H10591

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-10-1-95

Registry No. H-10591

LOCALITY

State GEORGIA

General Locality ATLANTIC OCEAN

Sublocality 8 NM SE OF TYBEE ROADS

19 95

CHIEF OF PARTY
CDR J. D. WILDER, NOAA

LIBRARY & ARCHIVES

DATE JUN 11 1996

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

DIAGRAM 1111-1

(E)

Ref Bp 158484-87

Charts

CP 4

11512 Appd 7/23/96 JCa

11509 Appd 7/18/96 JCa

11513 Appd 7/23/96 JCa

11480

11009 NC

NOAA FORM 77-28 (11-72)

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

REGISTER NOS.

H-10591

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-10-1-95

State: Georgia

General locality: Atlantic Ocean

Locality: 8 NM SE of Tybee Roads

Scale: 1:10,000 Date of Survey: April 7-June 28, 1995

Instructions dated: March 14, 1995 Project No.: OPR-G398-WH

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

Chief of Party: Commander John D. Wilder

Surveyed by: J.D. Wilder, M.R. Kenny, W.G. Kitt, A.L. Beaver, J.T. Michalski, C.E. Parrish, C. Bowditch, G. Garte, M.M. Cisternelli, J.B. Gaskin, 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~~ FEET

REMARKS: Time Zone Used, 0 (UTC)

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

AWOIS and SURF Rev'd 6/96

JUN 11 1996 4-15-97

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

PROGRESS SKETCH

HYDROGRAPHIC SURVEY

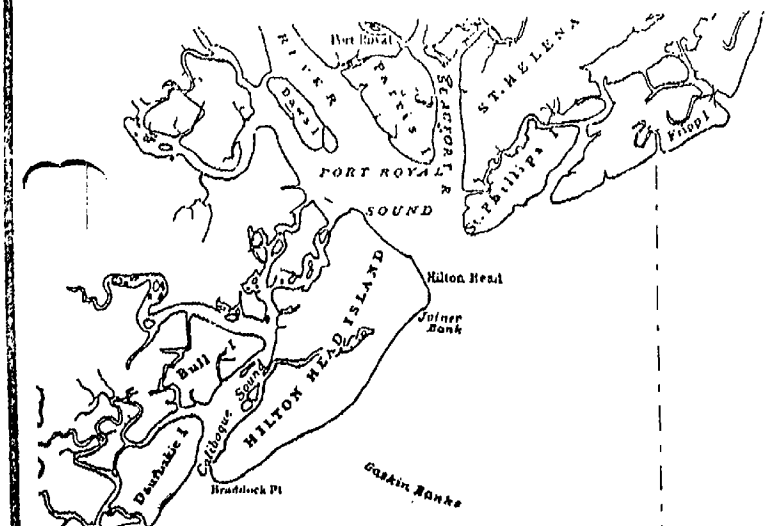
OPR-G115-WH

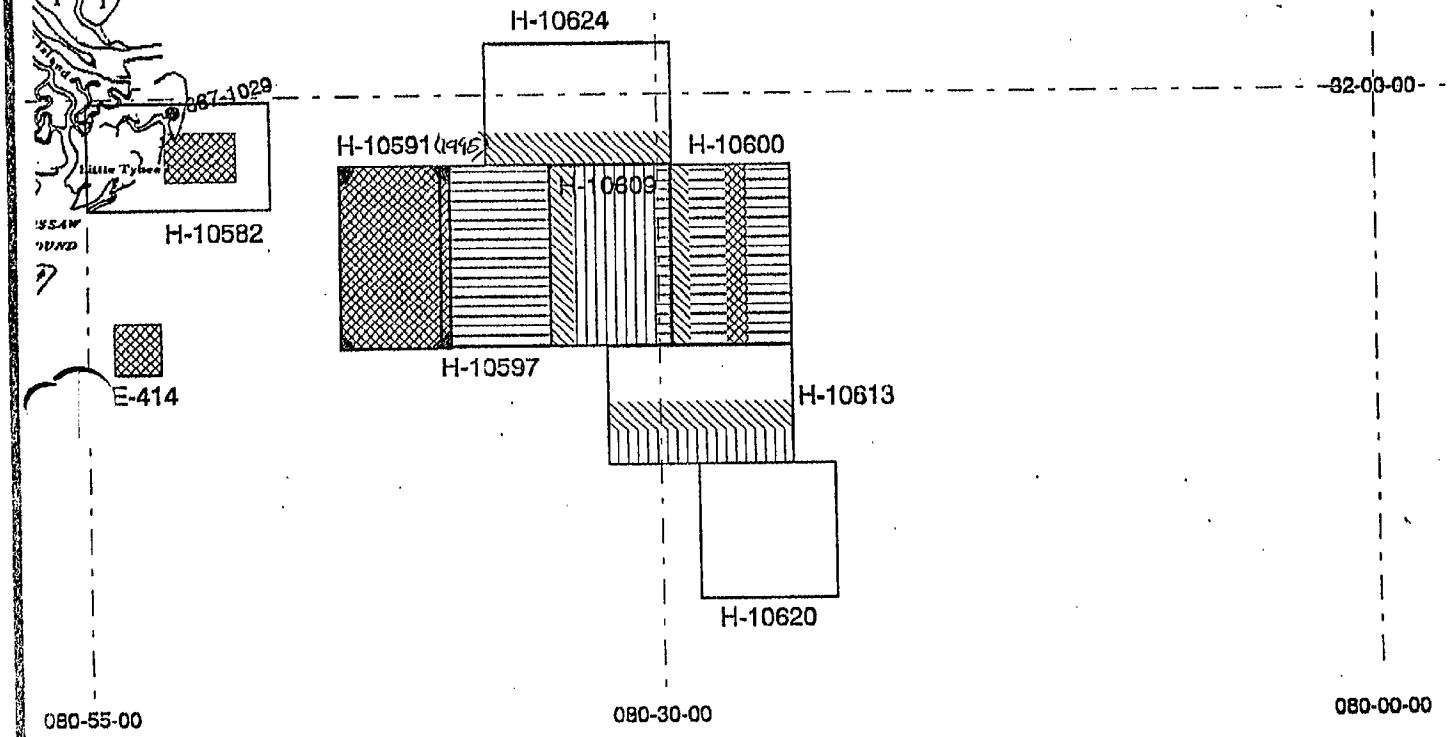
WASSAW SOUND and WILMINGTON RIVER

OPR-G398-WH

APPROACHES TO SAVANNAH RIVER

APRIL - NOVEMBER 1995





NOAA SHIP WHITING S329

CDR JOHN D. WILDER, COMMANDING

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

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
OPR-G398-WH
WH-10-1-95
H-10591

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

A. PROJECT

The purpose of project OPR-G398-WH is to provide contemporary hydrographic survey data for existing nautical charts. This project responds to requests from the Georgia Ports Authority and the Savannah Pilots Association. A 31-mile stretch of the Savannah River shipping channel was deepened from 38 to 42 feet in 1994. This project will determine the deepest and safest approach to the 42-foot dredged channel.

Project OPR-G398-WH, Approaches to Savannah, Georgia, is divided into sixteen survey sheets. The survey described in this report addresses sheet "A". The survey was assigned field sheet number WH-10-1-95 and registry number H-10591.

Survey operations were conducted in accordance with Hydrographic Project Instructions OPR-G398-WH dated March 14, 1995. There was one change to the project instructions dated May 17, 1995.

B. AREA SURVEYED

Hydrographic survey H-10591 is a 4 nm by 7 nm survey positioned at the entrance to the Savannah River sea channel. Sheet limits are bounded by 31° 58' 30.75" N and 31° 51' 31.6" N to the north and south respectively, and by 080° 39' 29.5" W and 080° 44' 15.0" W to the east and west respectively.

Survey operations commenced on April 7, 1995 (DN 97), and were completed on June 28, 1995 (DN 179).

C. SURVEY VESSELS

WHITING (VESNO 2930) was used for main-scheme side scan sonar and sounding data acquisition, crosslines, bottom samples and velocity casts.

Launch 1014 (2932) and 1015 (2931) acquired development splits and holidays and positioned aids to navigation. Launch 1014 conducted all dive operations.

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 NAME	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	2.11	March 07, 1995
*CLASSIFY	2.12	April 17, 1995
CONTACT	2.46	March 07, 1995
*CONTACT	2.48	April 17, 1995
CONVERT	3.65	February 24, 1995
DAS_SURV	6.76	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
HIPSTICK	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. Program *DAILYDQA* ensured the proper functioning of the MOD-3 diver 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, single 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. The following sonar equipment was used throughout the survey:

VESNO	Type	S/N	DN
2930	Towfish	16699	097-114
2930	Recorder	016671	097-111
2930	Recorder	016942	112-114
2931	Towfish	16835	128
2931	Recorder	016671	128

On WHITING, the SSS towfish was deployed from a Reuland winch (model number 8377-XF5461A, S/N 814861A-1) using armored cabling in conjunction with an A-frame on the stern.

The armored cable was connected to the SSS recorder via a slip-ring assembly.

On launch 1015 the SSS towfish was deployed using a Superwinch Model W115 in conjunction with an adjustable davit arm on the stern of the launch. The SSS towfish was towed with vinyl-coated Kevlar cable and was connected to the recorder via a slip ring assembly.

Side scan sonar data were collected utilizing the 100 meter range scale. In order to acquire the required 200% SSS coverage, main-scheme lines were run at a spacing of 75 meters. Adequate coverage was determined by producing an 'A' and 'B' swath plot and ensuring 100% coverage on each plot. Main scheme lines were split or re-run in all areas where 200% coverage was questionable.

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 6.0 knots.

Confidence checks were performed on a routine basis, primarily by noting changes in bottom texture on the outer edges of the sonagram and when passing alongside buoys.

All potentially significant contacts in the survey area were measured off the sonagram and entered into an HDAPS contact table. Using the contact utility program WHITING hydrographers determined contact heights, positions and correlations to one another. Significant items were further developed by diver investigation. Refer to section N and to Separate V for more information. DATA FILED WITH FIELD RECORDS.

F. SOUNDING EQUIPMENT

A Raytheon Digital Survey Fathometer (DSF-6000N) echo sounder was 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) depth. The high and low frequency digital depths were recorded by the HDAPS acquisition system. The high frequency depths were selected as the primary depths as shown on the sounding plots. In addition, 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 selected.

The following fathometers were used during this survey:

Vessel	S/N	Dates Used (DN)
2930	A109N	097-114
2931	B050N	116, 128, 136
2932	C076	99, 110, 128, 129, 137, 179

Electronic technicians performed daily accuracy checks and preventive maintenance on the

DSF-6000N. Bar checks were conducted in accordance with the HDAPS Field Procedures Manual (FPM).

Diver determined least depths were measured with a Diver Least Depth Gauge Module (MOD3) 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 profiler was calibrated on February 15, 1995, during WHITING's winter inport period and Data Quality Assurance tests were performed during each CTD cast, including diver investigations utilizing the MOD III least depth gauge.

After the CTD cast, programs *CAT 2.00* and *VELOCITY 2.11* 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. The correctors were reapplied to both high (100 kHz) and low (24 kHz) frequency beams following acquisition. Velocity profile data are in Separate IV submitted with this survey.

Data Quality Assurance (DQA) for the Seacat CTD profiler were performed by using a hydrometer and a thermometer to measure the density and temperature of a surface water sample taken during the CTD cast; program *CAT* compared these values to the CTD surface values, and determined if the velocity probe was working properly.

Three velocity casts were taken to generate corrector tables. The casts are summarized in the following table:

DN	Vel.Table#	Latitude	Longitude	Depth
095	1	31° 56' 43"N	080° 47' 07"W	12.8 m
095	3	31° 55' 35"N	080° 41' 39"W	15.9 m
129	17	31° 57' 04"N	080° 40' 59"W	16.3 m

There were no variations in instrument initials.

Bar checks were performed on launch 1014 and 1015 in accordance with the requirements stated in the Field Procedures Manual (FPM). No corrections to soundings were applied based on bar check data.

The correction for static draft on WHITING (2930) is 3.2 meters and was verified on May 12, 1995 with the MOD III diver least depth gauge. The correction for the static draft for launches 1014 and 1015 is 0.55 meters, as measured on July 28, 1993.

Settlement and Squat measurements for WHITING were conducted and determined on November 10, 1993 (Offset Table 9). Settlement and squat measurements for launch 1014

(Offset Table 2) and launch 1015 (Offset Table 1) were conducted and correctors determined on March 29, 1995. The settlement and squat correctors were applied to the sounding data in real time on each survey platform. Settlement and squat corrector tables are in Separate IV. DATA FILED WITH FIELD RECORDS.

On the WHITING, heave correctors were generated and logged in real time from a heave, roll and pitch sensor (HIPPY, S/N 19109-C). For launchs 1014 and 1015 heave corrections were applied during processing by manually scanning the echograms.

The tidal datum for this project is Mean Lower Low Water. The operating tide station at Fort Pulaski, Georgia (867-0870) served as the reference station for predicted tides. Predicted tides were applied to data using no time correction, and a 0.94 tidal height ratio. (NOTE: Change number 1 to the project instructions, dated May 17, 1995 states sheet H-10591 has a tidal height ration of 0.99. WHITING retained the original tidal height ration of 0.94 for all survey operations on sheet H-10591.) 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/CG24, Hydrographic Surveys Branch.

WHITING installed a tide station at Tybee Marina (867-1029) for datum control of H-10591. Opening levels were run on March 30, 1995. The tide gauge continues to collect data beyond the data acquisition dates for this survey sheet. Requests for smooth tides were submitted to the Product and Services Branch, N/OES231, Datums Section, on June 9, 1995 and July 14, 1995. APPROVED TIDES 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 was a HF Differential GPS station erected by WHITING personnel over a surveyed mark at Skidaway Institute of Oceanography. Additionally, WHITING used the forward range marker on Jones Island Range for performance checks. The adjusted NAD-83 position for Skidaway Institute (SKID) was provided by the Field Photogrammetry Section on March 6, 1995. The positions of SKID and Jones Island Front Range follow:

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

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

I. HYDROGRAPHIC POSITION CONTROL

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

DGPS positioning was accomplished in accordance with the FPM, section 3.4. The Horizontal Dilution of Precision (HDOP) limit was computed as required in section 3.4.2 of the FPM and found to be 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 MAXON radio-receivers used are as follows:

	Device	Serial Number
WHITING	Ashtech Sensor	AMC# A002785
	LRD-1	202
Launch 1014	Ashtech Sensor	700417B1203
	LRD-1	233
Launch 1015	Ashtech Sensor	700417B1191
	LRD-1	204

DGPS performance checks were done in two stages. The first stage was to send Launch 1015 to the Jones Island Front Range marker. The launch would take ten detached positions and compare them to the known position. All DGPS performance checks confirmed that the DGPS beacon was operating properly. Stage two was conducted with each launch securely housed in WHITING's davits. Simultaneous HDAPS positions were compared between WHITING and each launch; an offset in distance and azimuth was then applied between the ship and each launch system. DGPS performance checks were submitted under separate cover to N/CG244.

DGPS antenna offsets and laybacks were measured on July 28, 1993, for launches 1014 and 1015. 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-10591 (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.

J. SHORELINE

There is no shoreline within the survey area of H-10591.

K. CROSSLINES

A total of 77.46 nautical miles of crosslines were run for H-10591. This amounts to 10.5% of the mainscheme miles run. Using predicted tides there was adequate agreement between crossline and main-scheme lines. Over 90% of the soundings were within 0.3 meters or better.

L. JUNCTIONS – SEE ALSO EVALUATION REPORT

Survey H-10591 junctions with H-10597 on the east edge of H-10591. 90% of the soundings agree within 0.4 meters with select differences as great as 0.7 to 1.3 meters. In general, H-10591 soundings are shoaler than H-10597.

M. COMPARISONS WITH PRIOR SURVEYS – SEE ALSO EVALUATION REPORT

Two prior surveys, H-9197 and H-9144 have soundings which fall within the survey limits of H-10591. Note that all of these surveys are referenced to NAD-27 horizontal datum and Mean Low Water vertical datum. All comparisons were done in feet.

Survey H-9197 (1971-73, 1:20,000) overlaps a 1/4 mile wide strip on the NW corner of H-10591. The dredged channel (Tybee Range) is deeper in the current survey. In the general area of 31° 57.4'N, 080° 44.1'W the new survey is deeper by an average of 3 feet. All other soundings agree very well, the majority within 1 foot.

Survey H-9144 (1973-'74, 1:40,000) overlaps entirely survey H-10591. The current survey is deeper by approximately 3 feet in the general area of 31° 57.4'N, 080° 44.1'W. Survey H-10591 shows a slight shoaling to 41-42 feet from 43-44 foot soundings in the area of 31° 58.2'N 080° 39.7'W. All other soundings compare to within 1 foot.

N. ITEM INVESTIGATIONS

The following table summarizes the investigations of all side scan sonar contacts, the contacts are arranged according to fix number:

N.1	Fix 3006 (6094.13S)	Two steel, square containers
N.2	Fix 3009 (6402.00S)	Steel, square container
N.3	Fix 3014 (9195.50S)	Anchor chain
N.4	Fix 3016 (7365.50S)	Dead Reef
N.5	Fix 3025 (3011.24P)	Large structure buoy
N.6	Fix 3027 (11530.06)	Mooring buoy
N.7	Fix 3030 (11023.4S)	Buoy superstructure
N.8	Fix 3032 (10584.0S)	Instrument Cage
N.9	Fix 3050 (11602.1P)	Diving bell
N.10	Fix 3051 (128.39P)	Spar buoy and anchor weight
N.11	Fix 3052 (110.59P)	Mushroom anchor and chain
N.12	Fix 3053 (129.09S)	Pipe
N.13	Fix 3055 (8617.41S)	Anchor and chain
N.14	Fix 3057 (11085.56P)	Old fashion anchor
N.15	AWOIS 9330	Obstruction

N.1 Fix 3006 (6094.13S) Two steel, square containers

Latitude:	31° 52' 18.512" N
Longitude:	080° 39' 27.313" W
Source:	Side scan sonar contact
Least Depth:	13.7~~4~~ meters (~~45~~ 44 feet)

Divers investigated two 1/4 inch steel, square boxes measuring 5 feet by 5 feet embedded in the bottom, spaced approximately 20 meters apart. The least depth was measured by diver placed MOD III least depth gauge. IT IS RECOMMENDED THAT AN OBSTRUCTION WITH A KNOWN DEPTH OF 13.4m, (44FT) BE CHARTED IN LATITUDE 31°52'18.5"N, LONGITUDE 80°39'27.3"W!

N.2 Fix 3009 (6402.00S) Steel, square container ~~CHART 44 OBSTR~~ Do not Chart (at scale of 11480)

Latitude:	31° 52' 18.595" N
Longitude:	080° 39' 43.075" W
Source:	Side scan sonar contact
Least Depth:	~~15~~ 14.7 meters (~~49~~ 48 feet)

Divers investigated another 1/4 inch steel, square box similar to fix 3006. The least depth was measured by diver placed MOD III least depth gauge. IT IS RECOMMENDED THAT AN OBSTRUCTION WITH A KNOWN DEPTH OF 14.7m (48FT) BE CHARTED IN LATITUDE 31°52'18.6"N, LONGITUDE 80°39'23.1"W

N.3 Fix 3014 (9195.50S) Anchor chain Do not chart ~~CHART 48 OBSTR~~ (at scale of 11480)

Latitude:	31° 57' 35.976" N
Longitude:	080° 42' 19.050" W
Source:	Side scan sonar contact
Least Depth:	15.0 meters (49 feet)

Divers found large anchor chain approximately 100 feet long, lying 1 foot off the bottom in a N-S orientation. The least depth was measured by echo sounder. NO CHANGE IN CHARTING RECOMMENDED. DO NOT CHART

N.4 Fix 3016 (7365.50S) Dead reef

Latitude:	31° 55' 31.772" N
Longitude:	080° 40' 35.486" W
Source:	Side scan sonar contact
Least Depth:	14.6 meters

This side scan sonar contact was suspected to be significant but upon diver investigation was found to be insignificant. The least depth was measured by echo sounder. NO CHANGE IN CHARTING RECOMMENDED. DO NOT CHART.

N.5 Fix 3025 (3011.24P) Large structure buoy

Reported Latitude:	31° 55' 55.016" N
Reported Longitude:	080° 44' 19.353" W
Source:	Side scan sonar contact
Least Depth:	~~10.2~~ 9.6 meters (~~33~~ 31 feet)

A very large, old fashion structure buoy rising approximately 10 feet off the bottom was investigated by divers. This feature is within 150 feet north of the yellow "B" structure buoy marking the south-east corner of the charted dumping site. The least depth was measured by diver placed MOD III least depth gauge. IT IS RECOMMENDED THAT AN OBSTRUCTION WITH A KNOWN DEPTH OF 9.6 m (31FT) BE CHARTED IN LATITUDE 31°55'55.0"N, LONGITUDE 80°44'19.3"W. CHART 31OBSTR

N.6 Fix 3027 (11530.06) Mooring buoy

Latitude:	31° 57' 47.113" N
Longitude:	080° 44' 13.869" W
Source:	Side scan sonar contact
Least Depth:	~~11.5~~ 11.5 meters (37 feet)

An old mooring buoy with chain and anchor rising approximately 1 meter off the bottom was investigated by divers. The least depth was measured by diver placed MOD III least depth gauge. IT IS RECOMMENDED THAT AN OBSTRUCTION WITH A KNOWN DEPTH OF 11.5m (37FT) BE CHARTED IN LATITUDE 31°57'47.1"N, LONGITUDE 80°44'3.9"W. CHART 37 OBSTR

N.7 Fix 3030 (11023.4S) Buoy superstructure

Latitude:	31° 57' 55.781" N
Longitude:	080° 43' 35.881" W
Source:	Side scan sonar contact
Least Depth:	~~12.8~~ 13.2 meters (~~42~~ 43 feet)

Divers investigated the structure from the top half of a buoy. The contact rises approximately 1 meter off the bottom. The least depth was measured by diver placed MOD III least depth gauge. IT IS RECOMMENDED THAT AN OBSTRUCTION WITH A KNOWN DEPTH OF 13.2m (43FT) BE CHARTED IN LATITUDE 31°57'55.8"N, LONGITUDE 80°43'35.9"W

CHART 43OBSTR

N.8 Fix 3032 (10584.0S) Instrument Cage

Latitude:	31° 57' 54.180" N
Longitude:	080° 43' 09.777" W
Source:	Side scan sonar contact
Least Depth:	14.~~0~~6 meters (~~46~~ 48 feet)

A U.S. Army Corps of Engineers shoal detecting instrument cage was located within 50 feet of "Mo A" sea buoy, rising approximately 1 meter off the bottom. This instrument cage was placed intentionally by the U.S. Army Corps of Engineers. The least depth was measured by diver placed MOD III least depth gauge. NO CHANGE IN CHARTING RECOMMENDED. DO NOT CHART.

N.9 Fix 3050 (11602.1P) Diving bell

Latitude:	31° 55' 35.013" N
Longitude:	080° 44' 02.791" W
Source:	Side scan sonar contact
Least Depth:	~~11.4~~ 12.0 meters (~~37~~ 39 feet)

Divers investigated an old diving bell rising approximately 1.2 meters off the bottom. The least depth was measured by diver placed MOD III least depth gauge. IT IS RECOMMENDED THAT AN OBSTRUCTION WITH A KNOWN DEPTH OF 12m, (39FT) BE CHARTED IN LATITUDE 31°55'35.0"N, 80°44'02.8"W.

N.10 Fix 3051 (128.39P) Spar buoy CHART 39 OBSTR

Latitude:	31° 57' 04.836" N
Longitude:	080° 40' 59.423" W
Source:	Side scan sonar contact
Least Depth:	~~13.7~~ 14.6 meters (~~45~~ 48 feet)

Divers investigated a spar buoy and anchor weight approximately 300 feet north of Savannah Light rising 1 meter off the bottom. The least depth was measured by echo sounder as a result of a malfunction with the MOD III Least Depth Gauge. IT IS RECOMMENDED THAT AN OBSTRUCTION WITH A KNOWN DEPTH OF 14.6m, (48 FT) BE CHARTED IN LATITUDE 31°57.04.8"N, LONGITUDE 80°40'59.4"W.

N.11 Fix 3052 (110.59P) Mushroom anchor and chain CHART 48 OBSTR

Latitude:	31° 56' 33.690" N
Longitude:	080° 40' 03.139" W
Source:	Side scan sonar contact
Least Depth:	13.~~5~~3 meters (~~44~~ 43 feet)

Divers investigated a mushroom anchor and chain rising approximately one meter off the bottom. The least depth was measured by a diver placed MOD III least depth gauge. IT IS RECOMMENDED THAT AN OBSTRUCTION WITH A KNOWN DEPTH OF 13.3m, (43FT) BE CHARTED IN LATITUDE 31°56'33.7"N, LONGITUDE 80°40'03.1"W

CHART 43 OBSTR

N.12 Fix 3053 (129.09S) Pipe

Latitude:	31° 57' 01.008" N
Longitude:	080° 41' 01.304" W
Source:	Side scan sonar contact
Least Depth:	14.8 meters (48 feet)

Divers investigated a pipe rising approximately 0.3 meters off the bottom. This contact is an insignificant hazard to navigation. The least depth was measured by a diver placed MOD III least depth gauge. NO CHANGE IN CHARTING RECOMMENDED, DO NOT CHART.

N.13 Fix 3055 (8617.41S) Anchor and chain

Latitude:	31° 57' 10.007" N
Longitude:	080° 41' 47.955" W
Source:	Side scan sonar contact
Least Depth:	~~14.1~~ 13.7 meters (~~46~~ 45 feet)

Divers investigated an anchor and chain rising approximately 0.5 meters off the bottom. The least depth was measured by a diver placed MOD III least depth gauge. IT IS RECOMMEND THAT AN OBSTRUCTION WITH A KNOWN DEPTH OF 13.7m, (45FT) BE CHARTED IN LATITUDE 31° 57' 10.0"N, LONGITUDE 80°41'47.9"W.

N.14 Fix 3057 (11085.56P) Old fashion anchor CHART 45 OBSTR —

Latitude:	31° 53' 20.748" N
Longitude:	080° 43' 46.755" W
Source:	Side scan sonar contact
Least Depth:	11.4 meters (~~37~~ 36 feet)

Divers investigated an old fashion anchor rising approximately 2.0 meters off the bottom. The least depth was measured by a diver placed MOD III least depth gauge. IT IS RECOMMENDED THAT AN OBSTRUCTION WITH A KNOWN DEPTH OF 11m, (36FT) BE CHARTED IN LATITUDE 31°53'20.7"N, LONGITUDE 80°43'46.8"W

CHART 36 OBSTR —

N.15 AWOIS 9330 Obstruction

Reported Latitude:	31° 57' 47.0" N
Reported Longitude:	080° 43' 05.0" W
Reported Depth:	Unknown
Datum:	NAD 83
Search Technique:	ES, SSS, BD, DI
Search Radius:	150 meters

ONE CONTACT WAS LOCATED DURING 200% SIDE SCAN SONAR INVESTIGATION OF AWOIS ITEM. THE CONTACT IS DISCUSSED IN SECTION N.8, P.11, OF THIS REPORT. THE AWOIS ITEM IS NOT CHART ON THE CURRENT CHART OF 11512, 53RD, EDITION, OCT/21/95. NO CHANGE IN CHARTING IS RECOMMENDED.

"DISPOSAL AREA" deleted through COE BP 153855.

O. COMPARISON WITH THE CHART SEE ALSO EVALUATION REPORT

Soundings from chart 11509 (24th Ed., Aug 27/94 1:80,000) were compared to H-10591 soundings. H-10591 soundings agree with 70% of charted soundings. Of the remaining 30% most of the H-10591 soundings were shoaler by 0.4 to 1.0 meters.

P. ADEQUACY OF SURVEY — SEE ALSO EVALUATION REPORT

This survey is complete and of adequate quality to supersede all prior surveys of the area.

Q. AIDS TO NAVIGATION

Three buoys (RW "T", G "1" and R "2") and Savannah Light were positioned by WHITING personnel. Due to a lengthening of Tybee Range, the entrance channel to Savannah River, RW "T", G "1", and R "2" have been relocated one nautical mile (nm) seaward. In addition, buoy Y C "1" Priv was not found. The items examined were as follows:

Name	Latitude	Longitude	ΔD
Savannah Light	31° 57' 01.276"N	080° 40' 58.631"W	53.3 meters
RW "T"	31° 57' 53.247"N	080° 43' 08.994"W	1.0 nm
G "1"	31° 58' 16.776"N	080° 44' 12.466"W	1.0 "
R "2"	31° 58' 24.266"N	080° 44' 07.552"W	1.0 "
Y C "1" Priv	31° 53' 52.3"	080° 43' 11.0"	Not Found

ΔD is the distance from the survey position to the charted position of the buoy. For Savannah Light, ΔD is referenced to the USCG Light List position. The apparent difference in position is due to the rounding of the Light List position. THESE AIDS APPEAR ADEQUATE TO SERVE THEIR INTENDED PURPOSES.

There were no bridges, overhead cables, pipelines, or submarine cables, ferry routes or ferry terminals in the survey area.

R. STATISTICS

Number of Positions	5802
Main-scheme SSS Lines (Nautical Miles)	738.11
Crosslines (Nautical Miles)	77.46
Square Nautical Miles Surveyed	27.04
Days of Production	20
Detached Positions	55
Bottom Samples	13
Tide Stations Installed	1
Current Stations	None
Number of CTD Casts	3
Magnetic Stations	None

S. MISCELLANEOUS – SEE ALSO EVALUATION REPORT

Bottom samples for the survey area were acquired in accordance with the Hydrographic Manual, 4th Edition. As a result of the recent 1970's surveys and the consistant sand bottom characteristics, bottom samples were taken at 3000 meter grid spacing. All samples confirmed the already charted bottom characteristics of sand and shell. In addition, several diver investigations within the survey area witnessed only sand and broken shell as the bottom characteristics. Oceanographic log sheets for H-10591 are submitted with the separates for this survey. Bottom samples were submitted to the Smithsonian Institution.

No current studies were done in the area. No unusual magnetic variations were encountered in the survey area. No unusual submarine features were discovered.

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

H-10591 is complete and without inadequacies. No additional fieldwork is required.

U. REFERRAL TO OTHER REPORTS

None.

Submitted By:

Christopher E Pair

for Ensign Joel T. Michalski, NOAA
Junior Officer, NOAA Ship WHITING

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-B616-WH

SURVEY H-10591 FIELD SHEET WH-10-1-95
ITEM NUMBER 6108.12 S
CHART NO. (largest scale) _____

DESCRIPTION OR CROSS REFERENCE(S):

AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

SSS POS: L ° ' " N λ ° ' " W
E 41389.1
N 22765.0

METHOD OF INVESTIGATION: (circle)
Echosounder (Diver) Other (specify) _____

DIVE DATA: Divers ___
Time of Dive (UTC): Commenced _____ Completed _____
Current Slack 0.5 kts 1 kt 1.5+ kts
Visibility 0 1 2 3 4 5 6 7 8 9 >10 m
Bottom Type (S) Sh M P

INVESTIGATION NOTES:
Two large steel boxes.

POSITION: Date/DN ____/99 Time (UTC) _____ Fix # 3806
Easting 41360.7 Northing 22768.5
Latitude 031 °52 '18.512 " N Longitude 080 ° 39 ' 27.313 " W
LORAN C: W 14 X 25 Y 43 Z 60
7980 (LORAN for AWOIS only. GRI = 9960, N.E. United States.)

LEAST DEPTH: Date/DN ____/____ Time (UTC) _____
Method MOD III Least Depth Pressure Gauge.
S/N

Measured Depth: 1. _____ 2. _____ 3. _____ Avg. _____ m ft

Uncorrected Depth:	15.4	meters
Tide Corrector:	~~-1.7~~ -2.0	meters
Draft Corrector:		meters
Velocity Corrector:	-0.1	meters
CORRECTED LEAST DEPTH:	13.7	meters
	44 FT	

Recorder _____ Checked by _____ ~~For Charting~~ Recommendation

See Section N.1, Page 9 of Descriptive Report for Charting Recommendation

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-B616-WH

SURVEY H-10591 FIELD SHEET WH-10-1-95
ITEM NUMBER 6414.05S
CHART NO. (largest scale) _____

DESCRIPTION OR CROSS REFERENCE(S):

AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

SSS POS: L ° ' " N λ ° ' " W
E 40946.7
N 22768.0

METHOD OF INVESTIGATION: (circle)
Echosounder Diver Other (specify) _____

DIVE DATA: Divers ___
Time of Dive (UTC): Commenced _____ Completed _____
Current Slack 0.5 kts 1 kt 1.5+ kts
Visibility 0 1 2 3 4 5 6 7 8 9 >10 m
Bottom Type (S) Sh M P

INVESTIGATION NOTES:
1 steel box, similar to the other two (6108.12 S)

POSITION: Date/DN 199 Time (UTC) _____ Fix # 3009
Easting 40946.4 Northing 22770.2
Latitude 31 °52 ' 18.595 " N Longitude 080 °39 ' 43.075 " W
LORAN C: W 14 X 25 Y 43 Z 60
(LORAN for AWOIS only. GRI = 9960, N.E. United States.)

LEAST DEPTH: Date/DN ___/___ Time (UTC) _____
Method MOD III Least Depth Pressure Gauge
S/N

Measured Depth: 1. _____ 2. _____ 3. _____ Avg. _____ m ft

Uncorrected Depth:	16.6	meters
Tide Corrector:	-1.6	meters
Draft Corrector:		meters
Velocity Corrector:		meters
CORRECTED LEAST DEPTH:	15.0	meters

See Section N.2. Page 9 of Descriptive Report for Charting Recommendation

Recorder _____ Checked by _____

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-B616-WH

SURVEY H-10591 FIELD SHEET WH-10-1-95 (A)
ITEM NUMBER 9195.505
CHART NO. (largest scale) _____

DESCRIPTION OR CROSS REFERENCE(S):

AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

SSS POS: L 31° 57 ' 36.064" N λ 080° 42 ' 18.970" W
E 36832.8
N 32541.0

METHOD OF INVESTIGATION: (circle) Echosounder (Diver) Other (specify) _____

DIVE DATA: Divers ___
Time of Dive (UTC): Commenced _____ Completed _____
Current Slack 0.5 kts 1 kt 1.5+ kts Bottom Type S Sh M P
Visibility 0 1 2 3 4 5 6 7 8 9 >10m

INVESTIGATION NOTES:

Anchor Chain (insignificant height off bottom)

POSITION: Date/DN 1108 Time (UTC) 1730 Fix # 3014
Easting 36830.7 Northing 32538.3
Latitude 31°57'35.976"N Longitude 080°42'19.050"W
LORAN C: W 14 X 25 Y 43 Z 60
(LORAN for AWOIS only. GRI = 9960, N.E. United States.)

LEAST DEPTH: Date/DN / Time (UTC) _____
Method MOD III
S/N 68332

Surface 14.93/14.90 Measured Depth: 1. 39.74 2. _____ 3. _____ Avg. _____ m ft

DP Uncorrected Depth: 13.12 meters 16.4
Tide Corrector: _____ meters -2.0
Draft Corrector: _____ meters .6
Velocity Corrector: _____ meters .2
CORRECTED LEAST DEPTH: _____ meters 15.2

See Section N.3. Page 9 of Descriptive Report for Charting Recommendation

Recorder _____ Checked by _____

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-B616-WH

SURVEY H-10591 FIELD SHEET WH-10-1-95 (A)
ITEM NUMBER 7365.52 S (114044)
CHART NO. (largest scale) _____

DESCRIPTION OR CROSS REFERENCE(S):

AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

SSS POS: L 31 ° 55 ' 32.334" N λ 080 ° 40 ' 35.085" W
E 39568
N 28735

METHOD OF INVESTIGATION: (circle)
Echosounder (Diver) Other (specify) _____

DIVE DATA: Divers ___
Time of Dive (UTC): Commenced _____ Completed _____
Current Slack 0.5 kts 1 kt 1.5+ kts Bottom Type S Sh M P
Visibility 0 1 2 3 4 5 6 7 8 9 >10m

INVESTIGATION NOTES:
Dead Reef. (Nothing Significant)

POSITION: Date/DN DN 108 / Time (UTC) 1838 Fix # 3016
Easting 39557.5 Northing 28717.5
Latitude 31 °55 ' 31.772 " N Longitude 080 ° 40 ' 55.486 " W
LORAN C: W 14 X 25 Y 43 Z 60
(LORAN for AWOIS only. GRI = 9960, N.E. United States.)

LEAST DEPTH: Date/DN _____ / Time (UTC) _____
Method MOD III
S/N 68332

14.88/14.88 Measured Depth: 1. 37.32 2. _____ 3. _____ Avg. _____ m ft

DP
Uncorrected Depth: 14.6 meters
Tide Corrector: -1.8 meters
Draft Corrector: .6 meters
Velocity Corrector: .2 meters
CORRECTED LEAST DEPTH: 13.6 meters

Recorder _____ Checked by _____

See Section N.4. Page 10 of Descriptive Report for Charting Recommendation

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-B616-WH

SURVEY H-10591 FIELD SHEET WH-10-1-95
ITEM NUMBER SSS Contact off sheet #
CHART NO. (largest scale) _____

DESCRIPTION OR CROSS REFERENCE(S):

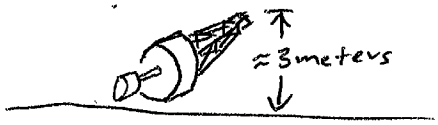
AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

SSS POS: L ° ' " N λ ° ' " W
E _____
N _____

METHOD OF INVESTIGATION: (circle)
Echosounder (Diver) Other (specify) _____

DIVE DATA: Divers ___
Time of Dive (UTC): Commenced _____ Completed _____
Current Slack 0.5 kts 1 kt 1.5+ kts Bottom Type S Sh M P
Visibility 0 1 2 3 4 5 6 7 8 9 >10 m

INVESTIGATION NOTES:
Very large, old fashion superstructure buoy



POSITION: Date/DN 5/8/95 / 128 Time (UTC) 1048 Fix # 3025
Easting 33675.8 Northing 29423.9
Latitude 31 °55 '55.016 " N Longitude 080 °44 '~~43.869~~ " W
LORAN C: W 14 X 25 Y 43 Z 60
(LORAN for AWOIS only. GRI = 9960, N.E. United States.)
19.353"

LEAST DEPTH: Date/DN 5/8/95 / 128 Time (UTC) 1048
Method MOD ~~III~~ Least Depth Gauge
S/N 68332

Measured Depth: ~~Bar~~ 14.85 in 30.55 Bottom 3. 14.83 out ~~Avg:~~ 10.82 m ft

Uncorrected Depth:	10.82	meters
Tide Corrector:	-6-1.2	meters
Draft Corrector:		meters
Velocity Corrector:		meters
CORRECTED LEAST DEPTH:	~~10.22~~ 9.6	meters

(31 FT)

Recorder _____ Checked by _____

See Section N.5. Page 10 of Descriptive Report for Charting Recommendation

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-B616-WH

SURVEY H-10591 FIELD SHEET WH-10-1-95
ITEM NUMBER 11530.1P
CHART NO. (largest scale) _____

DESCRIPTION OR CROSS REFERENCE(S): Solid Contact, small.

AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

SSS POS: L ° ' " N λ ° ' " W
E 33822.2
N 32870.0

METHOD OF INVESTIGATION: (circle)
Echosounder (Diver) Other (specify) _____

DIVE DATA: Divers ___
Time of Dive (UTC): Commenced _____ Completed _____
Current Slack 0.5 kts 1 kt 1.5+ kts Bottom Type S Sh M P
Visibility 0 1 2 3 4 5 6 7 8 9 >10 m

INVESTIGATION NOTES:
Old Mooring Buoy with chain and anchor

POSITION: Date/DN 5/8/95 / 128 Time (UTC) 1123 Fix # 3027
Easting 33815.2 Northing 32876.8
Latitude 31 °57 '47.113 "N Longitude 080 °44 '13.869 "W
LORAN C: W 14 X 25 Y 43 Z 60
(LORAN for AWOIS only. GRI = 9960, N.E. United States.)

LEAST DEPTH: Date/DN 5/8/95 / 128 Time (UTC) 1123
Method MOD III least depth Gauge
S/N 68332

Measured Depth: ~~a~~ 14.83 before ~~b~~ 32.77 bottom ~~c~~ 14.83 after ~~AVG~~ 12.36 m ft

Uncorrected Depth:	12.36 4 meters
Tide Corrector:	-.80 meters
Draft Corrector:	_____ meters
Velocity Corrector:	_____ meters
CORRECTED LEAST DEPTH:	11.56 meters (37 FT)

Recorder _____ Checked by _____

See Section N.6. Page 10 of Descriptive Report for Charting Recommendation

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-B616-WH

SURVEY H-10591 FIELD SHEET WH-10-1-95
ITEM NUMBER 10941.35
CHART NO. (largest scale) _____

DESCRIPTION OR CROSS REFERENCE(S): Moderately solid contact.

AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

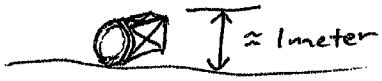
SSS POS: L ° ' " N λ ° ' " W
E 34817.3
N 33143.4

METHOD OF INVESTIGATION: (circle)
Echosounder (Diver) Other (specify) _____

DIVE DATA: Divers __
Time of Dive (UTC): Commenced _____ Completed _____
Current Slack 0.5 kts 1 kt 1.5+ kts
Visibility 0 1 2 3 4 5 6 7 8 9 >10 m
Bottom Type S Sh M P

INVESTIGATION NOTES:

Buoy super structure



POSITION: Date/DN 5/8/95 / 128 Time (UTC) 1208 Fix # 3030
Easting 34812.3 Northing 33145.2
Latitude 31 °57 '55.781 " N Longitude 080 °43 '35.881 " W
LORAN C: W 14 X 25 Y 43 Z 60
(LORAN for AWOIS only. GRI = 9960, N.E. United States.)

LEAST DEPTH: Date/DN 5/8/95 / 128 Time (UTC) 1208
Method MOD III Least Depth Gauge
S/N 68332

Measured Depth: ~~B~~ 14.90 before ~~2~~ 35.43 Bottom ~~3~~ 14.88 After ~~Avg~~ 13.89 m ft

Uncorrected Depth:	~~13.89~~ 9	meters
Tide Corrector:	~~-1.1~~ -0.7	meters
Draft Corrector:		meters
Velocity Corrector:		meters
CORRECTED LEAST DEPTH:	~~12.79~~ 13.2 (43 FT)	meters

Recorder _____ Checked by _____

See Section N.7. Page 10 of Descriptive Report For Charting Recommendation

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-B616-WH

SURVEY H-10591 FIELD SHEET WH-10-1-95
ITEM NUMBER 10584.05 (AWOIS 9330?)
CHART NO. (largest scale) _____

DESCRIPTION OR CROSS REFERENCE(S): Questionable AWOIS Item

AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

SSS POS: L ° ' " N λ ° ' " W
E 35496.0
N 33094.6

METHOD OF INVESTIGATION: (circle)
Echosounder (Diver) Other (specify) _____

DIVE DATA: Divers ___
Time of Dive (UTC): Commenced _____ Completed _____
Current Slack 0.5 kts 1 kt 1.5+ kts
Visibility 0 1 2 3 4 5 6 7 8 9 >10m
Bottom Type S Sh M P

INVESTIGATION NOTES:
U.S. Army Corps of Engineers Instrument Cage
Near Mo A sea buoy.

POSITION: Date/DN 5/8/95 / 128 Time (UTC) 1237 Fix # 3032
Easting 35497.8 Northing 33096.9
Latitude 31 ° 57 ' 54.180 " N Longitude 080 ° 43 ' 09.777 " W
LORAN C: W 14 X 25 Y 43 Z 60
(LORAN for AWOIS only. GRI = 9960, N.E. United States.)

LEAST DEPTH: Date/DN 5/8/95 / 128 Time (UTC) 1237
Method MOD III Least Depth Gauge
S/N 68332

Measured Depth: ~~E~~ 14.87 (Before) ~~S~~ 37.64 (Bottom) ~~E~~ 14.90 (After) ~~Avg.~~ 15.13 m ft

Uncorrected Depth:	15.13	meters
Tide Corrector:	~~-1.1~~ -0.5	meters
Draft Corrector:		meters
Velocity Corrector:		meters
CORRECTED LEAST DEPTH:	14.~~03~~6 (48 FT)	meters

Recorder _____ Checked by _____

See Section N.8. Page 11 of Descriptive Report for CHARTING Recommendation

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-G398-WH

SURVEY H-10591 FIELD SHEET WH-10-1-95
ITEM NUMBER 110.59 P
CHART NO. (largest scale) _____

DESCRIPTION OR CROSS REFERENCE(S): Appears to be scattered debris.

AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

SSS POS: L ° ' " N λ ° ' " W
E 40406.1
N 30627.6

METHOD OF INVESTIGATION: (circle)
Echosounder (Diver) Other (specify) _____

DIVE DATA: Divers 2
Time of Dive (UTC): Commenced _____ Completed _____
Current Slack 0.5 kts 1 kt 1.5+ kts
Visibility 0 1 2 3 4 5 6 7 8 9 >10 m
Bottom Type S Sh M P

INVESTIGATION NOTES: Mushroom Anchor & Chain

POSITION: Date/DN 6/28/95 179 Time (UTC) _____ Fix # 3052
Easting 40403.4 Northing 30626.3
Latitude 31 ° 56 ' 33.690 " N Longitude 080 ° 40 ' 03.139 " W
LORAN C: W 14 X 31 Y 45555.0 Z 61023.9
(LORAN for AWOIS only. GRI = 7980, S.E. United States.)

LEAST DEPTH: Date/DN 6/28/95 179 Time (UTC) 1330
Method MD3
S/N 68338

Measured Depth: 1. 36.86 2. _____ 3. _____ Avg. _____ m ft

Uncorrected Depth:	15.32	meters
Tide Corrector:	~~-1.8~~ -2.0	meters
Draft Corrector:		meters
Velocity Corrector:		meters
CORRECTED LEAST DEPTH:	13.53 (43 FT)	meters

Recorder _____ Checked by _____

See Section N.11. Page 11 of Descriptive Report for Charting Recommendation

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OFFICE USE

SURVEY H-10591 FIELD SHEET WH-10-1-95
ITEM NUMBER 129.09S
CHART NO. (largest scale)

DESCRIPTION OR CROSS REFERENCE(S):
Anchor chain just east of Savannah Light.

AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

SSS POS: L ° ' " N λ ° ' " W
E 38877.8
N 31467.8

METHOD OF INVESTIGATION: (circle)
Echosounder (Diver) Other (specify)

DIVE DATA: Divers 2
Time of Dive (UTC): Commenced Completed
Current Slack 0.5 kts 1 kt 1.5+ kts
Visibility 0 1 2 3 4 5 6 7 8 9 >10 m
Bottom Type S Sh M P

INVESTIGATION NOTES: Pipe

POSITION: Date/DN 6/28/95 179 Time (UTC) Fix # 3053
Easting 38874.2 Northing 31464.8
Latitude 31 ° 57 ' 01.008 " N Longitude 080 ° 41 ' 01.304 " W
LORAN C: W 14 X 31 Y 45562.8 Z 61293
(LORAN for AWOIS only. GRI = 7980, S.E. United States.)

LEAST DEPTH: Date/DN 6/28/95 179 Time (UTC) 1410
Method 1003
S/N 68332

Measured Depth: 1. 38.60 2. 3. Avg. m ft

Uncorrected Depth:	16.48	meters
Tide Corrector:	-1.7	meters
Draft Corrector:		meters
Velocity Corrector:		meters
CORRECTED LEAST DEPTH:	14.8	meters

Recorder Checked by

See Section N. 12. Page 12 of Descriptive Report for Charting Recommendation

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-~~G398~~-WH

SURVEY H-10591 FIELD SHEET WH-10-1-95
ITEM NUMBER 8617.415
CHART NO. (largest scale) _____

DESCRIPTION OR CROSS REFERENCE(S):
Looks like a sperm!

AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

SSS POS: L ° ' " N λ ° ' " W
E 37651.3
N 31730.7

METHOD OF INVESTIGATION: (circle)
Echosounder (Diver) Other (specify) _____

DIVE DATA: Divers 2
Time of Dive (UTC): Commenced _____ Completed _____
Current Slack 0.5 kts 1 kt 1.5+ kts
Visibility 0 1 2 3 4 5 6 7 8 9 >10 m
Bottom Type S Sh M P

INVESTIGATION NOTES: Anchor & chain

POSITION: Date/DN 6/28/95 179 Time (UTC) _____ Fix # 3055
Easting 37648.6 Northing 31739.8
Latitude 31 ° 57 ' 10.007 " N Longitude 080 ° 41 ' 47.955 " W
LORAN C: W 14 X 31 Y 45467.9 Z 61246.3
(LORAN for AWOIS only. GRI = 7980, S.E. United States.)

LEAST DEPTH: Date/DN 6/28/95 179 Time (UTC) 1455
Method MOD 3
S/N 68332

Measured Depth: 1. 37.10 2. _____ 3. _____ Avg. _____ m ft

Uncorrected Depth:	15.46	meters
Tide Corrector:	-1.47	meters
Draft Corrector:	_____	meters
Velocity Corrector:	_____	meters
CORRECTED LEAST DEPTH:	~~14.~~ 13.7 (45 FT.)	meters

Recorder _____ Checked by _____

See Section N.13, page 12 of Descriptive Report for Charting Recommendation

NOAA SHIP WHITING
ITEM INVESTIGATION REPORT
OPR-G398-WH

SURVEY H-10591 FIELD SHEET WH-10-1-95
ITEM NUMBER 11085.56P
CHART NO. (largest scale) _____

DESCRIPTION OR CROSS REFERENCE(S):
2 dark squares.

AWOIS POS: (NAD 83) L ° ' " N λ ° ' " W

SSS POS: L ° ' " N λ ° ' " W
E 34548.9
N 24678.3

METHOD OF INVESTIGATION: (circle)
Echosounder (Diver) Other (specify) _____

DIVE DATA: Divers ___
Time of Dive (UTC): Commenced _____ Completed _____
Current Slack 0.5 kts 1 kt 1.5+ kts
Visibility 0 1 2 3 4 5 6 7 8 9 >10 m
Bottom Type S Sh M P

INVESTIGATION NOTES: Old fashion anchor

POSITION: Date/DN 6/28/95 179 Time (UTC) _____ Fix # 3057
Easting 34538.8 Northing 24673.5
Latitude 31 ° 53 ' 20.748 " N Longitude 080 ° 43 ' 46.755 " W
LORAN C: W 14 X 31 Y 45560.7 Z 61285.1
(LORAN for AWOIS only. GRI = 7980, S.E. United States.)

LEAST DEPTH: Date/DN 6/28/95 179 Time (UTC) 1555
Method mod 3
S/N 68337

Measured Depth: 1. 3250 2. _____ 3. _____ Avg. _____ m ft

Uncorrected Depth:	12.30	meters
Tide Corrector:	-0.9 1.3	meters
Draft Corrector:		meters
Velocity Corrector:		meters
CORRECTED LEAST DEPTH:	11.40 (GC FT)	meters

Recorder _____ Checked by _____

See Section N.14. Page 12 of Descriptive Report For Charting Recommendation

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

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
- [x] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
WHITING	GEORGIA	8NM SE OF TYBEE ROADS	

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-G398-WH	WH-10-1-95	H-10591	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	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
Savannah Light	White house on platform supported by 4 steel girder piles	31° 57′	01.276″	080° 40′	58.631″		DGPS	11512 11513 11480

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD		☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED		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.

NOAA FORM 7[illegible]0 (8-74) SUPERSEDES NOAA FORM 76-[illegible]2-71) WHICH IS OBSOLETE, AND EXISTING STOCK SHOULD B[illegible]ROYED UPON RECEIPT OF REVISION.

☆ U.S. GPO:1975-0-665-080/1155

SAVANNAH LIGHT

Savannah Light is an 85 foot high white house on top of a large platform supported by four steel girder piles. Painted in large black letters on the sides of the white house is "SAVANNAH LIGHT." The light and sound characteristics are as follows:

Fl (2) W 15^{s}
.1^{s} fl 4.9^{s} ec
.1^{s} fl 9.9^{s} ec

14 nm range

RACON: G (– – •)

HORN: 1 blast every 20s (2s blast) which opperates continuously

QW obstruction lights on the NE and SW corners

The light was positioned by WHITING launch 1015. The position was obtained by taking 10 DGPS detached postions (DPs) on each of the four supporting piles, then averaging all DPs.

The position of Savannah light was found to be:

Latitude: 31° 57' 01.276"N Longitude: 080° 40' 58.631"W

US Coast Guard Light List position for Savannah Light is:

Latitude: 31° 57.0'N Longitude: 080° 41.0'W

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

May 19, 1995

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

Preliminary Information
Subject to Office Review

Dear Sir:

The NOAA Ship WHITING, while undergoing hydrographic survey operations near the entrance to Savannah River, Georgia, discovered nine uncharted obstructions in the vicinity of Savannah Light. The WHITING also found new buoy positions for RW "T" Mo (A) and G "1" and R "2" due to a lengthening of Savannah River Entrance Channel. As a result, the remaining buoys along Tybee Range and Bloody Point Range have been renumbered. Enclosed are reports concerning the obstructions, new buoy positions and numbers 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 11512 and 11513 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 Section
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

Hydrographic Survey Registry Number: H-10591

ADVANCE INFORMATION

State: Georgia

General Locality: Atlantic Ocean

Sublocality: 8 NM SE of Tybee Roads

Project Number: OPR-G398-WH

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

Objects Discovered:

	Latitude	Longitude
Anchor chain	**31° 57' 35.976"**	**080° 42' 19.050"**

Large ship's anchor chain approximately 100 feet long exposed, lies 1 foot off the bottom in a N-S orientation. Least depth measured by echosounder is 15.0 meters (49.0 feet) MLLW.

Steel containers (2) **31° 52' 18.512"** **080° 39' 27.313"**
Divers investigated two steel, square boxes measuring 5 feet by five feet made of 1/4 inch steel embedded in the bottom. Least depth measured by diver is 13.7 meters (45 feet) MLLW.

Steel container **31° 52' 18.595"** **080° 39' 43.075"**
Another steel, square box as described above. Least depth measured by diver is 15.0 meters (49 feet) MLLW.

Structure Buoy **31° 55' 55.016"** **080° 44' 19.353"**
Very large, old fashion structure buoy rising approximately 10 feet off the bottom. This feature is within 150 feet north of the yellow "B" structure buoy marking the south-east corner of the dumping site. Least depth measured by divers is 10.2 meters (33 feet) MLLW.

Mooring Buoy **31° 57' 47.113"** **080° 44' 13.869"**
An old mooring buoy with chain and anchor rising approximately 3 feet off the bottom. Least depth measured by divers is 11.5 meters (37 feet) MLLW.

ADVANCE INFORMATION

Buoy Structure **31° 57' 55.781"** **080° 43' 35.881"**
The structure from the top half of a buoy rising approximately 3 feet off the bottom. Least depth measured by divers is 12.8 meters (42 feet) MLLW.

Instrument Cage **31° 57' 54.180"** **080° 43' 09.777"**
U.S. Army Corps of Engineers shoal detecting instrument cage, located within 50 feet of "Mo A" sea buoy, rising approximately 3 feet off the bottom. Least depth measured by divers is 14.0 meters (46 feet) MLLW.

Diving Bell **31° 55' 35.013"** **080° 44' 02.791"**
Old diving bell rising approximately 4 feet off the bottom. Least depth measured by divers is 11.4 meters (37 feet) MLLW.

Spare Buoy **31° 57' 04.836"** **080° 40' 59.423"**
Spare buoy and anchor 300 feet north of Savannah Light rising approximately 3 feet off the bottom. Least depth measured by echo sounder is 13.7 meters (45 feet) MLLW.

Least depths were measured using a Raytheon Digital Survey Fathometer (DSF) 6000N echo sounders or by a diver placed MOD III Least Depth Gauge. All soundings have been corrected to MLLW with predicted tide correctors. Differential GPS was used to determine survey positions referenced to NAD 83.

Affected Nautical Charts:

Chart Number	Edition No. Date	Reported Depth	Chart Datum	General Location Latitude	Longitude
11512	40 1/08/94	as noted	NAD 83	32° 00' 00"	080° 45' 00"
11513	21 6/04/94	as noted	NAD 83	32° 00' 00"	080° 45' 00"
11480	32 5/14/94	as noted	NAD 83	32° 00' 00"	080° 45' 00"

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

REPORT OF NEW BUOY POSITIONS

ADVANCE INFORMATION

Hydrographic Survey Registry Number: H-10591

State: Georgia

General Locality: Atlantic Ocean

Sublocality: 8 NM SE of Tybee Roads

Project Number: OPR-G398-WH

Tybee Range has been lengthened 1 nautical mile (nm) seaward resulting in new buoy locations for the Mo(A) red/white sea buoy and buoys green "1" and red "2". The new positions are:

Buoy	Latitude	Longitude
RW "T" Mo (A) Sea Buoy	31° 57' 53.247"	080° 43' 08.994"
G "1"	31° 58' 16.776"	080° 44' 12.466"
R "2"	31° 58' 24.266"	080° 44' 07.552"

According to personnel at USCG Group Tybee Island, Aids to Navigation, all other buoys marking Savannah River Entrance Channel seaward of green "15" on Tybee Range and Bloody Point Range have been renumbered as described in the following table:

	Charted Buoy Number		Actual Buoy Number
Change	G "1"	to	G "3"
	R "2"	to	R "4"
	G "3"	to	G "5"
	R "4"	to	R "6"
	G "5"	to	G "7"
	R "6"	to	R "8"
	G "7"	to	G "9"
	R "8"	to	R "10"
	G "9"	to	G "11"
	R "10"	to	R "12"
	G "11"	to	G "13"
	R "12"	to	R "14"

In addition, buoy **Y C "1" Priv** at Latitude 31° 53' 52.3" Longitude 080° 43' 11.0" was not found.

ADVANCE INFORMATION

Differential GPS was used to determine buoy positions referenced to NAD 83.

Affected Nautical Charts:

Chart Number	Edition No. Date	Reported Change	Chart Datum	General Location Latitude	Longitude
11512	40 1/08/94	as noted	NAD 83	32° 00' 00"	080° 47' 30"
11513	21 6/04/94	as noted	NAD 83	32° 00' 00"	080° 47' 30"
11480	32 5/14/94	as noted	NAD 83	32° 00' 00"	080° 47' 30"

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

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

July 5, 1995

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

Preliminary Information
Subject to Office Review

Dear Sir:

The NOAA Ship WHITING, while undergoing hydrographic survey operations near the entrance to Savannah River, Georgia, discovered four uncharted obstructions in the vicinity of Savannah Light. Enclosed are reports concerning these obstructions 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 11512 and 11513 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 Section
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

ADVANCE INFORMATION

REPORT OF UNCHARTED SUBMERGED FEATURES

Hydrographic Survey Registry Number: H-10591

State: Georgia

General Locality: Atlantic Ocean

Sublocality: 8 NM SE of Tybee Roads

Project Number: OPR-G398-WH

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

Objects Discovered:

	Latitude	Longitude
Old fashion anchor	**31° 53' 20.748" N**	**080° 43' 46.755" W**

Divers investigated an old fashion anchor rising approximately 2.0 meters off the bottom. The least depth measured by a diver placed MOD III least depth gauge was found to be 11.4 meters (37 feet).

Mushroom anchor and chain	**31° 56' 33.690" N**	**080° 40' 03.139" W**

Divers investigated a mushroom anchor and chain rising approximately one meter off the bottom. The least depth measured by a diver placed MOD III least depth gauge was found to be 13.5 meters (44 feet).

Anchor and chain	**31° 57' 10.007" N**	**080° 41' 47.955" W**

Divers investigated an anchor and chain rising approximately 0.5 meters off the bottom. The least depth measured by a diver placed MOD III least depth gauge was found to be 14.1 meters (46 feet).

Pipe	**31° 57' 01.008" N**	**080° 41' 01.304" W**

Divers investigated a pipe rising approximately 0.3 meters off the bottom. This contact is an insignificant hazard to navigation. The least depth measured by a diver placed MOD III least depth gauge was found to be 14.8 meters (48 feet).

All soundings have been corrected to MLLW with predicted tide correctors. Differential GPS was used to determine survey positions referenced to NAD 83.

ADVANCE INFORMATION

Affected Nautical Charts:

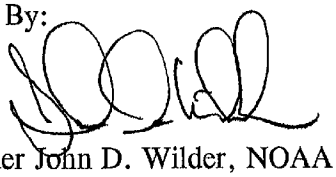
Chart Number	Edition No. Date	Reported Depth	Chart Datum	General Location Latitude	Longitude
11512	40 1/08/94	as noted	NAD 83	32° 00' 00"	080° 45' 00"
11513	21 6/04/94	as noted	NAD 83	32° 00' 00"	080° 45' 00"
11480	32 5/14/94	as noted	NAD 83	32° 00' 00"	080° 45' 00"

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

APPROVAL SHEET
HYDROGRAPHIC SURVEY
OPR-G398-WH
1995
WH-10-1-95
H-10591

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
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: October 25, 1995

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-G398-WH

HYDROGRAPHIC SHEET: H-10591

LOCALITY: Atlantic Ocean

TIME PERIOD: April 7 - June 28, 1995

TIDE STATION USED: 867-0870 Fort Pulaski, Ga.
Lat. 32° 02.0'N Lon. 80° 54.1'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 3.25 ft.
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 7.1 ft.

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): -0.05 ft.
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 6.8 ft.

REMARKS: RECOMMENDED ZONING

Times are direct, and apply a x1.02 range ratio to heights using Tybee Marina, Ga. (867-1029). Where data are not available for Tybee Marina, times are direct, and apply a X0.99 range ratio to heights using Fort Pulaski, Ga. (867-0870)

Notes: 1. Times are tabulated in Greenwich Mean Time.
2. Data for Tybee Marina, Ga. (867-1029) and Fort Pulaski, Ga. (867-0870) are temporarily stored on files #667-1029 and #667-0870 respectively.

Caution: Tybee Marina, Ga. (867-1029) data are considered preliminary until vertical stability is verified with closing levels by the NOAA ship Whiting.

Walter M. Hubbard

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-10591

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 11480 11509	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	
GEORGIA (title)	X		X							1
NORTH ATLANTIC OCEAN	X		X							2
TYBEE ROADS (inlet)	X		X							3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
				Approved						18
										19
										20
				Chief Geographer						21
				OCT 11 1995						22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H-10591 (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

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 0.785 seconds (24.189 meters or 2.42 mm at the scale of the survey) north in latitude, and 0.620 seconds (16.291 meters or 1.63 mm at the scale of the survey) east in longitude.

L. JUNCTIONS

H-10577 (1994) to the west
H-10597 (1995) to the east
H-10631 (1995) to the north
H-10642 (1995) to the southeast

A standard junction could not be effected between the present survey and survey H-10577 (1994). The junctional survey is archived at National Ocean Service (NOS) headquarters, Silver Spring, Maryland. Standard junctions could not be effected with surveys H-10631 (1995) and H-10642 (1995). The surveys have not reached the sounding stage of office processing.

A standard junction was effected between the present survey and survey H-10597(1995).

A standard junction was effected between the present survey and survey H-10597(1995).

There is no junctional survey to the southwest. Present survey depths are in harmony with the charted hydrography to the southwest.

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 11509 (24th Edition, Aug. 27/94)
11512 (52nd Edition, Jan. 8/94)
11513 (21st Edition, June 4/94)

Hydrography

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

The charted soundings in the Disposal Area (Discontinued), in the vicinity of Latitude 30°57'45"N, Longitude 80°43'12"W, should be revised to reflect the present survey depths in the common area. The charted notation "Depths from surveys of 1973-82" should be removed from the chart. AWOIS #9330 Disposal Area deleted through COE BP153855.

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

Dangers to Navigation

Two Danger to Navigation reports were 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. Copies of the reports are appended to this the report.

P. ADEQUACY OF SURVEY

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

WHITING Processing Team

Robert Snow

Robert Snow
Cartographic Technician

APPROVAL SHEET
H-10591

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 magnetic tape record for this survey. A final sounding printouts of the survey has been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Date: 29 FEB 96

Norris A. Wike
Cartographer
Atlantic Hydrographic Branch

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

Date: 29 Feb 1996

Nicholas E. Perugini
Commander, NOAA
Chief, Atlantic Hydrographic Branch

****

Final Approval:

Approved: Date: 6/14/96

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-10591

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
11512	2/29/96	Robert R. Ward	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No.
11509	2/29/96	Robert R. Ward	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No.
11513	2/29/96	Robert R. Ward	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No.
11480	2/29/96	Robert R. Ward	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
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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.