

4255

4255a

Field No. 4255b

REGISTER NO. 4255<sup>b</sup>

Diag. Ch. No. 1001-2, 1222-2, 1227

4255  
4255a

Form 504  
DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

State: Va.

11-5613

DESCRIPTIVE REPORT.

4255

Hyd. Sheet No. 4255a

LOCALITY:

C. Henry

Offshore - Virginia Beach to False Cape

22-25  
1912

CHIEF OF PARTY:

E. R. Hand - F. S. Borden

4255

4255

Form 504  
DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

*Virginia -*  
State: *North Carolina*

11-5613

DESCRIPTIVE REPORT.

*Hydro* Sheet No. *4255*

LOCALITY:

*Approaches to*  
*Chesapeake Bay -*  
*South of Cape Henry Va.*

1922

CHIEF OF PARTY: ✓  
*E. R. Hand*

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The finished Hydrographic Sheet is to be accompanied by the following title sheet, filled in as completely as possible, when the sheet is forwarded to the Office.

U. S. Coast and Geodetic Survey.

Register No. 4255 (Superceded by 4255b)

State . . ~~Virginia~~—North Carolina . . . . .

General locality Approaches to Chesapeake Bay . . . . .

Locality . . South of Cape Henry ~~Virginia~~ . . . . .

Chief of party . Eoline R. Hand . . . . .

Surveyed by . . Steamer Bache . . . . .

Date of survey . . September—October, 1922 . . . . .

Scale . . . . . 1: 120,000 . . . . .

Soundings in . Fathoms . . . . .

Plane of reference . Mean Low Water . . . . .

Protracted by L.B.Clore . . Soundings in pencil by L.B.Clore

Inked by . F. Albert . . . . . Verified by . F. Albert . . . . .

Records accompanying sheet (check those forwarded):

1 Des. report, \* Tide books, \* Marigrams, 1 Boat sheets,

3 Sounding books,        Wire-drag books,        Photographs.

Data from other sources affecting sheet 5 sets P.D.R. Abstracts

Remarks: \* To be forwarded at a later date.

*21*

DESCRIPTIVE REPORT  
TO ACCOMPANY  
HYDROGRAPHIC SHEET # 2  
APPROACHES TO CHESAPEAKE BAY  
SOUTH OF CAPE HENRY, VIRGINIA.  
JULY-NOVEMBER 1922  
STEAMER BACHE,  
EOLINE R. HAND, COMMANDING.

1132

DESCRIPTIVE REPORT  
to accompany  
HYDROGRAPHIC SHEET # 2

INSTRUCTIONS

This work was done under instructions dated June 2 1922 with subsequent special instructions.

LIMITS

The work on this sheet lies between latitudes 36-31 and 36-53 North and beginning near a line of buoys placed about ten miles offshore in approximately longitude 75-43 West, extends eastward to the thousand fathom curve in long. 74-30 W.

CONTROL

The control consisted of triangulation, topographic and hydrographic stations. The immediate control was a line of hydrographic buoys placed in such positions that the departures for the dead reckoning lines could be taken from the buoys. These buoys were placed at or just outside the limits of visibility of the shore stations and were located by (1) intersection of cuts on the buoy taken while the ship's position was determined by shore fixes, or (2) by fixes taken directly at the buoys.

The shore controls from which these buoys were located consisted of previously determined triangulation stations from which a series of signals were located by plain table traverse and sextant cuts, these being later verified by precise traverse run southward from Cape Henry, Va. Light House. (See descriptive report to accompany inshore sheet for further details of stations)

The bouys used were of the single barrel type with concrete anchor and counterweight and were built with cloth and screen target about fifteen feet above the water line. All buoys were removed when work was completed.

METHOD

All sounding lines were run approximately east and west. Lines eastward to the 25 fathom curve were spaced about two miles apart, from the 25 fathom to the 100 fathom curve, about four miles apart, and from the 100 fathom to the 1000 fathom curve, about eight miles apart.

All work was done by the ship. The method described in special publication #73 (Coast and Geodetic Survey), "Precise Dead Reckoning in Offshore Sounding" was used. Departure was taken from the buoys and the end of each line was tied in on the buoys or on a shore fix and the resultant error of closure distributed thruout the line. The only deviation from the method described in Special Publication #73 was that sometimes helm would be used to keep the ships head on course when stopping and backing and thus do away to a large extent with the transfer correction.

It will be noted that there is a difference between the length of the lines on the smooth sheet and those on the boat sheet. This is due to the fact that when the log was rated at the end of the season, somewhat different log factors were found from those used in plotting on the boat sheet. (See report on test for log factor already submitted to office) It was also found that no definite full and stop factor could be obtained on account of the varying intervals between stops affecting the quantity of this factor. To replace the full and stop factor a log loss to be applied for each stop was determined to be used in conjunction with the full speed or sounding speed log factor.

Soundings on this sheet are expressed in fathoms and halves as follows:-

One and two feet as the next even lower fathom, three and four feet are expressed as the half fathom while five feet is called the next even higher fathom.

#### SHOALS AND DEVELOPMENT

The 25 fathom curve lies from 35 to 40 miles to the eastward of the 10 fathom curve. Between these two curves there is a very uneven bottom. Coast and Geodetic Survey Chart # 1109 shows a number of shoal spots in this area which no indications were found in the sounding lines shown on the smooth sheet. These shoals are as follows:-

G. & G. S. Chart #1109 shows  $6\frac{1}{2}$  fathoms (P.D.) in lat.  $36-48\frac{1}{2}$  N. and long.  $75-24$  W. The shoalest sounding obtained in this vicinity was  $13\frac{1}{2}$  fathoms. The same chart shows  $6\frac{1}{2}$  fathoms in lat.  $36-37\frac{1}{2}$  N. and long.  $75-20\frac{1}{2}$  W.

The closest sounding obtained to this position was 19 fathoms. The chart also shows an 8 fathom shoal in lat. 36-33 N. and long. 75-15 W. while the shoalest sounding obtained in this vicinity was 15 fathoms. It will be noted however that the sounding lines of the smooth sheet do not pass directly over these shoal areas as noted on C. & G. S. Chart #1109. Some development of this area is needed to determine if these shoals actually exist as shown on the chart.

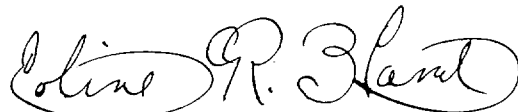
No shoals that might be of any danger to shipping were found. The following shoal spots were sounded;-

Lat. 36-34 $\frac{1}{2}$ N.-----	Long. 75-30 W.-----	9 fathoms
36-32	75-18	11 "
36-36 $\frac{1}{2}$	75-30	8 "
36-45	75-20	11 "

The inshore ends of most of the lines show some 9 and 9 $\frac{1}{2}$  fathom soundings between longitudes 75-29 and 75-40 W.

No developments were made of any of these shoal soundings on account of lack of time. Further development is needed to determine the area and least depth of these shoal areas.

Beyond the 25 fathom curve the bottom deepens rapidly and no evidences of shoals were found.



Eoline R. Hand,  
Commanding.

TABLE of STATISTICS

Sheet # 2

Approaches to Chesapeake Bay--South of Cape Henry Virginia

Steamer Sâche--Season 1922.

1922	Letter	Volume	Positions	Soundings	Miles Statute	Vessel
Sept. 13-14	A	1	24 PDR	727	114.7	Ship
Sept. 15-16	B	1	25 PDR	621	89.0	"
Sept. 29-30	C	2	20 PDR	681	87.0	"
Oct. 3-4-5	D	2	33 PDR	836	152.0	"
Oct. 20-21	E	3	25 PDR	712	94.0	"
		<u>TOTAL</u>	<u>127</u>	<u>3377</u>	<u>236.7</u>	

Soundings in Fathoms

Automatic tide gauge and staff, Fishermans Island, Virginia  
Plane of Reference M.L.W. = 1.94 feet on staff.

82



April 10, 1923.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in  
3 volumes of sounding records for

HYDROGRAPHIC SHEET 4255

Locality: Approaches to Chesapeake Bay, South of Cape Henry, Va.

Chief of Party: E. R. Hand in 1922

Plane of reference is Mean low water, reading  
1.9 ft. on tide staff at Fisherman's Island, Va.  
auto. gauge

For reduction of soundings, condition of records satisfactory  
except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of each day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.



Chief, Division of Tides and Currents.

## Report on Verifying & Inking # 4255.

A day was verified by replotting according to the abstract and a perfect check resulted. Subsequent days were not replotted, though the intermediate spacing of soundings was completely checked. The plotting of soundings was well done but fractions ~~should have~~ been omitted since the depths <sup>nearly all</sup> are nine fathoms or over (see P. 336 Y. J.) The smooth sheet was clean and in excellent condition. The field drafting was excellent.

Attention is called to the importance of the log factor in this branch of hydrography. A redetermination of the log factor at the end of the season gave a value which caused a variance of five miles in the offshore end of the line between smooth sheet and boat sheet. (See D. day). Any error in this factor does not show in the plotting since the seaward and landward courses counterbalance the effect. This means that the off-shore end is the place of the error.

Reference to radio compass bearings was made at various times but the book containing them could not be located. For ready reference the following is appended to locate where mention was made.

Vol. I pp. 4, 17, 18, 44 Vol. II pp. 16, 23, 53 Vol. III pp. 15, 26.  
These bearings were not used in plotting the work since they were believed to be inaccurate.

Astronomical observations (see end of Vol. II) were also disregarded in making the smooth sheet.

The field drafting by L. B. Clore is worthy of mention, since it is much better than the average.

Aug. 7, 1923.

Frank M. Albert  
Draftsman, Field Records Sec.

Supplemental Report to H. 4255.

After the sheet reported on in the preceding page was finished, it was found that several errors had been made and for this reason it was replotted with corrections to the abstract as follows:

1. A correction of +.02 mile for each log loss shown on the abstract.
2. A change in the current correction, based on ~~currents~~ furnished by the division of tides.
3. A change in the leeway correction, allowing only such leeway as was <sup>not</sup> parallel to the ship's course.

In replotting the sheet a new projection was made, buoys replotted and checked and the fixes determining the beginnings and endings of lines replotted. The fixes as replotted differed in some cases with the fixes as shown on the sheet submitted by field party, and was due, no doubt, to slight changes in the buoys as plotted on the second sheet.

After the replotting had been nearly finished, it was discovered that the method of correcting for leeway as given in Special Publication # 73 (Instructions in Precise Dead Reckoning) was not followed. This will make the offshore ends too far out but as the difference is relatively small the plotting was accepted. To have replotted the office sheet with a correct plotting of leeway would have meant considerable additional work, with no practical value accruing from the change.

Frank M. Albert  
Craftsman Section of Field Records

Dec. 20, 1923.

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

WASHINGTON

April 21, 1924.

SECTION OF FIELD RECORDS

Report On Hydrographic Sheet No. 4255

Off Cape Henry

Surveyed in 1922

Instructions dated June 2 and June 6, 1922.

Chief of Party, E. R. Hand.

Surveyed by party of Steamer BACHE.

Protracted and soundings plotted by F. M. Albert.

Verified by A. L. Shalowitz.

Inked by A. L. Shalowitz.

1. The records conform to the requirements of the General Instructions except in the preparation of the dead reckoning abstract. This was faulty in the following respects:

Log loss was allowed for only at anchorages, instead of at each stop.

Currents were assumed to be oscillating instead of rotary.

Leeway was figured as a correction factor when the wind was parallel to the course. Under this condition the log absorbs all the leeway.

Log factors were obtained at the end of the work instead of at its beginning.

2. The plan and character of development conform to the requirements of the General Instructions.
3. The plan and extent of development do not entirely satisfy the specific instructions. The latter directed that the spaces between sounding lines should be one-half mile out to the limit of visibility of signals which was assumed to be at about the 17 fathom curve, whereas the latter proved to lie 30 miles beyond the limit of visibility.

This zone of about 30 miles width was covered with lines 2 miles apart, although the instructions contemplated a spacing of one-half mile. In this zone are numerous undeveloped shoalings, the most notable being 8 1/4 fathoms at 36° 36' by 75° 30' and 13 fathoms at 36° 39' by 74° 57'.

4. The sounding line crossings are adequate.
5. The information is sufficient for drawing the usual depth curves.
6. The field plotting was completed to the extent prescribed in the General Instructions, and the work of L. B. Clore the field draftsman was excellent. Owing, however, to extensive changes made in the office to the dead reckoning abstract, it became necessary to discard the field plotting and make a new one in the office.
7. The junctions with the adjoining surveys on the north and west are adequate.
8. In view of the moderate depths and wide spacing of sounding lines in the area noted in paragraph 3 this survey cannot be considered complete for this area.
9. Character and scope of the surveying are fair and the field drafting good.
10. Reviewed by E. P. Ellis, April, 1924.

4255a

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

State: Virginia

11-5613

DESCRIPTIVE REPORT.

Hydro. Sheet No. 4255a

LOCALITY:

C. Henry

Offshore - Virginia Beach to

False Cape

1925

CHIEF OF PARTY:

F.S. Borden

4255a

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO. 42550

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.

C. & G. SURVEY  
L. & A.  
DEC 1 1925  
Acc. No.

Field No. \_\_\_\_\_

REGISTER NO. 42550

State VIRGINIA

General locality ~~SOUTHEAST OF CAPE HENRY, VA.~~

Locality OFFSHORE - Virginia Beach to False Cape

Scale 1:120000 Date of survey July<sup>21</sup>-October<sup>21</sup>, 1925

Vessel BACHE

Chief of Party F.S. Borden

Surveyed by F.S. Borden

Protracted by H.K. Hilton

Soundings penciled by H.K. Hilton, B.G. Jones

Soundings in fathoms ~~XXXXIX~~

Plane of reference M.L.W.

Subdivision of wire dragged areas by \_\_\_\_\_

Inked by J.M. Albert

Verified by " & Field Party

Instructions dated June 24, 1925, 1925

Remarks: 4255<sup>b</sup> Smooth sheet also shows adjusted lines of E.R. Hand

Run in 1922 in brown

DESCRIPTIVE REPORT  
TO ACCOMPANY  
OFFSHORE HYDROGRAPHIC SHEET  
SOUTHEAST OF CAPE HENRY  
VIRGINIA  
JULY - OCTOBER  
1925  
STEAMER BACHE  
F. S. BORDEN  
COMD'G.



DESCRIPTIVE REPORT  
TO ACCOMPANY  
OFFSHORE HYDROGRAPHIC SHEET  
SOUTHEAST OF CAPE HENRY  
VIRGINIA  
JULY - OCTOBER  
1925  
STEAMER BACHE  
F. S. BORDEN  
COMD'G.

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EXTENT

This sheet embraces practically the same area as the survey made in 1922 by Lieut. E. R. Hand which is shown on sheet 4255.

The area was resurveyed because the 1922 survey was inaccurate and did not develop the area sufficiently.

DEVELOPMENT

Instructions for the 1925 survey called for further development of the 1922 survey. In attempting to do this work it was soon discovered that due to considerable log loss the 1922 survey was very inaccurate. A new survey of the area was then made. Sufficient lines were run to show a clear contour of the bottom. As the bottom is very irregular this required a much closer development than would have been obtained by running lines spaced in accordance with instructions for the 1922 survey. In order to better visualize the bottom, the areas between the 10-12, 12-15, 15-18, 18-20, 20-25 fathom depth curves have been shown in different colors on the boat sheet.

METHODS EMPLOYED

The area was surveyed by the buoy control method. The buoys were located in the same manner as that described in the report on the survey of the approaches to Sabine Pass, Texas. The positions of the outer buoys were checked by sun sights. A large number of "Lines of Positions" obtained at the outer end of the work were carried to one buoy and the center of the "figure of error" obtained checked very closely the position of the buoy selected.

The standard compass was adjusted on east and west headings before the work was started and the ship was then swung for residual errors. The maximum deviation error is 10-24'. The probable error of a single observation made during the swing computed as 5'.~~00~~. The "A" factor computed as + 15', which is in close agreement with previous swings. The azimuth circle was checked just before making the swing.

Patent logs were rated before work was started. Both logs were new and the first rating gave each a factor of 1.00 for full speed. During the course of the work it was found necessary to rate the logs on two other occasions, due to change in factor, discovered in making full speed location runs with both logs streamed. The factor of the starboard log changed from 1.00 to .97 to .96, while the port log held the factor 1.00 throughout the season. The fact that the starboard log was the one which changed is probably due to it's having been used continuously for sounding in addition to full speed buoy location runs.

ADJUSTMENT OF 1922 SURVEY

The 1922 sounding lines are shown on the sheet and were adjusted to the 1925 survey as follows,

The sounding lines run in 1922 were transferred to the 1925 boat sheet and the soundings shown in red ink. Depth curves, based on the 1925 survey were drawn on the boat sheet and from these the lines of the 1922 survey were placed in their correct relative positions and the anchorage positions referred to the buoys of the 1925 survey. The adjusted positions of the 1922 survey are shown on the Position Abstract Cahier accompanying the sheet.

COMPARISON OF METHODS

Since the survey of the same area has now been made by two different methods, an opportunity is offered to compare methods. A comparison reveals the same faults in the Precise Dead Reckoning Method that were apparent in the survey made of the approaches to Sabine Pass, Texas, the principal one being that a patent log cannot be relied upon to give correct distance while running at slow and varying speeds. In adjusting the lines of the 1922 survey it was found that the greatest amount of log was lost in deep water when the vessel was proceeding at a very slow speed.

BOTTOM CHARACTERISTICS

It is requested that bottom character notations be made on the sheet in the Washington office. Due to the limited amount of time to complete the sheet before the vessel sails for the southern working grounds, it will not be possible to accomplish this on the vessel.

INKING OF SOUNDINGS

It is recommended that in inking soundings that the 1925 soundings be shown in black ink and the 1922 soundings in brown ink and that in drawing depth curves more weight be given to the black soundings.

To distinguish lines { 1922 positions in blue ink .  
1925 " " red " .

*Frank S. Borden*  
Frank S. Borden.

Statistics Sheet No.

Date, 1925	Letter	Volume	Positions	Soundings	Miles statute	Vessel
July 21	A	1	49	582	51.7	BACHE
July 23	B	1	25	352	28.7	BACHE
July 24	C	1	17	237	24.0	BACHE
Aug. 10	D	1	3	78	6.6	BACHE
Aug. 11	E	1	15	407	31.0	BACHE
Aug. 11	E	2	11	159	15.0	BACHE
Aug. 12	F	2	33	528	46.3	BACHE
Aug. 13	G	2	14	325	37.0	BACHE
Aug. 14	H	2	16	423	49.3	BACHE
Aug. 18	J	3	18	395	30.0	BACHE
Aug. 19	K	3	18	534	44.5	BACHE
Aug. 20	L	3	26	500	51.7	BACHE
Aug. 31	M	3	4	92	7.0	BACHE
Sept 1	N	4	45	574	51.5	BACHE
Sept 2	P	4	30	479	37.5	BACHE
Sept 3	Q	4	19	221	24.0	BACHE
Sept 8	R	4	8	85	6.0	BACHE
Sept 9	S	4	22	222	19.5	BACHE
Sept 9	S	5	13	221	31.0	BACHE
Sept 10	T	5	26	476	52.9	BACHE
Sept 11	U	5	46	248	55.0	BACHE
Sept 28	V	5	3	76	7.0	BACHE
Sept 29	W	5	21	422	32.0	BACHE
Oct. 12	X	6	4	27	2.4	BACHE
Oct. 13	Y	6	24	342	32.2	BACHE
Oct. 14	Z	6	14	188	22.4	BACHE
Oct. 21	A'	6	31	351	48.0	BACHE
TOTAL			555	8544	844.2	

DEC 7 - 1925

~~Division of Hydrography and Topography:~~

Division of Charts:

Tide reducers are approved in  
7 volumes of sounding records for

HYDROGRAPHIC SHEET NO. 4255 A

Locality: South Approaches to Chesapeake Bay, Va.

Chief of Party: F. S. Borden in 1925.

Plane of reference is  
2.9 ft. on tide staff at Fisherman's Island

For reduction of soundings, condition of records satisfactory  
except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A. M. or P. M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of each day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.



Chief, Division of Tides and Currents.

## Report on verifying and inking H. 4255<sup>a</sup>

This sheet is a resurvey of the area covered by H. 4255. It is supplemented by H. 4255<sup>b</sup> which is a photograph of the 'a' sheet upon which has been shown in brown the work by E. R. Hand in 1922, adjusted to agree with the 1925 survey.

The plotting was well done and the records were well kept. The plotting of positions was not verified in the office as Capt. Borden orally stated that this had been done in the field. However, the plotting of soundings was completely verified.

The survey of 1925 should be considered the more reliable as it was executed by "truy triangulation" <sup>control! (full speed double run)</sup>

The overlap of this sheet with 4286 is not shown on the latter, as it was thought best to have this omitted. The 10 fathom curve on 4286 does not agree with the curve on this sheet because of the difference in depth unit.

Jan. 11, 1926

J. M. Albert, Draftsman,  
Section of Field Records.



DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4255b

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. 4255b

REGISTER NO. 4255<sup>b</sup>

State Va

General locality Cape Henry  
Offshore -

Locality Va Beach to False Cape

Scale 1:120,000 Date of survey Sept. & Oct. 1922  
July to Oct. 1925

Vessel Bache

Chief of Party E. R. Hand & F. S. Borden

Surveyed by E. R. H., F. S. B. & C. A. Egner

Protracted by H. K. Hilton (1922 work adjusted by F. S. B.)

Soundings penciled by

Soundings in fathoms ~~feet~~

Plane of reference M. L. W.

Subdivision of wire dragged areas by

Inked by F. M. Albert

Verified by Field Party & F. M. A.

Instructions dated , 192

Remarks: This sheet is a photograph of 4255<sup>a</sup> and has shown on it the work by E. R. Hand in 1922, as adjusted by F. S. Borden. (sndgs. in brown)

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

WASHINGTON

January 25, 1926.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4255<sup>a</sup> and <sup>b</sup>.

Offshore, Cape Henry, Virginia

Surveyed in 1925

Instructions dated June 24, 1925.

Chief of Party, F. S. Borden.

Surveyed by F. S. B. and C. A. Egner.

Protracted by H. K. Hilton.

Soundings plotted by H. K. H. and B. G. Jones.

Verified by Field party and F. M. Albert.

Inked by F. M. A.

1. The records conform to the requirements of the General Instructions except that there is a scarcity of bottom characteristics on the outer portion of the survey.
2. The plan and character of development conform to the requirements of the General Instructions.
3. The plan and extent of development conform to the requirements of the specific instructions, the buoy control method having been used.
4. All the shoals mentioned in paragraph 8 of the specific instructions have been sufficiently disproved by the work on this sheet and the adjusted work of 1922, with the exception of the 7 fathom spot in lat.  $36^{\circ} 40 \frac{1}{2}'$ , long.  $75^{\circ} 32'$ . The least depth obtained in this vicinity was  $8 \frac{3}{4}$  fathoms, and as the lines were spaced a little more than a half mile apart the survey by no means precludes the possibility of 7 fathoms or less existing here. This sounding should therefore be retained on the charts. The others may be removed. For the convenience of the cartographer they are as follows: The  $6 \frac{1}{4}$  fathom sounding, marked P.D., in lat.  $36^{\circ} 48'$ , long.  $75^{\circ} 24'$ ; the  $6 \frac{1}{2}$  fathom sounding in lat.  $36^{\circ} 37 \frac{1}{2}'$ , long.  $75^{\circ} 20 \frac{1}{2}'$ ; the 8 fathom sounding in lat.  $36^{\circ} 32 \frac{1}{2}'$ , long.  $75^{\circ} 15'$ .

As to the other soundings mentioned in the specific instructions that were shown in pencil on H. 4255, the new survey would seem to indicate that most of them do not exist. No specific recommendations will be made relative to these, inasmuch as it is more a problem for the Drafting Section as to whether they should be retained on the charts or not.

5. The sounding line crossings are adequate.
6. The information is sufficient for drawing the usual depth curves.
7. The field plotting was completed to the extent prescribed in the General Instructions. The adjustments were all made and verified in the field and a re-verification in the office was considered unnecessary. The plotting of the soundings, however, was verified in the office and found correct.
8. Sheet 4255<sup>a</sup> comprises practically the same area as covered by H. 4255 (surveyed by E. R. Hand in 1922), the only difference being that a more accurate method of control was used on the recent survey.  
  
The work shown on H. 4255<sup>a</sup> includes only the 1925 work of F. S. Borden, while H. 4255<sup>b</sup> includes both the 1925 work of Borden and the 1922 work of E. R. Hand, the latter adjusted to conform to the 1925 work. This adjustment was made under the personal supervision of Capt. Borden and was not verified in the office except for possibly one or two changes. The 1922 adjusted work is shown on H. 4255<sup>b</sup> in brown and this sheet will supersede H. 4255.
9. The junctions with the sheets to the north and west are adequate, although owing to the difference in depth units between this sheet and H. 4286, the 10 fathom curves on the two sheets do not agree.
10. The combined result of the two surveys now gives a sufficient development for this area and no further work is required here.
11. Attention is called to the boat sheet, on which Capt. Borden has delineated the configuration of the bottom by the use of different colors for different depths. It is of tremendous assistance in visualizing the bottom and may possess possibilities for a method of representing submarine relief on the charts that will be of maximum assistance to the navigator.
12. Character and scope of surveying - excellent.  
Field drafting - excellent.
13. Reviewed by A. L. Shalowitz, January, 1926.