

H10690

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-10-6-96**

Registry No. **H-10690**

LOCALITY

State **NORTH CAROLINA**

General Locality **NORTH ATLANTIC OCEAN**

Sublocality **10 NM SOUTH OF CAPE FEAR
RIVER**

19 96

CHIEF OF PARTY

CDR M. R. Kenny, NOAA

LIBRARY & ARCHIVES

DATE **MAR 11 1998**

COMPILATION FEEDBACK

CHART 11536
11537 LOCALE WILMINGTON NC TODAY'S DATE _____
SURVEY 10690 H-DRAWING BY AHB PHB
MCD COMPILER _____

SYMBOLS: PROPERLY USED, WITHIN TOLERANCES? _____

TEXT: PROPERLY USED, WITHIN TOLERANCES? _____

SOUNDING SELECTION AND DENSITY? _____

DRAWING HISTORY: APPROPRIATE LEVEL OF DETAIL, ACCURACY? _____

ADHERENCE TO NAUTICAL CHART MANUAL? _____

OTHER COMMENTS ON COMPILATION _____

COMMENTS ON SCARS TECHNIQUE _____

VECTOR AND RASTER PROPERLY SCALED/REFERENCED? _____

PLEASE PROVIDE AS MUCH CONSTRUCTIVE FEEDBACK AS YOU CAN. MARK UP A COPY OF THE H-DRAWING IF YOU THINK IT WOULD CLARIFY YOUR COMMENTS. REMEMBER: IMPROVEMENT OF HSD H-DRAWINGS DEPENDS ON YOUR INPUT!

RETURN THIS COMPLETED FORM TO YOUR UNIT CHIEF.

H-10690

HYDROGRAPHIC TITLE SHEET

FIELD NUMBER:

WH-10-6-96

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

State: North Carolina

General locality: North Atlantic Ocean

Locality: 10 nm South of Cape Fear River

Scale: 1: 10,000

Date of survey: May 31 - October 15, 1996

Instructions dated: May 3, 1996

Project Number: OPR-G309-WH

Vessel: NOAA Ship WHITING (2930), Launch 1014 (2932), Launch 1015 (2931)

Chief of Party: CDR Maureen R. Kenny

Surveyed by: M.R. Kenny, A.L. Beaver, P.A. Gruccio, J. Pikulsky, E.J. Sipos, C.E. Parrish, J. Garte, U. Gardner Jr., P. Lewit, K.B. Shaver, F.R. Cruz

Soundings taken by echo sounder, hand lead-line, or pole: DSF 6000N fathometer

Graphic record scaled by: WHITING survey personnel

Graphic record checked by: WHITING survey personnel

Reduced by: N/A

Automated plot by: Explad Nova Jet II Plotter (AHS)
HP 7959B, Bruning (Field)

Verification by: Hydrographic Surveys Branch Personnel

Soundings in: Feet: ☒ Fathoms: ☐ Meters: ☒ at MLW: ☐ MLLW: ☒

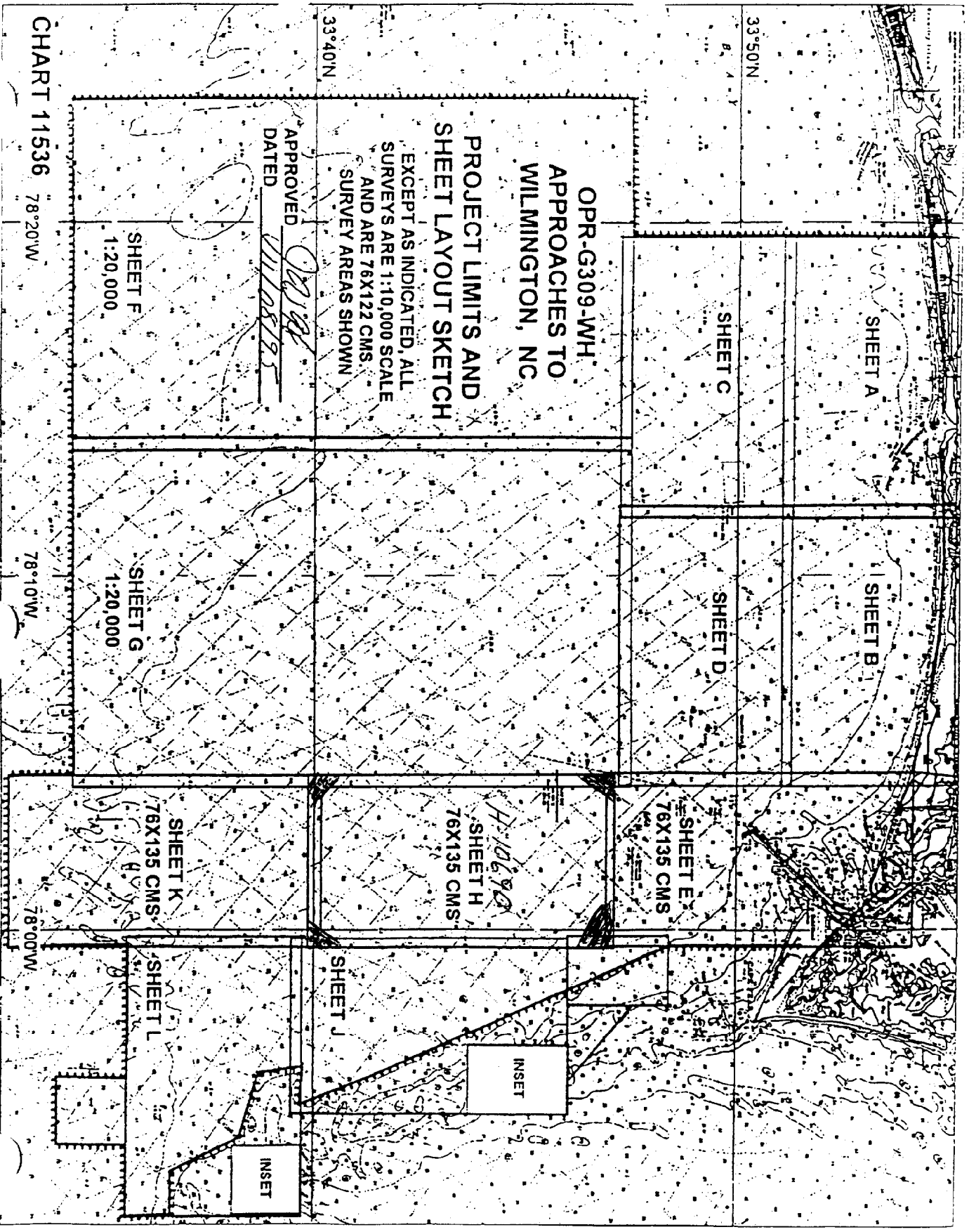
Remarks: 200 % Side Scan Sonar Coverage

Notes in Descriptive Report were made in Red during Office Processing.

Time zone used: 0 (UTC)

Horizontal Datum used: NAD 83

AWOIS and SURF ✓ RND 12/97



**DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
OPR-G309-WH
H-10690**

**NOAA Ship WHITING
CDR Maureen R. Kenny, NOAA
Commanding Officer**

A. PROJECT

Project OPR-G309-WH is being conducted to provide contemporary hydrographic survey data with 200% side scan sonar coverage for the approaches to Wilmington, North Carolina. This project was requested by the United States Coast Guard (USCG), Army Corps of Engineers, North Carolina State Port Authority, and the Wilmington-Cape Fear Pilot Association. Project OPR-G309-WH consists of twelve survey sheets. This survey was assigned sheet letter "H", field sheet number WH-10-6-96, and registry number H-10690. Survey operations were conducted in compliance with Hydrographic Project Instructions OPR-G309-WH, dated May 3, 1996.

B. AREA SURVEYED

Hydrographic survey H-10690 is located 10 NM south of Cape Fear River, North Carolina. The area surveyed is bounded by the following positions:

<u>Position</u>	<u>Latitude</u>	<u>Longitude</u>
1	33° 46' 55.5" N	078° 04' 52.5" W
2	33° 46' 55.5" N	077° 59' 40.0" W
3	33° 39' 51.6" N	077° 59' 40.0" W
4	33° 39' 51.6" N	078° 04' 52.5" W

Survey operations commenced on May 31, 1996 (DN 152), and were completed on October 15, 1996 (DN289).

C. SURVEY VESSELS

NOAA Ship WHITING (VESNO 2930) was used to conduct mainscheme echosounder, side scan sonar, holidays, bottom samples, sound velocity casts, echosounder splits, and crosslines. Dive investigations, echosounder splits, side scan sonar, holidays, sound velocity casts, and

detached positions were conducted on launch 1014 (VESNO 2932). Echosounder, side scan sonar, holidays, and crosslines were conducted on launch 1015 (VESNO 2931). No unusual problems or equipment configurations were encountered.

D. AUTOMATED DATA ACQUISITION AND PROCESSING *See also Evaluation Report.*

Survey data acquisition and processing were accomplished using the standard leadline and HDAPS software, dated March 28, 1996. Sound velocity corrections were determined using CAT version 2.00 and VELOCITY version 2.11. The DGPS station was checked using MONITOR version 1.2. The DAILYDQA program ensured the proper functioning of the MOD III diver least depth gauge. There were no nonstandard automated acquisition or processing methods used.

E. SIDE SCAN SONAR EQUIPMENT

Side scan sonar (SSS) operations were conducted using an EG&G model 260 slant-range corrected SSS recorder and an EG&G 272-T dual-channel towfish. The towfish was operated on the 100 kHz frequency and configured with a 20° beam depression. The following SSS equipment was used:

<u>VESNO</u>	<u>Type</u>	<u>S/N</u>	<u>DN</u>
2930	Towfish	016630	170-206
	Towfish	016697	222-289
	Recorder	016942	170-206
	Recorder	016946	222-289
2931	Towfish	011904	175-176
	Towfish	016630	222-235
	Recorder	016669	175-235
2932	Towfish	016697	174-176
	Towfish	011591	222
	Recorder	016673	174-222

On WHITING, the SSS towfish was deployed from a Reuland winch using one of two armored cables in conjunction with an A-frame mounted on the stern of ship. The armored cable was connected to the side scan recorder via a slip ring assembly. On launches 1014 and 1015, the side scan sonar towfish was deployed using a Superwinch in conjunction with an adjustable davit arm on the stern of the launch. The launches' towfish was towed with vinyl-coated Kevlar cable and was connected to the recorder by a slip ring assembly.

This survey required 200% side scan sonar coverage. Proper coverage was achieved by running mainscheme lines with 80-meter line spacing at the 100-meter range scale. This line spacing provided the overlap required by Field Procedures Manual, section 7.3.2.2. Adequate coverage was ensured by plotting alternate mainscheme lines on 'A' and 'B' swath plots and verifying 100% coverage on each plot.

The towfish was maintained at a height off the bottom of 8-20 percent of the range scale. Side scan operations were limited to a speed-over-ground of 4-6 knots. Confidence checks were performed by noting changes in linear bottom features extending to the outer edges of the sonagram and by passing aids to navigation.

Contacts were measured off the sonagram and entered into an HDAPS contact table.* Using the contact utility program, WHITING hydrographers determined contact heights, positions, and correlations to other contacts. Contacts appearing significant were further investigated by SSS development and then by divers if deemed necessary. Least depths were determined by a MOD III Diver Least Depth Gauge (S/N 68332) and final positioning of significant items was determined with detached positions taken on diver-placed buoys.*

F. SOUNDING EQUIPMENT

Raytheon Digital Survey Fathometer (DSF-6000N) echosounders were used to measure water depths during the survey. The DSF-6000N produced a graphic record of the high frequency (100 kHz) and low frequency (24 kHz) depths. The high and low frequency digital depths were recorded by the HDAPS acquisition system. The high frequency depths were selected as the primary depths and were used for plotting. All echograms were scanned for significant features. Significant features that were not selected as primary soundings were manually inserted. The following fathometers were used:

<u>Vessel</u>	<u>S/N</u>	<u>DN</u>
2930	C047N	152-176
	C076N	200-206
	A01244	222-223
	B046N	240-289
2931	A116N	156-176
	A00135	222-235
2932	B051N	156-261

Electronic technicians performed accuracy checks and preventive maintenance on all of the DSF-6000N echosounders used. Least depths on diver investigations in the survey area were acquired using the MOD III Diver Least Depth Gauge (S/N 68332).

* DATA Filed with Field Records,

G. CORRECTIONS TO SOUNDINGS

Sound velocity profiles of the water column were determined using a Seacat Conductivity, Temperature and Depth (CTD) profiler (model SBE-19, S/N 286 and S/N 1060). The CTD profilers were calibrated on January 10, 1996. The Seacat calibration records are included in the Separates, section IV.*

A corrector table was generated for the ship (vessel number 2930) for each velocity cast taken. Additionally, a corrector table was generated for the launches (vessel numbers 2931 and 2932). The following table shows the dates, locations and the table depths of each velocity cast that was applied to the data collected in this survey area:

<u>DN</u>	<u>VESNO</u>	<u>Vel.Table #</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Least Depth</u>
141	2930	02	33° 34' 42"N	078° 10' 30"W	24.0 M
141	2931-32	03	33° 34' 42"N	078° 10' 30"W	24.0 M
165	2930	06	33° 34' 53"N	078° 10' 26"W	25.0 M
165	2931-32	07	33° 34' 53"N	078° 10' 26"W	25.0 M
200	2930	16	33° 34' 26"N	078° 11' 01"W	26.7 M
200	2931-32	17	33° 34' 26"N	078° 11' 01"W	26.7 M
210	2932	18	33° 40' 50"N	078° 04' 05"W	19.2 M
214	2930	19	33° 34' 48"N	078° 10' 28"W	25.2 M
220	2930	23	33° 35' 00"N	078° 10' 40"W	22.7 M
220	2931-32	24	33° 35' 00"N	078° 10' 40"W	22.7 M
270	2930	35	33° 32' 42"N	078° 02' 36"W	26.8 M

Additional sound velocity casts were taken to ensure a uniform water column over the project area. When the shallow water casts were similar to deeper casts, only the deeper casts were used. Each cast was processed and corrector tables generated using *CAT* version 2.00 and *VELOCITY* version 2.10. The velocity correctors were manually entered into an HDAPS velocity table where correctors were applied to both the high and low frequency beams during data acquisition. Velocity profile data are included in the Separates, section IV.*

Data Quality Assurance (DQA) for the Seacat CTD profilers was performed by using a hydrometer and a thermometer to measure the density and temperature of a surface water sample taken during the CTD cast. The *CAT* program compared these values to the Seacat's surface values and confirmed that the Seacat was working properly. WHITING hydrometers were calibrated on March 25, 1996. Correctors were applied to the readings taken from the hydrometer. There were no variations in instrument initials.

The *DAILYDQA* program used in conjunction with the ship's barometer was used to assure that the MOD III Diver Least Depth Gauge was working properly. Daily results fell within specified operating ranges. CTD casts were used in the *SMLGAUGE* program to calculate least depth measurements.

* DATA Filed with Field Records.

Bar checks were performed on launch 1014 on April 22, 1996 (DN 113), August 8, 1996 (DN 221), and November 17, 1996 (322). Bar checks were performed on launch 1015 on April 22, 1996 (DN 113), and on November 16, 1996 (DN 321). No corrections to soundings were needed. Copies of the bar check data are included in the Separates, section IV. ✕

A leadline comparison was performed on WHITING on April 22, 1996 (DN 113) and November 18, 1996 (DN 321). Leadlines used were calibrated on December 14, 1995, and the calibration confirmed that the leadline error was negligible. Weather and sea conditions were calm and proved ideal for performing both leadline comparisons. The results showed excellent agreement with DSF-6000N high frequency depths averaging 0.04 meters deeper than leadline depths on DN 113 and 0.05 meters deeper on DN 321. Copies of the leadline comparison data are included in the Separates, section IV. ✕

The correction for the static draft for launches 1014 and 1015 is 0.55 meters and was measured on July 28, 1993. The corrector was entered into Offset Tables 2 and 1, respectively. 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 to the sounding data in real time for each survey platform.

Settlement and squat values for launch 1014 were determined on March 25, 1996, and were entered into Offset Table 2. ✕ Settlement and squat values for launch 1015 were determined on March 18, 1996, and were entered into Offset Table 1. ✕ Settlement and squat values for WHITING were determined on March 26, 1996, and were entered into Offset Table 9. ✕ The settlement and squat correctors were applied to the sounding data in real time for each survey platform. Offset tables are included in the Separates, section II. ✕

Heave correctors for launch 1014 and 1015 were applied during post processing by manually scanning the echograms and making the appropriate corrections. For data acquired by WHITING, the HDAPS data acquisition computer logged and applied, in real time, heave data from a heave, roll and pitch sensor (HIPPY, S/N 19109-C).

The tidal datum for this project was Mean Lower Low Water (MLLW). The operating tide station at Springmaid Pier, North Carolina (866-1070) served as the reference station for predicted tides. The water level sensor was located at Yaupon Beach, North Carolina (865-9182) and was maintained by WHITING. Tidal data used during data acquisition were based on Table 2 of the East Coast of North and South America Tide Tables. Digital tidal data were received on floppy disk from N/CS33, Hydrographic Surveys Branch, and were applied to the digital data during acquisition by HDAPS. A request for smooth tides was submitted to Product Services Branch, Datum Section, N/OES231 on October 25, 1996 (DN299). *Approved Tides & Zoning were Applied during Office Processing.*

** DATA Filed with Field Records.*

Time and height correctors used for this survey are as follows:

<u>Time Correction</u>	<u>Height Ratio</u>
0 hr 00 min	X 0.97

H. CONTROL STATIONS *See Also Evaluation Report.*

The horizontal datum for this project is the North American Datum of 1983 (NAD 83). The source of differential correctors were the USCG maintained Differential GPS station at Charleston, South Carolina, and Fort Macon, North Carolina. The positions from USCG reference listing are:

<u>Station</u>	<u>Latitude</u>	<u>Longitude</u>
Charleston, South Carolina	34° 45.45357'N	079° 50.57225'W
Fort Macon, North Carolina	34° 41.84333'N	076° 40.98706'W

WHITING used *MONITOR* 1.2 to verify station positions and to check for multipath in the area. The digital data obtained from the *MONITOR* 1.2 program were forwarded to N/CS31 in September 1996. Printouts from the *MONITOR* program are included in the Separates, section III. * *DATA Filed with Field Records.*

I. HYDROGRAPHIC POSITION CONTROL

A Differential Global Positioning System (DGPS) was used as the navigation system for this survey. The launches and WHITING used an Ashtech Sensor GPS receiver with CSI MBX1 beacon receiver which supplied correctors for DGPS navigation. Ashtech receivers were initialized by HDAPS and the CSI MBX1's were preset to the appropriate station frequency.

DGPS positioning was accomplished in accordance with the Field Procedures Manual (FPM), section 3.4. Horizontal Dilution of Precision (HDOP) limits were computed as required in section 3.4.2 of the FPM. The HDOP limit for a 1:10,000-scale survey using the USCG Beacon is 3.25. No position flyers were encountered. All suspect positions (high HDOP, DR'ed positions, high EPE) were examined for reliability. Questionable positions were either smoothed or rejected.

The serial numbers of the Ashtech Sensor, CSI MBX-1 receivers used are as follows:

<u>YESNO #</u>	<u>Device</u>	<u>Serial Number</u>
2930	Ashtech Sensor	700417B1203
	CSI MBX1	A003789
2931	Ashtech Sensor	700417B1194
	CSI MBX1	X-1088
2932	Ashtech Sensor	700417B1055
	CSI MBX1	X-1079

DGPS performance checks on WHITING were determined using SHIPDIM version 2.1. The position determined using correctors from the Charleston DGPS tower was compared to the position determined using correctors from the Fort Macon DGPS beacon using two independent DGPS systems. SHIPDIM routinely showed the positions given by the two systems to be within 2-3 meters of each other.

DGPS performance checks for launch 1014 and 1015 was conducted with the launches secured in WHITING davits. All platforms used correctors from the Charleston DGPS tower. Simultaneous HDAPS positions were compared between WHITING and the launches. An offset in distance and azimuth was then calculated between the ship and launches. A summary of the DGPS performance checks are in the Separates, section III.* All DGPS performance checks confirmed that the equipment was working properly.

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. The DGPS antennae were reinstalled on launches 1014 and 1015 on April 2, 1996, directly over the echosounder transducers. Antenna heights were also measured on the same respective dates shown above, using the water line as the reference. The offsets and laybacks were applied by HDAPS on-line. A minimum of four satellites was used during survey H-10700 (1:10,000) providing altitude unconstrained positioning.

Offset, layback, and height correctors for each launch's SSS aft towing boom were measured on July 28, 1993, and verified on April 5, 1994. All offset, layback, and height data were applied by HDAPS on-line. Correctors from offset table 1* were applied to all data acquired on launch 1015. Correctors from table 2* were applied to all data acquired from launch 1014. Offset, layback, and height for WHITING's SSS towfish A-frame were measured on July 27, 1992, using the forward high frequency transducer as the reference. Correctors were entered into Offset table 9.*

J. SHORELINE

There is no shoreline within the limits of survey H-10690.

* DATA Filed with Field Records. 7

K. CROSSLINES

A total of 119 nautical miles of crosslines were run on H-10690. This constitutes 16% of the total linear nautical miles of main-scheme lines run. Crossline and main-scheme agreement was adequate. In general, crossline soundings agree with mainscheme soundings to within 0.3 meters. Differences were randomly shoal and deep with no noticeable trends.

Survey operations were interrupted by Hurricane Bertha on July 13, 1996 (DN 195) and again by Hurricane Fran on September 6, 1996 (DN 250). Both of these class III hurricanes passed directly through the Cape Fear region. Additional crosslines, running diagonally across mainscheme lines, were run after each hurricane. In both cases, the diagonal crossline soundings agreed with mainscheme soundings to within 0.2 meters. Differences were randomly shoal and deep with no noticeable trends. It can be concluded that depths within the survey area of H-10690 were not altered by either hurricane.

L. JUNCTIONS *see also Evaluation Report.*

Survey H-10690 junctions with H-10687 (Sheet G, 1:20,000). Agreement between overlapping soundings at the junctions is satisfactory with soundings generally agreeing to within 0.2 meters. The greatest difference noted was 0.5 meters. Depth contours were continuous with no unusual patterns.

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

Prior surveys H-9323 (1973-74, 1:20,000), H-9117 (1971-72, 1:40,000), H-9116 (1970, 1:20,000), and H-9115 (1970, 1:20,000) were available for comparison with H-10690. All comparisons were made in feet. All prior surveys were referenced to NAD 27. The datum shift between NAD 27 and NAD 83 was calculated using *CORPSCON* (version 2.1) software and determined to be insignificant (1.0 mm at 1 : 20,000). No datum shift was applied in the comparisons. In general, soundings on all prior surveys agreed within 1 foot. The greatest difference on all three prior surveys was 3 feet. On average, soundings from H-10690 were deeper than those from H-9323, H-9117, H-9116, and H-9115.

N. ITEM INVESTIGATIONS

The following items were investigated by WHITING during this survey. Depths of features and surrounding depths are corrected to ~~predicted~~ MLLW.

Approved Tides

N.1 AWOIS 774 (side scan sonar contact # 1979.29S)

AWOIS 774 is a wreck of a 220-foot confederate blockade runner reported at position 33°43'29.13"N, 078°00' 52.46"W. The 250-meter radius search area was investigated with 200% side scan sonar coverage. A wreck matching AWOIS 774's description (fix # 2031) and falling within the 250-meter search radius was investigated by divers using the MOD III and found to have a least depth of 30 feet. *Reduced to MLLW (9.2 meters)*

Surveyed Latitude: 33° 43'29.^{.083}0"N
Surveyed Longitude: 078°00'52.^{.250}0"W
Least Depth: 30 feet *Reduced to MLLW*

3006 SIN PA Rep (1984)
WHITING recommends removing the charted wreck (PD) at position 33°43'24"N, 078°00' 52"W, from the chart, and charting the wreck at 33° 43'29.^{.083}0"N, 078° 00'52.^{.250}0"W, with a least depth of 30 feet. *CONCUR*

N.2 AWOIS 9684

AWOIS 9684 is a reported shoal ranging in depths between 28 to 30 feet in the vicinity of 33°43'30"N, 078°01'3^{.38}0"W. The 3000-meter radius search area was investigated with 200% side scan sonar coverage. Echosounder spacing was reduced to 40 meters in some areas to determine least depths. Other than the wreck described in N.1, no depths of 28 to 30 feet were found. Depths ranged from ³⁶24 to 52 feet in the 3000-meter search area. *Reduced to MLLW*
WHITING recommends representative soundings from this survey be charted. *11.8 to 16 meters. Reduced to MLLW* IT IS ALSO RECOMMENDED THAT THE NOTATION, SHOALING TO 28 FT REPORTED APRIL 1984, BE DELETED.

O. COMPARISON WITH THE CHART SEE ALSO EVALUATION REPORT

Chart 11537 (29th ed., 09 July 94, 1:40,000) and chart 11536 (12th ed., 04 September 93, 1:80,000) were compared with H-10690. There is good agreement between survey H-10690 and the charted soundings and features. H-10690 soundings are generally 0.5 meters deeper than the charted soundings.

P. ADEQUACY OF SURVEY SEE ALSO EVALUATION REPORT

This survey is complete and adequate to supersede all prior surveys in their common area.

Q. AIDS TO NAVIGATION

All aids to navigation were visually verified during the survey. On July 05, 1996 (DN 187) one detached position on the only floating aid in the survey area was recorded on launch 1014. The USCG has been notified of the surveyed position (see Appendix VI) which is 0.12 nm from the charted position and 0.24 nm from the position of the wreck. The position of the aid is listed below :

<u>ATON</u>	<u>Surveyed Position</u>	<u>Charted Position</u>
WR "6" Structure Buoy, State of North Carolina	33° 43' 32.4"N 078° 01' 13.0"W	33° 43' 32.0"N 078° 01' 06.0"W

R. STATISTICS

Number of Positions	7074
Main-scheme Sounding Lines (Nautical Miles)	728
Crosslines (Nautical Miles)	119
Square Nautical Miles Surveyed	25.5
Days of Production	32
Detached Positions	3
Bottom Samples	16
Tide Stations Installed	1
Current Stations	None
Number of CTD Casts	7
Magnetic Stations	None

S. MISCELLANEOUS

No anomalies in either tides or currents and/or unusual magnetic variations were encountered in the survey area. No unusual submarine features were discovered. Bottom samples were submitted to the Smithsonian Institution.

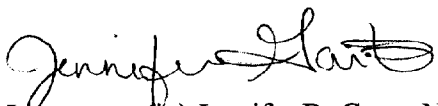
T. RECOMMENDATIONS *SEE ALSO SECTION P OF THE EVALUATION REPORT*

No additional fieldwork is required.

U. REFERRAL TO OTHER REPORTS

A Chart User Evaluation/Inspection Report and a Coast Pilot Report will be submitted in December 1996 as part of OPR-G309-WH.

Submitted by:


A handwritten signature in cursive script, appearing to read "Jennifer D. Garte". The signature is written in black ink and is positioned above the printed name.

Lieutenant (jg) Jennifer D. Garte, NOAA
NOAA Ship WHITING

APPROVAL SHEET
HYDROGRAPHIC SURVEY
OPR-G309-WH
1996
WH-10-6-96
H-10690

The data for this survey was acquired and checked under my daily supervision. Position and sounding accuracy meets the requirements specified in the Project Instructions, Hydrographic Manual, Hydrographic Survey Guidelines, and the Field Procedures Manual for Hydrographic Surveying. This survey is complete and adequate for the intended purpose of delineating bottom topography, determining depths, and identifying all potential dangers to navigation. No final field sheets were prepared for this survey. The survey data and accompanying records are complete for the preparation of the smooth sheet.

Approved By:


Commander Maureen R. Kenny, NOAA
Commanding Officer, NOAA Ship WHITING



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: February 5, 1997

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-G309-WH

HYDROGRAPHIC SHEET: H-10690

LOCALITY: North Atlantic Ocean

TIME PERIOD: May 31 - October 16, 1996

TIDE STATION USED: 865-9182 Yaupon Beach, N.C.
Lat. 33° 54.1'N Lon. 78° 04.9'W


PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.512 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: EC145

Refer to attachment(s) for zoning information.

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



CHIEF, TIDAL ANALYSIS BRANCH

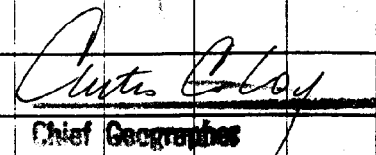


H-10704

GEOGRAPHIC NAMES

Name on Survey	Source of Information										
	A 91536, 11820 ON PREVIOUS SURVEY NO.	B CON U.S. QUADRANGLE MAPS	C FROM LOCAL INFORMATION	D ON LOCAL MAPS	E P.O. GUIDE OR MAP ATLAS	F RANDOMLY U.S. LIGHT LIST	G	H	I	J	K
BALD HEAD ISLAND (title)	X		X								1
NORTH ATLANTIC OCEAN	X		X								2
NORTH CAROLINA (title)	X		X								3
											4
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Approved


Curtis P. Boy
Chief Geographer

MAR 10 1997

N/CS33-73-97

LETTER TRANSMITTING DATA

TO:

Chief, Data Control Group, N/CS3x1
NOAA/National Ocean Service
Station 6815, SSMC3
1315 East-West Highway
Silver Spring, Maryland 20910-3282

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY
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☐ ORDINARY MAIL

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DATE FORWARDED

12-9-97

NUMBER OF PACKAGES

1 (one)

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H-10690

NORTH CAROLINA, NORTH ATLANTIC OCEAN, 10 NM SOUTH OF CAPE FEAR RIVER

1 (ONE) Tube containing the following:

- 1 Smooth Sheet
- 3 Composite Drawings for chart #11536
- 2 Composite Drawings for chart #11537
- 1 H-Drawing for chart #11536
- 1 H-Drawing for chart #11537
- 1 Descriptive Report for H-10690
- 1 Drawing History Form #76-71 for chart #11536
- 1 Drawing History Form #76-71 for chart #11537

FROM: (Signature)

Richard W. Blevins
Richard W. Blevins

RECEIVED THE ABOVE

(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Branch
N/CS33
439 West York Street
Norfolk, VA 23510-1114

12/08/97

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H-10690

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	7074
NUMBER OF SOUNDINGS	39754

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	12	01/02/97
VERIFICATION OF FIELD DATA	36	03/17/97
QUALITY CONTROL CHECKS	0	
EVALUATION AND ANALYSIS	12	
FINAL INSPECTION	6	03/13/97
COMPILATION	218	12/03/97
TOTAL TIME	284	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		03/14/97

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H-10690 (1996)**

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
AutoCAD, Release 12
QUICKSURF, version 5.1
MicroStation 95, version 5.05
I/RAS B, version 5.01

The smooth sheet was plotted using an ENCAD NovaJet III 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 0.636 seconds (19.586 meters or 1.96 mm at the scale of the survey) north in latitude, and 1.037 seconds (26.686 meters or 2.67 mm at the scale of the survey) east in longitude.

L. JUNCTIONS

H-10742 (1997)	to the north
H-10724 (1996-97)	to the east
H-10704 (1996)	to the south
<u>H-10687 (1996)</u>	<u>to the west</u>

Standard junctions were effected between the present survey and H-10742 (1997), H-10724 (1996-97), H-10704 (1996), and H-10687 (1996).

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 11536 (12th Edition, Sept 4/93)

Hydrography

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparison in section 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.

WHITING Processing Team

Franklin L. Saunders

Franklin L. Saunders
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

Norris A. Wike

Norris A. Wike
Cartographer

APPROVAL SHEET
H-10690

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 disproof of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Robert G. Roberson Date: MARCH 14, 1997
Robert G. Roberson
Chief, Cartographic Section

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.

Nicholas E. Perugini Date: MARCH 14, 1997
Nicholas E. Perugini
Commander, NOAA
Chief, Atlantic Hydrographic Branch

Final Approval:

Approved: Andrew A. Armstrong, III Date: FEB 12, 1998
Andrew A. Armstrong, III
Captain, NOAA
Chief, Hydrographic Surveys Division

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10690

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.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED