10199

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. PE-10-4-85

Registery No. H-10199

LOCALITY

State Delaware--New Jersey

General Locality Delaware River

Sublocality Vicinity of Artificial Island

1985-86

CHIEF OF PARTY
CDR A.E. Theberge & LCDR K.W. Perrin

LIBRARY & ARCHIVES

DATE January 21, 1987

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

10199

Area I
Chts
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-10199

FIELD NO.
PE-10-4-85

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State DELAWARE AND NEW JERSEY

General locality DELAWARE ~~BAY~~ RIVER

Locality VICINITY OF ARTIFICIAL ISLAND

Scale 1:10000 Date of survey 23 August - 25 Sept. 1985 and Additional Work 13 May - 5 June 1986

Instructions dated January 19 1984 Project No. opr-D219- PE-85

Vessel NOAA Ship Peirce launches PE-1 (VESNO 2831) and PE-2 (VESNO 2832)

Chief of party Cdr. A.E. Theberge, NOAA

Surveyed by D. Waltz, D. Ross, V. Barnum, J.Hill E. Lake

Soundings taken by echo sounder, ~~hand lead, pole~~ Raytheon DSF-6000N

Graphic record scaled by VDR,VAB,JAH BAL, MHB, MJB, WHM

Graphic record checked by VDR, VAB, JAH, BAL, MHB, MJB, WHM

Protracted by N/A Automated plot by ~~Hydroplot~~ Xynetics 1201 Plotter (AMC)

Verification by F.L. Saunders, AMC Verification Br.

Soundings in ~~fathoms~~ feet at MLLW ~~MLW~~ ~~MLLW~~ ~~XXXXX~~ ~~on field sheet~~

REMARKS: All Times are UTC

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 Checks MSM 2/4/87

SC 4-15-97

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

☆ U.S. GOVERNMENT PRINTING OFFICE: 1976—665-661/1222 REGION NO. 6

DESCRIPTIVE REPORT
TO ACCOMPANY HYDROGRAPHIC SURVEY
H-10199 (PE-10-4-85)
Scale: 1:10,000 1985

Cdr. Albert E. Theberge, NOAA
Chief of Party

A. PROJECT

This survey was performed in compliance with project instructions OPR-D219-PE-84 dated 19 January 1984, with Change No. 1 (March 28, 1984), Change No. 2 (June 19, 1984), Change No. 3 (October 19, 1984), and Change No. 4 (July 15 1985). The last change designated this project as OPR-D219-PE-85 for all operations in 1985. The AMC OPORDERS and the Hydrographic Manual, 4th Edition also apply.

The purpose of this survey is to provide modern survey data for the updating of existing and proposed charts due to the increase in vessel traffic and vessel draft using the Delaware River. This survey is "H" sheet of the current project sheet layout.

B. AREA SURVEYED

The survey encompasses the area between the eastern and western shores of Delaware Bay in the vicinity of the Salem Nuclear Plant. The Alloway Creek area east of the northern point of Artificial Island was not surveyed. Change four to the project instructions directed that small estuaries such as this should only be surveyed if conditions precluded work in the bay and river. The boundary of the survey is defined by the following limits, starting at the northwest corner and moving clockwise:

1.	39°32.0'N 75°34.2'W	2.	39°31.1'N 75°33.8'W	3.	39°30.7'N 75°34.0'W
4.	39°30.7'N 75°31.8'W	5.	39°27.8'N 75°30.5'W	6.	39°27.8'N 75°35.8'W

The area was surveyed between 23 August 1985 and 25 September, 1985.

C. SOUNDING VESSELS

The hydrography on this sheet was performed by launches PE-1 (VESNO 2831, hull number 1009) and PE-2 (VESNO 2832, hull number 1017). PE-1 and PE-2 are Type 1 aluminum survey launches. Bottom samples were taken by both launches. The launches were used for item investigations and inshore hydrography.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

The PEIRCE survey launches were equipped with Raytheon DSF6000N fathometers. All echo sounders performed satisfactorily except as noted on the fathogram or master printout. The sounding correctors for DSF6000Ns apply to both high and low frequency beams. The following equipment was used:

VESSEL	VESNO	INSTRUMENT	MODEL	S/N	DAYS
PE1	2831	RAYTHEON	DSF6000N	A105N	235-236
PE1	2831	RAYTHEON	DSF6000N	B050N	237-250
PE1	2831	RAYTHEON	DSF6000N	A112N	261-267
PE2	2832	RAYTHEON	DSF6000N	A112N	235-240
PE2	2832	RAYTHEON	DSF6000N	A119N	268

Echosounder

~~Sounding machine~~ initials were maintained at 0.0 during survey operations. Bar checks were made by all vessels when good quality checks were possible. Checks were taken in 5-foot increments over the maximum depth range possible for weather and sea conditions. This exceeds the requirements of the provisional operating and processing instructions for the DSF6000N echo sounder, which only require one 2-fathom check per day. Bar check correctors tended to vary with increasing depth, which was probably caused by excessive bar movement. The bar check corrections were not used for velocity correction data as oceanographic data was taken during the project. Abstracts of bar check data are included in the survey records and the appendices of this report.

Settlement and squat was determined for launches PE-1 (VESNO 2831) and PE-2 (VESNO 2832) in San Juan, Puerto Rico, in October 1985. Curves from these data are included in Appendix D. There was little difference in the settlement and squat correctors from other historical data for these vessels.

Martek casts were taken from both launches (VESNO 2831 and VESNO 2832) and the NOAA Ship PEIRCE (VESNO 2830). The Martek is a model 167 (S/N 127) calibrated August 8, 1985. Six Martek casts were performed during the project on the following dates: August 25, August 26, August 27, September 20, September 21, and September 25. Nansen casts were also taken from the PEIRCE (VESNO 2830) in the survey area on the following dates: August 27, August 28, September 10, and September 20. The first Nansen casts were taken to check the TDC instrument, which appeared to be erratic for the casts of 25, 26, and 27 August. These Martek TDC casts were subsequently rejected. Nansen casts were continued until another TDC was obtained (S/N 127) and verified as working properly on 20 September. All TDC and Nansen casts are graphed in Appendix D.

Only one velocity corrector tape was necessary for both surveys done on this project. Correctors are an average of all Nansen and Martek TDC casts for the entire project.

E. HYDROGRAPHIC SHEETS

All field sheets were made aboard the PEIRCE by the pdp8/e computers (serial numbers 13945 and 11118) and the Houston Instruments Complot DP-3 plotters (serial numbers 5848-19 and 7486-22). Hydrographic data is presented on seven sheets. The mainscheme lines are plotted on two sheets: PE-10-4-85 North and PE-10-4-85 South. Each sheet has overlays; a crossline overlay, and a bottom sample overlay. These sheets are at 1:10,000 scale.

In addition, one area of development was enlarged to 1:2500 scale and is included as a separate sheet. The area of development is outlined in black ink on the mainscheme sheet and has been given the name as listed below.

NAME	Plat/Plon	Postion Numbers
Dev. A	39/24/40N 75/34/46W	1661-1691

The least depth from this development is plotted on the appropriate mainscheme field sheet. None of the soundings on this plot has been designated "NSP". All are to be plotted on the smooth sheet.

Parameter tape printouts for all plotter sheets are included in the appendices. All field records will be forwarded to AMC for final verification.

F. CONTROL STATIONS

No control stations were established by the PEIRCE for this survey. Only existing control was used.

G. HYDROGRAPHIC POSITION CONTROL

Hydrographic position control was accomplished using the Mini-ranger Falcon 484 system. Range/range and range/azimuth positioning methods were used. The following mini-ranger equipment was used.

VESNO	EQUIPMENT	S/N	JD
2831	RANGE PROCESSING UNIT	D0018	235-264
	CONTROL DISPLAY UNIT	D0062	235-264
	RECEIVER/TRANSMITTER	C2096	235-264
2832	RANGE PROCESSING UNIT	D0017	235-240
	CONTROL DISPLAY UNIT	D0059	235-240
	RECEIVER/TRANSMITTER	C2123	235-240
	RANGE PROCESSING UNIT	D0018	268
	CONTROL DISPLAY UNIT	D0059	268
	RECEIVER/TRANSMITTER	C2096	268

REFERENCE STATIONS:

CODE	S/N
2/4	C2059
5	C2067
6	C2091
8	E2974
9	E2911
10	E2912
11	C2075

The following theodolites were used both for calibration and range/azimuth hydrography.

Instrument	Serial Number
Wild T-2	30694
Wild T-2	75507
HP3810B	1929A00361

Mini-ranger Falcon Calibration

This survey was conducted with no specific, formal guidance for calibrating the Mini-ranger Falcon system other than the general provisions of the Hydrographic Manual for short range systems. There is no AMC OPORDER concerning the Falcon system, although a draft version has been written. The draft AMC OPORDER and the hydrographer's best judgment have been used as guidance for positioning calibration.

Only baseline calibration values have been used for the electronic corrector tapes. Baseline calibrations were performed to the standards of the draft AMC mini-ranger OPORDER and records of these are included in the survey cahier. An abstract of the baseline calibrations follows, together with mean and standard deviation values for each code. The standard deviation values are typically less than 3 meters. The AMC OPORDER gives no rejection criteria for averaging baseline correctors but it seems that a single average for all baseline correctors is appropriate for use as final correctors.

No unusual problems were noted with the mini-ranger equipment during this survey. There were many "flyers" in some areas of the sheet. This problem was caused in part by reflections from vessel traffic and metal obstructions in the area. Some interference was apparently coming from other mini-ranger units in the area. On one occasion, reference station Code 2 was temporarily changed to Code 4 to eliminate this problem.

ABSTRACT OF BASELINE CORRECTORS

Correctors apply from:
JD 227 TIME _____
to:
JD 286 TIME _____

Vessel 2831

RPU: D0018
R/T: C2096

Comp by: _____ Checked by: _____

Code (Serial #) / Date of Calibration	2 (C2059)	5 (C2067)	6 (C2091)	8 (E2974)	9 (E2911)	10 (E2912)	11 (C2075)	Type of System Check
	Corr./SS	Corr./SS	Corr./SS	Corr./SS	Corr./SS	Corr./SS	Corr./SS	
JD 228 Aug. 16,1985	0.5/20	4.8/30	-4.3/15	-4.1/20	-5.9/20	-5.5/20	-11.0/20	BASELINE
JD 284 Oct. 11 1985	-3.8/15	0.8/25	-9.3/15	-9.0/15	-8.8/15	-10.0/15	-14.9/15	BASELINE
AVERAGE	-1.6	2.8	-6.8	-6.6	-7.3	-7.8	-12.9	
STD. DEVIATION	3.0	2.8	3.5	3.5	2.0	3.2	2.7	

Figure 3

ABSTRACT OF BASELINE CORRECTORS

Correctors apply from:
JD 227 TIME _____
to:
JD 286 TIME _____

Vessel 2832

RPU: D0017
R/T: D2123

Comp by: ____ Checked by: ____

Code (Serial #) / Date of Calibration	2 (C2059)	5 (C2067)	6 (C2091)	8 (E2974)	9 (E2911)	10 (E2912)	11 (C2075)	Type of System Check
	Corr./SS	Corr./SS	Corr./SS	Corr./SS	Corr./SS	Corr./SS	Corr./SS	
JD 227 15 AUG. 1985	-0.2/20	7.3/30	-4.0/20	-4.1/20	-3.6/25	-5.3/20	-8.9/15	BASELINE
JD 286 OCT. 12 1985	-1.5/25	2.0/25	-7.2/15	-6.5/25	-6.1/25	-6.8/25	-13.6/15	BASELINE
AVERAGE	-0.8	4.6	-5.6	-5.3	-4.8	-6.0	-11.2	
STD. DEVIATION	0.9	3.7	2.3	1.7	1.8	1.1	3.3	

Figure 3

Daily System Checks

Critical and noncritical daily system checks were performed according to the guidelines of the AMC (draft) OPORDER concerning calibration. Critical checks were made using the HP3810B total station to provide a range and azimuth to the sounding vessel or a fixed point critical check was performed. Original data for these calibrations is included with the daily records.

The following tables show the daily system check values obtained by each boat. The symbol "D" in the tables indicates that a critical check was performed, and the value shown is "DELTA". As discussed in the draft AMC OPORDER, "DELTA" is the absolute value of the difference between the daily corrector and the latest baseline corrector.

The symbol "R" in the tables indicates values for a noncritical least-squares systems check. A discussion of the least-squares system follows the ABSTRACT OF DAILY SYSTEM CHECKS.

ABSTRACT OF DAILY SYSTEM CHECKS

VESNO 2831 PE-10-4-85 H-10199

JD	CODE 2	CODE 3	CODE 5	CODE 6	CODE 7	CODE 8	CODE 9	CODE 10	CODE 11
236			R=+.6	R=-.6			R=+.4		
237			D=2	D=2			D=4		
238			D=0	D=1		D=2	D=1		
239			D=7	D=2					
240				R=0		R=+0.6	R=-.6		
241	No Calibration.								
261			D=1	D=1					D=3
262			D=1.5	D=1.3		D=4.9			D=3
250			D=8	D=2			D=6		
264			D=1	D=5		D=4	D=4	D=2	
266			D=3	D=2		D=4			D=8
267			D=4			D=0.5	D=7		D=7

ABSTRACT OF DAILY SYSTEM CHECKS

VESNO 2832 PE-10-4-85 H-10199

JD	CODE 2	CODE 3	CODE 5	CODE 6	CODE 7	CODE 8	CODE 9	CODE 10	CODE 11
235			D=3	D=4					
236				D=4			D=2.4		
240				D=1		D=3.1	D=0.6		
268			D=1						D=5

The least-squares system check requires at least three input ranges and the X-Y-Z positions of the reference stations. The vessel must be in position such that there is relatively good LOP geometry from the reference stations. The Falcon operator applies baseline correctors and selects a plane range output. The Falcon screen then gives a position in X-Y-Z, the input ranges, and a residual value for each reference station, as well as other parameters. The system check is successful when residual values are no larger than 0.5mm at the survey scale.

The least-squares method itself was first developed in the eighteenth century. It is a method for obtaining the most probable value for multiple sets of observed data. The simplest example of its application is finding the mean of a set of linear measurements. The mean is the most probable value for the "true" distance. The difference between the mean value and each separate measurement is termed a residual. In horizontal positioning, the most probable position is that position in which the sum of the squares of the residuals for each range is minimized. The size of each residual gives an indication of the error in each range comprising the position.

A copy of the positioning algorithm used by the Falcon system and the draft AMC OPORDER concerning calibration is included in this report. It should be noted that the Falcon also displays an "error circle radius" on the same screen as the least-squares information. This error circle does not result from any by-product of the least-squares process and has not been used in this survey.

H. SHORELINE

Shoreline data was transferred to the field sheets from registered shoreline manuscripts TP 00251, TP 00252, TP 00253, ~~and TP 00254~~, based on 1977 photography, at a scale of 1:10,000. The existence of shoreline features was verified visually if attached to the shoreline or by using electronically controlled detached positions if seaward of the shoreline. The only shoreline that is to be considered verified is that which is immediately adjacent to the plotted field sheet soundings.

I. CROSSLINES

Crosslines were run according to the Hydrographic Manual, Fourth Edition. 15.1 linear nautical miles of crosslines were run, which is equivalent to 8.5 percent of the total mainscheme miles acquired. Crossline soundings agreed well with the mainscheme hydrography. Agreement was between 0-2 feet.

J. JUNCTIONS

H-10112 - 1983 Survey 1:10000 scale

Agreement with H-10112 is excellent. Do not concur, see Eval. Rpt sec

K. COMPARISONS WITH PRIOR SURVEYS

H-1504a - 1:10,000, July 31, 1881

Artificial Island was not present at the time of the H-1504a survey. On the east side of the survey, because of the construction of Artificial Island, the soundings do not agree well--2 feet agreement up to a depth of 16 feet. For depths greater than 16 feet, the discrepancy ranges from 3 feet to 27 feet. On the northwest corner of the peninsula of Artificial Island a shoal appears to have developed. The H-1504a survey soundings are deeper by 4-12 feet. H-10199 channel soundings are deeper by 10 to 27 feet.

At the time of the H-1504a survey, Reedy Island was much larger than at present. For the soundings to the east of Reedy Island, agreement is poor. H-10199 soundings are deeper by 2 to 16 feet. Reedy Island Dike was not present at the time of the 1881 survey. Consequently, (PE-10-4-85 present survey) soundings near the dike are shoaler by 6-12 feet.

To the west of Reedy Island, agreement is fair, except to the northwest of Reedy Island Channel, where there are several H-1504 soundings which are deeper by 11-12 feet. There is no horizontal datum given, but it cannot be the NAD 1927, as the survey is prior to that year.

H-2494 - USC&GS 1:9600 scale, 1900

This survey covers the channel and a small area to either side of the channel. Agreement with H-2494 is fair to poor. H-10199 soundings are deeper by 2 feet at the eastern limit of H-2494 and increase to deeper by 26 feet in the channel. The datum used for this survey is not clear, but it is not the NAD 1927, as the survey was performed prior to that year.

Corps of Engineers Delaware River 40 foot Channel Edgemoor to Ship John Light Channel Examination, 1:2400 Scale, 1985

The soundings from the Corps of Engineers Channel Survey agreed well with H-10199. Soundings agreed within 1-3 feet.

H-1504b, 1:20,000 Scale USC&GS, 1881

This survey encompasses the area from Reedy Island Lighthouse to the south end of the sheet. Artificial Island and Reedy Island Dike were not in existence at the time of this survey.

There is good agreement along the western shore of Artificial Island for depths up to 20 feet (0-4 feet discrepancy). Towards the south end of Artificial Island, there are some depths which differ by 10 feet on the steep slope where dredging has taken place.

The area inside the sunken ships breakwater has very poor agreement. The average depth on H-10199 is 5 4 feet, whereas on H-1504b the average depth is 17 feet. The sunken ships breakwater was not in place at the time of the H-1504b survey.

On H-10199 for depths deeper than 20 feet, agreement is poor. The deepest depth on 1504b is 22 feet compared with 25 feet in the channel of H-10199. Dredging in the channel has resulted in these deeper depths.

On the western side of Reedy Island Dike, H-10199 soundings are deeper by 1 foot close to shore and up to 13 feet deeper towards the western shore of the dike. The reason for the above discrepancies may be increased currents due to dredging of the channel.

Four presurvey review items lie within the survey: AWOIS items #3257, 1365, 1370, and 3256. These items are discussed on the item investigation forms at the end of this section. AWOIS Item 3257 was not investigated because of misidentification by the field unit. This item was a group of dolphins, and a different group of dolphins was located than the ones required by the presurvey review. For item 3257 see Additional Work.

CHART # 12311 ITEM # 1365

ITEM DESCRIPTION : A LARGE ROCK PA ON FINGER SHOAL, SOUTH OF REEDY ISLAND DIKE.

SOURCE: AWOIS PRINTOUT JULY 26, 1985 (CL 623/74)

INVESTIGATION DATE: JD 264 TIME: 152000 UTC VESSEL: PE-1
VESNO 2831

OIC: LT.(jg) V. BARNUM

REFERENCES:

Position No.: 1431 corrected LEAST DEPTH 1 FT. Volume:
SOUNDING
VOL. 2/2

Sounding Correctors Applied: DRAFT, VELOCITY

Tides (~~Predicted~~/Actual) ~~PREDICTED~~

GEODETIC POSITION	LATITUDE	LONGITUDE
Charted:	39°27'39"N	075°34'24"W
Observed:	39°27'33"N	075°34'23"W

POSTION DETERMINED BY: RANGE/RANGE MINI-RANGER POSITIONING CONFIGURATION.

METHOD OF ITEM INVESTIGATION: AREA WAS METHODICALLY SEARCHED AND A DETACHED POSITION WAS TAKEN OVER THE SHOALEST DEPTH FOUND. AT ONE POINT THE LAUNCH WAS AGROUND ON THE ROCK. Rock also investigated on Day No. 156, 1986, corrected least depth of (2) obtained at above position.

CHARTING RECOMMENDATION: CHART THE ROCK *(2) AT POSITION 39°27'33"N 075°34'23"W ~~AT ONE FOOT DEPTH~~.

COMPILATION USE ONLY

CHART	APPLIED AS	DATE	COMPILER

CHART # 12311 ITEM # 1370

ITEM DESCRIPTION : A F/V REPORTED BEACHED ABOUT 300 YDS. NORTH OF REEDY ISLAND JETTY WITH LIGHT AND STERN VISIBLE ABOVE WATER.

SOURCE: AWOIS PRINTOUT JULY 26, 1985 (NM 11/53)

INVESTIGATION DATE: JD 266 TIME: 190000 UTC VESSEL: PE-1
VESNO 2831

OIC: LT.(jg) V. BARNUM

REFERENCES:

Position No.: 1692 - 1697 Volume:SDG. VOL. 2/2

Sounding Correctors Applied: DRAFT, VELOCITY

Tides (~~Predicted~~/Actual) ~~PREDICTED~~

GEODETIC POSITION	LATITUDE	LONGITUDE
Charted:	39°28'19"N	075°34'30"W
Observed:	39°28'~~16~~ 16.5"N	075°34'~~30~~ 30.5"W

POSTION DETERMINED BY: RANGE/RANGE MINI-RANGER POSITIONING CONFIGURATION.

METHOD OF ITEM INVESTIGATION: THE MAST OF THE FISHING VESSEL WAS OBSERVED PROTRUDING OUT OF THE WATER. DETACHED POSITIONS WERE TAKEN ON THE MAST AND OVER THE SUBMERGED WRECK.

CHARTING RECOMMENDATION: CHART AS ~~A VISIBLE WRECK AT POSITION 39°28'16"N 075°34'30"W.~~ indicated on present survey and delete charted visible wreck.

COMPILATION USE ONLY

CHART	APPLIED AS	DATE	COMPILER

CHART # 12311 ITEM # 3256

ITEM DESCRIPTION : Depths of 11 ft. and 16 ft. were reported in 1977 from COE permits.

SOURCE: AWOIS PRINTOUT JULY 26, 1985 (CL463/81)

INVESTIGATION DATE: JD 236 TIME: 182000 UTC VESSEL: PE-1
VESNO 2831

OIC: LT. V.D. ROSS

REFERENCES:

Position No.: 90+4-91, 85-85+5 Volume: see master printout

Sounding Correctors Applied: DRAFT,VELOCITY

Tides (~~Predicted~~/Actual) ~~PREDICTED~~

GEODETIC POSITION	LATITUDE	LONGITUDE
Charted:	39°28'07"N	075°32'35"W
Observed:	39°28'09"N	075°32'33"W

POSTION DETERMINED BY: SHORELINE HYDROGRAPHY USING RANGE/RANGE MINI-RANGER POSITIONING SYSTEM.

METHOD OF ITEM INVESTIGATION: TWO PARALLEL SHORELINES WERE RUN ACROSS THE REPORTED FEATURE. ~~THE LEAST DEPTH FOUND IS 12 FEET~~. NO INDICATION OF THE CHARTED DIKES WAS OBSERVED.

CHARTING RECOMMENDATION: CHART THE SOUNDINGS FROM SURVEY H-10199, REMOVE DIKE SYMBOLS NORTH AND SOUTH OF THE BARGE SLIP. ~~THE LEAST DEPTH TO REMAIN IN CHARTED POSITION~~. concur, also see item 2, Add. Work

---

COMPILATION USE ONLY

CHART	APPLIED AS	DATE	COMPILER

L. COMPARISON WITH THE CHART

H-10199 was compared with Chart 12311, 31st Edition, September 10, 1983.

In general, the soundings in the channel and to the east ~~agreed very well within 1-2 feet~~ are in agreement. To the west of the channel, the agreement was poor. Soundings differed by greater than 4 feet, with Chart 12311 soundings being the shoaler of the two. It is recommended that the H-10199 soundings replace all charted soundings. concur

A possible explanation for the discrepancy in soundings is an increasingly swifter current due to more extensive, deeper dredging of the channel augmenting erosional forces. Both natural and man-made processes have apparently altered the bottom topography since the old source surveys or the charted soundings.

M. ADEQUACY

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

N. AIDS TO NAVIGATION

The floating aids in the survey area agree with their charted positions and serve their intended purpose. No fixed aids were located by land survey methods during this survey. A detached position was obtained on ~~the lighted daybeacon~~ Baker Range light "2B". This is Position 1789 on Day 267, VESNO 2831. See Descriptive Rpt for 1986 work -- Aids to Navigation.

O. STATISTICS

	# of Positions	LNM Sounding Line
PE-1	1305	192.6
PE-2	119	3.0
Total	1424	195.6

Bottom Samples: 47
Tide Stations: 1
Nansen Casts: 4
Martek Casts: 5

P. MISCELLANEOUS

The bottom of Delaware Bay is characterized by mud or sandy mud. The dredged channel etches a distinct profile from its undredged surroundings. Currents are strong creating extensive sand waves in the channel, which are seen on channel rangelines and in many crosslines. The river bank on the west side of Artificial Island drops steeply off in comparison with the natural, gradually sloping banks.

Traffic in the channel is heavy and characterized by large, deep draft vessels and numerous tugs. The channel is well marked and no hazards to navigation were found to exist in the channel. The channel also appears to be

adequately wide to support the traffic. Outside the channel, Reedy Island Dike is a potential hazard to unwary small boaters as it is covered at high tide. However, the dike is well marked by buoys and the jetty lights.

Bottom samples were submitted to the Smithsonian Institution.

Q. RECOMMENDATIONS

Specific recommendations are made in Section L of this report.

R. AUTOMATED DATA PROCESSING

PROGRAM	PROGRAM NAME	VERSION
112	Hyperbolic R/R Hydroplot	10-12-83
116	Range/Azimuth Hydroplot	10-12-83
201	Grid, Signal, and Lattice Plot	04-18-75
211	Range/Range Non-Real Time Plot	01-09-81
216	R/Az Non-Real Time Plot	02/09/81
300	Utility Computations	10-21-80
330	Reformat and Data Check	05-04-76
360	Electronic Corrector Abstract	02-02-76
407	Geodetic Inverse/Direct Computation	09-25-78
500	Predicted Tide Generator	11-10-72
530	Layer Correction for Velocity	05-10-76
561	H/R Geodetic Calibration	12-01-82
602	Elinore - Extended Line Oriented Editor	12-08-82
612	Line Printer List	03-22-78

S. REFERRAL TO REPORTS

Coast Pilot Report OPR-D219-PE-85

Respectfully submitted:

Jennifer A. Hill, ENS., NOAA

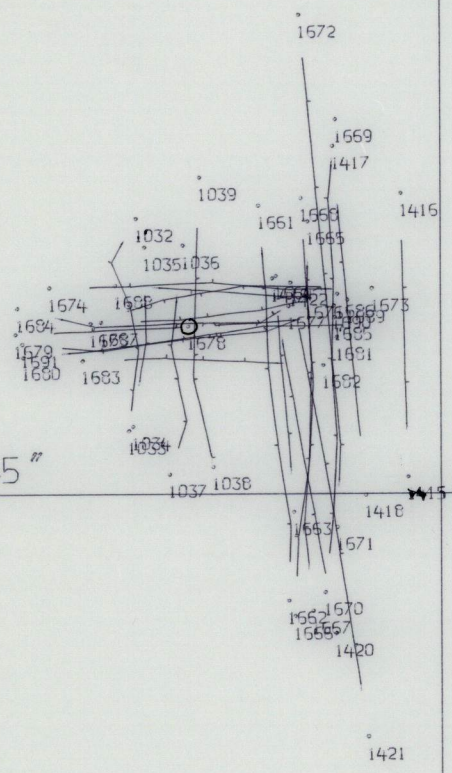
Jennifer A. Hill, Ens., NOAA

75° 34′ 30″ 75° 34′ 15″

39° 29′ 15″ 39° 29′ 15″

Position Overlay To Accompany H-10199
Scale 1:5000
Spike Development
least depth 11ft

39° 29′ 00″ 39° 29′ 00″



39° 28′ 45″ 39° 28′ 45″

75° 34′ 30″ 75° 34′ 15″

SIGNAL TAPE LISTING

PE-10-4-85

H-10199

```
001 6  39 31 25205 075 38 24163  139 0000 000000
002 6  39 26 44445 075 34 36474  139 0000 000000
003 6  39 24 23150 075 35 25852  139 0000 000000
004 6  39 21 52010 075 30 52270  139 0000 000000
005 6  39 32 26687 075 34 12770  139 0000 000000
006 6  39 30 33124 075 34 00103  139 0000 000000
007 6  39 28 56719 075 35 312298 139 0000 000000
008 6  39 30 04554 075 32 26759  139 0000 000000
009 6  39 28 03886 075 34 29770  139 0000 000000
010 6  39 28 58100 075 34 27716  139 0000 000000
011 6  39 28 55935 075 35 31009  139 0000 000000
012 6  39 23 19403 075 25 44615  139 0000 000000
013 6  39 26 59269 075 29 53987  139 0000 000000
014 6  39 22 38734 075 30 56920  139 0000 000000
```

SIGNAL	NAME	YEAR	SOURCE
001	Liston Rear Range Light	1933	Published
002	Reedy Island Range Front Light	1984	Published
003	Reedy Island Rear Range Light	1933	Published
004	Smyrna River Front Range Light	1933	Published
005	Baker Rear Range Light	1933	Published
006	Reedy Island Baker Front Range Light	1933	Published
007	Liston Range Front Light	1984	Published
008	Nuklear	Not Used	
009	Reedy Island South Dike Light	1984	AMC
010	Reedy Island Jetty Middle Light	1934	Published
011	Thorny 1983	1983	Published
012	Arnold USE	1932	Published
013	Hope USE	1932	Published
014	Delaware USE	1932	Published

APPROVAL SHEET

This survey is complete and adequate for the purpose of a basic hydrographic survey. The Commanding Officer continually supervised and examined all work.

APPROVED BY: A. E. Theberge

NOAA FORM 77-28
(11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.
H-10199
ADDITIONAL WORK

FIELD NO.
PE-10-4-85

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State DELAWARE & NEW JERSEY

General locality DELAWARE ~~BAY~~ RIVER

Locality ~~##~~ VICINITY OF ARTIFICIAL ISLAND

Scale 1:10,000 Date of survey MAY 8 - JUNE 5, 1986

Instructions dated June 4, 1986 Project No. OPR-D219-HFP-86, CHANGE NO. 2

Vessel NOAA Launch 520, HFP 4

Chief of party K.W. Perrin

Surveyed by LT. J.G. MADDOX

Soundings taken by echo sounder, hand lead, pole Raytheon DSF-6000N echosounder

Graphic record scaled by

Graphic record checked by

Protracted by Automated plot by

Verification by L.G. Cram

Soundings in fathoms feet at MLW MLLW

REMARKS:

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

☆ U.S. GPO: 1974-0-768-081/1207

ADDITIONAL WORK REQUIRED

Additional work is requested to resolve 8 items on survey H-10199, OPR-D-219-PE-85. This work is required to resolve two AWOIS Items -- 1 dredged channel limits -- 2 buoys not located by field unit -- and three charted features that could pose hazards to small boat navigation in the area. The eight items have been assigned a priority numbering of 1 most important and progressing to 8 of the lesser priority. If time restraints become an issue, items 1 through 3 are highly desirable to complete.

Item 1 in Latitude 39°28'03"N, Longitude 75°34'30"W to Latitude 39°27'36"S, Longitude 75 °34'15" known as Reedy Island Dike. The southern portion of this dike from Reedy Island South Dike Light to its most southerly limit approximately 70 meters south of buoy N"2" Bell is in question.

The dike is now charted (NO.12311, 31st Ed. Sept. 10, 1983) in a curve from Reedy Island South Light to end of buoy N"2". The source of this charted feature is believed to have come from a C&GS Shoreline Survey T-8778 from photos of March 1946 and supplemented by other surveys in Oct. 1948. The current shorline data shows this dike as a straight line feature from the South Dike Light to and beyond buoy N"2" by approximately 70 meters. There were at least three indications that there is some submerged objects in the charted area of the dike found by the basic survey H-10199. In addition, one line of hydrography was run over the delineation on TP-00253, at the southern most end of the dike as shown on that shoreline manuscript, with no indication of any submerged feature extending that far south.

Item 1 Work Requirements:

a. Split existing 100 meter hydro to 50 meters with lines that cross both delineations as shown on the base sheet (approx.300m). Extreme caution is urged when running these lines as either feature could be bare depending on the stage of tide. It may be necessary to further reduce line spacing (25m) to delineate any isolated features on either delineation of this dike. If the dike as shown on TP-000253 bares or shoals such that it cannot be crossed. Then it is desirable to obtain detached positions as close as possible to the feature with safety of boat and crew as first consideration.

b. Run lines necessary to delineate the terminus of this feature known as Reedy Island Dike.

Item 2 in Latitude 39°28'08"N, Longitude 75°32'33"W is two dikes and a small dredged Barge Slip. The source of this charted information originates with a Corp of Engineers permit to construct. This is AWOIS ITEM #3256.

The present survey had lines running parallel close into shore across the dikes without receiving any indication they were under construction or built.

Item 2 Work Requirements:

a. A visual inspection from Latitude 39°27'45"N to Latitude 39°28'30"N, to ascertain if any part of the barge slip has been built or is being built, and one approximately 700 meter, line close inshore to the bulkhead on Artifical Island that crosses both proposed dikes.

b. If it is ascertained that the slip is built or being built then a center line of hydro should be run into the barge slip.

Item 3 in Latitude 39°30'54"N (AWOIS ITEM NO. 3257) described as three dolphins, a boat slip and a pier. The source of the charted date originates with T-8778, 1946-48. The current shoreline data (TP-00251) shows all these items as subm ruins. No investigations wre made by field unit.

Item 3 Work Requirements:

a. It is recommended that a visual search be made of this area at the lowest stage of tide. After ascertaining what features are visual at that time. Detached positions should be taken on the most offshore features and a comparison made with the chart and T-8778 to determine what if any other items remain. If it appears that there are other items than one or two lines of hydro should be run over the area of these undiscovered items to determine if they can be hazardous to small boat navigation. While in that area any signs of a cable crossing as shown on the chart should be looked for. Note: It may be useful to inquire in the town of Port Penn directly across the river as to any local knowledge concerning these items.

Item 4 in Latitude 39°27'33", Longitude 75°32'03" is a dredged channel with reported depth of 18 feet (1980). The source for this channel is as shown on Chart 12311, 31st Ed. Sept. 10/83.

Some hydro was run by field unit in this area on H-10199, but no adequate delineation of the channel was ever done. This is the entrance to Salem Nuclear Power Plant which is the Tide Gage site for this additional work plus the Tide Gage site for the field work to be done by HSB in 1986.

One additional item in this area needs some additional work also. A barrier of sunken wrecks in Latitude 39°27'29"N, Longitude 75°52'00 to Longitude 75°31'30"W as shown on TP-00253. The field unit ran one line of hydro close to these without descriptions as to if they are submerged, awash or bare.

Item 4 Work Requiremnts:

a. In the dredged channel used as entrance to Salem Nuclear Power Plant it is requested that about 6 to 8 lines (25 meter) of hydro be run across the apparent axis of this feature and one line be run down the center line to determine if the 18 ft. report depth is accurate.

b. Along the barrier composed of the 15 stranded wrecks, it is requested that a line of hydro be run as close as possible (safely). It should be determined if there are 15 wrecks and if they bare at all stages of the tide or, are they awash, could any of these wrecks be a hazard to navigation at any time.

Item 5 - A row of piles in Latitude 39°29'51"N, Longitude 75°35'09" charted from T-8778, 1946-48. These piles are now believed to be in ruins as an object believed to be one of the piles was hit by a launch from the field unit on H-10199. The object bares 3ft at MLLW with smooth tides. This area only has 1 to 3 ft at MLLW and should be viewed as a hazardous area.

Item 5 Work Requirements:

a. Locate what remains of these piles, it is felt this can best be done at the lowest stage tide possible by visual inspection. If piles are visible take detached pos on ends with elevations and compare in length to delineation shown on T-8778 and Chart to ascertain if others may be in area. If piles not visible run hydro line over the row as delineated on T-8778.

Item 6 - Two buoys White/orange C"G" and white/orange C"H" in Latitude 39°30'20", Longitude 75°34'11"W. These two buoys are charted and are Light List numbers 2191 described as Reedy Island Dike Special Warning Buoy G & H. The field unit on H-10199 did not locate these buoys and its not clear if they are on station or have been deleted.

Item 6 Work Requirements:

a. Visual Inspection to determine if buoys are present, if they are; detached position to locate each one. If not, then a call to local Coast Guard District (Third) to determine their intentions reqarding these buoys.

Item 7 - Numerous pier ruins, piers and groins in Latitude 39°29'00"N, Longitude 75°35'30"W. These are shown on TP-00253 (1975-79) but no information was obtained by field unit in this area, (Bay View Beach).

Item 7 - Work Requirements:

Verify by detached positions the alongshore cultural features -- groins, ruins, pier ruins, and piers that exist in this area. This could or should be done on the copy of TP-00253 provided to the field party, or on separate plot but each feature on the T-sheet should be verified as present--in ruins-- or not visible.

Item 8 - A cooling tower in the complex known as the SALEM NUCLEAR POWER PLANT in approximate Latitude 39°27'45"N, Longitude 75°32'10"W. There are two landmarks currently charted in this area , both are domes. Local knowledge states that the cooling tower is the predominant landmark in this area. (approx. 500 ft. high)

Item 8 - Work Requirements:

Locate the cooling tower by the best available means, by HP 3810 Total Station, T-2 or whatever means. Also determine its height again by means available. One suggested way of obtaining height would be by asking at power plant, another might be a distance from known station to bottom of tower and distance to top by HP 3810. Will need a 76-40 landmark - to be charted - position (LAT & LONG) and how located and to what accuracy.

ITEM 8 - not completed

CHART # 12311 ITEM# 1

ITEM DESCRIPTION: Reedy Island South dike extension

SOURCE: C+GS T-8778

INVESTIGATION DATE: June 5, 1986

OIC: LT(jg) J. H. MADDOX

REFERENCES:

VESNO 1017

Position No. 173 - 234 Volume 1 pg. 11

CORRECTIONS APPLIED:

Velocity ✓ TRA Corrections ✓

~~Predicted~~ or ✓ Actual Tide Correctors

GEODETIC POSITION:

	Latitude	Longitude
Charted:	39° 28' 03 N	075° 34' 30 W
~~Observed~~:		

Position Determined By: R/R MR Falcon

METHOD OF ITEM INVESTIGATION:

50 m splits were run east and west along the southern extension of the dike using the parameters governed by Verification Department at AMC.
It was found the charted "curved" line of the dike does not exist, but the straight line extension, which was first believed does exist.

CHARTING RECOMMENDATIONS:

Chart the south dike extension as found on the present survey. Do not concur, chart as indicated on smooth sheet.

Charted bell buoy R 2 is a N 2 no bell chart N°2" at presently charted location. concur.

Compilation Use Only

CHART APPLIED AS

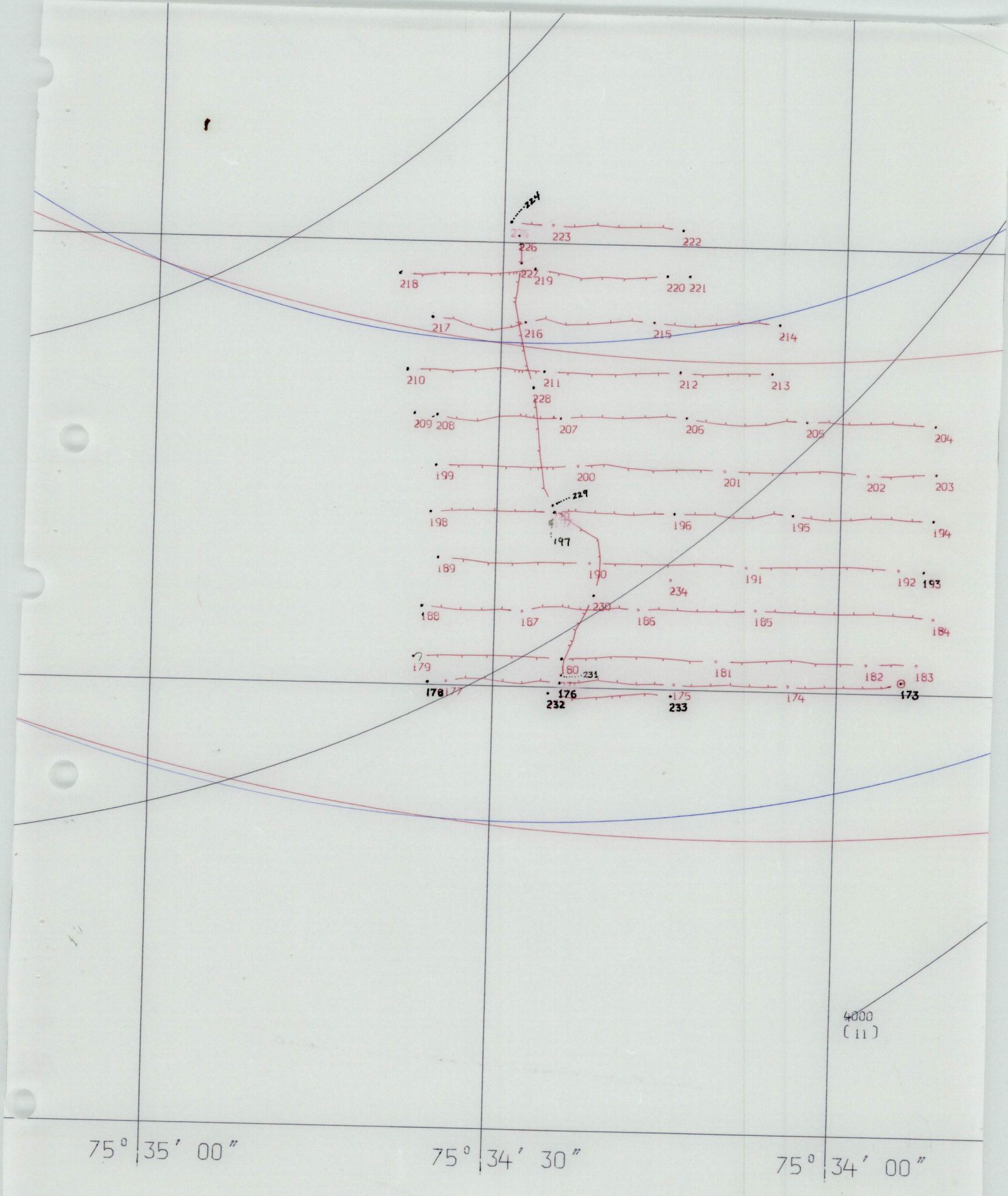

224
223
222
226
218
219
220 221
217
216
215
214
210
211
212
213
228
209 208
207
206
205
204
199
200
201
202
203
229
198
196
195
194
197
189
190
191
192 193
234
188
187
230
186
185
184
179
180
231
181
182
183
178
176
232
175
233
174
173
4000
(11)
75° 35′ 00″
75° 34′ 30″
75° 34′ 00″

CHART # 12311 ITEM# 2

ITEM DESCRIPTION: Two dikes and small barge slip.

SOURCE: Corp of Engineers

INVESTIGATION DATE: 5-15-86

OIC: LT (jg) J. H. MADDOX

REFERENCES:

Position No. Volume pg.

CORRECTIONS APPLIED:

Velocity ✓ TRA Corrections ✓

~~Predicted or~~ ✓ Actual Tide Correctors

GEODETIC POSITION:

	Latitude	Longitude
Charted:	39° 27' 45"N	75° 32' 30"N
Observed:	39° 28' 07"N	75° 32' 30"N

Position Determined By: R/R MR Falcon, public contact

METHOD OF ITEM INVESTIGATION: One line of hydro running centerline of barge slip. See attached papers for additional information.

CHARTING RECOMMENDATIONS:

Delete Dikes from chart, revise reported depth notes To agree with present survey.

Compilation Use Only

CHART APPLIED AS

ITEM 2 PE H-10199
PHONE INVESTIGATION

TALKED TO THE CIVIL GROUP HEAD OF NUCLEAR ENGINEERING AT PLANT SITE. MR. ROBERT CRAPO SAID PERMITS ISSUED BY THE CORPS OF ENGINEERS WERE IN REFERENCE TO THE RIP/RAP AND WOOD STRUCTURED RETAINING WALL WHICH BOUNDERS THE SEA/LAND INTERFACE AROUND ARTIFICIAL ISLAND. THERE WAS NEVER ANY PLAN OR PLANS TO BUILD A JETTY/BREAKWATER STRUCTURE ANYWHERE ALONG ARTIFICIAL ISLAND. I ASKED ABOUT THE SUPPOSED BKW OFF OF THE BARGE SLIP, TO THE N AND S. THERE IS NO INDICATION OF ANY CONTRACTED WORK TO CONSTRUCT SUCH STRUCTURES. HIS WORK PHONE # IS 609-339-4826

CHART # 12311 ITEM# 3 AWOIS (3257)

ITEM DESCRIPTION: Three dolphins, a boat slip and a pier

SOURCE: T-8778, 1946-48

INVESTIGATION DATE: 5-15-86

OIC: LT (jg) J. H. MADDOX

REFERENCES:

Position No. 1 & 2 Volume 1 pg. 4-5

CORRECTIONS APPLIED:

Velocity ✓ TRA Corrections ✓

~~Predicted or~~ ✓ Actual Tide Correctors

GEODETIC POSITION:

	Latitude	Longitude
Charted:	39° 30′ 54″N	75° 33′ 56′ W
Observed:	39° 30′ 53.5″N	075° 33′ 55.3″ W

Position Determined By: R/AZ

METHOD OF ITEM INVESTIGATION: Detached position of NW corner of wooden boat dock and offshore end of wooden Pier in ruins

CHARTING RECOMMENDATIONS:

Chart these items as found by this investigation ~~and~~ Revise chart as indicated on present survey.

Compilation Use Only

CHART APPLIED AS

ITEM 3 PE #10199

PHONE INVESTIGATION

DELAWARE BELL SYSTEM 1-800-282-8555 IN STATE SERVICE
1-800-441-8355 OUT-OF-STATE SERVICE
1-302-678-1421 LOCAL

CALLED AND RECIEVED INFORMATION ABOUT CABLE AREA. TWO FIRMS(*) ARE INVOLVED ACCORDING TO THEIR RECORDS. GAVE A TICKET # 154958 FOR ANY OTHER REFERENCES PER MY CALL.

* DELMARVA ELECTRIC COMPANY, WILMINGTON, DEL.
1-302-454-4127

TALKED TO THE SUPERINTENDENT MR. JOHN DUNHAM. ACCORDING TO HIS KNOWLEDGE THERE IS A CABLE RUNNING FROM AUGUSTINE BEACH TO A NATIONAL WEATHER SERVICE STATION. HE DID NOT KNOW THE LOCATION OF THE STATION ITSELF BUT DID VERIFY A CABLE WHICH WAS LAID IN THE EARLY 70's. THIS COMPANY PUT IT IN FOR NWS. Revised

* DIAMOND STATE TELEPHONE COMPANY, NEWARK, DEL.
1-302-738-3005

TALKED TO THE SUPERINTENDENT MATT GIORDANO AND CONFIRMED THAT THEIR COMPANY HAD NO SUBMERGED CABLE IN THE SAID VICINITY. HE DID SAY, HOWEVER, THAT THERE WAS SOME SORT OF GOVERNMENT CONCERNED CABLE RUNNING SUBMERGED IN THE SAID VICINITY. HE WAS NOT SURE WHAT AGENCY THOUGH.

CONTACTED JIM CAMPBELL AT NWS IN SILVER SPRINGS, MD 1-301-427-8090.
HE HAD NO IDEA ON THE MATTER. BUT HE DID REFER ME TO THE NWS OF WILMINGTON, DEL. AND GERALD O'BRIEN OF THE NWS'S OFFICE OF TECHNICAL SERVICES IN SILVER SPRING'S. HE SUGGESTED IF I DID NOT RECIEVE ANY DEFINITE INFORMATION ON ANYTHING TO TRY HIM AGAIN.

NWS IN WILMINGTON, DEL. 1-302-573-6143, 6142

TALKED TO MARILYN PELUSKI WHO HAS BEEN THERE FOR 10 YEARS. THIS WAS NEWS TO HER. ALL SHE KNEW ABOUT WAS THE TIDE GAGE AT REEDY PT. SHE HAS MY NAME AND OUR OFFICE # AND SAID SHE WOULD CALL BACK IF SHE FOUND OUT ANYTHING.

GERALD O'BRIEN OFFICE OF TECHNICAL SERVICES, NWS
1-301-427-7792

MR. O'BRIEN HAS NO RECORDS OF A WEATHER STATION IN THIS AREA. HE STATED THE NWS HAS PERMANENT STATIONS IN GEORGETOWN, INDIAN RIVER, AND WILMINGTON, DEL. HE ALSO STATED AN AUTOMATED STATION WAS SET UP FOR TEMPORARY SERVICE OFF OF BRANDYWINE SHOALS. SAID HE WOULD CONTACT THE EASTERN REGION FOR MORE INFORMATION.

GERALD O'BRIEN OFFICE OF TECHNICAL SERVICES, NWS
1-301-427-7792

MR. O'BRIEN STATED THAT THERE IS NO EVIDENCE OF ANY KIND OF WEATHER STATION SET UP IN THE VICINITY OF REEDY ISLAND. HE DID STATE THE FACT THAT THERE WAS SOME ELECTRICAL CABLE RUN TO THE AREA FOR A TIDE STATION OF SOME SORT.

JOHN DUNHAM DELMARVA ELEC.

SINCE MR. DUNHAM WAS THE ONLY SOURCE OF INFO I CALLED BACK AS A FOLLOW UP. HE SAID THAT THE STEP DOWN (4000V) TRANSFORMER IS LOCATED APPROXIMATELY 1 MILE SOUTH OF PORT PENN IN THE VICINITY OF AUGUSTINE BEACH AT A PUBLIC BATHING AREA. HE SUGGESTED THE CABLE WAS PUT IN FOR THE USC&GS AROUND 1969-70. THE CABLE RUNS TO A MAN MADE (RIP RAP) ISLAND. THE AREA HAS BEEN IDENTIFIED AS S OF REEDY ISLAND WHERE STATION REEDY USE 1900/1933 IS LOCATED. ON THIS ISLAND THERE IS A 2500-4000 V STEP UP TRANSFORMER. A #2 COPPER CABLE IS SAID TO BE SUBMERGED ACROSS THE WATER.

5-21-86

Mr. John Dunham - A active 4000 VAC 2 conducter # 8 copper wire submarine cable trenched in running diagonaly from Augustine Beach, Delaware to Southend of Reedy Island service to Coast Guard Light "13" established service in 1970 contact Mr Blount, CG Gloucester 609-456-1370 Mr Dunham will send copies of Blue prints

CHART # 12311

ITEM # 4

ITEM DESCRIPTION: dredged Channel 18 ft rep. 1980

SOURCE: Chart 12311 31st Ed. (CL582/81)

INVESTIGATION DATE: 29 May 1986

OIC: J. H. MADDOX

REFERENCES:

VESNO 1017

Position No. 124-138 Volume 1 pg. 4

CORRECTIONS APPLIED:

Velocity ✓

Predicted or ✓

TRA Corrections ✓

Actual Tide Correctors

GEODETIC POSITION:

	Latitude	Longitude
Charted:	39° 27' 33" N	075° 32' 03" W
Observed:	"	"

Position Determined By: R/R MR Falcon

METHOD OF ITEM INVESTIGATION: 50 m hydro lines were run along the axis of the Salem Nuclear Plant entrance. and a center line of hydro running into the Tide gage site. No indications of dredged 18ft channel was observed.

CHARTING RECOMMENDATIONS:

Revise or Delete "18 ft Reported 1980" from chart, present survey soundings do not verify the existence of the dredged channel

Compilation Use Only

CHART

APPLIED AS

CHART # 12311 ITEM# 5

ITEM DESCRIPTION: row of piles

SOURCE: T-8778, 1946-48

INVESTIGATION DATE: 5-16-86

OIC: LT (jg) J.H. MADDOX

REFERENCES:

VESNO 520

Position No. 5-9 Volume 1 pg. 7-9

CORRECTIONS APPLIED:

Velocity ✓ TRA Corrections ✓

~~Predicted~~ or ✓ Actual Tide Correctors

GEODETIC POSITION:

	Latitude	Longitude
Charted:	39° 29' 51" N	075° 35' 09" W
Observed:	"	"

Position Determined By: R/AZ

METHOD OF ITEM INVESTIGATION: Detached positions along row of Piles

CHARTING RECOMMENDATIONS: Retain as charted, concur

Compilation Use Only

CHART APPLIED AS

CHART # 12311 ITEM# 6

ITEM DESCRIPTION: Two buoys white/orange C "G" + C "H"

SOURCE: Light List

INVESTIGATION DATE: 5-15-86

OIC: LT (jg) J. H. MADDOX

REFERENCES: VESNO 0520

Position No. 3-4 Volume 1 pg. 5

CORRECTIONS APPLIED:

Velocity ✓ TRA Corrections ✓

Predicted or ✓ Actual Tide Correctors

GEODETIC POSITION:

	Latitude	Longitude
Charted:		
Observed:	Vicinity of 39° 30' 20" N	075° 34' 11" W

(SEE Volume) = see present survey.

Position Determined By: R/AZ

METHOD OF ITEM INVESTIGATION: Detached positions on existing "G" + "H" cans (white/orange)

CHARTING RECOMMENDATIONS: Retain as presently charted. Do not concur, chart as indicated on present survey.

Compilation Use Only

CHART APPLIED AS

CHART # 12311 ITEM# 7

ITEM DESCRIPTION: Numerous pier ruins

SOURCE: TP-00253

INVESTIGATION DATE: 5-16-86

OIC: LT (jg) J. H. MADDOX

REFERENCES:

VESNO 0520

Position No. 10-14 Volume 1 pg. 10-11

CORRECTIONS APPLIED:

Velocity ✓ TRA Corrections ✓

Predicted or ✓ Actual Tide Correctors

GEODETIC POSITION:

		Latitude	Longitude
Charted:	between	34° 29'00"N	075° 35' 30"W and lat. 39°29'15"N long. 75°35'24"W
Observed:		"	"

Position Determined By: R/AZ

METHOD OF ITEM INVESTIGATION: Detached positions along Bay View Beach See drawing of beach in Volume pg 10.

CHARTING RECOMMENDATIONS: Retain as charted. Do not concur, chart as indicated on present survey.

Compilation Use Only

CHART APPLIED AS

AIDS TO NAVIGATION

The following aids were determined to disagree with the current Light List of the Atlantic Coast 1986. Light List number 38825 Baker Range Light 2B is incorrectly positioned, it should be 39/27/28.289 N. LAT. 076/33/22.990 W. LONG. This position was determined by Range Azimuth using a Hewlett Packard 3810. Light List number 38830 Reedy Island Dike Lower Bell Bouy 2 is incorrectly described, it should not contain the description "Bell" .

All other aids to navigation are adequately described and serve the purpose in which they were established.

MISCELLANEOUS

It was observed that during peak flood tides, currents approach 5 kts. and were considered very dangerous in this area.

SIGNAL LIST
OPR D219-HFP-86
PE 10-4-85
H-10199

002	6	39	26	44445	075	34	36474	250	0000	000000	REEDY ISLAND RANGE FRONT LT. 85
006	6	39	30	33124	075	34	00103	139	0000	000000	REEDY IS BAKER FRONT RANGE LT. 85
010	6	39	28	58100	075	34	27716	250	0000	000000	REEDY IS JETTY MIDDLE LT. 85
011	6	39	28	55935	075	35	31009	250	0000	000000	THORNY, 1983
012	6	39	23	19403	075	25	44615	139	0000	000000	ARNOLD, 1932
013	6	39	26	59269	075	29	53987	139	0000	000000	HOPE USE, 1932
014	6	39	22	38734	075	30	56920	139	0000	000000	DELAWARE USE, 1932
015	6	39	30	01952	075	34	09733	250	0000	000000	REEDY USE, 1911

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

DATE: 07/25/86

Marine Center: Atlantic

OPR: D-219

Hydrographic Sheet: H-10199

Locality: Delaware River

Time Period: May 15 - June 5, 1986

Tide Station Used: 853-7614 Artificial Island, NJ

Plane of Reference (Mean Lower Low Water): 5.32 ft.

Height of Mean High Water Above Plane of Reference: 6.1 ft.

Remarks: Recommended Zoning:

1) North of latitude 39°30.0' apply +20 minute time correction and x0.98 range ratio to all heights.

2) South of latitude 39°30.0' zone direct.

James R. Hubbard
Chief, Tidal Datum Quality
Assurance Section

NOAA FORM 61-29
(12-71)

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

REFERENCE NO.

MOA23-4-86

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-10199 (PE-10-4-85)
OPR-D219-HSB-84--Delaware Bay

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

Return receipted copy to:

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

RECEIVED THE ABOVE
(Name, Division, Date)

Dwayne S. Clark
January 21, 1987
N/CG243

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-10199

Number of positions	1360
Number of soundings	7106
Number of control stations	13

	TIME-HOURS	DATE COMPLETED
Preprocessing Examination	48	31 JAN 86
Verification of Field Data	183	5 AUG 86
Quality Control Checks	155	
Evaluation and Analysis	64	12 SEP 86
Final Inspection	7	16 SEP 86
TOTAL TIME	457	

Marine Center Approval 2 OCT 86

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

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

DATE: 01/21/86

Marine Center: Atlantic

OPR: D-219

Hydrographic Sheet: H-10199

Locality: Delaware River

Time Period: August 22 - September 24, 1985

Tide Station Used: 853-7614 Artificial Island, NJ

Plane of Reference (Mean Lower Low Water): 3.86 ft.

Height of Mean High Water Above Plane of Reference: 6.1 ft.

Remarks: Recommended Zoning:

1) north of latitude 39°30.0' apply +20 minute time correction and x 0.98 range ratio to all heights

2) south of latitude 39°30.0' zone direct

James R Hubbard

Chief, Tidal Datum Quality
Assurance Section

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-10199

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ALLOWAY CREEK										1
ARTIFICIAL ISLAND										2
AUGUSTINE BEACH (locality)										3
AUGUSTINE CREEK										4
BAKER SHOAL										5
BAY VIEW BEACH (locality)										6
CANADAS BEACH (locality)										7
DELAWARE (title)										8
DELAWARE RIVER										9
LOWER BREAK										10
NEW JERSEY (title)										11
PORT PENN										12
REEDY ISLAND										13
REEDY ISLAND DIKE (cultural feature)										14
SILVER RUN										15
THE ISLAND										16
UPPER BREAK										17
										18
					Approved:					19
										20
					Charles E. Harrington					21
					Chief Geographer - N/CG2x5					22
					SEP 10 986					23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

ATLANTIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO.: H-10199 FIELD NO.: PE-10-4-85

Delaware--New Jersey, Delaware River, Vicinity of Artificial Island

SURVEYED: August 23 through September 25, 1985, and May 13 through June 5, 1986

SCALE: 1:10,000 PROJECT NO.: OPR-D219-PE-85
OPR-D219-HFP-86
(Change No. 2)

SOUNDINGS: Raytheon DSF-6000N Echo Sounder, Pole, Lead Line CONTROL: Range/Range (Mini-Ranger Falcon)
Range/Azimuth (Mini-Ranger/Theodolite)

Chief of Party ..... A. E. Theberge
..... K. W. Perrin (1986)

Surveyed by ..... D. A. Waltz
..... V. D. Ross
..... V. A. Barnum
..... J. A. Hill
..... B. A. Lake
..... J. H. Maddox (1986)

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

1. INTRODUCTION

a. No unusual problems were encountered during the evaluation of this survey.

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

c. During the verification of the 1985 field work at the Atlantic Marine Center, it was determined that in order to meet basic survey requirements additional field work would be required. As a result eight items were assigned as additional work for the 1986 field season. These items and the results were included as part of the present survey.

2. CONTROL AND SHORELINE

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

b. Shoreline originates with Class III registered shoreline maps TP-00251, TP-00252, and TP-00253, of 1975. Shoreline revisions in red are by the hydrographer.

3. HYDROGRAPHY

a. Depths at crossings are in good agreement.

b. The standard depth curves are adequately delineated except for portions of the 0- and 6-foot depth curves because of their proximity to shore. Some 3-, 24-, and 36-foot supplemental depth curves, dashed curves, and brown 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 except as listed below:

(1) The western inshore area of Reedy Island and the area east of the northern end of Artificial Island were not sounded.

(2) The following depths, noted as obstructions, were not developed.

Depth (ft.)	Latitude (N)	Longitude (W)
9	39°29'47.9"	75°34'12.2"
7	39°29'39.0"	75°34'13.8"
5	39°28'54.4"	75°34'47.1"
15	39°29'10.2"	75°34'39.2"

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. Fixed aids to navigation and landmarks were not verified as required. (See sections 4.2.2.1.1, 4.2.2.1.2, and 4.2.2.4 of the project instructions.)

b. Some features located seaward of the mean high waterline that originate with either the chart or the shoreline manuscripts were not verified or disproved as required in section 4.1.2 of the projection instructions.

5. JUNCTIONS

The junction with H-10200 (1985-86) on the south was completed during evaluation of that survey. An adequate junction was effected with H-10112 (1983) on the north with the exception of the area east of Artificial Island. Here, the area was not sounded on the present survey.

6. COMPARISON WITH PRIOR SURVEYS

a. H-132 (1841) 1:20,000
H-133 (1840-41) 1:10,000
H-148 (1841-43) 1:80,000
H-1249a,b (1875) 1:20,000
H-1504a,b (1881) 1:10,000
H-2160 (1893) 1:2,400
H-2494 (1900) 1:9,600

These surveys are dated prior to changes resulting from Federal Channel Projects and the construction of Artificial Island and Reedy Island Dike. Because drastic bottom and shoreline changes have resulted from these projects, a detailed comparison with the present survey is not considered worthwhile.

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

b. T-8753 (1946-48) 1:20,000
T-8755 (1946-48) 1:20,000
T-8777 (1946-48) 1:20,000
T-8778 (1946-48) 1:20,000
T-8779 (1946-48) 1:20,000

These photogrammetric shoreline maps cover the area common to the present survey and are subsequent to the prior hydrographic surveys. It is noted that the east side of Reedy Island has eroded about 100 meters while the remaining shoreline in the area has essentially remained the same.

Two dolphins were brought forward to supplement the present survey. With these additions, the present survey is adequate to supersede these prior surveys in the common area.

7. COMPARISON WITH CHART 12311 (31st Edition, September 10, 1983)

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 blueprints and other miscellaneous sources.

Attention is directed to the following items:

(1) Two piles, charted in the vicinity of latitude 39°30'03"N, longitude 75°34'07"W, from a miscellaneous source, were not investigated on the present survey and are deferred to the compiler for final resolution.

(2) A charted sunken ship uncovering at low water and a pier ruin, located in the vicinity of latitude 39°27'35"N, longitude 75°32'06"W, from T-8779 (1946-1948), are superseded by the present survey and should be deleted from the chart.

The present survey is adequate to supersede the charted hydrography within the common area, except as noted above.

b. Controlling Depths

(1) The charted controlling depths for the Baker and Reedy Island Ranges originate with U.S. Army Corps of Engineers surveys of March and April 1982. Present survey depths are in agreement with the tabulated controlling depths.

(2) Present survey soundings do not verify the existence of the dredge channel (18 feet reported 1980), charted in latitude 39°27'32"N, longitude 75°32'03"W.

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, except for Reedy Island Dike Lower Bell Buoy "2" which no longer marks the end of Reedy Island Dike as found on the present survey. (See Descriptive Report for 1986 work--Aids to Navigation.)

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. However, additional field work is recommended at some opportune time for the area east of the northern end of Artificial Island and for the depths listed in section 3.C(2) of this evaluation.

F. L. Saunders
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-10199

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

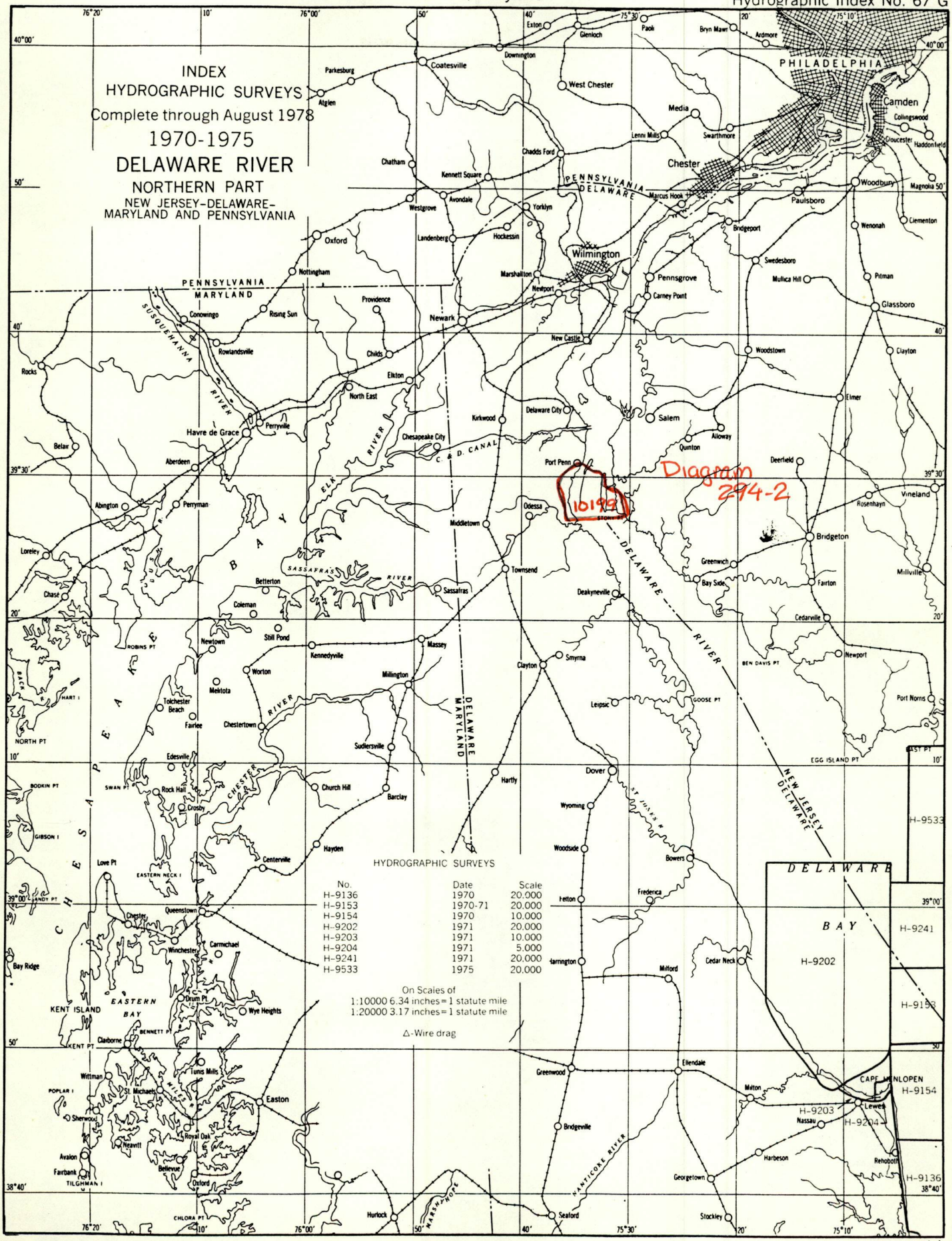
Dale E. Stallbrook for
George K. Myers
Chief, Standards Section (N/CG24)
Hydrographic Surveys Branch

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-10199

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	7/3/87	CORDTS	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 51
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.

app'd to St'd 1-28-87