

4939

4940

4940

Diog. Ch. No. 1000 & 1219-2 & 1220

Form 504

U. S. COAST AND GEODETIC SURVEY  
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey *Hydrographic*  
Field No. *4939* Office No. *4940*

LOCALITY

State *Md & Del*  
General locality *Coast of*  
Locality *Maryland & Delaware*

1929

CHIEF OF PARTY

*G. C. Mathison*

LIBRARY & ARCHIVES

DATE

4939

4939 4940

C. & G. SURVEY  
L & A  
DEC 21 1929  
Arc. No.

4940  
4939

Form 504  
Ed. June, 1928

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY  
R. S. Patton *Director*

State: Md. & Del.

DESCRIPTIVE REPORT

Topographic } Sheet No. 2 & 3  
Hydrographic } 4939  
4940

LOCALITY

Coast of Maryland & Delaware

Off Fenwick Island Light Vessel

19.29.

CHIEF OF PARTY

G. C. Mattison

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DESCRIPTIVE REPORT  
to accompany

HYDROGRAPHIC SHEET # 4039 and # 4040

(FIELD # 2 & 3)

AUTHORITY:

Instructions from the Director dated July 1, 1929.

LIMITS:

Sheet # 2 extends from Lat. 38 - 34, Long. 74 - ~~90~~<sup>40</sup> to Lat. 38 - 34, Long. 74 - 24 on the northward to a junction with sheet # 3 and sheet 4094 on the eastward to a line bearing 118° T from Fenwick Island Lightship on the southward to a overlap with sheet # 1 on the westward.

Sheet # 3 joins sheet # 2 on the westward, fills in the split on sheet # 4094 required in the instructions on the northward, extends to ten miles beyond the hundred fathom curve on the eastward, and to a line bearing 118° T from a point three miles south of Fenwick Island Light Vessel on the southward.

METHODS:

Dead reckoning methods were used on both sheets.

Two offshore buoys were located from runs beginning and closing on the inshore buoys and sheet # 3 controlled from these except for one line which closed on Fenwick Island Light Vessel.

The average closing for runs on sheet # 2 was 0.40 miles. This is equal to an error of 0.018 miles per mile of dead reckoning which was slightly better than the Florida work.

The average error on sheet # 3 was 0.031 miles per mile of dead reckoning, the error on the short runs being 0.013 miles per mile and on the long runs 0.045 miles per mile.

METHODS - FIELD DETAILS:

COURSES:

The ship was swung every 15 degrees for compass deviations on July 31, using sun azimuths. The values obtained were used for all the work on both sheets.

Variation was obtained from charts of the working grounds. Isogonic lines were interpolated for every tenth of a degree and are shown on the boat sheet.

The compass courses were obtained by reading the standard compass every 15 seconds for buoy locations and every minute for sounding runs, averaging the readings to obtain the final course, and carrying the results to tenths of degrees.

DISTANCE (LOG):

The distance used was that determined by the mean of two logs one streamed on either quarter. These were read at fifteen minute intervals and at positions.

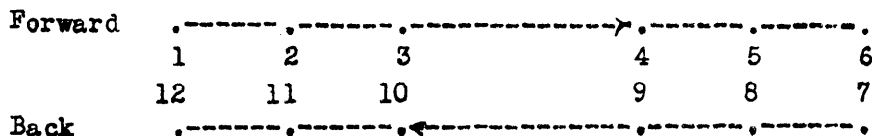
The log registers were placed on the wings of the bridge where they could be easily read. The rotors were streamed about two hundred feet astern of the taffrail. This arrangement was satisfactory except in a heavy beam wind when the line would blow against the ship's side and tend to chafe off.

On turns, a box or float of some sort was thrown overboard and when the ship had steadied on the new course and the logs were functioning properly a vertical angle and bearing were taken to it. This gave the correct relative distance and bearing of the first position to the second. The few times that this method was not used the distance shown by the log around the turn and the average course were taken.

The logs were rated at the beginning and at the end of the season. The values obtained on the first test were used throught the season as the second test showed practically the same results. The values obtained are shown in the table below.

Date test	Factors	
	# 191	# 193
August 10	0.961	0.937
November 3	0.954	0.930

For log rating tests the ship ran parallel to the beach close inshore where signals could be easily seen and strong fixes obtained. Positions were taken and logs read at each point indicated in the diagram. The runs were combined by averaging 1 - 4, 2 - 5, and 3 - 6, for the forward run and 7 - 10, 8 - 11, and 9 - 12 for the backward.



An equation was written for each run and both solved simultaneously to eliminate current. For obtaining the true distance between positions the fixes were plotted on an aluminum sheet and the distances scaled. The test was repeated three times giving three factors. The average was taken for the factor used in computations. Log tests are recorded and factors computed in the position record.

CURRENTS:

Current observations were made inshore and at some of the stations at the twenty fathom curve by anchoring the ship, measuring the strength of the current by means of a pole and line - the pole having a depth equal to the draft of the ship - and its direction by means of a bearing on the pole.

Offshore observations were made in the following manner: a buoy was dropped and after it had brought up on its scope a current pole was dropped near it. The ship then drifted taking vertical angles and bearings on the pole and buoy. Their correct position relative to the ship were then plotted on polar coordinate paper, distances scaled, directions obtained, and currents computed. Computations were made to hundredths of miles.

WIND:

At anchor the true direction and velocity of the wind were obtained. Underway the true direction and apparent velocity were obtained and corrected for course and speed of the ship to find the true velocity. An automatic anemometer record was also kept.

MISCELLANEOUS:

There was no opportunity to obtain many bearings. About half of those taken were obviously in error.

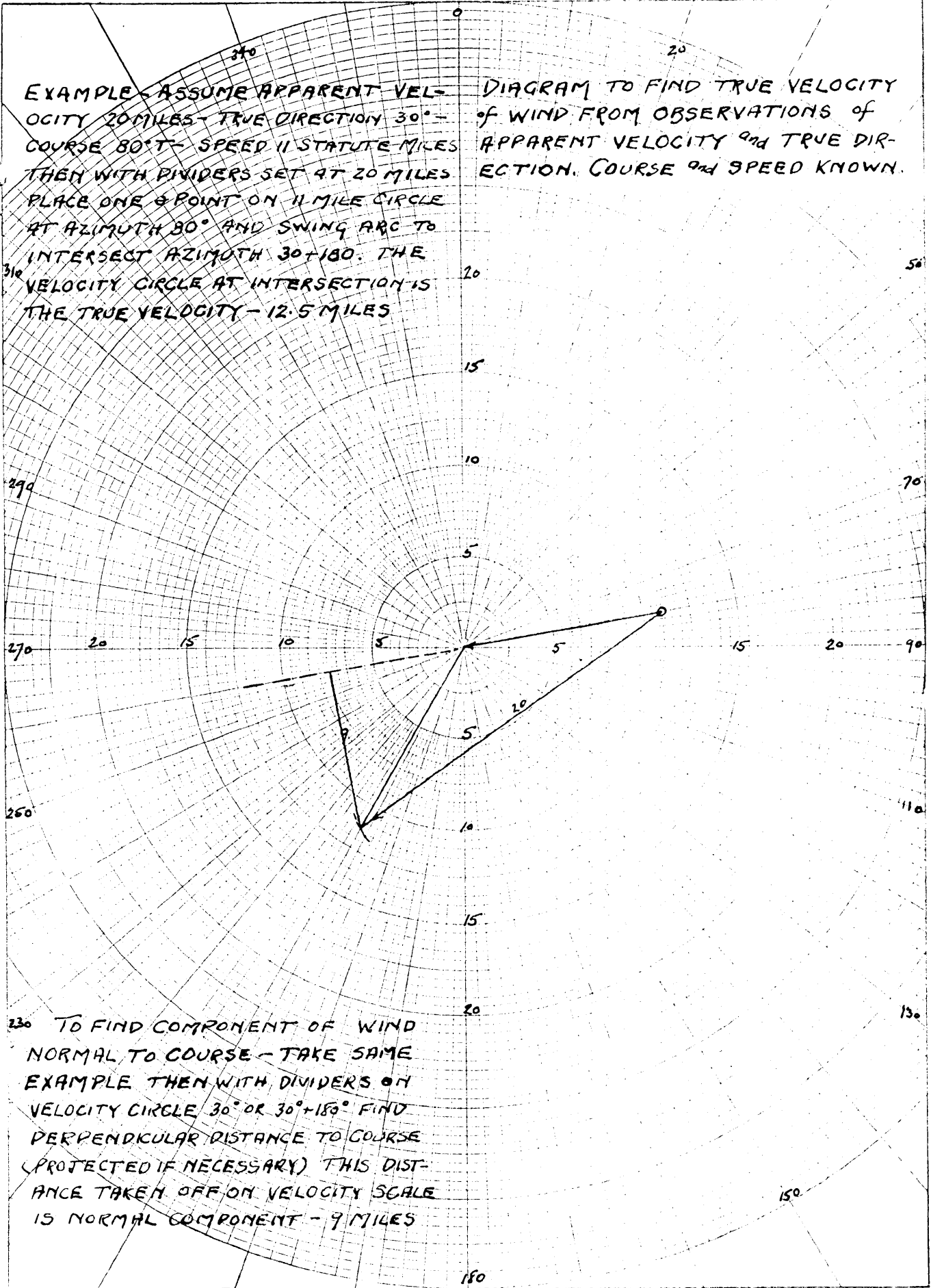
No sun sights were taken as the only long run offshore was made on a day when the horizon was poor.

At anchor, <sup>ages</sup> marker buoys consisting of a five gallon gasoline tin with flag attached for a float, six thread line for anchor line, and scrap iron for anchor were used to keep positions. The buoy was dropped over the stern as the logs were read, the ship ran past a short distance to clear the buoy with the logs and anchored. If a survey buoy were planted in the vicinity it was located by a vertical angle and bearing on the marker which was corrected for scope if necessary. Departures for the return run were taken from these buoys. They were also used in current observations where the ship did not anchor.

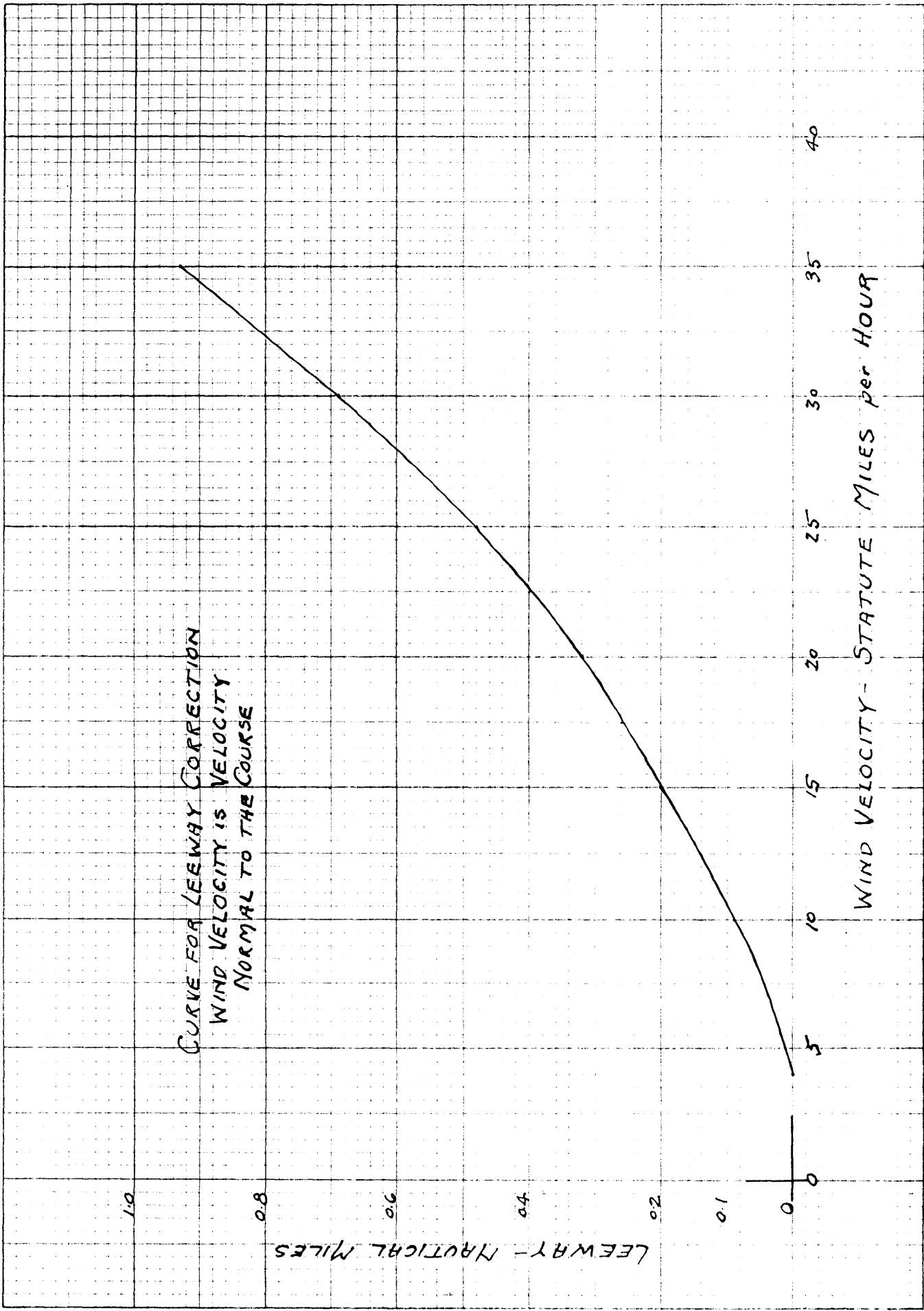
On sheet #3 a steel drum with standard wire for anchor line and a car coupling for anchor was used for a marker buoy and given a scope 1:3. Five fathoms less than two thirds of the wire was wound around the drum, three 2 x 4's were placed at equal intervals around it - the drum - and the remainder of the wire wrapped outside of the 2 x 4's. These were put on so that the anchor would not go down too quickly and it was intended that they should drop off after the anchor hit bottom. However the current encountered was so small that the wire beneath the 2 x 4's was not payed out. This simplified matters somewhat as no correction for scope was necessary. This type of buoy was dropped over the stern in similiar fashion to the lighter buoy used on Sheet # 2.

EXAMPLE - ASSUME APPARENT VELOCITY 20 MILES - TRUE DIRECTION  $30^\circ$  - COURSE  $80^\circ$  - SPEED 11 STATUTE MILES THEN WITH DIVIDERS SET AT 20 MILES PLACE ONE POINT ON 11 MILE CIRCLE AT AZIMUTH  $30^\circ$  AND SWING ARC TO INTERSECT AZIMUTH  $30^\circ + 180^\circ$ . THE VELOCITY CIRCLE AT INTERSECTION IS THE TRUE VELOCITY - 12.5 MILES

DIAGRAM TO FIND TRUE VELOCITY OF WIND FROM OBSERVATIONS OF APPARENT VELOCITY AND TRUE DIRECTION. COURSE AND SPEED KNOWN.



230 TO FIND COMPONENT OF WIND NORMAL TO COURSE - TAKE SAME EXAMPLE THEN WITH DIVIDERS ON VELOCITY CIRCLE  $30^\circ$  OR  $30^\circ + 180^\circ$  FIND PERPENDICULAR DISTANCE TO COURSE (PROJECTED IF NECESSARY) THIS DISTANCE TAKEN OFF ON VELOCITY SCALE IS NORMAL COMPONENT - 9 MILES



RECORDS:

The record was kept in two volumes both being sounding records with the headings changed. One record, the position record, was kept on the bridge and contains, the log readings, wind observations, current observations, bearings, log tests and all other data relative to plotting the sheet. The second record, the sounding record was kept in the radio room where the fathometer is located and contains the fathometer soundings, standard compass readings, serial temperatures, and salinity observations.

Position numbers are shown in both records, A bell was rung on the bridge at the exact time of the position, and the time noted in both records, the position record showing the time by the bridge clock and the sounding record showing the time by the fathometer clock. The clocks usually agreed within ten seconds. A correction for time was necessary in plotting soundings on sheet # 2 but not on sheet # 3 as the scale was so small that ten seconds would not show up.

METHODS-PLOTTING THE SHEET:

Runs were abstracted on form 612 which was modified slightly to permit the showing of two logs, the adjustment for closure, and any arbitrary corrections made. On the back of each form is explained any unusual detail of plotting.

Courses were plotted to parallel rulers which had been tested for accuracy. Compass courses, variation and deviation were all applied in degrees and tenths and true courses plotted to tenths.

Log factors were carried to three decimal places. Distances were carried to hundredths of miles and plotted with beam compass or dividers.

Current was applied at each change of course. Time on course was taken out to tenths of hours and currents computed and plotted to hundredths of miles. Where the course was changed between current observations a straight line interpolation was assumed. The current encountered was rotary and a clockwise rotation assumed in all cases.

Leeway was applied normal to the course. This was taken to tenths of miles and corrections computed and plotted to hundredths of miles. For corrections a value of two-tenths of a mile for a velocity of fifteen miles and zero for a velocity of four miles normal to the course were assumed. With these two points a theoretical course was constructed by proportioning intermediate values to a course of wind pressures taken from Bowditch - see diagram.

No corrections for scope was necessary in most cases.

Closure was adjusted in proportion to time in all cases.

The line was adjusted to bearings where these were available.

In plotting soundings, log distances were plotted and shown with a



Sheet # 5.

blue dot. Soundings were plotted on time between log readings taking the time shown in the sounding record as correct.

DISCREPANCIES AND CROSSINGS:

SHEET # 2.

The lines cross in but few places on the sheet and these check either exactly or within a fathom.

This sheet overlaps Sheet # 1 considerably but as the <sup>SOUNDINGS</sup> soundings were not plotted on Sheet # 1 no comparison could be made.

SHEET # 3.

The lines cross in only two places, one of which checks exactly and the other checks within a fathom.

The junction of the sheet with Sheet # 2 is good.

COMPARISONS WITH PREVIOUS SURVEYS:

SHEET # 2.

The sheet was compared with sheet # 4094. The following differences were noted - the twenty fathom curve on sheet # 2 is from one half to three miles to the eastward of the twenty fathom curve shown on sheet # 4094, the depths on corresponding points in the two sheets are from one to three fathoms shoaler on sheet # 2 than on sheet # 4094, a shoal of large extent with a least depth of 16 fathoms and general depths of 18 to 19 fathoms lying outside of the twenty fathom curve is shown on sheet # 2 and there is but slight indication of it on sheet # 4094.

SHEET # 3.

This sheet was compared with sheet # 4094 and the following differences noted - the hundred fathom curve is from 3.5 to 4 miles east of the hundred fathom curve shown on # 4094 and the shoal to the eastward of the hundred fathom curve is about the same amount out of position.

A shoal with a least depth of 19 fathoms not previously shown is located in Lat. 38 - 29, Long. 80 - 18.

RECOMMENDATIONS:

As this season's work was done at full speed and no troublesome corrections due to slip of log at slow speed and to stopping for vertical casts were necessary, it is recommended that this work be accepted over the old work.

FATHOMETER:

The fathometer was working well during the season. The red light was used to two hundred fathoms and the white light beyond it. All observers were experienced on the red light and none on the white.

Corrections were made for salinity and temperature to one hundred fathoms and as the corrections beyond was less than one percent none was applied. Index correction was applied where necessary although the greater correction

Sheet # 6.

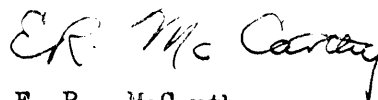
used was four feet.

Slope correction was applied to a large number of the soundings on "C" Day - Sheet # 3. The greatest correction from this source was 27 fathoms.

MISCELLANEOUS:

Soundings were taken in fathoms and half fathoms, reducers and corrections were entered in feet, soundings reduced to feet and plotted in fathoms. This is in accordance with the hydrographic manual.

Respectfully submitted,



E. R. McCarthy,  
Jr. H. & G. Engr.

Forwarded approved,



G. C. Mattison,  
H. & G. Engr.

Date	Day	STATISTICS		SHEET # 2 Soundings	Positions
		Volume	Mileage		
Aug. 24	A	1 - 2	37.7	226	13
25	B	1 - 2	38.4	200	15
26	C	1 - 2	39.0	196	21
Sept. 4	D	1 - 2	76.2	330	18
5	E	1 - 2	23.0	193	16
6	F	1 - 2	44.6	145	23
7	G	1 - 2	<u>21.9</u>	<u>100</u>	<u>9</u>
			280.8	1380	121

REMARKS:

11 Serial temperatures

Area surveyed 221.0 Square statute miles.

STATISTICS  
to accompany  
SHEET #  
(Field # 3)

Day	Date	Volume	Mileage	Soundings	Positions	Boat
A	9-5-29	Sdgs. #2. Pos. #1	67.4	182	6	Ship
B	9-6-29	"	30.7	114	8	Ship
C	9-10-29	"	<u>133.0</u>	<u>325</u>	<u>19</u>	Ship
Totals			231.1	621	33	

Remarks:

3 Serial temperatures

Area surveyed      287.0      Square statute miles

Positions of the inshore survey buoys are tabulated for convenience. These were taken from the records for Sheet # 1 except for  $\odot$  Ear, which was taken from the records for Sheet # 2.

Buoy	Latitude	Meters	Longitude	Meters
Arb <sup>t</sup>	38-34	+788	74-44	+670
Boy	38-32	-430	74-44	-92
Cat	38-30	-1572	74-44	-760
Dog	38-26	+480	74-44	-1336
Egg	38-24	-272	74-44	-580
Ear	38-24	-388	74-44	-786
Fox	38-22	+292	74-44	+396

Positions of the offshore buoys were scaled from sheet # 2. Position of Fenwick Island Light Vessel was plotted on sheet # 2.

Able	38-20	-1318	74-24	-108
Boaz	38-32	-1232	74-24	+1112
Fenwick Id.L.V.	38-26	-1272	74-46	+24

TIDAL NOTES  
to accompany  
SHEETS # 2 & # 3.

The portable tide gauge established July 24, 1929 on Ocean City Pier, was used for the reduction of soundings for the entire sheet.

Latitude                    38 - 19'.8

Longitude                  75 - 05'.3

Highest tide obtained - Sept. 1 - 17.8Hr.    6.3  
Lowest tide obtained - Sept. 4 - 1.8 Hr.    0.4

MEMORANDUM TO ACCOMPANY HYDROGRAPHIC SHEETS

NOS. 2 & 3

The field and office work on these sheets was done under constant supervision of the Chief of Party.

It is recommended that further developments be done in the vicinity of the 100 fathom curve in order that the curve may be better defined.

*GE Mettman*

ECM

REPORT FOR FILES OF FIELD RECORDS SECTION

January 11, 1930

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in  
3 volumes of sounding records for

HYDROGRAPHIC SHEET 4940

Locality: Maryland and Delaware (Off Fenwick Island)

Chief of Party: G. C. Mattison in 1929  
Plane of reference is mean low water, reading  
1.5 ft. on tide staff at Ocean City, Maryland  
~~1.5 ft. below B. M.~~

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 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.

Paul C. Whitney

Chief, Division of Tides and Currents.



January 11, 1930

Division of Hydrography and Topography:

Division of Hydrography and Topography:

These records were approved in  
Washington for sounding records for

HYDROGRAPHIC SHEET 4330

Locality: Maryland and Delaware (Off Fenwick Island)

Chief of Party: S. G. Mattison, in 1929  
Plane of reference is mean low water, reading  
17.5 ft. on tide staff at Ocean City, Md  
ft. below B. M.  
~~at Ocean City, Md~~

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 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.

Paul G. [unclear]

Chief, Division of Tides and Currents.

Report on H 4939

Chief of Party - G.C. Mattison

Surveyed by - G.C. Mattison, E.A. Deily, H.S. Paton and  
E.R. McCarthy.

Protected by E.R. McCarthy

Soundings penciled by E.R. McCarthy

Verified and inked by John S. Ladd.

1. The records conform to the requirements of the general instructions.
2. The plan and character of development fulfill the requirements of the general instructions.
3. What few sounding line there were, checked satisfactory.
4. The usual depth curves could be drawn.
5. The field plotting was complete to the extent prescribed in the general instructions.
6. No part of the work had to be

(cont.) done over by the office draftsman

9. Junction with adjacent sheet was not studied as all the current adjacent sheets are <sup>still</sup> incomplete. (in pencil only) at this time.

10. The character and scope of the surveying was excellent and the field drafting was very well done. The log positions being very accurately plotted and the spacing of the sounding carefully done between the log positions.

11. The penciled field sheet was in fathoms and it was necessary to ink in the sounding in feet. This caused slower ~~and more~~ ~~confusing~~ inking than would have been had it been done in fathoms. The soundings were reduced in feet in the volume.

Feb 4, 1930

John S. Ladd,  
jr. Civil Eng.

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

WASHINGTON

August 26, 1930.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4939

Off Fenwick Island Light Vessel, Maryland and Delaware

Surveyed in 1929

Instructions dated July 1, 1929 (Lydonia)

Fathometer soundings

Chief of Party, G. C. Mattison.

Surveyed by G. C. Mattison, E. A. Deilly, H. S. Paton, E. R. McCarthy.

Dead Reckoning lines plotted by E. R. McCarthy.

Verified by W. F. Malnate. (In field)

Soundings plotted by E. R. McCarthy.

Verified and inked by J. G. Ladd.

1. The records conform to the requirements.
2. The plan and extent of the survey conform to the requirements of the general and specific instructions, except that there are quite a number of fathometer soundings in depths under 13 fathoms.
3. The soundings lines cross at only two points on this sheet. They check well at these places.
4. The information is sufficient for drawing the 20 fathom curve.
5. The junction on the east with H. 4940 is satisfactory. The junction on the west with H. 4944 is also satisfactory but H. 4944 has not been verified at this time. The overlap is quite large and comparison with the penciled soundings shows very good agreement.
  - a. The soundings from this sheet, H. 4939, should be transferred to H. 4944 when that sheet is completed.
6. Comparison with H. 4094, surveyed in 1919 and 1920 shows considerable difference in the 20 fathom curve and differences of from one to three fathoms in depth in some places. As the depths on this sheet (H. 4939) are shoaler, the development more complete and the method of surveying probably

improved, it is recommended that this sheet within its limits supersede H. 4094.

7. The usual amount of field plotting was apparently well done by the field party except that the soundings were expressed in fathoms and had to be changed to feet. As the plotting of the dead reckoning lines had been checked in the field, they were accepted as plotted on the sheet by the field party.
8. Character and scope of surveying -- apparently very good.
  - a. It is noted that no vertical casts were obtained while lines were being run and therefore no bottom characteristics are available. Vertical casts were made before and after each days work.
9. No additional work is recommended.
10. Attention is called to the numerous gaps of one-half to one mile in the sounding lines due to the ten minute interval specified in the hydrographic manual.
- 11 Reviewed by R. L. Johnston, February 18, 1930.

Approved:

  
\_\_\_\_\_  
Chief, Section of Field Records (CHARTS)

  
\_\_\_\_\_  
Chief, Section of Field Work (H. & T.)

Feb. 6, 1930

Section of Field Records  
Report on Hydrographic Sheet No 4940  
Coast of Maryland and Delaware - Offshore  
Surveyed in 1929  
Instructions dated July 1, 1929

Chief of Party - G. C. Mattison  
Surveyed by - G. C. M., E. A. Derby, H. A. Paton, E. R. McCarthy  
Protracted and soundings plotted by - W. F. Malnate  
Verified and inked - J. J. Jarman

1. The records conform to the requirements of the General Instructions.
2. The plan and character of the development fulfill the requirements of the General Instructions.
3. The information is not sufficient for drawing the depth curves. The curves have been left in pencil where their existence is doubtful.
4. The field plotting was completed to the extent prescribed in the General Instructions.
5. The sounding line crossings are adequate.

6. The junction with H 4939 is  
good.

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

October 14, 1930.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4940

Off Fenwick Island Light Vessel, Md. and Del.

Surveyed in 1929

Instructions dated July 1, 1929 (LYDONIA)

Chief of Party, G. C. Mattison

Surveyed by G. C. M. and field party

Protracted and soundings plotted by W. F. Malnate

Verified and inked by J. T. Jarman

1. The work on this sheet is not complete, the party having discontinued work for the purpose of making R. A. R. tests.
2. Comparison with H. 4094 and Recommendations

This is the only matter of importance that need be considered in the disposition of the new survey. There is a difference in position of approximately 4 miles between the new work and the old work, with the new work falling farther offshore. As the new work utilized more precise methods, it is, doubtless, more accurate and should supersede the old work. However, since the new work fails to develop sufficiently the submarine valley shown on the old survey in the vicinity of the 100 fathom curve and since this is the most important navigational feature on the entire sheet, it is recommended that the charting of this sheet be deferred until the entire area is completed. Otherwise an adjustment would have to be made of the old soundings to the new location which might be further complicated by the later work. *(It might be practicable to revise H. 4094) amo.*

3. The junction with H. 4939 has been considered in the review of that sheet.



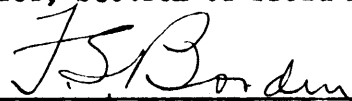
4. Additional work

The area in the vicinity of the submarine valley should be fully developed. Owing to the 4 mile differences between corresponding depths on the two surveys, it is recommended that additional work be done on the new survey to make the spacing of lines conform to the requirements of the specific instructions, disregarding entirely the sounding lines on H. 4094.

5. Reviewed by A. L. Shalowitz, October, 1930.

Approved:

  
\_\_\_\_\_  
Chief, Section of Field Records (Charts)

  
\_\_\_\_\_  
Chief, Section of Field Work (H. & T.)

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

C. & G. SURVEY  
L. & A.  
DEC 21 1929  
Acc. No.

REG. NO. 4939

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. 2

REGISTER NO. 4939

State MARYLAND & DELAWARE

General locality Delaware-Maryland Boundary

Locality OFF FENWICK ID. LIGHT VESSEL

Scale 1:40,000 Date of survey Aug. 24 to Sept. 9, 1929

Vessel LYDONIA

Chief of Party G. C. MATTISON

Surveyed by G. C. MATTISON, E. A. DELLY, H. S. PATON, E. R. McCARTHY

Protracted by E. R. McCARTHY

Soundings penciled by E. R. McCARTHY

Soundings in fathoms feet

Plane of reference MEAN LOW WATER

Subdivision of wire dragged areas by

Inked by John G. Ladd

Positions Verified by W. F. MALNATE John G. Ladd

Instructions dated July 1, 19 29

Remarks: DEAD RECKONING SHEET - PLOTTING VERIFIED IN FIELD

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

C. & G. SURVEY  
L & A  
DEC 21 1929  
Acc. No.

REG. NO.  
4940

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. 3

REGISTER NO. **4940**

State MARYLAND & DELAWARE

General locality Delaware-Maryland Boundary

Locality OFF FENWICK ISLAND LIGHT VESSEL

Scale 1:120,000 Date of survey Sept. 5 - 10, 19 29

Vessel LYDONIA

Chief of Party G. C. MATTISON

Surveyed by G. C. MATTISON, E. A. DEILY, H. A. PATON, E. R. MCCARTHY

Protracted by W. F. MALNATE

Soundings penciled by W. F. MALNATE

Soundings in fathoms feet

Plane of reference MEAN LOW WATER

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

Inked by \_\_\_\_\_

Positions Verified by E. R. MCCARTHY

Instructions dated July 1, 1929

Remarks: DEAD RECKONING SHEET - PLOTTING VERIFIED IN FIELD

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. -4940

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

Number of positions on sheet 33 (*Dead Reckoning*)  
Number of positions checked *Checked in field*  
Number of <sup>logs</sup> positions revised . . 2 .  
Number of soundings recorded . 421 .  
Number of soundings revised . 31 .  
Number of signals erroneously  
plotted or transferred . . *None* .

Date: - Feb 4, 1930 - - - - -

Cartographer: - *James J. Garman* - -