

5988

U. S. COAST & GEODETIC SURVEY  
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Form 504  
Ed. June, 1928

**DEPARTMENT OF COMMERCE**  
U. S. COAST AND GEODETIC SURVEY  
**R. S. Patton**, Director

State: Virginia

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**DESCRIPTIVE REPORT**

~~Coast and Geodetic~~ } Sheet No. 46  
Hydrographic }

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LOCALITY

Offshore Virginia Coast  
~~Entrance to Chesapeake Bay~~

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Offshore, Cobb Island to Cape Henry

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~~Chesapeake Lightvessel~~

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19 35

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CHIEF OF PARTY

Ray L. Schoppe

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. 46

J988  
REGISTER NO. 5988

State Virginia

General locality Offshore Virginia Coast to Entrance to Chesapeake Bay

Locality Offshore, Cobb Island to Chesapeake Light Vessel Cape Henry 24

Scale 1-40,000 Date of survey May 22 to June 25, 1935

Vessel LYDONIA

Chief of Party Ray L. Schoppe

Surveyed by Ray L. Schoppe, and Earl O. Heaton

Protracted by W. C. Russell

Soundings penciled by W. C. Russell

Soundings in ~~decimals~~ feet

Plane of reference M. L. W.

Subdivision of wire dragged areas by none

Inked by M. H. Dixon

Verified by E. C. McBlair

Instructions dated April 27, 1933 and Jan 10, 1935, 19

Remarks: Dorsey Fathometer used throughout.

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SHEET NO. 46

Project No. HT 142 - 143

Coast of Virginia - Cobb Island to Chesapeake Light Vessel.

Instructions:

Work on this sheet, on Project No H T 142 - 143 - 144, was covered by Instructions dated April 27, 1933, supplemented by Instructions issued in connection with Project H T 200, and dated Jan. 10, 1935.

Limits:

This sheet is bounded on the north by Latitude  $37^{\circ}20'$  between Longitude  $75^{\circ}21'$  and Longitude  $75^{\circ}30'$ . The western limit is approximately the ten fathom curve. The southern limit is Lat.  $36^{\circ}58'$ . Work was carried eastward to the limit of visibility of buoy signals where it joins sheet #48 of 1935 R.A.R. work.

This sheet joins field sheet 45<sup>H-5771</sup> (1934) in the north, Hydrographic Sheets #4193 and 4194 on the west, field sheet #47 (1935) on the south and field sheet #48 (1935) on the east. <sup>H-5990</sup>

<sup>H-5991</sup>

Survey Methods:

All hydrography on this sheet was controlled by visual fixes on survey buoys. Four buoys on sheets 46 and 47, within sight of shore objects, were located by sextant fixes and their positions were computed.

All other buoys were located from these by sun azimuths and taut wire distances. The taut wire measurements were made by the OCEANOGRAPHER.

The Dorsey Fathometer was used for all echo soundings. Each hour, a ten minute hand lead comparison was made at reduced speed, and also a vertical comparison was made each hour, as required by the Director's letter of May 29, 1934.

The problem of fathometer corrections has not been entirely solved. In theory, if the ship is dead in the water, the comparison of a fathometer reading and the simultaneous reading of a vertical cast of the hand lead, should show little difference. If this fathometer reading is corrected for dial speed, water temperature, etc, the comparison should give perfect agreement. Such comparisons on this sheet do not agree as closely as might be desired. It will be noted below that several crossings would be improved if the fathometer corrections were reduced. As the seasons progressed the comparisons became more satisfactory.

Discrepancies:

Crossings that differ by 3 feet or more are listed below. It will be noted that none of these poor crossings occur in water that is shoal enough to be dangerous to vessels of deepest draft. In each case, the least depth is plotted and cross references are made in the sounding volumes. In a few instances, the fathometer corrections appear to be excessive and the crossings would be satisfactory if the fathometer corrections were computed from comparison with hand lead under way at slow speed, rather than with vertical casts. The later method, however, is in accordance with the Director's letter, dated Oct. 30, 1935, File 22-AB, 1995 LY 4. If there is error in this method

the error is on the safe side. These reductions appear too great and the corrected soundings appear too shoal. At all crossings the shoalest sounding has been plotted.

Pos	Sdg	Pos	Sdg in feet	ft	Lat	Long	Remarks
129B	84	88-89C	80		37° 13.1'	75° 29.6'	B-day HL C-day Fath 2' corr ✓
82-83B	81	91C	77		14.5	28.9	Fath corr B-day zero ✓ C-day corr 2'
64-65B	81	91-92-C	78		14.6	28.7	Fath corr B-day zero C-day corr 2'
81-82C	73	36-37D	76		12.0	33.0	Corr B-day zero C-day corr 2'
3-4E	81	84-85C	78		11.2	30.7	Corr C-day 2' E-day zero
83-F	77	42-43F	81		09.6	28.9	83-F 2' corr
84-85F	73	60-F	81		10.4	28.5	HL too deep 58-61F 3' swell
94F	78	181-182A	81		16.2	25.2	2' corr F-day 0' A-day
94-95F	78	21-22A	81		16.6	25.0	2' corr F-day 0' A-day
37-38F	77	86-87J	73		10.5	31.2	3' swell F-day
53-54F	76	45-46K	80		10.0	28.6	Considerable swell both days
111-112K	60	5-6K	54		04.9	37.0	On steep slope
6-7M	56	9-10M	52		05.7	38.2	Lt swell
116-117K	74	182-183G	71		04.1	34.8	Irregular bottom a slight shift due to floating signals would account for this
181-182M	70	123-124L	64	36°	59.4	35.0	Bitto Bitto
147L	71	73-74M	78	37	01.7	31.4	Bitto Bitto There is a possibility that fath.read one fm. too shoal on 147L

The 71 plotted

Dangers:

There are no dangers on this sheet. Deep draft vessels do not traverse this area. A 34 foot sounding in Lat. 37°12.3' Long. 75°34.4' is on the extreme western edge of the sheet. The boat sheet reduction showed this sounding to be 36 feet, which was in close agreement with the old 38 foot spot on chart 1222. Further development was not made because the boat sheet agreement appeared good and it seemed to lay outside of the area specified for this season's work on Instructions dated Jan. 10th. This fathometer reduction is believed to be excessive and I doubt is this sounding should be less than 36 feet. The lesser depth must be accepted if this method of computing fathometer soundings is used. Two soundings of 47 feet were recorded but they are not considered dangers.

A list of shoal soundings is as follows:

Depth in ft	Pos.No.	Lat. 37°	Long. 75°
60	188-189M	38°57.5'	36.3'
63	164-165M	57.9	36.2
59	192M	58.3	38.3
53	194-195M	58.7	39.7
58	27M	59.1	39.5
64	123-124L	59.5	35.1
61	101-102L	37°00.6'	36.9
47	147-148M	00.5	42.1
59	47-48M	00.8	33.8
60	61-62M	00.8	33.2
56	26-27L	01.1	32.9
59	128-129L	01.3	33.6
59	75M	01.3	31.9
51	5-6-H	04.4	37.4
43	202-203L	05.8	37.5
58	193-194L	06.2	36.0
51	115-116J	08.4	32.9
50	56G	09.3	32.3
54	13-14G	10.3	30.2
34	128-129F	12.3	34.4
47	154B	13.9	33.0
50	27C	15.7	32.1
51	22B	16.9	30.8

All of these shoals have hard sand bottom

**Channels:**

There are no channels on this sheet.

**Anchorage:**

There are no anchorages on this sheet. The LYDONIA dropped anchor at night anywhere that the vessel happened to be when the days work ended.

**Comparison with Previous Surveys.**

Somewhat less depth is found on this sheet than is shown on Chart 1222. The position of shoals shows little if any change. The difference in depth is probably due to the improvement in survey methods. Many of the shoals on this sheet are narrow sand ridges. Steaming at 10 knots and reading soundings at 30 second intervals, one place on this sheet showed a jump from 85 ft to 64 ft in 30 seconds. It is probable that the fathometer will show a better profile of the bottom on each line, than could be obtained by hand lead methods. I believe this would account for much of the difference noted. A fathometer correction of 2 feet on some days, as noted above, would also indicate reduced depths.

**Wire Drag.**

No wire drag was done in this area. None is needed.

**Geographic Names.**

No geographic names appear in this area.

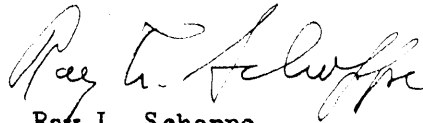
Statistics:

A table of statistics follows.

Tidal Data.

A sheet of tidal data is attached.

Respectfully submitted

A handwritten signature in cursive script, appearing to read "Ray L. Schoppe".

Ray L. Schoppe,  
Chief of Party



Statistics Sheet #46

Day	Date	No. of Positions	number of Soundings			Sta. Miles	Vol. No
			H L	Fath.	Total		
A	5-22	210	175	1204	1379	106.3	1
B	5-23	173	152	1043	1195	87.5	1 and 2
C	5-24	114	84	616	700	50.6	2
D	6-4	37	26	176	202	15.2	2
E	6-5	4	0	26	26	2.0	2
F	6-6	136	307	439	746	59.7	2
G	6-11	186	108	991	1099	92.3	3
H	6-12	36	22	189	211	16.0	3
J	6-13	152	74	770	844	71.5	3
K	6-20	165	129	862	991	74.9	4
L	6-21	228	117	1102	1219	98.2	4
M	6-25	277	129	1321	1450	120.0	5
Totals		1718	1323	8739	10062	794.2	

HYDROGRAPHIC SURVEY NO. H5988

Smooth Sheet yes

Boat Sheet 2

Sounding Records 5 Vols.

Descriptive Report yes

Title Sheet yes

List of Signals Buoy locations filed as Vol 4 & 5 H5989

Landmarks for Charts (Form 567) -

Statistics yes

Approved by Chief of Party no

Recoverable Station Cards (Form 524) -

Special Chart for Lighthouse Service -  
(Circular Nov. 30, 1933)

Remarks

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. 5988

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

Number of positions on sheet	.1718.
Number of positions checked	..18..
Number of positions revised	.None
Number of soundings recorded	.19,062
Number of soundings revised	.293
Number of signals erroneously plotted or transferred	.None

Date:

Verification by

Inked by

Review by

G. C. McGlosson  
Mr. Hizon  
John S. Ladd

Time:

Time: 32 Hrs

6 days 5 1/2 hours

GEOGRAPHIC NAMES  
 Survey No. **H5988**

On Chart No. 122 ✓  
 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

Name on Survey

	A	B	C	D	E	F	G	H	K	
<u>Cape Henry</u>	*		-				-	-		1
<u>Cobb Island</u>	*		-				-			2
										3
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Names underlined in red approved  
 C.R.W. on 5/15/36

# MEMORANDUM

## IMMEDIATE ATTENTION

SURVEY  
 DESCRIPTIVE REPORT } No. H 5988  
~~PHOTOSTAT OF~~ } ~~No. T~~

{ received APR 17 1936  
 registered MAY 8 1936  
 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	Smith	SP	page 2 <sup>A</sup> - P.N. ?
24			
25			
26			
30			
40			
62			
63			
✓ 82	Shalowitz	q.f.s.	
83			
88			
90			

RETURN TO

82	
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C. K. Green May 11 - '36

## TIDE NOTE FOR HYDROGRAPHIC SHEET

August 21, 1936.

Division of Hydrography and Topography:

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

### Plane of reference

~~Tide Reference~~ approved in  
5 volumes of sounding records for

HYDROGRAPHIC SHEET 5988

Locality Cobb Island to Cape Henry, Virginia Coast

Chief of Party: R. L. Shoppe in 1935  
Plane of reference is mean low water reading  
1.2 ft. on tide staff at Cobb Island  
5.6 ft. below B.M. 1

Height of mean high water above plane of reference is 4.1 ft.

Condition of records satisfactory except as noted below:



Chief, Division of Tides and Currents.

17 September, 1936

Report on # 5988  
Verifying and Inking

1. The records conform to the requirements of the General Instructions.
2. The usual depth curves can be completely drawn within the limits of the sheet. # 5988 is an off shore sheet and only the ten fathom curve is involved.
3. The field plotting was completed to the extent prescribed in the Hydrographic Manual.
4. The office draftsman did not have to do over any part of drafting done by field party except as follows:

The field party at various intervals took both fathometers and hand lead soundings. In the sounding volumes only the hand lead soundings were reduced,

Consequently only the hand lead soundings were plotted on the smooth sheet. Therefore it was necessary to reduce the fathometer soundings in the ~~to~~ records and plott them on the smooth sheet in place of the hand lead soundings.

5. The junctions on the north with # 5770 (1934) and # 5771 (1934) were found to be satisfactory. The junctions with other contemporary adjacent sheets will be made when they have been verified and inked in this office. ✓
6. There is no shoreline on this sheet and the signals used are by hydrographic location.
7. There are no aids to navigation shown on this sheet.

Respectfully submitted,

L. C. McGlosson



Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5988 (1935) FIELD NO. 46

Cobb Island to Cape Henry, Virginia.

Surveyed in 1935, Scale 1:40,000

Instructions dated April 27, 1933 and Jan 10, 1935.

Dorsey Fathometer Soundings

3 Point fixes on buoy signals

Chief of Party - Ray L. Schoppe  
Surveyed by - Ray L. Schoppe and Earl O. Heaton  
Protracted by - W. C. Russell  
Soundings penciled by - W. C. Russell  
Verified and inked by - G. C. McGlosson

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual except as follows:

- a. No approval note by the Chief of Party was contained in the record.
- b. Where comparative fathometer and lead line soundings were taken, only the latter were reduced in the volume. This was corrected in the office.

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

2. Compliance with Instructions for the Project.

This survey overlaps and establishes a junction on the west, (shoreward) with the 1921 work along the 60 foot curve. However the instructions contemplate eventual new basic surveys from the shore line out to this sheet.

3. Shoreline and Signals.

There is no shore line within the limits of this survey. The signals are all hydrographic buoy signals, the cuts, computations etc., for which are filed as Vol. 4 with H-5989 (1935).

4. Sounding Line Crossings.

The cross lines in numerous places show differences of 2 to 6 feet. The Chief of Party feels that this may partly be due to the fathometer corrections applied (see D. R. pages 2 and 4). However, for charting purposes, they may be considered as satisfactory.

5. Depth Curve

Within the limit of the survey the usual depth curves may be satisfactorily drawn.

6. Junctions with Contemporary Surveys.

- a. The junction with H-5770 (1934) on the northwest and with H-5771 (1934) on the north are satisfactory although the latter reveal evidences of a rather uneven bottom.
- b. The junctions with H-5991 (1935) on the east, with H-5992 (1935) on the southeast and with H-5990 (1935) on the south will be considered in the reviews of these surveys.
- c. A satisfactory junction is made on the west (inshore) with H-4193 (1921), H-4194 (1921) and H-4089 (1919) along the 60 foot curve. However the junction soundings have not been shown on the present survey since it is contemplated to eventually continue these surveys to the shore, thereby superseding the 1921 work. The overlapping portions of these 3 1921 surveys is considered under "Prior Surveys" in par. 7 g.

7. Comparison with Prior Surveysa. H-237 (1849-50)

This survey on a scale of 1:400,000 shows one line of widely spaced track soundings within the limits of the present survey. It should be considered as reconnaissance only. The information on this survey has been superseded on the charts and it needs no further consideration in this review.

b. H-397 (1853)

This survey on a scale of 1:40,000 overlaps the western half of the present survey. A comparison between the two shows a few differences of 3 to 6 feet, in depths around 60 feet. In all cases, however, similar depths may be found on the present survey relatively close by. Consequently H-397 (1853) contains no additional chartable information not found on the present survey, and the latter should therefore, supersede H-397 (1853) in future charting.

c. H-1531 (1882), H-1720 (1886), H-1721 (1886), and H-2118 (1892).

These 4 surveys on scales of 1:1,200,000, 1:200,00, 1:200,000, and 1:100,000 contain but a very few soundings that come within the limits of the present survey. They give no information not shown on the present survey, which in view of its much greater scale and adequate development should supersede the above survey for charting purposes

d. H-3314 (1911)

This survey on a 1:200,000 scale contains three lines that overlap the present survey. A comparison shows a few differences of

10 to 17 feet. However, these lines on H-3314 (1911) are controlled by a crude type of dead reckoning which made no allowance for current or leeway. They are apparently out of position and should be disregarded in future charting.

e. H.3768 (1915)

This survey on a 1:40000 scale makes a small overlap with the present survey in the west. The agreement is satisfactory.

f. H-4178 (1921)

This survey on a scale of 1:120,000 overlaps the eastern edge of the present survey. The agreement in general is satisfactory. The 77 foot sounding at Lat.  $37^{\circ}02.75'$ , Long.  $75^{\circ}32.3'$  has been carried forward to the present survey.

g. H-4089 (1919), H-4193 (1921) and H-4194 (1921)

These surveys all in a 1:40,000 scale overlap practically all of the present survey. The soundings thereon within the limits of the present survey are controlled by 3 point fixes on buoys. A comparison between them and the new survey shows a general good agreement. The 54 foot sounding (charted) from H-4089 (1919) at Lat.  $36^{\circ}59.45'$ , Long.  $75^{\circ}39.15'$  and the 77 foot sounding from H-4193 (1921) at Lat.  $37^{\circ}03.35'$ , Long.  $75^{\circ}31.9'$  are the only soundings that show any important differences and they have been carried forward to the present survey. The above surveys may be used to supplement the present survey whenever necessary in future charting.

8. Comparison with Chart 1222 and 1109, New Print dates, June 26, 1936 and Dec. 4, 1934.

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.

b. Aids to Navigation

There are no aids to navigation within the limits of the present survey.

9. Field Plotting

The field plotting was very satisfactory.

10. Additional Field Work Recommended

Although the bottom within the limits of this survey is a very undulating one, abounding in numerous small ridges and deeps, it is not considered that a more extensive development of the area as a whole would disclose any dangers to navigation. However, when feasible, the following two areas should be further developed:

- a. The 62 foot sounding at Lat.  $37^{\circ}18.5'$ , Long.  $75^{\circ}26.9'$  which is the shoalest sounding obtained on a ridge running northeast by southwest and surrounded by depths 10 to 20 feet deeper.
- b. The 34 foot spot at Lat.  $37^{\circ}12.25'$ , Long.  $75^{\circ}34.4'$  and the 38 about 950 meters to the northeast. The nearest depths similar to these are about 5 miles shoreward.

11. Dorsey Fathometer Corrections

The comments of the Chief of Party in the descriptive report on the problem of fathometer corrections indicates that further study is required on this phase of our work. Some of the discrepancies at the crossings may be due to the method of applying these corrections. For the depths involved these differences are not serious and no attempt has therefore been made to study or modify the method used. With the additional data that will be accumulated during the 1936 field season, this office will be in a position to make a comprehensive study of this problem with a view to standardizing the procedure for handling Dorsey Fathometer Soundings.

12. Superseding Old Surveys.

Within its limits the present survey with the indicated addition from prior surveys supersedes the following surveys for charting purposes:

H- 397 (1853)	in part
H-1531 (1882)	"
H-1720 (1886)	"
H-1721 (1886)	"
H-2118 (1892)	"
H-3768 (1915)	"
H-4178 (1921)	"

13. Reviewed by - John G. Ladd, Oct. 3, 1936.

Inspected by - A. L. Shalowitz

Examined and approved:

*C. K. Green.*

C. K. Green  
Chief, Section of Field Records

*Fred. L. Peacock*

Chief, Section of Field Work.

*P. O. Pollard.*

Chief, Division of Charts

*G. H. Hude*

Chief, Division of H. & T.

applied to Chart 122 - Feb 1937 - L.M.Z.  
applied to Chart 1109 - " " - L.M.Z.