

5990

~~Additional work 1940~~

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

DESCRIPTIVE REPORT

~~Topographic~~ } Sheet No. 47 ✓
Hydrographic }

LOCALITY

~~Chesapeake Light Vessel to~~
~~Wash Woods Coast Guard Station.~~

Offshore Virginia Coast
Cape Henry to False Cape

1935

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. 47

REGISTER NO. 5990

State Virginia

General locality ~~Eastern Shore~~ Offshore Virginia Coast

Locality Cape Henry to False Cape
~~Chesapeake Light Vessel to Wash Woods Coast Guard Station~~

Scale 1-40,000 Date of survey June 6 - Aug. 27, 1935

Vessel Ship LYDONIA

Chief of Party Ray L. Schoppe

Surveyed by Ray L. Schoppe

Protracted by J. E. Waugh

Soundings penciled by W. N. Martin and M. O. Witherbee

Soundings in ~~fathoms~~ feet

Plane of reference M L W

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated April 27, 1933, H T 142 and 143
Jan'y 10, 1935, H T 200, 19

Remarks:

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SHEET NO. 47.

Project No. H T-143

Virginia Coast - Chesapeake Light Vessel to Wash Woods
Coast Guard Station.

Date of Instructions:

The work on this sheet was done in accordance with Director's Instructions to the Commanding Officer of the OCEANOGRAPHER, LYDONIA and GILBERT dated April 27, 1933, covering projects H.T. 142 and 143. Additional Instructions for this work were written for project H.T 200, dated January 10, 1935.

Limits:

This sheet comprises the hydrography of an area extending from the Chesapeake Light Vessel to Wash Woods Coast Guard Station, but does not extend close in shore. The hydrography nearest the shore is 13 miles from the beach.

H-5988 H-5911
This sheet joins sheets H-4089 and H-4286 on the west, field sheets Nos. 46 and 49 (1935) on the north, and on the east it joins sheets Nos. 49 and 49 1/2 (1935).

Survey Methods:

All hydrography on this sheet was controlled by visual fixes on buoys, which were planted by the LYDONIA. Four buoys on sheets 46 and 47 within sight of shore signals were located by sextant fixes and all other buoys were located from these by sun azimuths and taut wire

distances. Due to a shortage of wire some distances were originally obtained from log runs, but were later verified by taut wire measurements and the wire measurements were used on the smooth sheet.

Soundings on this sheet were obtained by the Shoal Water Fathometer with a ten minute hand lead comparison each hour, at reduced speed. The ship was also stopped once each hour for a vertical comparison of hand lead and fathometer soundings. See paragraph 2-a, Director's letter of May 29, 1934.

Discrepancies:

In general all crossings on this sheet agreed within one or two feet. Only those in excess of two feet will be mentioned and they are as follows:

- (1) At latitude $36^{\circ}53'6$ and longitude $75^{\circ}37'2$ there is a crossing of ^{2 ft.} 5 feet between positions 115-116-B and 4-5-G. A five foot swell was noted in the record book for G day.
- (2) At latitude $36^{\circ}43'$ and longitude $75^{\circ}44'$ there are some crossings of 2 to 3 feet between 294-296-J and the regular system of lines. The soundings between 294-296-J appear to be in error, but no reason can be found for the discrepancy.
- (3) At latitude $36^{\circ}54'0$ and longitude $75^{\circ}42'8$ there is a crossing of 5 feet between positions 17-18-K and 144-145-C. This apparent discrepancy is probably due to the irregular bottom.
- (4) At latitude $36^{\circ}43'$ and longitude $75^{\circ}41'5$ there are several crossings of 2 to 4 feet between positions 130-132-K and the regular system of lines. The soundings between 130-132-K appear to be in error without any evident reason.
- (5) At latitude $36^{\circ}56.7$ and longitude $75^{\circ}32.7$ there is a crossing of 3 feet between 157-158-A¹ and 133-134-C¹. This crossing is evidently due to a very slight displacement on one or both of these lines.

All soundings
at crossings
retained
JSL.

- (6) At latitude 36°41.6 and longitude 75°33.7 on position 113-M there is a sounding which is evidently one fathom too deep. This sounding is on the beginning of a line with a note by the fathometer observer that it is probably one fathom too deep.

63 ft. Sounding at
pos. 113 M rejected
J.G.L.

Dangers:

There are no dangers on this sheet for any vessels, except those of very deep draft. Only two shoals were found where the depth was less than 45 feet and these are as follows:

- (1) At latitude 36°54.4 and longitude 75°42.7 there is a narrow shoal about 1 mile long with a minimum depth of ~~37~~ 36 feet.
- (2) At latitude 36°43.2 and longitude 75°46.2 there is a small shoal area with a minimum depth of 40 feet. This spot is well outside of the area designated for the season's work.

Other shoal soundings are listed in the following table.

<u>Sdg.Ft.</u>	<u>Lat. 36°</u>	<u>Long. 75°</u>	<u>Pos. No.</u>
46'	57.4'	40.5'	49-50-C ✓
47'	57.8	39.6	17-18-B ✓
55'	56.8	38.3	25-26-B ✓
50'	55.3	40.6	104-105-B ✓
56'	53.4	44.1	24-D ✓
47'	50.5	47.1	110-111-D ✓
49'	54.3	33.9	149-150-C ✓
54'	52.6	33.6	144-145-Z ✓
56'	50.3	34.2	145-X ✓
52'	48.5	35.9	59-60-X ✓
58'	51.1	37.8	157-158-F ✓
55'	49.6	36.6	71-72-X ✓
50'	47.0	37.4	116-117-V ✓
56'	47.0	31.2	65-66-B ¹ ✓
56'	46.0	28.9	32-C ¹ ✓
51'	40.5	31.9	85-86-L ✓

Continued on sheet #4.

<u>Sdg. Ft</u>	<u>Lat. 36°</u>	<u>Long. 75°</u>	<u>Pos. No.</u>
56'	42.5'	31.8'	99-M ✓
53'	39.1	31.3	240-241-M ✓
52'	39.4	32.2	209-210-M ✓
55'	50.3	39.9	226-227-C ✓
58'	49.2	41.9	64-E
57'	47.6	41.1	9-10-M ✓
55'	47.3	39.7	140-141-K ✓
56'	45.0	39.0	100-101-H ✓
52'	45.9	43.0	139-H ✓
53'	44.6	43.1	47-J ✓
50'	44.3	41.3	55-56-J ✓
56'	43.1	38.3	80-81-M ✓
50'	40.8	42.3	287-288-J ✓
50'	40.0	40.5	105-106-K ✓
55'	41.2	37.1	69-L ✓
52'	39.4	37.9	58-59-N ✓
52'	37.3	38.6	102-103-Q ✓
46'	36.6	37.0	200-201-R ✓
49'	35.7	39.5	85-86-T ✓

Channels:

There are no channels on this sheet.

Anchorage:

There are no sheltered anchorages on this sheet, although the sea is not nearly as rough over the entire area as it is farther east in deep water.

Comparison with Previous Surveys:

In accordance with paragraph 1 of the Director's letter dated June 3, 1935 a shoal at Latitude 36°40.5 and longitude 75 32' was thoroughly developed and the least depth found to be 51 feet. The 46 foot spot formerly

(See corrected soundings attached to D. R. H5993) CKA

(5)

charted on this position should be removed from the sheet.

48 has been removed
from charts.
See review, par. 8.
J.G.L.

The remainder of the sheet has been compared with charts No. 1222 and 1227 as representing all previous surveys. In general the depths on this sheet agree with those on the chart. The depth curves are considerably different than those shown on the charts, but due to the character of the bottom a difference of a foot or two in most places would cause considerable change in the curves.

Respectfully submitted

Earl O. Heaton

Earl O. Heaton
Lieu't. C & S

*Approved and forwarded.
Ray G. Schoppa
Chief of Party.*

*Approved
H. J. Swan.*

STATISTICS

Day	Date	Soundings			Pos.	Stat. Miles
		H L	Fatho.	Total		
A	June 25, 1935	18	52	70	11	4.0
B	" 26 "	74	718	792	147	67.0
C	" 27 "	124	1365	1489	276	132.6
D	" 28 "	138	896	1034	178	86.4
E	July 2	48	343	391	74	24.9
F	" 9 "	96	961	1057	196	85.4
G	" 10 "	109	1157	1266	237	105.8
H	" 11 "	85	885	970	186	80.7
J	" 12 "	124	1436	1560	297	135.8
K	" 17 "	76	712	788	151	61.2
L	" 23 "	83	685	768	153	59.2
M	" 24 "	127	1317	1444	265	110.4
N	" 25 "	90	1089	1179	219	92.4
P	" 26 "	37	391	428	80	33.4
Q	" 30 "	97	1014	1111	208	89.9
R	" 31 "	129	1329	1458	267	118.1
S	Aug 1	104	1322	1426	260	105.9
T	" 2 "	72	635	707	121	52.2
U	" 13 "	77	951	1028	179	84.1
V	" 14 "	130	1355	1485	268	116.6
W	" 15 "	133	1299	1432	271	101.7
X	" 16 "	78	1028	1106	194	92.4
Y	" 20 "	69	325	394	76	30.7
Z	" 21 "	318	914	1232	268	95.8
A ¹	" 22 "	66	1136	1202	202	97.0
B ¹	" 23 "	23	428	451	78	37.6
C ¹	" 27 "	82	967	1049	204	86.7
27 days		2607	24710	27317	5066	2187.9

HYDROGRAPHIC SURVEY NO. H5990

Smooth Sheet yes

Boat Sheet 1

Sounding Records 15 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. **H5990**
.....

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

Number of positions on sheet5066
Number of positions checked23
Number of positions revised0
Number of soundings recorded27,317
Number of soundings revisedapp. 1500
Number of signals erroneously plotted or transferred0

Date: Oct. 13, 1936

Verification by

Review by

J. A. McCormick
John B. Leedy

176

Time: 123 hrs.

Time: 28 1/2 hrs.

GEOGRAPHIC NAMES
 Survey No. **H5990**

Name on Survey	1227									
	A	B	C	D	E	F	G	H	K	
<u>Cape Henry</u>	*		-	✓			-	-		1
<u>False Cape</u>	*		-	-			-	#		2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
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										22
										23
										24
										25
										26
										27

Names underlined in red approved
 by *[Signature]* on 5/14/36

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
 DESCRIPTIVE REPORT } No. H 5990
 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			
24			
25			
26			
30			
40			
62			
63			
82			
83			
88			
90			

RETURN TO

82	
----	--

C. K. Green *May 12 - '36*

KWC

TIDE NOTE FOR HYDROGRAPHIC SHEET

August 21, 1936.

Division of Hydrography and Topography:

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

Plane of Reference

~~This Record is~~ approved in
15 volumes of sounding records for

HYDROGRAPHIC SHEET 5990

Locality Cape Henry to False Cape, 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

The tides for this sheet were considered to occur 15 minutes earlier than at Cobb Island and the range of tide was considered to be 0.8 of that at Cobb Island.

Height of mean high water above plane of reference is 3.3 feet.

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

TIDAL DATA H5990

Location of Tide Gauge:

Cobb Island Coast Guard Sta.
Cobb Island, Virginia
Latitude $37^{\circ}18.1'$
Longitude $75^{\circ}46.7'$

Height of M L W on staff

* 1.2 feet

Highest tide observed (Staff Reading)

6.9 feet June 19, 1935
6.9 feet Sept 14, 1935

Lowest tide observed (Staff Reading)

- 0.1 feet July 16-20, 1935

* The tides on this sheet were considered to occur 15 minutes earlier than at Cobb Island and the range of tide was considered to be 0.8 of that at Cobb Island.

* Reference to Director's letter (34-MT) of Sep't. 27, 1935 to Commanding Officer, Ship LYDONIA regarding Tide Reducer.

Records:

Records conform to ~~specifications~~ specifications.

Drafting:

Drafting is excellent. The Chief of Party and the officers who did the drafting should be commended for the high quality of their work. ✓

Junctions:

This sheet is joined on the north by H-5988 (verified), on the northeast by H-5992 and on the east by H-5993. Overlap was transferred from H-5988 and the junction is satisfactory. ✓

Reviewer's attention is called to ^{second} 1 paragraph under "Limits" on page 1 of Descriptive Report. Therefore did not attempt to show overlapping soundings from H-4089 and H-4286. ✓

Remarks:

Reviewer is referred to some paragraph on page 2. This paragraph ~~and~~ refers to the 10-minute hand lead comparison made each hour while the Dorey fathometer was operating.

The question was brought up by the verifier as to whether the hand lead or the fathometer soundings should be plotted when both were obtained. The Chief of Field Records Section made the decision that fathometer soundings should be plotted. This necessitated changing approximately 1500 soundings because the field party had plotted hand lead soundings. ✓

The field party did not show vertical casts. An inspection of the records will show

that vertical casts were taken in series of 6 to 8. Verifier averaged the fathometer soundings and vertical casts for each series. The sounding point was taken as 0.5 foot. It was thought that this would be more consistent under the circumstances than the usual 0.7 rule. The resulting means were plotted on the sheet in the manner usually employed for showing vertical casts. ✓

Verifier kept a rough record of the vertical casts and running comparisons. The results were as follows: ✓

217 series of vertical casts gave a total difference of 38.97 feet between hand lead and fathometer. The fathometer averaged 0.18 foot deeper than the hand lead; speed 0.18 foot deeper than the hand lead; speed taken at sounding speed ✓

2063 simultaneous soundings with hand lead and fathometer gave a total difference of 748 feet. The fathometer averaged 0.36 foot shallower than the hand lead.

The tabulation of differences accompanies this report. In case it is desired to use these tabulations it will probably be necessary for the verifier to put them in a more understandable shape. ✓

Buoy locations will be found in Vols. 4 + 5 for H-5989. ✓

Oct. 13, 1936.

Submitted,

J. A. McCormick.

a	0	1	-2.04	3
B	-1.49	7	-0.36	8
C	-6.51	1	-0.43	7
D	-2.35	8	-1.74	3
E	-0.22	3	+3.28	9
F	-0.52	8		
G	-1.39	10		
H	-4.98	8		
J	-4.12	12		
K	-2.71	7		
L	-1.56	9		
M	-2.45	12		
N	-5.12	10		
P	-1.00	4		
Q	-3.80	9		
R	+2.20	10		
S	-2.26	12		
T	-1.82	7		
U	+0.51	8		
V	+6.19	12		
W	-1.08	10		
X	-4.20	9		

Total
 $\frac{-38.97}{217}$

$\frac{18}{217} \frac{38.97}{217}$
 $\frac{1727}{1736}$

Vertical Casts

~~Fathometer - Hand Lead =~~
 Hand Lead - Fathometer = $\frac{-38.97}{217} = -0.18 \text{ feet}$

1
 7
 12
 8
 8
 3
 8
 8
 10
 10
 8
 12
 7
 9
 12
 12
 10
 4
 9
 12
 12
 7
 8
 12
 9
 10
 10
 10
 9
 7
 8
 12
 9
 12
 7
 8
 12
 10
 9

51.15
 12.18
 38.97
 2.20
 .51
 6.19
 3.28
 12.18

10
 8
 12
 9
 217

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5990 (1935) FIELD NO. 47

Cape Henry to False Cape, Offshore Virginia Coast, 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 - R. L. Schoppe
Surveyed by - R. L. Schoppe
Protracted by - J. E. Waugh
Soundings penciled by - W. N. Martin and M. O. Witherbee.
Verified and inked by - J. C. McCormick.

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 is contained in the records.
- b. Where comparative soundings were taken with the vessel stopped the field party did not plot the lead line soundings. These were added in the office.

The Descriptive Report is complete and satisfactorily covers all items of importance, except that it contained no statement as to how the fathometer corrections were determined.

2. Compliance with Instructions for the Project.

With the exception of the small shoal area noted in par. 10 of this review, the survey fully complies with the instructions for the project. The sheet is a fine example of a well planned and well executed survey.

3. Shoreline and Signals.

There is no shoreline within the limits of this survey. The signals are all buoys located by the hydrographic party. The cuts, compilation etc., for same are recorded in Volumes 4 and 5 of H-5989 (1935).

4. Sounding Line Crossings.

The crosslines in general are satisfactory, although there are a few cases of 2 to 4 foot differences which are attributed to the irregular bottom.

5. Depth Curves.

The usual depth curves may be satisfactorily drawn.

6. Junctions with Contemporary Surveys.

- a. Satisfactory junction is made with H-5988 (1935) on the north. The junctions with H-4089 (1921) and H-4286 (1922) on the west along the 60 foot curve is satisfactory and is in conformity with the instructions of Jan. 10, 1935. The junction soundings, however, have not been shown on the smooth sheet since a resurvey of this inshore area is eventually contemplated.
- b. The junctions with H-5992 (1935) on the northeast and with H-5993 (1935) on the east will be considered in the reviews of those surveys.
- c. There is no contemporary survey on the south, the only previous work in the area being H-965 (1868).

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

This survey on a scale of 1-40,000 shows but two lines of widely spaced track soundings within this area. They should be considered as reconnaissance only. The soundings on this survey have been superseded on the chart and needs no further consideration in this review.

b. H-397 (1853), H-520 (1855) and H-965 (1868).

These surveys on 1-40,000 scales, combined, cover the entire area of the present survey. Although there are a few differences of 2 to 3 feet in depths of 60 to 70 feet, the agreement may be considered as satisfactory. In view of the adequate development of the area on the present survey together with a number of intermediate surveys which show a shifting bottom, the above 3 surveys should be disregarded in future charting.

c. H-1498a (1882) and H-1531 (1882).

These surveys on a 1-1,200,000 scale are in reality, (within the limits of the present survey) but one survey. The single line that falls within the limits of the present survey is in good agreement with it.

d. H-1721 (1886).

This survey on a scale of 1-200,000 contains but a few sounding lines that overlap the present survey. The agreement in general is satisfactory with the exception of the 10 fathom sounding at lat. $36^{\circ}43.5'$, long. $75^{\circ}29.3'$ which falls on the

present survey in depths of 77 to 82 feet. The sounding volumes for this survey could not be located so the type of control used could not be determined. However because of the distance from shore the control is obviously dead reckoning. In view of the much larger scale and adequate development of the present survey which shows no indication of shoaling of this spot, the 10 fathom is considered to be either out of position or erroneous, and should be disregarded in future charting.

e. H-2759 (1905).

This survey on a scale of 1-80,000 contains a number of sounding lines overlapping the present survey that are controlled by dead reckoning of the earlier type. The agreement is not satisfactory, there being some differences of 10 to 17 feet in depths of 60 to 70 feet. In view of the weakness of the control on the old survey together with larger scale and adequate development of the area on the present survey, it should supersede the former (H-2759-1905) in future charting.

f. H-4090 (1919), H-4089 (1919), H-4193 (1921) and H-4286 (1922).

These surveys are on 1-40,000 scales except H-4090 (1919) which is on a 1-80,000 scale. Together they cover the major portion of the present survey. A comparison shows a good agreement although a few differences of 2 to 3 feet are noted in depths of about 60 feet. In each case, however, similar depths may be found on the present survey very close by, consequently they contain no chartable information not shown on the present survey and should be superseded by it in future charting.

g. H-4178 (1921).

This survey on a 1-120,000 scale contains but a single sounding line that overlaps the present survey. The agreement is satisfactory.

h. H-4255 (1922).

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

i. H-4255a (1925).

This survey is on a scale of 1-120,000 and consists of a resurvey of H-4255 (1922). (For details see Descriptive Report

and review therein). Since the work on H-4255 (1922) has been adjusted to this survey (H-4255a -1925) and both are shown on H-4255b (1922-25) a comparison of H-4255a (1925) with the present survey is considered under H-4255b (1922-25).

j. 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-4255 a (1925) for further details). The agreement with the present survey is satisfactory when the fractions of fathoms (as recorded in the sounding volumes) are taken into consideration but which were dropped in the plotting of the smooth sheets (H-4255 and H-4255a). It should also be noted that in charting these surveys the recorded fractions were not used in converting fathoms to feet. An important example of this is the charted 60 foot sounding from H-4255a (1925) at lat. $36^{\circ}32.6'$, long. $75^{\circ}33.5'$ which falls on the present survey between a 64 and 66. The records for H-4255a (1925) shows this sounding as 6 fathoms, 4 feet. The present survey with its larger scale and greater development should supersede H-4255b (1922-25) in future charting.

8. Comparison with Chart No. 1222, 1227 and 1001 (New Print dates Feb. 5, 1935, Feb. 8, 1935 and Aug. 19, 1935).

a. Hydrography.

Within the limits of the present survey the charts are based on surveys discussed in the foregoing paragraphs and contain no additional information that needs consideration in this review. Attention is, however, called to the following:

The 46 foot sounding formerly charted on chart 1227, ($7\frac{1}{2}$ fathoms on chart 1001) at lat. $36^{\circ}40.5'$, long. $75^{\circ}32'$ (originating with chart letter 403 of (1917) from the Hydrographic Office) was deleted upon advanced information from the field party for the present survey (see chart letter 965 of 1935). It needs no further consideration in this review and is mentioned here as a matter of record only.

b. Aids to Navigation.

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

9. Field Plotting.

The field plotting was excellent.

10. Additional Field Work Recommended.

When work is continued to the southward the 59 and 60 foot shoal spots in the vicinity of lat. $36^{\circ} 31'$, long. $75^{\circ} 31.7'$ should be further developed as adjacent lines indicated considerable slope.

11. Superseding Old Surveys.

Within its limits the present survey supersedes the following surveys for charting purposes.

H-397 (1853)	in part
H-520 (1855)	" "
H-965 (1868)	" "
H-1531 (1882)	" "
H-1498a (1882)	" "
H-1721 (1886)	" "
H-2759 (1905)	" "
H-4090 (1919)	" "
H-4089 (1919)	" "
H-4178 (1921)	" "
H-4193 (1921)	" "
H-4255 (1922)	" "
H-4255a (1925)	" "
H-4255b (1922-25)	" "
H-4286 (1922)	" "

12. Reviewed by - John G. Ladd, Oct. 21, 1936.

Inspected by A. L. Shalowitz.

Examined and approved:

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

R. O. Polbat
Chief, Division of Charts.

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

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

Applied to Chart 1222 - Feb 1937 - R.M.Z.
" " " 1227 " R.M.Z.
" " " 1109 " R.M.Z.