

9981

Diagrams 1221-2 & 1222-4

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. MI-20-7-81
Office No. H-9981

LOCALITY

State Virginia
General Locality Atlantic Ocean
Locality 15 Miles East of Hog Island

1981 & 82

CHIEF OF PARTY
CAPT R.A. Trauschke & CAPT J.A. Yeager

LIBRARY & ARCHIVES

DATE September 10, 1984

TRAUSCHKE

Area 2

CHTS

12210

12221

12200

13003

See Record of application to Charts
to sign off

HYDROGRAPHIC TITLE SHEET

H-9981

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.

MI 20-7-81

State Virginia

General locality North Atlantic Ocean

Locality 15 Miles East of Offshore Hog Island

Scale 1:20,000

Date of survey 25 Oct 1981-03 Nov 1982
31 JUL 1982-09 Nov 1982

Instructions dated 31 March 1981

Project No. OPR-D103-MI/PE-81
OPR-D103-MI-82

Vessel NOAA Ship MT MITCHELL (VESNO 2220)

Chief of party Capt. R. A. Trauschke, NOAA (1981), Capt. J. A. Yeager, NOAA (1982)

Surveyed by See Remarks

Soundings taken by echo sounder, hand lead, pole Echo sounder

Graphic record scaled by KPP, RW, EM, FS, RC, UG, JZ, BM, MS, CS

Graphic record checked by KWP, EV, KPP, RW, EM, FS

Protracted by N/A

Automated plot by AMC Digital Plotter

Soundings penciled by _____

Soundings in fathoms feet at MLW MLLW Feet at MLLW

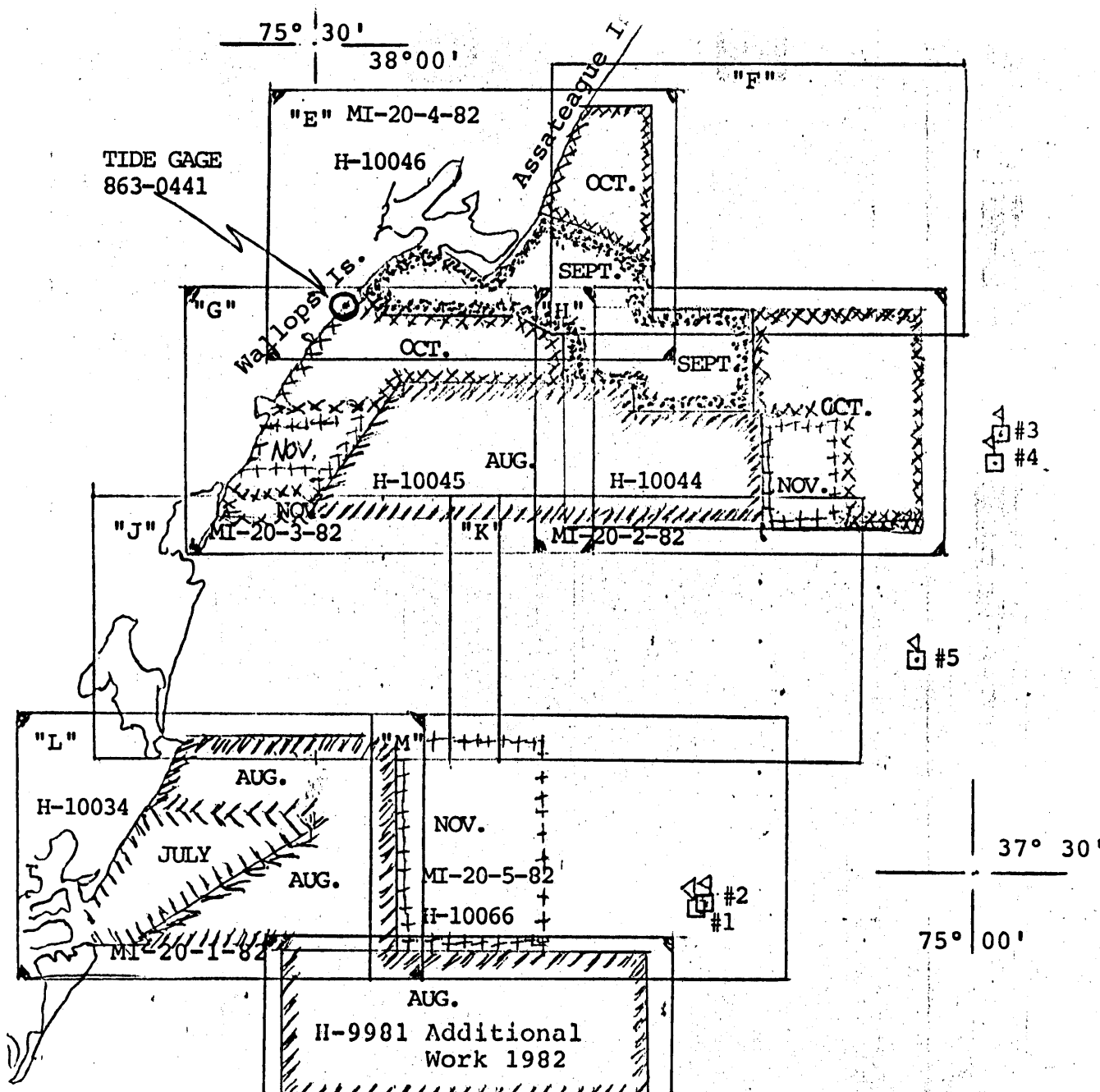
REMARKS: Sheet Manager, LT(JG) K. P. Peters, CDR R. Matsushige, LTCDR L. Lapine,
LT K. W. Perrin, LT E. S. Varney, LT(JG) J. W. Humphrey,
LT(JG) J. Zabitchuck, LT(JG) G. Yates, LT(JG) F. W. Rossmann,
ENS R. D. Henegar, ENS B. L. Coakley, ENS A. E. Orris, ENS D. I. Crews,
ENS C. L. McLean, ENS J. Miller, LT P. M. Thomas (BRN)






Notes in the Descriptive Report were made in red during verification.

STANDARDS CK'D 9-14-84

C.boy

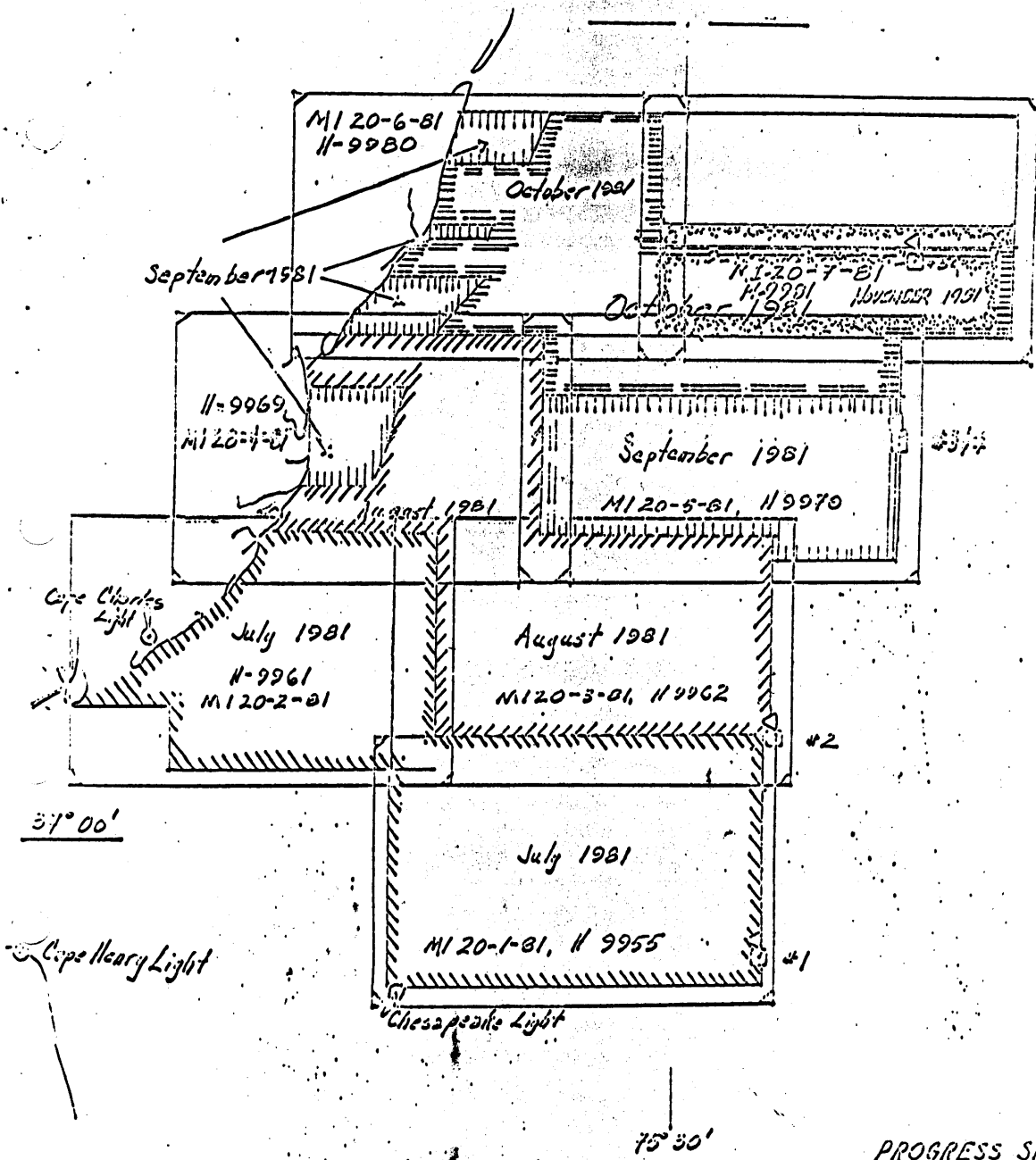
AWOIS SMJM 9/20/84
SURF SMJM 9/20/84



						
	JULY	AUG.	SEPT.	OCT.	NOV.	
	-	1856.3	525.0	467.8	725.2	LNM HYDRO (SHIP)
	-	195.4	22.8	47.5	55	SNM HYDRO (SHIP)
	248.6	587.6	255.1	563.8	218	LNM HYDRO (LAUNCH)
	21	20	18	344.4	20	SNM HYDRO (LAUNCH)
	54	47	36	53	21	BOTTOM SAMPLES
	2	1	1	1	-	NANSEN CAST
	-	784.7	271.9	324.8	396.6	MISC., NM (SHIP)
	199.6	348.4	220.6	263.0	227.6	MISC., NM (LAUNCH)

OPR-D103-MI-82, ASAP
 PROGRESS SKETCH
 HYDROGRAPHIC OPERATIONS
 NOAA SHIP MT. MITCHELL S-222
 J. Austin Yeager, Capt., NOAA
 COMMANDING OFFICER

SCALE OF CHART 12200



PROGRESS SKETCH
 HYDROGRAPHIC OPERATIONS
 NOAA SHIP MT MITCHELL S-22
 ROBERT A. TRAUSCHKE, CAPTAIN, U.S.N.
 COMMANDING

SCALE OF CHART 12200

July	August	Sept	October	November	
1530	1500	746	1426.7	520.4	LHM HYDRO (SHIP)
138	156	63	140	43	SHM HYDRO (SHIP)
500	331	417	307.6	-	LHM HYDRO (LAUNCH)
55	5	15	12	-	SHM HYDRO (LAUNCH)
12	205	29	106	-	BOTTOM SAMPLES
1	1	1	1	1	HAUSEH CAST
207	755	270	5133	173.3	MISC. HM SHIP

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* Removed from Descriptive Report and placed in envelope with original survey records.

A. PROJECT:

This project was begun in 1981 and completed in 1982. The 1981 phase was conducted in accordance with Hydrographic Project Instructions OPR-D103-MI/PE-81, Atlantic Seaboard Area Project (ASAP), DELMARVANC Phase. There were four (4) amendments to these instructions: change numbers 1, 2, 3, and 4 dated 27 April 1981, 6 May 1981, 21 July 1981 and 10 August 1981 respectively. Additional work accomplished in 1982 was conducted in accordance with Hydrographic Project Instructions OPR-D204-MI-82 with change number one (1) dated 5 May 1982 and change number two (2) dated 7 September 1982.

B. AREA SURVEYED:

The survey was conducted offshore Hog Island, Virginia. The limits of the survey are described by the following points:

<u>Latitude</u>	<u>Longitude</u>
37°17.5'N 37°18'-41.1"N	75°32.0'W 75°-31'-13.8"W
37°27.4'N 37°-18'-14.9"N	75°32.0'W 75°-14'-26.6"W
37°27.4'N 37°-26'-24.2"N	75°13.8'W 75°-13'-54.2"W
37°17.5'N 37°-26'-25.6"N	75°13.8'W 75°-31'-46.5"W

The southern portion of the survey, conducted between 25 October 1981 (JD 298) thru 5 November 1981 (JD 309), is described by Latitude 37°17.5 N to Latitude 37°23.0 N. The northern portion of the survey, described by Latitudes 37°23.0 N to 37°27.0 N, was conducted between 31 July 1982 (JD 212) and 09 November 1982 JD 313.

The survey was characterized by an irregular bottom. The shoalest depth of 47 feet was recorded on the western edge of the survey. The depth there increases to 40 feet at Longitude 75°22.0 W and then decreases to 80 feet at the easternmost portion of the survey (Longitude 75°15.5 W). Throughout the survey a general trend of deepening is observed when moving north from the southern portion of the survey (Latitude 37°19.00 N). The depth then shoals again in the northern area of the survey (Latitude 37°26.0 N).

C. SOUNDING VESSEL

The NOAA Ship MT MITCHELL (VESNO 2220) obtained all soundings for this survey. There were no unusual problems encountered during the course of this survey.

D. SOUNDING EQUIPMENT and CORRECTIONS TO SOUNDINGS - see also section 1.b of the Evaluation Report. Also section 4.b.

The following equipment was used by the NOAA Ship MT MITCHELL throughout this survey:

<u>Manufacturer</u>	<u>Equipment Name</u>	<u>Model Number</u>	<u>Serial Number</u>
Ross	Fineline Depth Recorder	5000	1050
Ross	Digitizer	6000	1050
Ross	Transceiver	248-1	219

Soundings were taken with a skag mounted transducer on the center line 32 meters aft of the navigational antenna. A correction for the locational difference is provided for within the online programs (RK110 used in 1981, RK112 used in 1982) and offline (RK210) program (antenna distance = 32.0). ANDIST (antenna distance) is supplied on the parameter tape.

Calibration and phase checks were made regularly throughout the survey, and phase difference adjustments were made online as necessary. Fathograms were scanned and correctors checked by trained experienced survey technicians. Any departure of the trace from the calibration due to phase differences was corrected during the scanning process. Regular soundings were corrected for wave action and phase differences; significant peaks and deeps were inserted via the electronic corrector tape. All records were inspected by the Officer-in-Charge. It was ships policy to concurrently run survey and bridge fathometers^{echo sounder} on the southern portion of the survey; the latter having a wider beam width to aid in the detection of shoals or obstructions. Graphic records from bridge fathometer are neither retained nor part of the survey records.

Corrections to soundings for predicted tides were made online. Predicted tides were based on daily predictions at Hampton Roads gage, station number 863-8610, having tide table index number 2353, with zoning correctors applied as indicated in project instructions for OPR D103-MI/PE-80. A time zone correction of negative two hours and thirty minutes was applied to Hampton Roads prediction, and multiplier of 1.3 applied to the tide heights.

Transducer draft was determined by subtracting the lead line distance from the rail to the water from known distance of rail to transducer (23.68 ft). A transducer draft of 14.1 feet was found on 8 July 1981. The correction was applied online by program RK110. A transducer draft of 13.9 feet was found on 22 July 1982. The correction is applied online by program RK112.

Corrections for the velocity of sound through water were determined from Nansen Cast Data. Nansen Casts were taken on the following dates and locations:

<u>Date</u>	<u>Latitude</u>	<u>Longitude</u>
03 November 1981 (JD 307)	37° 15.'30 N	75° 19.'24 W
15 July 1982 (JD 196)	37° 28.'36 N	75° 12.'36 W
27 July 1982 (JD 208)	37° 27.'00 N	75° 10.'24"
25 August 1982 (JD 237)	37° 46.'05	74° 58'40
22 September 1982 (JD 266)	37° 44.'54"	74° 59'12"
30 October 1982 (JD 303)	37° 37.'48"	75° 02.'42"

All Nansen Casts were taken outside of the survey area.

Correctors were calculated using program RK530.

Settlement and squat corrections will be applied via the TC/TI tapes provided with the data. The correctors were determined on 26 July 1981 by a test conducted off Cape Charles, Virginia. A copy of this data is included with the field records for this survey and will be applied by the Atlantic Marine Center, Norfolk, Virginia.

Data supporting the above corrections are included in the field records of this survey. A copy of an abstract of corrections to echo soundings is in Appendix D of this report. Requests have been sent to Chief, Tides and Water Levels Branch (OA/C23) dated 11-10-81 and 9-16-82 for verified hourly tides.

E. HYDROGRAPHIC SHEETS

Sheets for this survey were drawn aboard the MT MITCHELL using a COMLOT roll-bed plotter. The grids, signals and lattice plotted on the field sheet were made with RK201. Program RK210 in conjunction with parameter and signal tapes, master tapes, electronic corrector tapes, and velocity tapes was used for offline plotting of positions and soundings. All soundings were corrected for predicted tides, draft, instrument error, digitizing error and velocity of sound through water.

Soundings were not corrected for smooth tides or settlement and squat. These corrections will be applied during the final processing at NOAA Atlantic Marine Center (OA/CAM3) Processing Division, Norfolk, Virginia.

There were three field sheets for the southern half of this survey conducted in 1981:

<u>Sheet</u>	<u>Description</u>	<u>Skew</u>
1	Mainscheme	0,21,54
2	Crosslines, Bottom Samples	0,21,54
3	Splits Developments	0,21,54

There are two sheets for the northern half of the survey:

<u>Sheet</u>	<u>Description</u>	<u>Skew</u>
4	Mainscheme	0,21,54
5	Crosslines, Bottom Samples Developments	0,21,54

Field sheets along with field records and the following tapes have been submitted with this report to NOAA Atlantic Marine Center (OA/CAM3) Processing Division, Norfolk, Virginia for verification and smooth plotting:

Hyperbolic Master Tapes
Electronic Control Corrector Tapes
Velocity Corrector Tapes
TC/TI Tapes
Parameter Tapes
Predicted Tide Tapes (ASC II)
Signal Tapes

Information about projection and electronic control parameters are included in Appendix A of this report.

F. CONTROL STATIONS - see also section 4.d of the Evaluation Report.

The following electronic control stations were used for the southern portion of the survey conducted during the 1981 field season:

<u>Station Number, Name</u>	<u>Latitude</u>	<u>Longitude</u>
100 GRAVITY 1965, 1980	36°40'31.453"	075°54'56.471"
200 FEN, 1960	37°05'36.243"	075°58'17.556"
300 H-8-VA-78, 1981	37°51'46.270"	075°22'03.968"

The stations used for the northern portion of the survey conducted during the 1982 field season are as follows:

<u>Station Number, Name</u>	<u>Latitude</u>	<u>Longitude</u>
100 GRAVITY 1965, 1980	36°40'31.453"	075°54'56.471"
414 200 BIRD 1909, RM 5	37°44'17.414"	075°35'11.904"
414 300 JONES, 1981	37°53'16.699"	075°20'31.186"

Each control station is monumented. The stations were established using Third Order Class I survey methods. They were recovered in June/July 1981 and June/July 1982 by officers of the MT MITCHELL. Station descriptions are filed with the National Geodetic Survey. A complete list of stations used for this project and their geographic positions is included in Appendix F of this report.

G. HYDROGRAPHIC POSITION CONTROL

Sound line position for this survey was obtained by equipment manufactured by Odum Offshore Surveys, Inc., i.e. HYDROTRAC in the hyperbolic phase comparison mode. The equipment used and serial numbers in the 1981 field season are as follows:

<u>Location</u>	<u>Equipment Name</u>	<u>Model</u>	<u>Serial Number</u>
Ship (VESNO 2220)	HYDROTRAC Receiver	703	327
	HYDROTRAC Power Amplifier	Type 74-87	539
	Sawtooth Recorder		8224
Slave 1 (Station 100)	Receiver Slave Drive Unit	257	214
	Linear Power Amplifier	74-87	537
	Coupler		131
Slave 2 (Station 300)	Receiver/Slave Drive Unit		226
	Linear Power Amplifier	74-87	536
	Coupler		130
Master (Station 200)	Master Drive Unit		122
	Linear Power Amplifier	74-87	538

The following equipment and serial numbers were used on the north sheet during the 1982 field season:

<u>Location</u>	<u>Equipment Name</u>	<u>Model</u>	<u>Serial Number</u>
Ship (VESNO 2220)	HYDROTRAC Receiver	700	326
	HYDROTRAC Power Amplifier	Type 74-87	538
	Sawtooth Recorder		8501
Slave 1 (Station 100)	Receiver/Slave Drive Unit	257	220
	Linear Power Amplifier	74-87	536
	Coupler		130
Slave 2 (Station 300)	Receiver/Slave Drive Unit		215
	Linear Power Amplifier	74-87	539
	Coupler		133
Master (Station 200)	Master Drive Unit		121
	Linear Power Amplifier	74-87	540

Lane counts and partial lane correctors for the southern sheet conducted in 1981, were determined by the circle calibration method around Chesapeake Light Tower, a Third Order Triangulation Station at Latitude $36^{\circ}54'16.158''$ N, Longitude $75^{\circ}42'47.123''$ W. The circle calibration method is described on pages 4-28 of the Hydrographic Manual (Umbeck, 1976).
Umbeck

Once determined, these correctors were applied online via the HYDRO PLOT controller and offline via electronic corrector tapes. Partial lane counts were checked and recomputed during a calibration check and calibrating out at the end of the survey at Chesapeake Light.

The changes in the correctors from the beginning to the end of the survey were from $-.29$ to $-.33$ on pattern 1 and from $-.15$ to $-.18$ on pattern 2. Whole lane checks were made by making passes alongside a calibration buoy whenever practicable or when the whole lane count was in doubt. The buoy was set by MT MITCHELL using a short scope chain in about 40 feet of water at $36^{\circ}54'16.58''$ N, $75^{\circ}40'47.123''$ W. Its position was determined by noting HYDROTRAC rates when the buoy was set and during several circular passes around the buoy. Partial lane correctors for the northern sheet of the survey were determined by three point sextant calibration. The following visual stations were used:

<u>Visual Station and Numbers</u>	<u>Geographic Position</u>	
	<u>Latitude</u>	<u>Longitude</u>
131 LITTLE MACHIPONGO INLET COAST GUARD	$37^{\circ}27'11.949''$	$075^{\circ}40'30.639''$
135 HOG 1933	$37^{\circ}27'39.565''$	$075^{\circ}40'15.726''$
140 REVEL 1959	$37^{\circ}29'31.700''$	$075^{\circ}37'48.219''$
142 TARR 1962	$37^{\circ}32'11.100''$	$075^{\circ}37'24.750''$

Partial line correctors were applied via the online program (RK112). Calibrations were performed to check whole lanes and determine partial lane correctors daily.

In the 1981 field season, while conducting the south sheet, the partial lane correctors for pattern one had a range of -0.29 to -0.33 . Pattern two had partial lane corrector range of -0.15 to -0.18 . The range of partial correctors for pattern one in the 1982 field season (North sheet) was -3.90 to $+0.42$. Pattern two had a partial corrector range of -2.25 to -0.20 .

A sawtooth recorder was used to monitor the whole lane count while the ship was underway and the HYDROTRAC system was functioning properly. A digital readout of the count was monitored via an interface and the whole lane count annotated on the sawtooth recorder.

H. SHORELINES

There was no shoreline within the area of the survey.

I. CROSSLINES

A total of 74.5 miles of crosslines were run during this survey. This constitutes 7.9% of the mainscheme hydrography. Agreement between mainscheme soundings and crossline soundings were favorable and satisfactory with differences of 0 to 1 foot common.

J. JUNCTIONS - see also section 5 of the Evaluation Report

The following contemporary surveys junction with this survey:

<u>Registry #</u>	<u>Field #</u>	<u>Scale</u>	<u>Area of Junction</u>
H-9980	MI-20-6-81	1:20,000	western edge
H-9970	MI-20-5-81	1:20,000	southern edge
H-10034	MI-20-1-82	1:20,000	northwest corner
H-10066	MI-20-5-82	1:20,000	northern edge

This survey was conducted over two field seasons, the south sheet in 1981 and the north in 1982, the borders were therefore treated as junctions and closely examined. Comparison of the north and south sections of this survey were in excellent agreement with no indication of discrepancies in contour patterns. Survey H-9980 junctions with the western edge of this survey and has a common area described by Latitude $37^{\circ}17.5' N$, Longitude $75^{\circ}30'.0 W$, Latitude $37^{\circ}23'.0 N$, Longitude $75^{\circ}14'.0 W$, and Latitude $37^{\circ}23'.0 N$, Longitude $75^{\circ}30'.0 W$. Comparison with this survey was excellent with sounding agreement 0 to +/- 1 foot. Prior survey H-9970 borders the southern section of this survey and does not overlap. Comparison with this survey was excellent and exhibits no discrepancies in contour patterns. Survey H-10034 borders the northwestern section of this survey. Soundings were in general agreement within +/- 2 feet with a maximum discrepancy of 3 feet. Contours agreed well. Because H-10066 was conducted during the same field season by the same vessel there was no overlapping of borders. Soundings compared well and contour lines were in agreement. Surveys H-9970, H-9980, and H-9981 south, conducted in the 1981 field season and surveys H-9981 north, H-10034 and H-10066 conducted in the 1982 field season were run by the same vessel, NOAA Ship MT MITCHELL (VESNO 2220).

K. COMPARISON WITH PRIOR SURVEYS - see also section 6 of the Evaluation Report

There were no ^Ppresurvey ^{Review} items within the limits of this survey. Comparisons were made with the following prior surveys:

<u>Survey</u>	<u>Scale</u>	<u>Year</u>
H-4194	1:40,000	1921
H-5770	1:40,000	1934
H-5771	1:40,000	1935
H-5988	1:40,000	1935
H-5991	1:40,000	1935

- Not necessary - the other four (4) surveys cover the entire survey area and are most recent.

The present survey when compared to the western edge of H-5771 shows a deepening trend by two to five feet. Immediately west, the area described by connecting the following points: Latitude 37°20'N, Longitude 75°30', Latitude 37°23' N, Longitude 75°28' W, Latitude 37°23' N, Longitude 75°24' W, Latitude 37°20' N, Longitude 75°24' W, exhibits a shoaling trend of two to eleven feet. The area east of this is generally deeper by five to ten feet. Prior surveys H-5988, H-5991 and H-4194 had a common area with the southern portion of the present survey. All bounded to the north by 37°20' W, H-4194 and H-5988 covers the area between the western edge of the present survey to Longitude 75°23'W. Survey H-5991's common area of H-5988, and H-4194 agrees well with the present survey, with no apparent trends. H-5770 has a common area with the northwestern portion of this survey described by the area contained within Latitude 37°23.0, Longitude 75°30.0, Latitude 37°23.0, Longitude 75°28.0, Latitude 75°25.5 and Longitude 37°26.0 and Latitude 37°26.0, Longitude 75°30.0. The present survey exhibits no apparent trends of deepening and shoaling, most depths agreeing within +/- 1 foot.

L. COMPARISON WITH THE CHART - see also sections 4g and 7.2 of the Evaluation Report.

This survey shared a common area with charts 12210, 12221, and 12200. The northern portions of the survey, north of Latitude 37°20.7' N is covered by chart 12210, 25th Edition, 18 October 1980, scale 1:80,000. The depth of this survey was in general agreement with the chart and exhibit no apparent trends. The following are the largest discrepancies noted with depth in feet.

<u>Item</u>	<u>Chart Depth</u>	<u>Survey Depth</u>	<u>Latitude</u>	<u>Longitude</u>
A	67	76 71-87 ft	37°21.8' N	75°24.1' W
B	84	74 84-85 ft	37°22.75 N	75°25.2' W
C	58	68 63-68 ft	37°21.7 N	75°29.3' W
D	92	82 88-91 ft	37°24.4	75°18.9
E	88*	97 97-108 ft	37°24.6	75°14.7
F	77	88 85-89 ft	37°23.4	75°22.6
G	83	96 88-97 ft	37°24.1	75°21.4
H	76	89 83-88 ft	37°25.7	75°19.8
			24	

The area west of 75°29.0 W and south of 37°24.0' N was covered by chart 12221, 50th Edition, 18 July 1981, scale 1:80,000. The chart agreed well with the survey with sounding depths agreeing within one foot. The only discrepancy was Item C listed above, where charts 12221 and 12210 share a common area.

The entire survey was covered by chart 12200, 33rd Edition, 25 October 1980, scale 1:416,944. The survey depths, when converted to fathoms, agree well with the chart.

* 89 ft sounding on present survey approximately 300 meters to the east.

M. ADEQUACY OF THE SURVEY

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

N. AIDS TO NAVIGATION

There were no navigational aids within the area of this survey.

O. STATISTICS

The following statistics were compiled during this survey:

<u>Description</u>	<u>S sheet</u>	<u>N sheet</u>	<u>total</u>
Number of positions	2169	1633	3802 3847
Nautical Miles of Mainscheme Hydrography	566.0	373.6	939.6
Nautical Miles of Crosslines	34.0	40.5	74.5
Nautical Miles of Development	173.7	118.1	291.8
Total Miles of Hydrography	773.7	532.2	1305.9
Total Miscellaneous Miles	295.4	268.0	563.4
Total Miles	1069.1	800.2	1869.3
Total Area (Miles)	70.2	70.0	140.2
Nansen Casts	1	3	4
Bottom Samples	40	20	60

P. MISCELLANEOUS

The southern portion of the survey was conducted in 1981. The Descriptive Report and field sheets for the 1981 work were forwarded at that time. This Descriptive Report describes the field work from 1981 and 1982 to make a single complete report that covers both years' work.

During the smooth plotting of the field sheet, one position (position #205) was not plotted due to operator error. This position was determined by overlaying the smooth field sheet over rough field sheet; the soundings were copied from the rough plot by hand.

RK110 Hyperbolic Real Time Plot was used online by the ship, VESNO 2220, for data acquisition during the 1981 field season. RK112 Hyperbolic Real Time Plot was used for online data acquisition in the 1982 field season.

All information regarding tide gauges, that is, installation, removal, leveling, and marigram records have been sent to Chief, Tides and Water Levels Division (OA/C234), NOAA, National Ocean Survey, Rockville, Maryland. Any information regarding those records should be referred to Chief, Tides and Water Levels Division.

Q. RECOMMENDATIONS

None.

R. AUTOMATED DATA PROCESSING

The following HYDROPLOT programs were used to acquire and process survey data:

<u>Program Name</u>	<u>Version</u>
RK110 Hyperbolic Real Time Plot	01-30-76
RK112 Hyperbolic real Time Plot	08-04-81
RK201 Grid Signals and Lattice Plot	10-21-80
RK210 Hyperbolic Non-Real Time Plot	07-25-80
RK300 Utility Computations	10-21-80
RK330 Data Reformat and Check	05-10-76
RK360 Electronic Corrector Tape Abstract	02-21-76
AM500 Predicted Tide Generator	11-10-72
RK530 Velocity Correction computations	05-10-76
RK602 Extended Lane Oriented Editor	05-12-75

S. REFERENCE TO REPORTS:

Coast Pilot Report - NOAA Ship MT MITCHELL, Eastern Shore Virginia, OPR-D103-MI/PE-81, and OPR-D103-MI-82, ASAP.

Horizontal Control Reports OPR-D103-MI/PE-81 and OPR-D103-MI-82.

Respectfully submitted,



Kenneth P. Peters
Lieutenant (junior grade), NOAA

APPENDIX F

LIST OF STATIONS

ABSTRACT OF POSITIONS

VESNO: 2220

FIELD # MI 20-7-81

REG. # H-9981

DAY	POSITIONS	CTRL	S1	M	S2	REMARKS
298	001-024	05	100	200	300	BS X 1-22
298	025-044	05	100	200	300	M/S
300	045-046	05	100	200	300	BS X 23-24
301	046-063	05	100	200	300	BS X 25-40, POS 59 REJECT
301	064-206	05	100	200	300	M/S
302	207-672	05	100	200	300	M/S
306	673-750	05	100	200	300	XL
307	751-763	05	100	200	300	XL
307	764-1260	05	100	200	300	M/S
308	1261-1868 1600	05	100	200	300	HOT 1261-1600 MS
308	1601-1868	05	100	200	300	1601-1868 DEVELOP.
						1710 REJECT
309	1869-2169	05	100	200	300	1874-1875 REJECT
						M/S DEVELOPMENT/SPLITS

CTRL CODES

01 - VISUAL, 03 - THEODOLITE, 04 - RANGE-RANGE,
 05 - HYPERBOLIC, 08 - HYPERVISUAL, 09 - RANGE-VISUAL

001

002

003

004 SIGNAL TAPE--NAMES

005

006 SURVEY H-9981, FIELD NUMBER MI-10-7-81

1981

007

008

009 STA.# NAME

010

011 100 SANDRIDGE HYDROTRAC SITE (GRAVITY, 1965 (1980))

012 129 CHESAPEAKE LIGHT TOWER (CALIBRATION PT.)

020 200 FISHERMANS I. HYDROTRAC SITE (FFN, 1960)

039 300 ASSATEAGUE I. HYDROTRAC SITE (H-8-UA-78)

MI-20-7-81

SIGNAL LISTINGS

001	100	4	36	40	31453	075	54	56471	250	0004	171859
002	129	3	36	54	16158	075	42	47123	139	0039	000000
010	200	7	37	05	36243	075	58	17554	250	0050	171859
029	300	4	37	51	46270	075	22	03968	250	0004	171859

MASTER SIGNAL LISTINGS

MI-20-7-81

H 9981

1982

• 001	100	4	36	40	31454	075	54	56471	250	0000	171859	✓
002	110	4	36	54	16158	075	42	47123	139	0000	000000	
• 003	120	4	37	23	39409	075	42	31434	139	0000	000000	
004	125	4	37	23	39453	075	42	31515	139	0000	000000	
005	130	0	37	27	12013	075	40	30714	139	0013	000000	
• 006	131	6	37	27	11947	075	40	30639	139	0015	000000	✓
007	132	2	37	27	12019	075	40	30565	250	0013	000000	
• 008	135	4	37	27	39565	075	40	15726	139	0000	000000	✓
• 009	140	4	37	29	31700	075	39	48219	139	0000	000000	✓
• 010	142	0	37	32	11100	075	37	24750	139	0000	000000	✓
011	145	6	37	34	33483	075	36	01191	139	0000	000000	
012	146	4	37	34	23559	075	37	03467	139	0000	000000	
013	150	0	37	35	21197	075	36	57542	139	0000	000000	
014	155	4	37	36	21103	075	38	45122	139	0000	000000	
015	160	4	37	37	12105	075	38	52930	139	0000	000000	
016	165	3	37	38	05988	075	35	53840	139	0000	000000	
017	167	4	37	40	21070	075	35	40852	139	0000	000000	
018	170	1	37	41	41887	075	35	11562	139	0000	000000	
019	175	4	37	41	49767	075	36	50225	139	0000	000000	
020	180	5	37	44	16910	075	35	09494	139	0000	000000	
400 • 021	200	2	37	44	17414	075	35	11904	250	0000	171859	-OFF
022	210	4	37	46	25644	075	33	44864	139	0000	000000	-OFF
• 023	240	5	37	49	00905	075	30	11209	139	0000	000000	
024	250	7	37	49	48629	075	31	22808	139	0000	000000	
025	270	3	37	50	32204	075	28	48887	139	0000	000000	✓
• 026	273	4	37	51	08099	075	28	16909	139	0000	000000	
027	280	4	37	52	34534	075	26	38652	250	0000	000000	
028	288	7	37	51	46270	075	22	03968	250	0004	000000	✓
029	290	0	37	51	48970	075	22	06649	139	0000	000000	
030	291	7	37	51	48913	075	22	06592	250	0004	000000	
031	299	5	37	53	15578	075	20	31626	139	0007	000000	
410 • 032	300	0	37	53	16699	075	20	31186	250	0000	171859	JONES, 1981 -OFF
• 033	310	4	37	54	39797	075	21	22991	139	0000	000000	✓
034	319	6	37	55	09071	075	19	21586	139	0000	000000	
035	320	4	37	55	09696	075	19	22183	139	0000	000000	
036	321	2	37	55	10324	075	19	22052	250	0004	000000	
037	324	3	37	55	50303	075	18	57172	250	0000	000000	
038	327	3	37	56	40422	075	18	33276	250	0000	000000	
039	330	7	37	57	27184	075	17	56400	250	0000	000000	
• 040	340	3	37	58	20844	075	17	15574	250	0000	000000	
041	350	3	37	59	10452	075	16	35025	250	0000	000000	
042	370	3	38	00	55525	075	15	17408	139	0000	000000	

OPR-D103-MI-82
 SIGNAL NAMES

 001
 002
 003
 004

005 SIGNAL	NAME	QUAD#	STA#
001	100= GRAVITY, 1980		PUBLISHED BY NGS
002	110= CHESAPEAKE LIGHT TOWER, 1966	360754	1047
003	120= HOG ISLAND CG LOT, 1959	370753	1119
004	125= HOWARD, 1962 (MARK ON CATWALK)	370753	1038
005	130= LITTLE, 1959	370753	1048
006	131= LITTLE MACHIPONGO INLET CG LOT, 1959	370753	1121
007	132= LITTLE ECC, 1982		FIELD POSITION
008	135= HOG, 1933	370753	1037
009	140= REVEL, 1959	370753	1061
010	142= TARR, 1962	370754	1134
011	145= TULL, 1962	370754	1146
012	146= FARRAMORE BEACH CG TOWER, 1962	370754	1186
013	150= BRAD, 1962	370754	1147
014	155= HAMMOCK VFC, 1933	370754	1072
015	160= BURTON VFC, 1933	370754	1026
016	165= TOMPKINS, 1962	370754	1143
017	167= METOMPKIN INLET CG LOT #152, 1959	370754	1177
018	170= TERN, 1962	370754	1139
019	175= JOYNES-2, 1934	370754	1082
020	180= BIRD, 1909	350754	1020
021	200= BIRD, 1909, RM 5		FIELD POSITION ✓
022	210= SUTTON, 1949	370754	1132
023	240= FLAT, 1962	370754	1061
024	250= BARNES, 1909	370754	1008
025	270= WALLOPS ISLAND NEW NASA TANK, 1975	370751	1082
026	273= WALLOPS ISLAND NASA METMAST W80, 1968		PUBLISHED BY NGS
027	280= EASY WALLOPS BEACH CG LOT #3, 1949	370751	1019
028	288= H 8 VA 1978		FIELD POSITION
029	290= ASSATEAGUE BEACH CG LOT #150, 1959	370751	1071
030	291= ASSATEAGUE BEACH CG LOT ECC, 1982		FIELD POSITION
031	299= ASSATEAGUE NPS DOME, 1982		FIELD POSITION
032	300= JONES, 1981		PUBLISHED BY NGS
033	310= ASSATEAGUE LIGHTHOUSE, 1909	370751	1073
034	319= STEEL, 1962, RM 2		FIELD POSITION
035	320= STEEL, 1962	370751	1056
036	321= STEEL, 1962, RM 1		FIELD POSITION
037	324= H 7 VA 1978		FIELD POSITION
038	327= H 6 VA 1978		FIELD POSITION
039	330= H 5 VA 1978		FIELD POSITION
040	340= H 4 VA 1978		FIELD POSITION
041	350= H 3 VA 1978		FIELD POSITION
042	370= H 2 VA 1978		FIELD POSITION

200, FEN, 1960

APPENDIX G

ABSTRACT OF POSITIONS

ABSTRACT OF POSITIONS - 1982

VESNO: 2220
Year - 1982

FIELD # MI 20-7-81

REG. # H 9981

DAY	POSITIONS	CTRL	S1	M	S2	REMARKS
212	3001-3013	05	100	200	300	crosslines
212	3014-3046	05	100	200	300	main scheme
212	3047-3067	05	100	200	300	crosslines
213	3068-3160	05	100	200	300	crosslines
213	3161-3410	05	100	200	300	main scheme
214	3411-3562	05	100	200	300	main scheme
215	3563-4121	05	100	200	300	main scheme
216	4122-4223	05	100	200	300	main scheme
217	4224-4254	05	100	200	300	developments
218	4255-4401	05	100	200	300	developments
227	4402-4485	05	100	200	300	developments
228	4486-4578	05	100	200	300	developments
229	4579-4618	05	100	200	300	developments - reject 4616
313	4682-4691	05	100	200	300	developments

CTRL CODES

01 - VISUAL, 03 - THEODOLITE, 04 - RANGE-RANGE,
05 - HYPERBOLIC, 08 - HYPERVISUAL, 09 - RANGE-VISUAL

APPENDIX J

APPROVAL SHEET

APPROVAL SHEET

The field work on Hydrographic Survey H-9981 (MI-20-7-81) was under my daily supervision. The field sheets and records have been reviewed and approved by me.



Robert A. Trauschke
CAPTAIN, NOAA
Commanding, NOAA Ship MT MITCHELL S-222

APPENDIX I

LANDMARKS FOR CHARTS

"THERE WERE NO NON-FLOATING AIDS OR LANDMARKS WITHIN THE AREA OF THIS SURVEY."

APPROVAL SHEET

Survey H-9981Field No. MI-20-7-81

Date _____

The field work of 1981 was conducted under the command of CAPT Robert A. Trauschke, NOAA. The field sheet and report for that part of this survey was reviewed and approved by Captain Trauschke. See attached copy of his approval sheet.

The 1982 field work for this survey was conducted under my daily review and supervision. I have reviewed this report with the final field sheet and approve them and the accompanying records. Together they represent a complete survey adequate to supercede all prior surveys for charting purposes.


J. Austin Yeager
Captain, NOAA
Commanding
NOAA Ship MT MITCHELL

DATE: January 6, 1983

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 863-8863 Chesapeake Bay Bridge Tunnel, Virginia

Period: July 31-August 17, 1982

HYDROGRAPHIC SHEET: H-9981

OPR: D103

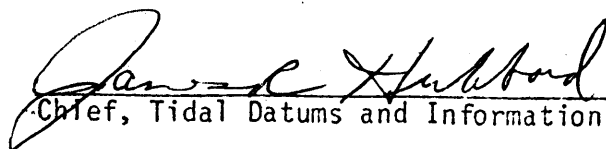
Locality: Offshore Hog Island, Virginia

Plane of reference (mean lower low water): 24.84 ft.

Height of Mean High Water above Plane of Reference is 2.7 ft.

REMARKS: Recommended Zoning:

Apply -30 minute time correction and x1.38 range ratio.


Chief, Tidal Datums and Information Branch

DATE: February 12, 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): 863-1542 Sand Shoal Inlet, VA

Period: October 25 - November 5, 1981

HYDROGRAPHIC SHEET: H-9981

OPR: D103

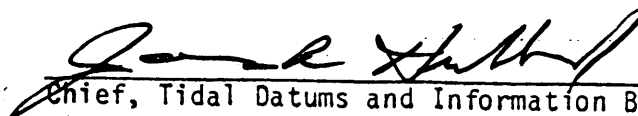
Locality: Delmarvance - Offshore of Hog Island, VA

Plane of reference (mean lower low water): 13.38 Ft.

Height of Mean High Water above Plane of Reference is 4.22 Ft.

REMARKS: Recommended Zoning

Apply -15 minute time correction and x0.87 range ratio.


Chief, Tidal Datums and Information Branch

HYDROGRAPHIC SURVEY STATISTICS

H-9981

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		8
DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDIAN FILES	2				
ENVELOPES					2
VOLUMES	2				
CAHIERS	2				
BOXES		1			

SHORELINE DATA

SHORELINE MAPS(List):

PHOTOBATHYMETRIC MAPS(List):

NOTES TO THE HYDROGRAPHER(List):

SPECIAL REPORTS(List):

NAUTICAL CHARTS(List):

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			3847
POSITIONS REVISED	25		25
SOUNDINGS REVISED	150		150
CONTROL STATIONS REVISED			
	TIME - HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	34	12	46
VERIFICATION OF CONTROL	8		8
VERIFICATION OF POSITIONS	45		45
VERIFICATION OF SOUNDINGS	167		167
VERIFICATION OF JUNCTIONS		4	4
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	70		70
COMPARISON WITH PRIOR SURVEYS AND CHARTS		15	15
EVALUATION OF SIDESCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		37	
OTHER		5	
	4		
TOTALS	328	73	401

Pre-processing Examination by
H. Smith, F. Saunders, J. Bradford, L. CramBeginning Date
4 JAN 1982Ending Date
15 FEB 1982Verification of Field Data by
J. B. Wilson, R. G. RobersonTime(Hours)
328Ending Date
29 MAR 1984Verification Check by
H. Smith, L. Cram, C. Meador, R. RobersonTime(Hours)
65Ending Date
9 FEB 1984Evaluation and Analysis by
L. G. Cram, R. G. RobersonTime(Hours)
73Ending Date
18 MAY 1984Inspection by
C. D. MeadorTime(Hours)
14Ending Date
17 MAY 1984

ATLANTIC MARINE CENTER
EVALUATION REPORT

Survey No.: H-9981

Field No.: MI-20-7-81

Virginia, Atlantic Ocean, 15 Miles East of Hog Island

Surveyed: 25 October through 5 November 1981 and
31 July through 9 November 1982

Scale: 1:20,000

Project No.: OPR-D103-MI/PE-81
and OPR-D103-MI-82

Soundings: Ross Digital Echo Sounder

Control: Odom Offshore Surveys,
HYDROTRAC (Hyperbolic
mode)

Chief of Party.....R. A. Trauschke (1981)
.....J. A. Yeager (1982)

Surveyed byR. K. Matsushige
.....L. A. Lapine
.....K. W. Perrin
.....E. S. Varney
.....P. M. Thomas (RN)
.....J. W. Humphrey
.....K. P. Peters
.....G. R. Yates
.....F. W. Rossmann
.....J. Zabitchuck
.....R. D. Henegar
.....B. L. Coakley
.....A. E. Orris
.....D. I. Crews
.....C. N. McClean
.....J. A. Miller

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

1. INTRODUCTION

a. During verification, the bottom characteristics were inked on the smooth sheet in the order of color, size, noun instead of the proper order of size, color, noun as required by section 4.7.2 of the Hydrographic Manual.

The Quality Control Inspector did not find the effort to correctly ink the bottom characteristics justifiable and the verifier was not required to make the correction.

b. The transducer draft for the sounding vessel in 1982 was found to be 13.9 feet; this was correctly applied to the survey data on the

corrector tape. During processing of the survey, the draft was changed to fourteen (14.0) feet. The result being a 0.1 foot error in all depths acquired during the 1982 field season. Considering the bottom topography in the survey area, it is felt that there is no adverse impact on the quality of this survey and the smooth sheet was not replotted.

c. Notes in the Descriptive Report were made in red during verification.

2. CONTROL AND SHORELINE

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

b. There is no shoreline within the area surveyed.

3. HYDROGRAPHY

a. Soundings at crossings agree within the criteria stated in sections 4.6.1 and 6.3.4.3 of the Hydrographic Manual and section 6.6 of the Project Instructions.

b. The standard depth curves could be drawn in their entirety. The charted ninety (90) foot curve was drawn in brown on the smooth sheet. Additional dashed and brown curves were drawn to better show the bottom relief.

c. Development of the bottom configuration and determination of least depths is very well done.

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. A negative report on dangers to navigation was not submitted as required by section 6.12 of the Project Instructions for both 1981 and 1982. There are no dangers to navigation within the limits of this survey.

b. A vertical cast comparison with the echo sounder was not performed by the hydrographer to determine instrument error as required by section 4.9.5.1.2 of the Hydrographic Manual.

c. Supporting data for velocity table 5 (1982) was not submitted with the field records. The correctors on table 5 compare well with the other velocity tables prepared in 1982. The table was left as is; it does not appear that the survey was adversely affected.

d. In 1981 signal number 200 was used for station FEN and 300 for H 8 VA 78. In 1982 signal number 200 was used for station BIRD and 300

for JONES. The signal numbers were revised at AMC to permit processing of the survey.

e. The hydrographer failed to submit a report on currents or a negative report as per section 8.2.2 of the 1982 Project Instructions.

f. The survey was not submitted to AMC in the prescribed time interval of six (6) weeks after termination of field operations found in section 6.13 of the Project Instructions. The survey was received one (1) month late.

g. The hydrographer did not make comparison with the latest editions of charts 12210 and 12221 as per section 6.10.2 of the Project Instructions. It was determined during evaluation and analysis that there have been no changes to these charts in the common area. The comparison made during evaluation and analysis was with the appropriate editions.

h. Spacing between soundings in Latitude 37°25'54"N, Longitude 75°18'18"W exceeds the criteria of 6mm found in sections 1.4.6 and 4.5.6 of the Hydrographic Manual because the hydrographer was using an excessive sounding interval. The interval was quickly changed and this problem existed only for a few soundings. An inspection of the echogram showed a flat bottom profile. No additional soundings were scaled and inserted into the survey records.

5. JUNCTIONS

H-9970 (1981) to the south
H-9980 (1981) to the west
H-10034 (1982) to the northwest
H-10066 (1982) to the north

Adequate junctions were effected with H-9980 (1981), H-10034 (1982) and H-10066 (1982) and the present survey.

The smooth sheet for survey H-9970 (1981) is archived at headquarters and a standard junction was not made. The comparison between a stable base copy of survey H-9970 (1981) and the present survey shows excellent agreement in the junctional area and the junctional curves can be completed.

There are no contemporary surveys to the east of the present survey. The charted depths and present survey depths along the east edge of the present survey are in harmony.

6. COMPARISON WITH PRIOR SURVEYS

H-5770 (1934) 1:40,000
H-5771 (1935) 1:40,000
H-5988 (1935) 1:40,000
H-5991 (1935) 1:40,000

The above surveys taken together cover the entire present survey area.

Soundings on these prior surveys are generally within plus or minus six (6) feet of present survey depths. The locations of deeps and highs show substantial agreement between the prior and present surveys. There is better delineation of all features on the present survey because of its greater sounding density.

Scattered soundings on H-5771 (1935) are up to eleven (11) feet shoaler than present survey depths. A fifty-eight (58) foot prior survey sounding in Latitude 37°21'21"N, Longitude 75°24'50"W is twenty-four (24) feet shoaler than present survey depths. The present survey has a fifty-seven (57) foot sounding in Latitude 37°21'11.77"N, Longitude 75°24'47.25"W, 400 meters southeast of the prior survey sounding. On H-5771 (1935), these extreme differences in depths may be attributed to the inherent inaccuracies of the Radio Acoustic Ranging positioning method, errors in reading the old style flashing light echo sounder and problems which the field encountered in the determination of sound velocity correctors for depth. Discussions of these problems and their field and office solutions can be found in the Descriptive, Verification and Review Reports for H-5771 (1935).

Considering the bottom composition, the time that has elapsed between the completion of the prior and present surveys and the use of improved hydrographic surveying technology, the present survey is adequate to supersede the prior surveys in the common area.

7. COMPARISON WITH CHARTS 12200 (33rd Edition, OCT 25/80)
12210 (27th Edition, OCT 2/82)
12221 (51st Edition, JAN 30/82)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and is adequately discussed under that comparison.

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

b. Aids to Navigation

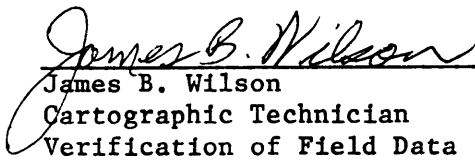
There are no fixed or floating aids to navigation in the survey area.

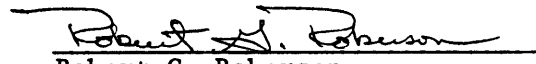
8. COMPLIANCE WITH PROJECT INSTRUCTIONS


This survey adequately complies with the Project Instructions except as noted in section 4 of this report.

9. ADDITIONAL FIELD WORK

This is an adequate basic survey; no additional field work is recommended.


James B. Wilson
Cartographic Technician
Verification of Field Data

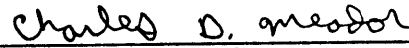

Robert G. Roberson
Senior Cartographer
Evaluation and Analysis


Leroy G. Cram
Supervisory Cartographic Technician
Verification Check

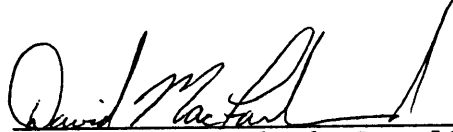
INSPECTION REPORT
H-9981

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 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

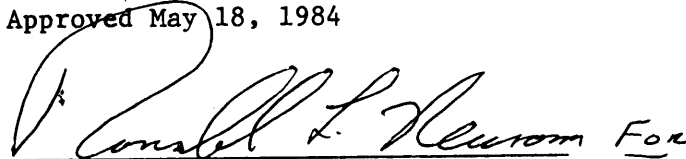


Charles D. Meador
Chief, Evaluation and Analysis Group



David B. MacFarland, Jr., LCDR, NOAA
Chief, Hydrographic Surveys Branch

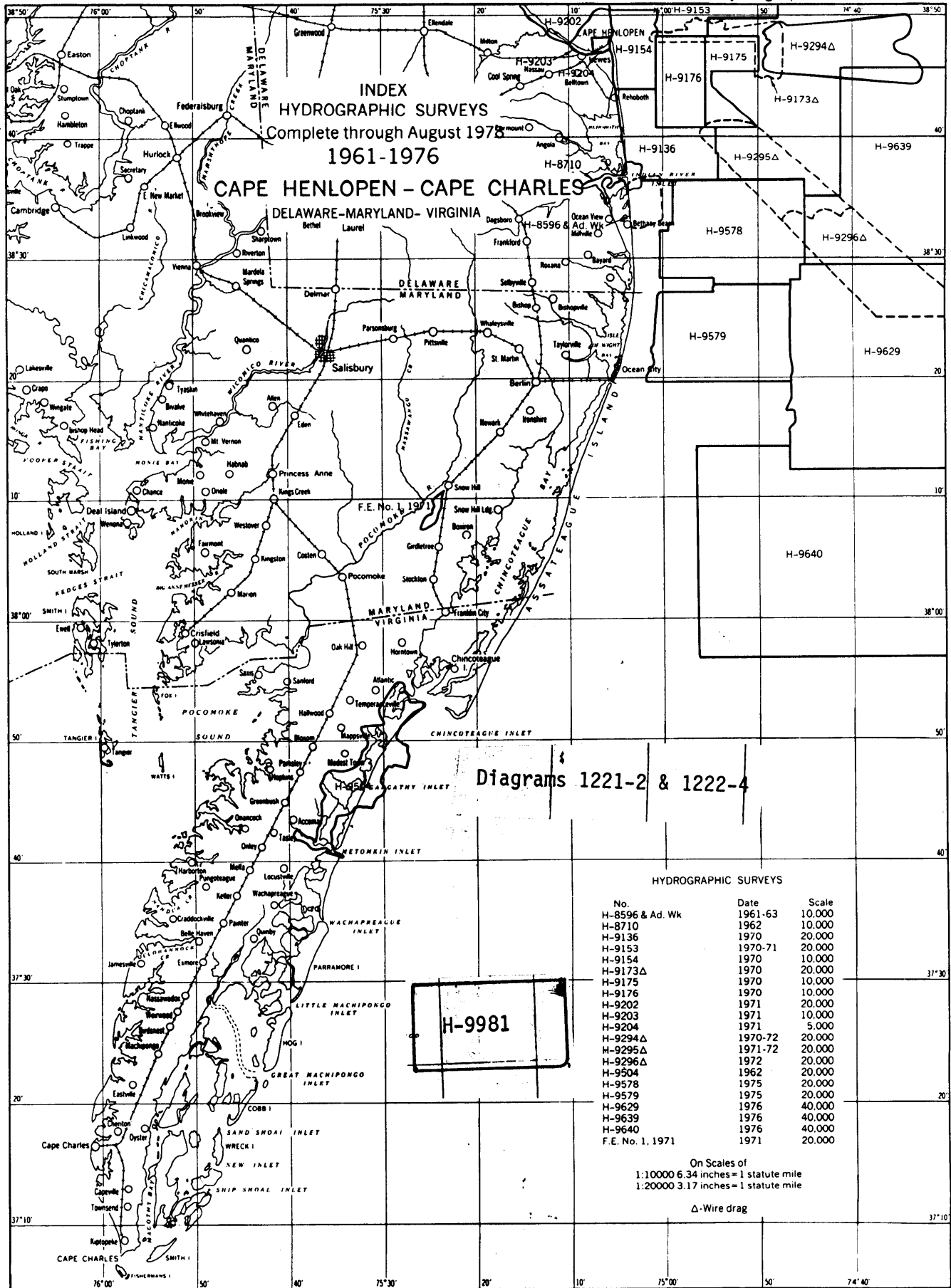
Approved May 18, 1984



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. 69 K



INDEX
HYDROGRAPHIC SURVEYS
Complete through August 1978
1961-1976
CAPE HENLOPEN - CAPE CHARLES
DELAWARE-MARYLAND-VIRGINIA

Diagrams 1221-2 & 1222-4

HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-8596 & Ad. Wk	1961-63	10,000
H-8710	1962	10,000
H-9136	1970	20,000
H-9153	1970-71	20,000
H-9154	1970	10,000
H-9173Δ	1970	20,000
H-9175	1970	10,000
H-9176	1970	10,000
H-9202	1971	20,000
H-9203	1971	10,000
H-9204	1971	5,000
H-9294Δ	1970-72	20,000
M-9295Δ	1971-72	20,000
H-9296Δ	1972	20,000
H-9504	1962	20,000
H-9578	1975	20,000
H-9579	1975	20,000
H-9629	1976	40,000
H-9639	1976	40,000
H-9640	1976	40,000
F.E. No. 1. 1971	1971	20,000

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

Δ - Wire drag

