

6192

APR 21 1937
U. S. COAST & GEODETIC SURVEY
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Rev. April 1935
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Topographic }
Hydrographic } Sheet No. 121

State New York - New Jersey

LOCALITY

Approaches to New York Harbor

~~with shore~~

1936

CHIEF OF PARTY

H. A. Seran, H. & G. Engr.

U. S. GOVERNMENT PRINTING OFFICE

6192

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO.

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. 121

REGISTER NO. H 6192

State New York - New Jersey

General locality Approaches to New York Harbor

Locality ~~Lat. 40°20' Long. 73°55' Lat. 39°25' Long. 71°40'~~
~~Lat. 39°55' Long. 72°25' Lat. 39°27' Long. 73°13'~~
~~Lat. 39°50' Long. 73°25'~~

Scale 1:120,000 Date of survey May 12 to July 26, 1936

Vessel OCEANOGRAPHER

Chief of Party H. A. Seran, H. & G. Engr.

Surveyed by Field Officers (W.D. Patterson)

Protracted by C.F.C., A.L.W., S.B.G., J.C.B.

Soundings penciled by C.F.C., J.C.B.

Soundings in fathoms feet

Plane of reference MLW

Subdivision of wire dragged areas by

Inked by William R. Jackson

Verified by William R. Jackson

Instructions dated April 9, 1936

Remarks:

DESCRIPTIVE REPORT

to accompany

Hydrographic Field Sheet No. 121

Approaches to New York Harbor

Instructions:

This survey was made in compliance with the Director's instructions for project #207, dated April 9, 1936, to the Commanding Officers of the Ships OCEANOGRAPHER, LYDONIA and GILBERT. ✓

Limits and Scale:

This survey was made on a scale of 1:120,000 and covers the area off the entrance to New York harbor that is included approximately between the following positions: ✓

Lat. 40°20'	Long. 72°55'
Lat. 39°25'	Long. 71°40'
Lat. 38°53'	Long. 72°25'
Lat. 39°27'	Long. 73°13'
Lat. 39°50'	Long. 73°23'

This sheet joins field sheets Nos. 403 and 404 to the west. *H-6191(1936)*

*Sheet 404
returned to
file for
re-survey*

Survey Methods:

Control consisted of a line of buoys located by sun azimuths and taut wire distances with each end tied to shore control by three point fixes. One buoy was located by the intersection of bomb distances from two other buoys. ✓

All sounding lines were controlled by R.A.R. methods and all soundings were taken with the 312 type fathometer. ✓

Control:

Buoy ABLE was located off the coast of Long Island in the vicinity of Fire Island by computing a three point fix ✓

from sextant angles taken on stations ashore. A line of buoys was then run in a southeasterly direction to buoy GEORGE, thence in a southwesterly direction to buoy NAN, thence in a west-northwesterly direction to buoy VICE which was planted near Barnegat Light Ship.

The buoys were lettered alphabetically from ABLE to VICE, except for buoy SAIL which was set off the main scheme and located by bomb distances.

A position was obtained for buoy VICE by computing a three point fix from sextant angles taken on stations ashore. The closing error between this position and the positions obtained by computing the traverse positions through the loop was 3 seconds of latitude and 1 second of longitude. This error was adjusted by applying it evenly to each buoy position.

The positions of all buoys on the main loop from ABLE to and including VICE were computed from sun azimuths and taut wire distances.

The position of buoy SAIL was obtained from the intersection of bomb distances from buoys LOVE and OBO.

Buoy PUP 2 was planted to take the place of PUP which went adrift after being located. It was located by sun azimuth and taut wire distance from OBO. Since no buoys had been planted beyond PUP at the time it went adrift, the remaining ones in the loop were located from PUP 2.

R.A.R.:

The buoys actually used for control on the sheet were part of the main adjusted loop with the exception of SAIL which it was necessary to establish in order to secure strong control.

The GILBERT and the WELKER were used as station ships and were shifted among the buoys as ~~it~~ was necessary to obtain good intersections of the distance arcs.

In the plotting of the sheet, the dead reckoning for each line was plotted on an overlay after the R.A.R. positions had been plotted. This overlay was then laid over the plotted positions and the final determination of the positions was decided upon. In general the intersections of distance arcs were held as correct unless there was strong evidence to the contrary.

In cases of but one return from station ships, the position was placed on the one arc if it were possible to fit in the dead reckoning and other factors, by so doing.

Arcs were rejected and not shown on the sheet if it was evident that they were in error and not used in determining the position.

The velocities necessary for the determination of the distance arcs were arrived at in the following manner:

An overlay was made covering the entire sheet. On this was plotted each determination of velocity, with the date taken, in its proper position, using a different color of ink for each trip out. Curves of equal velocity were then drawn for each

trip, making adjustments or splitting the entire trip in half if necessary because of appreciable changes of velocity as indicated by the daily velocities computed at the station ships.

Upon the first overlay, a second was then placed, and radial lines drawn from the position of each station ship in a manner such as to satisfactorily cover the sounding area. Equal intervals were then spotted along these lines, and on each of these points, the average velocity from the station ship was plotted, using the velocity curves from the first overlay. Curves of equal average velocity were then drawn, and the overlay was placed over the boat sheet. The average velocity from each station ship to each position was then taken off and entered in the bomb record, and the distances in meters were then computed.

Soundings:

All soundings were taken with the 312 type fathometer. Tide reducers were applied only within the 100 fathom curve. The methods of correcting the fathometer readings is described in a special report. The following, is a summary of the fathometer corrections:

SUMMARY OF FATHOMETER CORRECTIONS

Depth of 200 fathoms and less.

Period	Depth Range	Correction. Fast Disc.	Slow Disc.
1936	Fm.	Fm.	Fm.
May 11-13	20-43.5	-1.0	---
	44-96.5	-1.5	---
	97-152	-2.0	-10.0

SUMMARY OF FATHOMETER CORRECTIONS

Depth of 200 fathoms and less.

Period	Depth Range	Corrections	
		Fast Disc.	Slow Disc.
1936	Fm.	Fm.	Fm.
May 11-13	153-197	-2.5	-10.5
	198-200	-3.0	-11.0
May 20-21	20-30.5	+1.0	---
	31-109	+0.5	-7.5
	110-158	0.0	-8.0
	159-200	-0.5	-8.5
May 22-26	20-86.5	0.0	---
	87-150	-0.5	-8.5
	151-190	-1.0	-9.0
	191-200	-1.5	-9.5
June 4-10	20-116	-0.5	-3.5
	117-156	-1.0	-4.0
	157-193	-1.5	-4.5
	194-200	-2.0	-5.0
June 16-23	0-26.5	-0.0	---
	27-58	-0.5	---
June 30- July 2	0-30.5	0.0	---
	31-55	-0.5	---
July 7-15	0-41.5	0.0	---
	42-55	-0.5	---
July 22-26	0-52	0.0	---

Depths of more than 200 fathoms

Depth Range	Correction		
	Fast Disc.	Slow Disc.	
	Fm.	May 11 -26 Fm.	June 4-10 Fm.
201-236	-2	-10	-5
237-293	-3	-11	-6
294-353	-4	-12	-7
354-414	-5	-13	-8
415-479	--	-14	-9
480-540	--	-15	-10
541-613	--	-16	-11
614-690	--	-17	-12
691-779	--	-18	-13
780-879	--	-19	-14
880-1023	--	-20	-15
1024-1250	--	-21	-16
1250-	--	-22	-17

Additional fathometer correction for fathometer dial speed (other than middle reed of tachometer vibrating)

Reed	Correction Factor
1st Fast (Right)	-.012
2nd " "	-.027
3rd " "	-.047
1st Slow (Left)	+.013
2nd " "	+.031
3rd " "	+.056

Discrepancies:

In general the crossings were very good. In practically all of the cases where the lines did not cross perfectly, there was more or less of a steeply sloping bottom and a slight displacement of the lines would have brought them into perfect agreement. These slight displacements are perfectly understandable when consideration is given to the limitations of the R.A.R. methods, with respect to the lack of knowledge regarding the path taken by the sound waves in the intervening media, and the subsequent possible inaccuracy of the values arrived at for the velocity.

It is thought that especially in the submarine valley, where most of the displacements of lines seem to occur, is the path taken by the sound waves likely to be indeterminable and the velocities in error.

A summary of discrepancies noted is as follows:

NO.	LAT.	LONG.	DISCREPANCY	PROBABLE CAUSE
✓ 1-	39 18.7	71 47.9	1029 on 1069	Slight displacement of lines due to limitations of method. <i>Weak control</i>
	<i>Weak control. Lines adjusted to bring into agreement.</i>			
✓ 2-	39 23.2	71 54.5	638 on 584	" " " " "
	<i>Weak control. Lines adjusted to bring into agreement.</i>			
✓ 3-	39 12.1	71 55.6	950 on 975	" " " " "
	<i>Probably correct. No adjustment made.</i>			
✓ 4 *	39 30.0	72 21.7	166 on 190	Slight shift of line will cause good check, justifiable discrepancy considering limitations of method
	<i>This and other asterisked discrepancies below result from some incorrect field plotting. When plotted in accordance with the records the discrepancies disappeared.</i>			
✓ 5 *	39 30.0	72 18.9	397 on 425	" " " " "
✓ 6 *	39 29.8	72 15.4	323 on 298	" " " " "
✓ 7 *	39 29.8	71 58.3	416 on 402	" " " " "

** Erroneously plotted. When correctly plotted in accordance with the records the discrepancies disappeared.*

NO.	LAT.	LONG.	DISCREPANCY	PROBABLE CAUSE
✓ 8 *	39 30.1	71 50.5	574 on 589	Slight shift of line will cause good check-justifiable discrepancy considering limitations of method.
? 9 ?	39 28.8	71 50.5	594 on 574 <i>No such discrepancy in this location.</i>	" " " <i>Not counted</i>
✓ 10 *	39 28.8	72 00.8	470 on 451	" " " " "
✓ 11 *	39 28.3	72 12.8	446 on 456	Small depression with shoaler soundings on either side.
✓ 12 *	39 28.3	72 13.9	411 on 456	Slight shift of line will cause good check; justified discrepancy considering limitations of methods.
✓ 13 *	39 27.3	71 50.0	700 on 670	" " " " "
✓ 14	39 27.0	72 00.5	338 on 359 <i>Lines adjusted to bring into agreement</i>	" " " " "
✓ 15 *	39 26.9	72 06.9	328 on 308	Bad readings on fathometer.
✓ 16 *	39 26.9	72 11.8	594 on 653	Difficulty in getting correct soundings on steep slope.
✓ 17 *	39 26.8	72 14.1	426 on 392	Difficulty in obtaining accurate position of soundings on steep slope.
✓ 18 *	39 26.9	72 17.7	111 on ¹⁵¹ 157	Indication of hole - possible fathometer error.
✓ 19 *	39 23.9	72 05.7	594 ⁶²⁵ on 404	Slight displacement.
✓ 20	39 23.9	72 02.3	382 on ⁴⁰¹ 404 <i>Discrepancy not considered unreasonable in view of shoal indications. No adjustment made.</i>	Indication of shoal possible slight displacement of lines.
✓ 21 *	39 23.8	71 41.7	1139 on 1189	Difficulty in obtaining correct soundings due to depth with possible displacement of lines.
✓ 22 *	39 21.7	71 52.0	801 on 838	Slight displacement of lines.
✓ 23 *	39 22.0	72 06.7	826 on 869	Steep slope - difficult to obtain accurately located soundings.
✓ 24 *	39 20.3	72 00.6	712 on 764	Slight displacement of lines.
✓ 25 *	39 18.3	71 57.6	781 on 809	Probably bad soundings - deep-soundings indicated possibility of hole.
✓ 26	39 18.5	72 01.0	1044 on 1071 <i>Soundings between pos. 22 and 23E rejected because of fluctuation in fathometer speed.</i>	Bad soundings or slight displacement.

NO.	LAT.	LONG.	DISCREPANCY	PROBABLE CAUSE
27 *	39 18.4	72 04.6	643 on 668	Very slight displacement of soundings due to steep slope.
28 -	39 39.4	72 25.9	76 on 93	" " " " " " <i>Soundings from a third line which were not shown verify the 76. The 93 has been removed.</i>
29 -	39 38.6	72 24.7	86 on 128	" " " " " " <i>Soundings from a two third line which were not shown verify the 86. The 128 has been removed.</i>
30 -	39 37.9	72 25.3	¹⁰² 124 on 167	Fathometer error but possibility of shoal spot. <i>Due to bend in 100 fm. curve and steep slope. No adjustment made.</i>
31 *	39 34.5	72 23.8	104 on 195	Misplaced location of soundings due to steep slope.
32 *	39 32.1	72 19.9	71 on 106	Misplaced location of line due to poor control. Recommended rejection of 49H to 51H.
33 *	39 39.7	72 29.1	70 on 96	Slight displacement of line.
34 *	39 39.5	72 28.7	97 on 110	" " " " "
35 *	39 11.5	72 25.3	269 on 288	" " " " "
36 *	39 14.8	72 27.6	87 on 92	" " " " "
37 -	39 10.3	72 14.7	534 on 554	" " " " " <i>Bad " Control</i> <i>Weak control. Lines adjusted to bring into agreement.</i>
38 *	39 05.1	72 22.0	638 on 663	Probably bad soundings, may be shoal of small extent. <i>2 rejected</i>
39 R	39 46.0	72 34.9	31 on 38	Bad soundings. <i>Rej. 1-3 40</i>
40 *	39 44.7	72 58.8	35 on 37	Fathometer error or slight displacement of line. <i>Pos. 1-3 DD rejected. 39 removed.</i>
41 *	39 44.9	73 00.0	31 on 34	" " " "
42 *	39 53.2	73 03.0	38 on 41	" " " "
43 *	39 53.3	73 03.5	32 on 38	Fathometer error, or location of soundings slightly misplaced due to steep slope.

Comparison with Chart:

In general the survey is in fair agreement with chart 1108 out to the 50 fathom curve. It is also in fair agreement with the chart between the 50 fathom curve and the outer limit with the exception of the three submarine valleys appearing on the sheet. The 1000 fathom curve at the main gorge is in close agreement with that shown on the chart, but the 100 fathom curve is displaced on the southeast edge from that shown on the chart by about 5 miles in a southwesterly direction.

The smaller gorge to the northeastward of the main gorge is not in agreement with that shown on the chart by about 3 miles.

A smaller gorge was developed to the southwestward of the main gorge which does not appear on the chart, evidently because of insufficient development.

No indication was found of the 61 fathom sounding at

Lat. 39°29', Long. 73°00'.

This sdy. falls in depths of 32 fathoms on the present survey. There are no steep slopes in the vicinity. It has been removed from the latest charts by authority of Chart Letter 501 (1936) from the Comdg. Officer, Ship Oceanographer, Mr. G.L. Flower has added the following notation to the Chart Letter, "7/17/36. Has been on charts since before records were kept. Probably an error. Erase..... G.L.F."

Comparison with adjoining sheets:

The soundings on this sheet are in close agreement with those on adjoining field sheet \$403. They are not in satisfactory agreement with those on field sheet \$404. It is recommended that the soundings on this sheet be given preference over those on sheet 404 for the reason that much better results were being obtained from the fathometer on this sheet, while a great many of the fathometer soundings on sheet 404 were thought to be unreliable. Also for several days on sheet 404, the 515 type fathometer was used. As

Sheet 404 returned to the field for re-survey.

this instrument is not equipped with a tachometer, there was no way of controlling the fluctuating voltage that was always present to contend with. The two vertical casts taken on sheet #404 which fell within the limits of this sheet, agreed favorably with the fathometer soundings on this sheet.

Aids to Navigation and Land Marks:

There are no aids to navigation nor land marks falling within the limits of this sheet.

TIDAL NOTE

Tide reducers for this sheet were based on the standard gage at Atlantic City, New Jersey. In accordance with the instructions the tide was assumed to occur half an hour earlier than at Atlantic City.

Hourly heights were furnished by the office, referred to a datum 4.1 feet below mean low water.

Respectfully submitted,



C. F. Chenworth, Ensign, C&GS.,
Ship OCEANOGRAPHER.

Approved and forwarded:



H. A. Seran, Comdr. C. & G.S.

Commanding S. OCEANOGRAPHER.

- 12 -
STATISTICS

DAY	DATE	SOUNDINGS	POSITIONS	MILAGE
A	May 12	462	62✓	84.1
B	May 13	444	56✓	95.9
C	May 20	501	63✓	104.6
D	May 21	725	98✓	162.1
E	May 22	912	106✓	194.0
F	May 23	957	105✓	185.2
G	May 24	929	112✓	196.0
H	May 25	913	80✓	118.5
J	June 4	246	21✓	29.6
K	June 5	855	106✓	182.0
L	June 6	894	92✓	189.7
M	June 7	1286	87✓	186.3
N	June 8	805	89✓	134.6
P	June 9	963	88✓	163.3
Q	June 10	314	31✓	55.2
R	June 16	673	84✓	144.0
S	June 17	905	105✓	198.9
T	June 18	285	36✓	62.3
U	June 20	623	77✓	199.0
V	June 21	825	96✓	173.6
W	June 22	430	54✓	92.7
X	June 23	724	89✓	158.0
Y	June 30	462	52✓	100.2
Z	July 1	760	87✓	160.5
AA	July 2	725	84✓	157.6
BB	July 7	722	82✓	148.0
CC	July 8	709	88✓	148.0
		<u>19,049</u>	<u>2130</u>	

DAY	DATE	SOUNDINGS	POSITIONS	MILAGE
DD	July 9	535	66 ✓	108.8
EE	July 10	952	103 ✓	169.0
FF	July 11	640	76 ✓	132.2
GG	July 12	848	110 ✓	188.0
HH	July 13	644	71 ✓	136.0
JJ	July 14	302	53 ✓	85.2
KK	July 15	365	47 ✓	77.6
LL	July 22	645	76 ✓	135.7
MM	July 23	801	77 ✓	119.0
NN	July 25	1405	98 ✓	169.0
PP	July 26	360	34 ✓	54.0
		<u>7497</u>	<u>811</u>	
		<u>19049</u>	<u>2130</u>	
		<u>26546</u>	<u>2941</u>	

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
21 volumes of sounding records for

HYDROGRAPHIC SHEET

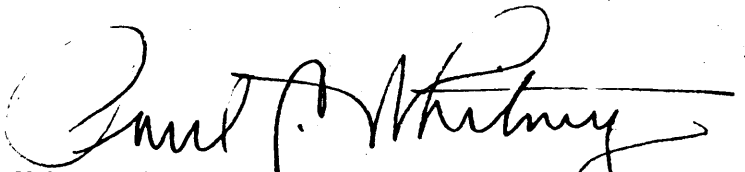
6192

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. **H6192**

Name on Survey	On Chart No. 1108		On previous survey		On U. S. quadrangle Maps		From local information		On local Maps		P. O. Guide or Map		Rand McNally Atlas		U. S. Light List	
	A.	B.	C.	D.	E.	F.	G.	H.	K.							
<u>Atlantic Ocean</u>	/															1
<u>Approaches to New York Harbor</u>																2
																3
																4
																5
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																7
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Names underlined in red approved																
by <u>SPB</u> on <u>5/6/37</u>																
																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. **H6192**

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

Number of positions on sheet	..294!
Number of positions checked	...230
Number of positions revised	...123
Number of soundings recorded	26546
Number of soundings revised46
Number of signals erroneously plotted or transferred

Date: July 29, 1937.

Verification by William R. Jackson

Time: 202 hrs.

Review by J.A. McCormick Aug. 9, 1937.

Time: 27 hrs.

HYDROGRAPHIC SURVEY NO. H-6192

Smooth Sheet Yes

Boat Sheet Yes

Sounding Records 15 Vols. _____
Bombing Records 6 " _____

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 38

Last Date July 26, 1936

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY }
 DESCRIPTIVE REPORT } No. H -6192
~~PHOTOSTAT OF EXHIBITS~~ }

{ 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			
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30			
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62			
63			
82			
83			
88			
90			

RETURN TO

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



VERIFICATION REPORT ON H-6192

R. A. R.

1. The records conform to the requirements of the General Instructions. ✓
2. The depths on cross lines are in good agreement, except those mentioned in the Descriptive Report that were not rectified by an adjustment. *Adjustments made by reviewer.*
3. The usual depth curves were completely drawn. ✓
4. There are no floating aids to navigation on this sheet. ✓
5. The junction with H-6191 on the N. W. is not shown at this time. ✓
6. In the field plotting, too much reliance was placed on the dead reckoning and not enough on the R. A. R. control. ✓

Special attention was given the 43 discrepancies listed in the Descriptive Report and an adjustment, made by replotting, rectified all but 10 of those listed. ✓

For further information on the field plotting see memorandums to Hydrography and Topography of July 21, 1937, Ref. 80-MCW and June 30, 1937, Ref. 80-LEF. ✓

Respectfully submitted,

William R. Jackson

William R. Jackson.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6192 (1936) FIELD NO. 121

Approaches to New York Harbor, New York - New Jersey.
Surveyed in May-July, 1936. Scale 1:120,000.
Instructions dated April 9, 1936 (OCEANOGRAPHER)

Fathometer Soundings.

RAR Control

Chief of Party - H. A. Seran
Surveyed by Officers of Ship Oceanographer
Protracted by - Various Officers
Soundings plotted by - Various Officers.
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 Special Publication 146, except as follows:

- a. In recording bomb returns in the sounding volumes the name of the station ship was entered instead of the station name. This added considerably to the work of verification.
- b. All station symbols and names were inked in blue. This matter as well as other matters pertaining to the plotting have been the subject of a memorandum from Chief, Division of Charts to Chief, Division H. & T., dated June 30, 1937.

The Descriptive Report is complete and satisfactorily covers all items of importance.

2. Compliance with Instructions for the Project.

The plan and extent of development are in accordance with the instructions for the project. The non-compliance with Par. 14 of the instructions relative to frequent simultaneous fathometer and vertical wire soundings on the side and head slopes of the gorge was verbally authorized by the Division of H. & T.

3. Shoreline and Signals.

No shoreline is shown on this offshore survey.

The buoys used for control were located by sun azimuth and taut wire and bomb distances, computed as a traverse and filed as a cahier for H-6191 (1936) under the accession number S-1451.

4. Sounding Line Crossings.

The sounding line crossings are in general satisfactory. 33 of the 43 discrepancies listed in the Descriptive Report, pages

7, 8 and 9, were brought into satisfactory agreement when faulty field plotting was corrected. The remaining ten were caused by weak control and steep slopes and were eliminated by making small adjustments to the lines involved.

5. Depth Curves.

Within the area covered by the survey, the usual depth curves may be satisfactorily drawn.

6. Junction with Contemporary Surveys.

The junction with H-6191 (1936) on the north will be considered in the review of that survey.

7. Comparison with Prior Surveys.

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

These 1:400,000 scale surveys cover the area inshore from the 150 fathom curve on the present survey. H-670 (1859) is a composite of the other two surveys in this area and contains no original information. A comparison with the present survey shows the soundings at the offshore limits of these prior surveys to be approximately five miles out of position in a southeasterly direction. The method of control is uncertain but probably depends on dead reckoning and astronomic observations. They show no outstanding features that need to be retained and should be superseded for charting by the present survey which has closer development and is more accurately controlled.

b. H-1498a (1880-81-82-83) and H-2920a (1882-83-84-86-87).

These 1:1,200,000 scale surveys show soundings obtained by the U. S. Fish Commission and the U. S. Coast and Geodetic Survey which are plotted on copies of Sailing Chart A. The soundings ~~are widely spaced and~~ are mostly off the edge of the continental shelf and are too widely spaced to define the limits of the Hudson River Gorge. These surveys were probably controlled by dead reckoning and astronomic observations and in view of the more accurate control and closer development of the present survey they should be superseded for charting purposes.

c. H-1531 (1882).

This 1:1,200,000 scale survey contains only a few soundings which fall within the limits of the present survey. These soundings are of no current value and should be superseded by the present survey in future charting.

d. H-1558 (1882- 1883 -1908).

This 1:300,000 scale survey covers the major portion of the present survey. It is not the result of a single planned survey but contains original soundings taken over a period of 26 years and transferred soundings from charts and from H-1498a (1880-83). The method of control is uncertain but is probably based on dead reckoning and astronomic observations. Differences with the present survey of three to five miles in the delineation of depth curves are undoubtedly due to the composite nature of the prior survey and to its method of control. Because of the much closer development and the better control on the present survey, it should supersede the above survey in future charting.

8. Comparison with Chart 1108 (New Print dated April 9, 1937).a. Hydrography.

Within the area of the present survey the chart is based on surveys discussed in the foregoing paragraphs and contain no other information that needs consideration in this review.

b. Aids to Navigation.

No aids to navigation are charted within the area of the present survey.

9. Field Plotting.

An unusual amount of work was required on the part of the verifier in order to make this survey acceptable for the permanent records. The descriptive report lists 43 cases of bad crossing. 33 of these were found to be satisfactory when plotted strictly in accordance with the records. Out of a total of 230 positions replotted by the verifier, 123 required a shift in position of over 100 meters. The positions which were erroneously plotted were due to the following: (1) personal errors; (2) failure to properly utilize magnetophone data; (3) rejections without proper basis; (4) erroneous handling of dead reckoning data. (See memorandum of June 30, 1937 from Chief, Division of Charts, to Chief, Division of Hydrography and Topography, Ref. 80-LEF.)

10.

Additional Field Work Recommended.

No additional field work is required. This survey represents a real contribution to the oceanographic knowledge of the submerged canyon of the Hudson River. And for the first time in the history of the Coast Survey there is available a well coordinated, well controlled survey of this important offshore submarine feature and with an accuracy commensurate with surveys of areas much closer inshore.

11. 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) in part
H-670 (1859) in part
H-1498a (1880-83) in part
H-1531 (1882) in part
H-1558 (1882-1908) in part
H-2920a (1882-87) in part

12. Reviewed by - J. A. McCormick, August 9, 1937.

Inspected by - A. L. Shalowitz.

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

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

Fred. L. Peacock
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G. Stude
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Applied to 1108 - April 1938 L.M.Z.
" " 1000 July 1938 F.M.A.