H10627

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-10-09-95

Registry No.: H-10627

LOCALITY

State: GEORGIA

General Locality: NORTH ATLANTIC OCEAN

Sublocality: 7 NM EAST OF GASKIN BANKS

19 95

CHIEF OF PARTY
CDR J. D. WILDER, NOAA

LIBRARY & ARCHIVES

DATE: SEP 12 1996

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

NOAA FORM 77-28 (11-72)

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

REGISTER NOS.

H-10627

HYDROGRAPHIC TITLE SHEET

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-10-9-95

State: Georgia

General locality: NORTH Atlantic Ocean

Locality: 7 NM east of Gaskin Banks, S.C.

Scale: 1:10,000 Date of Survey: July 20-Nov 2, 1995

Instructions dated: March 8, 1995 Project No.: OPR-G398-WH

Vessel: NOAA Ship WHITING, S 329

Chief of Party: CDR John D. Wilder

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

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 (AMC) ZETA 936 PLOTTER (FIELD)

Verification by: ATLANTIC HYDROGRAPHIC BRANCH PERSONNEL

Soundings in MLLW: ~~METERS~~ FEET

REMARKS: Time zone used: GMT (UTC), +0

200% Side Scan Sonar coverage performed throughout entire survey

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

SEP 12 1996

AWOIS and SURF - 9/96 RWD

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

PROGRESS SKETCH

HYDROGRAPHIC SURVEY

OPR-G115-WH

WASSAW SOUND and WILMINGTON RIVER

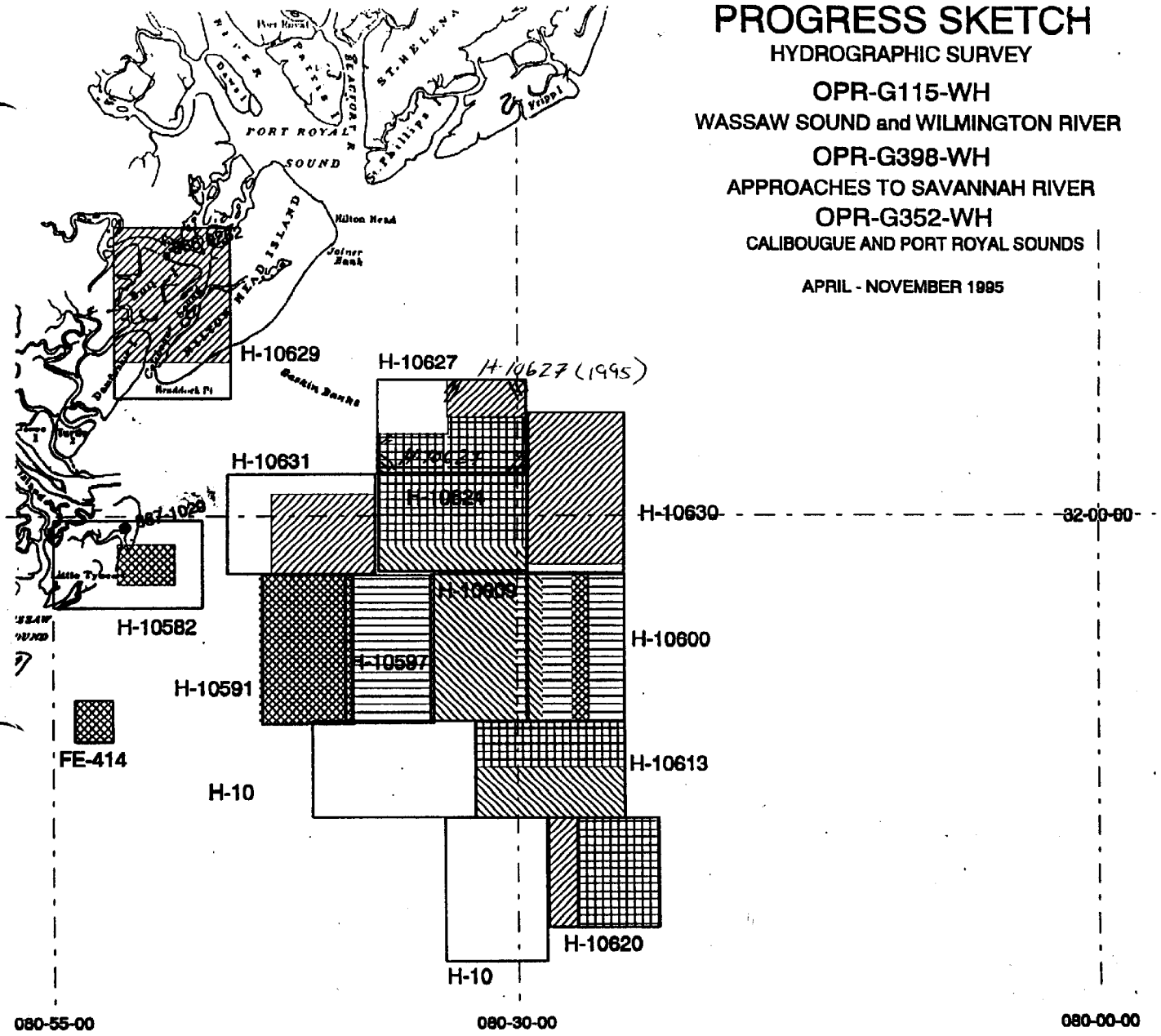
OPR-G398-WH

APPROACHES TO SAVANNAH RIVER

OPR-G352-WH

CALIBOUGUE AND PORT ROYAL SOUNDS

APRIL - NOVEMBER 1995



NOAA SHIP WHITING S329

CDR JOHN D. WILDER, COMMANDING

APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	
24	25	27	23	29				DAYS AT SEA
156	83	218	0					LNM SOUNDINGS (SHIP)
173	10	24	156					LNM SOUNDINGS (LAUNCHES)
904	1208	1550	1732					LNM SIDE SCAN (SHIP)
7	14	52	182					LNM SIDE SCAN (LAUNCHES)
38	49	64	74					SQ NM SURVEYED
6	10	22	24					ITEMS INV/DIVES
7	8	4	9					VELOCITY CASTS
45	19	15	15					BOTTOM SAMPLES
20	0	0	0					WATER CLARITY OBS
								HYDROGRAPHY

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
OPR-G398-WH
WH-10-9-95
H-10627

NOAA SHIP WHITING
CDR John D. Wilder, NOAA
Commanding Officer

A. PROJECT

Project OPR-G398-WH is navigable area survey with 200-percent side scan sonar coverage. The purpose of the project is to provide contemporary hydrographic survey data for the approaches to Savannah, GA. The project responds to requests from the Georgia Ports Authority and the Savannah Pilots Association.

Survey operations were conducted in compliance with Hydrographic Project Instructions OPR-G398-WH dated March 8, 1995, and Change No. 1 dated May 17, 1995.

The survey covered in this Descriptive Report was assigned sheet letter "E", field sheet number WH-10-9-95, and registry number H-10627.

B. AREA SURVEYED

Hydrographic survey H-10627 is 7 nautical miles east of Gaskin Banks, South Carolina. The sheet is bounded by the following four positions:

Position Number	Latitude	Longitude
1	32° 02' ~~39.3"~~ N 45.0"	080° 37' 30.0" W
2	32° 07' 09.3" N	080° 37' 30.0" W
3	32° 07' 09.3" N	080° ~~28'~~ ~~51.2~~" W 29'03.0"
4	32° 02' ~~39.3~~" N 45.4"	080° ~~28'~~ ~~51.2~~" W 29'03.0"

Survey operations began on July 20, 1995 (DN 201) and ended on November 2, 1995 (DN 306).

C. SURVEY VESSELS

NOAA Ship WHITING (vesno 2930), launch 1015 (vesno 2931) and launch 1014 (vesno 2932) were used to acquire side scan sonar and sounding data, bottom samples, crosslines, item investigations, dive operations, and to conduct side scan sonar development.

No unusual vessel configurations were used nor were any problems encountered.

D. AUTOMATED DATA ACQUISITION AND PROCESSING SEE ALSO EVALUATION REPORT

Survey data acquisition and processing were accomplished using the HDAPS system with the following software:

Program	Version	Date Installed
BACKUP	*2.00*	*February 24, 1995*
BASELINE	*1.14*	*February 24, 1995*
BIGABST	*2.07*	*February 24, 1995*
BIGAUTOST	*3.01*	*February 24, 1995*
BLKEDIT	*2.02*	*February 24, 1995*
CARTO	*2.17*	*February 24, 1995*
CLASSIFY	*2.12*	*April 17, 1995*
CONTACT	*2.48*	*April 17, 1995*
CONVERT	*3.65*	*February 24, 1995*
DAS_SURV	*6.80*	*April 17, 1995*
DIAGNOSE	*3.05*	*February 24, 1995*
DISC_UTIL	*1.00*	*February 24, 1995*
DP	*2.18*	*February 24, 1995*
DPCONVERT	*1.03*	*March 07, 1995*
DSNEDITS	*1.04*	*March 07, 1995*
EXCESS	*4.32*	*February 24, 1995*
FILESYS	*3.31*	*March 07, 1995*
GRAFEDIT	*1.06*	*February 24, 1995*
HIPSTIC	*1.01*	*February 24, 1995*
HPRAZ	*1.26*	*February 24, 1995*
INVERSE	*2.02*	*February 24, 1995*
LISTDATA	*1.02*	*February 24, 1995*
LOADNEW	*2.13*	*March 07, 1995*
LSTAWOIS	*3.07*	*March 27, 1995*
MAINMENU	*1.20*	*February 24, 1995*
MAN_DATA	*3.02*	*March 07, 1995*
NEWPOST	*6.13*	*February 24, 1995*
PLOTALL	*2.32*	*February 24, 1995*
POINT	*2.12*	*March 07, 1995*

PREDICT	*2.01*	*February 24, 1995*
PRESURV	*7.11*	*February 24, 1995*
PRINTOUT	*4.04*	*February 24, 1995*
QUICK	*2.07*	*February 24, 1995*
RAMSAVER	*1.02*	*February 24, 1995*
REAPPLY	*2.12*	*February 24, 1995*
RECOMP	*1.04*	*March 07, 1995*
SCANNER	*1.00*	*February 24, 1995*
SELPRINT	*2.05*	*February 24, 1995*
SYMBOLS	*2.00*	*February 24, 1995*
VERSIONS	*1.00*	*February 24, 1995*
ZOOMEDIT	*2.33*	*February 24, 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. *SHIPDIM* version 1.2 was used for positioning checks by comparing positions from the Charleston DGPS beacon and the HF station on Skidaway Island. The *DAILYDQA* program was used to assure that the MOD III diver depth gauge was working properly.

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. Data were collected using the 100 meter range scale. Confidence checks were obtained by noting objects and bottom changes on the sea floor at the outer edges of the 100 meter range scale. Seventy five meter line spacing was used for all mainscheme lines, and swath plots were used to assure that 200% coverage was obtained. The following sonar equipment was used throughout the survey:

VESNO	TYPE	S/N	FIX NUMBERS
2930	Towfish	A001343	6000 - 9144
2930	Recorder	016942	6000 - 9144
2931	Towfish	016835	354 - 1413
2931	Recorder	016671	354 - 1413
2932	Towfish	0011902	3233 - 3902
2932	Recorder	016673	3233 - 3902

On WHITING, the towfish was deployed from a Reuland winch (model number 8377-XF5461A, s/n 814861A-1). The SSS towfish was towed by armored cable connected to the side scan sonar recorder with a slip-ring assembly. On both launches, the SSS towfish was

deployed using a Superwinch Model W115 in conjunction with an adjustable davit arm on the side of the launch. The towfish was towed using a vinyl-coated Kevlar cable and was connected to the recorder via a slip ring assembly.

The SSS towfish was maintained at a height off the bottom of 8 to 20 percent of the range scale in use. SSS operations were limited to a speed-over-ground of 4 to 6 knots.

All potentially significant contacts were measured off the sonargram and entered into an HDAPS contact table. Using the contact utility program, WHITING hydrographers could determine contact heights, positions and correlations to one another. The items were then further examined by divers.

F. SOUNDING EQUIPMENT

Raytheon Digital Survey Fathometer (DSF) 6000N echosounders were used to measure bottom depths during the survey. The DSF-6000N produced a graphic record of the high frequency (100 kHz) and low frequency (24 kHz) bottom depths. Digital depths from the high frequency and low frequency beams were recorded by the HDAPS acquisition system. High frequency depths were selected as the primary depths and are shown on the sounding plots. Echograms were carefully reviewed for significant features along the track line. Any features on the graphic record that were not selected as primary soundings were manually inserted.

The following fathometers were used during this survey:

VESSEL	S/N	FIX NUMBER
2930	B051N	6000 - 9144
2931	B050N	1 - 1413
2932	A105N	3000 - 3902

A MOD III depth gauge (s/n 68332) was used to acquire least depths on contacts located by divers.

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 profiler was calibrated on February 16, 1995, during WHITING's winter inport period. Copies of the calibration report are included in Separate IV. DATA FILED WITH FIELD RECORDS.

After the CTD casts, programs *CAT 2.00* and *VELOCITY 2.10* were used to process the data, select significant data points, and create a corrector table. The velocity correctors were manually entered into an HDAPS velocity table, where the correctors were applied to both high and low frequency beams during acquisition. Velocity profile data are in the Separates

submitted with this survey. *

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 each CTD cast. The program *CAT* compared these values to the CTD surface values, and confirmed that the velocity probe was working properly.

WHITING hydrometers were calibrated on January 15-16, 1995. Correctors were applied to the readings taken from the hydrometer.

The velocity casts for mainscheme data acquisition were performed as described below:

DN	Vel Table#	Latitude	Longitude	Depth
198	38, 37	32° 01' 35" N	080° 30' 11" W	20.8m
218	42, 43	32° 03' 00" N	080° 24' 18" W	30.0 m
226	44, 45	32° 03' 00" N	080° 24' 24" W	32.7 m
251	50, 1	31° 59' 03" N	080° 37' 58" W	26.5 m
269	8, 9	31° 58' 46" N	080° 40' 33" W	20.0 m
286	15	32° 04' 56" N	080° 35' 21" W	20.9 m
299	22, 23	31° 58' 17" N	080° 44' 05" W	24.4 m
306	29	32° 06' 17" N	080° 31' 24" W	23.8 m

Sound velocity tables 38, 43, 45, 50, 9, 15, 23, and 29* were created for the launches, while 37, 42, 44, 1, 8, and 22* were applied to data collected by WHITING. Additional velocity casts were performed on days when the MOD III diver's least depth gauge was used to acquire depths, but are not listed above.

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 gauge was working properly. Daily results fell within specified operating ranges. CTD casts were used in the *SMLGAUGE* program in calculating least depth measurements.

Bar checks were performed on launches 1014 and 1015 to detect the need for corrections to digitized readings from the DSF-6000N. No corrections were needed.

New leadlines were made on February 23, 1995. A leadline comparison was conducted on May 11, 1995 in the Wilmington River. Due to current and uneven bottom characteristics, the accuracy of this comparison is questionable, although the comparison fell within 0.3 meters of the high frequency depth. On August 3, 1995, a leadline comparison was conducted while anchored in Port Royal Sound. The comparison fell within .08 meters of the high frequency depth.

* Filed with field data

The correction for the static draft for launches 1014 and 1015 is 0.55 meters, measured July 28, 1993. The correction for WHITING's static draft is 3.2 meters, a historical value which WHITING divers confirmed with the MOD III depth gauge on May 11, 1995.*

Settlement and squat measurements for launches 1014 and 1015 were determined on March 29, 1995. The correctors were entered in Offset Tables 2 and 1.* Settlement and squat measurements for WHITING were determined on November 10, 1993 and entered in Offset Table 9. The settlement and squat correctors were applied to the sounding data in real time on each survey platform.

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 19101-C). Heave correctors were applied in post processing for launches 1014 and 1015 by manually scanning the echograms.

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. No tidal zoning was done for this survey.

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

Time Correction	Height Ratio
- 0 hr 10 min	x0.94

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 on-line to the digital data using HDAPS software. The tidal data, in digital form, were received on floppy disk from N/CG24, Hydrographic Surveys Division.

On March 29, 1995, WHITING installed a tide station at Tybee Marina (867-1029) for datum control of OPR-G398. Opening levels were run on March 30, 1995. On June 6, 1995, confidence levels were run after the floating pier at Tybee Marina was damaged in a storm. The leveling run confirmed that the staff had not moved. Closing levels were run on November 16, 1995. A request for smooth tides was submitted to Product and Services Branch, Datum Section, N/OES231 on 20 November, 1995. APPROVED TIDES AND ZONING were applied during office processing

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 used was an HF Differential GPS station set on a tower over control mark "SKID" on Skidaway Island, GA. Additionally, WHITING used the forward range marker on Jones Island Range and the Charleston DGPS station for performance checks. The adjusted NAD-83 positions for SKID (2nd order class 1) and Jones Island Forward Range (4th Order) were provided by the Field Photogrammetry Section on August 16, 1994. The

* filed with field records

position for the Charleston beacon was scaled from the largest scale chart of the area. The positions are as follows:

	Latitude	Longitude
Jones Island Range, Front	32° 02' 31.71243" N	080° 51' 10.09256" W
SKID	31° 59' 19.22599" N	081° 01' 12.26294" W
Charleston Beacon	32° 45' 30.00000" N	079° 50' 30.00000" W

WHITING used *MONITOR* version 3.0 to verify the station position and to check for multipath in the area. The *OUTLIER.SUM* files and associated scatterplots are in Separate 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. Ashtech Sensor GPS receivers and LRD-1 HF receivers were used on both the ship and the launches for DGPS navigation. The Ashtech receivers were initialized by HDAPS, and the LRD-1 receivers were manually set to the correct 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: 1) an Ashtech MK XII receiver (s/n 700354A03069) , 2) a LRD-2 modulator (s/n 605), and 3) a RAY 152 HF transceiver (s/n BS29239).

DGPS positioning was accomplished in accordance with the 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 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 used are as follows:

	Device	Serial Number
WHITING	Ashtech Sensor	700417B1203
	LRD-1	248
Launch 1014	Ashtech Sensor	700417B1194
	LRD-1	206
Launch 1015	Ashtech Sensor	700417B1193 (DN 201-270) 700417B1055 (DN 286-298)
	LRD-1	233

DGPS performance checks were done in two stages. The first stage was to send a launch to

the Jones Island Forward Range marker. The launch would take ten detached positions and compare them to the known position. All DGPS performance checks confirmed that the DGPS station was working properly. Stage two was conducted with each launch securely housed in WHITING's davits. Simultaneous HDAPS positions were compared between WHITING and each launch; and offset in distance and azimuth was then applied between the ship and each launch system. A summary of the DGPS performance checks was submitted under separate cover for the entire project to N/CG244 on July 3, 1995 (DN 184). DATA FILED WITH FIELD RECORDS

A second method for obtaining DGPS performance checks consisted of using the *SHIPDIM* program to compare positions obtained from the Charleston Beacon and the HF station at Skidaway Island.

DGPS offsets and laybacks were measured on July 28, 1993, for launches 1014 and 1015, and on 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 dates 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-10627 (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. These data are on file at N/CG244. Correctors from offset table 1 and 2 were applied to all data acquired from launches 1015 and 1014 respectively. Correctors from offset table 9* were applied to all data acquired from WHITING.

J. SHORELINE

There is no shoreline within the limits of survey H-10627.

K. CROSSLINES

A total of 68.20 nautical miles of crosslines were run on H-10627, or 10.0% of the total linear nautical miles of mainscheme lines run. Agreement between crosslines and mainscheme lines is good. Eighty percent (80%) of the crossline soundings agree with mainscheme soundings to within 0.4 meters, with 0.9 meters being the maximum observed discrepancy. This maximum discrepancy was noted near the southeastern corner of the sheet in an area where the bottom is somewhat irregular.

* filed with field records.

L. JUNCTIONS *SEE ALSO EVALUATION REPORT*

Comparisons were made with H-10631 (B sheet), H-10624 (D sheet), and H-10630 (F sheet). The results of the comparisons are as follows:

H-10631: Agreement between H-10627 and H-10631 is adequate. Most soundings agree to within 0.2 meters, with 0.8 meters being the maximum observed discrepancy.

H-10624: The junction with this survey includes three overlapping mainscheme lines on the northern edge of H-10624. The two northernmost overlapping lines have excellent agreement (within 0.3 meters along the entire length of the sheet). The third overlapping line from the north agrees to within 0.5 meters. In general H-10624 soundings are shoaler than H-10627.

H-10630: Agreement between H-10627 and H-10630 is adequate. Most soundings agree to within 0.2 meters with 0.4 meters being the maximum observed discrepancy. In general, soundings from H-10630 are slightly deeper than soundings from H-10627. Depth contours are continuous at the junction.

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

Prior surveys were not available for comparison with H-10627.

N. ITEM INVESTIGATIONS *SEE ALSO EVALUATION REPORT*

The following items were investigated by WHITING divers. All least depths were acquired with a diver held MOD III least depth gauge and corrected to predicted MLLW. Surrounding depths are also corrected to predicted MLLW.

SECTION	NAME
N1.	978.38S
N2.	978.27P
N3.	992.45S
N4.	1032.10P
N5.	1084.13S
N6.	1099.14P
N7.	1084.12P
N8.	1178.23S
N9.	1195.50P
N10.	713.45P
N11.	1231.36S
N12.	8764.55S

	Contact	Item	Position
N1.	978.38S	Cement Block	32° 04' 16.460" N 080° 35' 28.779" W

Contact 978.38S was investigated by divers on October 26, 1995 (DN 299, fix #3765). The divers located a cement block with approximate dimensions 4 ft. by 5 ft. by 5 ft.. The object is located 0.2 nautical miles south of a dump site to the southwest of the Port Royal Sound Entrance Channel. The corrected least depth of the object is 13.5 meters (44.0 FT) in surrounding depths of 14.7 meters. WHITING recommends an obstruction be charted at the above position. Concur CHART 44 OBSTN

N2.	978.27P	Cement Block	32° 04' 18.349" N 080° 35' 31.350" W

Contact 978.27P was investigated by divers on October 29, 1995 (DN 299, fix #3768). The divers located a cement block with approximate dimensions 4 ft. by 5 ft. by 5 ft.. The object is located 0.15 nautical miles south of a dump site to the southwest of the Port Royal Sound Entrance Channel. The corrected least depth of the object is 13.7 meters (45.0 FT) in surrounding depths of 15.0 meters. WHITING recommends an obstruction be charted at the above position. ~~Concur~~ DO NOT CONCUR WITHIN LIMIT OF N1. DO NOT CHART

N3.	992.45S	Submerged Buoy	32° 04' 22.019" N 080° 35' 34.728" W

Contact 992.45S was investigated by divers on October 26, 1995 (DN 299, fix #3769). The divers located the bottom half of a structure buoy. The object is located 0.1 nautical miles south of a dump site to the southwest of the Port Royal Sound Entrance Channel. The corrected least depth of the buoy is 12.9 meters (43.0 FT) in surrounding depths of 15.3 meters. WHITING recommends an obstruction be charted at the above position. Concur CHART 42 OBSTNS

N4.	1032.10P	Buoy Weight	32° 04' 26.682" N 080° 35' 32.628" W

Contact 1032.10P was investigated by divers on October 26, 1995 (DN 299, fix #3773). The divers located a buoy weight. The corrected least depth of the object is 13.2 meters (43.0 FT) in surrounding depths of 13.7 meters. Due to the surrounding depths, the contact is insignificant. WHITING recommends general survey depths be charted in this area and the obstruction not be charted. ~~Concur~~ DO NOT CONCUR WITHIN LIMIT OF N3. ~~DO NOT CHART~~ chart 43 obstn. GKM 9/18/96

N5. 1084.13S

Contact 1084.13S was investigated by divers on October 26, 1995 (DN 299). WHITING divers conducted a 25 meter circle search at the position calculated using the HDAPS Side Scan Contact Utility and were unable to locate the contact. No obstruction exists; WHITING recommends general survey depths be charted in this area. Concur

N6. 1099.14P

Contact 1099.14P was investigated by divers on October 26, 1995 (DN 299). WHITING divers conducted a 25 meter circle search at the position calculated using the HDAPS Side Scan Contact Utility and were unable to locate the contact. No obstruction exists; WHITING recommends general survey depths be charted in this area. Concur

N7. 1084.12P

Contact 1084.12P was investigated by divers on October 26, 1995 (DN 299). WHITING divers conducted a 25 meter circle search at the position calculated using the HDAPS Side Scan Contact Utility and were unable to locate the contact. No obstruction exists; WHITING recommends general survey depths be charted in this area. Concur

N8. 1178.23S

Contact 1178.23S was investigated by divers on October 26, 1995 (DN 299). WHITING divers conducted a 25 meter circle search at the position calculated using the HDAPS Side Scan Contact Utility and were unable to locate the contact. No obstruction exists; WHITING recommends general survey depths be charted in this area. Concur

N9. 1195.50P

Contact 1195.50P was investigated by divers on October 29, 1995 (DN 299). WHITING divers conducted a 30 meter circle search at the position calculated using the HDAPS Side Scan Contact Utility and were unable to locate the contact. No obstruction exists; WHITING recommends general survey depths be charted in this area. Concur

N10. 713.45P (AWOIS 9340) Wreck 32° 04' 04.510" N
080° 36' 13.627" W

Contact 713.45P was investigated by divers on November 2, 1995 (DN 306, fix #3867). The divers located the wreck of a boat. The wreck was deteriorated, but appeared to match the

AWOIS #9340 VSL OLD SOUL (REPORTED) 32-04-00N, 80-36-12W (NAD 83)

description of AWOIS 9340. The difference in position between contact 713.45P and AWOIS 9340 is 145 meters. The corrected least depth of the object is 13.2 meters (43.3 FT) (MOD III depth gauge, corrected to ~~predicted~~ SMOOTH MLLW). The surrounding depths, with draft and predicted tide corrections applied, are 14.7 meters. WHITING recommends that the wreck symbol for AWOIS 9340 be moved to the new position. Concur CHART 43WK

N11. 1231.36S Submerged Buoy 32° 04' 50.887" N
080° 34' 57.229" W

Contact 1231.36S was investigated by divers on November 2, 1995 (DN 306, fix #3868). The divers located a buoy laying on its side. The corrected least depth of the buoy is 13.1 meters (43.0FT) in surrounding depths of 15.8 meters. WHITING recommends an obstruction be charted at the above position. Concur CHART 43 OBSTN

N12. 8764.55S

Contact 8764.55S was investigated by divers on November 2, 1995 (DN 306). WHITING divers conducted a 30 meter circle search at the position calculated using the HDAPS Side Scan Contact Utility and were unable to locate the contact. No obstruction exists; WHITING recommends general survey depths be charted in this area. Concur

The investigation of contact 1083.48P was cancelled after the investigations of 1099.14P and 1084.13S. 1083.48P appeared very similar to these contacts in both the appearance of the side scan sonar image and in location. During the dive investigations of 1099.14P and 1084.13S, several insignificant spoil piles were found, but no obstructions were located.

WHITING was unable to locate AWOIS items 9339 and 9332. Two hundred percent (200%) side scan sonar coverage was used throughout the 1000 meter radius search area of AWOIS item 9339, and all potentially significant contacts were investigated by divers. WHITING recommends this item be deleted from the charts. Concur AWOIS #9339 SHRIMPER; 50Ft long, (REPORTED) 32-03-42N 80-36-02W(NAD83) DISPROVED

In searching for AWOIS item 9332, two hundred percent (200%) side scan coverage was used throughout the portion of the 2000 meter radius search area which fell within the survey limits. The portion of the AWOIS search area which fell outside the survey limits was not investigated. WHITING recommends that the item be left on the chart until the search area has been fully investigated. Concur AWOIS # 9332 F/V JEAN MARIE (REPORTED) 32-06-37N, 80-32-00W (NAD27). NOT DISPROVED.

O. COMPARISON WITH THE CHART SEE ALSO EVALUATION REPORT

Charted depths from chart 11513 (21st ed., June 4/94, 1:80,000) were compared to H-10627 soundings. Agreement with chart 11513 is fair. Seventy three percent (73%) of the soundings from H-10627 agree with charted depths from chart 11513 to within 0.7 meters, with 2.0

meters being the maximum observed difference. This difference was observed in the northwest region of the survey area, near the 9.0 meter curve. On average, soundings from H-10627 are 0.5 meters deeper than charted depths from chart 11513.

P. ADEQUACY OF SURVEY *SEE ALSO EVALUATION REPORT*

All items found during this survey have been resolved. This survey is complete and adequate to supersede all prior surveys of the area.

Q. AIDS TO NAVIGATION

Five buoys were examined by launch 1014. Characteristics of all floating aids to navigation within the survey limits were verified as depicted. The items examined were as follows:

Light List #	Name	Position #	Δd
3470/210	MO(A) P	3849	54.9 m
3490	Channel lighted Bell Buoy "5"	3850	47.7 m
3485	Channel lighted buoy "4"	3851	107.3
3500	Channel Buoy "7"	3852	57.1 m
3495	Channel lighted buoy "6"	3853	13.1 m

where Δd is the distance between the charted position of the buoy and the detached position taken by the launch.

There are no submarine cables, pipelines or ferry routes within the survey limits.

R. STATISTICS

Number of Positions	5145
Main-scheme Sounding Lines (Nautical Miles)	678.97
Crosslines (Nautical Miles)	68.20
Square Nautical Miles Surveyed	32.9
Days of Production	22
Detached Positions	16
Bottom Samples	21

Tide Stations Installed	None
Current Stations	None
Number of CTD Casts	8
Magnetic Stations	None

S. MISCELLANEOUS SEE ALSO 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 on 9 November, 1995.

T. RECOMMENDATIONS SEE ALSO SECTION F OF EVALUATION REPORT

H-10627 is complete and without inadequacies. No additional fieldwork is required.

U. REFERRAL TO OTHER REPORTS

There are no other relevant reports submitted as a part of OPR-G398-WH.

Submitted By:

Christopher Parrish

ENS Christopher Parrish, NOAA
Junior Officer, NOAA Ship WHITING

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

November 28, 1995

ADVANCE INFORMATION

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

Dear Sir:

The NOAA Ship WHITING, while undergoing hydrographic survey operations near the Port Royal Sound Entrance Channel, discovered four uncharted obstructions. In addition, one previously charted wreck "PA" was located with a more precise position and depth. Enclosed is a report concerning the features which should be placed in the next Notice to Mariners and included in the next chart update.

Differential GPS was used to determine survey positions. Positions are referenced to NAD 83. All depths are referenced to MLLW using predicted tides. Charts 11513 and 11516 are the largest scale charts affected.

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

Chief, Nautical Charting Division, NOAA
Chief, AMC Operations Division, NOAA
Chief, Atlantic Hydrographic Division
Director, Defense Mapping Agency
Hydrographic/Topographic Center
President, Savannah Pilots Association

Sincerely,

John D. Wilder
Commander, NOAA
Commanding Officer

Enclosures.
CC: AMC1
N/CG2
N/CG244
DMAHTC
Savannah Pilots

REPORT OF UNCHARTED SUBMERGED FEATURES
(PRELIMINARY)

Hydrographic Survey Registry Number: H-10627

ADVANCE INFORMATION

State: Georgia

Sublocality: 7 NM east of Gaskin Banks, S.C.

Project Number: OPR-G398-WH

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

Objects Discovered:

	Latitude	Longitude
Cement Block	32° 04' 16.460" N	080° 35' 28.779" W

A cement block with approximate dimensions 1.2 m by 1.5 m by 1.5 m (4 ft. by 5 ft. by 5 ft.) was discovered by divers. The block has a least depth of 13.5 meters and lies 1.2 meters off the bottom.

Cement Block	32° 04' 18.349" N	080° 35' 31.350" W

A cement block with approximate dimensions 1.2 m by 1.5 m by 1.5 m (4 ft. by 5 ft. by 5 ft.) was discovered by divers. The block has a least depth of 13.6 meters and lies 1.4 meters off the bottom.

Structure Buoy	32° 04' 22.019" N	080° 35' 34.728" W

The bottom half of a submerged structure buoy was discovered by divers. The buoy has a least depth of 12.9 meters and lies 2.4 meters off the bottom.

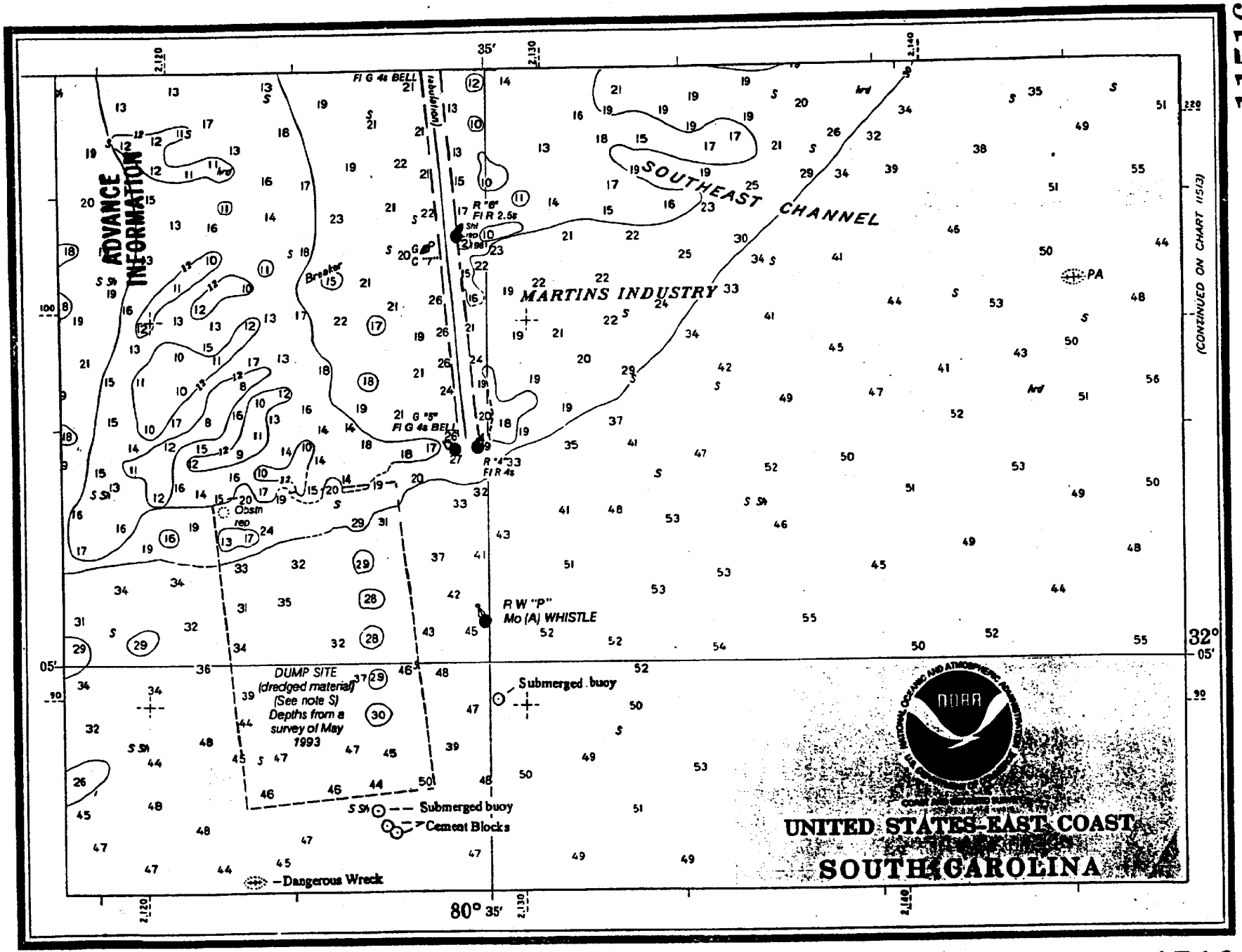
Buoy	32° 04' 50.887" N	080° 34' 57.229" W

A submerged buoy laying on its side was discovered by divers. The buoy has a least depth of 13.1 meters and lies 2.7 meters off the bottom.

Dangerous Wreck	32° 04' 04.510" N	080° 36' 13.627" W

A dangerous wreck was located by divers. The wreck has a least depth of 13.2 meters and lies 1.5 meters off the bottom. The wreck is currently charted at 32° 04' 00.00" N, 080° 36' 12.00" W.

11516


ADVANCE INFORMATION
SOUTHEAST CHANNEL
MARTINS INDUSTRY
FI G 4s BELL
R "6" FI R 2.5s
G "5" FI G 4s BELL
R "4" FI R 4s
R W "P" Mo (A) WHISTLE
Obstn rep
DUMP SITE (dredged material) (See note S) Depths from a survey of May 1993
Submerged buoy
Submerged buoy
Cement Blocks
Dangerous Wreck
PA
(CONTINUED ON CHART 11513)
35'
05'
32° 05'
80° 35'
UNITED STATES-EAST COAST
SOUTH CAROLINA

HORIZONTAL CONTROL STATIONS

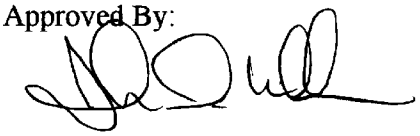
WHITING personnel erected a HF Differential GPS receiver/transmitter on the grounds of Skidaway Institute of Oceanography (station SKID). The position of the Skidaway mark was faxed from Field Photogrammetry Section to the WHITING on March 6, 1995. WHITING launches conducted DGPS performance checks using 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

APPROVAL SHEET
HYDROGRAPHIC SURVEY
OPR-G398-WH
1995
WH-10-9-95
H-10627

The data for this survey were acquired and checked under my daily supervision. Position and sounding accuracy meet the requirements specified in the Field 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 John D. Wilder, 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
Rockville, Maryland 20852

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: May 8, 1996

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-G398-WH

HYDROGRAPHIC SHEET: H-10627

LOCALITY: Atlantic Ocean

TIME PERIOD: July 20 - November 2, 1995

TIDE STATION USED: 867-1029 Tybee Marina, Ga.
Lat. 31° 59.8′N Lon. 80° 51.3′W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): -0.08 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 6.9 ft.

REMARKS: RECOMMENDED ZONING

Apply a -12 minute time correction and a x0.97 range ratio to heights using Tybee Marina, Ga. (867-1029).

Notes: 1. Times are tabulated in Greenwich Mean Time.
2. Data for Tybee Marina, Ga. (867-1029) are temporarily stored in file #667-1029.

William M. Stevenson

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10627

Name on Survey	A ~~11513~~, 11516, 11480 ON PREVIOUS SURVEY NO.	B	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	
GASKIN BANKS (title)	X		X							1
MARTINS INDUSTRY (bar)	X		X							2
NORTH ATLANTIC OCEAN	X		X							3
SOUTH CAROLINA (title)	X		X							4
SOUTH CHANNEL	X		X							5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
				Approved						18
										19
				Chief Geographer						20
										21
				FEB 23 1996						22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

10/30/96

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H-10627

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	5145
NUMBER OF SOUNDINGS	28397

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	42	03/22/96
VERIFICATION OF FIELD DATA	26	06/25/96
QUALITY CONTROL CHECKS	0	
EVALUATION AND ANALYSIS	3	
FINAL INSPECTION	4	06/13/96
COMPILATION	49	10/21/96
TOTAL TIME	124	

ATLANTIC HYDROGRAPHIC BRANCH APPROVAL 06/24/96

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H-10627 (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, 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 0.752 seconds (23.149 meters or 2.31 mm at the scale of the survey) north in latitude, and 0.615 seconds (16.139 meters or 1.67 mm at the scale of the survey) east in longitude.

L. JUNCTIONS

H-10624 (1995) to the south
H-10630 (1995) to the east
H-10631 (1995) to the southwest

Standard junctions were effected between the present survey and surveys H-10624 (1995) and H-10630 (1995).

There are no junctional surveys to the north and west. Present survey depths are in harmony with the charted hydrography to the south and east.

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 11480 (32nd Edition, May 14/94) 11513 (21st Edition, June 4/94)

Hydrography

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparison with chart 11480 in section O. of the Descriptive Report. On chart 11513 present survey depths are in good agreement west of Longitude 80°29'W, with differences of plus or minus (±) 1 to 2 feet ($\pm 0^{3}$-0^{6} m). East of Longitude 80°29'W present survey depths are as much as 7 feet (2^{1} m) deeper than charted depths. These differences are attributed to natural change and improved surveying technology.

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,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 this report.

P. ADEQUACY OF SURVEY

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

8. 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
Cartographic Technician

Norris A. Wike
Cartographer

APPROVAL SHEET
H-10627

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: 24 JUNE 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: 24 JUNE 1996
Nicholas E. Perugini
Commander, NOAA
Chief, Atlantic Hydrographic Branch

****

Final Approval:

Approved: Andrew A. Armstrong III Date: Sep 18, 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-10627

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	10/10/96	[signature]	Full ~~Part Before~~ After Marine Center Approval Signed Via FULL APPLICATION
			Drawing No. OF SOUNDINGS FROM SMOOTH SHEET
11513	10/21/96	[signature]	Full ~~Part Before~~ After Marine Center Approval Signed Via FULL APPLICATION
			Drawing No. OF SOUNDINGS THRU 11516
11480	3/7/97	Travis Neuman	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 4/2 Appl thru 11513
411	6/2/87	Daniel M. Brown	Full Part Before After Marine Center Approval Signed Via
			Drawing No. RA, NC-3E
11004	6/5/97	Daniel M. Brown	Full Part Before After Marine Center Approval Signed Via
			Drawing No. RA, NC-3E
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			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.