

5991

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

DESCRIPTIVE REPORT

~~Topographic~~ } Sheet No. 48
Hydrographic }

State Virginia

LOCALITY

^{shore}
Off Cape Charles, Va.

Lat. 37° 04' to 37° 20'

Long. 75° 00' to 75° 26'

1935

CHIEF OF PARTY

H. A. Segan

5991

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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. 48

REGISTER NO. 5991

State Virginia

General locality Off. ^{shore} Cape Charles, ²¹ Va.

Locality ~~Lat. 37° 04' to 37° 20', Long. 75° 00' to 75° 26'~~

Scale 1-40,000 Date of survey July 23 to Aug. 14, 1935

Vessel Ship OCEANOGRAPHER

Chief of Party H. A. Seran

Surveyed by Various Officers

Protracted by R. A. Earle

Soundings penciled by R. A. Earle

Soundings in ~~fathoms~~ feet

Plane of reference M.L.W.

Subdivision of wire dragged areas by

Inked by G. H. Everett

Verified by G. H. Everett

Instructions dated April 27, 1933

Remarks:

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SHEET (Field No. 48)

Project: 142

Virginia Coast, 1935

Ship OCEANOGRAPHER

H. A. Seran, Comdg.

Scale 1 - 40,000

INSTRUCTIONS:

The work on this sheet was executed in accordance with the Director's instructions to the Commanding Officers of the Ships OCEANOGRAPHER, LYDONIA and GILBERT; dated April 27, 1933. Supplemental instructions were dated June 3, 1933 and January 10, 1935.

LIMITS:

The area comprising this sheet lies between Lat. $37^{\circ} 04'$ and Lat. $37^{\circ} 20'$ and extends from Long. $75^{\circ} 00'$ on the east to a line which extends between Lat. $37^{\circ} 04'$, Long. $75^{\circ} 30'$ and Lat. $37^{\circ} 20'$, Long. $75^{\circ} 22'$ on the west.

This sheet connects with field sheet 123 on the east, with field sheet 49 on the south, with field sheet 46 on the west and with sheet 5771 (1934) on the north.

H-5995 (1935)

H-5992 (1935)

H-5988 (1935)

SURVEY METHODS:

The area on this sheet was surveyed by the Ship OCEANOGRAPHER; standard RAR methods being used. The GILBERT and WELKER were used as station ships.

CONTROL: All buoys were part of the control loops established for the season. The positions of the end buoys of the main loop (which contained buoys DOG and EASY) were established by fixes on objects located by triangulation and inter-buoy taut wire

distances and azimuths were used in obtaining the positions of the other buoys in this loop.

To find the position of the buoys in this loop, or any loop, all data were computed. (See Report on Traverse Computations and Adjustments).

Buoys POPE, QUAD and RUN were in a supplementary loop which ran from buoy DOG to buoy GAMMA. Sun azimuths were taken between all buoys in this loop; however, altho the distances between buoys GAMMA and SWAN were measured with taut wire; those between buoys, north of buoy SWAN, which includes the buoys on this sheet, were measured by bomb distances. We were unable to measure by taut wire the inter-buoy distances DOG-SWAN because no wire remained and the season was too far advanced to get another reel from the manufacturer. As the different distances between two buoys varied quite a bit; the exact adjusted positions of these buoys are not determined as accurately as the other buoys and it is believed that the very noticeable discrepancies between RAR positions and bearings is due to a slight inaccuracy in the position of these buoys.

SOUNDINGS: Most of the soundings on this sheet were obtained with the fathometer, altho on some shoals the handlead was used. When using the fathometer, comparisons were taken approximately every hour. The methods of obtaining corrections to be applied to fathometer soundings are given under a separate heading. In most cases soundings on shoals of less than 11 fms. were obtained with the handlead.

FATHOMETER CORRECTIONS:

No regular system of corrections could be devised for this entire sheet, therefore each day was treated as a separate unit and the fathometer corrections were obtained from the comparisons taken on said day.

In some cases differences between comparisons taken within several minutes of each other differed by as much as a fathom while in others a uniform change was noted thruout the day; therefore, various methods of obtaining and applying corrections were used on different days.

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

A DAY: Corrections were obtained from and applied gradually between the different comparisons.

B,D,H,L DAYS: On each of these days a mean of the difference between the handlead and fathometer soundings was obtained and applied as a correction thruout the day.

C DAY: Corrections were obtained from and applied gradually between the first and third comparisons.

A mean of the differences obtained in all other comparisons was applied from the time of the fourth comparison until the end of the day.

Corrections were gradually increased between the third and fourth comparisons.

E DAY: Corrections were obtained from and applied gradually between the first two comparisons.

A mean of the differences of half an hours

comparisons after 0824 was considered as being the fathometer correction at that time. Corrections were increased gradually from 0717 to this point.

No correction was entered between 0824 and 1321 and between 1351 and the end of the day as the handlead soundings were used during these periods.

Between 1321 and 1351 a mean of the differences obtained in the twenty minutes previous to 1321 was applied as a correction.

F DAY: In agreement with the first comparison no correction was applied until 0538 when a series of lines were rejected due to fathometer troubles.

In the periods 0626 to 1528 and 1702 to 1939 a mean of the differences between handlead and fathometer soundings for the respective periods was applied as a correction.

Corrections were increased gradually between 1528 and 1702.

G DAY: Between the times 0619 to 1155 and 1303 to 1903 a mean of the differences between the handlead and fathometer soundings for the respective periods was applied as a correction.

The correction to be applied was increased gradually between 1155 and 1303.

J DAY: Corrections were obtained from and applied gradually between the first and second comparisons.

A mean of the differences obtained in all other

comparisons was applied from the time of the third comparison until the end of the day.

Corrections were gradually increased between the second comparison and the correction used at the time of the third comparison.

K DAY: A mean of the differences between the handlead and fathometer soundings, taken previous to the time of irregular voltage, was applied during the period 0508 to 0929.

In the respective periods 1028 to 1040 and 1239 to 1445 a mean of the differences obtained from comparisons was applied as a correction.

The correction was increased gradually between 1040 and 1239.

All soundings on this date are rather questionable due to the frequent fluctuations of the voltage.

M DAY: A mean of the differences obtained by the first three comparisons and of that obtained from the last two comparisons was applied as a correction for the different periods involved. Corrections were gradually increased between the times of the third and fourth comparisons.

ADJUSTMENTS:

After plotting the RAR positions and bearings, log factors were computed between points of known strength on a line; then, with this log factor, and log distances and courses, a dead reckoning line could be plotted on tracing paper. This dead reckoning line was then placed over the original line and by comparison erroneous cuts and distances could be noted and rejected. Cuts which

obviously failed to check the RAR positions and dead reckoning line were not plotted on the sheet.

DISCREPANCIES:

POSITIONS: Positions occurring between the station ships were not definite because the arcs usually failed to meet, or overlapped. Positions were adjusted by the method given under "ADJUSTMENTS". In unusual cases where it was deemed necessary to explain the adjustment other than that given above; such explanation was written in the sounding volume.

Attention is called to a good many positions on K and M days, near the center of the sheet, where the arcs and bearings came far from checking and the adjustment was questionable due to the fact that different methods might have been used. This may have been caused by a buoy which had drifted slightly out of position.

SOUNDINGS: In general the crossing of sounding lines on this sheet was excellent; it being surprising to note the number of perfect crossings on different days when the fathometer was used and even when different buoys were used for control.

It was deemed unnecessary to call attention to discrepancies in depths, where it was likely that they were due to an irregular bottom, or where it was obvious that the rejection of a few soundings or the slight movement of a line would correct same.

Crossings not coming under the above category are given below:

1. 59 to 60-A and 1 to 2-B. Lines coincide and soundings on B Day appear to be about a fathom too deep. This correction would also correct the crossing of 2 to 3-B with 33 to 34-F. *The shoaler soundings were plotted on the sheet.*

2. E Day- Comparisons between handlead and fathometer soundings in less than 11 fms of water on E Day were very erratic, the differences being greater than a fathom; therefore, no weight should be given to fathometer soundings in these depths when the handlead was also used. *The hand lead soundings were plotted.*

3. Fathometer soundings on line 1 to 4-F appear to be a fathom deeper than those on all cross lines. This may be due to fluctuating voltage as two comparisons taken previous to this time but just six minutes apart differed by 5 feet. ✓

4. The 2nd to 5th soundings after position 7-F appear too deep. Recommend rejection of same. *The soundings were retained. Other soundings in this vicinity show similar differences.*

5. The 12 foot crossing 19 to 20-F and 41 to 42-D could be corrected by a slight shift of the line.

6. Soundings on F Day from right before position 33 to about 4 minutes after position 34 appear to be about a fathom too shoal. This is noted on five crosslines. *crossings OK except with B day see par 1 above.*

7. Crossing 21 to 22-B and 41 to 42-F is poor. This could be due to very irregular bottoms in this area altho soundings on B Day in this area appear to be too deep. ✓

8. Soundings on line 59 to 60-F are about a fathom shoaler than those on crosslines 76 to 77-A and 65 to 66-A. *Bottom irregular. All soundings were plotted*

9. Soundings in the center of line 133 to 134-F appear to be far too deep. This is probably due to an ^(?) erroneous reading of irregular bottom

the fathometer. *! HGT*

10. Many soundings on K Day are extremely doubtful due to continually fluctuating voltage. (See notes in sounding record.) Preference should be given to soundings on other lines.

The following are the worst of the cases in which poor crossings, caused apparently by erroneous soundings, were noted on this date.

- a. The crossings of 69 to 72-K with all other lines are poor.
- b. The crossings of 77 to 78-K with 82 to 83-H and 138 to 139-H are poor.
- c. Soundings on line 79 to 81-K are far too deep and extremely doubtful.
- d. Soundings on line 84 to 86-K are deeper than other soundings in the vicinity. This is noted especially when comparing with overlapping line 110 to 111-J.
- e. Soundings after position 82-K appear to be too deep.
- f. Soundings on line 92 to 93-K are deeper than those on the overlapping line 92 to 93-H.

11. The 15 foot crossing lines 89 to 90-C and 26 to 27-L is probably due to a few erroneous soundings on C Day. Bottom is extremely irregular. *The shoaler soundings were plotted.*

12. *not plotted* The 92 foot sounding after position 41-L appears to be erroneous. This caused the 15 foot crossing with line 62 to 63-K.

13. The crossings of line 109 to 110-G with lines 67 to 68-L and 69 to 70-L are poor. Soundings on G Day appear to be a fathom too shoal.

14. Soundings on line 76 to 78-L are shoaler than those
All soundings were plotted.
 on three cross lines.

VELOCITIES:

The method of determining the velocities used on this sheet is given on a separate paper at the end of this report.

DANGERS AND SHOALS:

There are no shoals within the limits of this survey which would be termed as dangers.

Shoal soundings were noted in many places on the shoal in the center of the sheet around Lat. $37^{\circ} 14'$ Long. $75^{\circ} 12'$. The shoalest sounding was one of 58 feet, obtained with the fathometer at position 64-D. With the handlead 63 feet was the least depth altho this depth occurred at several places.

On the shoal which centers at Lat. $37^{\circ} 12'$, Long. $75^{\circ} 16'$; a least depth of 61 feet was obtained at several places.

There is a least depth of 69 feet on the shoal at Lat. $37^{\circ} 04.5'$, Long. $75^{\circ} 26.5'$.

On the shoal on the northwestern edge of the sheet there is a 68 foot sounding at position $\phi 37-16.1 \wedge 75-22$ and also between positions 48 and 49-K. Altho soundings on K Day were rather questionable at times; these soundings are probably correct as there are 70 foot soundings at different places on this shoal which were obtained on other days.

COMPARISON WITH EXISTING CHART:

Except for a few soundings, miles apart, there are no soundings on the chart (1109) with which to make an adequate comparison. There are, however, several 10 fm soundings on the chart which correspond to the shoals in the center of the sheet.

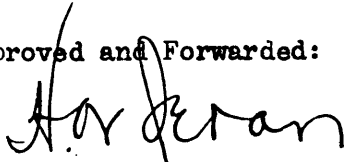
This depth compares exceptionally well with the 58 and 59 foot soundings found when developing these shoals and the positions are not far off.

Respectfully submitted,



R. A. Earle, Lt.(jg), U.S.C. & G.S.,
Ship OCEANOGRAPHER

Approved and Forwarded:



H. A. Seran, Comdr., U.S.C. & G.S.,
Commanding Ship OCEANOGRAPHER.

SHEET 48

STATISTICS

Day	Date	Soundings		Positions	Statute Miles	
		FM	HL		FM	HL
A	July 23, 1935	850		85	91.5	
B	July 24, 1935	1335		139	126.4	
C	July 25, 1935	1406		152	138.3	
D	July 26, 1935	1126		127	104.4	
E	July 30, 1935	800	286	95	17.2	35.0
F	July 31, 1935	1458		145	141.0	
G	Aug. 1, 1935	1259		125	121.5	
H	Aug. 2, 1935	1324		143	133.5	
J	Aug. 6, 1935	1370		129	135.7	
K	Aug. 7, 1935	874		102	89.6	
L	Aug. 13, 1935	708		83	42.4	
M	Aug. 14, 1935	468	20	52	41.1	2.0
Totals		12978	306	1377	1182.6	37.0

TIDAL DATA H5991

Location:	Cobb Island, Va.
	Latitude 37° 18.1'
	Longitude 76° 46.7'
Height of M.L.W. on Staff:	1.2 ft.
Highest tide observed:	6.9 ft June 19 & Sept 14, 1935
Lowest tide observed:	-0.1 ft July 16, 1935

As per Director's instructions dated September 27, 1935;
tides on this sheet were considered as occurring 15 minutes earlier
than at the tide station with no correction factor for range.

DETERMINATION OF VELOCITIES

SHEET 48

All work on this sheet was executed during the period July 23 to August 14, 1935, and during this time observations were taken on four trips to the working grounds.

To begin; all theoretical velocities determined from data obtained by the sounding vessel and the station ships on each individual trip, were plotted against the actual depths of the water in which they were taken; and after weighing each point in accordance with the number of observations taken, velocity curves were drawn. (On the graph different colors were used for different trips and different symbols for the different vessels.) All points on the entire sheet were then used, and weighing them again in accordance with the number of observations, a mean velocity curve for the entire sheet was drawn.

These curves were then examined and altho it was evident that the velocity increased with the temperature of the water as the season progressed, the mean curve seldom differed by more than one and one half meters per second from any other curve, and the maximum difference, which was only two meters per second, was due to a series of low velocities determined by the GILBERT on the first trip. Due to the above and to the fact that velocities at different depths on all trips were very erratic, differing by as much as five meters per second at the same depth when taken nearly simultaneously, it was decided that velocities at different depths could be scaled from the mean curve with as great a degree of accuracy as if each trip were

treated separately; therefore, velocities were scaled from this curve in accordance with the depth of the water and the assumption was made that the velocity was affected only by the depth of the water through which the sound wave travelled.

Due to the character of the bottom which varied erratically, no generalized depth curves could be drawn for this sheet, therefore areas of approximately equal depths were marked off on an overlay and labeled with the velocity for that depth as taken from the depth-velocity graph mentioned in the above paragraph.

In computing the actual velocity to be used for any particular RAR position, it was necessary to obtain a mean velocity between the station ship and the position. To lessen the work which would be involved in considering each position, separate systems of mean total velocity curves were drawn on overlays; one overlay being used for each position of each station ship. The method used in fixing the position of these mean velocity curves is as follows:

Radial lines were drawn (on an overlay placed over the equal depth tracing) from the position of the station ship so that they covered the whole area in which RAR stations were taken from said station. Using an arbitrary scale the distance along the radial lines between the equal depth-velocity curves were measured and tabulated. These distances were then multiplied by the corresponding velocity between each curve and a continuous total of the products was kept. To find the mean velocity at any curve, the sum of the products of the velocity units between the station ship and said curve was divided by the sum of the units of measure over the corresponding distance and the velocity obtained was plotted on the radial line. From these points

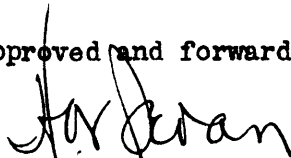
on the different radial lines mean-velocity curves were drawn and by placing the overlay containing these curves over the boatsheet, one could pick out the mean velocity from the station ship at each RAR position.

Respectfully submitted,



R. A. Earle, Lt. (jg), C&GS,
Ship OCEANOGRAPHER.

Approved and forwarded:



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

ac

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 Reductions~~ are approved in
8 volumes of sounding records for

HYDROGRAPHIC SHEET 5991

Locality Off Cape Charles, Virginia Coast.

Chief of Party: H. A. Seran 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.

Remarks

Decisions

	Remarks	Decisions
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GEOGRAPHIC NAMES
 Survey No. **H5991**

Name on Survey	1222										
	A	B	C	D	E	F	G	H	K		
<u>Gape Charles</u>	*		-	-		H	-	-			1
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Names underlined in red approved
 by *[Signature]* on 5/15/36

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. **H5991**

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

Number of positions on sheet	1377..
Number of positions checked	64 75
Number of positions revised	7
Number of soundings recorded	13284
Number of soundings revised	!!
Number of signals erroneously plotted or transferred

Date: Oct. 19, 1936

Verification by G.H. Everett

Time: 80 hrs.

Review by R.J. Christman

Time: 22 1/2

HYDROGRAPHIC SURVEY NO. H5991

Smooth Sheet yes

Boat Sheet 1

Sounding Records 11 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 _____

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
 DESCRIPTIVE REPORT } No. H 5991
~~PHOTOSTAT OF~~ } ~~No. T~~

{ received APR 16 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>J.P.</i>	<i>J.P.</i>	<i>J. P.</i>
24			
25			
26			
30			
40			
62			
63			
✓ 82	<i>A.L. Shalowitz</i>	<i>A.L.S.</i>	<i>D. R.</i>
83			
88			
90			

RETURN TO

82	C. K. GREEN
----	-------------

C. K. Green May 12 - '36

VERIFIERS REPORT ON H-5991

I. The records conform to the requirements of the General Instructions.

II. The 60 foot and 120 foot curves are complete within the limits of this survey.

III. The field plotting was complete and well accomplished. The few positions revised were changed to improve crossings when the position was doubtfully located.

Practically all positions verified were checked for distance from the location of hydrophone (data contained in copies)

IV. Junctions with 3 sheets have been made.

Sheet H-5713 was plotted in fathoms. Soundings were reduced to feet from the records. This junction shows less depth than H-5991.

Junctions with H-5771 and H-5988 are good.

Junctions with H-5995 and H-5992 have not yet been made.

V. Remarks.

On 5 day several lines were run using hand lead together with fathometer. The hand lead soundings were plotted (see note Vol. 3 Pg. 53)

List of Crossings on H-5991 which exceeded 5% of depth. ✓

A day.

			<u>Difference</u>	<u>Lat.</u>	<u>Long.</u>
100 ft. crosses	92 ft (F)		+8'	37-19.5	75-09.6
109	" 99' (F)		+10'	-19.6	-05.0
127	" 120 (F)		+7'	-20.1	-00.1
116	" 108 (F)		+8'	-17.5	-05.0
91	" 98 (B)		-7'	-18.1	-14.1

B day

106	" 97 (F)		+9'	-18.1	-19.9
96	" 87 (F)		+9'	-18.3	-09.9
101	" 95 (F)		+6'	-19.2	-09.9
92	" 87 (C)		+5'	-19.5	-14.6
88	" 82 (F)		+6'	-19.1	-15.0
96	" 91 (F)		+5'	-17.8	-15.1
70	" 77 (K)		-7'	-16.8	-22.2
90	" 101 (F)		-11'	-17.2	-22.6
96	" 87 (F)		+9'	-17.5	-15.1
87	" 81 (L)		+6'	-17.5	-21.0
92	" 98 (F)		-6'	-17.0	-23.0
80	" 88 (L)		-8'	-17.0	-22.3

C day

71	" 76 (E)		-5'	-17.4	-11.0
79	" 74 (F)		-5'	-15.6	-10.1
90	" 75 (L)		+15'	-15.2	-22.8
111	" 101 (F)		+10'		
80	" 85 (K)		-5'	-14.7	-23.1
78	" 84 (K)		-6'	-14.7	-23.2
82	" 87 (F)		-5'	-14.7	-23.8

D day

86	" 95 (F)		-9'	-13.7	-10.2
86	" 98 (F)		-12'	-13.9	-20.0
83	" 88 (K)		-5'	-13.8	-22.8
83	" 92 (K)		-9'	-13.8	-23.2
101 88	" 100 (K)		-12'	-12.8	-23.4
86	" 92 (L)		-6'	-12.9	-23.4

<u>D day Cont.</u>			<u>Diff.</u>	<u>Lat.</u>	<u>Long.</u>
83 ft	crosses	93 (F)	-10'	37-13.8	75-24.0
89	"	94 (F)	-5'	-12.9	-24.7
83	"	88 (K)	-5'	-12.3	-23.7
<u>G day</u>					
76	"	66 (F)	+10'	-12.9	-15.7
73	"	66	+7'	-11.4	-16.2
98	"	92 (L)	+6'	-09.8	-15.0
84	"	92 (L)	+8'	-09.5	-17.7
115	"	108 (M)	+7'	-09.2	-05.0
<u>H day</u>					
88	"	96 (L)	-8'	-08.0	-24.9
93	"	99 (K)	-6'	-08.0	-25.1
93	"	99 (K)	-6'	-06.3	-25.0
93	"	99 (K)	-6'	-07.4	-18.3
88	"	96 (K)	-8'	-07.2	-25.0
92		99 (K)	-6'	-06.3	-25.0
<u>V day</u>					
90	"	99 (K)	-9'	-05.1	-25.0
87	"	93 (L)	-6'	-04.7	-27.0
<u>L day</u>					
81	"	73 (K)	+8'	-04.2	-27.0
79	"	86 (L)	-7'		

It is noted in the records that the fathometer on K day was unsteady and probably registering too deep.

Some of these things may be due to a shift in the line or uneven bottom.

Submitted Oct. 19, 1936
 J. H. Evans

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5991 (1935) FIELD NO. 48.

Offshore Cape Charles, Virginia.

Surveyed in July-Aug. 1935, Scale 1:40,000.

Instructions dated April 27, 1933, (Oceanographer).

Hand Lead and Fathometer Soundings.

RAR control.

Chief of Party - H. A. Seran
Surveyed by - Ship's Officers
Protracted by - R. A. Earle
Soundings penciled by - R. A. Earle
Verified and inked by - G. H. Everett.

1. Condition of Records.

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

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

2. Compliance with Instructions for the Project.

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

3. Shoreline and Signals.

This is an offshore survey and no shoreline is shown on the sheet. The signals are survey buoys located by taut wire, and bomb distances with sun azimuths. The computed geographic positions are filed with Miscellaneous Data, 1935, in cahier S-1351.

4. Sounding Line Crossings.

The sounding line crossings in general are satisfactory. On several occasions, especially on K day, the fathometer was not functioning well, and thus introduced some crossing discrepancies. Other differences are due principally to the uneven bottom as indicated by differences between soundings on the lines themselves.

5. Depth Curves.

Within the area of the survey the usual depth curves can be satisfactorily drawn.

6. Junctions with Contemporary Surveys.

The junctions with H-5988 (1935) to the west, with H-5771 (1934)

on the north, with H-5713 (1934) on the northeast, and with H-5995 (1935) on the east are satisfactory.

Several soundings from the small scale sheets, H-5713 (1934) and H-5995 (1935), falling within the area of the present survey at the northeast corner of the sheet were found to be 6 to 10 feet shoaler than the depths on H-5991 (1935). Since the inclusion of these soundings on the present survey would have introduced improbable irregularities in the 20 fathom curve, and since the area is adequately developed on the larger scale present survey, the soundings have been removed from the smooth sheets upon which they originated. The curves along the junction are now in agreement.

Junction with H-5992 (1935) to the south will be considered in the review of that sheet.

7. Comparison with Prior Surveys.

a. H-237 (1849-50), H-1498a (1880-83, H-2920a (1882-7)).

The first on scale 1:400,000, the others plotted on copies of Sailing Chart A, are surveys of a reconnaissance nature showing a very few soundings within the area of the present survey. They need not be considered in future charting.

b. H-1720 (1886), H-2118 (1892), H-3314 (1911).

These surveys on scales of 1:200,000; 1: 100,000; and 1:200,000 respectively, show widely spaced sounding lines (2 to 7 miles apart) in the area of the present survey. The depths in general are in very good agreement with the present survey, but because of the larger scale and much closer development, H-5991 (1935) should supersede the above surveys for charting purposes.

c. H-4178 (1921), H-4193 (1921).

These surveys on scales of 1:120,000 and 1:40,000 are dependent on dead reckoning for control of lines in the area common to the present survey. In the western portion of the area, the agreement in depth is fair, but in the eastern portion there is apparently a displacement of sounding lines on the older surveys, though the lines are spaced too far apart to show special details. Because of the closer development and better control of the present survey, H-5991 (1935) should supersede the above surveys for future charting purposes.

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 very satisfactory.

10. Additional Field Work Recommended.

The survey is satisfactory and no further work is required.

11. Note to Compiler.

Attention is directed to par. 6 of this review relative to the use of this survey for charting in preference to the smaller scale surveys.

12. Superseding Old Surveys.

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

H- 237 (1849-50)	In part	H-2920a(1882-87)	In part
H-1498a(1880-83)	"	H-3314 (1911)	"
H-1720 (1886)	"	H-4178 (1921)	"
H-2118 (1892)	"	H-4193 (1921)	"

13. Reviewed by - R. J. Christman, Oct. 22, 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.

L. O. Robert.
Chief, Division of Charts.

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

Applied to Chart 1222 - Feb 1937 - L.M.Z.
" " " 1109 - " L.M.Z.

CH-12021 (Prototype) Fully Applied - J. Graham