H10825

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic/Side Scan Sonar

Field No. WH-10-12-98

Registry No. H10825

LOCALITY

State North Carolina

General Locality North Atlantic Ocean

Locality 5.9 NM SSW OF Fort Macon

1998

CHIEF OF PARTY
LCDR J. W. Humphrey

NOAA FORM 77-28
(11-72)

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

REGISTRY NUMBER:

HYDROGRAPHIC TITLE SHEET

H10825

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 NUMBER: **WH-10-12-98**

State: North Carolina

General locality: North Atlantic Ocean

Locality: 5.9 NM SSW of Fort Macon

Scale: 1: 10,000 Date of survey: Jul. 12, 1998 - Sept 18, 1998

Instructions dated: Feb 20, 1998 Project Number: OPR-F344-WH

Vessel: NOAA Ship WHITING S329

Chief of Party: LCDR John W. Humphrey

Surveyed by: J.W. Humphrey, E. Christman, T. Haupt, L. Krepp, E. Provensen, U.L. Gardner, P.G. Lewit, K.B. Shaver, F.R. Cruz, B. Armbruster, R. Corson

Soundings taken by echosounder: DSF-6000N Echosounder

Graphic record scaled by: WHITING personnel

Graphic record checked by: WHITING personnel

Protracted by: N/A Automated plot by: HP PLT 750C Plotter (FIELD) HEWLETT PACKARD DESIGN JET 2500 CP PLOTTER

Verification by: ATLANTIC Hydrographic Surveys Branch PERSONNEL

Soundings in: Feet: ✓ Fathoms: ____ Meters: (✓) at MLW: ____ MLLW: (*) : ____

Remarks: Basic Hydrographic and 200% Side Scan Sonar.

Electonic Data Processing (EDP) vessels numbers involved in data acquisition: 2930 and 2931

Time zones used: UTC

Survey work began and was completed in 1998

Horizontal Datum NAD 83

NOTES IN DESCRIPTIVE REPORT WERE MADE IN RED DURING OFFICE PROCESSING

AWOIS ✓ & SURF ✓ by MBH 3/4/99

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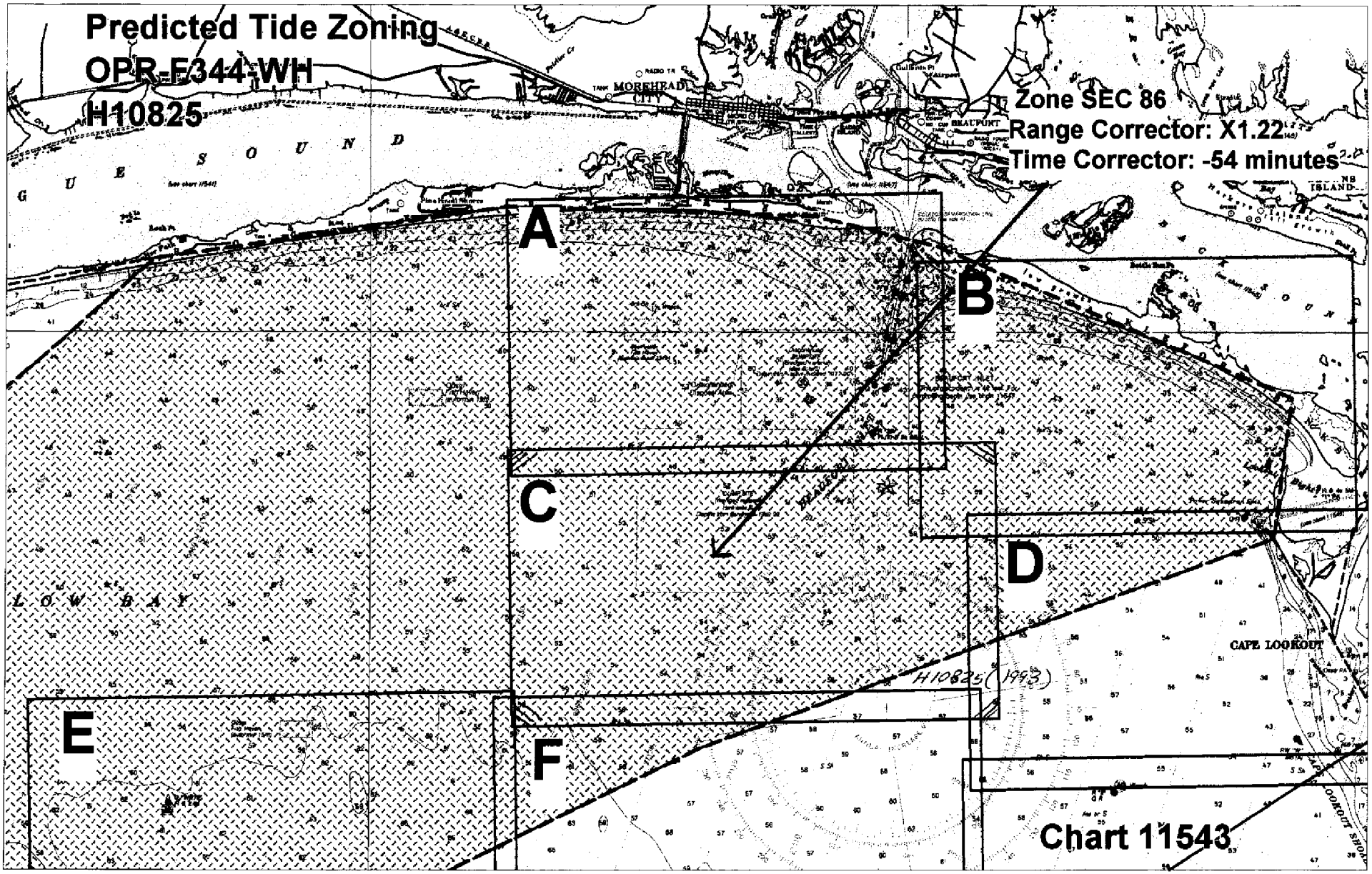

Predicted Tide Zoning
OPR-F344-WH
H10825
Zone SEC 86
Range Corrector: X1.22
Time Corrector: -54 minutes
A
B
C
D
E
F
Chart 11543
MOREHEAD CITY
BEAUFORT
CAPE LOOKOUT
H10825(1993)

TABLE OF CONTENTS

A. PROJECT

A.1 This survey was conducted in accordance with Hydrographic Project Instructions OPR-F344-WH, basic hydrographic survey, Atlantic Ocean, Approaches to Morehead City, North Carolina.

A.2 The original instructions are dated February 20, 1998.

A.3 There have been two changes to the original project instructions. The first change is dated June 30, 1998, and the second change is dated September 02, 1998.

A.4 This Descriptive Report covers H10825 (sheet "C") of OPR-F344-WH. H10825 lies 5.9 nautical miles south-southwest of Fort Macon, North Carolina. See section B.2 for exact survey boundaries.

A.5 Project OPR-G344-WH responds to a request from the Fifth U.S. Coast Guard District. The USCG is conducting a Port Access Route Study for Morehead City, North Carolina. The study will determine the need for fairways and/or traffic separation schemes for the area. The port of Morehead City is the primary embarkation point for the 2nd Division, U.S. Marine Corps. The area is also host to commercial vessels transporting hazardous cargoes such as petroleum products and fertilizers.

B. AREA SURVEYED

B.1 This survey covers the navigable area of the Approaches to Morehead City, North Carolina. It is bounded on the west by approximate longitudes 76°56'W, and 76°47'30"W. To the east it is bounded by Cape Lookout shoals at the north end, and longitude 76°20'W to the southeast. The southern limit is latitude 34°18'N.

B.2 The survey comprises one sheet with the following boundaries, starting at the NE corner and proceeding clockwise:

Sheet "C":

1. 34°34'24"N 076°47'25"W
2. 34°30'25"N 076°47'25"W
3. 34°30'25"N 076°56'22"W
4. 34°34'24"N 076°56'22"W
5. 34° 37' 00"N 076° 39' 34"W
6. 34° 34' 11"N 076° 38' 29"W

B.3 Data collection for this survey began on July 12, 1998 (DN 193). Data collection ended on September 18, 1998 (DN 261).

C. SURVEY VESSELS

C.1 The following vessels were used during this survey:

Vessel	EDP Number	Primary Function
NOAA Ship Whiting	2930 (WTEW)	Hydrography and Side Scan Operations
NOAA Launch WH-1	2931 (1015)	Hydrography and Side Scan Operations

C.2 No unusual vessel configurations were used during this survey.

D. AUTOMATED DATA ACQUISITION AND PROCESSING *SEE ALSO EVALUATION REPORT*

D.1 All software used for data acquisition and processing are contained on the **HYDROSOFT 8.2 (plus updates as of 4/22/98)** compact disc provided by Atlantic Hydrographic Branch (N/CS33). The following is a list of software used from this disc:
HYPACK for Windows version 7.1a
HSD Utilities
Hydrographic Processing System
HPTools

D.2 The SEABIRD SBE-19 Seacat Profiler (CTD) unit was utilized with **SEASOFT 3.3M** and **SEACAT 2.0** software. The program **VELOCITY** (Version 3.1, February 1998) was used to process the collected data and calculate velocity corrections.

E. SONAR EQUIPMENT

E.1 The WHITING conducted all side scan sonar operations using an EG&G Model 260 image-corrected side scan sonar recorder and a 100 kHz Model 272-T towfish.

E.2 The towfish was configured with a 20° beam depression, which is the normal setting and yields the optimum beam correction.

E.3 The 100 kHz frequency was used throughout the survey.

E.4 a. During survey preparation, it was determined that the depth of water in the survey area would require 80 meter line spacing to accommodate a 100 meter side scan sonar range scale. This line spacing and range scale combination was used to obtain complete (200%) area coverage and provided optimal contact resolution. The line spacing is in accordance with the value specified in section 7.3.2.1 of the Field Procedures Manual (FPM). Data collected with an EPE of 30 or greater was rejected or smoothed during post-processing, so the maximum line spacing was never exceeded.

E.4 b. Confidence checks were obtained during passes by bottom features such as sand waves, scours, substrate density changes and buoy anchors. These features were annotated on the sonargram.

E.4 c. Two hundred percent side scan coverage was completed throughout the entire survey area. All side scan coverage was checked with swath plots to ensure proper overlap between adjoining lines.

E.4 d. There were no degraded data returns collected during this survey.

E.4 e. On NOAA Ship WHITING, the SSS towfish was deployed from a Reuland winch using one of two armored cables in conjunction with an A-frame on the stern. The armored cable was connected to the SSS recorder by a slip-ring assembly.

E.5 There were no significant side scan sonar contacts found during the course of this survey.

E.6 All overlap was checked and holidays identified during post processing using **HPS_MI**, a MapBasic program provided by Hydrographic Surveys Division (N/CS32) to accompany **MapInfo** software **version 4.5**.

F. SOUNDING EQUIPMENT

F.1 All hydrographic depths were acquired using a Raytheon Model 6000N Digital Survey Echosounder.

F.2 No other sounding equipment was used.

F.3 There were no faults in sounding equipment that affected the accuracy or quality of the data.

F.4 Both high (100 kHz) and low (24 kHz) frequency sounding data were recorded during data acquisition. Only high frequency soundings were plotted.

G. CORRECTIONS TO SOUNDINGS

G.1 a. Sound Velocity Correctors

The velocity of sound was calculated using measurements taken from a Sea-Bird SBE 19 Seacat Profiler (CTD) (s/n 196093-1060). Seacat Data Quality Assurance Tests were conducted after each respective velocity cast to ensure that the unit was operating within tolerance.

All sound velocity data were processed using program **VELOCITY**. Computed velocity correctors were entered into the HPS sound velocity table and re-applied during post-processing to both high and low frequency soundings.

The following is a list of sound velocity casts performed for H10825:

Table Number	Day No.	Vessel Covered	Position of Cast		Days Covered
			Latitude	Longitude	
5	193	WHITING	34°34'18"N	076°47'12"W	193-194
6	193	1015	34°34'18"N	076°47'12"W	193
12	210	WHITING	34°34'17"N	076°47'11"W	203-207
17	217	WHITING	34°34'14"N	076°47'28"W	219-229
24	229	WHITING	34°34'18"N	076°47'06"W	230-259
34	259	WHITING	34°34'24"N	076°47'12"W	259
25	261	1015 - 2931			261

d. Leadline Comparison

A dual leadline comparison with the DSF-6000N was conducted for WHITING during OPR-F344-WH (H10825) on:

DN 189 at 34°39'48"N and 076°44'06"W (45 ft depths).

Weather and sea conditions were calm and proved ideal for performing the leadline comparison. No corrections to soundings were needed. Leadlines used were calibrated on January 13, 1998, and the calibration confirmed that the leadline error was negligible. See the fathometer record on the above listed day for actual DSF 6000N readings.

A leadline comparison was performed for the launch on:

DN 191 at 34°41'58"N and 076°40'52"W (25 ft depths)

Weather and sea conditions were fair and proved satisfactory for performing the barcheck and leadline comparisons. No corrections to soundings were needed. Copies of the leadline check data are included in the Separates, section IV. DATA FILED WITH FIELD RECORDS

f. Static Draft

The static draft correction for launch 1015 is 0.55 meters, and was measured on July 28, 1993. The corrector was entered into HPS Offset Table 1. The correction for static draft for WHITING is 3.2 meters, a historical value which WHITING divers confirmed with a MOD III Diver Least Depth Gauge on May 11, 1995. The corrector was entered into Offset Table 9. Static draft correctors were applied during data processing for each survey platform.

g. Dynamic Draft (Settlement and Squat Correctors)

Settlement and squat values for launch 1015 were determined on March 16, 1998, and were entered into HPS Offset Table 1. Settlement and squat values for WHITING were determined on March 26, 1996, and were entered into HPS Offset Table 9. The settlement and squat correctors were applied to the sounding data in real time for each survey platform. Refer to Separate IV for data records. DATA FILED WITH FIELD RECORDS

h. Heave, Roll, and Pitch Correctors

Heave correctors for data acquired by WHITING were determined by a TSS Dynamic Motion Sensor DMS-05. Heave correctors were collected during data acquisition and applied to raw data during the **HPTools** conversion process. Serial numbers for these sensors were as follows:

Vessel	Serial Number
2930	2066
2931	2062

he Whiting Gand launch 1015 employed no unusual or unique methods or instruments to correct echo soundings.

G.6 Tide Correctors

a. The tidal datums for this project are Mean Lower Low Water (MLLW) and Mean High Water(MHW). Soundings are referenced to MLLW. Heights of bridges and cables are referenced to MHW. The operating tide station at Duke Marine Laboratory, Beaufort, North Carolina (865-6483) served as control for datum determination.

b. Tidal zones are controlled by the Duke Marine Laboratory guage (865-6483). Due to the limitations of HPS and for ease of data processing, zone SEC86 correctors were applied to all H10825 data using unverified actual tides provided by the Atlantic Hydrographic Branch and entered using the DPAS tide utilities in HPS. All proper zones will be applied through HPS upon receipt of smooth tides from N/OES234. See following page for location of zone SEC86.

Approved tides for H10825 were requested from N/OES234 in a letter mailed and dated September 21, 1998. APPROVED TIDES AND ZONING WERE APPLIED DURING OFFICE PROCESSING

All sounding correctors were applied to both the narrow (100 kHz) and wide (24 kHz) DSF-6000N beams. Zoning for this project is consistent with the project instructions.

H. CONTROL STATIONS SEE ALSO EVALUATION REPORT

The horizontal datum for this survey is the North American Datum of 1983 (NAD 83). No horizontal control stations were established for this survey.

I. HYDROGRAPHIC POSITION CONTROL

I.1 This survey was conducted using the Global Positioning System (GPS) corrected by the U.S. Coast Guard (USCG) Differential GPS reference station network. The launch and the ship used an Ashtech Sensor GPS receiver with a CSI MBX1 beacon receiver supplying USCG correctors for DGPS navigation. Ashtech receivers were automatically initialized by HSDutils and the CSI MBX1 units were preset to the appropriate station and frequency.

I.2 Accuracy requirements were met as specified by the Hydrographic Manual and Field Procedures Manual (FPM). The Horizontal Dilution of Precision (HDOP) and Expected Position Error (EPE) specified by the FPM were monitored during on-line data collection. If the positioning degraded beyond the acceptable limits while on-line, the data were either smoothed or rejected.

I.3 Differential GPS Equipment:

The serial numbers of the Ashtech Sensor and CSI MBX1 receivers on the data acquisition platform are as follows:

Vessel	Device	Serial Number
2930 (WTEW)	Ashtech Sensors	700417B1203 (system A) 700417B1191 (system B)
	CSI MBX1	X-1318 (system A) X-1081 (system B)
2931 (1015)	Ashtech Sensor	700417B1194
	CSI MBX1	X-1088

I.4 Correctors were received from the Fort Macon, NC and Charleston, SC radiobeacons.

I.5 a. DGPS performance checks on NOAA Ship WHITING and launch 1015 were determined by using the "P"-Check program from the Hydrosoft version 8.2 disk. DGPS positions from the Whiting and launch 1015 were taken while secured in the WHITING davits using correctors from the Fort Macon, NC DGPS beacon. Simultaneous HYPACK positions were compared with WHITING. An offset in distance and azimuth was then calculated between the ship and launch system. A summary of the DGPS performance checks is included in the Separates, section III.* All DGPS performance checks confirmed that the equipment was working properly.* DATA FILED WITH FIELD RECORDS

I.7 a. There were no unusual methods used to operate or calibrate electronic positioning equipment.

I.7 b. There were no equipment malfunctions.

I.7 c. No unusual atmospheric conditions affected data quality.

I.7 d. No systematic errors were detected which required adjustments.

I.7 e. The maximum allowed HDOP value of 4.0 was never exceeded.

I.8 f. DGPS antenna offsets were measured on March 19, 1993, for WHITING. Offsets and laybacks were measured using the high frequency echosounder transducer as the reference. Correctors were entered into Offset Table 9. The DGPS antennae was installed on launch 1015 on April 2, 1996, directly over the echosounder transducer. Antenna height was also measured on the same respective dates shown above, using the water line as the reference. Correctors were entered into Offset Table 1 for launch 1015. A minimum of four satellites were used during survey H10825 providing altitude unconstrained positioning.

I.9.g. Offset, layback and height corrections for the launch's aft towing boom was measured on July 28, 1993, verified on April 5, 1994, and applied by HPS during post processing. Correctors were entered into Offset Table 1 for launch 1015. Offset, layback and height for WHITING's A-frame was measured on March 18, 1998, using the forward high frequency transducer as the reference. Correctors were entered into Offset Table 9.

These offsets, along with the cable length, towfish height, and depth of water, were used by the HPS system to compute the position of the towfish. Copies of HPS Offset Tables 1 and 9 are contained in Separate III. DATA FILED WITH FIELD RECORDS

J. SHORELINE

No shoreline is contained within the boundaries of this survey.

K. CROSSLINES

A combined total of 71.82 linear nautical miles of crosslines were acquired for this survey representing 10.91% of the 658.32 computed linear nautical miles of mainscheme hydrography.

A plot of all main scheme soundings in feet, superimposed with cross lines, was used to conduct main scheme-to-cross line comparisons. Depths at intersections were compared to all other depths within a 5-mm (50-meter) radius. Based on this procedure, agreement between main scheme and cross line depths was found to be excellent. The majority of compared depths fell within 1 to 2 feet of each other.

L. JUNCTIONS *SEE ALSO EVALUATION REPORT*

L.1 On its northern edge, survey H10825 junctions with survey H10827. H10827 is an ongoing survey, sheet "A", of OPR-F344-WH, with a scale of 1:10,000. On its northeast corner, survey H10825 junctions with survey H10832. H10832 is an ongoing survey, sheet "B", of OPR-F344-WH, with a scale of 1:10,000. On its southern edge, survey H10825 junctions with survey H10826. H10826 is an ongoing survey, sheet "F", of OPR-F344-WH, with a scale of 1:10,000. A comparison of data collected on H-10825 to that of it adjacent sheets mentioned above showed that no significant differences between soundings exist. Generally agreement was excellent, with an occasional 1 to 2 foot difference.

M. COMPARISON WITH PRIOR SURVEYS *SEE ALSO EVALUATION REPORT*

A comparison with prior surveys is not required for this survey, due to completion of 200% side scan sonar coverage.

N. ITEM INVESTIGATION REPORTS

No significant items were found within the limits of H10825.

O. COMPARISON WITH THE CHART *SEE ALSO EVALUATION REPORT*

O.1 Three charts are affected by this survey (H10825):

Chart 11520
"Cape Hatteras to Charleston"
37th Ed. 20 Dec 1997
Scale: 1:432,720

Chart 11543
"Cape Lookout to New River"
20th Ed. 11 July 1992
Scale: 1:80,000

Chart 11545
"Beaufort Inlet and part of Core Sound"
57th Ed. 18 January 1997
Scale: 1:40,000

O.3 a. Overall, the depths collected for this survey correlated well with charted soundings. Survey depths were converted from meters to feet and overlaid on the largest scale chart of the area using MapInfo software. Depths generally showed minor shoaling and deepening when compared to charted soundings. During the comparison, survey depths deeper than charted soundings by 4 feet or greater was the criteria for further investigation. Only two survey depths were found to be 4 feet or more deeper than charted soundings. These 2 soundings fell within the dumping grounds on H10825 and no further investigation was conducted.

O.3 b. In general, survey depths correlated well with charted soundings within the area with occasional differences of 1 to 2 feet. Any survey depth that showed significant deviation from the charted soundings was investigated with singlebeam echosounder. Upon development at 20 meter line spacing, these areas showed no significant deviation from the charted soundings.

P. ADEQUACY OF SURVEY *SEE ALSO EVALUATION REPORT*

This survey is complete and fully adequate to supersede prior survey data within common areas.

Q. AIDS TO NAVIGATION *SEE ALSO EVALUATION REPORT*

Q.2 There were 8 aids to navigation within the survey limits of H10825.

Aid	Charted Position		Surveyed Position		DP#
	Latitude	Longitude	Latitude	Longitude	
RW "BM" Mo(A)	34°35'00"N	076°41'33"W	34°34'49.8"N	076°41'33.7"W	20006
G"1" Q G	34°35'58"N	076°41'21"W	34°35'57.4"N	076°41'20.5"W	20004
R"2" Q R	34°35'58"N	076°41'13"W	34°38'56.1"N	076°41'14.4"W	20005
G"3" Fl G 2.5s	34°36'55"N	076°41'07"W	34°36'55.3"N	076°41'06.6"W	20003
R"4" Fl R 2.5s	34°36'55"N	076°40'58"W	34°3'54.7"N	076°41'00.9"W	20002
G"5" Fl G4s	34°37'56"N	076°40'54"W	34°37'54.8"N	076°40'52.5"W	20001
R"6" Fl R4s	34°37'56"N	076°40'45"W	34°37'53.7"N	076°40'46.1"W	20000
YC "A"	34°37'49"N	076°42'21"W	34°37'51.7"N	076°42'20.8"W	20007

R. STATISTICS

R.1	a. Number of Non-Rejected Positions	26668
	b. Linear Nautical Miles of Sounding Lines:	
	Nautical Miles of Side Scan Sonar	658.32
	Nautical Miles Hydrography	71.82
R.2	a. Square Nautical Miles of Hydrography	27.00
	b. Days of Production	20
	c. Detached Positions	8
	d. Bottom Samples	20
	e. Tide Stations.	1
	g. Velocity Casts	5

S. MISCELLANEOUS *SEE ALSO EVALUATION REPORT*

S.1 Bottom samples were taken at 2000-meter intervals. Samples were examined for composition and consistency, then stored in plastic bags and sent to the Smithsonian Institution.

S.2 During the course of work on H10825, operations were suspended due to hurricane BONNIE affecting the survey area. A series of hydrographic crosslines were run when WHITING resumed operations after BONNIE had passed. A comparison of soundings collected before and after hurricane BONNIE passed through showed no differences.

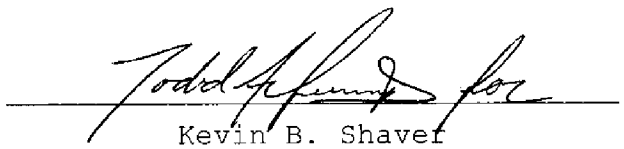
T. RECOMMENDATIONS *SEE ALSO EVALUATION REPORT*

T.1 No further survey work is recommended.

U. REFERRAL TO REPORTS

No reports or data are referred to in this Descriptive Report that are not included with this survey.

This report and the accompanying field sheets are respectfully submitted.



Kevin B. Shaver
Senior Survey Technician
NOAA Ship Whiting

APPENDIX III

LIST OF HORIZONTAL CONTROL STATIONS

No horizontal control stations were needed for this survey since differential GPS was employed exclusively for all positioning control. The geographic positions for the two differential GPS radio beacons used during this survey are as follows:

Fort Macon, NC	Lat. 36° 55.5' N
289 KHZ	Long. 076° 00.4' W
Charleston, SC	Lat. 32° 45.5' N
298 KHz	Long. 079° 50.6' W

APPENDIX VII

APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NO. H10825

Field operations contributing to the accomplishment of this basic hydrographic survey were conducted under my direct supervision with frequent personal checks of progress and adequacy. All field sheets and reports were reviewed in their entirety and all supporting records were checked as well.

This survey is more than adequate to supersede ALL prior surveys in common areas. This survey is considered complete and adequate for nautical charting.

John W. Humphrey, LCDR, NOAA
Commanding Officer
NOAA Ship WHITING

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: January 21, 1999

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-F344-WH
HYDROGRAPHIC SHEET: H-10825

LOCALITY: North Carolina, Atlantic Ocean Approaches To Morehead City

TIME PERIOD: July 12, 1998 - September 16, 1998

TIDE STATION USED: 865-6590 Atlantic Beach, Triple "S" Pier, NC
Lat. 34° 41.9'N Lon. 76° 42.7'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.207 meters

TIDE STATION USED: 865-6483 Duke Marine Lab, Beaufort Inlet, NC
Lat. 34° 43.2'N Lon. 76° 40.2'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.966 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SEC85 & SEC86.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

Note 2: Use tide data from the appropriate station with applicable zoning correctors for each zone according to the order in which they are listed in the Tidezone corrector files. For example, tide station one (TS1) would be the first choice for an applicable zone followed by TS2, etc. when data are not available.

Note 3: Atlantic Beach, Triple "S" Pier (865-6590) is the preferred tide data set for hydrography offshore, Atlantic Ocean Approaches to Morehead City. Unfortunately, a significant portion of the collected data was declared invalid do to unresolved gauge problems. Data collected at this station starting October 28, 1998 are valid based on data analyses. However, due

to pier construction, vertical stability verification through SOP differential leveling could not be conducted either at the maintenance activity or at the end of data collection for this project. As a result, uncertainty still exists, however, the accuracy is within the requirement for NOS hydrographic surveying operations. Therefore data from the Atlantic Beach station (TS1) should be used when available. The second choice station for this project is Duke Marine Lab 865-6483 (TS2).

Thomas N. Mero 1/21/99

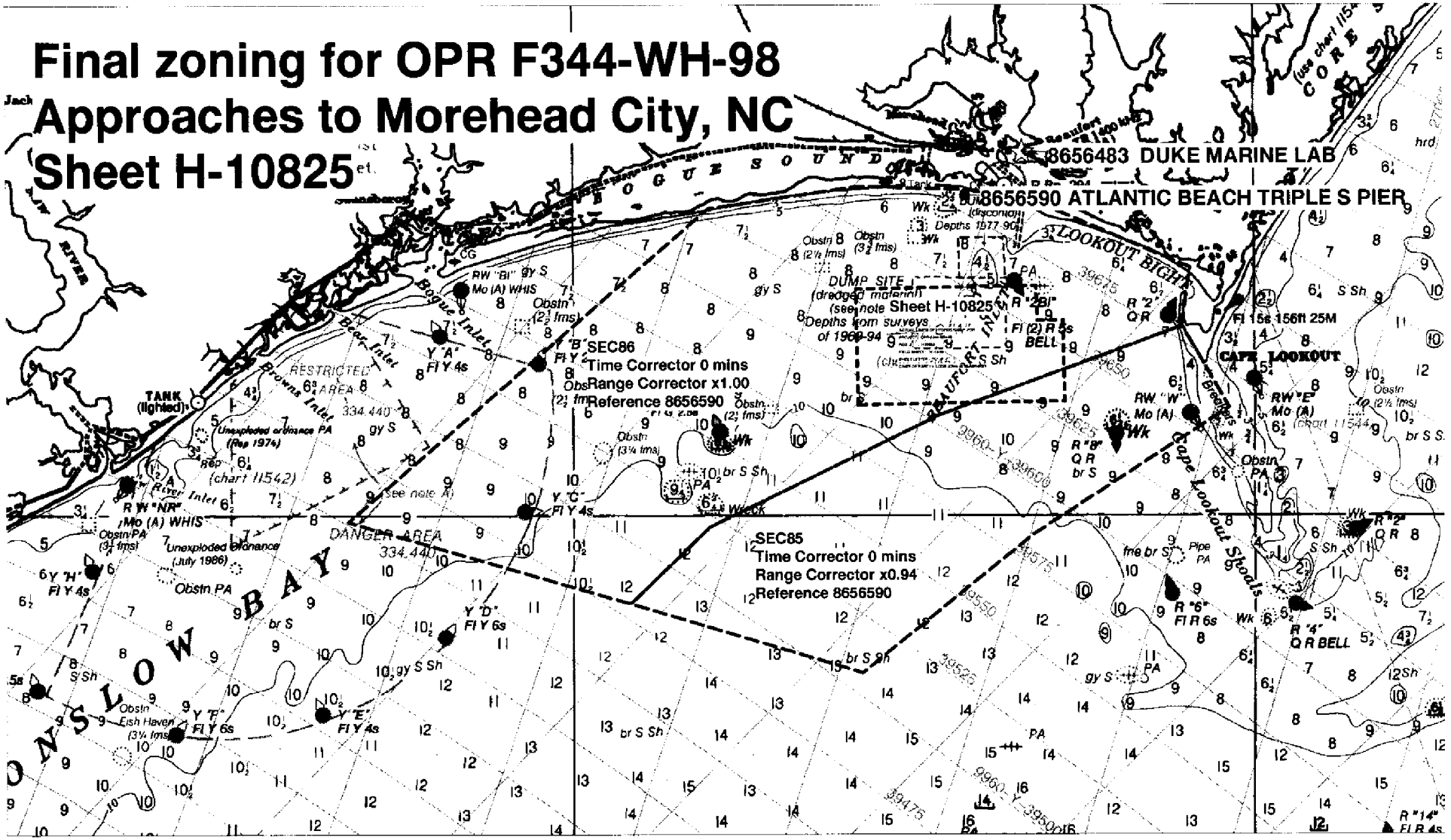
CHIEF, REQUIREMENTS AND ENGINEERING BRANCH

Final tide zone node point locations for OPR-F344-WH-98,
Sheet H-10825.

Format: Longitude in decimal degrees (negative value denotes Longitude West),
Latitude in decimal degrees
Tide Station (in recommended order of use)
Average Time Correction (in minutes)
Range Correction

	Tide Station Order	AVG Time Correction	Range Correction
Zone SEC85			
-76.553316 34.614162	865-6590	0	0.94
-76.730339 34.560916	865-6483	-54	1.15
-76.89935 34.493201			
-76.957503 34.446746			
-76.787701 34.404771			
-76.661971 34.488685			
-76.519049 34.565107			
-76.53576 34.589439			
-76.553316 34.614162			
Zone SEC86			
-76.553316 34.614162	865-6590	0	1.00
-76.54751 34.649844	865-6483	-54	1.22
-76.657373 34.688497			
-76.695358 34.696226			
-76.790541 34.698624			
-76.900257 34.685349			
-77.16484 34.496165			
-76.957503 34.446746			
-76.89935 34.493201			
-76.730339 34.560916			
-76.553316 34.614162			

Final zoning for OPR F344-WH-98
Approaches to Morehead City, NC
Sheet H-10825



NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10825

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
MOREHEAD CITY (title)	X		X							1
NORTH ATLANTIC OCEAN	X		X							2
NORTH CAROLINA (title)	X		X							3
										4
										5
										6
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Approved:

Chief Geographer

JAN 13 1999

NOAA FORM 76-155 SUPERSEDES C&GS 197

03/01/99

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H10825

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	26668
NUMBER OF SOUNDINGS	26668

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	12	11/27/98
VERIFICATION OF FIELD DATA	284	02/08/99
EVALUATION AND ANALYSIS	6	
FINAL INSPECTION	1	02/04/99
COMPILATION	51	02/26/99
TOTAL TIME	371	

ATLANTIC HYDROGRAPHIC BRANCH APPROVAL 02/07/99

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10825 (1998)

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

The following software was used to process data at the Atlantic Hydrographic Branch:

Hydrographic Processing System
NADCON, version 2.10
Siteworks, version 2.01
MicroStation 95, version 5.05
I/RAS B, version 5.01

The smooth sheet was plotted using an Hewlett Packard DesignJet 2500CP plotter.

H. CONTROL STATIONS

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. The smooth sheet has been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on the NAD 27, move the projection lines 0.588 seconds (18.132 meters or 1.81 mm at the scale of the survey) north in latitude, and 1.248 seconds (31.797 meters or 3.18 mm at the scale of the survey) east in longitude.

L. JUNCTIONS

H10827 (1998) to the North
H10832 (1998) to the Northeast
H10845 (1998) to the East
H10826 (1998) to the South

Standard junctions were effected between the present survey and surveys H10827 (1998), H10832 (1998), H10845 (1998) and H10826 (1998). There are no junctional surveys to the West. Present survey depths are in harmony with the charted hydrography to the north, east and south.

M. COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not done during office processing in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

O. COMPARISON WITH CHART 11543 (20th Edition, Jul 11/92 11545 (57th Edition, Jan 18/97 11520 (37th Edition, Dec 20/97

Hydrography

The charted hydrography originates with the prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in sections N. and O. of the Descriptive Report.

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

P. ADEQUACY OF SURVEY

This is an adequate hydrographic/side scan sonar survey. No additional work is recommended.

S. MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

The following NOS Charts are used for compilation of the present survey:

11543(21st ED., Aug 15/98)
11545(57th ED., Jan 18/97)

H10825

Frank Saunders

Frank Saunders
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H10825

Initial Approvals:

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 digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

_____ Date: 2/7/99

Norris A. Wike
Cartographer
Atlantic Hydrographic Branch

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

_____ Date: 2/7/99

Andrew L. Beaver
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

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Final Approval:

Approved: _____ Date: March 8, 1999

Andrew A. Armstrong, III
Captain, NOAA
Chief, Hydrographic Surveys Division

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H10825

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
11545	2/16/99	[signature]	Full ~~Part Before~~ After Marine Center Approval Signed Via FULL APPLICATION
		NORRIS A. WIKE	Drawing No. OF SOUNDINGS AND CURVES FROM
			SMOOTH SHEET
11543	2/17/99	[signature]	Full ~~Part Before~~ After Marine Center Approval Signed Via FULL APPLICATION
			Drawing No. OF SOUNDINGS AND CURVES FROM
			SMOOTH SHEET THRU 11545
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED