

6348

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	
Coast and Geodetic Hydrographic	Sheet No. H-6348
State	Massachusetts
LOCALITY	
Vineyard Sound	
Woods Hole and Approaches	
1938	
CHIEF OF PARTY	
C. M. Thomas	H. & G. E.

Comdg

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. ~~6340~~ ¹.....

REGISTER NO. H6348

State MASSACHUSETTS

General locality ~~SOUTHERN COAST OF CAPE COD~~ Vineyard Sound

Locality WOODS HOLE HARBOR AND APPROACHES

Scale 1:5,000 Date of survey July-October, 19 38

Vessel MOTOR VESSEL GILBERT

Chief of Party Chas. M. Thomas

Surveyed by C. M. Thomas, C. A. George, J. P. Lushene

Protracted by Milton C. Enstine

Soundings penciled by Milton C. Enstine

Soundings in ~~fathoms~~ feet

Plane of reference Mean Low Water

Subdivision of wire dragged areas by None

Inked by G. H. Everett

Verified by G. H. Everett

Instructions dated January 17, 19 38

Remarks:

K.W.W. 10/23/91

POST-OFFICE ADDRESS:

TELEGRAPH ADDRESS:

EXPRESS ADDRESS:

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

May 31, 1940

TO: The Director
U.S. Coast and Geodetic Survey

FROM: Lieut. (j.g.) Joseph P. Lushene
U.S. Coast and Geodetic Survey

THROUGH: Commanding Officer, M.V. GILBERT
U.S. Coast and Geodetic Survey

SUBJECT: Descriptive Report for Sheet 6348

I herewith submit a descriptive report for sheet Number 6348
in the locality of Woods Hole Harbor and Approaches, Massachusetts. ✓

This report has been written at the request of Lieut. H.C. Warwick
Commanding M.V. GILBERT, and it has been prepared as accurately as
conditions and circumstances permit. I hope it meets with your approval.

Respectfully Submitted

Joseph P. Lushene
Joseph P. Lushene
Jr. H. & G. Engr.

July, 18, 1940
Respectfully forwarded:
H.C. Warwick.

DESCRIPTIVE REPORT TO SHEET NO. 6348

DATE OF INSTRUCTIONS

The work was executed in accordance with instructions dated January 17, 1938.

LOCALITY

It covers the survey of the southern coast of Cape Cod, Mass., in the locality of Woods Hole Harbor and Approaches. This hydrographic sheet covers the area of chart number 348. The area consists of numerous shoals, ledges, rocks and strong tidal currents. During the season from May to August thick fog prevailed and generally all passages are dangerous in the fog without local knowledge.

SURVEY METHODS

Due to the rocky and dangerous area it was necessary to use three boats on this hydrography. The M.V. GILBERT was used on the deep and unprotected areas; a motor launch #37 loaned to the ship by the Lighthouse Service for areas fairly shoal and protected; and a dory with an outboard motor for areas of rocks and ledges. Three point sextant fixes were taken every two minutes and soundings taken at 20 or 15 sec intervals depending on the depth and conditions. Hand lead soundings were used with the launch and dory whereas the Dorsey Fathometer II was used on the GILBERT. During the first ^{few} ~~two~~ days the lead line supplied by the office seemed to change and appear to be unstable and hence a correction was applied. This situation was overcome by using old lead lines of past seasons which undoubtedly ^{were} ~~was~~ made with a different core material and showed no changes during the day whether wet or dry. Serial temperatures and lead line comparisons were taken

frequently for the reduction of echo soundings. The fathometer was set daily for draft so that no correction was necessary for this term. The squat of the ship was determined by setting up a level on the dock and noting the readings on the level rod aboard as it passed by at various speeds. This value was found to be negligible. All signals or objects used for sextant fixes were determined by triangulation or plane table methods on aluminum sheets.

DESCREPANCIES

Upon completion of this project a severe hurricane swept over the area on September 21, 1938. The islands and bluffs along the shores were severely eroded. The visible changes makes one believe that possibly underwater changes also occurred in shoal areas but in a less marked degree. However, no information is available as to the extent of shoaling or deeping.

N. B.

DANGERS

In spite of the fact that the area is covered with numerous rocks and dangers, no new dangers were found. Altho the previous survey appears to lack detail and development it is excellent in regard to discovery of dangers. The area close inshore is strewn with rocks and boulders and should be given a wide berth. Among the chief dangers are:

- 1- Coffin Rock with a depth of about ⁶~~5~~ $\frac{1}{2}$ feet ✓ Lat. 41°30.7' ✓
Long. 70°39.8'
- 2-Great Ledge has innumerable ³~~1~~ $\frac{1}{2}$ to ³~~2~~ ft. spots and rock awash. ✓ Lat. 41°30.7' ✓
Long. 70°40.1'
- 3-Nonamessett Shoal Lat. 41°30.5', Long. 70°40.5' ✓
- 4-Red ledge is a rocky shoal awash at low water ✓
Lat. 41°31.2' Long. 70°40.6' ✓

5-Middle ledge is a rocky shoal and bares at certain stages of low tide Lat. 41° 31.1' 2 ft. is least depth on present survey.
Long. 70° 40.9'

Hadley Rock
41° 31.04'
70° 41.38'
Coffin Rock
41° 30.72'
70° 39.77'

6-The 9 ft spot about 0.1 mile NNW of Hadley Rock buoy and a 11 ft spot about 0.1 mile SSW of Coffin Rock both shown on chart 348 are generally given a wide berth. Neither located on present survey.

CHANNELS

The channel to Little Harbor is a dredged channel of 17 feet and showed no shoaling.

The channel to Woods Hole or Great Harbor from Vineyard Sound has numerous shoals and rock ledges on each side. It is well marked by buoys and at the time of the survey had an excellent range. The range was destroyed by the hurricane but due to its importance and necessity has ~~probably~~^{now} been rebuilt. It provides an excellent and safe entry to Woods Hole.

The channel from Great Harbor to Buzzards Bay is referred to as Woods Hole Passage. This channel is very narrow with rocks ledges and shoals close aboard on each side. The tidal current is very strong and a stranger may experience difficulties if attempted at times other than slack water. The slack water in this passage lasts only a few minutes. The buoys are towed under frequently by the strong current which adds to the dangers to a stranger. The passage should not be attempted in a fog.

Broadway channel should not be used without local knowledge. Several groundings have been seen in this channel due to miscalculation of the current.

Generally one must confine himself to the channels and if the current is strong or if fog exists navigation should not be attempted.

COMPARISONS

Very few major changes have been found which is as expected in this rocky area. The actual and noticeable changes are in the depth curves. ^{Having} ~~Many~~ more sounding lines and detail will enable one to draw the depth curves with ease and greater accuracy than previously. No sketching [?] as shown on the previous survey need be resorted to. The former survey ^{H-1833 (1887)} appears to be excellent in regard to location and discovery of dangers. Many rocks and shoal spots N.B. as shown on former survey were verified and altho a number have not been verified or found their existence is not considered doubtful.

1. The 11 foot spot east of ^{Timmy} ~~Naushon~~ Point in latitude 41-31.42', longitude 70-41.78', was not found. ✓

2. The 5 foot spot on the north extreme end of ^{Timmy} ~~Naushon~~ Point Shoal ✓ ✓
Latitude 41-31.46, longitude 70-41.94 was not found. A local citizen found it but when he took the party to the ^{site} sight was unable to locate it for them. ✓

3. The 9 foot spot 0.1 mile NNW of Hadley Rock buoy was not found. ✓

4. The 11 foot spot 0.1 mile SSW of Coffin Rock was not found. ✓ ✓

Special searches and much time was devoted to verify their existence. Coffin Rock was found after many hours of laborious searching just as all hope for its existence was about to be given up. Even after Coffin Rock was found and its location established by cross bearings much time was spent relocating it to determine its shoalest depth due to its sharpness and small area. The lead line would constanly slide or bounce off its steep slope. This experience, therefore, gives one confidence in the existence of the above rocks even tho after a search nothing was found. Until wire drag operations are used to verify the existence of the above dangers their existence should not be considered doubtful.

All rocks and shoal soundings as shown on the previous survey should be retained and recharted even tho not found on this survey. These shoal spots are evidently pointed rocks of very small proportions and their existence can only be ~~dis~~proved by wire drag. The survey was run only as close to shore as boulders and safety would permit,

N.B.

CHANGES

From local knowledge the rock Latitude 41-30.79, longitude 70-42.05 shown on chart 348 which is about 120 yds east of Bull ~~Hook~~ Island at the edge of the channel leading to ^{INNER} Hadley Harbor has been blasted and removed.

8' hole in area
from H-8170/E.T./2/58

TIDAL NOTE

Portable tide gages at Uncatena Island and Little Harbor and a standard gage at Woods Hole were used on this sheet. The variation in tides made it necessary to use a zone system. The zones were selected by the office and are shown on the boat sheet. They are as follows:

1- UNCATENA GAGE ZONE

Area west of a north-south line just west of the black lighted beacon at the west end of Woods Hole Passage

2- MEAN OF UNCATENA AND WOODS HOLE GAGE ZONE

Area west of a line drawn from the east end of Devils Foot Id. to Mink Point.

3- WOODS HOLE GAGE ZONE

Area west of a line drawn SSW from Juniper Point for 0.2 miles thence to a point in latitude 41-30-29, longitude 70-40-00."

4- LITTLE HARBOR GAGE ZONE

Area east of the above line

2 ✓
3 0
R
R

REMARKS

Outside of the channels ~~###~~ passages and harbors the area is generally foul. Few venture outside and for this reason wire drag may be considered not feasible. However, for an excellent and thoroughly complete survey of chart 348 wire drag operations would be highly beneficial and necessary. It is hoped that the survey as completed will meet with your approval.

Respectfully submitted

Joseph P. Lushene
Joseph P. Lushene
Jr. H. & G. Engr.

Approved & Forwarded:
H. O. Danwiel.

S T A T I S T I C S

H6348

G I L B E R T

Day	Date	Positions	Miles	Soundings	Volume
A	June 22, 1938	23	4.2	124	1
B	June 24, 1938	82	12.4	751	1
C	June 29, 1938	61	10.3	612	1
D	July 22, 1938	57	12.65	323	1
E	July 27, 1938	70	11.5	441	2
F	July 28, 1938	10	2.7	64	2
G	July 29, 1938	76	10.1	326	2
H	Sept. 14, 1938	34	9.7	230	2
J	Sept. 29, 1938	21	2.5	90	2
K	Oct. 1, 1938	10	0.8	51	2

Totals Positions - 444
Mileage - 76.80
Soundings - 3012

L A U N C H

a	June 20, 1938	154	20.9	634	3
b	June 29, 1938	48	3.1	196	3
c	June 30, 1938	151	16.2	736	3 & 4
d	July 1, 1938	154	11.3	551	4
e	July 8, 1938	70	4.9	246	4
f	July 9, 1938	21	1.8	93	4
g	July 11, 1938	120	10.3	513	4 & 5
h	July 13, 1938	99	12.6	511	5
j	July 21, 1938	113	10.3	448	5
k	July 25, 1938	24	3.1	108	5
l	July 30, 1938	53	5.3	188	5
m	Aug. 1, 1938	46	4.4	194	5 & 6
n	Aug. 2, 1938	86	4.4	284	6
p	Aug. 3, 1938	52	4.0	195	6
q	Aug. 4, 1938	82	6.0	276	6
r	Aug. 5, 1938	49	2.9	177	6
s	Aug. 8, 1938	118	6.8	385	6 & 7
t	Aug. 9, 1938	107	6.9	352	7
u	Aug. 10, 1938	54	2.3	167	7
v	Aug. 15, 1938	53	3.6	178	7

Totals - - - - - Positions 1654
Mileage 141.10
Soundings 6432

D O R Y

a	July 5, 1938	15	-	39	8
b	July 6, 1938	191	8.3	513	8
c	July 7, 1938	181	8.0	588	8
d	July 8, 1938	109	4.7	312	9
e	July 11, 1938	73	2.5	227	9
f	July 13, 1938	57	1.0	137	9
g	July 16, 1938	32	2.0	190	9
h	July 19, 1938	47	2.2	295	9
j	July 25, 1938	25	1.3	132	9

(Continued)

S T A T I S T I C S

H6348

(Continued)

Day	Date	Positions	<u>D O R Y</u> Miles	Soundings	Volume
k	July 27, 1938	73	9.3	397	9 & 10
l	July 28, 1938	88	6.2	440	10
m	Aug. 1, 1938	30	1.6	129	10
n	Aug. 2, 1938	15	-	15	10
p	Aug. 3, 1938	87	4.3	262	10
q	Aug. 15, 1938	26	1.1	80	10
r	Sept. 17, 1938	45	1.2	76	10

Totals	Positions	-	1094
	Mileage	-	53.70
	Soundings	-	3832

Total 13276 (10 vols) Sdgs.
3192 Pr.

RQC
AME

TIDE NOTE FOR HYDROGRAPHIC SHEET

September 16, 1940

Division of Hydrography and Topography:

✓ Division of Charts: Attention: Mr. H. R. Edmonston

Tide Reducers are approved in
10 volumes of sounding records for

HYDROGRAPHIC SHEET 6348

Locality Woods Hole and Approaches, Vineyard Sound, Massachusetts

Chief of Party: Chas. M. Thomas in 1938

Plane of reference is mean low water, reading

2.1 ft. on tide staff at Woods Hole

9.2 ft. below B.M. 11 (1932)

2.0 ft. on tide staff at Little Harbor

8.2 ft. below B.M. 1

0.8 ft. on tide staff at Forbes Dock, Uncatena Island

6.7 ft. below B.M. 1

Height of mean high water above plane is 1.7 feet at Woods Hole; 1.3 feet at Little Harbor; 3.6 feet at Forbes Dock.

Note: The variation in tides made it necessary to use a zone system. The zones were selected by the office and are shown on the boat sheet. Also see page 6 of the Descriptive Report.

Condition of records satisfactory except as noted below:



Acting Chief, Division of Tides and Currents.

	Remarks	Decisions
1		U S G B
2	For title, applies to strait or passage; also name of town on north side Little Harbor and east of Great Harbor.	415706 U S G B
3		"
4		"
5		"
6		" U S G B
7		"
8	Do not ink pending U S G B decision for this name versus Gunners Point	"
9		" U S G B
10		415707
11		415706
12		415707 U S G B
13		415706
14		415707
15		U S G B
16		415706
17		"
18		" U S G B
19		"
20		"
21		"
22		"
23		"
24		" U S G B
25		
26		
27		

GEOGRAPHIC NAMES
 Survey No. **H6348**

Name on Survey	Source										
	A	B	C	D	E	F	G	H	K		
<u>Vineyard Sound</u>											1
<u>Woods Hole</u>											2
<u>Nobska Point</u>											3
<u>Little Harbor</u>											4
<u>Great Harbor</u>											5
<u>Juniper Point</u>											6
<u>Devils Foot Island</u>											7
<u>Mink Pt. X</u>	USRB decision										8
<u>Nonamasset Island</u>											9
<u>Uncatena Island</u>											10
<u>Timmy Point</u>											11
<u>Bull Island</u> ✓											12
<u>Hadley Harbor</u> ✓											13
<u>Inner Harbor</u> ✓											14
<u>Buzzards Bay</u>											15
<u>Coffin Rock</u>											16
<u>Great Ledge</u>											17
<u>Nonamasset Shoal</u>											18
<u>Red Ledge</u>											19
<u>Hadley Rock</u>											20
<u>Middle Ledge</u>											21
<u>Broadway (channel)</u>											22
<u>Timmy Point Shoal</u>											23
<u>Parker Flats</u>											24
											25
											26
											27

L. Heck 2/8/41

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. **H6348**

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

Number of positions on sheet	.....	3192
Number of positions checked	.....	158
Number of positions revised	.....	68
Number of soundings recorded	.....	13276
Number of soundings revised	.....	78
Number of soundings erroneously spaced	.....	70
Number of signals erroneously plotted or transferred	.....	—

Date:

Verification by *G.H. Everett*

Time: *156 1/2 hrs*

Review by *J.A. McCormick 1/25/41*

Time: *63 hrs.*

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
 DESCRIPTIVE REPORT
 PHOTOSTAT OF

No. H **H6348**
~~No. H~~

{ received July 25, 1940
 registered Aug. 1, 1940
 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	T. B. Reed
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✓ *TBR*

VERIFIER'S REPORT OF HYDROGRAPHIC SURVEY NO. H 6348

Verified and Inked by G.H. Everett

Date Nov. 8, 1940

1. The descriptive report was consulted and appropriate action taken. ✓
2. Soundings originating with the survey and mentioned in the descriptive report have been verified, including latitude and longitude. ✓
3. All references to survey sheets mentioned in the descriptive report include the registry number and year. ✓
4. Geographic names of hydrographic features are in slanting lettering and of topographic features in vertical lettering.
5. All items effecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken. ✓
6. All positions verified instrumentally were check marked in the sounding records. ✓
7. All critical soundings are clear and legible. ✓
8. The metal protractor has been checked within the last three months. ✓
9. The protracting and plotting of all bad crossings were verified. ✓
10. All detached positions locating critical soundings, rocks or buoys were verified. ✓
11. The boat sheet was compared with the smooth sheet. ✓
12. The spacing of soundings as recorded in the records was closely followed. *(not always by field plotter, who failed frequently to note change in time interval. The recorder seldom noted a change in remarks column.)* ✓
13. The bottom characteristics were shown on outstanding shoals. *Not many bottom characteristics taken.* ✓
14. The reduction and plotting of doubtful soundings were checked. *Several 'No bottom' soundings added which had been reduced and plotted as regular soundings. The recorder added + to ~~some~~ 'no bottom soundings' The (+) undoubtedly means 'no bottom' in the records.* ✓

15. The transfer of contemporary topographic information was carefully examined. ✓
16. All junctions were transferred. ✓
17. The notation "JOINS H " was added for all contemporary adjoining or overlapping sheets now registered. ✓
18. The depth curves have been drawn to include the significant depths. ✓
19. All triangulation stations and transfer of topographic and hydrographic signals were checked by the field party. ✓
20. Heights of rocks were checked against range of tide. ✓
21. Rocks transferred from topographic survey have a dotted curve where shown thereon. ✓
22. Unnecessary pencil notes have been removed. ✓
23. Objects on which signals are located and which fall outside of the low water line have been described on the sheet. ~~No~~ Descriptions given ~~except~~ for Nan (Nobska Pt.) and Rod which may be on a dock (Lat. 41-30.22; Long 70-42.35) ✓
(see note 57 (green) Dock not shown on T6621. Rod in 1ft. water. Dock not important.)
24. The low water line and delineation of shoal areas have been properly shown (see letter of October 20, 1934). Where definitely determined. ✓
See D.R. T6622 page 2 P Low Water Line.
25. Degree and minutes values and symbols have been checked. ✓
26. Source of shoreline and signals (When not given in report).
T6621 (1938) Plane table survey
T6622 (1938) " " "
Note: Signal Deer at Lat. 41-30.26; Long. 70-42.30 is shown as topo signal but is not on T6621. Its origin is not given in records. ✓
Probably a small unimportant dock.
27. Depth curves were satisfactory except as follows: Curves broken (sketched) inshore and near foul areas.
6' curve of channel west of Ram I. at Lat. 41-31.45; Long. 70-40.95 drawn to show 6' channel because so shown on B.S. but not necessarily proven by soundings ✓

28. Sounding line crossings were satisfactory except as follows;

Following glaring discrepancies in soundings were adjusted by verifier as noted in records:
36-37a (blue); 128a (blue); 12-13b (blue); 20-23e (blue); 79 (green)

sdgs. 1-2a (blue) appear one fm. too shoal thruout. (see 29' at Lat. 41-31.44; 70-40.55)
Line 23-24u (blue) has 37' (not plotted) almost on top of the 29'. Also 17' of 1a disagrees with 23' of 40b (blue) which positions plot in same place. Line 1-2a was retained because shown on B.S. and on account of general statement in D.R. pg. 5. Probably in error but retained. Many others similar.

29. Junctions with contemporary surveys were satisfactory except as follows: ✓

30. Condition of sounding records was satisfactory except as follows:

B.S. - most of detached pos. on rocks or other objects not plotted.

Volumes - Recording frequently uncertain, such as: time of pos. uncertain; vague notes, failure to note course changes; no bottom sdgs (evidently) recorded as (Ex. 10 +) which were missed by person reducing sdgs.; bottom char. & sdgs. on rocks sometimes entered in remarks column; errors in recording angles and stations. ✓

Drafting - Pos. nos. too large and not always well placed. Pencil curves too heavy. Names of signals placed out in water area. "Red Beacon" was erased and changed because it obscured sdgs & pos. of closely developed area. Minor errors in transfer of tape information.

31. The protracting was satisfactory except as follows: Too many errors,

caused by setting protractor on wrong signals and not studying B.S. where positions were plotted obviously out of place. In some instances the different B.S. plotting was noted but not accepted when B.S. plotting was obviously correct. ✓
Field plotter also erred in connecting wrong positions particularly where short lines were run close together.

32. The field plotting of soundings was satisfactory except as follows: ✓

Erronious sdgs caused by misreading recorded sounding (Errors noted from 1 to 10') Plotting $\frac{1}{2}$ sdg. as zero.

Bad spacing due to failure in noting change of time interval and skipping sdgs. between positions such as spacing 5 sdgs. between when 6 sdgs. were actually taken. ✓

33. Notes to reviewer:

1. ϕ 41-30.95 Pos. 69g (blue) vague note (Baul) interpreted by verifier as rock awash ✓
X 70-39.58 and so plotted. Not shown on B.S. Dubious but retained.
2. ϕ 41-31.48 Pos. 21u (blue) note "old breakwater". (Probably partly submerged) Not shown ✓
X 70-40.45 on B.S. T6622 shows rock awash at the probably inshore end of breakwater. Verifier plotted + (sunken rock) for outer end omitting note. O.K.
3. ϕ 41-30.40 Pos. 129b (green) note "off end of dock". T6621 shows stone pier awash ✓
X 70-42.42 Topo symbol accepted.
4. ϕ 40-30.57 Vol. 8 pg. 40 sounding off small platform dock 25 m. NE signal laz. ✓
X 70-42.38 Dock not shown on T6621. It may be a float. Disregard. Unimportant.
5. ϕ 41-30.87 Pos 82c (green) Note in remarks Col. "rock 1 fath under surface" No sdg. recorded ✓
X 70-41.88 in sdg. col. The 2 previous positions were locating rocks awash and it may be the note is wrong. Plotted as sunken rock with 4' on it. O.K.

Continued (see over)

6. ϕ 41-31.75 Detached sdg. $1\frac{1}{2}'$ Pos 76d (green) impossible fix - not shown on B.S.
 λ 70-40.60 Previous pos. were locations of rocks. Unable to plot. Rocks awash to depths of 3 ft. in vicinity. Disregard.
7. ϕ 41-31.95 Pos. 98d (green) Vague note on "rock 2 m below surface." Plotted as
 λ 70-40.95 sunken rock 2 meters inshore of sdg. since topo shows rocky shoreline. Changed to rock awash.
8. ϕ 41-31.18 Red nun buoy #4. Pos. 33e (green) Weak angles used with no two fixes
 λ 70-41.07 checking. Same buoy also sighted with bearing and distance on 29e (blue) and 42a (blue) with good agreement but disagreeing with 33e (green) The sdg. at buoy favors the bearing location. Strongest fix of 33e accepted since it places buoy farthest out from shore. O.K.
9. ϕ 41-31.37 Black can buoy #5 Pos. 68-70e (green) Disagreement in 3 fixes taken.
 λ 70-40.55 sdg. at buoy favors first fix as most probable location and so plotted. ✓ O.K.
10. ϕ 41-30.70 Pos 13n (green) note "rocks bearing 4 ft. Sdg. taken at time is 4 ft.
 λ 70-40.07 which according to note at top of page is at position over rock. It was assumed that bearing (not baring) means carrying 4 ft. of water. The use of "bearing" for submerged rocks is repeatedly used in records. One such note stated "rock bearing 1 ft. below surface" ✓
11. ϕ 41-31.22 Pos. 10r (green) note on sdg. before position "rocks 10 m to port"
 λ 70-40.57 This note followed by field plotter and rock awash plotted in pencil 43 meters wsw of buoy C "1." If this note is correct then the rock lies inside the channel and is a danger to navigation.
 It is very probable that the note is wrong and should read "10 meters to starboard." Reasons are: sdg. is about 15 m. north of foul area which might have been rocks sighted. Line 14-15 r (same day) is 10 meters north of 10r with no reference to rocks. The party did not take a detached fix, which they have done in practically all other cases where rocks were sighted out from general foul areas. It is not on B.S. but few other located rocks are shown. ~~the~~
 Therefore rock was left in pencil because it was assumed that the note was wrong. Erased. ✓
12. General - Soundings alongside of docks are 5 meters off at keel line ✓
 Dash line indicating foul areas have been revised from limit shown on Topo to fit additional information obtained by hydro.
 Rocks are mostly boulders according to records and foul areas are probably piles of boulders lying close to surface.
 Three black dots just north of drawbridge at entrance to Eel Pond are from T6622 and assumed to be piling. No reference to them in records.
13. ϕ 41-29.90 Rocks awash from T6621. Pos 98-99j (blue) notes "boulder bearing 3' at high water"
 λ 70-42.30 which may be northern one shown. Also Pos 40 (green) states "boulders bearing 1 to 4 ft during 2' tide. According to records some of rocks are bare at H.W. Not shown since it is not certain which rock is bare.
Note added awash at M.H.W. ✓
14. ϕ 41-31.24 Two rocks from T6622 noted as "bare 7' at L.W. These rocks were
 λ 70-40.25 transferred shown as bare rocks on this survey since ~~that~~ ^{H.W.} is only 1.7' above reference plane. No elevation added to rocks. ✓

HYDROGRAPHIC SURVEY NO. H6348

Smooth Sheet One

Boat Sheet Two

Records; Sounding 10 Vols., Wire Drag Vols., Bomb Vols.

Descriptive Report Yes

Title Sheet Yes

List of Signals Yes

Landmarks for Charts (Form 567) Yes

Statistics Yes

Approved by Chief of Party Yes

Recoverable Station Cards (Form 524)

Special Chart for Lighthouse Service Yes Nov. 20, 1939
(Circular Nov.30, 1933)

Hydrography: Total Days 46 ; Last Date Oct. 1, 1938

Remarks

DIVISION OF CHARTS

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6348 (1938) FIELD NO. 1

Massachusetts; Vineyard Sound; Woods Hole and Approaches
Surveyed in July - October 1938, Scale 1:5000
Instructions dated January 17, 1938 (GILBERT)

Soundings:

Control:

Hand Lead
Dorsey II Fathometer

Three-point fixes on shore
signals

Chief of Party - C. M. Thomas
Surveyed by - C. M. Thomas; C. A. George; J. P. Lushene
Protracted by - M. C. Enstine
Soundings plotted by - M. C. Enstine
Verified and inked by - G. H. Everett
Reviewed by - J. A. McCormick; January 25, 1941
Inspected by - H. R. Edmonston

1. Shoreline and Signals

Shoreline and topographic signals are from T-6621
and T-6622 of 1938.

2. Junctions with Contemporary Surveys

Satisfactory junctions were effected with H-6349
(1938) and H-6350 (1938) on the east. Present proj-
ect instructions do not call for new surveys on the
north, south or west.

3. Comparison with Prior Surveys

H-160 (1845), 1:20,000; H-163 (1845-46), 1:20,000;
H-527 (1855-56), 1:30,000; H-595 (1857), 1:20,000;
H-1832 (1887), 1:20,000; H-1833 (1887), 1:5,000;
H-2317 (1897), 1:10,000; H-2318 (1897), 1:20,000;
H-3391 (1912-14); W.D., 1:20,000

The descriptive report, page 5, states "Many rocks
and shoal spots as shown on former survey were veri-
fied and although a number have not been verified or
found their existence is not considered doubtful."
And on page 6, "All rocks and shoal soundings as
shown on the previous survey should be retained and
recharted even though not found on this survey."

Little more need be said. Depths charted in Woods Hole, where most of the differences occur, are mostly from H-1833 and from U. S. Engineers' channel surveys. The charted depths are shoaler than those of the present survey in well over a hundred instances.

A few soundings were carried forward from H-1833 and H-3391 before it was decided that continuance of such procedure was unsatisfactory and that a resurvey would be needed in order to dispose of differences and to determine changes caused by the hurricane of September 21, 1938. The present survey cannot be made basic and should be used only to supplement the information now charted.

4. Comparison with Chart 249 (New Print of Aug. 20, 1940)
Chart 348 (New Print of Aug. 8, 1940)

a. Hydrography

This subject has been partially covered in the preceding paragraph. As regards differences between present survey and charts in Woods Hole, it might be noted that the Chief of Engineers reports, as of June 30, 1939, controlling depths of 13 feet in the main channel through the strait and 11 feet in Broadway Channel. This would tend to favor the present survey rather than the charted depths, some of which are from rather old Engineers' surveys. Dredging has been done in these channels in order to maintain project depths.

Depths charted in Lackeys Bay, Lat. $41^{\circ} 30'$, Long. $70^{\circ} 42'$ are from H-1832 (1887) and are pretty thoroughly discredited. This applies particularly to the 30 foot depth charted in Lat. $41^{\circ} 30.0'$, Long. $70^{\circ} 40.5'$ which is undoubtedly 5 fathoms in error and to the 14 foot depth charted in Lat. $41^{\circ} 29.6'$, Long. $70^{\circ} 42.4'$ which is poorly controlled and must belong closer to shore.

Sunken rocks charted in Lat. $41^{\circ} 29.5'$, Long. $70^{\circ} 42.5'$ and in Lat. $41^{\circ} 30.1'$, Long. $70^{\circ} 41.8'$ are from Chart Letter 340 of 1924. The first group falls just at the limits of the present survey and should be retained as now charted. The second group is better delineated on T-1858 (1888-89).

b. Aids to Navigation

Positions obtained on the survey for floating aids mean little because of the subsequent hurricane of September 21, 1938. Range lights on Lat. 40° 31.5', Long. 70° 40.5' on the survey were destroyed in the hurricane and rebuilt in the positions now charted. Charted positions of other fixed aids in the area are substantially as shown on the survey.

5. Condition of Survey

The sounding records contain many uncertainties as to time, course, bottom, remarks, etc., The boat sheet was of little help in most of these cases as few notes or detached positions were even plotted. Field drafting on the smooth sheet was only fair, day letters and numbers being too large and a total of 68 positions having to be revised in the office.

6. Compliance with Instructions for the Project

Project instructions covered the execution of new basic surveys of this area. For reasons stated in Par. 3, the present survey cannot be considered basic.

7. Additional Field Work Recommended

Complete resurvey of the area is recommended. Boat sheets should be constructed in this office to show critical depths to be investigated. New topographic or air photo surveys will be recommended in the reviews of the current topographic surveys.

ref 7 DP

8. Superseded Surveys

Only the following surveys can be superseded in part:

H- 163
H- 527
H-1832

Examined and approved:

Thos B Reed

Thos. B. Reed,
Chief, Section of Field Records

Raymond R. Egan
Chief, Section of Hydrography

J. S. Borden

Chief, Division of Charts

G. H. ...

Chief, Division of
Coastal Surveys

Partially applied to Cht. 249 Mar. 4, 1941 K.P.
 Partially applied to cht 348 March 12, 1941 L.A.M.
 applied to Cht 1209 (in part) Aug 1941 H.S.J.
 Applied to chart 249 March 9, 1942 L.A.M.
 " " " 348 Reconstr. 2-6-57 Benson
 " " " 1210 Reconstr thru chart 249 M.D. 11-16-61
 Cymd to ^{new} " Cht 260 2-3-62 R.K.D.
 Resupplied to cht 348 8-8-70 Barber
 Added s/ds in 2
 areas $41^{\circ}18', 70^{\circ}42' \pm$
 $41^{\circ}25', 70^{\circ}37' \pm$