

6540

6540

Form 504
Rev. Dec. 1933

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

Topographic }
Hydrographic } Sheet No. H 6540

U. S. COAST & GEODETIC SURVEY
LIBRARY AND ARCHIVES
SEP 11 1940
MR. H. _____

State North Carolina

LOCALITY

North Carolina Coast

Frying Pan Shoals

1939

CHIEF OF PARTY

Raymond P. Eyma

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REG. NO. H 6540

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 6540

H6540

State North Carolina

General locality North Carolina Coast

Locality Frying Pan Shoals

Scale 1/40,000 Date of survey Oct. 16 - Dec. 18, 1939

Vessel Ship LYDONIA

Chief of Party R. P. Eymann

Surveyed by Ship's Officers

Protracted by Alfred Kaupa

Soundings penciled by Alfred Kaupa

Soundings in ~~fathoms~~ feet

Plane of reference Mean Low Water

Subdivision of wire dragged areas by

Inked by J. A. Ferguson

Verified by

Instructions dated September 2, 1939

Remarks: Plotted under the supervision of J. H. Brittain,

Norfolk Processing Office.

DESCRIPTIVE REPORT
to accompany
SHEET H 6540

DATE OF INSTRUCTIONS

The work on this sheet was done in accordance with Instructions, Project HT 240, dated September 2, 1939.

DATE OF SURVEY

The work on this sheet was done from October 16, 1939, to December 18, 1939.

LOCALITY AND LIMITS

This sheet is a resurvey of the outer part of Frying Pan Shoals from Latitude $33^{\circ} 26'$ to Latitude $33^{\circ} 38'$ and from Longitude $77^{\circ} 32'$ to Longitude $77^{\circ} 58'$. The limits are outlined in red on the attached sketch.

This survey covers part of the area originally surveyed on sheets H 4313, H 4323, H 4437 and H 4523.

SURVEY METHODS

The work on this sheet was done with the Ship LYDONIA. The hydrography was controlled by three point fixes on buoys located by taut wire - sun azimuth traverse and supplemented by buoys located from the main traverse line by three point fixes. During the time the survey was being made several of the buoys were shifted by storms so that there are two or three positions for some of them. In each case where the buoy was relocated a new name was given. This is covered in detail in a separate report on control being submitted with other miscellaneous data relating to the project.

All soundings on this sheet were obtained with the Dorsey No. 1 Fathometer.

FATHOMETER CORRECTIONS

The corrections for temperature and salinity, settlement and index were combined and entered in the sounding records as one correction. These corrections are contained in a separate report under the title "Fathometer Corrections".

TIDE DATA

Hourly heights for the Charleston, S. C., tide gage, referred to a datum of 2.3 feet on the tide staff, were used in the reduction of soundings on this sheet. The time of the tide for this area was taken as occurring one-half hour earlier than at Charleston, and the range as 0.8 of that at Charleston.

DISCREPANCIES

In only two instances did the cross lines fail to check within 2 feet. These two discrepancies are Positions 18J (83 feet) and 83H (79 feet); and Positions 8M (34 feet) and 146P (37 feet). These are probably due to the irregular bottom and slight error in position.

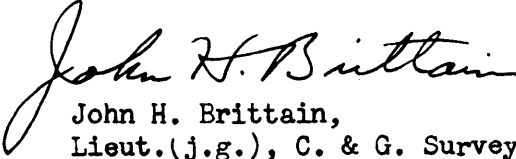
Two locations are shown for the Frying Pan Shoals Lightship, one for November 7, 1939, and one for December 9, 1939. These positions differ by approximately 350 meters.

JUNCTIONS WITH CONTEMPORARY SURVEYS

This sheet joins sheet H-6539 on the west and south and sheet H-6542 on the south. The junctions with these sheets are satisfactory.

COMPARISON WITH PREVIOUS SURVEYS

The soundings on this sheet agree in general within 3 feet with the soundings on Chart 1236. There are differences up to 0.3 mile between the positions of the shoaler soundings on this sheet and the chart.


John H. Brittain,
Lieut.(j.g.), C. & G. Survey,
Norfolk Processing Office.

H6450

STATISTICS FOR SHEET H-6540 (Field No. 41)

Project HT-240

1939

L Y D O N I A - R. P. Eymann, Comdg.

Day	Date	Vol.	Stat.	Miles	Soundings	Positions	Sq. St. Miles
A	Oct. 16	1		3.8	55	11	
B	" 17	1		42.8	458	82	
C	" 18	1		51.1	779	131	
D	" 19	1		41.4	592	110	
E	" 20	2		105.4	1256	202	
F	" 21	2&3		100.3	1143	185	
G	" 22	3		51.8	582	102	
H	" 23	3		86.5	1006	184	
J	" 24	4		25.9	276	49	
K	Nov. 7	4		88.0	1029	151	
L	" 8	4		6.9	81	9	
M	" 14	4		24.6	283	59	
N	" 15	4&5		67.3	740	130	
P	" 16	5		90.6	1000	181	
Q	Dec. 8	5&6		84.6	866	159	
R	" 9	6		112.7	1140	191	
S	" 10	6		3.5	52	9	
T	" 16	6&7		75.2	724	127	
U	" 17	7		80.0	895	172	
V	" 18	7&8		52.0	593	112	
TOTALS	20	8		1194.4	13550	2356	236.0

200
7/10

TIDE NOTE FOR HYDROGRAPHIC SHEET

September 28, 1940

Division of Hydrography and Topography:

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

Plane of reference approved in
8 volumes of sounding records for

HYDROGRAPHIC SHEET 6540

Locality Frying Pan Shoals, North Carolina coast

Chief of Party: R. P. Eyman in 1939
Plane of reference is mean low water reading
2.3 ft. on tide staff at Charleston, South Carolina
11.9 ft. below B. M.

Height of mean high water above plane of reference at Charleston is 5.1 feet.

Note: The time of tide on the working grounds was taken 1/2 hour earlier than Charleston, and the range 0.8 of that at Charleston.

Condition of records satisfactory except as noted below:



Acting Chief, Division of Tides and Currents.

GEOGRAPHIC NAMES

Survey No. **H6540**

On Chart No.
 On previous survey No.
 On U. S. quadrangle Maps
 From local information
 On local Maps
 P. O. Guide or Map
 Rand McNally Atlas
 U. S. Light List

Name on Survey

	A	B	C	D	E	F	G	H	K
<u>Frying Pan Shoals</u>									1
									2
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Names underlined in red approved
 by L. Heck on 1/6/41

Remarks

Decisions

1	Remarks	Decisions
2		
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Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. **H6540**

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

Number of positions on sheet	... 2356
Number of positions checked	... 95
Number of positions revised	... 6
Number of soundings recorded	13550
Number of soundings revised	... 8
Number of soundings erroneously spaced	... 12
Number of signals erroneously plotted or transferred	... 0

Date: 12/21/40

Verification by *John A. Ferguson* ;
G.B. Littlepage + H.W.M

Review by *Harold W. Murray*

Time: *151 hrs.*
1/3 hr.
Time: *24 hrs.*

HYDROGRAPHIC SURVEY NO. H6540

Smooth Sheet One

Boat Sheet One

Records; Sounding 8 Vols., Wire Drag Vols., Bomb Vols.

Descriptive Report Yes

Title Sheet Yes

List of Signals Yes

Landmarks for Charts (Form 567)

Statistics Yes

Approved by Chief of Party Yes

Recoverable Station Cards (Form 524)

Special Chart for Lighthouse Service Mar. 20, 1935
(Circular Nov.30, 1933)

Hydrography: Total Days 20 ; Last Date Dec. 18, 1939

Remarks

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
DESCRIPTIVE REPORT }
PHOTOSTAT OF }

No. H **H6540**
~~XXXX~~

received Sept. 25, 1940
registered Sept. 25, 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			
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63			
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83			
88			
90			

RETURN TO

82	T. B. Reed
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✓ *TBR*

VERIFIER'S REPORT OF HYDROGRAPHIC SURVEY NO. H-6540

Verified and Inked by *John A. Ferguson*

Date *Dec. 21, 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.
- ✓ 13. The bottom characteristics were shown on outstanding shoals.
- ✓ 14. The reduction and plotting of doubtful soundings were checked.

15. The transfer of contemporary topographic information was carefully examined.

No 16. All junctions were transferred.

NONE sec # 19

No 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.

✓ 24. The low water line and delineation of shoal areas have been properly shown (see letter of October 20, 1934).

✓ 25. Degree and minutes values and symbols have been checked.

26. Source of shoreline and signals (When not given in report).

Cover of Vol. 1.

✓ 27. Depth curves were satisfactory except as follows:

28. Sounding line crossings were satisfactory ~~except as follows:~~

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

Junction with H-6542(1939) and H-6539(1935-40) will be made when these sheets are verified. There are no contemporary hydrographic surveys to the east and north of this sheet ✓

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

31. The protracting was satisfactory ~~except as follows:~~

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

33. Notes to reviewer:

DIVISION OF CHARTS

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6540 (1939) FIELD NO. 41

North Carolina, North Carolina Coast, Frying Pan Shoals

Surveyed October 16 - December 18, 1939

Scale 1:40,000

Instructions dated September 2, 1939 (LYDONIA)

Soundings:

Fathometer

Control:

Three-point fixes on buoy signals

Chief of Party - R. P. Eymann.

Surveyed by - Ship's Officers.

Protracted by - Alfred Kaupa.

Soundings plotted by - Alfred Kaupa.

Verified and inked by - J. A. Ferguson.

Reviewed by - Harold W. Murray, December 31, 1940.

Inspected by - H. R. Edmonston.

1. Shoreline and Signals.

This is an offshore survey and no shoreline is shown.

The hydrography was controlled by three-point fixes on buoys located by taut wire - sun azimuth traverse and supplemented by buoys located from the main traverse line by three-point fixes.

2. Sounding Line Crossings.

General agreement of sounding line crossings is within 2 feet or less. (See D. R., page 2).

3. Depth Curves.

The usual depth curves may be satisfactorily drawn.

4. Junctions with Surveys.

a. The junctions on the south and west with H-6539 (1939-40) and H-6542 (1939) will be considered in the reviews of those surveys.

b. Along the north and northeast, satisfactory junctions are made with charted hydrography originating with 1923-24 surveys; H-4313, H-4323 and H-4437.

c. Southeastward of the vicinity of latitude $33^{\circ}26'$, longitude $77^{\circ}32'$; a satisfactory junction is made with the widely spaced lines on the 1:100,000 scale survey H-4468 (1924).

5. Comparison with Prior Surveys.

- a. H-277 (1851), H-306 (1851), H-1517 (1882) and H-2808 (1906); scales 1:20,000 and 1:40,000.

- (1). Portions of each of these early surveys cover part of the present survey. They contain no information not adequately covered by later carefully reviewed 1923-24 surveys considered in paragraph c. below or on the present survey.
- (2). The single uncharted 28 foot sounding (4-3/4 fms.) accompanied by a "rky" bottom characteristic on H-1517 (1882) (both shown in red) in latitude 33°32.9', longitude 77°38.7' falls between two 37-foot depths in general depths of 38 to 41 feet on the present survey. The 28 originates with an examination by J. E. Pillsbury in 1886. It is mentioned in the U. S. C. & G. S. Annual Report of 1886, page 52 (Library No. GS 183-C65) which in turn originates with Letter 1033 filed in a bound volume marked: "Office of Hydrographic Inspector, Letters," Book "A" 1886 - BLAKE.

The description of the sounding is briefly as follows: Examination to the eastward of the light vessel (vessel then charted 3 miles northwest of 1939 position) revealed a rocky patch of perhaps one-fourth mile in diameter situated near a then charted 5-3/4-fm. spot. The shoalest water, 4-3/4 fms., was found by a steaming and drifting over the shoal with six leads going. The examination included a verification of the position of the lightship by bearings from four different parts of the BALD HEAD LIGHT CIRCLE and running the course and distances from one to the other. The positions of the sounding and light vessel were spotted on a section of the chart (old chart No. 11) which accompanied the letter. This chart does not now accompany the letter. Whether the sounding is corrected for tide or not is not stated.

In 1904, Chart Letter 152 reported a 3-3/4-fm. spot in the same approximate vicinity and superseded the 4-3/4 fms. on the chart. In a resurvey of this area, H-4437 (1924) the review, paragraph 9 considered the 3-3/4 fms. as inaccurate in position and recommended expunging from the chart. The descriptive report of H-4437, page 5 states that the development included a search for the 3-3/4-fm. spot but no indications of such a shoal spot were found. It is noted, however, that the development as plotted on the smooth sheet consists solely of regularly spaced sounding lines with no evidence of detached positions accompanied by recorded soundings. In charting, neither of the two old soundings were used.

Many uncertainties surround these shoal spots and they are not being carried forward. A wire drag investigation, however, is being recommended. For charting purposes, it is recommended that the 4-3/4-fms. (28 feet) be charted as "28 reported" pending results of the wire drag examination.

Except as noted above, the closer developed present survey supersedes these 1851-1906 surveys.

- b. H-694 (1859 and 86) and H-768 (1860), scales 1:300,000 and 1:400,000.

A few soundings from these sparsely covered small scale surveys fall within the limits of the present survey and reveal no information that is not adequately superseded by the present survey.

- c. H-4313 (1923), H-4323 (1923) and H-4437 (1924); scale 1:40,000.

These well developed surveys taken together cover the entire area of the present survey. H-4437, however, covers most of the common area. General agreement of depths is within 3 feet although in the areas of lumpy bottom differences up to 10 feet occur frequently. The lumpy character may vary as great as 19 feet as in latitude 33° 35.0', longitude 77° 47.9' where the present survey shows a 31 close to a 50-foot sounding. Several soundings were carried forward.

A portion of the deeper depths on the east - west system of lines on H-4437 varies consistently deeper by as much as 10 feet in depths of 80 feet or more with both the present survey and the other diagonal system of lines on H-4437. This discrepancy was detected in the review (H-4437, par. 3 and H-4523, par. 6) and was attributed to faulty interpretation of sounding machine data "the forward machine hauling in the line and the leadman aft reading the depth." It was recommended that an approximate correction of minus 6 feet be applied to all soundings so obtained before application to the charts. This recommendation was not followed in charting but by applying this correction agreement with the present survey is considerably improved.

The present survey with the indicated additions supersedes these surveys. The bottom characteristics, however, should be retained wherever necessary.

- d. H-4468 (1924) and H-4523 (1925), scale 1:100,000.

Several widely spaced sounding lines from these small scale surveys fall within the present survey limits and are in fair agreement. A 59 foot sounding in depths of 70 feet was carried forward from H-4468 in latitude 33°29.3', longitude 77°39.9'. The 59 is a detached sounding and, therefore, cannot be adequately compared with the present survey. The present survey with this addition supersedes these surveys.

6. Comparison with Charts 1236 (New Print dated December 20, 1939)
1110 (New Print dated August 3, 1940).

- a. Hydrography.

Hydrography shown on the charts originates with surveys discussed in the preceding paragraphs and no further consideration is necessary.

- b. Aids to Navigation.

The floating aids to navigation located on the present survey vary from 275 to 900 m. from their charted positions. These aids are anchored in depths of 35 to 70 feet and have a considerable swinging radius. The aids in either position satisfactorily mark the general features intended. However, buoy N2B in latitude 33°37', longitude 77°51' as charted is closer to the charted wreck.

7. Condition of Survey.

- a. The sounding records were neat and legible and conform to the requirements of the Hydrographic Manual.
- b. The field protracting and plotting were exceptionally accurate.
- c. The Descriptive Report was clear and satisfactorily covers all matters of importance.

8. Compliance with Instructions for the Project.

The plan, character and extent of the survey satisfy the Instructions for the Project.

9. Additional Field Work Recommended.

- a. The long ridge extending northwestward from the lightship in latitude 33°27', longitude 77°34' should be wire dragged to a net effective depth of about 35 to 40 feet. This examination should include a definite examination and disposition of the 28 foot sounding (4-3/4 fms.) accompanied by a "rocky" bottom characteristic in latitude 33°33', longitude 77°39' and discussed in paragraph 5a(2) this review.

SEE
Card "Surveys Needed"
File. Rm 2013.

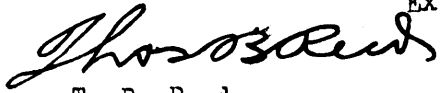
The shoalest depths obtained on this ridge on the present survey are from 34 to 37 feet and the range of tide 5 feet.

- b. When the area to the northward of the present survey is resurveyed, the area northwestward of latitude 33°34', longitude 77°46' on the present survey should be intensely developed as the bottom here is quite uneven.

10. Superseded Surveys.

H-277 (1851) in part.	H-4313 (1923) in part.
H-306 (1851) " "	H-4323 (1923) " "
H-694 (1859-86)" "	H-4437 (1924) " "
H-768 (1860) " "	H-4468 (1924) " "
H-1517 (1882) " "	H-4523 (1925) " "
H-2808 (1906) " "	

Examined and approved:



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



Chief, Division of Charts.



Chief, Section of Hydrography.



Chief, Division of Coastal Surveys.

Applied to Cht. 1236. June 1941. J.S.G.
" " " 1007 Mar. 1941 J.S.G.
Applied to Cht. 1110 April 8, 1941 S.P.