H10769

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-20-04-97

Registry No. H10769

LOCALITY

State Georgia

General Locality North Atlantic Ocean

Locality Approaches To Brunswick

1997

CHIEF OF PARTY

CDR J. W. Humphrey, NOAA

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DATE SEP 21 1998

NOAA FORM 77-28
(11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTRY NUMBER:

H-10769

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

FIELD NUMBER:
WH-20-4-96

State: Georgia

General locality: NORTH Atlantic Ocean

Locality: Approaches to Brunswick

Scale: 1: 20,000 Date of survey: August 7 - November 20, 1997

Instructions dated: May 21, 1997 Project Number: OPR-G311-WH

Vessel: NOAA Ship WHITING

Chief of Party: LCDR John W. Humphrey

Surveyed by: LCDR J.W. Humphrey, LT H. Orlinsky, M.J. Annis, B. Armbruster, R. Corson, F.R. Cruz, U.L. Gardner, P.G. Lewit, E.A. Owens, D.B. Pattison, K.B. Shaver

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

Graphic record scaled by: WHITING Personnel

Graphic record checked by: WHITING Personnel

Protracted by: N/A Automated plot by: HP 750C (FIELD)

Verification by: Hydrographic Surveys Branch PERSONNEL

Soundings in: Feet: ✓ Fathoms: ___ Meters: (✓) at MLW: ___ MLLW: (✓):

Remarks: **Time Zone Used, 0 (UTC)**

Basic Hydrographic and 200% Side Scan Sonar

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

AWOIS and SURF ✓ 9/15/98 TWD

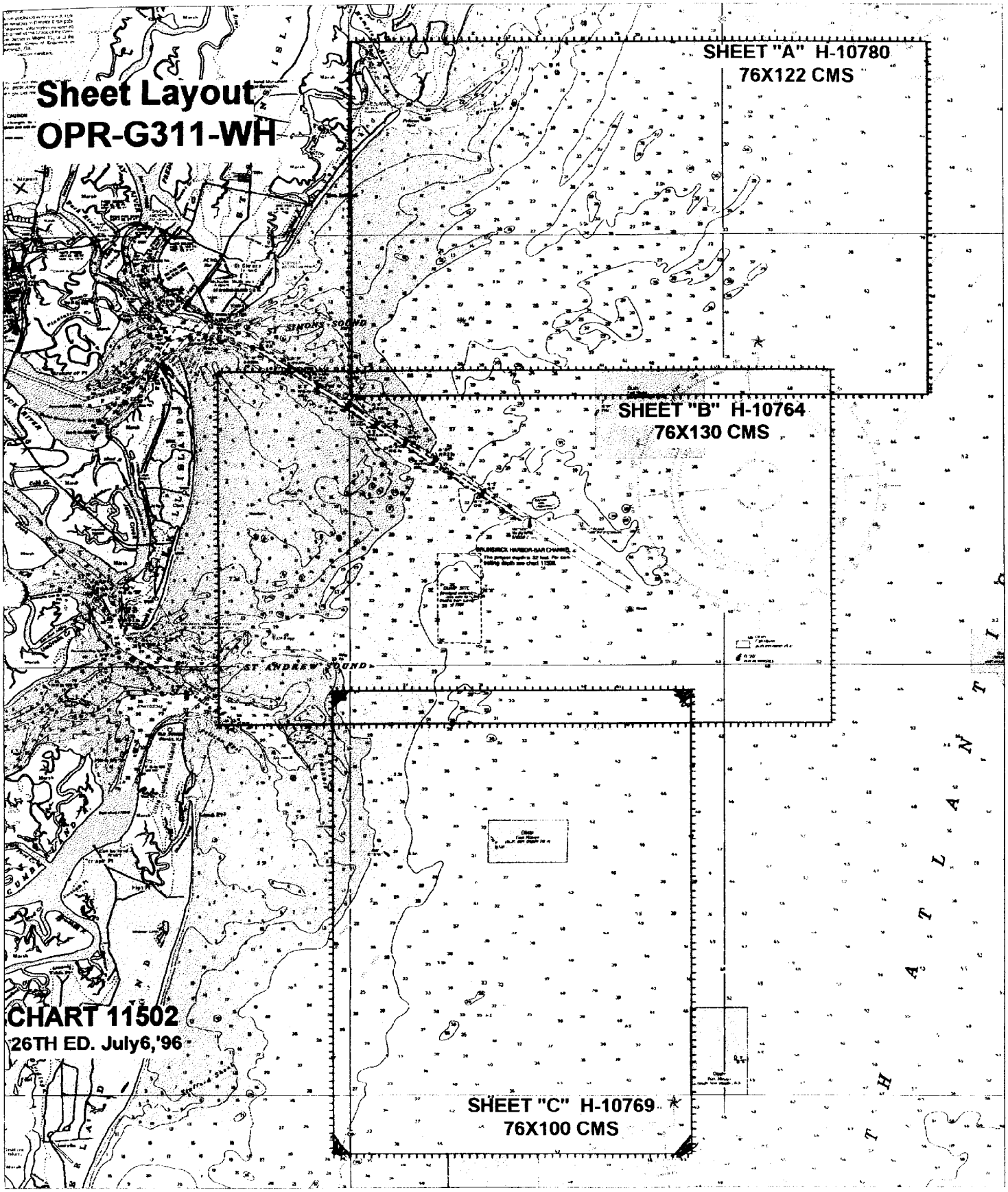

Sheet Layout
OPR-G311-WH
SHEET "A" H-10780
76X122 CMS
SHEET "B" H-10764
76X130 CMS
SHEET "C" H-10769
76X100 CMS
CHART 11502
26TH ED. July6,'96
ST SIMONS SOUND
ST ANDREW SOUND
ATLANTIC

TABLE OF CONTENTS

A. PROJECT

A.1 These surveys were conducted in accordance with Hydrographic Project Instructions OPR-G311-WH, basic hydrographic survey, Atlantic Ocean, Approaches to Brunswick, Georgia.

A.2 The original instructions are dated May 21, 1997.

A.3 There have been no changes to the original instructions.

A.4 This Descriptive Report covers H-10764 and H-10769 (sheets "B" and "C", respectfully) of OPR-G311-WH. H-10764 lies 7.0 nautical miles southeast of St. Simon's Sound, Georgia. H-10769 lies 7.0 nautical miles southeast of St. Andrews Sound, Georgia. See section B.2 for exact survey boundaries.

A.5 Project OPR-G311-WH responds to requests from Brunswick Bar Pilots Association. The entrance to Brunswick is currently transited daily by Panamax car carriers and bulk cargo vessels drawing maximum draft, some of which use the tidal cycle for entry on high tide.

B. AREA SURVEYED

B.1 These surveys cover the navigable area of the Approaches to Brunswick, Georgia. It is bounded on the west by approximate longitude 81°20'W, and on the east by approximate longitude 81°05'W. The northern and southern limits are latitudes 31°15'N and 30°49'N, respectfully.

B.2 These surveys are comprised of two sheets with the following boundaries, starting at the SE corner and proceeding clockwise:

Sheet "B" H-10764:

1. 30°58'38"N 081°07'08"W
2. 30°58'38"N 081°23'30"W
3. 31°06'51"N 081°23'30"W
4. 31°06'51"N 081°07'08"W

Sheet "C" H-10769:

1. 30°48'39"N 081°10'57"W
2. 30°48'39"N 081°15'00"W
3. 30°46'34"N 081°15'00"W
4. 30°46'34"N 081°17'24"W
5. 30°48'39"N 081°17'24"W
4. 30°48'39"N 081°20'58"W
3. 30°59'24"N 081°20'29"W
4. 30°59'24"N 081°10'55"W

B.3 Data collection began on July 10, 1997 (DN 191) for H-10764 and August 7, 1997 (DN 219) for H-10769. Data collection for H-10764 ended on November 19, 1997 (DN 323). Data collection for H-10769 ended on November 20, 1997 (DN 324).

C. SURVEY VESSELS

C.1 The following vessels were used during these surveys:

Vessel	EDP Number	Primary Function
NOAA Ship Whiting	2930(WTEW)	Hydrography and Side Scan Sonar Operations
NOAA Launch WH-2	2932(1014)	Hydrography and Side Scan Sonar Operations
NOAA Launch WH-1	2931(1015)	Hydrography and Side Scan Sonar Operations

C.2 No unusual vessel configurations were used during these surveys.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

SEE ALSO THE EVALUATION REPORT

D.1 All software used for data aquisition and processing are contained on the **HYDROSOFT 7.3 (plus updates as of 10/20/97)** compact disc provided by Hydrographic Surveys Division (N/CS32). The following is a list of software used from this disc:

HYPACK for Windows version 6.4
HSD Utilities
Hydrographic Processing System

D.2 The SEABIRD SBE-19 sound velocity profile unit was utilized with **SEASOFT 3.3M** and **SEACAT 2.0** software. The program **VELOCITY** (Version 2.11, September 21, 1994) was used to process the collected data and calculate velocity corrections.

E. SONAR EQUIPMENT

E.1 The WHITING and its launches conducted all side scan sonar operations using an EG&G Model 260 image-corrected side scan sonar recorder and a 100 kHz Model 272-T towfish.

E.2 The towfish was configured with a 20° beam depression, which is the normal setting and yields the optimum beam correction.

E.3 The 100 kHz frequency was used throughout these surveys.

E.4 a. During survey preparation, it was determined that the depth of water in the survey area would require various line spacing. Range scales of 50, 75 and 100 meters were used with a line spacing of 30, 57 and 80 meters, respectfully. These range scales were used to obtain complete (200%) area coverage and provide optimal contact resolution. The line spacing is in accordance with the value specified in section 7.3.2.1 of the Field Procedures Manual (FPM). Data collected with an EPE of 30 or greater was rejected or smoothed during post-processing, so the maximum line spacing was never exceeded.

E.4 b. Confidence checks were obtained during frequent passes by various aids to navigation and bottom features such as sand waves or anchor scours. These features were annotated on the sonargram.

E.4 c. Due to shoal areas on the western side of the survey areas for H-10764 and H-10769, 200% coverage may not have been obtained where water depths would not allow side scan sonar operations. In these areas, single beam echosounder data was collected to define the 18-foot curve. Any holidays with a length of 200 meters or less not covered with 200% side scan sonar were covered with 100% side scan sonar. In all other areas, two hundred percent side scan coverage was completed. All side scan coverage was checked with swath plots to ensure proper overlap between adjoining lines. All relevant and questionable contacts were investigated using a reduced side scan range scale (either 50 or 75-meter range scale, dependent on depth).

E.4 d. On NOAA Ship WHITING, the SSS towfish was deployed from a Reuland winch using one of two armored cables in conjunction with an A-frame on the stern. The armored cable was connected to the SSS recorder by a slip-ring assembly. On launches 1014 and 1015 the SSS towfish was deployed using a Superwinch in conjunction with an adjustable davit arm on the stern. The SSS towfish was towed with a vinyl-coated Kevlar cable and was connected to the recorder by a slip-ring assembly.

E.5 Significant side scan sonar contacts were investigated using side scan sonar at a reduced range scale. Development survey lines were routinely run with side scan sonar at 50 and 75-meter range scale. Detailed descriptions of all AWOIS items and investigated contacts falling within the Navigable Area are addressed in the ITEM INVESTIGATION REPORTS found in section N.

E.6 All overlap was checked and holidays identified during post processing using **HPS_MI**, a MapBasic program provided by Hydrographic Surveys Division (N/CS32) to accompany **MapInfo** software **version 4.1.**

F. SOUNDING EQUIPMENT

F.1 All hydrographic soundings were acquired using a Raytheon Model 6000N Digital Survey Echosounder.

F.2 No other sounding equipment was used.

F.3 There were no faults in sounding equipment that affected the accuracy or quality of the data.

F.4 Both high (100 kHz) and low (24 kHz) frequency sounding data were recorded during data acquisition. Only high frequency soundings were plotted.

G. CORRECTIONS TO SOUNDINGS

G.1 a. Sound Velocity Correctors

The velocity of sound through water was measured using a Sea-Bird SBE 19 Seacat Profiler (s/n 196093-1060). Seacat Data Quality Assurance Tests were conducted after each respective velocity cast to ensure that the unit was operating within tolerance.

All sound velocity data were processed using program **VELOCITY**. Computed velocity correctors were entered into the HPS sound velocity table and re-applied during post-processing to both high and low frequency soundings.

The following is a list of sound velocity casts performed for H-10764 and H-10769:

Cast Number	Day No.	Vessel Covered	Sheet	Position of Cast		Days Covered
				Latitude	Longitude	
01	191	WHITING	B	31°00′00″N	081°07′30″W	191-198
02		Launches				191-198
03	203	WHITING	B	31°00′06″N	081°07′24″W	203-212
04		Launches				203-212
05	217	WHITING	B	30°59′36″N	081°07′24″W	217-224
06		Launches				217-226
dive	218	Launches	B	31°01′06″N	081°12′54″W	218
07	223	WHITING	C	30°59′36″N	081°11′36″W	219-227
08		Launches				-------
09	232	WHITING	B	30°53′24″N	081°06′48″W	232-240
10		Launches				232-250
11	232	WHITING	C	30°56′30″N	081°11′06″W	232-250
12		Launches				-------
dive	240	Launches	B	31°01′15″N	081°19′36″W	240
13	251	WHITING	C	30°48′32″N	081°13′24″W	251-261
14		Launches				253-261
15	251	WHITING	B	30°59′24″N	081°13′42″W	252-261
16		Launches				251-256
dive	255	Launches	B	31°04′06″N	081°16′35″W	255
17	267	WHITING	C	30°48′52″N	081°16′07″W	267-278
18		Launches				269-278
19	267	WHITING	B	31°07′42″N	081°05′30″W	267-269
20		Launches				267-277
21	279	WHITING	C	30°53′27″N	081°11′00″W	279-293
22		Launches				279-296
dive	279	Launches	B	31°05′41″N	081°07′28″W	279
28	305	WHITING	C	30°53′24″N	081°11′36″W	305-310
29		Launches				305-308
33	315	WHITING	C	30°53′18″N	081°11′36″W	315-320
34		Launches				315-320
dive	323	Launches	C	30°58′30″N	081°18′44″W	323
dive	323	Launches	B	31°01′01″N	081°14′28″W	323

d. Leadline/Barcheck Comparison

A dual leadline comparison with the DSF-6000N was conducted for WHITING during OPR-G311-WH (H-10764 and H-10769) on:

DN 324 at 31°18'35"N and 081°08'22"W (28 ft depths)
DN 274 at 31°07'26"N and 081°11'14"W (27 ft depths)
DN 205 at 31°07'26"N and 081°11'14"W (30 ft depths)

Weather and sea conditions were calm and proved ideal for performing the leadline comparison. No corrections to soundings were needed. Leadlines used were calibrated on February 11, 1997, and the calibration confirmed that the leadline error was negligible. See the fathometer record on the above listed days for actual DSF 6000N readings.

Barcheck comparisons were performed for the launches on:

DN 212 at 31 14'09"N and 081 13'12"W (1014 and 1015)
DN 273 at 31 08'04"N and 081 12'07"W (1014)
DN 275 at 31 08'04"N and 081 29'48"W (1015)

A leadline comparison was performed for the launches on:

DN 324 at 31°10'23"N and 081°17'28"W (21 ft depths)

Weather and sea conditions were fair and proved satisfactory for performing the barcheck and leadline comparisons. No corrections to soundings were needed. Barcheck lines used were calibrated on February 12, 1997, and the calibration confirmed that the barcheck line error was negligible. Copies of the bar and lead-line check data are included in the Separates, section IV.*

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

f. Static Draft

The static draft correction for launches 1014 and 1015 is 0.55 meters, and was measured on July 28, 1993. The corrector was entered into HPS Offset Tables 2 and 1,* respectively. The correction for static draft for WHITING is 3.2 meters, a historical value which WHITING divers confirmed with a MOD III Diver Least Depth Gauge on May 11, 1995. The corrector was entered into Offset Table 9.* Static draft correctors were applied during data processing for each survey platform.

* DATA FILED WITH ORIGINAL FIELD RECORDS

g. Dynamic Draft (Settlement and Squat Correctors)

Settlement and squat values for launch 1014 were determined on March 7, 1997, and were entered into HPS Offset Table 2. Settlement and squat values for launch 1015 were determined on March 10, 1997, and were entered into HPS Offset Table 1. Settlement and squat values for WHITING were determined on March 26, 1996, and were entered into HPS Offset Table 9. The settlement and squat correctors were applied to the sounding data in real time for each survey platform. Refer to Separate IV for data records. FILED WITH THE ORIGINAL FIELD RECORDS

h. Heave, Roll, and Pitch Correctors

Heave correctors for data acquired by WHITING, launch 1014, and launch 1015 were determined by a TSS Dynamic Motion Sensor DMS-05. Heave correctors were collected during data acquisition and applied to raw data during the **HSD Utilities** conversion process. Serial numbers for these sensors were as follows:

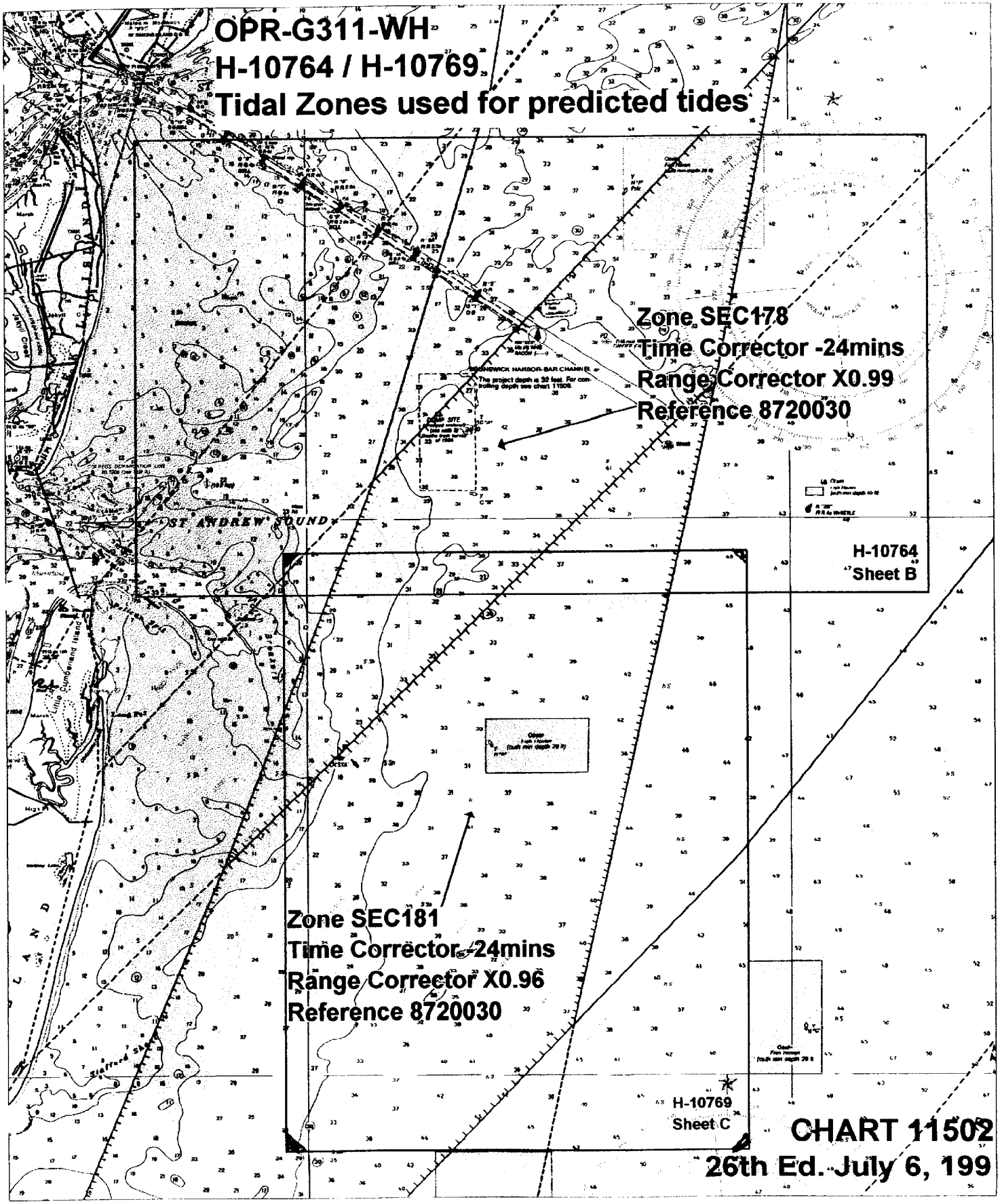
Vessel	Serial Number
2930	2066
2931	2062
2932	2068

G.6 Tide Correctors

a. The tidal datums for this project are Mean Lower Low Water (MLLW) and Mean High Water(MHW). Soundings are referenced to MLLW. Heights of bridges and cables are referenced to MHW. The operating tide station at Fernandina Beach, Florida (872-0030) served as control for datum determination.

b. Tidal zones are controlled by one primary gauge, Fernandina Beach, Florida (872-0030). Due to the limitations of HPS and for ease of data processing, zone SEC178 correctors were applied to all H-10764 data and zone SEC181 correctors were applied to all H-10769 data using the predicted tides utility in HPS. See following page for location of zones used. All proper zones will be applied through HPS upon receipt of smooth tides from N/OES234.

Smooth tides for H-10764 were requested from N/OES234 in a letter mailed and dated November 4, 1997. A secondary letter requesting smooth tides for H-10764, day number 323, was mailed and dated November 24, 1997. Smooth tides for H-10769 were requested from N/OES234 in a letter mailed and dated November 24, 1997. APPROVED TIDES AND ZONES WERE APPLIED DURING OFFICE PROCESSING.


OPR-G311-WH
H-10764 / H-10769
Tidal Zones used for predicted tides
Zone SEC178
Time Corrector -24mins
Range Corrector X0.99
Reference 8720030
H-10764
Sheet B
Zone SEC181
Time Corrector -24mins
Range Corrector X0.96
Reference 8720030
H-10769
Sheet C
CHART 11502
26th Ed. July 6, 199

The WHITING and its launches employed no unusual or unique methods or instruments to correct echo soundings.

All sounding correctors were applied to both the narrow (100 kHz) and wide (24 kHz) DSF-6000N beams. Zoning for this project is consistent with the Project Instructions.

H. CONTROL STATIONS *See Also the Evaluation Report*

H.1 The horizontal datum for these surveys is the North American Datum of 1983 (NAD 83). No horizontal control stations were established for these surveys.

I. HYDROGRAPHIC POSITION CONTROL

I.1 These surveys were conducted using the Global Positioning System (GPS) corrected by the U.S. Coast Guard (USCG) Differential GPS reference station network. The launches and the ship used an Ashtech Sensor GPS receiver with a CSI MBX1 beacon receiver supplying USCG correctors for DGPS navigation. Ashtech receivers were automatically initialized by HSDUtils and the CSI MBX1 units were preset to the appropriate station and frequency.

I.2 Accuracy requirements were met as specified by the Hydrographic Manual and Field Procedures Manual (FPM). The Horizontal Dilution of Precision (HDOP) and Expected Position Error (EPE) specified by the FPM were monitored during on-line data collection. If the positioning degraded beyond the acceptable limits while on-line, the data were either smoothed or rejected.

I.3 Differential GPS Equipment:

The serial numbers of the Ashtech Sensor and CSI MBX1 receivers on the data acquisition platforms are as follows:

Vessel	Device	Serial Number
2930 (WTEW)	Ashtech Sensors	700417B1203 (system A) 700417B1191 (system B)
	CSI MBX1	X-1318 (system A) X-1081 (system B)
2931 (1015)	Ashtech Sensor	700417B1194
	CSI MBX1	X-1088
	Maxon SM-3010H	20813457
2932 (1014)	Ashtech Sensor	700417B1055
	CSI MBX1	X-1079

I.4 Correctors were received from the Charleston, SC, and Cape Canaveral, FL radiobeacons.

I.5 a. DGPS performance checks on NOAA Ship WHITING were determined by using Shipboard Data Integrity Monitor program (**"SHIPDIM"**, Version 2.1), according to section 3.4.5 of the FPM. The position determined using correctors from the Charleston, SC DGPS tower was compared to the position determined using correctors from the Cape Canaveral, FL DGPS beacon using two independent DGPS systems. SHIPDIM routinely showed the positions given by the two systems to be within 2-3 meters of each other. See SHIPDIM PERFORMANCE CHECKS in Separate III for system checks.*

I.5 b. DGPS performance checks for launch 1014 and launch 1015 were conducted while secured in the WHITING davits using correctors from the Charleston, SC DGPS tower. Simultaneous HYPACK positions were compared with WHITING. An offset in distance and azimuth was then calculated between the ship and launch system. All DGPS performance checks confirmed that the equipment was working properly. See SHIPDIM PERFORMANCE CHECKS in Separate III for system checks.

I.7 a. There were no unusual methods used to operate or calibrate electronic positioning equipment.

I.7 b. There were no equipment malfunctions.

I.7 c. No unusual atmospheric conditions affected data quality.

I.7 d. No systematic errors were detected which required adjustments.

I.7 e. The maximum allowed HDOP value of 5.70 was never exceeded.

I.8 f. DGPS antenna offsets were measured on March 19, 1993, for WHITING. Offsets and laybacks were measured using the high frequency echosounder transducer as the reference. Correctors were entered into Offset Table 9.* The DGPS antennae were installed on launches 1014 and 1015 on April 2, 1996, directly over the echosounder transducer. Antenna height was also measured on the same respective dates shown above, using the water line as the reference. The offsets and laybacks were applied by HYPACK on-line. Correctors were entered into Offset Table 1* for launch 1015 and Table 2* for launch 1014. A minimum of four satellites were used during surveys H-10764 and H-10769 providing altitude unconstrained positioning.

* FILED WITH THE ORIGINAL FIELD RECORDS

I.9.g. Offset, layback and height corrections for the launches aft towing boom were measured on July 28, 1993, verified on April 5, 1994, and applied by HYPACK on-line. Correctors were entered into Offset Table 1* for launch 1015 and Table 2* for launch 1014. Offset, layback and height for WHITING's A-frame was measured on July 27, 1992, using the forward high frequency transducer as the reference. The offset and layback correctors were adjusted slightly on March 11, 1997, due to a small shift of the A-frame. Correctors were entered into Offset Table 9.*

These offsets, along with the cable length, towfish height, and depth of water, were used by the HPS system to compute the position of the towfish. Copies of HPS Offset Tables 1, 2 and 9 are contained in Separate III.*

J. SHORELINE

No shoreline is contained within the boundaries of these surveys.

K. CROSSLINES

K.1 A combined total of 247.25 nautical miles of crosslines were acquired for H-10764. This represents 29.4% of the 840.8 nautical miles of mainscheme hydrography. A combined total of 123.95 nautical miles of crosslines were acquired for H-10769. This represents 14.5% of the 856.4 nautical miles of mainscheme hydrography. Mainscheme hydrography miles were calculated using 200-meter line spacing.

K.2 A plot of all main scheme soundings in feet, superimposed with cross lines, was used to conduct main scheme-to-cross line comparisons. Soundings at intersections were compared to all other soundings within a 2.5-mm (50-meter) radius. Based on this procedure, agreement between main scheme and cross line soundings was found to be excellent. The majority of compared soundings fell within 1 foot of each other, with only an occasional difference of 2 feet noted along contour lines.

* FILED WITH THE ORIGINAL FIELD RECORDS

L. JUNCTIONS See Also the Evaluation Report

L.1 On its north edge, survey H-10764 junctions with survey H-10780. H-10780 is sheet "A" of OPR-G311-WH, with a scale of 1:20,000. A comparison of data collected on H-10764 to that on H-10780 proved no significant differences between soundings exist. Generally agreement was excellent, with an occasional 1 to 2 foot difference. Survey H-10769 does not junction with any surveys other than H-10764. A comparison of data collected on H-10769 to that on H-10764 proved no significant differences between soundings exist. Generally agreement was excellent, with an occasional 1 to 2 foot difference.

M. COMPARISON WITH PRIOR SURVEYS See Also the Evaluation Report.

M.1 A comparison with prior surveys is not required for these surveys, as stated in the Hydrographic Project Instructions for OPR-G311-WH.

N. ITEM INVESTIGATION REPORTS See Also the Evaluation Report

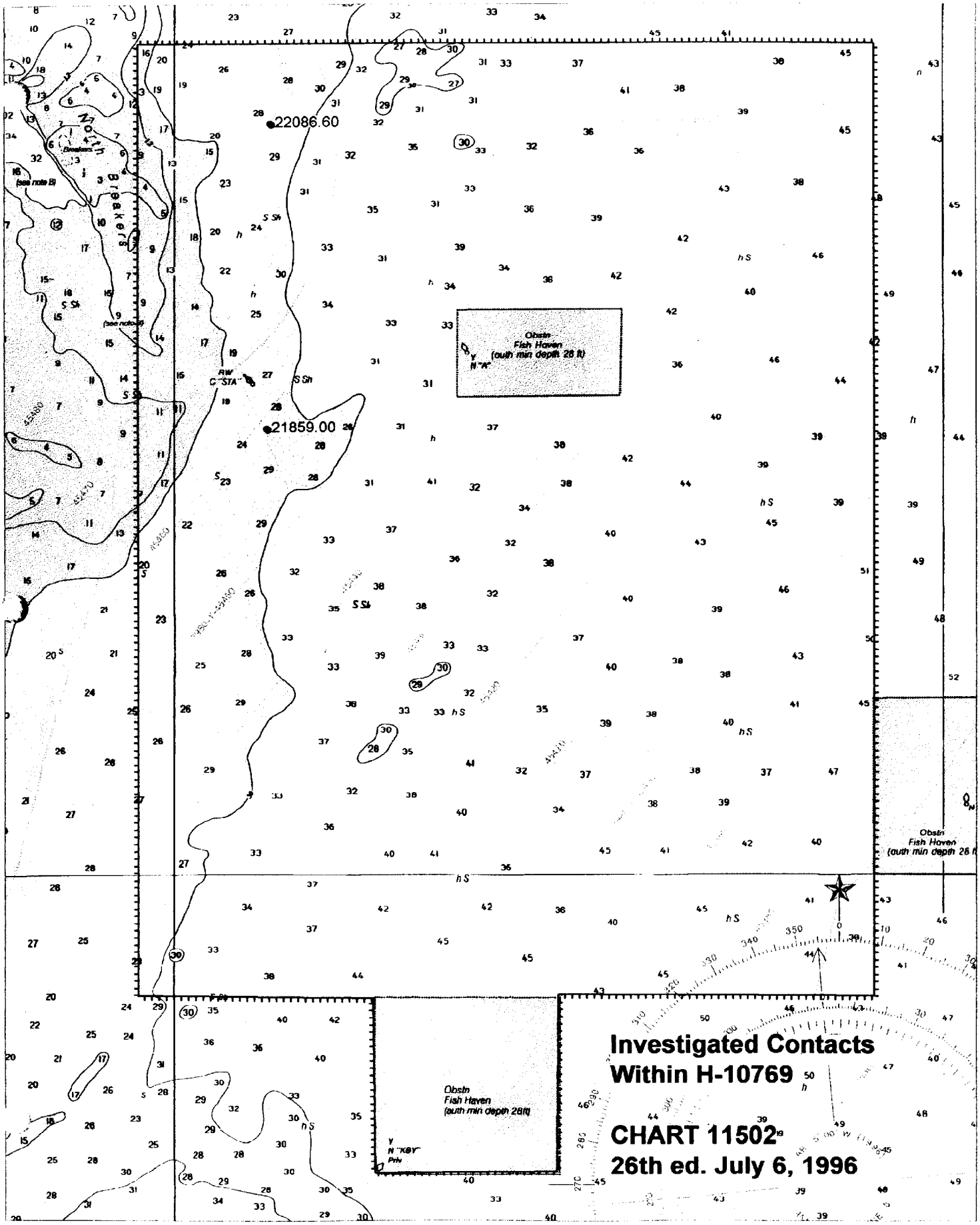
N.1 Within the survey limits of H-10764, there are several AWOIS items located in areas too shoal for echosounder development. A visual search was performed for many of these items. It should be noted that along the north edge of the Brunswick Harbor-Bar Channel there are several shoal to bare areas between buoys R "14" and R "6".

N.2 Within the survey limits of H-10764, contacts 32107.4 and 4098.39 were found near the entrance to Brunswick Harbor-Bar Channel and were the subject of diver investigations. Contact 32107.4 was found to be a sunken U.S. Coast Guard navigation buoy. The Coast Guard was notified of the surveyed position of contact 32107.4 and is currently scheduling removal of the buoy. Contact 4098.39 was determined to be the concrete anchor block. This anchor block's least depth is deeper than the controlling depth of the channel, no charting change is recommended for this item. The USACE Savannah District was notified of the surveyed position of contact 4098.39 for dredging considerations. The Brunswick Bar Pilots association was also notified of the surveyed positions of these items. A letter was sent to USCGC MADRONA on October 28, 1997 stating the surveyed position of contact 32107.4. A copy of this letter can be found in appendix VI of this report. No danger to navigation letter was submitted for either contact stated above.

N.3 Included with survey H-10769 is a fish haven joining the southern edge of the survey limits. This area covers 4.25 square nautical miles and has a minimum authorized depth of 28 feet. 200% side scan sonar was obtained in this area and all significant contacts were recorded in the contact table. No depths shoaler than ~~31.5~~ 34 feet were recorded for this area. This least depth was computed from side scan sonar contacts.

N.4 AWOIS items within the survey area for H-10764 / H-10769 that were investigated and are addressed in this report are 480, 481, 482, 9871, 9874, 9875, 9876 and 9877. Individual investigation reports are contained in this section. See the following page diagram for location of all items.

N.5 Due to water depth and safe navigation considerations, five AWOIS items within the survey area for H-10764 / H-10769 could not be addressed with a survey vessel. These items are 9872, 9873 and 9878.


22086.60
21859.00
Obstn
Fish Haven
(auth min depth 28 ft)
Obstn
Fish Haven
(auth min depth 28ft)
Investigated Contacts
Within H-10769
CHART 11502
26th ed. July 6, 1996

PAGES 14 THROUGH 25 WERE OMITTED FROM THE DESCRIPTIVE REPORT BECAUSE THEY PERTAIN TO HYDROGRAPHIC SURVEY H10764. THIS DATA CAN BE FOUND IN THE DESCRIPTIVE REPORT FOR H10764.

CONTACT NO: 21859.00

Item Description: Anchor

Source:

AWOIS Position:

Required Investigation: **Radius:**

Charts Affected: 11502

INVESTIGATION

Date(s): 10/26/97 (DN: 279)

Position Numbers: 5844

Investigation Used: DI

Surveyed Position: Lat. 30°55'03.078"N Lon. 081°18'47.083"W

Position Determined By: Differential GPS

Investigation Summary: After being covered with 200% side scan sonar, a contact was found at the surveyed position listed above. A dive was conducted on contact #21859.00, where divers found a large fluke anchor. A least depth (corrected with predicted tides) of 8.1 meters was found.

CHARTING RECOMMENDATION

Recommendation: Based on the results of survey H-10769, the hydrographer recommends charting an obstruction at the surveyed position with a depth (corrected with ~~predicted~~ APPROVED tides) of 26~~,58~~ feet. CONCUR

CHART A 126; OBSTN

CONTACT NO: 22086.60

Item Description: Obstruction

Source:

AWOIS Position:

Required Investigation: **Radius:**

Charts Affected: 11502

INVESTIGATION

Date(s): 11/19/97 (DN: 323)

Position Numbers: 7929

Investigation Used: DI

Surveyed Position: Lat. 30°58'30.865"N Lon. 081°18'43.988"W

Position Determined By: Differential GPS

Investigation Summary: After being covered with 200% side scan sonar, a contact was found at the surveyed position listed above. A dive was conducted on contact #22086.60, where divers found a metal object with a commercial nets hanging on one side. A least depth (corrected with predicted tides) of 8.0 meters was found.

CHARTING RECOMMENDATION

Recommendation: Based on the results of survey H-10769, the hydrographer recommends charting an obstruction at the surveyed position with a depth (corrected with ~~predicted~~ Approved tides) of ~~26.27~~ 25 feet. Concur.

Chart a 25; Obstn

N.5 The following is a list of contacts investigated with nothing found or were considered insignificant:

Contact Number	Easting	Northing	Remarks
Survey H-10764:			
65.65	40299.6	38815.0	
4135.27	32662	28560	
5563.61	30864.6	28645.0	Buoy Anchor in use
5563.83	30882.5	28617.9	Buoy Anchor in use
8131.87	28057.1	26246.8	
10360.15	25251.1	25288.7	
11305.7	25153.3	28676.9	
12251.15	24615.2	28435.8	
14357.46	30740.6	40402.4	
25765.2	36624	34663	
26913.4	23714.8	28704.3	
27796.58	30033.9	25358.8	
43547.4	40975	37844	
44917.34	41023	28545	
49281.73	40363.8	33627.8	
49498.42	40024	32301	
49769.88	43870	32629	
55522.98	37626	29483	
59044.05	36814.5	29762.8	
59788.21	42462.9	28107.3	
Survey H-10769:			
3467.38	26770.6	9742.7	
20169.95	29035.3	28840.6	
20247.45	21374.5	21934.9	
58138.59	34749.7	18121.9	
75230.39	29648.8	6728.3	Fish Haven

O. COMPARISON WITH THE CHART

See also the Evaluation Report

O.1 Five charts are affected by these surveys (H-10764 & H-10769):

Chart 11009
"Cape Hatteras to Straits of Florida"
34th Ed. 23 January 1993
Scale: 1:1,200,000

Chart 11480
"Charleston Light to Cape Canaveral"
33rd Ed. 6 April 1996
Scale: 1:449,659

Chart 11502
"Doboy Sound to Fernandina"
26th Ed. 6 July 1996
Scale: 1:80,000

Chart 11504
"St. Andrews Sound and Satilla River"
13th Ed. 26 January 1991
Scale: 1:40,000

Chart 11506
"St. Simons Sound, Brunswick Harbor and Turtle River"
37th Ed. 4 May 1996
Scale: 1:40,000

O.2 No Danger to Navigation reports were submitted for these surveys.

O.3 a. Overall, the soundings acquired in these surveys correlated well with charted depths. Survey depths were converted from meters to feet and overlaid on the largest scale chart of the area using MapInfo software. Depending on geographic area, depths showed minor shoaling and deepening when compared to charted soundings.

O.3 b. In general, survey depths were deeper than charted depths. Differences of 1 to 3 feet were common, with and occasional difference of 5 feet.

P. ADEQUACY OF SURVEY SEE ALSO THE EVALUATION REPORT

These surveys are complete and fully adequate to supersede prior survey data within common areas.

Q. AIDS TO NAVIGATION *See also the Evaluation Report*

Q.1 The survey limits for sheet "B" (H-10764) contain seventeen aids to navigation, as listed in the table below.

Detached Positions			
Nav. Aid	**Light List**	**Description**	**Difference between Charted and Survey Positions**
RW "STS"	Yes	Red & White w/red spherical top. Lighted/Whistle	66 meters
G "1"	Yes	Green lighted	22 meters
R "2"	Yes	Red lighted	40 meters
G "3"	Yes	Green lighted bell	45 meters
R "4"	Yes	Red lighted	29 meters
G "5"	Yes	Green lighted	5 meters
R "6"	Yes	Red lighted	32 meters
G "7"	Yes	Green lighted bell	32 meters
R "8"	Yes	Red lighted	8 meters
G "9"	Yes	Green lighted	15 meters
R "10"	Yes	Red lighted	17 meters
G "11"	Yes	Green lighted bell	12 meters
R "12"	Yes	Red lighted	37 meters
Y C "A"	No	Not lighted	21 meters
Y C "B"	No	Not lighted	24 meters
Y C "N"	No	Not lighted	970 meters
R "2B"	No	Red lighted/whistle 4 sec. flashing	29 meters

Detached positions (DP's) of navigation aids taken during these surveys were compared to positions on chart 11502 using **MapInfo**. The fish haven buoy Y C "N" is located approximately 970 meters from its charted position. The charted name (Y N "F") is also incorrect. Both position and name should adjusted to reflect detached position data. No other adjustments to these charted positions are recommended.

Q.2 The survey limits for sheet "C" (H-10769) contain two aids to navigation, as listed in the table below.

Detached Positions			
Nav. Aid	**Light List**	**Description**	**Difference between Charted and Survey Positions**
RW C "STA"	No	Not lighted	108 meters
Y N "A"	No	Not lighted	8 meters

Detached positions (DP's) of navigation aids taken during these surveys were compared to positions on chart 11502 using **MapInfo**. Buoy RW C "STA" is located 108 meters from its charted position. Buoy location should be adjusted to reflect detached position data. No other adjustments to these charted positions are recommended. Concur

R. STATISTICS

For Sheet "B" (H-10764):

R.1	a.	Number of Non-Rejected Positions 56253
	b.	Linear Nautical Miles (Side Scan Sonar). 2527.21
		Linear Nautical Miles of Hydrography Without the Use of Side Scan Sonar 276.74
R.2	a.	Square Nautical Miles of Hydrography 90.0
	b.	Days of Production 48
	c.	Detached Positions 32
	d.	Bottom Samples 23
	e.	Tide Stations 1
	g.	Velocity Casts 11

For Sheet "C" (H-10769):

R.1	a.	Number of Non-Rejected Positions 48927
	b.	Linear Nautical Miles (Side Scan Sonar). 2314.37
		Nautical Miles of Hydrography Without the Use Without the Use of Side Scan Sonar 183.51
R.2	a.	Square Nautical Miles of Hydrography 88.2
	b.	Days of Production 46
	c.	Detached Positions 4
	d.	Bottom Samples 12
	e.	Tide Stations 1
	g.	Velocity Casts 8

S. MISCELLANEOUS See Also the Evaluation Report.

S.2 Bottom samples were taken at 4000-meter intervals. Samples were examined for composition and consistency, then stored in plastic bags and sent to the Smithsonian Institution.

S.3 An acoustic Doppler current profiler (ADCP) was deployed at latitude 31°08.01'N, longitude 081°24.22'W on day number 233. The purpose of this deployment was to obtain current measurements in St. Simon's Sound Entrance for at least 32 days. Ocean and Lake Levels Division (OLLD) and WHITING personnel were responsible for deployment and retrieval of the current meter. OLLD personnel were responsible for downloading of data collected. The current meter was retrieved on day number 281.

T. RECOMMENDATIONS

T.1 The data acquired for these surveys showed only minor deepening within the survey limits. No further survey work is recommended.

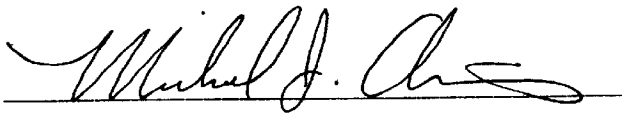
T.2 No present or planned construction or dredging should affect the results of these surveys.

T.3 Aside from the items mentioned in section T.1, no further investigation of the survey area is recommended.

U. REFERRAL TO REPORTS

No reports or data are referred to in this Descriptive Report that are not included with these surveys.

This report and the accompanying field sheets are respectfully submitted.



Michael J. Annis
Physical Scientist
Atlantic Hydrographic Branch

APPENDIX VII

APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NO. H-10769

Field operations contributing to the accomplishment of this basic hydrographic survey were conducted under my direct supervision with frequent personal checks of progress and adequacy. All field sheets and reports were reviewed in their entirety and all supporting records were checked as well.

This survey is more than adequate to supersede ALL prior surveys in common areas. This survey is considered complete and adequate for nautical charting.

John W. Humphrey, LCDR, NOAA
Commanding Officer
NOAA Ship WHITING

APPENDIX III

LIST OF HORIZONTAL CONTROL STATIONS

No horizontal control stations were needed for this survey since differential GPS employed exclusively for all positioning control. The geographic positions for the two differential GPS radio beacons used during this survey are as follows:

Charleston, SC	Lat. 32° 45.5 N
298 KHz	Long. 079° 50.6 W
Cape Canaveral, FL	Lat. 28° 27.6 N
289 KHz	Long. 080° 32.6 W

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: April 10, 1998

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-G311-WH
HYDROGRAPHIC SHEET: H-10769

LOCALITY: Georgia, Atlantic Ocean, Approaches to Brunswick

TIME PERIOD: August 7 - November 20, 1997

TIDE STATION USED: 872-0030 Fernandina, FL
Lat. 30° 40.5'N Lon. 81° 27.9'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.908 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SEC168, SEC169, SEC170, SEC178, SEC179, SEC 180, SEC181 & SEC182.
Refer to attachments for zoning information.

Note: Provided time series data are tabulated in metric units (Meters), relative to MLLW and on Greenwich Mean Time.

CHIEF, OPERATIONAL ANALYSIS BRANCH

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10769

Name on Survey	A ON CHART NO.	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)										1
NORTH ATLANTIC OCEAN	X		X							2
ST ANDREW SOUND (title)										3
										4
										5
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										25

Approved

Chief Geographer

NOV 26 1997

NOAA FORM 76-155 SUPERSEDES C&GS 197

09/14/98

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H10769

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	48927
NUMBER OF SOUNDINGS	48927

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	16	11/19/97
VERIFICATION OF FIELD DATA	71	07/29/98
EVALUATION AND ANALYSIS	9	
FINAL INSPECTION	14	07/24/98
COMPILATION	80	09/08/98
TOTAL TIME	190	

ATLANTIC HYDROGRAPHIC BRANCH APPROVAL 07/28/98

NOAA FORM 61-29
(12-71)

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

REFERENCE NO.

N/CS33-81-98

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY *(Check)*:

☐ ORDINARY MAIL ☐ AIR MAIL

☐ REGISTERED MAIL ☒ EXPRESS

☐ GBL *(Give number)* _____

TO:

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

DATE FORWARDED

September 10, 1998

NUMBER OF PACKAGES

1 Box, 1 Tube

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

H10769

Georgia, Approaches to Brunswick

1 Box Containing:

1 **Original Descriptive Report for H10769**
1 Envelope with three (3) HISTORY OF CARTOGRAPHIC WORK (NOAA form 76-71) for H10769 for charts 11502, 11503 and 11504

1 Tube Containing:

1 **Original Smooth Sheet for H10769**
1 Paper Composite plot of survey H10769 for chart 11502
1 Paper Composite plot of survey H10769 for chart 11503
1 Paper Composite plot of survey H10769 for chart 11504
1 Mylar H-Drawing of H10769 for chart 11502
1 Mylar H-Drawing of H10769 for chart 11503
1 Mylar H-Drawing of H10769 for chart 11504

FROM: *(Signature)* R. H. Whitfield

Richard H. Whitfield

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Branch N/CS331
439 W. York Street
Norfolk, VA 23510-1114

NOAA FORM 61-29 SUPERSEDES FORM C&GS 413 WHICH MAY BE USED.

☆U.S.GPO:1983-0-684-006/1192

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10769 (1997)

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
SiteWorks, version 2.01
MicroStation 95, version 5.05
I/RAS B, version 5.01

The smooth sheet was plotted using an Hewlett Packard Design Jet 350C 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 0.853 seconds (26.272 meters or 1.31 mm at the scale of the survey) north in latitude, and 0.681 seconds (18.092 meters or 0.90 mm at the scale of the survey) east in longitude.

L. JUNCTIONS

H10764 (1997) to the North
F00436 (1997) to the Southeast

Standard junctions were effected between the present survey and survey H10764 (1997), And F00436 (1997). There are no junctional surveys to the south, east, and west.

Present survey depths are in harmony with the charted hydrography to the south, east and west.

M. COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not done during office processing in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

O. COMPARISON WITH CHART 11502 (26th Edition, Jul 6/96) 11504 (13th Edition, Jan 1991)

Hydrography

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

1) The charted Obstr fish haven in the vicinity of Latitude 30°56'00"N, Longitude 81°15'00"W was fully developed with 200% side scan sonar and no soundings shoaler than the authorized depth of 28 ft were found.

2) The charted Obstr fish haven in the vicinity of Latitude 30°47'30"N, Longitude 81°16'00"W was fully developed with 200% side scan sonar and no soundings shoaler than the authorized depth of 28 ft were found.

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

P. ADEQUACY OF SURVEY

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

Q. Aids to Navigation

Two private maintained aids were located by this survey and should be charted as shown on the present survey.

S. MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

The following NOS Charts are used for compilation of the present survey:

11502 (26th Edition Jul 6/96)
11503 (37th Edition Nov 29/97)
11504 (14th Edition Dec 13/97)

Robert Snow

Robert Snow
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H-10769

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: 28 July 1998
Robert G. Roberson
Chief, Cartographic Section

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

Andrew L. Beaver Date: 7/28/98
Andrew L. Beaver
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

****

Final Approval:

Approved: Andrew A. Armstrong Date: Sept 16, 1998
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. H10769

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
11503	8/19/98	[signature]	Full Part Before After Marine Center Approval Signed Via
			Drawing No.
11504	8/20/98	[signature]	Full Part Before After Marine Center Approval Signed Via
			Drawing No.
11502	9/3/98	[signature]	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.
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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.