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

DESCRIPTIVE REPORT

~~Topographic~~ } Sheet No. 5588
Hydrographic } Field No. 4

State Massachusetts

LOCALITY

Cape Cod

Vicinity of Barnstable Harbor

1934

CHIEF OF PARTY

Earle A. Daily

5588

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

U. S. COAST & GEODETIC SURVEY
LIBRARY AND ARCHIVES

DEC 26 1934

REG. NO. 5588

HYDROGRAPHIC TITLE SHEET

Acc. No. _____

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. 4

REGISTER NO. 5588

State Massachusetts

General locality Cape Cod

Locality Vicinity of Barnstable Harbor *Large*

Scale 1: 20,000 Date of survey Aug. 27, to Nov. 25, 1934

Vessel Launch C 3769

Chief of Party Earle A. Dally

Surveyed by Edward S. Averell

Protracted by " " "

Soundings penciled by " " "

Soundings in ~~fathoms~~ feet

Plane of reference M. L. W.

Subdivision of wire dragged areas by _____

Inked by _____

Verified by _____

Instructions dated 1933 *(Orders)*
April 29, ~~and~~ and May 2, 1934 19

Remarks: Hand lead soundings - Visual fix control

1

DESCRIPTIVE REPORT
TO ACCOMPANY HYDROGRAPHIC SHEET
FIELD NO.4
BILLINGSGATE SHOAL TO WESTWARD
CAPE COD BAY, MASSACHUSETTS
PROJECT H.T.145
1934

INSTRUCTIONS

Instructions for the hydrography on this sheet are included in the "Orders and Instructions" to the Inspector, U.S. Coast and Geodetic Survey, Boston, Massachusetts, dated April 29, 1933, and "Orders" to Lieutenant Earle A. Deily, dated May 2, 1934.

SURVEY METHODS

The hydrography on this sheet is all hand lead sounding with visual fix control. Lines were spaced in accordance with the area to be surveyed. Those near shore were run at high tide and as close as dangers permitted.

The low water line from signal "TOW" to signal "JUN" was not developed on account of numerous large rocks in this area which made the surveying of it dangerous. This area is not particularly important to navigation.

Shoals were developed by closely spaced lines and the speed of the launch reduced to a minimum, also by drift soundings.

Strong localized currents are prevalent in this area. In such places, positions were taken at proper intervals to chart the true course of the launch. Abrupt changes in course were made only on positions. This will account for the numerous, apparently sharp angles in some of the sounding lines.

In general, sounding lines were run in an Easterly or Westerly direction. As a check on the work, cross lines were run at intervals of one mile between Longitude 70°-11.5 and Longitude 70°-18.5.

Due to the close of the season, the development of numerous shoal indications is incomplete. These shoal indications are listed under the paragraph heading "DANGERS".

The control for the hydrography on this sheet consists of positions determined by triangulation in 1933 and 1934 by Lieutenant Earle A. Deily, by topographic signals located by the topographic unit attached to Lieutenant Deily's party, 1934, and by two hydrographic signals located by the hydrographic party.

Tide curves from which reducers for this sheet were figured were obtained from the marigrams from the automatic portable tide gage, hl62, installed at the Town Pier in Provincetown, Mass. These curves are attached to this report.

DISCREPANCIES

A discrepancy in the soundings for "m" day, Sept. 28, 1934, was noted on the boat sheet. Investigation revealed an error in the plotting of the tide curve for that day. As the marigrams had been sent to Washington when this error was discovered, a curve was drawn using the predicted tide data for that day. The soundings for "m" day were computed by using the reducers taken from this curve. These soundings agreed satisfactorily with those on adjacent lines.

During field work, a jump in sounding lines was apparent when signal "Cock" was used. A new position of this signal was determined by the topographic party. Cuts taken by the hydrographic party to this signal; positions 231, 241, 251; fail to check either location. The positions taken by the hydrographic party were taken simultaneously and with the launch stopped. *The top. pos. of "Cock" was used by field party and should be accepted. The plotting of the few soundings involved is very satisfactory. G.R.*

In general, soundings on the cross lines agree satisfactorily. Where slight discrepancies do apparently occur, developments which have been made in those areas show that such a condition exists. The largest discrepancy occurs in Latitude 41-47.6, Longitude 70-12.4, a sounding of 28 and 44 together. This is due to the ledge in that area and both soundings should be retained.

Leadsman were careful to check the reading of the leadline when these variations occurred. Soundings showing shoal indications and which have not been developed should be retained.

Depth curves on the boat sheet fail to coincide with their respective curves on the smooth sheet in several places. Investigation revealed errors in the reduction of some soundings on the boat sheet.

DANGERS

A detached shoal in Latitude 41-46.3, Longitude 70-12.2, positions 46, 53, rocky bottom. In addition to sounding lines, 15 minutes was spent in drift soundings in this area. Nothing less than 33 feet was found. General depth 37 feet. *See adjacent*

A detached shoal in Latitude 41-45.9, Longitude 70-14.9, positions 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. In addition to sounding lines, 30 minutes was spent in drift soundings in this area. Nothing less than 37 feet was found. General depth 41 feet.

Other shoal indications are listed as follows, their development being prevented by the closing of the season. It is recommended that they be investigated further.

Lat.	41°-48'5	Long.	70°-14.4	41	foot	sounding	on	rock.
"	41-48.8	"	70-14.2	50	"	"	"	"
"	41-48.2	"	70-14.5	48	"	"	"	"
"	41-48.6	"	70-16.2	60	"	"	"	"
"	41-47.9	"	70-12.0	39	"	"	"	"
"	41-47.9	"	70-12.7	41	"	"	"	"
"	41-47.4	"	70-12.0	37	"	"	"	"
"	41-47.2	"	70-12.0	38	"	"	"	"
"	41-47.1	"	70-12.5	28	"	"	"	On rock
"	41-47.3	"	70-12.5	28	"	"	"	" "
"	41-47.4	"	70-12.5	31	"	"	"	"
"	41-47.7	"	70-12.3	29	"	"	"	"
"	41-47.8	"	70-12.3	29	"	"	"	on rock
"	41-47.7	"	70-13.6	42	"	"	"	"
"	41-47.0	"	70-13.4	31	"	"	"	on rock
"	41-47.0	"	70-12.9	35	"	"	"	"
"	41-47.2	"	70-13.0	35	"	"	"	On rock
"	41-47.9	"	70-15.0	38	"	"	"	"
"	41-47.5	"	70-14.9	35	"	"	"	on rock
"	41-47.7	"	70-16.1	52	"	"	"	"
"	41-47.3	"	70-16.5	52	"	"	"	"
"	41-47.4	"	70-18.0	54	"	"	"	"
"	41-47.6	"	70-18.4	58	"	"	"	"
"	41-47.5	"	70-18.7	59	"	"	"	"
"	41-47.9	"	70-12.5	30	"	"	"	"
"	41-46.9	"	70-12.6	29	"	"	"	"

Lat.	Long.	37 foot sounding			
" 41-46.8	" 70-12.9	27	"	"	on rock
" 41-46.7	" 70-12.7	27	"	"	"
" 41-46.8	" 70-14.5	41	"	"	" "
" 41-46.5	" 70-14.0	41	"	"	✓
" 41-46.3	" 70-14.2	38	"	"	✓
" 41-46.1	" 70-14.9	39	"	"	✓
" 41-46.3	" 70-15.3	43	"	"	✓
" 41-46.9	" 70-16.4	49	"	"	
" 41-46.8	" 70-17.3	46	"	"	
" 41-46.8	" 70-18.2	51	"	"	
" 41-46.5	" 70-18.4	52	"	"	✓
" 41-46.5	" 70-18.8	50	"	"	✓
" 41-46.3	" 70-18.8	48	"	"	✓
" 41-46.1	" 70-18.8	46	"	"	✓
" 41-46.2	" 70-19.5	51	"	"	✓
" 41-45.7	" 70-17.7	39	"	"	✓
" 41-49.2	" 70-14.5	47	"	"	
" 41-49.0	" 70-15.3	55	"	"	
" 41-47.6	" 70-12.4	27	"	"	
" 41-46.8	" 70-15.9	39	"	"	
" 41-47.0	" 70-18.7	56	"	"	
" 41- 48.3	" 70-11.6	28	"	"	On rock
" 41- 48.3	" 70-12.4	32	"	"	" "
" 41- 48.2	" 70-12.2	30	"	"	" "
" 41- 48.4	" 70-12.2	30	"	"	" "
" 41- 48.1	" 70-12.2	33	"	"	
" 41- 48.7	" 70-12.3	32	"	"	
" 41- 48.2	" 70-12.8	41	"	"	
" 41- 48.4	" 70-13.1	40	"	"	

Lat.41°-48'.3 Long.70°-13'.2 49 foot sounding.

" 41°-47'.5 " 70°-15'.5 51 " "

The following area should be further developed in order to properly draw the depth curves for that area.

Lat.41°-48'.3 Long.70°-12'.2

The following shoals should be investigated further;

Lat. 41°-48'.1 to Lat. 41°-48'.7
Long.70°-11'.6 Long.70°-11'.6

Lat. 41°-47'.8 to Lat. 41°-48'.1
Long.70°-12'.7 Long.70°-12'.7

The area that was not surveyed; that is, along the shore line between signals "TOW" and "JUN", is fouled with numerous large rocks.

In season, many lobster pot buoys abound in this area embraced by this sheet. At certain stages of the tide they are pulled under water by the current enough to render them invisible.

CHANNELS

No channels are embraced by this sheet. A nun buoy marks the entrance to Barnstable Harbor. In order to set a proper course to enter this harbor, the buoy should be located further to the west.

JUNCTION WITH PREVIOUS SURVEYS

The junction with sheet 3, made in 1934, is in general, satisfactory. Any discrepancies are due to the irregular bottom in this area.

The junction with sheet 5 is in general satisfactory. Any discrepancies in this junction can be traced to the shifting of the sand bars in this area, a very noticeable phenomenon.

COMPARISON WITH PREVIOUS SURVEYS

In comparison with chart 1208, the present survey seems much more detailed than previous work.

The ten fathom curve is now complete to the western limit of Field Sheet 4, and is less regular.

The five fathom curve is now complete to the western limit of Field Sheet 4, and is less regular.

Many rocky spots and areas have been found.

Chart 1208 shows rock with 30 feet as the least depth in Latitude 41°-47'.3 Longitude 70°-12'.8 The present survey places this area Eastward about .2 of a minute, with soundings of lesser depths than 30 feet and over a more extensive area. As the present survey does not fully develop this area, it has previously been listed for further investigation.

Respectfully submitted,

Edward S. Averell
Edward S. Averell,
Surveyor.

A copy to
Earle A. Deily,
Chief of Party.

Respectfully forwarded,
Wm. L. Peacock
Wm. L. Peacock, Inspector
Boston Field Station.

LIST OF SIGNALS
to accompany
HYDROGRAPHIC SHEET FIELD NO.4
Project No. H.T. 145
Cape Cod, Massachusetts, 1934.

Hydrographic Name	TRIANGULATION	Object
Hy		Hyannis Standpipe, 1934
Con		Yarmouth Cong. Ch. Sp., 1887-1934
Scar		Scargo Tower, 1934
Uni		Barnstable Unitarian Ch., 1909
Yar		Stack-Yarmouthport
Tow		Nobiscussett Water Tower, 1887-1934
Neck		Sandy Neck L. H., 1887-1934
Wes		West Barnstable Ch. Sp., 1909-1934
Sho		Shootflying Tower, 1934
Bas		Bass Hole, 1934
Brew		Brewster Station, 1887-1933
San		Saneck, 1934
Pay		Payne, 1934
Fre		Stack-Fish Freezer
Bea		Sandy Neck Beacon, 1934
Yet		Quivett, 1933
Cor		Tower- Scorton Neck
East		East Dennis, Methodist Church, 1887
Tan		Yarmouth Tank, 1934
Ses		Sesuit Stack
Par		Spire- First Parish Church

TOPOGRAPHIC

Jeg
Rum
Pea
Min
Can
Don
Use
But
Cock
Top
Cat
Jun
Bun

HYDROGRAPHIC

Tit Sounding Volume No.2 Position No.12 e
Red " " No.7 See y day

STATISTICS
to accompany
HYDROGRAPHIC SHEET FIELD NO.4
Project No. H.T.145
Cape Cod, Massachusetts, 1934.

Date 1934	Day	Statute Miles Sounding Lines	No. of Positions	No. of Soundings
8-27	a	5.0	23	86
8-28	b	21.8	90	377
9-4	c	22.5	126	685
9-5	d	35.2	190	779
9-6	e	39.0	165	744
9-7	f	20.6	111	521
9-10	g	32.5	177	833
9-11	h	28.2	159	632
9-17	j	31.0	142	527
9-20	k	40.0	145	589
9-21	l	37.0	128	482
9-28	m	11.3	67	271
10-2	n	27.0	118	417
10-3	p	29.9	132	498
10-5	q	28.5	124	418
10-26	r	13.4	48	175
10-30	s	5.0	20	83
10-31	t	29.2	114	458
11-5	u	2.0	26	63
11-8	v	23.0	98	342
11-10	w	24.6	103	343
11-15	x	10.9	48	179
11-17	y	6.0	53	219
11-18	z	9.5	82	201
11-19	aa	9.7	81	219
11-20	ab	0.3	19	31
11-21	ac	16.0	80	299
11-22	ad	14.2	89	276
11-23	ae	15.6	102	335
TOTALS		588.9	2860	11082

This sheet covers 49.0 Sq. Mi. (statute) of hydrography.

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. 5588

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

Number of positions on sheet	..2860
Number of positions checked	...196
Number of positions revised	...0...
Number of soundings recorded	!!082
Number of soundings revised	...0...
Number of signals erroneously plotted or transferred	...0...

Date: March 26, 1935.

Verification by *E. J. Greene, Jr.*

Review by *C. Peregian*

Time: 126 - hours

Time: 63 - hours

LAC

January 30, 1935

Division of Hydrography and Topography:

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

Tide Reducers are approved in
8 volumes of sounding records for

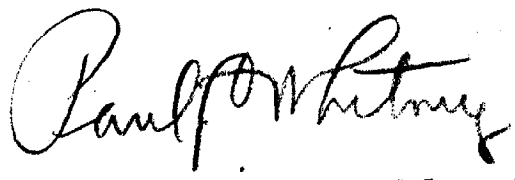
HYDROGRAPHIC SHEET 5588

Locality Vicinity of Barnstable Harbor, Cape Cod Bay, Massachusetts

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

Height of mean high water above plane of reference is 9.2 feet

Condition of records satisfactory except as noted below:



Chief, Division of Tides and Currents.

MARCH 26, 1935.

VERIFIER'S REPORT ON - H-5588

1. The records conform acceptably to the General instructions.
2. It was possible to draw in the usual depth curves, completely.
3. The field plotting was completed to the extent prescribed, in the Hydrographic manual.
4. The office draughtsman did not have to do any of the draughting over.
5. The junctions with adjacent sheets could not be compared as they had not been verified.
6. Nearly all crossings checked exactly, or within 1-foot.

Attention is called to the note opposite sounding 41 on page 60, of volume 7. Recommends further investigation to locate

rock. All rocks were plotted by the verifier from the ^{topographic} ~~air photo~~ compilation sheets. The shoreline was transferred from the ~~air photo~~ ^{topographic} compilation sheets to smooth sheet (7-6114, 7-6122, 7-6123). ~~topographic~~

Signed E. F. Greene Jr.
Verifier.

Topographic signals were verified by E. F. G., Jr.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5588 (1934)

Vicinity of Barnstable Harbor, Cape Cod, Massachusetts.

Surveyed Aug. 27 to Nov. 23, 1934

Instructions dated April 29, 1933 (Inspector, Boston, Mass.)

Hand Lead Soundings - 3 Point Control on Shore Signals.

Chief of Party - E. A. Deily.

Surveyed by - E. S. Averell.

Protracted and soundings plotted by - E. S. A.

Verified and inked by E. F. Greene, Jr.

1. Condition of Records.

The records conform to the requirements of the Hydrographic Manual with the following exceptions:

- a. The shoreline was not completely shown. This was added in the office.
- b. No copy of Landmarks for Charts on Form 567 accompanied this particular sheet. Landmarks for area submitted.
- c. Evidence that the transfer of topographic signals was checked in the field was lacking, since the initials of the checker did not appear on the sheet. This was accomplished in the office.

2. Compliance with Instructions for the Project.

The survey complies with the instructions for the project with the following exceptions:

- a. Charted soundings from old surveys, which were shoaler than the general depths of the present survey, were not developed sufficiently to disprove them (Par. 7). The development of some of the shoal areas of the present survey is incomplete due to the close of the season.

3. Sounding Line Crossings.

Agreement of depths at crossings is very good considering that the bottom is very irregular.

4. Depth Curves.

The depth curves can be satisfactorily drawn.

5. Junctions with Contemporary Surveys.

The junction on the east with H-5543 (1934) is satisfactory.

The junction on the south with H-5589 (1934) will be considered in the review of that sheet.

6. Comparison with Prior Surveys.

a. H-249 (1849-50).

Only a few soundings from this survey fall in the area covered by the present survey and comparison shows a general deepening has occurred. There are no outstanding soundings that need consideration here.

b. H-578 (1856).

This survey covers the area of the present survey with widely spaced lines. The agreement in depth is only fair.

(1) The following soundings (charted) fall in depths from 10 to 19 feet deeper on the present survey, however the new development is insufficient to conclusively disprove them.

24 foot sounding	lat. 41°49.4',	long. 70°12.4' ✓
31 " " "	41°48.35' "	70°13.0' ✓
30 " " "	41°47.35' "	70°12.8' ✓

Considerable uncertainty exists in the plotting of the different lines involving the above soundings due to the different speeds of the vessel, lack of definite time intervals, and very weak fixes used for control.

These soundings ~~therefore~~ are ~~not~~ being carried forward and should be retained on the charts pending a more thorough investigation .

(2) Two 40 foot soundings (charted) at lat. 41°47.76', long. 70°14.2' and lat. 41°47.9', long. 70°15.55' fall in blank areas on the present survey. As both are shoal spots, whose surrounding depths are in agreement with the present depths, both have been carried forward.

(3) The 40 foot sounding (charted) in lat. 41°45.8', long. 70°18.7' falls in depths of 50 to 52 feet on the present survey which covered the area rather closely. Depths of 44 feet were found about 100 m. westward. The 40 foot sounding is considered disproved and should be disregarded in future charting. ✓

c. H-751 (1861).

The agreement with the present survey along Sandy Neck is fairly good considering the sandy and shifting bottom except for a few soundings which appear questionable but are of no importance. ✓

Barnstable Bar has changed radically. The six foot shoal sounding (charted) at lat. 41°44.95', long. 70°12.95' evidently no longer exists as the present survey indicates a general deepening in this area.

d. H-3407 (1912).

This survey need not be considered in connection with the present survey as it shows only one line of soundings at Barnstable Bar which is a highly changeable area.

e. H-3776 (W.D.) (1915-16).

This wire drag survey overlaps the western part of the present survey but none of the shoals found by the drag fall within its limits.

7. Comparison with Charts Nos. 339, 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.

Red buoy N2 at Barnstable Bar is the only aid to navigation within the area of this survey. This buoy was located approximately 170 meters west of its charted position. The field party reports that the buoy should be located still further westward in order to set a proper course to enter Barnstable Harbor.

8. Field Plotting.

Protracting of positions and plotting of soundings were well done.

9. Additional Field Work Recommended.

a. Because of the irregular character of the bottom on this survey it is desirable to wire drag the area inside of the 60 ft. curve eastward of long. $70^{\circ}20'$ particularly the rocky ridge in approx. long. $70^{\circ}12.5'$ between latitudes $41^{\circ}46'$ and $41^{\circ}49'$. This ridge appears to be a continuation of Billings Gate Shoal as shown on Chart 1208.

b. In lieu of wire drag examination of this area the following hydrographic examinations should be made:

(1) The numerous shoal indications inside the 60 ft. curve as listed on pages 3, 4, and 5 of the descriptive report.

(2) The doubtful soundings charted from H-578 (1856) which are described in par. 6b of this review. The exact locations of the soundings described in Par. 6 b (1) are in doubt for the reasons stated, and therefore further investigation should not be confined merely to the positions as shown.

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-578 (1856)	" "
H-751 (1861)	" "
H-3407(1912)	" "

11. Reviewed by G. Risegari and R. L. Johnston, April 10, 1935.

Inspected by - A. L. Shalowitz.

Examined and approved:

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

F. S. Borden
Chief, Section of Field Work.

L. O. Gilbert
Chief, Division of Charts.

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

Applied to new chart 581

5/27/35 H. E. MacEwan

Applied to Chart # 1208

April 1936 L. J. Gerstner

Applied to new chart 339

May 16, 1936 L. J. Gerstner