

8164

Diag. Cnt. No. 1203-2.

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. ECFP-1151 Office No. H-8164

LOCALITY

State Massachusetts

General locality Plymouth

Locality Duxbury Bay and Outer Coast

19 ~~54~~ 55

CHIEF OF PARTY

C. R. Reed

LIBRARY & ARCHIVES

DATE May 1, 1957

B-1870-1 (1)

81640

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.

REGISTER NO. H-8164

Field No. ECFP-1154

State MASSACHUSETTS

General locality PLYMOUTH

Locality DUXBURY BAY AND OUTER COAST  
~~& OFF DUXBURY BEACH~~

Scale 1:10,000 Date of survey 6/21 to 10/21/54

Instructions dated 29 January 1954  
and 6/15 to 7/20/55

Vessel EAST COAST FIELD PARTY

Chief of party CLARENCE R. REED & M. T. PAULSON

Surveyed by EDWIN K. MCCAFFREY

Soundings taken by ~~XXXXXX~~ fathometer, graphic recorder, hand lead, ~~XXXX~~ POLE

Fathograms scaled by PARTY PERSONNEL

Fathograms checked by NORFOLK DISTRICT OFFICE

Protracted by RICHARD HAJEC & W.L. JONNS

Soundings penciled by W.L. JONNS

Soundings in ~~XXXXXX~~ fathoms feet at MLW ~~XXXX~~

REMARKS: See attached descriptive report covering work  
accomplished during the 1955 field season

2K12

NOTES FOR DESCRIPTIVE REPORT  
TO ACCOMPANY

Hydrographic Sheet H-8164 (FIELD NUMBER ECFP-1154)  
Duxbury Bay & Off Duxbury Beach, Massachusetts

EAST COAST FIELD PARTY

CLARENCE R. REED, CHIEF OF PARTY

PROJECT CS-368

1954

SCALE 1:10,000

\* \* \* \* \*

PROJECT This survey was accomplished under instructions dated 29 January 1954, calling for a new hydrographic survey of Plymouth Bay and vicinity.

SURVEY LIMITS & DATES The survey on this sheet covers that portion of Chart 245 north of latitude  $42^{\circ} 00'$ , exclusive of Kingston Bay and the Jones River.

A junction was made with contemporary survey H-8165 (FIELD NO. ECFP-1254) to the south, except to the east of Gurnet Point where the work was not completed. *Work completed in 1955*

Work on this survey began 21 June 1954 and concluded 21 October 1954.

VESSEL AND EQUIPMENT Launches number CS-172 and CS-82 were used consecutively in this survey. Both operated from a mooring east of State Pier at Plymouth, Massachusetts.

Echo soundings were obtained with Graphic Recorders number 71S and 77. Both operated with transducers mounted inboard in the launches. Recorder number 71S was used in Launch CS-172 for the period 11 June through 30 August, 1954. Recorder number 77 was used in Launch CS-82 for the period 16 September through 28 October 1954.

TIDES AND CURRENTS The tide note is appended to this report. No current observations were made on this project.

SMOOTH SHEET The smooth sheet is to be plotted by the Norfolk Processing Office.

CONTROL STATIONS The control consisted mainly of triangulation and Photo-hydro stations. The latter were plotted on Air-photo Compilation Sheets T-11170, and T-11173 by Photogrammetrist J.C. Lajoie. These were transferred to the boat sheet by officers of this party.

All necessary hydrographic stations were located by three or more sextant cuts to the station or by sextant fixes at the station sites.

SHORELINE & TOPOGRAPHY The shoreline and topographic details were transferred from Air-photo compilation Sheet T-11170 and T-11173. There were no additions or revisions to shoreline made during the progress of hydrography. *(1953) Review, P1*

SOUNDINGS Soundings were taken by Graphic Recorder, sounding pole and hand lead. Bottom samples were obtained using an armed hand lead.

CONTROL OF HYDROGRAPHY The sounding lines on this sheet were controlled by means of three point sextant fixes. No unusual jumps were observed in changing control stations. Fixes on sounding lines were taken at 1 minute and  $1\frac{1}{2}$  minute intervals. Offshore hydrography was controlled by the use of circular arcs, constructed on the "Circle Sheet" principle using the locus of points of three prominent on-shore control stations.

Check angles were taken to verify the location of all detached positions. \* smooth-plotted by 3-pt. fixes in Processing Office

ADEQUACY OF SURVEY Surveys in Duxbury Bay were completed, and carried to a satisfactory junction with contemporary survey H-8165 (ECP-1254) to the south. This portion of the survey is considered adequate to supersede prior surveys. That portion of the survey off Duxbury Beach south of latitude  $42^{\circ} 03.5'$  was not completed due to adverse weather conditions, launch trouble, and termination of the Field Season. completed in (See note by Chief of Party at end of report) (on "Approval Sheet") 1955

CROSSLINES Prescribed crosslines were run on the inshore portion of this survey. Crossings were not made across unimportant flats or, on the offshore portion of this survey because the survey of that latter area was incomplete. (See Report of 1955)

COMPARISON WITH PRIOR SURVEYS A comparison with prior surveys Nos. H-3905, H-3906 and H-3906a showed few discrepancies. Since these surveys were made in (1916 - 1917) any discrepancies noted will be discussed in the chart comparison to follow. See Review #5

COMPARISON WITH CHART 245 Soundings from the chart were transferred to the boat sheet before beginning hydrography. These soundings are shown on the sheet in green ink. Present soundings and features which disagree with charted information are discussed below.

The channels in Duxbury Bay have depths generally less than is charted. Several of the tidal drains are either not as extensive as charted or are non-existent.

The channel on the southeast side of Standish Shore has shoaled to depths not exceeding 10 feet in its upper portion. The entrance is bare? at MLW. (entrance depth is 3 ft.)

Cowyard Channel West has a controlling depth of 19 feet to buoy 11.

Cowyard Channel East has a controlling depth of 8 feet to approximately 1/2 mile south of Powder Point Bridge. (See 1955 Report)

The 42 foot sounding in latitude  $42^{\circ} 01.5'$ , longitude  $70^{\circ} 38.4'$  was not found. It occurs midchannel in depths of from 25', - 27'. It is recommended the 42' sounding be deleted and that a more representative sounding from this survey be charted. Disregard 42 from H-3906a (1916) 27 now charted

Rocks  
now  
charted { Two rocks awash were found in latitude  $42^{\circ} 05.49'$ , longitude  $70^{\circ} 38.28'$ . These were located as positions 33 - 34 c day, volume 1, page 51. It is recommended that these be added to the chart. \* Farnham Rock was found as charted. The least depth obtained was a fathometer sounding of 16.4' (15.2) (1955) This was on a continuous sounding line between positions 14 - 15 c day, volume 1, page 46. It is recommended that the present charted soundings be retained. \* See 1955 Report.

A least depth of 13.0' fathometer sounding was located in latitude 42° 05.02', longitude 70° 37.43'. This sounding occurred before position 84 h - volume 3, page 57. It lies 120 m east of a charted 18 foot shoal. It is recommended the new sounding be charted as a separate shoal. (now charted)

The least depth on Howland Ledge, latitude 42° 04.6', longitude 70° 37.2', was a fathometer sounding of 13.0 feet. This was found on a continuous sounding line between positions 16 - 17 f day, volume 8, page 33. This occurs 120 m NW of the present charted 13 foot sounding. It is recommended that this depth be added to those presently charted. (See 7-ft. sdg.) (See note by Chief of Party at end of report) (on "Approval Sheet") 1955 Report

The least depth on the shoal east of Bartlett Rock, latitude 42° 04.62', longitude 70° 37.57', was a fathometer sounding of 9.0 feet. This was found just prior to position 15 f, volume 8, page 32. It occurs 130 m east of the present least charted depth of 11 feet. It is recommended that this new, shoaler sounding be added to the chart. (charted; correct to 9)

Bartlett Rock, latitude 42° 04.66', longitude 70° 37.83', was found as charted. This rock, which bares 2 feet at MLW, is located as position 58 b, volume 7, page 19. The charted note "Bares 2 foot" is incorrect. A least depth of 7.4 feet fathometer was located 70 m south of this rock. This occurs between positions 13 - 14 f day, volume 8, page 32. It is recommended that this sounding be added to the chart. (at compiler's discretion)

The note on Brant Rock C.G. Station No. 29, latitude 42° 05.54', longitude 70° 38.77' should be changed to read "abandoned C.G. Station." (no note charted)

#### PRELIMINARY REVIEW BY CHART DIVISION - CHART 245

Item 4 High Pine Ledge was not investigated by this survey. Local reports state that rock and kelp are visible at low water, but that the rock does not break unless seas are heavy and tide is low. (see 1955 D.R.)

*See 1955 D.R. 42-04.7 70-36.97*  
Item 5 An extensive search was not made for this 7 foot spot. An adjacent sounding line gives a depth of 17.0 feet 15 m south of the charted location of this shoal. This is a fathometer sounding on a continuous line and occurs between positions 120 - 121 j day, volume 6, page 64. It is recommended that the present 7 foot charted sounding be retained until such time as an extensive survey can be run to prove or disprove its existence.

The entrance channel and mooring basin at Green Harbor were reported dredged to 6 feet in 1952. The present survey shows a controlling depth of 3 feet in the channel and 6 feet in the basin. (Review, PGB)

The Duxbury Yacht Club Basin was reported dredged to 7 feet in 1952. The present survey verified this, however the approaching channel has a controlling depth of 7 feet, and should be so charted. (charted)

The concrete tower at Brant Rock, latitude 42° 05.43', longitude 70° 38.60', was located by Air-photo methods. It was used as a hydrographic control station (HUG) and is submitted on form 567 for charting as a landmark. C.L. 97 (1955)

Powder Point Bridge is a fixed wooden highway bridge connecting Duxbury Beach and Powder Point. The boat channel, latitude 42° 02.85', longitude 70° 38.98' has the following clearances: width 25 feet, clear height 5 feet, MHW; channel depth 8 feet, MLW. (Recorded with H-8165)

DANGERS AND SHOALS Newly found shoals have been covered in the preceding section, Comparison with Chart.

COAST PILOT INFORMATION

A separate report on Coast Pilot will be made.

AIDS TO NAVIGATION

No fixed aids to navigation were located. Floating aids to navigation were located as follows:

<u>NAME (1953 LIGHT LIST)</u>	<u>LOCATION</u>	<u>DEPTH</u>	<u>VOL.</u>	<u>PAGE</u>	<u>DATE</u>
Farnum Rock Lighted	42° 05.60'	35	1	14	21 June 1954
Bell Buoy 6	70° 36.51'				
<i>Duxbury</i> Howland Ledge Buoy 8	42° 04.65' ✓ 70° 36.91' ✓	<del>29</del> 24	7	18	22 Sept. 1954
Bartlett Rock Buoy 2	42° 04.56' ✓ 70° 37.59' ✓	21	7	19	22 Sept. 1954
Bartlett Rock South Buoy 4	42° 04.51' ✓ 70° 37.87' ✓	17	7	19	22 Sept. 1954
High Pine Ledge <i>(relocated 1955)</i> Buoy 10 <i>See 1955 D.R.</i>	42° 01.98' ✓ 70° 36.37' ✓	17	8	49	29 Sept. 1954
Duxbury Bay Channel Buoy 4	41° 59.84' ✓ 70° 38.88' ✓	15	2	3	30 June 1954
Duxbury Bay Channel Buoy 5	42° 00.28' ✓ 70° 38.90' ✓	15	2	4	30 June 1954
Duxbury Bay Channel Buoy 6	42° 00.36' ✓ 70° 38.88' ✓	16	2	56	6 July 1954
Duxbury Bay Channel Buoy 7	42° 00.53' ✓ 70° 39.08' ✓	21	2	56	6 July 1954
Duxbury Bay Channel Buoy 8	42° 00.76' ✓ 70° 39.24' ✓	22	5	27	26 Aug. 1954
Duxbury Bay Channel Buoy 9	42° 00.97' ✓ 70° 39.50' ✓	<del>25</del> 18	2	56	6 July 1954
Duxbury Bay Channel Buoy 10	42° 01.14' ✓ 70° 39.52' ✓	<del>25</del> 18	2	56	6 July 1954
Duxbury Bay Channel Buoy 11	42° 01.56' ✓ 70° 39.54' ✓	<del>10</del> 9	3	7	7 July 1954
Duxbury Bay Channel Buoy 12	42° 01.60' ✓ 70° 39.49' ✓	14	3	7	7 July 1954

LANDMARKS FOR CHARTS

Landmarks will be submitted separately on Form 567.

GEOGRAPHIC NAMES

There are no changes or additions to Geographic Names to report.

Report approved with added notes  
by Chief of Party on "Approval Sheet".*Clarence R. Reed*  
Clarence R. Reed, CDR, USC&GS  
Chief of Party

- 4 -

Respectfully submitted,

*Edwin K. McCaffrey*  
Edwin K. McCaffrey  
ENS., USC&GS

TIDE NOTE TO ACCOMPANY

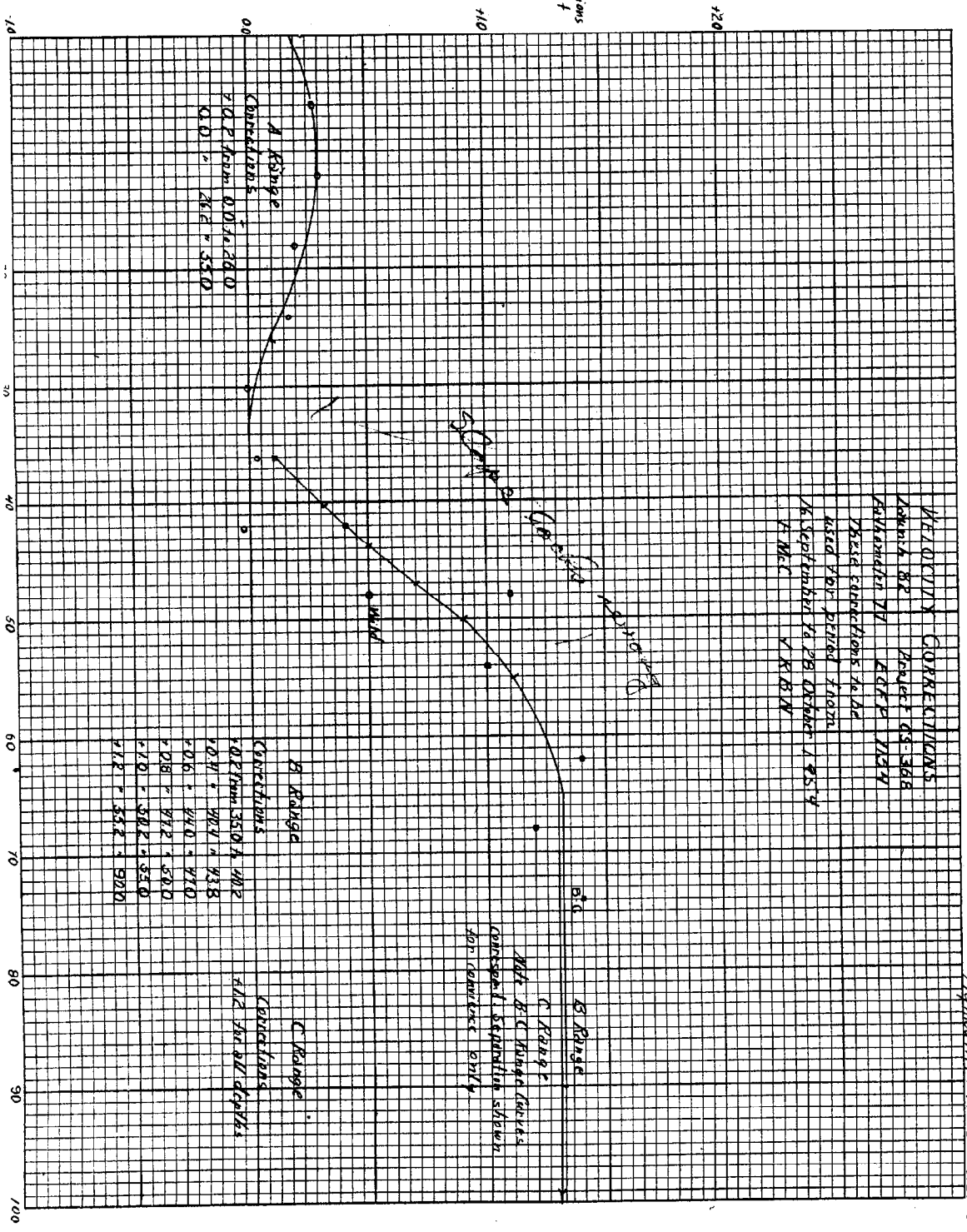
Hydrographic Survey Sheet H-8164(Field No. ECFP 1154)

Tide data for the reduction of soundings was obtained from a portable automatic tide gage at State Pier, Plymouth Harbor Massachusetts. This gage was maintained by party personnel. The mean low water plane of reference on the tide staff, was furnished by the Washington Office.

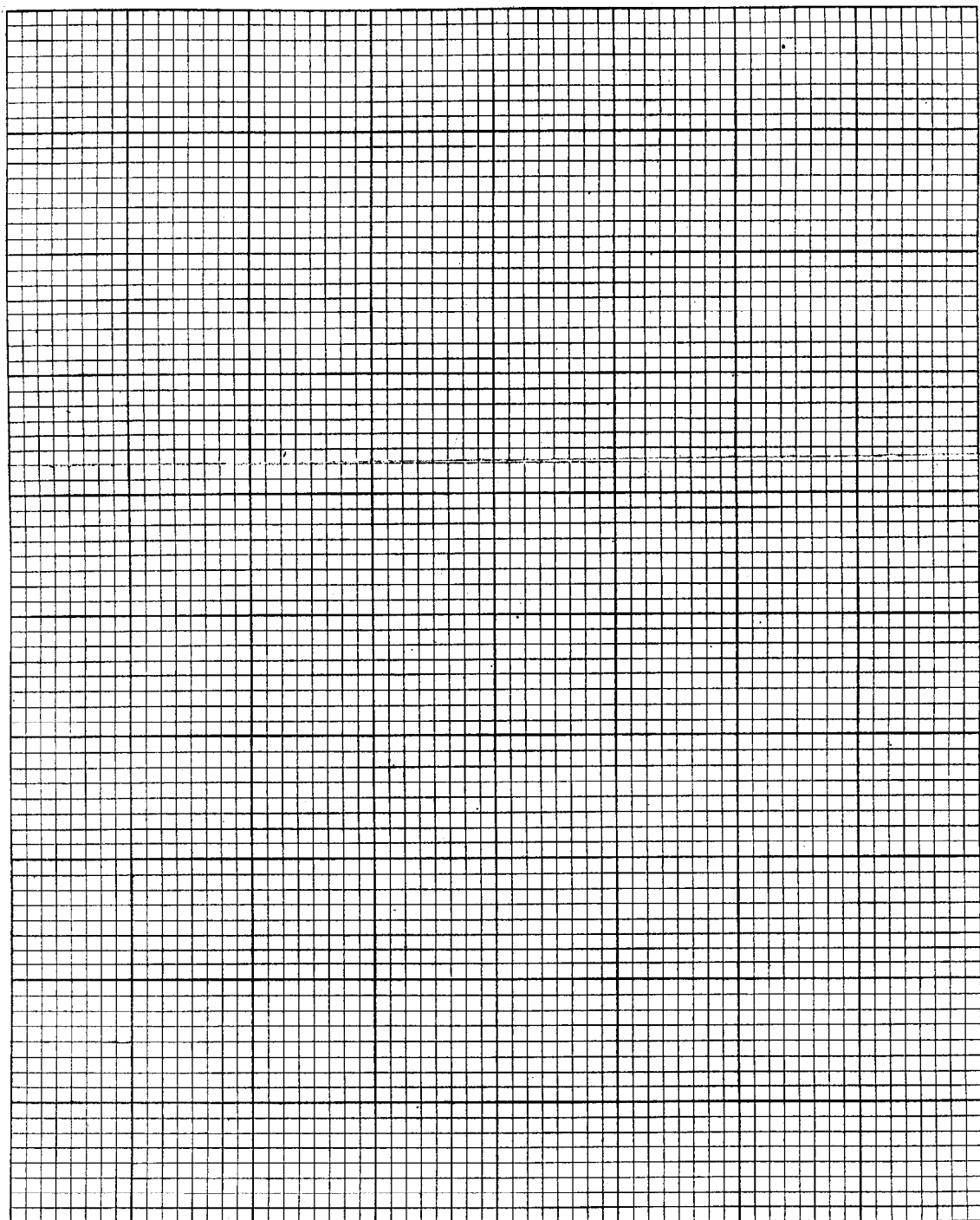
<u>STATION</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>MLW ON STAFF</u>
State Pier, Plymouth, Mass.	41° 57.57'	70° 39.77'	0.1

**HELICIDY CORRECTIONS**  
 Lokuta RR Project 95-348  
 Approved by AD&P 11/24  
 Basic corrections to be used for period from September 29, 1995 to October 1, 1995  
 F.M.C. ✓ K.R.W.

Corrections in Feet







Plymouth, Massachusetts

VELOCITY CORRECTIONS

March 116 PROJECT CS 368  
 FIDMATER NS ACVE 1154  
 These corrections to be  
 used for period from  
 11 June to 30 August  
 WPC @ WPA  
 VAMTC

A Range

CORRECTIONS

R12 from 350 to 351	+0.8
+120	+39.2
+170	+47.7
+16	+35.7
+14	+63.7
+12	+71.0
+10	+78.9
+0.8	+88.9

Steps back runway

B Range

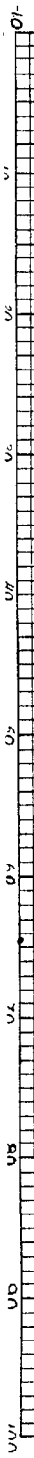
CORRECTIONS

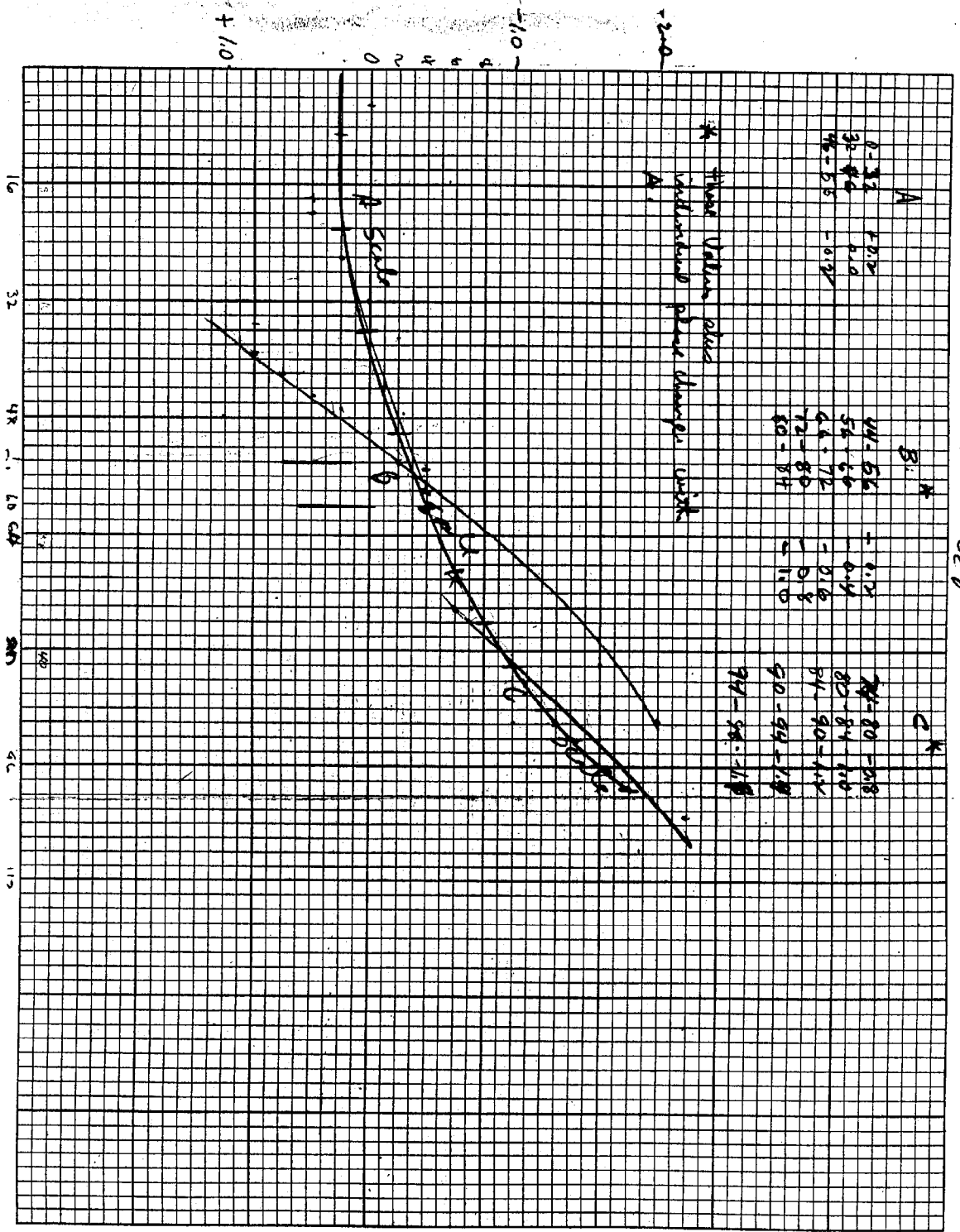
R106 from 1010 to 1011	+0.6
+07	+78.7
+02	+82.8
00	+90.7
02	+98.7

CORRECTIONS

R06 from 000 to 001	+0.6
+04	+10.7
+02	+22.7

Corrections  
in Feet





L-33

APPROVAL SHEET FOR  
HYDROGRAPHIC SHEET H-8164 (ECCP-1154)

The boat sheet and records for Hydrographic Survey H-8164 (ECCP-1154) have been inspected by me and are approved.

This survey was not completed due to the ending of the field season by the oncoming of winter. The area in Duxbury Bay is nearly complete. A few lines should be run southeast of Powder Point Bridge to develop the channel. A few unimportant drains such as those at Latitude  $42^{\circ} 01.3'$ , Longitude  $70^{\circ} 39.8'$  and Latitude  $42^{\circ} 00.4'$ , Longitude  $70^{\circ} 39.3'$  have no mid-channel lines run.

In the semi-completed outside area north of Latitude  $42^{\circ} 03.5'$  a number of wide spaces and holidays have been indicated in red. A further investigation of the 7 foot sounding northeast of Howland Ledge (Preliminary Review item 5) should be made. Rocks awash charted off Green Harbor Point should be checked. Other recommended investigations are indicated in red.

Wide separation of the sub-party at Plymouth from the parent party at Newburyport, Massachusetts and York, Maine (120 miles) seriously interfered with its efficient and economical operation. Not only was supervision hindered but interchange of personnel was impossible.

*Clarence R. Reed*

Clarence R. Reed  
CDR, USCGS  
OinC, East Coast Field Party

*See D. R. of 1955 work*

FATHOMETER CORRECTIONS

Hydrographic Survey Sheet H-8164(Field No. ECFP 1154)

The corrections tabulated below are based on an initial set at zero feet on the fathogram. Index corrections have been entered in the sounding volumes where the initial varied from zero feet. All soundings were taken in feet.

FATHOMETER NO. 71S  
21 June - 30 August 1954

*Launch # 172*

CORRECTION	DEPTH	
	From	To
<b>A RANGE</b>		
+0.6	0.0	10.0
+0.4	10.1	22.0
+0.2	22.1	55.0
<b>B RANGE</b>		
+2.2	35.0	39.1
+2.0	39.2	47.0
+1.8	47.1	55.0
+1.6	55.1	63.0
+1.4	63.1	70.9
+1.2	71.0	78.8
+1.0	78.9	86.8
+0.8	86.9	90.0
<b>C RANGE</b>		
+0.6	70.0	75.0
+0.4	75.1	82.7
+0.2	82.8	90.6
0.0	90.7	98.6
-0.2	98.7	100.0

FATHOMETER NO. 77  
21 September - 21 October 1954

*Lch. # 82*

CORRECTIONS	DEPTH	
	From	To
<b>A RANGE</b>		
+0.2	0.0	26.0
0.0	26.1	55.0
<b>B RANGE</b>		
+0.2	35.0	40.2
+0.4	40.4	43.8
+0.6	44.0	47.0
+0.8	47.2	50.0
+1.0	50.2	55.0
+1.2	55.2	90.0
<b>C RANGE</b>		
+1.2	All depths	

*5000  
1250  
1250*

STATISTICS TO ACCOMPANY HYDROGRAPHIC SHEET H-8164  
(FIELD NO. HCFP-1154)

DATE 1954	DAY LTR	VOL. NO.	LEAD LINES	NO. OF POSITIONS	STAT. MI. SDG. LINES
21 June	a RED	1	2	76	11.4
23 "	b	1	0	53	5.7
24 "	c	1	1	72	9.8
30 "	d	2	2	70 <i>37/1</i>	10.3
1 July	e	2	0	74	11.0
6 "	f	2	4	75	10.6
7 "	g	3	2	108	12.6
12 "	h	3	0	88	13.7
15 "	j	3&4	0	88	12.3
6 Aug.	k	4	1	80	10.3
12 "	l	4&5	1	124	16.3
24 "	m	5	1	70	8.0
26 "	n	5	1	121	14.8
30 "	p	5&6	0	144	19.1
TOTALS			15	1243	165.9

Above statistics for Launch #172

LAUNCH #82

21 Sept.	a BLUE	6	3	146	25.5
22 "	b	7	1	59	10.9
23 "	c	7	0	17	2.5
24 "	d	7	1	147 <i>no/3</i>	22.4
27 "	e	8	1	88	13.6
28 "	f	8	0	67	10.9
29 "	g	8&9	2	140	25.1
4 Oct.	h	9	1	126	22.3
18 "	j	9&10	0	81	10.0
19 "	k	10	0	166	21.4
20 "	l	10&11	0	83	10.4
21 "	m	11	1	91	11.9
TOTALS			10	1211	186.9

Area Surveyed 17.7 sq. stat. mi.

*1178*  
*3632*

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.

REGISTER No. H-8164

Field No. ECFP-1154

State MASSACHUSETTS

General locality PLYMOUTH

Locality DUXBURY BAY & DUXBURY BEACH

Scale 1:10,000 Date of survey 6/15 to 7/20/55

Instructions dated 29 Jan. 1954 & 17 February 1955

Vessel EAST COAST FIELD PARTY

Chief of party MARVIN T. PAULSON

Surveyed by EDWIN K. McCAFFREY

Soundings taken by ~~DIMONDIS~~ graphic recorder, hand lead, ~~XXX~~ POLE

Fathograms scaled by PARTY PERSONNEL A.G.D. EKM

Fathograms checked by NORFOLK DISTRICT OFFICE W.L.J.

Protracted by W.L. JONNS

Soundings penciled by W.L. JONNS

Soundings in ~~FATHOMS~~ feet at MLW ~~XXXXX~~

REMARKS: This report covers work accomplished during the 1955 field season.

*See Title Sheet in front of these Report covering both 1954 & 55 work*

copy 10/10  
SUPPLEMENTARY DESCRIPTIVE REPORT  
TO ACCOMPANY

Hydrographic Sheet H-8164

EAST COAST FIELD PARTY

MARVIN T. PAULSON, CHIEF OF PARTY

PROJECT 1368

1955

SCALE 1:10,000

\* \* \* \* \*

PROJECT This survey was accomplished under instructions dated 29 January 1954, and supplemental instructions 22/MEK FP-East Coast dated 17 February 1955.

SURVEY LIMITS AND DATES The survey on this sheet covers that portion of Chart 245 north of latitude  $42^{\circ}-00'$ , excluding Kingston Bay. Development work was done in Duxbury Bay and basic hydrography was completed off Duxbury Beach. The offshore area covered by this survey is 9.6 square statute miles and is bounded on the north and south by  $42^{\circ}-03.5'$  and  $42^{\circ}-00.0'$  respectively, on the east by the chart limit  $70^{\circ}-34.5'$  and on the west by Duxbury Beach. A good junction was made with contemporary survey H-8165.

Work on this survey began 15 June and ended 20 July 1955.

VESSELS AND EQUIPMENT Launch number CS-172 was used in this survey. It operated from a mooring in Green Harbor, Brant Rock, Massachusetts.

Echo soundings were obtained with graphic recorder No. 77, operated with transducer units mounted inboard in the launch bilges.

TIDES AND CURRENTS The tide station was maintained at State Pier, Plymouth Harbor, Massachusetts. The tide note is appended to this report. No current observations were made on this project.

SMOOTH SHEET The smooth sheet is to be plotted by the Norfolk Processing Office.

CONTROL STATIONS The control consisted mainly of triangulation and photo-hydro stations. This control was supplemented by a number of hydrographic signals built along Duxbury Beach and located by three or more sextant angles taken at the station site. All signal location cuts are recorded in the sounding records. A list of signals used is attached to this report.

SHORELINE AND TOPOGRAPHY There were no additions or revisions to the shoreline and topographic details of the original (1954) survey. *Review, P1*

SOUNDINGS Soundings were taken by graphic recorder, sounding pole and handlead. Bottom samples were obtained using an armed hand lead.

CONTROL OF HYDROGRAPHY The sounding lines on this survey were controlled by three point sextant fixes to appropriate control stations. Fixes were taken at  $1\frac{1}{2}$  minute intervals. No unusual position jumps were observed in changing fixes.

Check angles were taken to verify the location of all detached positions.



ADEQUACY OF SURVEY

This survey is considered adequate to supersede prior surveys.

CROSSLINES

Crosslines were run to the extent of approximately 10% of the total miles of sounding lines. Good crossings were noted.

COMPARISON WITH PRIOR SURVEYS

As stated in the original of this report, there are no prior surveys of recent date of this area. A comparison with the 1954 survey on this sheet, showed generally good agreement. Areas of slight disagreement are listed below:

Review #5

LATITUDE	LONGITUDE	1954	1955	REMARKS
42°-04.70'	70°-36.97'	17	7 ✓	This verifies a charted sounding of 7 feet. This was item, No.5 of the preliminary review. The depth obtained was a fathometer sounding of 6.8 feet occurring between position 1 & 2 of "a" day. It plots 30m south of the charted 7. It is recommended that the 7 foot <sup>20</sup> presently charted be retained. <i>7-ft. present depth adequate for charting</i>
42°-05.54'	70°-36.68'	16	15 ✓	This depth occurs on Farham Rock, 30m north of the presently charted 14. It is a fathometer sounding of 15.2 recorded on position 76 g. It is recommended that the present charted sounding be retained. <i>(14 retained)</i>
42°-04.91'	70°-38.31'	---	---	Rocks A study of the 1954 survey recommended that the charted rocks in this area be located. They are located in volume 3 as positions 1 & 2 f; and 95, 96, 97 & 98 g. <i>(Several rks. from prior surveys also retained)</i>
42°-02.71'	70°-38.61'	---	---	The channel southwest <sup>east</sup> of Powder Point Bridge carries <sup>7/8</sup> feet as a controlling depth up to the bridge.

\* There are no changes to report in Duxbury Yacht Basin Channel, and Green Harbor Channel (un-numbered items Preliminary Review) since the date of the last report. However Yacht Club officials at Duxbury state that re-dredging is scheduled for this year and that the contract depth will be 6 feet. \* Review, # 6 B

COMPARISON WITH CHART

Charted soundings from the latest edition of Chart 245 (1:20,000) were placed on the boat sheet in green ink. A comparison follows.

LATITUDE	LONGITUDE	CHART	1955 SURVEY	REMARKS
42°-01.96'	70°-36.57'	2	1 ✓	This is High Pine Ledge, Preliminary Review item No. 4. The least depth obtained was a pole sounding of 1.4 feet. It was located as position 10 p day and verifies the charted position. It is recommended that the 1 foot be substituted for the presently charted 2 foot spot. <i>1 1/2 ft. presently charted</i>

OK

1955

LATITUDE	LONGITUDE	CHART	SURVEY	REMARKS
42°-03.36'	70°-37.31'	45	37	The sounding noted is one of 37.2' recorded on a continuous line between position 45 <del>46</del> c day. The area was later developed but <del>no</del> shoaler indications were found. The 37 occurs between two charted 45 foot soundings, widely separated. (350 meters). <del>The 37 is recommended for charting.</del> (chart 31 ft. 55m. south

*Review, P3*

Excluding High Pine Ledge and the immediate vicinity, the area surveyed is generally of regular, uniformly sloping bottom. This survey showed good agreement with charted soundings in this area. The High Pine Ledge area was closely developed, and the depth curves indicate that its general depth and configuration is as charted. *Review, P5*

COAST PILOT No additions or revisions to Coast Pilot are recommended since the date of the last report.

AIDS TO NAVIGATION No fixed aids to navigation were located by this survey. High Pine Ledge Buoy 10 was observed to have been moved since the last survey and it was relocated.

NAME (1955 Light List)	LOCATION	DEPTH	VOL.	PAGE	LOCATION DATE
High Pine Ledge	42°-02.14'	<sup>15-17</sup> <del>22</del>	<sup>16</sup> <del>5</del>	10	7-6-55
Buoy 10	70°-36.43' <sub>2</sub>				

LANDMARKS No landmarks are recommended for charting since the date of the last report.

GEOGRAPHIC NAMES No changes are recommended to geographic names.

MISCELLANEOUS Weather stamps in the sounding volumes employ the Beaufort Wind Scale and Weather Symbols.

Predicted tides were used in the reduction of all boat sheet soundings.

Tide reducers were entered on the fathograms for the convenience of the processing office and at their suggestion. Velocity corrections are attached to this report. *Tide reducers were entered in the volumes in the Processing Office and soundings were reduced with templates.*

Respectfully submitted,

*Edwin K. McCaffrey*  
Edwin K. McCaffrey  
ENS., USC&GS

Approved and forwarded,

*Marvin T. Paulson*  
Marvin T. Paulson  
LCDR., USC&GS  
Chief of Party

APPROVAL SHEET

This report is a supplement to the report submitted with the 1954 Survey records. The survey consisted of development of shoals, adding additional lines to meet spacing requirements and delineate channels as indicated by the Washington Office review; and also the completion of the unsurveyed area. ✓

The sheet has been reviewed by me and is approved as complete and no additional surveys are required. The survey was accomplished by a detached party, so supervision and inspection of the sheet and records could not be made daily. Inspections were made periodically throughout the season to check records, progress, and make recommendations. ✓

*Marvin F. Paulson*

Marvin F. Paulson  
LCdr., C&GS, OinC

TIDE NOTE TO ACCOMPANY

Hydrographic Survey Sheet H-8164

Tide data for the reduction of soundings was obtained from a portable automatic tide gage at State Pier, Plymouth Harbor, Mass. This gage was maintained by party personnel. The mean low water plane of reference was furnished by the Washington Office.

STATION	LATITUDE	LONGITUDE	MLOW ON STAFF
State Pier, Plymouth, Mass.	41°-57.57'	70°-39.77'	0.1

STATISTICS

Hydrographic Survey Sheet H-8164

DATE 1955	DAY LTR	VOL. NO.	NO. POSITIONS	STAT. MI. SDG. LINE
15	June a	Purple 12	66	8.1
16	" b	12	72	13.3
17	" c	182 12 # 13	121	21.1
22	" d	213	71	11.2
23	" e	213	80	13.1
27	" f	314	2	—
28	" g	314	98	14.8
29	" h	384 14 # 15	164	29.0
30	" j	415	96	17.3
6	July k	485 15 # 16	91	14.3
7	" l	512	111	17.4
8	" m	512	1	—
11	" n	585 14 # 17	90	14.7
13	" p	617	60	8.2
14	" q	617	41	5.9
20	" r	617	18	1.6
	TOTALS	6	1178	190.0

numbered 1955 vol not to agree with actual renumbered vols.

Area Survey 9.6 sq. stat. mi.

7,068

**VELOCITY CORRECTIONS**  
**Hydrographic Sheet H-8164 (ECP 1154)**

Graphic recorder No. 77 and launch CS-172 were used exclusively in this survey. This sheet was one of three comprising project 1368. Bar checks were taken for all three sheets, and for convenience were tabulated in one abstract, enclosed in the original of report H-8164. The correct initial setting for this launch and recorder is 0.0 ft. Any deviation from this requires an index correction be applied to soundings. A summary of the velocity corrections follows:

**CORRECTIONS IN FEET**

**A SCALE** ✓

**B SCALE**

**C SCALE**

0.0 to 5.0  
 +0.2 from 5.2 to 9.4  
 +0.4 from 9.6 to 18.0  
 +0.2 from 18.2 to 26.6  
 0.0 from 26.8 to 31.2  
 -0.2 from 31.4 to 37.0  
 -0.4 from 37.2 to 55.0

+0.8 from 35.0 to 39.0  
 +0.6 from 39.2 to 42.0  
 +0.4 from 42.2 to 44.6  
 +0.2 from 44.8 to 47.0  
 0.0 from 47.2 to 50.0  
 -0.2 from 50.2 to 54.0  
 -0.4 from 54.2 to 58.0  
 -0.6 from 58.2 to 62.0  
 -0.8 from 62.5 to 66.0  
 -1.0 from 66.5 to 70.0  
 -1.2 from 70.5 to 74.0  
 -1.4 from 74.5 to 78.0  
 -1.6 from 78.5 to 82.0  
 -1.8 from 82.5 to 86.0  
 -2.0 from 86.5 to 90.0

-0.6 from 70.0 to 74.5  
 -0.8 from 75.0 to 78.5  
 -1.0 from 79.0 to 82.5  
 -1.2 from 83.0 to 86.5  
 -1.4 from 87.0 to 90.5  
 -1.6 from 91.0 to 94.5  
 -1.8 from 95.0 to 98.5  
 -2.0 from 99.0 to 102.5  
 -2.2 from 103.0 to limit  
 of sdg.

26.8

26.8

PROCESSING OFFICE  
LIST OF SIGNALS

H-8164

TRIANGULATION STATIONS

29Q 29Q (MGS), 1934  
 DISH STANDISH MONUMENT, 1889-1938  
 DUXY DUXY, 1938  
 FCUR PLYMOUTH HARBOR, CHANNEL LIGHT NO. 4, 1953  
 GURN PLYMOUTH (GURNET) L.H., 1938  
 PIER DUXBURY PIER L.H., (U.S.C. & G.S.), 1877-1934  
 RAD-1 GREEN HARBOR, WOU RADIO TOWER, N.E., 1938-43  
 RAD-2 GREEN HARBOR, WOU RADIO TOWER, S.E., 1938-43  
 RAD-3 GREEN HARBOR, WOU RADIO TOWER, W., 1938-43  
 RANT BRANT TANK, 1938  
 TALL DUXBURY, TALL CHURCH, SPIRE, 1908-35

TOPOGRAPHIC STATIONS

SOURCE T-11170

Ape	Bag	Car	Dip	Ego	Fun	Got	Hug	Imp	Joy
Keg	Lux	Tor	Van	Wop					

SOURCE T-11173

All	Are	Bar	Bee	Cap	Don	Dux	Earl	Fab	Gal
HaG	Ice	Jol	Ker	Lip	Lob	Mat	Mop	Nun	Oak
Ope	Pon	Put	Que	Quo	Rim	Row	Rye	Sam	Sid
Sin	Tug	Uno	Vue	Won	Yup				

HYDROGRAPHIC STATIONS

Bum	Vol.	13.	pg.	21	Log	H-8165		
Cas	"	12,	"	24	Low	Vol.	15,	pg. 16
Cat	"	4,	"	18	Mac	"	4,	" 19
Dal	"	16,	"	45	Mil	"	4,	" 18
Dal	"	17,	"	26	Pop	"	13,	" 21
Day	"	3,	"	10	Sig	"	4,	" 19
Dry	"	13,	"	21	Siz	"	16,	" 45
Ear	"	4,	"	18	Wet	"	13,	" 21
Edd	"	4,	"	19	Wig	"	4,	" 18
Eva	"	3,	"	4&5				
Han	"	4,	"	19				
Hot	"	15,	"	16				

ADDENDUM  
To Accompany

HYDROGRAPHIC SURVEY H-8164 (Field No. ECFP-1154)

GENERAL

Numerous changes in depths have occurred on this survey which are not apparent on chart 245. This, is no doubt caused by *review,* the closer fathometer development on the current survey compared *P5* to the handlead soundings on prior surveys. Changes and comparisons of major importance have been pointed out in the body of the descriptive report.

CONTROL

Much difficulty was experienced during the smooth plot of this survey because of the extensive use of swingers and weak angles, and also the apparent poor observation of angles. Many of the fixes chosen, while not exactly swingers, were too weak to give the exact positioning needed to properly delineate the edges of channels and permit good crossings in such an irregular bottom. This condition was much more noticeable on the 1954 season's work than on the 1955.

The following positions were not smooth plotted because of weak fixes:

121 to 1241 (red); *replotted & utilized* 62 to 66d (red); 22 to 26f (red); 60 to 62f (red); 40 to 44j (red); 70 to 71f (red); 93h (purple)

Respectfully submitted,

*Hugh L. Proffitt*  
Hugh L. Proffitt  
Cartographer.

Norfolk, Va.  
24 April 1957



GEOGRAPHIC NAMES

Survey No. H-8164

Name on Survey	Source of Name										K	
	A	B	C	D	E	F	G	H	K			
<u>Massachusetts</u>			(for title)								Bgn	1
<u>Plymouth</u>		"	"									2
<u>Gurnet Point</u> ✓											BGN	3
<u>Duxbury Bay</u> ✓												4
<u>Duxbury Beach</u> ✓												5
<u>Cowyard</u>											BGN	6
<u>Clarks Island</u> ✓												7
<u>High Pine Ledge</u> ✓												8
<u>Duxbury</u> ✓												9
<u>Duxbury Yacht Club</u> ✓												10
<u>Powder Point</u> ✓												11
<u>Powder Point Bridge</u>												12
<u>Back River</u> ✓												13
<u>Duck Hill River</u> ✓												14
<u>Little Wood Island River</u> ✓												15
<u>Great Wood Island River</u> ✓												16
<u>Green Harbor Pt.</u> ✓ <u>Green Harbor</u> ✓			(town)									17
<u>Green Harbor River</u> ✓												18
<u>Brant Rock</u> ✓			(town)									19
<u>Bartlett Rock</u> ✓												20
<u>Howland Ledge</u> ✓												21
<u>Farnham Rock</u> ✓											BGN	22
												23
												24
												25
<u>State Pier, Plymouth</u>			(tide station, off sheet)									26
												27

Names approved 5-24-57  
L. HECK

See chart 245 for best placement of names.

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. *8164*

Records accompanying survey:

Boat sheets *1*; sounding vols. *17*; wire drag vols. *—*;  
 bomb vols. *—*; graphic recorder rolls *15-Exp.*  
 special reports, etc. *1-Desc. Rep. and 1 Smooth Sheet.*

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

	Totals	1954	1955
Number of positions on sheet	3632	2454	1178
Number of positions checked	232	201	31
Number of positions revised	114	113	1
Number of soundings revised & added (refers to depth only)	2200	279	1921*
Number of soundings erroneously spaced	—	—	—
Number of signals erroneously plotted or transferred	—	—	—
Topographic details	Time 12 hrs.	—	—
Junctions	Time 4 hrs.	—	—
Verification of soundings from graphic record	Time 29 hrs.	26**	3

Verification by *E. Thomas* Total time *367* Date *10/23/57*

Reviewed by *J.A. Dinsmore* Time *80* Date *6 Nov. 1957*

\* 12 hrs reducing soundings plus time above normal bathogram inspection due to fact no reducers recorded for 1955 work by processing office.

\* 1725 sdgs corr for 1' tidal diff.  
 196 sdgs corr for 2' initial error.

*Enc*

TIDE NOTE FOR HYDROGRAPHIC SHEET

Chart Division: R. H. Carstens:

10 June 1957

Plane of reference approved in  
17 volumes of sounding records for

HYDROGRAPHIC SHEET 8164

Locality Duxbury Bay, Massachusetts

C. R. Reed }  
Chief of Party M. T. Paulson } in 1954-55

Plane of reference is mean low water, reading

0.1 ft. on tide staff at Plymouth

15.8 ft. below B.M. 10 (1954)

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

Condition of records satisfactory except as noted below:

NOTE: Tide reducers for the positions listed below have been  
revised in red and verified.

Vol.

Position

12

1a - 66a ✓

1b - 79b ✓

1c - 66c ✓

*revised depths*

13

67c - 121c

*William H. ...*

Signature

Chief, Tides Branch

DIVISION OF CHARTS  
REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-8164

FIELD NO. ECFP-1154

Mass., Plymouth, Duxbury Bay & Off Duxbury Beach

Surveyed: June-Oct. 1954 & June-July 1955 Scale: 1:10,000

PROJECT NO. CS-368

Soundings:

808 Depth Recorder  
Hand lead  
Pole

Control:

Sextant fixes on  
shore signals

Chief of Party - C. R. Reed & M. T. Paulson

Surveyed by - E. K. McCaffrey

Protracted by - R. Hajec & W. L. Jonns

Soundings plotted by - W. L. Jonns

Verified and inked by - E. Thomas

Reviewed by - T. A. Dinsmore

Date: 6 Dec. 1957

Inspected by - R. H. Carstens

1. Shoreline and Signals

The shoreline originates with the unreviewed manuscripts of air-photographic surveys T-11170, T-11173 and T-11174 of 1953. The red-dashed shoreline at Green Harbor channel indicates a revision sketched from air-photograph J-440 of 1953.

The origin of the signals is given in the Descriptive Report.

2. Sounding Line Crossings

Depth at crossings are in good agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves are adequately delineated.

Much of the offshore bottom is smooth and undulating. However, in the area eastward of Green Harbor Point, the bottom is very irregular being marked by pinnacle rocks, shoals and ridges. To the southward, High Pine Ledge rising to within 1 ft. of the surface in lat.  $42^{\circ}02'$ , long.  $70^{\circ}36.58'$ , is the most conspicuous feature in the area. Augmenting this feature is the 11-ft. shoal spit which connects the ledge with the mainland.

On the inland side, the expansive tidal flats of Duxbury Bay are broken up by a pattern of natural channels.

4. Junctions with Contemporary Surveys

An adequate junction was effected with H-8165 (1954-55) on the south.

No other contemporary surveys adjoining this area are registered at the present time.

5. Comparison with Prior Surveys

a. H-183 (1847) 1:40,000	H-1067 (1870) 1:10,000
H-422 (1853) 1:10,000	H-3413 (1912) 1:20,000
H-516 (1854-05) 1:80,000	H-3905 (1916) 1:10,000
<u>H-1035 (1863-70) 1:10,000</u>	<u>H-3906 (1916) 1:10,000</u>

The present survey falls within the area covered by these prior surveys. A comparison of the prior and present surveys reveals widespread differences in depths. Although many of the differences are attributed to the irregularities in the bottom which are revealed more completely and clearly by the closer development on the present survey, present depths in the outer coastal area are generally 1 to 8 ft. less than the prior depths. In the area of very irregular bottom eastward of Green Harbor, the comparison clearly indicates that there has been a free shifting of the shoal ridges not of rock origin. Close development in 1916 (H-3905) over Howland Ledge in lat.  $42^{\circ}04.7'$ , long.  $70^{\circ}37'$ , revealed least depths of 19 ft. compared with 7 to 12-ft. depths obtained by comparable development on the present survey.

H-8164 (1954-55)-3

Within Duxbury Bay, depths in the principal channels generally range from 1-6 ft. less than the prior depths. Many of the prior tidal drains have become obliterated from deposition of sediment or spoil. A general shoaling of the bay area is clearly indicated.

The following discrepancies are noted:

(1) The 42-ft. sounding charted in lat.  $42^{\circ}04.68'$ , long.  $70^{\circ}36.43'$ , from H-516 should be disregarded. Falling in present depths of 60-66 ft., the prior sounding which was preceded by 8 fms. (inshore) and followed by 12 fms. (offshore) was probably erroneously recorded as 7 fms. instead of 11.

(2) The 20-ft sounding charted in lat.  $42^{\circ}04.25'$ , long  $70^{\circ}38.02'$ , should be disregarded. Falling in fairly smooth-bottom depths of 27 ft. on the present survey, the origin of the prior 20 is uncertain. It was first charted as a  $3\frac{1}{4}$ -fm. sounding on chart 1208 in 1920 and apparently originated with a 29-ft. sounding on H-3905 which was misread as 20-ft. in compiling. Present development is adequate to discredit the questionable 20-ft. prior sounding.

(3) The 41-ft. sounding charted in lat.  $42^{\circ}02.06'$ , long.  $70^{\circ}35.83'$ , from H-3905 should be disregarded. Falling in present depths of 63 ft., the prior sounding is considered to be out of position because of faulty recording of a signal and should actually fall on the slope about 240 meters westward where comparable depths were obtained on the present survey.

Where little or no bottom changes are indicated supplementary soundings, rocks and bottom characteristics have been retained from the prior surveys. With these additions, the present survey is adequate to supersede the prior surveys within the common area.

b. H-3775 (1915) and H-3776 (1915-16) W. D.

These wire-drag surveys cover the offshore portion of the present survey. No conflicts exist between the effective drag depths and depths on the present survey. The numerous soundings which have been carried forward to the present survey from H-3775 W. D. attest to the value of wire-drag surveys in areas of irregular bottom.

6. Comparison with Chart 245 (Latest print date 10/7/57)

A. Hydrography

Charted hydrography originates principally with the prior surveys which need no further consideration. The present survey has been partially applied to the chart prior to verification and review. Numerous revisions have been made to smooth-sheet soundings during verification.

The charted hydrography is entirely superseded by the present survey except as noted in the following paragraph.

B. Dredged Channels

Charted depths of 3-4 ft. in Green Harbor Channel Entrance originating with the present survey prior to verification and review should be disregarded. Smooth-sheet depths are now in reasonable harmony with the depths on an after-dredging survey of April 1954 by the Department of Public Works of Massachusetts (Bp. 52829). Because of more complete development, the latter survey should supersede the present survey for charting within the common area.

C. Aids to Navigation

Most of the aids to navigation located on the present survey differ appreciably in position with the charted aids. The charted aids appear to adequately mark the features intended.

The beacons in the channel to Duxbury reported in H. O. Notice to Mariners 47 (1956) were established subsequent to the present survey.

7. Conditions of Survey

- a. The sounding records are complete; the Descriptive Report covers most matters of importance.
- b. The smooth plotting was generally accurate. However, in many instances the verifier shifted sounding lines into better agreement with adjacent hydrography by replotting weak fixes.

- c. Low-water air photographs were utilized during verification to aid in developing the tidal drains and the continuity of the channels in Duxbury Bay.
- d. The channel into Green Harbor was inadequately developed on the present survey. An additional sounding line along the axis of the channel would have provided a controlling depth more in harmony with the 7-ft. controlling depth furnished by the April 1954 after-dredging survey by the Department of Public Works of Massachusetts (Bp. 52829). In lieu of sufficient information on the present survey, blueprint 52829 was utilized to influence the depth-curve delineation on the present survey.
- e. About 200 soundings were corrected for a 2-ft. initial error which had apparently been overlooked during the reduction of soundings by the use of a scanning template in the Processing Office. Faulty scanning with a scanning template and omission of initial corrections are found to be less self-evident than in conventional recording and more time consuming to detect.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions except as noted in paragraph 7-d.

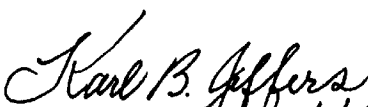
9. Additional Field Work


With the retention of numerous prior soundings, the survey is considered basic and no additional field work is recommended. Conspicuous shoal indications appearing in the offshore area would require further investigation had not a wire-drag survey been previously accomplished. The Public Works Department of Massachusetts makes periodic surveys of the inshore dredged channels.

Examined and Approved:

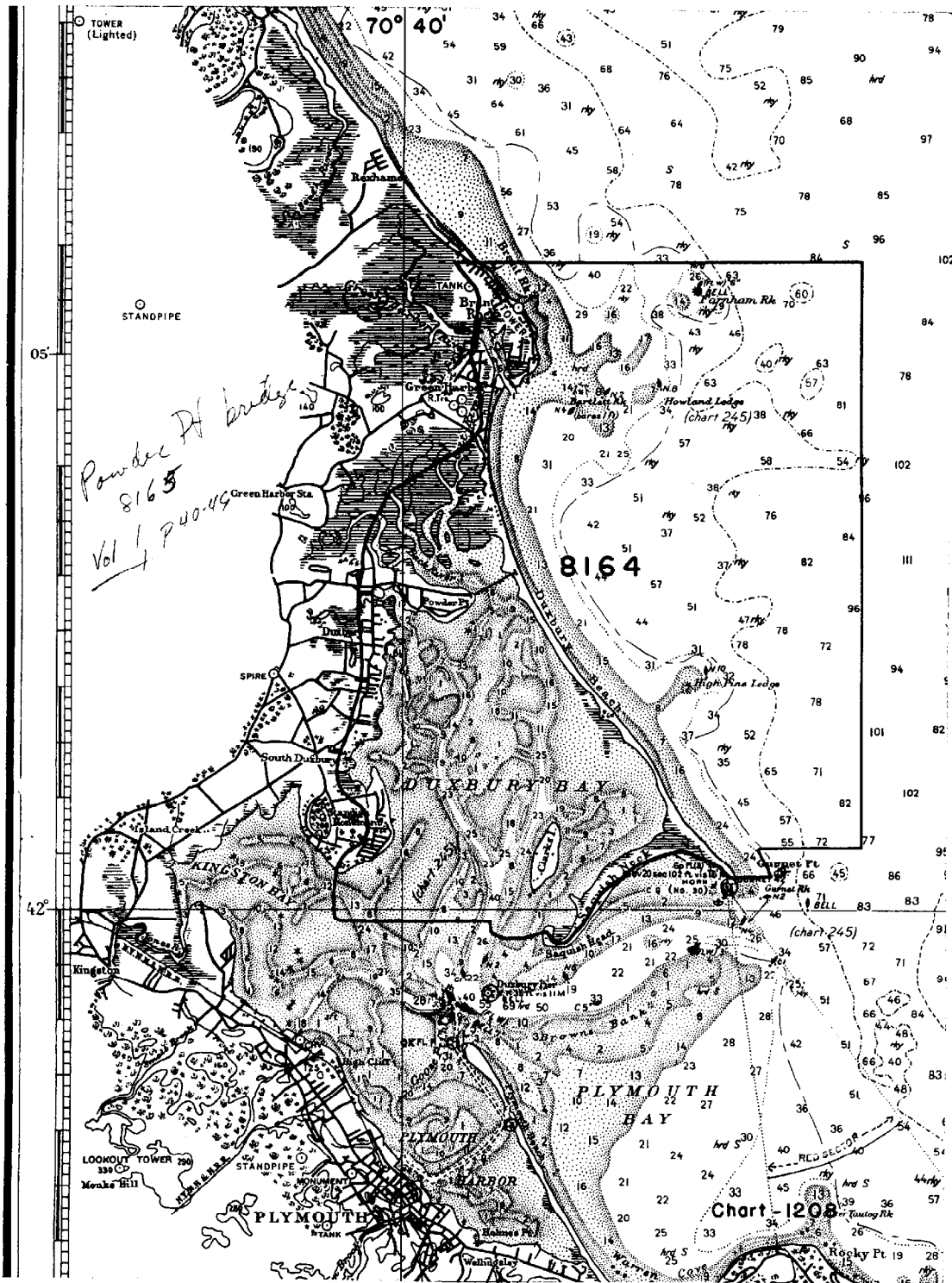
  
Max G. Ricketts  
Chief, Nautical Chart Branch

  
Charles A. Schanck  
Chief, Division of Charts

  
Karl B. Jeffers 1/7/58  
Chief, Hydrography Branch

  
Samuel B. Grenell  
Chief, Division of Coastal Surveys





# NAUTICAL CHARTS BRANCH

SURVEY NO. H-8164

Reviewed 6 Dec 1957  
Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
7-29-57	245	R.K. DeLauder	<del>Part. appl</del> Before <del>After</del> Verification and Review. <i>Atlantic Ocean only same</i>
			<i>for critical info to get edge on Ch 1208.</i>
7-29-57	1208	R.K. DeLauder	<del>Part. appl</del> Before <del>After</del> Verification and Review <i>To Atlantic Ocean only per instr. from G.H.S.</i>
8-21-57	245	R.K. DeLauder	<del>Part. appl</del> Before <del>After</del> Verification and Review <i>To Chesapeake Bay.</i>
6/16/58	1106	WE	<del>Part. appl</del> After Verification and Review <i>fully app'd</i>
6/17/58	1107	WE	<del>Part. appl</del> After Verification and Review <i>fully app'd</i>
7-16-58	71	M. Rogers	<del>Part. appl</del> After Verification and Review <i>applied direct.</i>
7/15/59	1208	J.P. Walker	<del>Part. appl</del> After Verification and Review <i>Completely</i>
9-1-59	1207	A.J. Hoffman	<del>Part. appl</del> After Verification and Review <i>Completely applied thru 1208 Drawg.</i>
4/19/59	245	N.W. Burgoyne	<del>Part. appl</del> After Verification and Review <i>Critical Corus Only</i>
12/29/59	245	<i>Reconstruction</i> N.W. Burgoyne	<del>Part. appl</del> After Verification and Review <i>-Completely Applied</i>
2/5/69	245 INSET	W. H. HALL	<i>Fully app after V + R</i>

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.