

9948

Diagram 1227-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey .. Hydrographic.....
Field No. PE-20-1-81.....
Office No..... H-9948.....

LOCALITY

State Virginia.....
General Locality Atlantic Ocean.....
Locality Alongshore--Sandbridge Beach.....

1981

CHIEF OF PARTY
CDR D.E. Nortrup.....

LIBRARY & ARCHIVES

DATE September 15, 1983.....

☆U.S. GOV. PRINTING OFFICE: 1980-766-230

AREA 2

CHARTS:

12208

12205 "A"

12207

12220

12200

13003 NL

9948

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The following data are filed with the field records:

Projection Parameters

Tc/TI Tape Listings and TRA Abstracts

Electronic Corrector Abstracts

Bottom Sediment Data

HYDROGRAPHIC TITLE SHEET

H-9948

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

FIELD NO.

PE-20-1-81

State Virginia

General locality Atlantic Ocean

Locality Alongshore Sandbridge Beach

Scale 1:20,000 Date of survey 14 June - 6 October 1981

Instructions dated 31 March 81 Project No. OPR-D103-MI/PE 81

Vessel NOAA Ship PEIRCE, Launch 1017, Launch 1009

Chief of party CDR. Donald E. Nortrup, NOAA

Surveyed by G.E. Leigh, L. Simoneaux, M. Mozgala, J. Bailey, R. Harris, M. Poeschl

Soundings taken by echo sounder, hand lead, pole Ross 5000 (echo sounder)

Graphic record scaled by L.F.S., M.M., J.W.B., R.B.H., M.E.P., B.M., T.R.O., B.E.M., J.W., R.W.

Graphic record checked by G.E.L., L.F.S., M.E.P.,

Protracted by _____ Automated plot by Xynetics 1201 Plotter (AMC)

Verification by Marine Survey Division, Atlantic Marine Center

Soundings in fathoms feet at MLW MLLW

REMARKS: *NOTES IN RED WERE MADE DURING VERIFICATION

AWOIS - 10/4/83 mgf

Applied to Stab. 9-26-82

OPR D103-MI/PE-81, DELMARVANC

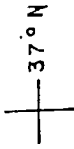
OFFSHORE DAM NECK

Registry Number H-9948
Field Number PE 20-1-81

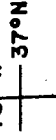
NOAA Ship PEIRCE
Donald E. Nortrup, CDR, NOAA
Commanding

From Chart 12200

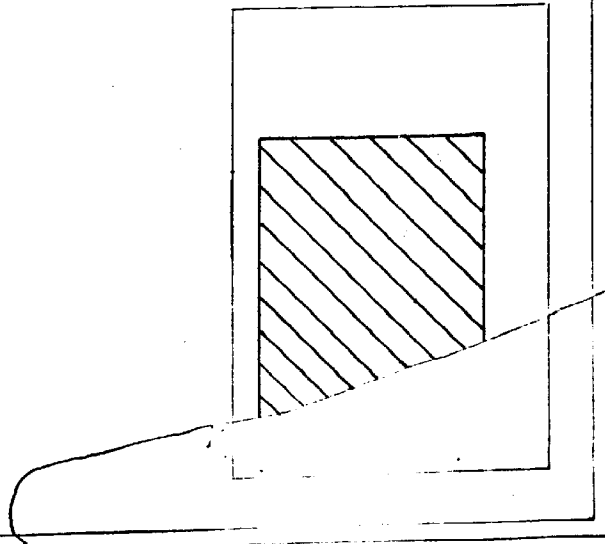
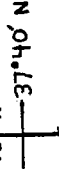
76°W



75°W



75°W



Descriptive Report

to Accompany

Hydrographic Survey H-9948

(Field Number PE 20-1-81)

CDR Donald E. Nortrup, NOAA

A. PROJECT

This basic hydrographic survey was conducted in accordance with Project Instructions OPR-D103-MI/PE-81 issued 31 March 1981. Three changes to the Project Instructions affecting this survey, changes 1 through 3 were issued 27 April, 06 May, and 21 July respectively.

B. AREA SURVEYED

This survey is bounded by shoreline in the vicinity of Dam Neck, Virginia to the west, Latitude 36°41'00"N to the south, Longitude 75°46'40"W to the east, and Latitude 36°47'30"N to the north. Sounding operations were accomplished between 13 June 1981, Julian Day (JD) 164, and 6 October 1981, JD 279 inclusive.

C. SOUNDING VESSELS

Soundings for the survey were obtained by:

NOAA Ship PEIRCE S-328	(VESNO 2830)
NOAA Launch 1009	(VESNO 2839)
NOAA Launch 1017	(VESNO 2837)

D. SOUNDING EQUIPMENT AND CORRECTION TO ECHO SOUNDINGS

The following Ross 5000 Fineline ~~fathometers~~^{echo sounders} were used during this survey:

VESNO	DATES	SERIAL NUMBER (S/N)
2830	JD 266-269	1078
2830	JD 270-271	1087
2830	JD 272-279	1079
2837	JD 164-183	1078
2837	JD 265-269	1079
2839	JD 165-179	1079
2839	JD 180-273	1083

All soundings were taken from hull mounted transducers in actual depths ranging from 2-⁶⁵~~61~~ feet.

Survey records were scanned by trained survey department personnel and checked by the Officer-in-Charge and the Operations Officer. Peaks and deeps considered significant, occurring between regular soundings were inserted during the scanning process. *Additional inserts were made during verification.*

Phase calibration checks were made at frequent intervals, at the ~~thirty~~^{thirty} foot mark. Any necessary adjustments were made and noted on the fathograms. Phase calibration checks were made across the full scale at the beginning and end of each line.

Velocity correctors were obtained from four temperature, depth, and conductivity (TDC) casts taken with a Martek Mark VII Sensor (Model 167-20, S/N 177) and Display Unit (Model 167-10, S/N 177), which was calibrated at the factory prior to ship's usage. The following table contains data regarding the casts.

CAST #	DATE	LOCATION	MAXIMUM DEPTH OF CAST	DATES OF HYDRO AFFECTED
1	15 June 81	36°41'00"N	48 ft.	JD 164-170
	JD 166	75°49'00"W		
2	27 June 81	36°48'43"N	74 ft.	JD 173-184
	JD 178	75°33'55"W		
7	30 September 81	36°41'40"N	54 ft.	JD 264-274
	JD 273	75°47'06"W		
8	10 October 81	36°43'08"N	67 ft.	JD 278-288
	JD 283	75°35'35"W		

Velocity correctors were applied at 0.2 foot increments to the maximum depth of the cast. Depths and correctors deeper than the cast depth were extrapolated to accommodate soundings deeper than the cast depth.

Data from all casts were not averaged to make one velocity tape as the differences in sound velocity exceeded the maximum allowable value (4 m/sec, as per Section 4.9.5 of the Hydrographic Manual, 4th ed.). High winds and

seas from Hurricane Dennis on 21 August caused a mixing of the water column as seen in the table comparing sound velocity and depth in Appendix D.

On JD 178 and 310 simultaneous TDC and Nansen casts were taken at $36^{\circ}48'43''\text{N}$, $75^{\circ}33'55''\text{W}$, and $36^{\circ}53'00''\text{N}$, $75^{\circ}21'36''\text{W}$ respectively. The Nansen and TDC data were compared to ensure TDC accuracy. On JD 178 the average cast salinities agreed to 1.1 parts per thousand (ppt) and the temperatures to within 0.34°C . On the JD 310 the average cast salinities agreed to within 1.70 ppt and temperatures to within 0.14°C . All velocity computations were based on uncorrected TDC data.

Bar checks were taken from the launches twice daily, weather permitting, on days of launch hydrography. The results of these bar checks were averaged for the same two week periods as the TDC casts (JD 164-170, JD 173-183, JD 265-273). The velocity correctors calculated from the bar checks compared well with those from the TDC casts. The difference averaged .11 feet, with a maximum difference of .3 feet. The TDC velocity correctors were applied to all soundings.

A vertical lead line cast was taken to a depth of 67 feet on 22 July, 1981, at 36°54'40"N, 75°43'37"W by PEIRCE. The corrector to the assumed static draft of 11.0 feet is -.65 feet since the static draft was determined to be 10.35 feet. This corrector is applied in the transducer corrections on the sounding correction abstracts for all data collected by PEIRCE.

The following transducer drafts were applied to soundings via the electronic corrector tape:

VESNO	ASSUMED TRA
2830	11.0
2837	1.6
2839	1.6

Settlement and squat correctors for PEIRCE were determined on 21 September, 1981, at the U.S. Army Corps of Engineers Pier on the Elizabeth River, Norfolk, Virginia with both launches aboard. Ship's personnel were stationed at the pier's end with a spirit level, and recorded readings from a leveling rod attached to the starboard side of the ship in line with the transducer. Readings were taken as the ship passed the pier at various throttle settings. Settlement and squat correctors for launches 1009 and 1017 were determined on 6 March, 1981, and 23 February, 1981, respectively, at Guantanamo Bay, Cuba, by a similar method. Settlement and squat correctors are incorporated into TC/TI tapes. Printouts of these tapes, as well as all velocity tapes are included in Appendix D.

This survey was conducted using predicted tides based on daily predictions at Hampton Roads, Virginia (reference station #863-8610). Predicted tides were corrected in accordance with a prezone scheme provided with the 1980 Project Instructions, and interpolated using program AM500. Prezone correctors were as follows: 1 hr. 40 min. was subtracted from the times of high and low tide, and a multiplicative factor of 1.38 was applied to the height of each tide. PEIRCE installed and maintained one tide station at Sandbridge Pumping Pier, Virginia (station 863-9428). A field tide note is included in Appendix B of this report.

E. HYDROGRAPHIC FIELD SHEETS

The following final field sheets were plotted on PEIRCE's HYDROPLOT system:

TITLE	SKEW	SCALE
Mainscheme and Mainscheme Splits North Sheet	0,18,40	1:20,000
Mainscheme and Mainscheme Splits South Sheet	0,18,40	1:20,000
Overlay, Crosslines & Bottom Samples North Sheet	0,18,40	1:20,000
Overlay, Crosslines & Bottom Samples South Sheet	0,18,40	1:20,000
Dumpsite Development	0,15,18	1:10,000
Spike Development	0,21,50	1:1,250

The survey was plotted off-line using electronic corrector tapes, tide tapes, and velocity tapes.

Smooth sheet will be plotted at the Atlantic Marine Center. All field records and the following data tapes have been forwarded:

Master Range/Range and Range/Azimuth Tapes

Electronic Corrector Tapes

Velocity Tapes

Parameter Tapes

Signal Tape

TC/TT Tapes

F. CONTROL STATIONS

For a list of control station descriptions, and names, see Appendix F.

Station nos. 002, 004, 005, 006, 009, 010, and 011 were established in June, 1981, by third order class one traverse methods by personnel from Operations Division, A.M.C. Station no. 012 was established in June, 1981, by third order class one intersection methods by personnel from Operations Division, A.M.C. Stations 013, 019, and 023 are published third order, class one stations (nos. 1050, 1054, and 1047 respectively) from quad 360754. Station 014 is a published third order, class one station (no. 1009) from quad 3607611. Station 018 is a third order-class one station established in 1980 by personnel from the Operations Division, A.M.C.

All horizontal control is based on the North American Datum of 1927.

G. HYDROGRAPHIC POSITION CONTROL

Range/range positioning for PEIRCE was accomplished using a DM-54 Automatic Ranging Grid Overlay (ARGO) positioning systems. ARGO is a medium range, multi-user, medium frequency, phase comparison system. Time slots used for this survey were 01/05/00/00 along with a smoothing code of 02 and a frequency of 1646.7 KHZ, with the system updating once each second. Fixed shore station AGC values and antenna range tune values were recorded hourly during times of hydrography. This information is included in the supplementary survey data.

The following ARGO equipment was used aboard the PEIRCE.

	S/N	DATES (JD)
RANGE PROCESSING UNIT (RPU)	R047844	266-269
	R047840	270-273
	R0379116	279
CONTROL DISPLAY UNIT (CDU)	C037948	266-279
ANTENNA LOADING UNIT (ALU)	A047847	266-279
STRIP CHART RECORDER	S097948	266-279
THERMAL PRINTER	A04127	266-279

The following ARGO equipment was used at the shore stations:

STATION	DAY	RPU	R0379121
COROLLA	JD 266-279	Power Supply	V0478106
(002)		ALU	A047853

BATTERY CRAMER		RPU	R047855
(018)	JD 266-279	Power Supply	V038167
		ALU	A047851

ARGO was calibrated at the beginning and end of each day. These calibrations were accomplished using one of three methods. On-line partial lane correctors were based on each day's opening calibration and entered into the on-line program (RK112). Final correctors were the mean of the days opening and closing correctors.

The first calibration method used was fixed point circle calibration around CHESAPEAKE LIGHT (Station #023), sighting on the antenna atop the tower. (See Section 4.4.3.3 of the Hydrographic Manual, 4th ed.) Line of position azimuths were determined by adding 90 and 270 degrees to the computed azimuths from CHESAPEAKE LIGHT to each of the shore stations. The light tower was circled twice during each calibration.

The second method used was a three point sextant fix, with check angle. Three fixes were averaged to obtain correctors for each calibration. Fix calculations were performed using RK561.

The third method used to calibrate ARGO was comparison to a calibrated, short range microwave Del Norte system. Ranges from Del Norte were converted to ARGO rates via program RK561. The program compared the two sets of rates and computed partial lane correctors for the ARGO system.

On one occasion (JD 270) a suspected ARGO whole lane loss occurred

and a whole lane check was made (See Section 4.4.3.3 in Hydrographic Manual, 4th ed.) at a buoy of known whole lane count. Both whole lane counts were found to be correct and hydrography continued.

On JD 273 the ARGO system went off the air due to inclement weather. Bottom samples were taken using the LORAN-C long range, hyperbolic, phase comparison system. Northstar model 6000 LORAN-C receiver S/N 70568 was used. The LORAN-C rates were converted to ARGO rates using program RK300, and a master tape was constructed using these rates. The LORAN-C system was used only for bottom samples.

On JD 267 when loading the on-line program (RK-112), an erroneous signal tape was used. This tape had station 018 at latitude $36^{\circ}55'41''.99$, not $36^{\circ}55'04''.200$ as it should be. As a result positions 8013-8209 were incorrectly located on the on-line sheet. When off-line plotted (with a correct signal tape) it was noted that a large gap existed between the R/R Del Norte data gathered by the launches, and the data collected by the PEIRCE. The off-line plot also revealed that the day's sounding lines were slightly skewed and curved. Additional sounding lines were run by the PEIRCE on JD 272 to fill in this gap.

Range/range control for the launches was accomplished using Del Norte short range microwave equipment. Del Norte is a line of sight, ranging system, with display in meters.

The following Del Norte Equipment was used in this survey:

<u>DAYS</u>		<u>LAUNCH 1009</u>	<u>LAUNCH 1017</u>
164-166	DMU/Master S/N	188/250	515/192
	Remote 1 S/N	1317	188
	Remote 2 S/N	----	1317
167-169	DMU/Master S/N	192/162	515/912
	Remote 1 S/N	1317	188
	Remote 2 S/N	----	1317
170	DMU/Master S/N	192/162	----
	Remote 1 S/N	1317	----
	Remote 2 S/N	188	----
173-174	DMU/Master S/N	192/162	----
	Remote 1 S/N	1317	----
	Remote 2 S/N	----	----
175	DMU/Master S/N	515/912	----
	Remote 1 S/N	667	----
	Remote 2 S/N	1317	----
177	DMU/Master S/N	192/277	159/620
	Remote 1 S/N	1063	1063
	Remote 2 S/N	1317	1317
178-183	DMU/Master S/N	192/277	515/162
	Remote 1 S/N	249	249
	Remote 2 S/N	1317	1317

<u>DAYS</u>		<u>LAUNCH 1009</u>	<u>LAUNCH 1017</u>
265-273	DMU/Master S/N	515/162	181/273A
	Remote 1 S/N	1063	1062
	Remote 2 S/N	1062	----

All Del Norte equipment underwent baseline calibration as per Section A.5.1.1 in the Hydrographic Manual, 4th ed. The correctors determined in these calibrations were applied to data via the electronic corrector tape, unless these correctors differed from those obtained in the daily systems check by more than 10 m. The daily systems check consisted of three point sextant fixes with check angle as described above. The correctors obtained from the system check were used if a difference of more than 10 m. was observed. This occurred on only two occasions: JD 271 and 273 on launch 1009.

On JD 177 a computer failure in launch 1009 necessitated manual acquisition of data. On each fix Del Norte rates were recorded in the sounding volume. A twenty second timer was used to time fixes and in-between soundings. Master and corrector tapes were constructed using program AM602. Positions for in between soundings were interpolated by the off-line plot program (RK211).

Range/azimuth control for launches 1009 and 1017 was accomplished using ranges from a Del Norte ranging system and azimuths from a known control station measured by Wild T-2 theodolite, S/N 75507. Calibration and application of correctors for Del Norte was by the same method described above. The initial azimuth was taken to another control station and

recorded at the beginning and end of each line. The initial was reset if it differed from the original initial by an amount greater than the limits specified in Section 4.4.4 of the Hydrographic Manual, 4th ed.

H. SHORELINE *See also sections 2, 6, and 7 of the Evaluation Report*

All shoreline on this survey was transferred from "SHORELINE MOVEMENT STUDY-SOUTH OF CAPE HENRY", SHEET Y, dated May 1980. This is not a shoreline manuscript and so has not been field edited. (See Project Instructions, Section 4.1). It was not possible to develop the zero foot curve due to the small tidal range, and constant breakers in the area. Also, a temporary pier is under construction at Dam Neck, VA. Details of this pier can be found in PEIRCE's 1981 Coast Pilot Report. With these exceptions, shoreline agrees well with this manuscript.

I. CROSSLINES

68.3 miles of crosslines were run for a total of 10.3% of the main-scheme mileage. Agreement at crossings is very good with all soundings agreeing to within 2 ft. ✓ *RAW*

J. JUNCTIONS

This survey junctions with the following contemporary 1:20,000 surveys:

H-9922 to the north ✓

H-9972 to the east ✓

H-9959 to the northeast ✓

RAW 9/30/82

H-9922

Junction comparisons with this survey are excellent. All soundings agree to within 2 ft. H-9922⁽¹⁹⁸⁰⁾ is currently being verified at Atlantic Marine Center.

H-9972

Junction comparisons with this unverified survey were good with 94% of the soundings agreeing to within 2 ft. Differences of as much as 3 to 4 feet were noted in the northeastern area of the survey; with H-9948 having the shoaler soundings. Since final field sheets for H-9948 and H-9972⁽¹⁹⁸¹⁾ were plotted using different tidal zone correctors, hydrographic lines from both surveys were plotted using the same zoned tide tape. Results revealed no better agreement with H-9972⁽¹⁹⁸¹⁾. It is possible that the cause for the discrepancy is the use of predicted tidal correctors.

✓ RHW
9/30/82

H-9959

Junction with this unverified survey was made only in the extreme northeastern corner of the H-9948⁽¹⁹⁸¹⁾. The junction consisted of .25 square miles. All soundings agreed to within 2 feet.

✓ RHW

There is no contemporary survey to the south of H-9948⁽¹⁹⁸¹⁾. ✓ RHW 9/30/82

K. PRIOR SURVEYS See also section 6 of the Evaluation Report

The following prior surveys have been conducted within the area of

this survey:

H-4286 (1922) 1:40,000

H-5990 (1935) 1:40,000

H-4286

This is a 1:40,000 survey completed in 1922. It coincides with the entire area of H-9948⁽¹⁹²²⁾. Comparison with this survey revealed that considerable offshore shoaling had taken place since 1922. The pattern and amount of shoaling is irregular with differences ranging from 1 foot to 10 feet, (10 foot differences at 36°45'15"N, 75°51'25"). There has been a movement of the shoreline westward ranging from ^{160 meters} ~~2 ft.~~ on the southern limit of the sheet to no movement on the northern edge of the sheet. This has caused along-shore soundings to be deeper than those on the prior survey. The greatest differences occur in the area of greatest shoreline movement. There is a zone between the area of shoreline movement and the offshore shoaling in which soundings agree to within 2 feet. It is recommended that the current survey supersede H-4286⁽¹⁹²²⁾.

H-5990

H-5990 is a 1:40,000 survey completed in 1935. It coincides with the current survey only in a 1.8 square mile area in the extreme northeastern portion of the survey. Agreement is very good with current survey soundings being 0 to 3 feet shoaler than soundings from H-^{5990 (1935)} ~~5990~~. It is recommended

that the current survey supersede H-5990⁽¹⁹³⁵⁾

There is one Presurvey Review Item within the limits of this survey. PSR item number 111 is listed as a non-dangerous sunken wreck at 36°45'30"N, 75°56'⁶40"W in the Wreck List. It is classified^{as} an information item so an exhaustive search was not conducted. However, while searching for the piles charted nearby, the mainscheme lines in the area were split. No indication of the wreck was found. It is recommended that this wreck continue to be charted, with the note "existence doubtful." *concur ✓ RHW 9/24/82*

L. COMPARISON WITH THE CHART *See also section 7 of the Evaluation Report*

Comparison was made with the latest published chart (#12207, 14th ed., 5 May 1979, 1:80,000 scale) 71% of the soundings agreed to within 2 feet. Of the discrepancies, 58% of the soundings are shoaler than the chart. *✓ RHW*

The following major discrepancies were noted:

LOCATION	CHARTED SOUNDING (ft)	SURVEY SOUNDING (ft)
<i>on Pull up ek</i> 36°44'33"N 75°52'30"W	44*	30 ✓ 27-ft sndg approx 660m. to sw. ✓
36°45'30"N 75°50'20"W	50	48 42-43 ✓
36°44'55"N 75°49'52"W	50	48 47 ✓
36°41'40"N 75°53'10"W	47	43 43-44 ✓
36°43'07"N 75°53'40"W	46	41 40-42 ✓

RHW 9-30-82

36°42'55"N
75°52'42"W

45

41 38-40 ✓

36°41'20"N
75°50'35"W

56

52 ✓ ✓

36°41'20"N
75°48'20"W

62

57 58-60 ✓

36°43'10"N
75°50'15"W

59

54 54-56

*There is a charted depth of 27 feet located .3 miles ^{South 2GR} ~~North~~west of the 44 foot sounding. ✓ RMW

In addition, several movements of shoals and depth contours were discovered. The shoal at 36°43'20"N, 75°50'15"W has moved .1 mile to the ^{east} southwest. The least depth by echosounder is 33 Feet. The shape of the shoal at 36°45'N, 75°52'50"W has changed considerably. The ~~20~~ ³⁰ foot ~~curve~~ ^{shoal} has moved .1 mile inshore south of 36°44'.

The 36 foot curve has moved .3 miles offshore at 36°42'40"N, 75°54'50"W and at 36°46'45"N, 75°55'08"W. ✓ RMW 9/30/82

The larger of these two shoals has shifted to the east with the shoal has grown to an approximate length of 3 miles with three (3) echosounder least depths of 20, 28, and 27 feet in the shallowest areas of the ~~entire~~ shoal. The portion of the dumpsite between longitudes 75°53'20"W and

75°54'25"W north of 36°46'30"N lies within the survey area. 45 meter line spacing was used within this area as per the Project Instructions. No evidence of shoaling, nor irregular bottom contours was discovered. A 1:10,000 scale blowup of the area is included to better delineate bottom contours in the area. ✓ RMW

Splits of the mainscheme arcs were run over the piles charted at 36°45'48"N, 75°56'54"W, as well as a series of lines parallel to shore.

No evidence of the piles was discovered. It is recommended that this item continue to be charted with the notation "existence doubtful." ✓ RMW

Eight developments were run to delineate areas of irregular bottom contours or shoal areas. The results of these developments are in the following table:

DEVELOPMENT	LOCATION	LEAST DEPTH (ft) by echo sounder
"A"	12.93 36°44'20"W 75°52'25"W	28 27
"B"	36-44-43.93N 75-52-36.57W 36°44'30"N 75°52'45"W	36.44-34.99N 75-52-39.72W 28 28 ✓
"C"	36°44'55"N 75°52'50"W	36-44-57.72 75-52-42.97 28 28 ✓
"D"	36°44'15"N 75°50'15"W	28 37
"E"	36°45'10"N 75°50'25"W	28 37
"F"	36°43'25"N 75°50'25"W	36-43-31.00 N 75-50-10.01W 28 33
"G"	36°43'00"N 75°48'55"W	28 40 This is one of three 40ft soundings.
"H"	36°47'00"N 75°52'20"W	28 40 This is one of two 40ft soundings. RGR 10/28/82

It is recommended that all the above least depths be depicted on up-dates of the chart.

An extensive development was run over the "spike" which occurred on the fathogram on JD 170 at position 154 . The spike showed a 33 foot depth in surrounding 46 feet depths. This development consisted of a series of east-west lines at 5 meter spacing run to 50m on either side of the "spike's" location, and a series of north-south lines run at 10 meter spacing to 50m on either side of the "spike's" location. This search revealed no evidence of the "spike." A 1:1250 blowup of this development is included

in the survey. In view of the many similar, but less definite "spikes" on that day's fathograms it was concluded that this spike was a spurious fathometer reading and should not be charted.

M. ADEQUACY

This survey is considered complete and adequate to supersede all charted information and the common areas of all prior surveys cited in Section K.

N. AIDS TO NAVIGATION

There are no fixed or floating aids to navigation within this survey. *Red bell buoy "2V" is located on the eastern edge of this survey. See section Evaluation Report, section 7. b. for additional comment.* *RAW*

O. STATISTICS

<u>VESNO</u>	<u>2830</u>	<u>2839</u>	<u>2837</u>	<u>TOTAL</u>
Nautical Miles Mainscheme	317.5	247.8	100.1	665.4
Nautical Miles Crosslines	21.0	11.0	36.3	68.3
Nautical Miles Developments	30.2	94.8	22.0	147.0
Positions	1130	1124	899	3153
Square Miles Sounded	28.2	33.3	11.4	73.0
Bottom Samples				115
Bar Checks				16
TDC Casts				4
Nansen Casts				2
Leadline Comparisons				1

P. MISCELLANEOUS

Bottom Samples taken for this survey were sent to the Virginia Institute for Marine Science, College of William and Mary, Gloucester, Virginia. The bottom sample "M" sheets are included in Appendix H of this report.

Q. RECOMMENDATIONS *See also section 7 of the Evaluation Report*

It is recommended that this survey supersede all existing charts and information to charting. Specific recommendations were made in section K and L of this report.

R. AUTOMATED DATA PROCESSING

The following HYDROPLOT Programs were used to acquire and process the survey data.

RK111	Range/Range Real Time HYDROPLOT	1 April 74
RK112	Range/Range and HYPERBOLIC Real Time HYDROPLOT	19 March 81
RK116	Range/Azimuth Real Time HYDROPLOT	24 August 78
FA181	Range/Azimuth Logger	23 February 78
RK201	Grid, Signal, and Lattice Plot	18 April 75
RK211	Range/Range Sounding Plot (Non-Real Time)	2 February 81
RK212	Visual Staton Table Load and Plot	1 April 74
RK216	Range/Azimuth Position and Sounding Plot	9 February 81
RK300	Utility Computations	21 October 80
RK330	Data Reformat and Check	4 May 76
RK360	Electric Corrector Abstract	2 February 76
AM500	Predicted Tide Generator	10 November 72

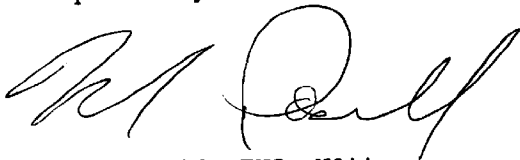
RK530	Velocity Corrector Computations	10 May 76
RK561	Hyperbolic and Range/Range Geodetic Calibration	19 February 75
AM602	Extended Line Oriented Editor	20 May 75
RK612	Line Printer List	22 March 78

Geodetic Package (800610) Hewlett-Packard 9815A.

S. REFERENCE TO REPORTS

Field Tide Notes are found in Appendix B of this report. Horizontal control reports are available at the Operations Division of Atlantic Marine Center. The 1981 PEIRCE Coast Pilot has been submitted under separate cover, as well as the 1981 Correction to Echo Soundings report. *A copy of the Coast Pilot report is appended.*

Respectfully Submitted,



Mark Poeschl, ENS, NOAA

DATE: February 16, 1982

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 863-9428 Sandbridge, Virginia

Period: June 13-November 9, 1981

HYDROGRAPHIC SHEET: H-9948

OPR: D103

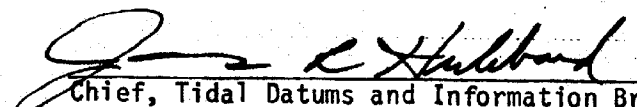
Locality: Delmarvance—offshore of Sandbridge, Virginia

Plane of reference (mean lower low water): 2.59 ft.

Height of Mean High Water above Plane of Reference is 3.60 ft.

REMARKS: Recommended zoning:

- (1) West of 75°50' Zone direct.
- (2) East of 75°50' apply x 1.06 range ratio.


Chief, Tidal Datums and Information Branch

FIELD TIDE NOTE

Field tide reduction of soundings was based on predicted tides from Hampton Roads, Virginia which were corrected in accordance with the prezonning scheme provided with the 1980 Project Instructions and was interpolated by a PDP 8/E computer using program AM500. All times of both predicted and recorded tides are Greenwich Mean Time.

Two tide stations were in operation (as control) during hydrography performed by PEIRCE. Station Sandbridge, Virginia (863-9428) was installed and maintained by personnel from PEIRCE. Station Duck, North Carolina (865-1370) was operational and under the jurisdiction of Atlantic Marine Center, Tides and Water Levels Branch throughout the survey. The location and period of operation of both stations are as follows:

<u>Site</u>	<u>Location</u>	<u>Period of Operation</u>
Sandbridge Pumping Pier Sandbridge, VA	36°41' ^{39.170} 30"N 75°55' ^{20.177} 12"W	11 Jun 1981 - 10 Nov 1981 <i>End</i>
Army Corps of Engineers Pier Duck, NC	36°10'54"N 75°45'00"W	Permanent Station (Primary)

Sandbridge Pumping Pier - Metercraft Model 7602, S/N 705-108 gage was installed on 11 June 1981 and began operation 12 June 1981. The staff was installed during the 1980 field season and was leveled on 12 June 1981. Fisher-Porter ADR, Model 1551, S/N 6511A5632M2, gage was installed on 11 June 1981 and began operations on 12 June 1981. The same staff, leveled 12 June 1981, was used for both gages.

On 25 June 1981, the ADR gage failed. The paper jammed in the punch block assembly and as a result the punch pins were bent. The gage was removed and returned to A.M.C. for repairs on 28 June 1981. The ADR gage was reinstalled at Sandbridge, VA and commenced operating on 29 June 1981.

On 1 August 1981, the recording paper jammed in the punch block assembly and bent the pins in the gage. On 4 August the problem was corrected by replacing the punch block and modified strip plate in the field. Total down time for the gage was 63.5 hours. During the down time of the ADR gage, the Metercraft bubbler gage was operational.

On 7 August 1981, the punch block assembly jammed in the ADR gage. The gage was removed and returned to A.M.C. for inspection. On 10 June, a new Fisher-Porter gage was installed at the site (S/N 7601A1469M23). During the replacement time of the new ADR gage, the bubbler gage was operational. Annotations on the bubbler gage marigrams are questionable for this period of time. A copy of a letter regarding the bubbler gage annotations sent to the Chief, Tide Requirements & Acquisitions Branch, Rockville, Maryland accompanies this tide note.

On 7 September 1981, the bubbler gage failed during hydrographic operations. During the down time of the bubbler gage, the ADR gage was operational. Upon inspection of the gage on 12 September 1981, it was discovered that the orifice was buried below 6" of sand. The problem was rectified by remounting the orifice 2.5 feet above the ocean bottom. The gage was restored to operations on 12 September 1981.

On 16 September 1981 during inspection of the ADR gage, it was found that the gage was punching 12 minutes fast. The conclusion was that the problem resulted

from excessive vibration of the pier and partially by the take-up spring on the gage. The spring was readjusted and the gage commenced operating on 17 September 1981.

On 30 October 1981, the punch block jammed on the ADR gage. The gage was removed and returned to AMC for repair. The punch block assembly was replaced and the gage reinstalled at Sandbridge that same day.

All tidal records were removed from the tide station at Sandbridge, VA on 11 November 1981. The tide station operation was discontinued due to completion of the hydrographic field season by PEIRCE.

Levels: Four spirit level runs were made at the Sandbridge station: (1) on 12 June 1981, to establish tide station prior to hydrographic operations; (2) on 19 August 1981, station releveled by personnel from Tides and Water Levels Branch at AMC; (3) on 1 October 1981, to check the elevation of the tide staff after the passage of Hurricane Dennis; and (4) on 16 November 1981, to level at the removal of the tide station. All information and data was forwarded to Tides and Water Levels Branch, Rockville, Maryland.

Zoning: Zoning is based on the prezoning scheme noted in the Project Instructions with correctors of -1 hours 40 minutes applied to times of high and low tides and a tide value multiplier of 1.38 applied to heights of the tides.

Duck, North Carolina - A check level was performed on this station on the 5 June 1981 prior to commencement of hydrographic operations. The gage was again leveled on

19 November 1981 at the end of the field season. All data was forwarded to Tide and Water Levels Branch, Rockville, Maryland.

Hampton Roads, Virginia - Reference station number 863-8610.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
NOAA Ship PEIRCE S-328
439 West York Street
Norfolk, Virginia 23510

September 11, 1981

TO: Chief, Tidal Requirements & Acquisitions Branch
FROM: *[Signature]*
Commanding Officer
NOAA Ship PEIRCE S-328

SUBJECT: Bubbler Marigrams for August 1981

During the months of June and July, we successfully gathered data from the two tide gages mounted on the Sandbridge Pumping Pier. During the month of August, the ADR gage, with good annotations, remained in operation for most of the month. The Bubbler gage also operated most of the month. However, the Bubbler's time annotations were extremely inconsistent.

The ADR record contains one gap in excess of three days. This gap extends from J.D. 218, 2300Z - J.D. 222, 1712Z. The Bubbler gage was in operation during this period, except for one hour, but its time annotations are questionable.

In an attempt to resolve this problem, overlapping ADR and Bubbler readings were compared at both ends of the ADR "down" period. The ADR readings were hand plotted and mylar overlays were made of the Bubbler readings. The end of gap comparisons indicated that the Bubbler gage time was one hour fast. Green colored annotations to this effect have been made on the Bubbler marigram covering this 3 3/4 day period. It should be emphasized that this is our "best estimate" and a more thorough analysis of the entire month's Bubbler marigram is necessary. The remainder of the month has similar time annotation problems. Apparently many different observers from several sources annotated the marigram during this period. Our tides officer and our contract observer have, again, thoroughly discussed annotations and the first nine days of September have excellent annotations.

Hourly heights normally supplied with this report have not been included because of the ambiguity of the marigram annotation.

The three day, eighteen hour gap exceeds normal hydrographic requirements. If it is impossible to interpolate tidal correctors for the period during which the ADR gage was inoperative resulting in the loss of survey data, we request you advise us as soon as possible.



10TH ANNIVERSARY 1970-1980

National Oceanic and Atmospheric Administration

A young agency with a historic
tradition of service to the Nation

GEOGRAPHIC NAMES

H-9948

Name on Survey	Source of Name											
	A	B	C	D	E	F	G	H	K			
	ON CHART NO. 12207	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST				
Atlantic Ocean (TITLE)	X											1
Dam Neck	X											2
Sandbridge Beach	X											3
Virginia (TITLE)	X											4
NORTH BAY												5
SHIPPS BAY												6
												7
												8
												9
												10
												11
												12
												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25

Approved:

Chris E. Harrington
Chief Geographer - N/C62x5

4 MARCH 1983

FIELD GEOGRAPHIC NAMES

H-9948
PE 20-1-81

Name on Survey	Source of Name										
	A	B	C	D	E	F	G	H	K		
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST			
DAM NECK											1
SANDBRIDGE BEACH											2
											3
											4
											5
											6
											7
											8
											9
											10
											11
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											21
											22
											23
											24
											25

<u>Mid-Depth (m)</u>	SOUND VELOCITY vs. DEPTH (m/sec + 1500)			
	TDC #1 JD 166	TDC #2 JD 178	TDC #7 JD 273	TDC #8 JD 283
0.5	21.82			
1.0		26.45	25.06	17.87
1.5	22.17			
2.5	20.23			
3.0		24.10	24.07	17.92
3.5	17.99			
4.5	15.53			
5.0		17.41	23.42	17.93
5.5	11.43			
6.5	8.07			
7.0		6.79	23.61	17.66
7.5	5.53			
8.5	4.89			
9.0		5.41	23.74	18.16
9.5	4.62			
10.5	4.60			
11.0		5.29	23.76	18.28
11.5	4.66			
12.5	4.70			
13.0		5.20	23.80	18.65
13.5	4.72			
14.5	4.70			
15.0		5.26	23.82	18.70
16.5			23.86	
17.0		5.23		18.66
19.0		5.32		18.81
21.0		5.32		
21.5				18.85
22.5		5.36		

* Hurricane Dennis passes, mixing the water column.

VELOCITY TAPE PRINTOUT

~~000000~~ 0 ~~0000~~ ~~0002~~ 000 000000 000101

~~000090~~ 0 ~~0002~~

~~000140~~ 0 ~~0004~~

~~000190~~ 0 ~~0006~~

~~000250~~ 0 ~~0008~~

~~000310~~ 0 ~~0010~~

~~000370~~ 0 ~~0012~~

~~000430~~ 0 ~~0014~~

~~000500~~ 0 ~~0016~~

~~000560~~ 0 ~~0018~~

~~000630~~ 0 ~~0020~~

~~000710~~ 0 ~~0022~~

~~000790~~ 0 ~~0024~~

~~999990~~ 0 ~~0024~~

✓ DVM 5-27-82

VELOCITY TAPE PRINTOUT

000135 0 0000 0007 000 200000 000181

000180 0 0002

000227 0 0004

000271 0 0006

000318 0 0008

000364 0 0010

000413 0 0012

000457 0 0014

000502 0 0016

000549 0 0018

000595 0 0020

000643 0 0022

999999 0 0022

✓ DVM 5-27-82

VELOCITY TAPE PRINTOUT

9

000040 0 0000 0007 000 283900 020101
 000085 0 0002
 000131 0 0004
 000178 0 0006
 000224 0 0008
 000270 0 0010
 000317 0 0012
 000363 0 0014
 000410 0 0016
 000456 0 0018
 000502 0 0020
 000549 0 0022
 999999 0 0022

Changed Velocity Table
 No. to 9 Because we have
 duplicate Table No's. Table
 7 also is used for vesno
 2830

~~This Velocity Table is
 not needed for this survey.
 Remove from original.~~

~~DUM~~
~~5-27-82~~

OK
 DUM

VELOCITY TAPE PRINTOUT

000136 ✓ 0 0000 0000 000 000000 000181

000185 ✓ 0 0002 ✓

000239 ✓ 0 0004 ✓

000288 ✓ 0 0006 ✓

000343 ✓ 0 0008 ✓

000393 ✓ 0 0010 ✓

000441 ✓ 0 0012 ✓

000494 0 0014 ✓

000545 ✓ 0 0016 ✓

000597 0 0018 ✓

000648 ✓ 0 0020 ✓

000696 0 0022 ✓

000753 0 0024 ✓

999999 0 0024 ✓

✓ DUM 5-27-82

SIGNAL NAMES/SOURCE

002 COROLLA, 1981 ✓	AMCOPS	
004 BACK BAY, 1981 ✓	AMCOPS	
005 SANDBRIDGE PUMPING PIER, 1981 ✓	AMCOPS	
006 SANDFIDDLER, 1981 ✓	AMCOPS	
009 DAM NECK BOG, 1981 ✓	AMCOPS	
010 NE CORNER BOG, 1981 ✓ DAM NECK BOG NE CORNER, 1981	AMCOPS	Not used
011 TECTUNSEN, 1981 ✓	AMCOPS	Not used
012 SANDBRIDGE WATER TANK, 1981 ✓	AMCOPS	
013 DAM NECK NAVY ^{M. J. S. N. B.} WELLS TANK, 1981 ✓ 1963	AMCOPS	Publ. station
014 CAPE HENRY LIGHTHOUSE, 1837 ✓	PUBL. STATION	Not used
018 BATTERY CRAMER, 1980 ✓	PUBL. STATION	
019 VA. BEACH MUNICIPAL WATER TANK, 1953 ✓	PUBL. STATION	Not used
023 CHESAPEAKE LIGHT, 1966 ✓	PUBL. STATION	Not used

SIGNAL TAPE LISTING

002 3	36	22	35633	075	49	49342	250	0000	164670	✓
004 3	36	40	29194	075	54	54781	250	0000	000000	✓
005 5	36	41	39178	075	55	20177	250	0000	000000	✓
006 3	36	44	24748	075	56	30719	139	0000	000000	✓
009 3	36	47	17522	075	57	34990	250	0015	000000	✓
010 3	36	47	18953	075	57	35154	139	0015	000000	✓
011 3	56	45	39786	075	57	00940	139	0000	000000	✓
012 3	36	44	44473	075	56	51556	139	0000	000000	✓
013 3	36	46	13694	075	57	51981	139	0000	000000	✓
014 3	36	55	34335	076	00	27216	139	0050	000000	✓
018 3	36	55	04200	075	59	44439	250	0006	164670	✓
019 3	36	50	31930	075	59	23523	139	0031	000000	✓
023 3	36	54	16153	075	42	47123	139	0000	000000	✓

Checked with Operations.

D.V.M 6-1-82

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	ORIGINATOR <input type="checkbox"/> PHOTO FIELD PARTY <input type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETTIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	FIELD ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	OFFICE ACTIVITY REPRESENTATIVE <input type="checkbox"/> REVIEWER <input type="checkbox"/> 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 L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection 5 - Field Identified 6 - Theodolite 7 - Planetable 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 **PHOTOGAMMETRIC 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.

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

REPORTING UNIT
(Field Party, Ship or Office)
Marine Surveys Div.
Atlantic Marine Ctr.,
Virginia

LOCALITY
Sandbridge Beach

STATE
Virginia

DATE
10/29/81

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

ORIGINATING ACTIVITY
 HYDROGRAPHIC PARTY
 GEODETIC PARTY
 PHOTO FIELD PARTY
 COMPILATION ACTIVITY
 FINAL REVIEW/CAM 31
 QUALITY CONTROL & REVIEW GRP.
 COAST PILOT BRANCH
(See reverse for responsible personnel)

OPR PROJECT NO.
D103

JOB NUMBER
H-9948

DATUM
North American, 1927

DESCRIPTION
(Record reason for deletion of landmark or aid to navigation.
Show triangulation station names, where applicable, in parentheses.)
TANK
(Sandbridge Water Tank, 1981)
Approx. 120 feet above ground

See L-90(82)

POSITION
LATITUDE LONGITUDE
° / ° / // //
D.M. Meters D.P. Meters
36-44 75-56 51.556

METHOD AND DATE OF LOCATION
(See instructions on reverse side)
OFFICE FIELD
F-3-6-1
6-2-81

CHARTS AFFECTED
12205
12207

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	D. E. Nortrup, CDR, NOAA Commanding Officer NOAA Ship PEIRCE
POSITIONS DETERMINED AND/OR VERIFIED	Operations Division, AMC
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	Marine Surveys Division Evaluation and Analysis Group Atlantic Marine Center (RGR)
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION' (Consult Photogrammetric Instructions No. 64.)	
OFFICE	FIELD (Cont'd)
<p>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</p> <p>FIELD</p> <p>I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection</p> <p>A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>	<p>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</p> <p>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</p> <p>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75</p> <p>**PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p>
<p>ORIGINATOR</p> <p><input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)</p> <p>FIELD ACTIVITY REPRESENTATIVE</p> <p>OFFICE ACTIVITY REPRESENTATIVE</p> <p><input checked="" type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE</p>	

RETURN TO NAUTICAL

Logged on 1/21/82
Form Approved. OMB No. 4160-0055

NOAA FORM 77-6
(10-72)

DATA BRANCH FILES

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

To: C322

COAST PILOT REPORT

90
11982
WJ
8
all
H

PLEASE MAIL TO:

Director
National Ocean Survey
National Oceanic and Atmospheric Administration
ATTENTION: C324
Rockville, Maryland 20852

This record of your experience and observations when coasting, entering port, and/or following inside channels will be used to correct, amplify, or confirm the description now given in the Coast Pilot.

Please use additional sheets if more space is needed.

Additional report forms will be provided upon receipt of each report.

GEOGRAPHIC LOCATION

Approximately 9.0 - 11.0nm south of Cape Henry Light, Virginia

LATITUDE 36°44'N (approx)	LONGITUDE 75°53'W (approx)	CHART NUMBER 12207	COAST PILOT NUMBER 4
VESSEL NOAA Ship PEIRCE (S-328)		MASTER/COMMANDING OFFICER Donald E. Nortrup, CDR/NOAA	
DATE OF OBSERVATION Summer 1981		OBSERVER Ship's personnel	

I. LANDMARKS: Mention those visible from seaward and useful for navigation (day and/or night); include natural ranges and indicate the pair of marks forming a range. Photographs of landmarks difficult to describe are solicited; each view should be labeled with the distance off and the direction towards which the camera was pointed.

TYPE	CHARTED		LATITUDE (Approximate)	LONGITUDE	DESCRIPTIVE INFORMATION HELPFUL IN IDENTIFICATION
	YES	NO			
Tank		XX	36°44' 44.473"N	75°56' 51.556"W	Green "golfball" water tank

OK/C324 has copies

II. RADAR: List best radar targets and if known, the maximum useful radar range at which the object can be positively identified and used. Mention under remarks places you have observed radar returns to be misleading.

NAME OR TYPE OF FEATURE (Include approximate latitude and longitude if necessary to identify on chart)	MAXIMUM USEFUL RANGE
Sandbridge Pumping Pier Latitude: 36°41'39.178"N Longitude: 75°55'20.177"W	3.0nm

III. ROUTES: Where entrance and inside routes are not marked by aids to navigation, show recommended directions for Coast Pilot (latitude and longitude of entrance point, and distances and true courses made good); include natural steering ranges if available.

AREA-2 BP-115927	SEE OTHER SIDE
CHARTS	
12200 Applied WBW 2/16/82	SCALE TOO SMALL FOR PILOT + TANK
12205A Applied WBW 2/16/82	Reapplied WBW 3/15/82 - PER TANK FLAG
12207 Applied WBW 2/13/82	Reapplied WBW 3/12/82
12208 Applied WBW 2/18/82	Reapplied WBW 3/15/82
12220 Applied WBW 2/16/82	PER TANK FLAG DATE 2/17/82

Photogrammetry
Returned Items To Be App'd
1-90/82 FEB 1 1982
2/19/82

IV. DANGERS: Mention those of concern to the navigator where special caution should be indicated in the Coast Pilot.

Buried sewage outfall pipeline from Dam Neck area of Virginia Beach, VA. Pipeline is still under construction. Engineering company responsible for construction of line contacted and forwarded enclosed copy of blueprint of pipeline. Offshore end of pipeline to extend one (1) foot off bottom. Recommend no anchoring in area.

Position of pipeline (determined from enclosed blueprint copy):

west end 36°46'29.5"N dogleg: 36°46'49.6"N northeast end: 36°47'11.0"N
 (shoreline): 75°57'16.6"W 75°55'52.8"W 75°55'37.8"W

V. CURRENTS: Indicate places you have experienced conditions of current where special caution should be mentioned in the Coast Pilot.

REF. 2-970(81)

No changes.

VI. ANCHORAGES: Mention best anchorage in the area and other secure anchorages having good holding ground.

LOCATION (Include anchorage bearings and natural ranges if available)

Anchoring NOT recommended in area of sewage outfall pipeline (see Section IV).

TYPE OF BOTTOM OBSERVED:

	EXCEL	GOOD	FAIR	POOR	COMMENT	RECOMMENDED FOR VESSELS:	
						LENGTH	DRAFT
HOLDING QUALITY						_____ TO _____ FT.	_____ TO _____ FT.
PROTECTION OFFERED							
ACCESSABILITY							

VII. REMARKS:

Sandbridge Pumping Pier and Sandbridge Water Tank were located by Third Order Class I methods by personnel from the Operations Division of the Atlantic Marine Center, Norfolk VA. The pier and water tank were used for control stations for surveys PE-20-1-82 (H-9948) and PE-20-3-81 (H-9972).

VIII. OTHER COAST PILOT CHANGES

U.S. COAST PILOT			
NUMBER	EDITION	PAGE	LINE(S)

NOTE: Any chart(s) submitted with your report to show conditions will be replaced free of charge.

READ: STRIKE OUT: INSERT AFTER: (Circle one)

None.

SEE OTHER SIDE

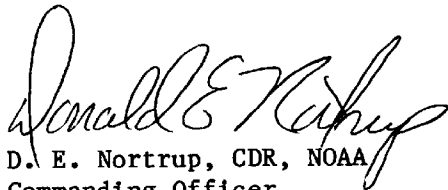
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APPROVAL SHEET

H-9948

Field Operations contributing to the accomplishment of this survey were conducted under my supervision with frequent personal checks of progress and adequacy. This report and the final field sheet have been closely reviewed and found to represent a complete survey adequate to supersede the common coverage portions of all prior surveys cited in Section K of the Descriptive Report.



D. E. Nortrup, CDR, NOAA
Commanding Officer
NOAA Ship PEIRCE, S-328

HYDROGRAPHIC SURVEY STATISTICS

H-9948

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		3
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		10
DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDIAN FILES				3 - Raw Plo Acousticograms	
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES				3 - Sound Vols smooth Plo	misc data

SHORELINE DATA

SHORELINE MAPS(List):

PHOTOBATHYMETRIC MAPS(List):

NOTES TO THE HYDROGRAPHER(List):

SPECIAL REPORTS(List):

NAUTICAL CHARTS(List): 12205, 12207

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			3153
POSITIONS REVISED	0	0	0
SOUNDINGS REVISED	577	36	613
CONTROL STATIONS REVISED	0	0	0
	TIME - HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	34	0	34
VERIFICATION OF CONTROL	18	2	20
VERIFICATION OF POSITIONS	106	0	106
VERIFICATION OF SOUNDINGS	115	30	145
VERIFICATION OF JUNCTIONS	6	4	10
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION	2	0	2
COMPILATION OF SMOOTH SHEET	73	18	91
COMPARISON WITH PRIOR SURVEYS AND CHARTS	0	15	15
EVALUATION OF SIDESCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT	0	35	35
OTHER	0	23	23
DIGITIZING	31	0	31
TOTALS	385	127	512
Pre-processing Examination by G. F. Trefethen, D.V. Mason	Beginning Date 5 Jan 82	Ending Date 11 Jan 82	
Verification of Field Data by M. Stewart, D. Mason, R. Hill, R. Whitfield	Time(Hours) 385	Ending Date 15 Nov 82	
Verification Check by G. F. Trefethen	Time(Hours) 32	Ending Date 15 Oct 82	
Evaluation and Analysis by R. G. Roberson	Time(Hours) 127	Ending Date 26 Jul 83	
Inspection by C. D. Meador	Time(Hours) 18	Ending Date 11 Jul 83	

ATLANTIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO.: H-9948

FIELD NO.: PE 20-1-81

Virginia, Atlantic Ocean, Alongshore--Sandbridge Beach

SURVEYED: June 14 through October 6, 1981

SCALE: 1:20,000

PROJECT NO.: OPR-D103

SOUNDINGS: Ross Digital
Echo Sounder

CONTROL: Cubic Western DM-54 ARGO
(Range/Range),
Del Norte (Range/Range),
Del Norte/Theodolite
(Range/Azimuth)

Chief of Party D. E. Nortrup

Surveyed by G. E. Leigh
..... L. F. Simoneaux
..... M. Mozgala
..... J. W. Bailey
..... R. B. Harris
..... M. E. Poeschl

Automated Plot by Xynetics 1201 Plotter (AMC)

1. INTRODUCTION

- a. No unusual problems were encountered during verification of the survey.
- b. Notes in the Descriptive Report were made in red during verification.

2. CONTROL AND SHORELINE

- a. Control is adequately discussed in sections F and G of the Descriptive Report.
- b. Shoreline on the survey originates with NOAA/NOS-CERC Cooperative Shoreline Movement Study Maps 44 and 45 of 1980 and was applied to the survey from a digital source. A discrepancy was discovered between the location of the pumping pier on map 45 and the location of a triangulation station, PUMPING PIER, 1981 on the end of the pier. The hydrographic location of the offshore end of the pier and the geodetic location of the triangulation station are in excellent agreement.

The temporary pier in approximate Latitude $36^{\circ}46'30''\text{N}$, Longitude $75^{\circ}57'16''\text{N}$ mentioned by the hydrographer in section H of the Descriptive Report was used for the construction of a sixty-six (66) inch sewer outfall extending over one (1) mile offshore. The exact location of the offshore end of the outfall is not known at this time. A telephone conversation with Mr. Bob Bunyan, U.S. Army Corps of Engineers, Norfolk District, (804) 547-9125, found that the temporary pier has been removed completely as required in the construction contract.

3. HYDROGRAPHY

a. Soundings at crossings are in good agreement. Depths vary from one (1) to two (2) feet. In areas of flat bottom the depths vary one (1) foot.

b. Except for the zero (0) depth curve, which could not be defined because of breakers along the shoreline, the standard depth curves could be adequately delineated. As an aid to the chart compiler the thirty-six (36) foot curve was added. Brown and dashed curves were added to show additional bottom relief.

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

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual with the following exceptions:

a. Daily bar checks required by section 1.5.2 of the Hydrographic Manual were not taken. Twenty-five (25) launch days of hydrography were run with twenty-seven (27) of a possible fifty (50) bar checks taken.

b. On Julian day 180 the echo sounder recorder on Launch 2839 was changed. This recorder was used for four (4) days, Julian days 180 through 183. No bar checks were taken during those four (4) days. On Julian days 265, 270 and 271 the same recorder was used. Three (3) bar checks were taken. Bar checks should have been taken when the recorder was first installed in the launch to determine any possible instrument error. The three (3) bar checks taken were taken eighty (80) days after the recorder's installation. The bar checks that were taken may not necessarily represent the conditions that existed earlier.

c. The TC/TI abstract for Launch 2839 submitted with the Descriptive Report was not complete. The TC/TI tape did cover all of the days of hydrography.

d. Velocity tables submitted by the hydrographer used the same table number for different tables. This was corrected by assigning new table numbers where necessary during verification.

e. The NOAA Form 76-40 submitted by the hydrographer was annotated "N/A". Section 4.2.2 of the Project Instructions and section 5.5 of the Hydrographic Manual require the hydrographer to evaluate all landmarks from seaward. This was not done. Also, a tank was located by personnel of Operations Division, Atlantic Marine Center, in Latitude $36^{\circ}44'44.473''\text{N}$, Longitude $75^{\circ}56'51.556''\text{W}$.

f. The hydrograper did not make a comparison with the appropriate (latest) edition of Chart 12207. The latest edition is the 15th edition of August 15, 1981.

g. The hydrographer's comparison with prior surveys was not complete. Wire drag surveys were also listed in section 6.10.1 of the Project Instructions. FE-77 WD, 1949 was not used for comparison.

5. JUNCTIONS

H-9922 (1980)	to the north
H-9959 (1981)	to the northeast
H-9972 (1981)	to the east

Adequate junctions were effected with the following surveys:

There are no contemporary surveys to the south. Depths in the junctional area are in harmony with charted depths.

6. COMPRARION WITH PRIOR SURVEYS

a. Hydrographic Surveys

H-4286 (1922)	1:40,000
H-5990 (1935)	1:40,000

Taken together, these prior surveys cover the present survey area in its entirety.

H-4286 (1922) covers the survey area in its entirety. Alongshore erosion of the shoreline has caused a general deepening trend out to approximately eighteen (18) feet. East of the eighteen (18) foot curve there is a general trend of shoaling on the present survey from one (1) to three (3) feet. There are three (3) areas of considerable difference. They are as follows:

a. In approximate Latitude $36^{\circ} 44' 54''$ N, Longitude $75^{\circ} 52' 45''$ W, the present survey is five (5) to eleven (11) feet deeper than the prior survey. Present survey depths are thirty (30) to thirty-seven (37) feet. The shoalest echo sounder depth on the present survey in the general vicinity is twenty-seven (27) feet.

b. In approximate Latitude $36^{\circ} 43' 15''$ N, Longitude $75^{\circ} 50' 30''$ W, the present survey is from two (2) to four (4) feet deeper and twelve (12) to thirteen (13) feet shoaler than the prior survey.

c. From Latitude $36^{\circ} 43' 00''$ N, Longitude $76^{\circ} 47' 00''$ W to Latitude $36^{\circ} 43' 30''$ N, Longitude $76^{\circ} 46' 50''$ W, the present survey is six (6) to seven (7) feet shoaler than the prior survey.

The shoreline in the survey area has receded approximately 160 meters in the south and remained stable in the north.

H-5990 (1935) covers only a small portion of the present survey's northeastern corner. There is no general trend of shoaling or deepening; depths vary from plus or minus one (1) to three (3) feet.

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

b. Wire Drag Surveys

FE-77 WD (1949) 1:40,000
H-9871 WD (1976) 1:20,000

A comparison with FE-77 WD (1949) and the present survey revealed a single wire drag item located by the prior survey in the common area. A wreck, hung at 41 feet, cleared by 39 feet in latitude $36^{\circ} 45.95' N$, longitude $75^{\circ} 46.32' W$. This wreck, listed as No. 403 in the 1957 Wreck List, was identified as the "TIGER".

There are no conflicts between the effective depths of the wire drag survey and hydrographic survey depths.

A comparison with H-9871 WD (1976) and the present survey revealed one (1) wire drag item in the common area. A wreck, hung at 44 feet, cleared by 43 feet in Latitude $36^{\circ} 45.95' N$, Longitude $75^{\circ} 46.31' W$. This wreck was identified as the "TIGER" on the 1957 Wreck List also as No. 403. The deeper clearance depth on this survey is most probably due to settlement and deterioration. The wreck was brought forward to the present survey from its location on this prior survey. It is recommended that the wreck remain charted in the same location with a clearance of 43 feet.

There are no conflicts between the effective depths of the wire drag survey and hydrographic survey depths.

7. Comparison With Charts 12207 (15TH Edition, AUG 15, 1981)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and miscellaneous sources. Attention is directed to the following:

1. A charted 27-ft sounding in Latitude $36^{\circ} 41' 50'' N$, Longitude $75^{\circ} 54' 22'' W$, falls in present survey depths of thirty-three (33) to thirty-four (34) feet. A note on the prior survey H-4286 (1922), which is the source for this sounding states, "First sounding at beginning of day. Probably too shoal." It is recommended that this sounding be deleted from the chart.

2. The charted wreck, Presurvey Review Item III, in Latitude $36^{\circ} 45' 30'' N$, Longitude $75^{\circ} 56' 46'' W$, was searched for as required in the Presurvey Review with negative results. It is recommended that the wreck be ~~retained~~ on the chart with the notation ED added unless subsequent data indicates otherwise.

3. The charted piles in Latitude $36^{\circ} 45' 42'' N$, Longitude $75^{\circ} 56' 54'' W$, were searched for with negative results. It is recommended that the piles be charted submerged piles unless subsequent data indicates otherwise.

4. An uncharted pier in Latitude $36^{\circ} 41' 39.178'' N$, Longitude $75^{\circ} 55' 20.177'' W$ was located by personnel of the Atlantic Marine Center. It is recommended that the position listed above be used for charting the end of pier, and the pier orientation taken from the present survey.

5. An uncharted landmark ("golfball" tank) was also located by Atlantic Marine Center personnel. The Coast Pilot Report submitted by the hydrographer recommended that this be charted as a landmark. The tank is located in Latitude $36^{\circ} 44' 44.473''$ N, Longitude $75^{\circ} 56' 51.556''$ W. The tank should be charted as a landmark as recommended by the hydrographer. A telephone call to the office of Utility Engineering, City of Virginia Beach, VA established that the tank extends approximately 120 feet above ground. A NOAA Form 76-40 will be submitted with the survey data.

6. An uncharted sewer extending offshore from the Dam Neck area to a bend in the line in approximate latitude $36^{\circ} 46' 47''$ N, longitude $75^{\circ} 55' 56''$ W to the offshore end in approximate latitude $36^{\circ} 47' 07''$ N, longitude $76^{\circ} 55' 41''$ W, should be charted in its proper location after "as built" drawings are submitted by the contractor. Since the last 2400 feet of this line has 300 risers which protrude approximately four and one-half ($4\frac{1}{2}$) feet above the bottom, some type of note may be appropriate to advise the mariner of the existence of the risers.

The present survey except as noted in this and other sections of this report is adequate to supersede the charted hydrography in the common area.

b. Aids To Navigation


One (1) floating aid to navigation falls within the survey limits. This buoy was transferred from H-9972 (1981) to the present survey. This buoy adequately serves its intended purpose.

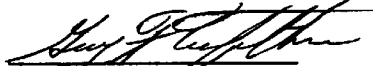
8. COMPLIANCE WITH INSTRUCTIONS


This survey adequately complies with Project Instructions except sections 4.2.2 (landmarks) 6.10.1 (comparison with prior surveys), and 6.10.2 (comparison with charts) of the Project Instructions.

9. ADDITIONAL FIELD WORK

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


Richard H. Whitfield
Cartographic Technician
Verification of Data


Guy F. Trefethen
Senior Cartographic Technician
Verification Check


Robert G. Roberson
Cartographer
Evaluation and Analysis

INSPECTION REPORT
H-9948

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey complies with National Ocean Service requirements except as noted in the Evaluation Report. The survey records comply with NOS requirements except where noted in the Evaluation Report.

Inspected

Charles O. meador

for R. D. Sanocki
Chief, Verification Section
Hydrographic Surveys Branch

Karl Wm. Kieninger

Karl Wm. Kieninger, CDR, NOAA
Chief, Hydrographic Surveys Branch

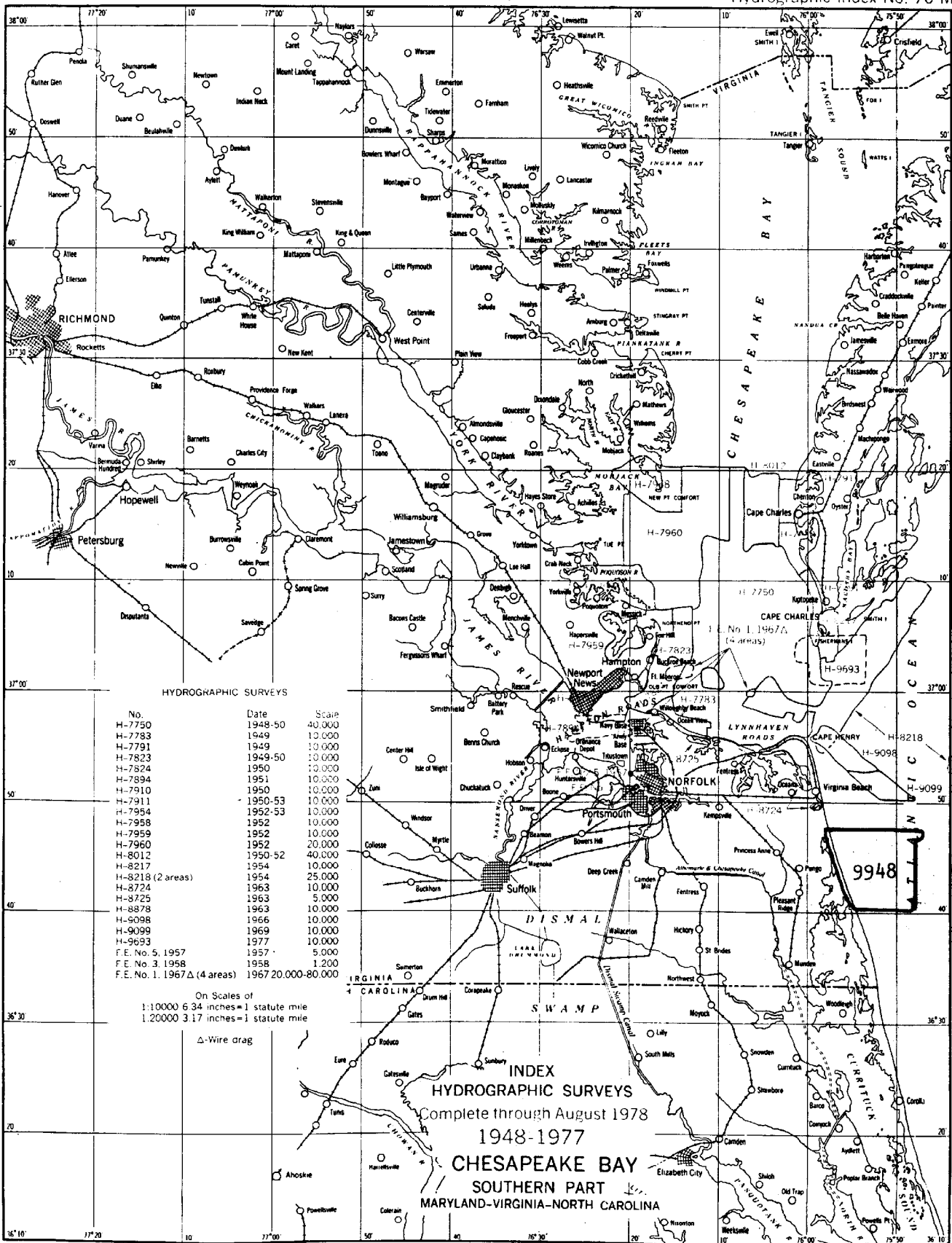
Approved August 1, 1983

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. 70 M



HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-7750	1948-50	40,000
H-7783	1949	10,000
H-7791	1949	10,000
H-7823	1949-50	10,000
H-7824	1950	10,000
H-7894	1951	10,000
H-7910	1950	10,000
H-7911	1950-53	10,000
H-7954	1952-53	10,000
H-7958	1952	10,000
H-7959	1952	10,000
H-7960	1952	20,000
H-8012	1950-52	40,000
H-8217	1954	10,000
H-8218 (2 areas)	1954	25,000
H-8724	1963	10,000
H-8725	1963	5,000
H-8878	1963	10,000
H-9098	1966	10,000
H-9099	1969	10,000
H-9693	1977	10,000
F.E. No. 5, 1957	1957	5,000
F.E. No. 3, 1958	1958	1,200
F.E. No. 1, 1967Δ (4 areas)	1967	20,000-80,000

On Scales of
1:10000 6.34 inches=1 statute mile
1:20000 3.17 inches=1 statute mile

Δ-Wire drag

INDEX
HYDROGRAPHIC SURVEYS
Complete through August 1978
1948-1977
CHESAPEAKE BAY
SOUTHERN PART
MARYLAND-VIRGINIA-NORTH CAROLINA

Diagram 1227-2

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9948

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	SCALE	REMARKS
✓ 12205A	1-10-84	R. Kennedy	Part	After Verification Review Inspection Signed Via Drawing No. 18A Critical Corr. only
✓ 12200	1-26-84	M. SONEIRA	Part	After Verification Review Inspection Signed Via Drawing No. 49 CRITICAL CORR. ONLY
✓ 12207	8-17-84	D.C. Harpine	Full Part Before	After Verification Review Inspection Signed Via Drawing No. 24 Critical CORR ONLY
✓ 12220	8-21-84	D.C. Harpine	Full Part Before	After Verification Review Inspection Signed Via Drawing No. 51 Critical Corrections only
12281	10-1-85	J. Graham	Full Part Before	After Verification Review Inspection Signed Via Drawing No. Prototype
✓ 12208	5-13-88	Ernest V. Monte	Part	After Verification Review Inspection Signed Via Drawing No. Applied Hydro Within Dump Site
✓ 12207	5-17-88	Ernest V. Monte	Part	After Verification Review Inspection Signed Via Drawing No. Re Applied Hydro, Part Within Disposal Site through 12208
✓ 12205A	5-18-88	Ernest V. Monte	Part	After Verification Review Inspection Signed Via Drawing No. ReApp'd Hydro in Disposal Site through 12208, 12207
✓ 12220	5-18-88	Ernest V. Monte	Part	After Verification Review Inspection Signed Via Drawing No. ReApp'd Hydro ^{at date} in Disposal Site through 12207
✓ 12200	5-18-88	Ernest V. Monte	Full Part Before	After Verification Review Inspection Signed Via Drawing No. ReApp'd Hydro in Disposal Site ^{at date} through 12200
88 12200	8-6-90	John Pierce	Fully Applied,	Dwg 52 through chrt. 12207
12207	2-26-90	Don Chisman	Full APPLICATION AFTER VERIFICATION REVIEW INSPECTION	CHT 12207 DWG # 24 & 25
12205	2-28-90	ELLEN SPENCER	FULL APPLICATION AFTER VERIFICATION REVIEW INSPECTION	DRAWING NO. 21 (APPLIED THRU 12207 - SAME SCALE)
12208	11/15/91	J. ROBINSON	Full	Drawing #11 Reconstruction