7750

Diag. Cht. No. 1222-3

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. PBS-4148 *Office No.* H-7750

LOCALITY

State VIRGINIA

General locality CHESAPEAKE BAY

Locality LOWER CHESAPEAKE BAY

194 8-49-50

CHIEF OF PARTY

A.C.Thorson, G.R.Fish, & R.H.Tryon,Jr.

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DATE MARCH 26, 1951

B-1870-1 (1)

7750

Form 537
(Ed. June 1946)

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

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.

REGISTER No. H-7750

Field No. PBS-4148

State Virginia

General locality Chesapeake Bay

Locality Lower Chesapeake Bay

Scale 1:40,000 Date of survey 17 June 1948 to 14 Nov. 1949 & 17 April 1950

Instructions dated 26 July 1948

Vessel Parker, Bowen & Stirni

Chief of party A.C. Thorson, G.R. Fish & R.H. Tryon, Jr.

Surveyed by Ship's Officers

Soundings taken by ~~fathometer~~, graphic recorder, hand lead, ~~wire~~

Fathograms scaled by Ships Personnel

Fathograms checked by " "

Protracted by H.J. Thompson & W.W. Feazel

Soundings penciled by A. Kaupa

Soundings in ~~fathoms~~ feet at MLW ~~MLLW~~ and are true depths

REMARKS:

U. S. GOVERNMENT PRINTING OFFICE 777032

DESCRIPTIVE REPORT
TO ACCOMPANY

HYDROGRAPHIC SURVEY H-7750
(Field No. PBS - H-4148)

Chiefs of Party
A. C. Thorson
G. R. Fish
R. H. Tryon, Jr.

Ships PARKER, BOWEN, STIRNI
Surveyed in 1948, 1949, 1950
Scale 1:40,000

A. PROJECT

This survey was executed under Instructions from the Director for Project CS-326, dated 26 July 1948, addressed to the Commanding Officer, Ships PARKER, BOWEN, STIRNI. This survey is complete. The advance Descriptive Report submitted after the 1948 season is incorporated throughout this report as are all previous and present special reports, and this Descriptive Report is complete in itself.

B. LIMITS AND DATES

In general this survey covers the area originally laid out for hydrography in Project CS-326, with the exception of some unfinished areas in the northeast and northwest and the inshore areas covered by contemporary or recent sheets.

On the northeastern edge junction is with prior survey H-3658, scale 20,000, date 1914. An inshore sheet to complete this area is contemplated. From Latitude 37° 11' 00" southward to Latitude 37° 04' 30" junction is made with contemporary sheet H-7791 (PBS-H-1249) scale 1:10,000, date 1949. Inner Middle Ground Shoal was developed on H-7791 (PBS-H-1249). Southward along Longitude 75° 58' junction is with ~~H-4193, scale 1:40,000, date 1921; H-4926, scale 1:20,000, date 1929;~~ and H-6595, scale 1:40,000, date 1940.

See Review par. 4

On the southeastern edge junction is made with contemporary surveys H-7703(PBS-H-1148) scale 1:10,000, date 1948 and H-7721 (PBS-H-1248), scale 1:10,000, date 1949.

On the southern edge junction is made with prior surveys H-6962 (1:20,000, 1944); H-7089 (1:10,000, 1946); H-7090 (1:20,000, 1946); and H-7024 (1:5,000, 1944-45).

Westward from Little Creek, junction is made with contemporary surveys H-7783 (PBS-H-1348, 1:10,000, 1948-49 and H-7824(PBS-H-1448, 1:10,000, incomplete). On the west edge junction is made with prior survey H-7171 (1:10,000, 1947) and contemporary survey H-7823 (PBS-H-1149, 1:10,000, 1949). North and west ofLatitude 37° 07' 30" Longitude 76° 12' 00" work is contemplated but not yet begun. Junction in this area is made with prior surveys FE-2, 1945, scale 1:10,000 and H-4039 (1:30,000, 1918-19). In the vicinity of Latitude 37° 10', Longitude 76° 09' junction is made with prior surveys FE-5, 1948, scale 1:20,000

This survey supersedes, in the areas covered, H-3658, H-3923 (1:30,000, 1916-17), H-4038 (1:40,000, 1918), H-4039, H-4040, (1:20,000, 1919), H-4193, H-4926, H-4927 (1:20,000, 1929) and supplements, H-6595, H-6962, H-7024, H-7089, H-7090, H-7171, FE-2, 1945 and FE-5, 1948.

Progress on this sheet has been slow because the Wire Drag Investigations assigned this party have been of first priority. Wire Drag operations have been performed during the fair-weather working season and hydrography has been completed on the occasional good days when Wire Dragging was suspended.

During 1948 work was accomplished between 17 June and 28 October. During 1949 work was accomplished between 18 April and 31 May

and between 12 October and 14 November.

C. VESSELS AND EQUIPMENT

The hydrography was accomplished by the Ships PARKER, BOWEN, STIRNI. Portable depth recorders Nos. 65, 116-S, 118-S, and 120-S (type 808) were used. (See attached special report "Fathometer Corrections").

D. TIDE AND CURRENT STATIONS

For the 1948 season tide reducers were furnished by the Washinton Office for specified areas upon request.

For the 1949 season the Washington Office furnished the actual hourly heights observed at the primary tide station at N.O.B., Hampton Roads, Va. The area surveyed was divided into quadrants with the correct time and range differences furnished by the Washington Office. (See attached Tide Report).

No current stations were occupied.

E. BOAT SHEET

The boat sheets PBS-4148 a, b, and c were constructed in the Washington Office on the projection ruling machine. Shoreline was partly drawn by the Washington Office. Additional shoreline was added by the field party, using tracings from topographic sheets Nos. T-8176, -8181, -8182, -8183, -8301, -8302, -8303, -8314, and T-8315. (1942-45)

Control and shoran distance circles were plotted on the boat sheet by personnel of the field party.

F. CONTROL STATIONS

Visual hydrography was controlled by twenty-five triangulation stations, supplemented by four hydrographic and nine topographic stations as listed on the next page.

LIST OF STATIONS ON SHEET H- 7750 (PBS-H-4148)

NAME USED ON HYDROGRAPHIC SURVEY	ORIGIN OF STATION
BAKE	BAKE, 1947
BLUFF [1]	PBS-C-49 and PBS-D-49
CAST	CAST, 1947
CAT [2]	PBS-H-1448 (Northwest Searchlight Tower), Topographic
CHARLES	CAPE CHARLES NEW LIGHTHOUSE (VA) 1887, 1932
CUP	CAVALIER HOTEL, CUPOLA 1929
DIO	RADIO TRANSMITTING TOWER, 1941
DOG [2]	PBS-H-1448 (Southeast Searchlight Tower), Topographic
FOX [3]	FOX HILL MUNICIPAL WATER TANK, 1939, 1943
GIB [1]	PBS-D-49
GRANITE "B"	GRANITE "B" (USE) 1939
HEN	CAPE HENRY LIGHTHOUSE, 1887, 1932
JETTY	JETTY, 1939
LIT	LITTLE CREEK, 1929, 1939
LOW [1]	PBS-C-49
LYN [4]	BRIDGE COUNTERBALANCE, Northly of 2 (Topography by S. E. District Office, 6-20-44)
MATE	CASEMATE, (USE) 1939
MINE	MINE, 1948
MOORE	MOORE, 1943
NEW	NEW POINT COMFORT LIGHTHOUSE, 1871, 1932
NITE	GRANITE TOWER "C" (USE) 1939
OLD	OLD PLANTATION FLATS LIGHTHOUSE 2, 1939
PA_	CAPE CHARLES, PENN. R. R. SHOP, STACK, 1939
PHEB	PHOEBUS, 1938
PLY	PBS-H-1348 (Topographic)
RIE	Hydrographic Location, See Vol. 1 Index
RED	HYGEIA INN, 1929
SHE [1]	PBS-D-49
SHED	PBS-WD-4148 (Hydrographic)
STACK [4]	(Topography by S. E. District Office, 6-20-44)
TRANS	TRANSMISSION TOWER, 1942
THIM	THIMBLE SHOAL LIGHTHOUSE, 1919, 1944
TOW -	Hydrographic Location, See Vol. 1 Index
TOW	TOW, 1947 (Not same as TOW above)
TREE	Hydrographic Location, See Vol. 1 Index
WISE "C"	Triangulation from S. E. District Office
WOLF	WOLFTRAP LIGHTHOUSE (VA) 1898, 1932
YORK	YORK SPIT LIGHTHOUSE (VA) 1900, 1932

1. These stations were originally hydrographic locations and were plotted and used for control as such (see index, vol. 1) Topographic location should be used on smooth sheet.

2. Positions follow;

CAT (Latitude 36° 59' +385.5 m, Longitude 76° 18' +250.5 m) *Located by tape and transit traverse from triangulation station.*

DOG (Latitude 36° 59' +293.3 m, Longitude 76° 18' +35.5 m) *Ditto*

3. Probably the same as SILVER TANK, FINIAL, 1947

4. Topographic locations by the S. E. District Office, 6-20-44

LYN (Lat. 36° 54' +841.0 m Long. 76° 05' +875.0 m)

STACK (Lat. 36° 54' +1162.0 m Long. 76° 08' +972.0 m)

LIST OF SIGNALS

To Accompany

HYDROGRAPHIC SURVEY H-7750 (PBS-4148)

(1948-49-50)

TRIANGULATION STATIONS

CHARLES	CAPE CHARLES, NEW LIGHTHOUSE, 1887-1932
CUP	CAVALIER HOTEL, CUPOLA, 1929
DIO	RADIO TRANSMITTING TOWER, 1941
FOX	FOX HILL, MUNICIPAL WATER TANK, 1939
HEN	CAPE HENRY LIGHTHOUSE, 1882-1943
LIT	LITTLE CREEK, 1929-39
MATE	CASEMATE (USE) 1939
MINE	MINE, 1948
MOORE	MOORE, 1943-47
NEW	NEW POINT COMFORT L.H. 1871-1932
OLD	OLD PLANTATION FLATS LIGHTHOUSE 2, 1939-42
PA	CAPE CHARLES, PENN. R.R. SHOP, STACK, 1939-42
PHEB	PHOEBUS, WATERWORKS TANK, 1938
RED	HYGEIA INN, 1929
THIM	THIMBLE SHOAL L.H. 1919-44
TRANS	TRANSMISSION TOWER, 1942
YORK	YORK SPIT L.H., 1900-32
JETTY	JETTY, 1929
WOLF	WOLF TRAP L.H., 1898-1932
LOOK	LITTLE CREEK, COAST GUARD TOWER, 1941
WEST	CHAMBERLAIN-VANDERBILT HOTEL, WEST TOWER, 1932
TOW	TOW, 1947
BAKE	BAKE, 1947
CAST	CAST, 1947

TOPOGRAPHIC STATIONS

Source T-7074 a&b

SHE GIB BLUFF LOW

Source H-7783 (1948)

PLY ? center pole of airplane ride

Source Form 524, P.C.W. (1944)

STACK ? LYN

Source Form 524, G.R.F. (1949)

CAT DOG

HYDROGRAPHIC STATIONS

SHED (Source H-7677 WD, 1948) ? (center of shed)

TREE RIE (Source, see index Vol. #1)

[redacted]

The following stations are classified and are shown on the hydrographic sheet by their hydrographic names:

HYDRO NAME	STATION NAME
WISE	WISE, P.C. TOWER C
TOW	SCR-296, UNIT 10 (Given topo accuracy by F.P.)
NITE	GRANITE, TOWER C, (USE), 1939

Shoran hydrography was executed on the eastern limits of this sheet by the Ships PARKER and BOWEN. This hydrography was controlled by shoran shore stations, located at triangulation station MINE, 1948, and CAPE HENRY LIGHTHOUSE, 1887, 1932. The distance circles from these stations are drawn in ~~red~~ blue ink ~~respectively.~~

G. SHORELINE AND TOPOGRAPHY

This is an offshore survey. For a discussion of the topographic detail, see the descriptive reports of the inshore, launch sheets. Review part I

H. SOUNDINGS

Soundings were taken with Submarine Signal Company, type 808-A and 808-J depth recorders adjusted for a speed of sound of 820 fathoms per second.

Standard practices were followed in taking bar checks to obtain the echo corrections. (See attached report, "Fathometer Corrections"). Part of report filed with fgms.

The shoal sounding recorded between positions 74 and 75 K (PARKER) was developed on AR day (PARKER) with negative results. It is probably a stray.

The shoal sounding recorded between positions 144 and 145 S (PARKER) was developed on AM day (PARKER) with negative results. The sounding is probably ~~an obstruction~~ a stray or school of fish.

Special development and investigation was made in the vicinity of ~~each~~ shoal soundings within the area as listed on the Preliminary Review of 14 July 1948 with ~~negative~~ results as listed under Para. L, - Comparison with prior surveys, added to this report by Comdr. G. R. Fish.

Sounding lines were not run along the axes of Thimble Shoal and York Spit Channels where U. S. Engineers exercise frequent

dredging and maintenance operations. It is believed the coverage furnished by the general system of lines is sufficient.

I. CONTROL OF HYDROGRAPHY

Standard surveying procedure was used employing both visual and shoran methods. On that part of the survey controlled by visual methods, sextants were used for three-point fixes using shore objects. On that portion controlled by shoran two distances were observed simultaneously.

Prior to the 1948 season the zero set of the shoran instruments was determined and the correct value is listed at the beginning of each day's work in the sounding volumes. Again in 1949 the zero set was determined and the values listed at the beginning of each day's work. In all shoran controlled hydrography the distances observed were recorded and corrections applied. The final distances obtained have all been checked.

Several sets of simultaneous shoran readings and three-point visual fixes were observed. These tests were made with the vessels stopped and underway.

The following discrepancies are noted:

Volume 22 (PARKER) - Four fixes - shoran position displaced approximately 150 meters southeast of the visual fix position.

1S - 6S (BOWEN) - 1.2 miles north of Cape Henry the shoran position is displaced approximately 70 meters southeast.

3.1 miles north of Cape Henry the shoran position is displaced approximately 50 meters east.

Visual fixes used; resulting in good agreement of adjacent hydrography

1U - 15 U (BOWEN) - 5.6 miles west north west of Cape Henry no displacement was found. See Processing Office Addendum

1U to 4U - Shoran positions used; 5U to 15U - visual fixes used. Fit hydrog. better

1.4 miles north of Cape Henry the shoran position is displaced approximately 100 meters southeast.

It is recommended that prior to the smooth plotting these positions be re-plotted and the discrepancies noted. The boat sheet discrepancies may have resulted because: (1) The shoran distance curves were added after the boat sheets had been used in the field. (2) Signals used by the PARKER included hydrographic signals, the plotted positions of which are subject to change. See Processing Office Addendum

These discrepancies may be entirely eliminated in the smooth plotting; at any rate there is sufficient overlap of visual control to enable adjustments should they prove necessary. Not eliminated

Comparisons too sparse & erratic to determine shoran corr.

J. ADEQUACY OF SURVEY

This survey is complete and adequate. Satisfactory junctions are made with all adjoining recent or contemporary sheets with the exception of sheet H-7791 (1949) (PBS-H-1249) where the shoran controlled hydrography does not entirely agree with the adjoining inshore sheets visually controlled work. There is sufficient overlap between the two surveys and it is expected an adjustment can be made easily. Adequate junction effected (See Descriptive Report for H-7791 (PBS-H-1249)).

It is expected that smooth plotting of final-reduced soundings will insure perfect junctions. Review, par. 4.

In a few instances the spacing of sounding lines exceeds the linits prescribed by the instructions. In such cases the bottom configuration obviates running additional splits.

Depth curves are drawn for contours from 12 feet to 78 feet at six-foot intervals. The 90 foot curve is also shown at Latitude 37° 14', Longitude 76° 04'. Boat sheet only

Attention is called to the shoal developing in Latitude 37° 04'.15, Longitude 75° 58'.05 found and shown on Sheet H-7791 (1949) (PBS-H-1249).

It is recommended that further hydrography be completed in this area. (when project limits are extended eastward)

K. CROSSLINES

Approximately ten percent of the lines run were crosslines. These closely check the soundings on the other lines and it is believed that final-reduced, smooth-plotted soundings will agree perfectly at crossings.

L. COMPARISON WITH PRIOR SURVEYS See pg. 11 for further comparisons

Prior Survey	Remarks
H-3658 (1914)	General shoaling, especially in channels - from 2 to 10 feet.
H-3923 (1916-17)	General shoaling of entire area- from 2 to 3 feet.
H-4038 (1918)	General shoaling of about 1 foot; area 2 miles North of Cape Henry shoaler by 5 feet..
H-4039 (1918-19)	General shoaling from 1 to 2 feet.
H-4040 (1919)	General shoaling - Approxi. 1 foot.
H-4193 (1921)	General shoaling - Approxi. 3 feet.
H-4926* (1929)	Natural changes; south and west of Fisherman's Island shoaler by 5 to 20 feet.

H-4927 (1929)	No copy of survey available. (See M, Comparison with Chart.)
H-6595 (1940)	Perfect agreement.
H-6962 (1944)	Perfect agreement.
H-7024 (1945)	Perfect agreement.
H-7089 (1946)	Perfect agreement.
H-7090 (1946)	Perfect agreement.
H-7171 (1947)	Perfect agreement.
FE-2, 1945	Perfect agreement.
FE-5, 1948	Perfect agreement.

* The shoal in Latitude 37° 04'.15, Longitude 75° 58'.05 found and shown on Sheet H-7791 (1949) (PBS-H-1249) warrants mention here. It is recommended that further hydrography be completed in this area.

The ~~dates and~~ scales of the above surveys are given in section B (Survey Limits and Dates). and in par. 5., Review

M. COMPARISON WITH CHART See Review, par. 6.

A comparison was made with chart 481 printed 16 August 1948, hand corrected to 21 March 1949, and with chart 1222 printed 20 June 1949, hand corrected to 14 November 1949.

In general the boat sheets are about one foot shoaler except in the inshore areas where hydrographic surveys have been conducted within the past ten years. In these areas of recent surveys little or no change is apparent.

Marked changes are found along the western and southern shores of Cape Charles and Fisherman's Island. This area is covered by prior surveys of 1914 and 1929 and changes of from 5 feet to 20 feet have occurred. The Inner Middle Ground Shoal seems to have shifted

to the southeast slightly accompanied with shoaling of the surrounding channels.

N. DANGERS AND SHOALS

In the area of this survey there are two shoals worthy of note, the Inner Middle Ground Shoal, depth 3 feet, and the newly found shoal in Latitude 37° 04'.15, Longitude 75° 58'.05, depth 8 feet where examined. on H-7791 (1949)

These two shoals are both on sheet H-7791 (1949) (PBS-H-1249) and are discussed in the Descriptive Report for that sheet. They are mentioned here because of their importance and because of their proximity to this sheet.

Other dangers consist of fish traps and fishing buoys. These are moved frequently and kept within the charted areas allocated to net fishing.

1- Comparison with prior surveys.

Comparison with preliminary review resulting from investigation of the records of charted soundings and features within the area outlined on chart 1222, furnished this party by the Washington office under date of 14 July 1948.

Items Nos. (1, 5) and (7) are wrecks and obstructions cleared on wire drag sheet PBS-WD 4148. H-7697 W.D. (1948) not within limits of pres. survey Sdgs. from Item 7 carried fwd. to pres. survey

Item No. 10 - 30 foot sounding in Lat. 37 - 11.3, Long. 76 - 02.7. There is no indication of a small shoal in this area and it is recommended that the 30 foot sounding be deleted from the charts. Sdg. deleted from chart This area was not developed due to the proximity of the 30 foot curve.

Item No. 11 - 18 foot sounding in Lat. 37 - 08.9, Long. 76 - 00.3. 18' confirmed by present survey. See Processing Office Addendum.

Development of the area shows no indication of a shoal and it is assumed that the sounding was in error by 1-fathom. It is recommended that this sounding be deleted from the charts. No!

Items Nos. 12, 24 and 25, - 12, 14 and 12 foot soundings, respectively, in vicinity of Lat. 37 - 07.6, Long. 76 - 02.0.

Development of these areas shows no evidence of shoals and indicates that the soundings were probably in error by 1-fathom. Sdgs. deleted from chart It is recommended that these soundings be deleted from the charts.

Items Nos. 13 and 14.

These wrecks are in the area covered by launch sheet PBS-1249. See H-7791 (1949)

Item No. 15 - Obstruction in Lat. 37 - 01.1, Long. 76 - 10.2.

This obstruction was cleared on wire drag sheet H-7028. (1945-50) There was no indication of any obstruction on the sounding lines run on this sheet. 15 ft. carried fwd. from H-7028 (1949)

Item No. 16 - Obstructions in vicinity of Lat. 36 - 58.0, Long. 76 - 14.0.

These obstructions were located and cleared on wire drag sheet H-7176 W.D. (1947) and no additional work was done on the present survey. Sdgs. from H-7176 W.D. carried fwd. to pres. survey

Item No. 19 - 11 foot depth reported in Lat. 36 - 57.2, Long. 76 - 10.2.

This reported shoal sounding was covered by wire drag sheet H-7177 (1947-48) PBS-WD-2248 and no additional work was done on the present sheet. 11 ft. has been deleted from chart

Items Nos. 20 and 21 - Obstructions in vicinity of Lat. 36 - 57.6, Long. 76 - 04.8.

These obstructions were cleared on wire drag sheet H-7177 (1947-48) and no additional work was done on this sheet. Sdgs. carried fwd. to pres. survey

Item No. 22 - E.D. wreck in Lat. 36 - 55.4, Long. 76 - 04.6.

This area was wire dragged on sheet H-7028 offshore (1944-45) but sufficient area to disprove the existence of the wreck was not covered due to the presence of fish trap stakes. The same situation still prevails and no additional work was done on this sheet. Now plotted

Item No. 23 - 27 foot sounding in Lat. 37 - 04.1, Long. 76 - 01.6.

The general depths in this area have changed and the charted position of the 27 foot sounding is now on the west edge of the "Nine Foot Shoal" which lies to the northeast. The area was not developed other than by the regular system of sounding lines. It is recommended that this sounding be deleted from the chart and that the depths shown on the present survey be charted. 27 ft. OK. in agreement w/present depths Retained on the chart. No disagreement apparent. Kell.

Item No. 26 - 23 and 17 foot soundings in vicinity of Lat. 37 - 07.8, Long. 76 -00.

There has been extensive shoaling in this area and present soundings are shoaler than the charted soundings. It is recommended that the present survey supersede prior surveys.

Items Nos. 27, and 28 - Wrecks in the vicinity of Lat. 36 - 57.6, Long. 76 - 01.0.

These wrecks were cleared on wire drag sheet H-7028 W.D. (1945) and no additional work was done on this sheet. Sdgs. at wks. carried fwd. to pres. survey

Item No. 29 ~~27~~ - 43 foot sounding in Lat. 36 - 56.7, Long. 76 - 02.1.

Development of this area indicated general depths about 1-fathom deeper than the 43 foot grounding obtained from wire drag sheet H-7028 W.D. (1945). The present boat sheet shows depths of 45 and 44 feet immediately to the west. It is recommended that the 43 foot sounding be retained due to the rough bottom in this area. 43 ft. carried fwd. to present survey

Items Nos. 2, 3, 4, 6, 8, 9, 30, 31 and 32 are outside the limits of the present sheet.

G. R. Fish
G. R. Fish
Commander, USC&GS
Comdg. Ships PARKER, BOWEN, STIRNI

Submitted

William E. Randall

William E. Randall
Lt. (j.g.) , USC&GS

APPROVAL SHEET

The records and boat sheets are approved as submitted to the Norfolk Processing Office. The survey is complete and adequate. Additional work is recommended in the Area of Latitude 37° 04'.15, Longitude 75° 58'.05, adjacent to this sheet. (See paragraph J., ADEQUACY OF SURVEY.)

G. R. Fish
Comdr., USC&GS
Comdg. Ships PARKER,
BOWEN, STIRNI

STATISTICS

The statistics for Hydrographic Survey H- 7750 (1948-49750) (PBS-H-4148) are as follows:

SHIP	VOL. NO.	DAY LTR.	DATE	NO. POSITIONS	STAT.MI.SDG. LINES
STIRNI			1948		
			June		
	1	A	22	123	38.7
	1	B	23	23	6.7
	1,2	C	24	156	56.0
	2	D	25	86	48.8
			July		
	2,3	E	7	67	25.0
	3	F	9	140	59.5
	3,4	G	16	132	58.2
	4	H	29	139	53.1
	5	J	30	164	54.7
			August		
	5,6	K	3	88	33.4
	6	L	16	113	42.9
	6	M	19	85	22.3
	6,7	N	20	151	44.2
	7	P	23	185	50.8
	7,8	Q	30	149	34.3
			September		
	8	R	2	218	60.3
	8,9	S	3	221	70.1
	9	T	7	129	31.7
	9,10	U	29	156	53.8
	10	V	30	54	13.9
			1949		
			April		
	36	W	18	113	35.1
	36	X	19	180	57.2
	36,37	Y	20	144	31.5
	37	Z	21	186	51.4
	37	AA	26	63	(H.L.)
	37	AB	28	13	2.9
	38	AC	29	208	77.3
			May		
	38	AD	3	159	57.3
	38,39	AE	5	122	29.7
			October		
	39	AF	12	117	27.9
	39	AG	21	11	2.1
	39	AH	24	136	35.7
	40	AJ	25	15	(H.L.)
			November		
	41	AK	14	14	4.1
			STIRNI TOTALS:	4060 Positions	
				1270.6 Stat. Mi. Sdg. Lines	
				53.8 Sq. Stat. Mi.	

STATISTICS (Continued)

The statistics for Hydrographic Survey H-7750 (1948-49-50) (PBS-H-4148) are as follows:

SHIP	VOL. NO.	DAY LTR.	DATE	NO. POSITIONS	STAT.MI.SDG.LINES
PARKER			1948		
			June		
	11	A	17	15	6.5
	11	B	18	77	34.2
	11	C	22	93	39.1
	11	D	23	65	27.5
	11	E	24	81	35.1
	12	F	25	173	69.7
	12	G	28	155	62.9
			July		
	12,13	H	7	86	33.1
	13	J	9	169	64.0
	13	K	16	168	53.5
	14	L	29	195	68.5
	14	M	30	196	64.8
			August		
	15	N	3	115	42.0
	15	P	16	195	61.7
	15,16	Q	18	167	53.9
	16	R	19	154	49.1
	16,17	S	20	229	78.6
	17	T	23	235	88.6
	17,18	U	30	120	40.3
			September		
	18	V	2	266	125.4
	18,19	W	3	241	110.9
	19	X	16	243	90.5
	20	Y	17	204	81.4
	20	Z	21	134	46.5
	21	AA	29	190	71.1
	21	AB	30	209	65.1
			October		
	22	AC	1	182	53.7
	22	AD	8	196	49.4
	23	AE	11	227	72.8
	23	AF	12	198	57.7
	24	AG	13	176	62.4
	24	AH	19	188	62.3
	25	AJ	27	177	55.0
	25,26	AK	28	232	62.4
		AL	(omitted)		
			1949		
			April		
	42	AM	19	105	30.9
	42	AN	20	135	38.2
	42	AP	27	44	8.2
	42,43	AQ	28	~~72~~ 104	28.1
	43	AR	29	153	61.3
	44	AS	Apr. 17, 1950	93 Total 6385	16.3

PARKER TOTALS: ~~6363~~ ~~6260~~ Positions
~~2234.1~~ ~~2206.4~~ Stat. Mi. Sdg. Line
100.2 Sq. Stat. Mi.

STATISTICS (Continued)

The statistics for Hydrographic Survey H-7758 1948-49-50 (PBS-H-4148) are as follows:

SHIP	VOL. NO.	DAY LTR.	DATE	NO. POSITIONS	STAT.MI.SDG.LINES
BOWEN			1948		
			July		
	27	A	9	74	38.0
	27	B	16	158	61.4
	27,28	C	29	132	54.9
	28	D	30	171	68.7
			August		
	28	E	3	95	35.0
	28,29	F	16	159	56.4
	29	G	18	124	43.7
	29	H	19	83	27.4
	29,30	J	20	111	45.7
	30	K	23	77	31.5
	30	L	30	101	42.0
			September		
	30,31	M	2	178	71.2
	31	N	3	188	79.9
	31	P	7	65	24.8
	31,32	Q	16	150	64.6
	32	R	17	139	54.2
	32	S	29	143	58.4
	32,33	T	30	155	59.8
			October	165	
	33	U	1	~~169~~	64.9
	33	V	8	152	55.9
			1949		
			April		
	34	W	26	129	46.6
			May		
	34	X	4	108	44.2
	34,35	Y	24	152	47.9
	35	Z	26	55	18.0
	35	AA	31	116	30.1
				318 0	
			BOWEN TOTALS:	~~3184~~ Positions	
				1215.2 Stat. Mi. Sdg. Lines	
				44.4 Sq. Stat. Miles	

* * * * * * * * * * * * *

				13625	
				97	
			TOTALS FOR SHEET	~~13584~~ Positions	
				4708.5 ~~4692.2~~ Stat. Mi. Sdg. Lines	
				198.4 Sq. Stat. Mi.	

TIDE NOTE

The standard automatic tide gage at the Naval Operating Base, Hampton Roads, Va., was used exclusively to obtain tide reducers. Because different methods of obtaining reducers were used in 1948 and 1949, the two seasons work will be treated separately.

1948 SEASON

At the conclusion of each month's hydrography, tides for the particular areas surveyed were ordered from the Washington Office. The hourly heights furnished were referred to mean low water and modified for time and range differences. From these values graphs were drawn and reducers scaled at intervals of 0.2 foot.

This method of ordering tides resulted in the area surveyed being subdivided into nine parts, with tides furnished accordingly. These are listed below with the dates for which they apply.

AREA			DATE
A	37-57.0 to 36-14.0 76-01.0 to 76-08.0	and 36-56.0 to 37-10.0 76-10.0 to 76-12.0	June 17, 18, 22, 24, 25, 28
B	36-55.7 to 37-14.9 76-03.4 to 76-11.6		July 7, 9, 16, 29, 30
C	36-55.8 to 37-04.0 76-00.0 to 76-05.0		Aug. 3, 16, 18, 19, 20, 23, 30
D	36-57.0 to 37-14.1 76-04.0 to 76-12.6		Aug. 3, 16, 18, 19, 20, 23, 30
E	37-10.0 to 37-20.0 75-58.0 to 76-14.0	and 36-56.0 to 37-10.0 76-10.0 to 76-14.0	Sept. 2, 3, 7, 16, 17, 29, 30
F	36-56.0 to 37-10.0 75-58.0 to 76-10.0		Sept. 2, 3, 7, 16, 17, 21, 29, 30
G	37-10.0 to 37-20.0 75-56.0 to 76-10.0	and 36-56.0 to 37-20.0 76-10.0 to 76-14.0	Oct. 1, 8, 11, 12, 13, 19, 27, 28
H	36-56.0 to 37-10.0 75-56.0 to 76-10.0		Oct. 1, 8, 11, 12, 13, 19, 27, 28
J	37-04.0 to 37-13.0 76-00.0 to 76-04.0		Aug. 18, 19, 30

1949 SEASON

To reduce the amount of work involved in ordering tides by the 1948 method and to enable this party to predict tides more closely the Washington Office was requested to sub-divide the entire area of CS-326 for tide purposes and provide in advance the time and range differences necessary to modify the N.O.B., Hampton Roads, observed hourly heights to obtain the correct heights for each of the areas.

The area was divided into quadrants centering on the intersection of Latitude 37° 10' and Longitude 76° 10' and divided by north-south, and east-west lines through this intersection.

The areas and differences as listed in the Director's letter of 25 March 1949, 36 tmo, are:

Area Designation	Area	Time Difference	High Water Height Difference
W	south of 37 10' east of 76 10'	-45 m	0.3 foot
X	north of 37 10' east of 76 10'	-30 m	0.0 "
Y	north of 37 10' west of 76 10'	0 m	0.0 "
Z	south of 37 10' west of 76 10'	-30m	0.0 "

Each sounding record contains on page 2 a list of the areas surveyed in the record. Throughout the records appropriate notes indicate which area is used for tide reducers.

FATHOMETER CORRECTIONS

HYDROGRAPHIC SURVEY OF THE LOWER CHESAPEAKE BAY

JUNE - OCTOBER 1948	A. C. Thorson, Chief of Party
APRIL - JUNE 1949	G. R. Fish, Chief of Party
OCTOBER - NOVEMBER 1949	R. H. Tryon, Jr., Chief of Party

EQUIPMENT

Depth recorders Nos. 65 (type 808-A) and Nos. 116-S, 118-S and 120-S (type 808-J) were utilized.

The Ship PARKER used recorders Nos. 118-S and 120-S; the Ship BOWEN used No. 116-S; and the Ship STIRNI used No. 65, 116-S and 120-S.

At the beginning of the 1948 season the three ships utilized the existing NJ-9 depth recorder transceiver units which were installed in the hulls of the vessels. Due to unsatisfactory results and the difficulty of obtaining bar checks, 808 type transceiver units were installed on the BOWEN and STIRNI. These units were placed inside the vessels, against the skin of the ship, alongside the keel in the vicinity of the NJ-9 units. The NJ-9 units were used on the PARKER during the 1948 season. Better results, especially in deep water, were obtained on the BOWEN and STIRNI after this change.

During the layup season before 1949 experiments were made with various transceiver unit installations. As a result it was decided to remove the NJ-9 units from their wells and replace them with 808 units connected to the 808 and the NJ-9. A relay permitted selectivity. These provided electrically matched units for the 808 and non-matched but workable units for the NJ-9. The modification was made by the three ships.

Prior to the beginning of the 1948 season, in compliance with Instructions from the Director (dated 1 April 1948, reference 27-

SRO, 50-B) the effective length of the stylus arms of the Fathometers Nos. 65, 116-S and 120-S were measured. Adjustments were made to Nos. 116-S and 120-S to bring the lengths of the arms to the tolerated lengths. It was not necessary to adjust No. 65. Fathometer No. 118-S borrowed from the Ship COWIE was checked and found correct. A report of the three fathometers charged to this party was forwarded to the Director on 29 May 1948.

The bar check apparatus used on all three vessels consisted of a 2½ inch G. I. pipe, 18 feet long, with a sheet iron reflecting plate four feet by eight inches, secured to the pipe. On the PARKER the bar is supported at each end by standard wire drag upright wire, graduated by pieces of cloth fastened between the strands. On the BOWEN and STIRNI the bar supports consist of phosphor-bronze center, mahogany-colored tiller rope graduated and marked similar to a standard leadline.

FIELD WORK

No serial temperatures or salinity observations were taken within the area covered by this survey. Echo corrections were determined from bar checks taken in accordance with standard practice.

During the 1948 season the PARKER varied the depth recorder's initial setting frequently to obtain minimum echo corrections for the average depths in the various areas surveyed. Consequently at the end of the season the bar check data was divided into three groups. From A day through K day the initial setting was 4.0 feet; from L day through AG day, 4.5 feet; and from AH day through AK day, 3.3 feet. The resulting changes in bar check values were approximately one half of the changes in initial setting. The BOWEN and STIRNI used initial settings of 4.0 feet to facilitate later computation of echo corrections.

During the 1949 season all three ships used initial settings of 4.0 feet. This proved most satisfactory, enabling the operator to control initial fluctuation more easily, and also facilitating computations.

The bar lines were checked against a standard frequently and found to be correct.

Draft readings taken on the three Ships before and after fueling indicated a maximum change in draft at the sounding units of approximately 0.35 feet. Because most hydrography was done when the fuel tanks were near a mean level, the draft effect was ignored.

No C and D scale phase comparisons were made aboard the PARKER for this survey. A comparison was made, however, on Sheet H-H-7824 (1948-50) (PBS-H-1448) C-day, PARKER, and a difference of two feet obtained between B and C scale with the C-scale depths deeper. It is assumed there is no phase difference between the C and D scales.

To obtain the echo corrections for the C and D scales, the B scale curve was projected and a new curve drawn parallel to it, offset two feet.

SETTLEMENT AND SQUAT

Corrections for settlement and squat for the PARKER, BOWEN, and STIRNI were determined by tests made on the BOWEN. The tests consisted of measuring depths with a type 808-J depth recorder as the Ship passed over the same point at various speeds. Horizontal control to insure the Ship's passing over the same point on each run consisted of ranges crossing at nearly right angles. The Ship ran one range and the depth was recorded when the Ship crossed the other range. Observations were made at three depths, forty-four feet, twenty-two feet, and twelve and one half feet, as outlined in the Hydrographic Manual.

In general the procedure for each depth was as follows: The Ship stopped over the point and recorded the depth and time. Then the Ship passed over the point a sufficient number of times at speeds of 400, 600, 800, and 1000 RPM to insure at least two good values at each speed, recording the depth and time over the point on each run. A final test was made with the Ship stopped over the point.

Plotting the recorded depths as ordinates versus times as abscissae, and using for a tide baseline a straight line connecting the two tests made stopped, before and after the underway tests, the settlement and squat corrections are the scaled differences in depth from the plotted positions of the tests measured vertically to the baseline. (The errors resulting from plotting the baseline as a straight line instead of as the actual tide curve are negligible). A mean of the corrections obtained at any one speed is the accepted correction for that speed. A similar graph was made for each of the three depths tested.

To obtain corrections for intermediate speeds, an interpolation graph was made, plotting corrections versus RPM and drawing a smooth curve for each of the three depths tested. From this, the final graphs were drawn, one for each speed used by the Ships. A tabulation of the final corrections and the graphs themselves accompany this report.

OFFICE COMPUTATION

All corrections and reductions to soundings have been made. The field-reduced soundings have been entered and checked in the sounding volumes by the field party.

Tide reducers were scaled from curves retained by this party.

Index corrections were scaled from the fathograms.

Settlement and squat corrections were scaled from curves which are attached to this report.

Echo corrections were determined separately for each Ship and the depth recorder (s) used thereon. In addition, on the PARKER, three sets were necessary for the 1948 work where the initial settings changed. The corrections are also grouped according to the season during which the work was performed, and for the BOWEN in the spring of 1949, according to the area worked in.

YEAR	SHIP	FATHOMETER NUMBER	INITIAL SET	DAY LTRS
1948	PARKER	120-S	4.0 ft.	A ------- K
			4.5	L ------ AG
			3.3	AH ------ AK*
	BOWEN	116-S	4.0	A ------- V
	STIRNI	65 and 116-S	4.0	A ------- V
1949	PARKER (spring)	120-S	4.0	AM ------ AP*
		118-S	4.0	AQ ------ AR
	BOWEN	116-S	4.0	W ------- X
		116-S	4.0	Y ------ AA
	STIRNI	65	4.0	W ------ AE**
		120-S	4.0	AB
1949	STIRNI (fall)	65	4.0	AF ----- AK***

* AL day inadvertantly omitted

** AB day excepted, shown on next line

*** AJ day excepted, handlead only

In the following pages the various fathometer corrections

are arranged as listed below. Within each group the data is arranged in order of PARKER, BOWEN, STIRNI.

a) Settlement and Squat corrections, tabulation - followed by graphs.

b) 1948 Echo Corrections, summary - followed by (abstracts and graphs.) filed with fgms.

c) 1948 Record of Simultaneous Comparisons. (filed with fgms.)

d) 1949 Echo Corrections, summary - followed by (abstracts and graphs.) filed with fgms.

e) 1949 Record of Simultaneous Comparisons.

ok

SETTLEMENT AND SQUAT

H-7750(1948-50)

SHIP'S PARKER, BOWEN, STIRNI

TABULATION OF CORRECTIONS

SPEED (RPM)	CORRECTION (FEET) (+)	FROM DEPTH TO DEPTH (FEET)
400	0.2	all depths
450	0.2	all depths
500	0.2	all depths
600	0.4	6.0 to 14.5
	0.2	15.0 & over
650	0.6	6.5 to 11.0
	0.4	11.5 to 17.0
	0.2	17.5 & over
700	0.8	to 12.0
	0.6	12.5 to 15.0
	0.4	15.5 to 19.5
	0.2	20.0 & over
750	1.0	to 12.0
	0.8	12.5 to 14.0
	0.6	14.5 to 16.5
	0.4	17.0 to 21.5
	0.2	22.0 to 31.5
	0.4	32.0 & over
800	1.0	12.5 to 13.0
	0.8	13.5 to 15.5
	0.6	16.0 to 19.0
	0.4	19.5 & over
850	1.0	12.5 to 13.5
	0.8	14.0 to 16.5
	0.6	17.0 to 22.5
	0.4	23.0 & over
900	1.0	12.5 to 14.5
	0.8	15.0 to 20.5
	0.6	21.0 to 34.0
	0.4	34.5 & over
1000	1.0	6.0 to 21.5
	0.8	22.0 to 31.5
	0.6	32.0 & over

FLOATING AIDS TO NAVIGATION H-7750

Light List Name	Latitude	Longitude	Depth	Pos. No.	Date	Vol.
Thimble Shoal Dredged Channel Ltd. Bell Buoy 1	36° 57.2~~0~~1'	76° 02.5~~0~~46'	42 ~~41½~~	27 W ~~9 G~~	Apr. 26, 1949 ~~Aug. 18, 1948~~	34 ~~29~~
" " " 2	36° 57.~~40~~37'	76° 02.42'	42 ~~43½~~	26W ~~8 G~~	Apr. 26, 1949 ~~Aug. 18, 1948~~	34 ~~29~~
Thimble shoal Approach Hd. Bell Buoy	~~37~~° 05.45'	76° 09.82'	29	105-106W	Apr. 18, 1949	29
Thimble Shoal Dredged Channel Ltd. Buoy 3	36° 57.~~95~~88'	76° 04.71'	40½	39 W	Apr. 26, 1949	34
" " " 4 " "	36° ~~58.00~~57.98'	76° 04.62'	40	40 W	Apr. 26, 1949	34
" " " 5 " "	37° 58.~~4~~39'	76° 06.~~84~~2'	41	3 AP	Apr. 27, 1949	42
" " " 6 " "	36° 58.52'	76° 06.73'	41	4 AP	Apr. 27, 1949	42
" " " 7 " "	36° 58.~~96~~5'	76° 09.~~02~~0'	38	1 AP	Apr. 27, 1949	42
" " " 8 " "	36° 59.10'	76° 08.95'	36½	2 AP	Apr. 27, 1949	42
" " " 9 " "	36° 59.50'	76° 11.15'	37½	2 V	Sept. 30, 1948	10
" " " 10 " "	36° 59.66'	76° 11.0~~3~~4'	34	1 V	Sept. 30, 1948	10
" " " 11 " "	37° 00.~~1~~12'	76° 13.62'	40½	3 AE	May 5, 1949	38
" " " 12 " "	37° 00.2'	76° 13.2'	44	2 AE	May 5, 1949	38
Middle Ground Ltd. Bell Buoy 6	37° 01.~~19~~20'	76° 02.~~19~~20'	38	45 X	May 4, 1949	34
Middle Ground Buoy 8	37° 05.~~32~~0'	76° 05.45'	29	1 AR	Apr. 29, 1949	43
Middle Ground Ltd. Whistle Buoy 10	37° 07.2~~2~~'	76° 07.6'	—	51 AM	Apr. 19, 1949	42
Middle Ground Ltd. Buoy 14	37° 10.3'	76° 09.1'	39	2 AJ	Oct. 25, 1949	40
York Spit Channel Ltd. Buoy 1	37° 11.14'	76° 9.48'	37½	3 AJ	Oct. 25, 1949	40
~~York Spit Channel Lower End Ltd. Buoy 2~~ Middle ground Ltd buoy 16	37° 10.94'	76° 9.19'	38½	4 AJ	Oct. 25, 1949	40

FLOATING AIDS TO NAVIGATION --7750 (Cont'd.)

Light List Name	Latitude	Longitude	Depth	Pos. No.	Date	Vol.
York Spit Channel Buoy 3	37° 12.18'	76° 09.10'	34½	6 AJ	Oct. 25, 1949	40
" " " " 4	37° 12.12'	76° 08.86'	35	7 AJ	Oct. 25, 1949	40
York Spit Channel Ltd. Buoy 5	37° 13.16'	76° 08.70'	36	8 AJ	Oct. 25, 1949	40
" " " " " 6	37° 13.09'	76° 08.47'	36½	9 AJ	Oct. 25, 1949	40
York Spit Channel Buoy 7	37° 14.12'	76° 08.32'	40	10 AJ	Oct. 25, 1949	40
" " " " 8	37° 14.05'	76° 08.08'	37	11 AJ	Oct. 25, 1949	40
York Spit Channel Ltd. Bell Buoy 9	37° 15.10'	76° 07.90'	40½	12 AJ	Oct. 25, 1949	40
York Spit Channel Upper End Ltd. Buoy 10	37° 15.05'	76° 07.67'	43	13 AJ	Oct. 25, 1949	40
Norfolk Wreck Ltd. Gong Buoy 2B	36° 57.42'	76° 01.35'	53	21 W ~~3 H~~	Apr. 26, 1949 ~~Aug. 19, 1948~~	34 ~~29~~
Horse Shoe Crossing Ltd. Bell Buoy	37° 01.30'	76° 08.91'	25½	32 AN	Apr. 20, 1949	42
Tail of the Horseshoe Ltd. Whistle Buoy TH	36° 58.71'	76° 00.65'	34	90 W	Apr. 26, 1949	34
Tail of the Horseshoe Shoal Ltd. Bell Buoy 2T	36° 58.44'	76° 02.29'	34	89 W	Apr. 26, 1949	34
York Spit Channel Entrance Ltd. Whistle Buoy 1A	37° 10.3'	76° 09.32'	38½	1 AJ	Oct. 25, 1949	40
Red Spar Buoy (marker for "2")	37° 11.34'	76° 09.14'	36	15 AJ	Oct. 25, 1949	40
Tail of the Horseshoe Shoal 18-foot Patch Buoy	36° 59.60'	76° 06.48'	21	6 AQ	Apr. 28, 1949	42
Tail of the Horseshoe Shoal Ltd. Buoy 1	37° 01.7'	76° 04.45'	36½	99 X	May 4, 1949	34
Horseshoe Shoal Buoy 2	37° 00.59'	76° 10.98'	23	25 X	Apr. 19, 1949	36

FLOATING AIDS TO NAVIGATION H-7750 (Cont'd.)

Light List Name	Latitude	Longitude	Depth	Pos. No.	Date	Vol.
Horse Shoe Bell Buoy 4	37° 00.5'	76° 13.02'	33½	1 AE	May 5, 1949	38
York River Junction Ltd. Bell Buoy	37° 08.90'	76° 12.22'	40	71 AD	May 3, 1949	38
Fish Net Stake Buoy S "32N"	37° 06.47'	76° 11.92'	25½	37 Y	Apr. 20, 1949	36
White Fishing Spar "B"	36° 57.61'	76° 13.97'	24	27 Z	Apr. 21, 1949	37
North Channel Buoy 2	37° 02.12'	75° 56.21'	33	21 AK	Oct. 28, 1948	25
North Channel Buoy 4	37° 02.68'	75° 57.11'	27	28 AK	Oct. 28, 1948	25
North Channel Buoy 6	37° 03.31'	75° 58.28'	58	34 AK	Oct. 28, 1948	25
North Channel Buoy 9	37° 05.18'	75° 59.70'	—	232 AK	Oct. 28, 1948	26
North Channel Buoy 11	37° 06.16'	76° 00.31'	26½	117 AN	Apr. 20, 1949	42
North Channel Buoy 13	37° 08.80'	76° 01.40'	25	100 AQ	Apr. 28, 1949	43
Cape Henry Ltd. Bell Buoy CH	36° 57.55'	76° 00.80'	6	~~2 H~~ 20 W	~~Aug. 19, 1948~~ Apr 26, 1949	~~29~~ 34
York Spit Channel Lower End Ltd buoy 2 ~~Buoy (not identified) (Ok. FL R "10" Chart 1222, 1951)~~	37° 11.37'	76° 9.15'	39½	5 AJ	Oct. 25, 1949	40
White fishing Spars (60)	—	—	—	1AA thru 63AA	April 26, 1951	37

1948

SUMMARY OF ECHO CORRECTIONS

SHEET H - 7750 1948-00-50

(PBS-H-4148)

Ship	Day Letter	Fath. No.	Initial Set (ft.)	Fath. Scale	From Depth to Depth (ft.)	Corr'n (ft.)
PARKER	A	120-S	4.0	A	7.0 to 13.0	0.0
	Thru				13.5 25.0	0.2
	K				25.5 33.0	0.4
					33.5 41.0	0.6
					41.5 49.0	0.8
					49.5 55.0	1.0
				B	35.0 to 37.0	-0.8
					37.5 45.0	-0.6
					45.5 53.0	-0.4
					53.5 61.0	-0.2
					61.5 69.0	0.0
					69.5 77.0	0.2
					77.5 85.0	0.4
				C,D	70.0 to 75.0	-1.8
					75.5 85.5	-1.6
					86.0 93.5	-1.4
					94.0 101.0	-1.2
					101.5 109.0	-1.0
					109.5 117.0	-0.8
	L		4.5	A	7.0 to 9.5	-0.2
	Thru				10.0 23.5	0.0
	AD				24.0 34.0	0.2
					34.5 41.5	0.4
					42.0 49.0	0.6
					49.5 55.0	0.8
				B	35.0 to 41.5	-1.0
					42.0 49.0	-0.8
					49.5 57.0	-0.6
					57.5 64.5	-0.4
					65.0 72.5	-0.2
					73.0 80.0	0.0
					80.5 88.0	0.2
					88.5 90.0	0.4
				C,D	70.0 to 75.0	-1.8
					75.5 85.5	-1.6
					86.0 93.5	-1.4
					94.0 101.0	-1.2
					101.5 109.0	-1.0
					109.5 117.0	-0.8
	AE		4.5	A	7.0 to 9.5	-0.2
	Thru				10.0 23.5	0.0
	AG				24.0 34.0	0.2
					34.5 41.5	0.4
					42.0 49.0	0.6
					49.5 55.0	0.8
				B	35.0 to 41.5	-1.8
					42.0 49.0	-1.6
					49.5 57.0	-1.4
					57.5 64.5	-1.2
					65.0 72.5	-1.0
					73.0 80.0	-0.8
					80.5 88.0	-0.6

SUMMARY OF ECHO CORRECTIONS
(CONTINUED)

SHEET H - 7750 (4448-4250
(PBS-H-4148)

Ship	Day Letter	Fath. No.	Initial Set (ft.)	Fath. Scale	From Depth to Depth (ft.)	Corr'n (ft.)
PARKER	AH Thru AK	120-S	3.3	A	7.0 to 19.5	0.4
					20.0 46.0	0.6
					46.5 55.0	0.8
				B	35.0 to 37.5	-1.6
					38.0 52.5	-1.4
					53.0 60.5	-1.2
					61.0 68.5	-1.0
					69.0 76.5	-0.8
					77.0 84.0	-0.6
					84.5 90.0	-0.4
BOWEN	A Thru V	116-S	4.0	A	7.0 to 40.5	0.0
					41.0 55.0	0.2
				B	35.0 to 50.5	0.2
					51.0 61.0	0.4
					61.5 68.5	0.6
					69.0 75.0	0.8
					75.5 81.0	1.0
STIRNI	A Thru V	65 and 116-S	4.0	A	7.0 to 55.0	0.0
				B	No soundings taken on "B" scale.	

SUMMARY OF ECHO CORRECTIONS (CONTINUED)

Sheet H - 7750 (1948-1950

(PBS-H-4148)

Ship	Day Letter	Fath. No.	Initial Set (ft)	Fath. Scale	From Depth to Depth (ft)	Corr'n (ft)
STIRNI	AF,AG AH,AK	65	4.0	A	0.0 to 13.0	0.0
					13.5 26.5	-0.2
					27.0 40.0	-0.4
					40.5 55.0	-0.6
				B	35.0 to 51.5	-1.6
					52.0 66.5	-1.8
					67.0 82.0	-2.0
					82.5 90.0	-2.2
				C	70.0 to 83.0	-2.4
					83.5 98.0	-2.6

ADDENDUM
To Accompany

(1948-49-50)

HYDROGRAPHIC SURVEY H-7750 (Field No. PBS-4148)

CONTROL

The few comparisons taken between the visual and shoran fixes showed rahher erratic results. A mean was taken of these differences and as the average disagreement between the two systems of control was much less than the size of a sounding a correction was not applied.

SOUNDINGS

Developement on AS day, Ship Parker, is being submitted on an over-lay. (see pg. 3 in sdg. Vol. 44)

- - -

Listed below are position numbers of apparent strays on the fathograms. These indications were not plotted on the smooth sheet, how-ever, it is felt they should be reviewed and possibly considered for wire drag investigation. Stray indications between positions 41 and 45C were investigated by Ship Parker on AS day with negative results.

φ37°01.4' λ76°02.1' 97 to 98Q (Bowen) } considered to be strays
φ37°07.4' λ76°08.1 110 to 112 (Parker) }

41 to 42C (Parker) } disproved
44 to 45C (Parker) } φ37°08.6 λ76°03.45'
φ37°10.0' λ76°03.4'

COMPARISON WITH CHART

18' sounding, Item 11, Lat. 37-08.9 Long. 76-00.3
Contrary to the statement in the body of the Descriptive Report, this 18' sounding is confirmed by the present survey. Latimer Shoal averages from one to two feet shoaler than charted and appears to be spreading in a N.W'ly direction far enough to include the subject sounding.

Respectfully submitted,

Hugh L. Proffitt
Cartographer

Norfolk, Va.
21 March 1951

Approved & Forwarded:

Earl O. Heaton
Supervisor, S.E. District.

GEOGRAPHIC NAMES

Survey No. H-7750

(1948-49-50)

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
Virginia									U.S.G.B	1
Chesapeake Bay									"	2
										3
Cape Henry										4
Cape Charles										5
Fisherman Island									U.S.G.B	6
Inner Middle Ground		mentioned in this report. See 1222 for placement after sheet is inked.								7
Nine Foot Shoal										8
Latimer Shoal										9
Other names on 1222 are correct, if it is										10
desired to use them.										11
										12
					/Names underlined					13
					in red are approved					14
					4-18-51 L. Heck					15
										16
										17
Hampton Roads		(location of tide gage)								18
										19
										20
										21
										22
										23
										24
										25
										26
										27

M 234

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7750 (1948-49-50)

Records accompanying survey:

Boat sheets 3; sounding vols. 44; wire drag vols. ......;

bomb vols. ......; graphic recorder rolls 47 env.

special reports, etc. 1 Smooth Sheet; 1 Overlay Tracing;

Descriptive Report.

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

Number of positions on sheet		13625
Number of positions checked		249
Number of positions revised		16
Number of soundings revised (refers to depth only)		127
Number of soundings erroneously spaced		41
Number of signals erroneously plotted or transferred		—
Topographic details	Time	8
Junctions	Time	......
Verification of soundings from graphic record	Time	23

Verification by Carl M. Brogovije / A. J. Hoffman / D. A. Engle (Curves & Junctions) Total time 693 / 150 / 51 = 894 hrs. Date 11-23-51 / 12-21-51 / 11-7-52

Reviewed by J. A. Dinsmore Time 72 hrs. Date 23 Jan. 1953

M-2232-1

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-7750 FIELD NO. PBS-4148

Virginia, Chesapeake Bay, Lower Chesapeake Bay

Project No. CS-326

Surveyed - June 1948 - April 1950 Scale 1:40,000

Soundings:

808 Fathometer
Hand lead

Control:

Shoran
Sextant fixes on shore signals

Chief of Party - A. C. Thorson, G. R. Fish and R. H. Tryon, Jr.
Surveyed by-Ship Officers
Protracted by - H. J. Thompson and W. W. Feazel
Soundings plotted by - A. Kaupa
Verified and inked by - E. M. Bragonje, A. J. Hoffman and D. R. Engle
Reviewed by - T. A. Dinsmore, 23 January 1953
Inspected by - R. H. Carstens

1. Shoreline and Control

This is an offshore survey. The incomplete shoreline outlined on the smooth sheet originates with air-photograph surveys of the 8000 series (1942-45) covering the Lower Chesapeake Bay area and revisions shown on H-7791 (1949).

The origin of the control is given in the Descriptive Report.

2. Sounding Line Crossings

Depths at sounding line crossings are in very good agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves are adequately delineated.

This survey covers a large portion of the lower part of the Chesapeake Bay including the main ship channels leading to Hampton Roads on the southwest and to the Chesapeake Bay ports on the north. These two principal channels are widely separated and bordered by expansive shoaler banks. Sharp irregularities in the form of sand waves occur throughout

an area extending from lat. 37° 01', long. 76° 04', to lat. 37° 06', long. 76° 09'. The sand waves range from 3 to 6 ft., in height. A conspicuous depression is revealed in lat. 37° 04.6', long. 76° 02.6'. In this vicinity, depths drop rapidly from 10 to 40 ft., in about 400 meters. The eastern bank of the principal channel leading northwestward is for the most part also quite steep. Except for the irregularities mentioned and the steep channel banks in several localities, the bottom is generally smooth and undulating.

4. Junctions with Contemporary Surveys

Adequate junctions were effected with the following surveys:

H-7791 (1949) on the east and northeast and in the vicinity of lat. 37° 05', long. 76° 01'.
H-6595 (1940) on the east and southeast.
H-7703 (1948) on the southeast.
H-7721 (1949) on the south.
*H-6962 (1944) in the vicinity of lat. 36° 58', long. 76° 03'
H-7089 (1946) on the south.
*H-7090 (1946) on the south.
H-7024 (1944) on the south.
H-7783 (1949) on the southwest.
H-7171 (1947) on the southwest.
H-7824 (1950) on the west.
*F.E. No. 5 (1948) in the vicinity of lat. 37° 10.6', long. 76° 09.0'.

Note: The surveys designated by an asterisk (*) are enclosed within the limits of the present survey.

The junctions with H-7823 (1949-50) on the west and H-8012 (1950) on the northeast will be considered in the reviews of those surveys.

Additional project surveys on the northeast, west and northwest have not yet been received in this office.

Charted depths at the project limits on the north (lat. 37° 20') and on the east between lat. 37° 01.3' and lat. 37° 04.2' are in harmony with present survey depths.

5. Comparison with Prior Surveys

a. H-286 (1851) 1:20,000
H-345 (1852) 1:20,000
H-364 (1852) 1:40,000
H-397 (1853) 1:40,000
H-446 (1854) 1:40,000

These early surveys are the first surveys made of the area covered by the present survey. Although superseded by numerous surveys of subsequent years, a comparison between these old surveys and the present survey is made to record for historical information the major changes in bottom that have taken place in this important area during an interim of one hundred years

and to define the trend of such changes.

Middle Ground Shoal extending from lat. 37° 07.4', long. 76° 06.2', to lat. 37° 00.7', long. 76° 00.1', as delineated by the present 18-ft. depth curve has moved southwestward from its prior location by amounts ranging from a few hundred meters on the north to nearly one-half mile at the southeastern tip. This change in bottom is exemplified in lat. 37° 01.1', long. 76° 01.7', where prior depths of 50-60 ft. are now superseded by 15-ft. depths.

Radical bottom changes are noted in the vicinity of Inner Middle Ground Shoal which lies westward of Fisherman Island. Here also, shoaling in a southwestward direction is in evidence. Prior depths of 31 ft. in lat. 37° 04.5', long. 76° 01.7', are now superseded by depths of 7-8 ft. In this vicinity, the 12-and 18-ft. depth curves have moved southwestward three fourths of a mile. To the southeastward in lat. 37° 03.7', long. 76° 00.0', prior depths of 28-30 ft. are now superseded by depths of 16-18 ft. In this vicinity, the 18-ft. depth curve has moved more than a mile southeastward.

H-364 reveals that a natural channel carrying depths of 33-65 ft. formerly extended in a northwesterly direction from lat. 37° 04.8', long. 76° 00.5'. The prior channel has since filled in and become a part of Inner Middle Ground Shoal. Prior channel depths of 40 ft. in lat. 37° 06.2', long. 76° 01.6', are now superseded by depths of 8 ft.

Major shoaling has occurred in lat. 37° 08.0', long. 76° 00.0', where prior depths of 23-25 ft. are now superseded by 12-ft. depths which represent the crest of an extensive shoal now existing in this locality.

Although the bottom changes described are considered to have resulted principally from natural causes, dredging in York Spit and Thimble Shoal channels together with the dumping of spoil in specific areas has also contributed to the bottom changes.

b. H-1183 (1873) 1:20,000
H-1873 (1888) 1:20,000
H-1874 (1888) 1:20,000
H-1876 (1888) 1:20,000
H-2064 (1891) 1:20,000
H-2404 (1899) 1:20,000
H-2551 (1901) 1:60,000
H-2799 (1906) 1:20,000
H-2866 (1906-07) 1:20,000
H-2867 (1906-07) 1:30,000
H-2867a (1911) 1:30,000
H-3041 (1910) 1:20,000
H-3175 (1910) 1:20,000
H-3313 (1911) 1:40,000
H-3415 (1912-13) 1:40,000
H-3658 (1914) 1:20,000
H-3768 (1915) 1:40,000
H-3923 (1916-17) 1:30,000
H-4038 (1918) 1:40,000
H-4039 (1918-19) 1:30,000
H-4039a (1919) 1:20,000
H-4040 (1919) 1:20,000
H-4089 (1919) 1:40,000
H-4193 (1921) 1:40,000

an area extending from lat. 37° 01', long. 76° 04', to lat. 37° 06', long. 76° 09'. The sand waves range from 3 to 6 ft., in height. A conspicuous depression is revealed in lat. 37° 04.6', long. 76° 02.6'. In this vicinity, depths drop rapidly from 10 to 40 ft., in about 400 meters. The eastern bank of the principal channel leading northwestward is for the most part also quite steep. Except for the irregularities mentioned and the steep channel banks in several localities, the bottom is generally smooth and undulating.

4. Junctions with Contemporary Surveys

Adequate junctions were effected with the following surveys:

H-7791 (1949) on the east and northeast and in the vicinity of lat. 37° 05', long. 76° 01'.
H-6595 (1940) on the east and southeast.
H-7703 (1948) on the southeast.
H-7721 (1949) on the south.
*H-6962 (1944) in the vicinity of lat. 36° 58', long. 76° 03'
H-7089 (1946) on the south.
*H-7090 (1946) on the south.
H-7024 (1944) on the south.
H-7783 (1949) on the southwest.
H-7171 (1947) on the southwest.
H-7824 (1950) on the west.
*F.E. No. 5 (1948) in the vicinity of lat. 37° 10.6', long. 76° 09.0'.

Note: The surveys designated by an asterisk (*) are enclosed within the limits of the present survey.

The junctions with H-7823 (1949-50) on the west and H-8012 (1950) on the northeast will be considered in the reviews of those surveys.

Additional project surveys on the northeast, west and northwest have not yet been received in this office.

Charted depths at the project limits on the north (lat. 37° 20') and on the east between lat. 37° 01.3' and lat. 37° 04.2' are in harmony with present survey depths.

5. Comparison with Prior Surveys

a. H-286 (1851) 1:20,000
H-345 (1852) 1:20,000
H-364 (1852) 1:40,000
H-397 (1853) 1:40,000
H-446 (1854) 1:40,000

These early surveys are the first surveys made of the area covered by the present survey. Although superseded by numerous surveys of subsequent years, a comparison between these old surveys and the present survey is made to record for historical information the major changes in bottom that have taken place in this important area during an interim of one hundred years

These prior surveys taken together cover the area of the present survey during the periods indicated. The surveys of 1918-19 furnish the most complete prior coverage. A comparison of the prior and present surveys reveals bottom changes which substantially follow the trend of the changes described in paragraph 5a. The major changes in bottom have occurred mostly in the area lying eastward of the principal natural channel. In this area, all evidence points to a continual shifting of shoals and channels in generally a southwesterly direction.

Noticeable changes in bottom have occurred in lat. 36° 59.5', long. 76° 10.9', and lat. 37° 12.0', long. 76° 09.0', where prior depths of 29 ft. and 31 ft. respectively have since been dredged to minimum channel depths of 40 ft. and 38 ft., respectively. These examples fall in Thimble Shoal and York Spit channels.

Except as noted, only minor differences of 1-3 ft. in depths are noticed elsewhere in the area.

c. H-4924b (1929) 1:10,000 H-4927 (1929) 1:20,000
H-4926 (1929) 1:20,000 F.E. No. 2 (1945) 1:10 & 1:40,000

H-4924b covers the approach area to Little Creek on the south.

H-4926 overlaps a small portion of the present survey south of Fisherman Island.

H-4927 is a development of a small area in the vicinity of lat. 36° 59', long. 76° 03'.

F.E. No. 2 is a development of a small area in the vicinity of lat. 37° 08', long. 76° 12'.

A comparison of these prior surveys with the present survey indicates that minor shoaling has occurred in the above areas. Present depths are generally 1-2 ft. less than the prior depths.

The present survey is adequate to supersede, within the common area, the prior surveys discussed in paragraphs 5a, b and c.

d. H-7028 W.D. (1945-50) 1:40,000 H-7177 W.D. (1947-48) 1:20,000
H-7176 W.D. (1946-47) 1:20,000 H-7677 W.D. (1947-48) 1:40,000

These wire-drag surveys cover detached areas within the limits of the present survey and were made to investigate the existence of reported wrecks or obstructions.

Except for minor conflicts of 1 ft. in two localities which have shoaled slightly, present depths are in harmony with the effective drag depths.

Critical information on these wire-drag surveys has been

carried forward to the present survey.

6. Comparison with Chart 481 (Latest print date 7/28/52)
Chart 1222 (Latest print date 4/14/52)

A. Hydrography

Charted hydrography originates principally with the previously discussed surveys supplemented by partial application of the present survey prior to verification and review. Numerous differences are noted between the charted depths and depths on the present survey. These differences are mostly due to the widespread bottom changes described in paragraph 5.

Examples of appreciable differences between charted depths and present survey depths are given in the following comparison:

Latitude	Longitude	Charted Depth	Present Survey Depth
37° 12.20'	76° 02.80'	84	74
37° 11.95'	76° 02.35'	85	75
37° 11.60'	76° 01.90'	90	80
37° 11.22'	76° 01.60'	96	82
37° 10.62'	76° 00.70'	85	73
37° 03.85'	75° 58.55'	17	26
37° 03.70'	75° 58.35	13	23
37° 01.61'	76° 00.15'	26	20
37° 01.10'	75° 59.30'	27	20
37° 01.22'	75° 58.18'	26	20
36° 59.05'	76° 05.50'	29	22

03.0" not for chart 6-18-52

The sunken wreck "P.A." charted in lat. 36° 58.05', long. 76° 13.15', and the sunken wreck "E.D." charted in lat. 36° 56.78', long. 76° 02.60', originate with H.O. Notice to Mariners Nos. 40 (1951) and 8 (1950), respectively. Inasmuch as this information is from sources subsequent to the present survey, the wrecks should be retained on the chart.

The present survey supersedes all charted information except that originating with the wire-drag surveys and from sources subsequent to the present survey.

B. Aids to Navigation

Numerous buoys (including thirteen mooring buoys) have been charted subsequent to the completion of the present survey. Several buoys have also been discontinued and others have been changed in character or position since the present survey was made. In view of the widespread changes in the floating aids to navigation in this area, a detailed discussion of the changes would serve no useful purpose.

The charted aids to navigation adequately mark the features intended.

C. Dredged Channels

The charted controlling depth of 38 ft. (Sept. 1951) in York Spit Channel originates with Bp. 48181 (1951).

The charted controlling depth of 39½ ft. (May-June 1950) in Thimble Shoal Channel originates with Chart Letter 639 (1950).

The charted controlling depth of 39 ft. (1951) in lat. 36° 58.5', long. 76° 00.0', originates with Chart Letter 266 (1951).

In the above marked channels, several conflicts are found between the charted controlling depths and depths on the present survey. However, the charted controlling depths are from after-dredging surveys made subsequent to the present survey and, therefore, supersede present survey depths.

The note "Being dredged to 38 ft." charted in the marked channel leading to York River on the west northwest originates with Chart Letter 59 (1952). The charted information supersedes the present survey within the limits of the marked channel.

7. Condition of Survey

a. The sounding records are complete; the Descriptive Report covers all matters of importance.

b. The smooth plotting was accurately done.

c. Comparisons between visual and shoran fixes in the southeastern part of the survey showed rather erratic results. However, a mean of the differences in positioning indicated that the discrepancies between the two systems of control amounted to much less than the size of a plotted sounding so no correction was derived or applied. Where appreciable differences were found, the visual fixes were used to control the hydrography.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

9. Additional Field Work

This is an excellent basic survey of the area covered and no additional field work is required.

Examined and approved:

H. R. Edmonston
Chief, Nautical Chart Branch

H. Arnold Karo
Chief, Division of Charts

G. R. Fish
Chief, Section of Hydrography

Earl O. Heaton
Chief, Division of Coastal Surveys

RH

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Hydrography and Topography~~ 17 April 1951

Division of Charts: R. H. Carstens

Plane of reference approved in 44 volumes of sounding records for

HYDROGRAPHIC SHEET H-7750 (1948-49-50)

Locality Lower Chesapeake Bay, Virginia

Chief of Party: (A. C. Thorson) in 1948-50
(G. R. Fish)

Plane of reference is
3.6 ft. on tide staff at Hampton Roads (N.O.B.)
13.4 ft. below B. M. 6 (1927)

Height of mean high water above plane of reference is 2.5 feet.

Condition of records satisfactory except as noted below:

E. C. McKay
Section
Chief, ~~Division~~ of Tides ~~and Currents.~~

U. S. GOVERNMENT PRINTING OFFICE 750675

Reviewed Jan 23 1953

NAUTICAL CHARTS BRANCH

SURVEY NO. H-7750 (1948-49-50)

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
11 May 51	Reconstr. 1222	H.E. MacEwen	Before ~~After~~ Verification and Review partial
June 51	C.P. dwg. 1222	Burgoyne	Before ~~After~~ Verification and Review partial
16 Oct 53	Reconstr. 494	H.E. MacEwen	~~Before~~ After Verification and Review
Jan 53	4181	Evans	Before ~~After~~ Verification and Review
Oct '53	400	Sam.	~~Before~~ After Verification and Review Completely applied.
22 July 1954	1222	H.E. MacEwen	~~Before~~ After Verification and Review Critical sdgs applied to C.P. Drg.
1 Sept 54	1222	H.E. MacEwen	~~Before~~ After Verification and Review Fully applied to Est. Buff Coast
8/16/56	Reconstr 481	[illegible]	Before After Verification and Review
9-24-59	New limits 3334	A.J. Hoffman	~~Before~~ After Verification and Review Completely applied
2-25-60	562	R.E. Elkins	~~Before~~ After Verification and Review Completely applied
8/24/70	78	J. McMillan	Fully After Verification & Review thru 1222-51
12001 Prototype	10-7-85	J-Graham	Fully Applied after final review

M-216

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.