

5995

5995

Form 504
Rev. Dec. 1933

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

Topographic } Sheet No. 123
Hydrographic }

State Virginia

LOCALITY

Atlantic Coast

Lat. ~~36°30'~~ to ~~37°20'~~

Long. ~~74°00'~~ to ~~75°00'~~

Offshore Virginia Coast

Great Machipongo Inlet to False Cape

193 5

CHIEF OF PARTY

H. A. Seran

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

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. 123

REGISTER NO. 5995

State Virginia

General locality ~~Atlantic Coast offshore~~ Offshore Virginia Coast²¹
Great Machipongo Inlet to False Cape⁴

Locality Lat. ~~36°30'~~ 37°20', Long. ~~74°00'~~ 75°00'.

Scale 1:120,000 Date of survey May 22
July 19, 1935

Vessel OCEANOGRAPHER

Chief of Party H. A. Seran

Surveyed by Various officers.

Protracted by E. B. Brown, Jr.

Soundings penciled by

Soundings in fathoms feet

Plane of reference M. L. W.

Subdivision of wire dragged areas by

Inked by E. C. McBlorson

Verified by E. C. McBlorson

Instructions dated April 27, 1933

Remarks:

RWV 9/22/92

DESCRIPTIVE REPORT TO ACCOMPANY HYDROGRAPHIC

SHEET NO. 123

DATE OF INSTRUCTIONS: April 27, 1933.

SURVEY METHODS:

The control buoys were located by a closed loop of taut wire distances and sun azimuths, with two exceptions. Buoy ABLE was located on a spur line by taut wire distance and sun azimuth; and buoy LOVE was located by bomb distances from buoys JIG and ABLE.

The sounding lines were controlled by RAR with two floating hydrophone stations. Generally, good returns were obtained from both stations. However, when returns were poor, the dead reckoning line was used, holding a single arc. In all cases the dead reckoning was used as a check on the RAR control.

The soundings were taken while the ship was underway at full speed, with the fathometer. The red light method was used when possible; when the depth was too great to obtain a sounding by the red light method, the white light method was used. Frequent vertical cast soundings were taken during each day to obtain corrections to the fathometer soundings.

FATHOMETER CORRECTIONS:

All soundings on this sheet were taken by the Ship OCEANOGRAPHER, the 312 type fathometer being used from A to N day and the 515 type fathometer for the remainder of the sheet.

312 TYPE FATHOMETER: In computing the corrections to be applied to the white light soundings, 312 type fathometer, points were plotted on a graph in which the differences between the vertical cast and fathometer soundings were used as ordinates and the depths

2

in which they were taken as abscissas. After rejecting stray points, comparisons in the same depths were grouped and a mean point plotted. From these latter points a curve from which corrections in different depths could be scaled was drawn.

In depths of less than 120 fms, when it was necessary to use the red light part of the 312 type fathometer, a procedure similar to the above was followed.

From the two curves the following corrections to be applied to soundings taken with the 312 type fathometer were obtained:

Red light		White light	
Below 43 fms	0	Below 120 fms	-4 fms
43 to 64 fms	-1 fm	121 to 540 fms	-5 fms
65 to 83 fms	-2 fms	541 to 910 fms	-6 fms
84 to white lt sdgs	-3 fms	911 to 1300 fms	-7 fms

515 TYPE FATHOMETER: No regular system of corrections could be devised for the soundings taken with this fathometer; therefore, each day was treated as a separate unit and the fathometer corrections were obtained from the comparisons taken on said day. Corrections on this portion of the sheet were entered in the volumes in feet, to be in agreement with the method of entering soundings.

The method to be used in applying corrections to soundings on this portion of the sheet was extremely questionable. On some days there seemed to be certain fathometer constants which held up to 50 or 60 fms regardless of depth while on other days the corrections seemed to vary with the depth. Although there was a larger correction factor applicable at the outer end of the lines around the 100 fm curve, the comparisons taken in this portion of the sheet were not

used, as few comparisons were taken and on these it was assumed that the steep slope accounted for the larger differences between the vertical cast and fathometer soundings. On days when the depth was used as a controlling factor, the correction applicable between 50 and 60 fms was used at all deeper depths.

The following is a summary of the different methods of obtaining and applying corrections:

P DAY: As only two comparisons were taken on this day, corrections were obtained from and increased gradually between them.

Q, W Days: On these days, points were plotted on a graph, using the differences between handlead and fathometer soundings as ordinates and the times at which they were taken as abscissas; and from these points a curve for applying corrections by time was drawn.

R Day: A mean of the differences between handlead and fathometer soundings in comparisons taken in depths of less than 35 fms, was used as a correction for the soundings concerned. Corrections for soundings in depths greater than 35 fms were obtained from a curve which was drawn from points obtained by plotting differences in comparisons against depths.

S, U Days: Corrections were applied gradually by time between the first comparison and the correction used at the time of the second comparison. The differences between handlead and fathometer soundings obtained in all comparisons after the first was used as a correction from the time of the second comparison until the end of the day.

T Day: Points were plotted using the differences between handlead and fathometer soundings as ordinates and the depths in

which they were taken as abscissas and from these points a curve for applying corrections was drawn.

1 V Day: A mean of the differences between the handlead and fathometer soundings, obtained in all comparisons, was used as a correction for this entire day.

2 X, Y Days: On each of these days corrections were obtained from and applied gradually by time between the first and second comparisons and between the second comparison and the correction used at the time of the third comparison. A mean of the differences between handlead and fathometer soundings, obtained in all comparisons after the second, was used as a correction from the time of the third comparison until the end of the day.

3 Z Day: Corrections were obtained from and applied gradually between the first two comparisons. All comparisons after the first were plotted as points on a graph in which the differences between handlead and fathometer soundings were ordinates and the time at which they were taken abscissas. From these points a curve for applying corrections was drawn.

4 AA Day: Points were plotted on a graph in which differences between handlead and fathometer soundings were used as ordinates and time when they were taken as abscissas. From these points a curve, from which the time of applying different corrections could be scaled, was drawn.

5 BB Day: Corrections were obtained from and applied gradually in time between ^{comparisons,} corrections.

VELOCITIES:

The velocities on this sheet are based on theoretical velocities computed from the British Admiralty Tables. The velocity at depth 400 fms was used and bottom velocity was used when the depth was less than 400 fms. Points where velocities had been determined were plotted in their correct positions and curves of equal velocity were drawn on a tracing of the sheet. Mean velocities were computed for each station for a large number of points on the sheet by the method used by the OCEANOGRAPHER for the field season of 1934 and described in a special report. Mean velocity curves were then drawn for each station. The velocity for each position was then taken from the mean velocity curves. A separate set of curves was drawn for each trip to the working grounds to make allowance for seasonal changes in velocities.

A line from G Day of sheet 122 was plotted on sheet 123. This line was run as a split for sheet 123. The positions only were transferred to sheet 122.

DISCREPANCIES:

On F Day, at Lat $37^{\circ}05'$ Long. $74^{\circ}45'$, positions 22, 23, and 24, there are some shoal soundings that fall on some deep soundings on S Day position 64 to 65. The F line should be moved about 0.2 mile northward to make the soundings agree. It is believed that the soundings on S Day are more accurately located due to the fact that on F Day, buoy LOVE was used for a station and buoy LOVE is located by bomb distances, while all other buoys are located by taut wire distances. This discrepancy occurs on the edge of the submarine valley where the bottom slope is great.

The line was moved N as recommended

On N Day at Lat. $36^{\circ} 54'$ Long. $74^{\circ} 12'$, positions 61 to 62, a sounding of 1208 fms crosses a sounding of 1170 fms on M Day, positions 17 to 18. This discrepancy is probably due to reading the fathometer too shoal on the M Day line and slightly too deep on the N Day line. ✓

On V Day at Lat. $36^{\circ} 49'$ Long. $74^{\circ} 41'$ very shortly before position 46, there is a sounding of 44 fms that is surrounded by soundings of 49 and 50 fms. There is no indication of a shoal on any other line in this vicinity; also the sounding is not ok'ed in the record book. It is believed that this sounding was recorded 5 fms too shoal. *The 44 sounding was not plotted.* ✓

On X Day Lat. $36^{\circ} 45'$ Long. $74^{\circ} 55'$, positions 5 to 7, the soundings are about 2 fms shoaler than the soundings on the east-west lines. It is probable that the fathometer correction could be one fathom in error on X Day at this time. ✓

On Y Day at Lat. $36^{\circ} 41'$ Long. $74^{\circ} 40'$, positions 59 to 60, a sounding of 93 fms falls on a sounding of 109 fms on Y Day position 22 to 23. The bottom slope is great at this point and a slight error in position would make a great discrepancy in depth. *Soundings shifted in position.* ✓

On AA Day at Lat. $36^{\circ} 33'$ Long. $74^{\circ} 44'$, positions 72 to 73, a 100 fms sounding falls on a 124 fms sounding on AA Day, positions 14 to 15. And at Lat. $36^{\circ} 35'$ Long. $74^{\circ} 43'$, position 73 to 74, a 68 fms sounding falls on a 58 fms sounding on Z Day, position 88 to 89. The AA Day line seems to be about 0.2 miles too far westward from position 72 ✓

to 77. On AA Day at Lat $36^{\circ} 35'$ Long. $74^{\circ} 56'$, position 82 to 83, *But it has been accepted as plotted by the field party. This line was on a very steep slope.* ✓

a 25 fathom sounding falls on a 23 fathom sounding on AA Day position
Due to differences in fathometer corrections.

20 to 21. The line seems to be too deep from position 82 to 83. *Soundings have been entered 5/12*

QUESTIONABLE POSITIONS:

25-A to 35-A; 10-B to 14-B; 50-C to 52-C; 53-C to 61-C; 126-F to 130-F; 18-H to 24-H; 10-L to 18-L; 15-S; 63-X to 67 $\frac{1}{2}$ X; 74-X to 78-X: These positions were plotted by dead reckoning, single arcs, and occasional intersections of two arcs. It was almost a guess as to which arcs were good and which were bad. However, the soundings are in good agreement.

48-S to 55-S: Majority of arcs were used on this line and soundings are in good agreement, so there is no reason to shift the line.

54-AA to 61-AA; 1-BB to 14-BB; The bearings are in very poor agreement with the WELKER arcs. The dead reckoning line was used on AA Day with the bearings and arcs that were in agreement with it. On BB Day the bearings and GILBERT arcs were used for positions. The chronograph was giving trouble at this time. It is possible that the compass was in error.

REMARKS:

A Day: Position 1; intersection OK.

Under this heading the D.R. (p. 712) gives details of plotting A day to D day inclusive.

Position 2; plotted from log factor 1.028 course factor $+5^\circ$ determined from line position 4 to position 10 and GILBERT arc.

Position 3; plotted from position 4 using 1.02 log factor and $+5^\circ$ course factor and GILBERT arc. Reject WELKER arc.

Positions 4, 5, 7, 9, 10; intersection OK.

Positions 6, 8; changes of course were plotted with log factor 1.02 and course factor $+5^\circ$.

Positions 11, 12; plotted between 10 and 14 using course and WELKER arcs; this is in fair agreement with the log factor previously determined.

Position 13; both arcs appear to be in error; it was plotted by course and log.

Position 14; intersection ok.

Positions 15, 16; plot with course and WELKER arcs; arc on 15 is in good agreement and arc on 16 in fair agreement with log factor previously determined. On position 15 reject GILBERT arc.

Position 17; intersection ok plot to position 21, using log factor 1.20 course factor -5° .

Position 18; reject WELKER arc 670 meters too long to check course and log. GILBERT arc ok.

Position 19; intersection in fair agreement with course and log.

Position 20; plot with log, course and WELKER arc. Reject GILBERT arc, 1770 meters too short.

Positions 21, 22; plot on course and log-no returns.

Position 23; intersection ok.

The line position 25 to 35 is slightly questionable in its position. It was plotted on a piece of tracing paper using a log factor 1.02 and a course factor -5° . This is the same log and course factor that was used for positions 1 to 16. The paper was shifted over the bomb arcs on the sheet until the majority of the arcs agreed with the dead reckoning positions. Also, at the beginning of the line, the distance between positions 24 & 25

could be determined approximately, due to the fact that the ship makes a full-around turn in about 0.4 miles. The WELKER arc on position 26 was too long and was rejected, using the GILBERT arc only. On position 30, both arcs were too short and were rejected. On position 32 the WELKER arc seemed too short and was rejected, using GILBERT arc only. On position 33 the intersection was used. On position 34 the GILBERT arc was too long and was rejected using WELKER arc only. On position 35 the intersection was used.

On the line position 36 to 52 the intersections are generally very good. The course checks very well, but the logs check only fairly well. The log factor 1.2 was the average but in some instances this factor had to be increased to as much as 1.3 and in others decreased to as much as 1.1. On position 41 both arcs were too long to check the course and log; the arcs were rejected and course and log used. On positions 51 and 52 the GILBERT arcs were questioned on the RAR abstract; however, since they were in good agreement with the course and log, the arcs were used on both positions.

B DAY: The line position 1 to position 9 is in very good agreement between dead reckoning and RAR control. On position 7 the WELKER arc was rejected because it was too long. All the other arcs were good. From position 9 to 14 the RAR control is in good agreement with the log; however, there is a large southerly set in the line that cannot be accounted for. The WELKER arc on position 12 was rejected because it was too long to check the course and log.

The line position 15 to position 35 is in very good agreement between dead reckoning and RAR control. On position 15 the GILBERT arc was rejected because it was too short and

on position 16 the WELKER arc was rejected because it was too long. These two positions were plotted using log factor and course factor determined from positions 21 to 22 and 26 to 27. On position 31 the GILBERT arc was rejected because it was too short.

The line position 36 to 49 is in very good agreement between dead reckoning and RAR control. On position 41 the WELKER arc was rejected because it was too long. On position 43 the GILBERT arc was rejected because it was too long. On position 49 the WELKER arc was rejected because it was too long.

On the line position 50 to 64 the log factor is 1.05 to 1.10 and there is a southerly set of 2° . All data are in good agreement. On position 50, WELKER arc was rejected because it was too long. On position 56, GILBERT arc was rejected because it was too short; position plotted on course and WELKER arc with log as check. On position 59, WELKER arc was rejected because it was too long. On position 64 (end of line), there was only one arc (from GILBERT); position plotted with one arc, course (allowing for 2° S set) and log factor 1.05.

On the line 65 to 74 the log factor is 1.08 and the course is set approximately 1° to southward. On position 67 the GILBERT arc was too long and was rejected. There is a slight increase in the log factor between positions 72 and 73; however, both intersections were used. On position 74 the GILBERT arc was rejected because it was too long.

C DAY: Position 1, reject WELKER, too long, back-plot from 2, using GILBERT arc. Positions 10 to 14, adjust to single arcs between 9 and 15. Positions 12 and 13, reject WELKER arcs, too long; plot by dead reckoning. Positions 17 to 23 plot by dead reckoning

after 16, using log and course factors previously determined on line and adjust to single arc WELKER, position 19. Reject WELKER arc on 18, too long.

Line 24 to 27 plotted by using log and course factor determined from 27 to 28 and adjusting line to single WELKER arcs on positions 24 and 26. Position 34 plot on course and log, with single arc from GILBERT. Position 38 reject WELKER arc, too long, plot on course and log with single arc from GILBERT. Positions 42 to 47 plot by course and log between 41 and 48 and adjust to single arcs. On 46 reject GILBERT arc, too long. Position 51 reject WELKER arc, too long, plot by log and course between 50 and 52 on single GILBERT arc.

Line 53 to 61, results are very erratic, plot on single arcs, log and course, holding intersection position 55. On 53 reject GILBERT arc, too short. On 54 reject WELKER arc, too long. On 57 reject GILBERT arc, too long. On 60 reject WELKER arc, too long. 63, reject WELKER arc. On 64 reject GILBERT arc. Plot on single arcs, course and log between 62 and 65.

D DAY: Position 5 reject WELKER arc, too long. Plot 5 and 6 on single arcs, course and log between 4 and 7. Position 27 reject both arcs, too long. Plot 24, 25, 26 and 27 on course and log between 23 and 28 and on single arc on position 26. Positions 29 and 30 reject WELKER arcs, too long. Plot 29, 30 and 31 on course and log between 28 and 32 and on single arc on 29. Plot positions 33, 34 and 35 on course and log between positions 32 and 36 and on single arc on 33. Plot positions 37 and 38 on course and log using factors previously determined and single arcs from WELKER. Plot positions 39, 40, 41 and 42 on course and log using factor determined

after position 43 and single arcs on positions 39 and 41. Log factor 1.06. Reject WELKER arc on 40, too long. Reject WELKER arc on position 42, too short. Position 44 reject WELKER arc, too short; position 45 arc recorded as GILBERT plots ok from WELKER. Position 46 reject GILBERT arc, too long. Plot 44, 45 and 46 between 43 and 47 on single arcs, log and course. Position 54 reject WELKER arc, too short. Plot line after position 53 on course and log using factors previously determined and adjust to single arcs on 57 and 60.

POOR CROSSINGS:

*see Review
per. 4b*

5 to 6-X 20 fms on 68 to 69-W 22 fms. Lat. $36^{\circ} 45'$ Long. $74^{\circ} 55'$

6 to 7-X 20 fms on 36 to 37-W 21 fms. Possible fathometer discrepancy.

5 to 6-X 19 fms on 89 to 90-X 21 fms.

59 to 60-Y 93 fms on 22 to 23-Y 109 fms. Lat $36^{\circ} 41'$ Long $74^{\circ} 40'$
On steep slope, soundings adjusted in location

72 to 73-AA 100 fms on 14 to 15-AA 124 fms. Lat $36^{\circ} 33'$ Long $74^{\circ} 44'$

73 to 74-AA 68 fms on 88 to 89-Z 58 fms. Lat $36^{\circ} 35'$ Long $74^{\circ} 43'$

Plotting accepted 82 to 83-AA 25 fms on 20 to 21-AA 23 fms. Lat $36^{\circ} 53'$ Long $74^{\circ} 56'$
See Review 4c *Probably due to differences in fathometer corrections.*

→ The line 72-AA to 77-AA is deeper than east-west lines.

It appears that the lines should be moved about 0.2 miles eastward.

BUOY CONTROL SCHEME:

The main scheme consisted of a loop of buoys located by taut wire distances and sun azimuths, originating at buoy BOY and closing at buoy JOHN. Buoys BOY and JOHN were located by three point sextant fixes on accurately located signals on shore. The positions of both buoys were computed. The position of each buoy on the traverse and on all spurs were computed on traverse computation forms. Also all adjustments for error of closure were computed in proportion to the distance measured from the origin. The errors in

Latitude and Longitude were computed separately for each bouy.

The error of closure of the main loop was 236 meters in Latitude and 21 meters in Longitude. The total length of the loop is 145 nautical miles, making the closure 1.6 meters per nautical mile.

A secondary line of buoys was located between buoy GAMMA and buoy DOG. The line was measured with taut wire from buoy GAMMA to buoy SWAN; also sun azimuths were observed along this line. A latitude closure was determined at buoy SWAN by observing a line of sun azimuths in both directions between buoy SWAN and buoy QUEEN. As the lines between SWAN and QUEEN run very nearly east and west, they did not have to be measured with great accuracy for this latitude closure; therefore, log distances were used on this line. This total latitude closure was 80 meters in 46.9 miles, or 1.8 meters per mile. Buoy QUEEN was located on a closed line of taut wire distances and sun azimuths between buoy RAIN and buoy JOHN, both located by three sextant fixes on shore objects. The latitude closure was then applied to the line GAMMA to SWAN.

The line buoy SWAN to DOG was measured with bomb distances and sun azimuths between buoys. The sun azimuths were observed in both directions. The latitude closure of this line was 54 meters in 24.7 miles, or 2.2 meters per mile. The buoys on this line are not located in latitude with as high a degree of accuracy as the buoys that were measured with taut wire. The longitude closure was 57 meters in 53.8 nautical miles, or 1.1 meter per mile. The longitude closure was applied to all buoys from GAMMA to DOG.

The easterly MERIDA WRECK BUOY was located from buoy GEORGE by a range-finder distance and a gyro-compass bearing. Buoy ABLE was then located by a taut wire distance and a sun azimuth from the easterly MERIDA WRECK BUOY.

Buoy LOVE was located by a bomb distance and a sun azimuth from buoy JIG.

Buoys ZERO, VAN and RAIN were located by three point fixes by the LYDONIA. The lines ZERO to VAN, VAN to RAIN, RAIN to JOHN were closed lines of taut wire distances and sun azimuths. The loop QUEEN to FAIR was a closed loop of taut wire distances and sun azimuths. The line FAIR to BLACK was a spur line located by taut wire and sun azimuths. The lines JOHN to IRISH and BLACK to ACTIVE were spur lines located by sun azimuths and full speed double runs. The computations of these lines were made and submitted by the ship LYDONIA.

The buoys mentioned in this par. do not fall within the limits of H-5995(1935) and affect the survey only indirectly.

There was some reason to question the azimuth between buoys ITEM and HYPO. A temporary buoy was installed as a check on this azimuth. The temporary buoy was plotted graphically and the azimuth ITEM to HYPO was found correct. So, the temporary buoy was not included in any of the computations.

Respectfully submitted,

H. A. Seran
for

Edward B. Brown, Jr., Lieut. (jg) C&GS.
Ship OCEANOGRAPHER

Approved, forwarded:

H. A. Seran

H. A. Seran, Comdr., C&GS.,

Commanding Ship OCEANOGRAPHER

STATISTICS FOR SHEET, FIELD NO. 123

Hydrographic Day.	No. of positions.	No. of soundings.	No. of statute miles of sounding line.
A	52	409	85.7
B	74	639	138.0
C	82	547	113.1
D	82	567	112.9
E	70	450	91.3
F	130	1080	114.0
G	37	340	62.5
H	81	651	115.5
J	96	618	128.0
K	55	373	68.8
L	85	480	80.0
M	58	364	85.5
N	69	610	128.0
P	53	741	77.5
Q	84	1121	108.5
R	68	1218	118.8
S	87	1302	150.9
T	58	997	107.3
U	77	1189	130.3
V	54	767	77.7
W	78	967	100.0
X	106	1474	125.7
Y	78	980	103.3
Z	107	1099	126.9
AA	84	1013	107.0
BB	14	127	12.0
TOTALS:	1919	20123	2669.2

672 fm = 64% 512 fm = 1345.9

HYDROGRAPHIC SURVEY NO. H5995

Smooth Sheet yes

Boat Sheet 1

Sounding Records 16 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. **H5995**

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

Number of positions on sheet
Number of positions checked
Number of positions revised
Number of soundings recorded
Number of soundings revised
Number of signals erroneously plotted or transferred

Date:

Verification by

Time:

Review by

Time:

GEOGRAPHIC NAMES
 Survey No. **H5995**

Name on Survey	1227								U. S. Light List	
	A	B	C	D	E	F	G	H		
<u>False Cape</u>	*		-	-			-			1
<u>Great Machipongo Inlet</u>			-				-		*	2
										3
										4
										5
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Names underlined in red approved
 by C.P.H. on 5/15/36

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY }
 DESCRIPTIVE REPORT } No. H 5998
 PHOTOSTAT OF } No. I

{ 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	<i>SP</i>	<i>SP</i>	<i>fathometer corrections - page 1 - P. R.</i>
24			
25			
26			
30			
40			
62			
63			
✓ 82	<i>M. Shalowitz</i>	<i>MS</i>	
83			
88			
90			

RETURN TO

82	
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C. H. Green May 11, '36

7 Oct., 1936

Report on H 5995
Verifying and Indexing

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.
3. The field plotting was completed to the extent prescribed in ✓ the Hydrographic Manual.
4. The officer draftsman did not have to do over any part of drafting done by the field party except as noted on the stationer sheet, and in cases of poor crossings. On cross lines where there is a difference in soundings it has been the policy on this sheet to move the soundings in place of the positions, where

Only H-5713(1934) and H-5994(1935) were
considered in this report. Other joining sheets
(5991-5992 and 5993 of 1935) are in process of
being inked and verified. Ryle

the 44 was not plotted,
194

which is surrounded by depths of 49 and 50 fathoms. In view of the belief of the Chief of Party on this survey, this sounding was not inked but was left in pencil for final disposition in the reviewing section.

10. On Y day, at lat. $36^{\circ}41'$, long. $74^{\circ}40'$, positions 59 and 60. A sounding of 93 fathoms falls on a sounding of 109 fathoms on Y day, position 22 and 23. At this point, the bottom slopes ^{steeply} ~~is greatly~~ ^{and} ~~west~~, ~~consequently~~ the verifier has moved the 109 fathom sounding eastward to agree with the surrounding hydrography.

Respectfully submitted,
O. C. McBliss

possible. Furthermore the field party did not always show the shoal soundings on the sheet, however the verifier believes that the general trend of the bottom was shown and the soundings were left or outlined by the field party.

5. The junctions with contemporary adjacent sheets were found to be satisfactory.

6. This is an off shore sheet and no topographic signals nor shoreline were shown.

7. There are no aids to navigation shown on this sheet.

8. Positions 21, 22, 23, and 24 on F day were moved north in order to agree with surrounding hydrography and to follow recommendation made by the Chief of Party.

9. On V day at lat $36^{\circ}49'$, long. $74^{\circ}41'$, just before position 46 there is a sounding of 44 fathoms.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5995 (1935) FIELD NO. 123

Great Machipongo Inlet to False Cape, Offshore Virginia
Coast, Virginia

Surveyed in 1935 Scale 1-120,000.

Instructions dated April 27, 1933 (OCEANOGRAPHER)

Fathometer Soundings.

RAR control.

Chief of Party - H. A. Seran.

Surveyed by - Officers of Ship OCEANOGRAPHER.

Protracted by - E. B. Brown, Jr.

Verified and inked by - G. C. McGlasson & C. F. McKemney.

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual.

The Descriptive Report is comprehensive 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.

3. Shoreline and Signals.

This is an offshore survey and no shoreline is shown.

The RAR station buoys were located by taut wire and bomb distances with sun azimuth, computed as a traverse and filed as Miscellaneous Data, Oceanographer, Lydonia and Gilbert, 1935 (S-1351).

4. Sounding Line Crossings.

The sounding line crossings in general are satisfactory. The difference of 2 fathoms in the crossing at lat. $36^{\circ} 45'$, long. $74^{\circ} 55'$ (line 5-6x day) is probably due to uncertain fathometer corrections at the beginning of the day. It is noted that the correction used is +5 feet while after pos. 20 all corrections for x day are + 16 feet. (See Descriptive Report page 6 par. 3 and page 4, par. 2).

5. Depth Curves.

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

6. Junction with Contemporary Surveys.

- a. The junction on the north with H-5713 (1934) is satisfactory except that discrepancies existed in depths in the vicinity of the continental shelf in long. $74^{\circ} 30'$. Investigation revealed that the plotting of a number of positions on both surveys in some cases were based on a compromise of all available data. The agreement was considerably improved by replotting the affected lines (pos. 45 to 46S, 1 to 2FF and 57 to 60R on H-5713 (1934) and 18 to 22P and 9 to 22Q on the present survey) giving greater weight to the courses steered.
- b. Junctions with H-5991 (1935), H-5992 (1935) and H-5993 (1935) will be considered in the reviews of those sheets.
- c. The junction with H-5994 (1935) is satisfactory.

Additional adjustments based on depth curve studies on Coastal Slope chart 1318, are shown on Sp. 31774 (1938).
H.W.M. 7/20/38

7. Comparison with Prior Surveys.

- a. H-237 (1849-50), H-1498a (1880-3), H-2920a (1882-7).

These surveys on scales 1-400,000, 1-1,200,000 and 1-1,200,000, respectively each show a few soundings within the area of the present survey. The 1880-87 surveys show soundings obtained by the U. S. Fish Commission which are plotted on copies of Sailing Chart A. They are in fair general agreement with the present survey but only a few of the deeper soundings appear on the present charts. The method of control is uncertain but probably depends on dead reckoning and astronomic observations. All three surveys should be classed as reconnaissance. They show no outstanding features that need to be retained and should be superseded for charting by H-5995 (1935) which is more detailed and more accurately controlled.

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

These surveys are on scales 1-1,200,000, 1-200,000, 1-200,000 and 1-100,000 respectively. The first shows an east-west line of soundings in approximate lat. 37° , the others show a general survey inside of the 100 fathom curve with lines spaced about 5 miles apart. The development is not sufficient to make a comparison of details. The general agreement is fair but the 100 fathom curve lies 1 to 3 miles to the eastward of its location on the present survey. In view of the better control, closer development and greater detail on the present survey, H-5995 (1935) should supersede the above surveys for charting purposes.

c. H-4090 (1919), H-4178 (1921).

These surveys on scales 1-80,000 and 1-120,000 are largely dependent on dead reckoning for control. In depths less than 30 fathoms the agreement is fair but in greater depths the agreement is poor due apparently to the method of control. Because of the much closer development and the better control on the present survey, H-5995 (1935) should supersede the above surveys in future charting.

d. H-4255 (1922).

This survey is on a scale of 1-120,000. The soundings thereon have been adjusted to those on H-4255a (1925), (discussed in the following paragraph) and shown on H-4255b (1922-25), which superseded H-4255 (1922). No further discussion is therefore needed in this review.

e. H-4255a (1925).

This survey on a scale of 1-120,000 consists of a re-survey of H-4255 (1922), (for detail, see Descriptive Report and review therein). Since the work on H-4255 (1922) has been adjusted to this survey and both are shown on H-4255b (1922-25), a comparison of this survey (H-4255a) with the present survey is considered under H-4255b (1922-25).

f. H-4255b (1922-25).

This sheet is a bromide print of H-4255a (1925) on the same scale, with the survey of 1922 (H-4255) adjusted thereto and shown in brown. (See Descriptive Report for H-4255a (1925) for further details). A comparison with the present survey shows a fair general agreement in depths less than 30 fathoms but in greater depths the agreement is poor due apparently to the method of control. The present survey (H-5995) with its much larger scale and closer development should supersede H-4255b (1922-25) in future charting.

Scales are the same 1:120,000

8. Comparison with Chart 1109 (New Print dated Aug. 29, 1936).

a. Hydrography.

Within the area of the present survey the chart is based on surveys discussed in the foregoing paragraphs and contains 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.

The field plotting was satisfactory.

10. Additional Field Work Recommended.

The survey is complete and no additional work is required. The 894 fathom sounding in lat. 36° 32', long. 74° 28' which falls well outside the 1000 fathom curve is corroborated in the sounding records by another sounding of similar depth but which is not plotted on the smooth sheet.

11. Superseding Old Surveys.

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

H-237 (1849-50)	in part
H-1498a (1880-3)	" "
H-1531 (1882)	" "
H-1720 (1886)	" "
H-1721 (1886)	" "
H-2118 (1892)	" "
H-2920a (1882-7)	" "
H-4090 (1919)	" "
H-4178 (1921)	" "
H-4255 (1922)	" "
H-4255a (1925)	" "
H-4255b (1922 & 1925)	" "

12. Reviewed by - R. J. Christman.

Oct. 13, 1936.

Inspected by - A. L. Shalowitz.

Examined and approved:

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

L. O. Lobbut
Chief, Division of Charts.

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

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

5995 (Additional Work
1937)

Form 504
Rev. Dec. 1933
DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

Topographic } Sheet No.
Hydrographic }

State Virginia
LOCALITY
Offshore Virginia Coast
Entrance to Chesapeake Bay

1937

CHIEF OF PARTY

Jack Senior

U. S. GOVERNMENT PRINTING OFFICE: 1934

(Add. 1 Wk.
1937)
5995

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.

REGISTER NO. **H5995** (Addl. Wk. 1937)

State **Virginia**

General locality **Offshore Virginia Coast**

Locality **Entrance to Chesapeake Bay**

Scale **1-120,000** Date of survey **Oct. 5, 1937**, 192

Vessel **LYDONIA**

Chief of Party **Jack Senior**

Surveyed by **Ship's Officers (C.M. Thomas)**

Protracted by **Ship's Officers**

Soundings penciled by **Ship's Officers**

Soundings in fathoms ~~feet~~

Plane of reference **M.L.W.**

Subdivision of wire dragged areas by

Inked by **J. A. McCormick**

Verified by **J. A. McCormick**

Instructions dated **Sept. 30, 1937**, 192

Remarks:

22

POST-OFFICE ADDRESS: c/o Postmaster,
Norfolk, Va.

TELEGRAPH ADDRESS:

EXPRESS ADDRESS:

1937 OCT 9 AM 8:35

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

Ship LYDONIA

8 October 1937.

To: The Director,
U. S. Coast and Geodetic Survey,
Washington, D. C.

From: The Commanding Officer,
U.S.C. & G.S.S. LYDONIA.

Subject: Hydrography on Chart 1318.

Reference: Supplemental Instructions, dated September 30,
1937: 22-AB: 1995 LY 1.

The dead reckoning sounding lines to supplement hydrography on Chart 1318, were run as instructed, en route from New York to Norfolk. All necessary data for transferring this additional work to chart, are recorded in one sounding record and ten dead reckoning abstract sheets. The field work is plotted on an overlay tracing of Chart 1318. All data are being forwarded under separated cover.

It might be interesting to note that Chesapeake Bay Light vessel marker buoy was actually picked up close aboard-150 meters distant - at the end of the dead reckoning loop. Such precise dead reckoning was made possible, of course, by having available the complete hydrographic development on Chart 1318, plus a margin of luck on course run to light ship. In general, the true courses were made good by suitable corrections to distances run, rather than by change of course. This, I believe, will simplify the final adjustment, when these additional soundings are "swung in" on Chart 1318. The method used on boat sheet (tracing cloth) is self explanatory, by reference to data accompanying sheet. Though the field plotting is only approximate, it is believed that the sounding lines as shown, are not far from their correct positions on Chart 1318.

Jack Senior, Lt. Comdr., C&GS.,
Comd'g. Ship LYDONIA

JS/T

Handwritten notes: 20, JEP, CKG

DEAD RECKONING ABSTRACT

Log No.	Factor
A	
B	
C	

Chart

1318 (to supplement)

U. S. C. AND G. S. SHIP Lydonia, Lt. Senior, A. Senior

COMMANDING. STATION

Locality off entrance to Chesapeake Bay DATE Oct. 5, 1931

(Name of Ship) STATION

distance between fixed positions = 175.1
Meridian log distance = 175.1
R = distance between fixed positions = 0.97
Number of revolutions = 0.97
DAY 0.97 (Name of Ship)

Pos. No.	TIME		REARRED TIME		COORDINATES			DISTANCE			REV. COUNTER			WIND			Remarks	
	h.	m.	m.	s.	PBC	Dev.	Var'n	True	Log Reads	Log Dist.	True Dist.	r	Rev.	Dist. by	Dist. by	Dir.		Vel.
1	01	43	40		175.1	17.3	W	177.4	A			0.97	96.8	95.2	880	100		37° 30' N Long. 76° 49.5' W
2	01	50	00		175.1	17.3	W	177.4	B				98.6	92.8	880	100		1st log taken
3	02	00	00		175.1	17.3	W	177.4	A				97.6	72.2	1090	100		2nd log taken
4	02	10	00		175.1	17.3	W	177.4	B				97.7	73.6	1114	100		3rd log taken
5	02	20	00		175.1	17.3	W	177.4	A				97.8	95.9	1123	100		4th log taken
6	02	30	00		175.1	17.3	W	177.4	B				97.4	077	1118	100		5th log taken
7	02	40	00		175.1	17.3	W	177.4	A				97.8	181	1104	100		6th log taken
8	02	50	00		175.1	17.3	W	177.4	B				97.6	282	1101	100		7th log taken
9	03	00	00		175.1	17.3	W	177.4	A				97.7	383	1101	100		8th log taken

R. A. R. AND DEAD RECKONING ABSTRACT

Log No.	Factor
A	
B	
C	

HYDROGRAPHIC SHEET No. 1318
U. S. C. AND G. S. SHIP Lydonia, J. Senior COMMANDING.
STATION _____ (Name of Ship)

LOCALITY Off entrance to Chesapeake Bay DATE Oct. 5, 1921 STATION _____ (Name of Ship)

$r =$ distance between fixed positions = _____ DAY _____ (Name of Ship)
 $R =$ distance between fixed positions = _____

Pos. No.	TIME h. m. s.	ELAPSED TIME m. s.	COURSE			DISTANCE			REV. COUNTER No. Station	READING Dist. by	DIST. BY R	DIST. BY R	WIND Dir. Type	VEL. dir. vel. dir.	REMARKS
			PSO	Dev.	Var'n	True	Log Reads	Log Dist.							
19	4-35-00	10 -	154				145	152	0.97	877 515	1005		100		
20	4-45-00	10 -	154				C49.57	1.48		878 504	989		100		Slight chop-ahead.
21	4-55-00	10 -	154				A			879 486	982		100		
22	5-05-00	10 -	154				A			880 479	993		100		
23	5-15-00	10 -	154				A			881 485	1006		100		
24	5-25-00	10 -	154				A			882 545	1060		100		
25	5-35-00	10 -	154				A			883 574	1029		100		
26	5-45-00	10 -	154				A			884 651	1077		100		
27	5-55-00	10 1/2	154				A			885 783	1132		100		

02-9

REAR-AND-DEAD RECKONING ABSTRACT

Log No.	Factor
A	
B	
C	

HYDROGRAPHIC SHEET No. 1318
U. S. C. AND G. S. SHIP Lydonia, Cl. Senior COMMANDING.
STATION _____ (Name of Ship)

LOCALITY Off Entrance to Chesapeake Bay DATE Oct 5 1927
STATION _____ (Name of Ship)

r = distance between fixed positions = .962
log distance = .982
DAY _____ (Name of Ship)

R = distance between fixed positions = .001833
NUMBER OF PARALLAXES _____ (Name of Ship)

Pos. No.	TIME h. m. s.	ELAPSED TIME m. s.	COURSE			DISTANCE			REV. COUNTER Reading	DIFFERENCE seconds	ADJUSTMENT Assumed	WIND Dir. Tps Vol. m.l./hr.	REMARKS	BROOK-LAMBERT MAGNETIC DEVIATION	
			PBO	Dev.	Var'n	True	Log Reads	Log Dist.							True Dist.
28	6-05-30	10				145			941	945	1062	100	10		
29	6-16-00	10	47			1304	1.54		947	972	1127	100	10		
30	6-26-00	10				1451	1.47		949	945	1073	100	10		
31	6-36-00	10				1605	1.54		950	137	1092	100	10		
32	6-46-00	10				1756	1.51		951	221	1084	100	10		
33	6-56-00	10				1908	1.52		952	303	1082	100	10		
34	7-06-00	10				2063	1.55		953	392	1093	100	10		
35	7-16-00	10				2218	1.55		954	483	1087	100	10		
36	7-26-00	10				2371	1.53		955	562	1079	100	10		

10 ft bearing

~~RECKONING~~ DEAD RECKONING ABSTRACT

Log No.	Factor
A	
B	
C	

HYDROGRAPHIC SHEET No. 1318
 U. S. C. AND G. S. SHIP LYDONIA, J. Senior COMMANDING.
 Locality off entrance to Chesapeake Bay DATE Oct. 5, 1937
 distance between fixed positions r = DAY 11
 log distance _____ (Name of Ship)
 STATION _____ (Name of Ship)
 STATION _____ (Name of Ship)
 STATION _____ (Name of Ship)

Pos. No.	TIME h. m. s.	HEAVED TIME h. m. s.	COURSE			DISTANCE			REV. COMP. DIST.		APPT. HORIZ. DIST. BY R. ASSUMED	WIND		Remarks	
			P80	Dev.	Var'n	True	Log Reads	Log Dist.	True Dist.	Reading		Distance	Dir. Type		Vol.
37	1-36-00	10 0 47				A			4972						
38	1-46-00	10 0 47				A			097724	1076		100	10		
39	7-56-00	10 - 4				A			00882	1082		100	10		
40	8-06-00	10 - 4				A			01072	1150		100	10		
41	8-16-00	10 - 4				A			012017	1005		100	10		
42	8-26-00	10 - 4				A			013162	1085		100	10		
43	8-36-00	10 - 4				A			014238	1076		100	10		
44	8-46-00	10 - 4				A			015329	1091		100	10		
45	8-56-00	10 - 4				A						100	10		

(5)

R. A. R. AND DEAD RECKONING ABSTRACT

Log No.	FACTOR
A	
B	
C	

HYDROGRAPHIC SHEET No. 1318
 U. S. C. AND G. S. SHIP LYDONIA, Senior, COMMANDING. STATION _____
 LOCALITY off entrance to Chesapeake Bay DATE Oct. 5, 1917 STATION _____
 distance between fixed positions r = DAY _____ STATION _____
 log distance _____ (Name of Ship) _____ (Name of Ship) _____
 (Name of Ship)

Pos. No.	TIME h. m. s.	DIPEND TIME h. m. s.	COURSE			DISTANCE			Rev. Counter No. Station	D.I.F.C. Distance seconds	Miles by Final	WIND		Time h. m. s.	Remarks	Depth NO. - SOUNDING
			PSC	Dev.	Var'n	True	Log Reads	Log Dist.				True Dist.	r			
46	9-06-00	10 -										100	10			
47	9-16-00	10 -										100	10			
48	9-26-00	10 -										100	00			
49	9-33-00 34-30	7 - $\frac{1}{2}$										100	00			
50	9-43-00	12 -										100	10			
51	9-55-00	10 -										100	10			
52	10-05-00	10 -										100	10			
53	10-15-00	10 -										100	10			
54	10-25-00	10 -										100	10			

*Make by hand 1.00
10 for survey*

~~DEAD~~ DEAD RECKONING ABSTRACT

LOG NO.	FACTOR
A	
B	
C	

HYDROGRAPHIC SHEET No. 1318
 U. S. C. AND G. S. SHIP LYDONIA, of Senior COMMANDING.
 LOCALITY off entrance to Chesapeake Bay DATE Oct. 5, 1937
 distance between fixed positions r = DAY _____
 log distance _____ (Name of Ship)
 STATION _____ (Name of Ship)
 STATION _____ (Name of Ship)
 STATION _____ (Name of Ship)

Pos. No.	TIME L ^s M. Mer.	ELEVATED TYPE	COURSE			DISTANCE			Rev. Count No. Station	Dist. by R. by Final	WIND Dir. True	WIND Vel.	REMARKS
			P80	Dev.	Var'n	True	Log Reads	Log Dist.					
55	10-35-00	10	343			C10377	1.62	1.00	026233	1094	100	10	
56	10-42-00	7	92			C10492	1.15	1.00	027014	781	100	10	
57	10-53-00	11				C10618	1.61	0.85	028224	1102	100	10	
58	11-03-00	10				C10832	1.64		029338	1114	127	7	
59	11-13-00	10				C10994	1.62		030450	1112	127	7	
60	11-23-00	10				C11159	1.65		031564	1114	127	7	
61	11-33-00	10				C11321	1.62		032661	1097	127	7	
62	11-43-00	10				C11482	1.61		033759	1098	127	7	
63	11-53-00	10				C11645	1.63		034866	1107	127	7	

Handwritten note:
 The log for 20 of 1.00
 follows by 582 and
 point 591227

R. A. R. AND DEAD RECKONING ABSTRACT

Log No.	Factor
A	
B	
C	

HYDROGRAPHIC SHEET No. 1318
 U. S. C. AND G. S. SHIP LYONIA, J. Senior, COMMANDING.
 LOCALITY Off entrance to Chesapeake Bay DATE Oct 5 1937
 distance between fixed positions r = DAY _____
 log distance _____ (Name of Ship) _____
 STATION _____ STATION _____ STATION _____

Pos. No.	TIME m. a.	EARTHED TYPE	COURSE			DISTANCE			Rv. Count for Reading	No. Station	Diff. Distance seconds	APPROX. VELOCITY Dist by R. Dead Reck.	Dir. Type	Wind Dir. Vel.	Remarks	Ship's No. Station	Ship's No. Station
			P80	Dev.	Var'n	True	Log Reads	Log Dist.									
64	12-03-00	10	274			264	118.07	1.63	0.982	035964	1096		125	7			
65	12-13-00	10	274				119.65	1.58	1.52	037036	1074		125	7			
66	12-23-00	10	274				121.21	1.52	1.50	038088	1052		125	6			
67	12-33-00	10	00	374			122.69	1.48	1.42	039084	1001		125	6			
68	12-43-00	10	00	274			124.24	1.58	1.49	040138	1049		125	6			
69	12-53-00	10	00	274			125.55	1.61	1.55	041225	1087		125	6			
70	13-03-00	10	00	274			127.46	1.61	1.55	042312	1087		125	6			
71	13-13-00	10	00	274			129.09	1.63	1.57	043406	1094		125	5			
72	13-23-00	10	00	274			130.72	1.63	1.57	044500	1094		125	5			

R. A. R. AND DEAD RECKONING ABSTRACT

HYDROGRAPHIC SHEET No. 1318

U. S. C. AND G. S. SHIP Lydonia, J. Senior COMMANDING.

Locality off entrance to Chesapeake Bay
r = distance between fixed positions
log distance

DATE Oct. 5, 1937
DAY

(Name of Ship)
(Name of Ship)
(Name of Ship)

STATION
STATION
STATION

Loop No.	Factor
A	
B	
C	

Pos. No.	TIME h. m. s.	ELAPSED TIME m. s.	COURSE			DISTANCE			New Counter Reading Diff. Station Distance	Miles from Station	WIND Dir. True	WIND Vol.	SOUNDING	REMARKS
			PSO	Dev.	Var'n	True	Log Reads	Log Dist.						
82	15 03 00	10 00 274				A	0/47.55	1.73	1.66	1.00	055394	1105		
						B								
						A								
83	15 13 00	10 00 274				A	0/49.37	1.72	1.65		056491	1097		
						B								
						A								
84	15 23 00	10 00 274				A	0/50.99	1.72	1.65		057579	1058		
						B								
						A								
85	15 33 00	10 00 274				A	0/52.70	1.71	1.64		058671	1092		
						B								
						A								
86	15 43 00	10 00 274				A	0/54.42	1.72	1.65		059775	1107		
						B								
						A								
87	15 53 05	10 00 274				A	0/56.14	1.72	1.65					
						B								
						A								
88	15 53 40	00 35 374				A	0/58.25	0.11	0.11					
						B								
						C								

None made.

*Chesapeake Lt Ship Marker
150 meters in port beam
Chesapeake Lt Ship 0.4 mile
0.1 port beam.
Bearing to buoy was
taken
Mounds 0.4 mile*

10

32.0 33.0 34.0 35.0 36.0

1
9
8
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1200
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100
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2

1

*From data Contained in Woods Hole Oceanographic
Institution's Report, Vol. IV, No. 1.*

Page 80 of Report.

Depth in fathoms.

Sept 2-10, 1932

Plotted by J. A. McCormick

Field Records Section (Charts).

HYDROGRAPHIC SHEET NO. **H5995** (Addl. Wk. 1937)
.....

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

Number of positions on sheet	..88..
Number of positions checked	..46.. only shown on H-5995
Number of positions revised	..46.. revised slightly for lead reckoning
Number of soundings recorded	..1592..
Number of soundings revised0..
Number of signals erroneously plotted or transferred

Date: Oct. 20, 1937.

Verification by J. A. Mc Cormick

Time: 27 1/2 hrs.

Review by J. A. Mc Cormick

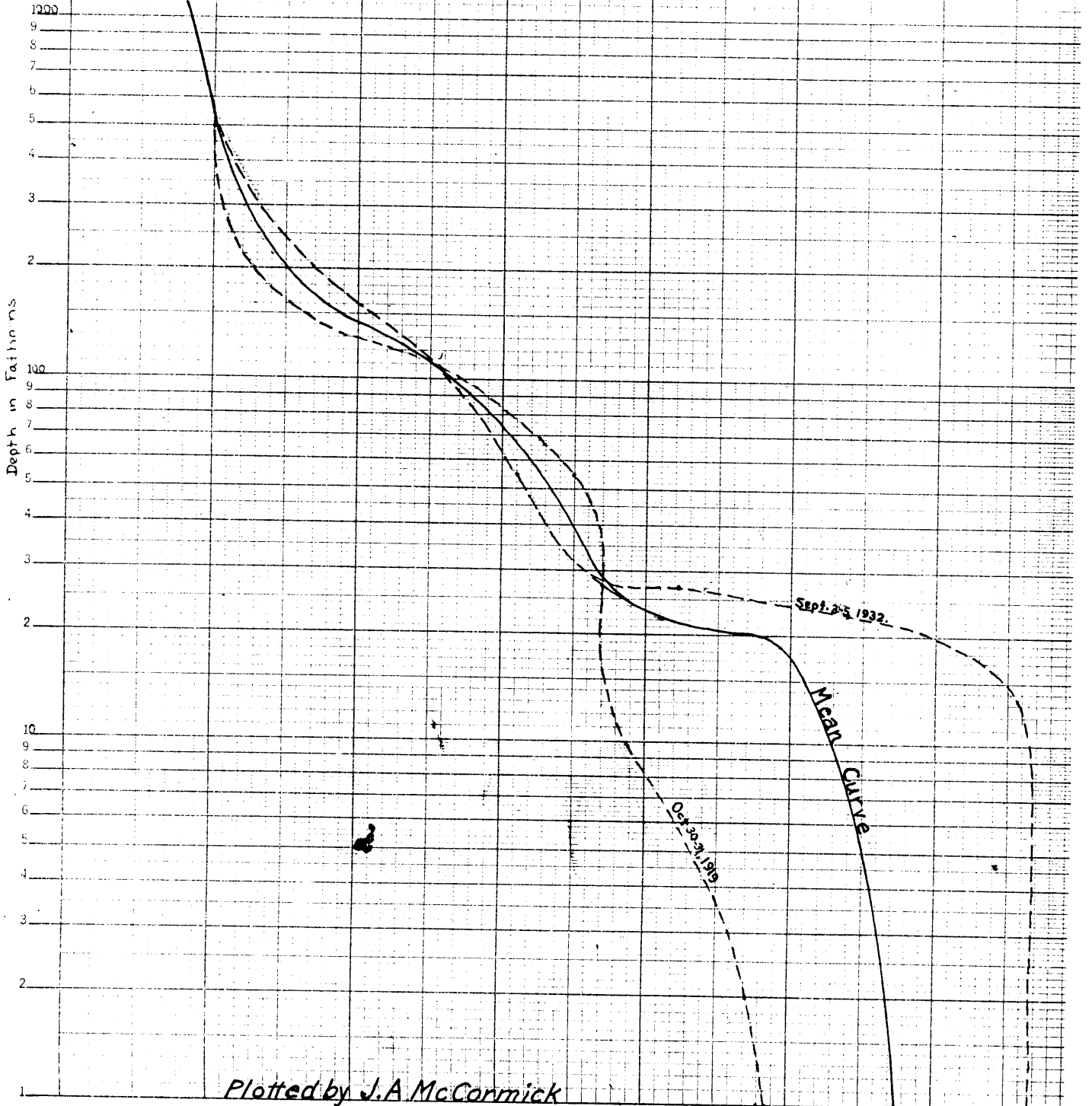
Time: 7 hrs.

Degrees Centigrade

0 2 4 6 8 10 12 14 16 18 20 22 24 26

From data Contained in Woods Hole Oceanographic Institution's Report, Vol. II, No. 4

Blue Curve - Page 67 of Report
Green " - " 86 " "



KEUFFEL & ESSER CO., N. Y. NO. 358-61
Non-Luminescent, 4 Cycles x 10 to the Inch
MADE IN U. S. A.

Plotted by J. A. McCormick

FATHOMETER CORRECTIONS.
 Fathometer Type 312 calibrated for 820 fathoms (1499.6 meters) per second.

Depth	Temperature	Salinity	Mean Temp. in 200 fm. layers	Mean Sal. in 200 fm. layers	Mean Velocity in 200 fm. layers	Mean Velocity Surface to depth	Factor	Corr.-fathoms
0	23.0 22.5	33.62						
200	6.0	35.16	11.4	35.3	1495.3	1495.3	-.0029	-0.6
400	4.4	35.04	5.2	35.1	1477.9	1486.6	-.0087	-3.5
600	3.9	34.96	4.2	35.0	1480.5	1484.6	-.0100	-6.0
800	3.6	34.92	3.8	34.9	1485.2	1484.7	-.0099	-7.9
1000	3.3	34.88	3.4	34.9	1490.1	1485.8	-.0092	-9.2
1200	3.1	34.85	3.2	34.9	1495.9	1487.5	-.0081	-9.7
1400								
1600								

Computed by J. A. McCormick

Verifier's Report on H-5995 (Ass's Work 1937).

No comments other than those contained
in the review are considered necessary.

J. A. Mc Cormick.

TIDE NOTE FOR HYDROGRAPHIC SHEET

October 20, 1937.

Division of Hydrography and Topography:

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

Tide Reducers are approved in
1 volumes of sounding records for

HYDROGRAPHIC SHEET 5995 Addl. Wk. 1937

Locality Off Chesapeake Bay Entrance

Chief of Party: Jack Senior in 1937

Plane of reference is mean low water, based on predictions
~~at low tide state~~ for Lat. 37° 00' N., Long. 74° 40' W
~~at low tide~~ Time: Hampton Roads - 2 hrs.
Height: Hampton Roads + 0.5 ft.

Height of mean high water above plane of reference is 3.0 feet.

Condition of records satisfactory except as noted below:

Acty *Stam*
Chief, Division of Tides and Currents.

HYDROGRAPHIC SURVEY NO. H-5995 (Add'l Wk. 1937)

Smooth Sheet Original One

Boat Sheet One new one

Sounding Records One Vols. _____

Descriptive Report Yes

Title Sheet Yes

List of Signals Same as original

Landmarks for Charts (Form 567) None

Statistics _____ None

Approved by Chief of Party _____ None

Recoverable Station Cards (Form 524) _____ None

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

Remarks _____

HYDROGRAPHY

Total Days One

Last Date October 5, 1937

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5995 (Additional Work 1937)

Entrance to Chesapeake Bay, Offshore Virginia
Coast, Virginia
Surveyed in October, 1937. Scale 1:120,000.
Instructions dated September 30, 1937 (LYDONIA)

Fathometer Soundings

Dead reckoning

Chief of Party - Jack Senior
Surveyed by - Ship's officers
Protracted by - J. A. McCormick
Soundings plotted by - J. A. McCormick
Verified and inked by - J. A. McCormick

1. Purpose of Survey

The purpose of the additional work was to furnish additional information for the better delineation of depth curves in the region south of Latitude 37° 00', and between the 100 fathom and 1,000 fathom contours. A dead reckoning line was to be run between Winter-Quarter Shoal Light Ship and Chesapeake Light Ship and adjusted to the 1935 work.

2. Condition of Records.

a. Field adjustment

The field adjustment of the dead reckoning lines was made on an overlay tracing of Chart 1318. The adjustment brought the additional work into fair agreement but there were still numerous crossing discrepancies to be disposed of. It was also necessary to look into the matter of fathometer and tide corrections which had not been applied in the field and for which no data were obtained.

b. Tide reducers

The range of tide was found from the predicted curve for this area to be 3.0 feet. Since this is less than one per cent of the depths involved in this additional work the reducers were omitted.

c. Temperature and Salinity Data.

As temperatures and salinities needed for the computation of fathometer corrections were not available in the records of previous surveys for this time of the year in this area, recourse was had to the reports of the Woods Hole Oceanographic Institution (Vol. II. No. 4 and Vol. IV. No. 1)

the additional work. In general, however, the additional work as finally adjusted is in very good agreement with the original work.

Only the work between Pos. 14 and 59 was retained in the final plotting on the smooth sheet, the rest falling in well developed areas and unnecessary for the purpose of this survey.

3. Results of Survey.

The survey has complied with the instructions in furnishing additional information for the delineation of depth curves. A 650 fathom hump which may be a ridge extending from the 700 fathom contour was found in Lat. $36^{\circ} 55'$, Long. $74^{\circ} 31'$.

4. Reviewed by - J. A. McCormick, October 20, 1937.

Inspected by - A. L. Shalowitz.

Examined and approved:

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

K. T. Adams
Chief, Division of Charts.

J. R. Peacock
Chief, Section of Field Work.

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

which contain the results of observations made off the entrance to Chesapeake Bay just beyond the Continental Shelf. These reports, however, gave only the values for depths above 200 fathoms, so it was necessary to extrapolate for depths between 200 fms and 1200 fms using as a pattern the Lydonia's Curves for July 1937 in the area off Cape May, N. J. Also since the present work was done on October 5, 1937, a mean of the Woods Hole temperature curves for September 5th and October 31st was used to approximate the thermal conditions existing at the time of the present survey.

In connection with the temperatures it is of interest to note that in depths between 100 and 200 fms. the Lydonia's temperatures averaged approximately two degrees less than those listed in the Woods Hole Reports for the same area and a similar time of year. For the upper layers the average difference was slightly greater. (See page 64 of Vol. II, No. 4 of Woods Hole Report).

d. Fathometer corrections.

Fathometer corrections for depths over 200 fms. were computed in accordance with Field Memorandum No. 3 of 1936, assuming a calibrated fathometer velocity of 820 fathoms per second. The resultant corrections ranged from -0.6 fms. at 200 fms. to -9.7 fms. at 1200 fms. Since these corrections are within one per cent of the depth and since the fathometer was read to the nearest five fathoms only, in depths over 100 fms., these corrections were omitted. No data was submitted for slow disc speed corrections based on comparisons with fast disc speed and therefore such corrections were ignored.

For depths less than 200 Fms. no computations were made but an inspection of the temperature curve shows that for the depths involved the corrections would also be within one per cent of the depth.

The above plottings and computations were made in the office and the data is attached to the descriptive report of this survey.

e. Office Adjustment

The adjustment of the lines by the field party was used as a first approximation. Additional adjustments were made in the office to bring the present work into harmony with the well controlled lines of the 1935 work. Generally the lines were expanded in length about 4 per cent and some of the lines were shifted slightly in azimuth, the net result being an improvement in many of the crossings and elimination of a 100 to 200 Fm. crossing discrepancy in Lat. $36^{\circ} -55'$, Long. $74^{\circ} -31'$. It was not possible to obtain perfect crossings in all cases notably in Lat. $36^{\circ} -57'$, Long. $74^{\circ} -22'$ where an 1103 on the original survey falls between 1135 and 1145 on

Applied to Chart 1109 - Dec 22, 1937
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