

# 10079

Diagram No. 1218-2

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

Type of Survey ... Hydrographic.....  
Field No. .... PE-20-1-83 .....  
Registry No. .... H-10079 .....

### LOCALITY

State ..... Delaware .....  
General Locality .. Delaware Bay .....  
Sublocality ..... Mispillion River to  
..... Little River .....

19 83

CHIEF OF PARTY  
CDR W.S. Simmons

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DATE ..... January 20, 1987 .....

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10079

Area 1  
Cht

12304 - TO SIGN OFF SEE "RECORD OF APPLICATION"

12200 - MC

HYDROGRAPHIC TITLE SHEET

H-10079

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.

PE 20-1-83

State DELAWARE

General locality DELAWARE BAY

Locality MISPILLION RIVER TO LITTLE RIVER  
~~PICKERING BEACH TO MISPELLTON~~

Scale 1:20,000 Date of survey 6 March - 27 April 1983

Instructions dated December 1, 1982 Project No. OPR-D219-PE-83

Vessel 3281, 3282 (Jensen type launches)

Chief of party CDR W. S. Simmons

Surveyed by NGM, RMM, SIA

Soundings taken by (echo sounder) hand-lead, pole Ross Model 5000 Fmeline Echo Sounder

Graphic record scaled by SIA, NGM, RMM, MPC, TRO, WRM, RBH

Graphic record checked by SAME

Protracted by \_\_\_\_\_ Automated plot by Xynetics 1201 Plotter (AMC)

Verification by R.L. Keene

Soundings in fathoms feet at MLW MLLW

REMARKS: All times are Coordinated Universal Time (UTC).

Revisions in red ink in Descriptive Report made during office processing.

STANDARDS CK'D 1-21-87 C.64

AWOIS/SURE MAM 1/30/87  
SC4-2197

## TABLE OF CONTENTS

HYDROGRAPHIC TITLE SHEET	
SMOOTH SHEET LAYOUT	
DESCRIPTIVE REPORT TEXT	
A. PROJECT.....	1
B. AREA SURVEYED.....	1
C. SOUNDING VESSEL.....	1
D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS.....	1
E. HYDROGRAPHIC SHEETS.....	3
F. CONTROL STATIONS.....	3
G. HYDROGRAPHIC POSITION CONTROL.....	4
H. SHORELINE.....	9
I. CROSSLINES.....	10
J. JUNCTIONS.....	10
K. COMPARISON WITH PRIOR SURVEYS.....	11
L. COMPARISON WITH CHART.....	15
M. ADEQUACY OF SURVEY.....	22
N. AIDS TO NAVIGATION.....	22
O. STATISTICS.....	24
P. MISCELLANEOUS.....	24
Q. RECOMMENDATIONS.....	24
R. AUTOMATED DATA PROCESSING.....	25
S. REFERENCE TO REPORTS.....	25
APPENDICES A-J	
APPROVAL SHEET	

Descriptive Report  
To Accompany  
Hydrographic Survey H-10079  
Field Number PE 20-1-83  
NOAA Ship PEIRCE  
CDR. Walter S. Simmons, COMDG.

A. PROJECT

Project OPR-D219-PE-83 is a basic hydrographic survey conducted in accordance with instructions dated December 1, 1982. Its purpose is to provide modern survey data for the updating of existing charts necessitated by the increase of both traffic volume and draft of vessels transiting Delaware Bay. Changes to these instructions were made on the following dates: Change No. 1, December 7, 1982; Change No. 2, February 25, 1983; Change No. 3, April 5, 1983; and Change No. 4, April 15, 1983. A letter from the Director, Atlantic Marine Center, dated February 16, 1983, concerning the Pacific Marine Center Mini-Ranger OPCODE is contained in the supplemental data files.

B. AREA SURVEYED

The area surveyed was along the western side of Delaware Bay between Mispillion River and Little River. The approximate limits of the surveyed area were 38°56'~~21~~'N to 39°09'20"N latitude and 75°16'09"W westward to the shoreline. The entire area is fairly shallow, the deepest sounding encountered being *about* 45 feet. The majority of the soundings were less than 20 feet. Four major shoal areas exist within this survey. The shoreline is very flat, low and composed of medium grain sand. Several small creeks and three rivers empty into the bay. Winds are a major force in the area, creating abnormal tides and eroding the beaches. Winter ice floes scour the bottom and often shift and/or ~~remove~~ aids to navigation.

C. SOUNDING VESSEL

All soundings were obtained by Jensen Type I aluminum launches, EDP No.'s 3281 and 3282.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Both launches were equipped with Ross 5000 Finline echo sounders as follows:

<u>VESNO</u>	<u>ECHO SOUNDER</u>	<u>DATES USED (JD)</u>
3281	1079	065-077
3281	1078	078-102
3282	1087	065-117

Bar checks were taken twice daily, weather and sea conditions permitting. Most days either tidal currents, seas or winds prevented the collection of good bar check data. A marked change in corrector values for both launches was noted

near the surface after JD 074, following a storm (from -0.2 to +0.2 for VESNO 3282 and from -0.6 to +0.4 for VESNO 3281). The data was grouped accordingly and corrections to soundings computed and graphed according to Sec. 4.9.5.1.3. of the Hydrographic Manual.

Martek CTD casts were taken on the following days using Martek Model 167 CTD, S/N 177, last calibrated by AMC on February 4, 1983:

<u>JD</u>	<u>POSITION</u>	<u>MARTEK CAST NO.</u>
091	39°02'30"N 75°15'18"W	1*
091	39°02'30"N 75°15'18"W	2
107**	39°02'30"N 75°15'00"W	3

\* Not used for comparison because of discrepancies in surface water temperatures between Martek and bucket samples.

\*\* Taken a day after a storm.

The first time the Martek was used, the digital depth readout was significantly different from the actual depth of the sensor, as measured with a calibrated cable. The depth sensor was adjusted by shipboard electronic technicians to correspond with the measured cable values. No other settings have been adjusted since the calibration.

Martek data were processed through program RK 530, velocity corrections computed and graphs plotted.

Final velocity correctors were determined by combining the oceanographic determinations with direct comparisons. Correctors derived from bar check data were used for the first twenty feet. These correctors were significantly different from the CTD correctors at the same depths. This was attributed to instrument error, and could not be corrected via the TC/TI tape. Correctors derived from the CTD casts were used below twenty feet. The displacement of the bar check curve from the oceanographic curve below twenty feet was negligible in all cases except one. A 0.1 foot instrument error corrector was applied to VESNO 3282 data for JD 065-074 via the TC/TI tape to account for the displacement.

The data was grouped and velocity corrections applied as follows:

<u>VESNO</u>	<u>DATES APPLICABLE (JD)</u>	<u>BAR CHECK GROUPING</u>	<u>CTD CAST NO.</u>	<u>VELOCITY TABLE NO.</u>
3282	065-075	065-074	2	1
3282	078-104	078-091	2	2
3281	065-074	065-074	2	3
3281	078-102	078-094	2	4
3282	107	078-091	3	5

Copies of the Abstract of Corrections to Echo Soundings, Velocity Correction Tables and TC/TI Tables are included in Appendix D. Bar check, CTD, and calibration data are included in the supplemental data folder. *Velocity Corr. Tables retained in D.R. - Abstract and TC/TI Tables transferred to sounding records.*

Settlement and squat tests were conducted for both launches on May 5, 1983, (JD 125). Tests were conducted from the jetty at the entrance to Fortescue, New Jersey, in approximately 12 feet of water. Readings were obtained using a Leitz self-leveling level, S/N 7423, set up on the jetty. A Philadelphia rod, S/N 810106, was positioned over the transducer of each launch. Each vessel carried a typical load. The data, computations and graphs are included in the supplemental data folder.

#### E. HYDROGRAPHIC SHEETS

Mylar field sheets were prepared onboard PEIRCE via program RK 201, Grid, Signal and Lattice Plot. The skew was 302°, width 21.5" and length 59" at a scale of 1:20,000. The entire survey area was contained on one computer sheet. Two overlays were made: one containing the crosslines, detached positions, bottom samples and shoreline and the other containing shoal developments and developments of anomalous charted soundings.

#### F. CONTROL STATIONS

The following stations were used as electronic control sites: signal numbers 3, 21, 22, and 23. The rest of the signals were used for daily system calibrations. PEIRCE personnel followed third-order traverse and intersection specifications while locating stations and aids to navigation for this survey. The datum is NAD 1927.

SOUTH JETTY, located at 38°56'11.298"N, 75°17'54.903"W, was used on <sup>Days</sup> JD 090, 096, for a fixed point calibration.

<u>SIGNAL</u>	<u>NAME</u>	<u>YEAR ESTABLISHED</u>
3	MIAH MAULL SHOAL MR	1983
4	ELBOW OF CROSS LEDGE LT 1983	1983
5	FOURTEEN FOOT BANK LIGHT	1933
7	MIAH MAULL SHOAL LIGHT	1933
9	BRANDYWINE SHOALS LIGHTHOUSE	1932
15	BIG STONE BEACH TOWER	1982 ✓
21	BRANDYWINE SHOALS MR	1983
22	FOURTEEN FOOT BANK MR	1983
23	ELBOW OF CROSS LEDGE MR	1983
25	SOUTH JETTY	1983 ✓

*All signals located off smooth sheet, except Signal #25*

A copy of the survey signal list may be found in Appendix F.

#### G. HYDROGRAPHIC POSITION CONTROL

The MINI-RANGER Positioning System operated in the range-range mode was used to control sounding operations during the entire Delaware Bay Survey. Although the MINI-RANGER III System has been successfully operated for many years by west coast hydrographic ships, and previously used by three of PEIRCE's officers, the use of this system by PEIRCE during OPR-D219-PE-83 resulted in numerous unexpected operating difficulties. The following paragraphs summarize the difficulties experienced and explain the procedures used to achieve satisfactory data acquisition. The MINI-RANGER did perform better than expected in two areas, range and reliability. The system was used up to a range of 12 nautical miles which was approximately the maximum line of sight even though the MINI-RANGER manual predicts a range cutoff near line of sight conditions. Reliability was also excellent with only one failure for the entire project, a receiver/transmitter. However, Code 5 reference station had erratic readings near the end of the project (see graph) and Code 6 had about 1 inch of water inside when it was removed from Elbow of Cross Ledge Light. PEIRCE personnel agree that the aging AMC DEL NORTE equipment could not have come close to the range and reliability of the MINI-RANGER Systems.

#### (ELECTRONIC) AGING OR CRYSTAL AGING

It has been previously observed that a drift in readings will occur as a result of frequency drift in the magnetron due to crystal aging. This appears to be especially true during the initial period of operation when one unit (Console

B0295, R/T C2000, Ref. Sta. C2075, Code 3) drifted ten meters in the first two weeks of operation.

#### INTERFERENCE

Radar interference is generally minimal with the MINI-RANGER System since this system uses time coded pulses and C-band which is not as commonly used in marine radars as X-band. Although the system uses time coded pulses, numerous erroneous rates were observed during the project, at times approaching 10% of the displayed rates. A possible source of the interference was Dover Air Force Base which was only 3 miles from the project area and which had a C-band weather radar. Another source of interference was other users of MINI-RANGER itself. We knew of three other users, the closest was about 25 miles to the north. MINI-RANGER users without the multiuser option will interfere with all other MINI-RANGER systems within range, even when using different codes. In an attempt to eliminate intermittent long range erroneous rates, the PEIRCE systems were changed from a range gate of 40 nautical miles to 25nm. There was no perceptible improvement.

#### SOFTWARE: MINI-RANGER MODE vs RAYDIST MODE

Although the MINI-RANGER System is intended to be interfaced with the computer/hydroplot system using the existing DEL NORTE interrupts, the system appears to perform more satisfactorily in the RAYDIST mode. In the RAYDIST mode, the program assumes the data is continually being updated at one second intervals. The ranges are obtained from data currently contained in the system. The problem with this method is that the hydroplot assumes the data is up-to-date but in reality, the MINI-RANGER may not be updating. In the DEL NORTE mode, the program requires a separate interrupt for each MINI-RANGER data channel, records a separate time for each channel update, and performs computations by keying interrupt 03. An oscilloscope connected to the system shows that the order in which the interrupts arrive changes frequently with time. This change of sequence will cause a "NAVERR 01" condition. This apparent channel 1 and 2 interrupt timing problem appears to be reduced when the update display rate on the console is reduced from maximum, approximately 2/second, to about 1/second. The advantage of operating in the RAYDIST mode is the elimination of most of the "NAV DOWNS." The disadvantages are that the program does not know if the rates are being updated and that no signal strength is output. The interrupt timing was changed part way through the project by AMC EED.

#### UNSMOOTHED vs SMOOTHED DATA MODES

Experience over the duration of this project indicates that the unsmoothed mode is the preferred operating mode since it maximized the "NAV UP" conditions. The advantages are that the steering needle is continually updated and that all data is utilized. The disadvantages are that erroneous rates are accepted by the program and utilized in all computations resulting in the plotter tracking uncontrolled over the entire plotter sheet and the erroneous rates are recorded when they occur on the normal sounding interval. However, when erroneous rates occur on the sampling interval they can be corrected offline



by time and course interpolation. This results in a great volume of post processing. In the smoothed data mode 11 sequential "NAVERR 01", or one "NAVERR 02" condition will cause a "NAV DOWN" condition. This results in all 9's being output, loss of plotter tracking, and loss of the steering meter update. Eleven sequential ranges are then required without detection of a "NAVERR 01" condition before "NAV UP" will occur. Therefore, a minimum duration of 11 seconds will occur between "NAV DOWN" and the return of the steering needle. With several 11 second periods occurring in succession, the survey vessel can vary off course sufficiently to require rejection of the line. On some occasions, the "NAV DOWN" condition lasted up to 35 minutes.

#### RANGE AVERAGING

After experimenting the first few days, the range averaging feature was turned off for the remainder of the project. This seemed to substantially reduce the number of erroneous rates.

#### NULL ZONES

Null zones were encountered in areas not predicted by the graphs and formulas in the MINI-RANGER Users Manual. Sounding lines were accomplished through these null zones in two different manners, depending upon the proximity of the zone to the beginning or ending points of planned lines. Null zones encountered in the middle of sounding lines were sounded by steering compass courses and plotted by time and course interpolation. Null zones encountered at the edge of the survey area were generally sounded, using a different reference station combination. Six reference stations were operated simultaneously in order to increase the choice of possible combinations. These null zones occurred with one system Console 911027 and R/T D2128 at ranges between 7600 and 8100 meters from all reference stations. This phenomenon was observed at any state of the tide, at slightly different R/T antenna heights and at reference station antenna heights, varying from 20-23 meters. These null zone bands could be drawn on the boat sheet prior to running sounding lines, enabling launch personnel to anticipate the position where loss of signal would occur. Since multiple reference stations were available, other stations could be selected in advance. The other launch system, Console 824118 and R/T C2096 did not experience null zones at any consistent range or at the regularity experienced on the above system. This particular range hole problem appears to be related to the overall sensitivity of each individual console R/T combination. In addition to null zones, signal strength values occasionally dipped below minimum allowable signal strength values while conducting sounding operations. These soundings were plotted by time and course interpolation when acceptable signal strengths occurred prior to entering and after exiting these low signal strength zones. The following table summarizes the MINI-RANGER equipment used during the project.

TABLE OF MINI-RANGER EQUIPMENT-PE-20-1-83

<u>VESNO 3281</u>	<u>Serial No.</u>	<u>Julian Day</u>
Range Console	B0295	065-102
R/T	C2000	065-102
<u>VESNO 3282</u>		
Range Console	911027	065-103
R/T	D2128	065-103
Range Console	824118	104
R/T	C2096	104
Range Console	911027	105-117
R/T	D2128	105-117

SHORE STATIONS

<u>Code</u>	<u>S/N</u>	<u>Location Signal No.</u>	<u>Height (M)</u>	<u>Julian Day</u>
2	C 2059	23	20	068-090
		22	20	092-105
		3	21	107-117
3	C 2075	3	21	065-117
4	C 2065	22	20	065-117
5	C 2067	21	23	065-117
6	C 2091	23	20	065-117
		23	20	091-117

CALIBRATION

Daily and baseline calibration work sheets are included with the data package for the survey. Range/range/range non-critical system checks using program RK 561 were performed twice daily early in the survey until two weeks into the project when the daily correctors began to differ significantly (5-10m) from the baseline correctors. Thereafter, critical system checks (sextant) were performed prior to and after each day's hydrography, if visibility conditions permitted. Since the ship was anchored adjacent to the work area, the normal procedure was to calibrate while the launches were still in the davits. This method had several advantages: 1) it provided a steady platform for high quality observations; 2) it significantly increased the observer's height of eye (the left check was 8.5 nautical miles from the ship); 3) it permitted one set of angles to be used for both launches, (using the appropriate "antenna data" for each launch); and 4) it permitted shipboard personnel to process the entire calibration network for each launch. Since six MINI-RANGER Reference Stations were in use and each was calibrated twice daily to compile a "history", the

calibration calculations amounted to several hours each day, thus freeing the launches for data gathering. Only sextant calibrations with fix vs. check fix inverses of 5 meters or less were accepted. Even with these inverse conditions, correctors often varied +5 to -5 meters. Correctors greater than 5 meters from the mean were rejected. Also those resulting from the larger inverses were considered suspect. Six fixes were generally recorded to insure that three would satisfy the inverse conditions and would be within 5 meters of the mean. When the first three fixes computed had good inverses and their correctors agreed well, the other three fixes were not computed. However, three fixes were frequently not sufficient to have a reasonable confidence in the value of the corrector. The accompanying graphs show Daily System Checks (sextant fixes in meters) vs. Julian Days. The table in the lower left corner shows the color code and lists the final electronic correctors in terms of which baselines are to be meaned (B1 = Baseline 1, etc.). The colored dots are the values determined from daily (opening and closing are separate) sextant fixes, with check angles. The circled dots are baseline calibration values. The Code One values (Daily and Baseline) are high for both Console/RT combinations. Reference station Code 1, (S/N 2058) was returned to the ship on April 11 after MINI-RANGER and FALCON evaluation testing by AMC and Rockville personnel. After return of this unit, daily correctors indicated that the unit had drifted considerably from the original baseline calibration conducted on March 3, 1983. Perhaps the unit was adjusted during the testing. Daily correctors ranged from -27 to -33 meters for console 911027, R/T2128 and from -36 to -43 meters for console 824118, R/T2096 as compared to -1 and -2 meters from the baseline calibration. The daily correctors were verified by the final baseline calibration conducted on May 6, 1983. Since the date of the drift is well documented by daily correctors, it is recommended that the final baseline correctors be used for this unit in lieu of the mean of the beginning and final baseline correctors. Code Five shows erratic readings during the time period 116-118. This anomaly may be due to the ship's heading during time of calibration on these days. All other correctors are within the +/-10 meters allowed for a 20,000 survey. The fixed point calibration method was used on two days while in the vicinity of the Mispillion River. The launches calibrated at the Mispillion River North and South Jetty Lights which were positioned during this survey, (See graphs in supplemental data.)

Another version of the multi-range, non-critical calibration method was used later in the project by processing several observed ranges simultaneously through program GP-05/F on the HP9815A Calculator. By assigning circle standard errors to the reference station positions (0.2 m) and standard errors to the MINI-RANGER ranges (2-5 m), an adjusted vessel position could be determined. Inverses were then computed from this position to each of the reference station locations. The difference between the observed and inversed distances was an approximate daily corrector. These were not used in plotting the graphs nor in determining the final electronic correctors. Since all six of the reference stations were to the north and east of the ship's location, the geometry of the solution was, in our case, somewhat weak. On several days when comparisons were made between these correctors and those determined by sextant fixes the values were very similar. With better geometry, this method could be used in the future as a daily systems (non-critical) check.

Electronic corrector values exceeding four meters listed in the Electronic Corrector Abstract (Appendix E) are values entered to correct the ranges of certain soundings, rather than using the time and course option in program RK 211. *Abstract in sdg. records*

#### H. SHORELINE

The shoreline on the field sheet was drawn from 1:20,000 scale photocopies reduced from revision prints TP-00058, TP-00056, and TP-00054, which are registered shoreline maps revised with 1982 photogrammetric source data. The actual shoreline was carefully compared to that drawn on the field sheet and no discrepancies were found. Recommend that the shoreline depicted on the revision prints be used for charting purposes. *Revision Prints not registered; filed in Marine Chart Branch as Bps.*

The following paragraphs address the notes to the hydrographer from the above-mentioned revision prints.

An unidentified object at 39°08.2'N, 75°24.4'W is an anchored floating auto tire erosion barrier. It shifts with the currents, and on one day part of it had washed ashore. Chart 12304 shows bare land, narrow and rectangular in shape, at this location. It is recommended that the presently charted bare land be removed from the chart and replaced with the words "floating tire barrier." *chart as float.*

No evidence of groin ruins at 39°06'N, 75°24.3'W was found. Two cylindrical cement slabs approximately 2-1/2 feet in diameter were lying on shore near this site. The remains of some bulldozer treads were lying on the beach near the water's edge. It is recommended that groin ruins not be added to the chart. *Concur*

An unidentified object marked by a dashed line on the shoreline manuscript and as three spots of bare land on the chart, both at 39°05.9'N, 75°23.9'W, may be an area marked by two "Submerged Structure" signs posted 522m apart. A detached position was taken at each sign. The north sign (position 3159) is at 39°06'09.86"N, 75°23'57.35"W. The south sign (position 3160) is at 39°05'53.26"N, 75°23'53.18"W. This area is shoreward of the zero foot curve as defined by the mainscheme hydrography. The survey launch struck it while taking soundings along the shoreline. The echo sounder trace near the south sign shows a definite obstruction with a least depth of -0.7 feet at approximately 164900Z, ~~16~~ 090. This calculation was based on predicted tides. The surrounding water depth was 1.6 feet. Recommend that the charted bare land be removed. Replace with a green color bordered by a dotted line to indicate area uncovers. *on Day 088, hydrographer notes feature to be a stone breakwater (see raw data print out.)*

Areas marked as being shallow on the revision prints were carefully examined in the field for accuracy in positioning, and no discrepancies were found. *Concur*

The geographic name "Bennett's Pier" at 39°01.9'N, 75°21.4'W on the revision print does not appear on any of the prior surveys nor on Chart 12304. No sign of a pier was found at that location, either visually or on the echo sounder trace. Recommend that it not be added to the chart without further office investigation as to the source of the acquisition of this geographic name. *See Approved Geographic Name List.*

Control stations seaward of the shoreline were located at the following lighthouses and are listed on the signal tape:

<u>NAME</u>	<u>SIGNAL NO.</u>	<u>POSITION</u>
MAIAH MAULL SHOAL MR	3	39°08' <sup>7</sup> 35.539"N 75°12'32.533"W
BRANDYWINE SHOALS MR	21	38°59'10.057"N 75°06'48.766"W
FOURTEEN FOOT BANK MR	22	39°02'53.289"N 75°10'57.348"W
ELBOW OF CROSS LEDGE MR	23	39°10'55.578 <sup>9</sup> "N 75°16'07. <sup>727</sup> "W .743

*All signals fall off smooth sheet.*

I. CROSSLINES

Fifty-seven miles of crosslines were run constituting 9.6 percent of the mainscheme sounding line mileage. Ninety-two percent of the soundings were in excellent agreement with the mainscheme values. Eight percent were from one to five feet deeper (positions 1436-1454, JD 093). This discrepancy may be attributed to abnormal tidal conditions on JD 081 and 082 when the mainscheme lines were run. Strong offshore winds, 20-30k, out of the northwest, and 3-5 foot seas probably resulted in lower than normal tides. On JD 093, seas were 1-2 feet and winds were 10-15k out of the southeast, contributing to higher than normal tides.

J. JUNCTIONS

Junctioning was accomplished with the following 3 surveys:

<u>REGISTRY NO.</u>	<u>SCALE</u>	<u>YEAR SURVEYED</u>
H-9202	1:20,000	1971
H-9313	1:20,000	1971 <sup>2</sup>
H-10084	1:20,000	1983

Sounding agreement was excellent with survey H-9202 and H-10084. Soundings from survey H-9313 were consistently shoaler by 1-2 feet everywhere except along the north side of the Mispillion River jetty.

The combined effect of wind and tides could account for as much as a 2-3 foot difference in soundings. Therefore, it is recommended that the junctions be reviewed after real tides have been applied. *See Eval. Rep.*

K. COMPARISON WITH PRIOR SURVEYS

The following assigned PSR items from the NOS Automated Wreck and Obstruction Information system printout of March 14, 1983 were investigated:

<u>PSR ITEM NO.</u>	<u>SURVEY POSITION</u>	<u>LEAST DEPTH</u>	<u>POS. NO.</u>	<u>INVESTIGATION METHOD</u>	<u>RECOMMENDED DISPOSITION</u>
2717	39°01'31"N 75°19'58"W	5.8 ft <i>(unconnected)</i>	1739, <u>5159</u> <del>1655</del>	Chain Drag "	Chart at surveyed position <u>5159</u>
1237	39°00.06"N 75°12'17.1"W	Bares 4 ft	6154	"	Chart at surveyed position
Buoy "LMW"	39°00'06"N 75°12'18"W		6156	"	See PSR Item 1237, page 12
1254	39°04'00"N 75°23'00"W	3.2 ft	1760 1740, 1818	"	Remove from chart

*Item falls off smooth sheet (See insert)*

PSR ITEM 2717 - CLARK POINT CHARTED WRECK COAL BARGE

A 250m radius chain drag search was conducted on April 5, 1983 (JD 095) to locate an unknown wreck locally believed to be a wooden coal barge. One hundred and fifty feet of 3/8 inch chain were paid out, with 6 polypropylene floats attached to the chain on 6 feet of line, spaced 30 ft apart. The two end floats were attached to 10 pound weights. There were 100 feet of towline between each end float and vessel. *Pattern of chain drag search inserted in D.R. (Scale 1:5,000)*

Launch PE-2 (VESNO 3282) was the controlling vessel. The support vessel, PEIRCE Boston Whaler, PE-4 (VESNO 3284), was positioned parallel to PE-2 50m to starboard. Sextant angles were recorded at each fix from the center line of the launch to the midsection of the whaler to position the whaler. Sweeps were made in an N-S orientation starting with position 1655 and ending with position 1739, a detached position (D.P.) where the chain hung on the wreck. Probes made with a sounding pole and the echo sounder trace indicated that the wreckage consisted of scattered debris with an echo sounder least depth of 5.8 feet in 8 feet of water. A diver search was not practical, because visibility was less than one foot. At 1:1000 scale plot of the chain drag is included with the data package. *Pos. 5159 is where L.D. was found.*

Remove the submerged dangerous wreck symbol at charted position 39°01'30"N, 75°20'00"W  
~~75°19'54"W~~. Chart a new symbol for a wreck over which the depth is known at position 39°01'31"N, 75°19'58"W. Least depth was 5.8 feet at 203647 UTC on April 5, 1983. Additional information on the chain drag operations is included in the supplemental data folder. *Chart as visible wreck.*

*corr. L.D. = 1.4 feet.*

PSR ITEM 1237 - STEAMSHIP MOHAWK

*Charted at lat. 39°00.1'N, long. 75°12.3'W  
as visible wreck, PA*

A half-hour echo sounder investigation to delineate the wreckage area was conducted on April 12, 1983 (JD 102).

The wreckage of the CLYDE LINE Steamship MOHAWK consists of scattered metal debris, both submerged and visible at MLLW over an area approximately 300 feet x 60 feet. It is oriented in a NW-SE direction (approximately 320° x 140° magnetic). The water depth in that area is 8 feet (bottom not visible) and the wreck bares 4 feet at MLLW. A red nun buoy "LMW" marking its location is approximately 60m south of the wreckage bearing 190° magnetic from the wreck. The position of the wreck and buoy were determined by using multi-rate Mini-Ranger. The latitude and longitude computations were performed on the HP-9815 using the Geodetic Package, Position by Trilateration program. The resultant position, 39°00'01.1"N, 075°12'17.1"W is the location of the bare portion of the wreck. Approximately two-thirds of the wreck lies SE of the bare portion. Buoy "LMW" is presently charted north of the wreck, at 39°00.2'N, 75°12.4'W. This is the same position as given in the Light List.

Remove charted buoy, ~~remove PA~~, chart buoy at surveyed position. *Do not concur  
chart wreck as shown on insert in D.R..* *Check buoy location with USCG.*

PSR ITEM 1254 - CHARTED WRECK OFF MOUTH OF ST JONES RIVER

A 200m radius chain drag search for a charted 55 foot sunken fishing vessel was conducted on April 6, 1983 (JD 096). The support vessel was PEIRCE Monark PE-3 (VESNO 3283). Sextant angles were taken at each fix from the center line of the launch to the midsection of the Monark. Sweeps were run in a NW-SE orientation from position 1740-1752; a N-S orientation from position 1752-1794; and a NE-SW orientation from 1795-1797 in order to run parallel with the numerous fish nets set in the area. This orientation was aborted because it meant working against the current. Positions 1798-1818 were run in an E-W direction. Position 1760 was a D.P. on a snag with a least depth of 2.5 feet in 4.7 feet of water. The bottom was soft and muddy as *Corr. L.D. 3 ft.* tested with a sounding pole, and it was not possible to determine the size or shape of the object snagged. This area was dotted with bush stakes and fish nets, making it impossible to conduct a non-interrupted sweep of the area.

Two local fishermen were contacted regarding this wreck: Mr. R.H. Barlow, a resident of Bowers Beach since 1928 and Mr. Poulin, the proprietor of Frenchie's Fish Store, Bowers Beach, a 13-year resident of Bowers Beach. Neither of these gentlemen had any knowledge of a wreck in the area or of any other fishermen ever snagging their nets on any debris.

The F/V OGDEN, a wooden oyster schooner, was towed onto the beach at the mouth of the St. Jones River in 1955, but was never lighted since it was not considered to be a danger to navigation. It is still there half buried in sand.

A <sup>foot</sup> 250m radius diver search was conducted by the Ships RUDE/HECK, Wire Drag Survey No. H-9172, OPR-480 in 1970. The wreck was not found. A copy of that report is included in the supplemental data folder. Note that the position *Wreck not found on H-9172 (1968-70) WD, an unreviewed wire drag survey, The wreck's charted pos. falls off limits of the wire-drag survey, however results of diver's search recorded in sdg. records.*

given in the report is one degree different in longitude from the AWOIS position. This is most likely a typographical error. *concur*

Recommend that PSR Item 1254 be removed from chart. *concur*  
*Chart 3054 at lat. 39°04'05.16"N, long. 75°23'09.31"W*  
 Comparisons were made with the following prior surveys:

<u>REGISTRY NO.</u>	<u>SCALE</u>	<u>YEAR SURVEYED</u>
H-1581	1:20,000	1882-1883
H-1582	1:20,000	1883
H-1631	1:20,000	1884
H-3183	1:20,000	1910

H-1581

This prior survey covered the northern section of the sheet. The first noticeable difference was the 0.1nm westward shift of the shoreline. Generally, the contemporary soundings were from 0-2 feet deeper. Shoal orientation (NW to SE) remained the same but a shift to the east occurred. This shift was more pronounced at the north end, 0.2-0.3nm to the east above 39°08'N with a shoalest depth of 6 feet; 0.1nm to the east at 39°07'N; and eventually reversing to 0.1nm westward at 39°06'N.

The channel adjacent to and west of the easternmost shoal has remained the same. A second shoal adjacent to and west of this channel has both lengthened by 0.7nm and shifted to a north-south orientation above 39°08.0'N.

The general relief delineating the shoals has become more pronounced.

The following soundings exceeded the criterion for comparison (Sec. 1.1.2 Part B.II.1. of the Hydrographic Manual).

<u>PRIOR DEPTH</u>	<u>POSITION (Approx)</u>	<u>CONTEMPORARY DEPTH</u>	<u>POSITION NO.</u>
7	39°04.6'N 75°21.9'W	11 <i>(uncorrected)</i>	2352+2 <i>See final sdg. p.o. for G.P.'s.</i>
10	39°06.0'N 75°18.7'W	22	2116+5
16	39°06.0'N 75°18.65'W	32	2116+4
10	39°06.5'N 75°18.7'W	31	2938+4
21	39°06.05'N 75°18.65'W	34	2938+3



37	39°06.1'N 75°19.5'W	23	2074+6
25	39°06.2'N 75°19.4'W	6	2933+2

The above discrepancies occurred around the shoal areas mentioned above, where either a small shift in positional control or a physical shift in the shoal would account for such large differences in depth. It is recommended that contemporary soundings supersede all prior soundings.

H-1582

This survey covers the southernmost portion of the field sheet. Contemporary soundings are 0-2 feet deeper near the shore. Depths along the channel are 0-3 feet deeper. Offshore depths are generally 0-3 feet deeper, the difference in depth increasing eastward except at 38°58.4'N, 75°16.4'W where the prior depth is 15 feet and contemporary depth is 14 feet (position 873+8). It is recommended that contemporary soundings supersede all prior soundings.

H-1631

This prior survey covered the major portion of the field sheet. Again the shoreline has shifted 0.1nm to the west. The Hawknest Shoal remained approximately in the same position but became shoaler by one foot with a <sup>CORR.</sup> least depth of ~~8~~<sup>4</sup> feet (position 2611).

There was no sign of a <sup>10</sup> ~~8~~ foot <sup>depth</sup> spot at 39°04'33"N, 75°18'02"W. Contemporary soundings in that area are <sup>CORR.</sup> ~~12~~<sup>12</sup> feet (position 2040).

No evidence of a five foot shoal near 39°04.4'N, 75°20.0'W was found, the depths in that area now being <sup>10-12</sup> ~~10-12~~ feet (2388+5). <sup>CORR. 9-10</sup> ~~lat. 39°04'34.59"N, long. 75°18'02.88"W~~ ~~lat. 39°04'22.47"N, long. 75°20'01.12"W~~

The NW-SE oriented channel from 39°00.0'N - 39°03.4'N and 75°16.0'W - 75°19.5'W remained generally the same both in orientation and depth. The 4 foot shoal (NW/SE orientation) just west of this channel (39°03'N, 75°20'W) has shifted 0.4nm to the east, changed orientation in a more N-S direction, and got deeper with a <sup>CORR.</sup> ~~4~~<sup>5</sup> least depth of ~~4~~ feet.

A six foot shoal spot at 39°58.5'N, 75°17.0'W is not evident in the contemporary survey. ~~Falls in pres. depths of 8 feet.~~

A five foot shoal spot at 38°59.7'N, 75°16.8'W is also gone. The present depth at that position is 11 feet (position 825+7).

A four foot shoal spot at 39°05.7'N, 75°17.8'W has lengthened and shifted northwest 0.2nm, the shoalest depth is ~~4~~<sup>4</sup> feet (position 2944+1). ~~400 meters northwest.~~ <sup>CORR.</sup>

H-3138

This survey covered the northwest corner of the sheet. Soundings differed by 0-3 feet, the contemporary soundings being deeper closer to shore and shoaler farther offshore. As in the other prior surveys, there was a 0.1nm westward shift of the shoreline.

The six and twelve foot curves have shifted considerably over the last 100 years because of the characteristically flat to gently sloping bottom topography. Overall, soundings agreed well in all locations, except on the edges of the shoals. In all cases, the western side of the shoals have gotten shoaler and the eastern sides have deepened.

L. COMPARISON WITH THE CHART

Sounding data was compared with NOS Chart 12304, 28th Edition, April 17, 1982. Each charted sounding was compared with the contemporary survey. Twenty-nine percent differed by three or more feet and are tabulated below: *See Eval. Rep.*

<u>CHARTED DEPTH (FEET)</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>SURVEY DEPTH &amp; POSITION NO.</u> <i>(Un corr)</i>	
9'	39°07'13"N	75°20'12"W	12'	1393+1 <i>G.P's of Pos. Nos. listed in Sdg. P.O.</i>
6'	39°07'42"N	75°23'30"W	7-9'	987+5
9'	39°07'39"N	75°20'39"W	13'	1413+2
5'	39°07'54"N	75°20'33"W	12'	1422+8
6'	39°07'50"N	75°19'27"W	15'	208+1
3'	39°07'59"N	75°20'15"W	6'	1426
5'	39°08'08"N	75°19'43"W	15'	1431
7'	39°08'03"N	75°23'09"W	10'	190+6
6'	39°08'40"N	75°20'47"W	11'	112+8
4'	39°09'12"N	75°21'54"W	11'	50+12
5'	39°07'30"N	75°19'06"N	9'	1501+7
5'	39°07'06"N	75°18'54"W	8'	1387+6
14'	39°03'12"N	75°21'13"W	10'	3108+1
4'	39°03'09"N	75°20'29"W	10'	3112+1
17'	39°03'21"N	75°20'06"W	13'	3093+4
13'	39°03'42"N	75°20'48"W	8'	2677+6

<u>CHARTED DEPTH (FEET)</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>SURVEY DEPTH &amp; POSITION NO.</u>	
12'	39°03'45"N	75°19'06"W	16'	3069+5
23'	39°03'12"N	75°18'36"W	17'	3103+3
10'	39°03'51"N	75°18'51"W	15'	3066+7
11'	39°03'38"N	75°18'51"W	15'	2619+5
10'	39°03'48"N	75°17'09"W	13'	2637+2
16'	39°04'06"N	75°20'06"W	10'	3234+4
5'	39°04'22"N	75°20'03"W	12'	2388+5
13'	39°04'24"N	75°20'24"W	9'	3223+5
6'	39°04'42"N	75°20'36"W	9'	2293+4
8'	39°04'54"N	75°20'27"W	12'	2262+3
5'	39°04'12"N	75°19'46"W	12'	3291+1
7'	39°04'06"N	75°19'27"W	15'	3235+4
10'	39°04'27"N	75°19'12"W	15'	2369+6
16	39°04'51"N	75°19'15"W	13'	3219+3
8'	39°04'52"N	75°19'30"W	13'	3219+7
15'	39°04'56"N	75°19'57"W	12'	2961+3
9'	39°04'06"N	75°18'54"W	14'	3053+5
12'	39°04'15"N	75°18'33"W	17'	2309+1
10'	39°04'39"N	75°18'39"W	13'	3030+8
9'	39°04'54"N	75°18'51"W	14'	2259+3
4'	39°04'33"N	75°18'02"W	12'	2040
9'	39°04'21"N	75°17'51"W	12'	2392+4
8'	39°05'15"N	75°21'06"W	12'	2210+4
15'	39°05'18"N	75°20'16"W	11'	3311+5
14'	39°05'39"N	75°20'30"W	10'	2158+6
8'	39°05'15"N	75°19'15"W	13'	2214+1

<u>CHARTED DEPTH (FEET)</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>SURVEY DEPTH &amp; POSITION NO.</u>	
9'	39°05'16"N	75°19'49"W	12'	2432+5
7'	39°05'30"N	75°19'36"W	11'	2999+7
9'	39°05'54"N	75°17'47"W	14'	2945
4'	39°05'39"N	75°17'53"W	10'	2983+3
10'	39°05'45"N	75°17'12"W	19'	2981
8'	39°06'33"N	75°22'45"W	11'	2445+7
10'	39°06'34"N	75°20'15"W	13'	2450+8
8'	39°06'07"N	75°18'48"W	20'	3347
4'	39°06'13"N	75°19'00"W	10'	2068+5
7'	39°06'16"N	75°18'09"W	10'	2924
8'	39°01'35"N	75°18'36"W	15'	752+7
4'	39°01'54"N	75°18'45"W	13'	717
6'	39°01'45"N	75°17'00"W	16'	726+2
8'	39°01'56"N	75°17'21"W	16'	2759+7
9'	39°02'21"N	75°17'03"W	13'	646+7
14'	39°02'26"N	75°17'36"W	18'	648
4'	39°02'18"N	75°19'15"W	10'	664+7
4'	39°02'35"N	75°19'41"W	10'	2789+1
4'	39°02'48"N	75°20'04"W	10'	2798+2
2'	39°02'48"N	75°22'24"W	5'	599+1
5'	39°02'18"N	75°21'04"W	7-9'	1931+2, 600+7
15'	39°02'57"N	75°20'57"W	11'	2565
26'	39°02'45"N	75°18'21"W	19'	609
15'	39°02'06"N	75°17'40"W	18'	694+4
17'	39°02'48"N	75°16'45"W	10'	3247+2

<u>CHARTED DEPTH (FEET)</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>SURVEY DEPTH &amp; POSITION NO.</u>	
22'	39°01'00"N	75°17'33"W	8'	794
11'	39°01'06"N	75°17'54"W	18	787+1
37'	39°01'03"N	75°16'45"W	21'	795+2
9'	39°00'00"N	75°17'30"W	15'	2838+1
5'	38°59'42"N	75°16'48"W	11'	825+7
19'	38°59'39"N	75°17'30"W	14'	831+7
1'	38°57'36"N	75°18'06"W	5'	1900+1
2'	38°57'33"N	75°17'24"W	4'	1903+2
1'	38°56'36"N	75°18'12"W	4'	1244+3

Sounding line spacing was decreased from 50m spacing in several areas of significant sounding differences from the chart. A representative sample of these soundings, all across the sheet, was investigated. No indication was found of prior depths.

General trends have been discussed in Section K. The charted shoreline was *about* 0.1nm east of the actual shoreline and the shoreline drawn from the revision prints. Recommend that the shoreline depicted on the revision prints be used for charting purposes. *concur. Also use registered shoreline maps in areas not revised by Revision Prints.*  
 The following items were investigated by chain drag: *(Per photogrammetry Bc.)*

<u>ITEM</u>	<u>POSITION</u>	<u>POSITION NO.s</u>	<u>LINE ORIENTATION</u>	<u>WATER DEPTH</u> <i>(EDIT.)</i>	<u>DAY</u> <u>38</u>
1) 19 ft* inboard/outboard <i>(Not charted)</i>	38°56.83'N 75°17.06'W	5001-5072 6001-6072 5073-5089 6073-6089	N-S	<del>7</del> 10 ft	097
<i>chain drag pattern search in D.R. insert (Scale 1:5000)</i>			E-W		097
2) Charted Pile, <i>PA</i>	39°03.7'N 75°23.3'W	5090-5153 6090-6153	N-S	<del>1-4</del> 2-7 ft	102
3) "MISS LEE" <i>(Not charted)</i>	39°03.18'N 75°20.70'W	5160-5210	N-S	<del>6-9</del> 10-14 ft	117
4) Charted Light off Murderkill R.	39°03.8'N 75°22.7'W				096

\* New Items.

19 FOOT INBOARD/OUTBOARD *Not charted*

This wreck was first reported to the ship by the Mispillion River Launch Service, who thought they had struck either the wreck or the partially submerged buoy which once marked it. Further information on this wreck was received via marine radio on April 28, 1983, from Officer George Gourley on the Delaware Police boat "ECHO." It was described as a 19 foot wooden hull with a Mercury outboard which sank in the summer of 1982. It was first seen bobbing approximately one mile east of Mispillion jetty. Local fishermen attempted to tow it to port but it broke up and sank. Officer Gourley believes it is completely broken up, with only the motor remaining. A Coast Guard buoy once marked the spot, but it is believed to have sunk. It was last seen 1/4 mile from the end of the jetty, on a 60° magnetic bearing. A Loran position, 9960X = 27239.8 and 9960Y = 42731.1 was supplied by local fishermen.

A 200m radius chain drag search was conducted in 7 feet of water, using both Jensen launches. Angles were recorded to the end buoys. The same operational procedure was used as described for PSR Item 2717 in Section K of this report, with the exception that angles were taken from the center line of the launch to the end buoys. The chain was snagged once but broke loose as the launches maneuvered toward the snag. The line on which the snag occurred (38°56.7'N, 75°17.0'W; X = 21980-22020) was rerun three times, twice in the direction of the original snag (south) and once northward. No further snags occurred. Recommend that it not be charted. *Concur*

CHARTED PILE PA

*charted at lat. 39°03.7'N, long. 75°23.3'W*

A 200m radius chain drag search was attempted. Numerous bush stakes, fish nets, and other fishing activities prevented a continuous non-interrupted sweep of the area. A couple of temporary snags occurred. These broke off rather freely and were attributed to the remains of past stakes planted to mark the channel leading to the Murderkill River Entrance. A 1:1,000 scale area coverage mylar blow-up is included in the data package. This item is located in the same vicinity as PSR Item #1254. As previously mentioned, local residents have no knowledge of any obstructions or hazards in this area. Recommend removing charted pile, PA. *Concur*

"MISS LEE"

*Not charted*

The "MISS LEE" was a 45 foot crabbing boat with a Chesapeake Bay deadrise hull. It was equipped with a large winch, a 20 foot long steel beam, and a heavy diesel crab dredge. It sank in 11 feet of water approximately 3/4 mile offshore by radar (from a Coast Guard boat). Coast Guard File No. 47, January 1982, lists its last known position, 39°03.18'N, 75°20.70'W, obtained by a Coast Guard helicopter.

Two local fishermen mentioned the "MISS LEE" when asked about recent wrecks in the area. Each gave an approximate position. These are (1) 39°03.1'N, 75°21.5'W, and (2) 39°01.6'N, 75°20.65'W. The wreck was reported to be barely visible at low tide. Each site was investigated at low tide and a visual/echo sounder search made, but no trace was found.

A 250m chain drag search was attempted but again, a full search was precluded by fishnets in the area. *Coverage in east-west direction is only 50 meters in radius from rept. pos.*

*Object snagged about 100 meters northeast of rept. pos.*  
 An object was snagged and a D.P. taken (positions 5208-5210) but it was not conclusive that it was the "MISS LEE". Further investigation should be conducted to confirm or disprove the identity of this object before taking any charting action. *Reported "Miss Lee" is only known obstr. in area. Object snagged is probably remnants. Chart as 6 Mk. at lat. 39°03'14.29"N,*

LIGHT OFF MURDERKILL RIVER

*long. 75°28'38.94"W.*

*See Eval. Rept. for add'l field work.*

Fish nets, stakes, and a moored barge prevented a chain drag search for the ruins of a charted light located east of the Murderkill River mouth at 39°03.8'N, 75°22.7'W. A new light built on a galvanized skeleton tower with a square green daymarker had just been built at approximately the same location.

*No ruins on chart.*

SHOAL INVESTIGATIONS

Four major shoal areas were developed. Mainscheme lines were split to 100m intervals and lines were run along the axis of the shoals at 50m spacing.

<u>LOCATION</u>	<u>POSITION NO.'s</u>	<u>LEAST DEPTH/POSITION NO.</u> <i>(Corrected)</i>	
39°03.2'N 75°20.3'W	1331-1354 3126-3146 3328-3341	7 ft 5	<del>2810</del> <i>About 1300 meters southeast of location.</i>
39°03.3'N 75°17.3'W	1355-1372 1940-1965 3256-3285 3316-3318 3386-3397	8 ft 4	<del>1940</del> <i>About 650 meters southeast of location.</i>
39°07.0'N 75°19.6'W	1515-1654 3162-3215 3343-3348	8 ft 1	<del>1615</del> <i>About 1700 meters north west of location.</i>
39°07.0'N 75°18.8'W	1969-2000 3350-3385 7001-7052	8 ft 4	<del>1984</del> <i>About 1200 meters north west of location.</i>

Other non-sounding features included:

<u>ITEM DESCRIPTION</u>	<u>CHARTED POSITION</u>	<u>DESCRIPTION</u>	<u>CHARTING RECOMMENDATION</u>
Bare land	39°08.1'N 75°24.4'W	Rectangular area approx. 0.1nm in length and less than .05nm in width	<i>Chart feature in area as shown on pres. survey.</i> Delete from chart. <i>Concur</i>

Bare land	39°06.0'N 75°24.0'W	Three rectangular pieces approx. 0.2nm in length inclusively and less than .05nm in width.	<i>chart as "stone breakwater!"</i> Delete from chart. <i>Concur</i>
Groin Ruins	39°06.9'N 75°24.35'W	*From a note to the hydrographer on the TP sheet.	Do not put on chart. <i>Concur</i>

No evidence of the above charted features were found.

The following non-charted items were located during the survey:

<u>ITEM DESCRIPTION</u>	<u>SURVEYED POSITION</u>	<u>POSITION NO.</u>	<u>CHARTING RECOMMENDATION</u>
1. Erosion floating tire barrier			Delete charted bare land.
North edge	39°08' <sup>06.48"N</sup> 06"N 75°24' <sup>23.59"W</sup> 24"W	494	Chart as "Floating Tire Barrier." } <i>chart as "float"</i>
South edge	39°08' <sup>02.83"N</sup> 03"N 75°24' <sup>23.28"W</sup> 23"W	493	
2. Pier in ruins	39°05' <sup>.57</sup> 38.7"N 75°24' <sup>6</sup> 03.4"W	3161	<del>Do not chart.</del> <i>chart as pier ruins as shown on pres. survey.</i>
3. Yellow drum mooring buoy. Fl G Light	39°03' <sup>53.62"N</sup> 54"N 75°22' <sup>09.33"W</sup> 09"W	2953	Chart at surveyed position.
4. North "Submerged Structure" sign <i>(Priv. marker)</i>	39°06' <sup>09.74"N</sup> 10"N 75°23' <sup>57.40"W</sup> 57"W	3159	Remove charted bare land, replace with dotted line to mark limiting danger line. <i>chart as stone breakwater (Hwash)</i>
5. South "Submerged Structure" sign <i>(Priv. marker)</i>	39°05' <sup>.13</sup> 53"N 75°23' <sup>.22</sup> 53"W	3160	

Items 1 and 4 have been discussed in Section H.

Item 2 was a pier in ruins extending about 15 feet from shore and baring approximately 1-1/2 feet at high tide.

Item 3 was a large yellow oil drum mooring buoy with a flashing green light on top. It is frequently used by barges and tugs.

The "CAUTION" note on unexploded ordnance and restricted area "NOTE A" were not investigated. Recommend their retention on chart.

No rocks were found at the entrance to Mispillion River Channel. Recommend retention of Cautionary Note.

No groin ruins were found at the mouth of Murderkill River.

*Sounding line over feature run at high water. Chart as shown on pres. survey.*



Soundings were taken on the centerlines of Mispillion River, Murderkill River, St. Jones River, and Cedar Creek using PEIRCE Monark, VESNO 3283 and Raytheon fathometer, S/N 5441. Vessel speed varied because of currents, tides, and direction of sounding lines. Fixes were taken when abeam of recognizable topographic features, as depicted in the accompanying aerial photographs. Each fix has been plotted on its respective aerial photograph (see table below). Positions for the fixes are based on the Officer in Charge's (OIC's) personal judgment as to distance offshore and thus, are approximate. *Photos not with sdg. records during evaluation.*

<u>JD</u>	<u>WATERWAY INVESTIGATED</u>	<u>AERIAL PHOTOGRAPH NO.</u>	<u>DEPTH RANGE (FEET)*</u>
118	Murderkill River to 39°00.7'N, 75°26.4'W	8232	6.6'-23.6'
119	St. Jones River to Barkers Landing, 39°05.0'N, 75°27.5'W	8233	4.3'-27.1'
119	Mispillion River to Bascule Bridge at Milford, 38°55.0'N, 75°25.1'W	8227 8248	4.1'-21.6'
119	Cedar Creek to junction between Cedar Creek and Slaughter Creek, 38°55.3'N, 75°19.6'W	8227	5.2'-19.1'

Staff readings were taken at the beginnings and ends of lines for Mispillion River and Cedar Creek at the Mispillion River staff; and at the Murderkill staff for the St. Jones River. No readings were recorded for Murderkill River. They are recorded on the echograms and are listed below:

<u>WATER</u>	<u>BEGINNING STAFF READING/TIME</u>	<u>ENDING READING/TIME</u>
ST. JONES RIVER	6.4 feet/1335Z	7.6 feet/1505Z
MISPILLION RIVER	5 feet/1420Z	6.5 feet/1615Z
CEDAR CREEK	4.8 feet/1810Z	3.8 feet/1902Z

All charted features along each waterway, such as bridges, overhead cables, and piers, were confirmed. No new features were found. Recommend retention of all charted features along each waterway.

Oyster stakes are located throughout the survey area. Recommend retention of Oyster Grounds Note on chart. *Concur*

No dangers to navigation were found in this survey. *Do not concur. See comments pertaining to PSR items.*

#### M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede all prior surveys in regards to bottom topography. More time might be devoted to searching for the "MISS LEE".

#### N. AIDS TO NAVIGATION

Ten floating aids were located on this survey and are listed on the following table: *Add'l search for more remains as suggested by hydrographer recommended.*

FLOATING AIDS

DESCRIPTION	SURVEYED POSITION/POS. NO.	CHARTED POSITION	LIGHT LIST POSITION	POSITIONAL AGREEMENT (CHART VS SURVEY)	PURPOSE
1. Yellow oil drum mooring buoy, F1 G	53-62 39°03'54"N/2953 75°22'09"W	---	---	---	Mooring buoy off of Murderkill R. mouth
2. Black can "1"	39°03'56"N/2952 75°22'27"W 20-86	---	---	---	Mark entrance channel to Bowers Beach in line with ranges on shore
3. Black Can "3"	26 39°03'30"N/2959 75°23'46"W	39°03'.8"N 75°23'.8"W	In ten feet	71m	Channel buoy to Bowers Beach
4. Red Nun "2"	45-85 39°03'33"N/2960 75°23'42"W 41-90	39°03'.6"N 75°23'.7"W	In five feet	21m	Channel buoy
5. Red Nun "LMW" <i>Off shoot limits</i>	39°00'06"N/6156 75°12'17"W 16-97	39°00'.2"N 75°12'.4"W	39°00'.2"N 75°12'.4"W In 14 feet	251m	Marking wreck PSR # 1237
6. BW Buoy N "D"	02-40 39°12'12"N/5154 75°19'56"W	39°02'.1"N 75°19'.7"W	In 15 feet	419m	Marks centerline of a natural channel
7. BW Buoy N "C"	55-57 38°59'40"N/5155 75°17'28"W 22-53	38°59'.7"N 75°17'.6"W	In 19 feet	265m	Marks centerline of a natural channel
8. Black Can "1"	38°56'11"N/1890 75°17'54"W 53-94	---	---	---	Mispillion channel entrance
9. Black Can "1"	39°01'36"N/1435 75°19'54"W 18-93	39°01'.6"N 75°19'.9"W	39°01'.5"N 75°19'.5"W	103m	Clark Point wreck (#2717)
10. Murderkill R. Entrance Light	39°03'47".8"N/5157 75°22'42".7"W 41-97	---	39°03'.8"N 75°22'.8"W	143m*	In line with ranges on shore delineating entrance channel

*Does not appear in 1983 or 1984 Light Lists.*

*Does not appear in 1983 or 1984 Light Lists.*

\* Light List vs. Survey

(2) Black Can "1" (position 2952) is the outermost marker for the entrance channels to St. Jones River and Bowers Beach. According to Mr. R. H. Barlow, a local resident since 1928, it is in line with the rear red square day marker set on shore, marking the approach to St. Jones River. He also said the controlling depth over the bar is one foot. Numerous stakes have been set on the southern side of the channel to mark the channel. These are maintained as needed by local fishermen. *Stake location not determined by field.*

(10) This structure consists of a square green day beacon mounted on a galvanized skeleton tower. It was being installed at the time of the survey and as yet had no light mounted on it. It is located at the site of the old charted light Fl G 4 sec 4m "1" PA. Recommend removal of "PA" from chart.

No new bridges, overhead, cables, submarine cables, pipelines, or ferry routes were located. A copy of NOAA 76-40 is included in Appendix I. The original form was sent to Chief, Operations Division, AMC, for forwarding to Chart Information Branch, Rockville, Maryland.

#### O. STATISTICS

<u>CATEGORY</u>	<u>VESNO 3281</u>	<u>VESNO 3282</u>	<u>TOTAL</u>
Total No. of Positions	1429	2073	3502
Nautical Miles of Sounding Lines	418.3	515.6	933.9
Square Miles of Hydrography	---	---	52
Bottom Samples	12	33	45
Tide Stations	---	---	6
Velocity Casts	---	---	3

#### P. MISCELLANEOUS

Forty-five bottom samples were taken during this survey. A copy of the *Retained in* Oceanographic Log Sheet "M" is contained in Appendix H of this report. *Sdg. records.* Samples were not kept. Current observations were not made. Wire drag echograms were not scanned, corrected, or used as sounding records. A computer hardware malfunction on VESNO 3282 caused the following erroneous times to be recorded on the data tapes: On JD 097, the times on the master printout are incorrect; 17 minutes slow from position numbers 5001-5004, 6 minutes slow from position numbers 5005-5054, and 3 minutes slow from position numbers 5055-5089. On JD 102, the times are 13 minutes slow for the entire day; position numbers 5090-5155.

#### Q. RECOMMENDATIONS

This survey is considered adequate for charting purposes. Further fieldwork is recommended for the "MISS LEE".

R. AUTOMATED DATA PROCESSING

The following programs were used for data acquisition and processing:

<u>PROGRAM NO.</u>	<u>DESCRIPTION</u>	<u>VERSION DATE</u>
RK 112	HYPERBOLIC, R/R HYDROPLOT	08/04/81
RK 201	GRID, SIGNAL, AND LATTICE PLOT	04/18/75
RK 211	RANGE/RANGE NON-REAL TIME PLOT	02/02/81
RK 300	UTILITY COMPUTATIONS	10/21/80
RK 330	REFORMAT AND DATA CHECK	05/04/76
PM 360	ELECTRONIC CORRECTOR ABSTRACT	02/02/76
AM 500	PREDICTED TIDE GENERATOR	11/10/72
RK 530	LAYER CORRECTIONS FOR VELOCITY	05/10/76
RK 561	H/R GEODETIC CALIBRATION	12/01/82
AM 602	ELINORE--LINE ORIENTED EDITOR	12/08/82
RK 612	LINE PRINTER LIST	03/22/78

S. REFERENCE TO REPORTS

A Horizontal Control report has been submitted to AMC at the end of the project.  
A Coast Pilot report has been forwarded to Chief, Coast Pilot Branch, Rockville.

Respectfully submitted,

*Svetlana I. Andreeva*

Svetlana I. Andreeva  
ENS, NOAA

## SIGNAL TAPE LISTING

OPR D-219 PE-83

DELAWARE BAY

003	7	39	07	35539	075	12	32533	<del>250</del> <sup>254</sup>	0021	<del>000000</del> <sup>149835</sup>
004	7	39	10	55578	075	16	07727 <sup>32</sup>	139	0019	000000
005	7	39	02	53294	075	10	57273	139	0018	000000
007	7	39	07	35526	075	12	32583	139	0018	000000
009	2	38	59	10030	075	06	48818	139	0018	000000
014	5	39	03	17991	075	24	23951	139	0020	000000
015	5	39	00	00750	075	19	43958	139	0000	000000
016	5	38	56	50423	075	18	55694	139	0020	000000
021	7	33	50	10057	075	06	48766	<del>250</del> <sup>254</sup>	0023	<del>000000</del> <sup>149835</sup>
022	2	39	02	53239	075	10	57348	<del>250</del> <sup>254</sup>	0020	<del>000000</del> <sup>149835</sup>
023	2	39	10	55578 <sup>9</sup>	075	16	07743	<del>250</del> <sup>254</sup>	0020	<del>000000</del> <sup>149835</sup>
025	1	33	56	11298	075	17	54903	<del>137</del> <sup>243</sup>	0000	000000
026	4	38	56	13475	075	17	53854	139	0000	000000

## SIGNAL TAPE LISTING

OPR-D219-PE-83  
DELAWARE BAY

<u>SIGNAL NO.</u>	<u>NAME</u>	<u>YEAR</u>	<u>QUADRANGLE/STATION NO.</u>	
003	MIAH MAULL SHOAL MR	1983 PE		
004	ELBOW OF CROSS LEDGE LIGHT	1983 PE	390752	
005	FOURTEEN FOOT BANK LIGHT	1933 NGS	390752	
007	MIAH MAULL SHOAL LIGHT	1933 NGS	390752	
009	BRANDYWINE SHOAL LIGHTHOUSE	1932 NGS	380751	1006
014	MURDERKILL R REAR RANGE LIGHT	1933 NGS	390752	1008
015	BIG STONE BEACH TOWER (AMC)	1982 AMC		
016	MISPILLION RIVER FLASHING LIGHT	1933 NGS	380751	1073
021	BRANDYWINE SHOALS MR	1983 PE		
022	FOURTEEN FOOT BANK MR	1983 PE		
023	ELBOW OF CROSS LEDGE MR	1983 PE		
025	SOUTH JETTY	1983 PE		
026	MISPILLION N JETTY LT 2	1983 PE		

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY

- HYDROGRAPHIC PARTY
  - GEODETIC PARTY
  - PHOTO FIELD PARTY
  - COMPILATION ACTIVITY
  - FINAL REVIEWER
  - QUALITY CONTROL & REVIEW GRP
  - COAST PILOT BRANCH
- (See reverse for responsible personnel)

REPORTING UNIT (If field party, ship or office) **NOAA Ship PEIRCE** STATE **DE, NJ** LOCALITY **Delaware Bay** DATE **5 May 83**

TO BE CHARTED  TO BE REVISED  TO BE DELETED

The following objects HAVE  HAVE NOT  been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO. **0219-PE-83** SURVEY NUMBER **NAD 1927** DATUM **NAD 1927**

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parenthesis.)	POSITION			METHOD AND DATE OF LOCATION (See instructions on reverse side)	CHARTS AFFECTED
		LATITUDE		LONGITUDE		
		D.M. Meters	° /	D.P. Meters		
TANK (EAST OF EIGHT) TOWER	Formerly "TANK" (EAST OF FOUR): Four new tanks built adjacent to and west of original tanks. (BIG STONE BEACH TOWER, 1982) Improved position.	39 10	75 25	48.50	V-Vis 4-21-83	12304
E Int 6 sec 61 ft 11 M HORN	(ELBOW OF CROSS LEDGE LT 1983) Light-house intersected in 1933 was destroyed 1947. Present structure built 1954 L.L.#2110.	39 00	75 19	43.958	F-2-6-L 11-12-82	12304
QK FI 30 ft 6M "2"	MISPILLION N JETTY LT 2, 1983) Rebuilt Sep. 1982. L.L.#2157.10	39 10	75 16	07.732	F-3-6-L 4-13-83	12304
FI G 4 sec 27 ft 5M "1"	(MISPILLION S JETTY LT 1, 1983) Rebuilt Nov. 1982. L.L.#2157	38 56	75 17	53.854	F-2-6-L 3-16-83	12304
QK FI 23 ft	(MURDERKILL R RANGE FRONT LIGHT, 1983) Improved position. L.L.#2160	38 56	75 17	54.896	F-2-6-L 3-16-83	12304
FI 4 sec 33 ft 6 M	NANTUXENT PT LT Rebuilt 21 Dec 1982. L.L.#2134	39 03	75 23	57.766	F-2-6-L 3-20-83	12304
FI 6 sec 30 ft 6 M	BEN DAVIS POINT LT Rebuilt 21 Dec 1982. L.L.#2135	39 16	75 14	41.72	From private survey contracted by USCG 1-18-83	12304
QK FI 24 ft 5 M "1"	COHANSEY OUTER LT 1 Rebuilt 21 Dec 1982. L.L.#2137	39 17	75 17	19.07	From private survey contracted by USCG 1-18-83	12304
PLATFORM (old LH base)	(CROSS LEDGE SHOAL OLD LIGHTHOUSE, 1933) Formerly TOWER (Aband LH) Abandoned LH has been destroyed, only cylindrical base remains.	39 20	75 21	59	From USCG LNM 1-18-83	12304
		39 09	75 14	12.919	V-6 3-16-83	12304

NC L-614(83)

Replaces C&GS Form 567.

TO BE CHARTED  
 TO BE REVISED  
 TO BE DELETED

REPORTING UNIT  
(If not Party, Ship or Office)

STATE

LOCALITY

DATE

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

ORIGINATING ACTIVITY

- HYDROGRAPHIC PARTY
- PHOTO FIELD PARTY
- COMPILATION ACTIVITY
- FINAL REVIEWER
- QUALITY CONTROL & REVIEW GRP
- COAST PILOT BRANCH

(See reverse for responsible personnel)

### NONFLOATING AIDS OR LANDMARKS FOR CHARTS

NOAA Ship PEIRCE

DE, NJ

Delaware Bay

5 May 83

The following objects HAVE  HAVE NOT  been inspected from seaward to determine their value as landmarks.

OPER PROJECT NO. 0219-PE-83

JOB NUMBER

SURVEY NUMBER

DATUM

NAD 1927

POSITION

CHARTING NAME

DESCRIPTION  
(Record reasons for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)

LATITUDE  
D.M. Meters

LONGITUDE  
D.P. Meters

METHOD AND DATE OF LOCATION  
(See instructions on reverse side)

CHARTS AFFECTED

FJ 2.5 sec  
23 ft 6 M  
"9"

(MAIN CHANNEL LIGHT 9, 1983)  
New light structure replaced Buoy "9"  
L.L.#2099

38 55 / 20.449 75 06

01.975

F-2-6-L  
4-5-83

12304

Priv.  
maintained

ST JONES R RED DAY BEACON  
Privately maintained; Began to lean after being located; unsuitable for NGS data base.

39 04 / 00.610 75 24

18.385

F-2-6-L  
3-20-83

12304

FJ 4 sec  
18 ft 4 M  
"1"

MURDERKILL RIVER ENTRANCE APPROACH LIGHT  
Rebuilt Apr 1983  
Sextant fix position unsuitable for NGS data base  
L.L.#2159-70

39 03 / 47.915 75 22

41.784

F-4-8-L  
4-27-83

12304

NC  
F-614(83)





APPROVAL SHEET

H-10079

Fieldwork on this survey was conducted under my supervision with frequent personal examination of the field sheet and records. This report and final field sheet have been reviewed and found to represent a complete and adequate survey except for investigation of the "MISS LEE" at latitude 39°03.18'N, longitude 75°20.70'W.

This survey should supersede all prior surveys and charted soundings in the common area.



Walter S. Simmons,  
Commander, NOAA  
Commanding Officer  
NOAA Ship PEIRCE

GEOGRAPHIC NAMES REPORT  
OPR-D219-PE-83  
Delaware Bay

PEIRCE personnel gathered information on geographic names coincidentally with other survey duties ashore. Local mariners were shown a copy of the most recent Chart 12304 of Delaware Bay and asked to verify the charted geographic names; no discrepancies were found. In addition, several uncharted names of water features were learned. Two of these names, "Broadkill Slough" and "Cedarbush Hole," are recommended for charting purposes. Both names represent substantial water features, and are widely recognized in the local area.

Cedarbush Hole is 4 nautical miles east of Kitts Hummock, DE. It extends from Lat. 39°07.2'N Long. 75°19.3'W southeast to Lat. 39°04.3'N Long. 75°17.1'W. One local mariner believes the name originates from a time when a cedar bush was placed on an adjacent shoal to mark the hole for fisherman.

*Cedarbush Hole added to smooth sheet per Geographer.*

Broadkill Slough is 4 nautical miles east of Slaughter Beach, DE. It extends from Lat. 38°56.0'N, Long. 75°14.0'W southeast to Lat. 38°54.0'N, Long. 75°11.5'W. The origin of the name is unknown, but "Broadkill" has also been applied to the Broadkill River and Broadkill Neck 6 nautical miles south.

*Broad Kill Slough falls off survey limits.*

The attached list names the local mariners who supplied the names of these features. All local mariners were able to independently name the features without the name being suggested to them first.

Respectfully submitted:

*Robert M. Mandzi*

Robert M. Mandzi, LT, NOAA

Approved:

*Walter S. Simmons*

Walter S. Simmons, CDR, NOAA

Named Cedarbush Hole and Broadkill Slough:

Richard Greer (Capt. - Del. Bay Launch Service)  
RD 4 Box 92  
Georgetown, DE 19947

Robert Waski (Capt. of "Phyllis Key II")  
Falkner's Pier  
Fredrica, DE 19946 (Bowers)

Jack Donovan (Local fisherman)  
Box 325  
Fredrica, DE 19946 (Bowers)

Willis Hand (Capt. of tugboat "Namu")  
524 Crawford Ave.  
Dover, DE 19910 (Port Mahon)

Named Broadkill Slough only:

Bud Walls (Marina Operator)  
RD 1 Box 114  
Greenwood, DE 19950

Robert Sleva (Charter Boat Captain)  
RD 1 Box 391  
Milford, DE 19963 (Slaughter Beach)

Charles F. Wrzesniewski (Captain of "Me Too")  
Box 318A  
Milford, DE 19963 (Slaughter Beach)

Named Cedarbush Hole only:

William "Frenchy" Poulin  
RD 1  
Fredrica, DE 19946 (Bowers)

75° 13'

75° 12'

39° 01'

39° 01'

39° 00'



N"LMW"

39° 00'

PSR Item no. 1237  
Steamship MOHAWK

Scale 1:20,000

38° 59'

38° 59'

75° 13'

75° 12'

75° 13'

75° 12'

39° 01'

39° 01'

PSR Item 1237

Scale 1:20,000

6154  
6155

39° 00'

39° 00'

38° 59'

38° 59'

75° 13'

75° 12'

MOA23-7-86

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY (Check):

ORDINARY MAIL  AIR MAIL

REGISTERED MAIL  EXPRESS

GBL (Give number) \_\_\_\_\_

TO:

Chief, Data Control Branch, N/CG243  
Room 151, WSC-1  
Hydrographic Surveys Branch  
National Ocean Service  
Rockville, MD 20852

DATE FORWARDED

7 January 1986

NUMBER OF PACKAGES

two (2)

**NOTE:** A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H-10112 (PE-20-1-83)  
OPR-D219-PE-83--Delaware Bay

Pkg. 1: (tube)

- Smooth Sheet
- Excess Sounding Overlays
- Position Overlay
- Original Descriptive Report

Pkg. 2: (box)

- Cahier containing Final Position Printout and Control Listing
- Cahier containing Final Sounding Printout and L-File Listing
- Folder containing data remove from Original Descriptive Report

FROM: (Signature)

  
Robert G. Roberson

RECEIVED THE ABOVE  
(Name, Division, Date)

*Dwayne S. Clark*  
*January 20, 1987*  
*N/CG243*

Return receipted copy to:

Chief, Hydrographic Surveys Branch,  
N/MOA23  
Atlantic Marine Center  
439 W. York Street  
Norfolk, VA 23510-1114

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NO.: H-10079

Number of positions	3125
Number of soundings	21432
Number of control stations	13

	<u>TIME-HOURS</u>	<u>DATE COMPLETED</u>
Preprocessing Examination	28	27 FEB 84
Verification of Field Data	447	28 FEB 86
Quality Control Checks	71	
Evaluation and Analysis	30	30 APR 86
Final Inspection	2	12 MAY 86
TOTAL TIME	578	
Marine Center Approval		23 MAY 86

Transmittal letter of survey and survey records will be included in the Descriptive Report to identify the records accompanying the survey.

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December 6, 1983

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 855-4399 Mahon River Entrance, DE  
855-5388 Murderkill River Entrance, DE  
855-6198 Mispillion River Entrance, DE

Period: March 6 - April 22, 1983

HYDROGRAPHIC SHEET: H-10079

OPR: D219

Locality: Delaware Bay

Plane of reference (mean lower low water): 855-4399 = 1.68 feet  
855-5388 = 2.71 feet  
855-6198 = 2.40 feet

Height of Mean High Water above Plane of Reference is

855-4399 = 5.8 feet  
855-5388 = 5.1 feet  
855-6198 = 4.6 feet

REMARKS: Recommended Zoning:

A) West of Longitude 75°20.0'

1. North of latitude 39°07.0' zone direct on 855-4399.
2. South of 39°07.0' zone direct on 855-5388.

B) East of Longitude 75°20.0'

1. North of latitude 39°05.0' zone on 855-4399 and apply a -10 minute time correction and x 0.98 range ratio.
2. South of 39°05.0' to 39°00.5' zone on 855-5388 and apply a -10 minute time correction and x 1.04 range ratio:
3. South of 39°00.5' zone direct on 855-6198. For times of hydrography when tide station 855-6198 was inoperative, zone on 855-5388 and apply a -25 minute time correction and x 0.98 range ratio.

*James E. Hubbard*  
Chief, Data and Information Branch

GEOGRAPHIC NAMES

Name on Survey	Source of Name											
	A	B	C	D	E	F	G	H	K			
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST				
BENNETTS PIER (locality)												1
BIG STONE BEACH												2
BOWERS BEACH (locality)												3
BROCKONBRIDGE GUT												4
CEDARBUSH HOLE												5
CEDAR CREEK												6
CLARK POINT												7
DELAWARE (title)												8
DELAWARE BAY												9
HAWKNEST (shoal)												10
KITTS HUMMOCK												11
LEWIS DITCH												12
LITTLE RIVER												13
MISPILLION LIGHT (locality)												14
MISPILLION RIVER												15
MURDERKILL RIVER												16
PICKERING BEACH												17
SAINTE JONES RIVER												18
SANDY POINT												19
WEBB LANDING												20
												21
												22
												23
												24
												25

Approved:

*Charles E. Hammon*  
Chief Geographer - N/CG275

MAR 28 1986



b. The standard depth curves are adequately delineated except for a few portions of the 0-foot depth curve because of its proximity to shore. A 3-foot supplemental depth curve, a brown curve, and some dashed curves were added to emphasize certain bottom features.

c. The development of the bottom configuration and the determination of least depths are considered adequate.

#### 4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records, and reports comply with the requirements of the Hydrographic Manual. However, additional clarifying comments should have been made in the sounding records concerning features specifically investigated.

#### 5. JUNCTIONS

An adequate junction was effected with H-10084 (1983) on the east during verification of that survey. Butt junctions were effected with H-9202 (1971) on the southeast and H-9313 (1972) on the south where differences of 2 and 3 feet were noted. These differences are considered to have been caused by shifting of sand due to currents and storms.

#### 6. COMPARISON WITH PRIOR SURVEYS

- a. H-118 (1842-43) 1:20,000
- H-122 (1842) 1:20,000
- H-123 (1842) 1:20,000
- H-124 (1841) 1:20,000
- H-148 (1841-43) 1:80,000

These prior surveys taken together cover the area of the present survey. A comparison of prior soundings with present depths reveals significant differences that are attributed mostly to natural causes and partially to methods of surveying. Due to the bottom changes in the area, the prior soundings are considered no longer valid. The present survey is adequate to supersede the prior surveys within the common area.

- b. H-1581 (1882-83) 1:20,000
- H-1582 (1883) 1:20,000
- H-1631 (1884) 1:20,000
- H-3183 (1910) 1:20,000

These prior surveys taken together cover the area of the present survey. In general, a comparison between prior and present depths reveals a relatively stable bottom with minor depth differences of  $\pm 1$  to 2 feet. However, in the northwest part of the present survey, depths are now 2 to 7 feet shoaler as a result of spoiling due to the establishment of a Federal Project Channel in Delaware Bay.

The present survey is adequate to supersede the prior surveys within the common area.

- c. T-8761 (1946) 1:20,000
- T-8762 (1946) 1:20,000
- T-8763 (1946) 1:20,000
- T-8764 (1946) 1:20,000

These photogrammetric shoreline maps cover the area common to the present survey and are subsequent to the prior hydrographic surveys. The shoreline in many areas has eroded about 50 to 100 meters, while the general character of the shore has essentially remained the same.

The present survey is adequate to supersede the above surveys in the common area.

7. COMPARISON WITH CHART 12304 (28th Edition, April 17, 1982)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys which requires no further consideration, supplemented by miscellaneous sources.

The present survey is adequate to supersede the charted hydrography within the common area.

b. Controlling Depths

(1) The "3 ft rep Oct 1957" note in the channel charted in the vicinity of latitude 39°04.0'N, longitude 75°23.4'W is in conflict with present depths. Chart the depths as shown on the present survey.

(2) The "4 FT JUNE 1981" note in the marked channel charted in the vicinity of latitude 39°03.6'N, longitude 75°23.4'W is in conflict with present depths. Chart the depths as shown on the present survey.

(3) The "6FT CENTERLINE MAY 1979" note in the approach channel to Mispillion River charted in the vicinity of latitude 38°56.5'N, longitude 75°18.4'W is in agreement with present depths.

c. Aids to Navigation

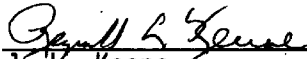
The aids to navigation located on the present survey are in substantial agreement with their charted positions and adequately mark the features intended. Two uncharted black can buoys at latitude 39°03'56"N, longitude 75°22'20"W and latitude 38°56'11"N, longitude 75°17'53"W were located by the hydrographer. The existence of these floating aids should be confirmed by the U.S. Coast Guard.

8. COMPLIANCE WITH INSTRUCTIONS

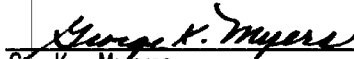
This survey adequately complies with the project instructions.

9. ADDITIONAL FIELD WORK

This is a good basic survey. The object snagged at latitude 39°03.14.29"N, longitude 75°20'38.94"W is the only position obtained at a hang of the chain drag during the investigation of the reported wreck "Miss Lee." A full investigation to determine whether additional remains of the wreck may be scattered throughout the area should be conducted at a future time.



J. L. Keene  
Cartographic Technician  
Verification of Field Data



G. K. Myers  
Chief, Standards Section (N/CG242)  
Hydrographic Surveys Branch  
Evaluation and Analysis



Robert R. Hill  
Senior Cartographic Technician  
Verification Check

Inspection Report  
H-10079

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The survey complies with National Ocean Service (NOS) requirements except as noted in the Evaluation Report. The survey records comply with NOS requirements except where noted in the Evaluation Report.

Inspected



Dale E. Westbrook  
Deputy Chief, Hydrographic Surveys  
Branch (N/CG24x1)

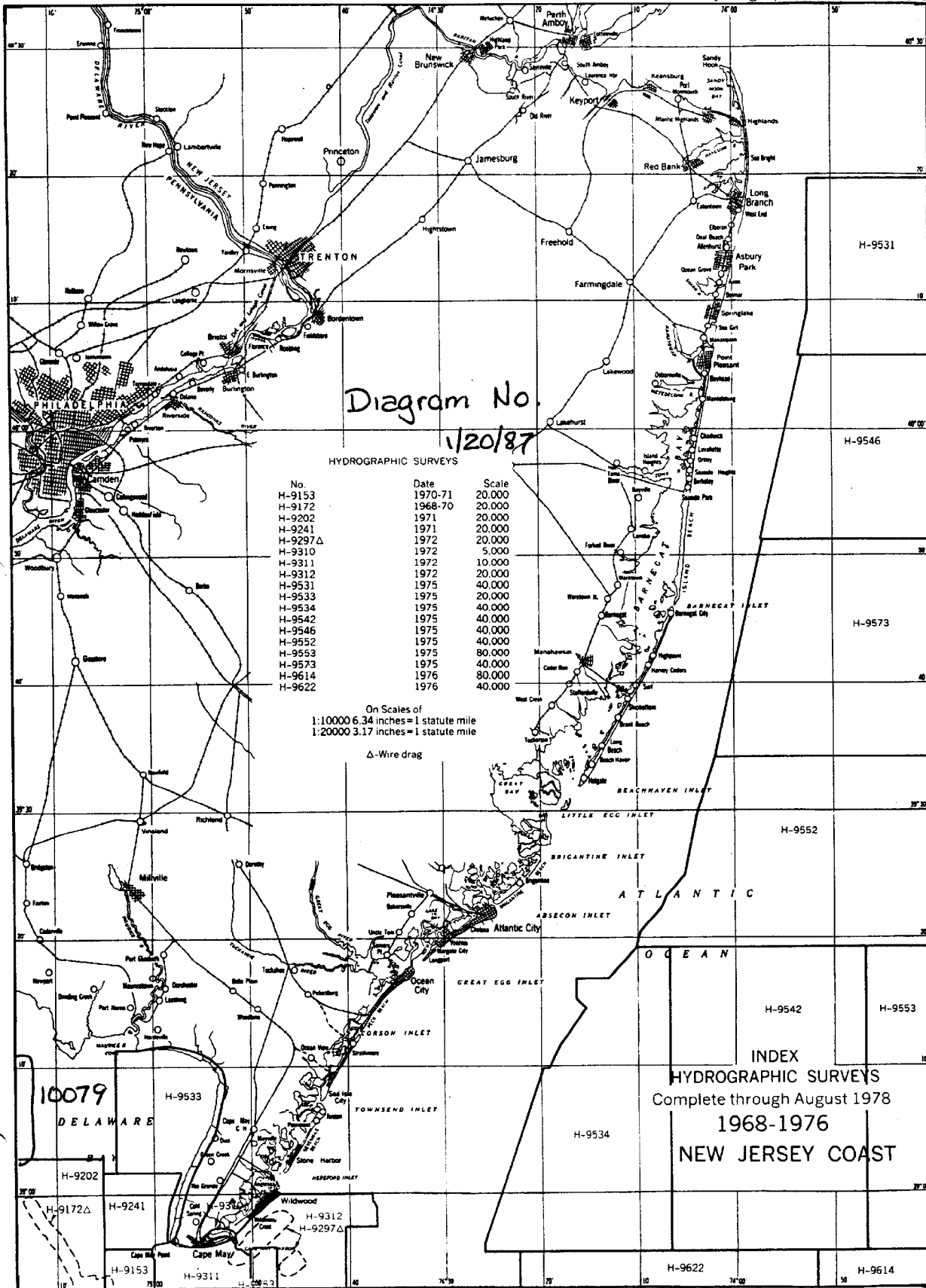
Approved



Wesley V. Hull, RADM, NOAA  
Director, Atlantic Marine Center

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

Hydrographic Index No. 66 L





MARINE CHART BRANCH  
**RECORD OF APPLICATION TO CHARTS**

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10079

**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
12304	5-5-87	H. Radde	Full <del>Part</del> After Marine Center Approval Signed Via Drawing No. 55
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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