5543

Form 504
Rev. Dec. 1933

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

DESCRIPTIVE REPORT

~~Topographic~~ Hydrographic } Sheet No. C 5543

State Massachusetts

LOCALITY

Cape Cod

Billingsgate Shoal

1934

CHIEF OF PARTY

U. S. GOVERNMENT PRINTING OFFICE: 1934

5543

Form 537
Ed. Dec., 1930

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. H - C

REGISTER NO. 5543

State Massachusetts

General locality Cape Cod

Locality Billingsgate Shoal

Scale 1:20,000 Date of survey May to August, 1934

Vessel Launch C 3769

Chief of Party Earle A. Deily

Surveyed by Edward S. Averell

Protracted by Ernest L. Hayward

Soundings penciled by Ernest L. Hayward

Soundings in ~~fathoms~~ feet

Plane of reference Mean low water

Subdivision of wire dragged areas by none

Inked by L. E. Perkins

Verified by L. E. Perkins

Instructions dated April 29, 1933, Orders May 2, 1934

Remarks:

U. S. GOVERNMENT PRINTING OFFICE, 1932

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SHEET C

CAPE COD, MASSACHUSETTS, 1934

Project H.T. 145

Earle A. Deily
Lieutenant, U.S.C.& G. Survey,
Chief of Party.

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SHEET C

CAPE COD , MASSACHUSETTS , 1934

Project H.T. 145

a:- Authority:

The authority for the work embraced by this sheet was embodied in the "Instructions" of the Director to the Inspector, U.S.Coast and Geodetic Survey, Boston Field Station dated April 29, 1933 , and in the "Orders" to Lieutenant Earle A. Deily, dated May 2, 1934.

b:- Survey Methods:

The usual hydrographic survey methods were used.

All soundings were taken with the hand lead. Shoal hand lead indications were developed by closely spaced lines and drift soundings. The launch speed at such times was reduced to a minimum.

Inshore soundings were taken at high tide and lines were run as close to the beach as depth and dangers permitted. *along 70°10' The position of the low water line between Sesuit Creek* and the western limit of the shee t was not determined because of the presence of numerous rocks which made navigation dangerous.

Cross lines were run over the entire area. In most cases satisfactory crossings were obtained.

c:- General Description of the Area Surveyed:

The hydrography on this sheet embraces in particular the developement of Billingsgate Shoal and the water area to the south and southeastward. The bottom in the last mentioned area is extremely irregular and numerous shoal indications were developed. Development of the 10 fathom curve was the westward limit of the work.

As tall signals for offshore hydrography were in place a system of more widely spaced lines were run outside the 10 fathom curve to complete the area south of Wood End Lighthouse and westward to the limit of the sheet.

A shoaling was noted in the lower end of Wellfleet Harbor and some hydrography was done to see what changes had occurred.

The area south of Billingsgate Shoal is very foul and wire dragging is recommended.

d:- Discrepancies:

Such discrepancies as were evident in the boat sheet were investigated and adjusted as soon as possible in the field.

In general the cross lines checked well. In some areas it was almost impossible to get good crossings and this was due apparently to bottom irregularities altho strong currents were noted south of Billingsgate Shoal. Special effort was made by the leadsmen to get good soundings and checking was continually done by the left angle man.

The soundings on the crossing of 16 feet on 19 feet, Latitude 41 51, Longitude 70 03.1 are undoubtedly correct as the bottom is irregular and a 19 foot deep was evident at this point on hydrographic sheet 5401 done in 1933.

In Latitude 41 48.1, Longitude 70 04.6, line 54 -55 bh, the cross line fails to check the east and west line by 1 fathom; see soundings previous to 55 bh. Considerably better agreement was secured on the boat sheet with predicted tides. The cross line was run on a rough day with a 1½ foot chop in a light southwesterly breeze with the note on position 57 bh that the wind and sea were increasing. It is recommended that the soundings on the east and west line be retained with the depth curves as drawn.

In Latitude 41 47 to 48, Longitude 70 05.6, positions 41 to 45 bh, the cross line fails to check in particular with a sounding of 26 feet between soundings of 19 and 21 feet; two soundings previous to position 43 bh. It is recommended that all of the soundings here be retained as this area has a particularly uneven bottom as evidenced by the close developement in the adjoining area. The cross line was run with a 1½ foot chop, light southwesterly breeze.

There is a discrepancy of 4 feet in the crossing in Latitude 41 48.6, Longitude 70 05.7. The line 110 a to 113 a was run on the first day of sounding and poor sounding may be the cause for this difference altho the bottom is irregular as evidenced by the 17 foot shoal in Latitude 41 48.4, Longitude 70 05.5. It is recommended that the shoal soundings be retained as the adjoining crossline checks and there is no evidence in the records of a fathom miscalling in the soundings.

When line, positions 79 ar to 83 ar was run, Latitude 41 53, Longitude 70 10, considerable difficulty was experienced in securing a line of soundings in the position as desired and the line was continually broken. The shift in line was probably due to poor sextant angles as the objects used were extremely distant. It is recommended that the soundings after 79 ar to 84 ar be deleted and the depth curve be drawn as shown. The cross line and the line positions

85 ar to 88 ar seem to check closely with the previous work.

Lat. 41°49.2 Long. 70°04.2

The soundings, positions 27g to 32 g, should be deleted even tho the sounding immediately after 32 g shows an OK. The other lines run to check these soundings show definite shoaler soundings and there is a 17 foot spot in this area.

Sdgs. deleted

When the lines 1ax to 44ax were run the position of the depth curve on the boat sheet changed considerably. The diagonal lines in this area were run as checks. The disagreement was probably due to faulty predicted tide reducers as little discrepancy is noted on the smooth sheet.

The line 1a to 3a, Latitude 41 46.6, Longitude 70 11.3 should be deleted altho shown on the smooth sheet. This was the first line run and the hydrographer reports that he undoubtedly mistook the right object. Additional lines were run in this area to disprove the soundings in question. No soundings similar to the first three were secured.

Not plotted

The single sounding of 12 feet, Latitude 41 50.9, Longitude 70 03.1, between positions 80e and 81 e was investigated further on October 18 th. The least depth found on this date after 3/4 of an hour in search was 14 feet. It is recommended that the 12 foot sounding be retained altho a sounding of 16 feet, position 5 bl fell nearly on the 12 foot sounding. The probability is that the shoal sounding was on a boulder which was not touched later. There are adjacent 14 and 15 foot soundings. The geologic features of the surrounding land areas give evidence of the possibilty of a boulder strewn bottom.

W.D.

There is a poor crossing on the line positions 56j to 59j, Latitude 41 51.5, Longitude 70 03.2. This crossing is satisfactory on the boat sheet with predicted tides. The north and south line was run in a light chop. The cross line checks the 1933 work fairly closely. It is recommended that the soundings from positions 56 j to 59 j be deleted.*

* These soundings evidently are erroneous and are deleted C&R.

e:- Dangers:

1-Approximately 25% of the work on this sheet is on Billingsgate Shoal which extends in a southwest direction for a distance of approximately 6 miles from the peninsula and string of islands on the west side of Wellfleet Harbor. This extensive shoal area bares at low water at its eastern end and the water deepens slowly to 20 feet at the western end. The north side of the shoal falls off slowly while the south side is steep-to. The water area to the south and west of the tip of the shoal is extremely irregular and is apparently boulder strewn.

2-Shoal, Latitude 41 48.6, Longitude 70 11.6, Positions 28bg, 29 bg, 35 bg., least depth 20 feet. This is the prominent shoal off the tip of Billingsgate Shoal. In addition to sounding lines 3/4 of an hour was spent in drift soundings and nothing less than 20 feet was found.

3-There is an isolated 32 foot spot, Latitude 41-49.8, Longitude 70 10.8, positions7ag and 8 ag. Further soundings in this

area, see positions 61 bg to 78 bg, gave no less depth than 33 feet, position 69 bg. One half hour was spent in drift soundings. The 32 foot sounding should be retained.

4-Shoal Indication, Latitude 41 48.3, Longitude 70 11.2, positions 6 bg and 7 bg, least depth 45 feet. There was a sounding of 33 feet, position 13 ai at this point. One half hour was spent in drift soundings in this area and nothing less than 45 feet found. Undoubtedly the sounding should be 8-4 as ok on the sounding previous to 13 ai. From the above explanation the 33 ft. sdg. undoubtedly was erroneous. There is no indication of a shoal in the area GR

5-Shoal indication, Latitude 41 48.7, Longitude 70 10.7, sounding 41 feet, position 71 ah. Nothing less than 45 feet, position 101 bg, was found after 50 minutes of drift sounding. It is recommended that the 41 foot sounding be shown.

6-Tip of shoal, Latitude 41 48.9, Longitude 70 10.3. A least depth of 28 feet, position 126 bg was found during 20 minutes of drift sounding at this point. The leadsman reported a definite hill-like feel to the bottom.

7-Detached shoal, Latitude 41 48.7, Longitude 70 10.0, A least depth of 33 feet, positions 127 bg, 128 bg, 129 bg was found here after ½ hour of drift sounding.

8-Detached shoal, Latitude 41 48.3, Longitude 70 10.1. A least depth of 38 feet, position 26 an was found here after 1½ hours of random sounding.

9-Detached shoal, Latitude 41 48.9, Longitude 70 09.8. A least depth of 28 feet, position 52 bk was found here after 20 minutes of drift sounding.

28 ft sdg close by

10-Detached shoal, Latitude 41 48.7, Longitude 70 09.8. A least depth of 29 feet, position 46 bk was found here. Cross lines were run and then 20 minutes was spent in drift sounding.

11-Detached shoal, Latitude 41 48.4, Longitude 70 09.8. This is a detached shoal of considerable size. The least depth found was 32 feet, position 96 be. Drift soundings were taken in the area immediately to the northward but nothing less than 33 feet, position 25 bk, was found.

31 Ft 65-66 BC

12-West end of foul area- Latitude 41 48.3, Longitude 70-09.6. Detached soundings were taken here but nothing less than 32 feet, positions 13 bk. Fifteen minutes was spent in drift sounding.

12 - 14 bk

13-Detached shoal, Latitude 41 48.6, Longitude 70 09.4 A least depth of 33 feet, positions 19 bd to 20 bd , was noted here.

14-Detached shoal, Latitude 41 48.5, Longitude 70 09.2. A least depth of 30 feet, position 66 an, was found in this area. Approximately 1 hour was spent in sounding in this area. A 29 foot spot was found later immediately southeastward, positions 73 bk and 74bk latitude 41 48.5, Longitude 70 09.1, 15 minutes spent in drift sounding.

15-Detached Shoal, Latitude 41 48.3, Longitude 70 09.1. A least depth of 30 feet, positions 70 bk and 71 bk, was found here after 15 minutes spent in drift sounding.

16-An extensive shoal area having a ~~least~~ depth of 29 feet in places extends from Latitude 41 48.5 to 41 48.8, Longitude 70 08.9. The least depth is 26 feet, position 104 bk, Latitude 41 48.5, Longitude 70 08.8. Twenty minutes was spent in drift soundings.

17-Detached shoal, Latitude 41 49.3, Longitude 70 08.8, least depth 34 feet, position 84 bj.

18-An extensive shoal area lies between Latitude 41 48.4 and41 48.8 , Longitude 70 08.4. There is a least depth of 27 feet, position 91 bq at the north end where 20 minutes was spent in drift sounding. There is an additional least depth sounding of 27 feet, position 114 bj, Latitude 41 48.5, Longitude 70 08.4.
LEAST DEPTH 26 FEET 125 - 126 bj

19-A considerable amount of developing was done in Latitude 41 47.5, Longitude 70 08.7 because of shoal indications and because of the 22 foot ledge shown on chart 1208. The bottom here is rocky but nothing less than 28 feet was found, positions 45v and 47 v. Three quarters of an hour was spent in search.

20-End of shoal spot, Latitude 41 46.9, Longitude 70 08.3 least depth 20 feet, Position 31 y. One and one quarter hours were spent here. There were soundings of 20 feet on positions 37y to 39 y.

21-Detached shoal, Latitude 41 48.4, Longitude 70 05.5. A least depth of 17 feet, position 33 ac was found on developing the shoal indicationOne hour was spent in this developement.

22-Shoal area, Latitude 41 47.8, Longitude 70 06.8. A least depth of 17 feet, position 13 ac was found. Three quarters of an hour was spent in this developement.

23-Detached shoal, Latitude 41 49.8, Longitude 70 05.8. There is a least depth of 19 feet, see positions 52 and 53 bj. Twenty five minutes was spent in drift sounding in this area.

24-Detached shoal, Latitude 41 50.2, Longitude 70 05.7. A least depth of 17 feet was found after ½ hour of developemsnt, positions 134 az, 135 az, 148 az.

25-There is a 15 ft. sounding, position 21 aw, Latitude 41 50.8, Longitude 70 05.6, evidence of the uneven bottom in this area.

26-Bibb Rock - A close developement of the area showing an 8 foot depth and bearing the note Bibb Rock, Latitude 41 49.8, Longitude 70 03.3 was made (see chart 1208). No soundings less than 13 feet were secured in this area and this danger should no longer be charted. Ten and eleven foot soundings were secured, however, immediately to the north of this area, see positions 130bh and 131 bh.

27-Sand Rock -Latitude 41 51.8, Longitude 70 02.4, Charts 1208 and 340. A thorough search of this area was made from a dory on a day on which the bottom could be seen. The least depth secured in 3/4 of an hour of sounding was 11 feet. Sand Rock should be removed from the chart.

28-The hydrography in Wellfleet Harbor, see volume 19, was done because of a breaker noted in Latitude 41 52.8, Longitude 70 02.8, see position 22 m, 181 bf, 182 bf, where a least depth of 2 feet was found. A sounding of 3 feet was secured in Latitude 41 52.7, Longitude 70 03.3, positions 81 bh and 82 bh.

29-There is a detached rock at the south end of Billingsgate shoal, Latitude 41 51.7, Longitude 70 04.4 which bares 2 feet at mean low water, see position 64 p.

30- There is a group of cut stones spread in a small area in Latitude 41 51.6, Longitude 70 04.4, position 66 p, which bares 2 feet at mean low water.

31-There is a rock on the west side of the entrance to Sesuit Creek which bares 7 feet at mean low water, Latitude 41 45.4, Longitude 70 09.4, position 78 aw.

32-There is a detached rock which bares 5 feet at mean low water, Latitude 41 45.5, Longitude 70 10.1, position 9 u.

33-There is a detached rock which bares 2 feet at mean low water, Latitude 41 45.3, Longitude 70 11.4, position 1 u.

f:- Channels:

1-There is a definite channel between the end of Billingsgate Shoal and the 20 foot shoal to the westward. There is a minimum depth of 37 feet at mean low water in this channel. The buoys marking the end of Billingsgate Shoal lie immediately to the eastward of the southern end.

2-A minimum depth of 20 feet at mean low water can be carried in toward Wellfleet Harbor to a point approximately 1½ miles south of the Bell-and-Light buoy which lies in Latitude 41 51, Longitude 70 03.5.

3-There is no definite channel over the flats to Rock Creek, the harbor of Orleans. Entrance is only possible at high water.

4-A channel leads inshore from Latitude 41 48, Longitude 70 02 to a point about 3/4 of a mile north of triangulation station Fieldstone 1933.

5-Entrance to Sesuit Creek is only possible at high tide. A few local fishermen use the harbor which is practically dry at low water.

g:- Junction with Previous Surveys:

Satisfactory junctions were made with the 1933 work.

In general the soundings on the junction with the Weelfleet sheet 5401 agree closely with the previous work. Such slight discrepancy as is noted may be due in great part to the fact that the 1934 soundings were reduced to Provincetown Tides. Sheet 5401 was reduced

to Wellfleet Tides. The ratio between the tides at Provincetown and Wellfleet is 1.099, Wellfleet Tides being higher. Wellfleet residents report changes in the harbor and entrance due to the severe winter of 1933-34.

As desired in the review of Sheet 5401, a copy of which was forwarded to the Chief of Party, cross lines in Latitude 41 56 to 58, Longitude 70 05 to 06 were run to clear up such discrepancy as apparently existed in the junction of sheets 5400 and 5401. This area has an irregular bottom. In general the cross lines checked fairly closely soundings on sheet 5401. According to the records the line beginning 95 ao was run on a day with a 1½ foot chop, a note on fix 97ao shows the wind and sea increasing, and this undoubtedly accounts for the poor crossing in Latitude 41. 56.5, Longitude 70 05.8. The succeding crossings on this line were in agreement.

Satisfactory junction was made with sheet 5400 as evidenced by the boat sheet. The soundings from sheet 5400 had been placed on the boat sheet in the Boston Office. The boat sheet soundings agree with these with the exception as noted in the paragraph immediately preceeding.

h- Comparison with Previous Surveys-

From a comparison with the soundings and depth curves the present survey seems more detailed than the previous work.

The extent and general shape of Billingsgate Shoal is the same.

There is now a depth of 20 feet on the shoal off the tip of Billingsgate Shoal.

As previously noted under dangers, an investigation of the 22 foot depth, ledge , charts 1208, was made and nothing less than 28 feet found, bottom, rocky.

No depth of 22 feet at the exact position as shown on chart 1208, Latitude 41 47.9, Longitude 70 07.5 , was found but the area to the south and southeastward has a minimum depth of 17 feet.

Bibb Rock was searched for and not found and should be removed from the chart. This matter considered in review. par. 6a

Sand Rock was searched for and not found and should be removed from the chart. This matter considered in review. par. 6a

No indications of a 22 foot depth was found in Latitude 41 49.5, Longitude 70 07.5.

The 33 foot sounding in Latitude 41 48.7, Longitude 70 10.0 was checked.

i:- Tides:

Tide reducers for the soundings are attached hereto.

With the exception of the soundings in volume 19, all soundings were reduced to actual tides as secured in Provincetown.

The Wellfleet Harbor soundings were reduced from predicted tides in Wellfleet Harbor as determined by applying the ratio to the actual tides at Provincetown at that time.

j:- Statistics:

Number of Soundings	27,577
Number of Positions	7,060
Statute miles of sounding lines	1,241.4
Area in square statute miles	108

Edward S. Averell

Edward S. Averell
Surveyor,
Hydrographer.

Earle A. Deily

Earle A. Deily
Lieutenant, U.S.C.& G.Survey,
Chief of Party

VERIFICATION REPORT ON H. 5543 (1934)

1. The records conform to the requirements of the General Instructions except that shoals, buoys and rocks were not noted in the index volumes. (Page 7, par. 60 a & b, Hydro. Manual).

2. The usual depth curves were completed except at crossings where rejection is possible.

3. The field plotting was good in general. However misses were plotted and shown as M which is confusing, since M is the symbol for bottom characterists Mud.

4. The topographic low water line, inked in on the smooth sheet, had to be removed since the yellow curve superceded it.

5. Rocks and notes were transferred from the topographic sheets.

6. The junctions with H. 5588 (1934), H. 5400 (1933), and H. 5401 (1933) were completed and the curves made to conform to the combined soundings. Curves were retraced back to the two sheets H. 5588 and H. 5400, but the changes and extent of development, shown on the junction with H. 5401, particularly in Wellfleet Harbor, were such that the curves on H. 5401 were not changed by the verifier. (See also, page 6, last paragraph in Descriptive Report).

7. The protractor used by the field plotter was probably slightly in error when using the extensions. This had a tendency to move positions Westward, but positions were rarely out enough to replot.

8. The projection was found to be incorrect at Lat. 41 - 45, Long. 70 - 08, but was not changed since the error didn't effect the soundings, and was slight.

9. The correct stamp was not at the base of the sheet.

10. Signals ROK and DED were plotted ten meters out of position.

11. Signal DED is 30 meters too far south on the boat sheet.

12. Signals ROk and DED were shown as hydrographic signals, but were changed by the verifier to red to agree with the boat sheet and topographic sheet 6034.

13. Capt. Ellis suggests the following rejections:

Lat.	Long.	Lines	
41 - 51	70 - 03	52½ to 56K, 29 - 33K, 44-49 K - Not plotted. 56 to 59J - Also recommended by F.P. See D.R. Page 3.	
41 - 47.5	70 - 02.2	50 to 52½ M	Rejected
41 - 48	70 - 04.6	54b to 57 b	Rejected
41 - 51.6	70 - 02.6	37 - 40 c	Rejected
41 - 51	70 - 08.1	83 - 91 ag	Rejected

See Descriptive Report of Field Party for other discrepancies.

14. The shoal indication at Lat. 41 - 48.3 (83.3?) Long. 70 - 11.2 of 33 feet (13 ai) was considered disproved, by the verifier. The 45 (6 and 7 bg) was plotted. (See Descriptive Report, Page 4). Exam

15. The rocks at positions 64 P and 66 P do not agree with the Boat sheet plotting of these rocks. The right angle on the boat sheet varies approximately 30 minutes from the recorded angles. Also, an old lighthouse (1835) was located near the smooth sheet plotting of 66 P. Exam

16. Positions 45 and 46 P are called log base of light tower in the remarks, but there is no evidence of a lighthouse in this vicinity. Exam

17. The low water line as defined by line 23 - 69 P was not plotted since there was a foot of tide at the time, and since the yellow curve could be defined by transferred soundings from H. 5401 (1933). ✓

18. The Descriptive Report, Page 5, Par. e - 18 (dangers) was in error regarding the least depth in Lat. 41 - 48.5, Long. 70 - 08.4. The least depth in this area is 26 feet (125 - 126 bj) not 27 feet. ✓

19. The field plotter made erroneous reductions for rocks on P day. The writer of the Field Descriptive Report undoubtedly copied these notes on rocks, for they were also in error. ✓

20. Fish traps were plotted by the use of combined hydrographic and topographic information. ✓

21. No lighthouse chart was submitted for this area. ✓

Respectfully submitted,

S. E. Perkins.

S. E. Perkins

April 20, 1935.

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 5543

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

Number of positions on sheet	7,060
Number of positions checked	40
Number of positions revised	14
Number of soundings recorded	27577
Number of soundings revised	8
Number of signals erroneously plotted or transferred	4

Date: Apr 20, 1935

Cartographer: S.E. Perkins

[redacted] by SEP

[redacted] by S. Ricciardi

[redacted] by S. Ricciardi

[redacted] 173½

[redacted] 60½

[redacted] 59½ hrs.

To: Mr. Bacon
From L. S. S.
Date. Nov. 16, 1934

GEOGRAPHIC NAMES
MASS.

Survey No. H 5543
Chart No. 1208
Diagram No. 1208-2

Name underlined in red approved Nov. 23, 193
H Bacon

*, Approved by the Division of Geographic Names, Department of Interior.

¢, Not Approved by the Division of Geographic Names, Department of Interior.

R, Referred to the Division of Geographic Names, Department of Interior.

Status	Name on Survey	Name on Chart	New Names in local use	Names assigned by Field	Location
	Billingsgate Shoal	Same			

(M 100)

LAC

November 28, 1934.

Division of Hydrography and Topography:

✓ Division of Charts:

E. P. Ellis

Tide Reducers are approved in
19 volumes of sounding records for

HYDROGRAPHIC SHEET 5543

Locality Billingsgate Shoal, Cape Cod Bay, Mass.

Chief of Party: Earle A. Deily in 1934
Plane of reference is mean low water reading.
4.1 ft. on tide staff at Provincetown
15.7 ft. below B.M. 6

Allowance made for difference in time and range of tide for soundings in Wellfleet Harbor.

Height of mean high water above plane of reference is 9.2 feet at Provincetown and 10.7 feet at Wellfleet.

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5543 (1934)

Billingsgate Shoal, Cape Cod, Massachusetts
Surveyed in 1934
Instructions dated April 29, 1933 (Inspector at Boston)
Orders dated May 2, 1934, to Lieut. E. A. Deily

Hand Lead Soundings. 3 Point Fixes on Shore Signals.

Chief of Party - E. A. Deily.
Surveyed by - E. S. Averell.
Protracted by - E. L. Hayward.
Soundings penciled by - E. L. Hayward.
Verified and inked by - S. E. Perkins.

1. Condition of Records.

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

a. Locations of buoys and rocks were not noted on the index pages of respective volumes.

b. No copy of Landmarks for Charts on Form 567 accompanied this particular sheet.

c. Evidence that the transfer of topographic signals and plotting of hydrographic signals was checked in the field was lacking, since the initials of the checker were not shown on the sheet. This was accomplished in the office. Two topographic signals, Rok and Ded, were found to be incorrectly shown in blue and were changed to red.

The Descriptive Report is umusually complete and adequately covers all matters of importance.

2. Compliance with Instructions for the Project.

The survey complies with the instructions for the project.

3. Sounding Line Crossings.

Agreement of soundings at crossings is in general very good, with the exceptions listed in the Descriptive Report (page 2 under "Discrepancies"). These cases fall in areas where the bottom was either irregular or the current quite strong.

The recommendations by the field party as to their disposition appear logical and have been followed.

4. Depth Curves.

The usual depth curves may be satisfactorily drawn.

5. Junctions with Contemporary Surveys.

The junction on the north with H-5400 (1933) is satisfactory.

The junction on the northeast with H-5401 (1933) is satisfactory.

The junction on the west with H-5598 (1934) is satisfactory.

There is no contemporary work on the west, north of lat. 41°52', however the present survey is in general agreement with the old surveys in this area.

6. Comparison with Prior Surveys.

a. H-249 (1849-50).

This survey covers the area of Billingsgate shoal and Wellfleet Harbor. Some rather radical changes have occurred since the date of the old survey. In the vicinity of lat. 41°49.6', long. 70° 03.2', the 18 foot curve has moved eastward almost a mile, while in the vicinity of the channel east of Billingsgate Island, the depths are in fair agreement.

A 16 foot shoaling (charted) at lat. 41°48.2', long. 70°04.3' falls in general depths of 24 to 25 feet on the present survey. From a comparison of the depths in this area, it is evident that a general deepening has occurred.

The 16 foot sounding, as well as other soundings on this shoaling, should be disregarded in future charting.

Three rocks (uncharted), Lump fish Rock, Lobster Rock and Channel Rock, are shown on this survey in the channel east of Billingsgate Island. All of these rocks were removed in 1872 by the Army Engineers. (See tracing filed with H-249 (1849-50)).

A sunken rock called Sand Rock was formerly charted in approximate lat. 41°51.87', long. 70°02.4'. This rock was not found on the survey of 1933, H-5401, and a further investigation was requested in the review of that sheet. The area was re-examined by the present field party in 1934 at low tide when the sea was smooth and the bottom visible. No rock was seen and no depths less than 11 feet were obtained. (See Descriptive Report, p. 7, and chart letter No. 736 (1934)). The rock is now considered disproved and the recommendation of the Chief of Party that Sand Rock be removed from the chart is concurred in.

Bibb Rock (charted) at lat. 41°49.75', long. 70°03.27' originates with an 8 foot Rk. sounding in the records of H-249 (1849-50) (pos. 1r). It was the first sounding obtained on a line which got a sounding of 13 feet at the same point later on. The present survey developed the area very closely, obtaining general depths of 13 and 14 feet. The old 8 foot sounding is considered erroneous and Bibb Rock should be removed from the chart as recommended by the Chief of Party. (See Descriptive Report, p. 7).

Quite a number of the charted soundings originating with this survey are shoaler than those of the present survey, however in these cases the surrounding depths are also shoaler than the present ones, indicating general shifting and deepening in these areas. The most prominent of these soundings are the following:

The	5	foot	sounding	in	lat.	41°51.90',	long.	70°06.00'
"	19	"	"	"	"	41°48.60',	"	70°05.90'
"	19	"	"	"	"	41°48.90',	"	70°06.20'
"	19	"	"	"	"	41°50.50',	"	70°06.30'
"	11	"	"	"	"	41°52.48',	"	70°07.95'

The above soundings, as well as all other soundings on H-249 (1849-50), should be superseded by those of the present survey, which is more detailed and also because there is evidence that the area is rather changeable.

b. H-516 (1854-55).

This survey, on a scale of 1-80,000, covers the northern limits of the present survey, with very widely spaced soundings.

There are differences of from 2 to 6 feet in depths of about 90 feet, which are probably due to the small scale of the old survey.

The present survey covers this area very satisfactorily and the old work should not be used for charting.

c. H-578 (1856).

This survey, on a scale of 1-40,000, covers practically the entire area of the present survey west of longitude 70°04' with very widely spaced lines.

The depths are in fair agreement with the following exceptions:

A 6 foot sounding (charted) at lat. 41°52.4', long. 70°07.0' and an 8 foot sounding (charted) at lat. 41°52.2', long. 70°07.9' are both single soundings on the same line of soundings which is in poor agreement throughout with the present depths. It is evident that this line is either out of position or else the area has changed radically. For this reason both of these soundings should be discontinued on the chart.

The 4 foot sounding (charted) at lat. 41°53.55', long. 70° 06.24' is also a single sounding on a line which does not agree with the present depths. It appears to be 1 fathom too shoal. The 4 foot sounding should also be disregarded in future charting.

A 22 foot sounding (charted) at lat. 41°49.25', long. 70° 07.5' is a single sounding on a line which is in fair general agreement with the present depths except at this spot. The present survey shows soundings of from 32 to 35 feet over the old 22. This is considered sufficient evidence for disregarding the 22 in future charting.

The above soundings, as well as any other soundings from H-578 (1856) which have not been specifically mentioned, should be superseded by those of the present survey, which is in greater detail and also because there is evidence that the area is subject to changes.

d. H-3418 (1912).

This survey covers only a small section of the present survey at the entrance to Wellfleet Harbor. It is in good general agreement except in the shoal area extending southeast of Billingsgate Island which is considered changeable.

e. T-1088 (1868) - Reference Par. 4a Review T-6113 (1934).

The disposition of 2 sunken rocks shown on T-1088 (1868) in approximate lat. 41°45.4', long. 71°10.2' but not located on T-6113 (1934) was left to this review. The northeastern rock was located by the present hydrographic party and found to be a rock awash baring 5 feet at M. L. W. The sunken rock about 300 meters southwest of it in lat. 41°45.4', long. 70°10.28' was not located. As there was 10 feet of tide at the time the adjacent sounding lines were run, it is quite probable this rock was not seen and inasmuch as one rock was verified it is probable the other also exists. This sunken rock has been carried forward to the present survey.

7. Comparison with Charts No's. 340 and 1208.

a. Hydrography.

Within the area 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.

b. Aids to Navigation.

The buoys were located in substantially the same positions as charted, with the following exceptions:

(1) Buoys C1 and S1, which mark the southwestern extremity of Billingsgate Shoal, were located approximately 300 meters west of their charted positions. However, in their position as located they properly mark the feature intended.

(2) Red buoy N2, west of Billingsgate Island in the channel into Wellfleet Harbor, was located approximately 350 meters northwest of its charted position. The channel which this buoy marks is subject to change and the buoys are correspondingly changed.

8. Field Plotting.

Protracting of positions and plotting of soundings was well done.

9. Additional Field Work Recommended.

This is an excellently executed survey from the standpoint of both general coverage and shoal development.

The sheet has nearly 100 miles of sounding lines between the zero foot curve and the high water line, with soundings ranging from 0 to -5 feet. An adequate delineation of the low water line would have been possible with fewer lines in this area with a resulting reduction of field work. This criticism is entirely confined to the area of minus soundings.

No additional work is required.

10. Superseding Old Surveys.

Within the area covered, the present survey, with the indicated additions from previous surveys, supersedes the following surveys for charting purposes:

H- 249 (1849-50) in part.
H- 516 (1854-55) " "
H- 578 (1856) " "
H-3418 (1912) " "

11. Reviewed by - G. Risegari and R. L. Johnston, May 11, 1935.

Inspected by - A. L. Shalowitz.

Examined and approved:

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Applied to new chart 581 4/6/35 H.E. Mae Swan

25 Jan 13, 1936
EAB.

Applied to Chart 580 4/11/36 I.M. Zeskind

Applied to Chart 1208 4/21/36 I.M. Zeskind

Applied to New Chart 839 5/16/36 I.M. Zeskind