Envelopes containing sonograms, fathograms and printouts for:
VESNO 0591 (HECK) for JDs: 179, 180, 181, 186, 187, 188, 191, 192, 193,
194, 195, 198, 199, 200, and 201

FROM: (Signature)


Richard H. Whitfield
RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

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

L

J

D. S. Clark
6-7-91

COAST AND GEODETIC SURVEY
ATLANTIC MARINE CENTER
EVALUATION REPORT

SURVEY NO.: FE-327SS

FIELD NO.: HE-10-7-89

New Jersey, Atlantic Ocean, Offshore Sandy Hook to Highlands

SURVEYED: 28 June through 20 July 1989

SCALE: 1:10,000

PROJECT NO.: OPR-C147-HE-89

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

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

Chief of Party.....S. R. Iwamoto

Surveyed by.....G. H. Tuell
.....H. W. Bonnah
.....L. D. Weiner
.....M. A. Sramek

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

1. INTRODUCTION

a. This is primarily a side scan sonar survey. A RAYTHEON DSF-6000N Fathometer was operated concurrently with the side scan sonar. The hydrography is considered reconnaissance hydrography and is not to be charted except for the shoalest sounding. Pneumatic depth gauges and lead lines were used to determine depths. Fathometer developments were conducted to search for items and to determine a depth when dive operations were not conducted.

b. Eleven (11) 1:10,000 scale and four (4) 1:5,000 scale page size sheets were generated during office processing and are attached to this report. Sheets 5, 8, and 11 of 15 show the areas of side scan sonar investigations by the field unit for items considered disproved. These plots are considered the smooth plots for this survey.

c. No unusual problems were encountered during office processing.

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

2. CONTROL AND SHORELINE

a. Control is adequately discussed in section H. 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 survey datum and the North American Datum of 1927 (NAD 27). To place the 1:10,000 scale sheets 1 and 4 through 13 of 15 on the NAD 27 datum, move the projection lines 0.391 seconds (12.1 meters or 1.21 mm at the scale of the survey) north in latitude, and 1.510 seconds (35.6 meters or 3.56 mm at the scale of the survey) east in longitude. To place the 1:5,000 scale sheets 2, 3, 14, and 15 of 15 on the NAD 27 datum, move the projection lines 0.391 seconds (12.1 meters or 2.42 mm at the scale of the survey) north in latitude, and 1.510 seconds (35.6 meters or 7.12 mm at the scale of the survey) east in longitude.

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

3. HYDROGRAPHY

Except as shown on the smooth sheets, the hydrographic data collected on this survey during side scan sonar operations is of reconnaissance value only and was not verified. Hydrography, run and shown on the smooth sheets included in this report, has had all correctors applied and may be used to supplement the charted hydrography in the common area.

On two occasions during office processing the lead line depths used by the hydrographer on items were found to be incorrect. In these cases, shoaler echosounder depths were used.

4. CONDITION OF SURVEY

The smooth sheets and accompanying overlays, hydrographic records, and reports are adequate and conform to the requirements of the HYDROGRAPHIC MANUAL, SIDE SCAN SONAR MANUAL, and Project Instructions.

5. JUNCTIONS

There are no contemporary junctional surveys. There are no junctional requirements in the Project Instructions.

6. COMPARISON WITH PRIOR SURVEYS

H-10286 (1988)

The present survey was conducted to ascertain information on specific items that were selected for additional investigation. In the cases where investigations provided conclusive proof that the item or feature was found by the present survey, the present survey is considered adequate to supersede information shown on the prior survey H-10286 (1988). In cases where the present survey did not provide sufficient information to positively conclude that an item was disproved the present survey may be considered supplemental to prior survey H-10286 (1988).

7. COMPARISON WITH CHARTS 12324SC (24th Ed., Nov. 15/86)
12326 (38th Ed., Feb. 22/86)
12327 (81st Ed., Mar. 15/86)

a. Hydrography

The charted hydrography originates with prior surveys previously discussed in the Evaluation Report for H-10286 (1988) and needs no further consideration. Attention is directed to the following:

1) Contact #6 is a 44 Obstr (A), in Latitude 40°23'45.20"N, Longitude 73°56'27.10"W, originating with prior survey H-10286 (1988). The investigation conducted by the field unit is approximately 45 meters east of the position of contact #6 and did not cover the area of the contact. This item is not considered disproved. A 42-ft depth in prior survey depths of 47 feet was found in Latitude 40°23'40.18"N, Longitude 73°56'24.25"W, 175 meters SSE of contact #6. The 44 Obstr (A) was brought forward to supplement the present survey. It is recommended that the present survey soundings supersede the prior survey in the common area and that the 42-ft depth be charted. It is not recommended that the 44 Obstr (A) be charted unless the scale of the chart allows. It is also recommended that additional work be conducted at an opportune time to verify or disprove contact #6. See sheet 2 of 15.

AW015
#8082

2) During the investigation of contact #16, two additional uncharted items were located; a rock (side scan sonar contact 152.36S) in Latitude 40°27'27.73"N, Longitude 73°56'07.80"W and an obstruction (wreckage) (contact 134.55P) in Latitude 40°27'32.39"N, Longitude 73°56'05.24"W. Dives were conducted on these items and leadline depths were determined. Using the leadline depths obtained by the hydrographer, the reduced depths determined the items to be

the same height as the surrounding bottom. During office processing, fathometer depths were used instead of leadline depths. Corrected depths on the two items were determined as follows: a rock with a depth of 38 feet (contact 152.36S) and an obstruction with a depth of 35 feet (contact 134.55P). It is recommended that an obstruction (wreckage) with a depth of 35 feet, 35 Obstr (wreckage), be charted in the position determined by the present survey. Because the obstruction is approximately 150 meters NE from the rock, it is not recommended that a rock with a depth of 38 feet (38 Rk) be charted unless the scale of the chart allows. See sheet 6 of 15.

AW015
#8085

3) Contact #25 is a 37 Obstr (A), in Latitude 40°28'56.60"N, Longitude 73°55'58.50"W, originating with prior survey H-10286 (1988). During office processing of the present survey, a side scan sonar contact that was not seen by field personnel, was detected on four (4) occasions by office personnel. The four (4) contacts are in a discolored area on the sonargrams and are not as distinct as the contact seen on the sonargrams from prior survey H-10286 (1988). Analysis of the sonargrams have determined the contacts to be the same as contact #25. The 37 Obstr (A), contact #25, is not considered disproved by the present survey, and was brought forward from the prior survey to supplement the present survey. It is recommended that an obstruction with a reported depth of 37 feet [37 Obstr (A)] be charted in the position determined by the prior survey. It is also recommended that additional work be conducted at an opportune time to verify or disprove the existence of contact #25. See sheet 12 of 15.

AW015
#8089

4) Contact #40 is a 26 Obstr (A), in Latitude 40°28'49.20"N, Longitude 73°56'13.80"W, originating with the prior survey. Examination of the side scan sonargrams show a rock outcrop or dredge spoil area at the location of contact #40. No echosounder development was conducted over the contact area. The 26 Obstr (A), contact #40, is not considered disproved, and was brought forward from the prior survey to the present survey. The contact falls within a general anchorage area. It is recommended that an obstruction with a reported depth of 26 feet [26 Obstr (A)] be charted in the position determined by the prior survey. It is also recommended that additional work be conducted at an opportune time to verify or disprove the existence of contact #40. An additional rock outcrop or dredge spoil area with depths of 31 feet was developed by the hydrographer in the vicinity of Latitude 40°28'46.5"N, Longitude 73°56'08.5"W, approximately 150 meters southeast of contact #40. Surrounding present survey depths range from 33 to 35 feet and are in agreement with prior survey soundings. It is recommended that the 31-ft

AW015
#8091

depths be charted should the scale of the chart allow. See sheet 14 of 15.

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

b. Aids to Navigation

There are no fixed or floating aids to navigation within the limits of this survey.

c. Dangers to Navigation

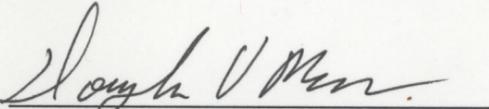
One Danger to Navigation report was submitted by the hydrographer to Commander (oan), First Coast Guard District, 408 Atlantic Avenue, Boston, Massachusetts. A copy of the notice is appended to the Descriptive Report.

8. COMPLIANCE WITH INSTRUCTIONS

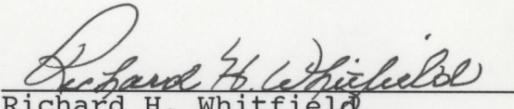
This survey adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

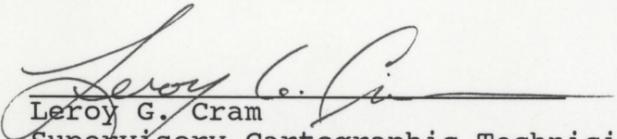
This is an adequate side scan sonar survey. No additional work is recommended except as stated in sections 7.a.1), 3), and 4) of this report.



Douglas V. Mason
Cartographic Technician
Verification of Field Data



Richard H. Whitfield
Cartographer
Evaluation and Analysis



Leroy G. Cram
Supervisory Cartographic Technician
Verification Check

APPROVAL SHEET
FE-327SS

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.

Robert G. Roberson
Robert G. Roberson
Chief, Evaluation and Analysis Team
Atlantic Hydrographic Section

Date: 30 May 1991

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
Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

Date: 30 May 1991

Final Approval:

Approved: J. Austin Yeager
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

Date: 6/21/91

75° 58' 00"
3

75° 57' 30"
3

75° 57' 00"
3

40° 24' 30"

25 Rks

73° 57' 30"

NAD 27
SYNETICS 1201
F.S. 3/9/1990

40° 24' 00"

40° 24' 00"

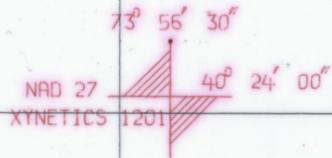
FE-327 SS
NEW JERSEY
OFFSHORE-SANDY HOOK TO HIGHLANDS
JULY 18, 1989
SCALE: 1 : 10,000
SOUNDINGS IN FEET AT MLLW
SHEET 1 OF 15
CONTACT 3

40° 23' 30"

73°56'45"

73°56'30"

73°56'15"



40° 24' 00"

From H-10286 (1988) →
 Obstr (A) 44

48
45

47
47 47

45 47

40° 23' 45"

47 47

47

46 45

47 46

44

44

42

44

45

43

44

FE-327 SS
 NEW JERSEY
 OFFSHORE-SANDY HOOK TO HIGHLANDS
 JULY-18-1989
 SCALE: 1:5,000
 HORIZONTAL DATUM: NAD 1983
 SOUNDINGS IN FEET AT MLLW
 SHEET 2 OF 15
 CONTACT 6

40° 23' 30"

73° 56' 45"

73° 56' 30"

73° 56' 15"

73° 56' 15"
 40° 27' 45"
 NRD 27
 SYNETHICS 1201
 V.F.L.S 3/12/1990

33
 33
 (31)
 34
 33 34

40° 27' 30"

33 34
 34 35
 34 36 35 34 36 36 37 38 38
 38 37 35 36 38 32 38 36 37 38 37 39 38 39 39
 40 39 38 38 38 36 34 37 38 38 39 39 39
 40 39 41 37 38 37 39 38 38 36
 42 42 41 39 38 39 37 38 38
 39 39 38
 40 39
 40
 41

FE-327 SS
 NEW JERSEY
 OFFSHORE - SANDY HOOK TO HIGHLANDS
 JULY 5 & 7, 1989
 SOUNDINGS IN FEET AT MLLW
 SCALE 1:5,000
 SHEET 3 OF 15
 CONTACT IO

40° 27' 15"

73°56'30"

73°56'00"

73°55'30"

73° 56' 00"

NAD 27

40° 27' 00"

40° 27' 00"

XYNETICS 1201
F.S. 3/12/1990

39 Wk (steel)

44 Obstr

44 Wk (steel) ✓

40° 26' 30"

52 Obstr ? ✓

FE-327 SS
NEW JERSEY
OFFSHORE-SANDY HOOK TO HIGHLANDS
JULY 6-18, 1989
SCALE: 1:10,000
SOUNDINGS IN FEET AT MLLW
SHEET 4 OF 15
CONTACTS 12,13,15 & 17

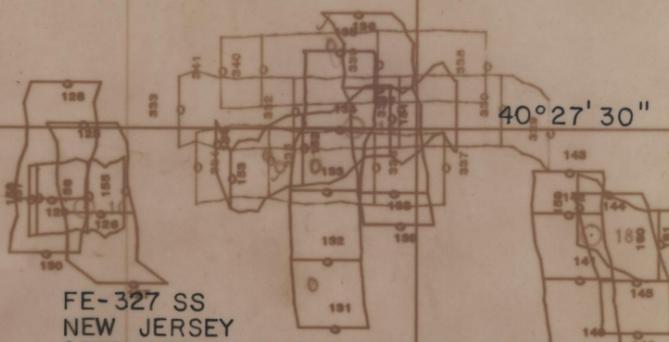
40° 26' 00"

73° 57' 00"

73° 56' 30"

73° 56' 00"

331.4
335.68

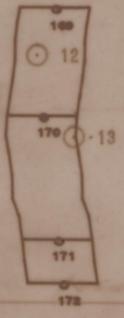
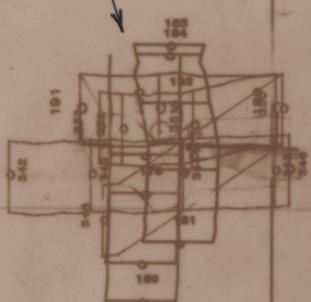


40° 27' 30"

FE-327 SS
 NEW JERSEY
 OFFSHORE SANDY HOOK TO HIGHLANDS
 JULY 5, 17, 1989
 SCALE: 1:10,000
 NAD 1983
 SHEET 5 OF 15
 CONTACT 14

40° 27' 00"

CONTACT 14



40° 26' 30"



73°56'30"

73°56'00"

73°55'30"

73° 56' 00"
 NAD 27
 XYNETICS 1201
 ✓FS 3/12/1990

40° 28' 00"

35 *Obstr (wreckage)*

40° 27' 30"

38 *Rk*

41 *M St*

FE-327 SS
 NEW JERSEY
 OFFSHORE SANDY HOOK TO HIGHLANDS
 JULY 13 & 19-20, 1989
 SCALE: 1:10,000
 SOUNDINGS IN FEET AT MLLW
 SHEET 6 OF 15
 CONTACTS 16,18 & 134.55

40° 27' 00"

73° 56' 30"

73° 56' 00"

73° 55' 30"

40° 28' 30"

46
 46
 47
 42 44 44 45 45 47 47 45 48 48
 37 40 42 44 45 46 46 47 47 48 48
 47
 47

40° 28' 00"

FE-327 SS
 NEW JERSEY
 OFFSHORE SANDY HOOK TO HIGHLANDS
 JULY 12, 1989
 SCALE: 1:10,000
 SOUNDINGS IN FEET AT MLLW
 SHEET 7 OF 15
 CONTACT 19

73° 55' 30"
 NAD 27
 XYNETICS 1201
 ✓ F.L.S. 3/12/1990
 40° 27' 30"
 40° 27' 30"

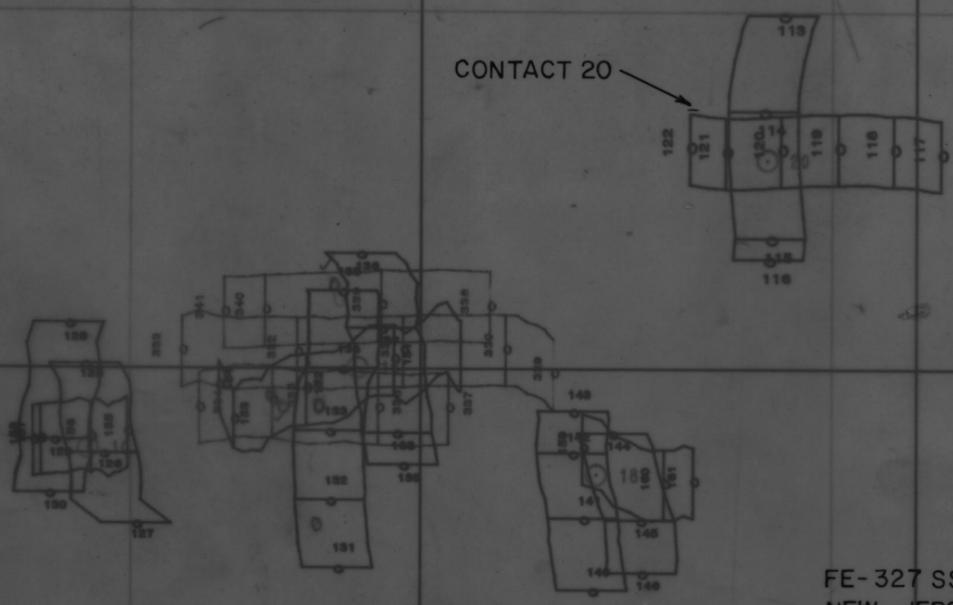
73°56'30"

73°56'00"

73°55'30"

40°28'00"

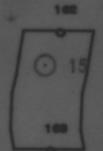
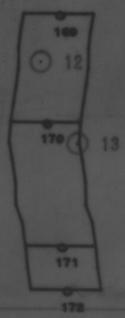
CONTACT 20



40°27'30"

FE-327 SS
 NEW JERSEY
 OFFSHORE SANDY HOOK TO HIGHLANDS
 JUNE 30, JULY 13, 1989
 SCALE: 1:10,000
 NAD 1983
 SHEET 8 OF 15
 CONTACT 20

40°27'00"



73°56'00"

73°55'30"

73°55'00"

73° 55' 30"
 NAD 27
 XYNETICS 1201
 V.F.S 3/13/1990

40°28'30"

J 47 WK

40°28'00"

✓
 FE-327 SS
 NEW JERSEY
 OFFSHORE-SANDY HOOK TO HIGHLANDS
 JULY 12, 1989
 SCALE : 1:10,000
 SOUNDINGS IN FEET AT MLLW
 SHEET 9 OF 15
 CONTACT 22

40°27'30"

73° 56' 00"

73° 55' 30"

73° 55' 00"

73° 55' 00"
 40° 29' 00"
 NAD 27
 XYNETICS 1201
 V.F.S 3/13/1990

52_{Wk}

40° 28' 30"

FE-327 SS
 NEW JERSEY
 OFFSHORE- SANDY HOOK TO HIGHLANDS
 JULY 7, 1989
 SCALE: 1:10,000
 SOUNDINGS IN FEET AT MLLW
 SHEET 10 OF 15
 CONTACT 23

40° 28' 00"

73° 55'00"

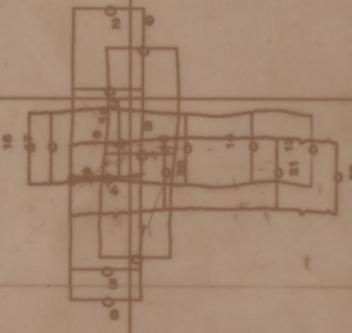
73° 54'30"

73° 54'00"

40°29'30"

40°29'00"

40°28'30"



FE-327 SS
NEW JERSEY
OFFSHORE-SANDY HOOK TO HIGHLANDS
JUNE 28, 29, 1989
SCALE: 1:10,000
NAD 1983
SHEET 11 OF 15
CONTACT 24

73° 56' 30"

73° 56' 00"

73° 55' 00"
3

40° 29' 30"

40° 29' 00"

37 40
 37 42
 38 42
 34 35 36 39 42 43 44 44
 33 34 41 42 43
 41 42 43
 42 43 44
 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

37 Obstr (A) ← From H-10286 (1988)

73° 55' 30"
 NAD 27
 XYNETICS 1201
 40° 28' 30" 40° 28' 30"

FE-327 SS
 NEW JERSEY
 OFFSHORE SANDY HOOK TO HIGHLANDS
 JUNE 29, 1989
 SCALE: 1:10,000
 SOUNDINGS IN FEET AT MLLW
 SHEET 12 OF 15
 CONTACT 25

73° 54'00"

73° 53'30"

73° 53'00"

40°24'00"

78
 78
 76
 76
 77
 77
 78
 77
 7576 7673 79 7979
 75 *Obstr*
 77
 76
 77
 74
 75
 75

40°23'30"

FE-327 SS
 NEW JERSEY
 OFFSHORE SANDY HOOK TO HIGHLANDS
 JULY 18, 1989
 SCALE: 1:10,000
 SOUNDING IN FEET AT MLLW
 SHEET 13 OF 15
 CONTACT 30

73° 53' 00"
 NAD 27
 SYNTHETICS 1201
 F.S. 3/13/1990
 40° 23' 00"
 40° 23' 00"

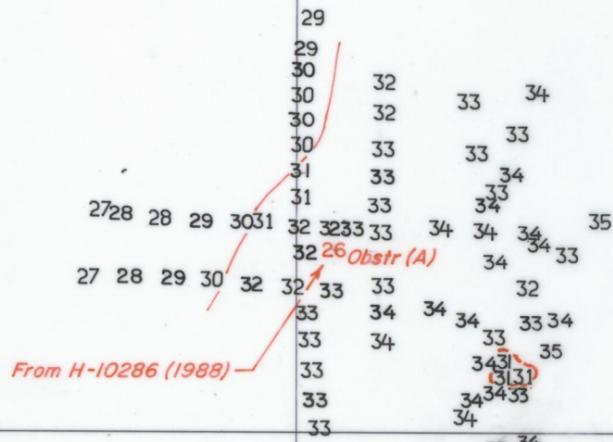
73° 56' 30"

73° 56' 15"

73° 56' 00"

73° 56' 15"
 40° 29' 00"
 NAD 27
 SYNTHETIC 1201
 ✓ F.S 3/13/1990

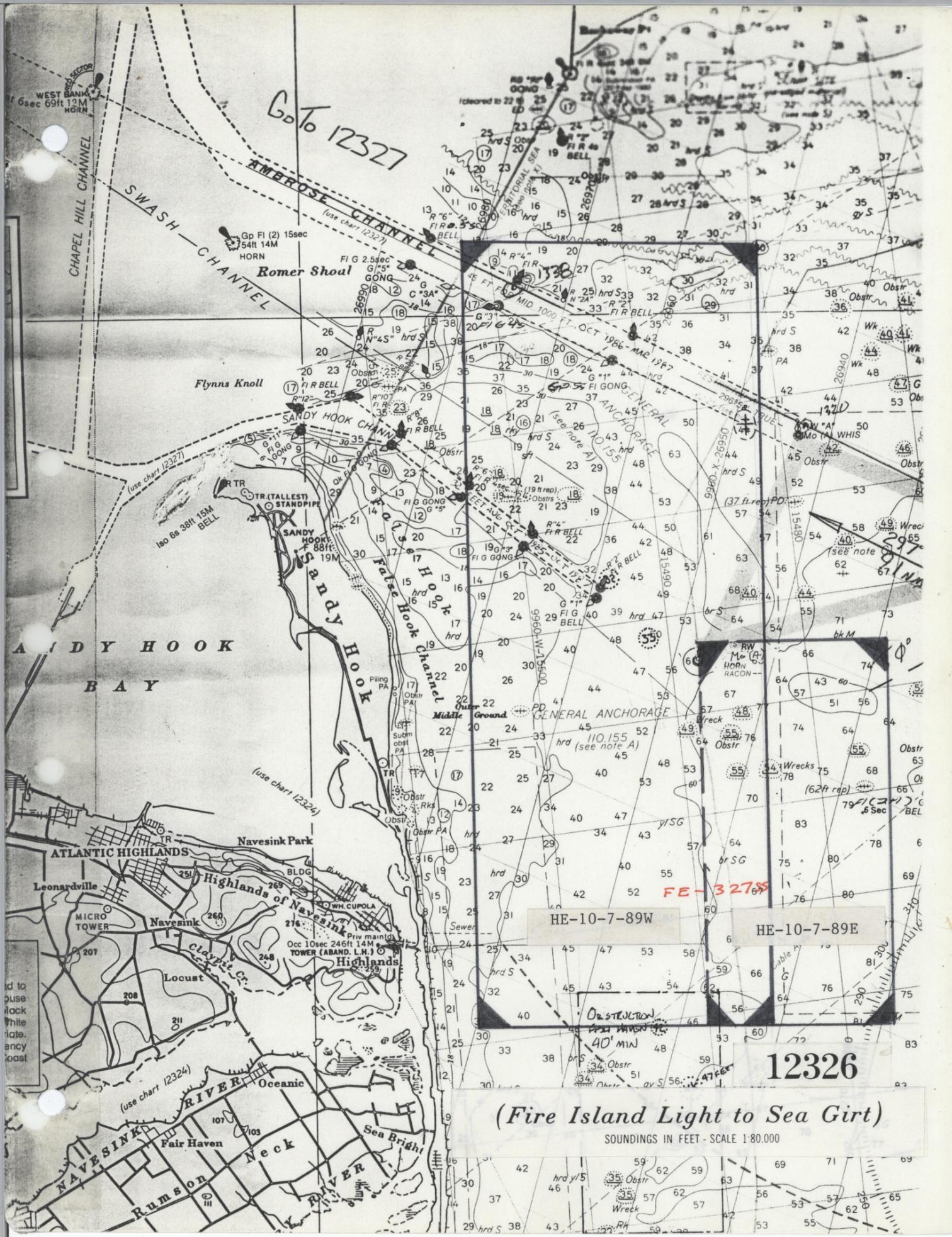
40° 29' 00"



40° 28' 45"

FE-327 SS
 NEW JERSEY
 OFFSHORE - SANDY HOOK TO HIGHLANDS
 JULY 13 & 20, 1989
 SCALE: 1:5,000
 SOUNDING IN FEET AT MLLW
 CONTACT 40
 SHEET 14 OF 15

40° 28' 30"



Go To 12327

FE-3275

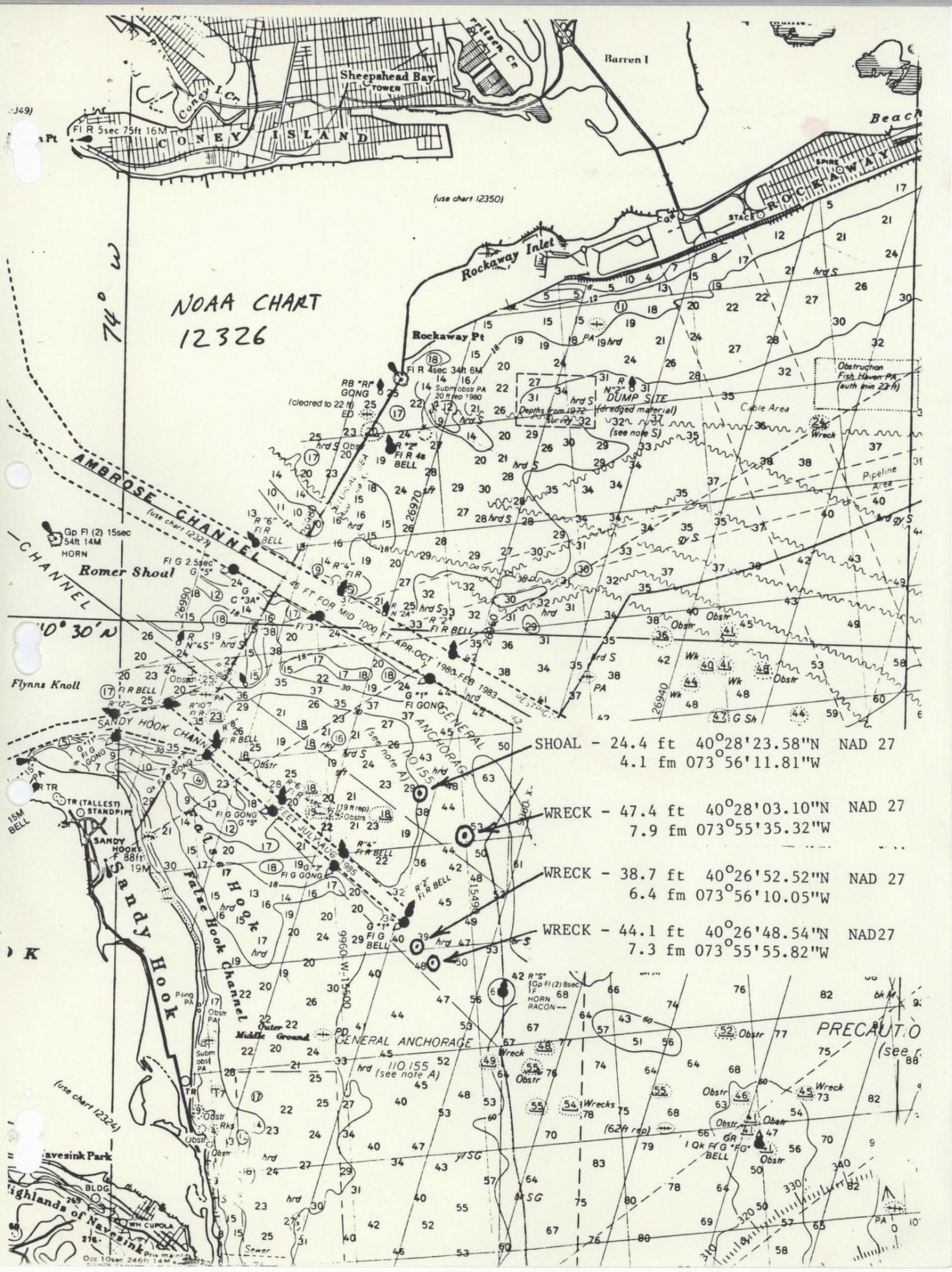
HE-10-7-89W

HE-10-7-89E

12326

(Fire Island Light to Sea Girt)

SOUNDINGS IN FEET - SCALE 1:80,000



- SHOAL - 24.4 ft 40°28'23.58"N NAD 27
4.1 fm 073°56'11.81"W
- WRECK - 47.4 ft 40°28'03.10"N NAD 27
7.9 fm 073°55'35.32"W
- WRECK - 38.7 ft 40°26'52.52"N NAD 27
6.4 fm 073°56'10.05"W
- WRECK - 44.1 ft 40°26'48.54"N NAD 27
7.3 fm 073°55'55.82"W

PRECAUTION
(see r. 88)

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

Hydrographic Index No. 66 L

