4147-0289

10112

Diagram No. 294-2

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. ... HFP-10-3-83

Registery No. ... H-10112

LOCALITY

State ... Delaware--New Jersey

General Locality ... Delaware River

Sublocality ... Reedy Island to Pea Patch Shoal

19 83

CHIEF OF PARTY
LCDR R.W.Jones

LIBRARY & ARCHIVES

DATE ... January 20, 1987

☆U.S. GOV. PRINTING OFFICE: 1985—566-054

10112

Overall Cht

12277
12311

TO SIGN OFF SEE "RECORD OF APPLICATION"

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.
H-10112

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.
HFP-10-3-83

State Delaware - New Jersey

General locality Delaware River

Locality ~~Pea Patch Island to~~ Reedy Island to Pea Patch Shoal

Scale 1:10,000 **Date of survey** 25 Aug. 83 - ~~2 Nov~~ 31 Oct. 83

Instructions dated 22 April 1983* **Project No.** OPR-D218-HFP-83

Vessel Hydrographic Field Parties Section, HFP-3, Launch 1283 and 520

Chief of party Ronald W. Jones, LCDR, NOAA

Surveyed by Frederick W. Rossman, LTjg, NOAA, OIC-HFP-3

Soundings taken by echo sounder, hand lead, pole All Raytheon DE-719B, 719C

Graphic record scaled by Field Party Personnel

Graphic record checked by F.Rossman and R. Snow

Protracted by ~~Field Sheet - PDP8/e~~ **Automated plot by** Smooth - Xynetics 1200

Verification by AMC - Verification Section - D.V. Mason

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

REMARKS: * Change No. 1 - 9 May 1983

Notes in red in the Descriptive Report were made during office processing.

Miscellaneous pages have been removed and filed with the survey records

AWOIS/SURF MSM 2/4/87

DESCRIPTIVE REPORT

TO ACCOMPANY

HYDROGRAPHIC SURVEY H-10112

HFP- 10-3-83

Scale 1:10,000

Chief of Party: Lcdr. Ronald W. Jones

Officer-in-Charge: Lt(jg) Frederick W. Rossman

Hydrographic Field Party Section, Hydrographic Field Party #3

Launch 1283 and 520

A. PROJECT

This survey was accomplished under Project Instructions OPR-D218-HFP-83, dated 22 April 83, and amended by:

Change No. 1, 9 May 1983

B. AREA SURVEYED

The area surveyed was the Delaware River south of Pea Patch Island, Delaware, south to Reedy Island, Delaware. The survey includes the Salem River, Fenwick Creek, Mill Creek and Straight Ditch, all on the New Jersey side of the river. The survey area includes portions of New Castle and Reedy Island Range Channels and the entrance channel to Salem River, New Jersey. The northern end of the survey includes the entrance to the Chesapeake and Delaware Canal. The survey area is roughly bounded by the following points:

Lat. 39°35'31"N	Long. 75°32'19"W
Lat. 39°35'15"N	Long. 75°29'42"W
Lat. 39°34'40"N	Long. 75°27'50"W
Lat. 39°34'06"N	Long. 75°29'30"W
Lat. 39°30'04"N	Long. 75°31'17"W
Lat. 39°30'43"N	Long. 75°33'40"W
Lat. 39°31'14"N	Long. 75°33'18"W
Lat. 39°31'17"N	Long. 75°34'19"W
Lat. 39°33'48"N	Long. 75°34'10"W

This survey was conducted from 25 August 1983 to ~~2 November~~ 31 Oct. 1983 (J.D. 237 to 306) inclusive.

C. SOUNDING VESSEL

All soundings obtained on this survey were obtained from NOAA Launches 1283 and 520. All survey records are annotated with the vessel number 1283 or 520 for the appropriate sounding vessel.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

The following raytheon fathometer equipment was used during the survey:

Launch 1283

JD 237-~~270~~ 251: Recorder Model #719-C, Serial #6211

JD ~~271~~ 269-276: Recorder Model #719-C, Serial #5881

JD 277-306: Recorder Model #719-C, Serial #6211

Launch 520

JD 290-291(AM) Recorder Model #719-B, Serial #9221

JD 291(PM)-304 Recorder Model #719-B, Serial #7727

Several problems occurred with the fathometers during the course of the survey. On JD 269, the constant voltage source of fathometer #6211, failed. The unit was returned to the Electronic Engineering Branch for repair and was returned to the field party. Serial number 9221 had problems with the gears on the paper drive motor and was replaced by fathometer #7727 on the afternoon of J.D. 291. This unit was later returned to working order by the field party. The fathometers on both these occasions were taken out of service before they affected the quality of the hydrographic data. A sounding clock was used to insure proper time interval between fixes, independent of the paper drive motor. The fathometer was monitored continuously while sounding and was under constant adjustment to insure that no initial corrections were necessary.

Settlement and squat tests were run in the Salem River, New Jersey:

Launch	Date	Latitude	Longitude
520	13 Oct. 83	39°34.'5N	75°28'.9W
1283	15 Aug. 83	39°34.'5N	75°28'.9W

The results of these tests are included in the appendix of this report. Settlement and squat corrections will be applied via the TC/TI tape during plotting of the smooth sheet at the Atlantic Marine Center and were not applied to the field sheet.

Velocity and instrument corrections were determined from the daily bar checks taken in the survey area. The lengths of the line on the bar were checked on 22 September 1983. The results of this inspection showed that the chain was accurately marked. Five velocity tables were tabulated using the

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS (Continued)

barcheck data, and are appended to this report. These velocity correctors were not applied on the field sheet. Velocity tapes are included with the survey data, for the smooth plotting of the sheet by AMC.

The field soundings were plotted using the static draft corrector and predicted tide for Reedy Point, Delaware using the tide correctors provided in the project instructions.

E. SURVEY SHEETS

The field sheets were prepared in the field using a PDP8/e computer and ADP-3 COMPLOT plotter. Two work sheets, two semi-smooth sheets, two smooth field sheets and two overlay sheets along with a hand plotted dogleg for Mill Creek and Straight Ditch, New Jersey are included with this survey. Mainscheme hydrography is plotted on the smooth field sheets, while crosslines, developments, splits, bottom samples, junction soundings, presurvey review items, and aids to navigation are shown on the overlay sheets. The Salem River and Fenwick Creek are plotted on one of the field sheets and the Delaware River on the other. Projection parameter tape listings for the field sheets are included in the Appendix of this report. The final smooth sheet and verification of this survey will be accomplished at the Atlantic Marine Center on the Harris/7 computer and the Xynetics 1201 plotter.

F. CONTROL STATIONS

Ten control stations were used during this survey. Positions were established by Hydrographic Field Party Section, Field Support Group to third order or better standards. All stations are referred to the North American 1927 datum. A list of all control stations used during this survey is included in the Appendix of this report.

G. HYDROGRAPHIC POSITION CONTROL

Three methods were used to control this survey:

1. Range-Range using Del Norte equipment: Delaware River
2. Range-Azimuth using Del Norte and a Wild T-1 Theodolite: Salem River
3. See-field-sheet (Dead Reckoning): Fenwick Creek, Mill Creek and Straight Ditch

The See-Field-Sheet Hydrography in Mill Creek and Straight Ditch will be digitized at the Atlantic Marine Center. The soundings in Mill Creek to be digitized are from positions 2191 to 2205, the soundings to be digitized in Straight Ditch are from positions 5317 to 5320. These data, positions 2191-2205 and 5317-5320, have 9's logged in the position data on the master tape. The Fenwick Creek work was logged and plotted by the field party with scaled range-azimuth fixes and does not need to be digitized.

G. HYDROGRAPHIC POSITION CONTROL (Continued)

A list of all electronic control equipment used during this survey is contained in the Appendix of this report.

The Del Norte equipment was calibrated on a 2616 meter baseline. Daily static checks were taken at horizontal control points in the survey area to determine if the equipment met accuracy standards. A calibration point was established on the wreck of the PHOENIX, using an HP-3808 to obtain the distance from the shore stations to the calibration point.

Del Norte master S/N 199 failed on J.D. 291 and was replaced with S/N 250. Del Norte DMU 180/master 250 failed on J.D. 299 and was replaced with pair 515/273A. Del Norte DMU 190/master 1066 failed on J.D. 294 and was replaced by DMU 190/master 1066 on J.D. 299.

A simple average of values between baselines were used for determining correctors to be applied to Del Norte rates for this survey, with the following exceptions:

- Correctors for J.D. 290 and 291 (Launch 1283) were determined from baseline values between J.D.'s 266-284 because no closing baseline value was obtained due to component failure. This decision was based on the operating history of DMU 180/Master 199 and the fact this pair had a "zero" error on the baseline on JD 284.

- Correctors for J.D. 294 were determined by assuming a linear interpolation of the drift between baselines on J.D.'s 293 and 299, and pro-rating the correction for the period of hydrography.

An abstract of the baseline correctors and daily check readings is contained in the Appendix of this report.

Portions of the hydrography below Elsinboro Point, New Jersey, Latitude 39°32'28"N, Longitude 75°32'03"W, have weak intersection angles. The area of weak intersection falls along the New Jersey shoreline and offshore to the 6 foot contour. Hydrography was conducted using horizontal control stations 123 and 125. This configuration was used because the areas were nearly perpendicular to the contour and both launches could time share the control. This configuration affects hydrography run on Julian date 290, 291 and 294 for launches 520 and 1283.

H. SHORELINE

Shoreline for this project came from several different sources. The majority of the shoreline support data are in the form of registered Class III Shoreline Maps, TP-00250, TP-00251 and TP-00252 from ~~Job~~ CM-7707. ~~TP-8777, date of issue June 1949, was used for the SEE FIELD SHEET work in Mill Creek, New Jersey east of 75°30'40". These maps were provided at the scale of the survey.~~

H. SHORELINE (Continued)

Portions of the Salem River and Fenwick Creek were taken from a 1:10,000 enlargement of Chart 12311. This portion of shoreline was transferred to the field smooth sheet in brown ink.

Shoreline changes were noted along the eastern (New Jersey) shore during the course of the survey. These areas, drawn in dashed red on the field sheet, are:

1. ~~39°35'12"N, 75°31'50"W~~
2. ~~39°35'02"N, 75°31'24"W~~
3. ~~39°34'48"N, 75°30'55"W~~
4. New Jersey shoreline below 39°31'50"N
5. Delaware shoreline between 39°31'18"N and 39°31'33"W
6. Delaware shoreline between 39°32'30"N and 39°32'39"W

All of the above areas are marsh shoreline.

Shoreline was run at maximum high tide or as close to maximum high tide as possible. Soundings in these areas fall shoreward of the manuscript high waterline, which has been drawn on the field sheet to reflect this discrepancy, in these areas.

The western side of Reedy Island and the Delaware shoreline below the last line of hydrography were not verified. The portion that was not verified is drawn in blue ink on the field sheet.

Features seaward of high water line are discussed in section L. of this report.

The hydrographer noted as much as a 4 mm variation between the Latitude/Longitude grid of the T-Sheets and the field sheets drawn using the PDP-8 computer. To overcome this problem, the field party shifted the T-sheets, square by square, to best fit the field sheets before transferring shoreline.

I. CROSSLINES

Crosslines constitute 10.5% of the mainscheme hydrography. 80% of the crossline soundings agree within ±1 foot of the mainscheme soundings, 92% agree within ±2 feet and 95% agree within ±3 feet.

The most noted cause of this difference was the change between real and predicted tides in the shallower sections of the river. A frontal system passed through the working grounds on Julian Date 243, 31 August 1983. The shallower area of the day's work (between positions 437-510) display a marked difference of 2 to 3 feet between crosslines and adjacent soundings from previous days.

I. CROSSLINES (Continued)

Where crossline soundings weren't in good agreement, due to bad predicted tides, they were not used for developing the contour lines on the field sheet.

The use of smooth tides should reduce the discrepancy between the soundings.

J. JUNCTIONS

This survey junctions with the following surveys:

1. H-10092 (1983) to the northwest

76 percent of these junction soundings agree within ±1 ft. when compared with the current survey and none of the junction soundings are in disagreement by more than 5 ft. The reason for this disagreement is believed to be due to the fact that portions of the New Castle Range Channel were dredged during the current survey but were not prior to the completion of H-10092.

The hydrographer recommends that in the junction areas, the soundings from the present survey be charted and that the depth curves be continued from H-10092 to the current survey.

K. COMPARISON WITH PRIOR SURVEYS

This survey area was previously covered by the following prior surveys:

H-1504a (1881), 1:10,000 scale
H-2494 (1900), 1:9,600 scale
H-2160 (1893), 1:2,400 scale

H-1504a 1:10,000 1881

Very little agreement exists between the prior survey and the current survey. Soundings on the current survey run deeper with the greatest differences (15 feet) in the dredged channel. No channel had been dredged in the river in 1881. The 18 foot contour on the two surveys is roughly similiar with the current survey being shifted slightly towards deeper water. No agreement exists between the other contours. The shoal north of Reedy Island, Delaware has widened and extends further north. Reedy Island has eroded away on the northern end of the island.

H-2494 1:9,600 1900

The comparison made between the prior and current survey is centered 1° above and below 39°31'00"N. Little agreement is noted between these two surveys. The soundings from the current survey are generally deeper. No dredged channel was present on the prior survey.

K. COMPARISON WITH PRIOR SURVEYS (Continued)

H-2160 1:2,400 1893

This is a large scale survey of the north end of Reedy Island, Delaware. The prior survey shows several old ice piers which appear in the same general location on the current survey as ruins. A considerable change has occurred in the shoreline through erosion. The depths on the current survey are deeper.

The differences noted between the current and prior surveys are probably due to erosion and the establishment of a dredged channel for navigation.

It is recommended that the soundings from the present survey supersede the prior surveys' soundings.

All presurvey review items are shown on either or both chart 12311 or 12277 and are discussed in section L. of this report.

L. COMPARISON WITH THE CHART

This survey was compared with:

CHART NO.	EDITION	DATE
12277	19th	26 June 1982
12311	30th	4 Sept. 1982

Both charts were enlarged to survey scale (1:10,000). This comparison applies to both charts above 39°32'30'N. and only chart 12311 below. this latitude.

Some shifting has occurred to the uncovered areas in the discontinued spoil area adjacent to the Salem R. Entrance Channel. Zero foot least depths occur the entire length of this spoil area, and indicate a slight shift from charted locations in most cases.

A notable change between the chart and the current survey north and south of Reedy Island Bar exists. The bar extends 650 meters further south than charted, to Lat. 39°31'34".5N, Long. 75°33'29"W, with minus ~~one~~ Two foot least depths. On the northern end, zero foot least depths extend ~~75 meters~~ further ~~north~~ south than currently charted, to Lat. 39°32'37".5N, Long. 75°33'38"W. An isolated uncovers area exists, centered at Lat. 39°33'00"N, Long. 75°33'30"W, an extension of Reedy Island Bar to the north, with least depths of ~~-1~~ 0.5 foot. The uncovers area on the north end of Reedy Island, Lat. 39°31'15"N, Long. 75°33'36"W, was found to have depths to 5 feet. All depths are referred to MLW using predicted tides.

Good agreement between the current survey and charted depths exists with the following exceptions or as noted above:

-- Soundings ~~2~~ 1 -3 foot shoaler than charted near Lat. 39°34'40"N, Long. 75°32'06"W

L. COMPARISON WITH THE CHART (Continued)

-- Soundings approx 5-~~10~~ feet deeper than charted along the east side of the south end of the New Castle Range Channel, and outside the channel limits

-- 5 to 10 feet deeper than charted due west of the entrance to Bulkhead Shoal Channel

-- 5 feet deeper than charted in the area adjacent to the west side of Reedy Island Bar

-- 2 to 5 feet ~~deeper~~ shoaler than charted in area adjacent to and east of Reedy Island Bar

-- Generally 3 feet deeper off Elsinboro Point

-- The charted 30 ft. sounding in the Salem River at Lat. 39°35'00"N, Long 75°29'32"W has depths 8-12 feet shoaler

Shoaling was noted just outside Reedy Island Range Channel at latitude 39°31'44"N, longitude 75°32'45"W. The charted depth in this area is 46 feet while the least depth from the current survey is 31 feet. No NOTICE TO MARINERS was issued on this shoal because it is outside the dredged channel and the surrounding charted depths range between 32 and 25 feet.

The following presurvey review items were investigated during the survey:

PSR #89 (AWOIS #1381) is a submerged anchor and chain charted in General Anchorage #3, latitude 39°33'20.0"N, Longitude 75°33'00.0"W. Source for this item was Local Notice To Mariners dated 9/73. A chain drag was conducted on Julian Day 270, positions 1007 through 1064. No evidence of the item was noted during the chain drag, however, after examining the plotted drag coverage, sufficient overlap was not attained for an unequivocal disproval. The hydrographer therefore recommends this obstruction be retained as charted. Concur as an dangerous obstr, rep. Acquire MSM 3/4/87

PSR# 90 (AWOIS #1377) is the PHOENIX, a wrecked tanker charted in Lat. 39° 32' 12"N., Long 75° 32' 28"W. Source of this item was Local Notice to Mariners 12/79. This item is present and was verified by a Third Order Class One position taken on the light that marks the center of exposed portion of the wreck (Light List #2198). No detached position was taken on the wreck during hydrography. The Third Order position is latitude 39°32'12".3713N, longitude 75°32'27".0183W. The wreck is partially submerged. Approximately 100 ft. of the hull is exposed. The visible wreck should remain charted, at the above position. Concur Acquire MSM 3/4/87

PSR #91 (AWOIS #1376) is a burned hull of a 27 foot cabin cruiser reported in Notice To Mariners 24/62. While transitting this area on Julian Day 300 a spike was observed. A star pattern was run over the spike and a least depth of ~~3.8~~ 1.0 feet corrected Acquire MSM 3/4/87

L. COMPARISON WITH THE CHART (Continued)

was determined at latitude 39°32'06."86N, longitude 75°34'05."89W. This position is 270 meters northwest of the charted position, latitude 39°32'00".N, longitude 75°33'59".W. This spike was probed with a sounding pole. A chain sweep was conducted in the charted area of the wreck on Julian Day 304, positions 2506 through 2555, and showed no evidence of the wreck in the charted area, however sufficient overlap was not attained, for an unequivocal disproval. The hydrographer recommends that an obstruction be charted at latitude 39°32'06."86N, longitude 75°34'05".89W and a wreck PD at latitude 39°32'00.0N, longitude 75°33'59".0W. Due to strong currents in the area, no diving investigations were conducted. Concur

PSR #100 is an information item. Notice to Mariners 6/47 had a stranded barge at position 39°32'21"N, 75°33'04"W. During the survey no evidence of this stranded barge was observed on the fathogram or visually. This item is not currently charted and it is the hydrographers recommendation that the item not be charted. Concur

The following Detached Positions, taken during the survey, are not currently charted and do not appear on the T-sheets, and are specifically recommended for charting:

Position	Description	Latitude	Longitude
5409, 5410, 5411	Stranded barge ruins	39°31'36".4N	75°34'13".8W
5412, 5413	Pier in ruins ~~(on manuscript as obstr./charted as piling)~~	~~39°31'50".9N~~ 39°31"52".5N	~~75°34'09".4W~~ 75°34'09".6W
5414	Wooden bulkhead in ruins ~~(on manuscript as ruins, charted as piling)~~	39°32'01".4N	75°34'08".6W
2671	Wooden bulkhead that blocks St. Georges Creek	39°32'23".7N	75°34'12".1W
5415	Wooden pier	39°32'26".6N	75°34'07".4W
5416, 5417	Pier in ruins, offshore end awash	39°32'06".7N 39°32'28".4N	75°34'04".4W 75°34'06".6W
5418	Wooden jetty in ruin	39°32'51".4N	75°34'01".4W
1798	Piles	39°32'56".0N	75°31'32".3W

L. COMPARISON WITH THE CHART (Continued)

1805	Dock	39°33'03".0N	75°31'24".3W
1806	Dock	39°33'03".4N	75°31'23".7W
1808	Pier in ruins	39°33'17".3N	75°31'11".1W
1814	Piles, Boat ramp (private)	39°33'56".4N	75°30'47".7W
1815	obstr (Steel I Beam) ~~bulkhead~~	39°33'58".1N	75°30'46".9W
1816	Pier	39°33'59".2N	75°30'46".0W

Objects located along the New Jersey shoreline south of 39°34'00"N, were applied to the field sheet in red, reflecting the shoreline change in this area. No uncharted Dangers to Navigation were found during this survey.

M. ADEQUACY OF SURVEY

This survey is complete and adequate for the area surveyed to warrant its use to supercede prior surveys for charting in the common areas. The field work does not include the southern portion of the layout for sheet "K", or the C and D Canal. Weather conditions limited the progress of the field work and hydrographic operations were stopped in early November before the southern portion of the field sheet and the canal could be completed.

N. AIDS TO NAVIGATION

All fixed and floating aids, except buoys 13 and 14 in the Salem River, the Liston Rear Range Light (L.L. #2178) and the Reedy Island Rear Range Light (L.L. #2195) were located in the survey area. The two range lights not located, were verified as presently charted with 1946 NGS positions at latitude 39°31'25".225N, longitude 75°38'24".163W and latitude 39°24'23."15N, longitude 75°35'25".852W respectively. A comparison was made between their charted and surveyed positions and light list description using the Light List (Vol. I, 1983) and agreed well, with the following exceptions:

Chesapeake and Delaware Canal Junction Lighted Bell Buoy, 1983 Light List No. 2205 was found 100 meters NNW of its charted location. This buoy has been premanently relocated per LNM No. 30, dated 26 July 1983, page. 5. The buoy was located with a detached position at latitude 39°33'49".3N, longitude 75°33'13".0W.

Anchorage Buoy WC "A", charted at latitude 39°31'54"N, longitude 75°33'09"W, has been discontinued, first referenced in LNM No. 37 dated 13 September 1983, and was not present at time of survey.

Salem River Entrance channel buoys 13 and 14 were not located during the survey. They were however observed while transitting the area and appear to be accurately charted.

N. AIDS TO NAVIGATION (Continued)

All other floating aids were found where charted and serve the apparent purpose for which they were established.

The following landmarks were verified visually as presently charted on chart 12311 and/or chart 12277:

Landmark	Latitude	Longitude	Chart
Marker (Lighted)	39°33'30".08	75°34'58".12	12311, 12277
White House (East End)	39°31'49".69	75°35'04".24	12311
Port Penn Presbyterian Ch. Spire, 1933	39°31'00".250	75°34'41".951	12311
Tr Base (SE Leg)	39°34'15".44	75°30'11".60	12331, 12277
Tr Base (NW Leg)	39°33'56".22	75°30'16".50	12311, 12277
Bldg. (Salem River)	39°34'15".02	75°29'49".21	12311

All fixed aids located to Third Order are listed on the appended 76-40's as well as landmarks with revised positions.

Cable and bridge clearances in the Salem River were checked and found to be accurately charted.

The azimuth's of all ranges were calculated by geodetic inverse between front and rear ranges and are as follows:

Salem Entrance Channel Range - 26°47'
Reedy Island Range - 195°10'
Baker Range - 355°04'
Liston Range - 317°57'

Charted range lines using the above values were found accurate. All azimuth values except Salem Entrance Channel Range agreed with the USCG Light List values, which shows 27°20' for the Salem Entrance Channel Range.

O. STATISTICS

	Total	1283	520
Number of Positions	3202	2724	463
Nautical Miles of Sounding Lines (Main Scheme)	216.4	179.4	37.0
Nautical Miles of Crossline	22.7	16.4	6.3
Nautical Miles of Development	39.1	37.9	1.2
Total Miles of Hydrography	278.2	199.65	44.5
Number of Bottom Samples	78	27	51
Number of Barchecks	31	26	5
Detached Positions	116	81	35

P. MISCELLANEOUS

During the course of the survey it was learned that a proposal exits in Congress to dredge the entrance channel to the Salem River and improve the Wharf at Salem, New Jersey. It is not known if funds have been appropriated for this project.

Mid channel lines were run in lieu of range lines due to limited visibility of rear range lights from the small boat.

No attempt was made to continue hydrography to the source of the Salem River. The river north of the bridge on highway 49 has no marked channel and is only navigable by skiff. The area is used mainly for duck hunting and fishing with local knowledge. The river channel meanders through Mannington Meadows and is extremely variable in depths ranging from 30 feet to 1 foot.

No current meter information was collected during the course of the survey. During the course of the survey the party noted high rates of current flow on the Salem River, probably due to the flushing effect from Mannington Meadow with the change in the tide. It is the hydrographers opinion that currents in the upper portions of the Salem river were well above 1 kt possibly ranging from 2 to 4 kts at maximum flow. Currents in the Delaware River appear to be slightly higher than those predicted in the tide and current tables.

It was noted the geographic name "Mill Creek" appears twice on Chart 12311, at latitude 39°32'15"N, longitude 75°31'20"W, and again at latitude 39°36'00"N, longitude 75°31'15"W. The USGS Quadrangle Map of this area, also shows two Mill Creeks.

Q. RECOMMENDATIONS

See Sections G, H, J, K, L, M for specific recommendations.

R. AUTOMATED DATA PROCESSING

Programs used during field data acquisition and field processing of this survey are as follows:

PROGRAM	DESCRIPTION	VERSION DATE
RK201	Grid, Signal, and Lattice Plot	4/18/75
RK211	Range/Range Non-real time plot	1/15/76
RK212	Visual Station Table Load	4/10/74
RK216	Range/Azimuth Non-real time plot	2/05/76
RK300	Utility computations	2/05/76
RK330	Reformat and Data Check	5/04/76
RK407	Geodetic Inverse/Direct Computation	9/25/78
AM500	Predicted Tide Generator	11/10/72
AM602	Elinore-line oriented editor	5/20/75

S. REFERENCE TO REPORTS

Descriptive Report H-10092, 1983, 1:10,000

Coast Pilot Report (NOAA Form 77-6)

Respectfully submitted,

Frederick W. Rossmann
Lt(jg), NOAA
OIC, HPF-3

Signal List *

Delaware River

OPR-D218

HFP-10-3-83; H-10112

113	3	39	33	44508	075	33	44497	250	0000	000000	PK Dutch Neck 1983 4
121	3	39	35	18909	075	33	56043	250	0000	000000	Doger 1983 4
122	1	39	34	41070	075	30	46860	250	0000	000000	Salem Cove Range Rear Light 1983 4
123	1	39	33	31537	075	33	31019	250	0000	000000	C and D Canal Light No.1 1983 4
125	4	39	32	27337	075	32	01136	250	0000	000000	Elsin 1983 4
133	6	39	34	17363	075	29	44662	250	0000	000000	PK Wilson 1983 4
134	4	39	34	29086	075	29	36093	250	0000	000000	Wilco 1983 4
135	1	39	35	03719 (9)	075	29	33019 (20)	250	0000	000000	Out 1983 4
136	6	39	34	30387 (8)	075	28	46879 (80)	250	0000	000000	Port 1983 4
139	4	39	34	27972	075	28	24076	139	0000	000000	Salem Municipal Tank New 1983 9

All stations established in 1983 by Hydrographic Field Parties Section, Field Support Group.

*Positions used on signal tape submitted with H-10112, reflecting positions adjusted 03/23/84

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

5 Dec 1983

From: OIC, HFP-3 Frederick M. Rosemann, LTJG NOAA

To: N/CG243

Via: N/MOA2 :: R.W. Kenniger

Thur: N/MOA 233 R W Jarvis

Subject: User Evaluation OPR-D218

Captain Sparks of the Pilots' Association For The Bay And River Delaware was contacted by phone (215-922-7165) on 25 October 1983. A brief discussion was conducted on Chart #12311, DELAWARE RIVER, Smyrna River to Wilmington. Captain Sparks stated the Pilots' Association had no complaints about our charts or tables. The Pilots' Association felt the current format, scale, color and chart layout met their needs. He also stated that the Tide and Current Tables were adequate. His only request of us was to continue to provide adequate and accurate information to the mariner.

ONE-BOAT OTTER BOARD CHAIN SWEEP

Lt. N. Perugini

March 5, 1980

The otter board chain sweep employed by Hydrographic Field Party #5 has been modeled after the technique described in a memo from the NOAA Ship PEIRCE to Chief of Operations Divison, Atlantic Marine Center, dated February 14, 1978. The following is a brief description of the technique now in use by HFP-5.

OPERATION:

The otter board chain sweep has proven to be an effective tool in locating submerged features in shallow water. The sweep currently in use by HFP-5 is deployed from a 22-foot Monark. The rig consists of two wooden otter boards; a 23-meter chain (3/16"), and two adjustable length tow lines. The otter boards and chain are dragged along a swath of the bottom by the two towlines. Dimensions of this swath are governed by the tow angle θ in Figure 1.

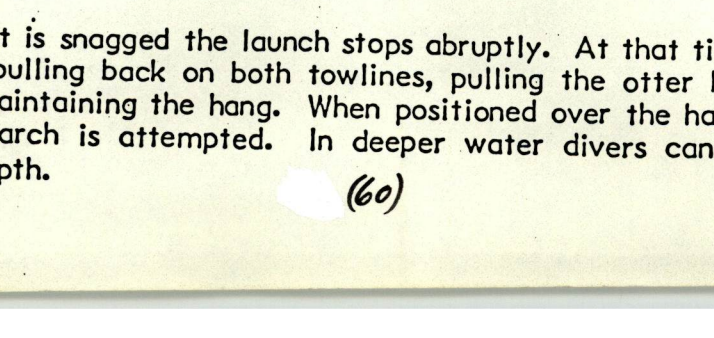


FIG. 1

This angle is dependent on tow speed and towline length.

Deployment of the sweep is performed by first throwing the chain overboard then followed by the otter boards. The rig is then towed slowly as the boards separate. Towline length is usually set at three times the depth. Speed and towline length are adjusted so the angle θ approaches 45°. Under ideal conditions at a depth of 10 feet, the sweep would cover a swath of 14 meters. Currently, the party is working on a plan to add upright lines and floats to the otter boards in order to observe actual spread of the otter boards.

When an object is snagged the launch stops abruptly. At that time two members of the crew begin pulling back on both towlines, pulling the otter boards and chain aboard while still maintaining the hang. When positioned over the hang a fathometer, pole, or leadline search is attempted. In deeper water divers can be deployed to determine a least depth.

DISPROVAL OF AN ITEM

Disproval of an item is time consuming and laborious. It is only attempted when either range/azimuth or range/range position control is available. A typical range/-azimuth disproval scheme is shown in Figure 2.

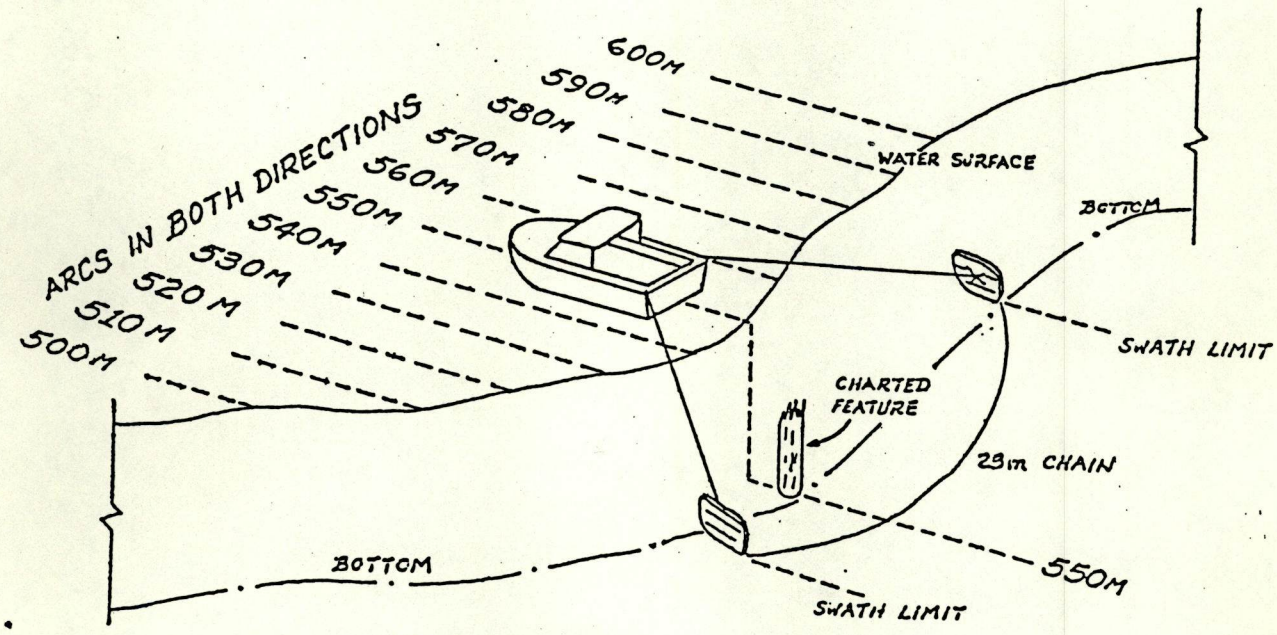


FIG. 2

If the feature is charted a range and azimuth is precomputed from the geodetic position. If the submerged object in Figure 2 has a precomputed range of 550m, controlled arcs between 500m and 600m will be run at 10m spacing in both directions. The 550m arc; for example, will be run in a north and south direction thus reducing the likelihood of the chain slipping over a tilted pile. In 10 feet of water each sweep would cover a 14 meter swath; thus, resulting in a 40% overlap in both directions. This overlap occurs with 30 feet of towline and a tow angle of 45°. Cut off azimuths are precomputed so as to give a total arc length of 200 meters. In this example an area of 200m x 100m would be swept in both directions. If no hangs were encountered during this operation, deletion of the submerged object would be recommended. The operation usually takes 2-3 hours per feature.

LIMITATIONS

The otter board chain sweep can only be utilized under ideal conditions. A regular hard, sandy bottom is most favorable so the boards can skid across the bottom. In areas with soft muddy bottoms, the boards often dig in and rig fouls. The sweep cannot be used in grassy areas or in areas with generally foul bottoms (i.e., stumps, snags, boulders). When any kind of fishing gear is in the area, a sweep is not attempted.

In Figure 1 the tow angle is often less than 45° which effectively reduces the area covered. In theory lengthening the towline would increase the swath with this reduced angle. In practice however a lengthened towline often causes the rig to foul, especially in tight turns. Also fouling of the chain often occurs when the boards are first deployed. The sweep loses effectiveness at depths deeper than 20 feet.

APPROVAL SHEET
SURVEY H-10112 (HFP-10-3-83)

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

No direct supervision was given by me during the field work and the field sheet was examined only during routine field inspection of the hydro party.

A concentrated effort was made to gather as much data in the main portion of the Delaware River in lieu of tributaries and the C & D Canal, before weather precluded operations. The minor inadequacies found on this survey, do not detract from the overall quality.

The sheet layout is being adjusted to accommodate this survey as a complete sheet, which is adequate, with no additional field work recommended.

Ronald W. Jones
Lt. Cdr. NOAA
Chief, Hydrographic Field Parties Section

NOAA FORM 61-29
(12-71)

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

REFERENCE NO.

MOA23-6-86

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 (HFP-10-3-83)
OPR-D218-HFP-83--Delaware River

Pkg. 1: (tube)
1 Smooth Sheet
2 Excess Sounding Overlays
1 Position Overlay
1 Original Descriptive Report

Pkg. 2: (box)
1 Cahier containing Final Position Printout and Control Listing
1 Cahier containing Final Sounding Printout and L-File Listing
1 Folder containing data remove from Original Descriptive Report

FROM: *(Signature)*

Robert G. Roberson

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

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

NOAA FORM 61-29 SUPERSEDES FORM C&GS 413 WHICH MAY BE USED.

☆ U.S. G.P.O. 1981-564-008/1048

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NO.: H-10112

Number of positions	3134
Number of soundings	11757
Number of control stations	17

	TIME-HOURS	DATE COMPLETED
Preprocessing Examination	31	29 OCT 84
Verification of Field Data	678	18 SEP 85
Quality Control Checks	146	
Evaluation and Analysis	55	9 JAN 86
Final Inspection	25	24 JAN 86
TOTAL TIME	935	

Marine Center Approval 13 FEB 86

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

DATE: 7/6/84

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Atlantic

OPR: D218

Hydrographic Sheet: H-10112

Locality: Delaware River

Time Period: August 24 - November 1, 1983

Tide Station Used: 853-7961, Sinnickson Landing, NJ
853-7979, Salem, Salem River, NJ
855-1702, Pea Patch Island, DE

Plane of Reference (Mean Lower Low Water):
853-7961 = 2.01 ft.
853-7979 = 2.84 ft.
855-1702 = 1.95 ft.

Height of Mean High Water Above Plane of Reference:
853-7961 = 5.5 ft.
853-7979 = 4.4 ft.
855-1702 = 5.8 ft.

Remarks: Recommended Zoning:

1. In Delaware River
   a. North of latitude 39°33.0' Zone Direct on 855-1702.
   b. South of latitude 39°33.0' to 39°30.0' Zone on 855-1702 and apply -20 minute time correction and x1.03 range ratio.

2. In Salem River, NJ
   a. From Salem River Entrance to latitude 39°34.8' Zone Direct on 853-7961.

James R. Hubbard
Chief, Tidal Datums Section

7/6/84

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

H10112
H-10012

OPR D218

2. In Salem River, NJ (continued)

b. From latitude 39°48.8' North and East along Salem River to latitude 39°48.8' Zone on 853-7961 and apply +20 minute time correction and x0.90 range ratio.

c. From latitude 39°48.8' South and East along Salem River to longitude 75°28.8' Zone on 853-7961 and apply +40 minute time correction and x0.81 range ratio.

d. East of longitude 75°28.8' along Salem River, Zone Direct on 853-7979.

NOAA FORM 76-40 (8-74)
Replaces C&GS Form 567.

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

NONFLOATING AIDS [redacted] FOR CHARTS (* Adjusted,3/23/84)

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): HFP-3
STATE: Delaware / New Jersey
LOCALITY: Delaware and Salem R.
DATE: 4/84

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

OPR PROJECT NO.: D-218
JOB NUMBER:
SURVEY NUMBER: H-10112
DATUM: North American 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION * LATITUDE ° /	LATITUDE // D.M. Meters	LONGITUDE ° /	LONGITUDE // D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
Lighted Range	Salem River Entrance Channel Range Front Lt.1983,L.L.#2199 (Salem Cove Range Front Lt.)	39 34	15.294	75 31	03.672	NC L-43(87)	F-2-6-L 5/83	12277 12311
Lighted Range	Salem River Entrance Chan.Range Rear Lt.1983,L.L.#2200,Sig.#122 (Salem Cove Range Rear Light)	39 34	41.070	75 30	46.860		F-2-6-L 5/83	12277 12311
Light	Chesapeake and Delaware Canal Lt. #2 1983,L.L. #2878 (C and D Canal Light 2)	39 33	46.167	75 33	33.770		F-2-6-L 5/83	12277 12311
Light	Chesapeake and Delaware Canal Light #1 1983, L.L. #2879,Sig.# 123 (C and D Canal Light 1)	39 33	31.537	75 33	31.019		F-2-6-L 5/83	12277 12311
Lighted Range	Baker Range Rear Light 1983,L.L. No.2190,(Baker Rear Range Light)	39 32	26.687	75 34	12.770		F-2-6-L 5/83	12311
Lighted Range	Baker Range Front Light 1983 L.L. No.2189 (Reedy Island Baker F Range Lt.)	39 30	33.124	75 34	00.103		F-2-6-L 5/83	12311
Light	Reedy Island Dike Middle Light 1983,L.L.#2192 (Reedy Island Jetty Middle Lt.)	39 28	58.100	75 34	27.716	Outside survey limits	F-2-6-L 5/83	12311
Lighted Range	Liston Range Front Light 1983 L.L. No. 2177	39 28	56.719	75 35	31.228	Outside survey limits	F-2-6-L 5/83	12311
Lighted Range	Reedy Island Range Wreck Light WR10R 1983,L.L.#2198 (Reedy Island Wreck Light WR10R)	39 32	12.373	75 32	27.000		F-2-6-L 5/83	12311
Light	Old Reedy Island Light 1983 L.L. No. 2196	39 30	02.339	75 34	09.045	Outside survey limits	F-2-6-L 5/83	12311

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	Frederick W. Rossmann, LTJG, NOAA OIC-HFP 3	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	R. DeCroix/J. Daniel, HFPS	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS (* Adjusted, 3/23/84)

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): HFP-3

STATE: Delaware / New Jersey

LOCALITY: Delaware and Salem R.

DATE: 4/84

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

OPR PROJECT NO.: D-218

JOB NUMBER:

SURVEY NUMBER: H-10112

DATUM: North American 1927

POSITION *

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
Radio Tower	C and D Canal Radio Tower, 1983	39 33	40.965	75 34	13.629		F-3-6-L 5/83	12277 12311
Tower Lighted	C and D Canal Lighted Tower, 1983	39 33	40.683	75 34	13.557		F-3-6-L 5/83	12277 12311
Tank	Salem Municipal Tank New, 1983	39 34	27.972	75 28	24.076		F-3-6-L 5/83	12311
	NC L-519(84)							

(57)

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	Frederick W. Rossmann, LTJG,NOAA OIC-HFP-3	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	R.DeCroix/J.Daniel, HFPS	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

NOAA FORM 76-40 (8-74)

SUPERSEDES NOAA FORM 76-40 (2-71) WHICH IS OBSOLETE, AND EXISTING STOCK SHOULD BE DESTROYED UPON RECEIPT OF REVISION.

☆ U. S. GPO:1975-0-665-080/1155

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
HFP-3	Delaware New Jersey	Delaware River	11/2/83

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
D-218		H-10112	North American 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
Light	C and D Canal Lt. 4, Not in L.L. Destroyed at time of survey. Shown on Chart 12277 20th ed. and Chart 12311 30th ed. as pile PA.							12311 12277
	NC L-519(84)							

(58)

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD		☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED		FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

NOAA FORM 76-40 (8-74)

SUPERSEDES NOAA FORM 76-40 (2-71) WHICH IS OBSOLETE, AND EXISTING STOCK SHOULD BE DESTROYED UPON RECEIPT OF REVISION.

☆ U.S. GPO:1975-0-665-080/1155

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER
H-10112
HFP-10-3-83
OPR-D218

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	
.ARTIFICIAL ISLAND										1
.BLACK DITCH										2
.BLACK DITCH BAR										3
.CANADAS BEACH (locality)										4
.CHESAPEAKE AND DELAWARE CANAL										5
.DELAWARE (title)										6
.DELAWARE RIVER (title)										7
.EAGLE ISLAND										8
.ELSINBORO POINT										9
.FORT ELFSBORG (locality)										10
.MARSH POINT										11
.MILL CREEK										12
.MILL CREEK COVE										13
.MONEY ISLAND										14
.NEW JERSEY (title)										15
.OAKWOOD BEACH ~~(title)~~										16
.PEA PATCH SHOAL										17
.REEDY ISLAND										18
.REEDY ISLAND BAR										19
.REEDY POINT					Approved:					20
.ST. GEORGES CREEK										21
.SALEM					Charles E. Harrington					22
.SALEM COVE					Chief Geographer - N/CG2x5					23
.SALEM RIVER					JAN 10 1986					24
.SINNICKSON LANDING .STRAIGHT DITCH										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

ATLANTIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO.: H-10112 FIELD NO.: HFP-10-3-83

Delaware-New Jersey, Delaware River, Reedy Island to Pea Patch Shoal

SURVEYED: August 25 through October 31, 1983

SCALE: 1:10,000 PROJECT NO.: OPR-D218-HFP-83

SOUNDINGS: Raytheon DE-719B Echo Sounder, Raytheon DE-719C Echo Sounder, Lead Line, Pole

CONTROL: Range/Azimuth - Del Norte/Theodolite
Range/Range - Del Norte
See Field Sheet

Chief of Party ..... R. W. Jones

Surveyed by ..... F. W. Rossmann

Automated Plot by ..... Xynetics 1201 Plotter (AMC)

1. INTRODUCTION

a. Changes to the Descriptive Report were made in red during office processing.

b. There were no unusual problems encountered on this survey.

2. CONTROL AND SHORELINE

a. Control is adequately discussed in section F and G of the Descriptive Report.

b. Shoreline originates with Class III registered shoreline maps TP-00250, TP-00251, and TP-00252 of 1975. Shoreline revisions in red are by the hydrographer. Shoreline in brown from chart 12311, 30th edition, is shown for orientation only.

3. HYDROGRAPHY

a. Depths at crossings are in good agreement.

b. The standard depth curves were adequately delineated except for portions of the 0-foot depth curve because of its proximity to shore. Some 3- and 36-foot supplemental and dashed depth curves were added to emphasize shoal features and more adequately delineate the bottom configuration.

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, with the exceptions listed below.

a. Several piers and pier ruins shown on TP-00252 were not verified in the field as required in section 4.2.1.1 of the project instructions.

b. During office verification, it was determined that no bar checks were taken on day numbers 294, 299, 300, and 304 for Launch 520.

c. Numerous piers and ruins, charted in Salem River, were neither verified nor disproved as required in section 6.11 of the project instructions.

5. JUNCTIONS

The junction with H-10092 (1983) on the northwest will be completed during the evaluation of that survey. No contemporary survey junctions with the present survey on the south. However, present depths are in general harmony with charted depths in that area.

6. COMPARISON WITH PRIOR SURVEYS

a. H-133 (1840-41) 1:10,000
H-148 (1841-43) 1:80,000
H-808 (1861) 1:10,000
H-1249a and H-1249b (1875) 1:20,000
H-1504a (1881) 1:10,000
H-2160 (1893) 1:2,400
H-2494 (1900) 1:9,600
H-2495 (1900) 1:9,600

These prior surveys are dated prior to changes resulting from Federal Channel Projects. Extensive channel dredging and cultural development preclude a detailed comparison with the present survey. However, the bottom configuration in Delaware River has generally remained the same. Only minor differences in depth inshore of 20-foot depths are noted; while in deeper depths along the channels, significant deepening of the bottom has occurred as a result of dredging.

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

b. T-8753 (1946-48) 1:20,000
T-8754 (1946-48) 1:20,000
T-8775 (1946-48) 1:10,000
T-8777 (1946-48) 1:10,000
T-8778 (1946-48) 1:10,000

These shoreline maps cover the area common to the present survey and are subsequent to the prior hydrographic surveys. Offshore features on these maps have either been verified by the present survey or were considered and not charted during the reconstruction of chart 12311 in 1952.

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

7. COMPARISON WITH CHARTS 12277 (19th Edition, June 26, 1982) and 12311 (30th Edition, September 4, 1982

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys which require no further consideration, supplemented by numerous U.S. Army Corps of Engineers surveys and other miscellaneous sources.

Attention is directed to the following items:

1. The note "Rocks," charted four times in the vicinity of latitude 39°35'20"N, longitude 75°32'00"W, originate with T-8777 (1946-1948). The notes, which appear in vertical lettering on the above shoreline map, describe the islets and were probably incorrectly applied to the chart in slanted lettering. There is no evidence of low water rocks shown on the present survey. The notes should be deleted from the chart.

2. The note "shoaling reported 1975," charted in latitude 39°35'00"N, longitude 75°29'15"W, originates with a U.S. Coast Guard Auxiliary letter of 1975 (CL-1773/1975). The note should be deleted and present survey soundings charted.

3. Numerous piers and ruins, charted in Salem River from miscellaneous sources, were neither verified nor disproved, and are deferred to the compiler for final disposition.

4. Eleven pile-like symbols charted near shore in the vicinity of latitude 39°32'00"N, longitude 75°34'09"W, from a miscellaneous source, were not adequately investigated by the hydrographer and should be retained as charted.

Except as noted above the present survey is considered adequate to supersede charted hydrography.

b. Controlling Depths

1. The charted controlling depths for the New Castle and Reedy Island Ranges originate with the U.S. Army Corps of Engineers survey of May and June 1982. Present survey depths are in agreement with the tabulated controlling depths.

2. The charted 4-foot centerline controlling depth for Salem River is based on a miscellaneous source of June 1976. Present survey depths are in agreement with the charted controlling 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.

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with the project instructions, except as noted in section 4 of this report.

9. ADDITIONAL FIELD WORK

This is a good basic survey and no additional field work is recommended.

Douglas V. Mason
Cartographic Technician
Verification of Field Data

Stephen R. Baumgardner
Cartographer
Standards Section (N/CG242)
Evaluation and Analysis

Robert R. Hill
Senior Cartographic Technician
Verification Check

Inspection Report
H-10112

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

George K. Myers

George K. Myers
Chief, Standards Section (N/CG242)
Hydrographic Surveys Branch

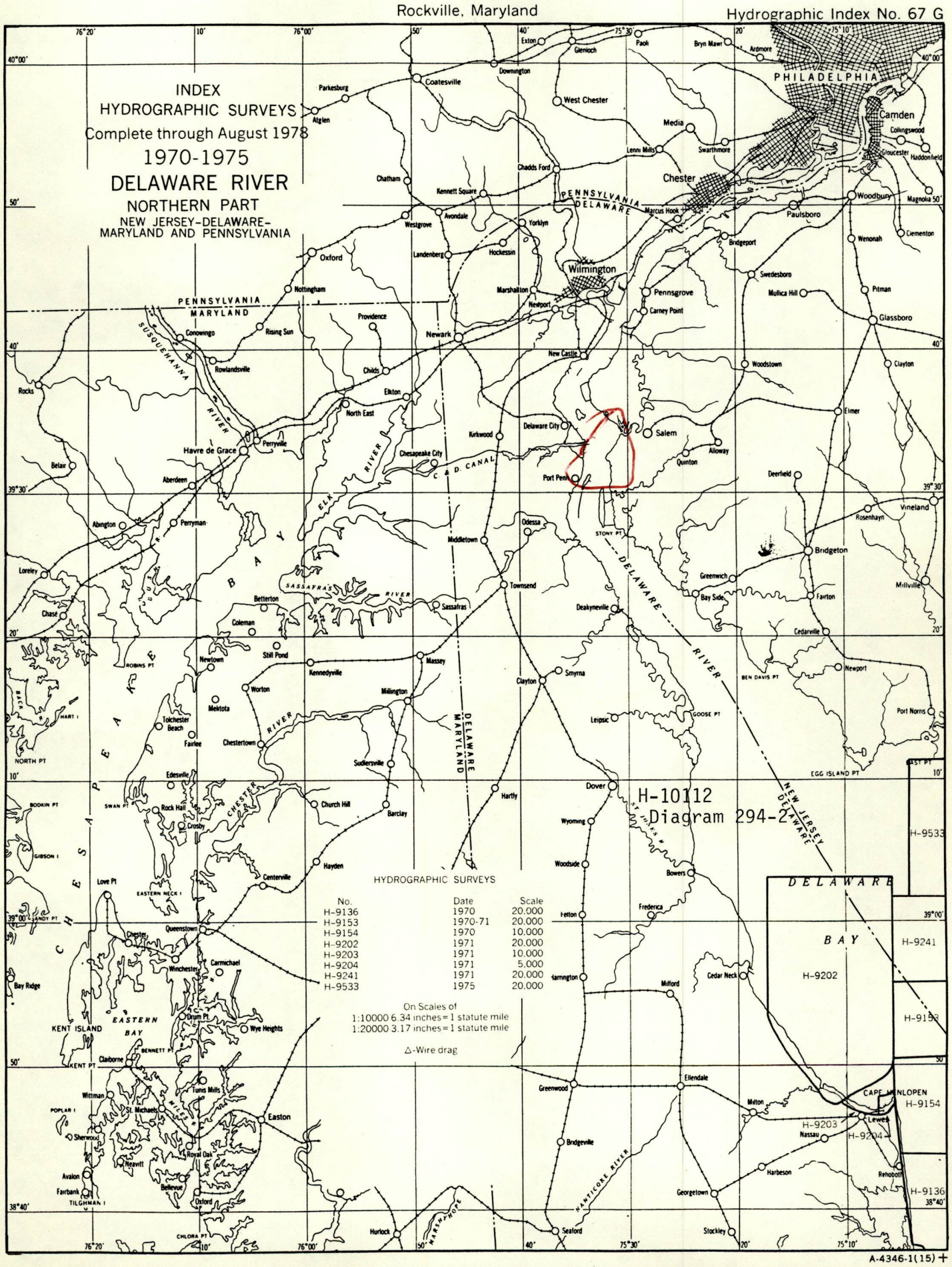
Approved

Wesley V. Hull

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. 67 G



A-4346-1(15)+

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10112

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
12311	7/29/87	Cartotw	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 51 31st Ed.
12277	Cartographer:		Full Part Before After Marine Center Approval Signed Via
	Sheet	was applied	Drawing No.
	To 12311	direct and was	not applied thru scales (12277)
	When added to	12277 be	Full Part Before After Marine Center Approval Signed Via
	sure the	2 charts	Drawing No.
		agree	
12277	2/27/89	Kenny O'Dell	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 45 22ND ED.
			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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			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.

Appl to Stds. 1-28-87 BR