



2434-2435-2436
2437

Dept. No. 77-1

U. S. COAST AND GEODETIC SURVEY.

Henry S. Pritchett, Superintendent.

State: *Md.*

DESCRIPTIVE REPORT.

Hydrographic Sheets Nos

	2434
	2435
	2436
	2437

LOCALITY:

Chesapeake Bay

1899.

CHIEF OF PARTY:

C. C. Yates

2434-2435-2436

2437

2436

Diag. Chart. No. 77-1

Department of Commerce and Labor
COAST AND GEODETIC SURVEY

H. S. Pritchett
Superintendent.

State: *Md*

DESCRIPTIVE REPORT.

Hyd. C Sheet No. *2436*

LOCALITY:

See

2434

1899
190

CHIEF OF PARTY:

C C Yates

2436

2437

Disq. Chart. No. 77-1

Department of Commerce and Labor
COAST AND GEODETIC SURVEY

H. S. Pritchett
Superintendent.

State: *Md*

DESCRIPTIVE REPORT.

Hyd^c Sheet No *2437*

LOCALITY:

See

2434

1899
190

CHIEF OF PARTY:

C. C. Yates

2437

W 106.

1

MAR. - 3. 1900. 03809

U.S. Coast and Geodetic Survey.
Henry S. Pritchett, Superintendent.

Descriptive Report
of
Hydrographic Sheets
of

- Bush River No 2437
- Romney Creek " 2436
- Middle Sassafas River " 2434
- Upper Sassafas River " 2435

Chesapeake Bay.

Maryland.

Chief of Party
Assistant Charles C. Yates

Steamer "Endeavor."

1899.
?

(Copy)

Office of the Coast and Geodetic Survey,
Washington, D.C.,
June 28th, 1899.

Instructions.

Capt. C. C. Yates,
Comdg. U. S. C. & G. S. S. Endeavor,
Baltimore, Md.

Sir:

As soon after the receipt of these instructions as practicable you
will please take up the hydrographic survey of Bush River, Md.

x x x x x x x x x

Yours respectfully
(Signed) Henry S. Pritchett
Superintendent.

(Copy)

Office of the Coast and Geodetic Survey,
Washington, D.C.
July 17, 1899.

Orders.

Capt. C. C. Yates,
U. S. C. & G. S. S. Endeavor
Baltimore, Md.

Sir:

You are hereby temporarily relieved of the command of the
U. S. C. & G. S. S. Endeavor, which you will turn over to Capt. John Ross,

x x x .

Yours respectfully,
(Signed) D. H. Tittmann
Acting Superintendent.

(Copy)

Office of the Coast and Geodetic Survey,
 Washington, D.C.
 July 17, 1899.

Instructions.

Capt. C. C. Yates,
 U. S. C. & G. S. S. Endeavor,
 Baltimore, Md.

Sir:

After you have transferred the command of the "Endeavor" to Capt. John Ross, you will please continue the work on Bush River. Mr. Hugh C. Hutellall, Aid, will be attached to your party.

Capt. Ross has been directed to turn over to you the launch of the "Endeavor" together with a crew comprising a coxswain, machinist, and a leadsmen.

* * * * *
 Yours respectfully,
 (Signed) O. H. Tittmann
 Acting Superintendent.

(Copy)

Office of the Coast and Geodetic Survey,
Washington, D.C.
August 18, 1899.

Instructions.

Captain C. C. Yates,
Assistant, Coast and Geodetic Survey,
Perryman, Ind.

Sir:

Before leaving Bush river you will please complete the hydrography of Romney creek of which a tracing has been sent you under another cover. The topography will doubtless be sufficient guide to you for completing the work on this stream. Topographic sheets covering this area were sent to Mr. Bowie whose address is Havre de Grace, and it may be best for you to write him for a tracing of the shore line and such adjacent objects as you may require in the development. The shoreline on tracing sent you is from the survey of 1845.

Yours respectfully,
(Signed) O. H. Tittmann
Acting Superintendent,

(Copy)

Office of the Coast and Geodetic Survey
Washington, D.C.

August 29, 1899.

Instructions.

Captain C. C. Gates,
U. S. Coast and Geodetic Survey,
Perryman, Ind.

Sir:

You will please resume command of the Steamer "Endeavor" at Baltimore, Ind., on Thursday, August 31st, 1899, relieving Captain John Ross, now in command.

Yours respectfully,
(Signed) O. H. Tittmann,
Acting Superintendent.

(Copy)

Office of the Coast and Geodetic Survey,
Washington, D.C.

September 1, 1899.

Instructions.

Captain C. C. Gates,
U. S. C. & G. S. Endeavor,
Baltimore, Ind.

Sir:

As soon as you have completed the work on Bush river and Rouney creek you will please proceed with the Endeavor to Sassafras river and continue the hydrographic work from the point where Mr. Marinier left to the head of the stream. You will, however, before beginning the work report to me on the existing data and means for economically finishing the work, and whether by co-operation with Mr. Nelson a triangulation or shore line which may be necessary can be furnished you.

Yours respectfully,
(Signed) O. H. Tittmann
Acting Superintendent.

Instructions from the Inspector of Hydrography and Topography.

Besides the preceding instructions, frequent verbal instructions and much valuable advice were received from Captain H. G. Ogden the Inspector of Hydrography and Topography.

Organization

Personnel:

Name	Rank	Occupation	Attached To Party	Detached from Party
⊕ Charles C. Yates	Asst. C & G. Survey	Chief of Party and Observer	May 9, 1898	-----
⊕ H. C. Mitchell	Aid C & G. Survey	Executive and Observer	May 28, 1899	Dec. 1899
⊕ W ^m Bauman Jr.	Chief Yeo. U.S.N.	Drumheadman and Observer	July 18, 1898	-----
* M. F. Flannery	Chief Incl. U.S.N.	Chief Engineer	Dec. - 1898	-----
* A. C. L. Roeth	Yeo. 2 ^d cl. U.S.N.	Recorder and In charge of accounts	May 10, 1898	-----
* D. B. Wainwright Jr.	Yeo 2 ^d cl. U.S.N.	Observer and Recorder	Dec. 23, 1898	-----
* C. E. Terry	Yeo 2 ^d cl. U.S.N.	Recorder	Aug. 29, 1898	Aug. 1, 1899
⊕ A. H. Blackiston	Recorder C & G. Survey	Recorder	July 18, 1899	Aug 31, 1899
* Ole Andersen	Carp. Mate 2 ^d cl. U.S.N.	Deck Officer	-----	1884 -----

In addition to the above officers the number of persons in the party were as follows:

On Bush River and Romney Creek Survey (Shore party)

3 Petty officers U.S.N. living forward.

2 Seamen U.S.C. & G.S. " "

Total average number of persons in party = 9

On Sassafrao River Surveys (Steamer party)

5 Petty officers U.S.N. living forward.

15 Enlisted men " " "

Total average number of persons in party = 27

⊕ Separated from Steamer "Endeavor" and on "shore party" from July 22 to August 31, 1899.

* With Steamer "Endeavor" in Long Island Sound with Coast Pilot party from July 22 to August 31, 1899

☐ Missing forward.

Equipment:On Bush River and Romney Creek Surveys (Shore Party):

Oil launch N^o 30
1 skiff

On Sassafras River Surveys (Steamer Party)

Steamer "Endeavor" and Outfit
Oil launch N^o 30
1 whaleboat
2 dinghys

Location of SurveyDescription:

Bush River survey (Sheet N^o 2437) includes the river and tributaries from its mouth to the Pennsylvania Railway bridge.

Romney Creek survey (Sheet N^o 2436) includes the upper end of the creek.

Middle Sassafras River survey (Sheet N^o 2434) covers the tributaries and a portion of the main body of the river from Ordinary Point to the mouth of Back Creek.

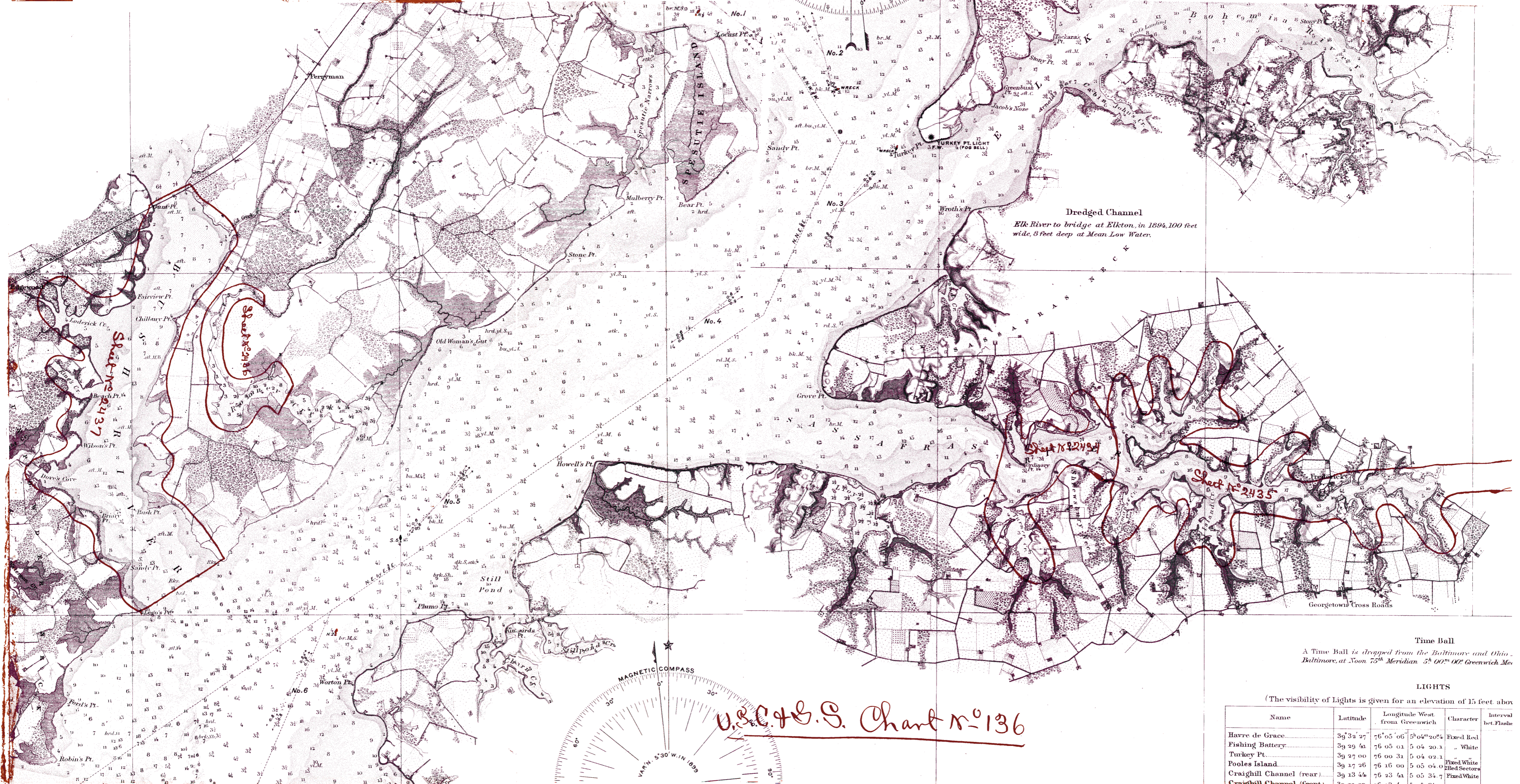
Upper Sassafras River survey (Sheet N^o 2435) includes the river and tributaries from the mouth of Back Creek to the head of the river.

Sketch:

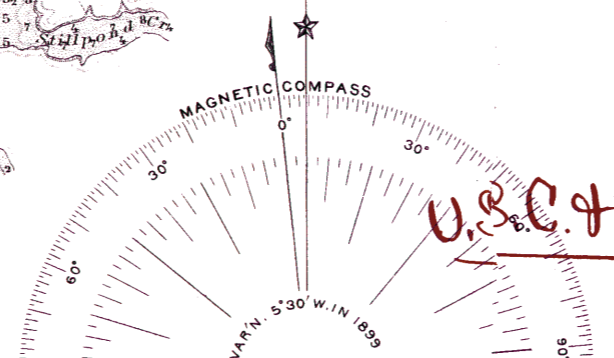
The general location of these surveys are shown by the areas inclosed by red lines on the following section of the U. S. C. & G. S. Chart No. 136.

Section of Chart N^o 136
showing
Location of Surveys

(See next page)



Dredged Channel
Elk River to bridge at Elkton, in 1894, 100 feet wide, 8 feet deep at Mean Low Water.



U.S.C. & G.S. Chart No. 136

Time Ball
A Time Ball is dropped from the Baltimore and Ohio - Baltimore, at Noon 75th Meridian 5^h 00^m 00^s Greenwich Me.

LIGHTS
(The visibility of Lights is given for an elevation of 15 feet above)

Name	Latitude	Longitude West from Greenwich	Character	Interval bet. Flashes
Havre de Grace	39° 32' 27"	76° 05' 06"	5 ^h 04 ^m 20 ^s 4	Fixed Red
Fishing Battery	39 29 41	76 05 01	5 04 20.1	White
Turkey Pt.	39 27 00	76 00 31	5 04 02.1	Fixed White
Pooles Island	39 17 26	76 16 00	5 05 04.0	2 Red Sectors
Craighill Channel (rear)	39 13 44	76 23 43	5 05 34.7	Fixed White
Craighill Channel (front)	39 22 22	76 22 42	5 05 34.7	Fixed White

Projections.

Sheets:

All of the sheets covered by this report are on the scale $\frac{1}{10000}$ (or $\frac{1}{20000}$) and, with the exception of the Bush River sheet, all of the projections were made and verified on board the Endeavor. (Romney Creek sheet on scale $\frac{1}{20000}$)

The Bush River sheet was furnished by the Office as was also a sheet of Sassafras River. The latter projection however was arranged poorly and the names of the stations were large and projected into the water space. It was decided, therefore, to make a new one, on board.

Stations:

With two or three exceptions, no stations other than those left by the topographic surveys, were obtainable on any of these sheets.

On Bush River, the location of all the stations were verified by plotting theodolite angles taken at every station.

On Romney Creek, there were no stations and the shoreline was used altogether for the location of soundings.

On the main body of the Middle Sassafras River sheet, I believe Assistant Flower used stations located by triangulation.

On the Upper Sassafras River, no stations were used, but the topographic stations taken from Assistant Nelson's sheet. In addition to the topographic stations on this river, a number of others were established by our party by sextant triangulation, in fact, our hydrography at the head of the river was carried about one-half a mile beyond the end of the shoreline on Assistant Nelson's sheet.

Shoreline:

The shoreline of all these sheets was transferred by Mr. W^m Bauman Jr., the "Endeavor's" draughtsman, from the original sheets of recent topographic surveys by Assistants Hodgkins, Nelson and Bowie.

The shoreline was transferred with great precision as it was known that a large portion of the soundings would depend upon it for their true location. In the case of the Sassafras River, the original topographic sheet was on $\frac{1}{20000}$ scale and therefore it was necessary to enlarge it to the $\frac{1}{10000}$ scale of the hydrographic projection.

Signals

A large number of medium size signals were required on this work. Most of them were about 12' high and consisted of a 3" x 4" center pole braced by 2" x 4" and surmounted by, what is called, a whitewashed "cage".

No trouble was experienced in seeing these signals.

The lumber was obtained in Baltimore.

At the end of the season's work, all of the signals on Bush River were taken down in order that they might not interfere with the sport of the duck hunters who abound in this locality in the Fall and Spring and who last season, blamed the Survey's signals for their poor luck, marksmanship, bad weather, etc. or whatever it might be that kept them from "killing" ducks.

Scheme

Bush River:

Transverse lines every 200 metres, longitudinal lines every 300 metres with such additional development as special localities demanded.

Romney Creek:

Zigzag lines according to the special features of the shoreline.

Middle Sassafras River:

In the main body, the scheme adopted by Assistant Flower was the same as the Bush River scheme. In the creeks (especially Turner's Creek where there is considerable navigation,) the lines were run very close together by the Endeavor's party but the location of the ends of all the creek lines depended on special features of the shoreline.

Upper Sassafras River:

In view of the proposed canal along this river from Chesapeake Bay to Delaware Bay and in accordance with special verbal instructions from the Inspector of Hydrography and Topography this portion of the River was surveyed in great detail, as follows:

Transverse lines every 150 metres, longitudinal every 300 metres and three continuous lines along each side and down the center of the main channel.

Smooth Plotting.

Positions :

The positions were all plotted, numbered, and inked in in their proper colors, as usual. No special difficulty was experienced in the plotting except in some of the Sassafras River creeks, where it is thought that some of the positions will have to be adjusted by the soundings.

Soundings:

Soundings were plotted according to the following schedule:

7 to 4 fathoms to the nearest $\frac{1}{4}$ foot.

" 10 " " " " $\frac{1}{2}$ "

All soundings were plotted in pencil and examined for indications of necessary additional development.

In Bush River, it is thought, that there still remains a number of spots that should receive additional development. Several abrupt changes of a fathom were discovered and although they are probably the result of a mistake of a new recorder and a new officer in charge of the boat, they will require special examination.

A boat sheet showing the additional development, planned for the "Endeavor's" party, was turned in with the smooth sheet of Bush River.

With exception of some "crossings" in the creeks, all of the Sassafras River soundings stood examination without the discovery of any apparent errors.

Contours.

No contours were drawn; as they only add to the confusion and dirt of a mass of pencil figures which require the greatest care, in handling the sheet, to keep legible.

Aids to Navigation.

There were no lighthouses, buoys, or any other aids to navigation located in the area covered by the four sheets.

Commerce

Bush River and Romney Creek:

No commerce in this section other than that of small sailing vessels (drawing from 2 to 6 feet) engaged in fishing and carrying of small supplies to and from the farms.

Sassafras River:

The commerce of this river is large for the Upper Chesapeake Bay. At Betterton, at the mouth of the river (during the season) four and five steamers stop twice a day on their way to and from Baltimore. Two of these steamers run the year around.

At Turner's Creek and Shallcross wharf, further up the river, (during the season) three steamers stop twice a day on their trips to and from Baltimore. One of these steamers runs all the year around.

A number of other wharves from Shallcross to Georgetown (during the season) have two daily steamers stopping twice a day and one steamer the year around.

From Georgetown to the head of the river, there are several places where a steamer frequently calls for freight.

The steamers running into the Sassafras River have a draft of 5 to 9 feet.

The drawbridge at Georgetown is very well looked after and as a rule there is very little delay in getting it opened for vessels desiring to pass.

Title and Statistics of Sheet N^o 2434.

U. S. Coast and Geodetic Survey
Henry S. Pritchett, Superintendent.

Hydrography
 Chesapeake Bay.
Maryland

Sassafras River.
 From Ordinary Point to mouth of Back Creek.

Chiefs of Parties

Assistant Charles C. Yates U. S. C. & G. S.
 Assistant G. L. Flower U. S. C. & G. S.

Steamer "Endeavor".
November 6 to 8, 1899.

Schooner "Eagle"
November 14 to 16, 1898

Scale $\frac{1}{10000}$

Statute Miles.

Nautical Miles.

Observers.

Sid H. C. Mitchell U. S. C. & G. S.
 Chief Yeoman W^m B. Proctor U. S. N.

*

* See Assistant Flower's records for the other observers

Recorders.

Yeoman D. B. Wainwright, U.S.N.

*

Leadsman.Boatswain Mate O. F. Andersen, U.S.N. Quartermasters
Olaf Johnson *Tide Observers

Seaman Sven Oleson

*

Statistics

Date	Letter	Number of				Vessel
		Volume	Angles	Soundings	Miles	
November 14, 1898	(Blue) a	I	224	767	10.5	Eagles' whaleboat
" 15, "	b	I	184	686	8.8	" "
" 16, "	c	I & II	234	817	9.2	" "
" 6, 1899	(Green) e	II		35	0.33	Endeavor's whaleboat
" 7, "	f	II	31	1022	6.5	" "
" 8, "	g	II & III	10	767	5.0	" "
Total	6	4	683	4094	40.33	

Number of \square geographical miles surveyed = 1.8 miles

* See Assistant Flowers records for the other recorders etc.

List of Sheets, Records, etc. relating to Sheet No 2434.

By Assistant Charles C. Yates, Chief of Party:

Vols. II and III - Original soundings - whaleboat -

Note: [These two volumes also contain soundings]
[relating to sheet No 2435.]

Vol I - Original - Tides - Georgetown
" I - " - " - Turner's Creek.

No duplicates or fair journals of the above records - By permission of the Superintendent.

1 { Smooth hydrographic sheet - All complete except the inking in of soundings and title.

1 Descriptive Report.

By Assistant S. R. Flower, Chief of Party:

Vols I and II - Original soundings - whaleboat.

Also, probably, some tide records and fair journals of soundings.

1 { Boat sheet - To be kept temporarily with smooth sheet until verified at Office and then to be destroyed.

Title and Statistics of Sheet No 2435

U.S. Coast and Geodetic Survey
Henry S. Pritchett, Superintendent.

Hydrography
Chesapeake Bay.
Maryland.

Sassafraus River
From Back Creek to head of river.

Chief of Party

Assistant Charles C. Yates U. S. C. & G. S.

Steamer "Endeavor"

Began October 14, 1899.
Ended November 27, 1899.

Scale 10000

Statute Miles

Nautical Miles

Observers

Assistant Charles C. Yates U.S.C. & G.S., Aid H. C. Mitchell U.S.C. & G.S. Yeoman D. B. Wainwright U.S.N.

Recorders.

Yeomen A. C. L. Koeth and D. B. Wainwright U.S.N.

Leadmen.

Boatswain Mate O. F. Andersen U.S.N. Quartermaster Olaf Johnson, U.S.N.

Coxswains.

Quartermasters Olaf Johnson and T. Nelson U. S. N.

Tide Observers.

Seaman Sven Olsson, U. S. N.

Statistics

Date 1899.		Letter	Number of				Vessel
			Volume	Angles	Soundings	Miles	
October	14	(Blue) a	I	80	344	2.1	Oil Launch
"	18	b	I	124	721	4.6	"
"	19	c	I	215	963	6.1	"
"	20	d	II	78	367	2.6	"
"	21	e	II	222	886	5.1	"
"	23	f	II	128	480	3.0	"
November	4	g	III	86	400	3.2	"
"	6	h	III	56	235	2.0	"
"	10	i	III IV	662	1809	13.2	"
"	14	k	IV	96	399	2.4	"
"	15	l	IV	92	442	2.2	"
"	16	m	IV	58	208	1.3	"
"	25	n	IV	150	596	4.3	"
October	23	(Green) a	I	---	416	3.0	Whaleboat
"	24	b	I	4	1103	7.3	"
"	25	c	I II	---	617	6.0	"
"	26	d	II	3	536	4.0	"
November	6	e	II	---	35	.3	"
"	7	f	II	31	1022	6.5	"
"	8	g	II III	10	767	5.0	"
"	9	h	III	---	681	5.2	"
"	11	i	III	---	398	3.0	"
"	14	k	IV	66	238	1.6	"
"	16	l	IV	76	285	2.4	"
"	17	m	III IV	46	753	5.9	"
"	18	n	IV	42	571	3.9	"
"	20	o	IV V	22	656	2.7	"
"	21	p	V	75	386	2.9	"
"	22	q	V	8	237	1.0	"
"	24	r	V	7	390	1.0	"
"	27	s	V	78	252	1.3	"
Total		31	9	2515	17193	115.1	

Number of \square geographical miles surveyed = 4.5 (approx)

List of sheets, records, etc., relating to Sheet No. 2435.

5 vols - original soundings - whaleboat

Note [Vols II and III of the above also contain soundings]
[relating to Sheet No. 2434]

4 vols - original soundings - Launch.

1 " " angles.

1 " " tides - Georgetown

1 " " " - Shallcross

1 " " " - Raisin's

1 " " " - Wilson's

By permission of the Superintendent, no duplicates were made of the above records

1 { Smooth hydrographic sheet - all complete except the inking in
of soundings and title.

1 Descriptive Report.

Title and Statistics of Sheet No 2436

U.S. Coast and Geodetic Survey
Henry S. Pritchett, Superintendent.

Hydrography
 Chesapeake Bay.
Maryland.

Upper End.
 of
Romney Creek.

Chief of Party

Assistant Charles C. Yates, U.S.C. & G.S.

Steamer "Endeavor".

Began August 29, 1899.
 Ended August 31, 1899.

Scale $\frac{1}{20000}$

Statute Miles

Nautical Miles

Observers.

Aid H.C. Mitchell U.S.C. & G.S.

Recorders

Recorder A.H. Blackiston U.S.C. & G.S.

Leadsman

Quartermaster Olaf Johnson U.S.N.

Tide Observers

Seamen Thorwald Andersen and Ferd Turner U.S.C. & G.S.

Statistics

Date	1899.	Letter	Number of				Vessel
			Volume	Angles	Soundings	Miles	
August	29	(Green) a.	I	—	418	4.0	Whaleboat.
"	30	b.	I	—	390	2.8	"
"	31	c.	I	—	172	1.3	"
Total		3	I	—	980	8.1	

Number of \square geographical miles surveyed = 0.8 miles

List of sheets, records, etc. relating to Sheet No. 2436.

- 1 vol. - original soundings - whaleboat
 - 1 " " tides - Romney Creek
 - 1 " " " - Poole Island Light House.
 - 1 " duplicate soundings - whaleboat
 - 1 " " tides - Romney Creek
 - 1 " " " - Poole Island Light House.

 - 1 { Smooth hydrographic sheet - all complete except the
linking in of soundings and title.

 - 2 { Tracings - To be kept temporarily with smooth sheet
until verified at Office and then to be destroyed.

 - 1 - Descriptive Report.
-

Title and Statistics of Sheet No. 2437.

U.S. Coast and Geodetic Survey.
Henry S. Pritchett Superintendent.

Hydrography.
Chesapeake Bay.
Maryland.

Bush River.
From mouth to railway bridge.

Chief of Party.

Assistant Charles C. Yates, U.S.C. & G.S.

Steamer "Endeavor".

Began July 12, 1899.
Ended August 31, 1899.

Scale 10000

Statute Miles

Nautical Miles.

Observers.

Assistant Charles C. Yates U.S.C. & G.S. Aid H. C. Mitchell U.S.C. & G.S. Chief Yeoman
Wm. Bauman, Jr., U.S.N. Yeoman D. B. Wainwright, Jr. U.S.N.

Recorders.

Yeoman A. C. L. Roth, U.S.N. Recorder A. H. Blackiston, U.S.C. & G.S.

Leadsmen.

Quartermasters O. F. Andersen and Olaf Johnson, U.S.N.

Coxswain.

Quartermaster Thomas Nelson, U. S. N.

Tide Observers.

Seamen H. D. Beir, U. S. N. Thorwald Andersen, U. S. C. & G. S. Ferd Towler, U. S. C. & G. S.

Statistics.

Date	1899	Letter	Number of				Vessel.
			Volume	Angles	Soundings	Miles	
July	12	(Blow) a	I	90	342	5.1	Oil Launch
"	13	b	II	136	525	7.6	" "
"	14	c	I	206	750	11.7	" "
"	15	d	II	108	394	6.9	" "
"	27	e	I	110	431	6.3	" "
"	28	f	II	216	808	12.4	" "
"	29	g	III	106	386	5.8	" "
"	31	h	III	188	691	9.5	" "
August	1	i	III	138	497	7.4	" "
"	12	k	IV	48	168	2.6	" "
"	23	l	IV	188	312	4.7	" "
"	25	m	IV	66	176	1.8	" "
"	3	(Saw) a	I	99	547	5.0	Whaleboat
"	5	b	I	5	483	2.8	"
"	9	c	I	35	592	4.4	"
"	11	d	I+II	44	516	3.3	"
"	12	e	II	50	298	2.9	"
"	14	f	II	38	153	2.8	"
"	15	g	II	61	240	2.4	"
"	16	h	II	16	50	0.3	"
"	17	i	II	100	385	3.3	"
"	21	k	II	64	291	2.2	"
"	22	l	II	122	429	3.3	"
"	26	m	III	10	56	0.5	"
"	31	n	III	49	233	1.9	"
Total		25	7	2293	9753	116.9	

Number of \square geographical miles surveyed = 6.9

List of sheets, records, etc. relating to Sheet No. 2437.

- 4 vols. - original soundings - launch.
 3 " " " - whaleboat
 1 " " tides - Towner's Landing - Bush River.
 1 " " " - Poole Island Light House.
 1 " " angles - Theodolite and sextant.
 3 " - duplicate soundings - launch.
 2 " " " - whaleboat.
 1 " " tides - Towner's Landing - Bush River.
 1 " " " - Poole Island Light House.
 1 " " angles - Theodolite and sextant.
- 1 { Smooth hydrographic sheet - all complete except the inking in of soundings and title.
1. { Boat hydrographic sheet - To be kept temporarily with smooth sheet until verified at Office and then destroyed.
- 1 - Descriptive Report.
-

Statistics of Field Work executed by Charles C. Gates, Asst. U.S.C. & G.S.

* Date and place of beginning field work Bush River, Ind. July 12, 1899
Date and place of closing field work Sassafras River, Ind. November 27, 1899

RECONNAISSANCE:

Area of, in square statute miles
Lines of intervisibility determined as per sketch submitted
Number of points selected for scheme

BASE LINES:

Primary, length of
Secondary, length of
Beach measurements, length of
Number of days employed in measurements of base
Number of days employed in remeasurements

TRIANGULATION:

Area of, in square statute miles
Signal poles erected, number of
Observing tripods and scaffolds built, number of
Observing tripods and scaffolds built, heights of
Days occupied in opening and verifying lines of sight, number of
Stations occupied for horizontal measures, number of
Stations occupied for vertical measures, number of
Geographical positions determined, number of
Elevations determined trigonometrically, number of

GEODETIC LEVELING:

Elevations determined by spirit-leveling of precision, number of
Lines of geodetic leveling, length of

LATITUDE, LONGITUDE, AND AZIMUTH WORK:

Latitude stations occupied, number of
Pairs of stars observed for latitude, number of
Average number of observations on a pair
Longitude stations, telegraphic, number of
Longitude stations, telegraphic, number of nights on which signals were exchanged
Longitude stations, chronometric, etc., number of
Azimuth stations, number of
Number of nights of observations for azimuth
Number of stars observed for azimuth

* [From September 8th to 30th on laying off of Speed Trial Course off Cape Charles City for U.S. Navy Department.]

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