

F00551

NOAA FORM 76-35A	
U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SURVEY	
DESCRIPTIVE REPORT	
Type of Survey	CEF Chart Evaluation & ATON
Registry No.	F00551
LOCALITY	
State	South Carolina
General Locality	Charleston
Sub-locality	Charleston Harbor Entrance to Yellow House Creek
2009	
CHIEF OF PARTY Robert W. Ramsey Jr Navigation Response Team 2	
DATE	LIBRARY & ARCHIVES

NOAA FORM 77-28 U.S. DEPARTMENT OF COMMERCE (11-72) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION <h2 style="text-align: center;">HYDROGRAPHIC TITLE SHEET</h2>	REGISTRY NUMBER: <h2 style="text-align: center;">F00551</h2>																																																												
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:																																																												
<table> <tr> <td>State/Territory:</td> <td colspan="3">South Carolina</td> </tr> <tr> <td>General Locality:</td> <td colspan="3">Charleston</td> </tr> <tr> <td>Sub-Locality</td> <td colspan="3">Charleston Harbor Entrance to Yellow House Creek</td> </tr> <tr> <td>Scale:</td> <td>1:10,000</td> <td>Date of Survey:</td> <td>February 10 & 11, 2009</td> </tr> <tr> <td>Instructions Dated:</td> <td>09 Apr, 2008</td> <td>Project Number:</td> <td>OPR-G347-NRT2-08</td> </tr> <tr> <td>Change No.1</td> <td colspan="3">28 July 2008</td> </tr> <tr> <td>Vessel:</td> <td colspan="3">NOAA Launch 1210</td> </tr> <tr> <td>Chief of Party:</td> <td colspan="3">Robert W. Ramsey Jr - Team Leader</td> </tr> <tr> <td>Surveyed by:</td> <td colspan="3">David Elliott, Robert Ramsey, (NRT2)</td> </tr> <tr> <td>Soundings by:</td> <td colspan="3">ODOM ECHOTRAC CV</td> </tr> <tr> <td>Graphic record scaled by:</td> <td>DE, RR,</td> <td>Graphic record checked by:</td> <td>DE, RR</td> </tr> <tr> <td>Protracted by:</td> <td>N/A</td> <td>Automated Plot:</td> <td>N/A</td> </tr> <tr> <td>Verification by:</td> <td colspan="3">Atlantic Hydrographic Branch</td> </tr> <tr> <td>Soundings in:</td> <td colspan="3">Meters at MLLW <i>(H-Cell units are in feet at MLLW)</i></td> </tr> <tr> <td colspan="4"> Remarks: 1) All Times are UTC. 2) This is a basic Hydrographic Survey under the Navigable Area Concept. 3) Projection is UTM Zone 17. <i>Bold, Red, Italic notes in the DR were made during office processing.</i> </td> </tr> </table>		State/Territory:	South Carolina			General Locality:	Charleston			Sub-Locality	Charleston Harbor Entrance to Yellow House Creek			Scale:	1:10,000	Date of Survey:	February 10 & 11, 2009	Instructions Dated:	09 Apr, 2008	Project Number:	OPR-G347-NRT2-08	Change No.1	28 July 2008			Vessel:	NOAA Launch 1210			Chief of Party:	Robert W. Ramsey Jr - Team Leader			Surveyed by:	David Elliott, Robert Ramsey, (NRT2)			Soundings by:	ODOM ECHOTRAC CV			Graphic record scaled by:	DE, RR,	Graphic record checked by:	DE, RR	Protracted by:	N/A	Automated Plot:	N/A	Verification by:	Atlantic Hydrographic Branch			Soundings in:	Meters at MLLW <i>(H-Cell units are in feet at MLLW)</i>			Remarks: 1) All Times are UTC. 2) This is a basic Hydrographic Survey under the Navigable Area Concept. 3) Projection is UTM Zone 17. <i>Bold, Red, Italic notes in the DR were made during office processing.</i>			
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SPECIAL NOTE:

Please read all notes and Special notes in this report prior to conducting ESAR.

F00551/NRT2

DESCRIPTIVE REPORT

To accompany

OPR-G347-NRT2-08

CEF / ATON SURVEY

F00551

Scale of Survey: 1:10,000

Year of Survey: 2009

Navigation Response Team 2 - Launch 1210

Robert W. Ramsey Jr. - Team Leader

A. AREA SURVEYED

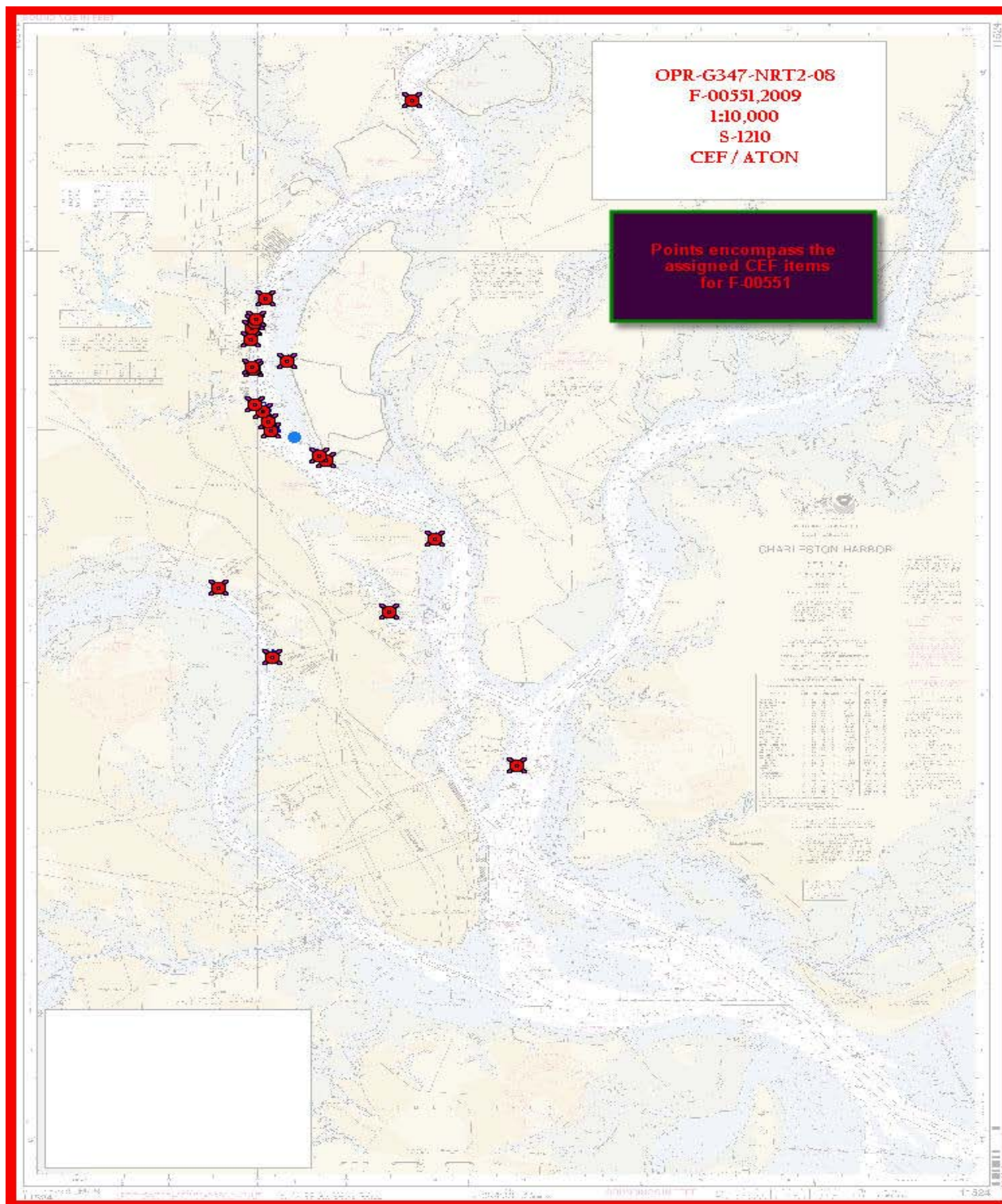
This hydrographic survey was conducted in accordance with *Port Letter Instructions for project OPR-G347-NRT2-08, Charleston, South Carolina. The instructions are dated April 9, 2008.

**Data filed with original field records.*

Charleston is the largest city and port in South Carolina and is a rich agricultural area with numerous manufacturing plants surrounding the city. Since Charleston is a busy port, new bathymetry data will be used to update the nautical charts. In addition, the port of Charleston is listed as one of the MTS 175 ports, this area is in need of ENC verification. The Remote Sensing Division, from National Geodetic Survey, has released a Chart Evaluation File (CEF) of the area for Charleston, SC. This CEF is addressed in this survey F-00551. The hydrographic data from this project will help ensure navigational safety through updated critical nautical charts and provide new information for emergency response organizations to use in the event of a marine casualty or coastal storm.

Survey Dates: 10 Feb 2009 (DN: 041) to 11 Feb, 2009, (DN: 042)

Survey limits are displayed graphically in the chartlet on the following page.



OPR-G347-NRT2-08 / F-00551

This survey data is very limited, approximately 2 LNM. The results of this non-normal survey are no Crosslines, B/S, Development, etc. The survey is limited to only SSS and VBES data to address the limited CEF items assigned. Trimble data was acquired on two lights specifically assigned to be addressed; this data was submitted to ATON.Report@noaa.gov on 20 February, 2009. *Concur.*

B. DATA ACQUISITION AND PROCESSING *See also the Evaluation Report*

B.1. EQUIPMENT

Data was acquired by Navigation Response Team 2 and survey Launch 1210. The vessel was configured as described in the **Data Acquisition and Processing Report (DAPR)* for this project. Major data acquisition systems are summarized below. ** Submitted with H-Cell Deliverables.*

NOAA launch 1210, a 30-foot SeaArk with a draft of 0.5 meters, was used to collect all survey data. There were no unusual vessel configurations or problems encountered with the vessel.

An ODOM EchotracCV2, Fathometer, was used to collect all echo soundings on this survey. This echo sounder is a dual frequency instrument but is only used in high frequency with a single transducer.

Klein 3000 side scan sonar was used throughout this survey. The side scan sonar equipment was used to investigate CEF items.

An Applanix POS MV 320 Ver3 (S/N 2546) was used as the primary navigation station and motion sensor on launch 1210 for all hydrographic data acquisition.

A Trimble DGPS Beacon Receiver was used provide RTCM broadcast correctors to the Applanix POS MV system on launch 1210.

The Instrument used for determining corrections for the speed of sound through the water column was an ODOM Digibar Ser # 98295-020606. A Seabird-Seacat Velocity Profiler, model 19-03, Ser# 198671-1477, used for quality control checks. CTD casts are processed in the Velociwin program supplied by the Hydrographic Systems and Technology Program (HSTP).

Concur.

B.2. QUALITY CONTROL

Following the **Field Procedures Manual* and the NOS Hydrographic Surveys Specifications and Deliverables Manual, May 2008 has insured the integrity of the survey data for F00551. ** Filed at*

AHB.

Differential GPS (DGPS) was used for all hydrographic data acquired on this survey. DGPS performance checks were conducted in accordance with FPM 3.4.4 by comparing the DGPS position of the vessel to a high accuracy calibration point monthly. **Concur.**

Echo Sounder Control

Lead line comparisons were conducted and compared to the digital depth and draft. The leadline log comparisons are in *Separates II. **Concur.**
***Filed with original field records.**

Side Scan Sonar Quality Control

Daily confidence checks were conducted by observing side scan imagery in the vicinity of known contacts, such as buoys or sand waves. Side scan data were considered satisfactory if these contacts could be distinguished throughout the entire range of the side scan trace. The confidence checks were performed daily at 100/500 kHz.

Coverage of 200% was obtained wherever possible in the required survey areas and where water depth and/or hazards permitted. Side scan sonar coverage was conducted to the 12-foot depth curve and single beam reduced line spacing was performed in other areas where warranted. The towfish was deployed off the starboard quarter of the vessel, which proved very stable. Significant contacts and shadows were processed with Caris HIPS/SIPS to determine the height off the bottom. The significant contacts were then compared by position, as well as common depth and relationship to channels to determine if further investigations were needed. Mosaics were generated for 100% and 200% to insure complete coverage. **Concur**

The system frequencies used were 100 kHz and 500 kHz. The recorder was set on one of either 25/50/75 meter range scales. There were no water depths greater than 35 meters. **Concur**

When operating in shoaled waters (e.g. less than 3 meters deep), a short tow was required for the Klein system. When cable-out was approximately 4 meters or less, minor degradation of the side scan imagery occasionally occurred. **Concur**

Junctions

This survey has no junctions due to the nature and type of a CEF survey. **Concur.**

B.3. CORRECTIONS TO ECHO SOUNDING

Velocwin SV and cast GP's have been inserted into the final Pydro PSS as suggested in the Field Procedures Manual. **Concur**

The leadline log comparisons are in *Separates II. **Filed with original field records. Concur.*

There are no deviations to be discussed in this section. *Concur*
**Data filed with original field records.*

C. VERTICAL AND HORIZONTAL CONTROL *See also the Evaluation Report*

The Instruments used for determining corrections for the speed of sound through the water column were an ODOM Digibar and a Seabird-Seacat Velocity Profiler. SVP casts are downloaded and processed in the Velociwin program supplied by the Hydrographic Systems and Technology Program (HSTP). Corrections were applied to the sounding plot using the Caris HIPS.

Field soundings are corrected by verified tides data from NOAA/CO-OPS, as per
WATER LEVEL INSTRUCTIONS
OPR-G347-NRT2-2008 Charleston, SC
(2/04/2008 MC)

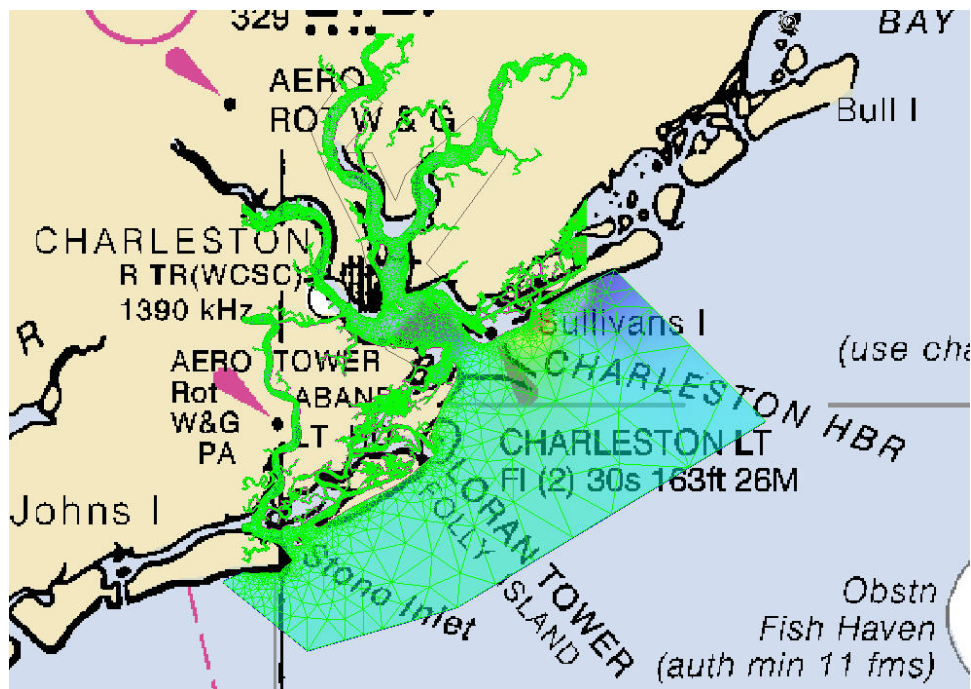
This is a TCARI controlled project.

Pertinent water level data were provided via email data transmissions through TIDEBOT, to the Field unit. Water level data requested and used were both 6 min Verified for final data submission. All data had “Verified” tides applied prior to submission. *Concur.*

The operating water level station at Charleston, SC (8665530) provided water level reducers for this project, during all periods of hydrography. *Concur.*

Tidal Constituent and Residual Interpolation (TCARI) method uses harmonic constituents and residuals from historical and operating water level stations to provide precise water level correction for bathymetric surveys.

For hydrography in the area of Charleston, SC the TCARI grid “G347NRT22008-TCARI.tc” supplied in conjunction with the water level data from Section 1.3.4 to produce a seamless tide correction, was used as the source file. This file was renamed to be matching of the survey “F00551_verified.tc”. Refer to the TCARI Field SOP for detailed TCARI instructions. A copy of the *.tc file and all *.dat water level files is included with each survey. *Concur.*



All elevations and soundings on survey F00551 are based on MLLW unless otherwise specified.

A Request for Approved Tides letter was sent to <smooth.tides@noaa.gov> on Feb 23, 2009. This request was generated by PYDRO and can be found in **Appendix IV*. The smooth tides were approved on 12 March, 2009 and all data for F00551 have had smooth tides applied to the PSS, then final merge was applied. *Concur.*

**Data appended to this Report.*

Horizontal Control

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 17. The control reference station used for this survey was the USCG DGPS Beacon. *No DGPS beacon identified.*

Horizontal dilution of precision (HDOP) was monitored on Hypack daily on the survey platform. The value never exceeded 2.5 HDOP, and adequate satellite coverage was maintained throughout the survey period. All positioning equipment was operated in a manner consistent with the manufacturer's requirements and as described in the **DAPR*. There were no equipment malfunctions, which affected the positional quality of the data.

** Submitted with H-Cell Deliverables.*

D. RESULTS AND RECOMMENDATIONS *See also the Evaluation Report*

D.1 Chart Comparison

There were no shoreline investigations or positions acquired during F00551. The CEF assigned items for F00551 were seaward of shoreline only. Resolved CEF database was sent to Mike Espey at RSD for direct addition to the CEF shoreline product, all information and data provided to AHB with this survey is for information and clarification only. *Concur. Survey processed using normal hydrographic survey submission guidelines.*

SPECIAL NOTE: The primary shoreline used on this survey was the shape file (103 utm17n_polyline.shp). This is the file that will be used to update both the ENC and RNC products after final edits are applied from the CEF database that was submitted by NRT2. Therefore, comparison notes were only conducted on CEF items that were assigned. General chart comparisons were conducted within the respective survey limits in prior submitted surveys H-11860 & H-11861, and will be conducted in pending surveys H-11862 & H-11863, during 2009 field work. The following document, CEF_Report_F00551.pdf, provides a general pictorial overview of CEF work conducted, and leads off with the one item that needs to be added to the chart by AHB. *All addressed CEF items were processed into Pydro.*

There are exceptionally strong tidal currents over three knots noted in the vicinity of the survey region, predominately on the ebb tide.

The port of Charleston is a high vessel traffic area. *Concur.*

There were two RNCs used for primary comparisons during this survey. They were 11523, and 11524 due to the proximity of their region related to acquisition. *NOS chart 11524 covers the entire survey area.*

<u>Chart Number</u>	<u>Edition Date</u>	<u>Scale</u>
11523	23rdDecember 2005	1:20,000
11524	51stFebruary 2008	1:20,000

There were two ENCs used for primary comparisons during this survey, listed below. *US5SC14M covers the entire survey area.*

<u>ENC Cell</u>	<u>Edition</u>	<u>Update Application</u>	<u>Issue Date</u>	<u>Corresponding Chart</u>
US5SC13M	10 th	2007-05-15	2008-02-19	11523
US5SC14M	17 th	2008-02-05	2008-02-05	11524

General Agreement with Charted soundings

In general survey soundings compared reasonably well within two to three feet of the charted soundings. All charted soundings should be superseded by this survey. *Concur.*

Detailed point feature information can be found “Pydro DR F-00551.pdf” located in *Appendices II.
**Data appended to this Report.*

AWOIS Item Investigations

There were No AWOIS items within the confines of F00551. *Concur – none assigned.*

Dangers to Navigation

There were No DTONS within the confines of F00551. *Concur.*

There was one item identified as CEF#105 that is in need of addition to the charts and is flagged in PYDRO as such. There was no DTON issued from the field as its location with respect to normal vessel traffic in the vicinity and its proximity to shore was not felt to warrant immediate action, and is left for AHB recommendations and concurrence for addition to the charts. *Concur. See Evaluation Report section D.1.1.*

D. 2. ADDITIONAL RESULTS

Aids to Navigation and Other Detached Positions

Navigation Aids serve their intended purpose.

The assigned ATON Report was submitted to ATON.reports@noaa.gov on 20 Feb 2009. Copies of the submission email can be found in Appendices V, under the email folder. There were two lights that Trimble handheld data sets were acquired. This data was post-processed with CORS data, and submitted directly. Copies of the data and relevant supporting information can be found in Appendices V under the ATON folder, all raw data are in Caris\preprocess\trimble folder.

One light assigned, Town Creek Mooring Light, could not be found on any source products, or local history. It is believed this light has never existed, and was not positively ascertained.

The ATON LL#2790 is listed as a lighted platform, this is not the case; in actuality this is a lighted dol. File named “ATON_Plots.pdf”, depicting the assigned ATON items can be found in the folder.
Concur.

Ferry Routes

There are no Ferry routes within the confines of F00551. *Concur.*

Submarine Cables and Pipelines

These will be addressed in the appropriate surveys H-11862 and H-11863. *Concur.*

Bridges

These will be addressed in the appropriate surveys H-11862 and H-11863. *Concur.*

Bottom Samples

There were No bottom samples taken on F00551.

These will be addressed in the appropriate surveys H-11862 and H-11863.

Concur.

Historic Wrecks

There were no historic wrecks confirmed by State Archaeologists on F00551. These will be addressed in the appropriate surveys H-11862 and H-11863. *Concur.*

Special Notes

The assigned CEF component of this survey was approached as follows:

- Assigned features in the SC0601_CEF.dbf file were converted to Hypack targets.
- The targets were then addressed for visual identification, and verification. If the item being addressed was not visually ascertainable, the area was swept with 200% SSS. If a contact was found that represented a high probability of being the feature, it was developed for a least depth.
- At this point the database file was updated in the “Field Note” and “Field Recommendation” columns, with the results.

There was only one CEF item #105, found to be warranting of such development.

It should be further noted that although, contacts may appear in the SSS data, if they were not deemed to be the item being searched for, they were not targeted nor developed. This is because these areas will be addressed in future surveys H-11862 & H-11863, to be completed in 2009 field season. *No additional significant features found in branch processing.*

The CEF database file was submitted to Mike Espey at RSD directly via email on 19 February, 2009. In addition, all supporting imagery and photographs were provided to enhance and clarify the evaluation. This data along with supporting metadata is included with this survey, for information only and can be found in the subfolder Public_Relations_&_Constituent_Products\CEF_SC0601.

There is no Coast Pilot Report included in this survey, as it is being addressed on a survey by survey base

throughout the project OPR-G347-NRT2-08. Edits are being and have been made for each “H” type survey (H-11860, H-11861 have been submitted, H-11862, and H-11863 are pending) and submitted to Coast.Pilot@noaa.gov . The lack of a report for F-00551 is because of the point specific type of survey, associated with a CEF / ATON survey. *Concur*

The PSS contained on the drive with the survey data has had the “Caris line directory” and “images not in line file” redirected to this portable drive. This PSS will open in its entirety with all images directly from the drive. The final PSS submitted on the data drive has been verified free of all outdated and stale data. The directory tree was changed to isolate raw data as per conversation with Chief of AHB in line with the AHB submission structure.

The MapInfo 9.5 workspace named “F00551 review.wor” can be found at:
Public_Relations_&_Constituent_Products\Field Products.

No survey outlines was submitted due to the limited work required for this survey.

The raw data directory size report was sent via e-mail to hydro.info@noaa.gov and copied to the Chief of the Atlantic Hydrographic Branch on March 04, 2009 as per FPM 5.2.3.3.6.

The Letter Transmitting data was sent via e-mail to LTDSUBMISSION.AHB@noaa.gov on March 17, 2009, as per FPM 5.2.5

E. APPROVAL SHEET

OPR-G347-NRT2-08

Charleston, SC

Survey Registry No. F00551

Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. All field sheets, this Descriptive Report, and all accompanying records and data are approved.

This survey is adequate to supersede all prior surveys in common areas, and for application to the relevant NOS nautical charts.

Submitted by:

**Robert W
Ramsey Jr**

Digitally signed by Robert
W Ramsey Jr
DN: cn=Robert W Ramsey
Jr, o=USDOC/NOAA/NOS/
NRB, ou=NRT-2,
email=Robert.
Ramsey@NOAA.GOV, c=US
Date: 2009.03.05 14:21:42 Z

**Robert W. Ramsey Jr - Team Leader
Navigation Response Team 2**

APPENDIX I

DANGERS TO NAVIGATION REPORT

APPENDIX II

SURVEY FEATURES REPORT

FOO551

Registry Number: F-00551
State: South Carolina
Locality: Charleston Harbor
Sub-locality: Charleston Harbor Entrance to Yellow House Creek
Project Number: OPR-G347-NRT2-08
Survey Date: 02/10/2009

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
11524	51st	02/01/2008	1:20,000 (11524_1)	USCG LNM: 02/12/2008 (06/03/2008) NGA NTM: 09/18/1999 (06/07/2008)
11521	29th	02/01/2008	1:80,000 (11521_1)	USCG LNM: 04/15/2008 (06/03/2008) NGA NTM: 04/03/2004 (06/07/2008)
11520	42nd	09/01/2005	1:432,720 (11520_1)	[L]NTM: ?
11009	37th	07/01/2004	1:1,200,000 (11009_1)	[L]NTM: ?
411	51st	12/01/2006	1:2,160,000 (411_1)	[L]NTM: ?

* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	210/1 subm Obstn (pile) (CEF#105)	Obstruction	0.39 m	32° 49' 26.3" N	079° 57' 49.5" W	---

1 - Item Data

1.1) Profile/Beam - 210/1 from f00551 / nrt2_1210_sb / 2009-041 / 000_1610

Survey Summary

Survey Position: 32° 49' 26.3" N, 079° 57' 49.5" W
Least Depth: 0.39 m (= 1.28 ft = 0.213 fm = 0 fm 1.28 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) ± 1.960 m ; TVU (TPEv) ± 0.130 m
Timestamp: 2009-041.16:10:36.100 (02/10/2009)
Survey Line: f00551 / nrt2_1210_sb / 2009-041 / 000_1610
Profile/Beam: 210/1
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

200% sss conducted for missing pile CEF#105.

Feature Correlation

Address	Feature	Range	Azimuth	Status
f00551/nrt2_1210_sb/2009-041/000_1610	210/1	0.00	000.0	Primary
f00551/nrt2_1210_klein3000hf_200sss/2009-041/sss090210155000	0001	3.89	062.9	Secondary
f00551/nrt2_1210_klein3000hf_100sss/2009-041/sss090210154700	0001	4.38	132.3	Secondary
ChartGPs - Digitized	1	13.64	087.8	Secondary (grouped)

Hydrographer Recommendations

Chart subm pile.

Cartographically-Rounded Depth (Affected Charts):

1ft (11524_1, 11521_1)

0 ¼fm (11520_1, 11009_1, 411_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: CATOBS - 1:snag / stump
 CONDTN - 2:ruined
 INFORM - subm dol
 QUASOU - 1:depth known

TECSOU - 1,2:found by echo-sounder,found by side scan sonar

VALSOU - 0.390 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

RSD investigation request of pile. Concur with field assessment. Pile found with 200% Klein 3000 SSS and least depth acquired with Odom CV VBES. Pile already shown on ENC. Pile not charted on latest edition of Raster chart. Pile needs to be added to Raster chart.

Feature Images

[Image file h:/compilation/f00551_g347_nrt2/ahb_f00551/pss/photos/sss090210001_m.tif does not exist.]

[Image file h:/compilation/f00551_g347_nrt2/ahb_f00551/pss/photos/sss090210001_m.tif does not exist.]

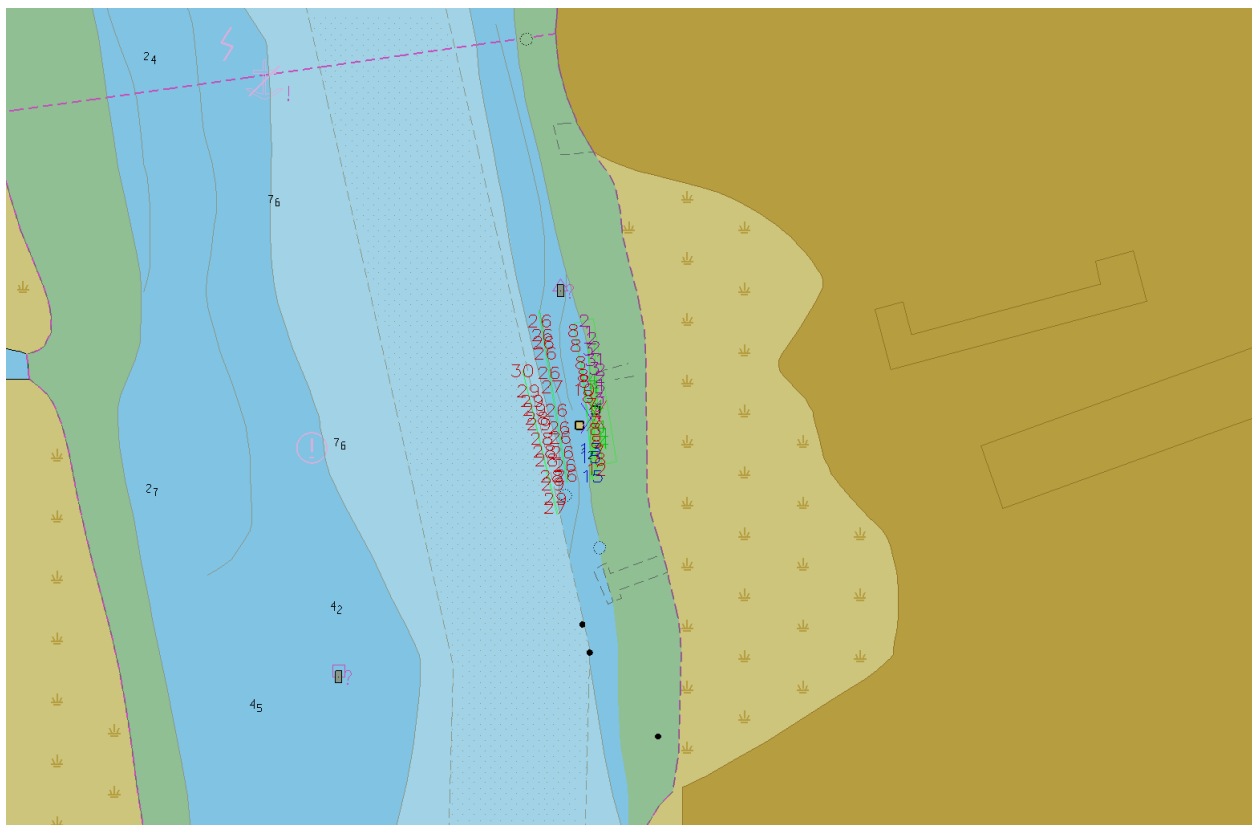


Figure 1.1.1

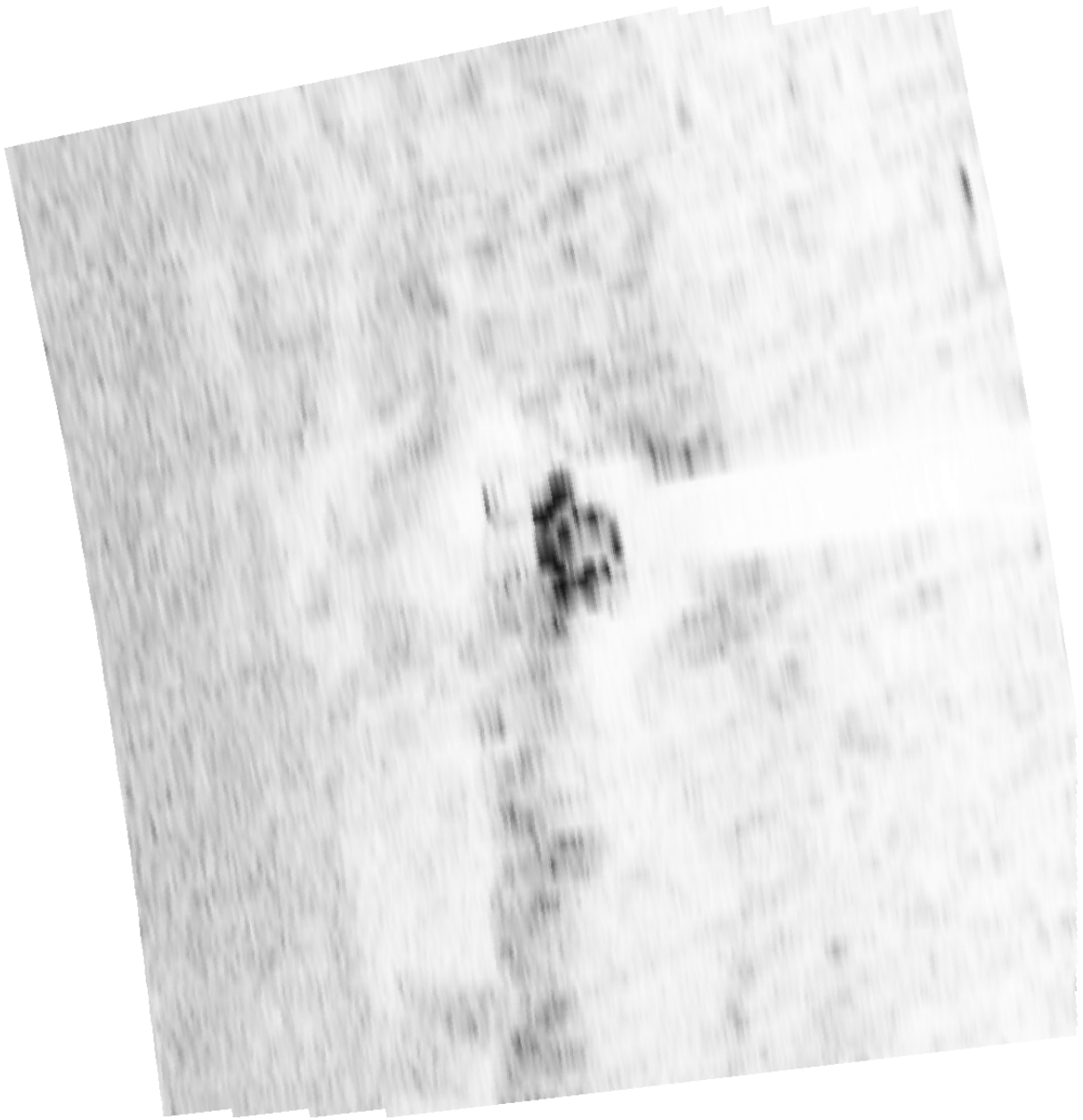


Figure 1.1.2

F00551-Charted Items

Registry Number: F-00551
State: South Carolina
Locality: Charleston Harbor
Sub-locality: Charleston Harbor Entrance to Yellow House Creek
Project Number: OPR-G347-NRT2-08
Survey Dates: 04/03/2009 - 04/06/2009

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
11524	51st	02/01/2008	1:20,000 (11524_1)	USCG LNM: 02/12/2008 (06/03/2008) NGA NTM: 09/18/1999 (06/07/2008)
11527	17th	03/01/2006	1:20,000 (11527_1)	[L]NTM: ?
11518	35th	05/01/2006	1:40,000 (11518_2)	[L]NTM: ?
11521	29th	02/01/2008	1:80,000 (11521_1)	USCG LNM: 04/15/2008 (06/03/2008) NGA NTM: 04/03/2004 (06/07/2008)
11520	42nd	09/01/2005	1:432,720 (11520_1)	[L]NTM: ?
11009	37th	07/01/2004	1:1,200,000 (11009_1)	[L]NTM: ?
411	51st	12/01/2006	1:2,160,000 (411_1)	[L]NTM: ?

* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

Features

Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AW It
CEF #71 - US 17 Cooper River Bridge	GP	[None]	32° 48' 12.9" N	079° 55' 04.3" W	-
CEF #102 - Dols	Dolphin	[None]	32° 49' 56.7" N	079° 56' 31.1" W	-
CEF #104 - Ruins	Stationary structure, floating or fixed	[None]	32° 50' 12.8" N	079° 58' 27.2" W	-
CEF #99 - Dol removal	GP	[None]	32° 50' 45.9" N	079° 56' 00.5" W	-
CEF #37 - Ruins	Stationary structure, floating or fixed	[None]	32° 51' 38.1" N	079° 57' 15.3" W	-
CEF #79 - Subm dol removal	GP	[None]	32° 51' 41.3" N	079° 57' 19.8" W	-
CEF #28 - ruins removal	GP	[None]	32° 51' 59.2" N	079° 57' 51.2" W	-
CEF #80 - Dolphins removal	GP	[None]	32° 52' 05.1" N	079° 57' 52.7" W	-
CEF #82 - ruins removal	GP	[None]	32° 52' 12.0" N	079° 57' 56.2" W	-

CEF #83 - subm pier removal	GP	[None]	32° 52' 17.1" N	079° 58' 02.2" W	-
CEF #73 - ruins removal	GP	[None]	32° 52' 41.0" N	079° 58' 02.9" W	-
CEF #75 - ruins removal	GP	[None]	32° 52' 42.3" N	079° 58' 03.7" W	-
CEF #93 - subm ruins removal	GP	[None]	32° 52' 45.8" N	079° 57' 40.2" W	-
CEF #96 - subm ruins removal	GP	[None]	32° 53' 01.1" N	079° 58' 04.5" W	-
CEF #76 - subm ruins removal	GP	[None]	32° 53' 08.5" N	079° 58' 03.5" W	-
CEF #77 - subm ruins removal	GP	[None]	32° 53' 12.0" N	079° 58' 02.2" W	-
CEF #78 - Dolphins	Dolphin	[None]	32° 53' 14.4" N	079° 58' 01.3" W	-
CEF #94 - I-526 Cooper River Bridge and power lines	GP	[None]	32° 53' 28.7" N	079° 57' 54.4" W	-
CEF #91 - Navy Pier, Towers	Stationary structure, floating or fixed	[None]	32° 55' 42.0" N	079° 56' 15.7" W	-

1 - Geographical Positions (GPs)

1.1) CEF #71 - US 17 Cooper River Bridge

Survey Summary

Survey Position: 32° 48' 12.9" N, 079° 55' 04.3" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:05:39 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 5
Charts Affected: 11524_1, 11518_2, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	5	0.00	000.0	Primary

Hydrographer Recommendations

Retain Bridge as charted.

S-57 Data

[None]

Office Notes

RSD investigation request of charted bridge from orthoimagery. Feature found as charted. Retain as charted. Retain as charted on ENC and Raster.

Feature Images



Figure 1.1.1

1.2) CEF #102 - Dols

Survey Summary

Survey Position: 32° 49' 56.7" N, 079° 56' 31.1" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-093.15:57:39 (04/03/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 2
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	2	0.00	000.0	Primary

Hydrographer Recommendations

Retain charted Dols.

S-57 Data

Geo object 1: Mooring/warping facility (MORFAC)
Attributes: CATMOR - 1:dolphin

Office Notes

RSD investigation request of charted Dols. Dols visually sighted by field party as charted. Row of 5 dolphins charted. Retain as charted on ENC and Raster chart.

Feature Images



Figure 1.2.1



Figure 1.2.2



Figure 1.2.3

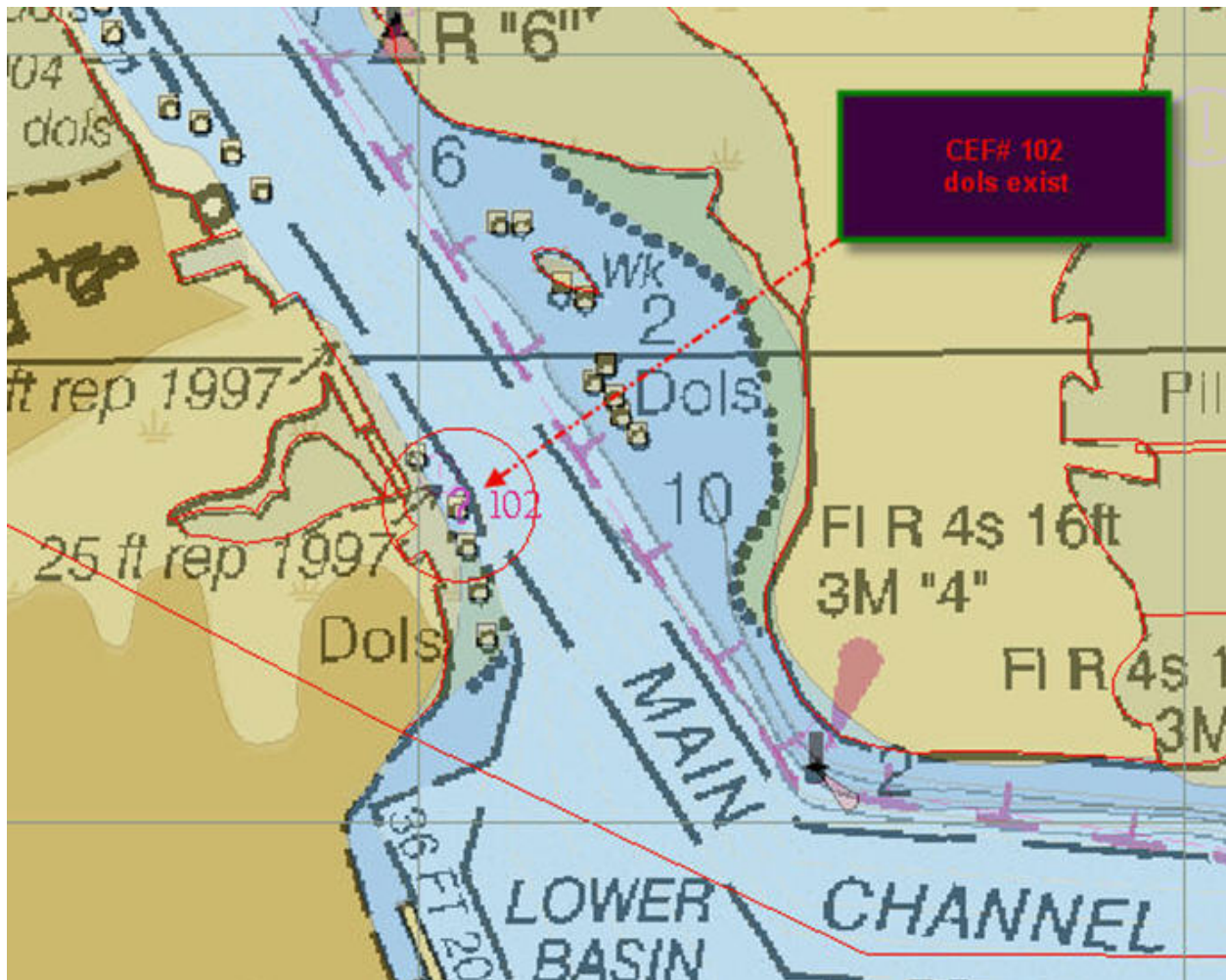


Figure 1.2.4

1.3) CEF #104 - Ruins

Survey Summary

Survey Position: 32° 50' 12.8" N, 079° 58' 27.2" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-093.16:02:35 (04/03/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 4
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	4	0.00	000.0	Primary

Hydrographer Recommendations

Chart ruins using orthoimagery.

S-57 Data

Geo object 1: Shoreline Construction (SLCONS)
Attributes: CATSLC - 4:pier (jetty)
 CONDTN - 2:ruined
 WATLEV - 4:covers and uncovers

Office Notes

RSD investigation request of ruins seen in orthoimagery. Ruins visually sighted by field party. Add ruins using orthoimagery and add note. Feature is already shown on ENC. Feature is not charted on Raster. Recommend the feature be added to raster.

Feature Images



Figure 1.3.1

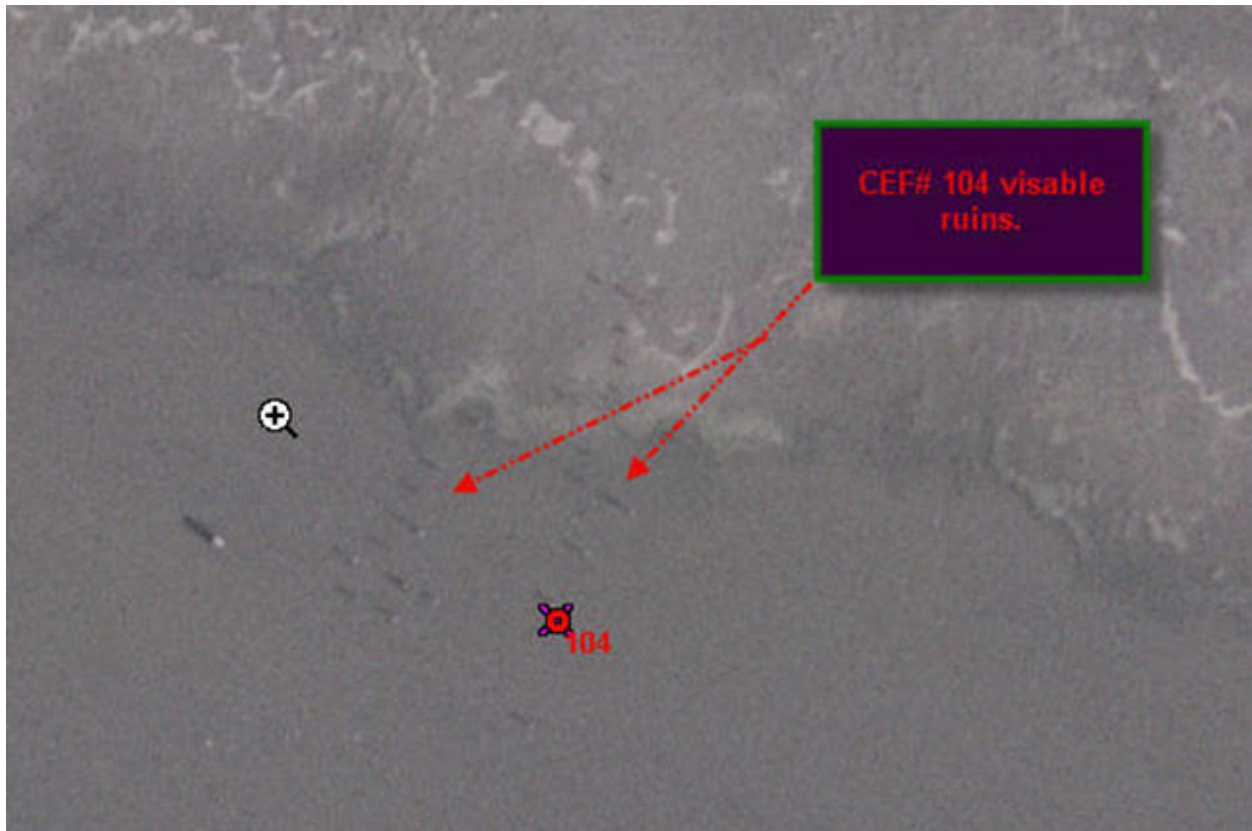


Figure 1.3.2

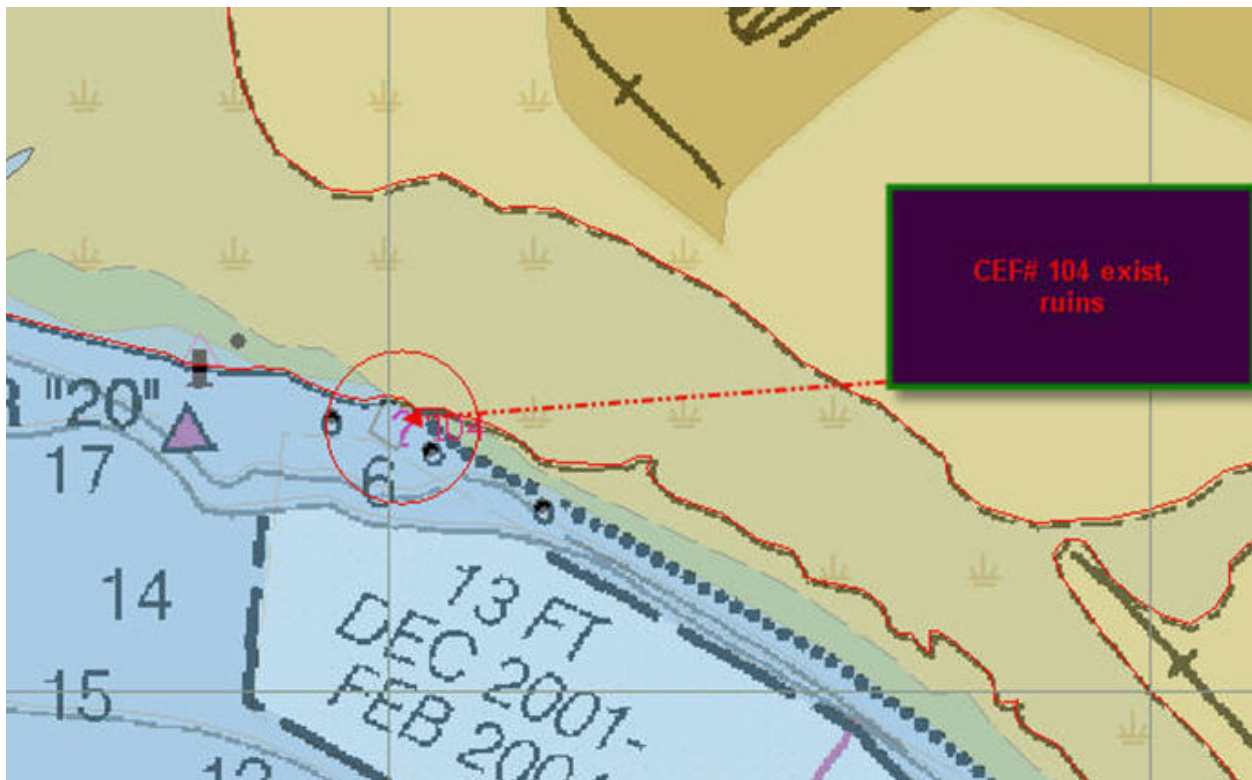


Figure 1.3.3

1.4) CEF #99 - Dol removal

Survey Summary

Survey Position: 32° 50' 45.9" N, 079° 56' 00.5" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-093.16:00:10 (04/03/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 3
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	3	0.00	000.0	Primary

Hydrographer Recommendations

Remove Dol from chart.

S-57 Data

[None]

Office Notes

RSD investigation request of charted Dol. Area searched with 200% Klein 3000 SSS. No feature found. Feature should have been visible if it were there. Delete charted visible dolphin symbol and notation. (Feature charted on ENC and Raster chart)

Feature Images

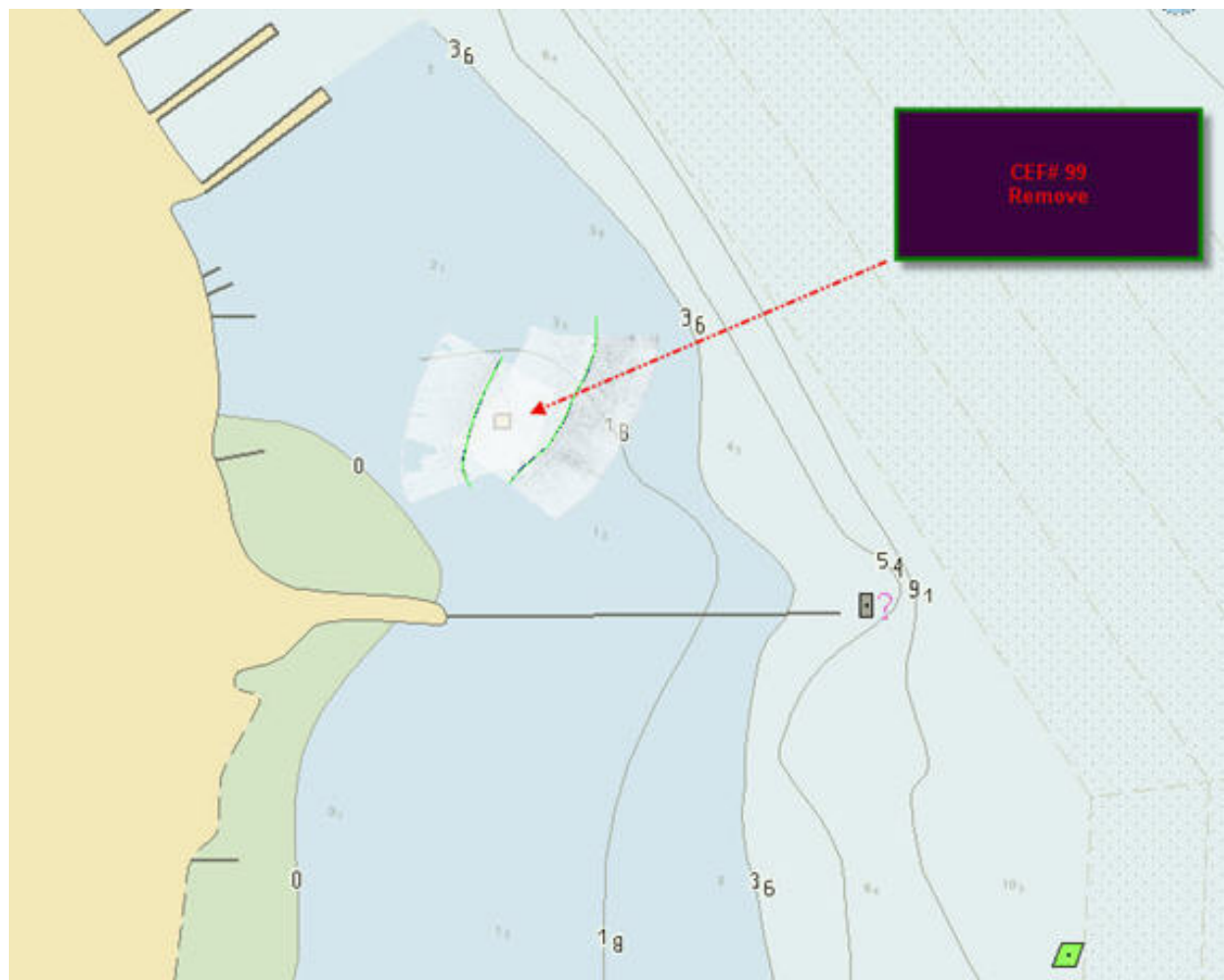


Figure 1.4.1

1.5) CEF #37 - Ruins

Survey Summary

Survey Position: 32° 51' 38.1" N, 079° 57' 15.3" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:13:54 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 6
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	6	0.00	000.0	Primary

Hydrographer Recommendations

Retain charted ruins.

S-57 Data

Geo object 1: Shoreline Construction (SLCONS)
Attributes: CATSLC - 4:pier (jetty)
 CONDTN - 2:ruined
 WATLEV - 4:covers and uncovers

Office Notes

RSD investigation request of charted ruins. Ruins sighted visually by field unit in charted position. Retain as charted. Ruins on ENC and Raster as charted. No changes necessary.

Feature Images



Figure 1.5.1

1.6) CEF #79 - Subm dol removal

Survey Summary

Survey Position: 32° 51' 41.3" N, 079° 57' 19.8" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:14:34 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 7
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	7	0.00	000.0	Primary

Hydrographer Recommendations

Remove Subm dol and symbol from chart.

S-57 Data

[None]

Office Notes

RSD investigation request of Subm dol. Area searched with 200% Klein 3000 SSS and no feature found. Remove dolphin symbol and notation from the raster chart and ENC.

Feature Images

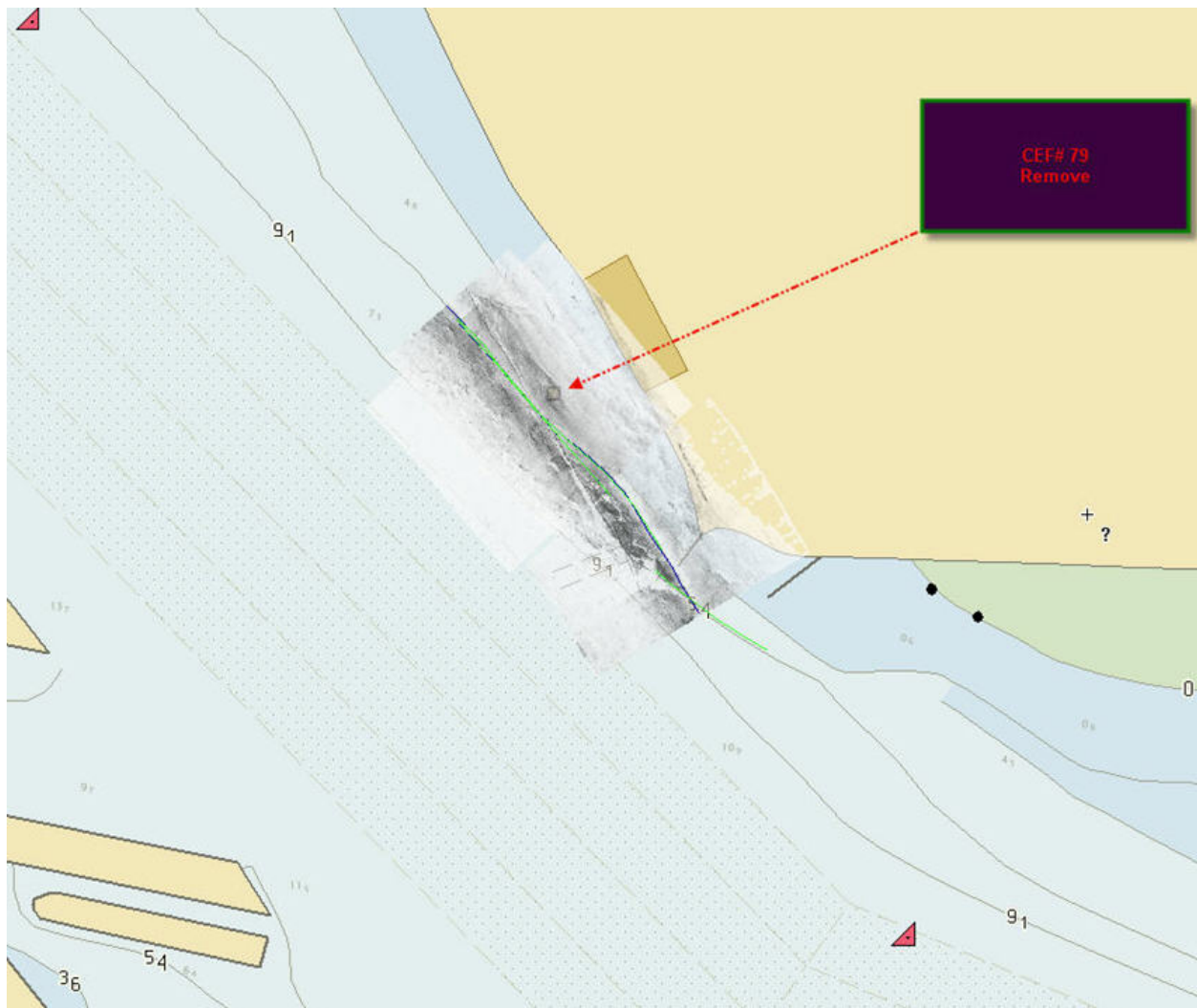


Figure 1.6.1

1.7) CEF #28 - ruins removal

Survey Summary

Survey Position: 32° 51' 59.2" N, 079° 57' 51.2" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:19:37 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 8
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	8	0.00	000.0	Primary

Hydrographer Recommendations

Delete any charted ruins in the vicinity of GP (none seen on raster).

S-57 Data

[None]

Office Notes

RSD investigation request of pier ruins. Area searched with 200% Klein 3000 SSS with no ruins found. Ruins are not charted on the latest edition of NOS chart 11524 but they are charted on the ENC. It is recommended that the ruins be removed from the ENC and no changes necessary for the raster chart.

Feature Images

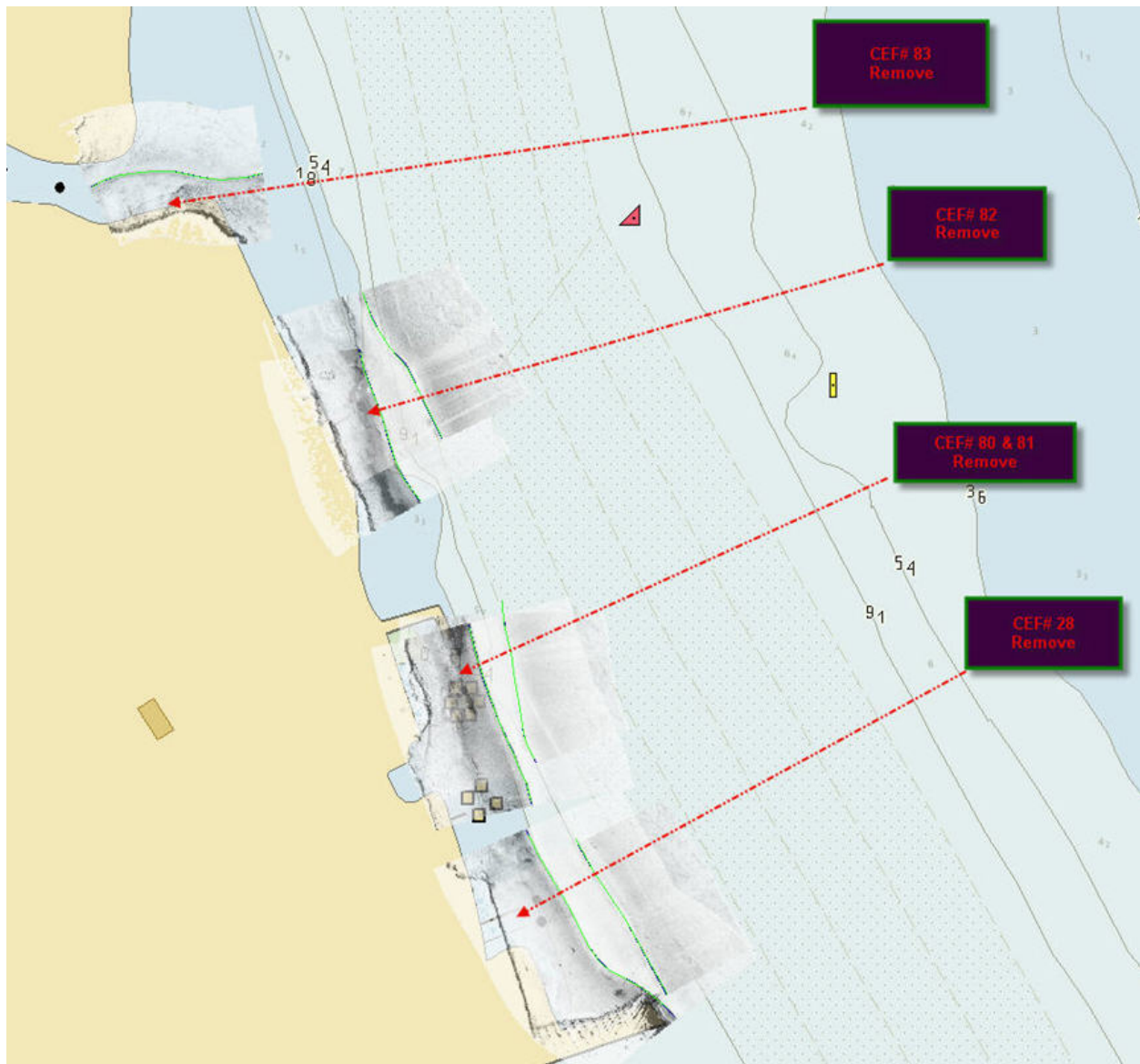


Figure 1.7.1

1.8) CEF #80 - Dolphins removal

Survey Summary

Survey Position: 32° 52' 05.1" N, 079° 57' 52.7" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:21:05 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 9
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	9	0.00	000.0	Primary
ChartGPs - Digitized	10	5.00	213.7	Secondary (grouped)

Hydrographer Recommendations

Remove charted Dolphins.

S-57 Data

[None]

Office Notes

Concur. RSD investigation request of charted dols. Area searched with 200% Klein 3000 SSS with no features found. Delete charted Dolphins on ENC and raster chart.

Feature Images

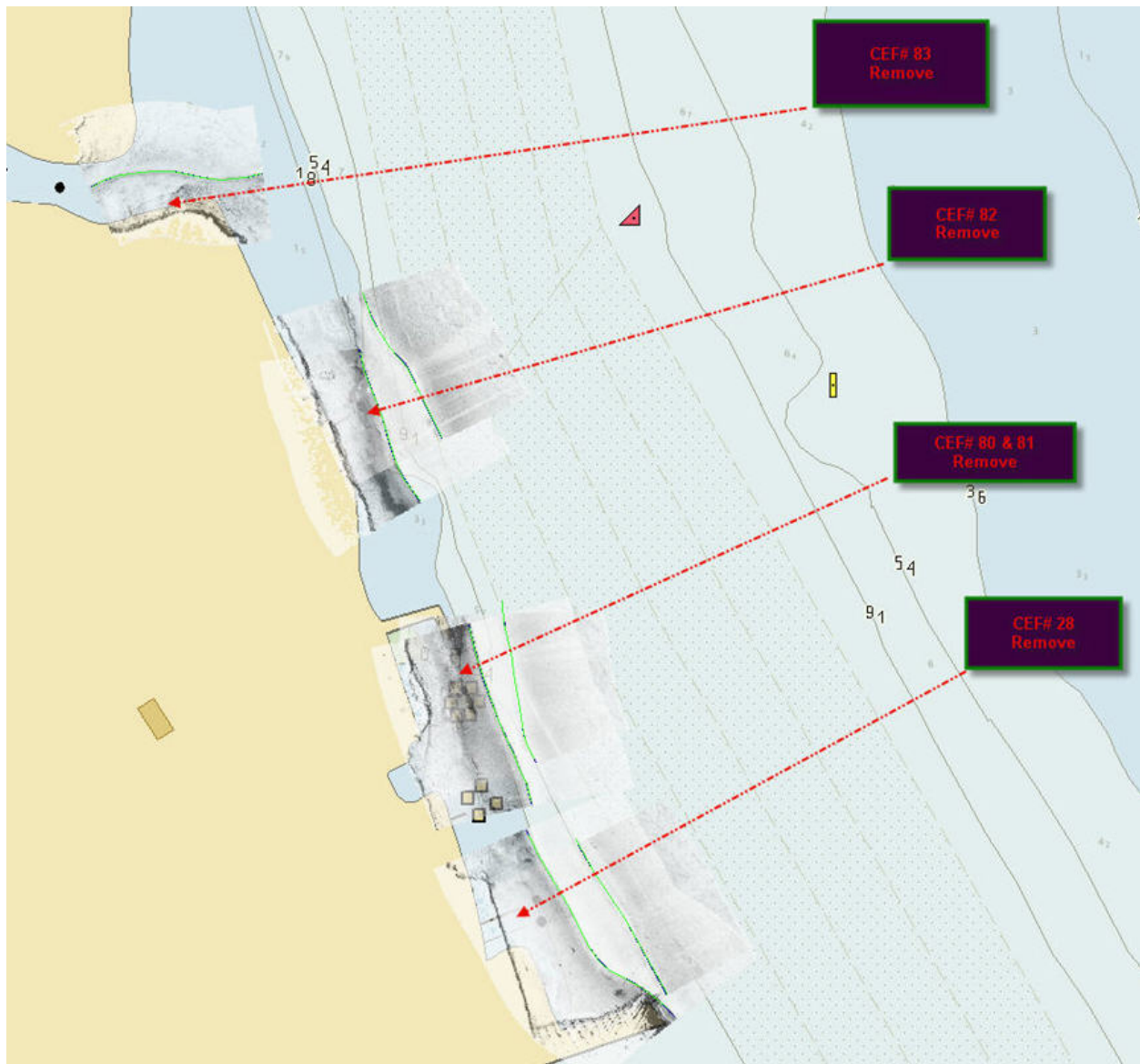


Figure 1.8.1

1.9) CEF #82 - ruins removal

Survey Summary

Survey Position: 32° 52' 12.0" N, 079° 57' 56.2" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:23:42 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 11
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	11	0.00	000.0	Primary

Hydrographer Recommendations

Remove any charted ruins in the vicinity of GP.

S-57 Data

[None]

Office Notes

RSD investigation request of subm ruins. Area search with 200% Klein 3000 SSS with no features found. Nothing found, nothing charted on raster but a pier (jetty) is charted on the ENC. Retain chart as is, delete the pier from the ENC.

Feature Images

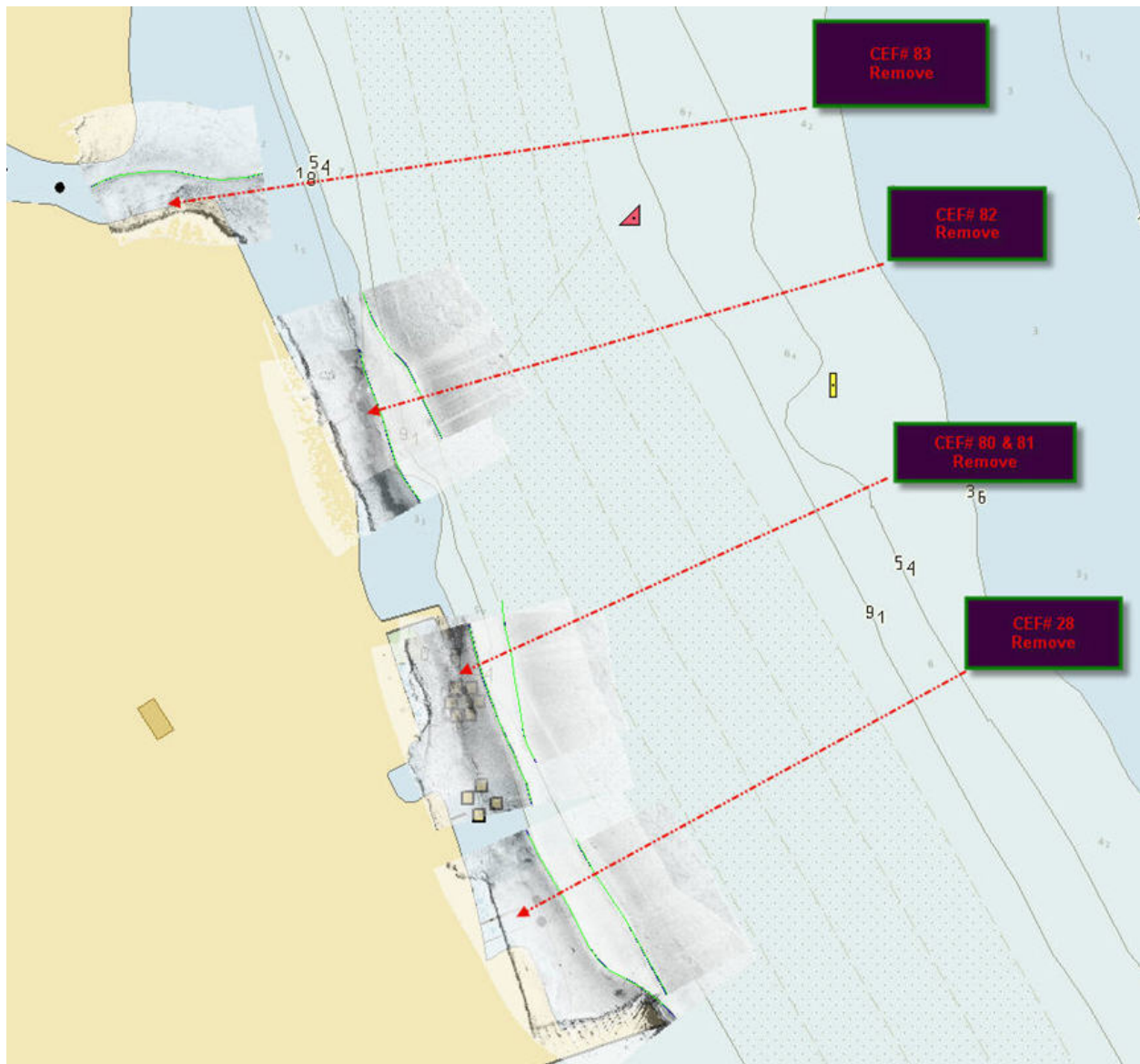


Figure 1.9.1

1.10) CEF #83 - subm pier removal

Survey Summary

Survey Position: 32° 52' 17.1" N, 079° 58' 02.2" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:23:58 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 12
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	12	0.00	000.0	Primary

Hydrographer Recommendations

Remove Subm pier from chart.

S-57 Data

[None]

Office Notes

RSD investigation request of Subm pier. Area covered with 100% Klein 3000 SSS with no features found. Delete charted submerged pier symbol and note from chart. Remove symbol from ENC.

Feature Images

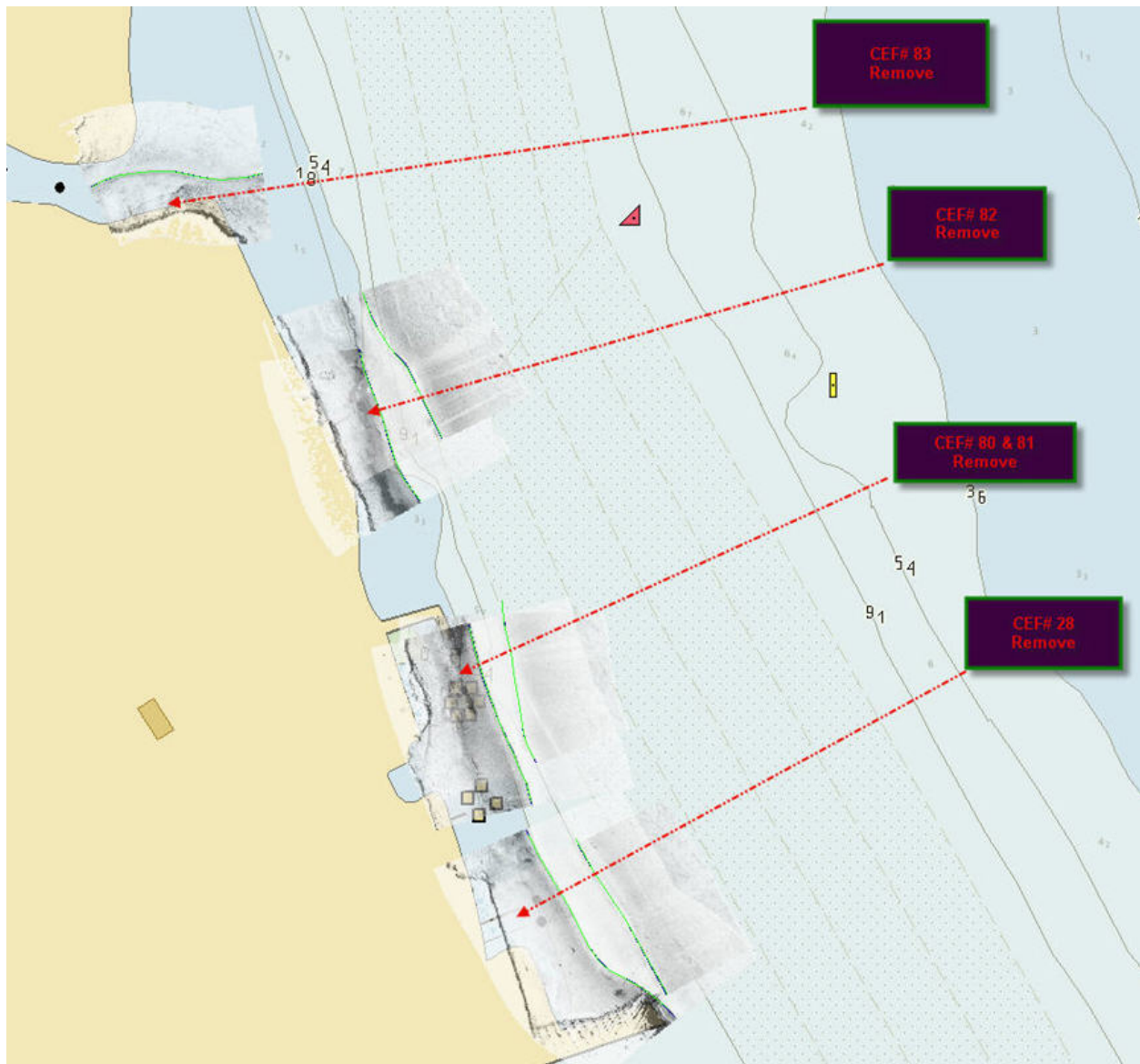


Figure 1.10.1

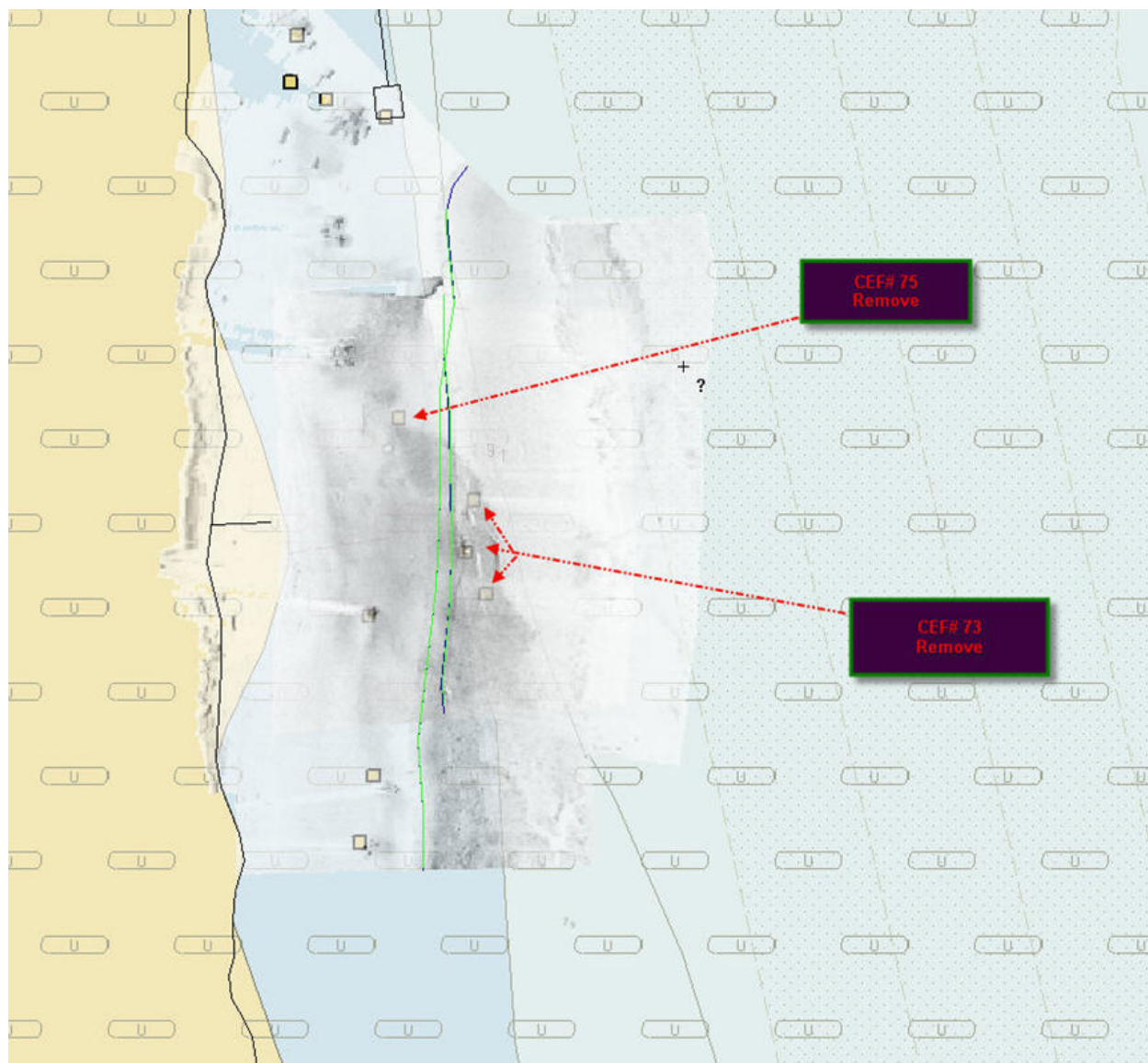


Figure 1.10.2

1.11) CEF #73 - ruins removal

Survey Summary

Survey Position: 32° 52' 41.0" N, 079° 58' 02.9" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:25:00 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 13
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	13	0.00	000.0	Primary

Hydrographer Recommendations

Remove any charted ruins from vicinity of GP.

S-57 Data

[None]

Office Notes

RSD investigation request of ruins. Area searched with 200% Klein 3000 SSS with no features found. Delete pier ruins symbol from raster and ENC.

Feature Images

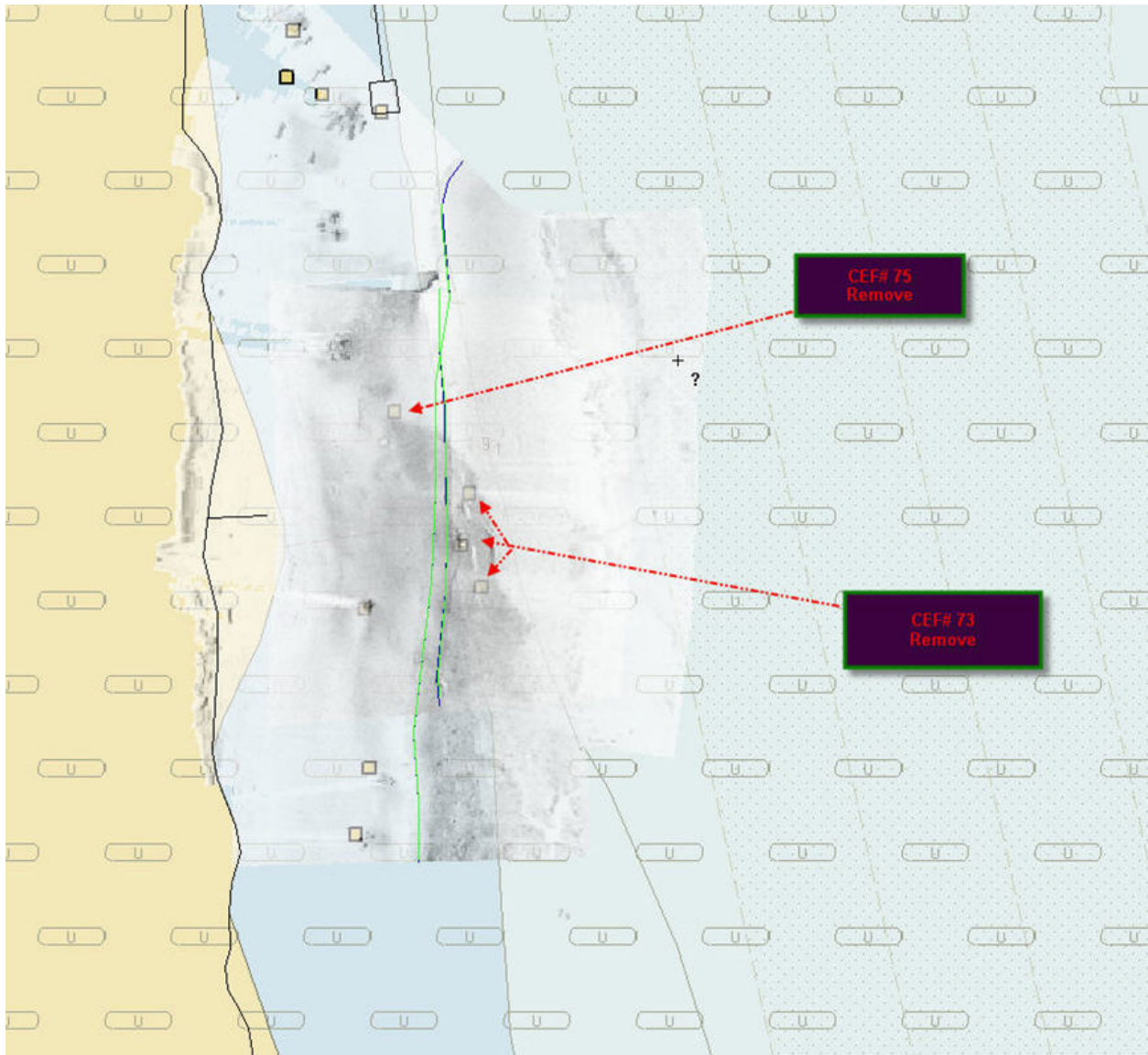


Figure 1.11.1

1.12) CEF #75 - ruins removal

Survey Summary

Survey Position: 32° 52' 42.3" N, 079° 58' 03.7" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:25:10 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 14
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	14	0.00	000.0	Primary

Hydrographer Recommendations

Remove any charted ruins from vicinity of GP.

S-57 Data

[None]

Office Notes

RSD investigation request of ruins. Area searched with 200% Klein 3000 SSS with no features found. No ruins found, no ruins charted on raster nor ENC. No changes to charting necessary.

Feature Images

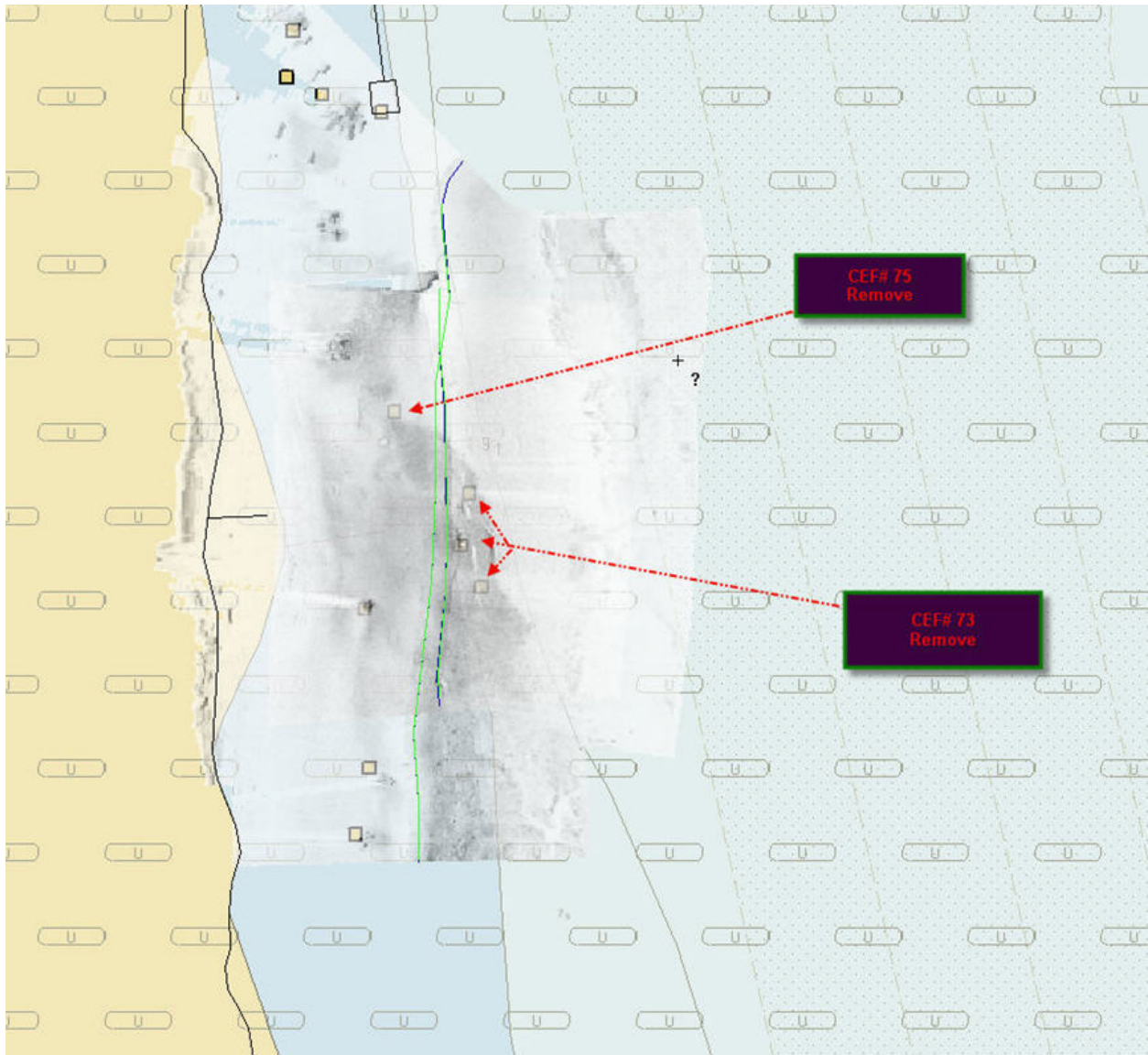


Figure 1.12.1

1.13) CEF #93 - subm ruins removal

Survey Summary

Survey Position: 32° 52' 45.8" N, 079° 57' 40.2" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:25:48 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 15
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	15	0.00	000.0	Primary

Hydrographer Recommendations

Remove any charted ruins from the vicinity of GP.

S-57 Data

[None]

Office Notes

RSD investigation request of subm ruins. Area searched with 200% Klein 3000 SSS and no features found. No ruins found. No ruins charted on raster. Pier (jetty) charted on ENC. Remove Pier (jetty) from ENC, retain raster as charted.

Feature Images

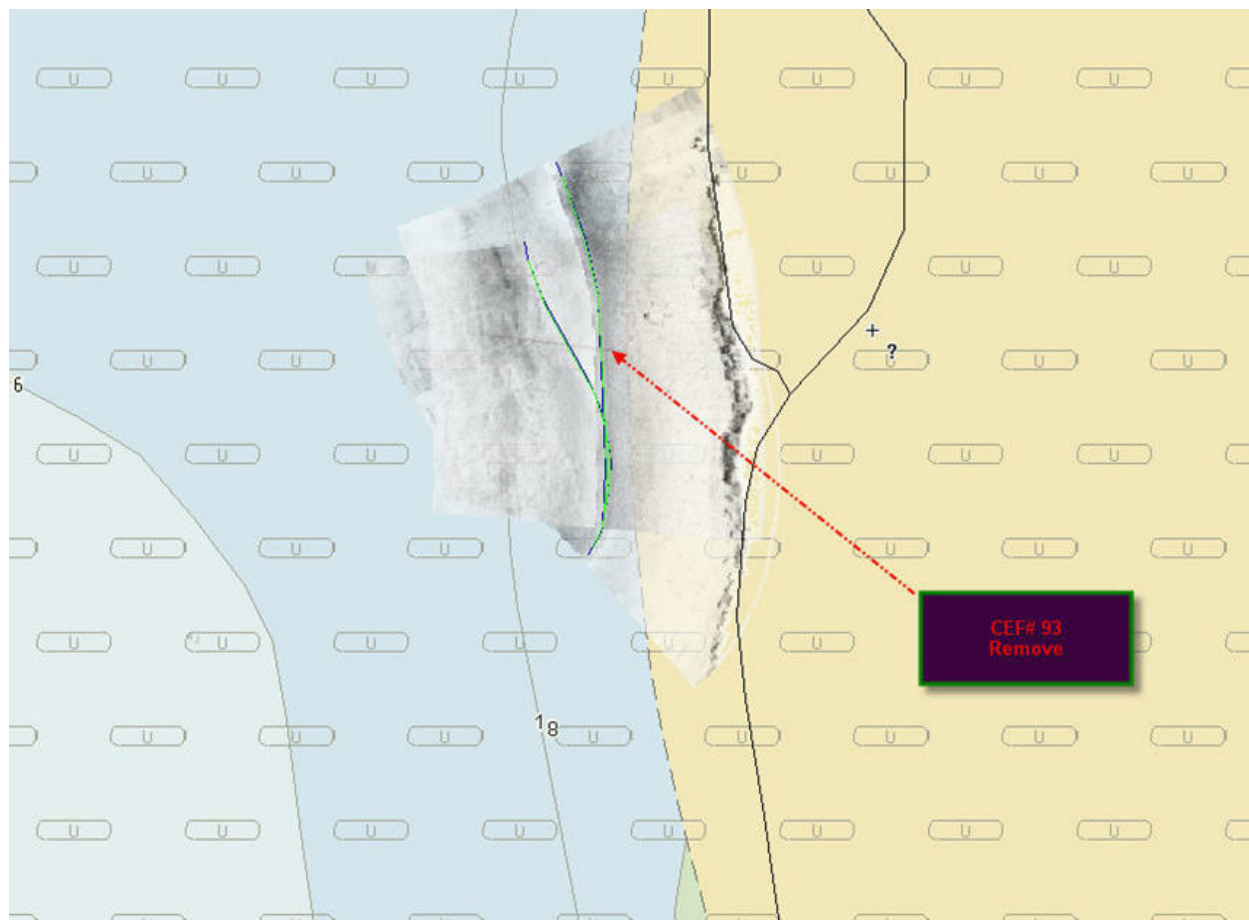


Figure 1.13.1

1.14) CEF #96 - subm ruins removal**Survey Summary**

Survey Position: 32° 53' 01.1" N, 079° 58' 04.5" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:26:10 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 16
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	16	0.00	000.0	Primary

Hydrographer Recommendations

Remove any charted ruins in the vicinity of GP.

S-57 Data

[None]

Office Notes

RSD investigation request of subm ruins. Area searched with 200% Klein 3000 SSS and no ruins-type features found. No ruins found, no ruins charted on raster. Pier (jetty) charted on ENC. Remove pier (jetty) from ENC. No changes to raster necessary.

Feature Images*Figure 1.14.1*

1.15) CEF #76 - subm ruins removal

Survey Summary

Survey Position: 32° 53' 08.5" N, 079° 58' 03.5" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:26:24 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 17
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	17	0.00	000.0	Primary

Hydrographer Recommendations

Remove any charted ruins from vicinity of GP.

S-57 Data

[None]

Office Notes

RSD investigation request of ruins. Area searched with 200% Klein 3000 SSS with no features found. No ruins found, no ruins charted on raster. Pier ruins on ENC. Remove Ruins from ENC. No changes to raster necessary.

Feature Images

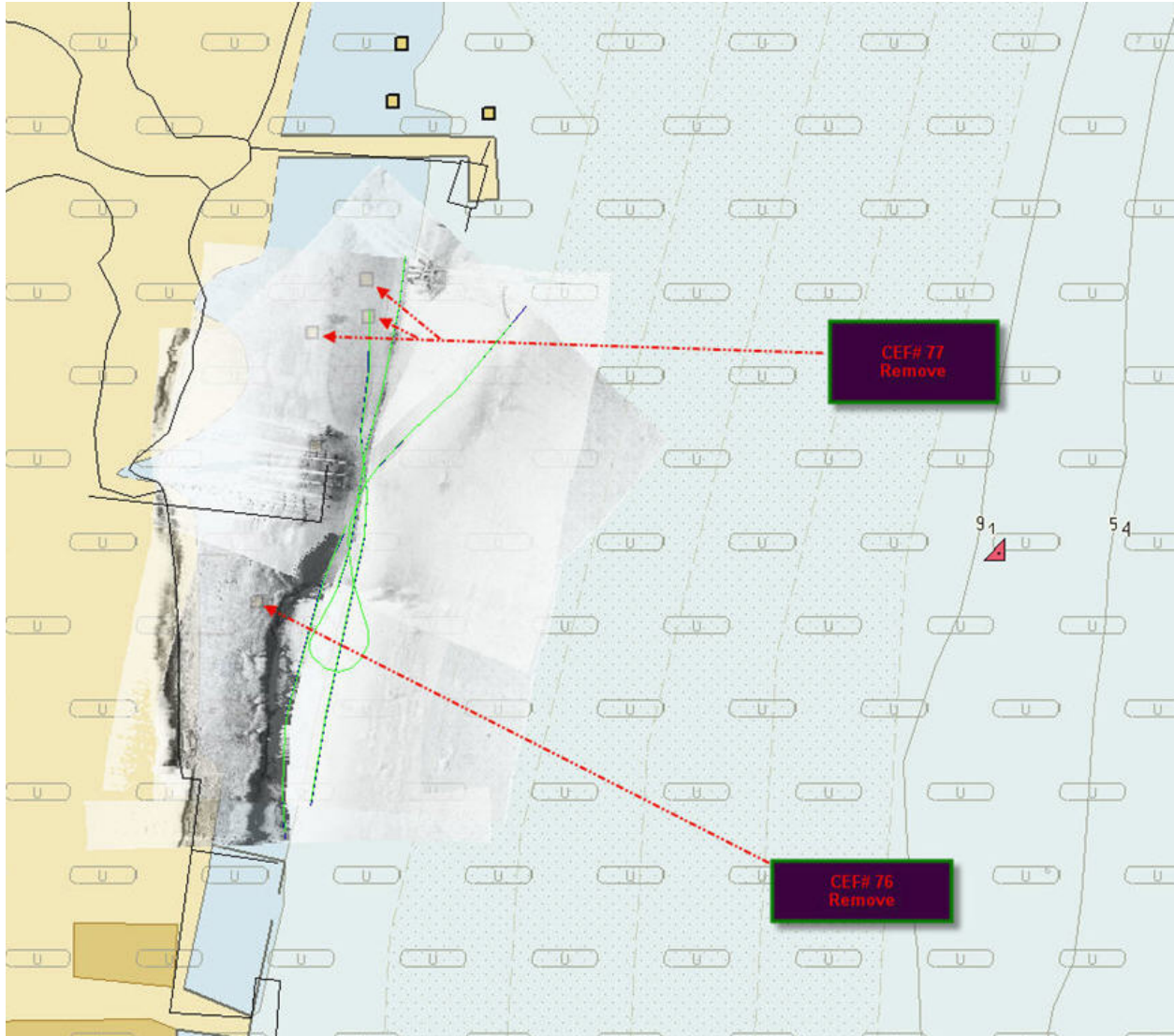


Figure 1.15.1

1.16) CEF #77 - subm ruins removal

Survey Summary

Survey Position: 32° 53' 12.0" N, 079° 58' 02.2" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:26:37 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 18
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	18	0.00	000.0	Primary

Hydrographer Recommendations

Remove any charted ruins from vicinity of GP.

S-57 Data

[None]

Office Notes

RSD investigation request of ruins. Area searched with 200% Klein 3000 SSS with no features found. No ruins found, no ruins charted on raster nor ENC. No changes to charting necessary.

Feature Images

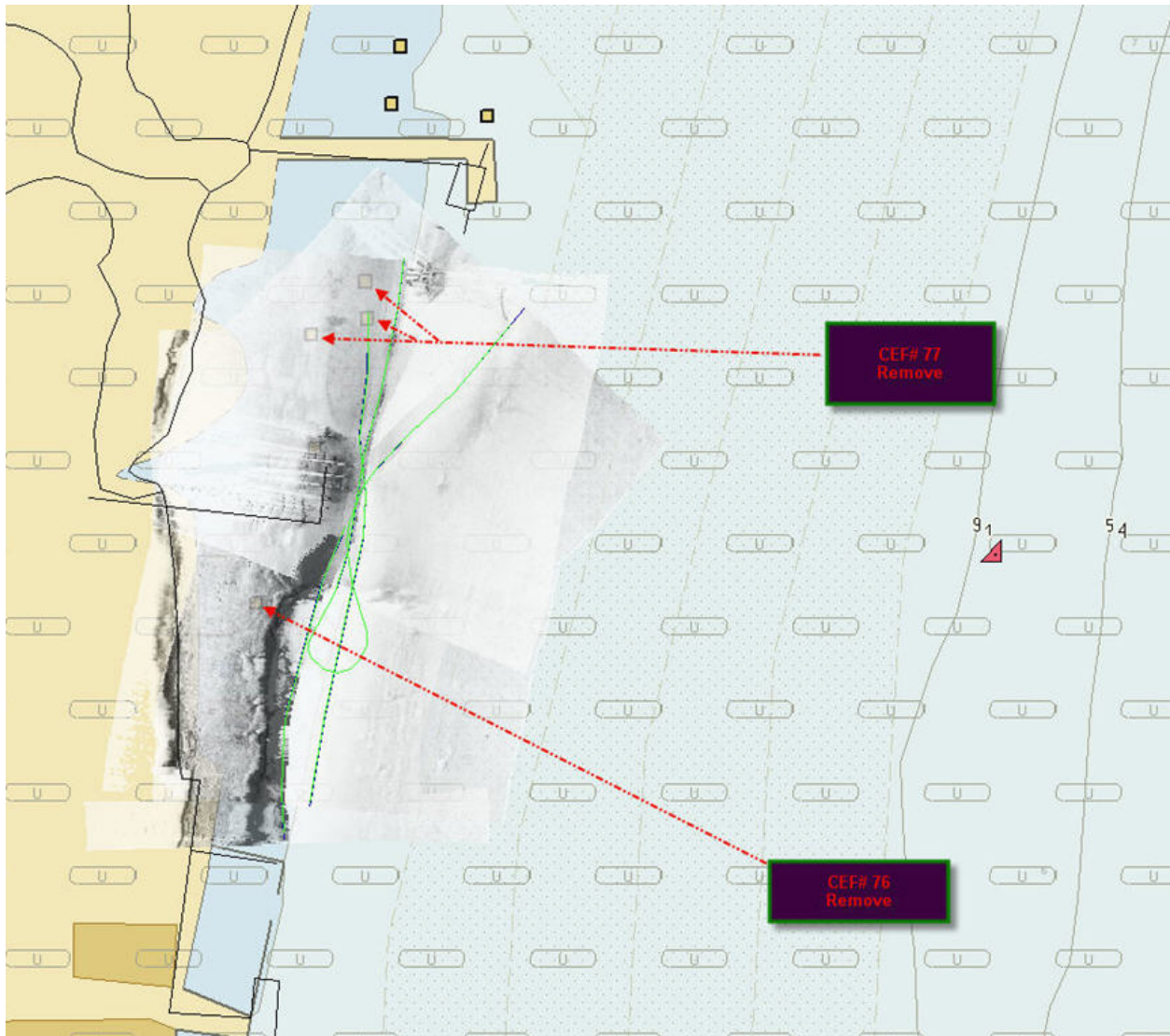


Figure 1.16.1

1.17) CEF #78 - Dolphins

Survey Summary

Survey Position: 32° 53' 14.4" N, 079° 58' 01.3" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:26:48 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 19
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	19	0.00	000.0	Primary

Hydrographer Recommendations

Retain charted dolphins.

S-57 Data

Geo object 1: Mooring/warping facility (MORFAC)
Attributes: CATMOR - 1:dolphin

Office Notes

RSD investigation request of charted dolphins. Dolphins sighted visually by the field unit. ENC has 7 dolphins charted, raster chart has only 6. Add a dolphin to raster chart based on ENC position. Retain other 6 as charted.

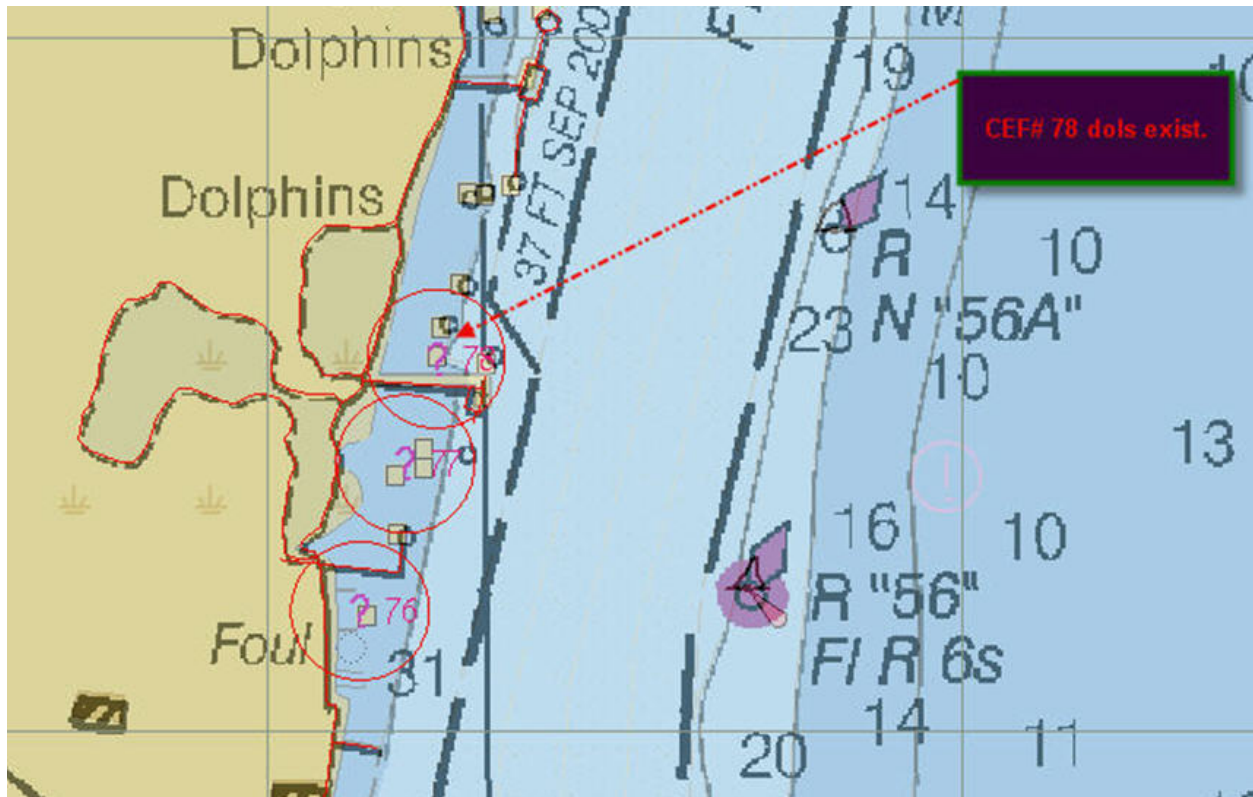
Feature Images*Figure 1.17.1*



Figure 1.17.2



Figure 1.17.3

1.18) CEF #94 - I-526 Cooper River Bridge and power lines

Survey Summary

Survey Position: 32° 53' 28.7" N, 079° 57' 54.4" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:27:07 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 20
Charts Affected: 11524_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	20	0.00	000.0	Primary

Hydrographer Recommendations

Change the charted position of the I-526 bridge to that seen in orthoimagery. Chart overhead power lines in current charted position of bridge or by orthoimagery position.

S-57 Data

[None]

Office Notes

RSD investigation request of I-526 bridge. The bridge was sighted by the field party. Power lines now exist 80 meters north of the charted bridge position, also sighted by the field party. The I-526 bridge is approximately 40 meters south of the charted position as viewed in the shape file submitted with this survey and about 36 meters south of the charted position as viewed on the orthoimagery file submitted of the area. It is unclear which is correct, the shape file or the orthoimagery. Because the shape files submitted by field do not match orthoimagery submitted by the field, a determination of the exact location of the bridge could not be determined in the office. It is recommended that the bridge position be updated by RSD based on the latest RSD orthoimagery.

There are lighted fenders on the bridge supports (lights on inboard of fenders). Defer to RSD for final determination of position of lights based on latest orthoimagery.

Defer to RSD to add overhead cable based on latest orthoimagery and to publish clearances.

Feature Images

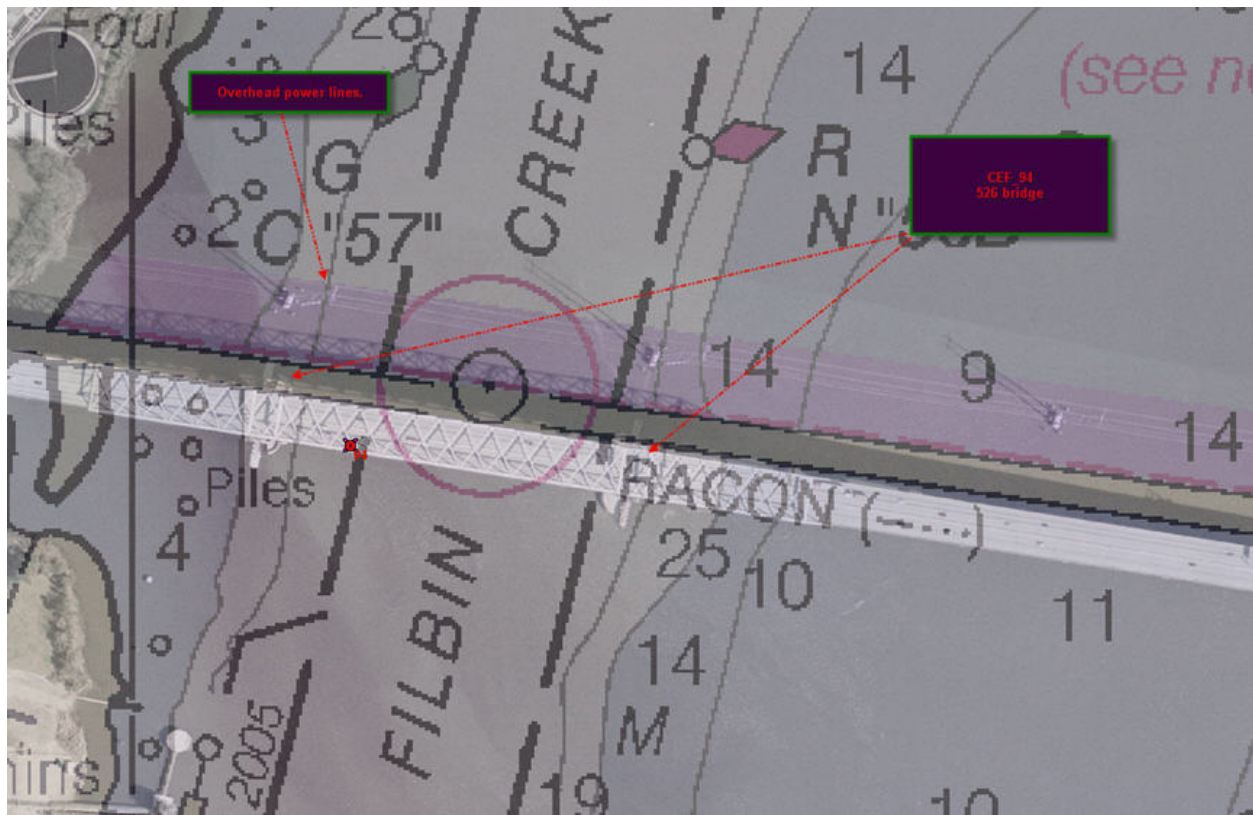


Figure 1.18.1



Figure 1.18.2



Figure 1.18.3

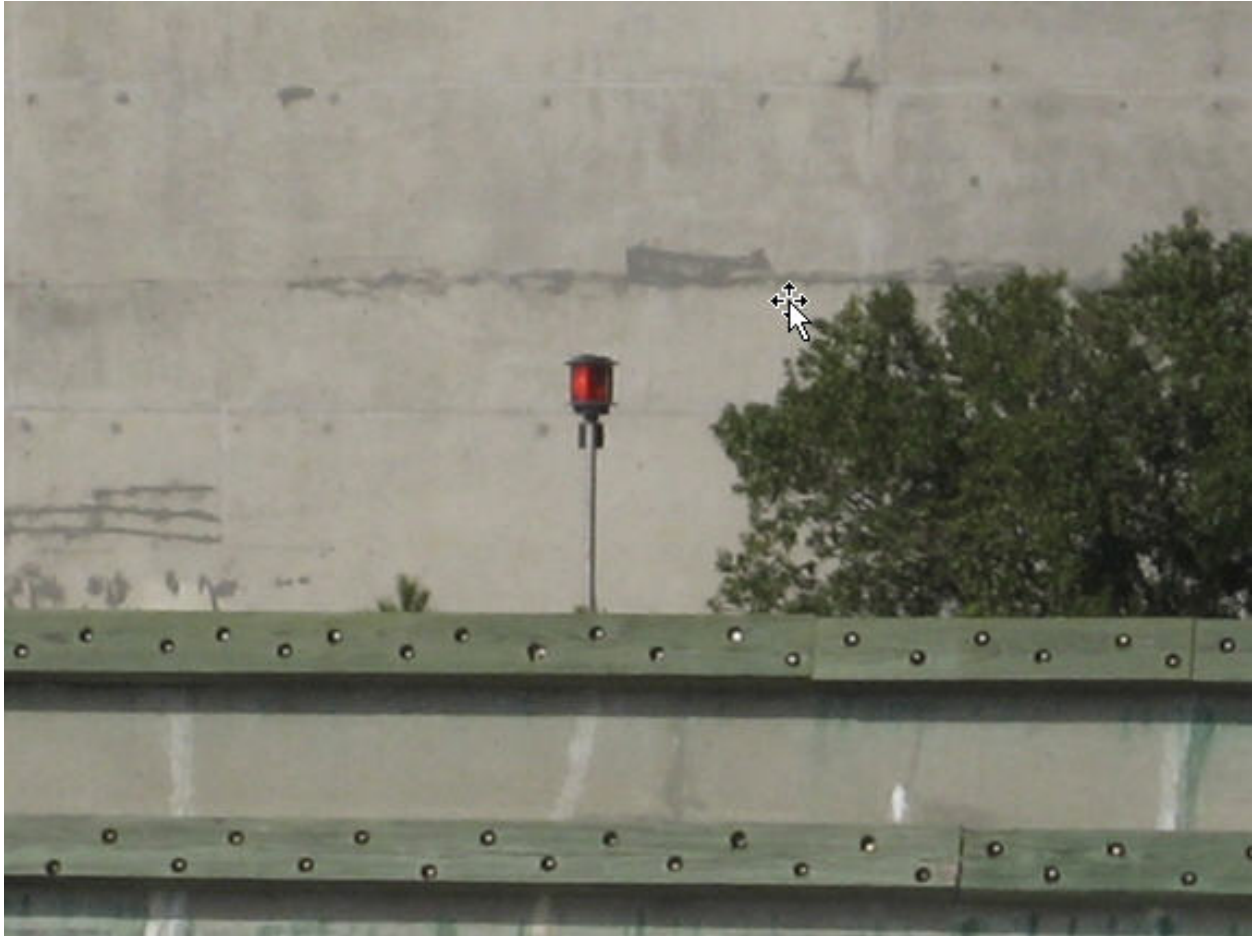


Figure 1.18.4

1.19) CEF #91 - Navy Pier, Towers

Survey Summary

Survey Position: 32° 55' 42.0" N, 079° 56' 15.7" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2009-096.12:40:48 (04/06/2009)
GP Dataset: ChartGPs - Digitized
GP No.: 21
Charts Affected: 11524_1, 11527_1, 11521_1, 11520_1, 11009_1, 411_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	21	0.00	000.0	Primary

Hydrographer Recommendations

Retain charted pier and towers.

S-57 Data

Geo object 1: Shoreline Construction (SLCONS)
Attributes: CATSLC - 4:pier (jetty)
WATLEV - 2:always dry

Office Notes

RSD investigation request of Navy pier and towers. Feature(s) found as charted. Retain as charted.

Feature Images

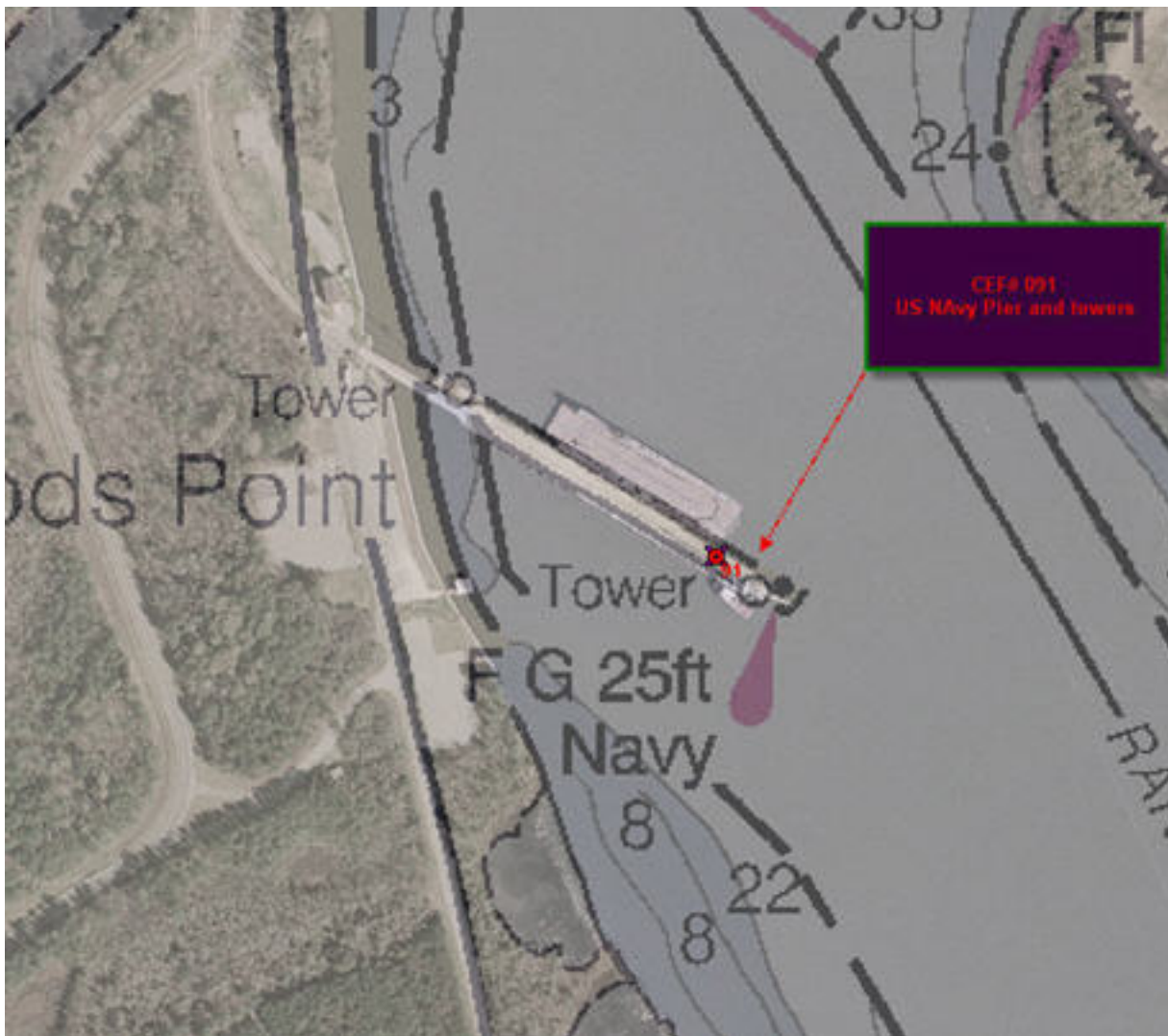


Figure 1.19.1



Figure 1.19.2

APPENDIX III
FINAL PROGRESS SKETCH AND SURVEY

APPENDIX IV
TIDES AND WATER LEVELS



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

NOAA NRT-2 (N/CS53x2)
800 Scallop Dr, c/o Cape Marina
Cape Canaveral, FL 32920

February 23, 2009

MEMORANDUM FOR: Chief, Requirements and Development Division, N/OPS1
Robert W Ramsey Jr
FROM: Robert W Ramsey Jr, NOAA NRT-2 (N/CS53x2)
SUBJECT: Request for Approved Tides/Water Levels

Digitally signed by Robert W Ramsey Jr
DN: cn=Robert W Ramsey Jr, o=USDOC/NOAA/
NOS/NRT, ou=NRT-2, email=Robert.
Ramsey@NOAA.GOV, c=US
Date: 2009.02.23 15:01:01 Z

Please provide the following data:

1. Tide Note
2. Final TCARI grid
3. Six Minute Water Level data (Co-ops web site)

Transmit data to the following:

Robert.Ramsey@NOAA.GOV

These data are required for the processing of the following hydrographic survey:

Project No.: OPR-G347-NRT2-08
Registry No.: F-00551
State: South Carolina
Locality: Charleston Harbor
Sublocality: Charleston Harbor Entrance to Yellow House Creek

Attachments containing:

- 1) an Abstract of Times of Hydrography,
- 2) digital MID MIF files of the track lines from Pydro



Year_DOY	Min Time	Max Time
2009_041	15:47:54	16:10:54
2009_042	16:01:35	18:17:47

APPENDIX V
SUPPLEMENTAL SURVEY AND
CORRESPONDENCE

From Dave.Neander@noaa.gov
Sent Friday, February 20, 2009 5:47 pm
To Robert.Ramsey@noaa.gov
Subject Return Receipt (displayed) - OPR-G347-NRT2-09//F-00551/ATON submission
Attachments MDPNPart2.txt 1K MDPNPart3.txt 1K

This is a Return Receipt for the mail that you sent to dave.neander@noaa.gov.

Note: This Return Receipt only acknowledges that the message was displayed on the recipient's computer. There is no guarantee that the recipient has read or understood the message contents.

Return-path: <ocs.mailadmins@noaa.gov>
Disposition-notification-to: Robert.Ramsey@noaa.gov
Received: from noaa.gov ([127.0.0.1])
by mail.nos.noaa.gov (Sun Java System Messaging Server 6.2-7.05 (built Sep 5 2006)) id <0KFD00A01FD4WM00@mail.nos.noaa.gov>
(original mail from Robert.Ramsey@noaa.gov); Fri,
20 Feb 2009 12:15:38 -0500 (EST)
Received: from noaa.gov ([127.0.0.1])
by mail.nos.noaa.gov (Sun Java System Messaging Server 6.2-7.05 (built Sep 5 2006)) with ESMTP id <0KFD007JVJY1OW90@mail.nos.noaa.gov> for
aton.reports@noaa.gov; Fri, 20 Feb 2009 12:15:37 -0500 (EST)
Received: from [74.243.246.177] by mail.nos.noaa.gov (mshttpd); Fri,
20 Feb 2009 17:15:37 +0000 (GMT)
Date: Fri, 20 Feb 2009 17:15:37 +0000 (GMT)
From: Robert.Ramsey@noaa.gov
Subject: OPR-G347-NRT2-09//F-00551/ATON submission
To: ATON REPORT <aton.reports@noaa.gov>
Cc: Chris Hare <Christopher.Hare@noaa.gov>,
"lawrence.t.krepp" <Lawrence.T.Krepp@noaa.gov>,
Shep Smith <Shep.Smith@noaa.gov>
Message-id: <9207850c45495786.499ee539@noaa.gov>
MIME-version: 1.0
X-Mailer: Sun Java(tm) System Messenger Express 6.2-7.05 (built Sep 5 2006)
Content-type: multipart/mixed; boundary=--4305ef3222378377455828ba491a0000
Content-language: en
X-Accept-Language: en
Priority: normal

From Christopher.Hare@noaa.gov
Sent Friday, February 20, 2009 5:43 pm
To Robert.Ramsey@noaa.gov
Subject Return Receipt (displayed) - OPR-G347-NRT2-09//F-00551/ATON submission
Attachments MDNPart2.txt 1K MDNPart3.txt 1K

This is a Return Receipt for the mail that you sent to Christopher.Hare@noaa.gov.

Note: This Return Receipt only acknowledges that the message was displayed on the recipient's computer. There is no guarantee that the recipient has read or understood the message contents.

Return-path: <Robert.Ramsey@noaa.gov>
Disposition-notification-to: Robert.Ramsey@noaa.gov
Received: from noaa.gov ([127.0.0.1])
by mail.nos.noaa.gov (Sun Java System Messaging Server 6.2-7.05 (built Sep 5 2006)) with ESMTP id <0KFD007JVJY1OW90@mail.nos.noaa.gov>; Fri, 20 Feb 2009 12:15:37 -0500 (EST)
Received: from [74.243.246.177] by mail.nos.noaa.gov (mshttpd); Fri, 20 Feb 2009 17:15:37 +0000 (GMT)
Date: Fri, 20 Feb 2009 17:15:37 +0000 (GMT)
From: Robert.Ramsey@noaa.gov
Subject: OPR-G347-NRT2-09//F-00551/ATON submission
To: ATON REPORT <aton.reports@noaa.gov>
Cc: Chris Hare <Christopher.Hare@noaa.gov>, "lawrence.t.krepp" <Lawrence.T.Krepp@noaa.gov>, Shep Smith <Shep.Smith@noaa.gov>
Message-id: <9207850c45495786.499ee539@noaa.gov>
MIME-version: 1.0
X-Mailer: Sun Java(tm) System Messenger Express 6.2-7.05 (built Sep 5 2006)
Content-type: multipart/mixed; boundary=--4305ef3222378377455828ba491a0000
Content-language: en
X-Accept-Language: en
Priority: normal

From Richard.Sillcox@noaa.gov
Sent Friday, February 20, 2009 5:19 pm
To Robert.Ramsey@noaa.gov
Subject Return Receipt (displayed) - OPR-G347-NRT2-09//F-00551/ATON submission
Attachments MDPNPart2.txt 1K MDPNPart3.txt 1K

This is a Return Receipt for the mail that you sent to Richard.Sillcox@noaa.gov.

Note: This Return Receipt only acknowledges that the message was displayed on the recipient's computer. There is no guarantee that the recipient has read or understood the message contents.

Return-path: <ocs.mailadmins@noaa.gov>
Disposition-notification-to: Robert.Ramsey@noaa.gov
Received: from noaa.gov ([127.0.0.1])
by mail.nos.noaa.gov (Sun Java System Messaging Server 6.2-7.05 (built Sep 5 2006)) id <0KFD00A01FD4WM00@mail.nos.noaa.gov>
(original mail from Robert.Ramsey@noaa.gov); Fri,
20 Feb 2009 12:15:38 -0500 (EST)
Received: from noaa.gov ([127.0.0.1])
by mail.nos.noaa.gov (Sun Java System Messaging Server 6.2-7.05 (built Sep 5 2006)) with ESMTP id <0KFD007JVJY1OW90@mail.nos.noaa.gov> for
aton.reports@noaa.gov; Fri, 20 Feb 2009 12:15:37 -0500 (EST)
Received: from [74.243.246.177] by mail.nos.noaa.gov (mshttpd); Fri,
20 Feb 2009 17:15:37 +0000 (GMT)
Date: Fri, 20 Feb 2009 17:15:37 +0000 (GMT)
From: Robert.Ramsey@noaa.gov
Subject: OPR-G347-NRT2-09//F-00551/ATON submission
To: ATON REPORT <aton.reports@noaa.gov>
Cc: Chris Hare <Christopher.Hare@noaa.gov>,
"lawrence.t.krepp" <Lawrence.T.Krepp@noaa.gov>,
Shep Smith <Shep.Smith@noaa.gov>
Message-id: <9207850c45495786.499ee539@noaa.gov>
MIME-version: 1.0
X-Mailer: Sun Java(tm) System Messenger Express 6.2-7.05 (built Sep 5 2006)
Content-type: multipart/mixed; boundary=--4305ef3222378377455828ba491a0000
Content-language: en
X-Accept-Language: en
Priority: normal

From Christopher.Hare@noaa.gov
Sent Thursday, February 19, 2009 3:08 pm
To Robert.Ramsey@noaa.gov
Subject Return Receipt (displayed) - CEF_SC0601_submission
Attachments MDNPart2.txt

1K MDNPart3.txt

1K

This is a Return Receipt for the mail that you sent to Christopher.Hare@noaa.gov.

Note: This Return Receipt only acknowledges that the message was displayed on the recipient's computer. There is no guarantee that the recipient has read or understood the message contents.

Return-path: <Robert.Ramsey@noaa.gov>
Disposition-notification-to: Robert.Ramsey@noaa.gov
Received: from noaa.gov ([127.0.0.1])
by mail.nos.noaa.gov (Sun Java System Messaging Server 6.2-7.05 (built Sep 5 2006)) with ESMTP id <0KFB00K41FCAGOE0@mail.nos.noaa.gov>; Thu, 19 Feb 2009 08:40:58 -0500 (EST)
Received: from [74.243.246.177] by mail.nos.noaa.gov (mshttpd); Thu, 19 Feb 2009 13:40:58 +0000 (GMT)
Date: Thu, 19 Feb 2009 13:40:58 +0000 (GMT)
From: Robert.Ramsey@noaa.gov
Subject: CEF_SC0601_submission
To: Mike Espey <Mike.Espey@noaa.gov>, Danielle Stuby <Danielle.Stuby@noaa.gov>, "lawrence.t.krepp" <Lawrence.T.Krepp@noaa.gov>
Cc: "David.Elliott@noaa.gov" <David.Elliott@noaa.gov>, Chris Hare <Christopher.Hare@noaa.gov>, Shep Smith <Shep.Smith@noaa.gov>
Message-id: <f8fc02c3639b103.499d616a@noaa.gov>
MIME-version: 1.0
X-Mailer: Sun Java(tm) System Messenger Express 6.2-7.05 (built Sep 5 2006)
Content-type: multipart/mixed; boundary=--78c99deab289c272286123846a18156
Content-language: en
X-Accept-Language: en
Priority: urgent
X-Priority: 1 (Highest)

From Mike Espey <Mike.Espey@noaa.gov>

Sent Thursday, February 19, 2009 2:10 pm

To Robert.Ramsey@noaa.gov

Cc Danielle Stuby <Danielle.Stuby@noaa.gov> , "lawrence.t.krepp" <Lawrence.T.Krepp@noaa.gov> , "David.Elliott@noaa.gov" <David.Elliott@noaa.gov> , Chris Hare <Christopher.Hare@noaa.gov> , Shep Smith <Shep.Smith@noaa.gov>

Subject Re: CEF_SC0601_submission

Attachments vCard(mike_espey)

1K

Thanks Bob, data rec'd (you may delete from ftp now). Your work on these items is appreciated!

-Mike

Robert.Ramsey@noaa.gov wrote:

Mike,

Attached is the edited dbf for CEF_SC0601, and a supplemental pdf that will go forward to AHB for addition to the charts with F-00551, 2009. Below is a link to download the zip file that contains additional information, photos, and support imagery from 2007 for your information, and use as you may choose. When you take it from the server, please make sure it unzips and then delete it from the server, or email me and I will, as it is a large one, and took 4 hours to upload, I do not want to that again, Ha!!

If you have any questions, or comments, please feel free to contact us, and once again it was a pleasure have Danielle down to help in this endeavor. I think we continually enhance the understanding of interdepartmental approaches, and mission parameters doing this, when it works out for both our needs and schedules.

<ftp://spo.nos.noaa.gov/Public/NRT2/>

Have a good evening,

Bob Ramsey
NOAA / NRT2

From <Robert.Ramsey@noaa.gov>

Sent Wednesday, March 4, 2009 7:48 pm

To hydro.info@noaa.gov

Cc gene parker <Castle.E.Parker@noaa.gov> , Shep Smith
<Shep.Smith@noaa.gov>

Subject OPR-G347-NRT2-08 // F00551 Raw data size

The following data will be sent upon receipt of smooth tides, still pending from request submitted on 23 Feb 2009.

OPR-G347-NRT2-08

F-00551, 2009

S-1210

VBES= 124mb

SSS= 335mb

additional raw data consist of POS MV , and hand held trimble data not included in the above figures.

Thank You,

Bob Ramsey

NOAA NRT-2

Sun Java-System Messenger Express

Welcome Robert Ramsey

 Help Log Out**Folders Inbox Sent Trash Drafts Addresses Options**Robert.Ramsey@noaa.gov: [Active Survey Related Temp](#)

Compose



Reply



Reply All



Forward



Delete



Printable



Add Addresses



Previous



Next



Close

[Move m](#)From [Mark Frydrych <Mark.Frydrych@noaa.gov>](#)

Sent Wednesday, March 4, 2009 9:41 pm

To [Robert.Ramsey@noaa.gov](#)

Subject Re: OPR-G347-NRT2-08 // F00551 Raw data size

Attachments [vCard\(mark_frydrych\)](#)

1K

Rob,
Will be waiting for the data.

Mark

Robert.Ramsey@noaa.gov wrote:

> The following data will be sent upon receipt of smooth tides, still pending from request submitted on 23 Feb 2009.

>

>

> OPR-G347-NRT2-08

> F-00551, 2009

> S-1210

> VBES= 124mb

> SSS= 335mb

>

> additional raw data consist of POS MV , and hand held trimble data not included in the above figures.

>

> Thank You,

>

> Bob Ramsey

> NOAA NRT-2

>

Subject: Re: Survey F00551 (data submitted to RSD)
From: David.Elliott@noaa.gov
Date: Tue, 28 Jul 2009 08:10:08 -0400
To: Debbie Bland <Deborah.A.Bland@noaa.gov>
CC: "LCDR Rick Brennan, NOAA" <Richard.T.Brennan@noaa.gov>

Hi Debbie,

Thank you for the note. Call on me anytime if you feel I can help. I believe NRB is taking some steps for the next round of the FPM to clarify the differences between CEF surveys and conventional. Naturally there has to be a record somewhere for items that are seaward and have to be side scanned for disproval, so it seemed the processing branch was the best avenue for that data. Please relay our conversations with other verifiers at AHB. I think that will be helpful for all.

Best regards, D.

----- Original Message -----

From: Debbie Bland <Deborah.A.Bland@noaa.gov>
Date: Monday, July 27, 2009 4:45 pm
Subject: Survey F00551 (data submitted to RSD)
To: David.Elliott@noaa.gov, "LCDR Rick Brennan, NOAA" <Richard.T.Brennan@noaa.gov>

David, as per our conversation this afternoon;

It is my understanding that for survey F00551, AHB should only be concerned with the uncharted submerged dolphin positioned during present survey operations and any bathymetric data collected. We do not need to do anything further to any of the CEF assigned items already submitted to RSD for direct addition to the CEF shoreline product. This data was submitted to AHB for information and clarification purposes only.

Thank you for your assistance,

Debbie Bland

From Smooth.Tides@noaa.gov
Sent Monday, February 23, 2009 3:14 pm
To Robert.Ramsey@noaa.gov
Subject Return Receipt (displayed) - Smmoth Tide request OPR-G347-NRT2-08/F00551
Attachments MDNPart2.txt 1K MDNPart3.txt 1K

This is a Return Receipt for the mail that you sent to Smooth.Tides@noaa.gov.

Note: This Return Receipt only acknowledges that the message was displayed on the recipient's computer. There is no guarantee that the recipient has read or understood the message contents.

Return-path: <Robert.Ramsey@noaa.gov>
Disposition-notification-to: Robert.Ramsey@noaa.gov
Received: from noaa.gov ([127.0.0.1])
by mail.nos.noaa.gov (Sun Java System Messaging Server 6.2-7.05 (built Sep 5 2006)) with ESMTP id <0KF100KIFY0E8GB0@mail.nos.noaa.gov> for smooth.tides@noaa.gov; Mon, 23 Feb 2009 10:07:26 -0500 (EST)
Received: from [74.243.246.177] by mail.nos.noaa.gov (mshttpd); Mon, 23 Feb 2009 15:07:26 +0000 (GMT)
Date: Mon, 23 Feb 2009 15:07:26 +0000 (GMT)
From: Robert.Ramsey@noaa.gov
Subject: Smmoth Tide request OPR-G347-NRT2-08/F00551
To: Smooth Tides Request <Smooth.Tides@noaa.gov>
Message-id: <d857c4011d3b102d.49a2bbae@noaa.gov>
MIME-version: 1.0
X-Mailer: Sun Java(tm) System Messenger Express 6.2-7.05 (built Sep 5 2006)
Content-type: multipart/mixed; boundary=--6bcfb8226d94c64fd5886fc43aa891a
Content-language: en
X-Accept-Language: en
Priority: normal
Original-recipient: rfc822;smooth.tides@noaa.gov

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT to ACCOMPANY
SURVEY F00551 (2009)**

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.

B. DATA ACQUISITION AND PROCESSING

B.1 DATA PROCESSING

The following software was used to process data at the Atlantic Hydrographic Branch:

CARIS HIPS/SIPS version 6.1 HF 1-6
CARIS Bathymetry Manager version 2.1 HF 1-7
DKART INSPECTOR, version 5.0 Build 732 SP1
CARIS HOM version 3.3 SP3
CARIS S57 Composer version 2.0
HSTP PYDRO version 8.5 r2537

B.2. QUALITY CONTROL

B.2.1. H-Cell

The AHB source depth grid for the survey's nautical chart update product was the shoal layer from the field submitted 2m VBES grid. The survey scale soundings were created from the shoal surface at 1mm radius at 1:10,000. The chart scale soundings were hand selected for the 20,000 chart scale. The chart scale selected soundings are a subset of the survey scale selected soundings.

Depth curves were hand-drawn. The depth curves are forwarded to MCD for reference only. The curves were utilized during chart scale sounding selection and quality assurance efforts at AHB. The depth curves are incorporated into the SS_H-Cell product as per 2009 H-Cell Specifications. The charted contours should be updated based on the SS_H-Cell data.

The pre-compilation products or components (Stand Alone HOB files (SAHOB)) are detailed in the Compile Log attached at the end of this document. The SAHOB files included depth areas (DEPARE), hand_drawn_depth contours (DEPCNT), sounding selections (SOUNDG), features (OBSTRN), US5SC14M_ENC_Features (BRIDGE, MORFAC, SLCONS), Meta objects (M_COVR, M_QUAL), and cartographic Blue Notes (\$CSYMB, CBLOHD).

All of the components with the exception of the sounding selection and depth contours were inserted into one feature layer (including the BlueNotes, as dictated by Hydrographic Technical Directive 2008-8), and this layer was exported into S-57 format in order to create the H-Cell deliverable. Similarly, the sounding selection and depth contours were exported into S-57 format separately, and then both S-57 files were processed in CARIS HOM to convert the metric units to feet. The final products are two

S-57 files, in Lat/Lon NAD-83, one that contains the chart soundings, all the features, Meta objects, and BlueNotes (F00551_CS.000), and one that contains the sounding selection and depth contours (F00551_SS.000). Finally, quality assurance checks were made utilizing CARIS S-57 Composer version 2.0 validation checks and DKART INSPECTOR, version 5.0, tests

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

F00551 CARIS H-Cell final deliverables include the following products:

F00551_CS.000	1:20,000 Scale	F00551 H-Cell with Chart Scale Selected Soundings
F00551_SS.000	1:10,000 Scale	F00551 Selected Soundings (Survey Scale)

B.2.2. Junctions

Survey F00551 (2009) does not junction with any contemporary surveys. Present survey depths are in harmony with the charted hydrography to the north, south, east and west.

C. VERTICAL AND HORIZONTAL CONTROL

Final vertical correction processing was completed by the field unit with no additional correction required by Atlantic Hydrographic Branch. The field unit applied verified water levels in conjunction with the preliminary tidal zoning which was accepted and approved by N/OPSI CO-OPS as the final zoning for F00551. Sounding datum is Mean Lower Low Water (MLLW). Vertical datum is Mean High Water (MHW)

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 17.

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

11524 (51st Edition, Feb./08)

Corrected through NM 03/21/2009
Corrected through LNM 03/21/2009
Scale 1:20,000

ENC Comparison

US5SC14M

Charleston Harbor
Edition 25
Application Date 2009-04-06
Issue Date 2009-04-28

D.1.1 Hydrography

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section “D” and Appendices 1, 2 and 5 of the Descriptive Report. The following exceptions are noted:

a. As per conversation with the field unit, AHB’s only responsibility in processing of this survey was for item b (below) and the bathymetric data collected during the present survey. We commented on all items addressed in the survey because it is part of our data set, but the final recommendations were sent to RSD, by the field unit, before the survey was sent to AHB for processing. Our recommendations can be considered for information purposes only.

b. The field unit was asked to verify or disprove the existence of a submerged pile in the vicinity of Latitude 32°49'26.255"N, Longitude 079°57'49.473"W. They found the pile with a least depth of 1.28 feet in the above position. The pile is not charted on the latest edition of NOS chart 11524 but it is shown on the latest edition of ENC for that chart (US5SC14M). A second pile in the vicinity of Latitude 32°49'26.04"N, Longitude -079°57'49.959"W was not listed as an item for the field to investigate, but it too is a submerged pile which is shown on the latest edition of the ENC but not on NOS chart 11524. The first pile was found on the side scan sonar trace and it is recommended that this pile be retained on the ENC and added to NOS chart 11524. The second pile was not found on the side scan sonar trace, but the sidescan sonar data is of poor quality and cannot be used to disprove the pile. It is recommended that the second pile be retained as is on the ENC and be added to NOS chart 11524. Both features were carried forward from ENC US5SC14M.

c. The field unit was asked to verify the location of I-526 Cooper River Bridge in the vicinity of Latitude 32°53'29.442"N, Longitude 079°57'50.967"W. According to the shape file submitted with this survey, the I-526 Bridge is approximately 40 meters south of the charted position. According to the orthoimagery file of the area it is about 36 meters south of the charted position. It is unclear which position, the shape file or the orthoimagery, is correct. Because the shape files submitted by field do not match the orthoimagery submitted by the field, a determination of the exact location of the bridge could not be determined in the office. It is recommended that the bridge position be updated by RSD based on the latest RSD orthoimagery.

d. The field unit verified the existence of lighted fenders on the I-526 Cooper River Bridge supports (lights on inboard of fenders). There is not enough information for charting in the office. Defer to RSD for charting based on position of lights using latest orthoimagery.

e. The field unit verified that overhead power cables now exist 80 meters north of the charted bridge position, in the vicinity of Latitude 32°53'29.523"N, Longitude 079°57'51.062"W. The shape file representation of the cable has been added to the H-Cell file for the present survey. Final determination is deferred to RSD to add overhead cable based on latest orthoimagery and to publish clearances.

D.2. ADDITIONAL RESULTS

Ortho photo imagery and a shape file of shoreline features were provided by the field unit. It is recommended that ne aerial imagery be acquired and processed in RSD for application and further updating of NOS chart 11524.

D.3. 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. See Section D.1. of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey.

D.4. ADEQUACY OF SURVEY

The present survey is adequate to update the raster charted and ENC features investigated by the present survey only. Any features and depths not specifically addressed either in the H-Cell BASE Cell File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further recommendations by the hydrographer.

This Document is for Office Process use only and is intended to supplement, not supersede or replace, information/recommendations in the Descriptive or Evaluation Reports

AHB COMPILATION LOG

General Survey Information	
REGISTRY No.	<i>F00551</i>
PROJECT No.	<i>OPR-G347-NRT2-08</i>
FIELD UNIT	<i>Navigation Response Team 2</i>
DATE OF SURVEY	<i>February 10 & 11, 2009</i>
LARGEST SCALE CHART	<i>11524 (51st Edition, Feb./08), 1:20,000</i>
ADDITIONAL CHARTS	
SOUNDING UNITS	<i>(feet)</i>
COMPILER	<i>Deborah Bland</i>

Source Grids	File Name
	H:\Compilation\F00551_G347_NRT2\AHB_F00551
	<i>E-SAR Final Products\GRIDS\F00551_VBES_2m.hns</i>
	<i>E-SAR Final Products\GRIDS\F00551_VBES_2m_Final.hns</i>
	<i>E-SAR Final Products\GRIDS\F00551_Shoal.hns</i>
Surfaces	File Name
	H:\Compilation\HXXXXXX_XXXX-XXXX\AHB_HXXXXXX\COMPILE\Working
<i>Combined</i>	<i>HXXXXXX_Xm_Combined.hns</i>
<i>Interpolated TIN</i>	<i>\Surfaces\HXXXXXX_Xm_InterpTIN.hns</i>
<i>Shifted Interpolated TIN</i>	<i>\Surfaces\HXXXXXX_Xm_InterpTIN_Shifted.hns</i>
<i>Product Surface</i>	<i>\Surfaces\HXXXXXX_Xm_Product_Surface.hns</i>
Final HOBs	File Name
	H:\Compilation\F00551_G347_NRT2\AHB_F00551\COMPILE\Final_Hobs
<i>Survey Scale Soundings</i>	<i>F00551_SS_Soundings.hob</i>
<i>Chart Scale Soundings</i>	<i>F00551_CS_Soundings.hob</i>
<i>Contour Layer</i>	<i>F00551_Hand_Drawn_Contours.hob</i>
<i>Feature Layer</i>	<i>F00551_Features.hob</i>
<i>Meta-Objects Layer</i>	<i>F00551_MetaObjects.hob</i>
<i>Blue Notes</i>	<i>F00551_BlueNotes.hob</i>
<i>ENC Retain Soundings</i>	<i>F00551_US5SC14M_ENC_Retain.hob</i>

Meta-Objects Attribution	
Acronym	Value
M_COVR	
CATCOV	
SORDAT	
SORIND	
M_QUAL	
CATZOC	
INFORM	Registry Number, Project Number, Vessel
POSACC	
SORDAT	
SORIND	
SUREND	
SURSTA	
DEPARE	

[Type text]

This Document is for Office Process use only and is intended to supplement, not supersede or replace, information/recommendations in the Descriptive or Evaluation Reports

DRVALV 1	
DRVALV2	
SORDAT	
SORIND	
M_CSCL	
CSCALE	
SORDAT	
SORIND	

SPECIFICATIONS:

- I. COMBINED SURFACE:
 - a. Number of ESAR Final Grids: 1
 - b. Resolution of Combined (m):

- II. SURVEY SCALE SOUNDINGS (SS): **233**
 - a. Radius
 - b. Shoal biased
 - c. Use Single-Defined Radius (mm at Map Scale): ; Radius Value = 1
 - d. Queried Depth of All Soundings
 - i. Minimum: **1.279**
 - ii. Maximum: **47.119**

- III. INTERPOLATED TIN SURFACE: **N/A**
 - a. Resolution (m):
 - b. Linear
 - c. Shifted value: *[-0.229m (feet), (≤ 10 fathoms)]
[$-1.372m$ (fathoms), (> 10 fathoms)]*

- IV. CONTOURS: **Hand Drawn**
 - a. Use a Depth List: HXXXXX_NOAA_depth_curves_list.txt
 - b. Line Object: DEPCNT
 - c. Value Attribute: VALDCO

- V. FEATURES:
 - a. Total Number of Features: **1**
 - b. Number of Insignificant Features: **N/A**

- VI. CHART SURVEY SOUNDINGS (CS):
 - a. Number of ENC CS Soundings:
 - b. Radius
 - c. Shoal biased
 - d. Use Single-Defined Radius: m on the ground
 - i. Radius Value (m):
 - ii. Or use a Sounding Space Range Table (if applicable): HXXXXX_SSR.txt
 - e. Filter: Interpolated != 1
 - f. Number Survey CS Soundings:

- VII. Notes: Item investigation survey.

[Type text]



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : March 12, 2009

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-G347-NRT2-2008
HYDROGRAPHIC SHEET: F00551

LOCALITY: Charleston Harbor Entrance to Yellow House Creek, SC
TIME PERIOD: February 10-11, 2009

TIDE STATION USED: Charleston, SC
Lat. 32° 46.9' N Long. 79° 55.5' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.648 meters

REMARKS: RECOMMENDED ZONING

Please use the TCARI grid "G347NRT22008-TCARI" as the final grid for project OPR-G347-NRT2-2008, F00551, during the time period between February 10-11, 2009.

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).

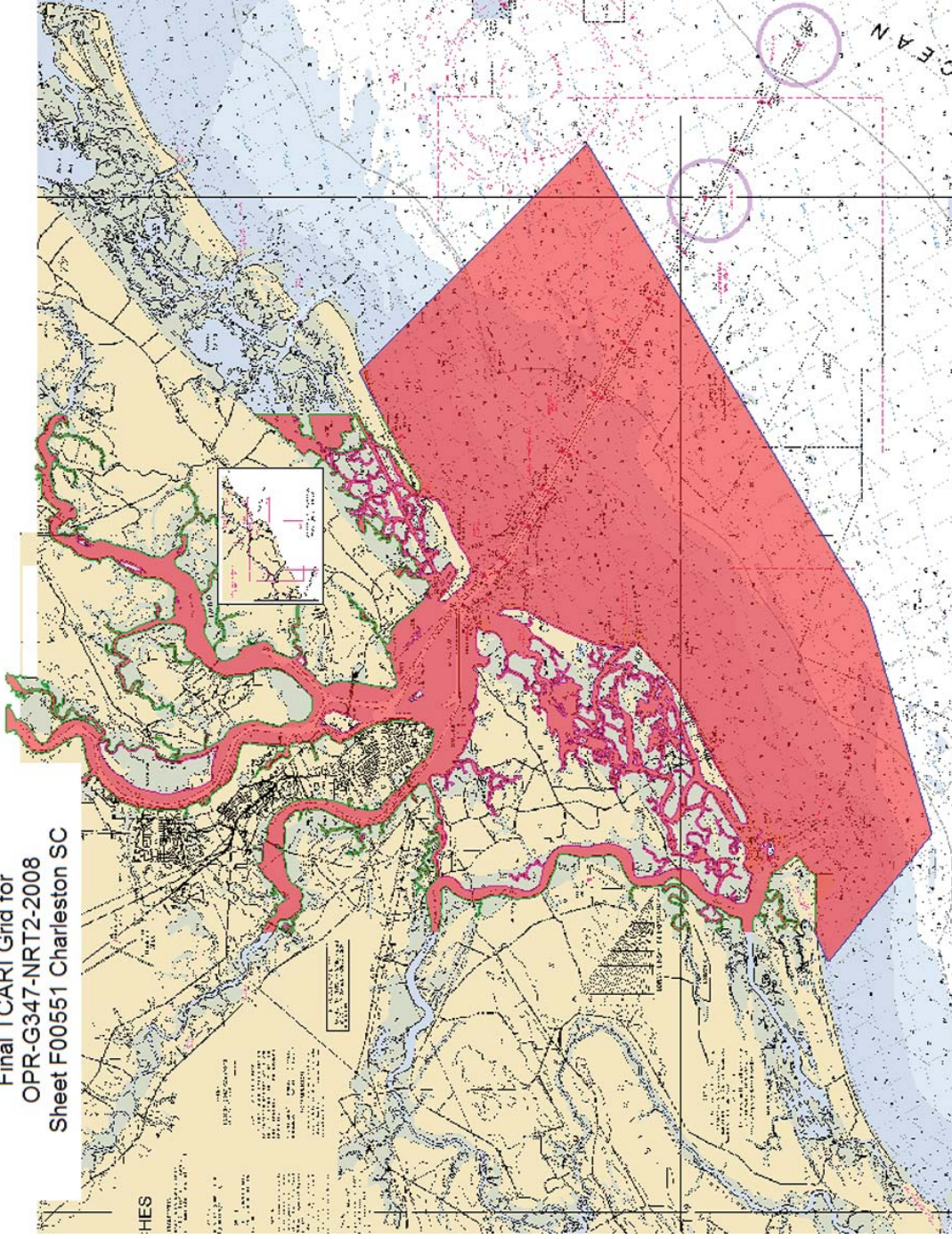
Peter J. Stone

Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, o=CO-OPS,
ou=NOAA/NOS,
email=peter.stone@noaa.gov, c=US
Date: 2009.03.16 10:31:31 -04'00'

CHIEF, OCEANOGRAPHIC DIVISION



Final TCARI Grid for
OPR-G347-NRT2-2008
Sheet F00551 Charleston SC



APPROVAL SHEET
F00551

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, representation of critical depths, cartographic symbolization, and verification or disproval of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the Evaluation Report.

All final products have undergone a comprehensive reviews per the Hydrographic surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

Deborah A. Bland
Cartographer
Atlantic Hydrographic Branch

I have reviewed the H-Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet National Ocean Service requirements and standards for products in support of nautical charting except where noted.

Approved:

Richard T. Brennan
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch