

FE334

SIDE SCAN

Diagram No. 1215-3

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-10-11-89
Registry No. FE-334SS

LOCALITY

State New Jersey
General Locality Atlantic Ocean
Sublocality Bradley Beach to Sea Grit^{ir}

1989

CHIEF OF PARTY
LCDR S.R. Iwamoto

LIBRARY & ARCHIVES

DATE May 16, 1990

☆U.S. GOV. PRINTING OFFICE: 1985-586-054

FE334

SIDE SCAN

"GP"
CHT
12324A
12306
12323
12306
13006

HYDROGRAPHIC TITLE SHEET

FE-334SS

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

FIELD NO.

HE 10-11-89

State New JerseyGeneral locality Atlantic OceanLocality Offshore Bradley Beach to Sea GirtScale 1:10,000 Date of survey 25 AUG 89 - 28 AUG 89Instructions dated 20 JUN 89 Project No. OPR-C147-HE-89Vessel HECK S-591 (EDPN 9140)Chief of party LCDR Stanley R. Iwamoto, Commanding OfficerSurveyed by LT Grady H. Tuell, ENS Harrie W. Bannah, ENS Lee D Weiner,
LTJG Dana S. WilkesSoundings taken by echo sounder, ~~hand lead, palex~~ DSF6000 echosounder, PneumofathometerGraphic record scaled by Automated HDAPS SystemGraphic record checked by LT Tuell, ENS Bannah, ENS WeinerVerification by: A.A. Luceno Automated plot by PMC Xynetics PlotterEvaluation by: A.A. LucenoSoundings in ~~fathoms~~ feet at ~~MLW~~ MLLWREMARKS: All items in this survey were originally identified by theNOAA Ship WHITING during the survey H-10291.All times in this survey are UTC.The Descriptive Report follows a non-standard format agreed upon
during meetings held between personnel from HECK, RUDE, WHITING and
Atlantic Hydrographic Section during January of 1989.Revisions & marginal notes in black generated during office processing.
Separates are filed with the hydrographic data.AWOIS/SURF GMSM 5/22/90XWAA 5-23-90

DESCRIPTIVE REPORT TO ACCOMPANY
SURVEY FE-334SS
FIELD NUMBER HE-10-11-89
NEW JERSEY
ATLANTIC OCEAN
OFFSHORE BRADLEY BEACH TO SEA GIRT
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-10291. Survey H-10291 was reviewed by personnel at the Pacific Hydrographic Section (N/CG245). Items to be addressed by HECK were specified in a memorandum from Rear Admiral Sigmund Peterson, NOAA to Captain Christian Andreasen, NOAA, dated March 22, 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. ✓

This Descriptive Report does not follow the standard format as defined in the Hydrographic manual. The report format is a result of agreements reached during meetings held between HECK, RUDE, WHITING, and N/CG244 during January and February 1989. ✓

Horizontal control recovery and installation of navigation units began on June 27, 1989. Hydrographic survey operations began on August 25, 1989 and continued until August 28, 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. ✓

Two contacts were investigated during this survey. Both contacts are addressed individually and are discussed in section K of this text. ✓

C. AREA SURVEYED

This survey lies along the New Jersey coast between Bradley Beach and Sea Girt. The offshore limit of the survey is approximately three miles east of the New Jersey coastline. ✓

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. The diver least depth was measured by pneumofathometer. ✓

E. SURVEY SHEET

The ~~survey sheet~~ ^{position plot} submitted in this report was 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. The sheet is Modified Transverse Mercator projection and is plotted on the North American Datum of 1983 (NAD 83). ✓

One 1:10000 ^{position} field survey sheet ^{and one side scan sonar plot were} submitted in this survey. See * APPENDIX V, PROJECT and PLOTTER SHEET PARAMETERS, for the technical specifications on the sheet. ✓
* Filed with the hydrographic data.

E1. HE-10-11-89W

This sheet is a 1:10000 plot oriented North-South. The sheet covers the entire survey. Data acquired on this sheet are submitted on raw data tape 23710 and smooth data tape 23720. ✓

Two copies of HE-10-11-89W are submitted:
1 field contact swathplot on mylar ✓
1 smooth contact swathplot on paper

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. 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 40 range scale setting. 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. 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 26 July 1989. Copies of these calibrations are provided in *APPENDIX I.H. ✓

The pneumofathometer system check was conducted on 24 August 1989. This check proved that the system was operating within tolerances. The results of this check are included in *Appendix I.H. ✓

** Filed with the hydrographic data.*

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 ODOM 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
8/24/89 (DOY 235)	40° 08' 30"N ; 73° 54' 00"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). ✓

The diver determined depth has been corrected for predicted tides. The tidal value was 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. ✓

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. *The depths determined by divers have been corrected for actual tides on the smooth sheet.* ✓
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 I.E.

G3. 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.F, 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.G, HDAPS OFFSET TABLE. *Settlement & squat correctors are negligible for this survey.* ✓

** Appendices are filed with the survey records.*

G4. 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. ✓

No data were acquired in echosounder mode.

G5. 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.G, HDAPS OFFSET TABLE. *The 6.9-foot draft correction was applied to the smooth sheet.* ✓

** Filed with the hydrographic data.*

H. HORIZONTAL CONTROL

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. ✓

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 OPR-B660-HE-89, which is submitted under separate cover to the Atlantic Hydrographic Section. Excerpts from this report are submitted under a separate cover to the Pacific Hydrographic Section for purposes of verifying this survey. ✓

** Filed with the hydrographic data.*

The range corrector and MASS for each MINI-RANGER code was entered into the HDAPS system using the Pre-Survey C-O 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. A new C-O Table was generated each time any change was made to the navigation configuration. Reference **APPENDIX II.C, HDAPS C-O TABLES*, for the various C-O tables 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 II.D, DAILY ABSTRACT OF HDAPS TABLES*, correlates control stations, MINI-RANGER codes, position numbers and dates of use. ✓

** Filed with the hydrographic data.*

The MINI-RANGER system performed well for the duration of this survey. Survey navigation was excellent. However, on DOY 237 the C-O table did not apply the baseline corrector for station 016; an error of six meters was thereby introduced on this LOP. Side scan sonar was the only type of surveying done on DOY 237, therefore, none of this data is directly used for charting purposes. The detached position for the only significant contact, contact 1, was taken on DOY 240 when the correct BLC values were applied. ✓

H2. GEODETIC 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. All coordinates were taken from WHITING's control station table. ✓

The 6-meter error on DN 237 did not affect the position of the wreck taken on DN 240 by diver investigation.

I. AUTOMATED DATA PROCESSING

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) *Original coordinates used in office processing.* If SSS imagery is acquired when the ship is running obliquely to the segment, the swathplot shows an incorrect shape. The problem is shown on the smooth plot (HE-10-11-89W) over contact 1. Because the contact was eventually resolved by diver investigation, the problem is not considered significant. ✓

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

Hydrographic soundings from this survey were compared with the largest scale chart of the area.

NOS CHART 12326
FIRE ISLAND LIGHT TO SEA GIRT
1:80000
38TH ED 22FEB86 ✓

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

This survey was also compared against prior survey:

H-10291
OFFSHORE NJ COAST, NJ
1:10000
1988

comparison to FE 221 was not accomplished as required by the Project Instruction. See sect. C of Eval. Report.

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.

The contact numbers are consistent with the numbering scheme used by WHITING during Survey H-10291

K. CONTACT INVESTIGATION REPORTS

Two 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>
1	RESOLVED	WK, DANGER TO NAV, 4 ⁷ FT
19	INSIGNIFICANT	ROCK, NOT DNGR TO SRFCE NAV

K1. INVESTIGATION REPORT FOR CONTACT #1

AREA OF INVESTIGATION:

State: New Jersey
County: Monmouth
Locality: Offshore New Jersey Coast, New Jersey
Latitude: 40° 08' 31.2" N
Longitude: 073° 58' 14.1" W

SURVEY PROCEDURES:

Positioning: Falcon Mini Ranger
Side Scan Sonar Search: 25 August 1989 (DOY 237)
Diver Investigation: 28 August 1989 (DOY 240)
Contacts: One

A fifty meter range scale side scan sonar search was conducted over the coordinates provided by WHITING. HECK located the contact at fix 1333.0. A second image of the contact was obtained at position 1335.5. Comparison of the side scan records obtained by the two ships clearly indicates that the contact is wreckage. A dive marker buoy was deployed at position 1352. ✓

After divers placed the buoy on the high point, the HECK was maneuvered along side the buoy. Fix 1354 was taken when the contact was noted on the fathometer. ✓

CONTACT INVESTIGATION REPORT CONTACT #1:

DIVER INVESTIGATION SUMMARY: The contact was investigated by the HECK's divers on 28 August 1989 (DOY 240). LT Tuell and LTJG Wilkes descended the marker buoy, and immediately found the wreck. The least depth was taken on a corner which was slightly higher. The highest point was determined by visual inspection aided by the use of diver depth gauges. Visibility in the location of the contact was 20 feet. The least depth was measured with the pneumofathometer. ✓

CONTACT DESCRIPTION: Divers discovered a large metal barge. The wreck was lying inverted on a sandy bottom. The barge rises 6-8 feet off the bottom on one side and 3 feet on the other side. Visibility was very good and the divers were confident that the measurement was made on the highest point. ✓

Date of measurement: 28 August 1989 (DOY 240)
Time of measurement: 15:20 Zulu

Pneumofathometer depth: 47.8
~~Predicted~~ tidal corrector: ~~-0.9~~
Actual ----- ~~-1.0~~
Least Depth 46.8⁸ feet

POSITION DETERMINATION:

Fix number :1354
Number of LOPs :4
Max Residual :3.8
Error Circle Radius :5.4

Easting:23247.8
Northing:8370.6

Latitude: 40° 08' 31.3⁹8" N
Longitude: 073° 58' 14.02¹" W

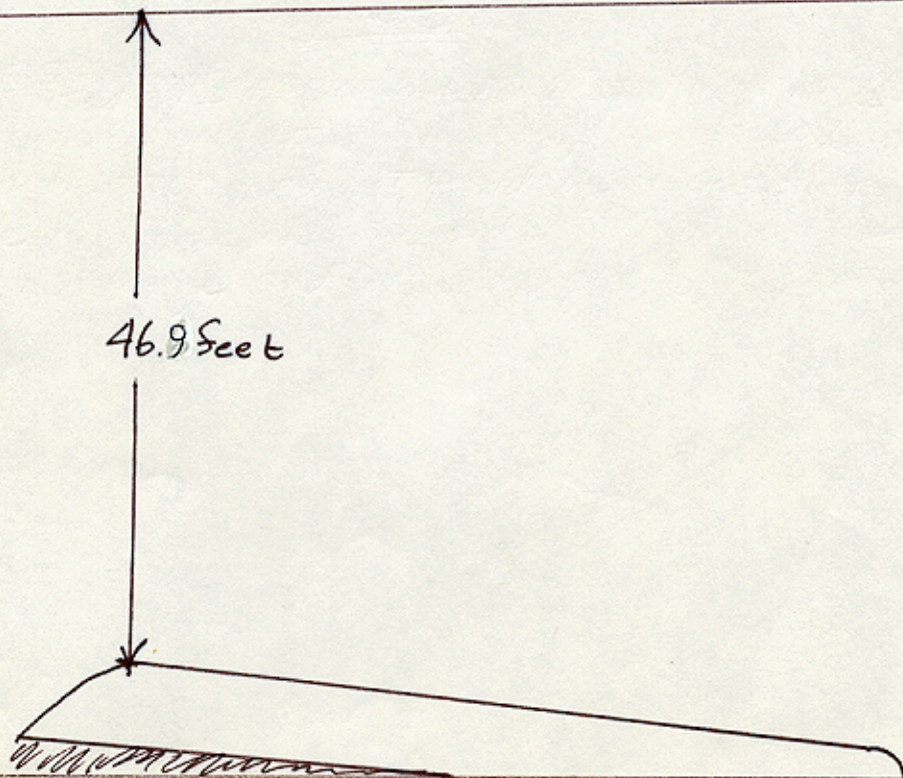
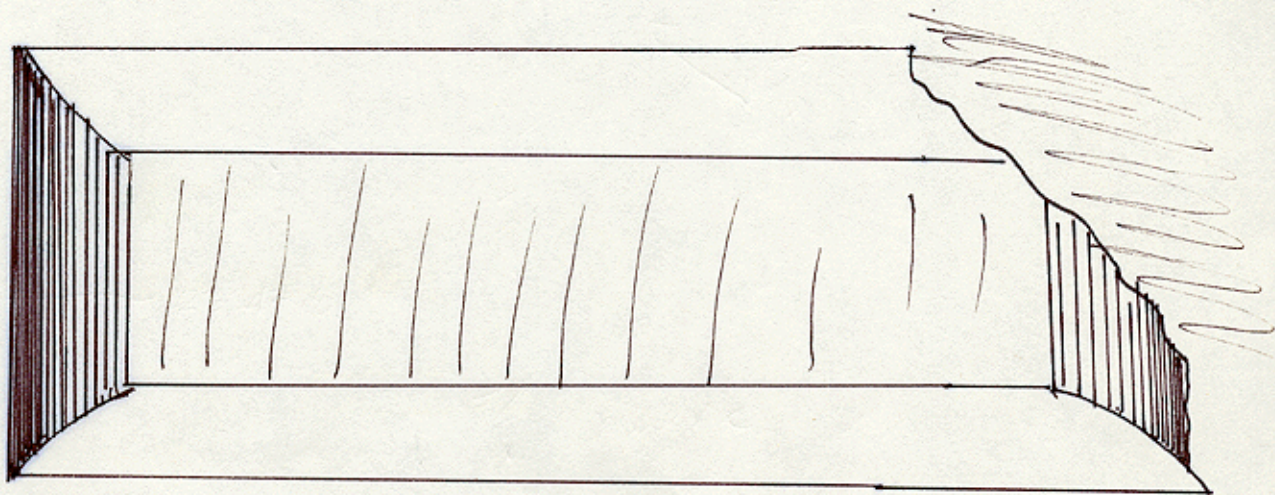
Loran C rates: chain - 9660

W-15516.4 X-26924.3 Y-43516.0 Z-59772.5

RECOMMENDATIONS: The wreck is presently charted as 46 feet. It is shown on prior survey H-10291 as an obstruction with a depth of 42 feet. HECK recommends that this contact be charted as a wreck, dangerous to surface navigation, with a known depth of 48 feet. The wreck should be charted at the coordinates determined in this survey. *see Sect. C of EMB Report*

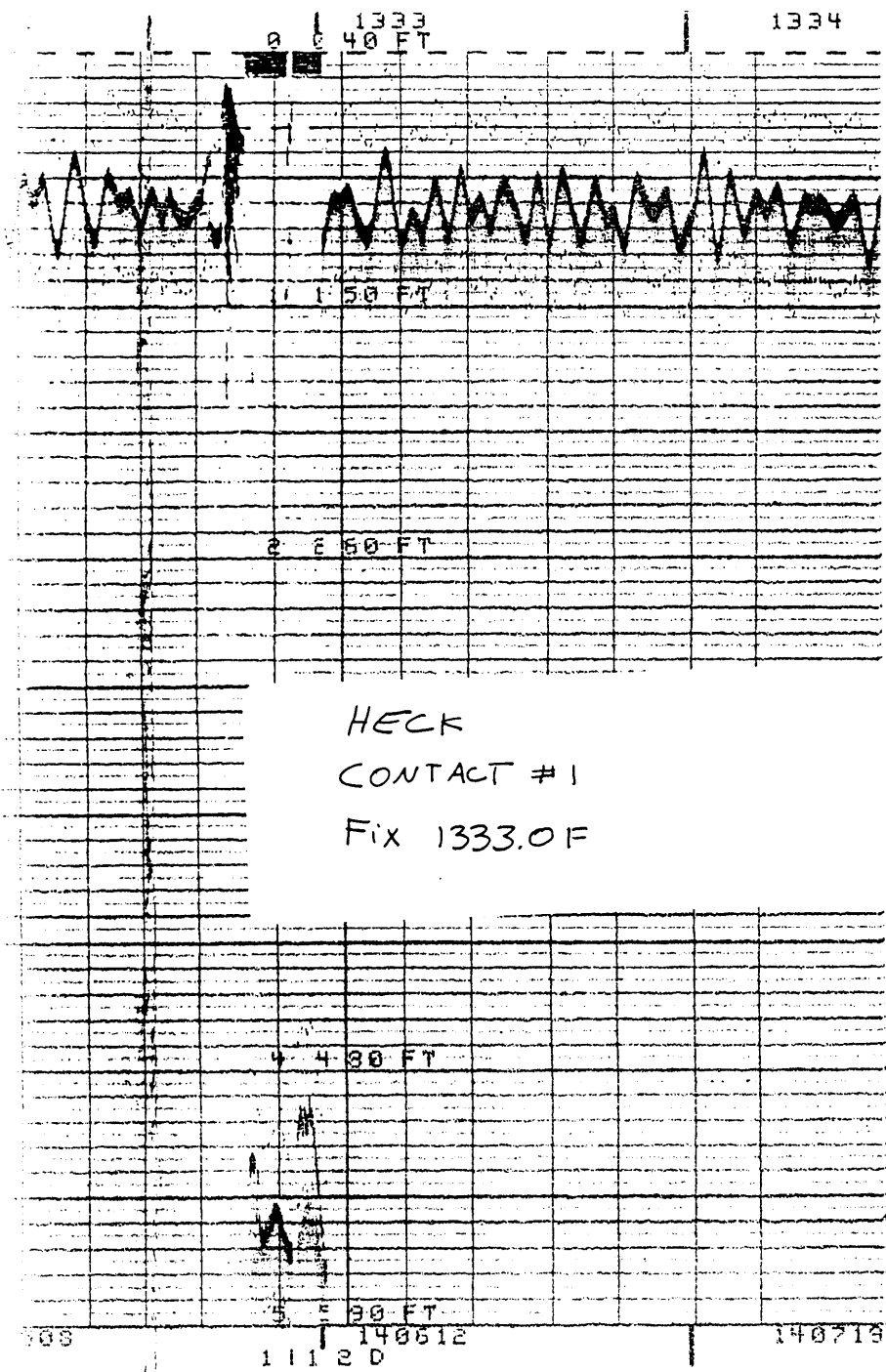
The Project Instructions speculated that this contact was AWOIS item 1504. The HECK agrees that this barge is most likely the AWOIS item. However the derrick mentioned in the AWOIS text was not found by HECK's divers. Since the barge is higher on one side, The derrick is probably beneath the barge and is working into the sandy bottom. ✓

Contact #1

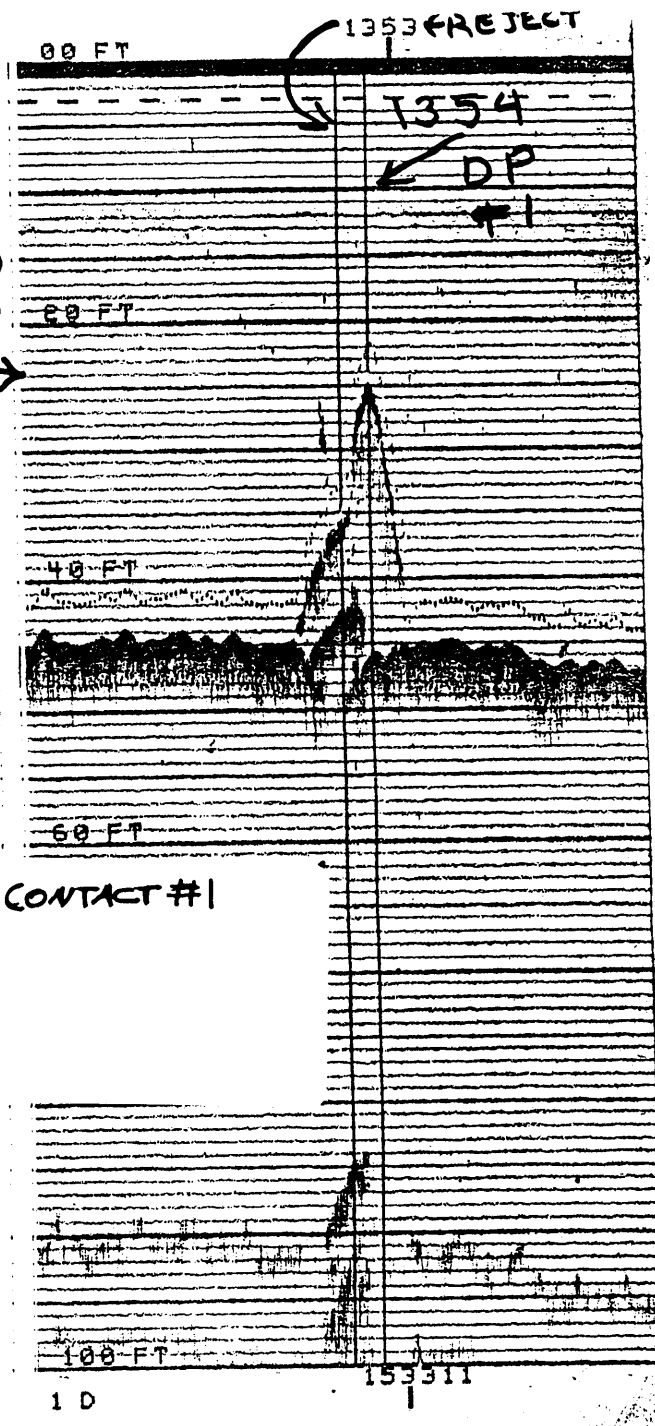
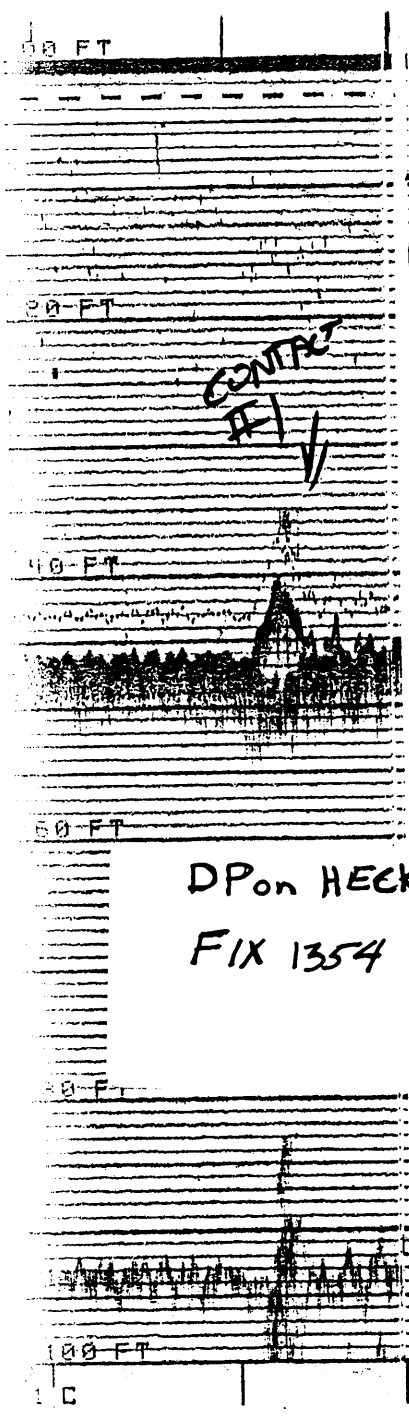


HECK
CONTACT#1
FIX#1335.5

E.
OECM
E.
OECM
E.
OECM 14:13:34 138E
E.
OECM
E.
OECM
E.
OECM
E.
OECM
E.
OECM 14:13:23
E.
OECM
E.
OECM
E.
OECM
E.
OECM
E.
OECM 14:13:12
E.
OECM
E.
OECM
E.
OECM
E.
OECM
E.
OECM 14:13:01
E.
OECM
E.
OECM
E.
OECM
E.
OECM
E.
OECM 14:12:50
E.
OECM
E.
OECM
E.
OECM
E.
OECM
E.
OECM 14:12:40
E.
OECM
E.
OECM
E.
OECM
E.
OECM



HECK
CONTACT #1
Fix 1333.0 F



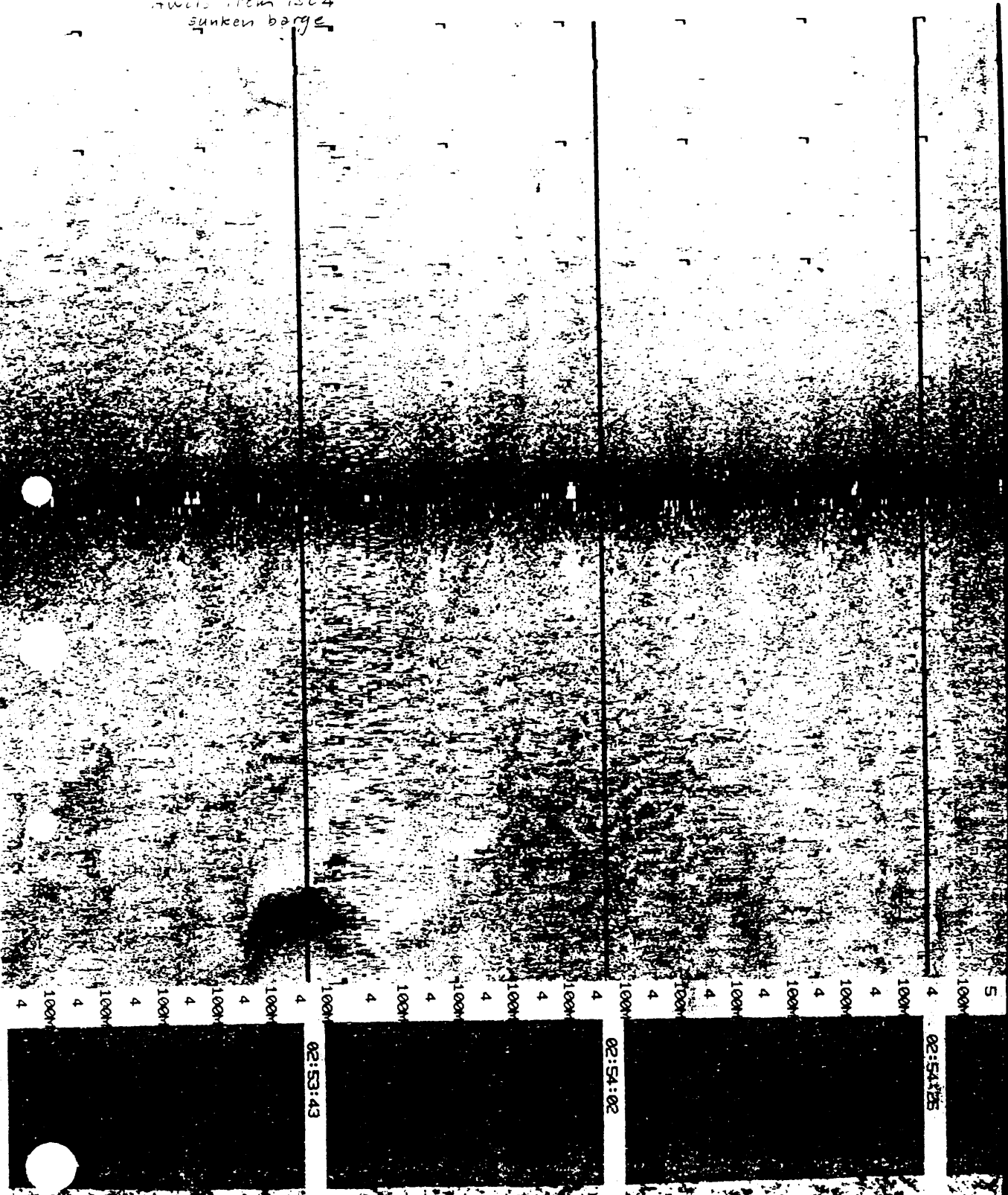
DP on HECK CONTACT #1
 FIX 1354

C

D

153311

→ well item 1264
 sunken barge



4 5
 100M 100M
 4 4
 100M 100M
 4 4
 100M 100M
 4 4
 100M 100M
 4 4
 100M 100M
 4 4
 100M 100M

02:53:43

02:54:02

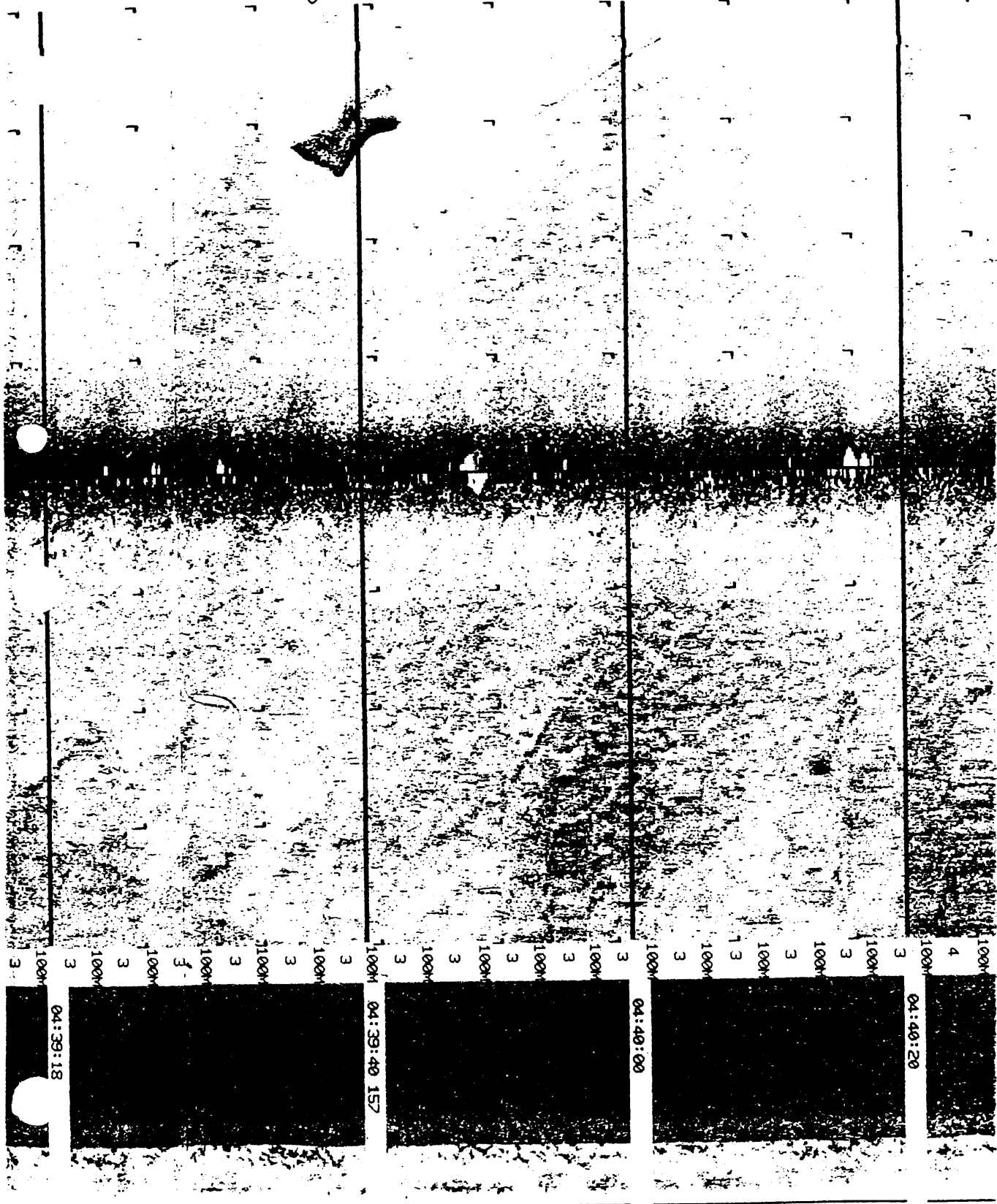
02:54:25

↑ 91.28
 10.00

13645
102209
91729
SAND

13645 ←
102209
91729
SAND

11000 1104 1504
sunken barge



04:39:18

04:39:40 157

04:40:00

04:40:20

CB

DIVING OPERATIONS
C-147

DATE: 8/28/89 1989

UNIT: NOAA SHIP HECK S591
AWOIS ITEM # H-10291
TARGET # 1

LOCATION: MIDDLE ATLANTIC COAST

DIVE MASTER: LT. G. TUELL
TENDERS: AB. LEWIS
C. B. MICKLE

DIVERS: Tuell
Wilkes

DIVE PLAN: CIRCLE SEARCH AND ITEM INVESTIGATION. MAX DEPTH: _____ FT.
MAX TIME : _____ MIN.
AVERAGE LEAST DEPTH: _____ FT.
DEPTH: (1) 47.5 (2) 47.8 (3) 48.0 LEAST DEPTH TIME : 11 : 20

EQUIPMENT USED: OPEN CIRCUIT SCUBA.

+ 4
15 20 Z

CONDITIONS:

WIND : DIR _____ KTS _____
SEAS : DIR _____ FT _____
CURRENT : KTS _____

VISIBILITY: FT. 20
AIR TEMP: (C) _____
WATER TEMP: (C) _____

TANK PRESSURE: * 1451 Z
15 20 Z DIVE TIME: *

ALL TIMES LOCAL:

DIVERS NAME	SI	GROUP	RNT	*IN	OUT*	PRES. CHANGE	*DN _____ UP*	BOTTOM TIME	DEPTH	GROUP
# <u>Tuell</u>				*IN <u>2700</u>	<u>3800</u>		*DN <u>1051</u>	<u>37</u>	<u>58'</u>	<u>H</u>
<u>Wilkes</u>				<u>600</u>	<u>400</u> OUT*		<u>1120</u> UP*	<u>37</u>	<u>61</u>	<u>H</u>
2				*IN _____	OUT*		*DN _____ UP*			
3				*IN _____	OUT*		*DN _____ UP*			

D	S
<u>47.6</u>	<u>47.5</u> R
<u>47.6</u>	<u>47.5</u> R
<u>48.0</u>	<u>47.8</u>
<u>48.0</u>	<u>48.00</u>
<u>48.0</u>	<u>48.0</u>

POST DIVE COMMENTS: _____

DIVERS DESCENDED BUOY LINE AND IMMEDIATELY FOUND THE WRECK. WRECK WAS A LARGE METAL BARGE LYING INVERTED ON A SANDY BOTTOM. LEAST DEPTH WAS TAKEN ON AN CORNER WHICH WAS SLIGHTLY HIGHER. WRECK RISES ABOUT 6-8 FEET OFF BOTTOM ON ONE SIDE AND 3 FEET ON OTHER

LT. G. Tuell
DIVE MASTER SIGNATURE

DEPTH BY PNEUMOFATHOMETER

K2. INVESTIGATION REPORT FOR CONTACT #19

AREA OF INVESTIGATION:

State: New Jersey
County: Monmouth
Locality: Offshore New Jersey Coast, New Jersey
Latitude: 40° 08' 32.3" N
Longitude: 074° 00' 42.0" W

✓

SURVEY PROCEDURES:

Positioning: Falcon Mini Ranger
Side Scan Sonar Search: 25 August 1989 (DOY 237)
Contacts: ONE

✓

50 meter range scale side scan sonar revealed no significant contact at coordinates provided by WHITING. No diver investigation was conducted.

✓

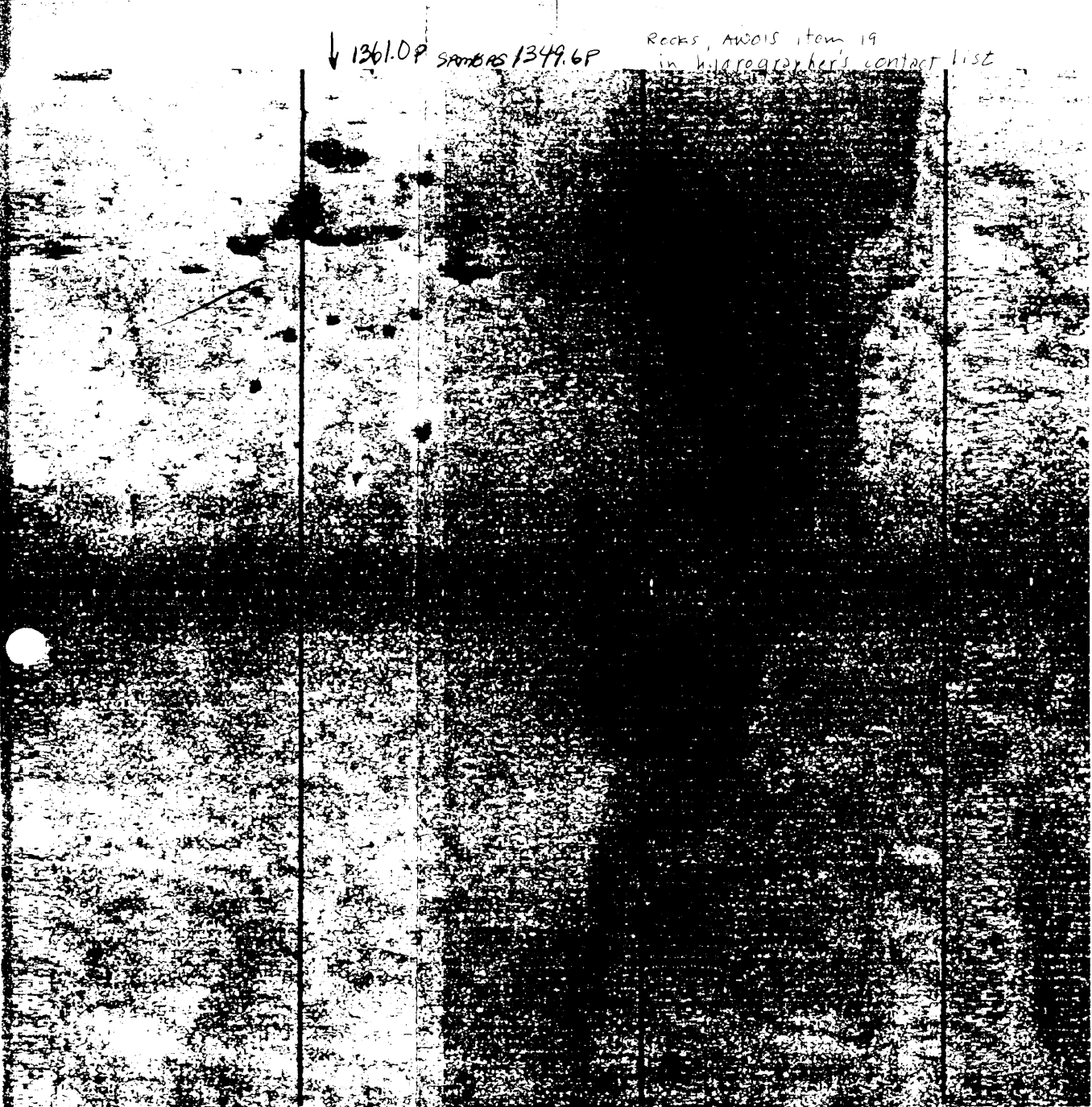
RECOMMENDATIONS: This contact is insignificant. *concur. See Sect. 6 of Eval. Report*

Hect's imagery in vicinity
of contact #19
No significant contact

14:47:33
E
14:47:34
E
14:47:35
E
14:47:36
E
14:47:37
E
14:47:38
E
14:47:39
E
14:47:40
E
14:47:41
E
14:47:42
E
14:47:43
E
14:47:44
E
14:47:45
E
14:47:46
E
14:47:47
E
14:47:48
E
14:47:49
E
14:47:50
E
14:47:51
E
14:47:52
E
14:47:53
E
14:47:54
E
14:47:55
E
14:47:56
E
14:47:57
E
14:47:58
E
14:47:59
E
14:48:00
E
14:48:01
E
14:48:02
E
14:48:03
E
14:48:04
E
14:48:05
E
14:48:06
E
14:48:07
E
14:48:08
E
14:48:09
E
14:48:10
E
14:48:11
E
14:48:12
E
14:48:13
E
14:48:14
E
14:48:15
E

↓ 1361.0P samplers 1349.6P

Rocks, AWSIS item 19
in hydrographer's contact list



1000 4 1000 4 1000 4 1000 4 1000 3 1000 3 1000 3 1000 3 1000 4 1000 4 1000 4 1000 4 1000 4 1000 4 1000 3 1000 3 1000 3 1000 3

01:51:27 1361

01:51:50

01:52:10

HORIZONTAL CONTROL STATIONS

STAT #	NAME	LAT	LON
001	AMBROSE LT ECC, 1988	40-27-35.263	73-49-49.999
002	SANDY HOOK LT ECC, 1986	40-27-42.189	74-00-07.226
003	SPERMACEITI COVE, 1940 C-G CUPOLA	40-25-36.085	73-59-03.266
004	SEA CLUB 2, 1988	40-21-55.966	73-58-22.996
007	SHORES, 1988	40-19-42.745	73-58-27.912
009	OCCOVE, 1988	40-16-48.873	73-58-59.989
012	ASBURY TOWERS, 1988	40-13-43.310	73-59-53.482
016	BELFISH, 1988	40-11-08.351	74-00-34.846
019	GIRTY, 1988	40-08-11.868	74-01-38.854
* 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

* not used for control



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

Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

FILE COPY

MAR 22 1989

MOP211C/AL

MEMORANDUM FOR: Captain Christian Andreasen, NOAA
Chief, Nautical Charting Division

Sigmund R. Petersen

FROM: Rear Admiral Sigmund R. Petersen, NOAA
Director, Pacific Marine Center

SUBJECT: Review of Survey H-10291 Side Scan Sonar Records

The side scan sonar operation from Bradley Beach to Sea Girt supplementing hydrographic survey H-10291 was executed by NOAA Ship WHITING from November 3 to November 23, 1988. Section 6.14.1 of Project Instructions OPR-C147-WH, Offshore New Jersey Coast, dated August 22, 1988 requires a review and/or supplement of the hydrographer's recommendations on significant contacts. The review consisted of checking the sonargrams for additional significant contacts; checking the contact height and position computations; and correlating the contacts with AWOIS items, charted features and soundings from the field sheet.

The hydrographer listed twenty nine contacts from seven different objects of which two were recommended for additional investigation. No additional significant contacts were identified during the office review of the echogram and the sonargram records. The two contacts discussed below were identified by the hydrographer and verified during office review to be significant.

AWOIS 1504, designated as Item #1 from the hydrographer's contact list, is a sunken barge listed at latitude 40°08'29.4"N, longitude 73°58'15.0"W in the AWOIS listing. This barge is charted as a wreck with a least depth of 46 feet on charts 12324 and 12326. No contact was recorded on the sonargram at this position. However, repeated contacts were recorded on the sonargram from possibly the same barge 61.7 meters NNE from the AWOIS listing at latitude 40°08'31.297"N, longitude 73°58'14.176"W. It is recommended that further investigation by divers or by other means be made for a positive identification of the feature and determination of its least depth.

Contacts recorded on the sonargram listed as item #19 in the hydrographer's contact list are possibly from some scattered rocks extending for a radius of 200 meters from latitude 40°08'32.334"N, longitude 74°00'41.992"W (NAD83). The sonargram indicates that some rocks have a least depth of 44 feet in 47 feet of water. It is recommended that a diver investigation be made for a positive identification of the feature and determination of its least depth.



Information has been received recently regarding a potential error in soundings obtained with the DSF-6000N echosounder. The error apparently originates only with certain echosounders used with the HDAPS and at this time it is not known if the faulty equipment was, in fact, used during this survey. Until the exact nature of this error is identified and quantified, users of the information contained in this report are cautioned that the depths contained in the preceding paragraphs may be at least six percent greater than the actual depths.

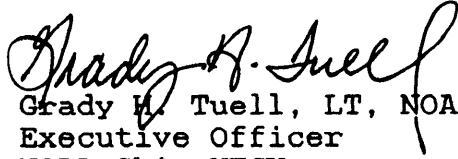
A plot of the significant contacts and AWOIS items, a copy of the Side Scan Sonar Data Report, a copy of sonargrams relevant to each contact and applicable excerpts from the Descriptive Report for survey H-10291 will be forwarded to the Commanding Officer, NOAA Ship HECK.

A contact plot at 1:20,000 scale and a contact list have been forwarded under separate cover to the Operations Section, CG241, for use in compiling Project Instructions.

Separate cover



Submitted by: Lee D. Weiner, ENS, NOAA
Survey Officer
NOAA Ship HECK



Reviewed by: Grady M. Tuell, LT, NOAA
Executive Officer
NOAA Ship HECK

L. LETTER OF APPROVAL

During the period JULY 27, 1989, to AUGUST 31, 1989, 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, LCDR, NOAA
Commanding Officer
NOAA Ship HECK

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: NOVEMBER 1, 1989

MARINE CENTER: Pacific

OPR: C147-HE-89

HYDROGRAPHIC SHEET: FE-334-SS

LOCALITY: Atlantic Ocean, offshore Bradley Beach to Sea Grit,
New Jersey

TIME PERIOD: August 25 to August 28, 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 - apply a x0.95 range ratio to all heights, and a -0 hr. and 40 min. time correction for Sandy Hook.

James F. Hubbard

CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

TIDES OK *ATL* 12/13/89

GEOGRAPHIC NAMES

Name on Survey
NEW JERSEY, ATLANTIC OCEAN
BRADLEY BEACH TO SEA GIRT

12324
12326
A ON CHART NO. 12324
B ON PREVIOUS SURVEY NO. 12326
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

	A	B	C	D	E	F	G	H	K	
ATLANTIC OCEAN (TITLE)	X	X								1
BRADLEY BEACH (TITLE)	X	X								2
NEW JERSEY (TITLE)	X	X								3
SEA GIRT (TITLE)	X	X								4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

Approved:

Charles R. Hamilton

Chief Geographer - N/CG 2x3

DEC 5 1989

HYDROGRAPHIC SURVEY STATISTICS

FE-334SS

RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		* 2	SMOOTH OVERLAYS: POS., ARC, EXCESS		* 2
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		1
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES				1 Position & Sounding	
ENVELOPES	1		1		
VOLUMES					
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS (List):
 PHOTOBATHYMETRIC MAPS (List):
 NOTES TO THE HYDROGRAPHER (List):

~~SPECIAL REPORTS (List):~~ * Attached to Evaluation Report

NAUTICAL CHARTS (List):

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			21
POSITIONS REVISED			3
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	5.0		5.0
VERIFICATION OF SOUNDINGS	22.0		22.0
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	4.0		4.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS		5.0	5.0
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		61.0	61.0
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	31.0	66.0
			97.0

Pre-processing Examination by D. Hill	Beginning Date	Ending Date 12/19/89
Verification of Field Data by A. Luceno	Time (Hours) 22.0	Ending Date 1/10/90
Verification Check by J. Green	Time (Hours) 13.0	Ending Date 2/14/90
Evaluation and Analysis by A. Luceno, C.R. Davies	Time (Hours) 66.0	Ending Date 2/26/90
Inspection by D. Hill	Time (Hours) 4	Ending Date 5/8/90

EVALUATION REPORT

FE-334SS

1. INTRODUCTION

Survey FE-334SS is a field examination accomplished by the NOAA Ship HECK under Project Instructions OPR-C147-HE, Offshore New Jersey Coast, New Jersey, dated June 20, 1989.

This field examination is a combined hydrographic/side scan sonar survey utilizing the Hydrographic Data Acquisition and Processing System (HDAPS) of items not investigated or resolved by the NOAA Ship WHITING during survey H-10291. Survey FE-334SS was accomplished to resolve the critical items noted in the attached PMC letter, Review of Survey H-10291 Side Scan Sonar Records, March 22, 1989. The minimal additional hydrographic/side scan sonar work supplemented by diver investigation or echo-sounder investigation to allow for a rapid resolution of all critical items within survey H-10291, was accomplished.

This survey occurred off the coast of New Jersey and covers two areas centered 0.6 nautical miles and 2.5 nautical miles east of Sea Girt. Depths range from 44 to 56 feet in the surveyed areas.

Predicted tides for Sandy Hook, New Jersey, zoned for the project area, were used for the reduction of soundings during field processing. Approved hourly heights zoned from Sandy Hook, gage 853-1680, were used during office processing.

The field sheet parameters for survey H-10291 were used for this survey. These field sheet parameters have been revised to change the projection to polyconic. The TRA and sound velocity correctors are discussed in section G of the hydrographer's report and are adequate. An accompanying computer printout contains the parameters and the correctors. The electronic correctors were applied on-line during the data acquisition and are adequate.

A digital file has been generated for this survey as required by N/CG2 Hydrographic Survey Guideline No. 23, Completion of Digital Hydrographic Surveys, September 7, 1983.

2. CONTROL AND SHORELINE

Section H of the hydrographer's report contain adequate discussion of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are published values and 1988 field values based on NAD 83. These values were used during office processing for the

computation of positions. The smooth sheet and accompanying overlays are annotated with NAD 27 adjustment ticks based on values determined by N/CG121. Geographic positions based on NAD 27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections.

Latitude: +0.410 seconds (+12.6 meters)
Longitude: -1.502 seconds (-35.5 meters)

There are no weak fixes noted in this survey.

There are no shoreline maps applicable to this survey.

3. HYDROGRAPHY

This field examination is adequate to:

- a. determine least depths and supersede the scaled sonagram depths in Contact No. 1 and Contact No. 19 that are plotted on survey sheet H-10291; and
- b. reveal there are no significant discrepancies or anomalies requiring further investigation.

4. CONDITION OF SURVEY

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3; the Hydrographic Survey Guidelines; and the Field Procedures Manual, except as follows.

The hydrographer did not compare the present survey to prior survey FE-221WD as required by the Project Instructions.

5. JUNCTIONS

Junctions are not required for this survey.

6. COMPARISON WITH PRIOR SURVEYS

H-10291	(1988)	1:10,000
FE-221WD	(1978-79)	1:40,000

The comparison to surrounding depths with the prior surveys in the surveyed areas has been previously accomplished in survey H-10291. The project instructions required comparisons to specific items only.

Contact No. 19, originating with survey H-10291 at latitude 40°08'32.3N, longitude 74°00'42.0"W, was investigated using side scan sonar set for a 50-meter range scale. The search covered a circle with a 200-meter radius. No significant contact was detected. A corrected depth of 47 feet was obtained by echo

sounder at the reported contact position during the present survey. This depth agrees with the echosounder depths from prior survey H-10291. The 47-foot depth is adequate to supersede the 46-foot scaled sonargram depth with an "obstr" qualifier that is plotted on survey H-10291.

Contact No. 1 is on a sunken wreck covered 46 feet (AWOIS item 1504) originating with survey FE-221WD and listed at latitude 40°08'29.4"N, longitude 73°58'15.0"W. A sonargram scaled depth of 42 feet with an "obstrn" qualifier for this wreck is plotted on survey H-10291 at latitude 40°08'31.3N, longitude 73°58'14.2"W. During the present survey a corrected least depth of 47 feet was obtained by divers using a pneumofathometer. The divers reported very good visibility in the area within a 20-foot range and were confident that the measurement was made on the highest point on the wreck. The 47-foot depth with a "WK" qualifier from survey FE-334SS is adequate to supersede the 42-foot plotted depth with an "obstrn" qualifier on survey H-10291 and the 46-foot leadline depth from survey FE-221WD.

7. COMPARISON WITH CHART

Chart 12324, 24th edition, dated November 15, 1986; scale 1:40,000

Chart 12326, 38th edition, dated February 22, 1986; scale 1:80,000

Comparison to the charts has been previously accomplished in survey H-10291. The project instructions required comparisons with the charts on an item-by-item basis only.

a. Hydrography

All charted hydrography originates with older prior surveys and miscellaneous sources.

The 47-foot depth on the wreck from survey FE-334SS is adequate to supersede the 46-foot charted depth on the same wreck.

b. AWOIS

There are no AWOIS items originating from miscellaneous sources that are applicable to this survey.

c. Controlling Depths

There are no charted channels with controlling depths within the area of this survey.

d. Aids to Navigation

There are no fixed or floating aids located within the area of this survey.

e Geographic Names

Names appearing on the smooth sheet have been approved by the Chief Geographer.

f. Dangers to Navigation

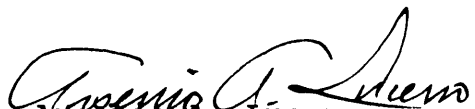
No reports of dangers to navigation were generated during the survey or office processing.

8. COMPLIANCE WITH INSTRUCTIONS

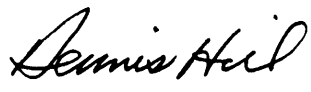
Survey FE-334SS adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is an adequate field examination. No additional field work is recommended.


Arsenio A. Luceno
Cartographer

This survey has been examined and it meets Charting and Geodetic Services' standards and requirements for use in nautical charting. Approval is recommended.


Dennis Hill
Chief, Hydrographic Unit

APPROVALS

I have reviewed the smooth sheet, accompanying data, and reports associated with hydrographic survey FE-334SS. This survey meets or exceeds Charting and Geodetic Services' standards for products in support of nautical charting.

Pamela Chelgren-Koterba 5-8-90
Commander Pamela Chelgren-Koterba, NOAA (Date)
Chief, Pacific Hydrographic Section

Approved: *Not required per HSG No. 70* 5-15-90 R.W.W.
RADM Ray E. Moses, NOAA (Date)
Director, Atlantic Marine Center

Approved: *Wesley V. Hull* 5-17-90
fn RADM Wesley V. Hull, NOAA (Date)
Director, Charting and Geodetic Services

73° 58' 30"

73° 58' 00"

73° 57' 30"

40° 09' 00"

NAD 27

40° 09' 00"

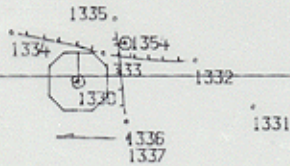
40° 09' 00"

3/20/90 A.A.L.

✓ TSG

40° 08' 30"

40° 08' 30"



FE-334 SS
 NEW JERSEY, ATLANTIC OCEAN
 BRADLEY BEACH TO SEA GIRT

POSITION OVERLAY
 SHEET 1 OF 2

40° 08' 00"

40° 08' 00"

73° 58' 30"

73° 58' 00"

73° 57' 30"

73° 58' 30"

73° 58' 00"

73° 57' 30"

40° 09' 00"

NAD 27

40° 09' 00"

40° 09' 00"

3/20/90 A.A.L.

✓ JSG

40° 08' 30"

53 53 52 52 48 53
53 53

56

55

40° 08' 30"

FE-334 SS
NEW JERSEY, ATLANTIC OCEAN
BRADLEY BEACH TO SEA GIRT

DATE OF SURVEY: AUGUST 1989

SCALE-1:10000

SOUNDINGS IN FEET AT MLLW

DATUM: NAD 83

SHEET 1 OF 2

CONTACT NO.1 AWOIS NO.1504

40° 08' 00"

40° 08' 00"

73° 58' 30"

73° 58' 00"

73° 57' 30"

74° 01' 00"

74° 00' 30"

74° 00' 00"

40° 09' 00"

NAD 27

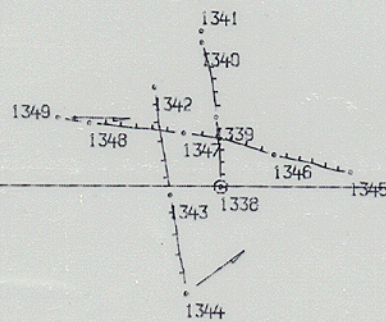
40° 09' 00"

40° 09' 00"

3/20/90 A.A.L.
JSG

40° 08' 30"

40° 08' 30"



FE-334 SS
NEW JERSEY, ATLANTIC OCEAN
BRADLEY BEACH TO SEA GIRT

40° 08' 00"

40° 08' 00"

POSITION OVERLAY
SHEET 2 OF 2

74° 01' 00"

74° 00' 30"

74° 00' 00"

74° 01' 00"

74° 00' 30"

74° 00' 00"

40° 09' 00"

NAD 27

74° 00' 30"

40° 09' 00"

40° 09' 00"

3/20/90 A.A.L.

JSG

40° 08' 30"

47
 48
 45
 47
 47
 47
 47
 49
 48 49 50 51
 48 48
 48
 48
 48
 48

40° 08' 30"

40° 08' 00"

FE-334 SS
 NEW JERSEY, ATLANTIC OCEAN
 BRADLEY BEACH TO SEA GIRT

40° 08' 00"

DATE OF SURVEY: AUGUST 1989
 SCALE - 1:10000
 SOUNDINGS IN FEET AT MLLW
 DATUM: NAD 83
 SHEET 2 OF 2
 CONTACT NO. 19

74° 01' 00"

74° 00' 30"

74° 00' 00"

LORAN-C

GENERAL EXPLANATION

CY 100kHz.
INTERVAL
..... 99,600 Microseconds
PULSE DESIGNATORS: (Not individual stationators).

60-X

NOTES ON THIS CHART

9960-X 9960-Y 9960-Z

Lines of position overprinted on this chart are prepared for use with ground wave signals. They are presently compensated only for propagation delays which have not yet been observed data. Mariners are cautioned not to rely on the lattices in inshore waters. Corrections are not provided.

For Symbols and Abbreviations see Chart No. 1
International Regulations for Preventing Collisions at Sea, 1972
Demarcation lines are shown thus: - - - - -

HEIGHTS

Heights in feet above Mean High Water

AUTHORITIES

Soundings and topography by the National Ocean Service, Hydrographic Services with additional data from the Corps of Engineers, Geological Survey, and U.S. Coast Guard.

SUPPLEMENTAL INFORMATION

Consult U.S. Coast Pilots 2 and 3 for important supplemental information.

STORM WARNINGS

National Weather Service displays storm warnings at the following approximate locations:

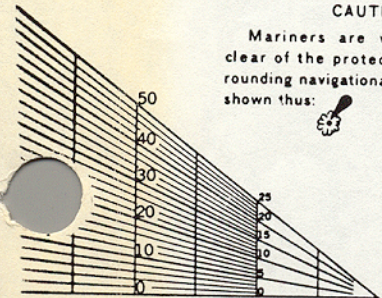
- Island C.G. Station (40°37.5'-73°15.6')
Port Beach C.G. Station (40°35.4'-73°33.4')
Rockaway Pt C.G. Station (40°34.0'-73°53.1')
Ambrose Light (40°27.6'-73°49.9')
Pt Lookout (40°35.6'-73°35.2')
Shark River (40°11.3'-74°00.8')

CAUTION

Temporary changes or defects in aids to navigation are not indicated on this chart. See Notice to Mariners.
During some winter months or when endangered by ice, certain aids to navigation are replaced by other types or removed. For details see U.S. Coast Guard Light List.

CAUTION

Mariners are warned to stay clear of the protective riprap surrounding navigational light structures shown thus: [Symbol]



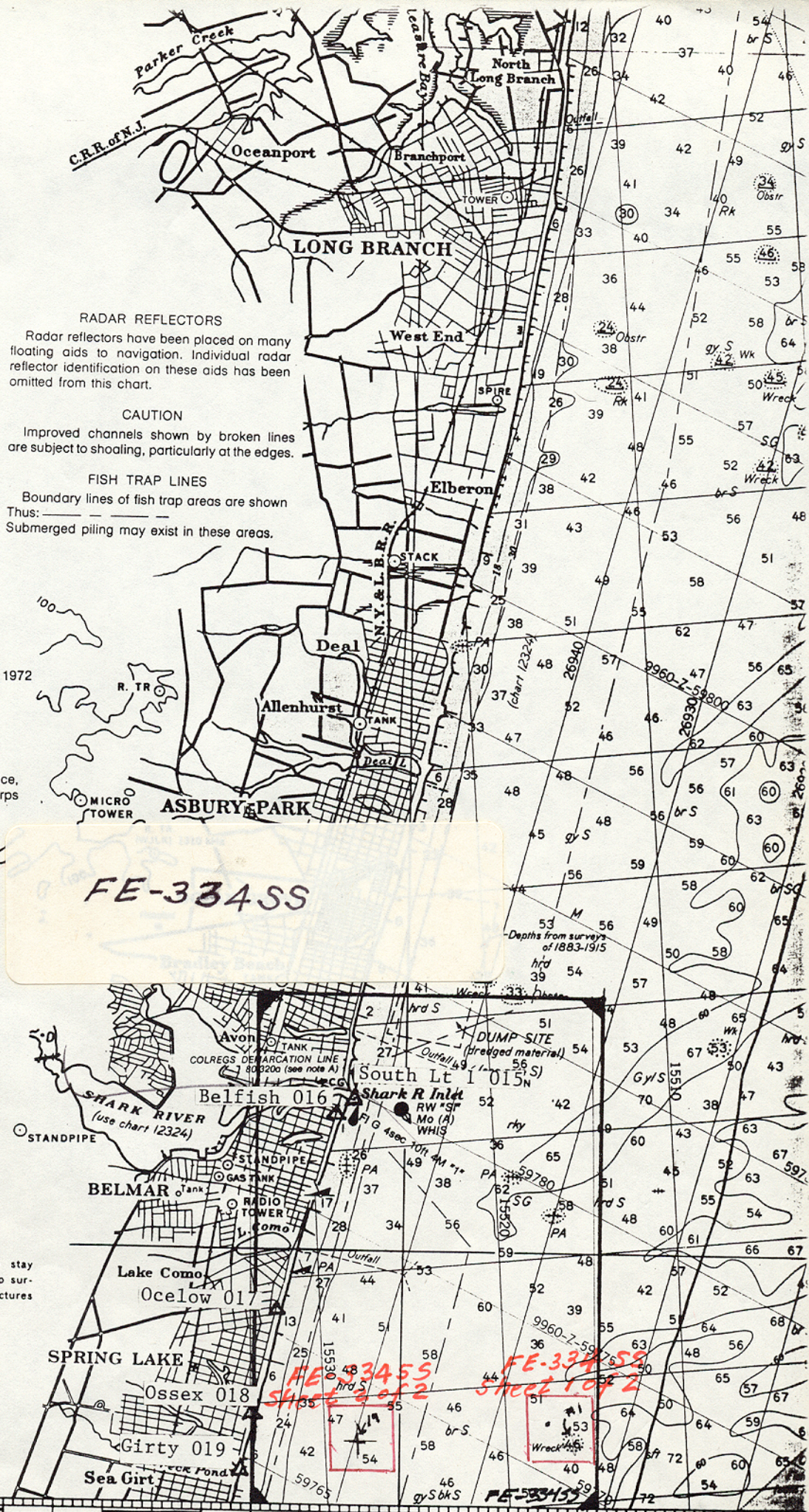
IN LINEAR INTERPOLATOR

12326
38th ED FEB 22/86

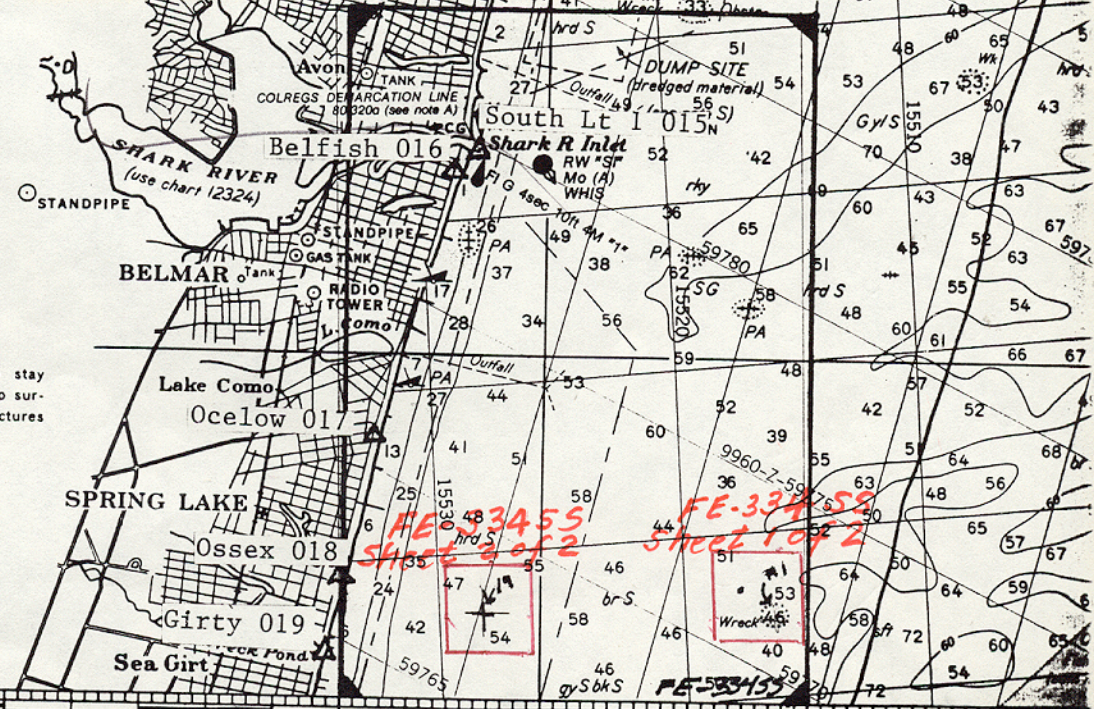
05'

74°

(JOINS CHART 12323)



FE-334SS



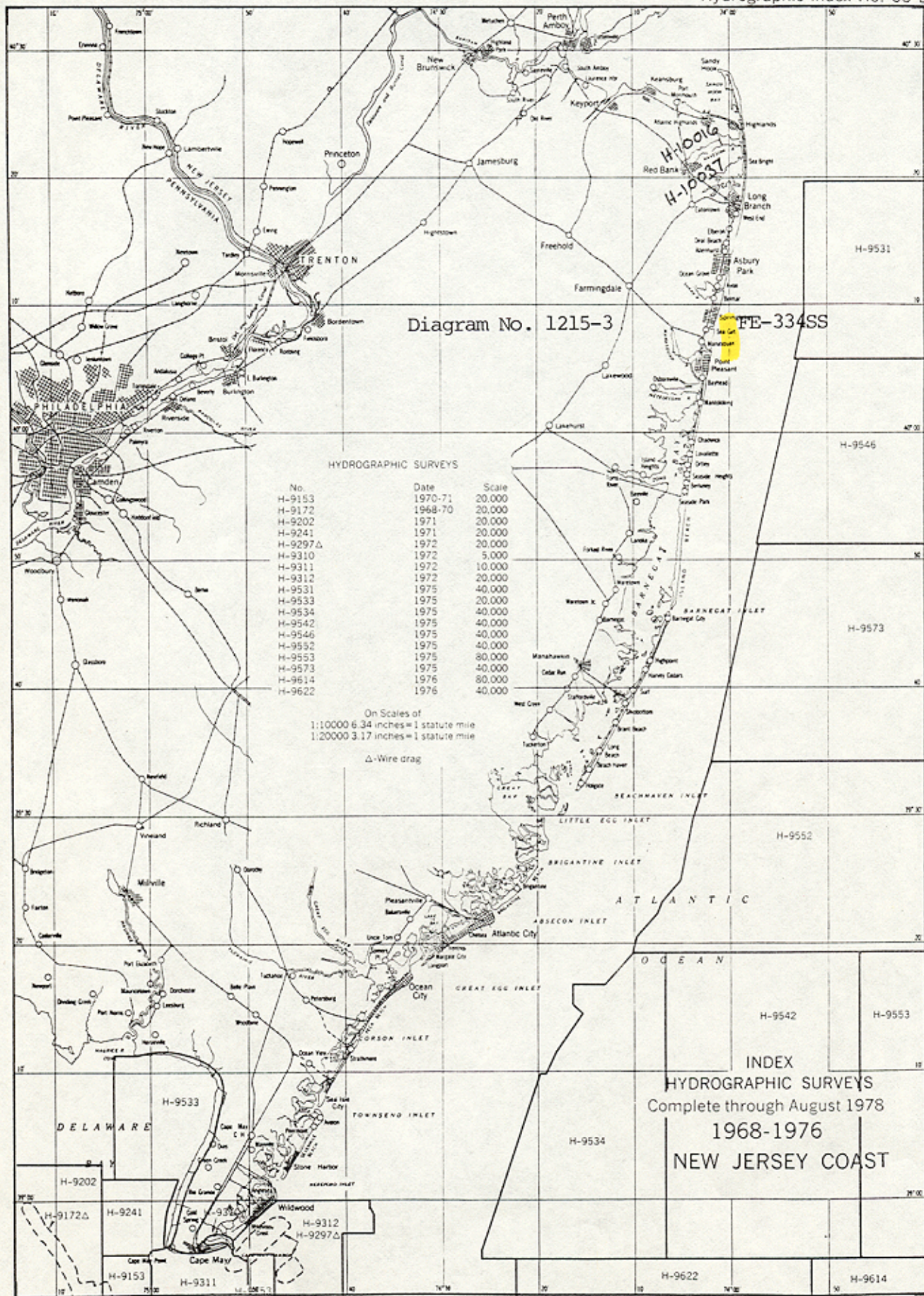
FE-33455 SHEET 2 OF 2

FE-33455 SHEET 1 OF 2

FE-33455

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

Hydrographic Index No. 66 L



MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE - 334 SS

INSTRUCTIONS

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

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

CHART	DATE	CARTOGRAPHER	REMARKS
12324	5/9/90	ARMACEN	Full Part Before After Marine Center Approval Signed Via <i>critical soundings</i>
			Drawing No. <i>applied.</i>
12326	5/11/90	ARMACEN	Full Part Before After Marine Center Approval Signed Via <i>critical soundings</i>
			Drawing No. <i>applied.</i>
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
EXAMINED FOR NM
GDBU
12-17-78
12-30-78

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-334SS

INSTRUCTIONS

- A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
 2. In "Remarks" column cross out words that do not apply.
 3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
12300	3-8-91	K.P. Foster	Full Part Before After Marine Center Approval Signed Via
13006	3-13-91	John Barber	Drawing No. 55
13006	3-13-91	John Barber	Full Part Before After Marine Center Approval Signed Via Drawing No. 48
12323	2/4/91	L. Adams	Full Part Before After Marine Center Approval Signed Via Drawing No. 32
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.