9562

Diag. Cht. No. 77-3

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey Hydrographic

Field No. AHP-10-5-75

Office No. H-9562

LOCALITY

State Maryland

General Locality Lower Patapsco River

Locality Stony Creek to Bodkin Neck

1975-76

CHIEF OF PARTY
U.O. Rolland & W.R. Daniels

LIBRARY & ARCHIVES

DATE March 3, 1980

☆U.S. GOV. PRINTING OFFICE: 1978—666-172

9562

NOAA FORM 77-28 (11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTER NO.

H-9562

HYDROGRAPHIC TITLE SHEET

INSTRUCTIONS - 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.

AHP-10-5-75

State Maryland

General locality ~~Baltimore Harbor~~ Lower Patapsco River

Locality ~~Lower Patapsco River~~ Stony Creek ~~Marley Neck~~ - Bodkin Neck

Scale 1:10,000 Date of survey 11 Sept. 1975 - 12 Dec. 1975 18 Oct. 1976 - 9 Nov. 1976

Instructions dated 9 July 1975* Project No. OPR-514-AHP-75

Vessel Hydrographic Surveys Branch Launches 1270, 1277, and 1282

Chief of party J. O. Rolland & W. R. Daniels

Surveyed by W. A. Wert, W.D. Otto, K.W. Perrin, S. R. Iwamoto

Soundings taken by echo sounder, hand lead, pole All (Raytheon 723 & 723D echo sounders)

Graphic record scaled by LCG, JMR, GH, RL, EF, RS, EH

Graphic record checked by WAW, WDO, KWP

Protracted by Field Sheet - LCG Automated plot by Xynetics 1201 ~~1200~~ ADS ~~PDP 8/e - DP-3~~

Verification by AMC - Verification Branch J. Scott Bradford 12-30-79

Soundings in ~~fathoms~~ feet at MLW ~~MLLW~~

REMARKS: *Change No.1 dated 30 July 1975

*Change No. 2 dated 20 July 1976

Times based on GMT.

"Misc items Filed with Field records"

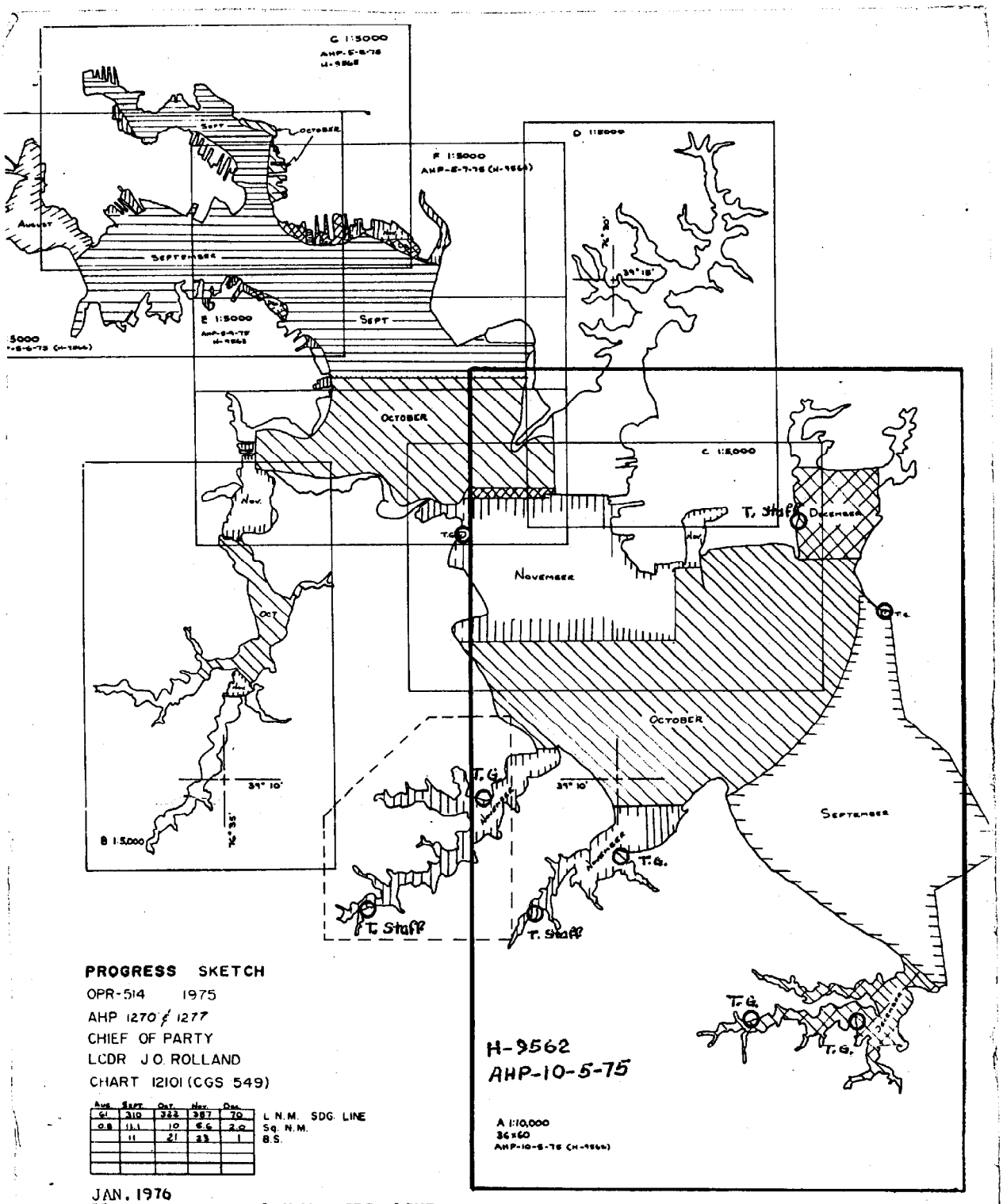
Applied to Stds
6-23-81 WJT

RWD 9/80

1

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. G.P.O. 1972-769-565/519 REG.#6



PROGRESS SKETCH

OPR-514 1975

AHP 1270 & 1277

CHIEF OF PARTY

LCDR J.O. ROLLAND

CHART 12101 (CGS 549)

Aug	Sept	Oct	Nov	Dec	
GI	310	342	387	70	L.N.M. SDG. LINE
08	11.1	10	6.6	2.0	Sq. N.M.
	11	21	23	1	B.S.

JAN. 1976

23 L.N.M. SDG. LINE

0 Sq. N.M.

18 B.S.

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-9562 (AHP-10-5-75)

Scale: 1:10,000 1975-1976
Vessel: ATLANTIC HYDROGRAPHIC PARTY Chief J. O. Rolland
W. R. Daniels

A. PROJECT

OPR-514 is a hydrographic survey to provide data to update existing nautical charts of Baltimore Harbor, Maryland. The survey was accomplished in accordance with Project Instructions OPR-514-AHP-75 dated July 9, 1975, Change Number 1 dated July 30, 1975 and Change Number 2 dated July 20, 1976.

B. AREA SURVEYED

The area encompassed by Sheet AHP-10-5-75 is an irregular section extending north from Bodkin Point to North Point and westward to the shoreline. The approximate limits of open water hydrography are bounded by 39°08'00"N, 76°26'00"W; 39°09'00"N, 76°25'00"W; 39°12'15"N, 76°27'00"W; 39°12'15"N, 76°27'45"W; 39°11'25"N, 76°27'45"W; 39°11'30"N, 76°32'00"W; and 39°09'45"N, 76°30'00"W. Survey also included Stony Creek, Rock Creek, Bodkin Creek, Old Road Bay and North Point Creek. Field work began September 11, 1975, and continued through to December 12, 1975. Launch 1282 returned to complete the survey October 18, 1976 and continued through to November 9, 1976.

C. SOUNDING VESSEL

Launch 1277 and Launch 1270 were used to accomplish hydrographic operations conducted in 1975 and Launch 1282 was used in 1976.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

LAUNCH 1277

A Raytheon Fathometer, model number DE723D, serial number 1904, was used in Launch 1277. This fathometer often fails to sound (Digital and analog) in depths under the transducer ranging from 2.4 feet or less and never sounds in depths less than 1.9 feet; therefore, pole soundings were necessary in shoal water. Depth corrections were obtained by averaging bar check values and excluding values which differed by more than 0.4 feet. Three graphs were constructed and velocity correctors were scaled in accordance with table 3 of the Provisional Hydrographic Manual. Appreciable changes in depth corrections occured between the first and last days of hydrography. As a result of water temperature decreases during autumn cooling, three separate velocity tables were constructed. The three graphs, Bar Check Abstract, and Corrector Value Abstracts are included with this

report. Settlement and Squat Correctors were obtained as outlined in Section 4.9.4.2 of the Provisional Hydrographic Manual. The graph and Corrector Value Abstract are included with this report. Daily TRA corrections were determined as outlined in section 4.9.4.1 of the revised Hydrographic Manual. Frequent A to F scale checks were taken to insure correct stylus arm length. All initial settings were adjusted to zero. All fathograms were scanned to mean out sea swell action where applicable.

LAUNCH 1270

Echo sounding equipment used for the project was Raytheon DE-723 survey fathometer. AHP Launch 1270 used serial number 925. Daily bar checks were taken to insure the accuracy of the equipment.

Pole soundings were taken in depths which were too shallow for the sounding equipment. The general depths encountered by the survey vessel were from 3 to 15 feet.

The methods used to determine, evaluate, and apply the following listed corrections to echo soundings are:

(1) Velocity of sound through water--not used
(2) Variations in the instruments initial--this error was detected by careful scanning of the fathograms for initial error. When the initial of the fathometer was found to be off, a correction was entered to the sounding volume and TC/TI tape.
(3) Other instrument corrections--during this survey, frequent F-scale checks on the DE-723 fathometer were made as hydrography progressed.
(4) Corrections determined from direct comparisons--Daily bar checks were taken to establish seperate tables of correction to depth for the echo sounding unit. All bar check tables and lead lines were checked before and after the survey to insure that no changes in their length occurred.
(5) Settlement and squat--previously determined correctors for settlement and squat were used as a souce for this correction.

An abstract of settlement and squat corrections will accompany this report.

LAUNCH 1282

All soundings were recorded to the nearest two tenths of a foot. For depths less than 2.0 feet or when the echo sounder had an unreadable trace, pole soundings were taken. For depths greater than 2.0 feet, echo sounders were used to obtain soundings.

The echo sounder in Launch 1282 was a Raytheon DE-723, serial number 1279 used during the entire survey. The graphic records were scanned and check scanned by trained personnel in accordance with the requirements specified in the Provisional Hydrographic Manual.

Bar checks were taken daily on days that hydrography was actually run when possible to ensure an accurate echo sounder correction to depth.

The echo sounder initial was checked and kept at zero usually not varying more than 0.1 foot. F-scale checks were made frequently each day.

E. HYDROGRAPHIC SURVEY

On Launch 1277, field sheets were constructed, raw master tapes were logged and data plotted on field sheets by the launch's on board PØP8/e hydroplot system. Edited master and corrector tapes, velocity tapes, and TC/TI tapes were logged by Launch personnel.

Field sheets were constructed by party personnel for plotting hydro data obtained by Launch 1282 and 1270. Data for these sheets were logged and plotted manually. All data for this survey will be submitted to AMC Processing Division for replotting and verification.

F. CONTROL STATIONS

Control stations used by Launch 1277 were either located or verified by Photo Party 61. Control used by Launchs 1270 and 1282 was of two types, existing triangulation and prominent cultural features which appeared on the manuscripts of the area. In the latter signal locations were pricked and circled on the manuscripts and submitted to Marine Chart Division, Rockville, Maryland, for scaling of the G. P. s by digitizer. This report contains a complete signal list with the source and quality of control. See also, Horizontal Control Report submitted by Photo Party 61.

G. HYDROGRAPHIC POSITION CONTROL

Del Norte positioning equipment, which operates in a range-range mode, was used to control all of the hydrography by Launch 1277 on sheet AHP-10-5-75. Five separate control networks were used on this sheet. All shore stations were located at established third order triangulation or traverse stations. Whenever possible, calibration was established twice daily by positioning the launch at a known third order established station. Del Norte ranges were compared to ranges calculated by PDP8/e computer using the RK407 program. Any eccentricity from the traverse station to the mobile antenna was taken into account at the time of calibration. Refer to Daily Raw Data printouts for calibration data and see Appendix for Abstracts of Correctors. Repeatability of calibration data was very good, with a maximum observed difference of 3 meters between morning and evening calibrations of any unit; mean daily differences for the various stations ranged from 0.3 to 1.3 meters. The mean standard deviations over all calibration of a particular station ranged from .75 to 1.13. Performance of the Del Norte equipment during the project, however, was only fair due to the presence of numerous skip zones and local interference throughout the project area, resulting in an excessive number of erroneous positions (approximately 4.5 % of all soundings had to be plotted by time and course).

Position control methods used by Launch 1270 and Launch 1282, were range-azimuth or "see boat sheet." A T-2 theodolite was used to obtain the azimuth angle on all Range/Azimuth hydro. The initial was checked frequently, usually every 15 minutes.

The Del Norte was calibrated twice each day over a measured baseline and the mean of the two calibrations was used providing the spread was less than 5 meters. The Del Norte worked very good on both Launch 1270 and 1282 and there is no reason to doubt its accuracy.

Del Norte Equipment utilization:

LAUNCH 1277

SHORE STATIONS

Signal number	S/N	Julian Days Used
1	188	254-273, 295-301
2	248	281-294
8	188	274-294, 307
9	181	254-279, 287-289, 295-307
13	181	342
16	181	340
18	216	340
19	216	342

Mobile Transponder	S/N	159	all hydro
Distance Measuring Unit	S/N	182	all hydro

LAUNCH 1270

DMU #162	all hydro
Master #185	all hydro
Remote #180	all hydro all shore stations
T-2 #85658	all hydro

LAUNCH 1282

DMU # 122	J. D. 292-301
DMU #123	J. D. 314
Master #187 A	All hydro
Remote #249 D	All hydro
T-2 # 85658	all hydro

H. SHORELINE

Shoreline and topographic details were transferred from manuscripts TP-00844, TP-00849, TP-00846, TP-00850, and TP-00852. The shoreline at the southern tip of Fort Howard, 39°11'45"N, 76°26'40"W,

compiled on TP00852.
was not compiled on TP-00850, Due to the small tidal range, the MLW line was not delineated in all areas; however the 3-foot curve was defined by hydrography.

The field edit of all the listed Manuscripts was completed by Photo Party #61. No changes to the shoreline are to be noted by the hydrographer.

I. CROSSLINES

LAUNCH 1277

Approximately 17.8 nautical miles or 9.9 % of the mainscheme hydrography run on sheet AHP-10-5-75 were crosslines. The agreement with mainscheme lines was very good with most soundings agreeing to the nearest foot. A maximum difference of 2 feet occurred along a crossline at 39°10'40"N; this discrepancy is probably due to tidal differences.

LAUNCH 1270

Crosslines were run in excess of 10% of the regular system of hydrography. The magnitude of discrepancy was one foot or less with no major discrepancies occuring.

LAUNCH 1282

The percentage of crosslines run was 9.6% of the mainscheme hydro. Agreement was excellent with differences of not more than one foot.

J. JUNCTIONS See verifiers Report

This survey does not junction with any prior surveys, however its area is covered by Prior Survey Number H-2354, scale 1:10,000, 1898.

A junction was made on the north by Launch 1277 with contemporary Survey H-9582, also run by Launch 1277. Soundings at this junc~~ture~~ 1277 show good agreement.

Junction soundings at the mouth of Jones Creek and North Point Creek run by Launch 1277 in 1975 and those run by Launch 1278 run in 1976 show differences of approximately 2 feet. It was noted by the OIC of Launch 1282 that the tide was unusually low during the time the junction was made and that smooth tides should resolve the discrepancy.

Junctions by Launch 1270 and 1277 at the entrance to Stony Creek, Rock Creek, and Bodkin Creek show good agreement.

See verifiers' report

K. COMPARISON WITH PRIOR SURVEYS

Two prior surveys were provided for comparison; Surveys Number H-2354 and Number H-2358, both dated 1898 and at a scale of 1:10,000. The agreement in the open water sounded by Launch 1277 shows very good agreement. The trend of the depth curves remain relatively unchanged and depths in general agree within 1 or 2 feet. The maintained channels are now 10 to 20 feet deeper for obvious reasons.

Soundings also show good agreement in Stony, Rock, and Bodkin Creeks with the only change to be noted at the westerly tip of the 6 foot shoal at the entrance to Rock Creek, shown on the prior survey at Latitude 39°09.3', Longitude 76°30.2'. The shoal has receded* 200 meters eastward with the only remnant being an isolated 5 foot least depth on a group of rocks at this position. Depths are generally 10 to 15 feet deeper at this location. ✓ concur

* Area was probably dredged subsequent to prior surveys.

Presurvey Review Items were investigated with the following results:

ITEM #1 - OBSTRUCTION PA charted at Latitude 39°12.78', Longitude 76°27.13'. The area was wire dragged to determine the location of the obstruction. An obstruction was located submerged 4.0 feet at MLW at Latitude 39°12.8', Longitude 76°27.15'. It is recommended that the obstruction be charted at the new position. Origin NM 33/70 ~~See verifiers report~~ concur

From C/L 680/69

ITEM # 2 - THE VISIBLE WRECK PA charted at Latitude 39°12.7', Longitude 76°26.83'. The wreck was located ~~awash at MLW.~~ The wreck should be charted ~~at its new G. P.,~~ not Latitude 39°12.5~~8~~, ~~Longitude 76°26.82'.~~ ~~and be deleted from its present G. P.~~ as a sunken wreck, PA. However, another wreck (a barge) from T-5421(33) was verified by the present survey in lat 39°12.56', long 76°26.82. See verifiers report, para 1.a. ✓

ITEM #3 - DANGEROUS SUNKEN WRECK charted at Latitude 39°10.9', Longitude 76°28.01'. This wreck was reported to be covered by 4 feet of water; closely spaced lines were run (3 conw) in the general vicinity by Launch 1277 with no indication of the wreck. The area was ~~wire~~ dragged by Launch 1282 in 1976 with no wreck or obstruction being found. ~~It~~ (however) it is recommended that the sunken wreck symbol be deleted from the chart. Origin NM 45/32. Concur ✓

ITEM #4 - DANGEROUS SUNKEN WRECK, PD, charted at Latitude 39°09.25', Longitude 76°27.0'. Closely spaced lines were run in the general vicinity by Launch 1277 with no indication of the wreck. The area was ~~wire~~ chain dragged by Launch 1282 in 1976 with obstructions being located at Latitude 39°09.2~~8~~' (pos 5247), Longitude 76°27.~~0~~8'; (pos 5248) Latitude 39°09.2~~9~~8', Longitude 76°27.~~0~~9' and Latitude 39°09.2~~9~~", Longitude 76°27.~~0~~5". The obstructions were approximately 2 feet off the bottom but positive identification as to whether it was a wreck could not be made. It is recommended that ~~either~~ an obstruction symbol be charted at the above G. P.'s ~~or~~ and that the wreck symbol remain as charted and the "PD" designation be ~~deleted.~~ retained. Origin 920/62 ✓ pos 5247, pos 5249 concur Vol. 7 p. 4

A shoalest depth of 7 Feet was located at lat 39°09.25', long 76°27.16' (pos 2521/6).

The chain drag did not cover the area charted with the wreck, PD.

Pos 5247 14ft (not plotted)
Pos 5248 8ft (obstr)
Pos 5249 9ft (obstr)

ITEM #18 - DANGEROUS SUNKEN WRECK, PA, charted in Latitude 39°12.03', Longitude 76°27.93'. The area was ~~wire~~ dragged to determine the location of the sunken wreck. The wreck was located at Latitude 39°12.06', Longitude 76°28.08'. It is recommended that the sunken wreck be charted at its new G. P. and be deleted from its present position. 12WK was transferred to H-9582(1975) during quality evaluation of the present survey.

ITEM # 5 - SUNKEN WRECK charted at Latitude 39°08.0', Longitude 76°26.18'. Area was surveyed at close line spacing with no indication of the wreck being obtained. Contact was made with Maryland Marine Police who indicated that the wreck had been removed during the summer of 1971. It is recommended the wreck symbol be deleted from the chart. concur
Origin NM 37/68 and C/L 1099/72

ITEM # 6 - SHOALING REPORTED - Latitude 39°08.0', Longitude 76°26.33'. The area of the shoaling was surveyed at 50 meter spacing, (positions 716-761 + 1001-1006). The ~~shoal~~ bottom has been completely delineated. concur
Origin C/L 578/69 Chart present survey information

ITEM # 7 - SUBMERGED PILES CHARTED IN THE VICINITY OF Latitude 39°08.87'. Longitude 76°27.55'. The area was examined extensively at low tide, with no indication of the piles. An inquiry of the area of the submerged piles was made with owner of Paradise Beach Marina which is adjacent to the location of the piles. The owner, Mr. R. Meyer, of 408, 2nd Ave S. W., Glen Bernie, Maryland, stated that the pilings have been completely removed and none exists at this time. It is recommended concur that the submerged piles symbol and designation be deleted from the chart.
Origin NM 34/69

ITEM # 8 - SHOALING REP. 1968 - In Latitude 39°10.17', Superseded by PSR ITEM 32 (next page) Longitude 76°30.10'. This area was adequately covered by hydrography to delineate concur bottom configuration. The 42ND edit of chart does not have this
Origin C/L 1648(68) area as "Shoal Rep," Item appears on 41ST Ed.

ITEM # 9 - REP. BARE AT MLW 1974 - Latitude 39°09.8', Longitude 76°32.9'. This area was covered with close spaced hydro with no indication of the bare shoal noted. A visual search of the adjacent area of the creek revealed no bare shoal. It is recommended the notation "Rep. concur bare at MLW 1974" be removed from the chart. Origin C/L 18/74

ITEM # 10 - WRECK, PD, charted in Latitude 39°11.3', Longitude 76°31.05'. Closely spaced lines were run in the vicinity by Launch 1277 with no indication of the wreck. When Launch 1282 returned in 1976, the area was wire dragged with no wreck or obstruction being located. ~~See hydro report~~ Staff ~~It is recommended the wreck symbol and designation be deleted from the chart~~. Origin N/M 46/74 Concur, delete from chart, chain drag investigation included with PRS Item 11a.

ITEM # 12 - PILES AND RUINS charted in the vicinity of Latitude 39°09.75', Longitude 76°28.45'. The area was investigated at low tide. Fix ~~#688~~ 2688 marks the only indication of any piles in the vicinity, a concur group of five 4" diameter piles bare 8'6 at MLW. It is recommended that the piles and ruins symbol and its position be adjusted on future editions of the chart. Refer to Field Edit Sheet OPR-514, Baltimore Harbor, for more accurate description.

ITEM # 13 - VISIBLE OBSTRUCTION charted in Latitude 39°11.63', Longitude 76°26.53'. This item is a small rock island with ruins of an old lighthouse. Refer to Field Edit Sheet, OPR-514, Baltimore Harbor, for further details. Obstr on TP 00852

ITEM # 26 - OBSTRUCTIONS charted in:

			Cleared depth	
a.	Latitude 39°12.27'	Longitude 76°31.71'		
~~b.~~ b.	Latitude 39°11.76'	Longitude 76°30.98'	9	See Verifier's Report of H-9582 (1975), para. 7a(4)
~~c.~~ c.	Latitude 39°11.51'	Longitude 76°30.80'	6	

These ~~Both~~ obstructions were ~~wire~~ chain dragged ~~for~~ extensively to determine their existence. There are no obstructions located at these G. P.'s. It is recommended that these obstructions be deleted from the chart. Concur Origin C/L 317/48; Special Investigation, USC+GS Ships Wainwright and Hilgard.

ITEM # 32 - OBSTRUCTION, REP. 1975 - Latitude 39°10'03", Longitude 76°30'01". Adverse weather and closing of the field season prevented a specific search for this item. Hydro run by Launch 1277 in 1975 at the location of this obstruction does indicate the 6 foot curve has ~~been~~ never extended approximately 150 meters offshore at this position. It is recommended the obstruction symbol be retained until a specific search can be made. Falls in area of PSR Item B (Shoaling Reported) origin C/L 1648/68, 4 to 5 foot soundings verified as indicated by present smooth sheet.

ITEM # 33 - SHOALING REPORTED - Latitude 39°09'10", Longitude Longitude 76°30'35". Hydro run by launch 1270 in 1975 indicates shoal depths extend 150 meters offshore from Water Oak Point. Additional hydro was not run by Launch 1282 in 1976 for the reasons stated above in Item #32. It is recommended that soundings from this survey replace the now charted terminology "Shl rep". concur

ITEM # 11 - OBSTRUCTIONS - 4 obstructions charted in Origin C/L 317/48; Special Investigation, USC+GS Ships Wainwright and Hilgard

			Cleared depth	
a.	Latitude 39°11.~~76'.28~~	Longitude 76°~~30~~ 31.07'	9	delete from chart
* b.	Latitude 39°11.~~51~~ 31'	Longitude 76°30.~~80~~ 51	~~6~~	revise position
c.	Latitude 39°10.78'	Longitude 76°29.45'		delete from chart
d.	Latitude 39°11.03'	Longitude 76°29.21'		delete from chart

The four areas of obstructions were extensively wire dragged to determine their existance. *The only obstruction located was at Latitude 39°11.33', Longitude 76°30.5~~2~~1', with a least depth of 12 feet at MLW. ~~The other 3 obstructions should be deleted from the chart, and the remaining obstruction be charted at the new G. P.~~ ~~See Verifier's report~~ Concur

DASHED CIRCLED ITEMS

Rock submerged in Latitude 39°12.22, Longitude 76°27.97'. The area was wire dragged to determine the location of the submerged rock. An obstruction was located ~~in the same location.~~ approx 50 meters southwest. The least depth was determined to be 6 feet. It is recommended that the rock symbol remain as indicated. The position of the ~~rock~~ obstr has been rejected (pos 226; Vol 6.) on the present survey, attributed to weak Fix. Retain the charted information See QC Report, para 6.

Closely spaced lines were run in the vicinity of a 12 foot sounding charted in Latitude 39°11.3', Longitude 76°27.7'. A least depth of 16 feet was found in this area. Delete 12 ft depth from chart. concur

VISIBLE WRECKS ENCLOSED BY TRIANGLES

The visible wrecks are too numerous to describe separately, and were verified by one of the following methods: (1) investigation with fathometer; (2) information from local marine authority (Maryland Port Adm. or Maryland Marine Police; (3) visual investigation.

Charted as	Latitude	Longitude	Results
Origin C/L 1551/67 Visible wreck Charted as sunken WK on 42nd Ed 10/75	39°07'33"	76°26'54"	* Not found--removed by marina owner.
Visible wreck	39°09'36"	76°31'51" 30'13"	* Not found--removed by pier owner.
Rock 5 RK	39°09'18"	76°29'53"	** Found--see position 482, 1037, & last out of 625.
Visible wreck Origin T-5424 (Bp 48376)	39°09'05"	76°29'53"	* Not found--removed reference Maryland Marine police. (Nov, 1975)

* delete from chart
** Revise position of 5 RK charted in lat. 39°09'22", long 76°30'12" to the present survey information.

L. COMPARISON WITH THE CHART

A comparison with Chart 12278, 41st Edition, June 7, 1975, shows little agreement in most areas. ~~Depths in the~~ Isolated areas extending from the southern shoreline out to the 12 foot curve east of 76°30'W are generally 1 to 3 feet deeper than charted. The three 5 foot shoals charted near Latitude 39°09'20"N, Longitude 76°27'15"W were found to consist of several isolated 7 foot soundings in an area which is generally 9 to 11 feet deep. Several 20 to 21 feet deep "holes" were found in the vicinity of Latitude 39°11'15"N, Longitude 76°26'45"W, where 8 to 11 foot depths are charted. The 6 and 12 foot curves west of 76°30'W have shifted approximately 100 meters further from shore. The small channel near Latitude 39°10'45", Longitude 76°31'15", ~~is up to 8 feet deeper than charted.~~ has 11 and 13 foot depths as indicated on the present survey. An extensive search was made at low tide for the rock awash charted off a groin at Latitude 39°09.8, Longitude 76°29.2; no indication of this rock was found. The depth in this area is 4 feet. See NR, para 7.9(5). A 35 foot deep "hole" was found in the vicinity of Latitude 39°09'30", Longitude 76°25'30" where 13 foot depths are charted. A rock awash (Fix #1082) was found approximately 60 meters north of White Rocks. A rock covered ~~1.7~~ 4 feet (5th out, Fix #1105) was found approximately 25 meters west of White Rocks. These rocks are not shown on the chart. 4 ft. depth shown (on slope)

Jones Creek and North Point Creek show some shoaling at their upper reaches.

See V.R. para. 7a.(4).

The sunken wreck charted at Latitude 39°19'15", Longitude 76°31'01", was observed to be several "visible" wrecks and should be charted as such. This wreck could have been more thourghly investigated.

The sunken wreck charted at Latitude 39°09'02", Longitude 76°30'52" has been removed and should be deleted from the chart. ??? who & when was it removed Retain as charted, not considered disproved.

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede prior surveys for charting.

N. AIDS TO NAVIGATION See Q.C. Report, para 7.c.

Comparison of floating aids to navigation with the Light List Volume I, 1975, and Chart 12278, 41st Edition, June 7, 1975, showed the following discrepancies:

Brewerton Channel Lighted
Black Bell Buoy "3B" (LL2784) is listed in 41 feet of water; it lies in 25 feet. Lat 39°10.77', Long 76°26.65'

Patapsco River 1/2 measured mile bouys "A" and "B" are out of position and reversed (buoy "A" is where buoy "B" is charted, etc.). The distance between the buoys is approximately 1080 meters, or about ~~125~~ 108 meters longer than 1/2 nautical mile. Markers are privately maintained.

Rock Creek Lighted
Red buoy "2" (LL3537) was observed to have a radar reflector. This is not shown on the chart or in the Light List. Lat 39°09.76', Long 76°29.75'

Penwood Channel buoys "5", "6", and "9" (LL3543-3545) are listed as being lighted. They are not charted as such, nor were they observed to have lights. The light List states that these buoys are replaced by unlighted buoys from December 15 to March 15; observations were made in October. 1976 Light List in agreement with present survey information

The Light List contains entries for Penwood Channel buoys "1" and "4." These buoys are not charted, nor were they observed. The 1976 Light List does not show these aids

Comparison of fixed aids to navigation with the Light List Volume I, 1975 and Chart 12278, 41st Edition, June 7, 1975 showed the following discrepancies:

Bodkin Creek Entrance Light
~~Black Daybeacon~~ "7", (LL3534), listed in 8 feet of water; it lies in 12 feet. Revise charted position to agree with the present survey information. See also Form 76-40 (C/L 1169/76) Lat. 39°08'14.85", long. 76°25'56.22"

Penwood Channel range front and rear lights (LL3541 and 3542) are charted as green lights; they are listed in the Light List as white lights. The charted phase characteristics agree with the Light List. The lights were not observed by party personnel; refer to Field Edit Sheet, OPR-514, Baltimore Harbor, 1975, for description. It should be noted that the The charted position of the range rear light is approx 250 meters out of position. Chart present survey information. See Form 76-40, C/L 1169/76.

name "Pennwood Channel" does not appear on the chart; this channel was identified by plotting the position of Pennwood Channel Range front light, as given in the Light List, on Chart 12278. This channel runs north from Brewerton Channel into Old Road Bay.

O. STATISTICS

Vessel	N. Mi. Sdg. line	Sq. Mi	Bottom Samples	No. of pos.
Launch 1277	249.2	10.6	24	2126
Launch 1270	77.0	3.3	14	1059
Launch 1282	17.7	1.0	4	474
Totals	343.9	14.9	42	3659

P. MISCELLANEOUS

Velocity corrections have not been applied to soundings on the field sheets, they are reduced for predicted tides only. A large number of pole soundings and the inability to use TC/TI Tapes on the off-line plot prevented this. The creeks in this area have a two to three foot layer of soft, unconsolidated mud with a more compact layer below it. These layers are the cause of two traces appearing on the fathogram at depths greater than 7 or 8 feet. The upper trace is the true bottom.

O. RECOMMENDATIONS

None.

R. AUTOMATED DATA PROCESSING

PROGRAM NAME	NUMBER	VERSION DATE
On-line R/R RTS	RK111	8/7/74
Grid, Signal Plot	RK2DI	4/18/75
Off-line R/R Non-RTS	RK211	8/16/74
Utility	RK300	5/22/74
Corrector Abstract	PM360	3/21/74
Lambert R. C. Conversion	AM400	4/1/73
Geodetic Direct/Inverse	RK407	8/15/74
Geodetic 3-Point Fix	RK410	8/23/73
Predicted tides	AM500	11/10/72
Elinore	AM602	5/21/75

S. REFERENCE TO REPORTS

1. Horizontal Control Report OPR-514, Baltimore Harbor, Maryland, 1975.
2. Field Edit Report OPR-514, Baltimore Harbor, Maryland, 1975.

Respectfully Submitted,

Robert A. Lewis

Robert A. Lewis
Assistant Chief
Hydrographic Surveys Branch

FIELD TIDE NOTE

Field tide reduction of soundings was based on predicted tides from Baltimore Harbor, Maryland, and were interpolated by PDP-8/E computer utilizing AM-500. All times of both predicted and recorded tides are GMT.

Two ADR-punch tape gages were installed near the mouth of the Patapsco River and remained in operation during the entire 1975-76 field season. These gages were reestablished when the field party returned in 1976 and remained in service until completion of the project.

Site and Gage Name	Location	Period
North Point (ADR)	39°11'45" 76°26'48"	8/12/75 to end of season 7/15/76 reestablished-end of season.
Hawkins Point ADR)	39°12'30" 76°31'56"	8/11/75 to end of season 7/15/76 reestablished to end of season

Three 30 day bubbler gages were installed at the following locations;

Stony Creek 30 day gage	39°09'45" 76°31'39"	9/30/75---1/22/76 11/5/76---11/8/76
Bodkin Creek 30 day gage	39°07'40" 76°26'58"	11/14/75---1/21/76
Rock Creek	39°09'14"	11/18/75---1/21/76

Four tide staffs were installed at the upper reaches of Stony, Rock, Main, and North Point Creeks to cover periods of hydrography in these creeks.

Rock Creek (Staff)	39°08'19" 76°31'22"	November 20, 1975 thru December, 1975
Stony Creek (Staff) Greenhaven Marina	39°08'43" 76°33'13"	Nov.-Dec. 1975 Period of hydro
Main Creek (Staff) Carback Marina	39°07'35" 76°28'23"	December 5, 1975 thru December 11, 1975
North Point Creek (Staff)	39°13'20" 76°26'29"	November 9, 1976 thru November 10, 1976

All tide data from the above gages and staffs have been transmitted to Tides Branch, Rockville.

ZONING

Zoning information will be furnished by Chief, Tides Branch, Rockville.

SETTLEMENT AND SQUAT TEST

October 20, 1976

Launch 1282

140 hp outboard

Four runs were made at five speeds, 1000 rpm, 1500 rpm, 2000 rpm, 2500 rpm and 3000 rpm. The boats speed range for hydrography is 1000 rpm to 2000 rpm. Two runs were made at each speed in one direction and two runs were made in the opposite direction.

The procedure was to have a person with a level on shore and a person holding a level rod on the boat. The vessel would run by the observer at each speed and a reading was taken from the level rod. After a comparison of data was made, the average value for each hydro speed was determined. A curve constructed and a settlement and squat table was prepared. The changes in tidal heights were taken into consideration.

Test Run - 20 October 1976

NOTE: At no time did the tide change during each settlement and squat run.

Run #1

	1000	1500	2000	2500	3000
Still	9.65	9.65	9.65	9.65	9.65
Underway	9.70	9.80	9.90	9.95	10.00
S&S Correction	0.05	0.15	0.25	0.30	0.35

Run #2

	1000	1500	2000	2500	3000
Still	9.70	9.70	9.70	9.70	9.70
Underway	9.75	9.85	9.95	10.00	10.00
S&S Correction	0.05	0.15	0.25	0.30	0.30

Run #3

	1000	1500	2000	2500	3000
Still	9.70	9.70	9.70	9.70	9.70
Underway	9.75	9.85	9.95	10.00	10.05
S&S Correction	0.05	0.15	0.25	0.30	0.35

Run #4

	1000	1500	2000	2500	3000
Still	9.75	9.75	9.75	9.75	9.75
Underway	9.80	9.90	10.00	10.05	10.05
S&S Correction	0.05	0.15	0.25	0.30	0.30

Average Correctors for each speed

1000	1500	2000	2500	3000
0.05	0.15	0.25	0.30	0.33

Settlement and Squat Test

4 October 1974
J.D. 277

Launch 1270

Two runs were made at 1000 RPM's, 1500 RPM's, and 2000 RPM's. These speeds are the boats most suitable hydro speeds.

The procedure was to anchor a marker buoy with a short scope. Launch 1270 was then stopped alongside the marker buoy and the depth of water was measured with the echo sounder. Then the vessel was run past the marker buoy at normal sounding speeds, and another accurate echo sounding was taken when in the same position relative to the buoy. Changes in tidal heights were taken into consideration. The tests were repeated in a second location for comparisons. After a comparison of data was made, the average valve for each hydro speed was determined. A curve constructed and a settlement and squat table was prepared.

The following data is respectfully submitted:

Robert Lewis
for/ W. E. George, Lt.(jg), NOAA

Run #1

Note: At no time did the tide change more than 0.1 foot during each S & S run.

	1000 RPM	1500 RPM	2000 RPM	2500 RPM
Still	5.5'	5.5'	5.5'	5.5'
Underway	5.1'	5.0'	4.8'	4.5'
S&S Corr.	+0.4'	+0.5'	+0.7'	+1.0'

Run #2

	1000 RPM	1500 RPM	2000 RPM	2500 RPM	3000 RPM
Still	4.3'	4.3'	4.3'	R	R
Underway	3.9'	3.8'	3.7'		
S&S Corr.	0.4'	0.5'	0.6'		

1000 RPM	+0.4'	+0.4'	+0.4'
1500 RPM	+0.5'	+0.5'	+0.5'
2000 RPM	+0.7'	+0.6'	+0.65'
2500 RPM	+1.0	R	+1.0'

Signal Tape Listing
OPR-514
H-95-62
AHP-10-5-75

See Q.C. Report, para 1.

001·3	39	09	50044	076	28	35728	254	0000	000000 SMALLWOOD, 1975
002·6	39	10	24770	076	29	17151	250	0000	000000 White 1915, 1973
004-3	39	10	58803	076	31	01479	243	0000	000000 Piling '75,1975 (Light "8")
008·0	39	12	05999	076	29	44667	254	0000	000000 Sparrows Point, 1975
009·6	39	11	48896	076	26	55046	250	0000	000000 Cutoff, 1973
013·0	39	12	06606	076	26	57894	250	0000	000000 Fort Howard Raydist 1973
014-0	39	12	57818	076	27	47021	250	0000	000000 Craig Hill Channel Upper RR Lt.
5-0	39	13	09894	076	27	43935	243	0000	000000 Penwood Channel Front R Lt.
016·0	39	13	06225	076	27	30514	243	0000	000000 Jones Creek Light "2"
017-0	39	12	52954	076	27	09430	243	0000	000000 Light "3"
018·0	39	13	02864	076	26	40577	243	0000	000000 Daybeacon 4
019·0	39	13	07366	076	26	30319	243	0000	000000 North Point Creek Lt. "6"
500·7	39	09	44940	076	31	38960	254	0000	000000 End of pier TP-00846
501·7	39	09	46895	076	31	31848	243	0000	000000 SE Corner of Bridge HSE TP-00846
503·7	39	09	17641	076	30	02832	254	0000	000000 Corner of blkhd TP-00849
504·7	39	09	45247	076	28	58542	139	0000	000000 Fort Smallwood tank, 1934
505·7	39	10	12355	076	30	46334	254	0000	000000 End of pier TP-00846
506·7	39	10	24422	076	31	03041	243	0000	000000 Stony Creek Lt. "4" TP-00846
507·7	39	10	01120	076	31	24410	254	0000	000000 End of pier TP-00846
508·7	39	09	46620	076	31	31140	243	0000	000000 N.E. corner of Bdg. op. TP-00846
509·7	39	09	14852	076	30	27823	254	0000	000000 End of pier TP-00849
520·7	39	08	04605	076	26	24649	254	0000	000000 Corner of blkhd TP-00850
521·7	39	07	37426	076	25	58880	243	0000	000000 Tower TP-00850
523-7	39	08	14301	076	25	56239	243	0000	000000 Bodkin Lt. "7" TP-00850
4·7	39	07	39339	076	26	58185	254	0000	000000 End of pier TP-00850
525·7	39	07	36355	076	27	12656	254	0000	000000 Point of land TP-00850
530·7	39	09	45403	076	29	16326	254	0000	000000 End of pier TP-00850
531·7	39	09	19327	076	30	04540	243	0000	000000 Rock Creek Lt. "3" TP-00849
532·7	39	10	19752	076	30	41890	254	0000	000000 End of pier TP-00846
600·7	39	09	03390	076	32	17150	254	0000	000000 NE corner of pier TP-00846
790·7	39	13	38730	076	27	45660	254	0000	000000 End of pier TP-00844
791·7	39	13	09850	076	27	43870	243	0000	000000 Pennwood Ch. R.Fr.Lt.(TP-00844)
792·7	39	13	23790	076	27	32450	254	0000	000000 Corner of pier TP-00844
793·7	39	13	19490	076	26	28810	254	0000	000000 End of pier TP-00852
794·7	39	13	07460	076	26	30360	243	0000	000000 North Point Creek Lt."6" TP-00852
795·7	39	13	03020	076	26	55490	254	0000	000000 Corner of pier TP-00852
796-7	39	12	28090	076	31	58490	254	0000	000000 Brewerton Channel Front Range Light TP-00846
? 900 7	39	10	25228	076	29	17954	250	000	000000 White Rock light (1961).
900	39	12	4666	076	30	0467			Sparrow Pt. Dry Dock Lt. P4

APPROVAL SHEET

Survey H-9562 (AHP-10-5-75)

The hydrographic records transmitted with this report are complete and adequate.

95 percent of the field work was done in 1975 under the supervision of LCDR J. O. Rolland.

Final field work was completed by LTJG K.W. Perrin in 1976 under the supervision of LCDR W. R. Daniels.

This survey is complete and adequate with no additional field work recommended.

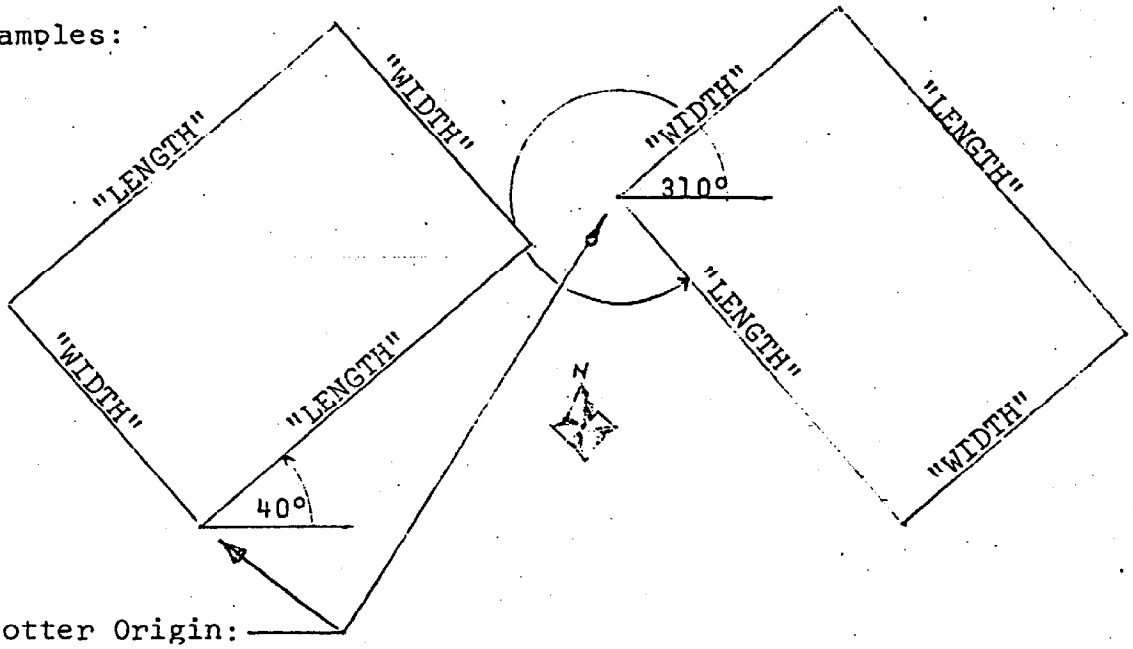
William R. Daniels
LCDR, NOAA
Chief, Hydrographic Surveys Branch

CAM3-1
1/3/77

ATLANTIC MARINE CENTER
PROJECTION PARAMETERS
POLYCONIC OR MODIFIED TRANSVERSE MERCATOR

1. Project No. OPR-514
2. Reg. No. H-9562
3. Field No. AHP-10-5-75
4. Requested By J. S. Bradford
5. Ship or Office Verification
6. Date Required ASAP

7. Polyconic ☐ Modified Transverse Mercator ☐
8. Central Meridian of Projection 76 ° 28 ' 30 "
9. Survey Scale: 1: 10,000
10. Size of Sheet (check one - "width" x "length"):
    36 x 54 ☐ 36 x 60 ☐ Other [X] Specify 152.4 x 104.6
11. Examples:



12. Plotter Origin:
    Latitude 39 ° 05 ' 53.0 "
    Longitude 76 ° 24 ' 55.0 "
13. Skew Angle (measured counterclockwise at origin): 90 °
14. G.P.'s of Triangulation and/or Signals attached ☐
15. G.P.'s and Frequencies for Electronic Control Arcs attached ☐
16. Material Desired: Tracing Paper ☐ Mylar [X]
    Other ☐ Specify _____
17. Remarks: Smooth sheet

6/30/77

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center: ~~CAM332~~ CAM332

Hourly heights are approved for Form 362

Tide Station Used (NOAA Form 77-12): Stony Creek, Bodkin Creek, Rock Creek (Fairview), Main Creek, Hawkins Point, Baltimore

Period: September 11, 1975 - November 10, 1976

HYDROGRAPHIC SHEET: H-9562

OPR: 514

Locality: Baltimore Harbor, Maryland

Plane of reference (mean ~~lower~~ low water): See page 2.

Height of Mean High Water above Plane of Reference is 1.1 ft.

Remarks: Recommended zoning:

1. In Stony Creek zone direct on Stony Creek.
2. In Rock Creek zone direct on Rock Creek.
3. In Main Creek zone direct on Main Creek.
4. In Bodkin Creek zone direct on Bodkin Creek.
5. In the Patapsco River zone direct on Hawkins Point for 1975 work. For 1976 work zone direct on Baltimore. (The data for Hawkins Point is questionable in 1976).

Don Spillman
Chief, Tides Branch

6/30/77

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Plane of reference (mean low water):

Ft.	
2.2	- Stony Creek
1.9	- Bodkin Creek
3.8	- Rock Creek (Fairview)
3.2	- Main Creek (Carback Marina)
3.27	- Hawkins Point
3.96	- Baltimore

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

SURVEY NUMBER

H-9562

GEOGRAPHIC NAMES

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	
ALPINE BEACH (Ppl)										1
ASHLAR POND										2
BACK COVE										3
BACK CREEK										4
BACK CREEK POINT										5
BAR HARBOR										6
BAYSIDE BEACH (Ppl)										7
BEEHIVE COVE										8
BIG BURLEY COVE										9
BIG MARSH POINT										10
BODKIN CREEK										11
BODKIN NECK										12
BODKIN POINT										13
BODKIN POINT SHOAL										14
BREWERTON CHANNEL										15
CARUEL BEACH (Ppl)										16
~~CARVEL BEACH (Ppl)~~										17
CEDAR POINT										18
CHESAPEAKE BAY										19
CLEAR WATER BEACH (Ppl)										20
COTTAGE GROVE BEACH (Ppl)										21
COX CREEK										22
CRAIGHILL CHANNEL										23
CUTOFF ANGLE										24
ELI COVE										25

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

SURVEY NUMBER

H-9562

GEOGRAPHIC NAMES

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	
FAIRVIEW										1
FORT HOWARD										2
FRANKIE POINT										3
GOOSE COVE										4
GRAVEYARD POINT										5
GREEN HAVEN										6
GREENLAND BEACH (Ppl)										7
HERBERT A. WAGNER GENERATING PLANT CHANNEL										8
HICKORY POINT										9
HIGH POINT (Ppl)										10
HOG NECK										11
JONES CREEK										12
JUBB COVE										13
LITTLE MARSH POINT										14
LOCUST COVE										15
LOMBARDEE BEACH (Ppl)										16
LONG COVE										17
MAIN CREEK										18
MARLEY NECK										19
MATHIAS COVE										20
MT. PLEASANT BEACH (Ppl)										21
NABBS CREEK										22
NORTH POINT										23
NORTH POINT CREEK										24
NORTH POINT SHOAL										25

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

SURVEY NUMBER

H-9562

GEOGRAPHIC NAMES

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	
OLD BEE POINT										1
OLD GLORY BEACH (Ppl)										2
OLD HOUSE COVE										3
OLD LANDEN POINT										4
OLD ROAD BAY										5
ORCHARD BEACH (Ppl)										6
ORCHARD POINT										7
PARADISE BEACH (Ppl)										8
PATAPSCO RIVER										9
PENWOOD CHANNEL										10
PERRY COVE										11
PINEHURST										12
POWHATAN BEACH (Ppl)										13
RIVIERA BEACH (Ppl)										14
ROCK CREEK										15
ROCK HILL BEACH (Ppl)										16
ROCK POINT										17
ROCK POINT SHOAL										18
ROCKVIEW BEACH (Ppl)										19
SANDERS PARK (Ppl)										20
SLOOP COVE										21
SPARROWS POINT SPARROWS POINT (Ppl)										22
SPIT NECK										23
SPIT POINT										24
~~STONY BEACH (Ppl)~~										25

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

SURVEY NUMBER

H-9562

GEOGRAPHIC NAMES

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	
STONY CREEK										1
STONY POINT										2
SUNSET BEACH (Ppl)										3
TAR COVE										4
THE HAMMOCK										5
VENICE ON THE BAY										6
WALL COVE										7
WATER OAK POINT										8
WHARF CREEK										9
WHITE POND										10
WHITE ROCKS										11
WHITES COVE										12
										13
										14
					Approved:					15
										16
					Chas E. Harrington					17
					Chief Geographer - C3x5					18
					7 JAN 1981					19
										20
										21
										22
										23
										24
										25

APPROVAL SHEET
FOR
SURVEY H-9562

A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position printout has/~~has not~~ been made. A new final sounding printout has/~~has not~~ been made.

B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the Verifier's Report.

Date: _____

Signed: [signature]

Title: Chief, Verification Branch

NOAA FORM 77-27 (5-77) | U. S. DEPARTMENT OF COMMERCE NOAA | HYDROGRAPHIC SURVEY NUMBER H-9562

HYDROGRAPHIC SURVEY STATISTICS

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS	11 E.O
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. 1 ARC, 2 EXCESS	3

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						1-misc. data
CAHIERS	1-with printouts					
VOLUMES	9 in box					
BOXES			1- Smooth			

T-SHEET PRINTS (List)

SPECIAL REPORTS (List) 1-Cht.-mark-up

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS: PRE-VERIFICATION	AMOUNTS: VERIFICATION	AMOUNTS: TOTALS
POSITIONS ON SHEET			3659
POSITIONS CHECKED	360	65	
POSITIONS REVISED		40	
SOUNDINGS REVISED		130	
SOUNDINGS ERRONEOUSLY SPACED		3	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED			
	TIME – HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	19		
VERIFICATION OF CONTROL		223	
VERIFICATION OF POSITIONS	2	304	
VERIFICATION OF SOUNDINGS		150	
COMPILATION OF SMOOTH SHEET		80	
APPLICATION OF TOPOGRAPHY			
APPLICATION OF PHOTOBATHYMETRY		31	
JUNCTIONS		70	
COMPARISON WITH PRIOR SURVEYS & CHARTS		35	
VERIFIER'S REPORT		80	
OTHER			
TOTALS	21	973	994

Pre-Verification by D.V. Mason	*Beginning Date* 06/08/77	*Ending Date* 06/08/77
Verification by R. Kenne, J.Bradford	*Beginning Date* 09/15/77	*Ending Date* 01/03/80
Verification Check by Robert Roberson	*Time (Hours)* 5	*Date* 01/04/80
Marine Center Inspection by Hydrographic Inspection Team (AMC)	*Time (Hours)* 16	*Date* 01/09/80
Quality Control Inspection by Robert W. Derkazarian	*Time (Hours)* 360	*Date* 9/15/80
Requirements Evaluation by O.J. Hill	*Time (Hours)* 8	*Date* 4/10/81

O. Mapes 1/30/81 39 hours

Reg. No. 9562

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey the following shall be completed:

CARDS CORRECTED

DATE_____ TIME REQ'D_____ INITIALS_____

REMARKS:

Reg. No. _____

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE_____ TIME REQ'D._____ INITIALS_____

REMARKS:

ATLANTIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9562 FIELD NO. AHP-10-5-75

Maryland, Lower Patapsco River, ~~Marley Neck~~ Stony Creek - Bodkin Neck

SURVEYED: 1 September through 12 December 1975
18 October through 9 November 1976

SCALE: 1:10,000 PROJECT NO.: OPR-514

SOUNDINGS: Raytheon 723
Raytheon 723D
Pole Soundings

CONTROL: Del-Norte
(Range-Range &
Range-Azimuth)

Chief of Party	J. O. Rolland
.....	W. R. Daniels
Surveyed by	W. A. Wert
.....	W. D. Otto
.....	K. W. Perrin; S.R. Iwamoto
Automated Plot by	XYNETICS 1201 Plotter (AMC)
Verified and Inked by	J. Scott Bradford
Date	December 30, 1979

1. Introduction

No unusual problems were encountered during verification. The red changes in the Descriptive Report were made by the verifier.

2. Control and Shoreline

a. The source of control is adequately described in Sections F. and G. of the Descriptive Report.

b. The shoreline application was made from reviewed Manuscripts TP-00844 and TP-00846, October 1974, field edit November 1975, scale 1:5,000; and TP-00849, TP-00850, and TP-00852, October 1974, September and October 1975, scale 1:10,000.

3. Hydrography

a. The agreement at crossings is adequate.

b. The standard depth curves are adequately delineated with the inclusion of a supplemental three-foot curve. The zero curve was not delineated. in some areas.

c. The bottom configuration was adequately developed with the exceptions mentioned in Section 7. of this report.

4. Condition of Survey

The sounding records, smooth field sheet, and the Descriptive Report are adequate and conform to the requirements of the Hydrographic Manual, with the following exceptions:

a. There was a lack of coordination between the launch chiefs. Three groups of position numbers all started with Position Number One. Constants were added to each group to avoid position number duplication.

b. The hydrographer only used two of the six prior surveys that covered the common area of the present survey. H-6376, the most recent source for charted features in and around Bodkin Creek, should have been used for comparison by the hydrographer.

c. Hydrography in some areas of the creeks was a little sparse, and delineation of depth curves required more interpretation by the verifier.

d. The investigations done on some Presurvey Review Items were inadequate and confusing since no plot of these investigations was provided. See Q.C. Report, para 2.

e. The hydrographer failed to investigate numerous charted features (rocks, obstructions, and especially wrecks). In the Descriptive Report on page 11 the hydrographer states, "The visible wrecks are too numerous to describe separately." Too numerous is not a reason for not comparing the present survey with the charted wrecks. Each charted wreck should have been compared and described in the Descriptive Report.

f. The area of latitude 39°10'40", longitude 76°31'32" was not surveyed, ~~or discussed by the hydrographer.~~ Cox Creek as indicated on the boat sheet is completely land locked due to mud flats across its mouth.

5. Junctions

A junction was effected with the following survey:

H-9582 (1975) to the north

An adequate junction was completed with H-9582 at the time of the present survey. No ~~other~~ contemporary surveys join H-9562x to the east, however depths are in general agreement with the chart.

6. Comparison with Prior Surveys

H-2352	(1898)	1:10,000
H-2358	(1898)	1:10,000
H-2354	(1898)	1:10,000
H-2347	(1897)	1:10,000
H-6376	(1938)	1:10,000
H-2395	(1899)	1:10,000
H-2401	(1899)	1:10,000 + 1:5,000
H-4371	(1924)	1:10,000

The field obtained two prior surveys, H-2354 and H-2358. H-6376 should have superseded H-2354 in the area of Bodkin Creek and around Bodkin Point. The shoreline has changed somewhat throughout the survey area, particularly in the area of Bodkin Point. Since 1938 it appears that Bodkin Point has receded approximately 125 meters, and Cedar Point approximately 50 meters.
See O.C. Report para 6.
The depths in the creeks (Bodkin Creek, Main Creek, Back Creek, North Point Creek, Rock Creek, and Stoney Creek) ~~are as much as 4 feet deeper.~~ Comparison with H-2352 shows ~~differences~~ present depths of ± ½ to 4 feet in Jones Creek. A drastic change in the shoreline has occurred due mainly to dredging and filling for industrial purposes. Apparently, even the geographic name for this creek has changed from Welshman Creek to Jones Creek... (Sparrows Point area)

Numerous shoal soundings from H-2358 were carried forward along the shoreline of Venice on the Bay and Paradise Beach. The validity of these charted soundings is doubted by the verifier. The field party did not investigate these shoal soundings thoroughly enough to prove or disprove them. The line spacing was reduced, but no time was spent to obtain the least depths. The disposition of these soundings should be evaluated by Quality Control. Several of these soundings have been deleted during Quality Control, attributed to bottom change.
Chart #12278 shows no soundings in the discontinued spoil area, but some soundings in this area were carried forward from H-2358 because they are shoaler than the present survey. The hydrographer did not prove or disprove the existence of these shoal depths. These soundings have been deleted during Quality Control, attributed to bottom change.
These soundings were carried forward from H-2358 and are shown on the smooth sheet in violet.

Sounding	Location	Sounding	Location
* 6'	Lat. 39°08.57' Long. 76°26.35'	* 5-1/2'	Lat. 39°09.48' Long. 76°27.40'
6'	Lat. 39°08.93' Long. 76°26.89'	* 5-3/4'	Lat. 39°09.13' Long. 76°26.99'
7'	Lat. 39°09.24' Long. 76°27.14'	* 12'	Lat. 39°11.09' Long. 76°26.715'
* 6'	Lat. 39°09.32' Long. 76°27.20'	** 11-1/2'	Lat. 39°10.42' Long. 76°27.95'
* 6'	Lat. 39°09.43' Long. 76°27.49'	** 11-1/2'	Lat. 39°10.36' Long. 76°27.99'
* 6'	Lat. 39°09.72' Long. 76°28.01'	12'	Lat. 39°11.65' out of survey area Long. 76°28.07'

Sounding	Location	Sounding	Location
* 6'	Lat. 39°09.995' Long. 76°28.13'	** 11'	Lat. 39°10.78' Long. 76°28.45'
* 5-1/2'	Lat. 39°09.75' Long. 76°27.75'	** 11'	Lat. 39°10.52' Long. 76°29.35'
12'	Lat. 39°10.32' Long. 76°29.40'	** 11-1/2'	Lat. 39°10.97' Long. 76°29.62'
6'	Lat. 39°10.45' Long. 76°30.66'	** 11-1/2'	Lat. 39°10.98' Long. 76°28.37'
12'	Lat. 39°11.00' Long. 76°28.35'	** 11'	Lat. 39°10.67' Long. 76°28.43'
~~12'~~	~~Lat. 39°10.51'~~ ~~Long. 76°26.415'~~		

* Disregard; bottom changed or insignificant
** Depth discredited by H-2395 (1899)

With the insertion of these soundings and several rocks and piers the present survey is adequate to supersede the above prior surveys within the common area.

7. Comparison with Chart #12278 (42nd Edition, October 4, 1975)

a. Hydrography

Most of the charted hydrography (90%) originates with the previously discussed prior surveys. The remaining 10% comes from sources other than NOS, designated as "Blue Prints" for charting purposes, and are too numerous to mention. See para. K and L of the Descriptive Report and para 7 of the Quality Control Report for additional disposition of items.

A chain sweep was used for the investigation of some* Presurvey Review Items and other features. This chain sweep is a useful means of locating submerged features that possibly could not be found with the survey equipment on board. Although useful in locating submerged objects, this chain sweep is not a valid wire-drag and does not meet existing wire-drag standards; therefore, chain dragging cannot disprove the existence of a submerged object. See Q.C. Report, para. 2

* Some items previously located accurately by U.S.C.&G.S. ships Wainwright and Hilgard C/L 317 (1948)

Presurvey Review Item #2, Visible Wreck PA: The hydrographer did not locate Presurvey Review Item #2. There are two wrecks charted in this area, and the southernmost wreck was verified. The status of Item #2 is unknown and is recommended to be ~~retained as~~ charted, as a sunken wreck PA. origin T-5421 (1933)

Origin of visible wreck is C/L 680 3/69; lat. 39°12.7' long 76°26.83'

Presurvey Review Item #11, Obstructions: Four obstructions were investigated with chain sweep and were not located; however, an obstruction was located at latitude 39°11.33', longitude 76°30.5~~2~~4 with a least depth of 12 feet. Recommend that this obstruction be charted. See Descriptive Report, page 10, item 11, for positions and dispositions. Item #6

The present survey is adequate to supersede the charted information when attention is given to the following items, which come from sources not readily ascertainable at the time of verification and do not* appear in any topographic or hydrographic information available: *four items appear on NOS surveys.

	Charted Item	Location	Recommendation
(1.)	subm. rock Origin H-6376 (1938)	Lat. 39°07.63' Long. 76°26.48'	was not verified or disproved by this survey and should be retained, as submerged.
(2.)	subm. wreck Origin C/L 1551/67	Lat. 39°07'33" Long. 76°26'54"	was removed by marina owner. Delete from chart.
(3.)	subm. wreck PSR Item 5	Lat. 39°08.0' Long. 76°26.18'	was removed by Maryland marine police. See D.R. page 9.
(4)	two ~~visible~~ rocks awash at MLW Origin H-6376 (1938)	Lat. 39°08.~~7~~8'35' Long. 76°26.5'	was not verified or disproved by this survey and should be retained, as submerged.
(5.)	~~visible rock~~ rockawash at MLW	Lat. 39°09.~~7~~8'3' Long. 76°29.24'	was not verified or disproved by this survey and should be retained, as submerged.
(6.)	subm. wreck	Lat. 39°09.73' Long. 76°~~30~~29.85'	was not verified or disproved by this survey and should be retained.
(7.)	obstr. rep. 1975 See D.R. Item 32, page 10	Lat. 39°10.01' Long. 76°30.01'	this item should have been investigated by the field either in 1975 or 1976. Recommend that it be retained.
(8)	subm. wreck Origin T-5342 (1935) delete from chart	Lat. 39°10.34' Long. 76°30.7~~0~~8'	present survey shows no indication of a subm. wreck directly off Stoney Pt., although a stranded wreck was located 150 meters south. Recommend that ~~both~~ visible wrecks be charted.
(9).	subm. wreck	Lat. 39°10.25' Long. 76°31.00'	Orchard Beach Point is apparently bulkheaded with stranded wrecks. The field did not investigate this subm. wreck, which is approximately 40 meters offshore. Recommend charted wreck ~~remain as charted~~ be revised to a visible wreck.

The Presurvey Review Items for this survey are adequately discussed under Section K. of the Descriptive Report, with accompanying verifier's notes.

These recommendations are made on the basis of material available during verification and are only valid if no subsequent information indicates otherwise.

b. Controlling Depths

There is no conflict between the charted controlling depth and the present survey.

c. Aids to Navigation

The aids to navigation in the survey area have been adequately discussed under Section N. of the Descriptive Report. The disposition of N "10" (Penwood Channel) was not verified by the field, (not located). See O.C. Report, paragraphs 7.a and c.

8. Compliance with Instructions

This survey adequately complies with Project Instructions.

9. Additional Field Work

This is a good basic survey. Additional field work is not recommended.

Inspection Report
H-9562

Any verification errors regarding procedures and presentation of survey data detected during inspection by the Hydrographic Inspection Team have been corrected before submission for administrative approval. HIT comments regarding quality of field work, compliance with instructions, and adequacy of the survey have been incorporated within the Verifier's Report.

Examined and Approved:
Hydrographic Inspection Team
Date:

Robert A. Trauschke, CDR, NOAA
Chief, Processing Division

absent
David W. Yeager, Lt. Cdr., NOAA
Field Procedures Officer
Operations Division

absent
R.D. Sanocki
Technical Assistant
Processing Division

Jack E. Richardt for
Maureen Kenny, LT, NOAA
Chief, Electronic Data
Processing Branch

Harry R. Smith
Team Leader
Verification Branch

Approved/Forwarded

Richard H. Houlder
RADM, NOAA
Director, Atlantic Marine Center

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

OA/C352:RWD

September 15, 1980

TO: Glen R. Schaefer GRS
Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch gnd

FROM: R. W. DerKazarian Robert W. DerKazarian
Quality Evaluator

SUBJECT: Quality Control Report for H-9562 (1975-76), Maryland, Lower Patapsco River, Stony Creek to Bodkin Neck

A quality control inspection of H-9562 was accomplished to monitor the survey for adequacy with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, smooth plotting, shoreline transfer, decisions and actions taken by the verifier, and the cartographic presentation of data. Revisions and additions to the smooth sheet, plus helpful comments made to the verifier, are identified on a one-half scale copy of the survey to be furnished the verifier. In general, the survey was found to conform to the National Ocean Survey's standards and requirements except as stated in the Verifier's Report and as follows:

1. The following supplements, and is in addition to, paragraph 2.a of the Verifier's Report:

The Signal Tape Listing in the Descriptive Report, the Control File Listing in the smooth Position Listing, the smooth sheet and Form 76-40, "Report on Nonfloating Aids or Landmarks for Charts," submitted are in conflict, in several cases, as to the geographic position values, spelling, dates, identifications, and the cartographic codes listed. The smooth sheet has been corrected where necessary; however, the various signal listings and the symbolization on the position arc overlay have not been corrected.

Form 76-40 was too lengthy to include within the Descriptive Report. A copy, which should be used for further reference, has been submitted to Marine Chart Division and designated as C/L 1169/76.

Seven control stations (15 through 19, 506, and 523) have had their triangulation station symbols changed to topographic stations during

quality evaluation inasmuch as the positions of these stations have not met third-order accuracies.

Control stations 15 and 19 used in 1975 were renumbered 791 and 794, respectively, in 1976 and utilized as initial stations for range-azimuth control. The 1976 station numbers have been added to the smooth sheet.

An additional station was added to the present smooth sheet and designated as signal 900 during quality evaluation. This signal which is "Sparrow Point Dry Dock Light P4" was used as the initial station in range-azimuth control for the chain drag development of Presurvey Review Item 26a in latitude 39°12.3'N, longitude 76°31.7'W. The signal location was plotted from the form 76-40 listing and entered into the appropriate signal lists.

2. Failure during verification to plot chain drag information submitted by the field by regarding the data as "not meeting existing wire-drag standards" resulted in the time-consuming task of hand plotting the data during quality evaluation. A combination of basic sounding lines, splits, and an adequate pattern of chain sweeps was sufficient to disprove the items. The outcome of this work satisfied the disposition of seven Presurvey Review items that would have been deferred for future surveys (items 10, 11a, c, d, 26a, b, and c). See Descriptive Report pages 9 and 10 for disposition of these items.

3. Three Presurvey Review items (26a, b, and c) disproved by present survey data fall within the limits of junctional survey H-9582 (1975). This information has been annotated in the Descriptive Report of that survey. See Descriptive Report, page 10.

4. The seaward end of several groins in the vicinity of latitude 39°09.95'N, longitude 76°30.2'W were located by the hydrographer. These positions are in conflict with visible portions of these features as shown on the shoreline manuscripts. The submerged portions of the groins extend approximately 45 meters from the HWL and are covered 1/2 to 1 1/2 feet at MLW. A delimiting line has been added to the smooth sheet to approximate the position of the groin ends. It should be assumed that the groins immediately southeast of this area extend to the same approximate limits.

5. A spike appears on the graphic depth record (position 2131 2 3/4 out) approximately 40 meters east of Bodkin Creek Daybeacon No. 10 in latitude 39°08.09'N, longitude 76°26.12'W amid channel depths. This obstruction possibly is the remains of a prior aid which rise 1 foot from the bottom. The sounding line was adjusted by time and course, placing the obstruction at midchannel as shown on the graphic depth record. With the exception of this obstruction, the controlling depth of the channel is 7 feet.

6. The following supplements and is in addition to the Verifier's Report, paragraph 6:

. . . have shoaled randomly 1-3 feet at their headwaters. No noteworthy differences exist between prior and present depths in the remaining portions, except for changes that have occurred in some channels. The entrance channel in Bodkin Creek has shifted slightly which is attributed to natural causes and possible dredging. Comparison . . . Jones Creek.

A creek in latitude 39°13.25'N, longitude 76°27.85'W has been filled as a result of cultural changes.

The main body of water south and southwest of Brewerton Channel has shoaled 1 to 2 feet. East of Venice in the vicinity of latitude 39°09.7'N, longitude 76°26.08'W a deepening of 1 to 3 feet has occurred between the 6- and 12-foot depth curves. Two 21-foot depressions approximately 900 meters south of North Point are shown on the present survey. Here, prior depths of 13 feet existed.

A charted wreck in latitude 39°07.67'N, longitude 76°26.77'W (Bodkin Creek) from H-6376 (1938) falls in present depths of 2 feet where two piers are located. The existence of this wreck is considered doubtful and it should be deleted from the chart.

A pier in latitude 39°11.7'N, longitude 76°26.95'W (North Point) from H-2358 (1898) was partially deleted from the chart during the application of data from T-5421 (1933). The submerged remains of this pier are shown on the graphic depth records and appear to be partially covered by sediment. A submerged pier in ruins has been carried forward during quality evaluation.

A 240-meter section of pier in latitude 39°09.78'N, longitude 76°29.41'W (Rock Creek) from H-2358 (1898) was destroyed by hurricane "Hazel" and subsequently the damaged portion was removed in September 1956, as reported by C/L 755 (1957). No evidence of the ruins appears on the graphic depth record.

A charted rock covered 1 foot at MLW in latitude 39°12.22'N, longitude 76°27.97'W from H-4371 (1924) was not disproved by the present survey as an intended chain drag investigation of this area was not centered over the rock. Inasmuch as a detailed development of the area on junctional survey H-9582 (1975) confirmed the existence of the charted rock, a rock covered 5 feet located by the hydrographer approximately 50 meters southwest in junctional depths of 12 to 14 feet is considered in error. The rock on the present survey was rejected during quality control. See Descriptive Report, page 10 (Dashed Circled Items).

A charted pier in latitude 39°13.36'N, longitude 76°27.78'W (Jones Creek) from T-5421 (1933) not mentioned by the hydrographer falls within the low water line on the present survey. The existence of this pier is considered doubtful. It is recommended that it be deleted from the chart.

An islet in latitude 39°12.16'N, longitude 76°27.26'W (Old Road Bay) from T-5421 (1933) does not appear on other prior surveys and falls in depths of 2 feet on the present survey. The islet (25 meters long) was probably an oyster bar and is considered no longer in existence.

7. The following is in addition to the Verifier's Report paragraphs 7.a and c:

a. Hydrography

The charted rock covered 5 feet (dashed circled item) in latitude 39°09.37'N, longitude 76°30.18'W (Rock Creek) was located by the present survey approximately 120 meters southwest in latitude 39°09.31'N, longitude 76°30.22'W. The charted rock does not appear to be on any National Ocean Survey surveys; however, reference to the rock was made in the U.S. Bureau of Lighthouses and U.S.C.&G.S. Notice to Mariners 41/26, paragraph 1668. The origin is not readily ascertainable. The position of the charted rock is considered doubtful and should be deleted from the chart. It is recommended that the present survey information be charted and that an aid be established to mark this near channel feature.

c. Aids to Navigation

The list of Penwood Channel Buoys published in the 1975 Light List indicates that the buoys are in depths ranging from 8 to 16 feet. The 1976 Light List indicates that these buoys are in depths of 20 feet which is in agreement with the present survey information, with the exception of Buoy "14" which is in 10 to 12 feet of water.

The charted position of Stony Creek Entrance Light 4 is approximately 40 meters out of position and should be revised accordingly.

The charted positions of Bodkin Creek Lights 3 and 7; and Bodkin Creek Daybeacons 5, 9, 10, and 12 are not in agreement with the present survey information and should be revised accordingly.

cc:
OA/C351

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

MAY 15 1981

OA/C351:DC

TO: OA/CAM - Richard H. Houlder

FROM: OA/C3 - Roger F. Lanier

SUBJECT: H-9562 (1975-76), OPR-514, Maryland, Lower Patapsco River, Stoney Creek to Bodkin Neck, Report of Compliance with Project Instructions

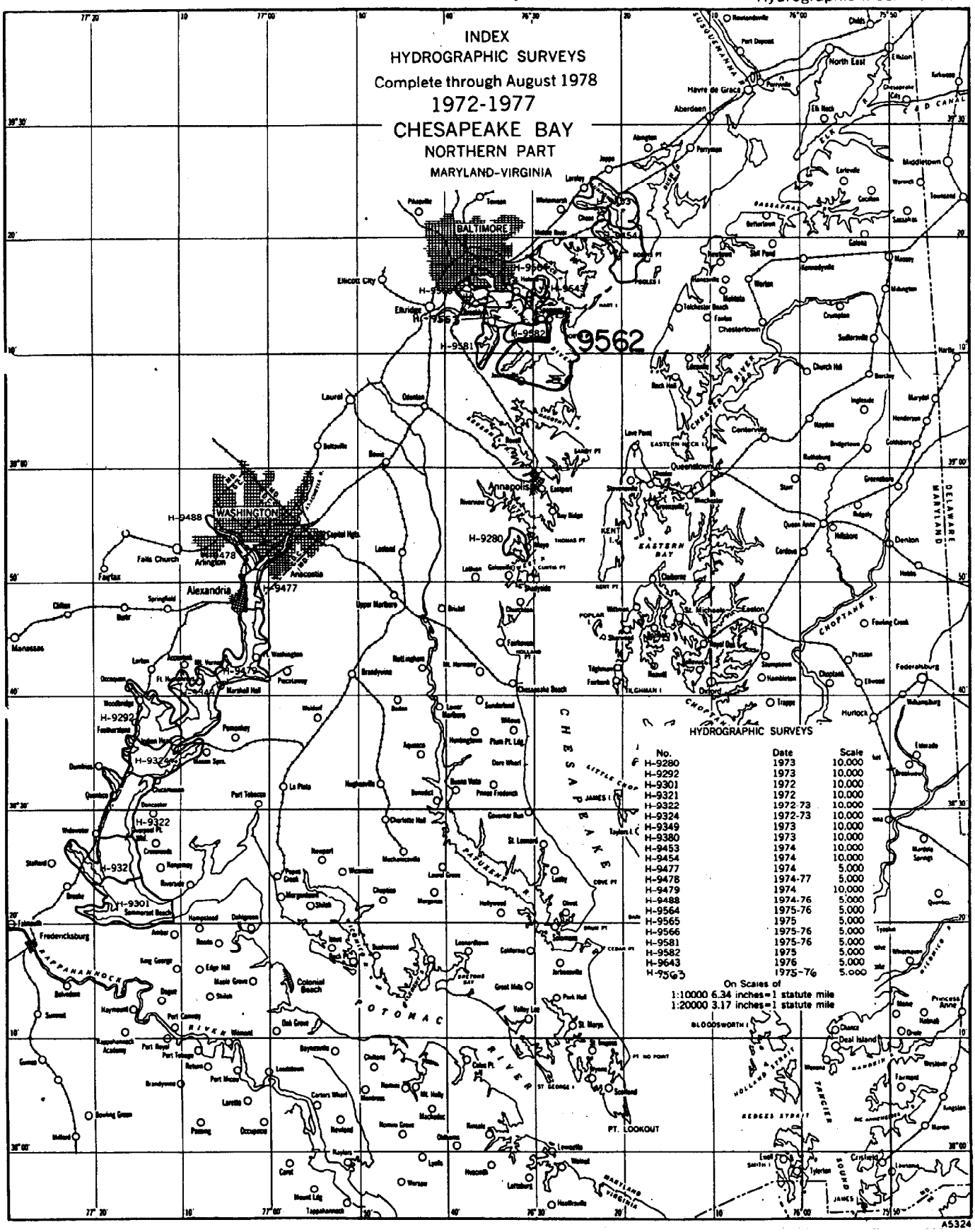
The smooth sheet and Descriptive Report for the subject survey have been examined. This survey, except as noted in the Quality Control Report, dated September 15, 1980 (copy attached), and the Verifier's Report is complete and adequate for the purposes intended and is in compliance with Project Instructions OPR-514-AHP-75, dated July 9, 1975.

Attachment

cc:
OA/C352 w/o att.

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 68 J



FORM C&GS-8352
(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 9562

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
12273	7-15-81	D.C. Harpine	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No. 62 Exa. Critical Corrections only, No
	7-16-81	Reviewed RLD	~~Corrections~~ Revised 6' & 12' Curves Off Rock Pt.
MAR 12281	9-16-81	MZ Mahmud	Full Part Before After Verification Review Inspection Signed Via
			Drawing No. 49
MAR 12278	11-3-81	MC Mahmud	Full Part Before After Verification Review Inspection Signed Via
			Drawing No. 67
12273	11-6-81	Marguerite S Moore	Full ~~Part~~ Before After Verification Review Inspection Signed Via
			Drawing No. 63
12260	11-17-81	Martha Mahmud	Full Part Before After Verification Review Inspection Signed Via
			Drawing No. 42
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
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			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P63