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U. S. COAST & GEODETIC SURVEY
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Form 504
Rev. April 1935
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

~~Topographic~~ } Sheet No. 403
Hydrographic }

State New York

LOCALITY

Approaches to New York Harbor.

1936

CHIEF OF PARTY

H. A. Seran

U. S. GOVERNMENT PRINTING OFFICE

5607

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 6191

HYDROGRAPHIC TITLE SHEET

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. 403

REGISTER NO. 6191

State New York

General locality ~~Atlantic Coast~~

Locality Approaches to New York Harbor

Scale 1: 40,000 Date of survey August, 19 36

Vessel OCEANOGRAPHER

Chief of Party H. A. Saran

Surveyed by Field Officer (J. C. Bose)

Protracted by R. A. Marshall

Soundings penciled by R. A. Marshall

Soundings in fathoms feet

Plane of reference M. L. W.

Subdivision of wire dragged areas by

Inked by W. R. Jackson

Verified by W. R. Jackson

Instructions dated April 9, 19 36

Remarks:

DESCRIPTIVE REPORT

to accompany

Hydrographic Sheet No. 403

Approaches to New York Harbor

H. A. Seran, Chief of Party, C&GS.

Scale 1:40,000

Instructions:

The work on this sheet was executed in accordance with the Director's Instructions dated April 9, 1936 (22AA-1995 Ocl) Project #207.

Limits:

This sheet joins the LYDONIA'S Sheet, Field #401 on the northerly side. It makes a junction with Sheet, Field #121 on its southerly limits. The western limits of the sheet join Sheet, Field #404. ^{(H-6192(1936))} ^{(H-6193(1936))}

Survey Methods:

The area on this sheet was surveyed by the Ship OCEANOGRAPHER, using standard R.A.R. methods.

The launches WELKER and GILBERT were used as station ships throughout the season.

The use of sono-radio buoys by the OCEANOGRAPHER was started on this sheet. As the lag in these buoys was an unknown quantity, the smooth sheet was first plotted in the usual manner. Then the distance arcs from the buoys were plotted. The discrepancy then scaled off the smooth sheet.

The correction for each sono-radio buoy return was then taken from the curve and applied.

Sono-radio buoy arcs were then plotted on the smooth sheet. As this was the first time that they were used, it was thought that returns from the station ships should be given preference. The sono-radio buoy returns were used wherever they fitted in with the returns from the station ships and dead reckoning.

The arcs as plotted on the smooth sheet were inked in, even though they were not used, as it was thought that a visible record of the returns might be useful at some future date.

On B. day, (the first day that the sono-radio buoy were used) the returns were so scattered and erratic that no use could be made of them and they were not plotted on the smooth sheet.

The velocity used for the buoy returns was the same as that used for the nearby station ship.

The color of the ^{sono} buoy arcs is same as the distance arcs for the control buoy.

The velocities used in plotting the smooth sheet were obtained by two methods.

1. The bottom velocities were used and the velocity for each position obtained in the usual manner.

2. It was noted, while plotting on the boat sheet, that on several days a much higher velocity was needed than the theoretical velocity depending on the bottom temperature.

In order to find out the velocity needed to make the arcs close on the line between the buoys, a cut and try method was used.

Positions on the line between buoys and several on either side of the line were plotted, using different velocities until the arcs met. If these velocities approximated the velocity obtained by using the bottom temperature, the bottom velocity was used on that day.

On A, E, & F days the velocity needed to make the arcs close was much higher than the bottom velocity. Therefore, on these days the velocity found necessary (by trial) to make the arcs close was used.

On E day it was found that the velocity needed to make the arcs close increased during the day.

The increase in velocity was pro-rated over the entire day. Using the positions ~~on the~~ positions on the line between buoys for a base.

The increase in velocity carried over from E day into F day.

A table showing the comparison between velocities needed to make the arcs close and the bottom velocities is attached to this report.

Discrepancies and Adjustments:

Positions were plotted using all the available data and experience gained in plotting on the boat sheets in the field.

Bearings were used with caution and were as a check on the position.

On several days the ^{log} ~~log~~ was not functioning properly. At such times it was necessary to rely on the time run in plotting the dead reckoning.

of
Crossings on three feet or less were considered to be satisfactory and are not listed.

The following discrepancies have been noted:-

The cross line at 12-13B & 14-15B apparently is satisfactory.

NO.	LAT.	LONG.	DISCREPANCY	PROBABLE CAUSE
1	40 22.7'	72 44.2'	121	The junction shows uneven bottom in this area. <i>* The junction in this area is good. GR.</i>
2	40 27.6'	72 54.6' ^{58.8}	121B-122B	The 120' soundings appear to be deep. <i>Replotting of D day line results in good crossing.</i>
3	40 27.4'	73 58.8' ^{72-55.5'}	131C	The sounding before the position appears to be deep. <i>same as No. 2</i>
4	40 27.4'	73 00.0'	62-63D	Soundings on this line deep. <i>Crossing is satisfactory.</i>
5	40 27.4'	73 05.0'	65-66D	It is recommended that this end of the line be shifted slightly in a northerly direction to make a better crossing. <i>No shift necessary. Crossing is satisfactory.</i>
6	40 23.5' ^{18.5}	72 52.6' ⁷³⁻¹²	91-92F	128 & 129' soundings appear to be deep. They do not conform to the soundings on either line. <i>Crossing is satisfactory.</i>
7	40 20.6'	73 07.0'	70-71H	The 116' [*] soundings seems to be a little shoal (about 1 fathom). <i>No evidence in the edg. record that 116' is erroneous, and is therefore accepted.</i>
8	40 16.9'	73 16.1'	68-69G	120' [*] soundings deep. <i>* Crossing is good, less than 3 percent.</i>
9	40 27.6'	73 03.0'	1J	Shifting this position slightly in a southerly direction would make a satisfactory crossing. <i>Replotting of D day line results in good crossing.</i>
10	40 27.4' ^{25.4}	73 08.4'	6-7J	Soundings on this line are deeper than the soundings in the immediate vicinity.
11	40 21.3'	72 24' ⁷³⁻¹⁹	15J	Moving this position to the northward would make the lines cross satisfactory. <i>No change considered necessary and the lines do not cross.</i>
12	40 16.9' ^{40-21.2}	73 16.1' ^{73-06.55}	67-68J	126' [*] soundings on a 121' sounding. One of these soundings has apparently been read wrong. <i>* 126 ft sdg. appears too deep and has not been plotted.</i>
13	40-14.3	73-21.8	78-79K	118' sounding on this line is shoal. <i>Crossing is less than 3% and is acceptable.</i>

At intervals on L day a four foot discrepancy was noted on crossings. The only reason for this discrepancy appears to be

* The crossings are less than 4% Sdgs. are acceptable.

that the fathometer was just starting its subsequent erratic behavior at this time.

Junctions:

H-6191(1936)

A satisfactory junction was made with Sheet #121 on the southerly side of the sheet.

Dangers:

The area of the wreck, Lat. $40^{\circ}20'$, Long. $73^{\circ}17'$, shown on chart #1108 was developed. No indication of the wreck was found.

✓
Discussed in Review per. S.A.
✓

Tidal Data:

Tide Gage was located at Atlantic City, New Jersey.

The data from this gage was furnished by the office. ✓

The tide was assumed to occur half an hour earlier than at Atlantic City, as stated in the instructions.

Fathometer Data:

A separate fathometer report has been submitted.

*File in a corner
Acc. No. S-1459*

Respectfully submitted,

Robert A. Marshall
Robert A. Marshall, Lt. (JG)
U.S.C. & G.S.S. OCEANOGRAPHER.

Approved and forwarded:

H. A. Seran.

H. A. Seran, Comdr. C&GS.,
Commanding S. OCEANOGRAPHER.

(Velocities) 7

COMPARISON of TEMPERATURES

HYDROGRAPHIC SHEET NO.403

DAY	DATE	Mean of Bottom Velocities (OCEO.)	Mean of Bottom Vel. (Gilbert)	Mean of Bottom Velocities (Welker)	Mn. Vel. Sta. Ships	Velocity by Trial.
A	Aug. 7	1486	1478.9	1474.4	1476.6	1480 - 1495.
B	" 8	1480.5	1477.1	1476.8	1476.9	1480 - 1487
C	" 9	1481.9	1476.3	1476.1	1476.2	1480
D	" 10	1483.7	1476.5	1477.2	1476.9	1480 - 1485
E	" 11	1481.4	1474.0	1477.6	1475.8	1485 - 1500
F	" 12	1479.7	1473.8	1476.3	1475.0	1500 - 1495
G	" 18	1476.0	1474.4	1477.4	1475.9	1476
H	" 19	1482	1475.8	1475.5	1475.6	not available
J	" 20	1481	1475.2	1476.9	1476.0	" "
K	" 21	1476	1474.7	1478.0	1476.3	1481
L	" 22	1484	1475.9	1479.4	1477.7	1475

LIST OF STATISTICS

to accompany

HYDROGRAPHIC SHEET #403

<u>DAY</u>	<u>DATE</u>	<u>SOUNDINGS</u>	<u>POSITIONS</u>	<u>MILEAGE</u>
A	Aug. 7	160	30	30.0
B	Aug. 8	889	129	139.6
C	Aug. 9	1027	131	147.2
D	Aug. 10	748	81	89.5
E	Aug. 11	628	94	97.6
F	Aug. 12	695	93	107.0
G	Aug. 18	801	101	117.7
H	Aug. 19	1129	111	122.0
J	Aug. 20	819	94	97.5
K	Aug. 21	863	118	128.0
L	Aug. 22	<u>796</u>	<u>83</u>	<u>88.9</u>
TOTALS		8555	1065	1165.0

LCC

TIDE NOTE FOR HYDROGRAPHIC SHEET

May 17, 1937.

Division of Hydrography and Topography:

✓ Division of Charts: **Attention: Mr. E. P. Ellis**

Tide Reducers are approved in
7 volumes of sounding records for

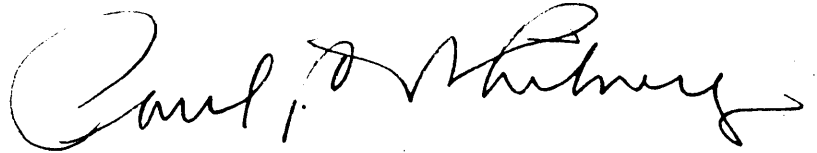
HYDROGRAPHIC SHEET 6191

Locality **Approaches to New York Harbor**

Chief of Party: **H.A. Seran in 1936**
Plane of reference is **mean low water, reading**
4.1 ft. on tide staff at Atlantic City
15.8 ft. below B.M. 32

Height of mean high water above plane of reference is **4.1 feet.**

Condition of records satisfactory except as noted below:



Chief, Division of Tides and Currents.

GEOGRAPHIC NAMES

Survey No. H-6191

Name on Survey	A	B	C	D	E	F	G	H	K	
	<div style="display: flex; justify-content: space-between; font-size: small;"> On Chart No. 1108 On previous survey No. On U. S. Quadrangle Maps From local information On local Maps P. O. Guide or Map Rand McNally Atlas U. S. Light List </div>									
<u>Atlantic Ocean</u>										1
<u>Approaches to New York Harbor</u>										2
										3
										4
										5
										6
										7
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										9
										10
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										22
										23
										24
Names underlined in red approved by <u>JTE</u> on <u>5/6/37</u>										25
										26
										27

Remarks

Decisions

	Remarks	Decisions
1		<i>For Title</i>
2		<i>For Title</i>
3		
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Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. **H6191**

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

Number of positions on sheet	.1065.
Number of positions checked	..163.
Number of positions revised	...96.
Number of soundings recorded	..8555
Number of soundings revised17.
Number of signals erroneously plotted or transferred

Date: Aug. 17, 1937.

Verification by W.R. Jackson

Time: 102 hrs.

Review by

Time:

HYDROGRAPHIC SURVEY NO. H-6191

Smooth Sheet Yes

Boat Sheet Yes

Sounding Records 5 Vols. _____
Bombing Record 2 "

Descriptive Report Yes

Title Sheet Yes

List of Signals Vol.#1

Landmarks for Charts (Form 567) None

Statistics Yes

Approved by Chief of Party No

Recoverable Station Cards (Form 524) None

Special Chart for Lighthouse Service None
(Circular Nov. 30, 1933)

Remarks _____

HYDROGRAPHY

Total Days 11

Last Date AUG. 22, 1936

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY }
 DESCRIPTIVE REPORT } No. H-6191
~~PHOTOSTAT OF~~ } ~~NOOK~~

{ received April 20, 1937
 { registered May 4, 1937
 { verified
 { reviewed
 { approved

This is forwarded in order that your attention may be directed to the matters as indicated below. Please initial in column 3 as an acknowledgement that your attention has been thus directed. The complete original records are available if desired. If you cannot give this your immediate attention, please initial, note, and forward to the next section marked, calling for the records at your convenience.

ROUTE		Initial	Attention called to
20			
22			
24			
25			
26			
30			
40			
62			
63			
82			
83			
88			
90			

RETURN TO

82	C. K. Green
----	-------------



VERIFICATION REPORT ON H-6191

R. A. R.

1. The records conform to the requirements of the General Instructions.
2. In general the depths agree at cross lines. ✓
3. The usual depth curves were completely drawn. ✓
4. There are no aids to navigation on this sheet.
5. The junctions with contemporary adjacent survey H-6026, H-6192, and H-6139 are satisfactory, except along the line 35 - 38 Y, ^{on H-6192} Latitude $40^{\circ} 06'$, Longitude $73^{\circ} 06'$, where the line seems to be about 1 fathom shoal. The V. C. at the end of the line indicates the fathometer was reading shoal. *Junction is discussed in review par. 6*
6. The field plotting was completed to the extent prescribed in the Hydrographic Manual, except: (a) several positions showed evidence of careless plotting, and (b) one distance arc was erroneously plotted for "D" day throughout. The reason for this could not be determined, but it is suspected the wrong magnetophone data was used. ✓

In several instances the color arcs were interchanged. A few places were found where the bomb was rejected in the record but was plotted on the sheet and was satisfactory. ✓

7. In several cases the comparisons and bottom characteristics were left in pencil. These were not inked because of poor location, especially at the beginning and end of a day's work. Example: End of "H" day. Latitude $40^{\circ} 25'$, Longitude $73^{\circ} 13'$. ✓

Soundings from position 108K to end of day were left in pencil because of faulty operation of the fathometer. A notation by J. Morton, on page 40 of Volume 5, indicates a correction should be applied. After consulting Mr. Morton and C. K. Green it was decided to leave the soundings in pencil and probably sheet 404 would cover the area sufficiently to clear up these uncertain soundings. ✓

According to Mr. Morton, this was the beginning of the erratic work of the fathometer which later lead to the rejection of Sheet 404. ✓

Respectfully submitted,

William R. Jackson

William R. Jackson.

Aug. 17, 1937.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6191(1936) FIELD NO. 403

Approaches to New York Harbor, N. Y.
Surveyed in Aug., 1936. Scale 1:40,000
Instructions dated April 9, 1936 (OCEANOGRAPHER)

Fathometer Soundings

RAR Control

Chief of Party - H. A. Seran
Surveyed by - J. C. Bose
Protracted by - R. A. Marshall
Soundings plotted by - R. A. Marshall
Verified and inked by - W. R. Jackson

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual and Sp. Pub. 146, except as follows:

- a. The name of the station ship instead of the station name was entered in the records. This procedure entailed considerable additional time in the verification of positions.
- b. The station symbols were inked in one color. The distance arcs did not correspond to the station symbol colors, and position arcs did not always correspond in color to the station symbols, or the distance arcs. None of these were changed in the office.
- c. The degrees and minutes symbols for the latitude and longitude figures were omitted on the projection. These additions were accomplished in the office.
- d. Several bomb positions were rejected in the sounding records but were found to be satisfactory in the verification. These were added to the sheet in the office.
- e. The positions of a number of fathometer comparisons, particularly those at the ends of lines were not definitely determined by fixes, but only the approximate positions by latitudes and longitudes were given. In a number of these cases the comparisons were in very poor agreement with adjacent definitely located soundings and were therefore omitted on the sheet.
- f. The reference station was incorrectly named on the sheet. The name, Zed, should have been Yoke.

The Descriptive Report is satisfactory except for the following items:

- g. Failure to include an abstract of the final fathometer corrections (Par. 9. Field Memo. No. 3).
- h. Numerous errors in latitude and longitude of the various discrepancies listed on page 5 of the D. R.

2. Compliance with Instructions for the Project.

The plan, character and extent of development are in accordance with the instructions for the project.

3. Shoreline and Signals.

This is an offshore survey and no shoreline is shown.

The buoy signals were located by the taut wire - sun azimuth method and the data is filed in a cahier, under the accession number S-1459.

4. Sounding Line Crossings.

The sounding line crossings are, in general, very satisfactory. In some few places the crossing differences are as much as 4 feet but in these cases they are less than 4% of the depth and no changes were considered necessary.

A number of poor crossings listed in the descriptive report, page 4, were found satisfactory after the replotting of D day, which was found erroneously plotted by the field party.

5. Depth Curves.

Within the area covered the usual depth curves can be satisfactorily drawn.

6. Junction with Contemporary Surveys.

- a. The junction with H-6026 (1936) and H-6189 (1936) on the north is satisfactory.
- b. The junction with ^{the} survey on the west (Field No. 404) will be considered in the review of that sheet.
- c. The junction with H-6192 (1936) on the south is satisfactory except as follows:
 - (1) In the vicinity of Lat. 40° -06', Long. 73° -06' the soundings between positions 67F and 69F were about 10 feet deeper than the overlapping soundings on H-6192 (1936). Examination of a nearby comparative sounding on both surveys shows perfect agreement between the fathometer soundings and the vertical

cast on H-6191 (1936), but a 0.9 fathom difference on H-6192 (1936). The latter difference amounts to about 4% of the depth and although in excess of the requirements specified in Field Memo. No. 3 of 1936, the average difference for a number of comparisons covering a period of time is within the $1\frac{1}{2}\%$ requirement in the above memorandum. Therefore no correction was applied by the field party to the fathometer soundings on H-6192 (1936). However, in order to improve the junction of the two surveys, a special office correction of 0.9 fathom was added to the fathometer soundings on H-6192 (1936) between pos. 35Y and 38Y. This has been indicated in the sounding volumes.

- (2) Soundings between positions 108K and 110K on the southwest limit of the sheet show differences in depths as much as 20 feet with depths on H-6192 (1936). In sounding volume 5, page 40, a statement by Mr. J. Morton is made, that a correction should be applied to these soundings and according to his verbal statement, this was the beginning of the erratic work of the fathometer which resulted in a resurvey of Field Sheet No. 404. The questionable soundings have been left in pencil and will be disposed of when Field Sheet No. 404, which will doubtless overlap this area, is received.
- Soundings inked.
See par. 66,
Review H-6223(1937)

7. Comparison with Prior Surveys.

a. H-100(1842), H-101 (1844), H-670 (1859).

These surveys on a scale of 1:400,000 cover the area of the present survey with widely spaced soundings and sounding lines. Comparison of the old depths shows in general, poor agreement with those on the present survey and much of the work appears to be out of position. The method of control that was used in the offshore areas was probably dead reckoning and astronomic observations. The old surveys show no outstanding feature that needs consideration and since the present work is better controlled, more closely developed and is on a much larger scale, H-6191 (1936) should supersede the above surveys for charting purposes.

b. H-1558 (1882-83).

This survey on a scale of 1:300,000 covers the area of the present survey with widely spaced sounding lines. While the control of the survey in all probability was dead reckoning and astronomic observations, the comparison of the old and present depths, however, are in general, in fairly good agreement. Because the present survey has more closely covered the area and being on a much larger scale and better controlled, it should supersede the old survey for charting purposes.

c. H-1538 (1882), H-1578a (1883).

These surveys on a scale of 1:40,000 overlap small portions of the present survey on the west limits between approximate Lats. $40^{\circ} -13'$ and $40^{\circ} -20'$. The agreement of the few depths on H-1538 (1882) with the present depths are generally good, but the comparison with the depths on H-1578a (1883) shows the soundings on the present survey from 4 to 14 feet deeper in places and shoaler as much as 6 feet in other places. In all probability the sounding lines on H-1578a (1883) are out of position, probably due to the method of control used which was undoubtedly dead reckoning and astronomic observations. Because of the age of the old surveys, better control and adequacy of the present survey, H-6191 (1936) should supersede the above surveys for charting purposes.

8. Comparison with Chart 1108 (New Print dated April 9, 1937)
1214 (New Print dated June 8, 1937)
1215 (New Print dated May 20, 1937)a. HYDROGRAPHY

Within the area of the present survey the chart is based on surveys discussed in the foregoing paragraphs and contains no additional information that needs consideration in this review except the wreck charted in approximate latitude $40^{\circ} -20'$, longitude $73^{\circ} -16.5'$. This wreck originates with H. O. N. to M 26 of 1919 which states that the "Wreck of Steamer Yankee lies sunk in 16 fathoms about 4 miles 349° from the light vessel Cardinal, in the approach to N. Y. lower bay. Light vessel, Cardinal, $40^{\circ} -16' -00''N$, $73^{\circ} -15' -30''W$." An examination by the present field party disclosed no less than 109 feet in the area. However, since the vessel was of steel and since it is almost impossible to disprove the existence of a wreck with either a hand lead or a fathometer, the wreck symbol should be retained on the charts until definite information is received of its non-existence or removal. (see Par. 10, this review).

b. Aids to Navigation.

There are no aids charted within the limits of the present survey.

9. Field Plotting.

The field plotting was found satisfactory except for the careless plotting of several positions and particularly the erroneous plotting of "D" day. It appears that the wrong magnetophone data was used in the latter case.

10. Additional Field Work Recommended.

The survey in general is satisfactory and no additional fathometer work is required. When opportunity affords the area of the charted wreck discussed in Par. 8a, this review, should be investigated with a wire drag if information regarding its removal is not obtained.

11. Miscellaneous.a. R. A. R. Velocities.

Attention is called to the discussion in the Descriptive Report, pages 2 and 3, regarding R. A. R. velocities used on this sheet. The use of theoretical bottom velocities resulted in some cases in the failure of bomb arcs to meet when the vessel was on line between buoys, indicating the existence of a higher velocity. The reason for this was not investigated in the office. The adjusted velocities used by the field party was accepted.

12. Superseding Old Surveys.

Within the area covered, the present survey supersedes the following surveys for charting purposes:

H - 100 (1842)	in part
H - 101 (1844)	" "
H - 670 (1859)	" "
H - 1538 (1882)	" "
H - 1558 (1882 -83)	in part
H - 1578a (1883)	" "

13. Reviewed by G. Risegari, August 31, 1937.

Inspected by A. L. Shalowitz.

Examined and approved:

C. K. Green, *C. K. Green*
Chief, Section of Field Records.

K. T. Adams
Acting Chief, Division of Charts.

Fred. L. Peacock
Chief, Section of Field Work.

G. H. Hude
Chief, Division of H. & T.

Applied to Chart 1215- Feb 3, 1938- R.M.Z.
" " " 1108- Mar 10, 1938 R.M.Z.
" " " 1000 July 1938 F.M.A.