F00636

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Survey

DESCRIPTIVE REPORT

Type of Survey:	Navigable AreaSupport USCG
Registry Number:	F00636

LOCALITY

State(s):	Florida
General Locality:	Proposed Anchorage Offshore Mayport/St Johns River
Sub-locality:	7 NM NE of St Johns Point

2014

CHIEF OF PARTY
Erik H Anderson

LIBRARY & ARCHIVES

Date:

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

REGISTRY NUMBER:

HYDROGRAPHIC TITLE SHEET

F00636

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

State(s):	**Florida**
General Locality:	**Proposed Anchorage Offshore Mayport/St Johns River**
Sub-Locality:	**7 NM NE of St Johns Point**
Scale:	**10000**
Dates of Survey:	**03/20/2014 to 05/22/2014**
Instructions Dated:	**10/30/2013**
Project Number:	**S-G925-NRT2-13**
Field Unit:	**Navigation Response Team 2**
Chief of Party:	**Erik H Anderson**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	**Side Scan Sonar**
Verification by:	**Pacific Hydrographic Branch**
Soundings Acquired in:	**meters at Mean Lower Low Water**

Remarks:

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Notes in red were generated during office processing. The processing branch concurs with all information and recommendations in the DR unless otherwise noted. Page numbering may be interrupted or non-sequential. All pertinent records for this survey, including the Descriptive Report, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via http://www.ngdc.noaa.gov/.

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Descriptive Report to Accompany Survey F00636

Project: S-G925-NRT2-13

Locality: Proposed Anchorage Offshore Mayport/St Johns River

Sublocality: 7 NM NE of St Johns Point

Scale: 1:10000

March 2014 - May 2014

Navigation Response Team 2

Chief of Party: Erik H Anderson

A. Area Surveyed

Proposed deep draft anchorage area 7 NM northeast of St Johns inlet.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
30° 29' 5.76" N 81° 18' 19.36" W	30° 26' 6.34" N 81° 16' 0.14" W

Table 1: Survey Limits

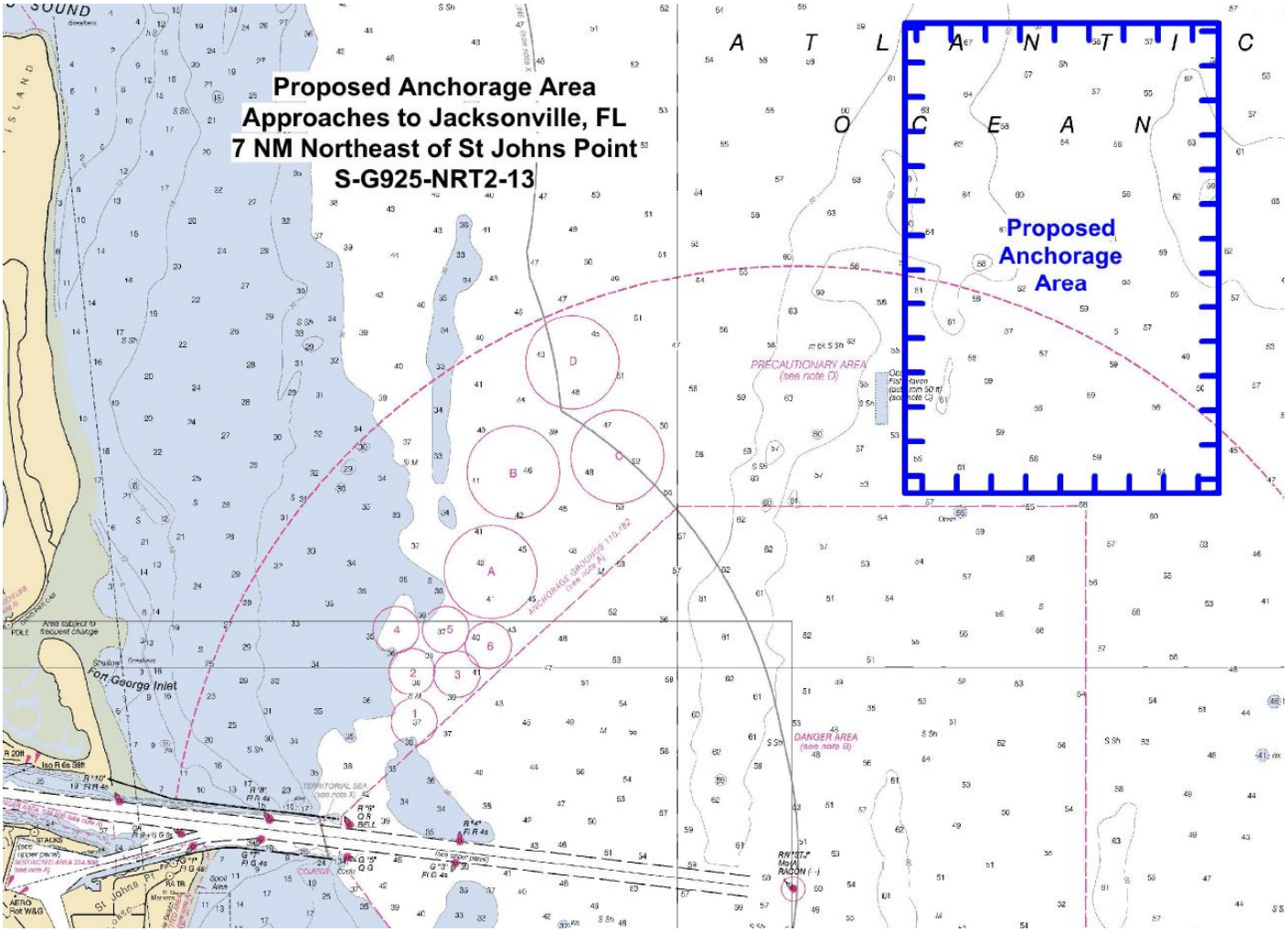

Figure 1: Survey Limits S-G925-NRT2-13

Survey Limits were acquired in accordance with the requirements in the Project Instructions and the HSSD.

A.2 Survey Purpose

The USCG and Jacksonville Docking Pilots Association have requested support for a hydrographic survey and to investigate hazards to navigation in the waters of a proposed anchorage area 7 NM northeast of St. Johns Inlet.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

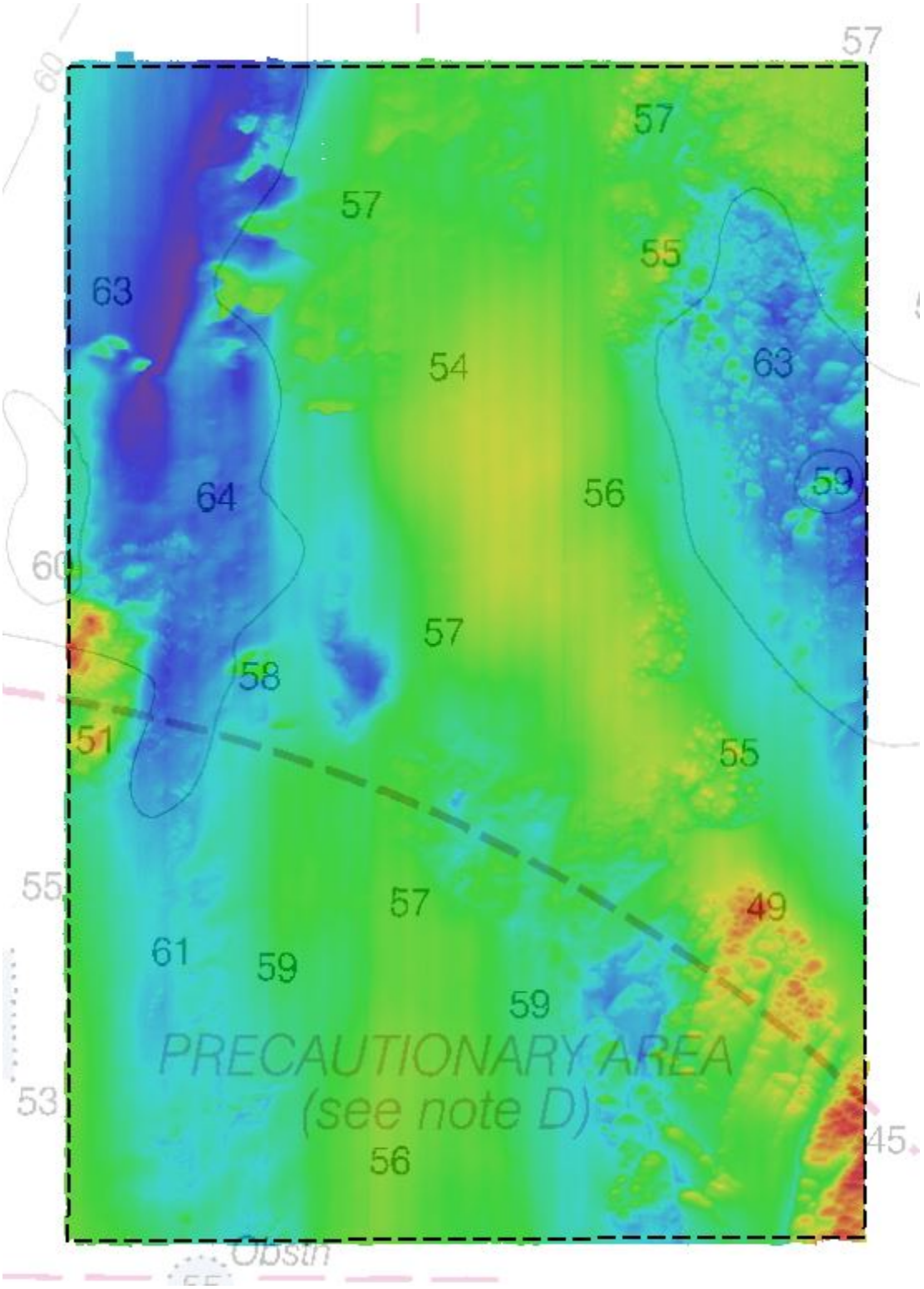

Figure 2: MBES Coverage acquired concurrently with 200 percent SSS

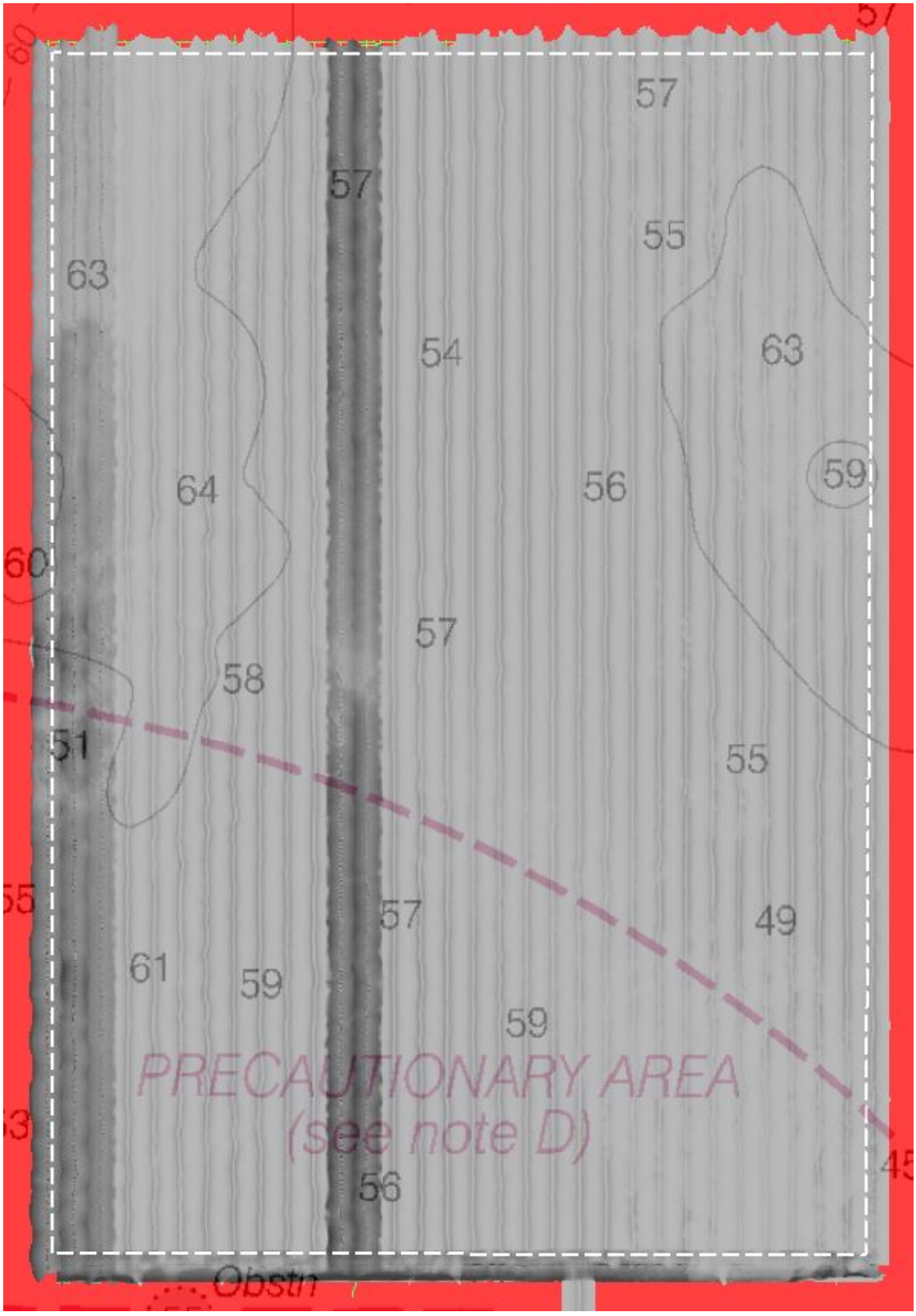

Figure 3: 100 Percent Side Scan Coverage Mosaic

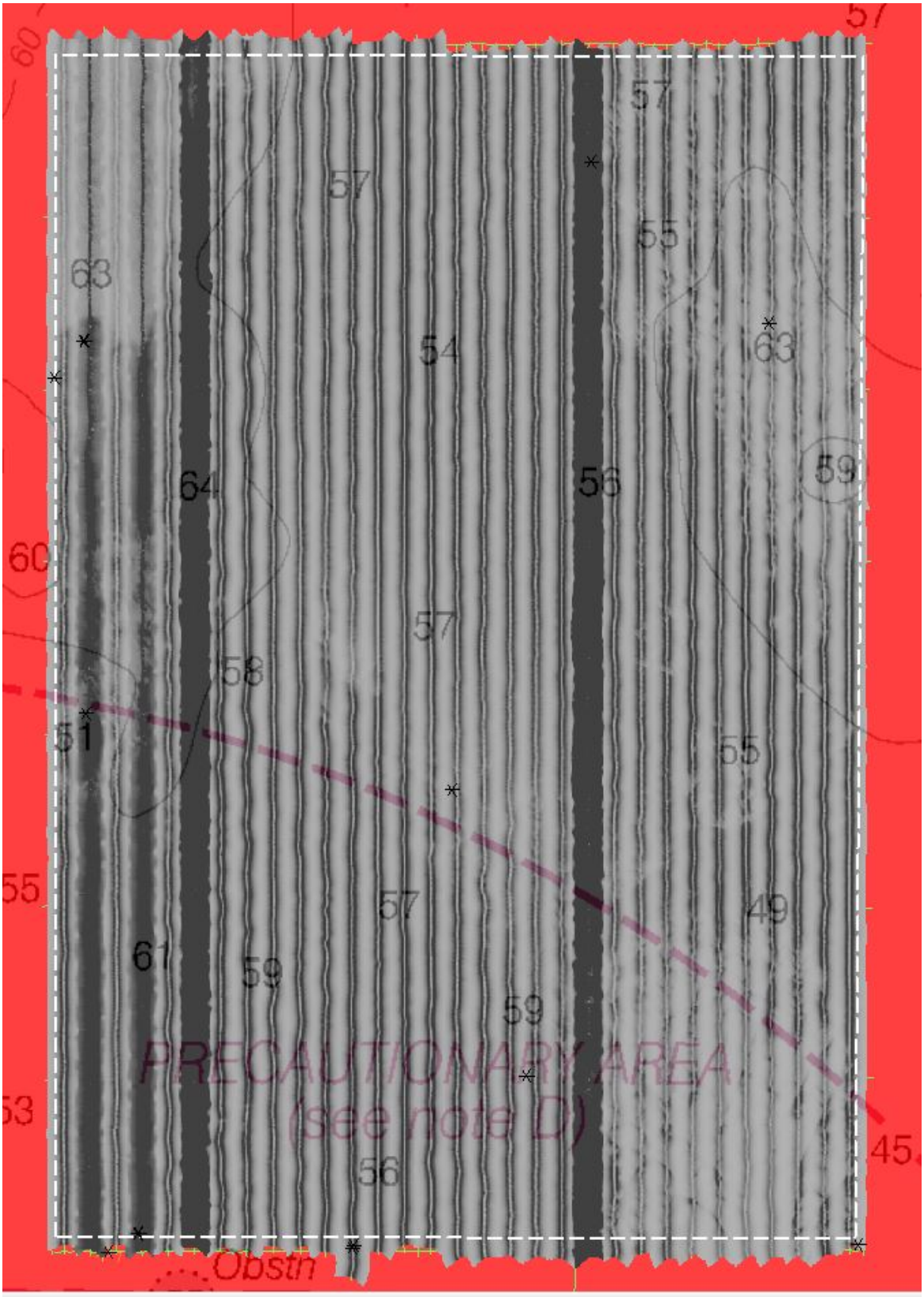

Figure 4: 200 Percent Side Scan Coverage Mosaic

Survey Coverage was in accordance with the requirements in the Project Instructions and the HSSD.

A.5 Survey Statistics

The following table lists the mainscheme and crossline acquisition mileage for this survey:

	HULL ID	*S-1210*	*Total*
LNM	**SBES Mainscheme**	0	0
	MBES Mainscheme	0	0
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/SSS Mainscheme	0	0
	MBES/SSS Mainscheme	194	194
	SBES/MBES Crosslines	16.62	16.62
	Lidar Crosslines	0	0
Number of Bottom Samples			0
Number of AWOIS Items Investigated			0
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			7.9

Table 2: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

Survey Dates	Day of the Year
03/20/2014	79
05/22/2014	142

Table 3: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

B.1.1 Vessels

The following vessels were used for data acquisition during this survey:

Hull ID	*S-1210*
LOA	9.15 meters
Draft	0.5 meters

Table 4: Vessels Used

Vessel used for hydrographic surveys, operational support, equipment testing and emergency response surveys.

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
R2Sonic	2024	MBES
Edgetech	4125	SSS
Applanix	POS M/V 5	Positioning and Attitude System
Odom	DigiBar Pro	Sound Speed System

Table 5: Major Systems Used

The Trimble SPS 361 was used to provide RTCM corrector data to POS M/V.

B.2 Quality Control

B.2.1 Crosslines

Crosslines acquired for this survey totaled 9% of mainscheme acquisition.

Crosslines accounted for 16.62 LNM. The percentage of crosslines to mainchene was 11.6 percent. The mean difference between mainscheme and crosslines was 2cm with a standard deviation of 8cm across the survey.

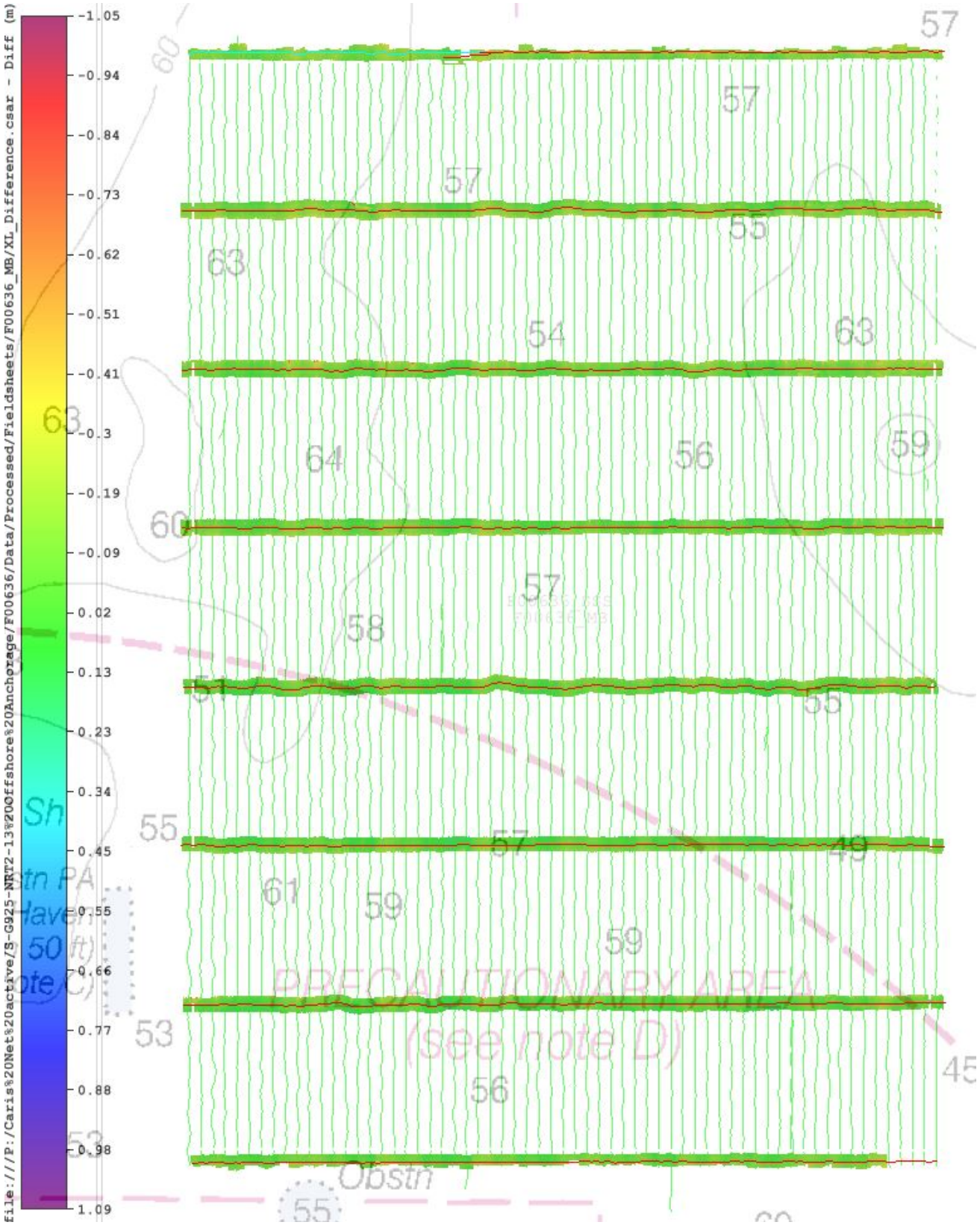

Figure 5: Crossline Difference Surface (units in meters)

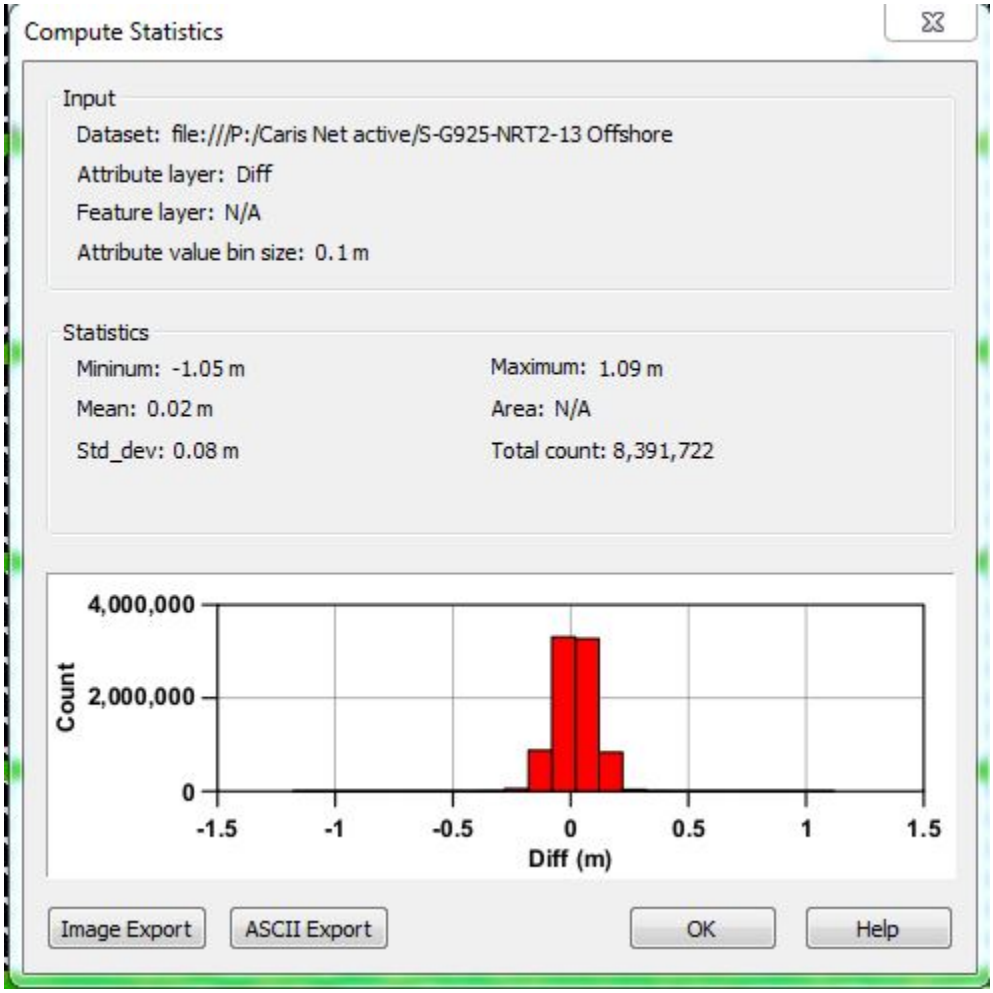

Figure 6: Crossline Statistics

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning
0 meters	0.25 meters

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
S-1210	4 meters/second	0 meters/second	0.3 meters/second

Table 7: Survey Specific Sound Speed TPU Values

The estimated tidal error contribution to the total survey error budget in the approaches to Jacksonville, FL is 0.25 meters at the 95% confidence level, and includes the estimated gauge measurement error, tidal datum computation error, and tidal zoning error.

Sound speed uncertainty at the surface is 0.3 meters/second which is based on the SVP manufactures specified uncertainty.

Sound speed measured uncertainty is 4 meters/seconds. This is determined by cast frequency of every 3 hours.

The TPU is overestimated as the field unit should have divided the .25 m value supplied by CO-OPs for tides uncertainty in half for application in HIPS.

B.2.3 Junctions

No junctioning surveys have been provided for this project.

There are no contemporary surveys that junction with this survey.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

B.2.5 Equipment Effectiveness

There were no conditions or deficiencies that affected equipment operational effectiveness.

B.2.6 Factors Affecting Soundings

There were no other factors that affected corrections to soundings.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: SVP Cast were conducted at a maximum of every 3 hours or when surface sound velocity changed more than 2m/s.

The survey consisted of a rectangular area offshore with minimal variations of depth thus providing a particularly uniform distribution of sound velocity with regards to spatial distribution. Sound velocity cast were conducted at fixed intervals of 3 hours.

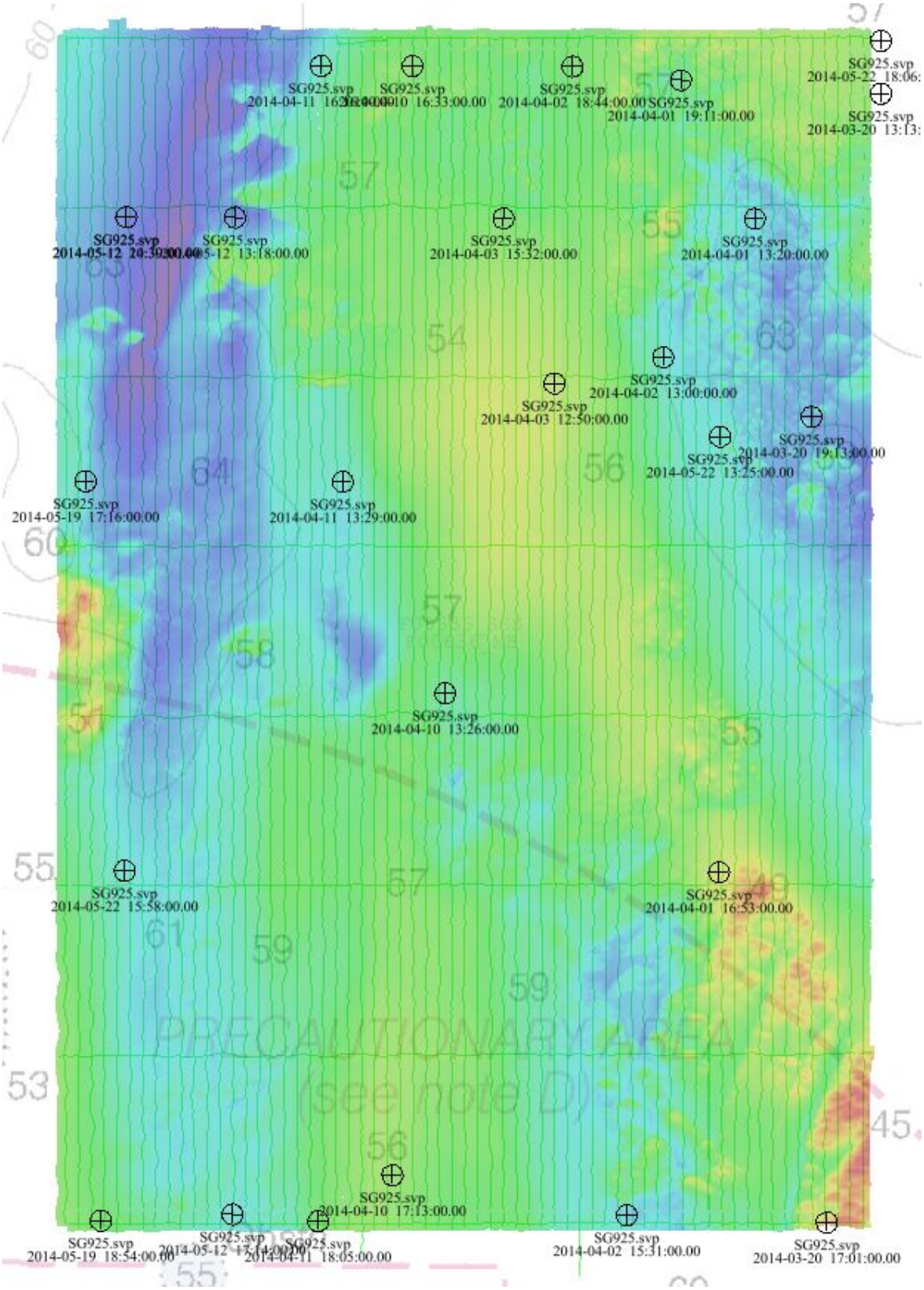

Figure 7: Sound Velocity Cast Times and Locations

B.2.8 Coverage Equipment and Methods

All equipment and survey methods were used as detailed in the DAPR.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Raw Backscatter was logged as a 7k file and has been sent to the Processing Branch. Backscatter was not processed by the field unit.

Backscatter data was not submitted as 7K files. The field submitted .R2S backscatter files which are not supported by the software used at the Pacific Hydrographic Branch for creating backscatter mosaics and therefore were not processed.

B.5 Data Processing

B.5.1 Software Updates

There were no software configuration changes after the DAPR was submitted.

The following Feature Object Catalog was used: NOAA Profile V5.3.2

B.5.2 Surfaces

The following surfaces and/or BAGs were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
F00636_MB_1m_MLLW	CUBE	1 meters	14.21 meters - 20.72 meters	NOAA_1m	MBES TracklineSBES Set Line Spacing
F00636_MB_1m_MLLW_Final	CUBE	1 meters	14.21 meters -	NOAA_1m	MBES TracklineSBES

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
			20.72 meters		Set Line Spacing
F00636_1m_100	SSS Mosaic	1 meters	0 meters - 0 meters	N/A	100% SSS
F00636_1m_200	SSS Mosaic	1 meters	0 meters - 0 meters	N/A	200% SSS

Table 8: Submitted Surfaces

F00636_MB_1m_MLLW was created with data concurrently acquired during 200 percent side scan acquisition. Line spacing was set at 60 meters which allowed for approximately 95% multibeam coverage. Small holidays in the multibeam were ignored as object detection was achieved with 200 percent side scan. The entire survey was able to be captured in one surface and gridded to a resolution of 1m based specs for complete multibeam coverage for depths less than 20 meters.

B.5.3 Timing Discrepancy

A timing discrepancy was discovered on day 2014-079 and 2014-139 during post processing of the data. Caris was contacted regarding issue and determined a series of steps to correct the problem. After using these steps, all timing data matched. Upon further examination we determined that the issue was caused by powering on the MBES system before starting the POS/MV. The correspondence with Caris is included in the Project Correspondence folder, submitted with the project.

C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the accompanying HVCR.

C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

Standard Vertical Control Methods Used:

Discrete Zoning

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

Station Name	Station ID
Mayport, FL	8720218

Table 9: NWLON Tide Stations

File Name	Status
G925NRT22013CORP.zdf	Final Approved

Table 10: Water Level Files (.tid)

There was no Tide Corrector file associated with this survey.

A request for final approved tides was sent to N/OPS1 on 06/09/2014. The final tide note was received on 06/23/2014.

No changes made to preliminary zoning scheme.

Final tide note is appended to this report.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The projection used for this project is 17 North.

The following DGPS Stations were used for horizontal control:

DGPS Stations
Savannah, GA 319kHz

Table 11: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

Caris Hips and Sips, Bathy Database, and Pydro were all used as GIS systems to compare digital surfaces and new sounding data with existing products.

D.1.1 Raster Charts

The following are the largest scale raster charts, which cover the survey area:

Chart	Scale	Edition	Edition Date	LNM Date	NM Date
11490	1:40000	20	01/2011	06/10/2014	06/21/2014

Table 12: Largest Scale Raster Charts

11490

Raster 11490 is in general agreement with respect to contours and soundings throughout the survey area except for what has been noted in Figure 9. The red boxes illustrate soundings shoaler than charted, and the blue box shows a significantly deeper area.

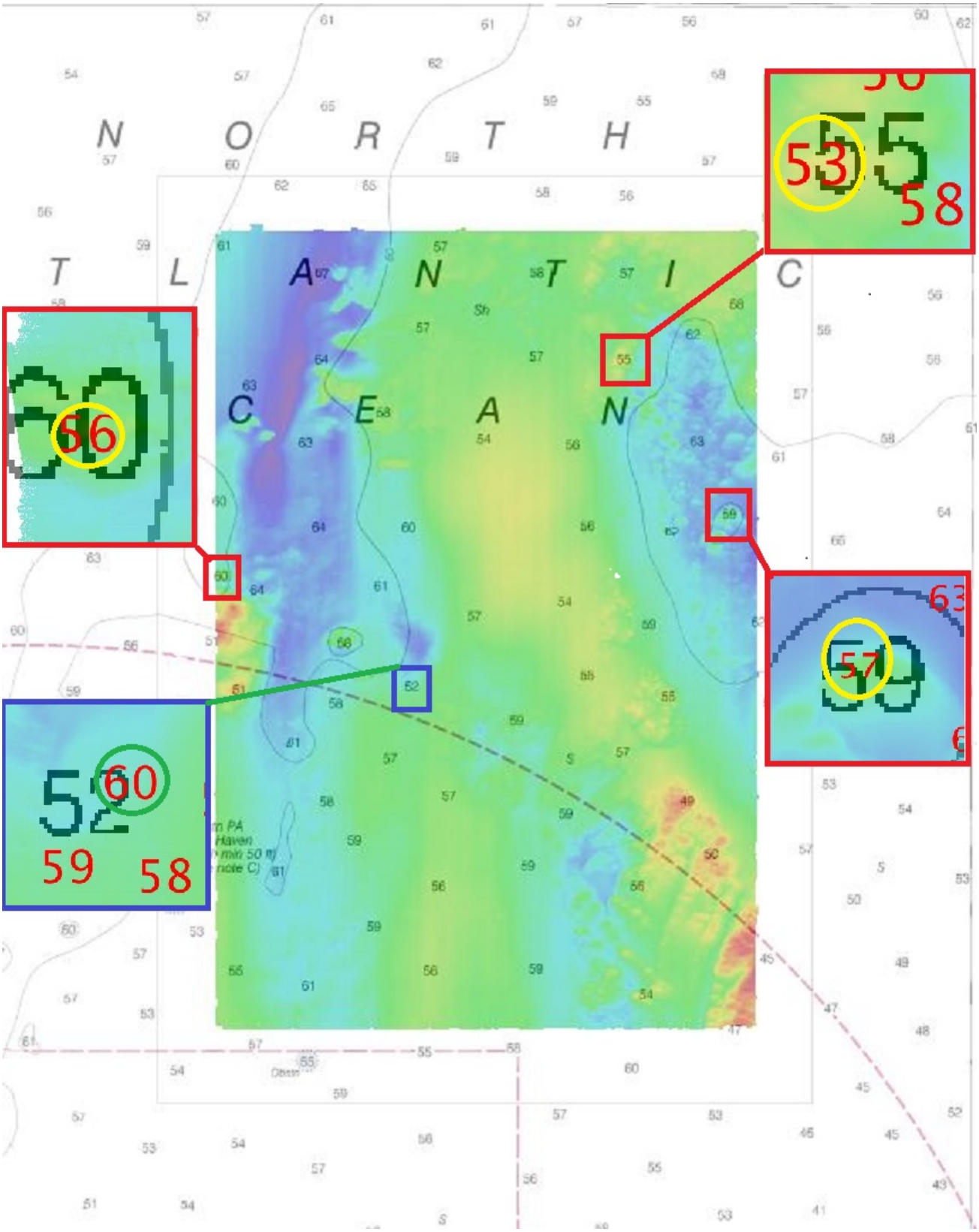

Figure 8: RNC 11490_1 Chart

D.1.2 Electronic Navigational Charts

The following are the largest scale ENCs, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US5FL51M	1:40000	28	05/22/2014	07/29/2013	NO

Table 13: Largest Scale ENCs

US5FL51M

ENC US5FL51M is in strong agreement with survey data. The mean difference was less than 1 meter between new data and charted soundings.

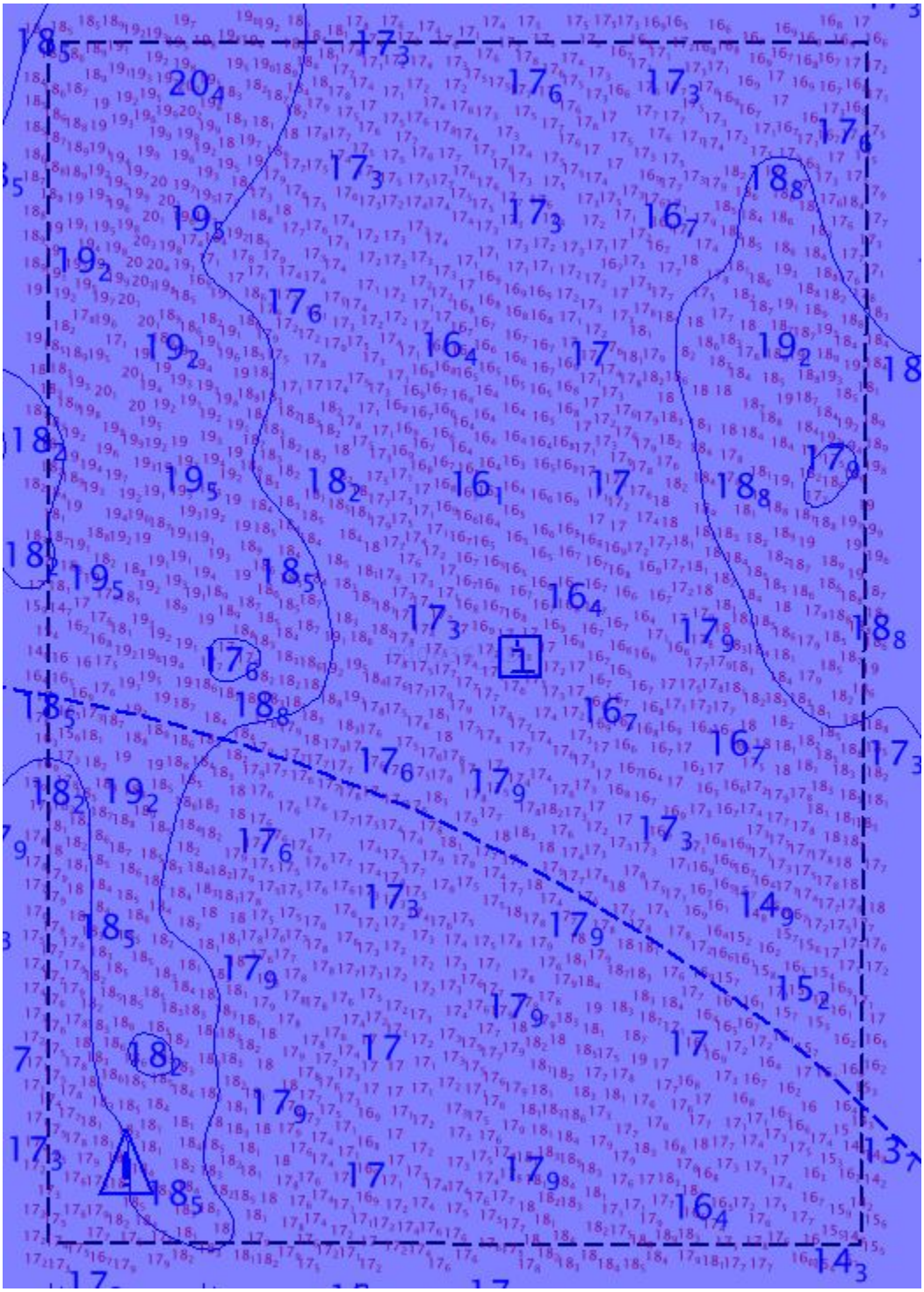

Figure 9: ENC USFL51M with survey data overlaid

D.1.3 AWOIS Items

No AWOIS items were assigned for this survey.

D.1.4 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.5 Charted Features

Obstrn PA Fish Haven exist several hundred meters west of south west corner of specified survey area and was not investigated.

D.1.6 Uncharted Features

Three small obstructions were found and attributed in the final feature file shown in Figure 11. They were noted due to the potential for anchor snags in this potential anchorage.

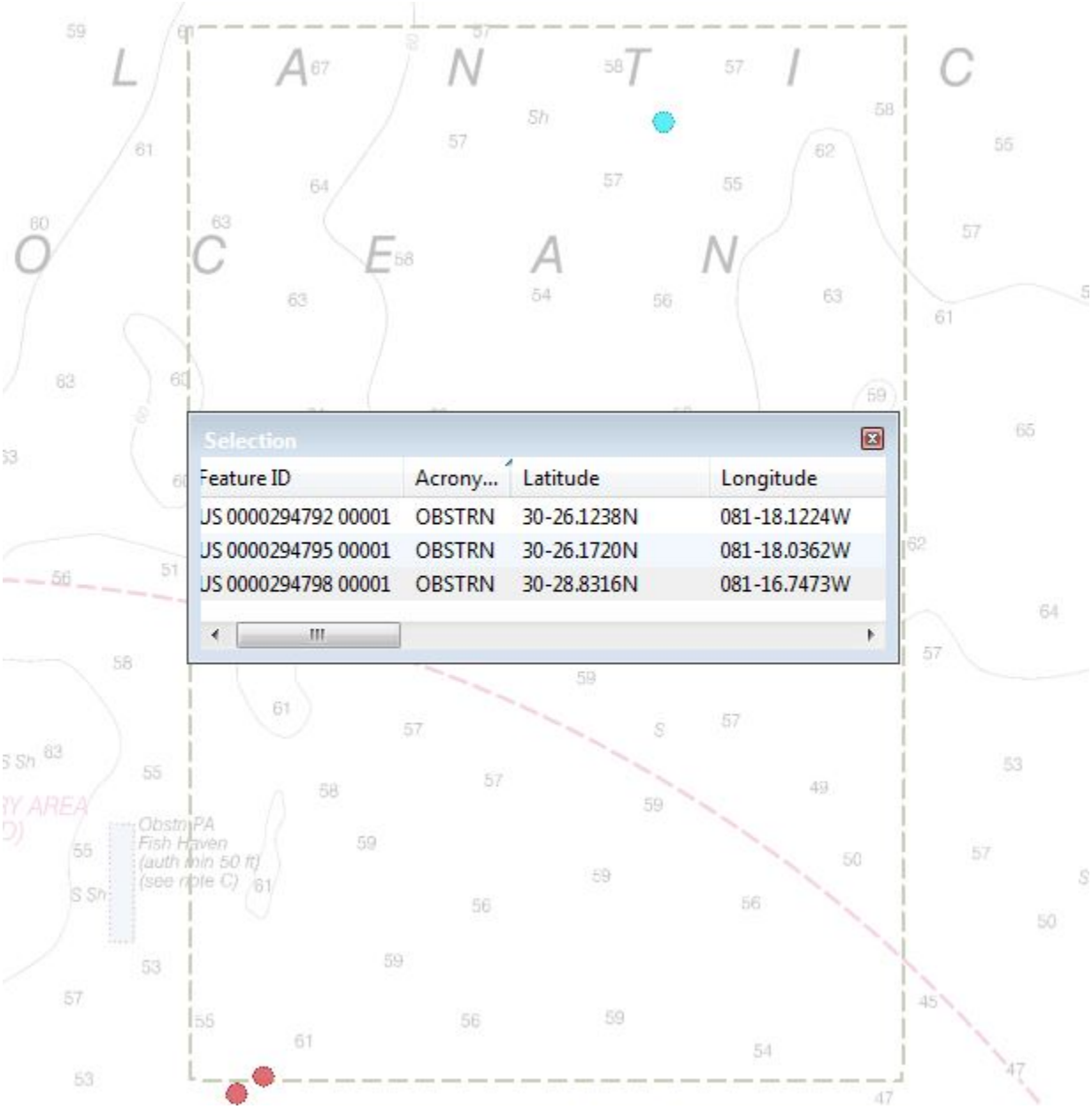

Figure 10: 3 Uncharted Obstructions

D.1.7 Dangers to Navigation

No Danger to Navigation Reports were submitted for this survey.

D.1.8 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey.

D.1.9 Channels

No channels exist for this survey. There are no designated anchorages, precautionary areas, safety fairways, traffic separation schemes, pilot boarding areas, or channel and range lines within the survey limits.

D.1.10 Bottom Samples

No bottom samples were required for this survey.

D.2 Additional Results

D.2.1 Shoreline

Shoreline was not assigned in the Hydrographic Survey Project Instructions or Statement of Work.

D.2.2 Prior Surveys

No prior survey comparisons exist for this survey.

D.2.3 Aids to Navigation

No Aids to navigation (ATONs) exist for this survey.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

No submarine features exist for this survey.

D.2.6 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.7 Platforms

No platforms exist for this survey.

D.2.8 Significant Features

The north west corner of the survey area contained several natural ledges with up to 4 feet of relief as shown in Figure 12 . These areas can cause significant problems for potentially large ships trying to anchor.

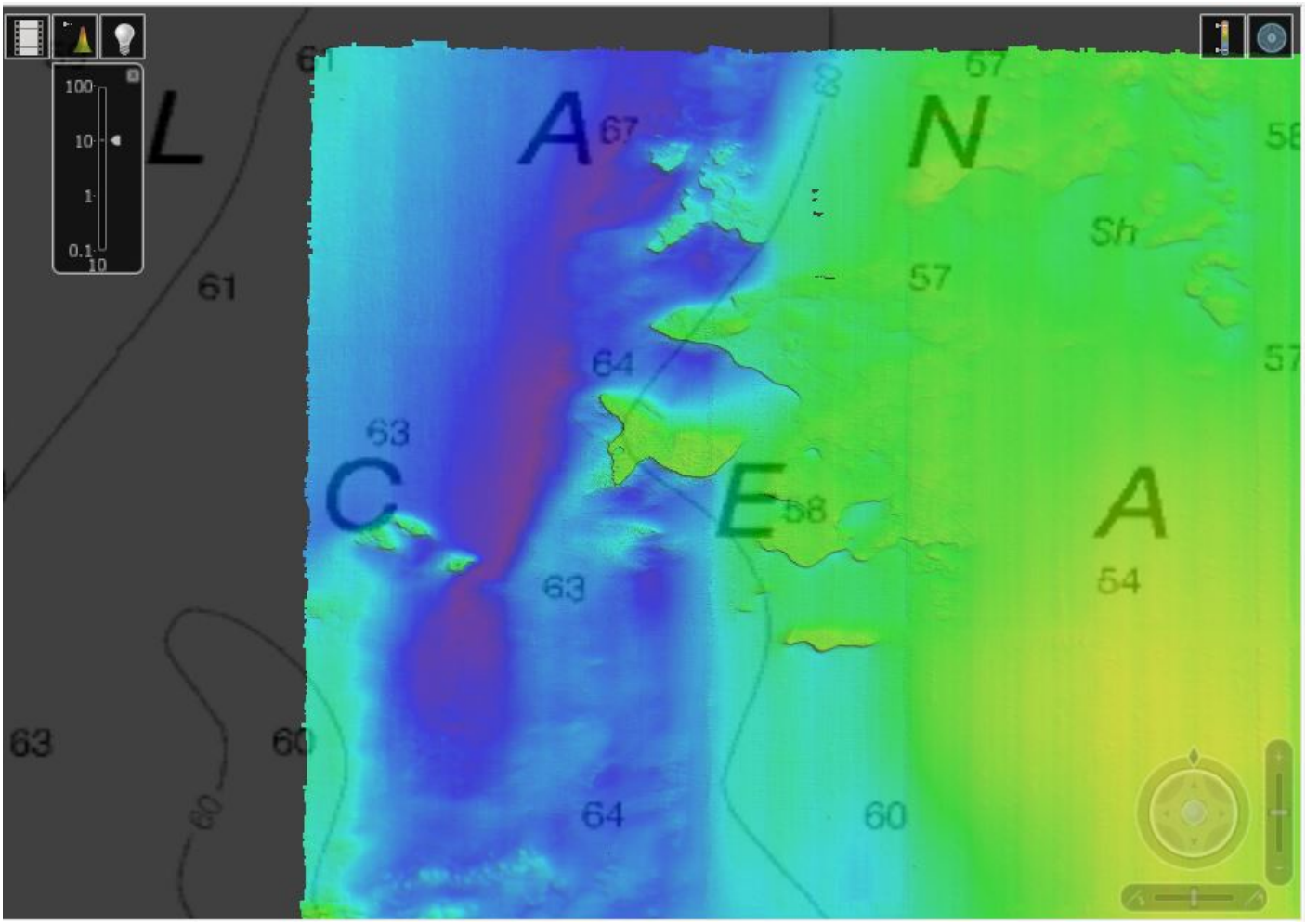

Figure 11: North West Corner Natural Ledges

D.2.9 Construction and Dredging

No present or planned construction or dredging exist within the survey limits.

D.2.10 New Survey Recommendation

No new surveys or further investigations are recommended for this area.

D.2.11 Inset Recommendation

No new insets are recommended for this area.

E. Approval Sheet

As Chief of Party, Field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Approver Name	Approver Title	Approval Date	Signature
Erik H Anderson	Chief of Party	07/02/2014	ANDERSON.ERIK.HANS.1388637370 Digitally signed by ANDERSON.ERIK.HANS.1388637370 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=ANDERSON.ERIK.HANS.1388637370 Date: 2014.07.02 15:29:33 Z

F. Table of Acronyms

Acronym	Definition
AHB	Atlantic Hydrographic Branch
AST	Assistant Survey Technician
ATON	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
BASE	Bathymetry Associated with Statistical Error
CO	Commanding Officer
CO-OPS	Center for Operational Products and Services
CORS	Continually Operating Reference Staiton
CTD	Conductivity Temperature Depth
CEF	Chart Evaluation File
CSF	Composite Source File
CST	Chief Survey Technician
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DGPS	Differential Global Positioning System
DP	Detached Position
DR	Descriptive Report
DTON	Danger to Navigation
ENC	Electronic Navigational Chart
ERS	Ellipsoidal Referenced Survey
ERZT	Ellipsoidally Referenced Zoned Tides
FFF	Final Feature File
FOO	Field Operations Officer
FPM	Field Procedures Manual
GAMS	GPS Azimuth Measurement Subsystem
GC	Geographic Cell
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division
HSSD	Hydrographic Survey Specifications and Deliverables

Acronym	Definition
HSTP	Hydrographic Systems Technology Programs
HSX	Hypack Hysweep File Format
HTD	Hydrographic Surveys Technical Directive
HVCR	Horizontal and Vertical Control Report
HVF	HIPS Vessel File
IHO	International Hydrographic Organization
IMU	Inertial Motion Unit
ITRF	International Terrestrial Reference Frame
LNM	Local Notice to Mariners
LNM	Linear Nautical Miles
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NAIP	National Agriculture and Imagery Program
NALL	Navigable Area Limit Line
NM	Notice to Mariners
NMEA	National Marine Electronics Association
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NRT	Navigation Response Team
NSD	Navigation Services Division
OCS	Office of Coast Survey
OMAO	Office of Marine and Aviation Operations (NOAA)
OPS	Operations Branch
MBES	Multibeam Echosounder
NWLON	National Water Level Observation Network
PDBS	Phase Differencing Bathymetric Sonar
PHB	Pacific Hydrographic Branch
POS/MV	Position and Orientation System for Marine Vessels
PPK	Post Processed Kinematic
PPP	Precise Point Positioning
PPS	Pulse per second

Acronym	Definition
PRF	Project Reference File
PS	Physical Scientist
PST	Physical Science Technician
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPE	Total Porpagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United Stated Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDA	Global Positiong System timing message
ZDF	Zone Definition File

UNITED STATES DEPARMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : June 19, 2014

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: G925-NRT2-2013
HYDROGRAPHIC SHEET: F00636

LOCALITY: 7 NM northeast of St Johns Point, Offshore Jacksonville
TIME PERIOD: March 20, 2014 - May 22, 2014

TIDE STATION USED: 872-2018 Mayport Bar Pilots Dock, St Johns River
Lat. 30° 23.9'N Long. 81° 25.7' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.426 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project G925-NRT2-2013, F00636, during the time period between March 20, 2014 - May 22, 2014.

Please use the zoning file G925NRT22013CORP submitted with the project instructions for G925-NRT2-2013. Zone SA198 is the applicable zone for F00636.

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 on the 1983-2001 National Tidal Datum Epoch (NTDE).

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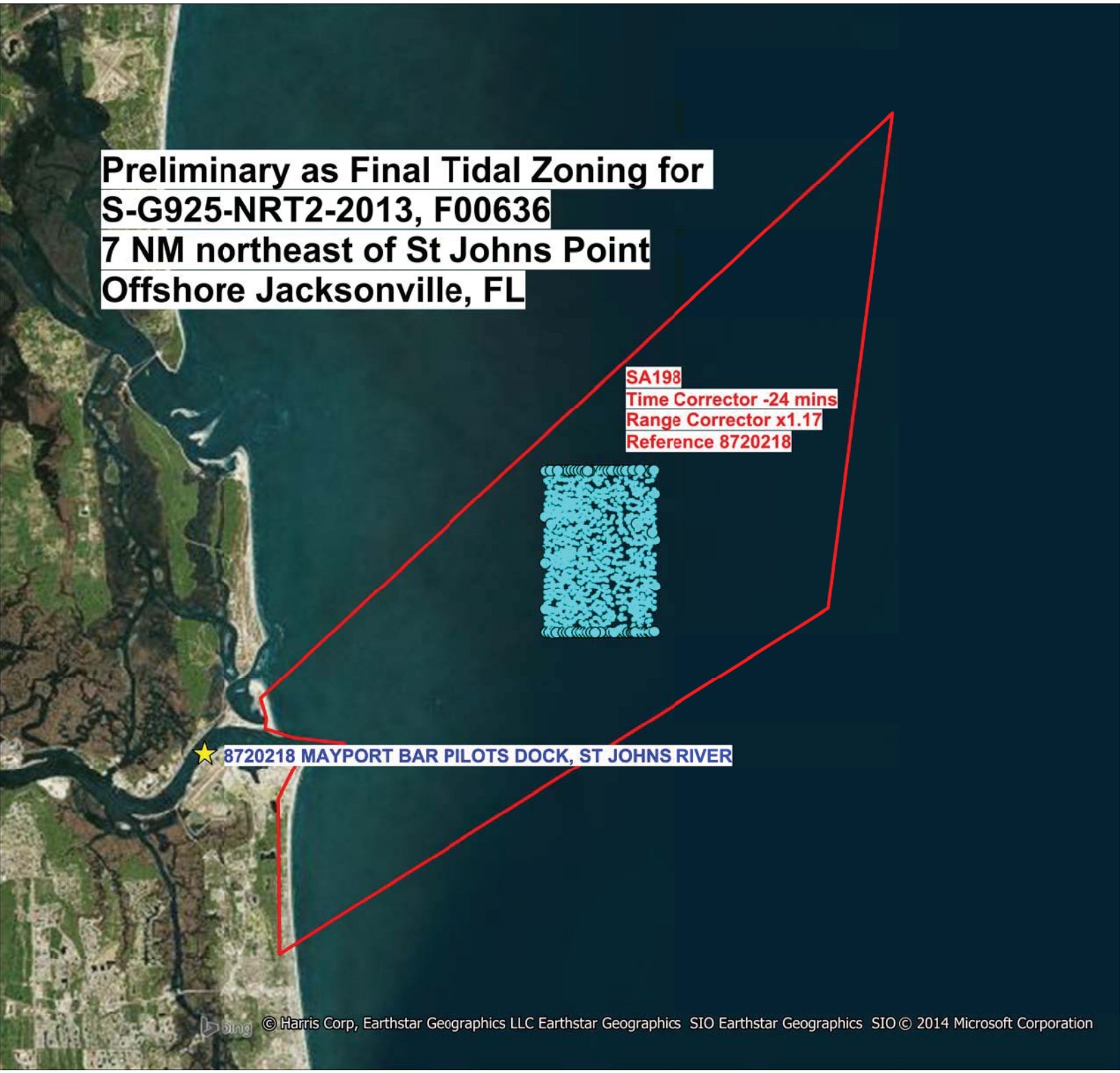
CHIEF, PRODUCTS AND SERVICES BRANCH


Preliminary as Final Tidal Zoning for
S-G925-NRT2-2013, F00636
7 NM northeast of St Johns Point
Offshore Jacksonville, FL
SA198
Time Corrector -24 mins
Range Corrector x1.17
Reference 8720218
8720218 MAYPORT BAR PILOTS DOCK, ST JOHNS RIVER
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APPROVAL PAGE

F00636

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NGDC for archive

- F00636_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- F00636_GeoImage.pdf

The survey evaluation and verification has been conducted according current OCS Specifications.

Digitally signed by HOLMBERG.PETER.SCOTT.1365886101
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=HOLMBERG.PETER.SCOTT.1365886101
Date: 2014.12.22 13:11:13 -08'00'

Approved:_____

Peter Holmberg
Cartographic Team Lead, Pacific Hydrographic Branch

The survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Digitally signed by EVANS.BENJAMIN.K.1237217094
Reason: I am approving this document
Date: 2014.12.22 13:05:01 -08'00'

Approved:_____

CDR, Benjamin K. Evans, NOAA
Chief, Pacific Hydrographic Branch