

H10814

NOAA FORM 78-35A	
U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE	
<b>DESCRIPTIVE REPORT</b>	
<i>Type of Survey</i> .....	HYDROGRAPHIC .....
<i>Field No.</i> .....	WH-10-08-98 .....
<i>Registry No.</i> .....	H10814 .....
<b>LOCALITY</b>	
<i>State</i> .....	FLORIDA .....
<i>General Locality</i> .....	NORTH ATLANTIC OCEAN .....
<i>Sublocality</i> .....	6NM EAST OF .....
	FERNANDINA BEACH .....
	<u>19 98</u>
	<b>CHIEF OF PARTY</b>
	LCDR. J. W. HUMPHREY, NOAA .....
<b>LIBRARY &amp; ARCHIVES</b>	
<b>DATE</b> .....	SEP 16 1998 .....

\*U.S. GOV. PRINTING OFFICE: 1987--758-980

REFERENCE NO.

N/CS33-80-98

LETTER TRANSMITTING DATA

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

- ORDINARY MAIL
- AIR MAIL
- REGISTERED MAIL
- EXPRESS
- GBL (Give number) \_\_\_\_\_

TO:

CHIEF, DATA CONTROL GROUP, N/CS3x1  
 NOAA/NATIONAL OCEAN SERVICE  
 STATION 6815, SSMC3  
 1315 EAST-WEST HIGHWAY  
 SILVER SPRING, MARYLAND 20910-3282

DATE FORWARDED

SEPTEMBER 9, 1998

NUMBER OF PACKAGES

ONE 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.

H10814

FLORIDA, NORTH ATLANTIC OCEAN, 6NM EAST OF FERNANDINA BEACH

(ONE) TUBE CONTAINING THE FOLLOWING:

- ✓ 1 SMOOTH SHEET FOR SURVEY H10814
- ✓ 1 ORIGINAL DESCRIPTIVE REPORT
- ✓ 2 DRAWING HISTORY FORMS (NOAA FORM #76-71) 1 EACH FOR NOS CHARTS 11502 AND 11503
- ✓ 1 RECORD OF APPLICATION TO CHART FORM (NOAA FORM #75-96) FOR SURVEY H10814
- ✓ 1 H-DRAWING FOR NOS CHART 11502
- ✓ 1 H-DRAWING FOR NOS CHART 11503
- ✓ 1 COMPOSITE DRAWING FOR NOS CHART 11502
- ✓ 1 COMPOSITE DRAWING FOR NOS CHART 11503

FROM: (Signature)

Deborah A. Bland

RECEIVED THE ABOVE

(Name, Division, Date)

Return receipted copy to:

ATLANTIC HYDROGRAPHIC BRANCH  
 N/CS33  
 439 WEST YORK STREET  
 NORFOLK, VA 23510-1114

Rec'd  
 George Meyer  
 Hydrographic Division  
 9-10-98

REGISTRY NUMBER:

H10814

**HYDROGRAPHIC TITLE SHEET**

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

FIELD NUMBER:

WH-10-8-98

State: Florida

General locality: North Atlantic Ocean

Locality: Approaches to Jacksonville GNM East of Fernandina Beach

Scale: 1:10,000 Date of survey: May 21 - June 1, 1998

Instructions dated: March 20, 1998 Project Number: OPR-G354-WH

Vessel: NOAA Ship WHITING

Chief of Party: LCDR John W. Humphery

Surveyed by: LCDR John W. Humphery, LT J.S. Verlaque, LT(jg) T.A. Haupt, M.J. Annis, R. Corson, F.R. Cruz, U.L. Gardner, P.G. Lewit, 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 750 (FIELD) HP 350 Plotter (ATH)

Verification by: Hydrographic Surveys Branch

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 / SURF ✓ 9/11/98 SJV

OPR-G354-WH

Approaches to Jacksonville

H10814 Sheet G

Chart 11502 26th Ed.

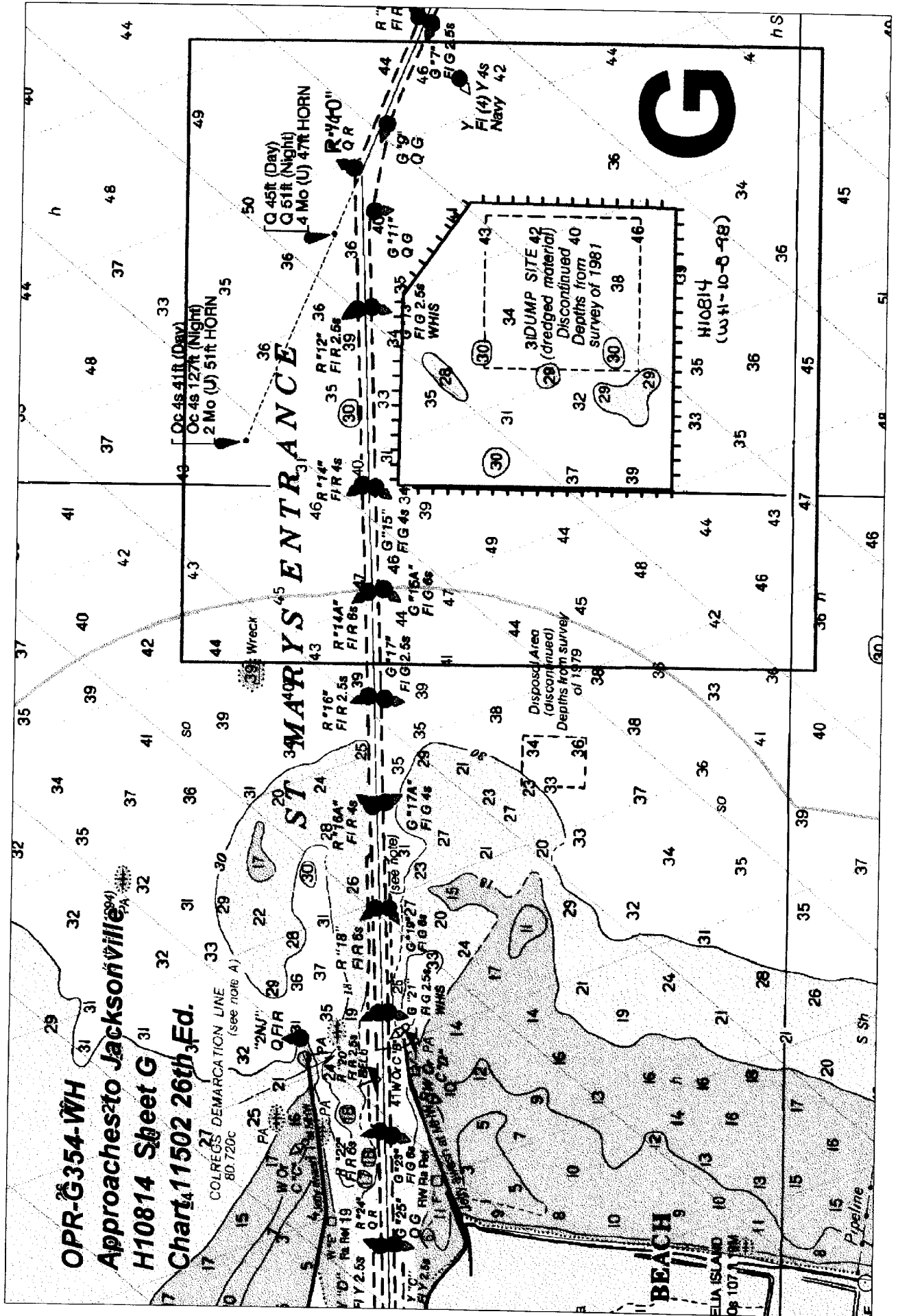


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APPENDICES

SEPARATES

**A. PROJECT**

A.1 This survey was conducted in accordance with Hydrographic Project Instructions OPR-G354-WH, basic hydrographic survey, Atlantic Ocean, Approaches to Jacksonville, Florida.

Replace  
w/ FE DR  
TEXT

~~A.2 The original instructions are dated March 20, 1998.~~

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

A.4 This Descriptive Report covers H10814 (sheet "G") of OPR-G354-WH. H10814 lies 6.0 nautical miles east of Fernandina Beach, Florida. See section B.2 for exact survey boundaries.

A.5 Project OPR-G354-WH responds to requests from the Jacksonville Waterway Management Council. The council is concerned that enhancement and construction of artificial reefs in the approaches to St. Johns River will reduce detail on NOS charts covering the area. This area is host to U.S. Naval vessels, commercial deep-draft vessels and tugs engaged in towing operations.

**B. AREA SURVEYED**

B.1 This survey covers the navigable area of the Approaches to Jacksonville, Florida. It is bounded on the west by approximate longitude 81°<sup>20</sup>21'W, and on the east by approximate longitude 81°<sup>17'43"</sup>16'W. The northern and southern approximate limits are latitudes 30°<sup>42'30"</sup>44'N and 30°<sup>40'45"</sup>39'N, respectfully.

B.2 The survey comprises one sheet with the following boundaries, starting at the SE corner and proceeding clockwise:

Sheet "G":

- 1. 30°<sup>40'45"</sup>39'N 081°<sup>17'43"</sup>16'W
- 2. 30°<sup>42'30"</sup>44'N 081°<sup>17'43"</sup>21'W
- 3. 30°<sup>42'30"</sup>44'N 081°<sup>17'43"</sup>21'W
- 4. 30°<sup>40'45"</sup>39'N 081°<sup>17'43"</sup>16'W

B.3 Data collection for this survey began on May 21, 1998 (DN 141). Data collection ended on June 1, 1998 (DN 152).

\*Change No.1. was issued on April 30, 1998.

**C. SURVEY VESSELS**

C.1 The following vessels were used during this survey:

<b>Vessel</b>	<b>EDP Number</b>	<b>Primary Function</b>
NOAA Ship Whiting	2930 (WTEW)	Hydrography and Side Scan Operations
NOAA Launch WH-2	2932 (1014)	Hydrography and Side Scan Operations

C.2 No unusual vessel configurations were used during this survey.

**D. AUTOMATED DATA ACQUISITION AND PROCESSING** *See also Evaluation Report*

D.1 All software used for data acquisition and processing are contained on the **HYDROSOFT 8.2 (plus updates as of 4/22/98)** compact disc provided by Atlantic Hydrographic Branch (N/CS33). The following is a list of software used from this disc:

**HYPACK for Windows version 7.1a**  
**HSD Utilities**  
**Hydrographic Processing System**  
**HPTools**

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 3.1, February 1998) 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 the survey.

E.4 a. E.4 a. During survey preparation, it was determined that the depth of water in the survey area would require only one range scale to cover the entire sheet. A range scale 75 meters was used with a line spacing of 60 meters. This range scale was 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 passes by bottom features such as sand waves, scours and substrate density changes. These features were annotated on the sonargram.

E.4 c. 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. There were no degraded data returns collected during this survey.

E.4 e. 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 launch 1014 the SSS towfish was deployed using a Superwinch in conjunction with an adjustable davit arm on the stern. The SSS towfish was towed with 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. Singlebeam echosounder was also utilized for contact investigation, using a line spacing of 10 meters. 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 4.5**.

**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 H10814:

Cast Number	Day No.	Vessel Covered	Position of Cast		Days Covered
			Latitude	Longitude	
49	141	WHITING	30°40'18"N	081°18'06"W	141
50		Launches			
55	148	WHITING	30°41'12"N	081°17'54"W	148-152
56		Launches			

d. Leadline Comparison

Dual leadline comparisons with the DSF-6000N were conducted for WHITING during OPR-G354-WH (H10814) on:

DN 148 at 30°41'06"N and 081°06'36"W (45 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.\*

A leadline comparison was performed for the launches on:

DN 133 at 30°23'42"N and 081°22'48"W (15 ft depths)

DN 150 at 30°24'15"N and 081°24'26"W (15 ft depths)

DN 151 at 30°42'21"N and 081°18'22"W (45 ft depths)

Weather and sea conditions were fair and proved satisfactory for performing the barcheck and leadline comparisons. No corrections to soundings were needed. Copies of the leadline 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 (v3.1) to calculate least depth measurements.

f. Static Draft

The static draft correction for launches 1014 is 0.55 meters, and was measured on July 28, 1993. The corrector was entered into HPS Offset Table 2. 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 16, 1998, and were entered into HPS Offset Table 2.\* 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.

h. Heave, Roll, and Pitch Correctors

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

Vessel	Serial Number
2930	2066
2932	2068

G.2 The WHITING and its launches employed no unusual or unique methods or instruments to correct echo soundings.

G.6 Tide Correctors

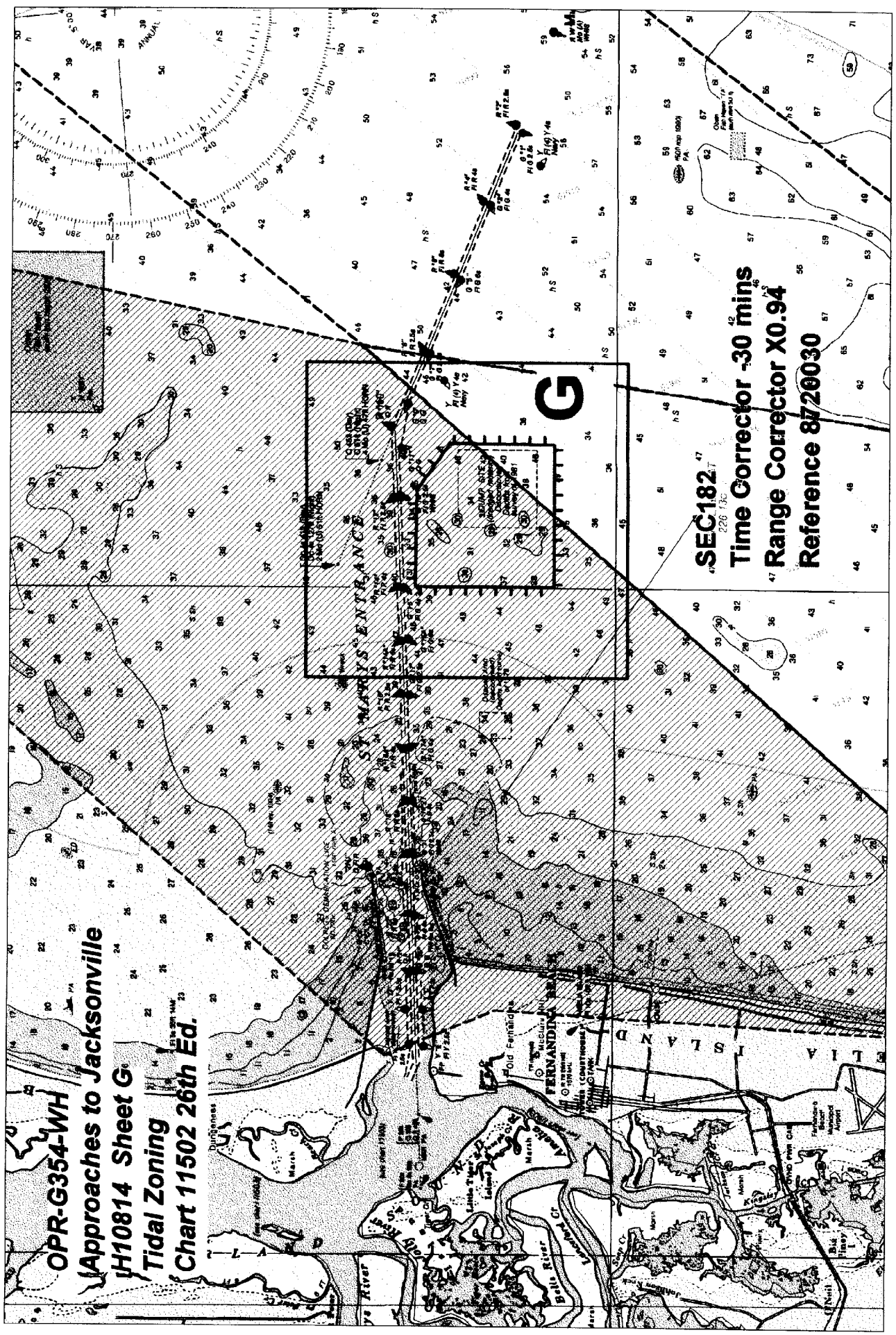
a. The tidal datums for this project are Mean Lower Low Water (MLLW) and Mean High Water (MHW). Soundings are referenced to MLLW. Heights of bridges and cables are referenced to MHW. The operating tide station at Fernandina Beach, Florida (872-0030) served as control for datum determination.

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 SEC182 correctors were applied to all H10814 data using the predicted tides utility in HPS. All proper zones will be applied through HPS upon receipt of smooth tides from N/OES234. See following page for location of zone SEC182.

c. 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.

Smooth tides for H10814 were requested from N/OES234 in a letter mailed and dated June 29, 1998. *Approved tides and zoning were applied during office processing*

*\* Data filed with original field records*



**OPR-G354-WH**  
**Approaches to Jacksonville**  
**H10814 Sheet G**  
**Tidal Zoning**  
**Chart 11502 26th Ed.**

**SEC182**  
Time Corrector -30 mins  
Range Corrector X0.94  
Reference 8720030

**G**

**H. CONTROL STATIONS** - See also the Evaluation Report

The horizontal datum for this survey is the North American Datum of 1983 (NAD 83). No horizontal control stations were established for this survey.

**I. HYDROGRAPHIC POSITION CONTROL**

I.1 This survey was 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:

<u>Vessel</u>	<u>Device</u>	<u>Serial Number</u>
2930 (WTEW)	Ashtech Sensors	700417B1203 (system A) 700417B1191 (system B)
	CSI MBX1	X-1318 (system A) X-1081 (system B)
2932 (1014)	Ashtech Sensor	700417B1055
	CSI MBX1	X-1079

I.4 Correctors were received from the Cape Canaveral, FL, and Charleston, SC 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 2-4 meters of each other.

I.5 b. DGPS performance checks for launch 1014 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. A summary of the DGPS performance checks is included in the Separates, section III. All DGPS performance checks confirmed that the equipment was working properly.

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 4.0 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 launch 1014 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. Correctors were entered into Offset Table 2\* for launch 1014. A minimum of four satellites were used during survey H10814 providing altitude unconstrained positioning.

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 HPS during post processing. Correctors were entered into Offset Table 2 for launch 1014. Offset, layback and height for WHITING's A-frame was measured on March 18, 1998, using the forward high frequency transducer as the reference. 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 2 and 9 are contained in Separate III.\*

**J. SHORELINE**

No shoreline is contained within the boundaries of this survey.

**K. CROSSLINES - See also Evaluation Report**

No crosslines were acquired for this survey due to irregular submarine relief in the survey area.

**L. JUNCTIONS - See also Evaluation Report**

H10814 does not junction with any other survey.

**M. COMPARISON WITH PRIOR SURVEYS - See also Evaluation Report**

A comparison with prior survey depths is not required for this survey, due to completion of 200% side scan sonar.

**N. ITEM INVESTIGATION REPORTS**

N.1 H10814 was an investigation of a discontinued dumpsite near the entrance to St. Marys River. 200% side scan sonar was obtained within the limits of hydrography and no significant contacts were found. The hydrographer recommends updating charted depths with survey soundings and removal of the dashed lines delineating the charted discontinued dump site and the associated charted text at lat.  $30^{\circ}41'23.320''N$ , lon.  $081^{\circ}18'30.600''W$ . Charts affected by this dump site investigation are 11480, 11502 and 11503. *Concur*

*Remove dump limits and all associated notes.*



CONTACT NO: 3222.35

Item Description: Obstruction

Source: H10814

AWOIS Position:

Required Investigation: Echosounder Radius: None

Charts Affected: 11502, 11503

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INVESTIGATION

Date(s): 1 June 1998 (DN 152)

Position Numbers: 3767.9

Investigation Used: ES

Surveyed Position: Lat. 30°42'16.566"N Lon. 081°19'27.617"W

Position Determined By: Differential GPS

Investigation Summary: Side scan sonar contact number 3222.35 was found during mainscheme hydrography and then investigated with singlebeam echosounder. A least depth (corrected with predicted tides) of 10.7 meters (35.1<sup>0</sup> feet) was found.  
*smooth*

---

CHARTING RECOMMENDATION

Recommendation: Based on the results of this survey, the hydrographer recommends no charting change due to the surrounding survey depths. Charted depths in this area should be updated to reflect survey data. *Do not concur*

*Chart a (35) Obstr in the present survey location*

O. COMPARISON WITH THE CHART - See also Evaluation Report

O.1 Three charts are affected by this survey (H10814):

Chart 11480  
"Charleston Light to Cape Canaveral"  
35<sup>th</sup> Ed. 9 May 1998  
Scale: 1:449,659

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

Chart 11503  
"Cumberland Sound - Fernandina Harbor to Kings Bay"  
37<sup>th</sup> Ed. 29 November 1997  
Scale 1:20,000

O.2 No Danger to Navigation reports were submitted for this survey.

O.3 a. Overall, the soundings collected for this survey correlated fairly 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 generally 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. *cmur*

P. ADEQUACY OF SURVEY . See also Evaluation Report

This survey is complete and fully adequate to supersede prior survey data within common areas. *cmur*

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

Q.2 The survey limits for sheet H10814 contain five aids to navigation:

<b>Detached Positions</b>			
<b>Nav. Aid</b>	<b>Light List</b>	<b>Description</b>	<b>Difference Between Charted And Survey Positions</b>
G "7"	Yes	Green Lighted	26 meters
R "8"	Yes	Red lighted	96 meters
G "9"	Yes	Green Lighted	67 meters
R "10"	Yes	Red Lighted	65 meters
G "11"	Yes	Green Lighted	54 meters
R "12"	Yes	Red Lighted	37 meters
G "13"	Yes	Green Lighted	47 meters
R "14"	Yes	Red Lighted	16 meters
G "15"	Yes	Green Lighted	14 meters
R "14 A"	Yes	Red Lighted	36 meters
G "15 A"	Yes	Green Lighted	57 meters
R "16"	Yes	Red Lighted	48 meters
G "17"	Yes	Green Lighted	126 meters
4 Mo (U) Range Front	Yes	Lighted KRW on tower	7 meters
2 Mo (U) Range Rear	Yes	Lighted KRW on tower	10 meters

**R. STATISTICS**

- R.1 a. Number of Non-Rejected Positions . . . . . 3940
- b. Linear Nautical Miles of Sounding Lines:
  - Nautical Miles of Side Scan Sonar . . . . . 101.32
  - Nautical Miles Hydrography . . . . . 000.99
- R.2 a. Square Nautical Miles of Hydrography . . . . . 3.3
- b. Days of Production . . . . . 6
- c. Detached Positions . . . . . 20
- d. Bottom Samples . . . . . 5
- e. Tide Stations. . . . . 1
- g. Velocity Casts . . . . . 2

S. MISCELLANEOUS. See also *Evaluation Report*

S.1 Bottom samples were taken at 2000-meter intervals. Samples were examined for composition and consistency, then stored in plastic bags and sent to the Smithsonian Institution.

T. RECOMMENDATIONS

T.1 No further survey work is recommended.

U. REFERRAL TO REPORTS

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

This report and the accompanying field sheets are respectfully submitted.

A handwritten signature in cursive script, reading "Michael J. Annis". The signature is written in dark ink and is positioned above a horizontal line.

---

Michael J. Annis  
Physical Scientist  
Atlantic Hydrographic Branch

**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

**APPENDIX VII**

**APPROVAL SHEET**

LETTER OF APPROVAL

REGISTRY NO. H10814

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.

A handwritten signature in cursive script, reading "John W. Humphrey", written over a horizontal line.

John W. Humphrey, LCDR, 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: August 10, 1998

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-G354-WH

HYDROGRAPHIC SHEET: H-10814

LOCALITY: Atlantic Ocean, Approaches to Jacksonville, FL

TIME PERIOD: May 21 - June 1, 1998

TIDE STATION USED: 872-0030 Fernandina Beach, 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: SEC170, SEC182 & SEC183

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units  
(Meters), relative to MLLW and on Greenwich Mean Time.

  
-----  
CHIEF, OPERATIONAL ANALYSIS BRANCH





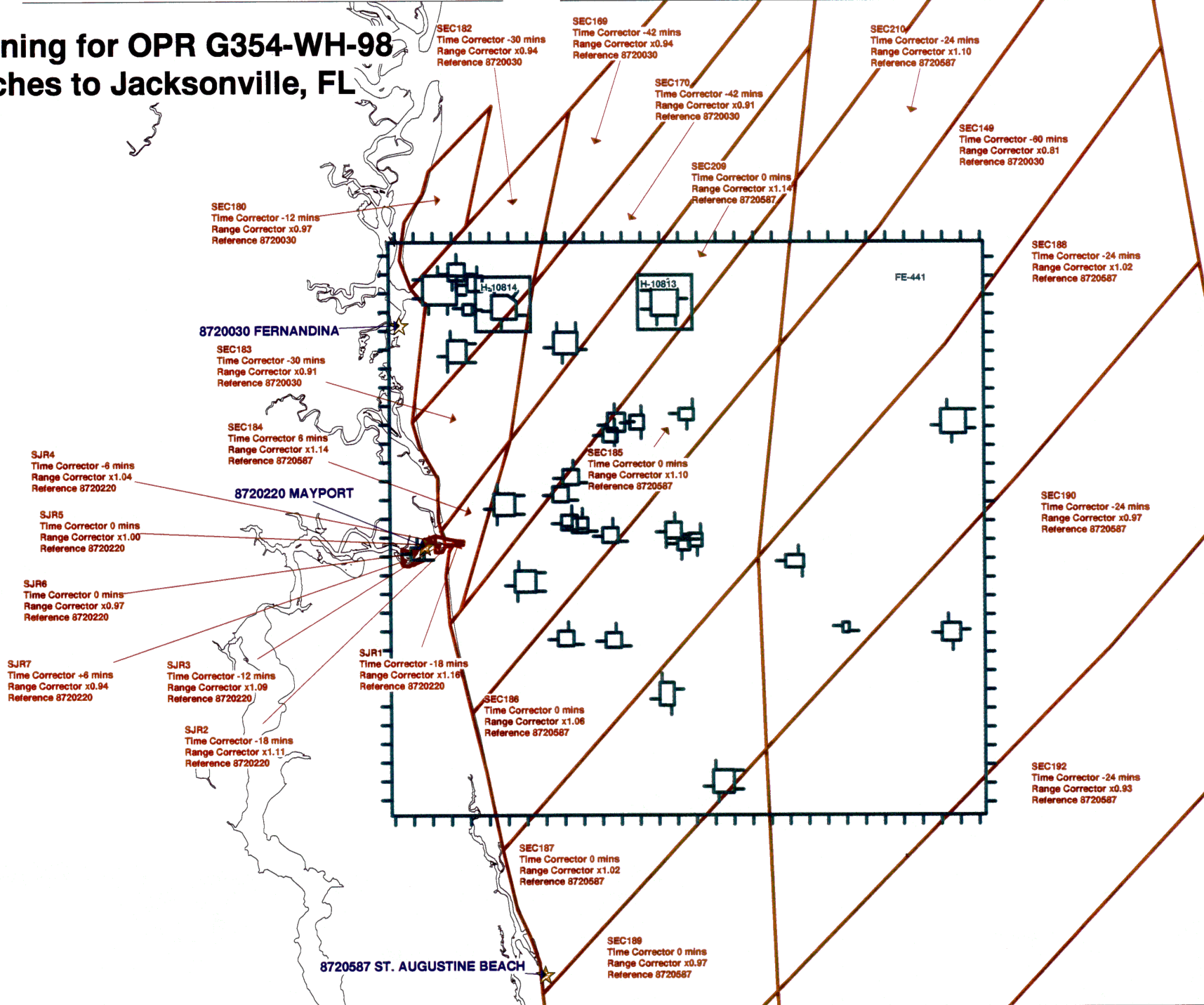
Final tide zone node point locations for OPR G354-WH-98,  
Sheet H-10814.

Format: Longitude in decimal degrees (negative value denotes  
Longitude West),  
Latitude in decimal degrees  
Tide Station (in recommended order of use)  
Average Time Correction (in minutes)  
Range Correction

	Tide Station Order	AVG Time Correction	Range Correction
Zone SEC170			
-81.307354 30.527636	872-0030	-42	0.91
-81.272817 30.720991			
-80.943948 31.072817			
-80.943948 31.072817			
-80.843639 31.198624			
-80.868145 31.019904			
-81.307354 30.527636			
Zone SEC182			
-81.44972 30.717596	872-0030	-30	0.94
-81.218542 30.940138			
-81.272817 30.720991			
-81.448563 30.549619			
-81.428028 30.699065			
-81.434639 30.701509			
-81.44972 30.717596			
Zone SEC183			
-81.412904 30.479789	872-0030	-30	0.91
-81.411846 30.426852			
-81.408447 30.413717			
-81.307354 30.527636			
-81.272904 30.721046			
-81.448563 30.549619			
-81.437839 30.518337			
-81.412904 30.479789			

# Final Zoning for OPR G354-WH-98

## Approaches to Jacksonville, FL



GEOGRAPHIC NAMES

H-10814

Name on Survey	A ON CHART NO. 11502, 11303, 11488 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											
	FLORIDA (title)	X		X								
NORTH ATLANTIC OCEAN	X		X									2
SAINT MARYS ENTRANCE	X		X									3
SAINT MARYS RIVER (title)	X		X									4
												5
												6
												7
												8
												9
												10
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												24
												25

Approved  
*Dennis J. Roseberry*  
 Chief Geographer  
 AUG 14 1998

N/CS33-80-98

LETTER TRANSMITTING DATA

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

- ORDINARY MAIL
- AIR MAIL
- REGISTERED MAIL
- EXPRESS
- GBL (Give number) \_\_\_\_\_

TO:

[ CHIEF, DATA CONTROL GROUP, N/CS3x1 ]  
 NOAA/NATIONAL OCEAN SERVICE  
 STATION 6815, SSMC3  
 1315 EAST-WEST HIGHWAY  
 SILVER SPRING, MARYLAND 20910-3282 ]

DATE FORWARDED

SEPTEMBER 9, 1998

NUMBER OF PACKAGES

ONE 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.

H10814


FLORIDA, NORTH ATLANTIC OCEAN, 6NM EAST OF FERNANDINA BEACH

(ONE) TUBE CONTAINING THE FOLLOWING:

- 1 SMOOTH SHEET FOR SURVEY H10814
- 1 ORIGINAL DESCRIPTIVE REPORT
- 2 DRAWING HISTORY FORMS (NOAA FORM #76-71) 1 EACH FOR NOS CHARTS 11502 AND 11503
- 1 RECORD OF APPLICATION TO CHART FORM (NOAA FORM #75-96) FOR SURVEY H10814
- 1 H-DRAWING FOR NOS CHART 11502
- 1 H-DRAWING FOR NOS CHART 11503
- 1 COMPOSITE DRAWING FOR NOS CHART 11502
- 1 COMPOSITE DRAWING FOR NOS CHART 11503

FROM: (Signature)

Deborah A. Bland



RECEIVED THE ABOVE

(Name, Division, Date)

Return receipted copy to:

[ ATLANTIC HYDROGRAPHIC BRANCH ]  
 N/CS33  
 439 WEST YORK STREET  
 NORFOLK, VA 23510-1114 ]

09/09/98

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NUMBER: H10814

NUMBER OF CONTROL STATIONS		2
NUMBER OF POSITIONS		3927
NUMBER OF SOUNDINGS		3927
	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	59	08/14/98
VERIFICATION OF FIELD DATA	25	08/19/98
EVALUATION AND ANALYSIS	3	
FINAL INSPECTION	3	08/20/98
COMPILATION	14	09/04/98
TOTAL TIME	104	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		08/21/98

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**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR H10814 (1998)**

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 (HPS)  
NADCON, version 2.10  
SITEWORKS 02.01  
MicroStation 95, version 5.05  
I/RAS B, version 5.01

The smooth sheet was plotted using an HEWLETT-PACKARD 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 datum move the projection lines 0.858 seconds (26.420 meters or 2.64 mm at the scale of the survey) north in latitude, and 0.684 seconds (18.216 meters or 1.82 mm at the scale of the survey) east in longitude.

**K. CROSSLINES**

The hydrographer makes the statement in the Descriptive Report, "No crosslines were acquired for this survey due to irregular submarine relief in the survey area."

Section 1.4.2 pages 1-10 and 1-11 of the Hydrographic Manual leaves it up to the hydrographer's discretion whether to run crosslines in areas of very irregular submarine relief, because they are of no value as a hydrographic checking tool in these cases.

**L. JUNCTIONS**

There are no contemporary surveys that junction with the present survey. Present survey depths are in harmony with the charted in the junctional areas.

**M. COMPARISON WITH PRIOR SURVEYS**

A comparison with prior surveys was not performed. This is in accordance with section 4. Of the memorandum titled, "Changes to Hydrographic Survey Processing," dated May 24, 1995.

**O. COMPARISON WITH CHART 11480 (35<sup>th</sup> Edition, May 09/98)  
11502 (26<sup>th</sup> Edition, Jul 06/96)  
11503 (37<sup>th</sup> Edition, Nov 29/97)**

The charted hydrography originates with prior surveys and miscellaneous sources. The hydrographer makes adequate chart comparisons in Section O. of the Descriptive Report.

**P. ADEQUACY OF SURVEY**

This is an adequate hydrographic survey. No additional work is recommended.

**Q. AIDS TO NAVIGATION**

The hydrographer located 13 floating aids, and two fixed aids to navigation. These aids appear adequate to serve their intended purpose. The following should be noted:

Saint Marys Entrance Lighted Buoy "13" is charted as a whistle buoy. U.S. Coast Guard Light List, Volume III, light list number 6545, does not list this as a whistle buoy. It is recommended that the proper characteristics of this buoy be determined and any appropriate change be made to the nautical chart.

**S. MISCELLANEOUS**

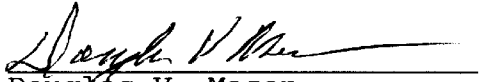
Chart compilation using the present survey was done by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data has been forwarded to Marine Chart Division, Silver Spring, Maryland.

The following NOS charts were used for compilation of the present survey:

11503 (37 <sup>th</sup> Ed., November 29/97)	1:20,000
11502 (26 <sup>th</sup> Ed., July 6/96)	1:80,000



H10814


A handwritten signature in cursive script, appearing to read "Douglas V. Mason", written over a horizontal line.

Douglas V. Mason  
Cartographic Technician  
Verification of Field Data  
Evaluation and Analysis

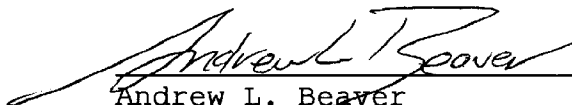
APPROVAL SHEET  
H10814 (1998)

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.

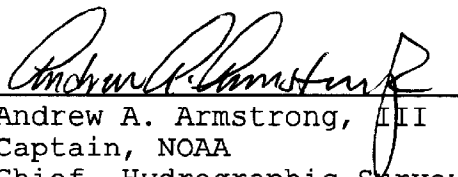
 Date: August 21, 1998  
Robert G. Roberson  
Cartographer  
Chief, Cartographic Section

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

 Date: 8/21/98  
Andrew L. Beaver  
Lieutenant Commander, NOAA  
Chief, Atlantic Hydrographic Branch

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Final Approval:

Approved:  Date: Sept 16, 1998  
Andrew A. Armstrong, III  
Captain, NOAA  
Chief, Hydrographic Surveys Division

MARINE CHART BRANCH  
**RECORD OF APPLICATION TO CHARTS**

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H10814

**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
11502	9/3/98	D. Brouha A. Blain	Full <del> </del> After Marine Center Approval Signed Via Drawing No.
11503	9/2/98	D. Brouha A. Blain	Full <del> </del> 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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