

9104

Diag. Cht. Nos. 1001-3 & 1232-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC
Field No. PE-80-2-70
Office No..... H-9104

LOCALITY

State NORTH CAROLINA
General Locality RALEIGH BAY
Locality SOUTH OF CAPE HATTERAS

1970

CHIEF OF PARTY
J. A. YEAGER

LIBRARY & ARCHIVES

DATE 2/22/71

9104

HYDROGRAPHIC TITLE SHEET

H-9104

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 80-2-70

State NORTH CAROLINA

General locality SOUTHWEST OF CAPE HATTERAS RALEIGH BAY
SOUTH OF CAPE HATTERAS

Locality OFFSHORE OF RALEIGH BAY & SOUTH OF DIAMOND SHOALS

Scale 1:80,000 Date of survey February to April 1970

Instructions dated Jan. 7, 1970 Project No. OPR-486

Vessel USC&GS SHIP PEIRCE

Chief of party J. AUSTIN YEAGER

Surveyed by LT. ^{P.H.}KERLEY, LT. ^{J.O.}ROLLAND, LTJG. ^{J.H.}SNOOKS, ENS. ^{D.H.}JOHNSON, ENS. ^{P.L.}GESTER
CST LEWIS (Civilian)

Soundings taken by echo sounder, hand lead, pole ECHO SOUNDER

Graphic record scaled by SHIP PERSONNEL

Graphic record checked by SHIP PERSONNEL

Protracted by GERBER DIGITAL PLOTTER - PACIFIC MARINE CENTER

Soundings penciled by " " " - " " "

Soundings in ~~6000~~ feet at MLW ~~MLW~~

REMARKS: THIS SURVEY IS COMPLETE

*Applied to stars
3-1-71 cas.*

*AMP
3/2/71*

RWW 8/27/92

DESCRIPTIVE REPORT

TO ACCOMPANY

HYDROGRAPHIC SURVEY PE-80-2-70

USC&GSS PEIRCE

SCALE: 1:80,000

J. AUSTIN YEAGER, CDR USESSA

CHIEF OF PARTY

A. PROJECT:

This survey was accomplished under Project OPR-486, Bathymetric Surveys, North Carolina Coast. Instructions dated January 7, 1970 supersede all previous instructions. ✓

B. AREA SURVEYED:

The area in which this survey was conducted includes the northwest portion of Raleigh Bay, immediately south of Cape Hatteras, N.C. It is bounded on the southeast by the 100 fathom curve, on the west by the 10 fathom curve and its junction with ~~PE-80-1-70 (H-9183)~~ at $\lambda 75^{\circ}47'30''W$, and on the north by Diamond Shoals and $\phi 35^{\circ}07'30''N$. ✓

C. SOUNDING VESSEL:

The Ship PEIRCE performed all hydrography on this sheet. Positions numbers are denoted in violet. ✓

D. SOUNDING EQUIPMENT:

Two Raytheon (type 723) fathometers were used for sounding in this survey. Fathometer number 246 was used for Julian days 050 & 051. All other work was recorded on fathometer number 259. Depths from 43 to 720 feet were observed. ✓

The velocity corrections for the ship were obtained by taking Nansen cast oceanographic stations. Depth and temperature data was recorded in the field. Salinity data was determined by means of a salinometer carried on board. Results of the oceanographic observations were used in determining layer velocities for sound. These values were then graphed, with velocity corrector values taken at 0.5 foot increments. ✓

The initial was held at 9.0 feet for soundings observed in feet and 1.5 fathoms for soundings observed in fathoms. Included in the initial is a reduction of one foot from the draft of the vessel transducer as per instructions in a memorandum from the Chief, Instrument Division dated October 1, 1962. A constant draft correction of -0.2 feet was calculated for the ship. This figure and other echo sounder errors is discussed in "Report to Echo Sounder", OPR 486, 1970 Field Season, USC&GSS PEIRCE.

on boat sheet

E. SMOOTH SHEET:

The smooth sheet will be computer plotted at the ^{Pacific} Atlantic Marine Center, ^{Seattle} Norfolk, Virginia. Field records were encoded on punched tapes designed for computer use. This "Raw Data Tape" was made during the field operations and contained position information including time, depth, day number, and two Hi Fix readings. Corrector tapes were also logged which provide calibration corrections to Hi Fix readings as well as all other data (smooth tides, transducer corrections, etc.), necessary to reduce the depth to final, correct values. The tapes will be intergrated by computer to obtain data for the computer plotter.

F. CONTROL:

Hi Fix was used for positioning the ship during hydrographic operations. Shore stations established at "BUGG" ($\phi 35^{\circ}06'23"N$, $\lambda 75^{\circ}57'26"W$) and "FIRE" ($\phi 34^{\circ}51'33"N$, $\lambda 76^{\circ}18'37"W$) generated electronic control for the northwest corner of the sheet (day no's. 050 & 051), and at "FIRE" and "HAT" ($\phi 35^{\circ}12'20"N$, $\lambda 75^{\circ}42'12"W$) for the rest of the sheet.

Hi Fix calibration was accomplished through three-point sextant fixes, plotted on a calibration sheet, scale 1:20,000. Reference is made to "Report on Electronic Control Hi Fix Calibration & Corrections", OPR 486, 1970 Field Season, USC&GSS PEIRCE, ~~for a detailed discussion~~ of the method used.

G. SHORELINE:

There was no shoreline within the limits of this survey.

H. CROSSLINES:

Crosslines were run at 6.7% of total hydrographic mileage on the sheet. Agreement was very good.

I. JUNCTION:

Junction with contemporary survey ^{MI} PE-80-1-70 (H-⁹⁰⁶⁰9103) ✓
along longitude 75°49'00" was good with no distortion
in depth curves.

Junction with H-8808⁽¹⁹⁶³⁾ on the northwest is adequate. Iso- ✓
lated soundings in some cases disagree by as much as 30
feet but this is due to the extremely rugged bottom
topography and the changeable nature of the bottom in
this area.

Junction with 8810 on the northeast is good. Some dis. ✓
agreement arises due to the fact that H-8810 was surveyed
in fathoms whereas H-9104 was done in feet.

J. COMPARISON WITH PRIOR SURVEY:

One pre-survey review item in this project is located on ✓
this survey. No investigation of this reported object
(an unexploded depth charge) was required. No questionable
sounding investigation was required.

K. COMPARISON WITH THE CHART:

Comparison was made with two C&GS charts covering the area ✓
of the survey: C&GS 1110 and 1232. Comparison with chart
1110 was fair; the apparent disagreement can be accounted
for by the addition of velocity correctors which are
variable as a result of movement of the Gulf Stream which
is active in this area. Disagreement may also be due to
lack of position control in the previous survey dated 1927.
Comparison with chart 1232 was good. One and two foot
variations due to the rough topography and active currents
of the shoal area, and predicted tide errors are to be
expected.

L. ADEQUACY OF SURVEY:

This survey is complete and adequate to super^sede previous ✓
surveys of the area.

M. AIDS TO NAVIGATION:

There were no aids to navigation within the limits of this ✓
survey.

N. STATISTICS:

| <u>No. of Pos'n.</u> | <u>No. of Sdg. Line</u> | <u>Sq. Miles</u> | <u>Nansen Casts</u> |
|-------------------------|-------------------------|------------------|---------------------|
| ¹³⁰⁴ 1276 | 1,923.0 | 609.0 | 5 |

| <u>N.M. of Magnetics</u> | <u>Bottom Samples</u> |
|--------------------------|-----------------------|
| 1,062.0 | 18 |

O. MISCELLANEOUS:

Sea surface temperatures were recorded hourly while the ship was underway. These temperatures were used in coordination with Nasen cast oceanographic stations to determine velocity corrector zones. A detailed description is outlined in "Report on Correction to Echo Sounder," OPR 486, 1970 Field Season, USC&GSS PEIRCE.

P. RECOMMENDATIONS:

None.

Q. REFERENCES:

1. "Report on Electronic Control, Hi Fix Calibration and Corrections," OPR 486, 1970 Field Season, USC&GSS PEIRCE.
2. "Report on Corrections to Echo Sounder", OPR 486, 1970 Field Season, USC&GSS PEIRCE.

Respectfully submitted,

Ronald L. Gester

Ronald L. Gester
ENS, USESSA

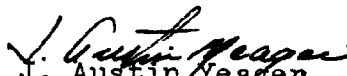
FORWARDED:

J. Austin Yeager
J. Austin Yeager
CDR, USESSA
Commanding, Ship PEIRCE

APPROVAL SHEET

Field No. PE-80-2-70, H-9104

Field work and data processing on this survey was under my immediate daily supervision. The Boat Sheet and all records have been reviewed and approved by me. It is believed this survey is complete and adequate to supercede prior surveys.


J. Austin Yeager
CDR, USESSA
Chief of Party

SEPARATES FOLLOWING TEXT:

APPENDIX A. TIDAL NOTE

B. ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

C. ABSTRACT OF CORRECTIONS TO DISTANT MEASUREMENTS

D. ABSTRACT OF TRA CORRECTIONS

E. ABSTRACT OF DAILY CONSECUTIVE POSITION NUMBERS

F. ABSTRACT OF STANDARD FORMAT COLUMN HEADINGS

G. ABSTRACT OF HYDROGRAPHIC DATA LOCATED ON THE SURVEY

APPENDIX A

TIDAL NOTE

Tidal heights for this survey were furnished by the Tides and Currents Branch, Oceanography Division. Hourly heights were based on records from the Standard Tide Gage at Hampton Roads, Virginia. In order to defer to the working grounds a correction of -2 hours in time and a range ratio of 1.5 was used.

All times for the survey were based on the 75°W time meridian. Height increments were scaled from the smooth graph in 0.5 foot increments as specified by the Hydrographic Manual. On several smooth tide graphs some hourly heights did not follow the general tide curve. Therefore, in cases of this nature a curve was fitted that best described the hourly tide trend.

An abstract of smooth tides follows as a copy of the Tide Tape Printout:

APPENDIX B

ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

Velocity corrections for this survey were determined from temperature and salinity observations (Nansen casts) made throughout the survey period. The survey was divided into four zones, each zone having a special velocity table. Reference is made to the special report on corrections to Echo Soundings, OPR 486, 1970 Field Season, USC&GSS Peirce, which describes the method of computation and determination of zones.

Velocity Tables

Zone 1 = Velocity Table #1
Zone 2 = " " #2
Zone 3 = " " #3
Zone 4 = " " #4

Table #1

| <u>Depth To</u> | <u>Corr.</u> |
|-----------------|--------------|
| 30.5 | ±0.0 |
| 68.0 | +0.5 |
| 999.9 | +1.0 |

Table #2

| <u>Depth To</u> | <u>Corr.</u> |
|-----------------|--------------|
| 14.5 | ±0.0 |
| 25.0 | +0.5 |
| 36.5 | +1.0 |
| 48.5 | +1.5 |
| 61.0 | +2.0 |
| 74.5 | +2.5 |
| 88.0 | +3.0 |
| 102.0 | +3.5 |
| 115.0 | +4.0 |
| 128.5 | +4.5 |
| 141.5 | +5.0 |
| 154.5 | +5.5 |
| 167.5 | +6.0 |
| 181.0 | +6.5 |
| 194.0 | +7.0 |
| 208.0 | +7.5 |

Table #2 cont'd

| <u>Depth To</u> | <u>Corr.</u> |
|-----------------|--------------|
| 222.0 | + 8.0 |
| 235.5 | + 8.5 |
| 248.5 | +9.0 |
| 261.5 | + 9.5 |
| 274.0 | +10.0 |
| 286.5 | +10.5 |
| 300.5 | +11.0 |
| 313.5 | +11.5 |
| 327.0 | +12.0 |
| 341.0 | +12.5 |
| 356.0 | +13.0 |
| 371.5 | +13.5 |
| 384.0 | +14.0 |
| 397.5 | +14.5 |
| 411.0 | +15.0 |
| 425.0 | +15.5 |
| 439.5 | +16.0 |
| 454.0 | +16.5 |
| 468.0 | +17.0 |
| 482.5 | +17.5 |
| 497.0 | +18.0 |
| 512.0 | +18.5 |
| 527.0 | +19.0 |
| 542.5 | +19.5 |

APPENDIX B (CONT'D)

Table #2 cont'd

| <u>Depth To</u> | <u>Corr.</u> |
|-----------------|--------------|
| 557.0 | +20.0 |
| 572.5 | +20.5 |
| 587.5 | +21.0 |
| 602.5 | +21.5 |
| 999.9 | +22.0 |

Table #3

| <u>Depth To</u> | <u>Corr.</u> |
|-----------------|--------------|
| 28.0 | ±0.0 |
| 63.9 | +0.5 |
| 99.0 | +1.0 |
| 129.9 | +1.5 |
| 162.5 | +2.0 |
| 192.0 | +2.5 |
| 221.0 | +3.0 |
| 999.9 | +3.5 |

Table #4

| <u>Depth To</u> | <u>Corr.</u> |
|-----------------|--------------|
| 16.9 | ±0.0 |
| 31.9 | +0.5 |
| 48.9 | +1.0 |
| 65.9 | +1.5 |
| 83.9 | +2.0 |
| 102.9 | +2.5 |
| 121.9 | +3.0 |

Table #4 cont'd

| <u>Depth To</u> | <u>Corr.</u> |
|-----------------|--------------|
| 140.9 | + 3.5 |
| 158.9 | + 4.0 |
| 175.9 | + 4.5 |
| 193.9 | + 5.0 |
| 211.9 | + 5.5 |
| 225.9 | + 6.0 |
| 240.9 | + 6.5 |
| 254.9 | + 7.0 |
| 269.9 | + 7.5 |
| 282.9 | + 8.0 |
| 296.9 | + 8.5 |
| 309.9 | + 9.0 |
| 323.9 | + 9.5 |
| 336.9 | +10.0 |
| 350.9 | +10.5 |
| 364.9 | +11.0 |
| 377.9 | +11.5 |
| 391.9 | +12.0 |
| 404.9 | +12.5 |
| 418.9 | +13.0 |
| 432.9 | +13.5 |
| 447.9 | +14.0 |
| 461.9 | +14.5 |
| 474.9 | +15.0 |
| 488.9 | +15.5 |
| 503.4 | +16.0 |
| 516.9 | +16.5 |
| 530.9 | +17.0 |
| 545.4 | +17.5 |
| 559.4 | +18.0 |
| 573.7 | +18.5 |
| 999.9 | +19.0 |

APPENDIX C

ABSTRACT OF CORRECTIONS TO ELECTRONIC DISTANCE MEASUREMENTS

HI FIX electronic positional control was used throughout the survey. Reference is made to the Special Report on Calibration & Corrections to HI FIX, OPR 486, 1970 Field Season, USC&GSS PEIRCE, for a discussion on the calibration method.

Abstract of HiFix Corrections, PE-80-2-70

| <u>Day</u> | <u>Time (From)</u> | <u>Corrn Pat I</u> | <u>Corrn Pat II</u> | <u>Remarks</u> |
|------------|------------------------|------------------------|-------------------------|----------------|
| 050 | 143300 | -0.08 | -0.11 | Calibration #2 |
| | 220800 | -0.08 | +0.89 | |
| 051 | 000000 | -0.08 | +0.89 | |
| | 010500 | -0.08 | -1.11 | |
| | 012700 | -0.08 | +2.89 | |
| 079 | 125600 | -0.24 | +0.77 | Calibration #5 |
| 080 | 000000 | -0.24 | +0.77 | |
| | 014100 | -1.24 | +0.77 | |
| | 020700 | -3.24 | +0.77 | |
| | 022800 | -5.24 | +0.77 | |
| | 023700 | -6.24 | +0.77 | |
| | 035300 | -5.24 | +0.77 | |
| 081 | 222200 | -0.24 | +0.77 | Calibration #6 |
| 082 | 000000 | -0.24 | +0.77 | |
| | 170600 | -0.24 | -0.23 | |
| 083 | 000000 | -0.24 | -0.23 | |
| 091 | 213600 | -0.20 | +0.81 | |
| 093 | 185300 | -2.20 | -1.19 | |
| | 223700 | -13.20 | -1.19 | |
| 094 | 001900 | -13.20 | -1.19 | Calibration #7 |
| | 040800 | -15.20 | -1.19 | |
| | 054800 | +8.80 | -1.19 | |
| | 064900 | +26.80 | +2.81 | |
| | 123800 | -0.20 | -0.19 | |
| | 130200 | -26.20 | -0.19 | |
| | 135000 | +0.80 | -0.19 | |
| | 143100 | -23.20 | -0.19 | |
| | 151900 | -49.20 | -0.19 | |
| | 175100 | -0.20 | -0.19 | |

APPENDIX C (CONT'D)

| <u>Day</u> | <u>Time (From)</u> | <u>Corrn Pat I</u> | <u>Corrn Pat II</u> | <u>Remarks</u> |
|------------|------------------------|------------------------|-------------------------|----------------|
| 095 | 000000 | -0.20 | -0.19 | |
| 096 | 000000 | -1.20 | -1.19 | |
| 097 | 000000 | -1.20 | -1.19 | |
| 098 | 000000 | -1.20 | -1.19 | |
| | 100700 | -1.20 | -0.19 | |
| | 100700 | | | |
| 104 | 190300 | -1.23 | -1.20 | |
| 105 | 000000 | -1.23 | -1.20 | Calibration #8 |
| | 183800 | -0.23 | -0.20 | |
| 106 | 133100 | +0.77 | -0.20 | |
| 107 | 000400 | -0.23 | -0.20 | |
| 108 | 000000 | -0.23 | -0.20 | |

APPENDIX D

ABSTRACT OF TRA CORRECTORS

The TRA corrector is a combination of various correctors applied to soundings obtained electronically and is comprised of the following:

TRA = Transducer draft + Initial correction
 + Instrumental Error + Settlement & Squat
 + Phase correction + Fathometer speed error

For this survey only Transducer Draft and Initial corrections are necessary. All others were nonexistent or were kept below the level to be applied. Reference is made to the Special Report on Corrections to Echo Soundings, 1970 Field Season, OPR 486, USC&GSS PEIRCE, for a discussion of the methods and computations.

Transducer Draft:

Measurements from the ship's rail to the water line indicated that the ship's transducer depth varied from 9.6 ft. to 10.1 ft. depending on the amount of fuel and water aboard. Average transducer draft was 9.8 ft. The small range of depth change resulted from refueling the ship during each import period.

With an assumed depth of 10.0 ft. and an actual depth of 9.8 ft. (average) a constant depth correction of -0.2 ft was used for all soundings.

Initial Error:

The following initial corrections were applied.

| <u>Day</u> | <u>No.</u> | <u>Time</u> <u>(From)</u> | <u>Corr.</u> | <u>Day No.</u> | <u>Time</u> <u>(From)</u> | <u>Corr.</u> |
|------------|------------|------------------------------|--------------|----------------|------------------------------|--------------|
| 050 | | 143300 | +0.0 | 050 | 195900 | +0.2 |
| | | 143915 | -0.2 | | 200130 | 0.0 |
| | | 154300 | +0.0 | | 200900 | -0.2 |
| | | 154700 | -0.2 | | 201100 | -0.4 |
| | | 154915 | 0.0 | | 201530 | 0.0 |
| | | 160200 | +0.2 | | 201700 | +0.2 |
| | | 160715 | 0.0 | | 201900 | +0.6 |
| | | 162400 | -0.2 | | 202130 | 0.0 |
| | | 162915 | 0.0 | | 202600 | -0.2 |
| | | 175500 | +0.2 | | 202900 | -0.4 |
| | | 180315 | 0.0 | | 203230 | 0.0 |
| | | 193800 | +0.2 | | 204100 | +0.2 |
| | | 194315 | 0.0 | | 204445 | 0.0 |

APPENDIX D (CONT'D)

| <u>Day No.</u> | <u>Time (From)</u> | <u>Corr.</u> | <u>Day No.</u> | <u>Time (From)</u> | <u>Corr.</u> |
|----------------|--------------------|--------------|----------------|--------------------|--------------|
| 050 | 205200 | -0.2 | 082 | 233000 | -0.2 |
| | 205400 | -0.4 | | 233800 | -0.4 |
| | 205630 | 0.0 | | 234215 | 0.0 |
| | 205900 | +0.2 | 083 | 000000 | 0.0 |
| | 210230 | 0.0 | | 091 | 000000 |
| | 211000 | -0.2 | 093 | | 000000 |
| | 211430 | 0.0 | | 094 | 000000 |
| | 213000 | -0.2 | 095 | | 000000 |
| | 213230 | 0.0 | | 096 | 000000 |
| | 213500 | +0.2 | 097 | | 000000 |
| | 213830 | 0.0 | | 004600 | -0.2 |
| | 214100 | -0.2 | 005200 | 0.0 | |
| | 214430 | 0.0 | 098 | 000000 | 0.0 |
| | 214800 | +0.2 | | 131900 | -0.2 |
| | 215045 | 0.0 | 132330 | 0.0 | |
| | 215900 | -0.2 | 000000 | 0.0 | |
| | 220700 | 0.0 | 104 | 000000 | 0.0 |
| | 221200 | +0.2 | | 233000 | +7.0 |
| | 221645 | 0.0 | 233300 | 0.0 | |
| | 224400 | -0.2 | 105 | 000000 | 0.0 |
| | 224730 | 0.0 | | 082100 | +7.0 |
| | 235630 | -0.2 | 082245 | 0.0 | |
| | 235730 | -0.4 | 095700 | -0.5 | |
| 235830 | -0.6 | 100200 | 0.0 | | |
| 051 | 000000 | -0.6 | 106 | 000000 | 0.0 |
| | 000200 | 0.0 | | 107 | 000000 |
| | 000900 | +0.2 | 108 | | 000000 |
| | 001230 | 0.0 | | | |
| | 010800 | -0.2 | | | |
| | 010930 | 0.0 | | | |
| | 011300 | -0.2 | | | |
| | 011530 | 0.0 | | | |
| 013200 | -0.2 | | | | |
| 013300 | 0.0 | | | | |
| 079 | 000000 | 0.0 | | | |
| | 224800 | +1.0 | | | |
| | 235630 | 0.0 | | | |
| 080 | 000000 | 0.0 | | | |
| 081 | 222200 | 0.0 | | | |
| 082 | 000000 | 0.0 | | | |
| | 043400 | -0.2 | | | |
| | 043630 | 0.0 | | | |
| | 051600 | -0.5 | | | |
| | 052400 | 0.0 | | | |

APPENDIX E

ABSTRACT OF DAILY CONSECUTIVE POSITION NUMBERS

PE-80-2-70

| <u>Date 1970</u> | <u>Day #</u> | <u>Position No's.</u> |
|------------------|--------------|-----------------------|
| 2/19 | 050 | 0001 - 0080 |
| 2/20 | 051 | 0081 - 0093 |
| 3/20 | 079 | 0094 - 0186 |
| 3/21 | 080 | 0187 - 0258 |
| 3/22 | 081 | 0259 - 0270 |
| 3/23 | 082 | 0271 - 0410 |
| 3/24 | 083 | 0411 - 0551 |
| 4/01 | 091 | 0552 - 0556 |
| 4/03 | 093 | 0557 - 0587 |
| 4/04 | 094 | 0588 - 0712 |
| 4/05 | 095 | 0713 - 0833 |
| 4/06 | 096 | 0834 - 0846 |
| 4/07 | 097 | 0847 - 1027 |
| 4/08 | 098 | 1028 - 1134 |
| 4/14 | 104 | 1135 - 1162 |
| 4/15 | 105 | 1163 - 1254 |
| 4/16 | 106 | 1255 - 1258 |
| 4/17 | 107 | 1259 - 1380 |
| 4/18 | 108 | 1381 - 1394 |

APPENDIX G

ABSTRACT OF HYDROGRAPHIC DATA LOCATED ON THE SURVEY

| <u>Stn No.</u> | <u>Day No.</u> | <u>Data Located</u> |
|----------------|----------------|---------------------|
| ✓1255 | 106 | fne gy S & M |
| ✓1256 | " | fne br S |
| ✓1257 | " | fne br S |
| ✓1258 | " | bk M |
| ✓1375 | 107 | crs br S, brk Sh |
| ✓1376 | " | fne dk gy S, brk Sh |
| 1377 | " | fne dk gy S, brk Sh |
| ✓1378 | " | fne dk gy S, brk Sh |
| ✓1379 | " | fne br S |
| ✓1380 | " | fne dk gy S |
| ✓1387 | 108 | fne br S & Sh |
| ✓1388 | " | fne gy S |
| ✓1389 | " | fne gy S, brk Sh |
| ✓1390 | " | fne br S, Brk Sh |
| ✓1391 | " | fne gy S, brk Sh |
| ✓1392 | " | br S, Sh |
| ✓1393 | " | br S |
| ✓1394 | " | fne dk gy S, brk Sh |

APPENDIX F.

ABSTRACT OF STANDARD FORMAT COLUMN HEADINGS

Raw Data Tape

| <u>Time</u> | <u>Ind.</u> | <u>Sdg.</u> | <u>Posn #</u> | <u>Day #</u> | <u>R-1</u> | <u>R-2</u> |
|-------------|-------------|-------------|---------------|--------------|------------|------------|
| 142200 | 1 | 1005 | 0001 | 050 | 069950 | 025443 |

Corrector Tape

| <u>Time</u> | <u>Ind.</u> | <u>Sdg.</u> | <u>Posn #</u> | <u>Day #</u> | <u>R-1 Calb.</u> | <u>R-2 Calb.</u> | | | |
|-------------|-------------|-------------|---------------|--------------|----------------------|----------------------|------|-----|-----|
| 142200 | 1 | 1005 | 0001 | 050 | 100011 | 000020 | 0000 | 000 | 000 |

TRA Correction/ Table Indicator (TC/TI) Tape

| <u>Time</u> | <u>Ind.</u> | <u>TRA</u> | <u>Table</u> | <u>Day #</u> | <u>Vel</u> | |
|-------------|-------------|------------|--------------|--------------|------------|---------|
| 142200 | 0 | 1002 | 0001 | 050 | 000000 | 0000000 |

Tide Tape

| <u>Time</u> | | <u>Tide</u> | | <u>Day #</u> | | |
|-------------|---|-------------|------|--------------|--------|--------|
| 142200 | 0 | 1020 | 0000 | 050 | 000000 | 000000 |

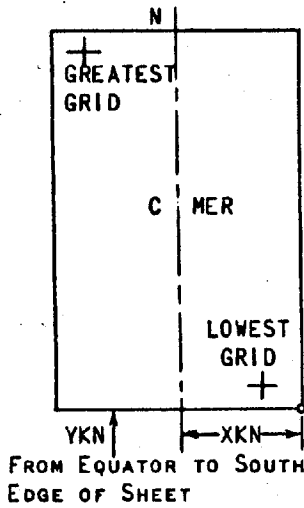
Velocity Table Tape

| <u>Depth</u> | | <u>(**)</u> | <u>(*)</u> | | | |
|--------------|---|-------------|------------|-----|--------|--------|
| 000185 | 0 | 0005 | 0001 | 000 | 000000 | 000000 |

(**) = Velocity Correction
(*) = Velocity Table

PARAMETERS FOR DIGITAL COMPUTING
POLYCONIC PROJECTION

- (1) PROJECT No. OPR 486 (4) REQUESTED BY Atlantic Marine Center
- (2) H No. H - 9104 (5) SHIP ~~XXXXXXXX~~ PEIRCE
- (3) FIELD No. PE-80-2-70 (6) DATE REQUIRED ASAP
- (7) VISUAL (8) ELECTRONIC (FILL OUT FORM #3)
- (10) XKN (SP 5) DISTANCE FROM CMER TO EAST EDGE (NYX = 1)
OR WEST EDGE (NYX = 0). 37,035.2 METERS
- (11) YKN (SP 241) DISTANCE FROM EQUATOR TO SOUTH EDGE
OF SHEET. 3,801,519.43 METERS
- (12) CENTRAL MERIDIAN 75° 30' 00" W
- (13) SURVEY SCALE 1:80,000
- (14) SIZE OF SHEET (CHECK ONE) 36x54 42x60 OTHER 36x60
- (15) NYX, ORIENTATION OF SHEET (CHECK ONE)
NYX = 1 NYX = 0



(9) PLOTTER ORIGIN
(CORNER OF SHEET)

LATITUDE 34° 20' 35"
LONGITUDE 75° 05' 45"

GRID LIMITS

LIST G.P. OF ALL STATIONS TO BE PLOTTED ON THIS PROJECTION ON THE BACK OF THIS FORM. (DEG., MIN., METERS)

- (16) GREATEST LATITUDE 35° 15' 00" (PROJECTION LINE
- (17) LOWEST LATITUDE 34° 25' 00" INTERVAL, PAGE 4
- (18) DIFFERENCE 0° 50' 00" HYDRO MANUAL)
- (19) 05' 00"
- (20) 10 YSN
- (21) GREATEST LONGITUDE 75° 50' 00"
- (22) LOWEST LONGITUDE 75° 10' 00"
- (23) DIFFERENCE 0° 40' 00"
- (24) 05' 00"
- (25) 8 XSN

40.

FORM # 3

FIG. 7

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

(RANGE - RANGE)

- (1) PROJECT No. OPR 886 (2) H- No. 9104 (3) FIELD No. PE-80-2-70
- (4) TYPE OF CONTROL: SHORAN, RAYDIST, HI-FIX, RADAR
FREQUENCY (FOR CONVERSION OF RAYDIST OR HI-FIX LANES TO METERS) 1718.59 khz
- (5) RANGE ONE (R1) LATITUDE 35 ° 06 ' 23.18 "
STATION NAME BUGG LONGITUDE 75.87 57 ' 26.20 "
- (6) RANGE TWO (R2) LATITUDE 34 ° 51 ' 33.30 "
STATION NAME FIRE LONGITUDE 76 ° 18 ' 37.06 "
- (7) AZIMUTH FROM R1 TO R2 049 ° 42 ' 44.12 "
- (8) BASELINE LENGTH IN METERS 42,320.45 M.
- (9) LOCATION OF SURVEY WITH RESPECT TO ELECTRONIC BASELINE: CHECK ONE
(TO DETERMINE: IMAGINE AN OBSERVER STANDING AT R1 AND LOOKING DIRECTLY
AT R2 --- IF THE SURVEY AREA IS TO THE OBSERVER'S LEFT THEN A IS
NEGATIVE; IF THE SURVEY AREA IS TO THE OBSERVER'S RIGHT THEN A IS
POSITIVE.)
- A (MINUS) +A (PLUS)
- (10) IF SHORAN CORRECTIONS ARE APPLIED BY THE EQUATION, $K(X) + C = D$,
WHERE X IS SHORAN DISTANCE AND D IS TRUE DISTANCE, ENTER THE CONSTANT
COEFFICIENTS OF THE EQUATIONS HERE:
K(R1) _____, C(R1) _____, K(R2) _____, C(R2) _____
- (11) NUMBER OF VELOCITY TABLES TO BE USED:
NONE, ONE, MORE THAN ONE.
- (12) _____ THIS FORM IS SUBMITTED ONLY AS AN AID IN PREPARING A BOAT
SHEET PROJECTION.
_____ THIS FORM APPLIES TO ALL DATA ON THIS SURVEY.
 _____ THIS FORM APPLIES TO PART OF THE DATA ON THIS SURVEY -
TIME AND DATE LIMITATIONS: FROM 050 To 051
POSITION NUMBER LIMITATIONS: FROM 001 To 093
THIS IS FORM #3 SHEET # 1 OF 2 SHEETS FOR THIS SURVEY.
- (13) OTHER REMARKS:

Station positions are unadjusted.

40.

FORM # 3

FIG. 7

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

(RANGE - RANGE)

- (1) PROJECT No. OPR 486 (2) H- No. 9104 (3) FIELD No. PE-80-2-70
- (4) TYPE OF CONTROL: SHORAN, RAYDIST, HI-FIX, RADAR
FREQUENCY (FOR CONVERSION OF RAYDIST OR HI-FIX LANES TO METERS) 1718.59 khz
- (5) RANGE ONE (R1) LATITUDE 35 ° 12 '20.56 "
STATION NAME HAT LONGITUDE 75 ° 42 '12.89 "
- (6) RANGE TWO (R2) LATITUDE 34 ° 51 '33.30 "
STATION NAME FIRE LONGITUDE 75 ° 18 '37.06 "
- (7) AZIMUTH FROM R1 TO R2 055 ° 24 '18.89 "
- (8) BASELINE LENGTH IN METERS 67,398.79 M.
- (9) LOCATION OF SURVEY WITH RESPECT TO ELECTRONIC BASELINE: CHECK ONE
(TO DETERMINE: IMAGINE AN OBSERVER STANDING AT R1 AND LOOKING DIRECTLY
AT R2 — IF THE SURVEY AREA IS TO THE OBSERVER'S LEFT THEN A IS
NEGATIVE; IF THE SURVEY AREA IS TO THE OBSERVER'S RIGHT THEN A IS
POSITIVE.)
- A -A (MINUS) +A (PLUS)
- (10) IF SHORAN CORRECTIONS ARE APPLIED BY THE EQUATION, $K(X) + C = D$,
WHERE X IS SHORAN DISTANCE AND D IS TRUE DISTANCE, ENTER THE CONSTANT
COEFFICIENTS OF THE EQUATIONS HERE:
K(R1) _____, C(R1) _____, K(R2) _____, C(R2) _____
- (11) NUMBER OF VELOCITY TABLES TO BE USED:
NONE, ONE, MORE THAN ONE (3).
- (12) _____ THIS FORM IS SUBMITTED ONLY AS AN AID IN PREPARING A BOAT
SHEET PROJECTION.
_____ THIS FORM APPLIES TO ALL DATA ON THIS SURVEY.
 _____ THIS FORM APPLIES TO PART OF THE DATA ON THIS SURVEY -
TIME AND DATE LIMITATIONS: FROM 079 To 108
POSITION NUMBER LIMITATIONS: FROM 094 To 1394
THIS IS FORM #3 SHEET # 2 OF 2 SHEETS FOR THIS SURVEY.
- (13) OTHER REMARKS:

Station positions are unadjusted.

COAST & GEODETIC SURVEY - D. A. JONES, DIRECTOR

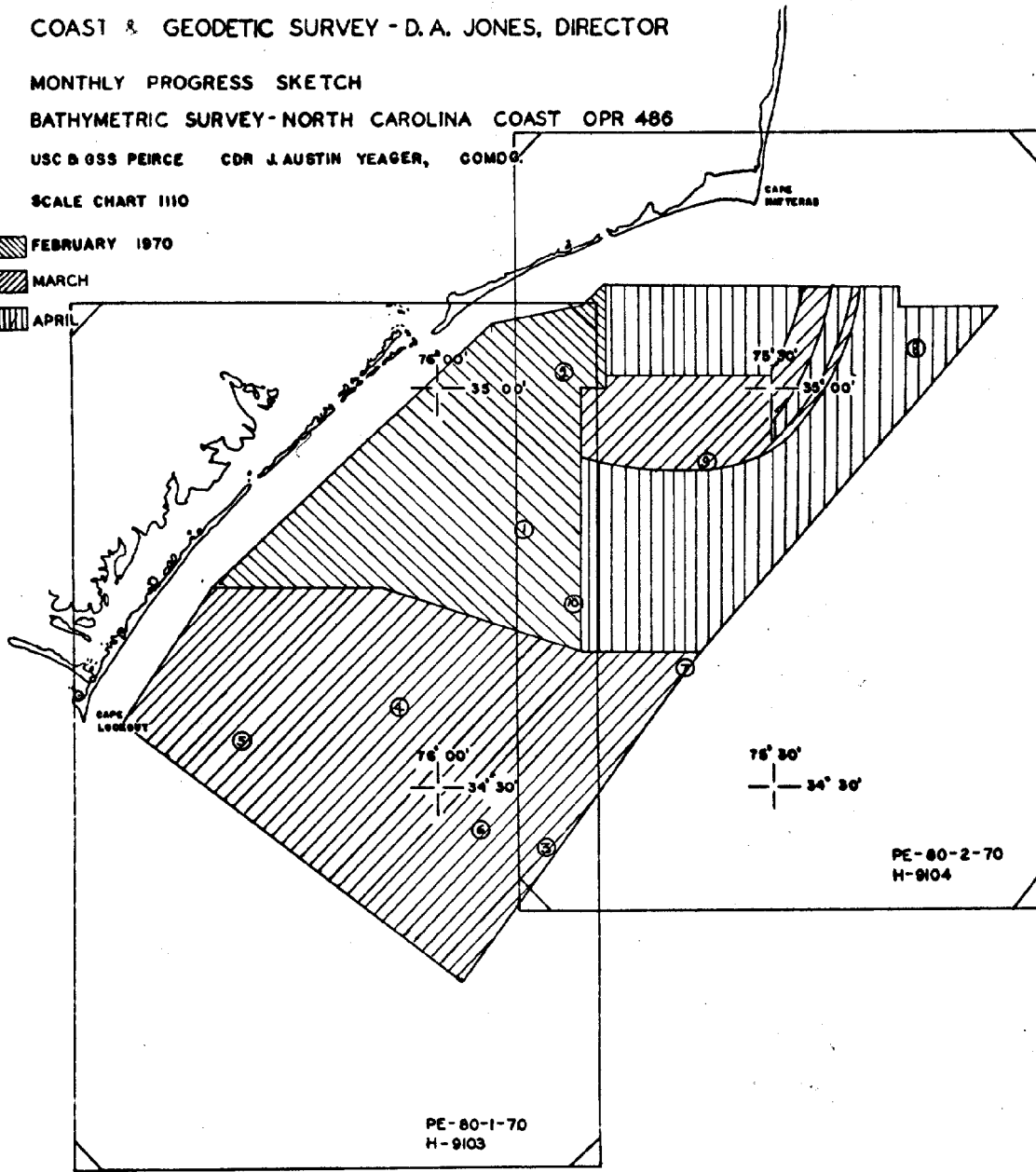
MONTHLY PROGRESS SKETCH

BATHYMETRIC SURVEY - NORTH CAROLINA COAST OPR 486

USC B GSS PEIRCE CDR J. AUSTIN YEAGER, COMDG.

SCALE CHART 1110

-  FEBRUARY 1970
-  MARCH
-  APRIL



PE-80-2-70
H-9104

PE-80-1-70
H-9103

TIDE NOTE FOR HYDROGRAPHIC SHEET

June 25, 1970

~~Nautical Chart Division~~ Atlantic Marine Center

Plane of reference approved in
~~values of sounding records~~ for Tide Tape Printouts

HYDROGRAPHIC SHEETS 9060 and 9104

Locality: North Carolina Coast

~~Chief of Party~~ 1970

Plane of reference is mean low water

Tide Station Used (Form C&GS-681):

Hampton Roads

at the working grounds
Height of Mean High Water above Plane of Reference is as follows:

3.7 feet

Remarks

J. M. Symons
Chief, Tides and Currents Branch

GEOGRAPHIC NAMES

Survey No. H-9104

| Name on Survey | | | | | | | | | | | |
|----------------|---|---|---|---|---|---|---|---|---|--|----|
| | A | B | C | D | E | F | G | H | K | | |
| Atlantic Ocean | | | | | | | | | | | 1 |
| Raleigh Bay | | | | | | | | | | | 2 |
| | | | | | | | | | | | 3 |
| | | | | | | | | | | | 4 |
| | | | | | | | | | | | 5 |
| | | | | | | | | | | | 6 |
| | | | | | | | | | | | 7 |
| | | | | | | | | | | | 8 |
| | | | | | | | | | | | 9 |
| | | | | | | | | | | | 10 |
| | | | | | | | | | | | 11 |
| | | | | | | | | | | | 12 |
| | | | | | | | | | | | 13 |
| | | | | | | | | | | | 14 |
| | | | | | | | | | | | 15 |
| | | | | | | | | | | | 16 |
| | | | | | | | | | | | 17 |
| | | | | | | | | | | | 18 |
| | | | | | | | | | | | 19 |
| | | | | | | | | | | | 20 |
| | | | | | | | | | | | 21 |
| | | | | | | | | | | | 22 |
| | | | | | | | | | | | 23 |
| | | | | | | | | | | | 24 |
| | | | | | | | | | | | 25 |
| | | | | | | | | | | | 26 |
| | | | | | | | | | | | 27 |

PREPARED BY

Frank W. Peckett
CARTOGRAPHIC TECHNICIAN

APPROVED BY

A. Joseph Wright
CHIEF GEOGRAPHER

FORM C&GS-946
(REV. 11-65)
(PREP. BY
HYDROGRAPHIC
MANUAL 20-2,
6-94, 7-13)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY
NAUTICAL CHART DIVISION

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. H-9104

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

| RECORD DESCRIPTION | AMOUNT | RECORD DESCRIPTION | AMOUNT |
|--------------------|--------|--------------------|--------|
| SMOOTH SHEET & PNO | 1 | BOAT SHEETS | 1 |
| DESCRIPTIVE REPORT | 1 | OVERLAYS | |

| DESCRIPTION | DEPTH RECORDS | HORIZ. CONT. RECORDS | PRINTOUTS | TAPE ROLLS | PUNCHED CARDS | ABSTRACTS / SOURCE DOCUMENTS |
|-------------|---------------|----------------------|-----------|------------|---------------|------------------------------|
| ENVELOPES | 1 | | | | | |
| CAHIERS | 2 | | 8 | | | |
| VOLUMES | | | | | | |
| BOXES | | | 2 & Tapes | | | |

T-SHEET PRINTS (List)

None

SPECIAL REPORTS (List)

Hi-Fix Calibration & Velocity Correction Reports

OFFICE PROCESSING ACTIVITIES

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

| PROCESSING ACTIVITY | AMOUNTS | | | |
|--|------------------|--------------|--------|--------|
| | PRE-VERIFICATION | VERIFICATION | REVIEW | TOTALS |
| POSITIONS ON SHEET | | | | 1394 |
| POSITIONS CHECKED | | 100 | 139 | |
| POSITIONS REVISED | | 18 | 0 | |
| DEPTH SOUNDINGS REVISED | | 50 | 240 | |
| DEPTH SOUNDINGS ERRONEOUSLY SPACED | | 8 | 0 | |
| SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED | | | | |
| | TIME (MANHOURS) | | | |
| TOPOGRAPHIC DETAILS | | | 1 | |
| JUNCTIONS | | | 1 | |
| VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS | | 10 | 20 | |
| SPECIAL ADJUSTMENTS | | | 0 | |
| ALL OTHER WORK | | 217 | 38 | |
| TOTALS | | 227 | 59 | |

| PRE-VERIFICATION BY | BEGINNING DATE | ENDING DATE |
|---------------------------------------|----------------|-------------|
| | | |
| VERIFICATION BY | BEGINNING DATE | ENDING DATE |
| B. Stephenson, G. Trefethen, B. Davis | 9-29-70 | 1-27-71 |
| REVIEW BY | BEGINNING DATE | ENDING DATE |
| Lisa Quinlan | 9-12-76 | 10-17-76 |

4/25/77
03/1/77

Cassidy

Crossing Imp. Karl Wellborn - 21 Jan (4-20-77)

REGISTRY NO. H-9104

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey, the following shall be completed:

CARDS CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

REGISTRY NO. 4-9104

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE 9-23-82 TIME REQUIRED _____ INITIALS JAC

REMARKS:

H-9104

Information for Future Presurvey Reviews

None

| <u>Position</u> | <u>Index</u> | <u>Bottom Change</u> | <u>Use</u> | <u>Resurvey</u> |
|-----------------|--------------|----------------------|--------------|-----------------|
| <u>Lat.</u> | <u>Long.</u> | <u>Index</u> | <u>Index</u> | <u>Cycle</u> |
| 342 | 0755 | 0 | 2 | 50 years |
| 343 | 0755 | 0 | 2 | 50 years |
| 344 | 0755 | 2 | 2 | 50 years |
| 344 | 0754 | 0 | 2 | 50 years |
| 345 | 0755 | 2 | 2 | 50 years |
| 345 | 0754 | 2 | 2 | 50 years |
| 345 | 0753 | 0 | 2 | 50 years |
| 350 | 0755 | 6 | 2 | 25 years |
| 350 | 0754 | 6 | 0 | 50 years |
| 350 | 0753 | 9 | 0 | 50 years |
| 350 | 0752 | 3 | 2 | 50 years |

OFFICE OF MARINE SURVEYS AND MAPS

MARINE SURVEYS DIVISION

MODIFIED HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-9104

FIELD NO. PE-80-2-70

North Carolina, Raleigh Bay, South of Cape Hatteras

SURVEYED: February 19 - April 18, 1970

SCALE: 1:80,000

PROJECT NO.: OPR-486

SOUNDINGS: Echo Sounders DE-723

CONTROL: Hi-Fix (Range-Range)

| | |
|--------------------------------------|------------------------------|
| Chief of Party | J. A. Yeager |
| Surveyed by | R. H. Kerley |
| | J. O. Rolland |
| | J. H. Snooks |
| | D. H. Johnson |
| | R. L. Gester |
| | CST R. Lewis (Civilian) |
| Automated Plot by | Gerber Digital Plotter (PMC) |
| Verified by | B. Stephenson |
| | G. Trefethen |
| | B. Davis |
| Reviewed by | L. Quinlan |
| | Date: November 15, 1976 |
| Cursory inspection made--survey | K. W. Wellman |
| processing considered complete | April 20, 1977 |

1. Control and Shoreline

The origin of the control is adequately covered in part F of the Descriptive Report.

There is no shoreline within the limits of this survey.

2. Hydrography

a. Depth curves at crossings are in good agreement.

b. The standard depth curves are adequately delineated.

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

3. Condition of Survey

The field work, survey records, automated plotting, and the Descriptive Report are adequate and conform to the requirements of the Hydrographic Manual and Instruction Manual - Automated Hydrographic Surveys, except as follows:

a. Sounding line spacing should have been reduced in some areas of sandwaves near the northern limits to improve the portrayal of the bottom configuration.

b. Approximately 10 percent of the soundings on the smooth sheet were hand-corrected due to some inefficiency of the plotter which caused it to plot incorrect or incomplete integers. The same condition was found on the position overlay.

4. Junctions

The junctions with H-9060 (1970) on the west, H-9451 (1974) on the northwest, H-8808 (1964) on the north, and H-8810 (1964-65) on the northeast were discussed in the reviews of those surveys. No contemporary survey joins the present survey on the east; however, charted depths and survey depths are in general harmony in this area.

5. Comparison with Prior Surveys

| | | | |
|----|-----------|-----------|-------------|
| a. | H-244 | (1850) | 1:20,000 |
| | H-686 | (1859) | 1:200,000 |
| | H-767 | (1860) | 1:500,000 |
| | H-884 | (1865-66) | 1:240,000 |
| | H-1498a&b | (1880-82) | 1:1,200,000 |
| | H-1500a | (1881) | 1:600,000 |
| | H-1561 | (1880-81) | 1:1,200,000 |
| | H-1721 | (1886) | 1:200,000 |
| | H-2920a | (1882-87) | 1:1,200,000 |

The reconnaissance nature of these prior surveys precludes an adequate detailed comparison between prior and present depths.

The present survey is adequate to supersede the prior soundings in the common area.

| | | | |
|----|--------|--------|----------|
| b. | H-538 | (1856) | 1:40,000 |
| | H-1136 | (1872) | 1:40,000 |
| | H-2127 | (1892) | 1:20,000 |
| | H-2471 | (1900) | 1:40,000 |

These prior surveys, taken together, cover most of the area of the present survey.

A comparison between the prior surveys and the present survey reveals random indications of present depths being generally 2 to 6 feet shoaler than prior depths. Greater differences of \pm 20 to 40 feet, however, were noted in general depths exceeding 120 feet.

The noted depth differences are attributed to the unstable nature of the bottom materials in this area and to the less accurate methods employed on the prior surveys.

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

- c. H-8531 W.D. (1955) 1:40,000
FE 1, 1957 W.D. 1:40,000

There are no conflicts between the effective wire-drag depths from these prior surveys and depths on the present survey. Several least depths on submerged wrecks were carried forward, and appropriately annotated, to supplement the present survey.

6. Comparison with Chart 11520 (1110) 20th Edition, January 10, 1976
11555 (1232) 22nd Edition, September 6, 1975

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys which require no further consideration supplemented by the partial application of the boat sheet, the U.S. Navy Wreck List of 1957, and miscellaneous blueprints, notices to mariners, and chart letters.

Attention is directed to the following:

(1) The Monitor Marine Sanctuary charted latitude $35^{\circ}00.50'$, longitude $75^{\circ}24.50'$ originates with CL 213/75 and NM 11/75. It is verified and should be retained as charted.

(2) Unexploded Depth Charge Rep 1967 charted latitude $35^{\circ}01.25'$, longitude $75^{\circ}17.00'$ originates with Notice to Mariners 21, 1957. It is neither verified nor disproved by the present survey and should be retained as charted.

(3) The following submerged wrecks, originating with indicated sources, are neither verified nor disproved by the present survey and

should be retained on the chart:

| <u>Latitude</u> | <u>Longitude</u> | <u>Source</u> |
|-----------------|------------------|--|
| 34°57.00' | 75°40.00' | U.S. Navy Wreck List (1957) |
| 34°49.30' | 75°33.00' | U.S. Navy Wreck List (1957) |
| 34°44.10' | 75°35.00' | U.S. Navy Wreck List (1957) |
| 34°39.00' | 75°48.00' | U.S. Navy Wreck List (1957) |
| 34°41.50' | 75°35.00' | NM 36/45 |
| 34°41.10' | 75°49.0' | NM 38/57 |
| *35°05.07' | 75°34.9' | U.S. Navy Wreck List #422 |
| 35°05.16' | 75°19.34' | H-8351 W.D. Descriptive Report and Review |

*Recommend this be charted as cleared by 11 fathoms

b. Aids to Navigation

There are no aids to navigation within the limits of the survey.

7. Compliance with Instructions

The survey adequately complies with the project instructions.

8. Additional Field Work

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

Examined and Approved:

A. J. P. P. P.
Chief
Marine Surveys Division

L. A. M. M.
Associate Director
Office of Marine Surveys
and Maps

H- 9104

A. Additions and corrections have been furnished the plotter
center by the verification unit. ^{by Review} Except those marked for submission
Signed *Thugh J. Puffes*
Date Feb. 16, 1971 Title Chief, Verification Br., AMC

B. Additions and corrections have been added to the survey
records and the final smooth sheet forwarded to the ^{Review} ~~verifica-~~
~~tion~~ unit.

Date Feb. 16, 1971 Signed *Thugh J. Puffes*
Title Chief, Verification Br., AMC

C. The smooth sheet has been inspected, is complete, and
meets the requirements of the General Instructions for
automated surveys and the Hydrographic Manual. (Note:
All exceptions are listed in the verifier's report).

Date Feb. 16, 1971 Signed *Thugh J. Puffes*
Title Chief, Verification Br., AMC

D. Smooth sheet and records forwarded to Rockville, Maryland
Office.

Date Feb. 17, 1971

77° 76° 75°

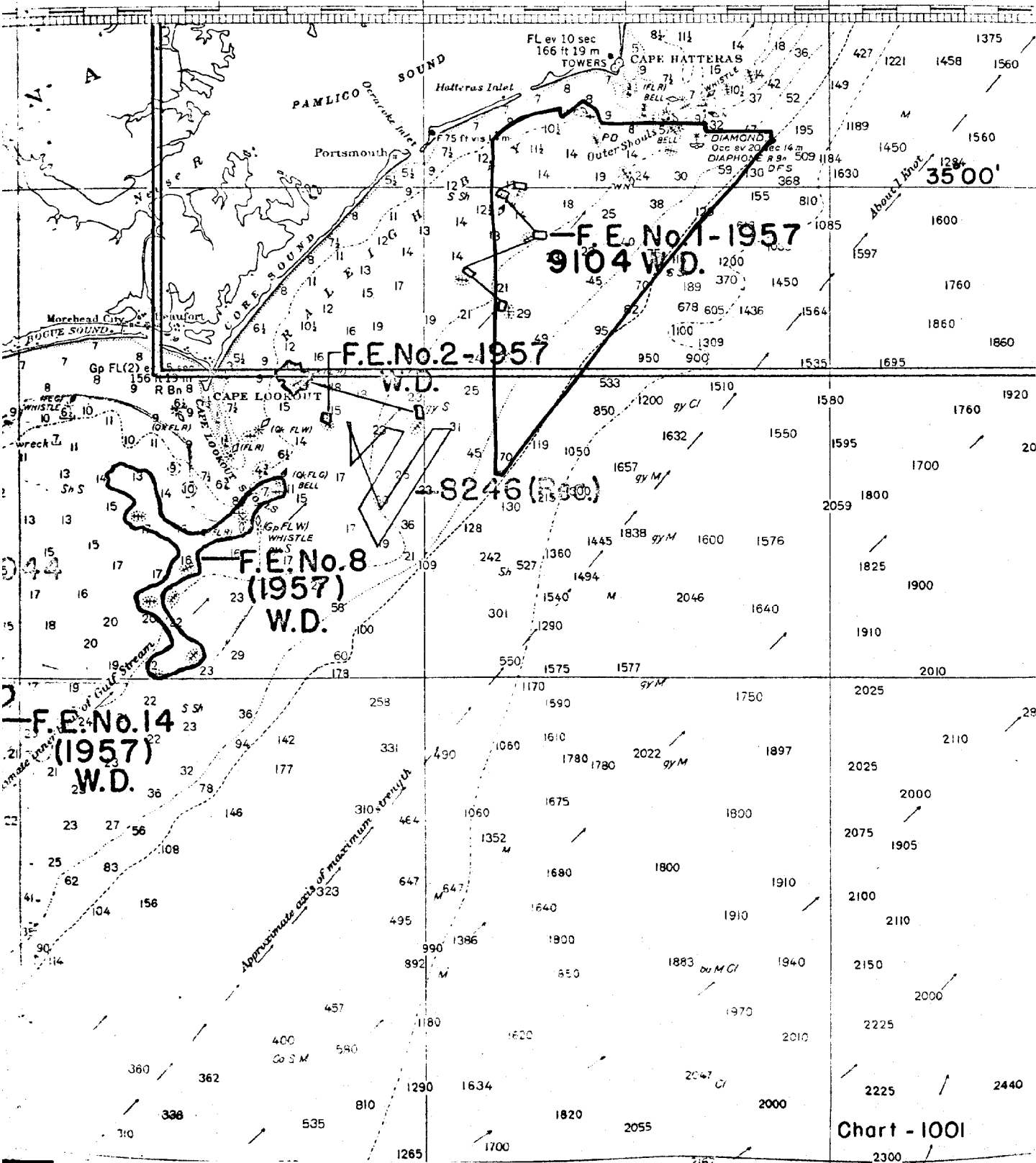


Chart - 1001

