

6558

6558

Form 504
Rev. April 1935

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

~~Topographic~~ } Sheet No. H - 6558
Hydrographia }

U. S. COAST & GEODETIC SURVEY
LIBRARY AND ARCHIVES

DEC 23 1941

Acc. No.

State MASSACHUSETTS

LOCALITY
NANTUCKET ISLAND
~~ATLANTIC OCEAN~~

NANTUCKET SHOALS

19341

CHIEF OF PARTY
H. Arnold Karo

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REG. NO. H6558

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. 41

REGISTER NO. H - 6558

State MASSACHUSETTS

General locality ~~ATLANTIC OCEAN~~ Nantucket Island

Locality NANTUCKET SHOALS

Scale 1:40,000 Date of survey May - August, 1940

Vessel Ship LYDONIA

Chief of Party H. Arnold Karo

Surveyed by Ship's Officers
John H. Brittain, L.L. Lawrence, Alfred Kaupa, D.M.

Protracted by Stanley and Edw. G. Cunney.

Soundings penciled by Alfred Kaupa

Soundings in ~~fathoms~~ feet

Plane of reference M.L.W.

Subdivision of wire dragged areas by

Inked by P.H. Andros

Verified by P.H. Andros

March 4, 1938 and Supplemental Instruc-
Instructions dated tions dated Feb. 28, 1940., 19

Remarks:

DESCRIPTIVE REPORT

TO

ACCOMPANY HYDROGRAPHIC SHEET NO. H-6558 (FIELD NO. 41) 1940

Scale 1:40,000

PROJECT HT -207 NANTUCKET SHOALS

Ship LYDONIA

H. Arnold Karo, Chief of Party.

INSTRUCTIONS:

This survey was executed under the authority of the Director's Instructions for Project No. HT - 207 dated March 4, 1938, and Supplemental Instructions dated February 28, 1940 and July 18, 1940.

LOCALITY:

This survey is located to the south and southeast of Nantucket Island. It extends from latitude 40 57' and longitude 70 03' on the southwest to latitude 41 00' and longitude 69 45' on the southeast and from latitude 41 08' and longitude 69 52' on the northeast to latitude 41 10' and longitude 70 06' on the north west. Old South Shoal and Davis South Shoal were surveyed by the GILBERT. The western and southwestern limits of this survey join the 1939 surveys of the ships LYDONIA AND OCEANOGRAPHER (surveys H-6447 and H-6439 respectively).

CONTROL AND SIGNALS:

The triangulation control previously established on Nantucket Island furnished the primary control for this survey. This primary triangulation control was used to compute the positions of the inshore buoys. From here the control was carried out to sea by the standard sun-azimuth taut wire method. A small amount of hydrography at the northern limit of the work was controlled by fixes on shore objects. The buoy control for this survey and for sheet H-6559 is described in a separate report for project HT-207. Acc. No. S-1965 Shelf No. 844-SHS-6558-1940-K

SURVEY METHODS:

The usual visual control method of three point fixes was used throughout this survey, either on shore objects, survey buoys or a combination of the two. No shift in lines was experienced in going from one to the other. The Dorsey No. 1 type Shoal Water Fathometer was used throughout this survey, soundings being recorded every thirty seconds and at such other times as were necessary. In addition, the 808 type Recording Fathometer was operated simultaneously with the Dorsey No. 1 Fathometer for most of this survey. The installation and operation of the 808 Fathometer is described in detail in the 1940 Season's Report for Project HT-207. No attempt was made to systematically record the soundings from the 808 Fathometer. However, each record was scaled and compared with the recorded soundings from the Dorsey

No. 1 Fathometer and any additional soundings obtained from the 808 fathogram were entered in the record book.

The main system of sounding lines was run in a north and south or east and west direction, with additional development lines where required, parallel and normal to the main system of lines. Additional sounding lines were run along the ridges of the shoals. The bottom was found to be most irregular and uneven, and a large amount of development was found to be necessary to properly delineate the bottom contours.

Currents were found to be quite strong, and, around the shoal areas, were apt to be somewhat erratic. The strength of the current was found to increase in the eastern area of the survey. The subject of currents is covered more fully in the 1940 Season's Report for Project No. HT-207.

COMPARISON WITH PREVIOUS SURVEYS:

In general, the soundings of this survey agree with those of previous surveys. A slight discrepancy in position and depth was noted in some instances, but these discrepancies are not very large or serious, being most probably due to the poorer control of the earlier surveys. The additional detail of the present survey developed many additional shoals. It is recommended that the present survey supersede all previous surveys in this area for charting purposes.

JUNCTIONS:

The junctions with H-644^{6 (1933) and H-6447 (1939)} on the west are satisfactory, the discrepancies seldom exceeding one or two feet.

The junction with H-6439⁽¹⁹³⁹⁾ on the southwest is considered satisfactory. This area is quite irregular and most discrepancies can be attributed to this uneven bottom. These discrepancies seldom exceed three feet.

Junctions on the east with Field Sheet No. 23 - GILBERT, will be considered in the descriptive report for that sheet when it is plotted.

The junction in the southeast corner of this sheet with that of sheet No. H-5227 is in disagreement. It is believed that H-5227⁽¹⁹³²⁾ should be shifted in order that the junction be brought into better agreement with the present survey and that of H-6559⁽¹⁹³⁹⁾. This disagreement of junctions for this area will be taken up in more detail in the descriptive report for H-6559⁽¹⁹⁴⁰⁾. It is, therefore, recommended that due to better control of the present survey, it be held fixed and H-5227⁽¹⁹³²⁾ be adjusted to agree with H-6558⁽¹⁹⁴⁰⁾ and H-6559.

Disagreement
not apparent
on this
survey.

DISCREPANCIES:

Latitude 40° 59.3' and Longitude 70° 01.5', crossing 66 - 67 E (incl.) and 4 - 5 B (incl.). There is an apparent discrepancy between the soundings

on these two lines. Although the bottom is irregular in this vicinity, it appears that the discrepancy is slightly more than can be accounted for by the uneven bottom. The apparent reason for this discrepancy is unknown. It is recommended that the shoaler soundings be plotted. These discrepancies are such that they present no danger to navigation. The maximum apparent discrepancy is $\frac{4}{3}$ feet.

DANGERS:

No new obstructions were found which would be dangerous for ships or boats of moderate draft. Twenty-~~two~~^{three} feet was the least depth found in the area surveyed. However, this sheet borders on Old South Shoal and Davis South Shoal on the east and southeast and Old Man Shoal on the north, and these are much shoaler than the shoalest water found on this survey. Due to the strong currents and generally poor visibility encountered in this area, it is recommended that this area be navigated with caution and avoided entirely when possible. lat. 41°02.0' long. 69°47.8'

CHANNELS:

No channels as such were developed on this sheet, except for a channel between Old South Shoal and Davis South Shoal. ~~A least depth of 25 feet was obtained in this channel.~~ As it is unmarked, its use is not recommended. No definite depth can be assigned as least depth. This depends entirely upon the navigator.

ANCHORAGES:

No specific anchorages are found on this sheet. Anchorage may be had wherever the depth affords, having due regard for weather conditions, the strong currents encountered throughout this area and the various existing shoals. During the progress of this survey, the LYDONIA anchored in various sections and had no difficulty in maintaining her anchorage position. A scope of at least six to one was used.

LANDMARKS:

No additional landmarks suitable for charting purposes were located. The present chart shows all suitable landmarks in this area.

GEOGRAPHIC NAMES:

No new geographic names were charted. Those appearing on Chart No. 1209 are correct for the area of this sheet.

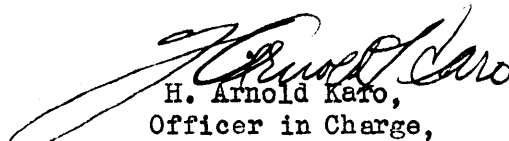
MISCELLANEOUS:

This sheet was surveyed by the ship's officers.

Tidal reducers for this project were obtained from the standard tide station maintained at Newport, R.I. Upon instructions from the office, the tides were considered to be 2 hours earlier and 0.7 of the range at the above mentioned station. Investigation during the early part of the

season showed that the establishment of tide gages along the south and east coast of Nantucket Island would not be feasible. Accordingly fathometer tide stations were authorized in supplemental instructions dated April 30, 1940. A total of 4 fathometer tide stations were observed by the LYDONIA on this project and repeat observations were made at 3 of these stations. Additional fathometer tide stations were observed by the GILBERT.

Respectfully submitted,


H. Arnold Kero,
Officer in Charge,
Norfolk Processing Office.

Norfolk, Virginia,
9 December, 1941.

STATISTICS

H6558

SHEET NO. H 6558 (Field No. 41)

PROJECT NO. HT-207

LYDONIA

H.A.Karo, Commanding.

L Y D O N I A

Date	Day	Stat. Miles	Soundings	Positions
May 6, 1940	A	8.9	98	8
" 7	B	13.0	375	20
" 9	C	138.4	1355	217
" 10	D	152.0	1596	256
" 11	E	146.8	1531	274
" 12	F	69.9	757	142
June 7	G	96.8	1215	167
" 8	H	116.7	1283	216
" 9	J	97.8	856	138
" 10	K	90.4	1176	151
" 11	L	150.6	1794	255
" 22	M	84.8	1075	167
" 23	N	73.6	888	144
July 14	P	17.5	241	20
Aug. 10	Q	4.6	51	5 *

Ship Total 1261.8 14,191 2180

L A U N C H *

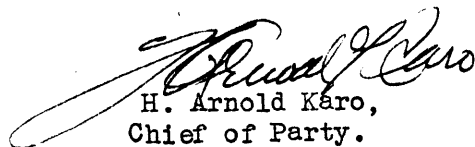
June 8	a	7.0	155	37
" 9	b	15.0	339	69
" 22	c	11.2	269	76

Launch Total 33.2 763 182

Totals for Sheet 1295.0 14,954 2362

* This hydrography will be plotted on Sheet No. 23 (Field) - GILBERT, as these soundings appear in the area of this sheet and were used for preliminary reconnaissance before the actual hydrography by the GILBERT was started.

The records for hydrographic sheet No. 6558, field No. 41,
have been examined and are approved.


H. Arnold Káro,
Chief of Party.

*See
File*

TIDE NOTE FOR HYDROGRAPHIC SHEET

January 14, 1942.

~~Division of Hydrography and Topography:~~

✓ Division of Charts: Attention: MR. H. R. EDMONSTON.

Plane of reference approved in
9 volumes of sounding records for

HYDROGRAPHIC SHEET 6558

Locality Nantucket Shoals

Chief of Party: H. A. Karo in 1940

Plane of reference is mean low water reading

1.3 ft. on tide staff at Newport, R. I. (Time + 2 hrs.; Range 0.7)
36.0 ft. below B. M.1

Height of mean high water above plane of reference on working
grounds is 2.5 feet.

Condition of records satisfactory except as noted below:



Chief, Division of Tides and Currents.

GEOGRAPHIC NAMES
Survey No. **H6558**

Name on Survey											
	A, On Chart No.	B, On previous survey No.	C, On U. S. quadrangle Maps	D, From local information	E, On local Maps	F, P. O. Guide or Map	G, Rand McNally Atlas	H, U. S. Light List	K		
<u>Davis South Shoal</u>											1
<u>Nantucket Island</u>											2
<u>Nantucket Shoals</u>											3
<u>Old Man Shoal</u>											4
<u>Old South Shoal</u>											5
											6
											7
											8
											9
<u>Newport (R.I.)</u>											10
											11
											12
											13
											14
											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25
											26
											27
											M 234

Names underlined in red approved
by Lattack on 6/18/42

See Charts 1107
1209
for name locations

Remarks

Decisions

	Remarks	Decisions
1		409693-698 U.S.G.B
2		412 700
3	For title	409693-698
4		412 699
5		410 698
6		
7		
8		
9		
10	Location of tide staff.	
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

Surveys Section (Chart Division)

HYDROGRAPHIC SURVEY NO. **H.6558**

Records accompanying survey:

Boat sheets ^{One}.; sounding vols. ⁽⁹⁾.; wire drag vols.;
 bomb vols.; graphic recorder rolls ⁽⁶⁾ combined with 6559
 special reports, etc. ⁽¹⁾ Fathometer Corrections; Buoy Control; see H 6559

.....

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

Number of positions on sheet	2162..
Number of positions checked	409..
Number of positions revised	26..
Number of soundings recorded	13,884
Number of soundings revised (refers to depth only)	15..
Number of soundings erroneously spaced	40..
Number of signals erroneously plotted or transferred	0..
Topographic details	Time ..9..
Junctions	Time ..24..
Verification of soundings from graphic record	Time ..69..

Verification by *P.H. Andros*..... Total time 389.. Date 5-16-42...

Review by *J.A. McCormick*..... Time 35 hrs. Date 6/9/42.

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
 DESCRIPTIVE REPORT
~~PHOTOSTATIC OF~~

No. H **H6558**

~~NO. 1~~

{ received Dec. 23, 1941
 registered Jan. 8, 1942
 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	R. W. Knox
----	------------

RWK

DIVISION OF CHARTS

SURVEYS SECTION

REVIEW OF HYDROGRAPHIC SURVEY

REGISTER NO. 6558

Field No. 41

Massachusetts; Nantucket Island; Nantucket Shoals
Surveyed in May - August 1940, Scale 1:40,000
Instructions dated March 4, 1938; February 28, 1940
(LYDONIA)

Soundings:

Dorsey I Fathometer
808 Recorder

Control:

Sextant Fixes on Shore Signals
and Buoys

Chief of Party - H. A. Karo
Surveyed by - Officers of Ship LYDONIA
Protracted by - Various
Soundings plotted by - A. Kaupa
Verified and inked by - P. H. Andros
Reviewed by - J. A. McCormick, June 9, 1942
Inspected by - H. R. Edmonston

1. Shoreline and Signals

Shoreline is unnecessary and has been omitted. Buoy locations are filed in the library with the sounding volumes for the survey. Location of shore signal "Barn" is given in Vol. 3.

2. Sounding Line Crossings

Satisfactory.

3. Depth Curves

Satisfactory. Arguments have been advanced that most of the detached curves on the survey could be drawn parallel to the general trend rather than transversely as has been done. The present survey cannot prove or disprove either contention nor are these contentions considered important to the usual processes of cartography. A large scale survey, say 1:5,000, with rigid control might solve the problem but such a survey is not practical. There is also the possibility that such a survey would further muddle the situation by showing the bottom to be much similar to the land forms so strikingly illustrated in Fig. 26 of "Classification of Sand Dunes" in the February-March 1940 issue of the Journal of Geology and described as "interesting transverse dune series."

4. Adjoining Surveys

Satisfactory junctions were effected with H-6446 (1939) and H-6447 (1939) on the west and H-6439 (1939) on the south. The small overlap with H-5227 (1932) on the southeast also was satisfactory. Development of the gap between H-6439 (1939) and the present survey in the vicinity of Davis South Shoal was accomplished by the M. V. GILBERT in 1940. The areas on the north and east also will be resurveyed under project instructions now issued.

5. Previous Surveys

- a. H-179 (1846), 1:40,000; H-223 (1847-48) 1:40,000;
H-406 (1853), 1:400,000

Little consideration has been given these surveys because of their age and poor control. They can be disregarded.

- b. H-2041 (1890), 1:40,000; H-2052 (1890), 1:20,000;
H-2081 (1891), 1:40,000; H-2095 (1891), 1:40,000

These surveys were basic for the area until superseded by the present work. Agreement of depths is fairly good although the poorer control of the older surveys becomes quite evident at the outer limits of the area. The present survey is better developed than any of the old surveys, including H-2052 which is on a larger scale. More shoals have been found on the new work and old ones are verified, not always exactly as to position but usually within reasonable proximity of such. An exception is the 30-foot sounding (charted) in Lat. $41^{\circ}06.9'$, Long. $70^{\circ}00.9'$ on H-2041 (1890) falling in 47 to 68 feet on the present survey. The 30 has been carried forward. Depths of 28 to 30 feet ($4\text{-}\frac{3}{4}$ charted) in Lat. $40^{\circ}58.5'$, Long. $69^{\circ}52.6'$ on H-2041 fall in 35 to 60 feet on the present survey and are just on the edge of Davis South Shoal. The difference in this vicinity is ascribed to dead reckoning on H-2041 but the discrepancies should be definitely settled by the GILBERT's 1940 work on the shoal.

6. Comparison with Chart 1107 (New Print of May 12, 1942)
Chart 1209 (New Print of Dec. 24, 1941)

Hydrography charted in this area is from surveys discussed in the preceding paragraphs. Too much confidence

cannot be placed in the original chart compiler's application of soundings. A 6-fm. sounding charted in Lat. 40°59.0', Long. 69°59.0' is almost 1/2 mile from the sounding with which it originated on one of the old surveys. The present survey shows 34 feet close to the correct position. Survey and chart positions of navigational aids in the vicinity of Davis South Shoal are sufficiently close for practical purposes.

7. Compliance with Project Instructions

Satisfactory.

8. Additional Field Work Recommended

The area is so complex that investigation of the innumerable shoal soundings would require more work than was required for the original survey. It is not an area to be traversed without extreme caution.

9. Superseded Surveys

H- 179	in part	
H- 223	"	"
H- 406	"	"
H-2041	"	"
H-2052	"	"
H-2081	"	"
H-2095	"	"

Examined and approved:

Robert W. King
Chief, Surveys Section

J. B. Borden
Chief, Division of Charts

L. O. Baynes
Chief, Section of Hydrography

G. H. Wade
Chief, Division of Coastal Surveys

Applied (in Joint) to ch 1209. Aug 1942. J.K.S.

Applied to chert 1000 (thru ch. 1108) Apr. 26-1943 GFE

Applied to chert 1108
" " " 1107

May 3, 1943 J.K.S.
July 26, 1943 J.K.S.