H10656

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. WH-10-16-95

Registry No. H-10656

LOCALITY

State South Carolina

General Locality Port Royal Sound

Sublocality Bay Point to Daws Island

19 95

CHIEF OF PARTY
CDR M. R. Kenny

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DATE DEC 5 1996

☆U.S. GOV. PRINTING OFFICE: 1987—756-980

DIAGRAM 1240-3

L-40(97)
(E) Ref Bp 160073

Charts

CP 4
11516 Appd 5/14/97 TLW
11507A
11513 Appd 5/14/97 TLW
11480 NC

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NOS.

H-10656

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

FIELD NO.

WH-10-16-95

State: South Carolina

General locality: ~~Atlantic Ocean~~ PORT ROYAL SOUND

Locality: ~~Port Royal Sound~~ BAY POINT TO DAWS ISLAND

Scale: 1:10,000 Date of Survey: Oct. 12 - Nov. 16, 1995

Instructions dated: August 29, 1995 Project No.: OPR-G352-WH

Vessel: NOAA Ship WHITING, S-329

Chief of Party: CDR Maureen R. Kenny

Surveyed by: CDR J.D. Wilder, CDR M. Kenny, LT A. Beaver, LT P. Gruccio, ENS E. Sipos, ENS C. Parrish, ENS J. Michalski, ENS J. Garte, U. Gardner, M. Cisternelli, K. Shaver, F.R. Cruz

Soundings taken by echo sounder: DSF-6000N

Graphic record scaled by: WHITING SURVEY PERSONNEL

Graphic record checked by: WHITING SURVEY PERSONNEL

Protracted by: N/A Automated plot by: ~~ENCAD NOVAJET III PLOTTER (AHB)~~ HP 7959B, BRUNING (FIELD)

Verification by: ATLANTIC HYDROGRAPHIC BRANCH PERSONNEL

Soundings in MLLW: METERS (FIELD) FEET (AHB)

REMARKS: Time Zone Used: 0 (UTC)

Side Scan Sonar used for item investigations

Horizontal Datum Used: NAD 83

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

DSC 12-6-96 AWOIS and SURF ✓ RWD 12/96

NOAA FORM 77-28 SUPERSEDES FORM C & GS-537

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
OPR-G352-WH
WH-10-16-95
H-10656

NOAA SHIP WHITING
CDR Maureen Kenny, NOAA
Commanding Officer

A. Project

The purpose of this project is to provide contemporary hydrographic survey data for existing nautical charts. The project responds to requests from the U.S. Coast Guard (USCG), U.S. Corps of Engineers (USACE), U.S. Marine Corps (USMC), South Carolina Port Authority, Port Royal Branch Pilots Association, Beaufort Harbor Master, and private marinas at Hilton Head Island. This survey of Port Royal Sound will be used by the USCG Marine Safety Office (MSO) to develop an oil spill contingency plan, primarily for oil boom placement strategies.

Project OPR-G352-WH consists of two survey sheets. The survey described in this report was designated "B" sheet, field sheet number WH-10-16-95, and registry number H-10656.

Survey Operations were conducted in compliance with the Hydrographic Project Instructions OPR-G352-WH dated August 18, 1995. There are no changes to the original project instructions.

B. AREA SURVEYED

Hydrographic survey H-10656 is located in Port Royal Sound, South Carolina, and is bounded by the following coordinates:

Position	Latitude	Longitude
SE Corner	32° 15' 00" N	80° 38' 15" W
SW Corner	32° 15' 00" N	80° 46' 15" W
NW Corner	32° 19' 06" N	80° 46' 15" W
NE Corner	32° 19' 06" N	80° 38' 15" W

This survey also contains an inset which is bounded by the following coordinates:

Position	Latitude	Longitude
SE Corner	32° 14' 10" N	080° 44' 30" W
SW Corner	32° 14' 10" N	080° 45' 20" W
NW Corner	32° 15' 00" N	080° 45' 20" W
NE Corner	32° 15' 00" N	080° 44' 30" W

Survey operations commenced on October 12, 1995 (DN 285) and concluded on November 16, 1995 (DN 320).

C. SURVEY VESSELS

Launch 1014 (vesno 2932) and Launch 1015 (2931) were used to conduct mainscheme echosounder, side scan sonar investigations, developments, bottom samples, AWOIS investigation, and dive operations. WHITING was used for DGPS performance checks only. 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 following software:

PROGRAM NAME	VERSION	DATE INSTALLED
BACKUP	*2.00*	*February 27, 1995*
BASELINE	*1.14*	*February 27, 1995*
BIGABST	*2.07*	*February 27, 1995*
BIGAUTOST	*3.01*	*February 27, 1995*
BLKEDIT	*2.02*	*February 27, 1995*
CARTO	*2.17*	*February 27, 1995*
CLASSIFY	*2.12*	*April 17, 1995*
CONTACT	*2.48*	*April 17, 1995*
CONVERT	*3.65*	*February 27, 1995*
DAS_SURV	*6.80*	*April 17, 1995*
DIAGNOSE	*3.05*	*February 27, 1995*
DISC_UTIL	*1.00*	*February 27, 1995*
DP	*2.18*	*February 27, 1995*
DPCONVERT	*1.03*	*March 7, 1995*
DSNEDITS	*1.04*	*March 7, 1995*
EXCESS	*4.32*	*February 27, 1995*
FILESYS	*3.31*	*March 7, 1995*
GRAFEDIT	*1.06*	*February 27, 1995*

HIPSTICK	*1.01*	*February 27, 1995*
HPRAZ	*1.26*	*February 27, 1995*
INVERSE	*2.02*	*February 27, 1995*
LISTDATA	*1.02*	*February 27, 1995*
LOADNEW	*2.13*	*March 7, 1995*
LSTAWOIS	*3.07*	*March 7, 1995*
MAINMENU	*1.20*	*February 27, 1995*
MAN_DATA	*3.02*	*March 7, 1995*
NEWPOST	*6.13*	*February 27, 1995*
PLOTALL	*2.32*	*February 27, 1995*
POINT	*2.12*	*March 7, 1995*
PREDICT	*2.01*	*February 27, 1995*
PRESURV	*7.11*	*February 27, 1995*
PRINTOUT	*4.04*	*February 27, 1995*
QUICK	*2.07*	*February 27, 1995*
RAMSAVER	*1.02*	*February 27, 1995*
REAPPLY	*2.12*	*February 27, 1995*
RECOMP	*1.04*	*March 7, 1995*
SCANNER	*1.00*	*February 27, 1995*
SELPRINT	*2.05*	*February 27, 1995*
SYMBOLS	*2.00*	*February 27, 1995*
VERSIONS	*1.00*	*February 27, 1995*
ZOOMEDIT	*2.33*	*February 27, 1995*

Sound Velocity corrections were determined using *CAT* version 2.00 and *VELOCITY* version 2.11. The DGPS station was checked using *MONITOR* version 3.0. 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:

VESNO	Type	S/N	DN
2931	Towfish	016697	320
	Recorder	16669	320

2932	Towfish	10823	319
	Recorder	016673	319

On launch 1014 and 1015, the SSS towfish was deployed using a Superwinch Model W115 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.

200% side scan sonar coverage was used in the investigation of AWOIS items 9503 and 9504.

In order to acquire the required 200% SSS coverage for the search areas, mainscheme lines were run with 110 meter line spacing at the 75 meter range scale for the first 100% coverage, and 170 meter line spacing at the 100 meter range scale for the second 100% coverage. The towfish was maintained at a height off the bottom of 8-20 percent of the range scale. Side scan operations were limited to 4.5 knots. Adequate coverage was determined by producing an '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 sonargram, and passing by aids to navigation.

All contacts appearing significant were measured off the sonargram and entered into an HDAPS contact table. Using the contact utility program, WHITING hydrographers determined contact heights, positions, and correlations to other contacts. They were then further developed by means of echosounder investigation and/or side scan developments. Final resolution and least depths of significant items were determined 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 for significant features and any significant features that were not selected as primary soundings were manually inserted.

The following fathometers were used:

VESSEL	S/N	DN
2931	A105N	285 - 320
2932	B015N	288 - 319

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 a Seacat Conductivity, Temperature and Depth (CTD) profiler (model SBE-19, S/N 286). The CTD was calibrated on February 15, 1995. The Seacat calibration records are included in the Separates, section IV. *

For each velocity cast taken, one corrector table was generated for the launches (VESNO 2931, 2932). The following table shows the dates, locations and depths of each velocity cast that was applied to the data collected in this survey area:

DN	Vel. Table #	Latitude	Longitude	Depth
285	13	32° 15' 19" N	080° 40' 00" W	17.1 m
301	25	32° 14' 54" N	080° 39' 39" W	20.5 m

An additional cast was taken for the dive investigation on DN 320, but is not listed above. 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 frequency (100 kHz) and the low frequency (24 kHz) 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 January 15-16, 1995. Correctors were applied to the readings taken from the hydrometer.

There were no variations in instrument initials.

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.

Bar checks were performed on launches 1014 and 1015. No corrections to soundings were needed.

The correction for the static draft for launches 1014 and 1015 is 0.55 meters, as measured on July

* DATA FILED WITH THE ORIGINAL FIELD RECORDS.

28, 1993. Settlement and squat measurements for launches 1014 and 1015 were determined on March 29, 1995 and entered into Offset table 2 and 1 respectively. The settlement and squat correctors were applied during data acquisition on each survey platform. Offset tables are included in the Separates, section II. FILED WITH THE ORIGINAL FIELD RECORDS

Heave correctors for launch 1014 and 1015 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 Fort Pulaski, Georgia (867-0870) served as the reference station for predicted tides. Although the survey area is covered by five tide correction zones, to facilitate data acquisition, only one set of time and height correctors was applied. Tide corrections for other zones will be reapplied when smooth tides are applied. 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.

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

Time Correction	+ 00 hrs 24 mins
Height Ratio	x 1.00

WHITING installed and leveled one ADR gauge for datum control on H-10656. The following table lists the station name, number and location:

Station Number	Station Name	Latitude	Longitude
866-8918	Ribaut Island	32° 16.0' N	080° 44.2'W

Opening levels were run on October 12, 1995. Closing levels were run on November 16, 1995. Both opening and closing levels closed within tolerance. The request for smooth tides was submitted to the Product and Services Branch, N/OES231, Datums Section, on November 29, 1995. APPROVED TIDES AND ZONING WERE APPLIED DURING OFFICE PROCESSING

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 high frequency Differential GPS station set on a tower over a control mark on Skidaway Island, GA. WHITING used the Charleston USCG DGPS Beacon for continuous performance checks using *SHIPDIM* version 2.1. The adjusted NAD-83 positions for SKID (2nd Order Class I) and the Jones Island Range were provided by the Field Photogrammetry Section. The position of the Charleston USCG DGPS Beacon was scaled from the largest scale chart of the area. The positions are as follows:

Station	Latitude	Longitude
SKID	31° 59' 19.22599" N	081° 01' 12.26294" W
Charleston USCG DGPS Beacon	32° 45' 30.000" N	079° 50' 30.000" W
Jones Island Range, Front	32° 02' 31.71243" N	080° 51' 10.09256" W

WHITING used *MONITOR* 3.0 to verify station position and to check for multipath in the area.

I. HYDROGRAPHIC POSITION CONTROL

A Differential Global Positioning System (DGPS) was used as the navigation system for this survey. Both launches and the ship used an Ashtech Sensor GPS receiver with a LRD-1 HF receiver supplying correctors for DGPS navigation. Ashtech receivers were initialized by HDAPS and LRD-1 receivers were set to the appropriate frequency.

WHITING personnel erected a HF Differential GPS station on the grounds of Skidaway Institute of Oceanography (station SKID). The station contains the following equipment: an Ashtech MK XII receiver, s/n 700354A03069; an LRD-3 modulator, s/n 605; and a Ray 152 high frequency transceiver, s/n BS29239.

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 Skidaway Island 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 LRD-1 receivers on the data acquisitions platforms are as follows:

VESNO #	Device	Serial Number
2931	Ashtech Sensor	70041751203
	LRD-1	233
2932	Ashtech Sensor	700417B1194
	LRD-1	206
2930	Ashtech Sensor	700417B1055
	LRD-1	248

DGPS performance checks were done in two stages. The first stage determined the proper functioning of WHITING's DGPS equipment. Prior to September 25, 1995, the check was performed by using a launch to take ten DP's alongside the forward range light marking Jones Island Range. The average position from these DP's was compared to the known position of the range light to verify the proper functioning of the DGPS equipment.

After September 25, 1995, the proper functioning of the DGPS equipment was determined by using *SHIPDIM* version 2.1. The position from the Skidaway DGPS tower was compared to the position provided by the Coast Guard DGPS beacon in Charleston. *SHIPDIM* routinely showed the positions given by the two systems to be within 2-3 meters of each other.

Stage two was conducted with each launch secured in the WHITING davits. Simultaneous HDAPS positions were compared between WHITING and each launch. An offset in distance and azimuth was then calculated between the ship and each 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. * DATA FILED WITH THE ORIGINAL FIELD RECORDS.

DGPS antenna offsets were measured on July 28, 1993, for launches 1014 and 1015 and March 19, 1993, for WHITING. Offsets and laybacks were measured using the 100 kHz (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 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 from launch 1015. Correctors from offset table 2 were applied to all data acquired from launch 1014.

J. SHORELINE SEE ALSO THE EVALUATION REPORT

Shoreline verification was not completed on H-10656 due to time constraints.

K. CROSSLINES

A total of 46.81 nautical miles of crosslines, or 16 % of the mainscheme mileage, was run on H-10656. Agreement between mainshceme and crossline soundings is adequate. Sixty one percent (61 %) of the crossline soundings agree with mainscheme soundings to within 0.5 meters. Discrepancies of up to 2.0 meters between mainscheme and crossline soundings were noted in the central portion of the survey sheet. These discrepancies can be accounted for by the large sand waves (up to 3.0 meters in height) known to exist in the area. In other portions of the sheet, crossline and mainscheme soundings generally agreed to within 0.3 meters.

L. JUNCTIONS SEE ALSO THE EVALUATION REPORT.

Survey H-10656 does not junction with any contemporary surveys.

M. COMPARISONS WITH PRIOR SURVEYS See also the Evaluation Report

Comparisons were made between H-10656 and the following prior surveys: H-5518 (1933-1934, 1:10,000), H-5564 (1934, 1:10,000), H-5130 (1931, 1:10,000), and H-5117 (1931, 1:10,000). All comparisons were made in feet. All prior surveys were referenced to NAD-27. Because the datum shift between NAD-27 and NAD-83 was determined to be insignificant compared to the error in overlaying the sounding plots from the surveys, no datum shift was applied in the comparisons. Results of the comparisons are as follows:

H-5518: In general, agreement between H-10656 and H-5518 was adequate with most soundings agreeing to within 4 feet. The most significant discrepancies exist in the shoal area just west of Fort Fremont Reach between buoys G "29" and G "31". The general trend of the shoal appears to be a deepening toward the north end and an increased shoaling toward the south end. In addition, near the southern end, the shoal appears to be expanding slowly in a westward direction. This westward expansion combined with the increased shoaling has led to discrepancies between the two surveys of 15 to 17 feet just west of the channel. Concur

H-5564: In comparing H-10656 and H-5564, the most significant discrepancies were again noted in or near shoals. The shoal just south of the restricted area at the mouth of the Broad River between Parris Island and Daws Island has expanded in a southeasterly direction. This expansion has led to discrepancies between the two surveys of up to 21 feet.

The shoal just east of Dolphin Head on the southern bank of Port Royal Sound has also expanded in a southeasterly direction leading to discrepancies in soundings of up to 33 feet between H-10656 and H-5564. In other areas, agreement between the two surveys is adequate with most soundings agreeing to within 3 feet.

Due to time constraints, the 15-foot sounding from survey H-5564 at approximate position 32° 15' 47" N, 080° 40' 42" W was not fully investigated during survey H-10656. In general, depths from H-10656 are deeper in this area than depths from H-5564, suggesting that this 15-foot shoal may no longer exist. WHITING recommends that further survey work be done to develop this area. Until further work is completed, the 15-foot sounding should be carried through to the present survey. Concur. See also Section M. of the Evaluation Report.

H-5130: In comparing H-10656 and H-5130, discrepancies between the two surveys due to the southeasterly expansion of the shoal just northeast of Dolphin Head were again noted. The largest discrepancy noted in this area was 24 feet.

Within the shoal just southeast of Daws Island, discrepancies between the two surveys of up to 20 feet were noted, although there does not appear to be any systematic deepening or shoaling. Elsewhere, agreement between H-10656 and H-5130 is adequate with most soundings agreeing to within 3 feet. Concur

H-5117: Agreement between H-10656 and H-5117 is fair, with most soundings agreeing to within 2 feet. In general, soundings from H-10656 are slightly deeper, with the largest discrepancies occurring near shoals or close to shore. Due to time constraints, hydrography was not run in Skull Creek between latitudes 32° 14' 55" N and 32° 15' 00" N. WHITING recommends that hydrography be completed in this area. Concur

N. ITEM INVESTIGATIONS

Due to time constraints, AWOIS 9503 and 9504 were the only items investigated by WHITING during this survey. Side scan sonar was used in investigating both items. Depths of features and surrounding depths are corrected to ~~predicted~~ approved MLLW.

Section	AWOIS Item	Status
N1.	9503	Disproved
N2.	9504	Disproved

N1. AWOIS 9503

Reported Position:

Latitude:	32° 15' 30.72" N
Longitude:	80° 39' 35.38" W
Reported Depth:	unknown
Feature:	Wreck Royal Lady

The item was investigated using SSS on the 100-meter range scale. Two-hundred percent SSS coverage was performed over the required search radius of 500 meters. Only one item of interest (contact #4589.06S) was noted. Contact #4589.06S was investigated by divers. Divers found what appeared to be a natural feature (possibly limestone) encrusted with heavy marine growth. The divers described the feature as being over 50 meters in length. The least depth of the feature is 8.0 meters (MOD III divers least depth gauge) in surrounding depths of 10.5 meters. No evidence of a wreck was located. WHITING recommends that the symbol for a wreck be removed from the chart and that a depth of 8.0 meters be charted at the following position: 32° 15' 15.129" N, 080° 39' 31.964" W. Concur Chart as 26 FT

A 29FT depth ~~depth~~ was located at the position of the charted wreck.
*Approx 450m south of the charted wreck.

N2. AWOIS 9504

Reported Position:

Latitude:	32° 15' 42.720" N
Longitude:	080° 39' 17.380" W

Reported Depth: unknown
Feature: unknown

Two-hundred percent SSS coverage was performed over the required search radius of 500 meters in searching for AWOIS item 9504. No significant contacts were found; WHITING recommends removal of this item from the chart. CONCUR. DELETE THE SUNKEN WRECK

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

Soundings from chart 11516 (27th ed., Oct. 30/93, 1:40,000) were compared to H-10656 soundings. The comparison was made in feet at the 1:10,000 scale. On average, soundings from H-10656 are approximately 2 feet deeper than charted depths from chart 11516, except in the vicinity of certain shoals.

Consistant with the prior survey comparisons, as discussed in section M, the largest discrepancies existed in or near the following shoals: 1) the shoal just east of Dolphin Head on the southern bank of Port Royal Sound (soundings as shoal as 5 feet exist near charted depths of 30 to 33 feet); 2) the shoal area just west of Fort Fremont Reach between buoys G"29" and G "31"; 3) the shoal just south of the restricted area at the mouth of the Broad River between Parris Island and Daws Island (this shoal now extends over 0.25 nautical miles past the charted contour line); and 4) the shoal just southeast of Daws Island.

All of the above features were reported as dangers to navigation to the U.S. Coast Guard (see appendix I). APPENDED TO THIS REPORT.

P. ADEQUACY OF SURVEY SEE ALSO THE EVALUATION REPORT

This survey is complete and adequate to supersede all prior surveys in their common area except for the 15-foot sounding at latitude 32° 15' 47" N, longitude 080° 40' 42" W from prior survey H-5564 noted in section M.

Q. AIDS TO NAVIGATION SEE ALSO THE EVALUATION REPORT

All aids to navigation were visually verified during the survey. All aids appear adequate to serve their intended purpose. Due to time constraints, not all aids in the survey area were positioned using DGPS. CONCUR

R. STATISTICS

Number of Positions	3807
Main-scheme Sounding Lines (Nautical Miles)	286.07
Crosslines (Nautical Miles)	46.81
Square Nautical Miles Surveyed	15
Days of Production	14
Detached Positions	26
Bottom Samples	37
Tide Stations Installed	1
Current Stations	None
Number of CTD Casts	2
Magnetic Stations	None

S. MISCELLANEOUS See also the Evaluation Report

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 the Evaluation Report

The only additional fieldwork recommended is a further investigation of the 15-foot sounding from chart 11516 at approximate position 32° 15' 47" N, 080° 40' 42" W and ~~an investigation~~ the development of the ~~reported shoal~~ holiday between daymarkers G "9" and G "9A" in Skull Creek. There are no current plans for construction or dredging in the survey area. Concur

U. REFERRAL TO OTHER REPORTS

A Chart User Evaluation Report and a Coast Pilot Report were submitted as part of OPR-G352-WH.

Submitted by:

Christopher Parrish

Ensign Christopher Parrish
Junior Officer, NOAA Ship WHITING

APPROVAL SHEET
HYDROGRAPHIC SURVEY
OPR-G352-WH
1995
WH-10-16-95
H-10656

The data for this survey were acquired and checked under the Commanding Officer's 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. 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 and adequate for the preparation of the smooth sheet.

Approved By:

Maureen R. Kenny

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

HORIZONTAL CONTROL STATIONS

WHITING personnel erected a HF Differential GPS receiver/transmitter on the grounds of Skidaway Institute of Oceanography (station SKID). The position of the Skidaway mark was faxed from Field Photogrammetry Section to the WHITING on March 6, 1995. WHITING launches conducted DGPS performance checks using the Jones Island Range, Front Light as a known position. The positions are as follows:

Station:	**SKID**
Latitude:	31° 59' 19.22599" N
Longitude:	081° 01' 12.26294" W
Ellipsoid Ht:	-29.858 meters

Station:	**Jones Island Range, Front Light**
Latitude:	32° 02' 31.71243" N
Longitude:	080° 51' 10.09256" W

The Differential GPS station at the Charleston Coast Guard station was used for performance checks. The position of the station, scaled from the largest scale chart of the area, is as follows:

Station:	**Charleston**
Latitude:	32° 45' 30.000" N
Longitude:	079° 50' 30.000" W

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
NOAA Ship WHITING	South Carolina	Port Royal Sound	1/24/96

The following objects HAVE [ ] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-G352-WH	WH-10-16-95	H-10656	NAD 83

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
Beacon R "14"		32 14	17.414	080 45	11.574	✓	F-DGPS 11/8/95	11516 11513
Light "1"		32 16	53.135	080 44	51.172	✓	F-DGPS 11/16/95	11516 11513
Beacon R "4"		32 16	23.050	080 44	10.714	✓	F-DGPS 11/16/95	11516 11513
Light R "6"		32 15	48.227	080 44	31.795	✓	F-DGPS 11/16/95	11516 11513
Beacon G "7"		32 15	22.889	080 44	58.968	✓	F-DGPS 11/16/95	11516 11513
Beacon G "9"		32 15	00.677	080 45	09.016	✓	F-DGPS 11/16/95	11516 11513
								✓ me

RESPONSIBLE PERSONNEL

TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	Maureen R. Kenny Commander Maureen R. Kenny, NOAA	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	Christopher E Parrish Ensign Christopher E. Parrish, NOAA	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

Surrounding depth = 10.5 meters

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-G398-WH

SURVEY H-10656 ("B" SHEET) FIELD SHEET WH-10-16-95

ITEM NUMBER 4589.06 S AWOIS NUMBER 9503

"ROYAL LADY"

SSS POSITION: E 28584.4

N 18951.9

DESCRIPTION OR CROSS REFERENCES: X-REF : 4524.48 P

METHOD OF INVESTIGATION (circle):

Echosounder (Diver) Other (specify) _____

INVESTIGATION NOTES:

Divers investigating this item found what appeared to be a nature feature encrusted with heavy marine growth. Its least depth was considerably shoaler than the surrounding depths, but no debris from the "Royal Lady" could be located throughout the search area.

DATE/DN: 11/16/95 1320 TIME (UTC): 141417 FIX: 2164

EASTING 28586.3 **LATITUDE** 31°50'15.171"

NORTHING 18950.9 **LONGITUDE** 080°47'33.447"

LORAN C: W _____ X _____ Y _____ Z _____

LEAST DEPTH:

METHOD 77023 SERIAL NUMBER 68332

MEASURED PRESSURE: 14.62 (in) 26.94 (bottom) 14.64 (out)

COMPUTED DEPTH: 8.52

TIDE CORRECTOR: -.5

DRAFT CORRECTOR: N/A

VELOCITY CORRECTOR: N/A

CORRECTED LEAST DEPTH: 8.02

RECORDER _____ CHECKED _____

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

December 26, 1995

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 undergoing hydrographic survey operations in Port Royal Sound, discovered uncharted shoals which constitute dangers to navigation. Enclosed is a report concerning the features which should be placed in the next Notice to Mariners. The following table is a summary of our findings:

Feature	Latitude	Longitude	Depth
Shoal	32° 15' 18.987" N	080° 40' 50.082" W	5 ft
Shoal	32° 15' 30.961" N	080° 41' 10.502" W	3 ft
Shoal	32° 17' 53.695" N	080° 39' 17.461" W	5 ft
Shoal	32° 17' 22.708" N	080° 42' 01.963" W	7 ft
Shoal	32° 17' 09.316" N	080° 44' 08.364" W	~~1 ft~~ 0.5 FT

Differential GPS was used to determine the survey position. Positions are referenced to NAD 83. All depths are referenced to MLLW using predicted tides. Charts 11516 and 11513 are the affected by this report.

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

Chief, Marine Charting Division, NOAA
Chief, AMC Operations Division, NOAA
Director, Defense Mapping Agency
Hydrographic/Topographic Center

Sincerely,

Maureen Kenny

Maureen Kenny
Commander, NOAA
Commanding Officer

Enclosures.
CC: AMC1
N/CS2
N/CS33
DMAHTC

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H-10656

State: South Carolina

Sublocality: Port Royal Sound

Project Number: OPR-G352-WH

CAUTION
ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW

The following features have been found during hydrographic survey operations by NOAA Ship WHITING:

Features Discovered:

1. The shoal near the southern bank of Port Royal Sound just east of Dolphin Head in the vicinity of daymarker G "1" has expanded in a southeast direction. A 5-foot sounding was found near a charted depth of 33 feet (Chart 11516), and a 3-foot sounding was found near charted depths of 20 to 26 feet.

2. The shoal just west of Fort Fremont Reach in the Beaufort River between buoys G "29" and G "31" has expanded in a westward direction. A 5-foot sounding was found near charted depths of 11 to 21.

3. The shoal at the mouth of the Broad River between Parris Island and Daws Island has expanded in southeast direction. A 7-foot sounding was found near a charted depth of 20 feet.

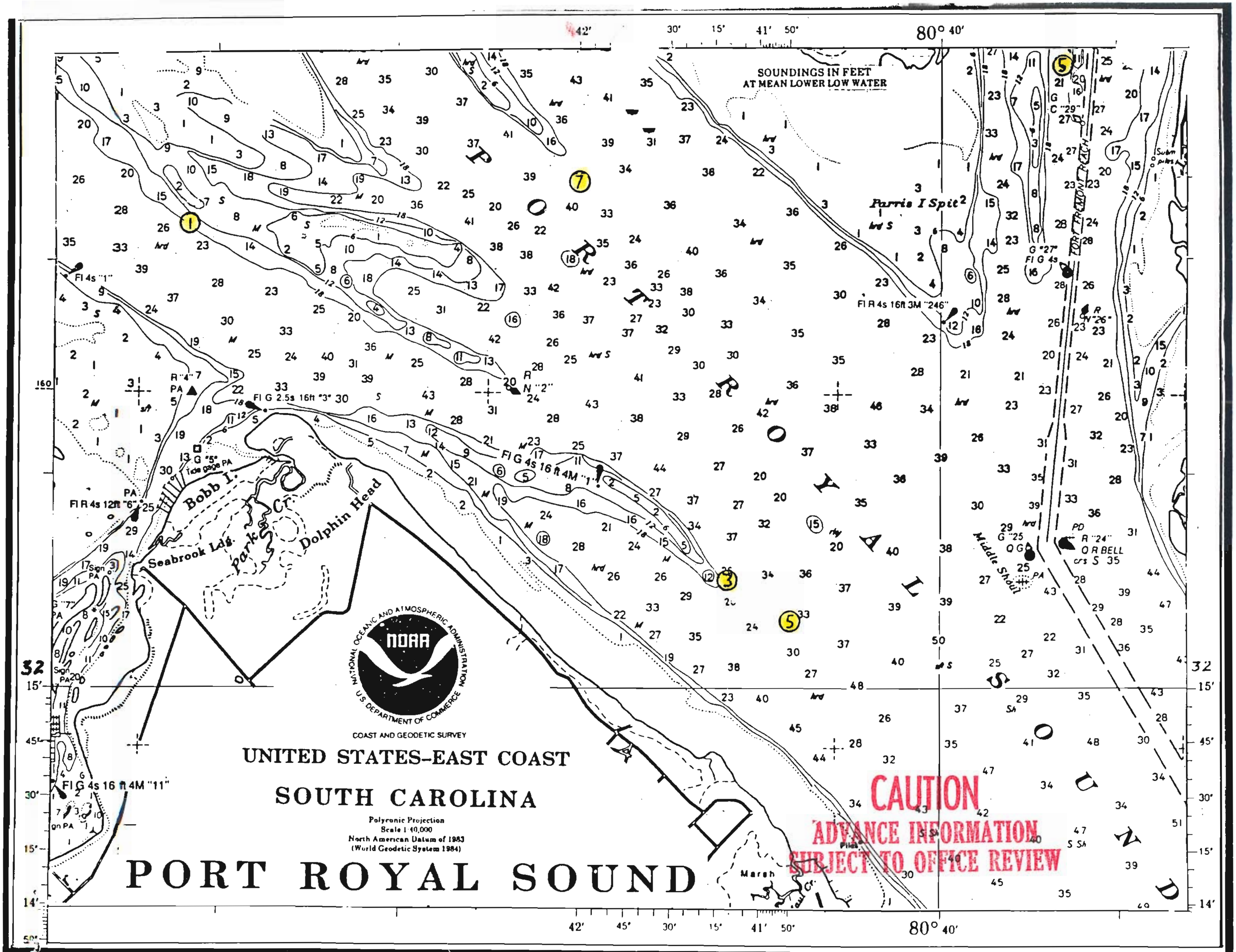
4. A ~~1~~ ½ ft see previous page-foot shoal was found just south of Daws Island near a charted depths of 7 to 15.

Affected Nautical Charts:

Charts 11516 (27th ed., Oct. 30/93) and 11513 (21st ed., June 4/94) are affected by this report.

Reported Depth	Geographic Position Latitude	Longitude
5 ft	32° 15' 18.987" N	080° 40' 50.082" W
3 ft	32° 15' 30.961" N	080° 41' 10.502" W
5 ft	32° 17' 53.695" N	080° 39' 17.461" W
7 ft	32° 17' 22.708" N	080° 42' 01.963" W
~~1~~ ft ½ ft - see previous page	32° 17' 09.316" N	080° 44' 08.364" W

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


11516
SOUNDINGS IN FEET
AT MEAN LOWER LOW WATER
PORT ROYAL SOUND
Parris I Spit
FORT FREMONT REACH
Middle Shoal
Bobb I.
Seabrook Lds.
Park Cr.
Dolphin Head
Marsh
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
UNITED STATES–EAST COAST
SOUTH CAROLINA
Polyconic Projection
Scale 1:40,000
North American Datum of 1983
(World Geodetic System 1984)
PORT ROYAL SOUND
CAUTION
ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW
11516

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: May 23, 1996

HYDROGRAPHIC SECTION: Atlantic

HYDROGRAPHIC PROJECT: OPR G352-WH

HYDROGRAPHIC SHEET: H-10656

LOCALITY: Port Royal Sound, S.C.

TIME PERIOD: October 12 - November 16, 1995

TIDE STATION USED: 866-8918 Ribaut Island, S.C.
Lat. 32° 16.0'N Lon. 80° 44.2'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 5.61 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 7.1 ft.

REMARKS: RECOMMENDED ZONING

1. MAPINFO polygon: #5

-80.791376	32.298391
-80.799456	32.236418
-80.753636	32.216816
-80.735312	32.251868
-80.791376	32.298391

Apply a +6 minute correction to times and a X1.05 range ratio to heights using Ribaut Island, S.C. (866-8918).

2. MAPINFO polygon: #6

-80.684246	32.239065
-80.701965	32.252344
-80.671802	32.302938
-80.642716	32.302504
-80.638408	32.269255
-80.684246	32.239065

Apply a -24 minute time correction, and a X0.89 range ratio to heights using Ribaut Island, S.C. (866-8918).

3. MAPINFO polygon: #7

-80.670725	32.212689
-80.6261	32.257395
-80.638408	32.269255
-80.684246	32.239065
-80.670725	32.212689

Apply a -12 minute time correction, and a X0.93 range ratio to heights using Ribaut Island, S.C. (866-8918).

4. MAPINFO polygon: #8

-80.791376	32.298391
-80.761752	32.319802
-80.712737	32.336202
-80.671802	32.302938
-80.701965	32.252344
-80.736437	32.252836

Times and heights are direct using Ribaut Island, S.C. (866-8918).

5. MAPINFO polygon: #9

-80.638408	32.269255
-80.614216	32.28471
-80.623129	32.296212
-80.642716	32.302504
-80.638408	32.269255

Apply a -6 minute time correction, and a X0.96 range ratio to heights using Ribaut Island, S.C, (866-8918).

6. MAPINFO polygon: #10

-80.671802	32.30296
-80.667269	32.333904
-80.645199	32.336415
-80.642716	32.302504
-80.671802	32.30296

Apply a -6 minute time correction, and a X0.96 range ratio to heights using Ribaut Island, S.C, (866-8918).

Note: Times are tabulated in Greenwich Mean Time.

William M. Hybo

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-10656

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 11516, 11513, 11507	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	
BAY POINT	X		X							1
BAY POINT ISLAND	X		X							2
BEAUFORT RIVER	X		X							3
BOBB ISLAND	X		X							4
BROAD RIVER	X		X							5
CHECHESSEE RIVER	X		X							6
DAWS ISLAND	X		X							7
DOLPHIN HEAD (cape)	X		X							8
FORT FREMONT	X		X							9
HILTON HEAD ISLAND	X		X							10
LANDS END (ppl)	X		X							11
MACKAY CREEK	X		X							12
MIDDLE SHOAL	X		X							13
MORSE ISLAND CREEK	X		X							14
PARK CREEK	X		X							15
PARRIS ISLAND	X		X							16
PARRIS ISLAND SPIT	X		X							17
PINCKNEY ISLAND	X		X							18
SAINT HELENA ISLAND	X		X							19
SAINT PHILLIPS ISLAND	X		X							20
SEABROOK LANDING (ppl)	X		X							21
SKULL CREEK	X		X							22
SOUTH CAROLINA (title)	X		X							23
STATION CREEK	X		X							24
WHALE BRANCH	X		X							25

Approved:

Curtis A. Loy

Chief Geographer

MAR 20 1996

NOAA FORM 76-155 SUPERSEDES C&GS 197

11/27/96

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H-10656

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	3807
NUMBER OF SOUNDINGS	20679

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	26	03/07/96
VERIFICATION OF FIELD DATA	135	11/05/96
QUALITY CONTROL CHECKS	11	
EVALUATION AND ANALYSIS	15	
FINAL INSPECTION	30	10/04/96
COMPILATION	128	11/26/96
TOTAL TIME	345	

ATLANTIC HYDROGRAPHIC BRANCH APPROVAL 11/19/96

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H-10656 (1995)

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 0.721 seconds (22.221 meters or 2.22 mm at the scale of the survey) north in latitude, and 0.612 seconds (16.008 meters or 1.60 mm at the scale of the survey) east in longitude.

J. SHORELINE

Shoreline originates with 1:10,000 scale enlargements of 1:20,000 scale, final reviewed, Class III photogrammetric manuscripts TP-01406, and TP-01407 of 1989. The shoreline shown on the smooth sheet was digitized by Atlantic Hydrographic Branch personnel.

L. JUNCTIONS

There are no contemporary junctional surveys. Depths in the junctional areas are in general harmony with the charted depths.

M. COMPARISON WITH PRIOR SURVEYS

H-5117	(1931)	1:10,000
H-5130	(1931)	1:10,000
H-5518	(1933-34)	1:10,000
H-5564	(1934)	1:10,000

An adequate comparison was made with the prior surveys listed above in section M., pages 9 and 10, of the Descriptive Report. The following should be noted:

A charted 15-ft depth (4^9 m), in Latitude 32°15'46"N, Longitude 80°40'42"W, originating with H-5564 (1934) is not considered disproved. Additional work to verify or disprove the depth and has been recommended. The depth has been brought forward from the prior survey to supplement the present survey. It is recommended that the 15-ft depth be retained as charted.

Except as noted above, the present survey is adequate to supersede the prior surveys within the common areas.

O. COMPARISON WITH CHART 11516 (27th Edition, Oct 30/93)

Hydrography

The charted hydrography originates with the previously discussed prior surveys and requires no further consideration. The hydrographer makes an adequate chart comparison in section O. of the Descriptive Report. The following should be noted:

1. The following charted Automated Wreck and Obstruction Information System (AWOIS) items were not investigated.

AWOIS Item # Description	Latitude (N)	Longitude (W)
9495 Sign PA	32°14'14.00"	80°45'15.00"
9496 Visible Wreck PA	32°14'18.48"	80°45'03.36"
9497 Sign PA	32°14'21.00"	80°44'58.00"
9498 Shl Rep 1980	32°14'55.00"	80°45'05.00"
9499 Sign PA	32°15'03.73"	80°44'52.38"
9500 Subm Pile PA	32°15'04.00"	80°45'12.00"

9502 Sign PA	32°15'30.72"	80°44'36.38"
9536 Subm Piles	32°17'27.00"	80°38'49.00"
9537 Piles PA	32°18'18.00"	80°38'45.00"

It is recommended that these features be retained as charted.

2. AWOIS item #9501, a charted sign PA in Latitude 32°15'10.00"N, Longitude 80°45'12.00"W, was located by the field unit in Latitude 32°15'10.11"N, Longitude 80°45'12.71"W. It is recommended that the charted sign PA be revised and charted as shown on the present survey.

3. Seven charted piers, in the vicinity of Latitude 32°15'52"N, Longitude 80°44'15"W, were not investigated by the field unit. It is recommended that the piers be retained as charted.

4. The charted piers, in the vicinity of Latitude 32°14'46"N, Longitude 80°44'52"W, are shown incorrectly on the chart. It is recommended that the piers be revised and charted as shown on the present survey.

5. The geographic name, Bobb Island, on NOS chart 11516, in the vicinity of Latitude 32°16'00"N, Longitude 80°44'00"W, is shown as Ribaut Island on NOS chart 11513. A telephone conversation with Chief Geographer, Curtis Loy, on March 3, 1996 confirmed that Bobb Island is the correct geographic name. It is recommended that the geographic name Ribaut Island on chart 11513 be revised to Bobb Island.

6. The following uncharted piers originate with shoreline manuscript TP-01407. These piers were neither verified nor disproved by the hydrographer.

Feature	Latitude (N)	Longitude (W)
pier	32°14'22.4"	80°44'38.0"
pier	32°14'24.3"	80°44'35.0"
pier	32°14'28.2"	80°44'37.2"
pier	32°14'38.6"	80°44'42.2"

It is recommended that these piers be charted as shown on the present survey.

7. Two charted mooring buoys in the vicinity of Latitude 32°17'39"N, Longitude 80°41'40"W were neither verified nor disproved by the field unit. No change in charting is recommended.

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

Dangers 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.

Controlling Depths

There are no conflicts between the present survey depths and the charted controlling depths in Fort Fremont Reach.

P. ADEQUACY OF SURVEY

This is an adequate hydrographic/side scan sonar survey. Additional work is recommended at an opportune time to resolve items discussed in this report.

Q. AIDS TO NAVIGATION

The following fixed aids to navigation were located by the field unit.

Aid to Navigation	Latitude (N)	Longitude (W)
Skull Creek Daybeacon 4	32°16'23.05"	80°44'10.71"
Skull Creek Light 6	32°15'48.23"	80°44'31.79"
Skull Creek Daybeacon 7	32°15'22.89"	80°44'58.97"
Skull Creek Daybeacon 9	32°15'00.68"	80°45'09.02"
Skull Creek Daybeacon 9A	32°14'53.60"	80°45'04.50"

These aids to navigation are presently charted as position approximate (PA). It is recommended that the notations PA be removed from the chart and the aids be charted as shown on the present survey.

R. RECOMMENDATIONS

Additional hydrography is recommended for a holiday in

the vicinity of Latitude 32°15'00"N, Longitude 80°45'00"W in Skull Creek. Verification or disproval of the AWOIS items discussed in section 0.1 of this report is also recommended.

S. MISCELLANEOUS

Chart compilation using the present survey 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

Robert Snow
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

Richard H. Whitfield
Cartographer
Evaluation and Analysis

APPROVAL SHEET
H-10656

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: 19 NOVEMBER 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: 19 Nov 1996
Nicholas E. Perugini, CDR, NOAA
Chief, Atlantic Hydrographic Branch

****

Final Approval:

Approved: Andrew A. Armstrong III Date: Dec 17, 1996
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. H-10656

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
11516	11/20/96	[illegible]	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No.
11513	5/14/97	[illegible]	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. Appd thru 11516
11507	8/9/99	[illegible]	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. Appd thru 11516
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
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			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED