

4088 a,b,c,d,e.

a,b,c,d,e.

4088

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

Atlantic &
State: Pacific oceans.

11-5613

DESCRIPTIVE REPORT.

Hyd. Sheet No. 4088 a,b,c,d,e

LOCALITY:

Deep Sea Sounding
Capu Hatteras to
San Diego

1914 & 1919

CHIEF OF PARTY:

C.C.Y.-F.H.H.-E.H.P.-R.R.L.-T.V.M.

Report on the Deep Sea Hydrography
 Norfolk, Virginia to San Diego, Calif.
 executed by the
 Coast and Geodetic Survey Steamers BACHE, LYDONIA, SURVEYOR,
 SIALIA and WENONAH.

To take advantage of the cruises to the west coast of the Survey Steamers SURVEYOR, LYDONIA, WENONAH and SIALIA during 1919, instructions were given each of the Commanding Officers to make deep sea soundings and secure other oceanographic data over routes laid down in the office. These routes were placed so as each would develop an unexplored track.

2. The results of this hydrography have been plotted on Hydrographic Office Charts Nos. 1006, 1007, 1176, 1290 and 1411, which are a part of this report. From a study of these charts it will be seen that these vessels have secured information of great oceanographic value over areas heretofore devoid of sounding.

3. In all cases, excepting for a few soundings in the Gulf of Panama, by the Steamer LYDONIA, all soundings were made by vertical casts using the standard deep sea sounding appliances. The plotting was made after a careful going over the available data received at this office from each vessel.

4. In addition to the Hydrography accomplished as above, the route of the Coast and Geodetic Survey Steamer BACHE, with consequent hydrography while on the fisheries cruise of 1914^{es} under the auspices of the Bureau of Fisheries and the Bureau, was plotted.

5. Proper legends differentiate the work of the various vessels.

6. The following table gives a list of statistics:

Vessel	Miles	Soundings	Bottom
Steamer SURVEYOR :	2520	62	52
Steamer BACHE :	2065	36	- - -
Steamer LYDONIA :	3495	94	39
Steamer WENONAH :	1380	65	42
Steamer SIALIA :	525	7	- - -
Total	9985	263	133

Respectfully submitted,

Paul C. Whitney

Chief, Coast Pilot
 Section.

**Report on the Deep Sea Hydrography
Norfolk, Virginia to San Diego, Calif.
executed by the
Coast and Geodetic Survey Steamers BACHE, LYDONIA, SURVEYOR,
SIALIA and WENONAH.**

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Total	9985	263	133

Respectfully submitted,

Paul C. Whitney

Chief, Coast Pilot
Section.

Hyd. Sheets Nos. 4088^a b c d e
(Verification Report)

This work consisting of deep sea soundings made by the Steamers Surveyor, Lydonia, Menonah and Sialia in 1919 and the Steamer Bache in 1914, was plotted by Capt. P.C. Whitney on Hydrographic Office Charts Nos. 1006, 1007, 1176, 1290 and 1411.

The soundings have been carefully and accurately plotted from all the data and records received by the office. In the work of the Bache in 1914, there are some discrepancies between the boat sheet and the records.

After a study of all the data available, it was apparent that Capt. Whitney's plotting was the best result obtainable from the material at hand.

R. L. Johnston

Acc. Nos. of records

77995
78004
78005
78006
78007
78040
78041
78042
78043
78044

AND REFER TO NO. 4-MEM

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
WASHINGTON

SECTION OF FIELD RECORDS.

Report on Hydrographic Sheet 4088. Surveyed in 1914 and 1920.

Chiefs of Parties: C.C.Yates, F.H.Hardy, E.H.Pagenhart, T.J.Maher and
R.R.Lukens.

Soundings plotted and inked by P. C. Whitney.

Verified by R. L. Johnston.

1. This survey, in general, fulfills the requirements of the specific instructions. Such departures from the instructions as occurred were, no doubt, caused by circumstances beyond the control of the commanding officers.
2. It is quite probable that shoaler water exists on the 248 fathom bank midway between Jamaica and Colon. The LYDONIA crossed this bank without sounding.

E. P. Ellis,
February 26, 1921.

4088 a, b, c, d, e.

Deep Sea Hydrography.

Cape Hatteras to San Diego, via Panama.

Surveyor, Cape Hatteras to San Diego,	Hardy.
Wenonah, " " " " "	Lukens.
Lydonia, " " " " "	Paganhart.
Sialia, " " " West Indies.	
Bache, " " " Bermudas and Straits of Florida, 1914.	Whiting.

Send all field records of above to Capt. Whitney.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
WASHINGTON

May 8, 1924.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4088

Surveyed in 1922 and 1923

Surveyed by Steamer DISCOVERER, H. A. Seran, 1922

" " " PIONEER, R. R. Lukens, 1922

" " " LYDONIA, R. F. Luce, 1922

" " " GUIDE, R. F. Luce, 1923

Plotted by the field parties on navigational charts.

Plotted on final charts by F. M. Albert

Inked by A. L. Shalowitz and F. M. Albert

Verified by A. L. Shalowitz and H. R. Edmonston.

1. The sounding records of all the parties conform to the requirements of the General Instructions except that but few bottom characteristics were obtained by the Discoverer.

In no case was the usual descriptive reports submitted. The season and voyage reports, however, supply the information usually found in the descriptive reports.

2. The plan and character of the surveys conform to the requirements of the General Instructions.
3. In general the plans and extent of the several surveys conform to the requirements of the specific instructions. The charts showing the proposed routes for each vessel are not available for comparison with the completed sheets.

Malpele Island which the Guide was instructed to locate does not lie near the course followed by that vessel, hence it was not located.

4. All the plotting that it was feasible for the field parties to do was done by them.
5. The data comprised in this survey are supplementary to and in agreement with existing charted details with the following exceptions:

- (a) The soundings by the Pioneer and the Guide cast doubt upon the existence of the shoals reported north of Manzanillo Pt. (4088 d - H. O. 5002).
 - (b) Soundings by the Pioneer over the charted position of the 70 fathom bank off the coast of Costa Rico indicate that its charted position is doubtful. (4088 g. H. O. 1007 and H. O. N. to M. No. 32, 1920 and Voyage report of Pioneer dated Nov. 8, 1922.)
 - (c) The location of Alijos Rocks off Lower California was determined by the Pioneer, with excellent observing conditions, to be 6 or 7 miles from their charted location. (4088 h, H. O. 1006 and Voyage report of Pioneer.)
 - (d) The Discoverer traversed the charted location of the rock bearing 10 feet southwest of Alijos Rocks and states that it is not in the charted position. (4088 h, H. O. 1006 and Par. 31 of Discoverer's Season's Report Sept. 25 to Oct. 28, 1922.)
6. The perfection of the sonic sounding device and the methods of using it constitute a notable advance in the art of deep sea sounding. The comparison of sonic and wire soundings show that the sonic soundings obtained by the Guide may be relied upon as being well within the allowable degree of error.
 7. The character and scope of the surveying of the four ships included in this report are excellent.
 8. Reviewed by E. P. Ellis, May, 1924.

COPY TO FIELD RECORDS.

Nov. 27, 1923.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
4 volumes of sounding records for

HYDROGRAPHIC SHEET 4088

Locality: **Atlantic Ocean, Norfolk, Va., to Colon, C.Z.
Pacific Ocean, Bay of Panama**

Chief of Party: **R. F. Ince and R. R. Lubens in 1922.**

Plane of reference is **mean low water springs, reading
-7.5 ft. on tide staff at Balboa, C. Z.**

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.

February 21, 1924.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
4 volumes of sounding records for

HYDROGRAPHIC SHEET 4088

Locality: New London, Conn, to San Diego, Calif.

Chief of Party: R. F. Luce in 1923.

Plane of reference is mean low water springs, reading
-7.5 ft. on tide staff at Balboa, C. Z.

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.
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13. Remarks.



Chief, Division of Tides and Currents.

U. S. COAST AND GEODETIC SURVEY






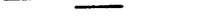



E. Lester Jones, Director

Register No. 4088

DEEP SEA HYDROGRAPHY

Soundings in fathoms

Surveyed by U. S. Coast and Geodetic Survey Steamers

	Bache,	C. C. Yates,	Commanding,	1914
	Lydonia,	E. H. Pagenhart,	"	1919
	Sialia,	T. J. Maher,	"	"
	Surveyor,	F. H. Hardy,	"	"
	Wenonah,	R. R. Lukens,	"	"
	Discoverer,	H. A. Seran,	"	1922
	Pioneer,	R. R. Lukens,	"	"
	Lydonia,	R. F. Luce,	"	"
	Guide,	R. F. Luce,	"	1923

This sheet contains a key to all
the work done on H. 4088^a to ^h.

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. 4088 a, b, c, d, e

State . Atlantic and Pacific Oceans

General locality . Deep sea sounding

Locality . Cape Hatteras to San Diego

Chiefs of party G. C. Yates, F. H. Herby, E. H. Pagenhart, R. R. Lukens, and T. J. Maher

Surveyed by Steamers Bashe, Endeavor, Lydonia, Menomah and Sicli

Date of survey . 1914 and 1919

Scale . Various

Soundings in . Fathoms

Plane of reference . _____

Protracted by P. C. Whitney Soundings in pencil by P. C. W.

Inked by P. C. W. Verified by

Records accompanying sheet (check those forwarded):

Des. report, _____ Tide books, _____ Marigrams, 13 Boat sheets,

_____ Sounding books, _____ Wire-drag books, _____ Photographs.

Data from other sources affecting sheet

Remarks:

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. 4088^{e, f, g}

State . En. route New London, Conn., to San Diego, Calif.

General locality . Pacific Coast

Locality . Cape Mala, Panama, to Cape Corrientes, Mexico

Chief of party R. F. Luce

Surveyed by Str. GUIDE

Date of survey . December 13, 1923. - December 22, 1923.

Scale 7'

Soundings in . fathoms

Plane of reference . Soundings not reduced

Protracted by H. B. Brown. Soundings in pencil by H. B. Brown

Inked by Verified by

Records accompanying sheet (check those forwarded):

Des. report, _____ Tide books, _____ Marigrams, _____ Boat sheets,

_____ Sounding books, _____ Wire-drag books, _____ Photographs.

Data from other sources affecting sheet

Remarks: Sheet #4 of a series of 5 sheets showing sounding line of Str. GUIDE, enroute New London, Conn., to San Diego, Calif.

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. 4088^h

~~xxxx~~ En. route, New London, Conn., to San Diego, Calif.

General locality . . . Pacific Coast

Locality Cape San Lucas, Mexico, - San Diego, Calif.

Chief of party . . . R. F. Luce

Surveyed by . . . Str. GUIDE

Date of survey December 25, 1923 - December 28, 1923.

Scale

Soundings in fathoms

Plane of reference . . soundings not reduced

Protracted by H. B. Brown. Soundings in pencil by H. B. Brown

Inked by Verified by

Records accompanying sheet (check those forwarded):

Des. report, Tide books, Marigrams, Boat sheets,

Sounding books, Wire-drag books, Photographs.

Data from other sources affecting sheet

Remarks: Sheet #5 of a series of 5 sheets showing sounding line of Str. GUIDE enroute New London, Conn., to San Diego, Calif.

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. 4088^a

State

General locality Atlantic Ocean.

Locality Lat. 35-48 to Lat. 25-13 on Mer 72-26.

Chief of party T. J. Maher.

Surveyed by Party on U. S. S. Sialia.

Date of survey Oct. 10-Oct. 14, 1919.

Scale 1:500,000.

Soundings in Fathoms.

Plane of reference

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

Inked by G. L. B.--T. J. M. Verified by

Records accompanying sheet (check those forwarded):

Des. report, 1 Tide books, --- Marigrams, --- Boat sheets,

1 Sounding books, 1 Wire-drag books, --- Photographs.

Data from other sources affecting sheet Ship's Log Copy . .
forwarded. Dead Reckoning Tabulations. 2 Cahiers Computations
of Sights, 1 Ship's Swing.

Remarks:

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. 4088^e

State ~~Republic of Panama-Panama Canal Zone~~

General locality Pacific Coast

Locality Bay of Panama

Chief of party R.F. Lucas

Surveyed by Str. GUIDE

Date of survey December 12-13 1923

Scale

Soundings in Fathoms

Plane of reference Soundings not reduced

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

Inked by Verified by

Records accompanying sheet (check those forwarded):

- 1 Des. report, Tide books, Marigrams, Boat sheets,
- 1 Sounding books, Wire-drag books, Photographs.

Data from other sources affecting sheet
This is sheet #3 of a series of five sheets covering the sounding line run by the Str. GUIDE from New London, Conn. to San Diego, California.

Remarks: All soundings not specially designated by letter were taken with Fischer sounding tubes. At intervals wire soundings were taken to check the tube soundings, and at these positions the depth obtained by the tube sounding is followed by the letter (T) and the depth obtained by the vertical wire sounding is followed by the letter (W) as shown on the chart.

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. 4088^{b,c,d}

State . En route New London, Conn., to San Diego, Calif.

General locality . Caribbean Sea

Locality . . Mona Island - Panama Canal

Chief of party . . . R. F. Luce

Surveyed by Str. GUIDE

Date of survey . . December 3, 1923 - December 7, 1923

Scale- -

Soundings in . fathoms

Plane of reference .Soundings not reduced

Protracted by J.H.Service Soundings in pencil by J.H.Service

Inked by Verified by

Records accompanying sheet (check those forwarded):

Des. report, Tide books, Marigrams, Boat sheets,

..... Sounding books, Wire-drag books, Photographs.

Data from other sources affecting sheet

Remarks: Sheet #2 of a series of 5 sheets showing sounding line of Str. GUIDE, enroute New London, Conn., to San Diego, Calif.

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. 4088^{a+b}

~~xxxx~~ En. route, New London, Conn., to San Diego, Calif.

General locality North Atlantic Ocean

Locality . New London, Conn., - Mona Island

Chief of party . . R. F. Luce

Surveyed by . . Str. GUIDE

Date of survey . November 21, 1923, to December 3, 1923

Scale

Soundings in fathoms

Plane of reference . . Soundings not reduced

Protracted by J. H. Service Soundings in pencil by J. H. Service

Inked by Verified by

Records accompanying sheet (check those forwarded):

- { Des. report, _____ Tide books, _____ Marigrams, _____ Boat sheets,
- { 4 _____ Sounding books, _____ Wire-drag books, _____ Photographs.
- { Data from other sources affecting sheet
- { 11 Mercator plotting sheets; 1 wire sounding summary;
- { 3 Navigation notebooks

For
entire
series
of
sheets

Remarks: Sheet #1 of a series of 5 sheets showing sounding line of Str. GUIDE, enroute New London, Conn., to San Diego, Calif.

Applied to compilation of Chart (new) No. 5020

S. B. Mays Dec 1937

3.

4088

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4088

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

State: Atlantic Ocean

11-5613

DESCRIPTIVE REPORT.

Hyd. Sheet No. 4088^a

LOCALITY:

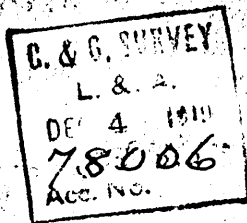
26

1919

CHIEF OF PARTY:

T. J. Maher

DEPARTMENT OF COMMERCE.



C o a s t a n d G e o d e t i c S u r v e y .

Col. E. Lester Jones,
Superintendent.

Deep Sea Hydrography
between

Cape Henry, Va., and the Bahama Ids. Oct. 9-14, 1919.

U.S.S. SIALIA.

Report submitted by
T. J. Maher, Chief of Party.

U. S. S. Sialia.
October, 1919.

Report. - Deep Sea Hydrography.

Cape Henry to Bahama Id.

Instructions dated

Copy attached.

Officers:- T. J. Maher, H. & G. Engr. Commanding.
C. T. Bussell, Jr. H. & G. Engr. Executive Off.
G. L. Bean, Jr. H. & G. Engr.
Wm. M. Scaife)
L. W. Burdette) Deck Officers.
F. L. Chamberlin, Chief Engineer.
E. E. Irwin, Surgeon.

Time used - 60th Meridian.

Apparatus:

Str. Sialia. - Sigsbee Deep Sea Sounding Machine.
Piano wire. - 50 lb. shot. - Sigsbee Detaching Rod, and
Nigrette and Tandra Deep Sea Thermometer.

1. The Sigsbee machine is of the familiar type mounted on the stern. The dynamometer was mounted on the taffrail to which it was secured by a railing of two tiers of piping. This secured the dynamometer and also protected the men at the machine, making it impossible for a man to fall overboard. The original sheave casing or sliding panel, was removed and another substituted for it. This was so constructed as to take a Ballauf sheave, which is direct reading, requiring no correction for the amount of wire on the reel. The Sigsbee registering sheave was used as a check. About 30,000 fathoms of piano wire and 125 fifty pound shot were taken along. The wire was spliced with a long splice of few turns, the ends of the wire for about 1" were closely turned, as in electrical connections. The whole was then soldered.

2. On October 9th the ship was swung in Chesapeake Bay. Com-
passes were adjusted. It was cloudy during a greater part of the day; this caused considerable delay. The compasses were properly adjusted and the errors reduced, but a swing for residuals could not be made with the accuracy desired.

3. On October 9th at 6.20 p.m. Cape Henry Light was passed. At 12 noon, October 10th the ship was stopped for the first sound-
ing. With the exception of the petty officers, none of the crew were seamen. Few, if any, ever handled a wheel; the steering was wild. The difference between dead reckonong positions and positions by observation can not be considered as due to current. None of the officers on board were familiar with deep sea sounding; none were familiar with the apparatus. About 8000 fathoms of wire were lost: this is more than the usual loss during an entire season.

4. Watches were arranged as follows:

T. J. Maher, - C. O. and E. E. Irwin, Surgeon. 8 to 12.

G. L. Bean, - Wm. M. Scaife. 12 to 4.

C. T. Bussell, - Executive Officer and L. W. Burdette.
4 to 8.

Under this arrangement the senior watch officer could leave a junior officer on watch while he worked up his sights. During my watch at night, I always had the Boatswain on the bridge when I left it to attend to the sounding machine, or work up sights.

5. Weather conditions. - Weather conditions were good. Moonlight prevailed, so night sights were possible. During the first few days Mr. Bussell did not furnish many positions, being under the impression that as he was not navigating officer it was not necessary for him to do so.

6. Plotting. - G. L. Bean used the old Sumner method. I used the Haver-sine method. Red lines are position lines plotted according to observation. Yellow lines are position lines carried forward for run. Black circles are the positions of soundings, according to observed positions. When observations were not taken at the immediate time of the sounding, correction for current and wind were made when it was apparent that the effect of these was perceptible. Blue lines indicate dead reckoning courses; blue circles dead reckoning positions.

7. Computations. - The computations have not been checked. The positions taken by myself and Mr. Bean are in such shape as to be used by the office. Mr. Bussell has not gotten his position computations into shape for office use. It is not feasible to delay the work until these are ready, as other hydrographic work will be taken up, causing an accumulation which will delay other work. Some changes may be made in the position lines when his computations are submitted, but it is not believed that the changes will be material.

8. Run from sounding # 1 to # 2 disclosed few, if any, features of interest. A position midway furnishes a new point from which dead reckoning is to be carried. The run from sounding # 2 to sounding # 3 shows an unusual feature: at 8 a.m., sun position, sun east, moon position, moon west, show the ship to be 20 miles west of the dead reckoning position and about 25 miles west of the D. R. position, if allowance were made for current. The weather was calm. An unusual set, entirely local, as its existence is unsupported by observations elsewhere, bad steering, or the compass sticking may have caused it. The course was continued until I verified the position. From the position of sounding three as determined by observation, the dead reckoning was carried back. No unusual set was noted. The discrepancy between the 8 a.m. position carried forward and that carried back is not accounted for.

9. Sounding # 3 to Sounding # 4. From position # 3 plot dead reckoning course as per dead reckoning tabulation. Stopped to sound at 8.15, lead struck bottom at 8.56 p.m. This is the time to be used for the position of the sounding. Position lines determined from observations on Formalhaut, Polaris, Moon, and Altair. The intersection of Formalhaut and the Moon, agreeing closely with the dead reckoning, is used. A correction of .3 kt. per hour, N 50 E set, from time of sounding to time of position line ~~is~~ applied.

10. Sounding # 4 to Sounding # 5. A discrepancy similar to that existing between soundings 2 and 3 is noted. Three sets of positions were taken during the night. The course passing through these is shown in green. The dead reckoning course is shown in blue. About 8.10 a.m. I took sights on the sun - east - and on the moon-west. All errors due to refraction, eccentricity, and dip were thus eliminated. The course was changed. The two sights were carried along to intersect a 9.59 a.m. sight. The meridian altitude sight must be given considerable weight. The 9.59 a.m. position carried forward and the meridian altitude with a correction for an assumed current, .4kt. N. 40 E. determine the position. An unusual, heavy set appears to have been experienced during 6 to 8 a.m. The evidence in support of this is not sufficient to give it consideration, and it can only be thought of as something infrequent and momentary.

11. Sounding # 5 to # 6. Nothing unusual was noted. The difference between the dead reckoning positions and the observed positions indicate a slight ~~N E~~ by N ly set of .2 to .4 kt per hour.

12. Sounding # 6 to # 7. The difference between dead reckoning and observed positions indicate a westerly set of about .8 kt. per hour. Few intermediate positions are available to determine the accuracy of this. On account of bad steering, even though an unusual set was observed on two preceding occasions, it was necessary to use caution in attributing the difference to current.

13. Sounding # 7 to #8. Nothing unusual is noted. A sight on Polaris at 11.56 p.m. agrees with a 7.07 p.m. sight on the same star. It indicates a set, one component of which is southerly; the other is undetermined. The most likely position is chosen.

14. Sounding # 8 to # 9. Polaris sight, 11.56 p.m. carried back to 7.07 p.m. indicated a southerly set. The other component of this set was not determined. The dead reckoning position of sounding 8 compared with its observed position does not verify the assumption that the set existed. Intermediate sights are too infrequent and do not agree well. The position taken for the sounding is shown on the sheet. The method used in deriving it is explained in the notes on the sheet.

15. The wind had considerable effect on the ship. On Oct. 11, 2 p.m. while aft at the sounding machine I had a current pole lowered over the side. It drifted N E. .5 knot per hour. The wind was ESE - force 1 -2.

16. None of the computations have been checked. None of the plotted positions have been checked. Not on the plotting sheet, the use of different colored inks, a copy of the logs covering the time engaged in sounding, are submitted. These will assist whoever checks this computation. In giving weight to the different position lines, the log should be consulted for the notes on the weather conditions prevailing at the time. 60th Meridian time was used; this should be noted when twilight sights are considered. The time from 4 to 8 p.m. is the best for obtaining positions. 8 to 12 p.m. and 12 to 4 a.m. the poorest. Moon horizons are often times good, but never as good as daylight horizons.

17. Closer attention was paid to chronometer corrections in my sights than in the others.

18. Water temperatures, Surface temperatures, temperatures of the air, and barometric readings were taken. H. O. Table 200 giving average corrections was used. The meteorological observations permit the use of the more accurate corrections. The height of the bridge above the water is 21 feet. To this is to be added the height of the observer's eye.

19. Bottom temperatures were not taken. I observed at the first sounding when a deep sea thermometer was lost, that an excessive loss of wire would take place, and then decided not to take temperature readings until sufficient skill was acquired. Detaching rods could be made on the ship but thermometers could not and it was considered best to miss a few readings at first and get others later, than to lose the thermometers and get no readings.

20. Bottom specimens. Four samples, at soundings #s 3, 4, 5, & 7, were obtained in quantities large enough for shipment. All were apparently the same. An exceedingly fine, greyish brown silt of the consistency of rouge. A small trace of sand or abrasive material was noticeable.

21. Transmitted with this report are:

- 1 Copy of log covering period of hydrography.
- Dead reckoning computation.
- 1 Copy of ship's swing.
- 1 Napierian diagram.
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- 1 Copy of Night Orders.

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22. Some information regarding currents may be derived from the positions taken while the ship was drifting on the Atlantic. Positions were taken with this object in view. The ship drifted in a loop, or whirl. The existence of this is probably more apparent than real as the effect is due somewhat to weather con-

page 5.

ditions. I have observed, when engaged on current observations, that a counter current exists along the edge of strong channel currents. This may, or may not, exist on the eastern side of the Gulf Stream. Other duties take up too much of a Chief of Party's time to permit the amount of attention which he should give to his field work. I am unable at this time to examine closely the two unusual westerly sets, a third set at sounding # 7, and that at sounding # 8.

J. Mahan.

Duplicate

JAN 17 10 26 AM '20

SUPERINTENDENT	
HYDROGRAPHY	
SALES	
GEODESY	

Department of Commerce
Coast & Geodetic Survey,

JAN 17 9 41 AM '20

Col. E. Lester Jones
Superintendent.

OFFICE	
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MAGNETISM	

Deep Sea Hydrography,

U. S. S. Sialia.

Cape Henry to The Bahamas.

Oct. 9 - Oct. 14, 1919.

14
6
T. J. Maher,
Commanding.

POST-OFFICE ADDRESS:

TELEGRAPH ADDRESS:

EXPRESS OFFICE:

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

Washington

September 11, 1919.

To: Commanding Officer,
Steamer SIALIA,
Coast Guard Depot, Arundel Cove,
Baltimore, Md.

From: The Superintendent, Coast and Geodetic Survey.

Subject: INSTRUCTIONS.

Having completed your arrangements, you will proceed with the Steamer SIALIA to San Francisco, California via the Panama Canal.

2. En route you will please endeavor to obtain soundings with temperatures and bottom characteristics insofar as bottom specimens may be brought to the surface with the equipment at hand.

3. Starting with a position and sounding at Longitude $72^{\circ} 25'$ West, Latitude $36^{\circ} 00'$ N., you will steer south true along the $72^{\circ} 25'$ meridian to the Bahama Islands, taking soundings along the meridian at the start and at Latitudes 34° N., 32° N., $29^{\circ} 50'$ N., $28^{\circ} 50'$ N., 27° N., 26° N., 25° N., 24° N., and 23° N.

4. From the Windward Passage to Panama soundings are desired at the following positions along a track joining Tiburon Bay, Southwest Point of the Island of Haiti, and a point on the Panama Coast midway between San Blas Point and Manzanillo Point, sounding at 17° N. and at 16° N., then every 30 nautical miles along the above mentioned track to within about 45 miles of the Panama Coast.

5. In the Culf of Panama the line will start at a sounding and position in Longitude $79^{\circ} 28'$ West, Latitude $8^{\circ} 25'$ N. From this position run South true spacing soundings about 12 nautical miles apart to Latitude $6^{\circ} 14'$ N.

6. From the sounding and position at Latitude $6^{\circ} 14'$ N. run West true to Longitude $83^{\circ} 30'$ West, spacing soundings about eighteen miles apart to Longitude $81^{\circ} 55'$ W. then 30 miles apart

to a position and sounding at Longitude $83^{\circ} 30'$ West.

7. From the position and sounding at Longitude $83^{\circ} 30'$ West, Latitude $6^{\circ} 14'$ N., endeavor to make good a 296° course passing Eastward of Sorocco Island to a position in Longitude $116^{\circ} 30'$, Latitude $21^{\circ} 30'$ N. spacing soundings forty miles apart.

8. From the soundings and position at Longitude $116^{\circ} 30'$ West, Latitude $21^{\circ} 30'$ N. endeavor to make good a 345° course to a position in the vicinity of Longitude $118^{\circ} 45'$ W., Latitude $29^{\circ} 25'$ thence direct to San Diego, spacing soundings 40 miles apart.

9. The foregoing is an outline of the track over which soundings are desired. In case it is found impracticable to carry out the schedule through stress of weather, lack of coal, or other sufficient causes you are authorized to space the soundings at greater intervals, take additional soundings where shoals are encountered or abandon the track outlined.

10. In connection with the work outlined above approximate values for currents along your route by means of dead reckoning and frequent astronomical observations should be obtained.

11. A careful record of the meteorological conditions, engine revolutions, fuel consumption, compass adjustment, patent log corrections and other data obtained during the voyage should be kept and transmitted to the office upon reaching San Francisco.

12. It is also desired that your track be plotted on a chart together with the soundings, forwarding the chart to this office upon your arrival at San Diego.

R. L. Paris.
Acting Superintendent.

NIGHT ORDERS.

October 9th to October 10th.

Continue on 120 deg. steering compass course. Check steering and standard compasses once every hour. Have barometer and thermometer read every hour. Read patent log every hour. At 12.00 midnight, o/c to 130 steering compass. Call me if fog sets in or if weather sets in bad.

(sgd.)

T. J. MAHER.

October 10th to October 11th.

Continue on 190 course at speed not to exceed 10.5 knots. Call me at any time if necessary. Position to be made good is shown on chart and is lettered C.

(sgd.)

T. J. MAHER.

GLB.

CTB.

October 11th to October 12th.

Continue on course 175 deg. steering compass. Each officer will enter in the log the position of the ship at the end of his watch. Call me at any time if necessary.

(sgd.)

T. J. MAHER.

GLB.

CTB.

October 12th to October 13th.

Course to be made good - south true along meridian 72 : 26. Compass course is 175 deg. If too much allowance for leeway change course to make 180 true good. If change greater than 10 deg. is made call me. Call me if the weather thickens, if line does not plot right, or at any time if necessary.

(sgd.)

T. J. MAHER.

At one o'clock change course to 180 steering compass.

GLB.

CTB.

4. Watches were arranged as follows:

T. J. Maher, - C. O. and E. E. Irwin, Surgeon. 8 to 12.
G. L. Bean, - Wm. M. Scaife. 12 to 4.
C. T. Bussell, - Executive Officer and L. W. Burdette. 4 to 8.

Under this arrangement the senior watch officer could leave a junior officer on watch while he worked up his sights. During my watch at night, I always had the Boatswain on the bridge when I left it to attend to the sounding machine, or work up sights.

5. Weather conditions. - Weather conditions were good. Moonlight prevailed, so night sights were possible. During the first few days Mr. Bussell did not furnish many positions, being under the impression that as he was not navigating officer it was not necessary for him to do so.

6. Plotting. - G. L. Bean used the old Sumner method. I used the Haver sine method. Red lines are position lines plotted according to observation. Yellow lines are position lines carried forward for run. Black circles are the positions of soundings, according to observed positions. When observations were not taken at the immediate time of the sounding, correction for current and wind were made when it was apparent that the effect of these was perceptible. Blue lines indicate dead reckoning courses; blue circles dead reckoning positions.

7. Computations. - The computations have not been checked. The positions taken by myself and Mr. Bean are in such shape as to be used by the office. Mr. Bussell has not gotten his position computations into shape for office use. It is not feasible to delay the work until these are ready, as other hydrographic work will be taken up, causing an accumulation which will delay other work. Some changes may be made in the position lines when his computations are submitted, but it is not believed that the changes will be material.

8. Run from sounding # 1 to # 2 disclosed few, if any, features of interest. A position midway furnishes a new point from which dead reckoning is to be carried. The run from sounding # 2 to sounding # 3 shows an unusual feature: at 8 a.m., sun position, sun east, moon position, moon west, show the ship to be 20 miles west of the dead reckoning position and about 25 miles west of the D. R. position, if allowance were made for current. The weather was calm. An unusual set, entirely local, as its existence is unsupported by observations elsewhere, bad steering, or the compass sticking may have caused it. The course was continued until I verified the position. From the position of sounding three as determined by observation, the dead reckoning was carried back. No unusual set was noted. The discrepancy between the 8 a.m. position carried forward and that carried back is not accounted for.

9. Sounding # 3 to Sounding # 4. From position # 3 plot dead reckoning course as per dead reckoning tabulation. Stopped to sound at 8.15, lead struck bottom at 8.56 p.m. This is the time to be used for the position of the sounding. Position lines determined from observations on Formalhaut, Polaris, Moon, and Altair. The intersection of Formalhaut and the Moon, agreeing closely with the dead reckoning, is used. A correction of .3 kt. per hour, N 50 E set, from time of sounding to time of position line is applied.

10. Sounding # 4 to Sounding # 5. A discrepancy similar to that existing between soundings 2 and 3 is noted. Three sets of positions were taken during the night. The course passing through these is shown in green. The dead reckoning course is shown in blue. About 8.10 a.m. I took sights on the sun - east - and on the moon - west. All errors due to refraction, eccentricity, and dip were thus eliminated. The course was changed. The two sights were carried along to intersect a 9.59 a.m. sight. The meridian altitude sight must be given considerable weight. The 9.59 a.m. position carried forward and the meridian altitude with a correction for an assumed current, .4kt. N, 40 E. determine the position. An unusual, heavy set appears to have been experienced during 5 to 8 a.m. The evidence in support of this is not sufficient to give it consideration, and it can only be thought of as something infrequent and momentary.

11. Sounding # 5 to # 6. Nothing unusual was noted. The difference between the dead reckoning positions and the observed positions indicate a slight N E by N ly set of .2 to .4 kt per hour.

12. Sounding # 6 to # 7. The difference between dead reckoning and observed positions indicate a westerly set of about .8 kt. per hour. Few intermediate positions are available to determine the accuracy of this. On account of bad steering, even though an unusual set was observed on two preceding occasions, it was necessary to use caution in attributing the difference to current.

13. Sounding # 7 to # 8. Nothing unusual is noted. A sight on Polaris at 11.56 p.m. agrees with a 7.07 p.m. sight on the same star. It indicates a set, one component of which is southerly; the other is undetermined. The most likely position is chosen.

14. Sounding # 8 to # 9. Polaris sight, 11.56 p.m. carried back to 7.07 p.m. indicated a southerly set. The other component of this set was not determined. The dead reckoning position of sounding 8 compared with its observed position does not verify the assumption that the set existed. Intermediate sights are too infrequent and do not agree well. The position taken for the sounding is shown on the sheet. The method used in deriving it is explained in the notes on the sheet.

15. The wind had considerable effect on the ship. On Oct. 11, 2 p.m. while aft at the sounding machine I had a current pole lowered over the side. It drifted N E. .5 knot per hour. The wind was ESE - force 1 - 2.

U. S. S. Sialia.
October, 1919.

Report. - Deep Sea Hydrography.

Cape Henry to Bahama Id.

Instructions dated Sept. 11, 1919.

Copy attached.

Officers: - T. J. Maher, H. & G. Engr. Commanding.
C. T. Bussell, Jr. H. & G. Engr. Executive Off.
G. L. Bean, Jr. H. & G. Engr.
Wm. M. Scaife) Deck Officers.
L. W. Burdette)
F. L. Chamberlin, Chief Engineer.
E. E. Irwin, Surgeon.

Time used - 60th Meridian.

Apparatus:

Str. Sialia. - Sigsbee Deep Sea Sounding Machine.
Piano wire. - 50 lb. shot. - Sigsbee Detaching Rod, and
Nigrette and Tandra Deep Sea Thermometer.

1. The Sigsbee machine is of the familiar type mounted on the stern. The dynamometer was mounted on the taffrail to which it was secured by a railing of two tiers of piping. This secured the dynamometer and also protected the men at the machine, making it impossible for a man to fall overboard. The original sheave casing or sliding panel, was removed and another substituted for it. This was so constructed as to take a Ballauf sheave, which is direct reading, requiring no correction for the amount of wire on the reel. The Sigsbee registering sheave was used as a check. About 30,000 fathoms of piano wire and 125 fifty pound shot were taken along. The wire was spliced with a long splice of few turns, the ends of the wire for about 1" were closely turned, as in electrical connections. The whole was then soldered.

2. On October 9th the ship was swung in Chesapeake Bay. Compasses were adjusted. It was cloudy during a greater part of the day, this caused considerable delay. The compasses were properly adjusted and the errors reduced, but a swing for residuals could not be made with the accuracy desired.

3. On October 9th at 6.20 p.m. Cape Henry Light was passed. At 12 noon, October 10th the ship was stopped for the first sounding. With the exception of the petty officers, none of the crew were seamen. Few, if any, ever handled a wheel; the steering was wild. The difference between dead reckoning positions and positions by observation can not be considered as due to current. None of the officers on board was familiar with deep sea sounding; none was familiar with the apparatus. About 8000 fathoms of wire were lost; this is more than the usual loss during an entire season.

16. None of the computations have been checked. None of the plotted positions have been checked. Note on the plotting sheet, the use of different colored inks, a copy of the logs covering the time engaged in sounding are submitted. These will assist whoever checks this computation. In giving weight to the different position lines, the log should be consulted for the notes on the weather conditions prevailing at the time. 50th Meridian time was used; this should be noted when twilight sights are considered. The time from 4 to 8 p.m. is the best for obtaining positions, 8 to 12 p.m. and 12 to 4 a.m. the poorest. Moon horizons are often times good, but never as good as daylight horizons.

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