

H10800

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Sur HYDROGRAPHIC/SIDE SCAN SONAR

Field No WH-10-05-98

Registry H10800

LOCALITY

State Florida

General Locality North Atlantic Ocean

Locality Approaches to Jacksonville

1998

CHIEF OF PARTY
LCDR John W. Humphery

LIBRARY & ARCHIVES

DATE DEC 11 1998

REGISTRY NUMBER:

H10800

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-10-5-98

State: Florida

General locality: North Atlantic Ocean

Locality: Approaches to Jacksonville

Scale: 1: 10,000 Date of survey: April 15 - May 19, 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, 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

aphic record scaled by: WHITING Personnel

Graphic record checked by: WHITING Personnel

Protracted by: N/A Automated plot by: HP 750 (FIELD) HEWLETT PACKARD DESIGN JET 2500 PLOTTER (OFFICE)

Verification by: ATLANTIC 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 DESCRIPTIVE REPORT WERE MADE IN RED DURING OFFICE PROCESSING

AWOIS/SURFV 11/27/98 SJV

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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.

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 H10800 (sheet "D") of OPR-G354-WH. Survey H10800 lies 22.0 nautical miles east-southeast of St. Johns Point, 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°03'W, and on the east by approximate longitude 80°54'W. The northern and southern approximate limits are latitudes 30°24'N and 30°18'N, respectfully.

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

Sheet "D":

1. 30°18'11"N 080°55'09"W
2. 30°19'13"N 081°02'³⁵/₂₈"W
3. 30°23'16"N 081°02'00"W
4. 30°22'15"N 081°54'25"W

B.3 Data collection for this survey began on April 15, 1998 (DN 105). Data collection ended on May 19, 1998 (DN 139).

C. SURVEY VESSELS

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

Vessel	EDP Number	Primary Function
NOAA Ship Whiting	2930 (WTEW)	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 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. 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 100 meters was used with a line spacing of 80 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. A slip-ring assembly connected the armored cable to the SSS recorder.

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. 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 H10800:

Cast Number	Day No.	Vessel Covered	Position of Cast		Days Covered
			Latitude	Longitude	
13	106	WHITING	30°20'54"N	081°20'24"W	105-107
14		Launches			
21	112	WHITING	30°20'18"N	080°55'16"W	114-118
22		Launches			
31	121	WHITING	30°20'20"N	080°55'24"W	121-128
32		Launches			
47	136	WHITING	30°20'18"N	080°54'18"W	135-139
48		Launches			

d. Leadline Comparison

Dual leadline comparisons with the DSF-6000N were conducted for WHITING during OPR-G354-WH (H10800) on:

DN 089 at 30°23'07"N and 081°16'41"W (60 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. 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 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.

g. Dynamic Draft (Settlement and Squat Correctors)

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*

** DATA FILED WITH FIELD RECORDS*

h. Heave, Roll, and Pitch Correctors

Heave correctors for data acquired by WHITING was 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

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 SEC187 correctors were applied to all H10800 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 SEC187.

Smooth tides for H10800 were requested from N/OES234 in a letter mailed and dated June 1, 1998. *APPROVED TIDES AND ZONING WERE APPLIED DURING OFFICE PROCESSING*

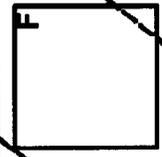
The WHITING employed no unusual or unique methods or instruments to correct echo soundings.

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.

OPR-G354-WHNOAA Ship WHITING
APPROACHES TO JACKSONVILLE, FL
ALL SHEETS ARE 1:10,000-SCALE

76CM X 122CM

Tidal Zoning H-10800



SEC209
Time Corrector -42 mins
Range Corrector X0.87
Reference 8720030

SEC185
Time Corrector -42 mins
Range Corrector X0.84
Reference 8720030

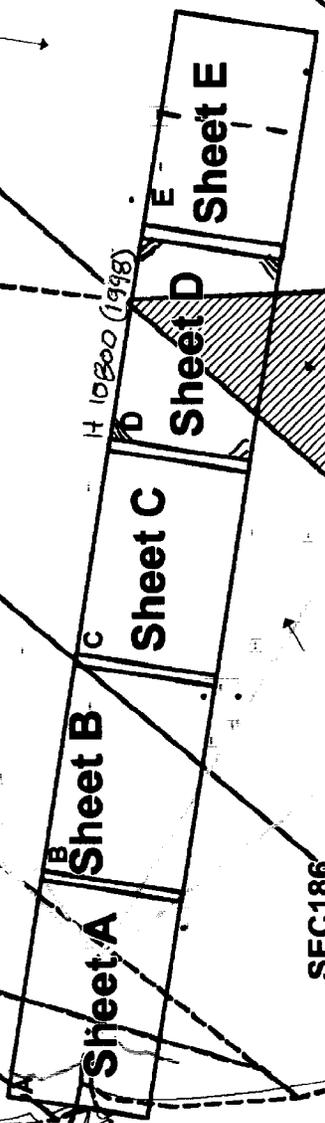
SEC188
Time Corrector -60 mins
Range Corrector X0.78
Reference 8720030

SEC186
Time Corrector -42 mins
Range Corrector X0.81
Reference 8720030

SEC187
Time Corrector -42 mins
Range Corrector X0.78
Reference 8720030

8720030 FERNANDINA BEACH

8720220 MAYPORT



H 10800 (1998)

H. CONTROL STATIONS *SEE ALSO EVALUATION REPORT*

The horizontal datum for this survey is the North American Datum of 1983 (NAD 83). A horizontal control station was established at St. Johns Lighthouse for the use of a NOAA VHF "Fly-Away" station. Ashtech software **GPPS**, along with NGS software **FORWARD3D** and **INVERSE3D** were used to compute the station position. NGS program **MONITOR** was used as a quality check for the computed position. Geographic position and DQA results of **MONITOR** for this station can be found in appendix III of this report.

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 and NOAA-established VHF "Fly-Away" station. The launches and the ship used an Ashtech GPS receiver with a CSI MBX1 beacon receiver supplying USCG correctors for DGPS navigation. When the NOAA VHF station was used, DGPS correctors were received with Maxon or TAD VHF radios on all platforms. HSDutils automatically initialized Ashtech receivers 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 was 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)

I.4 Correctors were received from the Cape Canaveral, FL, Charleston, SC and NOAA VHF 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.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. A minimum of four satellites was used during survey H10800 providing altitude unconstrained positioning.

I.9.g. 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. A copy of HPS Offset Table 9 is contained in Separate III. DATA ON FILE WITH FIELD DATA

J. SHORELINE

No shoreline is contained within the boundaries of this survey.

K. CROSSLINES

A combined total of 75.37 linear nautical miles of crosslines were acquired for this survey representing 10.9% of the 693.4 linear nautical miles of mainscheme hydrography.

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 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 to 2 feet of each other, with an occasional difference of 3 feet noted along contour lines. In areas of irregular bottom, differences of up to 4 feet were seen.

L. JUNCTIONS *SEE ALSO EVALUATION REPORT*

L.1 On its western edge, survey H10800 junctions with survey H10794. H10794 is a survey, sheet "C", of OPR-G354-WH, with a scale of 1:10,000. A comparison of data collected on H10800 to that on H10794 proved no significant differences between soundings exist. Generally agreement was excellent, with an occasional 1 to 3-foot difference. On its eastern edge, survey H10800 junctions with survey H10809. H10809 is a survey, sheet "E" of OPR-G354-WH, with a scale of 1:10,000. A comparison of data collected on H10800 to that on H10809 proved no significant differences between soundings exist. Generally agreement was excellent, with an occasional 1 to 3-foot difference.

M. COMPARISON WITH PRIOR SURVEYS *SEE ALSO EVALUATION REPORT*

A comparison with prior surveys is not required for this survey, as stated in the Hydrographic Project Instructions for OPR-G354-WH.

N. ITEM INVESTIGATION REPORTS

CONTACT NO: 48505.3

Item Description: Wreck

Source: MS SSS/Office of Fisheries Management of Florida

AWOIS Position: None

Required Investigation: S2 **Radius:** None

Charts Affected: 11480

INVESTIGATION

Date(s): May 15, 1998 (DN 135)

Position Numbers: 65336.7

Investigation Used: ES, SSS

Surveyed Position: Lat. 30°19'28.466 N Lon. 081°56'44.231" W

Position Determined By: Differential GPS

Investigation Summary: During mainscheme hydrography, contact 48505.3 was found and covered with 200% side scan sonar. During a singlebeam echsounder investigation of 48505.3, a least depth, corrected with ~~predicted~~ tides, of 81.0^{0.3} feet (24.7^{4.9} meters) was found. APPROVED

CHARTING RECOMMENDATION

Recommendation: Based on the results of this survey, the hydrographer recommends charting a non-dangerous wreck with a depth of 81⁰ feet (corrected with ~~predicted~~ tides) at the surveyed position. APPROVED

CHART 80 WK

O. COMPARISON WITH THE CHART SEE ALSO EVALUATION REPORT

O.1 Two charts are affected by this survey (H10800):

Chart 11480
"Charleston Light to Cape Canaveral"
34th Ed. 3 May 1997
Scale: 1:449,659

Chart 11488
"Ameila Island to St. Augustine"
20th Ed. 9 March 1996
Scale: 1:80,000

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

O.3 a. Overall, the soundings collected for this survey were deeper when compared to charted depths. Survey depths were converted from meters to fathoms and overlaid on the largest scale chart of the area using MapInfo software.

O.3 b. In general, survey depths were deeper than charted depths. Differences of 1 to 2 fathoms were common.

P. ADEQUACY OF SURVEY SEE ALSO EVALUATION REPORT

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

Q. AIDS TO NAVIGATION SEE ALSO EVALUATION REPORT

Q.2 The survey limits for sheet H10800 contain no aids to navigation.

R. STATISTICS

R.1 a. Number of Non-Rejected Positions 25533
b. Linear Nautical Miles of Sounding Lines:
 Nautical Miles of Side Scan Sonar 615.02
 Nautical Miles Hydrography 77.1
R.2 a. Square Nautical Miles of Hydrography 27.0
b. Days of Production 19
c. Detached Positions 0
d. Bottom Samples 24
e. Tide Stations 1
g. Velocity Casts 4

S. MISCELLANEOUS

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.

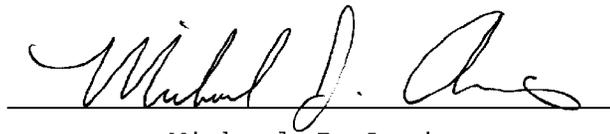
T. RECOMMENDATIONS *SEE ALSO SECTION P. OF THE EVALUATION REPORT*

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", is written over a horizontal line.

Michael J. Annis
Physical Scientist
Atlantic Hydrographic Branch

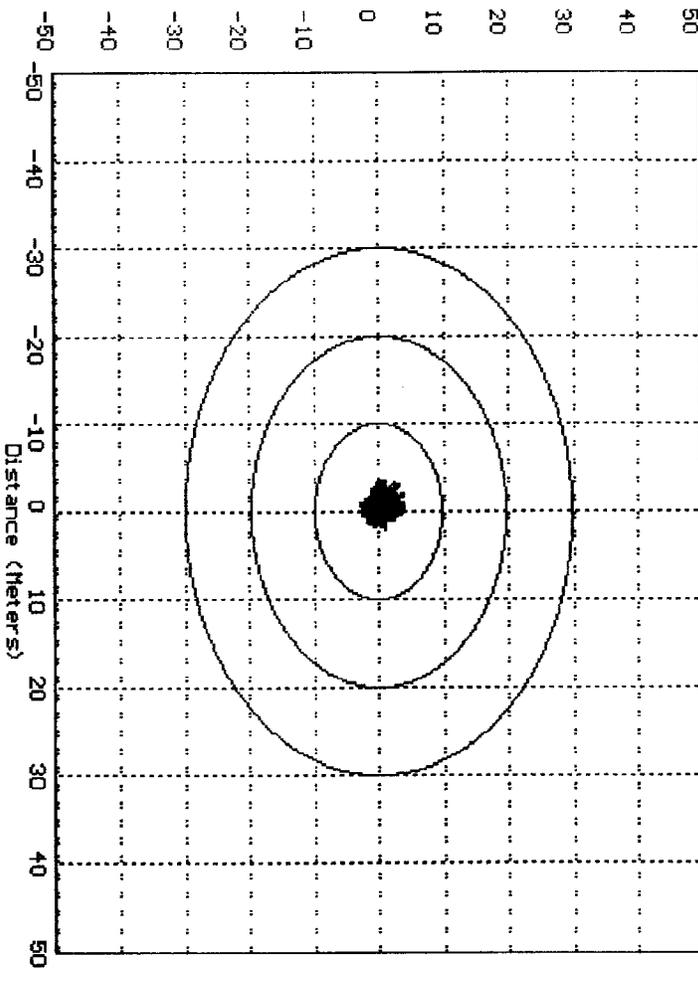
APPENDIX III

LIST OF HORIZONTAL CONTROL STATIONS & MONITOR Output Plots

The geographic positions for the differential GPS stations used during this survey are as follows:

Charleston, SC 298 KHz	Lat. 32° 45.5 N Long. 079° 50.6 W
Cape Canaveral, FL 289 KHz	Lat. 28° 27.6 N Long. 080° 32.6 W
NOAA VHF "Fly Away" 171.2 MHz	Lat. 30° 23.169 N Long. 081° 23.875 W

JAYLIGHTHOUSE Position: 30-23-10.14 N 081-23-52.51 W Alt: -5.9 (m)



04/22/1998
13:55:56

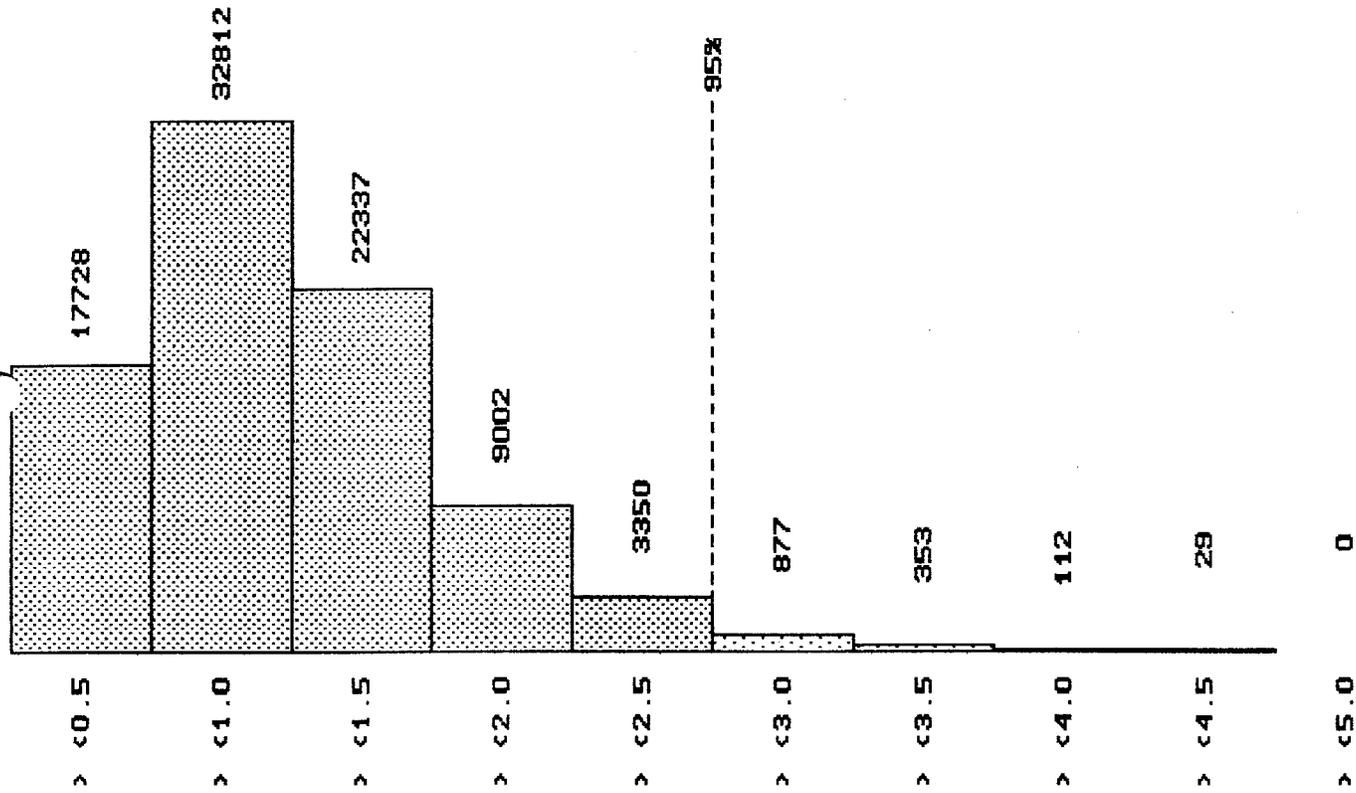
Error Statistics:

Total Records: 86600
 Samples used: 86600
 Bad Records: 0
 Num. Outliers: 0
 GPS Availability: 100.000
 Mean Radial Error: 0.976
 Radial Std Dev: 0.563
 Mean East Error: -0.398
 East Std Dev: 0.707
 Mean North Error: 0.034
 North Std Dev: 0.782
 Average HDOP: 1.234
 Min SVs/Max SVs: 5/ 9
 Min hdop/Max hdop: 0.8/2.5

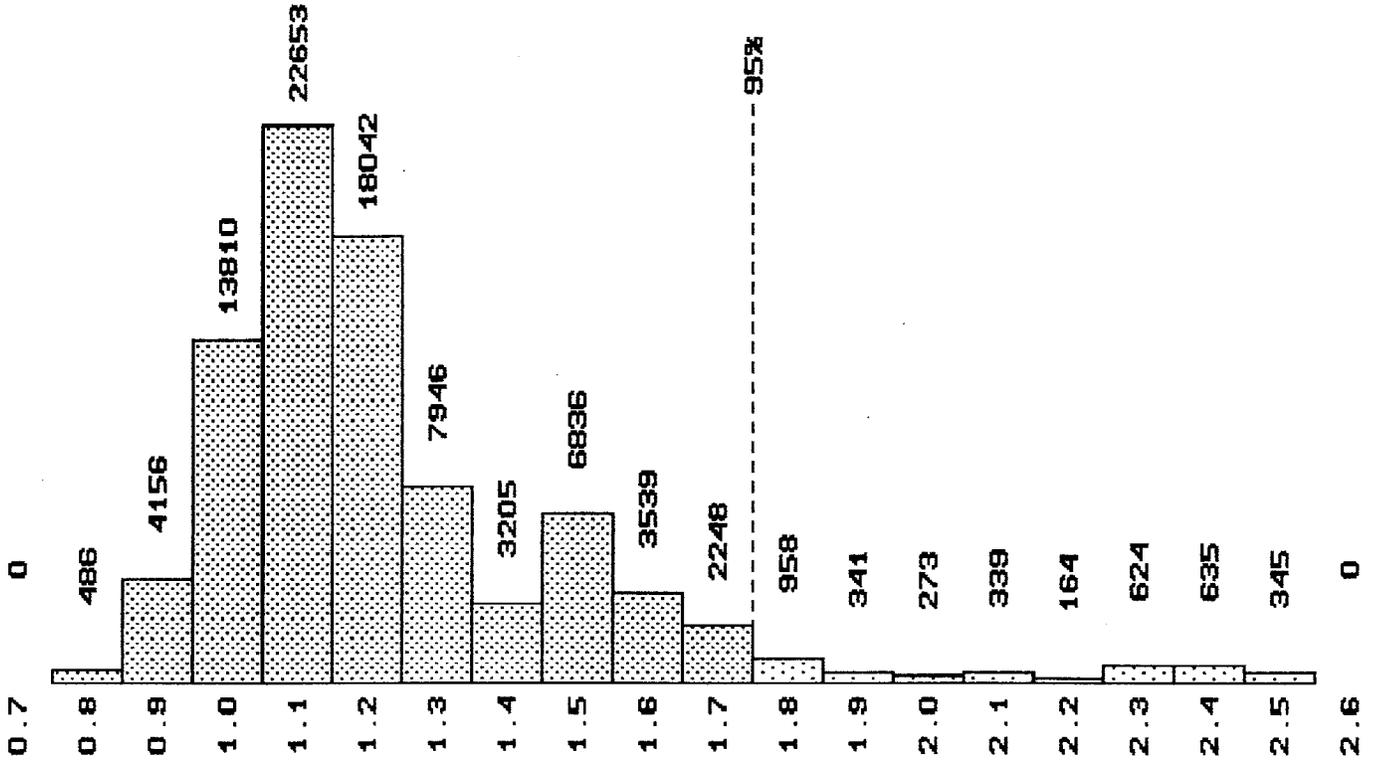
GGX Message Data:

UTC Time: 170521.00
 Latitude: 3023.16899 N
 Longitude: 8123.87600 W
 HDOP: 1.50
 Num of SVs: 6
 DGPS Flag: 2
 Age Corr: 6
 Error: 1.3
 Error/HDOP: 0.9

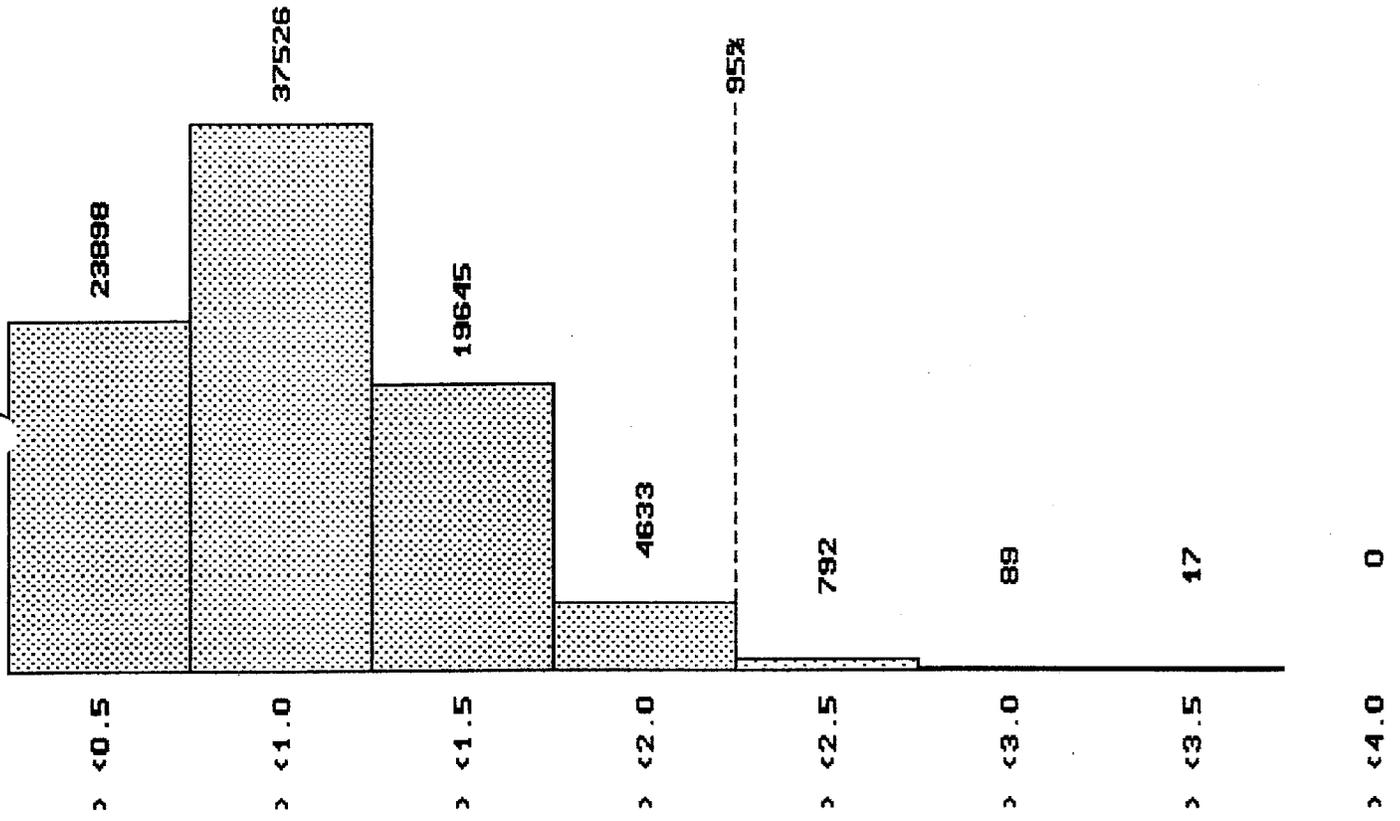
POSITION ERROR DISTRIBUTION



HDOOP DISTRIBUTION



ERROR/HOOP DISTRIBUTION



APPENDIX VII

APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NO. H-10800

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



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: June 10, 1998

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-G354-WH

HYDROGRAPHIC SHEET: H-10800

LOCALITY: Atlantic Ocean, Approaches to Jacksonville, FL

TIME PERIOD: April 15 - May 19, 1998

TIDE STATION USED: 872-0587 St. Augustine Beach, FL
Lat. 29° 51.4'N Lon. 81° 15.8'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.466 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: SEC149, SEC186, SEC187 and SEC188.
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



GEOGRAPHIC NAMES

H-10800

Name on Survey	ON CHART NO. 11490, 11498, 11490 ON PREVIOUS SURVEY ON U.S. QUADRANGLE MAPS FROM LOCAL INFORMATION ON LOCAL MAPS P.O. GUIDE OR MAP GRAND McNALLY ATLAS U.S. LIGHT LIST										
	A	B	C	D	E	F	G	H	K		
FLORIDA (title)	X		X								1
JACKSONVILLE (title)	X		X								2
NORTH ATLANTIC OCEAN	X		X								3
											4
											5
											6
											7
											8
											9
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											24
											25

Dennis J. Rosenberg
 Chief Geographer
 JUN 16 1998

12/02/98

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H10800

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	25533
NUMBER OF SOUNDINGS	25533

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	46	06/19/98
VERIFICATION OF FIELD DATA	69	10/23/98
EVALUATION AND ANALYSIS	13	
FINAL INSPECTION	6	11/06/98
COMPILATION	22	11/17/98
TOTAL TIME	156	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		11/06/98

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10800 (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
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 DesignJet 2500 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 0.876 seconds (26.985 meters or 2.69 mm at the scale of the survey) north in latitude, and 0.741 seconds (19.802 meters or 1.98 mm at the scale of the survey) east in longitude.

L. JUNCTIONS

H10794 (1998) to the West
H10809 (1998) to the East

Standard junctions were effected between the present survey and survey H10794 (1998), and H10809 (1998). There are no junctional surveys to the South, or North. Present survey depths are in harmony with the charted hydrography to the South and North.

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 11480 (34th Edition, May 03/97)
11488 (20th Edition, March 9/96)**

Hydrography

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

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.

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.

H10800

Franklin L. Saunders

Franklin L. Saunders
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H10800

Initial Approvals:

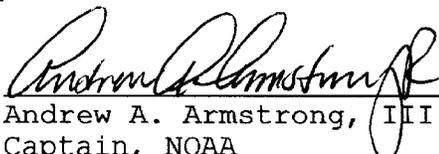
The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet 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: 11-06-98
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: 11/6/98
Andrew L. Beaver
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

Final Approval:

Approved:  _____ Date: Dec 10, 1998
Andrew A. Armstrong, III
Captain, NOAA
Chief, Hydrographic Surveys Division

