

10031

Diagrams 369-5 & 1215-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey ... Hydrographic
Field No. WH-10-1-82
Office No. H-10031

LOCALITY

State New Jersey
General Locality Vicinity of Sandy Hook
Locality Flynns Knoll to Old Orchard
..... Shoal

1982

CHIEF OF PARTY
CDR R.K. Matsushige

LIBRARY & ARCHIVES

DATE October 3, 1984

10031

Area 1 & 2

CHTS

*12380
12327
12324A*

*to sign off see
Receipt of duplication*

HYDROGRAPHIC TITLE SHEET

H-10031

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

FIELD NO.

WH-10-1-82

State New Jersey

General locality New York Harbor Vicinity of Sandy Hook

Locality Lower Bay, Sandy Hook Bay Flynn's Knoll to Old Orchard Shoal

Scale 1:10,000

Date of survey 11 July - 1 September, 1982

Instructions dated 3 May, 1982

Project No. OPR-B139-WH-82

Vessel NOAA Ship WHITING launches 1014 (HDP #2932), 1015 (HDP #2931), MonArk 1288 (HDP #2933)

Chief of party CDR Roy K. Matsushige, Commanding Officer

Surveyed by A. Fior, V. Shaffer, M. Henderson, E. Steigerwald, P. Ruiz, T. Wolf, P. Kenul

Soundings taken by echo sounder, ~~and lead line~~ ROSS Model 5000, Raytheon 719

Graphic record scaled by VNS, MEH, EAS, PJR, TAW, PMK, frc, fs, cdm, rf, sp, mf, mr, sh, gp, lm

Graphic record checked by WHITING personnel

Protracted by _____

Automated plot by Hydroplot
Xynerias 1201 Plotter (Amc)

Verification by _____

Soundings in ~~XXXXXX~~ XXXXXX feet at ~~MLW~~ MLLW

REMARKS: All times are Coordinated Universal Time.

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

AWO15 + SURF 1/7/85 M5M

Copy to SDC 10-4-84

LEGEND:

- LNM Sdg Lines
- SNM Hydrography
- B. Samples Taken
- TDC Cast
- Hydro Coverage
- Hor. Control Sta.
- Tide Station

74° 05'

July

624

Aug

835

Sept

231

13

16

145

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136

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Hydro Coverage

Hor. Control Sta.

Tide Station

TDC Cast

SNM Hydrography

LNM Sdg Lines

B. Samples Taken

July

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Tide Station

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LNM Sdg Lines

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Hydro Coverage

Hor. Control Sta.

Tide Station

TDC Cast

SNM Hydrography

LNM Sdg Lines

B. Samples Taken

July

Aug

DESCRIPTIVE REPORT
TO ACCOMPANY
BASIC HYDROGRAPHIC SURVEY

WH-10-1-82

H-10031

SCALE: 1:10,000

SURVEYED 11 JULY - 1 SEPTEMBER, 1982

BY NOAA SHIP WHITING S-329

CDR ROY K. MATSUSHIGE

COMMANDING OFFICER

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* Material removed from Descriptive Report and filed with original records

A. PROJECT

Hydrographic Survey H-10031 was performed in accordance with Project Instructions OPR B139-WH-82, New York Harbor, Lower Bay, dated 3 May 1982, as amended by Change No. 1 dated 30 June 1982 and Change No. 2 dated 18 August 1982.

B. AREA SURVEYED

The area surveyed is in the Lower Bay of New York Harbor, general locality Lower Bay and Sandy Hook Bay. The surveyed area is bounded by the following points:

40° 27' 40" N, 74° 00' 00" W
40° 30' 42" N, 74° 00' 00" W
40° 30' 42" N, 74° 06' 00" W
40° 27' 40" N, 74° 06' 00" W

The area was divided into two sections which were defined as east and west. The area surveyed is characterized by sandy to muddy bottom, with shoals covering approximately one-third of the area. The topography of the bottom on the east sheet is greatly influenced by strong tidal currents. Sand ridges cover an area of approximately two square miles centered at 40°29'45"N, 74°01'15"W. The sea floor in the remainder of the surveyed area is relatively flat with the exception of five dredged channels. This survey was conducted from 11 July to 1 September 1982, Julian Days 192-244.

C. SOUNDING VESSEL

The sounding vessels used throughout this survey were WHITING survey launches 1014 and 1015, EDP numbers 2932 and 2931 respectively, and MonArk 1288, EDP number 2933. Launch 1014 was used predominantly on the west sheet and launch 1015 was used on the east sheet. MonArk 1288 was used for range/azimuth hydrography on the east sheet in the vicinity of the Sandy Hook Coast Guard Station. The east and west sheets were divided at longitude 74° 02' 20"W with the remaining boundary points as listed in Section B. Range/range position control was used for the majority of the east sheet and for the entire west sheet. The range/azimuth hydrography was conducted east of longitude 74°01'00"W, along the shoreline and south of the tip of Sandy Hook to latitude 40°27'40"N. Positions 9000-9158 were used for the Monark. Monark EDP number is 2933

Each launch was equipped with the Ross 5000 echo sounder and the Del Norte positioning system. The MonArk was equipped with a Raytheon DE-719B fathometer and the Del Norte positioning system.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Ross echo sounder serial number 1053 was used on launch 1014 during JD's 192-196 and serial number 1049 was used during JD's 196-244. Ross echo sounder serial number 1052 was used on launch 1015 on JD's 192-244. Raytheon fathometer serial number 5458 was used on the MonArk during JD's 194-203. The sounding trace on all records was very good and in many instances the blanking was set to ten feet to ensure that the phase and initial corrections were adjusted properly.

The following procedures were used to determine the corrections to echo soundings:

Velocity corrections:

TDC casts were taken on JD's 193, 203, 208, 210, 217, 224, and 243 using a Martek TDC model 167 (s/n 127) calibrated in February 1982. The positions of the casts are plotted on the progress sketch enclosed with this report. Bar checks were recorded once per day usually at slack water. Due to the strong tidal currents in the survey area, bar checks attempted at other than slack water produced inconsistent results. Velocity corrections were determined from a combined plot of daily bar checks averaged for each launch and the TDC casts. The intervals of time to which these corrections were applied were divided into ten-day periods corresponding with periods of hydrography. The graphs and velocity tape printouts are included in Appendix IV, and the TDC cast computations and bar check forms are included in the supplemental data folder.

TRA corrections:

The draft for each launch was measured to be 1.5 feet and no instrument error was apparent from the daily bar checks. Settlement and squat trials were conducted on 10 July 1982 for launch 1014 and 11 July for launch 1015 near the Sandy Hook Coast Guard Pier at Sandy Hook, New Jersey. No settlement and squat corrections were applied to MonArk data. Ross echo sounder serial number 1053 was used on launch 1014 and serial number 1052 was used on launch 1015. A complete report of the trials with the data and resultant graphs is included in Appendix IV.

Predicted Tides:

The smooth field sheets for this project were plotted using predicted tides from the reference gage at the Sandy Hook Coast Guard Pier (853-1680), Latitude $40^{\circ}28.0'N$, Longitude $74^{\circ}00.6'W$. Logger tapes were provided by Processing Division, AMC, and were converted to predicted tide tapes, a printed copy of which is included in the supplemental data folder. The field tide note and request for smooth tides for the period of the survey are included in Appendix II.

Velocity corrections and vessel drafts were applied to smooth field sheet soundings. All other TRA corrections as listed on the TRA correction abstract included in Appendix IV will be applied during final processing by OA/CAM3, Processing Division, via TC/TI tapes and smooth tide data. A listing of the TC/TI tapes to be used is included in Appendix IV and the paper tapes are included with the data.

E. HYDROGRAPHIC SHEETS

All field sheets were prepared by WHITING personnel using a Houston Instrument DP-3 Roll Plotter. This survey was divided into two sheets, east and west, each with a skew of 90° and the following origins:

East 40° 27' 15" N, 73° 58' 39" W
West 40° 27' 15" N, 74° 02' 21" W

A total of twelve plotted sheets are submitted with this survey: five rough field sheets with mainscheme, crosslines, bottom samples, channel developments, buoys, shoreline soundings, and five wreck developments; and seven smooth field sheets with mainscheme, crosslines, bottom samples, channel developments, buoys, shoreline soundings, and five developments. The wreck developments, bottom samples, shoreline soundings, and channel developments were plotted on five overlays (two for the west sheet and three for the east sheet) to aid processing and provide sheet clarity. The plotter origin for the east sheet was also changed to 40° 27' 15" N, 73° 59' 30" W for the smooth plot to aid sheet clarity.

All plotted sheets and field records have been submitted to OA/CAM3, Processing Division, for verification.

F. CONTROL STATIONS

The following signals were used for electronic positioning control and visual or fixed point calibration signals:

<u>Signal No.</u>	<u>Name</u>	<u>Year Est'd</u>	<u>Quad & Station Number</u>
002	Old Orchard L.H.	1900	4007412 STA 2444
005	Sandy Hook Pt Light	1944 1944	4007421 STA 1112
006	Sandy Hook LORAN	1982 1954	NA
008	Sandy Hook L.H. Finial	1900 1835	4007421 STA 1108
009	Horse Shoe	1940	4007421 STA 1039
017	Ammo Pier Cal'n PT. 82	1982	NA Terminal Channel Front Range Light
018	West Bank L.H. Ecc. 82	1982	NA
019	Romer Shoal L.H. Ecc. 82	1982	NA

Station numbers 006, 017, 018, and 019 were established to Third Order, Class I standards by WHITING personnel. Refer to the Horizontal Control Report which will be submitted to CAMI at the completion of the project. Positions for 002, 005, 008, and 009 were obtained from NGS published data.

Stations 006 and 017 were also NGS published data.

G. HYDROGRAPHIC POSITION CONTROL

Range/range position control was used throughout this survey by the two launches and range/azimuth was used by the MonArk. The Del Norte positioning system was used for all hydrography. Frequent problems were encountered with this system, predominantly minor electronic failures or failures due to atmospheric conditions.

The following Del Norte components and serial numbers were used aboard launch 1014:

<u>JD</u>	<u>DMU</u>	<u>Master</u>	<u>Left Remote</u>	<u>Right Remote</u>
192	180	169	262	1065
193	180	169	262	1065
194	180	169	1059	1065
195	180	169	1059	1065
196	180	169	1059	1065
197	180	169	1059	1065
202	180	169	1059	1065
203	180	169	1059	1065
204	189	281	1059	1065
205	180	169	1059	1065
206	180	169	1059	1065
207	180	169	1059	1065
208	180	169	1059	1065
211	180	169	1059	1065
216	180	912	1065	1059
243	180	912	1059	1065
244	180	278	1059	1065

The following Del Norte components and serial numbers were used aboard launch 1015:

<u>JD</u>	<u>DMU</u>	<u>Master</u>	<u>Left Remote</u>	<u>Right Remote</u>
192	515	912	262	1065
193	515	912	262	1065
194	515	912	1059	1065
195	515	912	1059	1065
196	515	912	1059	1065
197	515	912	1059	1065
202	515	912	1059	1065
203	515	912	1059	1065
204	515	912	1059	1065

205	515	912	1059	1065
206	515	912	1059	1065
207	515	912	1059	1065
208	515	912	1059	1065
215	189	281	1065	1059
216	189	281	1065	1059
225	189	281	1059	1065
243	189	281	1059	1065
244	189	281	1059	1065

The following Del Norte components and serial numbers were used aboard MonArk 1288:

<u>JD</u>	<u>DMU</u>	<u>Master</u>	<u>Remote</u>
195	189	281	217
202	189	281	1322
203	180	169	1322

A Wild T-2 (s/n 57484) Theodolite was used during range/azimuth hydrography. The locations of the remotes were as follows:

<u>Station No.</u>	<u>002</u>	<u>006</u>	<u>009</u>	<u>018</u>	<u>019</u>
<u>s/n (code)</u>	262(74)	1059(76)	217(78)	1065(72)	1065(72)
<u>JD's</u>	192-193	215-225	195	192-211	215-244
		1059(76)		1322(78)	
		194-211, 243-244		202-203	

Slave unit stations were chosen so that intersection angles between the ranges within the working area were greater than 30° and less than 150°. All range/range data for this survey was recorded in real time using RK112 and the launch computer systems. Range/azimuth data collected by the MonArk was hand-logged at the end of each day.

Calibrations for the Del Norte system were computed in accordance with the Hydrographic Manual. All Del Norte equipment was calibrated over a measured baseline before each trip of this survey. The first baseline calibration was performed at the Navy Munitions Pier, Earle, New Jersey on 9 July 1982 (JD 190). WHITING personnel used a Hewlett Packard EDM (s/n 1929A00355) to measure the baseline at a distance of 1352 meters. This baseline which is less than the required minimum of 1800 meters, was the longest distance possible at that time due to construction on the pier. Another baseline calibration was performed on JD 221 over this baseline with master s/n 912, DMU s/n 515, remotes s/n's 1059 and 1065. This supplemental calibration was done when the units were suspected to be malfunctioning. The calibration values were not used for corrections to the Del Norte ranges. The routine baseline calibrations were conducted on JD's 200, 214, 227, and 242 over a measured baseline of 1927 meters from Governors Island, New York to Battery Park, New York.

Field calibrations were performed twice daily by each launch using the fixed point at Ammo Pier Cal'n Point 1982 and twice daily by the MonArk using three-point sextant fixes. (See the calibration forms in the supplemental data included with

Terminal Channel Front Range Light.

this survey for the stations used for calibration.) Baseline calibration correctors were applied during off-line plotting when the average daily calibration was in close agreement, and when the components in each launch system had been baseline calibrated. Otherwise the average daily correctors were used.

An ANDIST corrector of zero was used during all fixed point and visual calibrations. During visual calibrations the observers were able to stand near the Del Norte master. The master antenna was brought alongside the fixed point for the calibrations at the Ammo Pier Cal'n Point 1982. All values used on corrector tapes are shown on the Electronic Corrector Abstract, Appendix V. All calibration data for this survey is considered adequate and no problems which would degrade position accuracy of this survey were encountered.

Terminal Channel Front Range light

H. SHORELINE *See also section 2.6 of the Evaluation Report.*

Shoreline for this survey was obtained from two sources. The shoreline for the on-line field sheets was traced from NOS Chart 12330 12th Ed., June 21, 1980, at a scale of 1:10,000, as TP Sheet #00758 was not made available to the WHITING when this survey began. During hydrography, especially when running shoreline, it was found that the charted shoreline had been greatly changed, especially at the northern tip of the peninsula where the effect of the currents was the greatest. It was observed, after the TP Sheets were obtained, that the shoreline on the field edit manuscript was the same as the present shoreline except at $40^{\circ}28'35''N$, $74^{\circ}00'56''W$ and $40^{\circ}28'04''N$, $74^{\circ}00'38''W$ where soundings were obtained inshore of the mean lower low waterline on TP-00758, scale 1:10,000. The new shoreline is shown on the smooth field sheet as a dashed line. A copy of NOS Chart 12330 is included with the data to provide a comparison with the shoreline obtained from manuscript TP-00758.

The field edit was performed by WHITING personnel and personnel from AMC in July and August of 1982. Changes to shoreline manuscripts are noted on TP-00758. All field edit changes have been transferred to the field sheet. The field edit report and accompanying data is to be forwarded after all hydrography is completed for this project.

I. CROSSLINES *See also section 3.2 of the Evaluation Report.*

Nine nautical miles of crosslines were run by launch 1015 on the east sheet which is 8% of the mainscheme. Eleven miles of crosslines were run by launch 1014 on the west sheet which is 7% of the mainscheme. Agreement of crosslines with mainscheme was generally very good. One hundred percent agreed within one foot on the west sheet, one hundred percent of the crosslines run during range/azimuth hydrography on the east sheet agreed within one foot, ninety-nine percent of the range/range crosslines on the east sheet agreed within one foot while less than one percent differed by two feet or more. This comparison meets the criterion stated in Section 1.1.2

of the Hydrographic Manual. The appearance of the crosslines (and mainscheme) were due to poor steering caused by on-the-job training of new and inexperienced coxswains. This did not affect the quality of the data.

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

This survey junctioned with H-9820 to the north, a 1:10,000 scale survey completed in 1979. The junction was very good with all depths agreeing within one foot on the west sheet, and 99% agreeing within one foot on the east sheet. The remaining 1% agreed within 2 feet. This comparison meets the criterion stated in Section 1.1.2 of the Hydrographic Manual.

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

PSR Items

The following three pre-survey review items were investigated during this survey:

<u>Item No.</u>	<u>Description</u>	<u>Charted Pos.</u>	<u>Source</u>
2452	Obstr. rep. PA FULL INVESTIGATION	40° 30' 29.4"N 74° 01' 02.9"W	LNМ 49/72 <i>OK</i>
2453	15 foot Rep FULL INVESTIGATION	40° 28' 12.0"N 74° 01' 31.5"W	LNМ 30/76 <i>dim. rep. to 14</i>
2457	Wreck, PA FULL INVESTIGATION	40° 30' 15.0"N 74° 02' 30.0"W	LNМ 39/75 <i>OK</i>

Item number 2452 was an unidentified obstruction reported to lie 660 yards at a bearing of 210 degrees from Romer Shoal Lighthouse. A full investigation was carried out by launch 1015 with 80-meter line spacing running north-south, 50-meter line spacing running northwest-southeast roughly defining a circle with a radius of 750 meters from the charted position, and 40 meter line spacing running northeast-southwest within a circle with a radius of 325 meters. Launch 1014 also ran two drift sounding lines over the charted position. No trace of an obstruction was found on any of the echogram records. The hydrographer recommends that the charted symbol be revised from PA, position approximate, to ED, existence doubtful. - Do not concur - retain as charted - recommend wire drag/side scan sonar work at a later date.

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Item number 2453 was a 15-foot shoal located at position 40°28'12"N, 74°01'31.5"W. The shoal investigation was conducted using launches 1014 and 1015. Line spacing of 40 meters was run in the area in a radial pattern north-south, east-west, northeast-southwest, and northwest-southeast showing a least depth of fourteen feet (fifth out of position number 5032) located at 40°28'13.2"N, 74°01'36.5"W. The sea floor composition in this area was observed to be gray mud and sand. The hydrographer recommends that the least depth be charted at its new position. - Concur - chart the present survey depths.

*AWO15
14/185
MSM*

Item number 2457 was reported to be a 23-foot speedboat sunk at approximate position $40^{\circ}30'15''N$, $74^{\circ}02'30''W$ in 26-30 feet of water. A full investigation search was carried out by launches 1014 and 1015. Line spacing of 40-meters was run in a grid pattern to a radius of 750 meters north-south and east-west from the charted position, not extending past the center of Chapel Hill South Channel as requested in the PSR instructions. In addition, a series of soundings were observed in the vicinity of the charted position on lines steered in northwest to southeast directions with 20-meter line spacing. No indication of the wreck was found on any of the echogram records and the hydrographer recommends that the charted symbol be revised from PA to ED. - Retain as charted - recommend wire drag/side scan sonar investigation at a later date.

Always
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MAM

Prior Surveys - See also sections 6a and 6b of the Evaluation Report.
This survey was compared to the following prior surveys: H-6994WD (1:20,000, 1944) H-5735 (1:20,000, 1934), H-5637 (1:10,000, 1934), and H-4610 (1:20,000, 1926). This survey agrees well with all of the prior surveys except for the following:

All of the wire drag strips on H-6994WD are shoaler than the depths from the present survey except for the shoal (PSR Item 2453). The fourteen-foot depth determined by this survey negates the seventeen-foot strip that contains this shoal.

Surveyed depths from H-5735 all agreed within two feet except for the northern part of Chapel Hill South Channel and the sand ridge area of the east sheet where depths differed by as much as five feet. This discrepancy is attributed to differences in dredging depths between 1934 and the present, and to the constantly changing effects of the currents in the sand ridge area. Survey H-5637 compared well except for shifting in varying directions of the eighteen-foot contour lines over most of the sheet, again, caused by strong tidal currents in the area. Within the eighteen-foot depth curve, the depths agreed within one foot and occasionally two feet, whereas the depths differed by as much as three feet along the depth curve due to natural processes shifting the sandy bottom.

Survey H-4610 was compared to this survey and it was found that the fourteen-foot depth of PSR Item 2453 is shoaler than the previous surveyed depths. Also, the shoal configuration between the north side of Sandy Hook and Sandy Hook Channel has changed. Due to the strong currents around the northern tip of Sandy Hook and the intermittent dredging operations required in Sandy Hook Channel which interferes with the natural sand movement from south to north, the entire Hook and Flynn's Knoll is constantly changing. (Evidence of this is the fact that the Coast Guard moves fixed light "15" an average of six times yearly to mark the tip of land. The sand ridge area at Flynn's Knoll was developed by 40-meter line spacing running north-south with five crosslines to provide a check). Refer to the dive report in Section P which reports that the sand ridges visibly move with the current.

L. COMPARISON WITH THE CHART - See also section 7 of the Evaluation Report.

Survey H-10031 was compared with NOS Chart 12330, 12th edition June 21, 1980, scale 1:10,000. Where the bottom topography was regular, the depths agreed very well with 98% agreeing within one to two feet and 100% agreeing within three feet. Agreement was not as good near the dredged channels and along the eighteen-foot

contour line. Within shoal areas such as Flynn's Knoll and Romer Shoal, the depths agreed well. The following charted shoals were not found during this survey: 18 feet at $40^{\circ}27'45''\text{N}$, $71^{\circ}01'04''\text{W}$, 17 feet at $40^{\circ}29'17''\text{N}$, $74^{\circ}00'08''\text{W}$, 16 feet at $40^{\circ}29'27''\text{N}$, $74^{\circ}00'06''\text{W}$, 18 feet at $40^{\circ}29'25''\text{N}$, $74^{\circ}00'19''\text{W}$, 18 feet at $40^{\circ}27'49''\text{N}$, $74^{\circ}03'02''\text{W}$, 18 feet at $40^{\circ}27'39''\text{N}$, $74^{\circ}02'55''\text{W}$. The 17-foot sounding at $40^{\circ}29'47''\text{N}$, $74^{\circ}02'31''\text{W}$ was not located. The only indication of a shoal in that area was a 19-foot spike found on the echogram (between the second and third sounding from position 1393). Development of the area on JD 244 with 20-meter line spacing showed no more than this spike at position $40^{\circ}29'45''\text{N}$, $74^{\circ}02'33''\text{W}$. Another similar spike was also found at position $40^{\circ}29'52''\text{N}$, $74^{\circ}05'07''\text{W}$ at a depth of nineteen feet. The hydrographer recommends that the second spike be added to the chart at its surveyed position, and that all presently charted spikes be retained on the chart even though these were not observed during this survey. The absence of the charted shoals can be attributed to the strong currents which may have altered the topography of the sandy bottom. The effect of these currents was also seen in the northeast quadrant of Flynn's Knoll with its sand ridges and the shoal along the north side of Sandy Hook where surveyed depths were generally deeper than the charted depths. The fourteen-foot cleared depth at position $40^{\circ}30'37''\text{N}$, $74^{\circ}01'00''\text{W}$ was not located during extensive development of PSR Item 2452. It is recommended that this item be retained as charted. PSR Item 2453 was found to be more extensive than charted and shoaler at fourteen feet.

The "Pile PA" located at $40^{\circ}28'42''\text{N}$, $74^{\circ}00'54''\text{W}$ was not found during hydrography. Pilings were sighted washed up on the beach in this general locality and it is recommended that this item be charted as "Pile ED". The explosives anchorage areas are reported to be no longer in use but the general anchorages remain in effect. This information was obtained from a conversation with LT J. Thibault, Station Commander, Coast Guard Station Sandy Hook. *Recommend charting as submerged pile, ED.*

*Atwoods
1/17/85
msm*

The cable areas charted between Sandy Hook and Romer Shoal, and Romer Shoal and West Bank are still to be charted because although the power cable from shore to Romer Shoal is no longer in use, it is still in place. The power cable from West Bank Light to Romer Shoal will continue to be in use indefinitely. The pipeline which is charted from Morgan, New Jersey, extending across the survey area, is in use and is a submerged oil pipeline which continues to Long Island.

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede prior surveys for charting purposes. The following are the areas where the hydrography is below the standards set forth in the Hydrographic Manual:

small holiday
There is a ~~hole~~ at Latitude $40^{\circ} 28' 12'' \text{N}$, Longitude $74^{\circ} 01' 10'' \text{W}$ caused by an improper junctioning between the launch running range/range hydrography and the MonArk running range/azimuth hydrography. *This holiday is not considered significantly detrimental enough to affect the survey results.*

N. AIDS TO NAVIGATION - See also section 4.1 of the Evaluation Report.

All floating aids within the survey area were located and positioned by hydrographic means. A full report can be found in the letter dated 31 August 1982 sent to the Third Coast Guard District included after Section S. A local Notice to Mariners revision was submitted to report the offset positions of buoys "13" and "15A" in Sandy Hook Channel and a copy of the message is included. Subsequent to completing the survey, in fact, as the WHITING was departing the survey area for Norfolk, 8 September 1982, it was observed that "13" and "15A" had been replaced. This was confirmed in correspondence from the Third Coast Guard District dated 22 September 1982. New positions were determined on JD 271 for buoy "13" which replaced "15A" and "11" which replaced "13" using sextant fixes. This was completed by the WHITING field party which remained at Sandy Hook to complete the project in conjunction with HFP-5. The following floating aids to navigation were located:

<u>Description</u>	<u>Charted Pos.</u> (Scaled from 12330)	<u>Surveyed Pos.</u>
"3" F I G 2.5sec	40°27'37" 74°02'42"	40°27'38" 74°02'41"
R"4" F I R 2.5sec	40°27'39" 74°02'48"	40°27'38" 74°02'48"
C"3FH"	40°27'42" 74°00'38"	40°27'44" 74°00'39"
W Or N"B"	40°27'52" 74°03'14"	40°27'52" 74°03'14"
W C"E"	40°27'58" 74°03'01"	40°27'56" 74°03'02"
C "I"	40°28'10" 74°02'18"	40°28'09" 74°02'19"
C "I"	40°28'18" 74°01'22"	40°28'18" 74°01'22"
B R I QK F I G	40°28'22" 74°02'20"	40°28'21" 74°02'21"
"17" F I G 2.5sec GONG	40°28'30" 74°01'43"	40°28'32" 74°01'43"
"1" F I G 2.5sec	40°28'33" 74°03'01"	40°28'33" 74°03'01"
R "18" F I R 4sec BELL	40°28'34" 74°02'04"	40°28'33" 74°02'06"
R "20" F I 2.5sec	40°28'34" 74°02'19"	40°28'32" 74°02'19"
R B I QK F I GONG	40°28'41" 74°03'01"	40°28'42" 74°03'00"
N "16"	40°28'46" 74°01'24"	40°28'46" 74°01'25"
R N "2"	40°28'46" 74°02'41"	40°28'45" 74°02'41"

"15A" FI G 4sec GONG	40°28'52" 74°00'42"	40°28'52" 74°00'35"
"13" FI 2.5sec GONG	40°28'53" 74°00'04"	40°28'51" 74°00'00"
R N "4"	40°28'53" 74°03'55"	40°28'53" 74°03'56"
R "14" FI R 4sec BELL	40°28'57" 74°00'53"	40°28'57" 74°00'53"
R N "4"	40°29'04" 74°02'44"	40°29'03" 74°02'44"
R "6" FI R 2.5sec BELL	40°29'04" 74°04'43"	40°29'03" 74°04'42"
R "12" FI R 4sec BELL	40°29'06" 74°00'05"	40°29'06" 74°00'04"
C "3"	40°29'10" 74°02'56"	40°29'10" 74°02'56"
R N "8"	40°29'14" 74°05'32"	40°29'14" 74°05'33"
R N "6"	40°29'37" 74°02'40"	40°29'36" 74°02'40"
"5" FI G 4sec BELL	40°29'40" 74°02'52"	40°29'40" 74°02'52"
C "7S"	40°29'52" 74°00'20"	40°29'53" 74°00'21"
R N "8"	40°30'09" 74°02'35"	40°30'09" 74°02'36"
C "7"	40°30'11" 74°02'48"	40°30'12" 74°02'48"
R "6S"	40°30'12" 74°00'07"	40°30'12" 74°00'07"
B R C	40°30'13" 74°03'36"	40°30'13" 74°03'37"
R N "8S"	40°30'36" 74°01'03"	40°30'36" 74°01'04"
R "10" FI R 4sec BELL	40°30'434" 74°02'31"	40°30'42" 74°02'32"

Fixed Aids

In conjunction with field edit, fixed aids to navigation were located by personnel from the WHITING and AMC. See the starred items on the accompanying NOAA form 76-40's, Non-Floating Aids for charts. A complete field edit report will be submitted at the completion of this project.

The following channel range azimuths were observed and compared with chart 12330:

<u>Name</u>	<u>Charted Range</u>	<u>Observed Range</u>
Chapel Hill South Channel	186°	185° 57'
Swash Channel	305°	305° 00'
Terminal Channel	207.5°	Unobtainable because the rear range light has been temporarily removed.

O. STATISTICS

	<u>VESNO 2932</u>	<u>VESNO 2931</u>	<u>VESNO 2933</u>
Number of Positions	2023	2405	159
Nautical Miles of Hydrography	369	290	8
Square Miles of Hydrography	9	6	0.4
Bottom Samples	45	109	0
Tide Stations	0	0	0
TDC Casts	2	3	0

P. MISCELLANEOUS

The following channels, natural and dredged, were developed by running lines along the axis of the channels with 50-meter spacing (the surveyed depths agreed with the tabulated depths of the Corps of Engineers report on Chart 12330): Chapel Hill South Channel; Swash Channel; Raritan Bay, East Reach; Sandy Hook Channel; Terminal Channel. Range/range hydrography was rerun in portions of the channels where the Corps of Engineers contract vessel SUGAR ISLAND was dredging. Dredging operations were performed simultaneously with hydrography by the WHITING, therefore sections were resurveyed to provide the most recent data available. The following positions should be rejected and replaced:

REJECT

*3 ⁴ -4 ⁵	188 ² -189 ⁴	275 ⁵ -276 ¹
32 ⁶ -33 ⁷	208 ⁴ -209 ⁶	1348-1349
44 ⁷ -46 ¹	218 ² -219 ¹	1352 ⁷ -1353 ⁷

70 ¹ -71 ³	237 ² -238 ⁵	1375 ⁷ -1377 ¹
83 ⁷ -84 ⁷	247 ⁵ -248 ⁶	1387 ⁴ 1388 ⁶
106 ⁵ -107 ⁷	266 ⁴ -267 ⁵	1408 ³ -1409 ⁵
		1679 ¹ -1680 ³

* The fourth sounding from position three through the fifth sounding from position four.

Replace with: 7279-7363.

Reject: 5023 ⁵ -5028 ⁵	5268-5268 ³	5360 ⁷ -5361 ⁶
5201 ⁶ -5202 ²	5287 ¹ -5288	5373 ² 5373 ⁷
5204 ⁵ -5205 ¹	5289-5289 ³	5392-5392 ⁷
5222 ⁴ -5223	5308-5308 ⁴	5405 ¹ -5406
5224-5224 ²	5312-5312 ⁴	5432 ¹ -5432 ⁷
5245 ³ -5245 ⁷	5331 ² -5331 ⁵	5443-5443 ⁷
5266-5267	5342 ⁵ -5342 ⁷	5360 ⁷ -5361 ⁶
5373 ² -5373 ⁷	5392-5392 ⁷	5405 ¹ -5406
5432 ¹ -5432 ⁷	5443-5443 ⁷	5464 ⁷ -5465 ⁶
5476 ³ -5477 ²	5499 ¹ -5499 ⁷	5509 ¹ -5509 ⁷
5530 ⁷ -5531 ⁵	5542-5542 ⁷	5568 ⁵ 5569 ³
5846 ⁵ -5848	5849-5849 ³	6283-6284
6285-6285 ⁶	6290 ² -6291	6292-6992 ³

Replace with: 1904-2023.

A special current observation was performed to establish the validity of published information. A full report follows in Appendix X.

Q. RECOMMENDATIONS - See also section 9 of the Evaluation Report

Survey H-10031 is adequate and no further field work is recommended. See recommendations in Sections K (comparison to prior surveys) and L (comparison with the chart).

R. AUTOMATED DATA PROCESSING

<u>Program Number</u>	<u>Description</u>	<u>Version Date</u>
RK 112	Range/Range Real-Time Hydroplot	08/04/81
RK 116	Range/Azimuth Real Time Plot	08/24/81
RK 201	Grid, Signal and Lattice Plot	04/18/81
RK 211	Range/Range Non-Real Time Plot	02/02/81
RK 212	Visual Station Table Load	04/01/74
RK 216	Range/Azimuth Non-Real Time Plot	02/09/81
RK 300	Utility Computations	10/21/80
RK 330	Data Reformat and Check	05/04/76
AM 500	Predicted Tide Generator	11/10/72
AM 530	Layer Corrector for Velocities	05/10/76
RK 561	Range/Range Geodetic Calibration	05/26/81
AM 602	Extended Line Oriented Editor	05/21/75
RK 612	Line Printer Listing	03/22/78

S. REFERRAL TO REPORTS

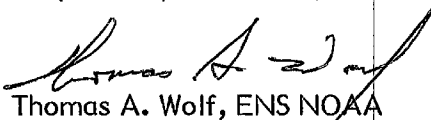
Tide Station Report submitted to OA/C321, Tidal Requirements and Acquisitions Branch, 1982.

Horizontal Control Report to be submitted to OA/CAM1, Operations Division.

Request for smooth tides submitted to OA/C231, Tides and Water Levels Branch, 18 August 1982.

Field edit report to be submitted to OA/CAM3 after the project is completed.

Respectfully submitted,


Thomas A. Wolf, ENS NOAA



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

July 27, 1982

C353:GHM

TO: Commanding Officer
NOAA Ship WHITING
George N. Mastrogianis
FROM: C353 - George N. Mastrogianis
SUBJECT: Assignment of Registry Number

The following hydrographic registry number, H-10031, is assigned in accordance with the information listed below:

<u>Registry No.</u>	<u>Field No.</u>	<u>Area</u>	<u>Project No.</u>
H-10031	WH-10-1-82	Lower Bay, New York Harbor 40°27.4'N - 40°32.2'N 73°57.3'W - 74°06.8'W	OPR-B139

cc:
CPM3
CAM3
CAM1
C35x2





NATIONAL OCEAN SURVEY
NOAA SHIP WHITING
US COAST GUARD SUPPORT CENTER
GOVERNORS ISLAND, NEW YORK 10004

DATE : 12 July 1982

TO : Chief, Data Control Branch, OA/C353

THRU : CDR. C. W. Fisher, CAM 1

FROM : *Roy K. Matsushige*
CDR. Roy K. Matsushige, NOAA
Commanding Officer, NOAA Ship WHITING

SUBJECT: REGISTRY NUMBER ASSIGNMENT

Request hydrographic registry number for the following survey
from OPR-B139-WH-82, WH-10-1-82.

AREA: NEW YORK HARBOR, LOWER BAY

40° 32.2' N	73° 57.3' W
40° 27.4' N	73° 57.3' W
40° 27.4' N	74° 06.8' W
40° 32.2' N	74° 06.8' W





U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
NOAA Ship WHITING
439 W. York St.
Norfolk, Virginia 23510

31 August 1982

Chief, Aids to Navigation Division
Third Coast Guard District
Governors Island, New York 10004

Dear Sir:

During a survey to revise the nautical charts of New York Harbor, Lower Bay and Sandy Hook Bay, conducted between 10 July and 31 August 1982, the following aids to navigation were positioned:

Sandy Hook Channel: R "12" Fl R 4 sec BELL
"13" Fl 2.5 sec GONG
R "14" Fl R 4 sec GONG
"15A" Fl G 4 Sec GONG
N "16"
"17" Fl G 2.5 sec GONG
R "18" Fl R 4 sec BELL

Junction between Chapel Hill South Channel and Raritan Bay East Reach:
R "20" Fl R 2.5 sec
B R I Qk Fl G
C "1"
R N "2"
R B I Qk Fl GONG
"1" Fl G 2.5 sec

Chapel Hill South Channel:
C "3"
R N "4"
"5" Fl G 4 sec BELL
R N "6"
C "7"
R N "8"
R "10" Fl R 4 sec BELL
B R C

Terminal Channel:
W C "E"
C "1"
W Or N "B"

Raritan Bay East Reach:
R N "4"
R "6" Fl R 2.5 sec BELL
R N "8"



All buoys were positioned using a thirty-foot launch equipped with a Del Norte short range microwave positioning system laying to alongside the buoy. Ranges in meters were recorded from known points on shore and the values were converted to geographic positions.

In general, all the floating aids were determined to be within approximately 50 meters of the charted positions. Buoys "13" and "15A" in Sandy Hook Channel, however, are not located where charted. Buoy "13" is approximately 250 meters east and buoy "15A" is approximately 190 meters east of the charted positions. The Del Norte positions for these two buoys were double-checked by occupying the buoys and observing three-point sextant fixes with the following results:

"13" Fl 2.5 sec GONG	40° 28' 51"N	73° 59' 55"W
"15A" Fl G 4 sec GONG	40° 28' 53"N	74° 00' 33"W

The stations used for the visual sights and the angles observed between them are as follows:

	"13"	"15A"
Left Station: Sandy Hook LORAN Tower		
Center Station: Old Orchard Light	60/19/48	99/36/50
Right Station: Romer Shoal Light	47/41/30	59/23/06

It is recommended that the surveyed positions of these two buoys be charted.

Sincerely,

Roy K. Matsushige
Roy K. Matsushige, CDR NOAA
Commanding Officer

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

Commander (COM)
Third Coast Guard District
Government Island
New York, NY 10994
(212) 661-1100



• 16500

28 SEP 1982

CDR Roy K. Matsushige, NOAA
Commanding Officer
NOAA Ship WHITING
439 West York Street
Norfolk, VA 23510

Dear Sir:

Thank you for your letter of 31 August 1982 regarding the surveying of aids to navigation in Lower New York Bay and Sandy Hook Bay.

Sandy Hook Channel Lighted Gong Buoy 11 (LLNR 1628) was position checked on 10 September 1982 by the servicing unit. The buoy was indeed found off station and was reset on charted position in approximate position 40-28-52.8, 74-00-04.1. (Note: On 3 September 1982, Sandy Hook Channel LGB 13 (LLNR 1628) was renumbered and renamed Sandy Hook LGB 11 (LLNR 1628).

Sandy Hook Channel Lighted Gong Buoy 15A (LLNR 1631) was advertised as being temporarily relocated to facilitate dredging in Third Coast Guard District Local Notice to Mariners (LNM) No. 29-82 of 22 June 1982. This buoy was returned to charted position on 3 September 1982 and was renamed Sandy Hook Channel Lighted Gong Buoy 13 (LLNR 1631).

Your assistance in these matters is appreciated. In the future and if possible, please do not hesitate to call us by telephone or radio on aids which appear off station. As you know the mail can take some time.

On a different subject, my ops officer spoke to your ops officer in early August regarding surveying the sunken drydock in the vicinity of Sandy Hook Wreck Lighted Buoy WR (LLNR 1622.10). The establishment of this aid was reported in LNM No. 23-82. Any information you are able to gather regarding the condition and/or present location of this wreck would be appreciated. We would like to discontinue this buoy if the wreck has broken up sufficiently.

Again, thanks for the report.

Sincerely,

D. A. NAUS
Captain, U.S. Coast Guard
Chief, Aids to Navigation Branch
By direction of the District Commander



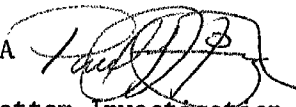


-2-

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY

11 August 1982

TO: Virginia N. Shaffer, LT, NOAA
Field Operations Officer
NOAA Ship WHITING

FROM: Paul J. Ruiz, ENS, NOAA 

SUBJECT: Diving Operation for Bottom Investigation
H-10031, OPR-B139-WH-82, WH-10-1-82
Dive Date: 10 August 1982

The purpose of this dive was to investigate the composition and shape of suspected sand ridges approximately 1.5 nautical miles northeast of Sandy Hook, NJ. Two dives were planned for this day at different locations. At 1308 LMT, the MonArk with LCDR A. N. Fior, dive master, ENS P. J. Ruiz, NOAA diver, YST E. J. Lowery, NOAA diver, and SS R. Brewington, NOAA diver, departed from Ship WHITING towards the first dive site.

The first area, previously marked by Launch 1015 personnel with a marker float, was at approximate position $40^{\circ} 29' 37''$ N, $74^{\circ} 01' 33''$ W. The MonArk anchored at the site of the float and dive operations began. The investigation continued from 1403 LMT to 1453 LMT when the divers surfaced.

The second site, which was 0.25 nautical miles south from the first site, at approximate position $40^{\circ} 29' 50''$ N, $74^{\circ} 00' 40''$ W, was likewise marked with a float. The dive operations was conducted here from 1605 LMT to 1631 LMT when the divers surfaced.

On both occasions, the running-anchor technique of scanning an area was employed. It was observed that the sand ridges of varying heights with a maximum of seven feet were developed and constantly shifting probably because of strong currents prevailing in the areas.

Because the area is in a constant state of change and because the composition of the ridges is fine-grained sand, it presents a minimum danger to navigation.



VI. LIST OF STATIONS

SIGNAL TAPE LISTING

001	6	40	31	17579	074	07	55491	250	0000	000000	GR. KILLS L.H. 1926
002	6	40	30	43892	074	05	56860	250	0015	000000	OLD ORCH. L.H. 1900
003	6	40	32	16282	074	02	35796	250	0021	000000	WEST BANK L.H. 1917
004	6	40	30	46443	074	00	50175	250	0016	000000	ROMER SHL L.H. 1900
005	6	40	28	14463	074	01	03758	250	0011	000000	SANDY HOOK PT LT 1944 0
006	6	40	28	21559	074	00	44196	250	0000	000000	SY. HOOK LORAN 1982 51E, 1950
007	6	40	28	08591	074	00	28098	139	0000	000000	SY. HOOK ST'PIPE, 1930
008	6	40	27	41798	074	00	08811	250	0026	000000	SY. HOOK L.H. FINIAL, 1835
009	6	40	26	56385	074	00	11897	250	0010	000000	HORSE SHOE 1940
010	6	40	23	45337	073	59	09162	250	0074	000000	RIGH 1940 NAV S DEL
011	6	40	25	35696	073	59	04774	139	0000	000000	SP COVE CUPOLA 1926
012	6	40	24	38137	073	58	46611	139	0000	000000	SHREW 1981
013	6	40	23	45789	073	58	40347	139	0000	000000	NEW BRIDGE 1934
014	6	40	23	45240	073	59	09203	250	0074	000000	NAVESINK LT SOUTH
015	6	40	23	47250	073	59	10544	139	0000	000000	NAVESINK LT NORTH
016	6	40	27	02492	074	03	09194	139	0000	000000	LEON. PIER FRONT R. LT
017	6	40	27	21691	074	03	00569	139	0000	000000	AMMO PIER CAL'N 1982*
018	6	40	32	16189	074	02	35730	250	0000	000000	W BANK L.H. ECC. 1982
019	6	40	30	46333	074	00	50220	250	0020	000000	ROMER SHOAL L.H. ECC. 82

* Terminal Channel Front Range light

IX. LANDMARKS FOR CHARTS AND NONFLOATING AIDS TO NAVIGATION

NOAA FORM 76-40 (8-74)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION				ORIGINATING ACTIVITY	
Replaces C&GS Form 567.		TITLE NON-EXISTING AIDS OR LANDMARKS FOR CHARTS		LOCALITY SANDY HOOK BAY		<input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> PHOTO FIELD PARTY <input type="checkbox"/> COMPILATION ACTIVITY <input type="checkbox"/> FINAL REVIEWER <input type="checkbox"/> QUALITY CONTROL & REVIEW GRP. <input type="checkbox"/> COAST PILOT BRANCH (See reverse for responsible personnel)	
TO BE CHARTED <input checked="" type="checkbox"/> TO BE REVISED <input type="checkbox"/> TO BE DELETED <input type="checkbox"/>		REPORTING UNIT (Field Party, Ship or Office) NOAA SHIP WHITING	STATE NEW JERSEY	DATE 8/82			
The following objects HAVE <input checked="" type="checkbox"/> HAVE NOT <input type="checkbox"/> been inspected from seaward to determine their value as landmarks. OPR PROJECT NO. OPR B139-WH-82		DATUM NA 1927		METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED	
CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)	POSITION		OFFICE	FIELD		
		LATITUDE D.M. Meters	LONGITUDE D.P. Meters				
MARKER	(ATLANTIC HIGHLANDS EAST MEASURED MILE 1970) Triang. sta. disk still exists, meas. mile marker not maintained. Should be deleted from chart	40 25	74 01	74E(C)7169 10/19/74 <i>see H-10049</i>	V-VIS 7/31/82	12324 12327 12330	
STANDPIPE	(SANDY HOOK STANDPIPE 1930)	40 28	74 00	74E(C)6964 10/17/74	V-VIS 7/31/82	"	
FLAGPOLE	(SANDY HOOK FORT HANCOCK PARADE GROUND FLAGPOLE 1930)	40 27	74 00	74E(C)6964 10/17/74	V-VIS 7/31/82	"	
TOWER	COMPTON CREEK	40 26	74 04	74 E(C)7169 10/19/74	F-2-6-L 8/6/82	"	
RADIO TOWER	RED AND WHITE TOWER, SANDY HOOK Position sealed from 78th ed. Chart #12227	40 28	74 00	14.50 15.35	V-VIS 7/31/82	"	
RADIO TOWER	SANDY HOOK	40 28	74 00	44.20 46.46	F-2-6-L 8/12/82	"	
RADIO TOWER	RED AND WHITE TOWER, SANDY HOOK	40 28	74 00	15.81 44.69	F-2-6-L 8-12-82	"	

L-1257(84)

NOAA FORM 76-40 (8-74) Replaces C&GS Form 567.									
U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION									
NONFLOATING AIDS OR STANDARDS FOR CHARTS									
REPORTING UNIT (Field, Party, Ship or Office)		LOCALITY		STATE		DATE		ORIGINATING ACTIVITY	
NOAA Ship WHITING		SANDY HOOK BAY		NEW JERSEY		8/82		<input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> PHOTO FIELD PARTY <input type="checkbox"/> COMPILATION ACTIVITY <input type="checkbox"/> FINAL REVIEWER <input type="checkbox"/> QUALITY CONTROL & REVIEW GRP. <input type="checkbox"/> COAST PILOT BRANCH (See reverse for responsible personnel)	
OPR PROJECT NO.		JOB NUMBER		SURVEY NUMBER		DATUM		METHOD AND DATE OF LOCATION (See instructions on reverse side)	
OPR B139-WH-82		CM-7301		TP-000758		NA 1927		OFFICE	
CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE		LONGITUDE		POSITION		FIELD	CHARTS AFFECTED
		D.M. Meters	/	/	D.P. Meters	D.M. Meters	/		
	SWASH CHANNEL								
LIGHT	SANDY HOOK LIGHT L.L. #1616 (SANDY HOOK LIGHTHOUSE FINIAL 1835)	40 27	41.80	74 00	08.81			V-VIS 7/28/82	12324 12327 12330
-LIGHT 15	L.L. #1630 Light is moved an average of 6 times per year.	40 28	35.98	74 01	04.45			F-2-6-L 8/12/82	"
LIGHT	(SANDY HOOK POINT LIGHT 1940) L.L. #1635	40 28	14.46	74 01	08.76			V-VIS 7/28/82	"
-RANGE F LT	CHAPEL HILL SOUTH CHANNEL	40 25	16.35	74 03	21.71			F-2-6-L 8/2/82	"
-RANGE R LT	L.L. #1637 Light is gone, tower is still in place.	40 23	55.13	74 03	32.77			F-2-6-L 8/6/82	"

L-1257(84)

NOAA FORM 76-40 (8-74) Replaces C&GS Form 567.		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION				ORIGINATING ACTIVITY	
NONFLOATING AIDS OR MARKERS FOR CHARTS		LOCALITY		DATE		<input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> PHOTO FIELD PARTY <input type="checkbox"/> COMPILATION ACTIVITY <input type="checkbox"/> FINAL REVIEWER <input type="checkbox"/> QUALITY CONTROL & REVIEW GRP. <input type="checkbox"/> COAST PILOT BRANCH (See reverse for responsible personnel)	
REPORTING UNIT (Field Party, Ship or Office) NOAA SHIP WHITING		STATE		DATE		METHOD AND DATE OF LOCATION (See instructions on reverse side)	
CHARTING NAME (Record reason for deletion of landmark or aid to navigation. Show triangulation station name, where applicable, in parentheses)		DATUM NA 1927		POSITION LATITUDE ° / ' " / D.M. Meters		LONGITUDE ° / ' " / D.P. Meters	
CHARTING NAME SANDY HOOK BAY		STATE NEW JERSEY		LOCALITY SANDY HOOK BAY		CHARTS AFFECTED	
OPR B139-WI-82	CM-7301	TP-00758					
LIGHT 2	LEONARDO CHANNEL LIGHT 2 - L.L. #1649 This fixed light has been replaced with a red nun buoy (unlit).	40 25	74 03	29.11		V-VIS 7/31/82	12324 12327 12330
LIGHT 7	LEONARDO CHANNEL LIGHT 7 L.L. #1649.10	40 25	74 03	38.64		F-2-6-L 8/2/82	"
RANGE	ATLANTIC HIGHLANDS BREAKWATER LIGHT L.L. #1650	40 25	74 01	11.94		F-2-6-L 8/2/82	"
RANGE F LT	ATLANTIC HIGHLANDS RANGE FRONT LIGHT L.L. #1651	40 25	74 01	57.60		unverified 8/6/82	"
RANGE R LT	ATLANTIC HIGHLANDS RANGE REAR LIGHT L.L. #1652	40 25	74 02	06.22		unverified 8/6/82	"
RANGE F LT	SANDY HOOK BAY TERMINAL CHANNEL						
RANGE R LT	DOCK FRONT RANGE LIGHT L.L. #1654 (LEONARDO PIER FRONT RANGE LIGHT 1982)	40 27	74 03	09.19		F-2-6-L 5/82	"
RANGE R LT	DOCK RANGE REAR LIGHT L.L. #1655 Light not in place at time of field edit.	40 26	74 03	23.64		-	

L-1257(84)

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X. CURRENT STUDY

DRIFT BUOY OBSERVATIONS

A special current investigation was carried out by WHITING personnel after divers reported what they felt were stronger than published currents during their dive on the sand ridge area.

A drift buoy was constructed of a long wooden pole, weighted at one end to float vertically, with the tip of the pole at the surface. The launch was anchored at the north end of Swash Channel, and the buoy was allowed to drift away from the launch with the prevailing current. The line attached to the buoy was marked off in ten-foot intervals for a distance of two-hundred feet.

A trail was taken every fifteen minutes, in which the buoy was released, and the time recorded as each marker passed over the stern railing. The time taken for the buoy's drift was also observed for each trail.

During trial #11 (1900 Z), the direction of the current reversed from flood to ebb. Because the launch was swinging around on its anchor during this trial, the line from the buoy was laid out in an arc, which caused the observed velocity for this trial to be higher than the true velocity probably was.

No observations were made at maximum flood or ebb.

DRIFT BUOY DATA

The launch was anchored at Latitude $40^{\circ} 29' 56.5''N$, Longitude $73^{\circ} 59' 27.8''W$ on 12 August 1982.

The predicted currents for the day were determined using the Narrows with a correction applied from 1.7 miles ENE of the N tip of Sandy Hook (1982 Tidal Current Tables) as follows:

	Time (GMT)	Velocity(kts)	Direction
Flood	1544	1.62	295 ^o
Slack	1930		
Ebb	2207	1.44	100 ^o

Observed currents were as follows:

Trials	Time (GMT)	Velocity (kts)	Direction
1	1630	1.12	303 ^o
2	1645	1.20	303
3	1700	1.00	303
4	1715	0.94	303
5	1730	0.83	303
6	1745	0.71	303
7	1800	0.70	303
8	1815	0.59	315
9	1830	0.43	315
10	1845	0.41	315
11	1900	0.32	315 to 090
12	1915	0.27	090
13	1930	0.47	105
14	1945	0.66	105
15	2000	0.73	105
16	2015	0.80	105
17	2030	1.03	105

The velocity trend and direction of these observed currents were generally in agreement with the predicted currents.

✓ Filed

CURRENT OBSERVATIONS

Time Distance	#1	#2	#3	#4	#5	#6	#7	
0	163350	164400	170330	171530	173000	174500	180000	
10	52	02	33	35	04	04	04	
20	57	06	37	40	11	12	13	
30	3401	11	44	48	18	22	21	
40	07	16	50	54	24	29	29	
50	14	23	55	59	36	40	39	
60	19	28	0403	1605	43	50	48	
70	25	33	09	12	50	58	56	
80	31	39	17	19	56	4607	0105	
90	36	44	23	25	3103	17	14	
101	43	50	30	33	11	26	22	
110	47	55	34	40	18	34	30	
120	53	4500	40	45	24	42	38	
130	59	06	46	52	31	52	46	
140	3504	09	52	1700	39	4700	55	
150	09	15	0500	06	46	08	0204	
160	15	20	07	11	54	16	16	
170	21	25	11	18	3202	24	26	
180	26	30	17	24	10	33	33	
190	31	35	22	31	17	41	42	
200	163537	164540	170529	171737	173225	174748	180251	
TOTAL:	200 ft	107sec	100	119	127	145	168	171
Sample Computation of Current Velocity:								
$0.6 \text{ kt/} \frac{\text{ft}}{\text{sec}} \times (200 \text{ ft} / \# \text{ of seconds per test})$								
NOTE: The 0.6 kt/ft/sec factor is derived from the following:								
$(1 \text{ kt/nm/hr}) (3600 \text{ sec/hr}) (1 \text{ nm}/6000 \text{ ft}) = 0.6 \text{ kt/ft/sec}$								

XI. APPROVAL SHEET

To ensure completeness on this hydrographic survey (H-10031), all the field work and office work was supervised on a day to day basis.

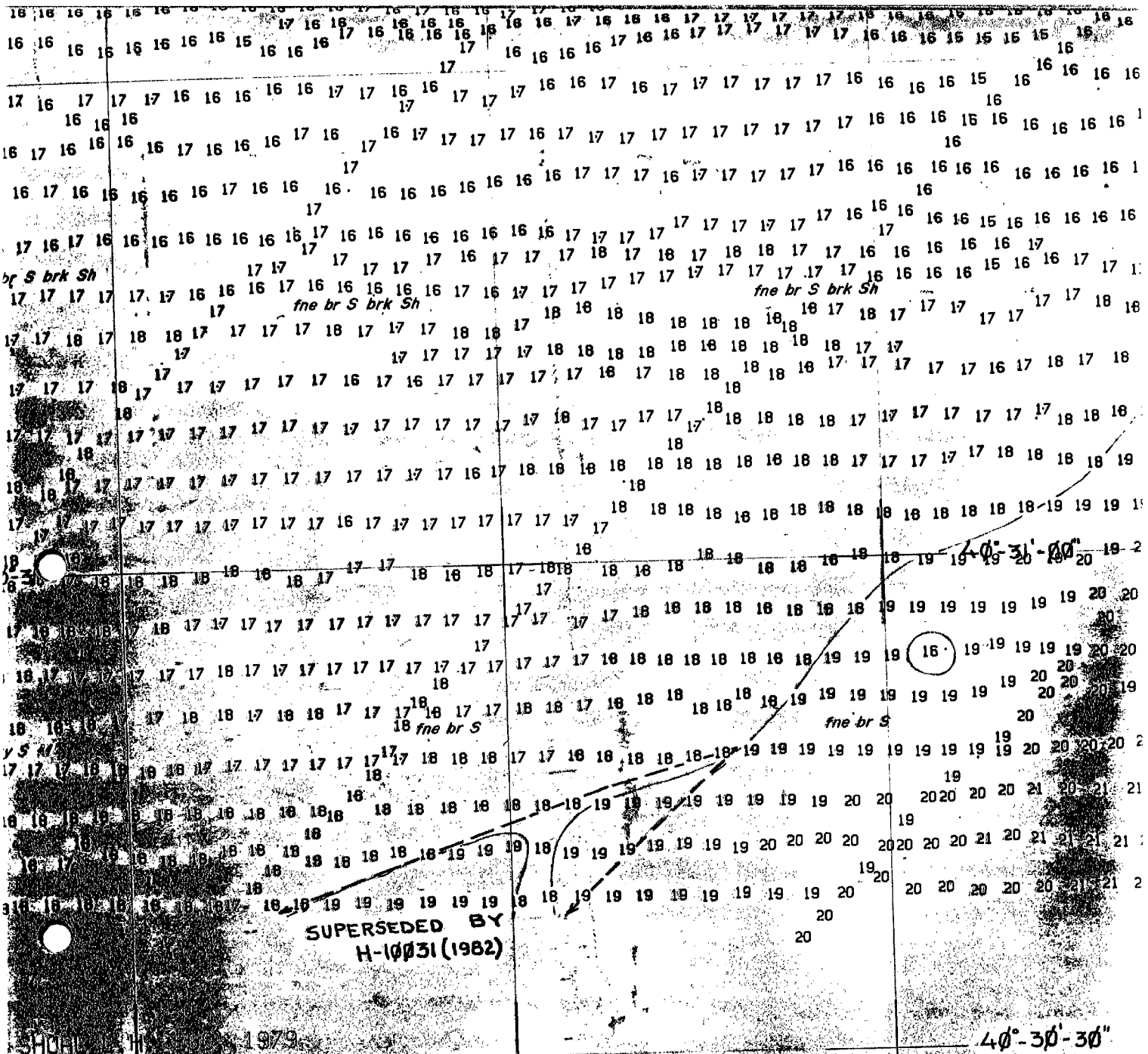
All the work was executed in accordance with the Project Instructions and the hydrographic Manual standards.

This survey is considered complete and adequate for charting purposes.

Approved and Forwarded:

Roy K. Matsushige

Commander Roy K. Matsushige, NOAA
Commanding Officer, NOAA Ship WHITING S-329



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Y S M

**SUPERSEDED BY
H-10031 (1982)**

30"

1979

40°-31'-30"

74° 05' 30"

74° 05' 00"

74° 04' 30"

2/28/83

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Marine Center: Atlantic

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 853 1681 Sandy Hook, New Jersey

Period: July 11 - September 1, 1982

HYDROGRAPHIC SHEET: H-10031

OPR: B-139

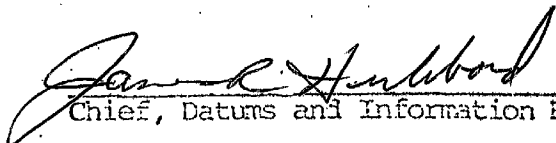
Locality: Sandy Hook Bay, New Jersey

Plane of reference (mean ~~lower~~ low water): 2.47 ft.

Height of Mean High Water above Plane of Reference is 4.7 ft.

REMARKS: Recommended zoning:

1. West of longitude $74^{\circ}00.0'$ Zone direct
2. East of longitude $74^{\circ}00.0'$ apply -15 minutes time correct and x 0.94 range ratio.


Chief, Datums and Information Branch

GEOGRAPHIC NAMES

H-10031

Name on Survey	Source of Name										
	A	B	C	D	E	F	G	H	K		
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST			
CHAPEL HILL SOUTH CHANNEL											1
FLYNNS KNOLL											2
LOWER BAY											3
NEW JERSEY (title)											4
OLD ORCHARD SHOAL											5
ROMER SHOAL											6
SANDY HOOK											7
SANDY HOOK BAY											8
SANDY HOOK CHANNEL											9
SANDY HOOK POINT											10
SWASH CHANNEL											11
TERMINAL CHANNEL											12
											13
											14
											15
											16
											17
										Approved:	18
											19
										<i>Charles E. Harrington</i>	20
										Chief Geographer - NCG 2x5	21
										JUN 19 1984	22
											23
											24
											25

HYDROGRAPHIC SURVEY STATISTICS

H-10031

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

RECORD DESCRIPTION		AMOUNT		RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET		1		SMOOTH OVERLAYS: POS., ARC, EXCESS		3	
DESCRIPTIVE REPORT		1		FIELD SHEETS AND OTHER OVERLAYS		8	
DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS		
ACCORDIAN FILES	3						
ENVELOPES					2		
VOLUMES	4				2		
CAHIERS	2						
BOXES							
SHORELINE DATA							
SHORELINE MAPS(List):							
PHOTOBATHYMETRIC MAPS(List):							
NOTES TO THE HYDROGRAPHER(List):							
SPECIAL REPORTS(List):							
NAUTICAL CHARTS(List):							
<i>OFFICE PROCESSING ACTIVITIES</i>							
<i>The following statistics will be submitted with the cartographer's report on the survey</i>							
PROCESSING ACTIVITY				AMOUNTS			
				VERIFICATION	EVALUATION	TOTALS	
POSITIONS ON SHEET						4317	
POSITIONS REVISED				316		316	
SOUNDINGS REVISED				539		539	
CONTROL STATIONS REVISED					1	1	
				TIME - HOURS			
				VERIFICATION	EVALUATION	TOTALS	
PRE-PROCESSING EXAMINATION				33		33	
VERIFICATION OF CONTROL				10		10	
VERIFICATION OF POSITIONS				55		55	
VERIFICATION OF SOUNDINGS				125		125	
VERIFICATION OF JUNCTIONS				12		12	
APPLICATION OF PHOTOBATHYMETRY							
SHORELINE APPLICATION/VERIFICATION				5		5	
COMPILATION OF SMOOTH SHEET				54	8	62	
COMPARISON WITH PRIOR SURVEYS AND CHARTS					26	26	
EVALUATION OF SIDESCAN SONAR RECORDS							
EVALUATION OF WIRE DRAGS AND SWEEPS							
EVALUATION REPORT					27	27	
OTHER					21	21	
DIGITIZING				4		4	
TOTALS				298	82	380	
Pre-processing Examination by R.G. Roberson, F.L. Saunders, G.F. Trefethen				Beginning Date 5 NOV 1982	Ending Date 16 NOV 82		
Verification of Field Data by D.V. Mason, G.F. Trefethen, R.R. Hill, Jr.				Time(Hours) 298	Ending Date 16 OCT 1983		
Verification Check by R.R. Hill, Jr., R.G. Roberson				Time(Hours) 69	Ending Date 15 JUNE 1984		
Evaluation and Analysis by R.G. Roberson				Time(Hours) 82	Ending Date 20 JULY 1984		
Inspection by R.D. Sanocki				Time(Hours) 20	Ending Date 18 JULY 1984		

ATLANTIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO.: H-10031

FIELD NO.: WH-10-1-82

New Jersey, Vicinity of Sandy Hook, Flynn's Knoll to Old Orchard Shoal

SURVEYED: 11 July through 1 September 1982

SCALE: 1:10,000

PROJECT NO.: OPR-B139-WH-82

SOUNDINGS: Ross Digital Echo Sounder,
Raytheon DE-719B Fathometer

CONTROL: Del Norte (Range/
Range) and
Del Norte - Theodolite
(Range/Azimuth)

Chief of Party.....R. K. Matsushige

Surveyed by.....A. N. Flior
.....V. N. Shaffer
.....M. E. Henderson
.....E. A. Steigerwald
.....P. J. Ruiz
.....P. M. Kenul
.....T. A. Wolf

Automated Plot by.....Xynetics 1201 Plotter (AMC)

1. INTRODUCTION

a. No unusual problems were encountered during office processing of the survey.

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

2. CONTROL AND SHORELINE

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

b. Shoreline originates with Class III reviewed Photogrammetric Manuscript TP-00758 of 1974/75, revised with 1981 aerial photography. Changes in dashed red were applied to the smooth sheet from the final field sheets.

3. HYDROGRAPHY

a. Soundings at crossings agree within the limits prescribed in sections 4.6.1 and 6.3.4.3 of the Hydrographic Manual and section 6.6 of the Project Instructions.

b. The standard depth curves could be drawn in their entirety with the exception of the zero (0) curve which was not accessible due to shallow water and safety of navigation. The supplemental three (3) foot curve was drawn to better show the present bottom configuration in the changeable area adjacent to Sandy Hook. Dashed and brown curves were also added to better portray the bottom configuration.

c. Development of the bottom configuration and determination of least depths is considered adequate with the following exceptions:

1) The eighteen (18) foot shoal in Latitude $40^{\circ}30'30''N$, Longitude $74^{\circ}03'40''W$ should have had additional east-west lines run to adequately delineate the shoal.

2) A single line of hydrography in Latitude $40^{\circ}28'08''N$, Longitude $74^{\circ}00'55''W$ found a deep trough, depths from eighteen (18) to twenty-two (22) feet, with surrounding depths of one (1) to five (5) feet. The hydrographer did not run additional lines of hydrography to verify the existence of this deep trough. Subsequently, the hydrography on this line was rejected and is not shown on the smooth sheet because it is felt that the soundings are erroneous.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports are adequate and conform to the specifications of the Hydrographic Manual with the following exceptions:

a. Ten (10) discreet observations required for fixed point (static) daily system checks were not observed. It is felt, however, that this does not adversely affect the quality of the survey data.

b. The tide station on the smooth field sheet was not plotted on the final field sheet as required by section 4.2.1 of the Hydrographic Manual.

c. The spacing between position fixes consistently exceeds the four (4) centimeter criterion found in section 1.1.2 of the Hydrographic Manual. Considering the use of range/range control and automated data acquisition on this survey, there is no adverse affect on the survey.

d. Bar check data for launch 1014 (EDP Number 2932) for year days 192-197 was grouped together for comparison with TDC data. On year day 196 echo sounders were changed on launch 1014. The bar check data taken on year day 197 should have been treated separately in order to establish any inherent error for that echo sounder. After an examination of data, it does not appear that there is a major difference between the two (2) sounders, and no adverse impact is apparent.

e. Velocity Table VII was not deep enough to cover the range of depths acquired. The graph was extended and the table corrected. These corrections were entered in the data files and applied to the sounding data during verification of the survey.

f. The velocity graph for Velocity Table IX was examined and reconstructed during verification of the survey after an apparent two (2) foot discrepancy between Monark 1288 and launch 1015 hydrography in the vicinity of Latitude 40°28'00"N, Longitude 74°01'15"W was found. After the reconstruction process, the hydrography was re-examined and the two (2) foot discrepancy was no longer existent. The newly constructed graph and table are now a permanent part of the survey records.

g. The proper NGS name and establishment date for some triangulation stations were not put on the smooth field sheet. Some triangulation station names were totally absent from the smooth field sheet.

h. Some of the data tapes were labeled with the wrong vessel identification number.

i. Twice daily bar checks were not taken as required by section 1.5.2 of the Hydrographic Manual. Thirty-six (36) out of a maximum of seventy-eight (78) bar checks were taken; this is considered an adequate sampling considering that the graphs were constructed from TDC data.

j. The hydrography deleted by Verification Group listed on pages 13 and 14 of the Descriptive Report should not have been forwarded to the Marine Center.

It is incumbent upon the hydrographer to provide the best representation of the survey area. The inclusion of this data added nothing to the survey except confusion and additional hours of verification time. The inclusion of this type of information in the digital records submitted by the field unit is an unacceptable practice.

k. The fish trap in Latitude 40°28'17"N, Longitude 74°04'44"W was not completely located by the hydrographer. All four (4) corners of the trap should have been located. Only two (2) of the four (4) corners were located.

l. The two (2) buoys that were found off station by the hydrographer were not relocated nor was the data for relocation to be provided at a later date received at the Marine Center. The positions shown on the smooth sheet are those of the buoys as provided in the survey data.

m. The hydrographer did a good job of obtaining current data as required by section 8.2 of the Project Instructions.

n. Master and Corrector Printouts were not included with the original survey data package submitted for year day 216.

o. Notes in the sounding volumes were poor when referencing piers, piles, groins, dols, etc.

p. The hydrographer failed to make comparison with all of the most recent prior surveys within the area of the present survey.

q. The NOAA Forms 76-40 provided to and submitted by the hydrographer were confusing and incorrect. The geographic position for the last TOWER listed on page 94 of the Descriptive Report is actually the position of the RADIO TOWER found on page 95 of the Descriptive Report. The RADIO TOWER was located by the hydrographer using Third Order, Class I methods. A field edit on photogrammetric manuscript TP-00758 performed concurrently with hydrographic operations identified the RADIO TOWER located by the hydrographer as the charted TOWER (TALLEST) in Latitude $40^{\circ}28'14.50''N$, Longitude $74^{\circ}00'42.88''W$. This was not correct. The field verification of a charted landmark using the "V-VIS" method is not an acceptable method when there are several objects that the similar name or description and are located near one another. The Forms 76-40 that are pages 94 and 95 of the Descriptive Report have been corrected during office processing.

r. Geographic positions of several landmarks were scaled from the chart and the scaled position was used on the NOAA Forms 76-40. Further complications arose from the use of a small scale chart as opposed to the largest scale chart available, 1:20,000 versus 1:40,000. Requirements in section 4.2.3.1 of the Project Instructions outline the criteria for the location of landmarks and nonfloating aids to navigation. A scaled position and "V-VIS" inspection are not acceptable methods in this case.

5. JUNCTIONS

H-9820 (1979) to the north
H-10035 (1982) to the east
H-10049 (1982) to the south)

Adequate junctions were effected between the present survey and H-10035 (1982) and H-10049 (1982).

The smooth sheet for survey H-9820 (1979) is archived at headquarters and a standard junction was not made.

The comparison between a stable base copy of survey H-9820 (1979) and the present survey shows excellent agreement in most the junctional area. The junctional curves can be completed in the junctional area except in Latitude $40^{\circ}30'39''N$, Longitude $74^{\circ}05'00''W$ and Latitude $40^{\circ}30'39''$, Longitude $74^{\circ}00'00''$ where the present survey is consistently one (1) foot shoaler and the curves could not be made coincidental. A butt junction was effected between the two (2) surveys in the two areas mentioned above. Page size copies of the areas where the butt junction was effected have been included in the Descriptive Report.

There are no contemporary surveys to the west of the present survey. Charted depths and present survey depths are in harmony.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-5234a (1932) Ad. Wk. (1934) 1:10,000
H-5234b (1932) 1:10,000
H-5617 (1934) 1:10,000
H-5637 (1934) 1:10,000
H-5735 (1934) 1:20,000
H-7864 (1950) 1:10,000
H-7866 (1950) 1:10,000

The above prior surveys taken together cover the present survey area in its entirety except in the areas of U.S. Army Corps of Engineers maintained channels.

Comparison with the above prior hydrographic surveys shows good agreement with a general trend of the present survey being one (1) to two (2) feet shoaler. The exception to this is the area of sand waves along the eastern edge of Flynns Knoll where survey depths vary from plus or minus (+/-) five (5) feet and the area immediately adjacent to the tip of Sandy Hook where currents keep the shoreline and near shore area in a constant state of change.

The present survey is adequate to supersede the above prior surveys within the common area except as noted above.

b. Wire Drag Surveys

H-6994 W.D. (1944) 1:20,000
H-8330 W.D. (1956) 1:25,000

A comparison between H-6994 W.D. (1944) and the present survey shows no hangs or groundings within the common area. An eighteen (18) foot sounding in Latitude $40^{\circ}27'54''N$, Longitude $74^{\circ}04'42''W$ is charted from the prior survey. Present survey depths in the area are twenty-two (22) feet. There are conflicts between the effective depths and present survey depths in Latitude $40^{\circ}28'45''N$, Longitude $74^{\circ}00'45''W$. The area is characterized by a sand bottom and strong currents. This combination makes the area extremely changeable in nature. The U.S. Army Corps of Engineers maintains the channels in this area. Considering the nature of the bottom and the time interval since the prior survey was conducted, it is felt that these conflicts do not constitute any serious problems.

A comparison between H-8330 W.D. (1956) and the present survey reveals one (1) wire drag hang charted in the area common to these surveys. A sixteen (16) foot hang charted in Latitude $40^{\circ}30.63'N$, Longitude $74^{\circ}01.00'W$ with a cleared depth of fourteen (14) feet was brought forward to the present survey. It is recommended that the wire drag clearance depth be retained as charted until the item can be investigated again using side scan sonar or wire drag. There are

several conflicts between the effective depths and present survey depths. These conflicts are no greater than two (2) feet. Considering the trend noted in the comparison with the prior hydrographic surveys, it is felt that the conflicts are not significant and constitute no major problem.

7. COMPARISON WITH CHART 12330 (13th Edition, June 12/82)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys, U.S. Army Corps of Engineers surveys and miscellaneous sources, and requires no further discussion.

1) Six (6) Presurvey Review Items fell within the survey area and three (3) of the six (6) are discussed in section K of the Descriptive Report. The following discussion addresses the three (3) Presurvey Review Items not covered in section K of the Descriptive Report.

Information Items 1638, 1639, and 1640 were the cargo ships "MC CABE," "AYURUOCA," and "TURNER" reported sunk in 1942, 1945, and 1944, respectively, in Latitude 40°30'00"N, Longitude 74°00'00"W with a positional accuracy of three (3) to five (5) miles. None of these wrecks are charted.

AWO/S
11/7/85
msm

No indication of these wrecks were found by the present survey. It is recommended that the present charting disposition be continued.

2) The pier ruins charted in the vicinity of Latitude 40°28'03"N, Longitude 74°00'39"W (west of the Coast Guard Station) were reported by the field editor to be non-existent. A telephone conversation with Chief Petty Officer Hutchison at the Coast Guard Station, Sandy Hook, New Jersey (FTS 342-5250, ext. 312) confirmed the demolition of the pier and subsequent search for and removal of submerged pilings. It is recommended that the pier ruins be deleted from the chart.

3) The charted 10 ft rep 1981 in Latitude 40°27'59.5"N, Longitude 74°00'38"W was not verified or disproved. It is recommended that the note be retained as charted unless subsequent information indicates otherwise.

4) The submerged ruins charted in Latitude 40°28'00"N, Longitude 74°00'33"W was either verified or disproved. Three (3) lines of hydrography crossed the area of the pier with no indication found on the fathogram. The source for these ruins could not be determined from the available prior surveys. It is recommended that the chart compiler research the source of these submerged ruins and determine their continued applicability to the chart.

5) The ruin charted in Latitude 40°28'10"N, Longitude 74°00'46.8"W was reported non-existent by the field editor. It is recommended that the ruin be deleted from the chart.

The present survey is considered adequate to supersede the charted hydrography except as noted above.

b. Controlling Depths

1) Sandy Hook Channel - Dredging operations were being conducted concurrently with hydrographic operations. The hydrographer reran sounding lines in the area dredged after dredging operations were completed. A comparison was made between the tabulation on the chart in print at the time of hydrography and the latest chart was made. The comparison with the latest edition shows a twenty-two (22) foot sounding from the present survey on the left outside quarter of the channel in Latitude 40°28'48"N, Longitude 74°00'53"W along with several thirty-one (31) and thirty-two (32) foot soundings in the vicinity of Latitude 40°28'45"N, Longitude 74°01'00"W. The tabulation on the latest chart edition shows 34.1 feet for the left outside quarter. A comparison with the previous (12th) edition of the chart shows the twenty-two (22) foot sounding outside the thirty (30) foot curve.

2) Chapel Hill South Channel - several twenty-two (22) foot soundings in approximate Latitude 40°30'45"N, Longitude 74°02'30"W were found. These are one (1) foot shoaler than shown on the tabulation for the right outside quarter of the channel. Right outside quarter is listed as 23-feet.

3) Raritan Bay East Reach has no conflicts between present survey depths and the tabulated controlling depths.

4) Terminal Channel has no conflicts between present survey depths and the tabulated controlling depths.

5) The turning basin at the junction of Raritan Bay East Reach, Chapel Hill South Channel and Sandy Hook Channel in Latitude 40°28'45"N, Longitude 74°02'39"W shows "28 FEET, JULY 1979" with additional charted soundings showing exceptions has twenty-three (23) to twenty-seven (27) foot depths in the vicinity of Latitude 40°28'41"N, Longitude 74°02'33".

c. Aids to Navigation

Aids to navigation shown on the present survey are adequate to serve their intended purpose with the exception mentioned in section N of the Descriptive Report and section 4.1 of this report.

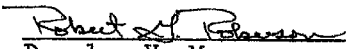
8. COMPLIANCE WITH PROJECT INSTRUCTIONS


This survey adequately complies with the Project Instructions except as noted in this report.

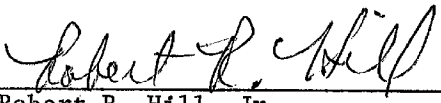
9. ADDITIONAL FIELD WORK

This is an adequate basic survey; additional field work is recommended in section K of the Descriptive Report regarding Presurvey Review

Items 2452 and 2457. An echo sounder investigation alone of these items is not considered sufficient to disprove their existence.


for Douglas V. Mason
Cartographic Technician
Verification of Field Data



Robert G. Roberson
Senior Cartographer
Evaluation and Analysis


Robert R. Hill, Jr.
Senior Cartographic Technician
Verification Check

Inspection Report
H-10031

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 complies with National Ocean Service requirements except as noted in the Evaluation Report. The survey records comply with NOS requirements except where noted in the Evaluation Report.

Inspected




R. D. Sanocki
Chief, Hydrographic Surveys
Processing Section
Hydrographic Surveys Branch



David B. MacFarland, Jr., LCDR, NOAA
Chief, Hydrographic Surveys Branch

Approved July 20, 1984



Wesley V. Hull, RADM, NOAA
Director, Atlantic Marine Center

