8111

Diag. Cht. No. 1208-2

Form 50

U. S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

,					
Type of Survey Hycrographic					
BN Field No. BG-1153 Office No. H-8111					
LOCALITY					
State Massachusetts					
General locality Cape flod Bay					
Locality Barnstable Harbor					
2					
19.53					
CHIEF OF PARTY					
H.O.Fortin & H.A.Paton					
LIBRARY & ARCHIVES					
DATE June 7-1954					

B-1870-1 (1)

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-8111

BN
Field No. BO-1153

State	Massachusetts				
General locality	Cape Cod Bay				
Locality	Barnstable Ha	rbor			
Scale 1:	10,000		Date of survey	8-21 October 1	L95 3
Instructions dated	18 Septem	ber 1953		»-· ··- ·· ··· · · · · · · · · · · ·	
VesselU	SCG Launch 3853	6			
Chief of party	H.O.Fortin &	H.A.Pat	on		
Surveyed by	John F. Vance	Jr. &	Richard H.Houl	der	
Soundings taken by	y fathometer, gran	xic xeen rd	r, hand lead, wire	Sounding Pole	
Fathograms scaled	by Various	Operator	6		
Fathograms checke	ed by J.F.Vanc	e Jr. &	R.H.Houlder		
Protracted by	Robert	t B. Rey	nolds		
Soundings penciled	by Mary	Keyton			
Soundings in 52	zhoma feet at	; MLW	MILLW	····	
REMARKS: This	s survey was smo	oth plot	tted in the Hyd	rographic Section	m-of
the Norfolk rr	ocessing Office.	·			,
					·
			FICE 16—66520—1		



Descriptive Report
to accompany
Barnstable Harbor
Hydrographic Survey # H-8111
Field No. By-1153

H.O. Fortin and H.A. Paton, Chiefs of Party Scale 1:16,000 USCG Launch No. 38536 8/21 October 1953

A. Project.

Project 363, hydrographic survey of Barnstable Harbor, Massachusetts was executed in compliance with instructions dated 18 September 1953, to the Commanding Officer Ship Bowen.

B. Survey Limits and Dates.

The area surveyed included the harbor east of longitude 70° 18.4' and the harbor entrance between longitudes 70° 15' and 70° 17', north to latitude 41° 45.2'. Signal building started on 28 September 1953 and continued until the tide gage arrived and was installed on 7 October 1953. Launch hydrography began on 8 October and continued until 21 October 1953. Several days of bad weather followed and operations ceased on 24 October in order to return to Newport and prepare for the Fall Cruise. As time was cut short by the impending Fall Cruise, all the information mentioned in the preliminary review and referred to in paragraph 16 of the instructions was not investigated. There was also no time to extend the limits of the survey as mentioned in paragraph 4 of the instructions.

C. Vessel and Equipment.

The Ship Bowen was tied up at the U.S. Engineers pier at Sandwich, Massachusetts and used as the base of operations. A 38 Coast Guard launch was borrowed from the Cape Cod Cannal Lifeboat Station and outfitted with a plotting table and fathometers for survey operations. The launch was left in Barnstable with the crew returning to the Bowen each night.

The Ship Bowen was anchored in Barnstable Harbor to observe a 25 hour current station.

D. Tide and current stations.

All the bench marks were located at Beach Point where there weren't any piers that extended to the low water line, so a structure had to be built out in the water. A staff and well were attached to this structure and a portable tide gage installed. This location was at latitude 41-43.32 and longitude 70-17.10. The contractor promised to remove this structure upon our departure. Three old marks and two new ones on Beach Point were connected with levels by setting up the instrument on a shoal, bare only at low water. All the level records and marigrams were sent to the Washington Office for reduction.

Strong currents were noticed while trying to run sounding lines across the harbor entrance so a 25 hour pole current station was observed. These records were forwarded to the Washington Office on 26 October 1953. The location of the current station was at latitude 41°-43'-32" and longitude 70°-16'-23". Strongest ebb current observed was 1.8 knots.

E Boat Sheets.

The boat sheet was furnished by the Washington Office and will be returned there.

F. Control Stations.

There is attached to this report a list of signals used for control. The control consisted mainly of triangulation stations, topographic stations and photogrammetric stations. The photogrammetric stations were transferred from Sheet No. 11193. A planetable set up, using the boat sheet on top of Sandy Neck Lighthouse, was used to check the position of signals.

A planetable traverse was run from EBON east along the coast in an effort to locate triangulation station Bass Hole 1934. Signals were built as the traverse proceeded. These signals were later located by three point fixes taken at the station sites. As triangulation station Bass Hole 1934 could not be found, the traverse was continued up the coast in an effort to make a check on NOBISCUSSET WATER TOWER 1934. It was found that this station had been destroyed. It is recommended that these signals be plotted on the smooth sheet as hydrographic signals using the 3 point fixes instead of the planetable traverse as the latter was run on the boat sheet.

F. Control Stations cont'd.

A few other hydrographic signals were also located. Yarmouth tank was located by planetable methods directly on the boat sheet as the triangulation location was not immediately available.

G. Shoreline and Topography.

The shoreline was obtained from Sheet No. T-11193 and no major inaccuracies were observed. Although a planetable traverse was run eastward from EBON, no attempt was made to locate shoreline.

H. Soundings.

Soundings were obtained with Submarine Signal Commany type 808-J, No. 100S depth recorder except in shallow waters where a sounding pole was used. Standard procedure was used in obtaining bar checks. Enclosed is an analysis of the bar checks and a list of corrections used.

I. Control of Hydrography.

The sounding lines of this survey were controlled by the three-point-sextant-fix method. There were no unusual "jumps" when changing control stations. Fixes were taken at one to two minute intervals. In lower Maraspin Creek where control was lacking, positions of soundings were referred to piers and wharfs. (See sketch Vol. #6, Page 18.)

J. Adequacy of Survey.

Although there wasn't time to investigate all the areas 70 mentioned in the preliminary review, this survey is considered adequate to modernize the chart.

K. Crosslines.

Sufficient Crosslines were run according to instructions with satisfactory results.

L. Comparison with prior surveys.

A comparison with prior survey No. 5589, 1:10,000, 1934 indicates changes that might be expected due to the large drainage area that empties into Barnstable Harbor. A major change occurs in the main entrance channel where previous the best channel had veered to the northeast just north of buoy C-1.

The best channel between Cape Cod Bay and Beach Point now appears to lie just west of a straight line from red bell buoy "2" south to buoy C-1, thence south to buoy N-"2A". This new channel appears to be deeper than the old one and was probably swept out by the current.

Referring to the preliminary review, some of the items were checked or are obviously changed as follows:

Item No.1. It appears that the reviewer's assumption is correct as a sounding line (77-78f) was run almost over the exact spot and depths of 6' were found. However, it was not extensively investigated.

Item No.2. There appears to be no signs of a 2 sounding on the new survey in this vicinity as it falls in a 9 and 10 depth.

Item No. 3. The new survey covers this area in detail and shows the shoal extending just south and east of buoy C-"3".

Item No. 4. This was not specifically investigated, but soundings in the immediate area seem to indicate greater depths at these spots.

Item No.5. This was crossed by a sounding line (154-155d) and 12' depths were obtained.

nut resolved see To review

Item No.6. Baxter Rock was searched for (Pos. 91-95j) and located by Pos. 96j. A 5.6' sounding was obtained on the rock.

Item No.7. Lobster Rock was located by Pos. 90j, a 1.8' sounding was obtained on the rock.

Item No.8

Item No.9

A cursory examination was made of items 8 and 9. Item #8 is a 6 sounding approximately halfway between a 12 sounding and a bare spot. No sign of item #9 was found.

shifting butom here

M. Comparison with the chart No. 339.

The channel entrance change mentioned in L should be applied to the chart as it changes this area quite a bit.

After review, it would seem that the soundings mentioned in items No. 1,2 and 5 could be deleted from the chart.

Item 5 returned see 70 review

N. Dangers and Shoals.

A rock extremely dangerous to navigation (Pos. 89j) was located in the entrance channel to Barnstable Harbor and reported to the Washington Office for publication in the Notice to Mariners. The rocks position is latitude 410-442! and longitude 700-16.40!. It has a diameter of 40 meters and 4! of water over it at MLW. It is on a direct range with Sandy Neck Light and the Hyannis Standpipe. The flashing green light on chart 339, at the entrance to the basin by Blish Point, has been removed and is now marked by an walighted beacon.

These two dangers were reported by letter to the Director on 20 October 1953, However, the position of the rock was erroneously stated as Latitude 410-44142", longitude 700-161-40".

P. Aids to Navigation.

All the aids to navigation in the area were located as follows:

Buoy No.	Latitude	Longitude	Water depth	
N-" 2A"	410-43.40	700-16.41	231	
C3	41-43.25	70-16.76	161	
C5	41-43.28	70-17.10	111	
N4 .	41-42.92	70-17.53	134	
37 Bell #2#	41-42.73 410-45.10	70-18.21 70"-16.21	9.5 ¹ 28 ¹	
NS	41-45.13	70-16.24	31	•
C-1	41-44.29	70-16.32	15*	see P.O. list

U. Miscellaneous.

The bottom in the entire area surveyed was sand.

Z. Tabulation of Applicable Data.

- 1. Two volumes of level records and six Bench Mark Notes.
- 2. One volume of direct staff readings.
- 3. Four portable tide gage marigrams.
- 4. Tide station report and section of chart 339 showing location of tide gage and current station.
- 5. One volume of Pole current readings.
 (above records forwarded on 26 October 1953)
- 6. Ten cahiers of fathograms.
- 7. Six sounding volumes.
- 8. Boat sheet.
- 9. Descriptive report.
- 10. Miscellaneous data.
 - (a) Copy of prior survey No. 5588 and 5589
 - (b) Shoreline Manuscript No. T-11193
 - (8) Photographs 4K8-11, 4K 15-17, 53-J-670-700, 53-J-703-710.
- 11. Elevan triangulation recovery notes.
- 12. Ten Topographic recovery notes.
- 13. Tide reducers.

Respectfully submitted,

7. Van ce Jan Vance. Jr Ensign USC&GS

Approved and Forwarded

H.A. Paton, Capt. USC&GS

Enc.

TIDAL NOTE

Sheet B0-1153

An automatic portable tide gage was maintained at latitude $41^{\circ}43.32^{\circ}$, longitude $70^{\circ}17.10^{\circ}$ during the period that hydrography was in progress. All the records were forwarded to the Washington Office, where reducers were computed and forwarded to this party.

SPECIAL REPORT ON CURRENTS

Barnstable Harbor , Massachusetts

Reference: Paragraph 19 of the instructions for Project CS-363, Barnstable Harbor, Mass., dated 18 September 1953

There appeared to be a fairly strong current in the main entrance channel to Barnstable Harbor so a 25 hour pole current station was observed by the Ship Bowen. The poistion of this station was at latitude 41°43'32" and longitude 70°16'23". The strongest ebb current observed was 1.8 knots. As the records were forwarded to the Washington Office on 26 October 1953 no attempt is made in this report to evaluate the results.

BAR CHECK CORRECTIONS

Fathometer No. 1005

A Scale :	Depth	Corrections
	0-351	0.0
	36-401	-0.21
	41-50'	40.4
	51-601	-0.61

No intial corrections were entered in the sounding volumes as they were all zero.

ANALYSIS OF BAR CHECK CORRECTIONS

Barnstable Harbor

Fathometer No. 100S

DATE	DEPTHS	51+	101	15;	201	251	30¹	351	40
10/8/53			-0.71						
9			+ 0.1	0.0	0.0	+0.1	-0.1		
10		0.0		0.0	- • -	-0.1 -0.2	- • -	-0.1	-0.8
12			0.0	+0.1	+ 0.1	-0.1	0,0	0.0	
13		-0.2		+0.1 +0.1	+0.1 0.0	0.0			
14			0.0		0.0	0.0 0. 0	-0.2 0.0		
15				0.0	0.0	0.0	-0.2		
19			-0.1	-0.1	• -	0.0	-0.1	-0.1	-0.2
5 0			+0.1	+0.1					
	Mean	+0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	- 0.5

^{*} Comparision with sounding pole

STATISTICS TO ACCOMPANY HYDROGRAPHIC SHEET BO-1153

DATE	DAY LETTER	VOL. NO.	NO. of POSITIONS	STAT. MILES SOUNDINGS
10 /8/53	a	1	69	6.8
10/9/53	ъ	1	184	23.0
10/10/53	c	3	93	11.3
10/12/53	đ	2 & 3	158	18.1
10/13/53	•	3	16 6 5	23.8
10/14/53	f	3 & 4	146	19.4
10/15/53	g	4 & 5	157	18.7 ⁸
10/19/53	'n	5	81	6,8
10/20/53	j	5	107	10.4
10/21/53	k	6	83	5.3
		TOTALS	3 12 44 3	14 2: 7

⁵ Square stature Miles soundings

FLOATING AIDS TO NAVIGATION H-8111

BUOY	POSITION	POS. NO.	DEPTH	DATE	
BARNSTABLE HARBOR					
Entrance Buoy 2A	41-43.41 70-16.41	6 4a	/°	10-8-53	
Buoy 3	41-43.25 70-16.77	65a	12:-18	н	
Buoy 5	41-43.28 70-17.10	66 a	10'	11	/
Buoy 4	41-42.98 ³ 70-17.51 ²	67 a	131	78	,
Buoy 7	41-42.51 70-18.21	68a 76 j	7'	" 10-20-53	/
Barnstable Bar Bell Buoy 2	41-45.10 70-16.22	10	30'	10-13-53	-
Entrance Buoy 1	41-44.30 70-16.32	2 f	15'	10-14-53	_
Buoy 2 (not listed)	41-45.13 70-16.26	lf	27'	11	-

LIST OF SIGNALS H-8111

TRIANGULATION STATION S

SCARGO TOWER, 1933-53 CAR

YARMOUTH CONGREGATIONAL CHURCH, SPIRE, 1887-1953 CONG

YARMOUTH PORT, FISH FREEZER STACK, 1934-53 FISH

BARNSTABLE POST OFFICE, FLAGPOLE, 1934-53 FLAG

YARMOUTH TANK, 1934 OUT

PIPE HYANNIS STANDPIPE, 1934-53

SANDY NECK LIGHTHOUSE, 1934-53 SAND

MARKED TOPOGRAPHIC STATIONS

(T-11193)

CALF, 1953 KITE, 1953 DUNE, 1953 EBON, 1953 GARY, 1953

ACME, 1953 GERT, 1953

DESCRIBED TOPOGRAPHIC STATIONS (T-11193)

Gabe Spire Neck

TOPOGRAPHIC STATIONS

(T-11193)

Fly Hit Nan Po1 Rob Sag Him BatBoy Cat Day Ski Tan Wes

HYDROGRAPHIC STATIONS

Bat Vol. 1, pg. 71

1, pg. 71 Kay Ħ

1, pg. 72 Nob :1 1, pg. 71 ral

11 1, pg. 72 Pan

Ħ 1, pg. 71 Red

11 1, pg. 71 Yel

1, pg. 21 Wat

ADDENDUM To Accompany

HYDROGRAPHIC SURVEY H-8111 (Field No. Bo-1153)

GENERAL

Sand waves, from four to six feet high, occur in the main channel off Beach roint.

CONTROL

Hydrographic stations Red, Yel, Pan and Nob were located on rather slim sextant angles. They differ some from the boat sheet positions but no unusual jumps were noted during the smooth plot.

Some weak fixes were used to control sounding lines near the northern limits of the sounded area, but it is believed an adequate adjustment was obtained on these.

Respectfubly submitted

Hugh L. Proffit

Cartographer.

Norfolk, Va. 20 May 1954

GEOGRAPHIC NAME Survey No.H- 8 1.11		Cho. Or	And Out	D Wada	le la	Dr. taco Mode	Ocudeor	M. S.	J.S. Jehry	*/
Name on Survey	A	B B	, C	D	E (S	G	Н		_
Massachusetts										
Cape Cod Bay	11%						-			ļ
Sandy Neck										
Beach Poin	<u> </u>	,								-
Blish Point	,									ļ.,
Barnstable 1	tarlour									-
Baxter Koc	(See	page	H	<u> </u>					-
Lobster Rocl	۲)									-
The Core							,			\vdash
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Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-8111...

Records accompanying survey:	
Boat sheets; sounding vols; wi	ire drag vols
bomb vols; graphic recorder rolls	•
special reports, etc. 1 Smooth Sheet; 1 Descrip	•
Station Cards:	• • • • • • • • • • • • • • • • • •
The following statistics will be submitted wit rapher's report on the sheet:	th the cartog-
Number of positions on sheet	1243
Number of positions checked	
Number of positions revised	2
Number of soundings revised (refers to depth only)	9
Number of soundings erroneously spaced	
Number of signals erroneously plotted or transferred	
Topographic details	Time4
Junctions	Time
Verification of soundings from graphic record	Time
Verification by A.R. STRMTotal time	78 hr. Date 6/15/51
Reviewed by A. R. STIRMI Time Dinsmove	46 hr. Dete 4/22/52

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-8111

FIELD NO. BN-1153

Massachusetts, Cape Cod Bay, Barnstable Harbor

Project No. CS-363

Surveyed - October, 1953

Scale 1:10,000

Soundings:

Control:

808 Fathometer Hand lead Sounding Pole

Sextant fixes on shore signals

Chief of Party - H. O. Fortin, H. A. Paton Surveyed by - J. F. Vance, R. H. Houlder Protracted by - R. B. Reynolds Soundings plotted by - M. Keyton Verified and inked by - A. R. Stirni Reviewed by - A. R. Stirni 6/26/56 Inspected by - R. H. Carstens

1. Shoreline and Control

The shoreline originates with the unreviewed manuscripts of air-photographic survey T-11193 (1953)

The source of the control is given in the Descriptive Report.

2. Sounding Line Crossings

The sounding line crossings are in satisfactory agreement.

3. Depth Curves and Bottom Configuration

The bottom configuration is comprised of an entrance channel cut through irregular shoal flats and extending into the bay. Sandwaves rising as much as 6 ft, above the bottom, characterize the area of the channel in the vicinity of Beach Point. The usual depth curves are adequately delineated with the addition of the 3-ft. curve to accentuate the irregularities on the shoal flats. A dangerous submerged rock lies in the entrance channel and several submerged rocks are found in Barnstable Harbor.

4. Junctions with Contemporary Surveys

There are no contemporary surveys adjacent to this project.

5. Comparison with Prior Surveys

a. H-751 (1861), 1:10,000 H-3407 (1912), 1:10,000

H-578 (1856), 1:40,000

These prior surveys are discussed in the review of survey H-5589 (1934). Lobster Rock charted in lat. 41°42.76', long. 70°17.73', from H-751 is covered by 2/3-ft. on that survey. The present depth of 2 ft. is considered adequate for charting.

b. H-5589 (1934), 1:10,000

The major change which has occurred since the time of the prior survey has been the gradual westward movement of the northern portion of the channel leading from Beach Point out to Cape Cod Bay. There are also other changes of as much as 6 ft. in depths and shifting of sand bars resulting from the current action of tides and several creeks draining into Barnstable Harbor. Baxter Rock, charted at 4-ft. depth at lat. $41^{\circ}42.81^{\circ}$, long. $70^{\circ}17.72^{\circ}18$ from survey H-751 (1861), where it is shown as $4\frac{1}{4}$ ft. A 5-ft. depth was determined on this rock with a sounding pole at 40.8-ft. tide correction on the present survey. The 5-ft. sounding is adequate for charting.

The present survey with the addition of numerous rocks and the 6-ft. sounding from H-5589 is adequate to supersede the prior survey in the common area.

6. Comparison with Chart 339 (Print date 4/19/54)

A. Hydrography

The charted hydrography originates with the previously discussed prior survey supplemented by a few shoal soundings from the present survey, a Corps of Engineers survey of Maraspin Creek, made in September, 1949 and Chart letter 259 (1956) reporting an obstruction in lat. 41°43.2', long. 76°17.2'.

Except for the obstruction charted from Chart letter 259 (1956), the present survey is adequate to supersede the charted information.

B. Aids to Navigation

Subsequent to the completion of the present survey, the numbers of all buoys in Barnstable Harbor, inshore from N-2 and R Bell 2 were changed, three lights were added, and one buoy was moved to a new station. The survey location of Black Can Buoy 5 (now Lighted Buoy 9) is 50 meters north of the charted position and Black Can Buoy 1 (now Black Can Buoy 5) is 200 meters north of the charted position. The position of Black Can Buoy 5 (survey No.) was referred to the Coast Guard for consideration on June 22, 1956; all other buoys adequately mark the features intended.

7. Condition of Survey

- The sounding records and Descriptive Report are complete and comprehensive.
- (b) The smooth plotting was accurately done.
- (c) As noted in the Descriptive Report the survey time was shortened because of the impending fall cruise and all items mentioned in the preliminary review were not investigated. However, it is felt that an additional hour would have been well spent in investigating the charted 6-ft. shoal at lat. 1º42.97', long. 70°17.50'. This sounding has been charted in a questionable status since 1934, and is not resolved by the regular system of sounding lines of the present survey. In view of the prevalence of isolated rocks in the area, the 6 ft. has been retained.

Compliance with Project Instructions

The survey adequately complies with the Project Instructions except for paragraph 16, referring to the preliminary review and especially item 5 of the preliminary review, which is discussed under Condition of Survey (7c).

9. Additional Field Work

This is a good basic survey, however, it is recommended that any future work planned in the vicinity should include an investigation of the 6-ft. sounding discussed in paragraph 7c

Edmonston

Chief, Nautical Chart Branch

Hydrography Branch

Examined and Approved:

Charles A. Schanck

Chief, Chart Division

Samuel B. Grenell

Chief, Division of Coastal Surveys

TIDE NOTE FOR HYDROGRAPHIC SHEET

Division and Countries are suppressed.

10 June 1954

Division of Charts:

R. H. Carstens

Plane of reference approved in 6 volumes of sounding records for

HYDROGRAPHIC SHEET

8111

Locality

Barnstable Harbor, Massachusetts

Chief of Party: H. O. Fortin in 1953 Plane of reference is mean low water, reading 2.3 ft. on tide staff at Barnstable Harbor 14.1 ft. below B. M. 1 (1934)

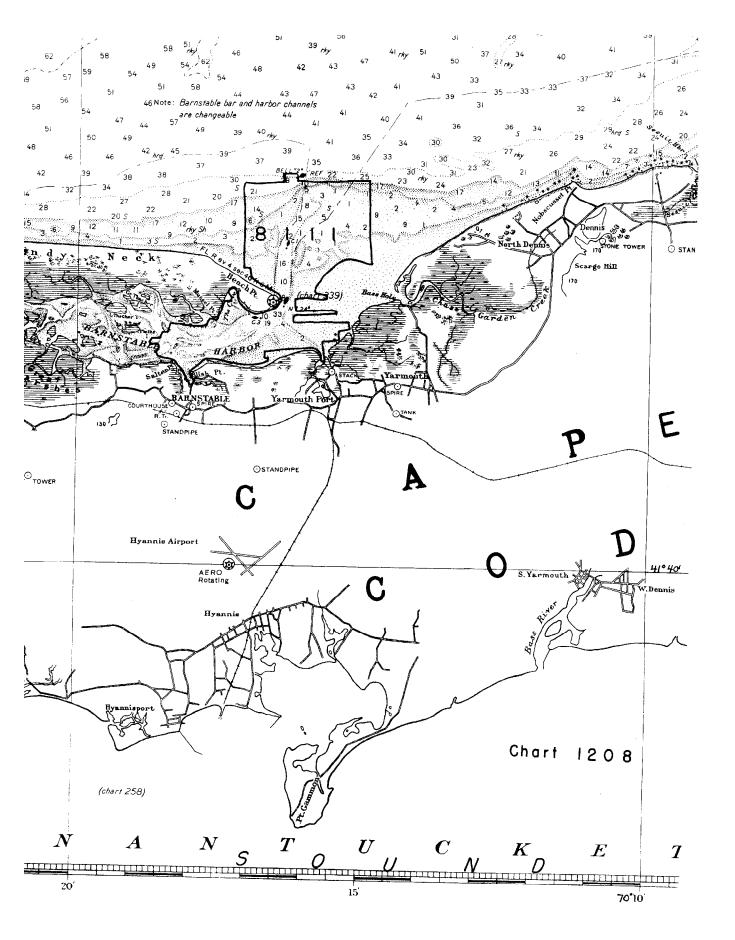
Height of mean high water above plane of reference is 9.5 feet.

Condition of records satisfactory except as noted below:

E.C. Mc Kay

Tides Branch

Chief, Division of Tides and Currents.



NAUTICAL CHARTS BRANCH

SURVEY NO. H-8111

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
8/25/54	1208	CB Samuel	Part Appd. Before **Exer-Verification and Review
923/54	1200	ODSAMACI	
9-7-54	339	D. N. Berron	Before Verification and Review Partis/ splication application application are application for application of application and several completely applied small
			7-21-36
7-30-57	1208	R.K. Dechuder	Before After Verification and Review Chu Chi
	200	2111.	339 Completing FULL REAPPLED After Varification and Review & MISPECTION
10-30-74	339	C DOOLDY	After Verification and Review + INSPECTION.
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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.