

H10674

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-10-04-96**

Registry No. **H-10674**

LOCALITY

State **SOUTH CAROLINA**

General Locality **NORTH ATLANTIC OCEAN**

Sublocality **11 NM. SOUTHEAST OF**

..... **RATTLESNAKE SHOAL**

19 96

CHIEF OF PARTY

..... **CDR. M. R. KENNY, NOAA**

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JAN 10 1997

DATE

H-10674

HYDROGRAPHIC TITLE SHEET

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-10-4-96

State: South Carolina

General locality: ^{Atlantic} Atlantic Ocean

Locality: 11.0 NM Southeast of Rattlesnake Shoal, SC

Scale: 1: 10,000 Date of survey: April 10 to May 19, 1996

Instructions dated: March 5, 1996 and CH No. 1 dated March 13, 1996 Project Number: OPR-G342-WH

Vessel: NOAA Ship WHITING (S-329)

Chief of Party: CDR Maureen R. Kenny, NOAA

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

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

Graphic record scaled by: WHITING personnel

Graphic record checked by: WHITING personnel

Retracted by: N/A Automated plot by: HP 7959, Bruning (FIELD) ^{ENCLOSURE NO VASEI III} _{PLOTTER (AHS)}

Verification by: ATLANTIC HYDROGRAPHIC PERSONNEL

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

Remarks:

Time zones used: 0 (UTC)

Horizontal Datum used: NAD 83

NOTES IN THE DESCRIPTIVE REPORT WERE MADE IN RED DURING OFFICE PROCESSING

50 JAN 10 1997

AWOIS ✓ SURF ✓ 12/17/96 by MBH

**DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
OPR-G342-WH
WH-10-4-96
H-10674**

**NOAA SHIP WHITING
CDR Maureen Kenny, NOAA
Commanding Officer**

A. Project

The purpose of this project is to update charted hydrography in the approaches to Charleston, South Carolina. The project is being conducted in response to requests from the Charleston Branch Pilots Association. Project OPR-G342-WH consists of four survey sheets. The survey described in this report was designated "D" sheet, field sheet number WH-10-4-96, and registry number H-10674.

Survey operations were conducted in compliance with Project Instructions OPR-G342-WH dated March 5, 1996, and change Number 1, dated March 13.

B. AREA SURVEYED

Hydrographic survey H-10674 is located 11.0 nautical miles southeast of Rattlesnake Shoal, and the limits of hydrography are the following:

| <u>Position</u> | <u>Latitude</u> | <u>Longitude</u> |
|-----------------|-----------------|------------------|
| SW Corner | 32° 32' 46N | 79° 43' 04W |
| NW Corner | 32° 36' 52N | 79° 43' 04W |
| NE Corner | 32° 36' 52N | 79° 35' 12W |
| West Corner | 32° 34' 56N | 79° 41' 36W |
| East Corner | 32° 34' 52N | 79° 36' 52W |
| South Corner | 32° 32' 52N | 79° 39' 30W |

Survey operations commenced on April 10, 1996 (DN 101) and concluded on May 19, 1996 (DN 140).

C. SURVEY VESSELS

NOAA Ship WHITING (vesno 2930), and launch 1014 (vesno 2932) were used to conduct mainscheme echosounder, side scan sonar operations, developments, bottom samples, AWOIS investigation, and dive operations. No unusual problems or equipment configurations were encountered.

D. AUTOMATED DATA ACQUISITION AND PROCESSING - SEE ALSO THE EVALUATION REPORT

Survey data acquisition and processing were accomplished using the HDAPS system with the standard HDAPS software dated March 28, 1996. Sound velocity corrections were determined using *CAT* version 2.00 and *VELOCITY* version 2.11. 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-TH dual-channel, dual-frequency 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 | 11908 | 101- 127 |
| 2930 | Towfish | 16630 | 128- 140 |
| 2930 | Recorder | 016946 | 101- 140 |
| 2932 | Towfish | 10823 | 101- 140 |
| | Recorder | 016673 | 101- 140 |

On WHITING, the SSS towfish was deployed from a Reuland winch using armored cabling in conjunction with an A-frame on the stern. The armored cable was connected to the SSS recorder by a slip-ring assembly. On launch 1014 the SSS towfish was deployed using a Superwinch in conjunction with an adjustable davit arm on the stern. The SSS towfish was towed with vinyl-coated Kevlar cable and was connected to the recorder via a slip ring assembly.

In order to acquire the required 200% SSS coverage, east-west mainscheme lines were run with 80 meter line spacing at the 100 meter range scale. The towfish was maintained at a height off the

bottom of 8-20 percent of the range scale (8-20 meters). Side scan operations were limited to a speed-over ground of 4.0 to 6.0 knots. Adequate coverage was determined by producing 'A' and 'B' swath plot and ensuring 100% coverage on each plot. Confidence checks were performed by noting changes in bottom texture on the outer edges of the sonagram, and passing by aids to navigation.

All contacts appearing significant 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 then further developed by means of side scan sonar developments. Final resolution and least depths of significant items were determined by divers using the MOD III Diver Least Depth Gauge, with detached positions taken on diver-placed buoys.

F. SOUNDING EQUIPMENT

Raytheon Digital Survey Fathometer (DSF) 6000N echo sounders 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, and any significant features that were not selected as primary soundings were manually inserted.

The following fathometers were used:

| <u>VESSEL</u> | <u>S/N</u> |
|---------------|------------|
| 2930 | C076 |
| 2932 | B015N |

Electronic technicians performed accuracy checks and preventative 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).

G. CORRECTIONS TO SOUNDINGS

Sound velocity profiles of the water column were determined using Seacat Conductivity, Temperature and Depth (CTD) profilers (models SBE-19, S/N 286 and 1060). Both CTD's were calibrated on February 15, 1995. The Seacat calibration records are included in the Separates, section IV. *DATA FILED WITH FIELD RECORDS.*

For each velocity cast taken, two corrector table were generated: one for the launch (vessel number 2932) and one for the ship (vessel number 2930). The following table shows the dates, locations and depths of each velocity cast that was applied to the data collected in this survey area:

| <u>DN</u> | <u>Vel. Table #</u> | <u>Latitude</u> | <u>Longitude</u> | <u>Depth</u> |
|-----------|---------------------|-----------------|------------------|--------------|
| 112 | 4 | 32°39'06N | 79°34'33W | 24.3 |
| 122 | 8 | 32°33'20N | 79°38'36W | 23.5 |
| 130 | 14,15 | 32°33'19N | 79°40'02W | 25.4 |

Each cast was processed and corrector tables generated using *CAT* version 2.00 and *VELOCITY* version 2.11. The velocity correctors were manually entered into an HDAPS velocity table where correctors were applied to both the high and the low frequency beams during data acquisition. Velocity profile data is included in the Separates under section IV. ✖

Data Quality Assurance (*DQA*) for the Seacat CTD profiler 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 hydrometers.

The *DAILDQA* 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.

A bar check was performed on April 22, 1996 (DN 113), on launch 1014. No corrections to soundings were needed. Copies of the bar check are included in the Separates, section IV. ✖

Leadlines were calibrated on December 14, 1995. A leadline comparison was conducted on April 22, 1996 in Charleston Harbor. The comparison was .04 meters deeper than the high frequency depth. The leadline comparisons are included in the Separates, section IV. ✖

The correction for the static draft for launch 1014 is 0.55 meters, as measured on July 28, 1993. The correction for WHITING's static draft is 3.2 meters, a historical value that diver's confirmed with the MOD 3 Diver Least Depth Gauge on May 11, 1995. Static draft correctors were entered into Offset tables 2 (launch 1014), and 9 (WHITING) and applied to all sounding data during data acquisition.

Settlement and squat measurements for launch 1014 were determined on March 25, 1996 and entered into Offset table 2 in HDAPS. Settlement and squat measurements for the ship were determined on March 26, 1996 and entered into Offset table 9. ✖ The settlement and squat

✖ DATA FILLED WITH FIELD RECORDS.

correctors were applied during data acquisition on each survey platform. Offset tables are included in the Separates, section II.

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

The tidal datum for this project was Mean Lower Low Water. The operating tide station at Charleston, South Carolina (866-5530) served as the reference station for predicted tides. Tidal data used during data acquisition were taken from Table 2 of the East Coast of North and South America Tide Tables and were applied to the digital data during acquisition by HDAPS. Digital tidal data were received on floppy disk from N/CS3, Hydrographic Surveys Division. APPROVED TIDES AND ZONING WERE APPLIED DURING OFFICE PROCESSING.

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

| | |
|-----------------|------------------|
| Time Correction | - 00 hrs 24 mins |
| Height Ratio | x 0.95 |

No subordinate tide stations were required for this survey. The Charleston tide station (866-5530) is maintained by the Atlantic Operation Section (N/OES213) and was not inspected or leveled by WHITING.

H. CONTROL STATIONS SEE ALSO THE EVALUATION REPORT

The horizontal datum for this project is the North American Datum of 1983 (NAD 83). The source of differential correctors was a USCG maintained Differential GPS beacon at Charleston, South Carolina. WHITING used the USCG maintained Differential GPS beacon at Fort Macon, NC for continuous performance checks using SHIPDIM, version 2.1. The position of the Charleston USCG DGPS Beacon, and Fort Macon USCG DGPS Beacons obtained from the Coast Guard are as follows:

| <u>Station</u> | <u>Latitude</u> | <u>Longitude</u> |
|-----------------------------|------------------|-------------------|
| Charleston USCG DGPS Beacon | 32° 45' 27.214"N | 079° 50' 34.335"W |
| Fort Macon USCG DGPS Beacon | 34° 41' 50.599"N | 076° 40' 59.224"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 will be forwarded to N/CS31 in July 1996. Printouts from the MONITOR program are included in the Separates, section III. DATA FIGS WITH FIELD RECORDS.

I. HYDROGRAPHIC POSITION CONTROL

A Differential Global Positioning System (DGPS) was used as the navigation system for this survey. The launch and the ship used an Ashtech Sensor GPS receiver with a CSI-MBX1 receiver supplying correctors for DGPS navigation. Ashtech receivers were initialized by HDAPS and MBXI receivers were set to the appropriate frequency.

DGPS positioning was accomplished in accordance with the Field Procedures Manual, section 3.4. The HDOP limit for a 1:10,000 scale survey using the Charleston station is 3.75. 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 and MBX1 receivers on the data acquisitions platforms are as follows:

| <u>VESNO #</u> | <u>Device</u> | <u>Serial Number</u> |
|----------------|-------------------|----------------------|
| 2930 | Ashtech Sensor | 700417B1203 |
| | CSI-MBX1 receiver | X-1081 |
| 2932 | Ashtech Sensor | 700417B1055 |
| | CSI-MBX1 receiver | X-1079 |

The proper functioning of the DGPS equipment onboard the WHITING was determined by using *SHIPDIM* version 2.1 to take continuous performance checks between the Charleston beacon and Fort Macon beacon. *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 were conducted with the launch secured in the WHITING davit. Simultaneous HDAPS positions were compared between WHITING and the launch. An offset in distance and azimuth was then calculated between the ship and launch system. A summary of the DGPS performance checks were submitted in the Separates, section III. All DGPS performance checks confirmed that the equipment was working properly.

DGPS antenna offsets were measured on April 2, 1996 for launch 1014 and March 19, 1993, for WHITING. Offsets and laybacks were measured using the high frequency echosounder transducer as the reference. 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 were used during survey H-10629 (1:10,000) providing altitude unconstrained positioning.

Offset, layback, and height corrections for the 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 2 were applied to all data acquired from launch

1014.

J. SHORELINE

There is no shoreline within the limits of H-10674.

K. CROSSLINES

A total of 53.3 nautical miles of crosslines, or 10 % of the mainscheme mileage, was run on H-10674. Agreement between mainscheme and crossline soundings is adequate.

L. JUNCTIONS - SEE ALSO THE EVALUATION REPORT

Comparisons were made with sheets WH-10-1-96 (H-10669) to the northeast, WH-10-3-96 (H-10671) to the north, and WH-10-2-96 (H-10670) to the northwest. Agreement between the four sheets is adequate. Most soundings agree to .2 meters (0.6 ft) with the largest discrepancy being 0.6 meters (2 ft) on H-10669. Depth contours agreed very well between the three sheets.

M. COMPARISONS WITH PRIOR SURVEYS - SEE ALSO THE EVALUATION REPORT

Comparisons were made between H-10674 and the following prior surveys: H-7172 (1946-1947, 1:40,000) and H-8871 (1965, 1:40,000). All comparisons were made in feet. All prior surveys were referenced to NAD27. Because the datum shift between NAD27 and NAD83 was determined to be insignificant using the *Corpscon* conversion program, no datum shift was applied in the comparison.

H-7172

This prior survey covers the majority of the survey area except for the most southern end of the survey area. Agreement between soundings was adequate, with all soundings agreeing to within 2 ft (.6 meters). Soundings from H-10674 were generally deeper than soundings from this prior survey.

H-8871

This prior survey covers the southernmost edge of the survey area. Agreement between soundings is adequate, with all soundings agreeing to within 2 ft (.6 meters). Soundings from H-10674 were generally deeper than soundings from this prior survey.

N. ITEM INVESTIGATIONS

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

N1. AWOIS 509 (Fix #3001)

Corrections to the wreck description were made after examination of the dive report. MSB

AWOIS item 509, a charted wreck at Lat: 32° 36' 01.25" N and Long: 079° 40' 08.87" W, with a cleared depth of 35 ft, was located using the required 200% side scan sonar coverage. Divers found the wreck, measuring ³² 30 ft in width and sitting ³⁷ 6 ft off the bottom. Divers described the wreck as being a decayed wooden hull loaded down with large cement blocks. Using the MODIII Diver Least Depth Gauge, the corrected least depth was determined to be 11.3 meters. DP #3001 was taken on a diver placed buoy directly on top of the wreck. WHITING recommends that the cleared depth of 35 ft be removed from the chart at Lat: 32° 36' 01.25" N and Long: 079° 40' 08.87" W, and a ~~wreck~~ be charted as follows:

~~WRECK~~
 Latitude: 32° 36' 01.304"N
 Longitude: 79° 40' 09.054"W
 Least Depth: 37 ft (11.3 meters)

CONCUR
 CHART AB 37WK

N2. Obstructions near "Y N" buoy (South Carolina Department of Natural Resources - Artificial Reef)

An uncharted fish haven was discovered using 200% side scan sonar coverage. Numerous pieces of debris were found near a privately maintained "Y N" buoy marked as "SC Department of Natural Resources - Artificial Reef". Several contacts were also found up to 1500 meters from this buoy. Whiting used the HDAPS Contact Utilities Program to determine the least depths of all contacts appearing significant on the side scan sonar. A grid plot overlay was used to determine the most significant contact for each 200 meter block encompassing the fish haven. 11 contacts were further investigated by diver's using the MODIII. Divers described all of these items as metal cylinders. The following is a list of these contacts, their positions and corrected least depths.

| <u>Item #</u> | <u>Position</u> | <u>Least Depth (M)</u> |
|---------------|----------------------------------|------------------------|
| 8893.33 | 32°33' 24.826 N 79° 39' 44.357 W | 18.1 (59 FT) |
| 8906.17 | 32°33' 23.324 N 79° 39' 24.844 W | 15.9 (52 FT) |
| 8940.45 | 32°33' 18.876 N 79° 40' 15.666 W | 13.4 (45 FT) |
| 8958.01 | 32°33' 18.508 N 79° 40' 02.526 W | 16.8 (55 FT) |
| 9007.56 | 32°33' 11.226 N 79° 40' 09.273 W | 16.4 (53 FT) |
| 9052.07 | 32°33' 07.905 N 79° 39' 46.727 W | 16.5 (54 FT) |
| 9054.37 | 32°33' 08.652 N 79° 40' 18.219 W | 16.5 (54 FT) |

| | | | |
|---------|------------------------------|------------------|------------------------------|
| 9064.33 | 32°33' 03.779 ³ N | 79° 40' 05.733 W | 16.9 (55 FT) |
| 9065.14 | 32°33' 05.120 N | 79° 40' 14.252 W | 16.67 (55 FT) |
| 9111.32 | 32°33' 01.968 N | 79° 40' 10.281 W | 16.0 15.9 (52 FT) |
| 9163.42 | 32°32' 53.539N | 79° 40' 15.465W | 17.0 (56 FT) |

Item #8940.45 (dive DP #3014) was found to be the contact in the fish haven with the greatest height off of the bottom. Divers found this item to be a metal structure measuring 40' in length, with a corrected least depth of 13.4⁴⁵ meters (44 ft.).

WHITING recommends plotting an Obstruction- Fish Haven, with a 1,000 meter circle search radius around position Lat: 32° 33' 21" N , and Long: 79° 39' 58" W , with a controlling least depth of 44 feet. CONCUR
45

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

Soundings from chart 11521 (21ST Ed., Feb. 5/94, 1:80,000) were compared to H-10674 soundings. The comparison was made in feet at the 1:10,000 scale. Agreement between soundings was adequate, with soundings falling within 2 ft of each other as discussed in section M. H-10674 soundings were generally deeper than charted soundings.

P. ADEQUACY OF SURVEY - SEE ALSO THE EVALUATION REPORT

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

Q. AIDS TO NAVIGATION

All aids' positions were verified and appear adequate to serve their intended purpose. CONCUR

R. STATISTICS

| | |
|---------------------------------------------|------|
| Number of Positions | 3301 |
| Main-scheme Sounding Lines (Nautical Miles) | 451 |
| Crosslines (Nautical Miles) | 53 |
| Square Nautical Miles Surveyed | 21.8 |
| Days of Production | 18 |
| Detached Positions | 15 |
| Bottom Samples | 16 |
| Tide Stations Installed | None |
| Current Stations | None |

Number of CTD Casts
Magnetic Stations

3
None

S. MISCELLANEOUS

No anomalies in either tide or current 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.

R. RECOMMENDATIONS - SEE ALSO SECTION P. OF THE EVALUATION REPORTS.

No additional fieldwork is needed. There are no current plans for construction or dredging in the survey area.

U. REFERRAL TO OTHER REPORTS

A Chart User Evaluation Report was submitted as part of OPR-G352-WH, in June 1996. A Coast Pilot Report will be submitted in July 1996.

Submitted by:

Monica Cisternelli

Monica Cisternelli
Senior Survey Technician
NOAA Ship WHITING

STATUS AS OF 11 MARCH 1996

CAPE HENRY, VA

Light List Number 375

Status: On-air operational testing.
RBN Antenna Location: 36 55.6N, 076 00.4W
REFSTA Ant Location (A): 36 55.62440N, 076 00.38196W
REFSTA Ant Location (B): 36 55.61973N, 076 00.41182W
REFSTA RTCM SC-104 ID(A): 012
REFSTA RTCM SC-104 ID(B): 013
Broadcast Site ID: 806
Transmission Frequency: 289 KHZ
Transmission Rate: 100 BPS
RTCM Correction Message: TYPE-9
Morse Code Identifier: None...Single carrier operation.
Signal Strength: 75uV at 130 NM
Planned/Observed Outages: N/A

FT MACON, NC

Light List Number 725

Status: On-air operational testing.
RBN Antenna Location: 34 41.8N, 076 41.0W
REFSTA Ant Location (A): 34 41.84333N, 076 40.98706W
REFSTA Ant Location (B): 34 41.85661N, 076 40.99206W
REFSTA RTCM SC-104 ID (A): 014
REFSTA RTCM SC-104 ID (B): 015
Broadcast Site ID: 807
Transmission Frequency: 294 KHZ
Transmission Rate: 100 BPS
RTCM Correction Message: TYPE-9
Morse Code Identifier: None...Single carrier operation.
Signal Strength: 75uV at 130 NM
Planned/Observed Outages: N/A

CHARLESTON, SC

Light List Number 155

Status: On-air operational testing.
RBN Antenna Location: 32 45.5N, 079 50.6W
REFSTA Ant Location (A): 32 45.45357N, 079 50.57225W
REFSTA Ant Location (B): 32 45.44787N, 079 50.59039W
REFSTA RTCM SC-104 ID(A): 016
REFSTA RTCM SC-104 ID(B): 017
Broadcast Site ID: 808
Transmission Frequency: 298 KHZ
Transmission Rate: 100 BPS
RTCM Correction Message: TYPE-9
Morse Code Identifier: None...Single carrier operation.
Signal Strength: 75uV at 150 NM
Planned/Observed Outages: N/A



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
NOAA Ship WHITING S-329
439 W. York Street
Norfolk, VA 23510-1114

June 14, 1996

Commander, Seventh Coast Guard District
Brickell Plaza Federal Building Room 406
909 SE First Avenue
Miami, Florida 33131-3050

CAUTION
ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW

Dear Sir:

The NOAA Ship WHITING, while conducting hydrographic survey operations in the approaches to Charleston, South Carolina, located three features which constitute dangers to navigation. Enclosed are reports concerning these features which should be placed in the next Notice to Mariners. The following table summarizes our findings:

| <u>Feature</u> | <u>Latitude</u> | <u>Longitude</u> | <u>Depth</u> |
|----------------|-----------------|------------------|--------------|
| Obstruction | 32° 33' 18.9" N | 079° 40' 15.7" W | 44 ft |
| Wreck | 32° 43' 18.5" N | 079° 42' 27.9" W | 28 ft |
| Obstruction | 32° 42' 38.7" N | 079° 45' 44.2" W | 18 ft |

In addition, the aids to navigation (ATONS) listed below were located at positions which differ from their charted positions:

| <u>Floating ATON</u> | <u>Position Charted</u> | <u>Position from Survey</u> | <u>Date Located</u> |
|----------------------|-------------------------------------|-------------------------------------|---------------------|
| RW Mo(a) "C" | 32° 39' 40.0" N 079° 40' 53.0" W | 32° 39' 38.3" N 079° 40' 51.0" W | May 19, 1996 |
| Y "B", N | 32° 38' 00.0" N 079° 41' 30.0" W | 32° 37' 54.0" N 079° 41' 25.2" W | May 19, 1996 |
| R "2A", Lighted | 32° 41' 03.0" N 079° 43' 35.4" W | 32° 41' 04.0" N 079° 43' 32.5" W | May 8, 1996 |
| R "4", Lighted | 32° 42' 07.2" N 079° 45' 50.4" W | 32° 42' 09.1" N 079° 45' 53.0" W | May 8, 1996 |
| Y "TB" | 32° 39' 00.6" N 079° 43' 05.4" W | 32° 38' 55.8" N 079° 43' 09.2" W | May 8, 1996 |
| Y, N, Priv | 32° 42' 38.4" N 079° 45' 40.8" W | 32° 42' 35.7" N 079° 45' 40.8" W | May 7, 1996 |

Differential GPS was used to determine the survey positions of both the ATONS and the dangers



to navigation listed above. Positions are referenced to NAD 83. All depths are referenced to MLLW using predicted tides. Charts 11523 and 11521 are affected by this report.

A copy of this letter and enclosures have been forwarded to the following offices:

Chief, Marine Charting Division, NOAA
Chief, AMC Operations Division, NOAA
Chief, Atlantic Hydrographic Branch, NOAA
Director, Defense Mapping Agency
Hydrographic/Topographic Agency
President, Charleston Pilots Association

Sincerely,

Maureen R. Kenny

Maureen R. Kenny
Commander, NOAA
Commanding Officer

Enclosures

cc: AMC1
N/CS2
N/CS33
DMAHTC

CAUTION
ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H-10674
State: South Carolina
General Locality: North Atlantic Ocean
Sublocality: 11.0 NM SE of Rattlesnake Shoal
Project Number: OPR-G342-WH, NOAA Ship WHITING

The following item was discovered during hydrographic survey operations:

Metal cylinders in the vicinity of a South Carolina fish restoration project buoy were found with side scan sonar and investigated by divers. The feature is covered 44 feet corrected to MLLW using predicted tides.

Affected nautical charts:

| <u>CHART</u> | <u>EDITION</u> | <u>DEPTH</u> | <u>DATUM</u> | <u>LATITUDE</u> | <u>LONGITUDE</u> |
|--------------|----------------|--------------|--------------|-----------------|------------------|
| 11521 | 21st, Feb 5/94 | 44 ft | NAD 83 | 32° 33' 18.9" N | 079° 40' 15.7" W |

Questions concerning this report should be directed to the NOAA Atlantic Hydrographic Branch in Norfolk, Virginia, at telephone number (804) 441-6746.

CAUTION
ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW

Note: The item in this report is the fuselage (identified in Sect. O of the Evaluation Report) referred to as Item 8940.45 in Section N2. of the Hydrographer's Report. The least depth for this item is 45 ft. (MLLW).

MBH

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H-10671
State: South Carolina
General Locality: North Atlantic Ocean
Sublocality: 5.0 NM SE of Rattlesnake Shoal
Project Number: OPR-G342-WH, NOAA Ship WHITING

The following item was discovered during hydrographic survey operations:

A submerged wreck was found with side scan sonar and investigated by divers. The wreck is covered 28 feet corrected to MLLW using predicted tides.

Affected nautical charts:

| <u>CHART</u> | <u>EDITION</u> | <u>DEPTH</u> | <u>DATUM</u> | <u>LATITUDE</u> | <u>LONGITUDE</u> |
|--------------|----------------|--------------|--------------|-----------------|------------------|
| 11521 | 21st, Feb 5/94 | 28 ft | NAD 83 | 32° 43' 18.5" N | 079° 42' 27.9" W |

Questions concerning this report should be directed to the NOAA Atlantic Hydrographic Branch in Norfolk, Virginia, at telephone number (804) 441-6746.

**CAUTION
ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW**

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H-10670
State: South Carolina
General Locality: North Atlantic Ocean
Sublocality: 4.0 NM SE of Rattlesnake Shoal
Project Number: OPR-G342-WH, NOAA Ship WHITING

The following item was discovered during hydrographic survey operations:

A sunken barge was located using side scan sonar and investigated by divers. The item is covered 18 feet corrected to MLLW using predicted tides and falls within the limits of a charted fish haven with an authorized minimum depth of 20 feet.

Affected nautical charts:

| <u>CHART</u> | <u>EDITION</u> | <u>DEPTH</u> | <u>DATUM</u> | <u>LATITUDE</u> | <u>LONGITUDE</u> |
|--------------|-----------------|--------------|--------------|-----------------|------------------|
| 11523 | 15th, Jun 25/94 | 18 ft | NAD 83 | 32° 42' 38.7" N | 079° 45' 44.2" W |
| 11521 | 21st, Feb 5/94 | 18 ft | NAD 83 | 32° 42' 38.7" N | 079° 45' 44.2" W |

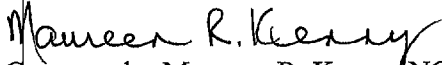
Questions concerning this report should be directed to the NOAA Atlantic Hydrographic Branch in Norfolk, Virginia, at telephone number (804) 441-6746.

CAUTION
ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW

APPROVAL SHEET
HYDROGRAPHIC SURVEY
OPR-G342-WH
WH-10-4-96
SHEET D

The data for this survey were acquired and checked under my supervision. Position and sounding accuracy meet the requirements specified in the Project Instructions, Hydrographic Manual, Hydrographic Survey Guidelines, and the Field Procedures Manual for Hydrographic Surveying. The 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: June 27, 1996

HYDROGRAPHIC SECTION: Atlantic

HYDROGRAPHIC PROJECT: OPR-G342-WH

HYDROGRAPHIC SHEET: H-10674

LOCALITY: 11 Nautical Miles Southeast of Rattlesnake Shoal,
Charleston, South Carolina

TIME PERIOD: April 10 - May 19, 1996

TIDE STATION USED: 866-5530 Charleston, S.C.
Lat. 32° 46.9'N Lon. 79° 55.5'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 2.49 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 5.5 ft.

REMARKS: RECOMMENDED ZONING

Apply a -24 minute correction to times and a X0.95 range ratio to heights using Charleston, S.C. (866-5530).

Note: Times are tabulated in Greenwich Mean Time.

William M. Gibson
CHIEF, DATUMS SECTION



10/30/96

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H-10674

| | |
|----------------------------|-------|
| NUMBER OF CONTROL STATIONS | 2 |
| NUMBER OF POSITIONS | 3301 |
| NUMBER OF SOUNDINGS | 18549 |

| | TIME-HOURS | DATE COMPLETED |
|---------------------------------------|------------|----------------|
| PREPROCESSING EXAMINATION | 20 | 07/31/96 |
| VERIFICATION OF FIELD DATA | 31 | 08/15/96 |
| QUALITY CONTROL CHECKS | 0 | |
| EVALUATION AND ANALYSIS | 9 | |
| FINAL INSPECTION | 8 | 09/24/96 |
| COMPILATION | 19 | 10/25/96 |
| TOTAL TIME | 87 | |
| ATLANTIC HYDROGRAPHIC BRANCH APPROVAL | | 09/26/96 |

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H-10674 (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, version 5.0
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 0.652 seconds (20.084 meters or 2.01 mm at the scale of the survey) north in latitude, and 0.725 seconds (18.916 meters or 1.89 mm at the scale of the survey) east in longitude.

L. JUNCTIONS

H-10669 (1996) to the northeast
H-10670 (1996) to the northwest
H-10671 (1996) to the north

Standard junctions were effected between the present survey and surveys H-10669 (1996), H-10670 (1996), and H-10671 (1996). There are no junctional surveys to the east, south or west. Present survey depths are in harmony with the charted hydrography to the south, east, and west.

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 CHARTS 11521 (21nd Edition, Feb 05/94)**Hydrography**

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

The following uncharted obstructions should be noted:

| <u>Description</u> | <u>Depth (ft/m)</u> | <u>Latitude (N)</u> | <u>Longitude (W)</u> |
|--------------------|-------------------------|---------------------|----------------------|
| metal cylinder | 54/16 ⁶ | 32°33'07.90" | 79°39'46.73" |
| metal cylinder | 55/16 ⁹ | 32°33'18.51" | 79°40'02.53" |
| metal pipe | 59/18 ⁷ | 32°33'24.83" | 79°39'44.36" |
| fuselage | 45/13 ⁷ | 32°33'18.88" | 79°40'15.67" |
| metal tank | 53/16 ³ | 32°33'11.23" | 79°40'09.27" |
| metal cylinder | 54/16 ⁴ | 32°33'08.65" | 79°40'18.22" |
| metal cylinder | 55/16 ⁷ | 32°33'05.12" | 79°40'14.25" |
| metal cylinder | 56/17 ⁹ | 32°32'53.54" | 79°40'15.46" |
| metal cylinder | 52/15 ⁹ | 32°33'01.97" | 79°40'10.28" |
| metal cylinder | 55/16 ⁹ | 32°33'03.77" | 79°40'05.73" |
| metal object | 52/15 ⁹ | 32°33'23.32" | 79°39'24.84" |

These obstructions are in the vicinity of a buoy marked, "South Carolina Dept of Natural Resources Artificial Reef Support Fish Restoration Project". It is recommended that the shoalest obstruction of this group be charted as shown on the present survey and remaining obstructions be charted as allowed by chart scale. It is also recommended that any permits issued in conjunction with the project referred to on the buoy referenced in this paragraph be researched for additional charting consideration.

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

Danger to Navigation

One Danger to Navigation report was submitted to

Commander (oan), Seventh Coast Guard District, Miami, Florida for inclusion in the Local Notice to Mariners, and to the Marine Chart Division, N/CS3x1, Silver Spring, Maryland. A copy of the report is appended to the Descriptive Report.

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.

H-10674

WHITING Processing Team

Robert Snow

Robert Snow
Verification and
Evaluation and Analysis
Cartographic Technician

APPROVAL SHEET
H-10674

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.

Robert G. Roberson Date: SEPTEMBER 26, 1996
Robert G. Roberson
Cartographer
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: September 26, 1996
Nicholas E. Perugini
Commander, NOAA
Chief, Atlantic Hydrographic Branch

Final Approval:

Approved: Andrew A. Armstrong, III Date: Jan 8, 1997
Andrew A. Armstrong, III
Captain, NOAA
Chief, Hydrographic Surveys Division

