H11915

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey	Basic Hydrography
Field No	NRT4
Registry No.	H11915

LOCALITY

State	MICHIGAN
General Locality	ST. CLAIR RIVER, MI
Locality	PORT HURON TO THE SOUTH END OF LAKE HURON

2008

TEAM LEADER
LUCY HICK
NRT4

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION **HYDROGRAPHIC TITLE SHEET**	**REGISTRY No.** H11915
	FIELD No. NRT4

State Michigan

General Locality St. Clair River, MI

Sub-Locality Port Huron to South End of Lake Huron

Scale 1:10,000 **Date of Survey** July 21 to Aug 6, 2008

Instructions Dated June 2, 2008 **Project No.** OPR-W408-NRT4-08

Vessel NOAA Launch S1211

Chief of Party Lucy Hick, Team Leader

Surveyed by Lucy Hick, John Doroba, & Dan Jacobs

Soundings by echo sounder Odom CVX2 Vertical Beam Echosounder

Graphic record scaled by N/A

Graphic record checked by N/A **Automated Plot** N/A

Verification by Atlantic Hydrographic Branch

Soundings in meters at Great Lakes Low Water Datum (LWD)

REMARKS: (1) All times are in UTC.

(2) This is a basic hydrographic survey under the Navigable Area Concept.

(3) Projection is UTM Zone 17N

TABLE OF CONTENTS

DESCRIPTIVE REPORT

to accompany
Hydrographic Survey H11915
OPR-W408-NRT4-08

Scale of Survey 1:10,000
Year of Survey: 2008
Navigation Response Team 4
NOAA Launch S1211
Lucy Hick - Team Leader

A. AREA SURVEYED

This Basic Hydrographic survey was conducted in accordance with the Project Letter Instructions for project OPR-W408-NRT4-08, West Lake Erie, Detroit and St. Clair Rivers, MI. The instructions are dated June 2, 2008. ***Concur.***

The St. Clair River is about 39 miles long from Lake St. Clair via St. Clair Cutoff Channel and South Channel to the head of the river at Lake Huron. The upper river, above Chenal Ecarte, is generally a single deep channel. The banks of the river are clay and sand and usually quite steep. The International Boundary, separating the US & Canada, is almost centerline of the channel and when proceeding upstream the Boundary stays approximately centerline the full length of the St. Clair River to its head at Lake Huron.

The survey area, assigned to NRT4, consisted of 1.1 SNM. This included the entire St. Clair River (shore to shore) from its mouth to 0.675 nautical miles south of the entrance of the Black River. It also included a small area of Lake Huron extending approximately 0.54 NM north of the Ft. Gratiot Light.

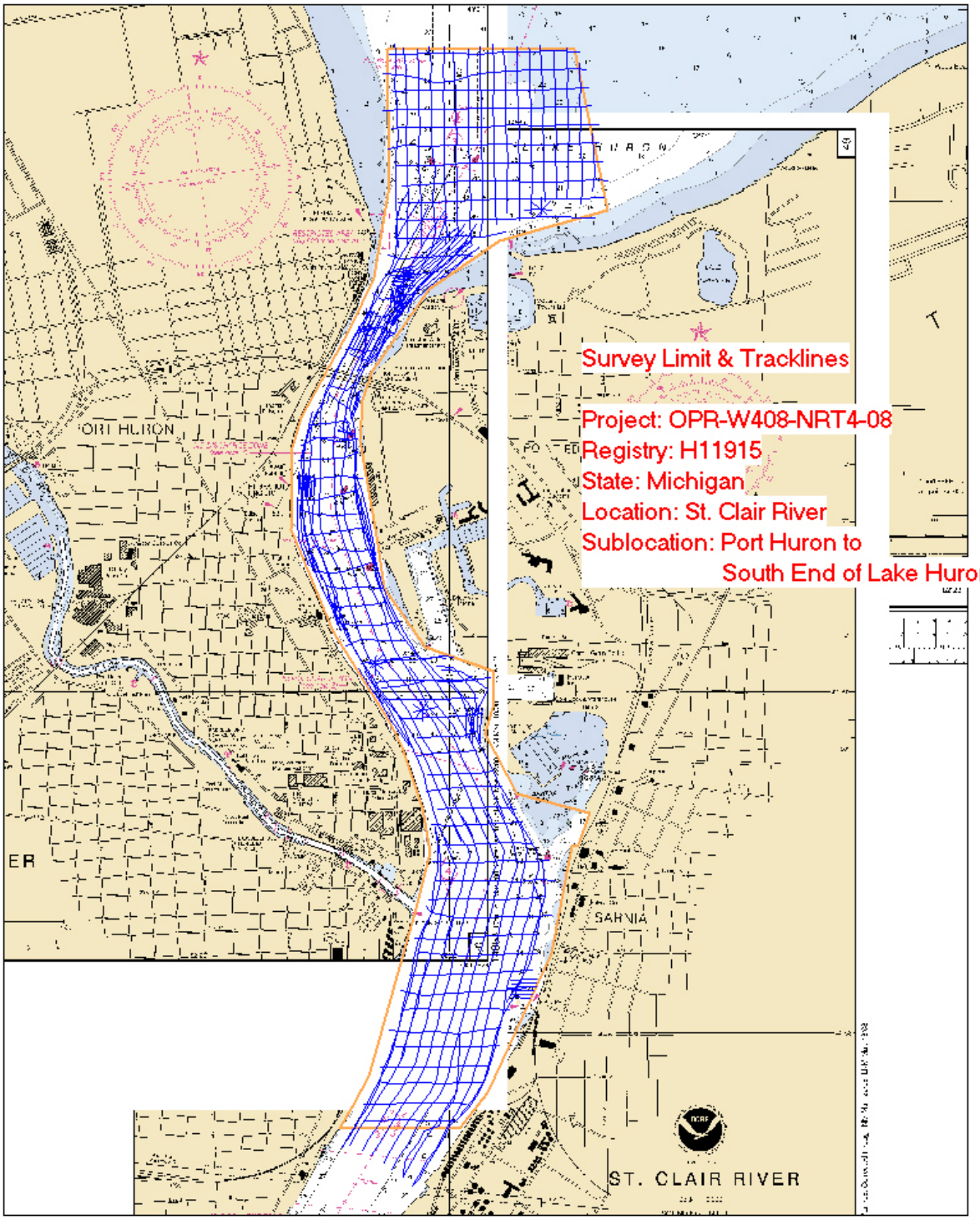
Survey Limits for Sheet I, H11915 are as follows:

43° 00' 54.05" N	82° 24' 19.66" W
42° 57' ~~4~~ ***3***2.13" N	82° 25' 40.23" W

Survey Dates: July ~~5~~ ***21***, 2008 (DN: 203) to ~~September 25~~ ***August 6,*** 2008 (DN: 219)

Both 200% side scan sonar (SSS) data and vertical beam echosounder (VBES) data were collected in all areas. SSS data were collected at 75 meter range scale, with lines run along the length of the river. VBES data were collected across the river with 100 meter line spacing. ***Concur.***

Survey limits and tracklines are displayed graphically on the following page.


Survey Limit & Tracklines
Project: OPR-W408-NRT4-08
Registry: H11915
State: Michigan
Location: St. Clair River
Sublocation: Port Huron to
South End of Lake Huron
PORT HURON
SARNIA
ST. CLAIR RIVER

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

B.1. EQUIPMENT

Data were acquired by Navigation Response Team 4 using Survey Launch S1211. The vessel was configured as described in the Data Acquisition and Processing Report (DAPR)* for this project. Major data acquisition systems are summarized below.

NOAA Survey Launch S1211 used to acquire positions, soundings, imagery, and sound velocity data. Positions were acquired with a Trimble DSM212L Differential GPS (DGPS) beacon receiver. Soundings were acquired with an ODOM CVX2 single-beam echosounder (VBES) system. Imagery was acquired with a stern-towed KLEIN 3000 side scan sonar (SSS) system. Water column sound velocity data was acquired with an ODOM Digibar Pro DB1200 sound velocity profiler. ***Concur.***

B.2. QUALITY CONTROL

Data integrity for H11915 was insured by following the Field Procedures Manual and the NOS Hydrographic Surveys Specifications and Deliverables Manual, both dated May 2008.

Differential GPS was used for all hydrographic data acquired on this survey.

Vertical Echosounder Quality Control

While collecting VBES data, the least depths were sometimes not accurately digitized by the echosounder. However, the least depth was visible in the analog trace. NRT4 personnel adjusted the VBES parameters levels to compensate for this. When this was not effective, the least depths were determined from the analog trace and the digital data was manually edited during CARIS post-processing. ***Concur.***

Side Scan Sonar Quality Control

The SSS data were acquired at frequencies of 100kHz and 500kHz. The recorder was set to 75 meter range scale for all areas of the survey. There were no water depths greater than 25 meters in areas where side scan data were collected. ***Concur.***

Daily confidence checks were conducted by observing side scan imagery in the vicinity of known contacts, such as seawalls, breakwaters, and buoys. Side scan data were considered satisfactory if these items could be distinguished throughout the entire range of the side scan trace. The confidence checks were performed daily at both frequencies. Coverage of 200% was obtained wherever possible in the required survey areas and where water depth and/or hazards permitted. Depending on location, side scan sonar coverage was conducted from shore-to-shore or from edge-of-channel to edge-of-channel. ***Concur.***

****Filed with original field records and submitted to HSD with survey deliverables.***

An extremely swift current exists in this part of the St. Clair River, especially in the area just under the Blue Water Bridge, called the "rapids." This led to some operational difficulties towing the SSS. When heading south, with the current, it was impossible to keep the vessel under 6 knots. When heading north, against the current, the towfish tended to fly up towards the surface. Because of the current, boat traffic, divers and swimmer in the water, and the shape of the river, towing across the river was not an option. Due to time restraints and the problems associated with each direction, a decision was made to tow in both directions along the river.

An operational cable out distance of 10m was used under normal circumstances. In a few instances of shallow water depth, the tow cable was shortened.

Crosslines

As stated in the previous section, SSS data was collected along the river. Therefore mainscheme VBES data were also collected along the river. However, this method did not provide enough soundings to compare with the current charted soundings. To correct for this, crosslines were run across the river at 100 meter line spacing. ***Concur.***

Sixty-seven crosslines, for a total of 18.33 linear nautical miles (LNM), were acquired by the field party. This is approximately 50 percent of mainscheme acquisition (36.88 LNM). A visual inspection of crossline data and main scheme data showed good comparison. ***Concur.***

Junctions

No junctioning surveys were provided for comparison with this project. ***Concur. See Evaluation Report.***

B.3. CORRECTIONS TO ECHO SOUNDING

Corrections to echo soundings did not deviate from the methods explained in the DAPR*. A table detailing all sound velocity casts is located in Separate II.**

C. VERTICAL AND HORIZONTAL CONTROL

C.1. VERTICAL CONTROL

All soundings were reduced to Low Water Datum (LWD) with verified water levels and Tidal Constituent and Residual Interpolation (TCARI). ***Concur.***

A Request for Approved Water Levels letter was sent to N/OPS1 on September 16, 2008. A Tide Note and final TCARI grid was received on October 10, 2008. Both of these memos are included in Appendix IV. ***

****Filed with original field records and submitted to HSD with survey deliverables.***
***** Digitally filed with original field records at AHB.***
****** Appended to this report.***

The operating National Water Level Observation Network (NWLON) stations at Dry Dock, MI (9014087), Mouth of the Black River, MI (9014090), Dunn paper, MI (9014096), Fort Gratiot, MI (9014098), served as datum control and provided water level reducers for the survey area. ***Reference Appendix IV Final Tide Note.***

Verified water levels from the N/OPS1 CO-OPS website were downloaded and applied to all soundings for this sheet. ***No other tidal correction required at AHB.***

The TCARI grid, H11915-TCARI.tc was used as the final grid to apply water level data to the soundings. ***Concur.***

C.2. HORIZONTAL CONTROL

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 17N. The control reference station used for this survey was the USCG DGPS Beacon in the auto-select mode. ***Concur.***

Horizontal dilution of precision (HDOP) was monitored daily on Hypack. At no point did HDOP exceed 4.00, and adequate satellite coverage was maintained throughout most of the survey period.

Daily GPS dropouts were observed. Additionally dropouts occurred while navigating under the Blue Water Bridge. If the dropout was short, data continued to be collected and the navigation was interpolated in CARIS. If the dropout continued for a significant period of time, the survey line was ended and acquisition was restarted when the GPS signal returned.

All positioning equipment was operated in a manner consistent with the manufacturer requirements and as described in the DAPR.

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

D.1. CHART COMPARISON

Seven raster charts and ten ENCs are affected by this survey:

Chart	Edition	Edition Date	Issue Date	Update #	Scale
14500	27th	Oct-02	Nov-08	266	1:500,000
14820	21st	Oct-05	Nov-08	125	1:400,000
14852	46th	Jun-06	Nov-08	116	1:15,000 1:40,000
14853	17th	Mar-08	Nov-08	38	1:15,000

Chart	Edition	Edition Date	Issue Date	Update #	Scale
14860	36th	Jun-05	Nov-08	153	1:500,000
14862	28th	Apr-02	Nov-08	231	1:120,000
14865	16th	Jun-99	Nov-08	219	1:15,000

Chart	Edition	Edition Date	Issue Date
US5MI33M	13	Apr-08	Jun-08
US5MI41M	5	Feb-07	Sept-08

Chart Discrepancies

Several discrepancies were noted in the overlapping charts in the project area. Charts 14865_1, 14853_47, and 14852_2 are all 1:15,000 scale, Polyconic Projection, and NAD83. However none of them line up well with each other, when overlain in MapInfo. They all have differing contour lines and soundings. ***Reference H11915 DR, Appendix V.***

These problems were especially evident when comparing charts 14853_47 with 14865_1. The hydrographer addressed these problems to Steve Soherr in an e-mail, dated August 1, 2008. Mr. Soherr replied back in an e-mail, dated August 4, 2008. In this e-mail, he states:

"When I compare the team work in progress (WIP) files against one another, I see that most of the discrepancies have been resolved, however since 14865 has not been printed as a new edition since the application of the team source, it appears to be "not in sync" with 14853…

With regards to a shift - this is something that will likely need to be investigated more thoroughly.. I did notice that both kapps are Polyconic and 1:15,000 in scale, so there should be no shift. A new GC of the area is probably needed to remedy a relative shift in features. I will go ahead and request new imagery of the area through NDB."

On December 10, 2008 these charts were downloaded from the NOAA website and re-compared. The same problems were still evident. It is worth noting that the Edition date of chart 14865 is June 1999. A NOAA survey, D00135, was completed in this area in August 2000.

Copies of these e-mails, as well as a document illustrating these discrepancies can be found in the Chart Comparison folder of Appendix V.***

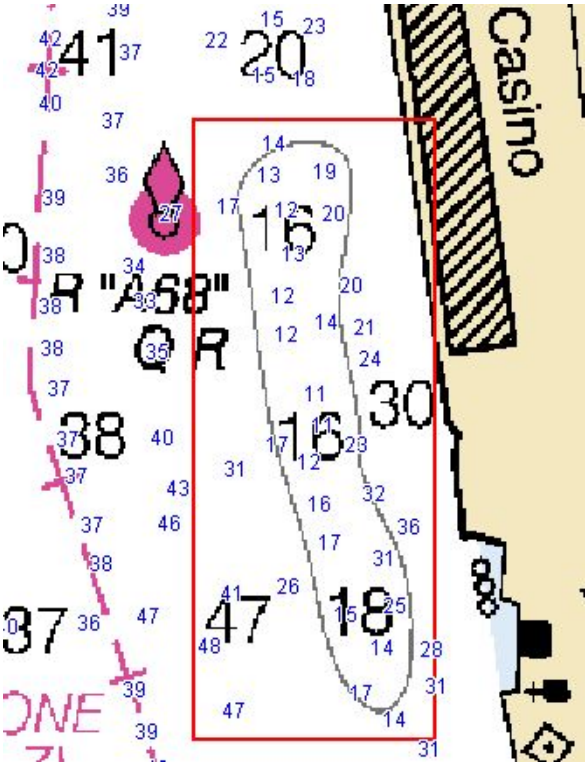
Where possible, NRT4 ran SBES investigation lines in the areas of large differences in sounding values. Because chart 14853 has a much more recent Edition date than the other charts, it was used for comparison purposes.

**** Appended to this report.***

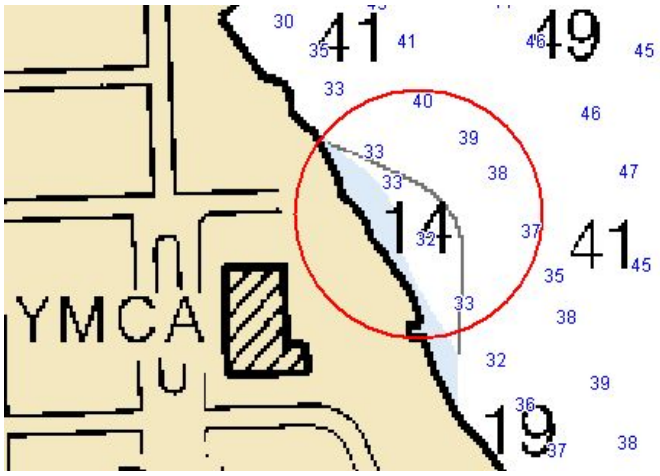
General Agreement with Charted Soundings

In general, soundings acquired in the survey area agreed favorably with currently charted soundings. However, the following discrepancies were noted:

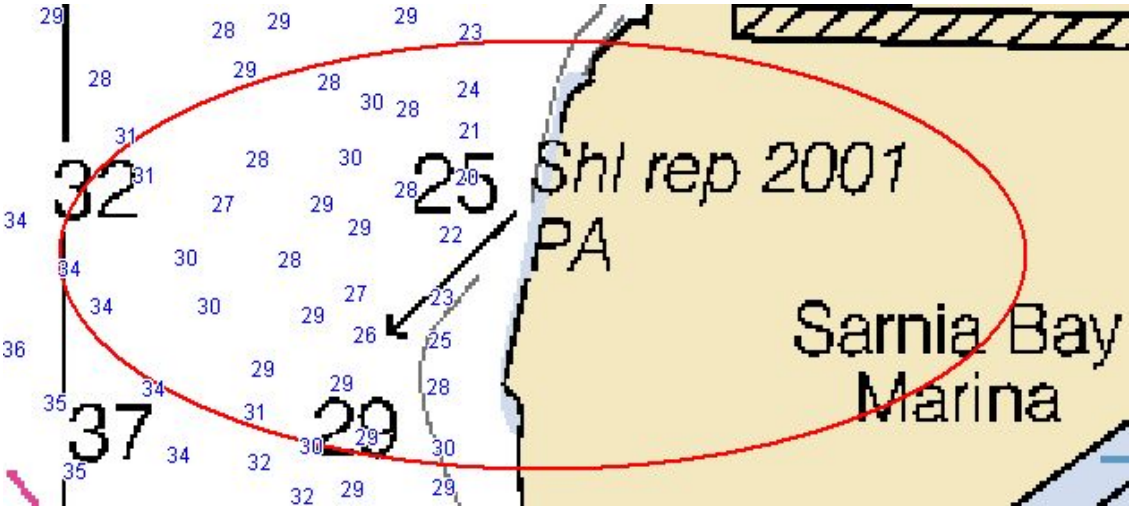
1. The shoal, located on the E side of the river, near the Casino (42°59'32" N, 82°25'22" W) is shoaler than charted. Current charted depths are 16-18ft. However depths of 11 feet were acquired in the area. ***Recommend to supersede all charted soundings within the common area.***



2. A 14 ft shoal is currently charted at 42°58'56" N, 82°25'15" W, on the W side of the river, near the Port Huron YMCA. The shoalest depth, recorded in the area was 32 ft. ***Recommend to update the charted 18-ft depth curve in the immediate area and revise chart with current surveys soundings.***



3. A reported Shoal (2001) is currently charted at ~~42°24'54" N, 82°58'54"W~~ ***42°58'54"N, 082°24'54"W***, on the E side of the river. No evidence of this shoal was seen in the survey data. NRT4 recommends replacing all currently charted soundings in the survey area with the newly acquired soundings. ***Concur.***



AWOIS Item Investigations

Three AWOIS items were assigned within the Hydro Survey boundaries. Information about these AWOIS Items can be found in the Survey Features Report, Appendix II. **** Concur.***

**** Appended to this report.***

Dangers to Navigation

No Dangers to Navigation were submitted for this project. ***Concur with clarification. AHB submitted three Dangers Marine Chart Divisions during the survey review process. Reference Appendix I attached to this report.***

Bottom Samples

No bottom samples were collected for this project. ***Concur. Retain all charted sediment characteristics.***

D. 2. ADDITIONAL RESULTS

Aids to Navigation and Other Detached Positions

A list of Aids to Navigation (AToNs) was received from Christopher Hare, of the Office of Coast Survey (OCS), on May 30, 2008. Within the survey area, this list included 5 fixed AToNs, for which MCD was requesting an accurate position. These AToNs will be addressed in the Field Examination Report, F00556. ***F00556 is an ENC validation survey and not available for review and comparison during AHB's compilation of H11915. Recommend to defer final charting disposition to Marine Chart Division, Nautical Data Branch.***

Ferry Routes

No charted ferry routes exist within the survey area. ***Concur.***

Submarine Cables and Pipelines

No charted submarine cables exist within the survey area.

Several charted submerged sewer and water intake pipelines exist within the survey area. None of these pipelines were investigated by NRT4. However, the submerged water intake cribs, offshore of the Lambton Water Treatment Plant, and the submerged crib offshore of the Port Huron Water Filtration Plant were assigned to the Field Team as AWOIS items. These cribs were previously discussed in the AWOIS Item Investigation section. No other submerged cribs were investigated by NRT4. ***Concur with clarification. A third crib was verified during AHB's review; reference H11915 DR Appendix II, Item 2.1***.

Bridges and Overhead Cables

The Blue Water Bridge crosses the St. Clair River just below the mouth and connects the towns of Port Huron, USA with Point Edward, Canada. The bridge was visually identified by the Field Team and appeared to be on station. However, the vertical and horizontal clearances were not verified. ***Concur. Retain bridge clearance notation as charted.***

Fish Havens

No fish havens exist in this project area. ***Concur.***

Shipwrecks

Several charted and uncharted shipwrecks were identified in the survey area. Information about these shipwrecks can be found in the Survey Features Report, Appendix II. ***Reference Appendix II, Items 2.2, 2.11, 2.12, 2.13, and 4.3 appended to this report.***

APPROVAL SHEET

OPR-W408-NRT4-08
Basic Hydrographic Survey
St. Clair River
Port Huron to South End of Lake Huron
Michigan
Registry No. H11915

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.

Respectfully,
Submitted:

Lucy Hick
Team Leader, Navigation Response Team 4

H11915 Danger to Navigation

Registry Number: H11915

State: Michigan

Locality: St Clair River

Sub-locality: Port Huron to South End of Lake Huron

Project Number: OPR-W408-NRT4-08

Survey Dates: 08/04/2008 - 08/05/2008

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
14853	17th	03/01/2008	1:15,000 (14853_47)	USCG LNM: 01/08/2008 (03/04/2008) CHS NTM: None (01/25/2008) NGA NTM: None (03/08/2008)
14853	17th	03/01/2008	1:15,000 (14853_46)	USCG LNM: 01/08/2008 (03/04/2008) CHS NTM: 03/31/2000 (01/25/2008) NGA NTM: None (03/08/2008)
14852	46th	06/01/2006	1:15,000 (14852_2)	USCG LNM: 04/29/2008 (11/18/2008) CHS NTM: 08/29/2008 (10/31/2008) NGA NTM: None (11/29/2008)
14865	16th	06/26/1999	1:15,000 (14865_1)	USCG LNM: 01/08/2008 (03/04/2008) CHS NTM: 02/26/1993 (01/25/2008) NGA NTM: 10/23/2004 (03/08/2008)
14852	46th	06/01/2006	1:40,000 (14852_3)	[L]NTM: ?
14862	28th	04/13/2002	1:120,000 (14862_1)	USCG LNM: 01/08/2008 (03/04/2008) CHS NTM: 01/27/2006 (01/25/2008) NGA NTM: 10/23/2004 (03/08/2008)
14820	21st	10/01/2005	1:400,000 (14820_1)	[L]NTM: ?
14860	36th	06/01/2005	1:500,000 (14860_1)	[L]NTM: ?
14500	27th	10/01/2002	1:1,500,000 (14500_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	12-ft Sounding (Shoal) 64/1	Shoal	3.71 m	43° 00' 01.0" N	082° 25' 24.3" W	---
1.2	14-ft Sounding (Shoal) 16/1	Shoal	4.27 m	43° 00' 03.7" N	082° 25' 22.4" W	---

1.3	33-ft Wreck 175/1	Wreck	10.02 m	42° 58' 56.7" N	082° 25' 06.8" W	---

1 - Danger To Navigation

1.1) 12-ft Sounding (Shoal) 64/1

DANGER TO NAVIGATION

Survey Summary

Survey Position: 43° 00' 01.0" N, 082° 25' 24.3" W

Least Depth: 3.71 m (= 12.17 ft = 2.028 fm = 2 fm 0.17 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-218.17:05:57.058 (08/05/2008)

Survey Line: h11915 / 1211_sb / 2008-218 / 834_1705

Profile/Beam: 64/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

12-ft shoal sounding highlighted during AHB review and verification. A shoal exists on the west side of the river. Current charted depth in the near vicinity is 51-ft to the SSW. The shoal is located on top of the river's western inclined slope.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-218/834_1705	64/1	0.00	000.0	Primary

Hydrographer Recommendations

Recommend charting 12-ft sounding at the surveyed location. Submit as Danger to Navigation.

Cartographically-Rounded Depth (Affected Charts):

12ft (14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1)

2fm (14500_1)

12ft (14860_1)

3.7m (14820_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)

Attributes: OBJNAM - 12-ft Sounding on Shoal

QUASOU - 1:depth known

SORDAT - 20080806

SORIND - US,Us,nsurf,H11915

TECSOU - 1:found by echo-sounder

VERDAT - 12:Mean lower low water

Office Notes

Concur. Submitted as DtoN.

Feature Images

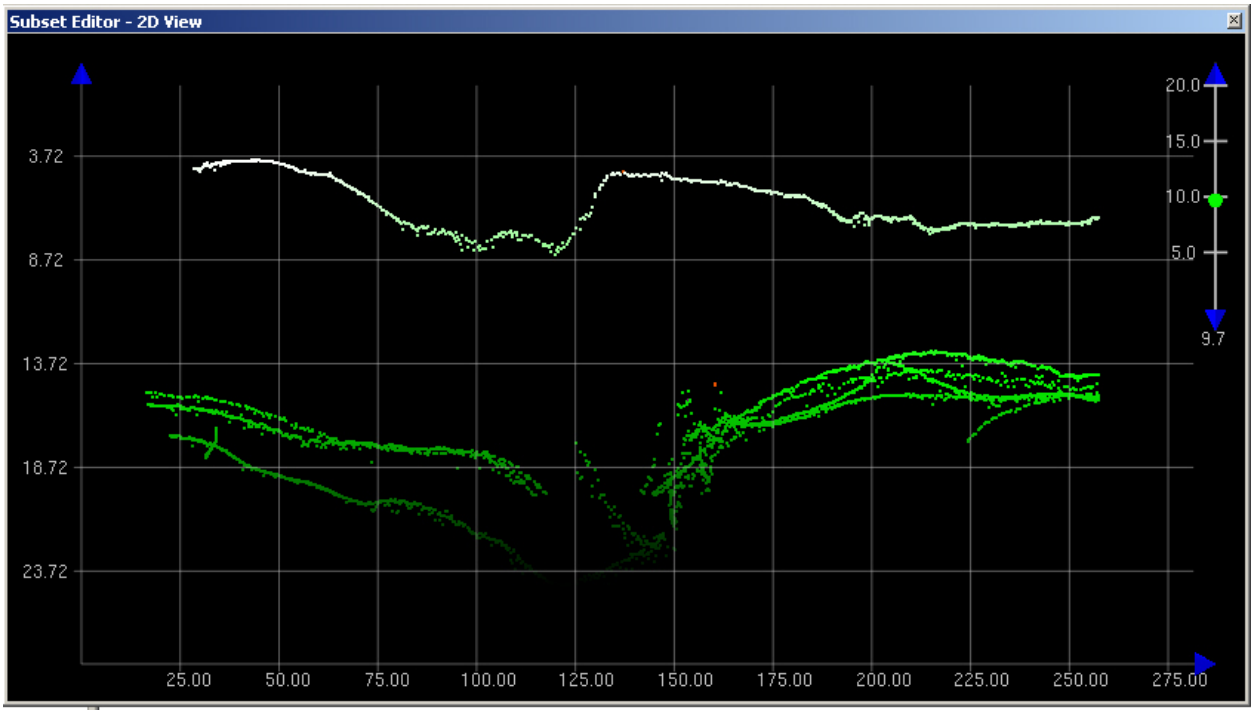


Figure 1.1.1

Figure 1.1.2

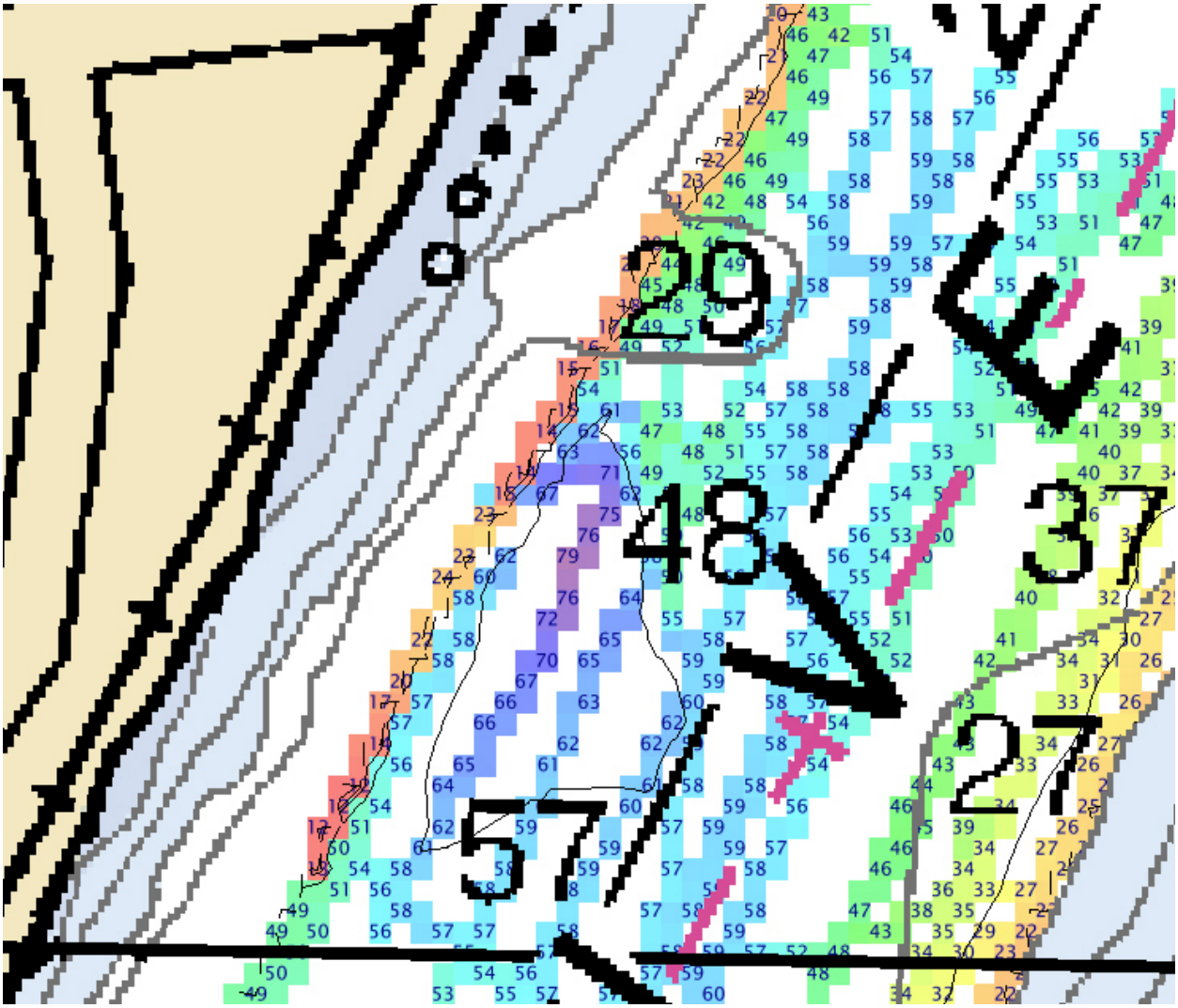


Figure 1.1.3

1.2) 14-ft Sounding (Shoal) 16/1

DANGER TO NAVIGATION

Survey Summary

Survey Position: 43° 00' 03.7" N, 082° 25' 22.4" W

Least Depth: 4.27 m (= 14.01 ft = 2.335 fm = 2 fm 2.01 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-218.17:06:31.784 (08/05/2008)

Survey Line: h11915 / 1211_sb / 2008-218 / 834_1705

Profile/Beam: 316/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

14-ft shoal sounding highlighted during AHB review and verification. A shoal exists on the west side of the river. Current charted depth in the near vicinity is 51-ft to the SSW. The shoal is located on top of the river's western inclined slope.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-218/834_1705	316/1	0.00	000.0	Primary

Hydrographer Recommendations

Recommend charting 14-ft sounding at the surveyed location. Submit as Danger to Navigation.

Cartographically-Rounded Depth (Affected Charts):

14ft (14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1)

2 ¼fm (14500_1)

14ft (14860_1)

4.3m (14820_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)

Attributes: OBJNAM - 14-ft Sounding on Shoal

QUASOU - 1:depth known

SORDAT - 20080806

SORIND - US,US,nsurf,H11915

TECSOU - 1:found by echo-sounder

VERDAT - 12:Mean lower low water

Office Notes

Concur. Submitted as DtoN.

Feature Images

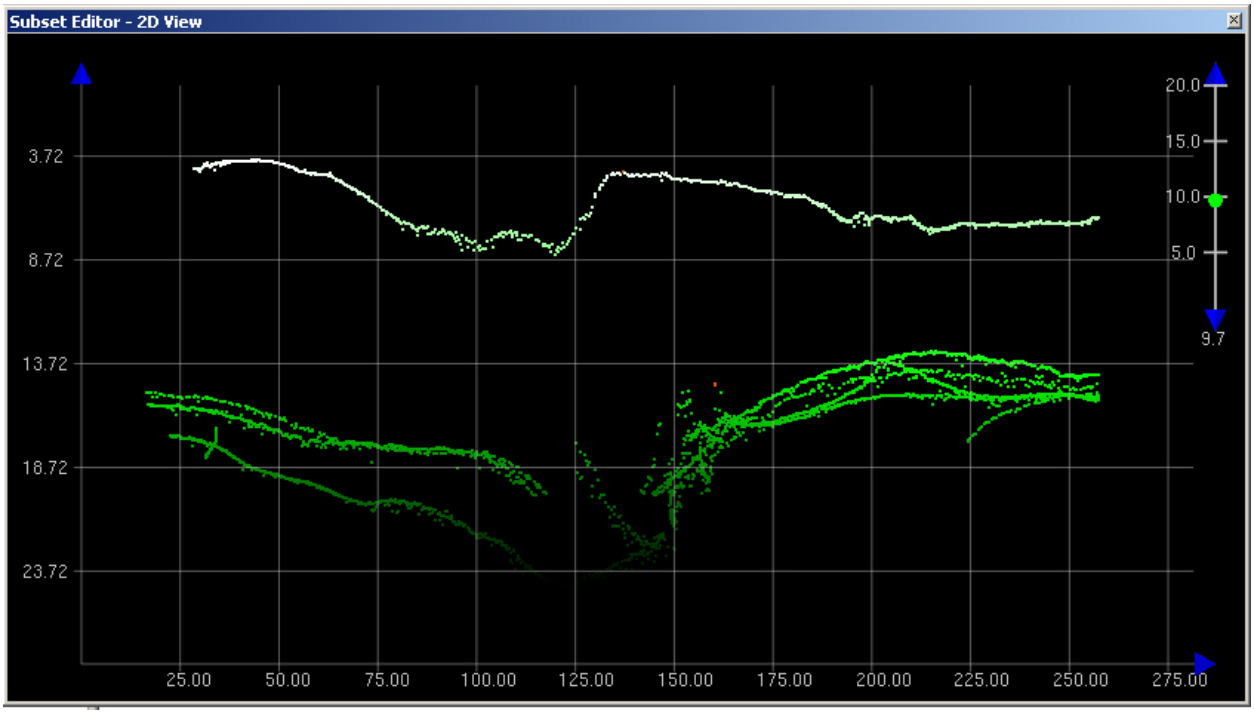


Figure 1.2.1

Figure 1.2.2

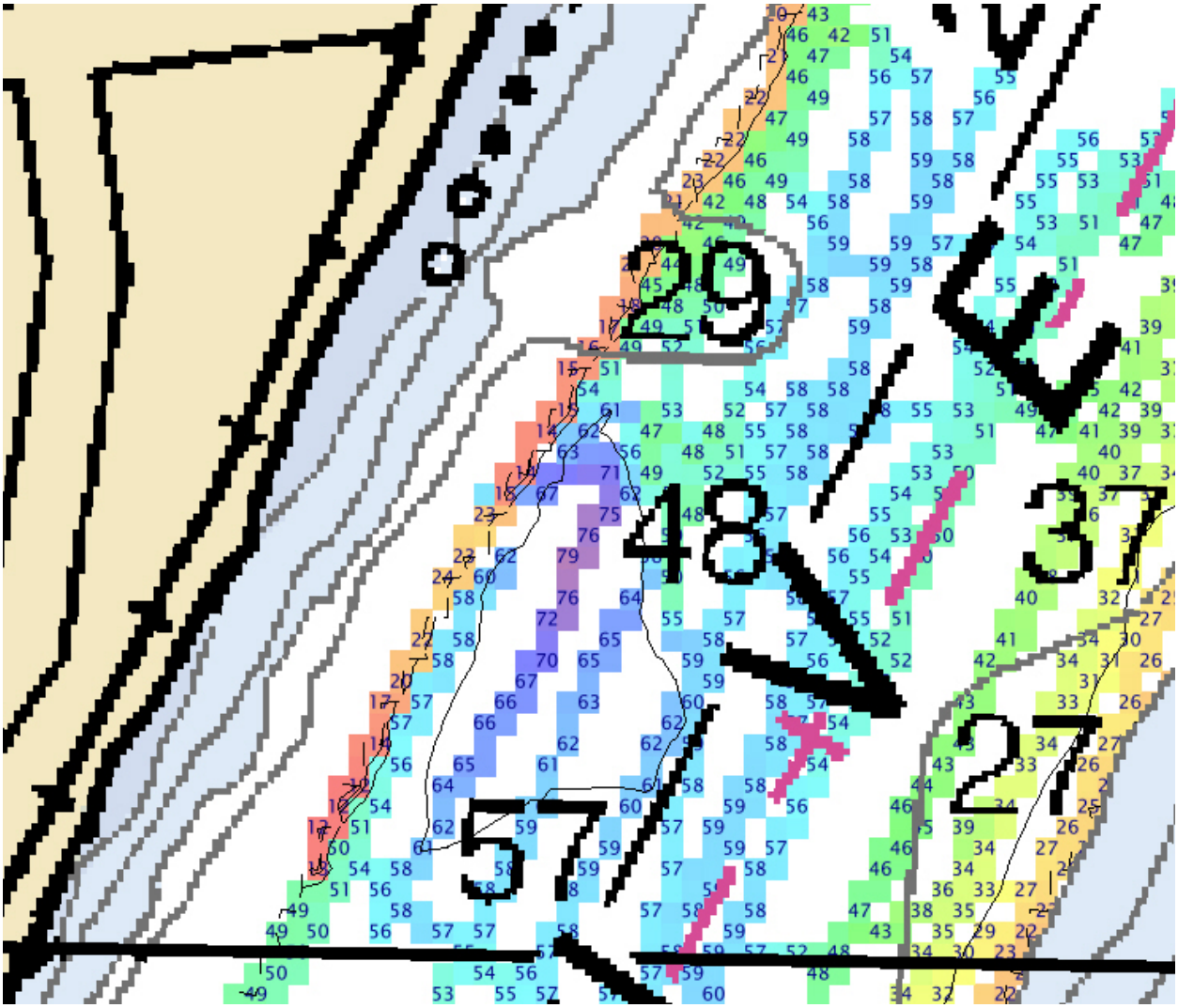


Figure 1.2.3

1.3) 33-ft Wreck 175/1

DANGER TO NAVIGATION

Survey Summary

Survey Position: 42° 58' 56.7" N, 082° 25' 06.8" W

Least Depth: 10.02 m (= 32.87 ft = 5.479 fm = 5 fm 2.87 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-217.14:32:51.597 (08/04/2008)

Survey Line: h11915 / 1211_sb / 2008-217 / 079_1432

Profile/Beam: 175/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Subm Wk seen in SSS imagery. SBES investigation lines run in a star-shaped pattern. Wk not considered a DToN. LD (34 ft) would not be restricting to ships transiting the area, since they have to come through a shoaler area, immediately to the south.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-217/079_1432	175/1	0.00	000.0	Primary

Hydrographer Recommendations

Hydrographer recommends charting Subm Wk.

Cartographically-Rounded Depth (Affected Charts):

33ft (14852_2, 14853_46, 14853_47, 14852_3, 14862_1)

5 ½fm (14500_1)

5fm (14860_1)

10.0m (14820_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 2:dangerous wreck

OBJNAM - 33-ft Wreck

QUASOU - 6:least depth known

SORDAT - 20080806

SORIND - US,US,nsurf,H11915

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

VALSOU - 10.020 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart 33-ft Sunken Wreck. Submitted as Danger to Navigation as the feature is not charted and it represents the shoalest depth within the common area (approximately 110m radius). Submitted as DtoN.

Feature Images

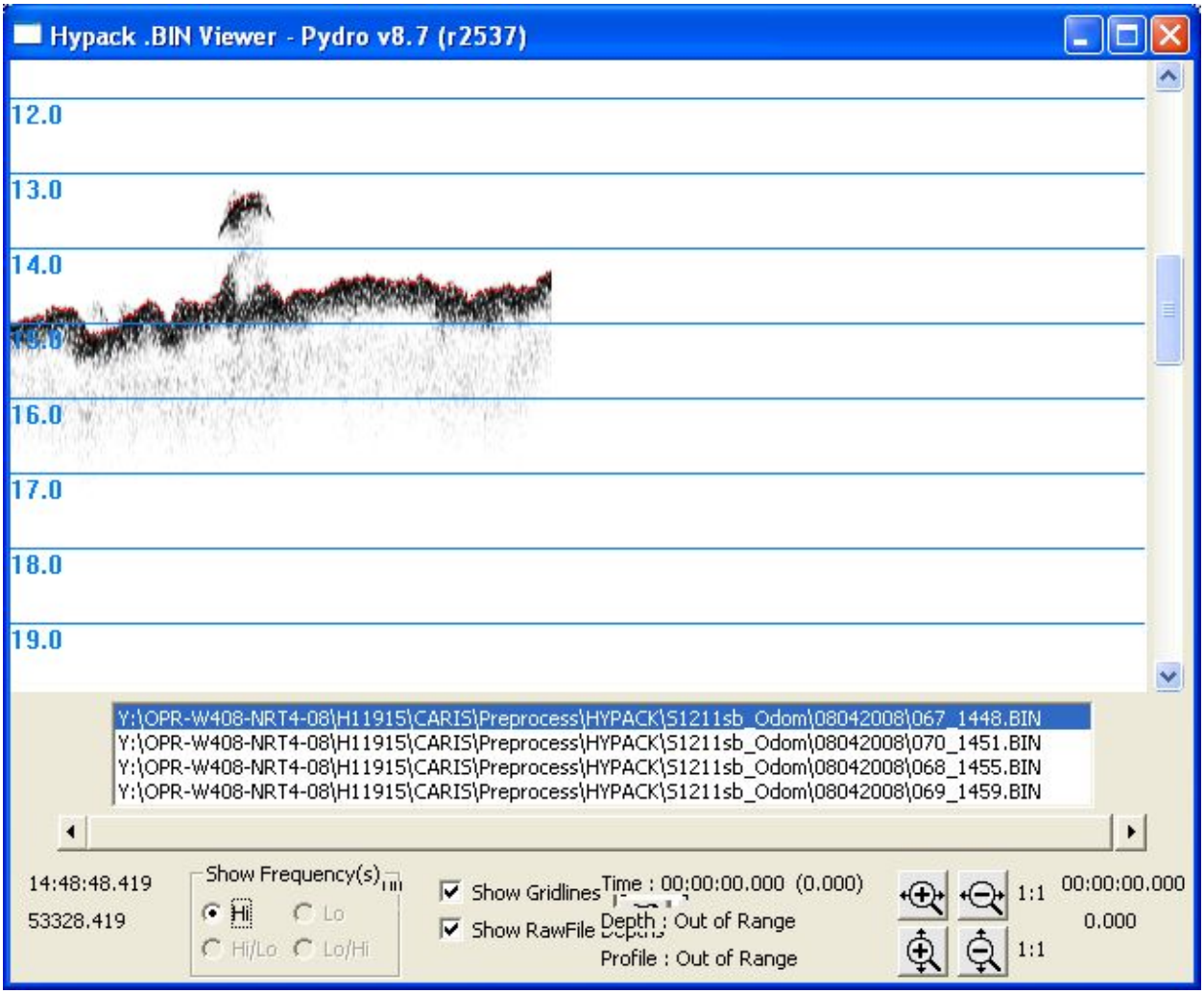


Figure 1.3.1

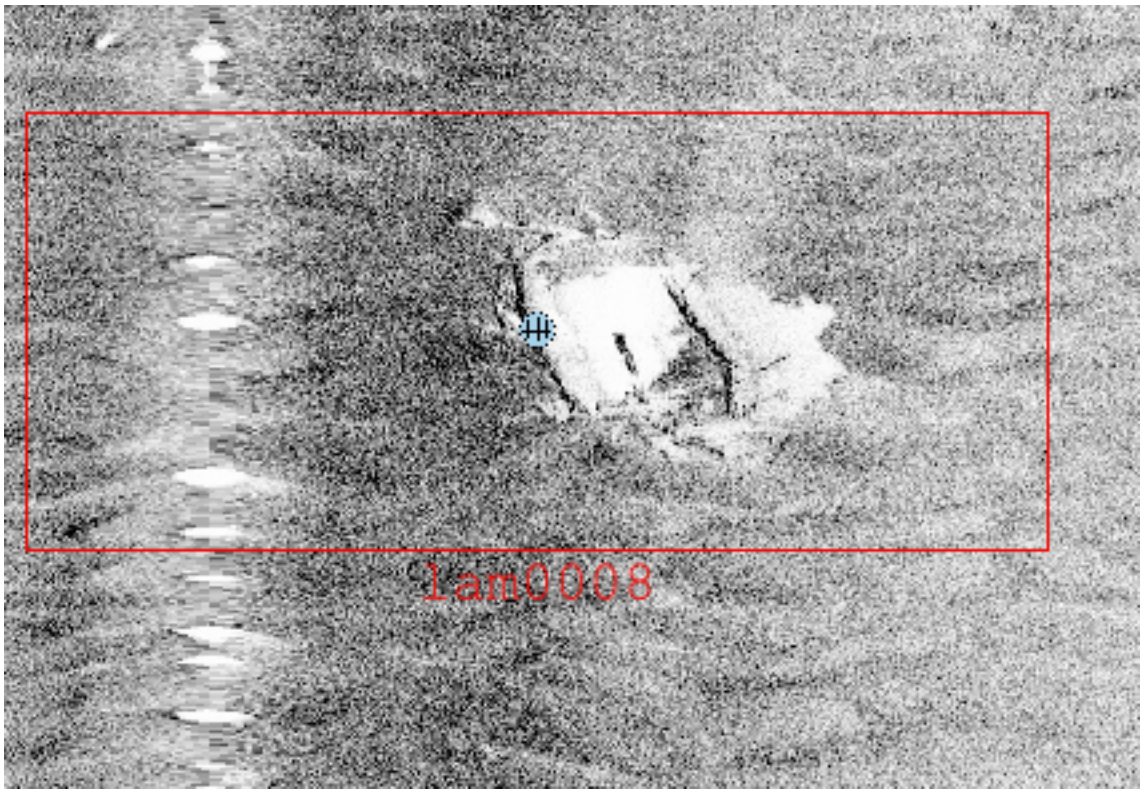


Figure 1.3.2

Figure 1.3.3

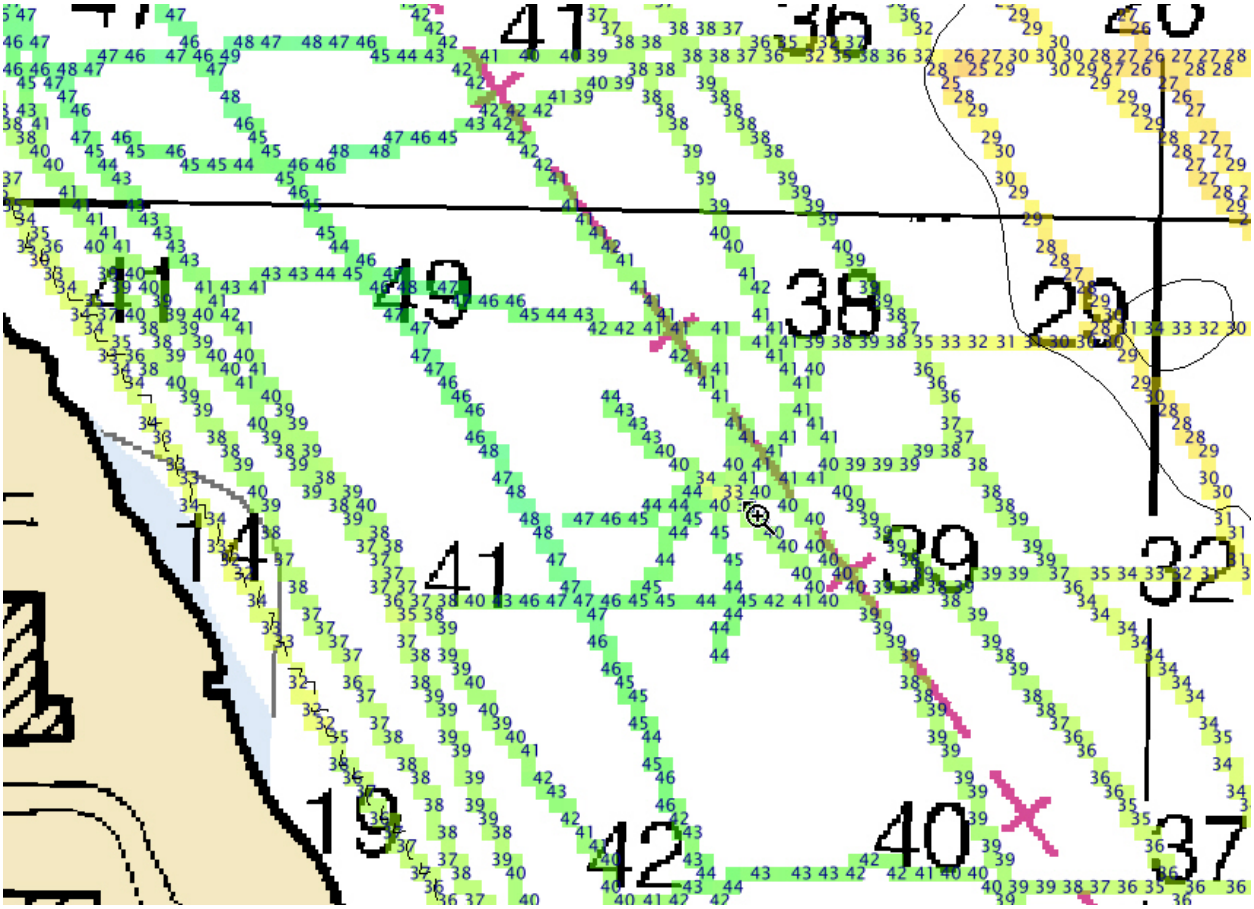


Figure 1.3.4

Subject: Dangers to Navigation - H11915
Date: Tue, 17 Mar 2009 09:43:54 -0400
From: "diane.melancon" <Diane.Melancon@noaa.gov>
To: Castle E Parker <Castle.E.Parker@noaa.gov>, Dave Neander <Dave.Neander@noaa.gov>, Ed Martin <Ed.Martin@noaa.gov>, Howard Danley <Howard.Danley@noaa.gov>, Jim Crocker <James.M.Crocker@noaa.gov>, Joseph Robinson <Joseph.Robinson@noaa.gov>, Ken Forster <Ken.Forster@noaa.gov>, Kevin Shaw <Kevin.Shaw@noaa.gov>, Mark Griffin <Mark.Griffin@noaa.gov>, NDB e-Mailbox <OCS.NDB@noaa.gov>, Richard Sillcox <Richard.Sillcox@noaa.gov>, Shep Smith <Shep.Smith@noaa.gov>, Tom Loeper <Thomas.Loeper@noaa.gov>, Travis Newman <Travis.Newman@noaa.gov>, Brian Link <Brian.Link@noaa.gov>

L-396/09 and DD-13671 have been registered by the Nautical Data Branch and directed to Products Branch A for processing.

The DTONs reported are two shoals and a wreck in the St. Clair River, MI.

The following charts are affected:
14865 kapp 1326
14852 kapp 1262
14853 kapp 1308
14853 kapp 1309
14852 kapp 1261

The following ENCs are affected:
US5MI33M
US5MI41M

References:
H-11915
OPR-W408-NRT4-08

This information was discovered and submitted by NOAA's NRT4.

-------- Original Message --------
Subject: H11915 DtoN submission from AHB to MCD/NDB
Date: Fri, 13 Mar 2009 15:40:59 -0400
From: Castle.E.Parker <Castle.E.Parker@noaa.gov>
To: _NOS OCS MCD Navigation Dangers <mcd.dton@noaa.gov>
CC: James M Crocker <James.M.Crocker@noaa.gov>, Shep Smith <Shep.Smith@noaa.gov>, Brian Link <Brian.Link@noaa.gov>

```
Good Day,
Please find attached a zip file for survey  H11915 DtoN report  for
submission to Marine Chart Division / Nautical Data Branch (MCD/NDB).

The submitted features were determined to be Dangers to Navigation based
upon the current status of the affected charts.  The features were
verified and processed during survey review and acceptance. The contents
of the attached WinZip file were generated at Atlantic Hydrographic
Branch.  The attached zip file contains a DtoN Letter (PDF), a Pydro XML
file, and associated image files.

If you have any questions, please direct them back to me; email me or
```

call 757-441-6413 ext. 108.
Thank you for your assistance with this matter,
Gene Parker

H11915_DtoNs_AHBtoMCD_submission031309.zip	**Name:** H11915_DtoNs_AHBtoMCD_submission **Type:** Zip Compressed Data (application/x-zip-compressed) **Encoding:** base64

Diane MelanÃ§on <Diane.Melancon@noaa.gov>
Senior Cartographer
NOAA/NOS/OCS/Marine Chart Division
Nautical Data Branch

H11915 Survey Features Report Appendix 2

Registry Number:	H11915
State:	Michigan
Locality:	St Clair River
Sub-locality:	Port Huron to South End of Lake Huron
Project Number:	OPR-W408-NRT4-08
Survey Dates:	07/28/2008 - 08/06/2008

This report contains a list of all significant charted, uncharted, DToN, and AWOIS features located during survey H11915.

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
14853	17th	03/01/2008	1:15,000 (14853_47)	USCG LNM: 01/08/2008 (03/04/2008) CHS NTM: None (01/25/2008) NGA NTM: None (03/08/2008)
14853	17th	03/01/2008	1:15,000 (14853_46)	USCG LNM: 01/08/2008 (03/04/2008) CHS NTM: 03/31/2000 (01/25/2008) NGA NTM: None (03/08/2008)
14852	46th	06/01/2006	1:15,000 (14852_2)	USCG LNM: 04/29/2008 (11/18/2008) CHS NTM: 08/29/2008 (10/31/2008) NGA NTM: None (11/29/2008)
14865	16th	06/26/1999	1:15,000 (14865_1)	USCG LNM: 01/08/2008 (03/04/2008) CHS NTM: 02/26/1993 (01/25/2008) NGA NTM: 10/23/2004 (03/08/2008)
14852	46th	06/01/2006	1:40,000 (14852_3)	[L]NTM: ?
14862	28th	04/13/2002	1:120,000 (14862_1)	USCG LNM: 01/08/2008 (03/04/2008) CHS NTM: 01/27/2006 (01/25/2008) NGA NTM: 10/23/2004 (03/08/2008)
14820	21st	10/01/2005	1:400,000 (14820_1)	[L]NTM: ?
14860	36th	06/01/2005	1:500,000 (14860_1)	[L]NTM: ?
14500	27th	10/01/2002	1:1,500,000 (14500_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	AtoN R "A70" (discontinued)	GP	[None]	42° 59' 45.1" N	082° 25' 23.4" W	---
2.1	Charted crib (retain as charted)	SSS	[None]	42° 58' 04.9" N	082° 24' 44.4" W	---
2.2	27ft Wreck 73/1	Wreck	8.39 m	42° 59' 50.9" N	082° 25' 22.2" W	---
2.3	34-ft Wk AWOIS 14207 1503/1	Wreck	10.38 m	42° 59' 36.2" N	082° 25' 35.7" W	---
2.4	17ft Obstruction 145/1	Obstruction	5.38 m	43° 00' 24.9" N	082° 24' 38.5" W	---
2.5	25ft Obstruction 231/1	Obstruction	7.83 m	42° 59' 01.1" N	082° 25' 19.6" W	---
2.6	30ft Rock 367/1	Rock	9.35 m	42° 58' 59.3" N	082° 25' 17.9" W	---
2.7	42-ft Obstruction (Buoy block) 130/1	Obstruction	12.91 m	42° 59' 45.4" N	082° 25' 24.8" W	---
2.8	AWOIS 10707 30-ft Obstruction (crib) 129/1	Obstruction	9.21 m	42° 59' 13.3" N	082° 25' 28.3" W	---
2.9	AWOIS 10708 intake cribs (38-ft LD) 354/1	Shoal	11.57 m	43° 00' 08.2" N	082° 25' 11.6" W	---
2.10	47-ft Wk 580/1	Wreck	14.49 m	43° 00' 04.0" N	082° 25' 21.1" W	---
2.11	29-ft Wreck (north end) 336/1	Shoal	8.91 m	43° 00' 13.9" N	082° 25' 11.0" W	---
3.1	AWOIS #14207 UNKOWN	AWOIS	[no data]	[no data]	[no data]	---
4.1	12-ft Sounding (Shoal) 64/1	Shoal	3.71 m	43° 00' 01.0" N	082° 25' 24.3" W	---
4.2	14-ft Sounding (Shoal) 16/1	Shoal	4.27 m	43° 00' 03.7" N	082° 25' 22.4" W	---
4.3	33-ft Wreck 175/1	Wreck	10.02 m	42° 58' 56.7" N	082° 25' 06.8" W	---

1 - Charted Features

1.1) AtoN R "A70" (discontinued)

Survey Summary

Survey Position: 42° 59' 45.1" N, 082° 25' 23.4" W

Least Depth: [None]

TPU (±1.96σ): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]

Timestamp: 2008-217.16:09:34 (08/04/2008)

GP Dataset: ChartGPs - Digitized

GP No.: 1

Charts Affected: 14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

R "A70" has been discontinued. Verified by a phone call to Canadian CG on 8/4/2008 the Canadian CG Light List www.notmar.gc.ca/go.php?doc=eng/services/list/2006-inland-waters/i7312e2006

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	1	0.00	000.0	Primary

Hydrographer Recommendations

Hydrographer recommends removing R "A70" from chart.

S-57 Data

[None]

Office Notes

Concur. Delete charted navigational aid R "A70" Fl R 4 s. Defer final charting disposition to Nautical Data Branch, Marine Chart Division.

2 - New Features

2.1) Charted crib (retain as charted)

Survey Summary

Survey Position: 42° 58' 04.9" N, 082° 24' 44.4" W

Least Depth: [None]

TPU (±1.96σ): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]

Timestamp: 2008-213.08:13:57 (07/31/2008)

Survey Line: h11915 / 1211_sss500k_200percent / 2008-206 / h080724174000

Contact/Point: 0001/1

Charts Affected: 14852_2, 14853_46, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Charted Crib

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sss500k_200percent/2008-206/h080724174000	0001	0.00	000.0	Primary
h11915/1211_sss500k_100percent/2008-206/h080724183700	0001	2.46	088.2	Secondary

Hydrographer Recommendations

Hydrographer recommends retaining as charted.

S-57 Data

[None]

Office Notes

Concur.

Feature Images

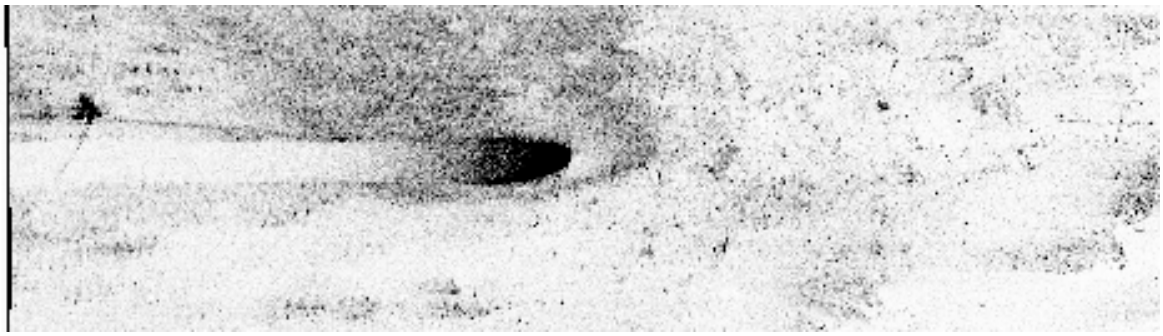


Figure 2.1.1

Figure 2.1.2

2.2) 27ft Wreck 73/1

Survey Summary

Survey Position: 42° 59' 50.9" N, 082° 25' 22.2" W

Least Depth: 8.39 m (= 27.53 ft = 4.589 fm = 4 fm 3.53 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-217.16:18:41.000 (08/04/2008)

Survey Line: h11915 / 1211_sb / 2008-217 / 045a1618

Profile/Beam: 73/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Subm Wk seen in SSS imagery and investigated with SBES in three closely spaced lines.

Wk not designated as DToN due to location outside main navigation channel and close proximity of river bank bridge.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-217/045a1618	73/1	0.00	000.0	Primary
h11915/1211_sss500k_200percent/2008-206/h080724152000	0004	5.89	160.5	Secondary
h11915/1211_sss500k_100percent/2008-204/h080722141600	0003	25.74	028.7	Secondary

Hydrographer Recommendations

Hydrographer recommends charting 27-ft Subm Wk.

Cartographically-Rounded Depth (Affected Charts):

27ft (14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1)

4 ½fm (14500_1)

27ft (14860_1)

8.4m (14820_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 2:dangerous wreck

CONVIS - 2:not visual conspicuous

OBJNAM - 27-ft Wk

QUASOU - 6:least depth known

SORDAT - 20080806

SORIND - US,US,nsurf,H11915

STATUS - 1:permanent

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

VALSOU - 8.392 m

VERDAT - 13:Low water

WATLEV - 3:always under water/submerged

Office Notes

Concur. Chart 27-ft sunken wreck at the surveyed location.

Feature Images

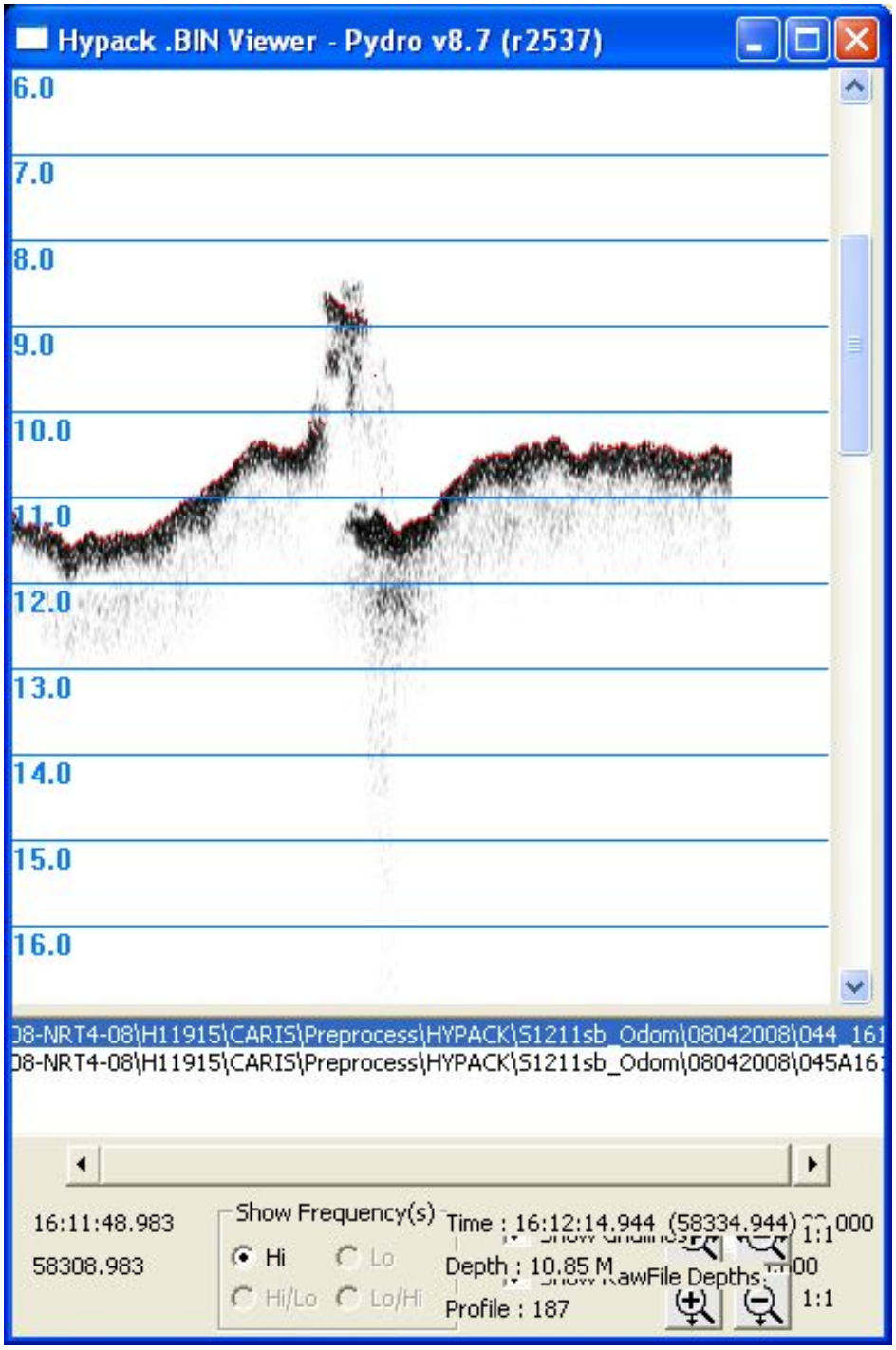


Figure 2.2.1

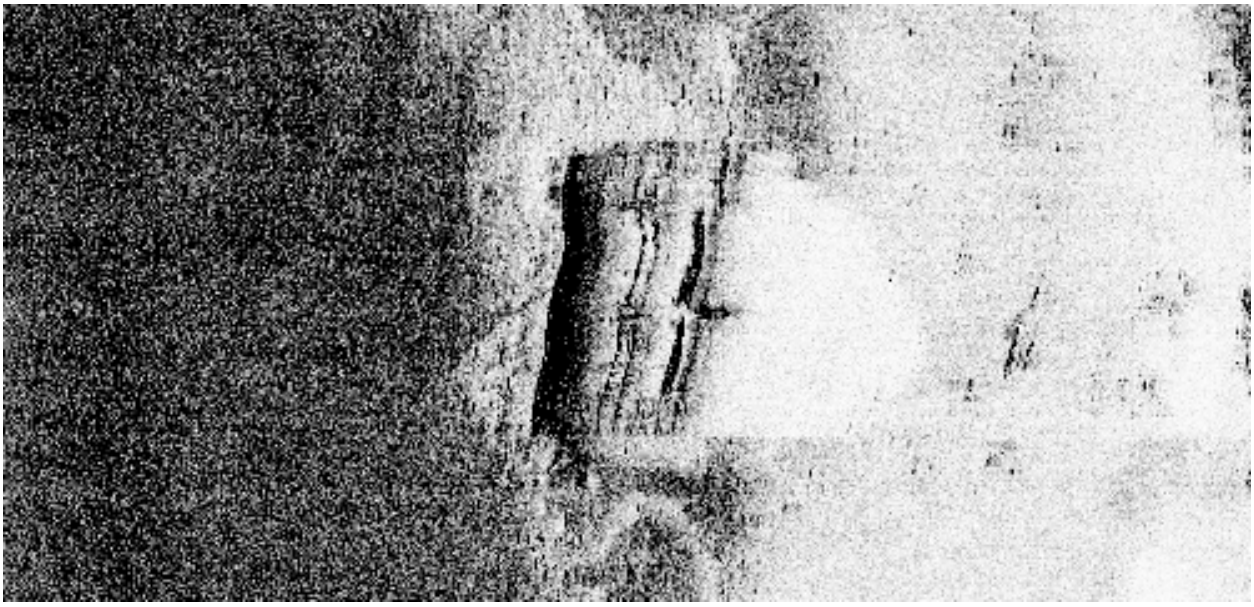


Figure 2.2.2

2.3) 34-ft Wk AWOIS 14207 1503/1

Survey Summary

Survey Position: 42° 59' 36.2" N, 082° 25' 35.7" W

Least Depth: 10.38 m (= 34.06 ft = 5.676 fm = 5 fm 4.06 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-210.14:31:58.961 (07/28/2008)

Survey Line: h11915 / 1211_sb / 2008-210 / 001_1428

Profile/Beam: 1503/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Investigation of AWOIS item 14207. Large Subm Wk was seen in SSS imagery . Wreck is oriented approximately E-W across the river. SBES investigation was conducted by running N-S lines with 10 meter spacing from across the entire length of the Wk. An addition SBES line was run E-W down the length of the Wk. A LD of 36.75 ft was obtained, which is significantly deeper than the 28.5 ft LD previously recorded by a CHS MBES survey.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-210/001_1428	1503/1	0.00	000.0	Primary

Hydrographer Recommendations

Hydrographer recommends retaining Subm Wk as charted.

Cartographically-Rounded Depth (Affected Charts):

34ft (14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1)

5 ½fm (14500_1)

5fm (14860_1)

10.4m (14820_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 2:dangerous wreck

OBJNAM - 34-ft wreck

QUASOU - 6:least depth known

SORDAT - 20080806

SORIND - US,US,nsurf,H11915

TECSOU - 6:swept by wire-drag

VALSOU - 10.380 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Delete charted 28-ft Wreck. Append chart with 34-ft Wreck at the surveyed location.

Feature Images

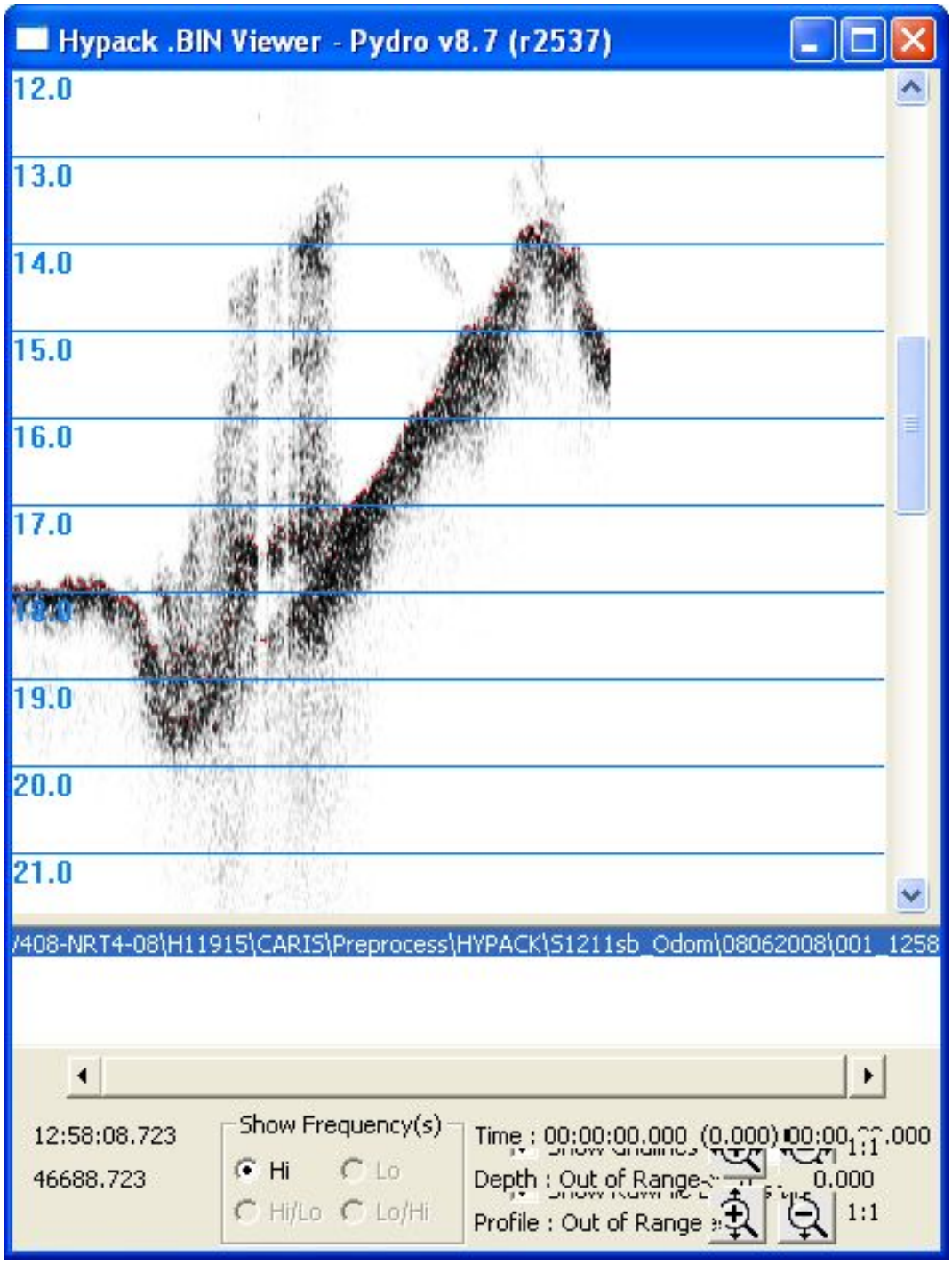
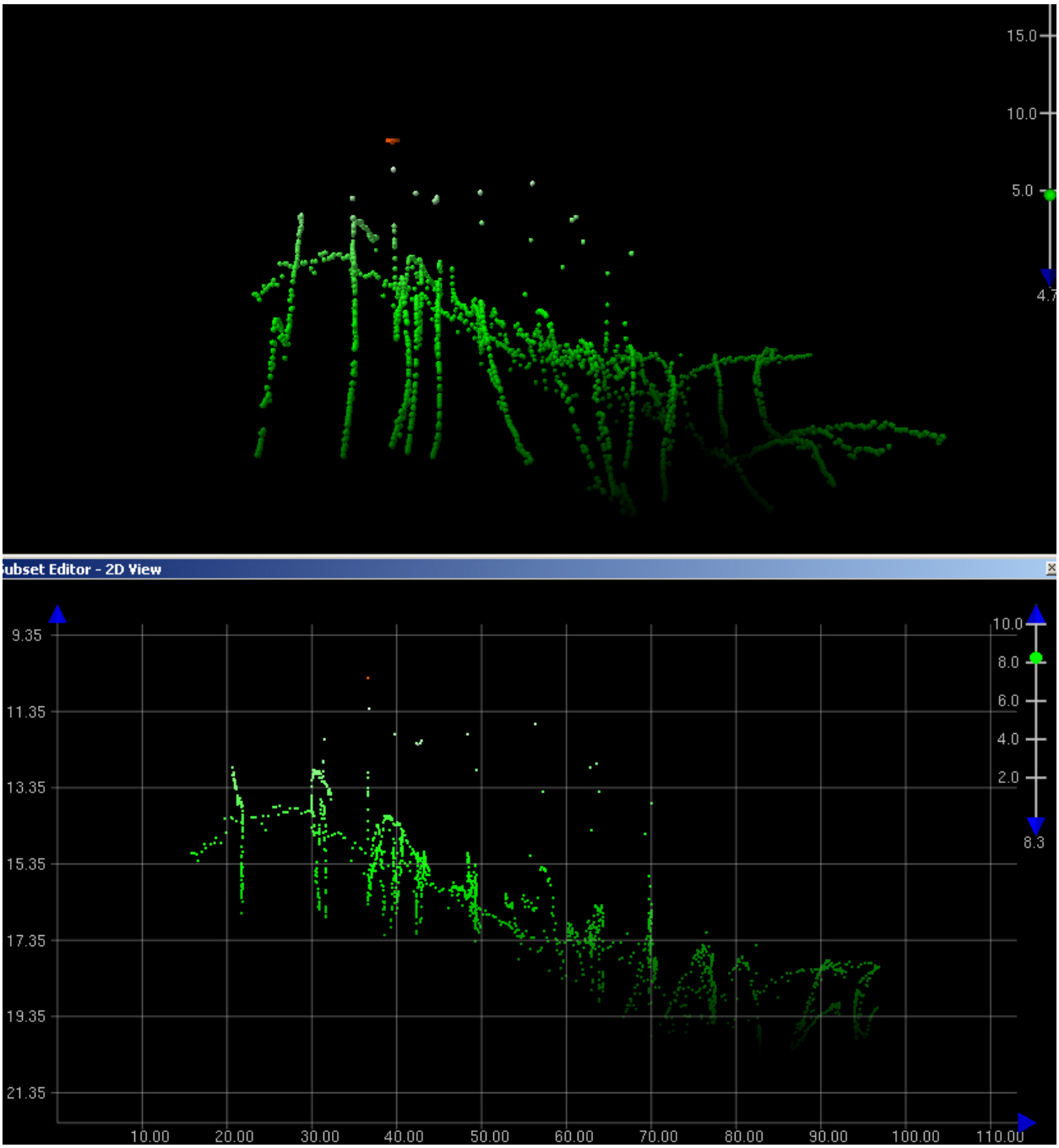


Figure 2.3.1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2.0
8.3

Figure 2.3.2

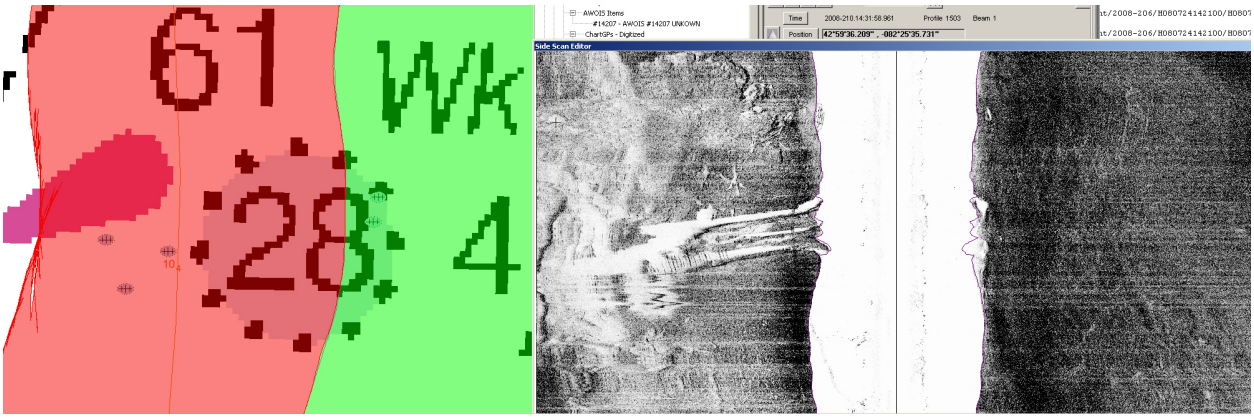


Figure 2.3.3

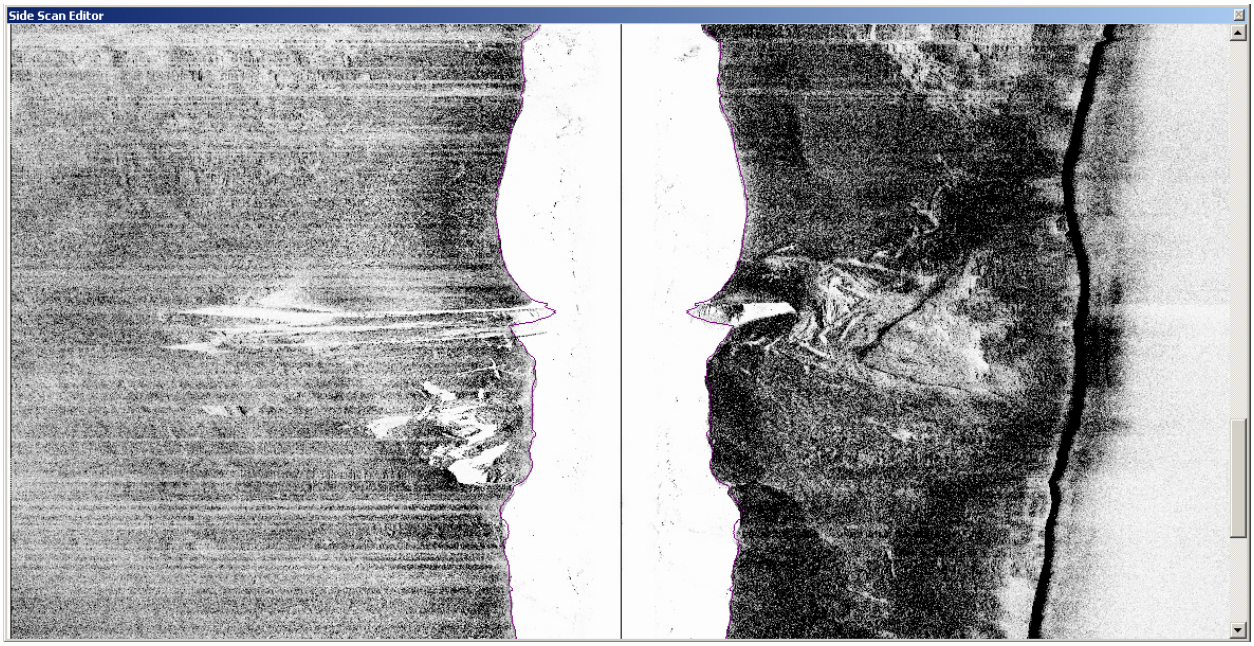


Figure 2.3.4

2.4) 17ft Obstruction 145/1

Survey Summary

Survey Position: 43° 00' 24.9" N, 082° 24' 38.5" W

Least Depth: 5.38 m (= 17.64 ft = 2.940 fm = 2 fm 5.64 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-217.13:58:25.141 (08/04/2008)

Survey Line: h11915 / 1211_sb / 2008-217 / 002_1358

Profile/Beam: 145/1

Charts Affected: 14852_2, 14853_46, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Three small contacts seen in SSS imagery. SBES investigation lines run in a star pattern over center of 3 contacts.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-217/002_1358	145/1	0.00	000.0	Primary
h11915/1211_sss500k_200percent/2008-204/h080722134800	0001	5.96	235.9	Secondary (grouped)

Hydrographer Recommendations

Chart Subm Obstn.

Cartographically-Rounded Depth (Affected Charts):

17ft (14852_2, 14853_46, 14865_1, 14852_3, 14862_1)

3fm (14500_1)

17ft (14860_1)

5.4m (14820_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: OBJNAM - 17-ft Obstruction

QUASOU - 6:least depth known

SORDAT - 20080806

SORIND - US,US,nsurf,H11915

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

VALSOU - 5.376 m

VERDAT - 13:Low water

WATLEV - 3:always under water/submerged

Office Notes

Concur. Chart 17-ft Obstruction at the surveyed location.

Feature Images

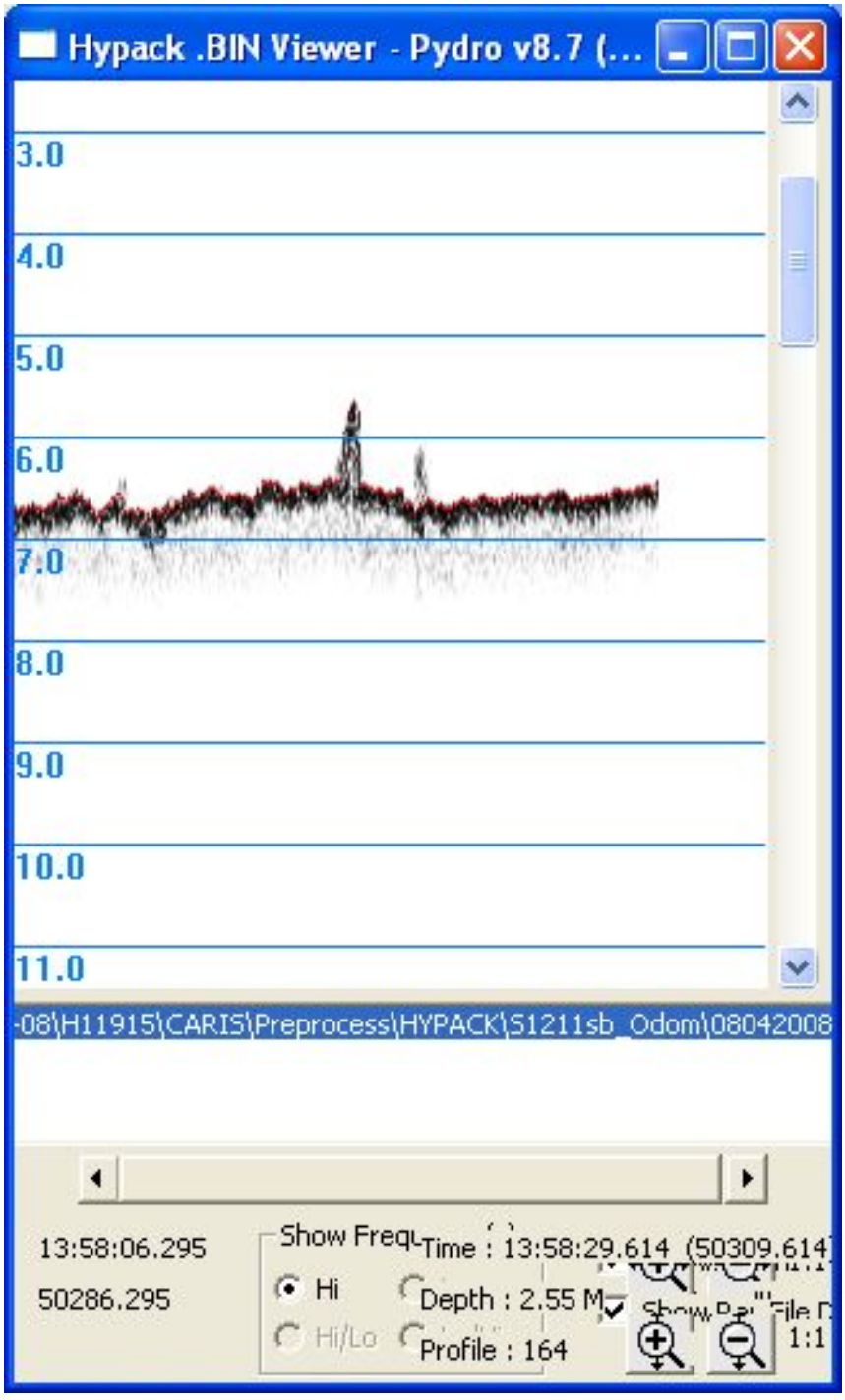


Figure 2.4.1

Figure 2.4.2

2.5) 25ft Obstruction 231/1

Survey Summary

Survey Position: 42° 59' 01.1" N, 082° 25' 19.6" W

Least Depth: 7.83 m (= 25.70 ft = 4.283 fm = 4 fm 1.70 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-218.16:10:48.000 (08/05/2008)

Survey Line: h11915 / 1211_sb / 2008-218 / 808_1610

Profile/Beam: 231/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Subm obstn seen in SSS imagery, very close to shore. SBES investigation lines run parallel to shore. Obstn not considered a DToN d/t proximity to shore.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-218/808_1610	231/1	0.00	000.0	Primary
h11915/1211_sss500k_200percent/2008-206/h080724142100	0002	0.60	109.6	Secondary
h11915/1211_sss500k_100percent/2008-204/h080722152900	0003	3.95	314.3	Secondary

Hydrographer Recommendations

Hydrographer recommends charting Subm Obstn.

Cartographically-Rounded Depth (Affected Charts):

25ft (14852_2, 14853_46, 14853_47, 14852_3, 14862_1)

4 ¼fm (14500_1)

25ft (14860_1)

7.8m (14820_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: OBJNAM - 25-ft Obstrn

QUASOU - 6:least depth known

SORDAT - 20080806

SORIND - US,US,nsurf,H11915

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

VALSOU - 7.833 m

VERDAT - 13:Low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart 25-ft Obstruction.

Feature Images

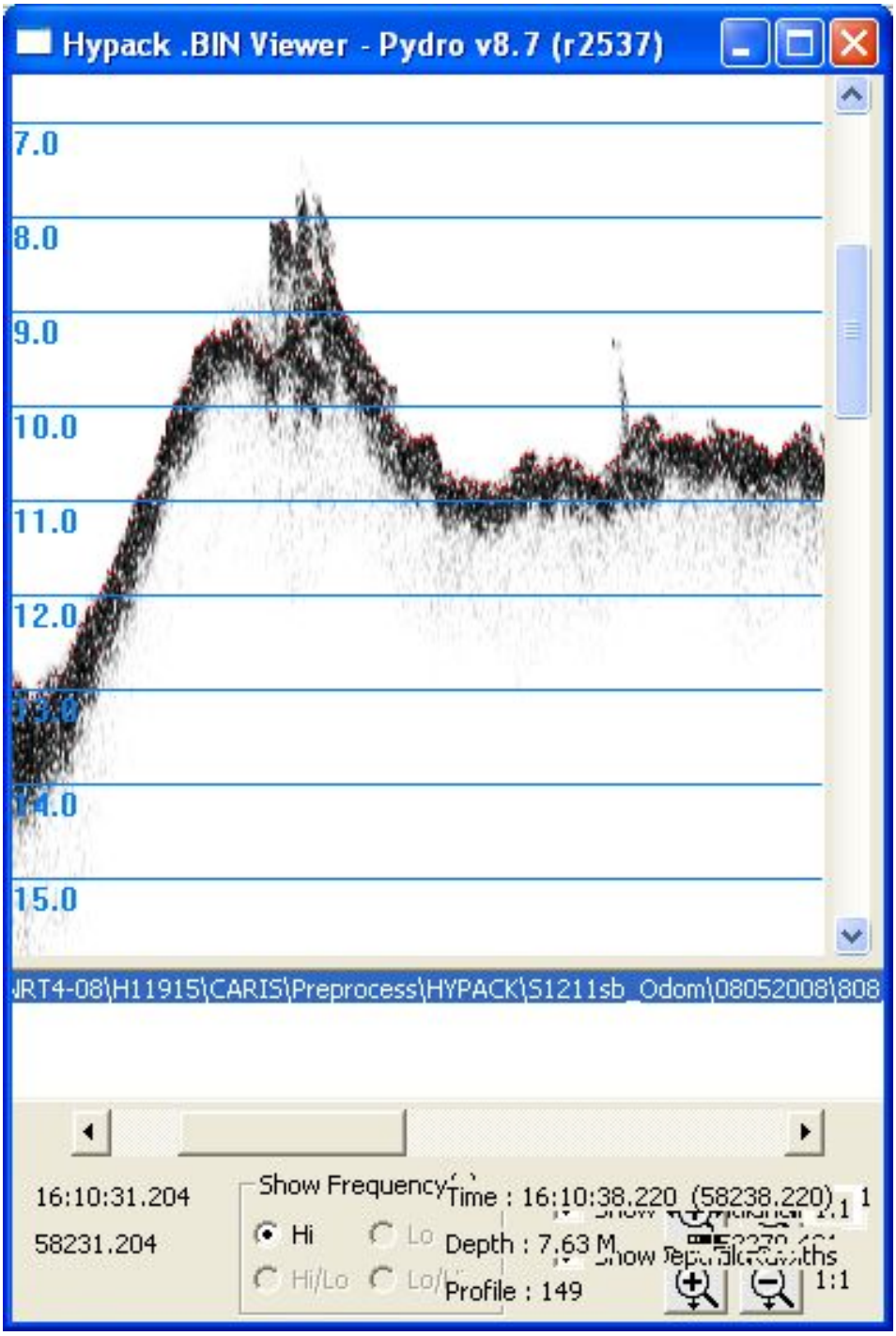


Figure 2.5.1

2.6) 30ft Rock 367/1

Survey Summary

Survey Position: 42° 58' 59.3" N, 082° 25' 17.9" W

Least Depth: 9.35 m (= 30.69 ft = 5.114 fm = 5 fm 0.69 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-218.16:11:07.000 (08/05/2008)

Survey Line: h11915 / 1211_sb / 2008-218 / 808_1610

Profile/Beam: 367/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Subm Rk seen in SSS imagery, very close to shore. SBES investigation lines run parallel to shore. Rk. not considered a DToN d/t proximity to shore.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-218/808_1610	367/1	0.00	000.0	Primary
h11915/1211_sss500k_200percent/2008-206/h080724142100	0001	9.29	108.9	Secondary

Hydrographer Recommendations

Hydrographer recommends charting Subm Rk.

Cartographically-Rounded Depth (Affected Charts):

30ft (14852_2, 14853_46, 14853_47, 14852_3, 14862_1)

5fm (14500_1)

30ft (14860_1)

9.4m (14820_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)

Attributes: QUASOU - 6:least depth known

SORDAT - 20080806

SORIND - US,US,nsurf,H11915

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

VALSOU - 9.353 m

VERDAT - 13:Low water

WATLEV - 3:always under water/submerged

Office Notes

Concur. Chart 30-ft rock at the surveyed location.

Feature Images

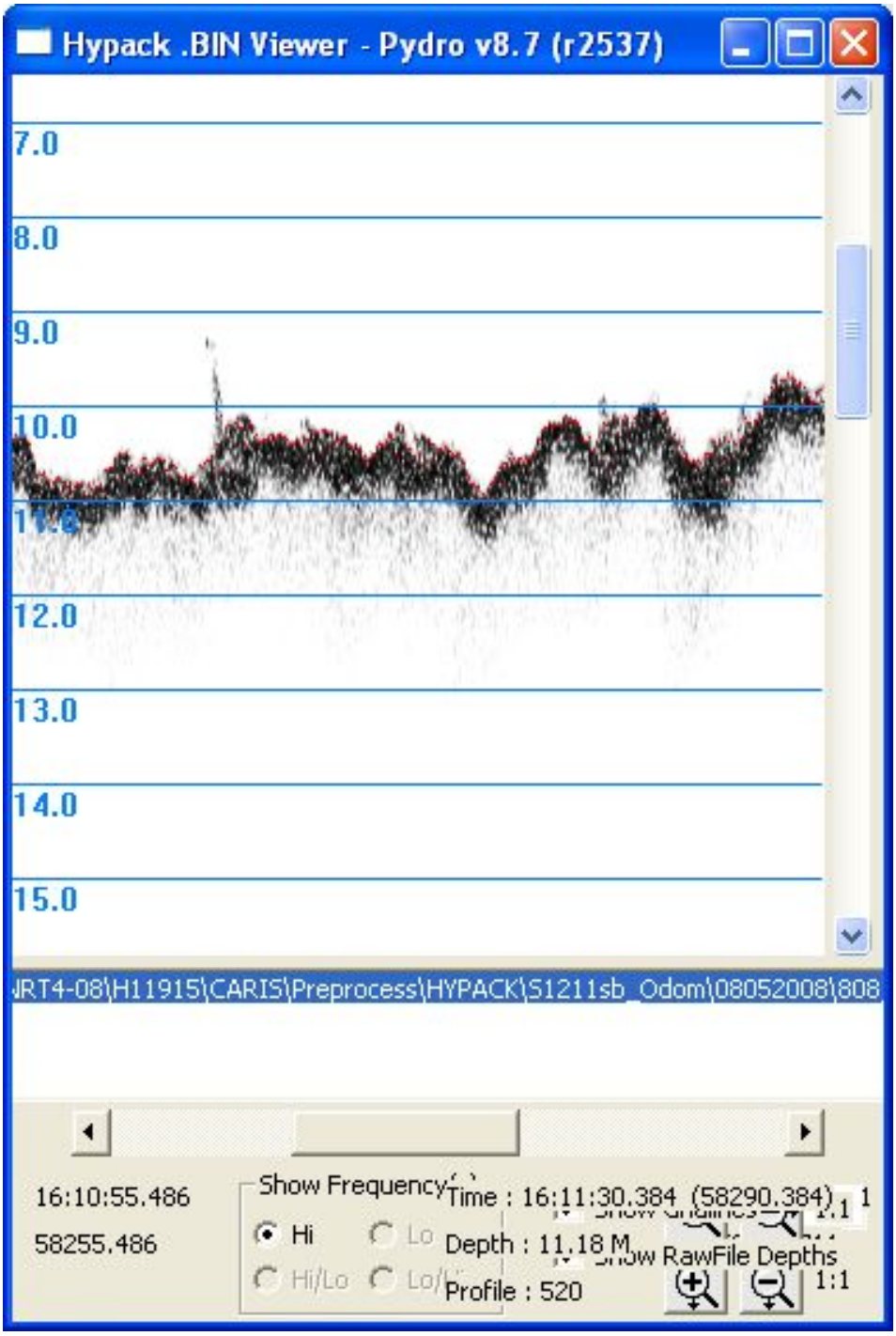


Figure 2.6.1

2.7) 42-ft Obstruction (Buoy block) 130/1

Survey Summary

Survey Position: 42° 59' 45.4" N, 082° 25' 24.8" W

Least Depth: 12.91 m (= 42.36 ft = 7.060 fm = 7 fm 0.36 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-217.16:07:39.000 (08/04/2008)

Survey Line: h11915 / 1211_sb / 2008-217 / 050_1607

Profile/Beam: 130/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Subm Obstn seen in SSS imagery. Believed to be buoy block for discontinued Buoy R "A70". Buoy no longer exists. Block is located in a hole, surrounded by shoaler depths, and was not considered a DToN.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-217/050_1607	130/1	0.00	000.0	Primary

Hydrographer Recommendations

Hydrographer recommends not charting block due to location in a hole. Hydrographer also recommends charting current surveyed depths in surrounding area.

Cartographically-Rounded Depth (Affected Charts):

42ft (14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1)

7fm (14500_1)

7fm (14860_1)

12.9m (14820_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: OBJNAM - 42-ft Obstn (buoy block)

QUASOU - 6:least depth known

SORDAT - 20080806

SORIND - US,US,nsurf,H11915

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

VALSOU - 12.911 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do Not Concur. Recommend charting 42-ft Obstruction (buoy block) at the surveyed location.

Feature Images

Figure 2.7.1

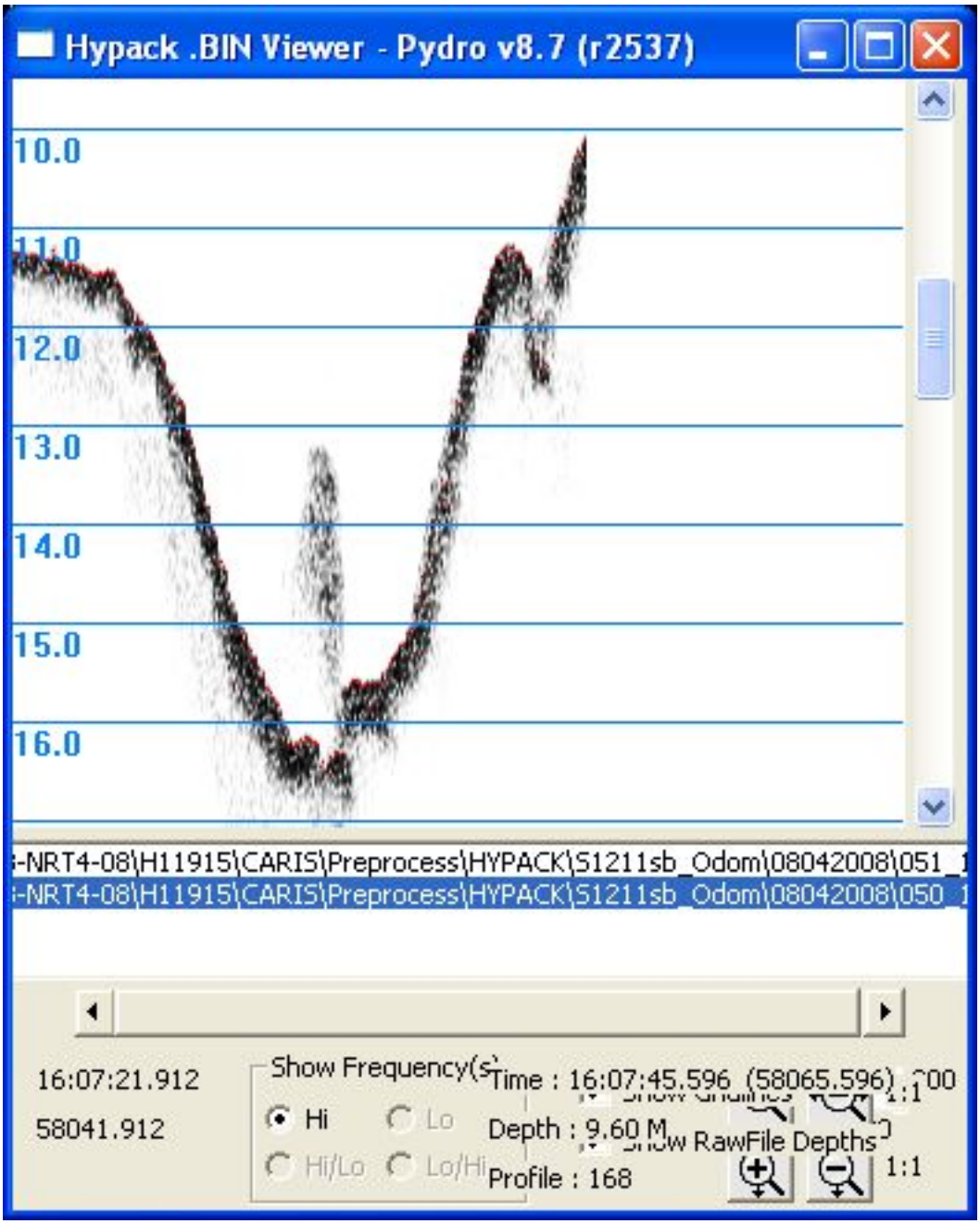

Hypack .BIN Viewer - Pydro v8.7 (r2537)
10.0
11.0
12.0
13.0
14.0
15.0
16.0
-NRT4-08\H11915\CARIS\Preprocess\HYPACK\S1211sb_Odom\08042008\051_1
-NRT4-08\H11915\CARIS\Preprocess\HYPACK\S1211sb_Odom\08042008\050_1
16:07:21.912
58041.912
Show Frequency(s)
Hi
Lo
Hi/Lo
Lo/Hi
Time : 16:07:45.596 (58065.596)
Depth : 9.60 M
Profile : 168
Show RawFile Depths
1:1

Figure 2.7.2

2.8) AWOIS 10707 30-ft Obstruction (crib) 129/1

Survey Summary

Survey Position: 42° 59' 13.3" N, 082° 25' 28.3" W

Least Depth: 9.21 m (= 30.22 ft = 5.037 fm = 5 fm 0.22 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-217.15:45:09.556 (08/04/2008)

Survey Line: h11915 / 1211_sb / 2008-217 / 063_1544

Profile/Beam: 129/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Investigation of AWOIS Item 10707 - Subm Crib. Crib seen in SSS Imagery and was investigated with tightly spaced SBES lines. Current charted dept of crib is 33 ft. LD found to be 30 ft. Field party did not consider this depth discrepancy an DToN d/t close proximity to shore, permanently moored lightship and 13' shoal.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-217/063_1544	129/1	0.00	000.0	Primary

Hydrographer Recommendations

Revise charted depth of crib to 30 ft.

Cartographically-Rounded Depth (Affected Charts):

30ft (14852_2, 14853_46, 14853_47, 14852_3, 14862_1)

5fm (14500_1)

30ft (14860_1)

9.2m (14820_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: CATOBS - 4:crib

OBJNAM - 30-ft Obstruction

QUASOU - 6:least depth known

SORDAT - 20080806

SORIND - US,US,nsurf,H11915

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

VALSOU - 9.211 m

WATLEV - 3:always under water/submerged

Office Notes

Concur. Chart 30-ft Obstrn (submerged crib). Recommend to revise chart notation to "Depth over crib 30 ft".

Feature Images

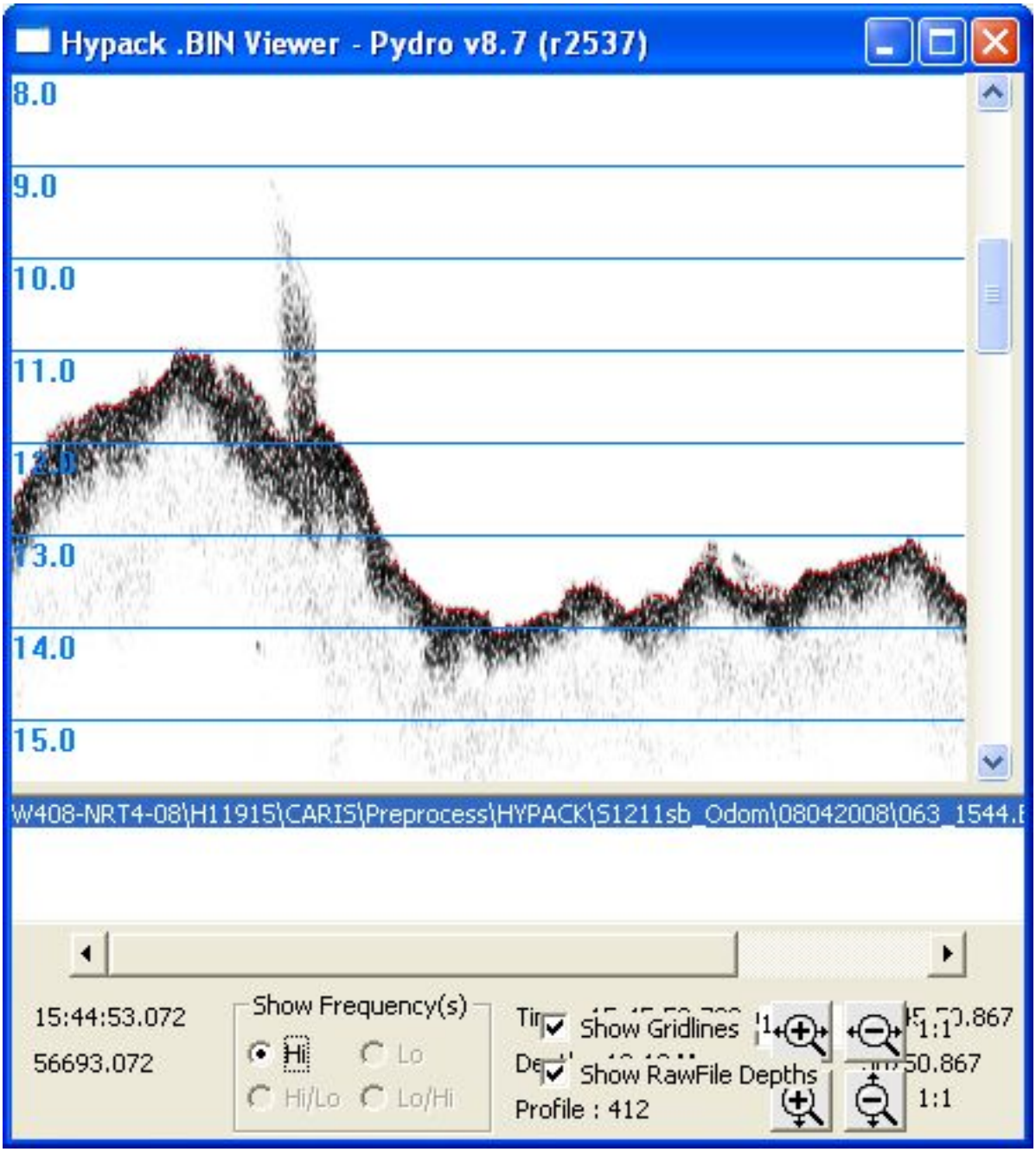


Figure 2.8.1

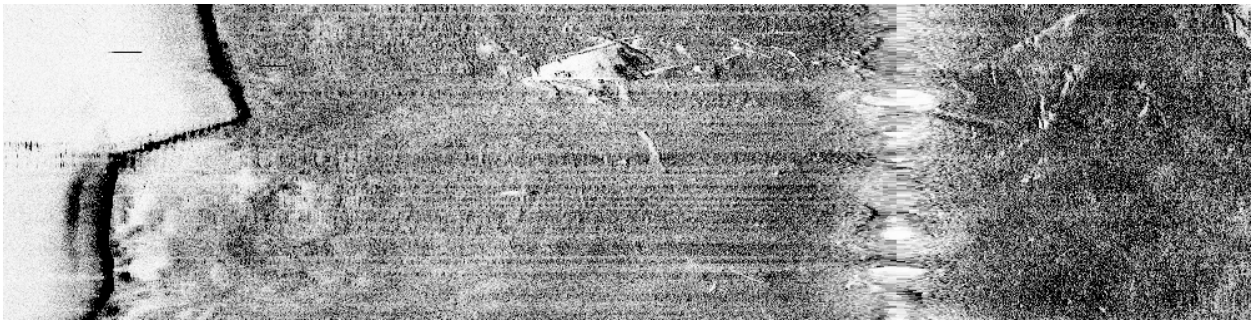


Figure 2.8.2

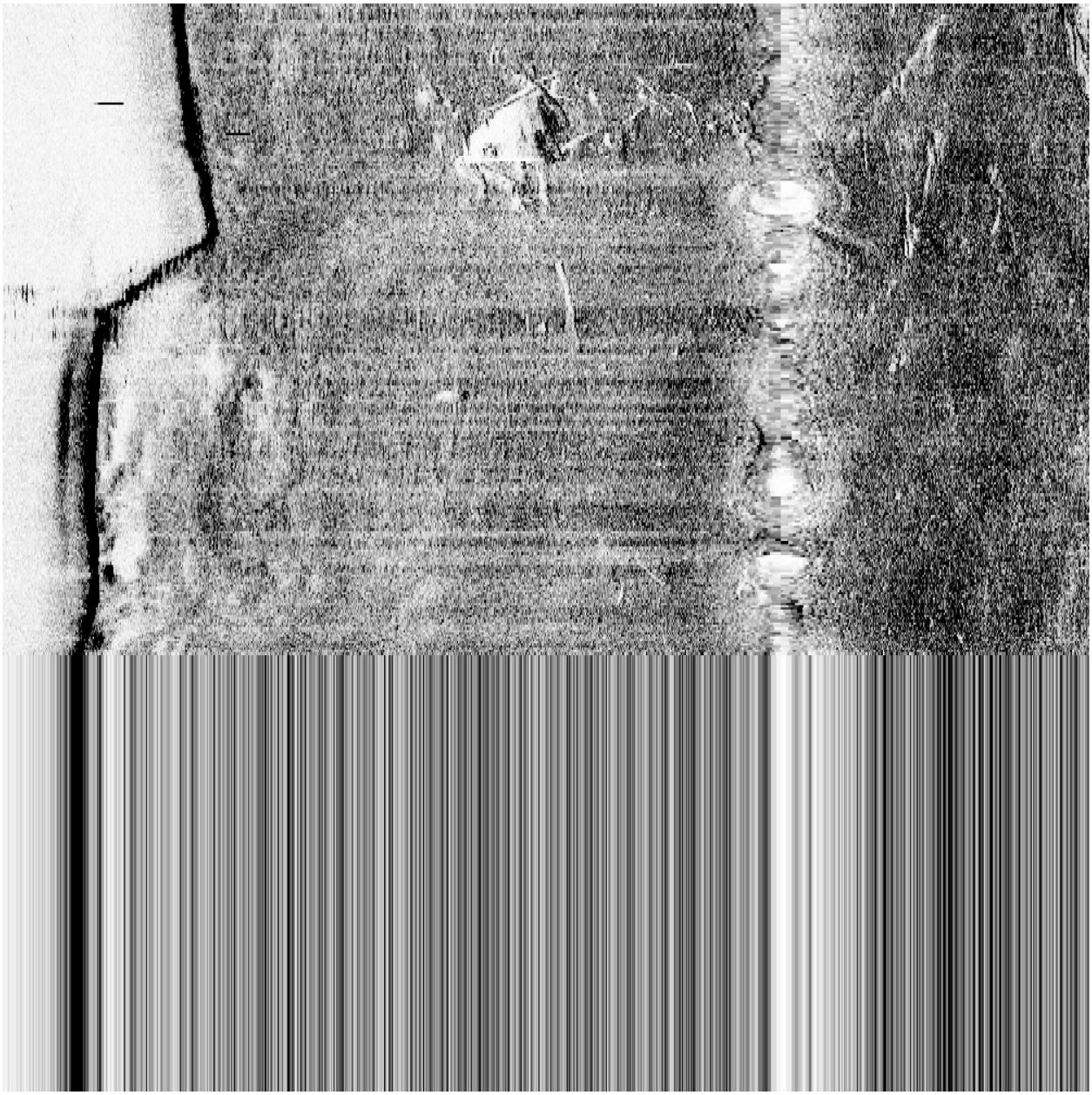


Figure 2.8.3

2.9) AWOIS 10708 intake cribs (38-ft LD) 354/1

Survey Summary

Survey Position: 43° 00' 08.2" N, 082° 25' 11.6" W

Least Depth: 11.57 m (= 37.94 ft = 6.324 fm = 6 fm 1.94 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-218.14:24:56.000 (08/05/2008)

Survey Line: h11915 / 1211_sb / 2008-218 / 037_1424

Profile/Beam: 354/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Investigation of AWOIS 10708 - 3 intake cribs.

Cribs seen in SSS imagery. SBES investigation lines run parallel to shoreline. It was difficult/impossible to safely locate all three cribs d/t the current, their location near shore the bridge.

LD of 38 ft was obtained on the cribs. This is shoaler than the currently charted 34 feet.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-218/037_1424	354/1	0.00	000.0	Primary

Hydrographer Recommendations

Hydrographer recommends retaining cribs as charted.

Cartographically-Rounded Depth (Affected Charts):

38ft (14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1)

6 ¼fm (14500_1)

6fm (14860_1)

11.6m (14820_1)

S-57 Data

[None]

Office Notes

Concur with clarification. Chart 14865 notation indicates the least depth is 34-ft. Chart 14853_6 notation indicates the least depth is 24-ft. Recommend annotate chart with " Depth over Cribs 38 feet". Recommend to compile all charts within the common area with H11915 survey depths.

Feature Images

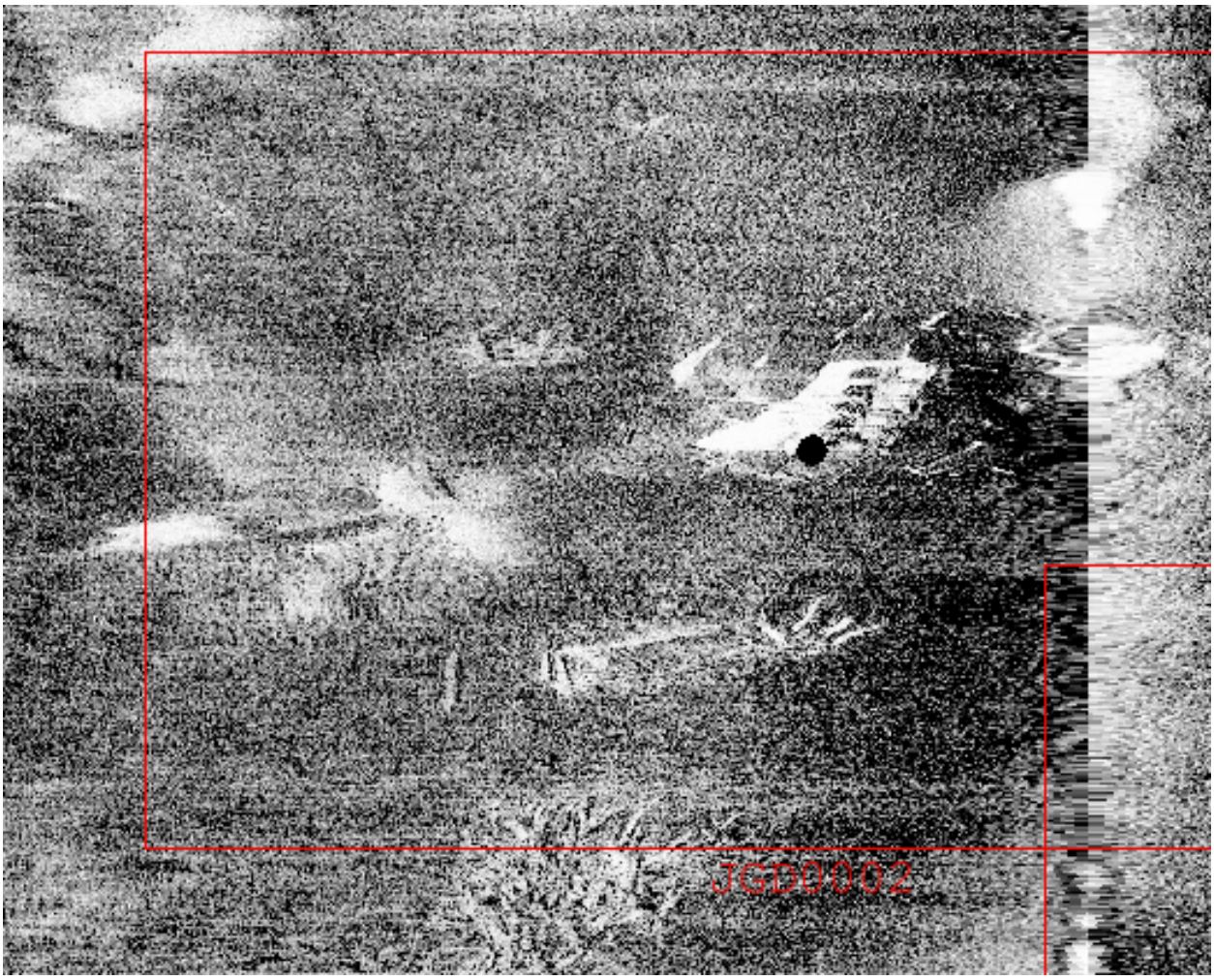


Figure 2.9.1

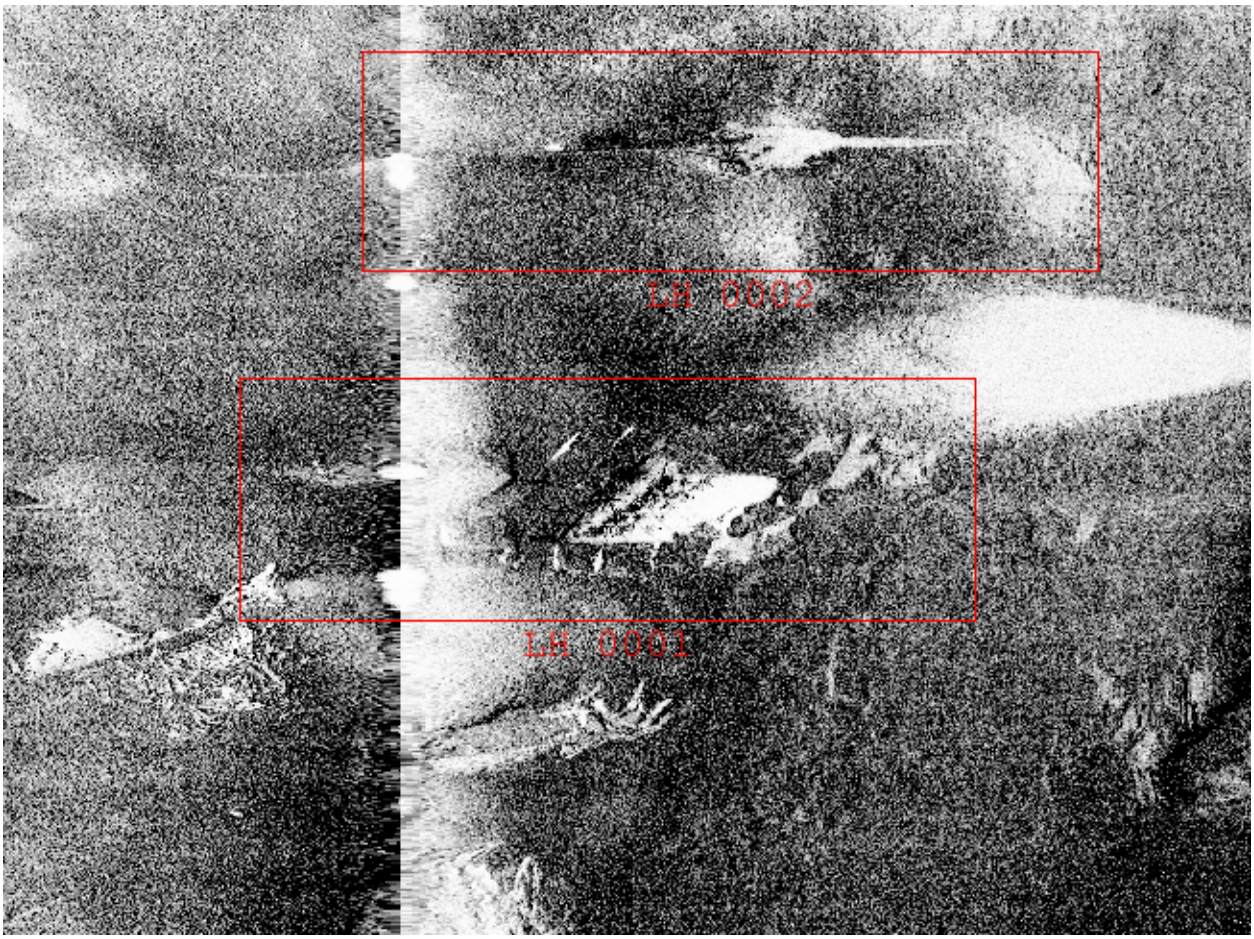


Figure 2.9.2

2.10) 47-ft Wk 580/1

Survey Summary

Survey Position: 43° 00' 04.0" N, 082° 25' 21.1" W

Least Depth: 14.49 m (= 47.55 ft = 7.925 fm = 7 fm 5.55 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-218.17:26:18.486 (08/05/2008)

Survey Line: h11915 / 1211_sb / 2008-218 / 836_1724

Profile/Beam: 580/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Large Subm Wk seen in SSS imagery. SBES investigation lines run over entire area of Wk at 20 m line spacing. Additional SBES investigation lines run in star pattern over location of highest measured shadow. Wk. not considered a DToN because LD > nearby currently charted 48' sounding.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-218/836_1724	580/1	0.00	000.0	Primary
h11915/1211_sb/2008-217/008_1627	165/1	3.79	298.9	Secondary
h11915/1211_sb/2008-217/007_1633	187/1	8.54	352.2	Secondary
h11915/1211_sss500k_100percent/2008-204/h080722151100	0001	8.81	317.8	Secondary
h11915/1211_sss500k_200percent/2008-206/h080724142100	0008	14.98	313.6	Secondary
h11915/1211_sb/2008-218/837_1728	183/1	17.40	273.0	Secondary
h11915/1211_sb/2008-218/837_1728	214/1	21.19	336.4	Secondary
h11915/1211_sss500k_200percent/2008-206/h080724140400	0006	36.08	327.4	Secondary

Hydrographer Recommendations

Hydrographer recommends charting Subm Wk.

Cartographically-Rounded Depth (Affected Charts):

47ft (14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1)

7 ¾fm (14500_1)

8fm (14860_1)

14.5m (14820_1)

S-57 Data

Geo object 1:	Wreck (WRECKS)
Attributes:	CATWRK - 2:dangerous wreck
	OBJNAM - 47-ft Wreck
	QUASOU - 6:least depth known
	SORDAT - 20080806
	SORIND - US,US,nsurf,H11915
	TECSOU - 1,2:found by echo-sounder,found by side scan sonar
	VALSOU - 14.494 m
	VERDAT - 12:Mean lower low water
	WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart 47-ft sunken Wreck at the surveyed location.

Feature Images

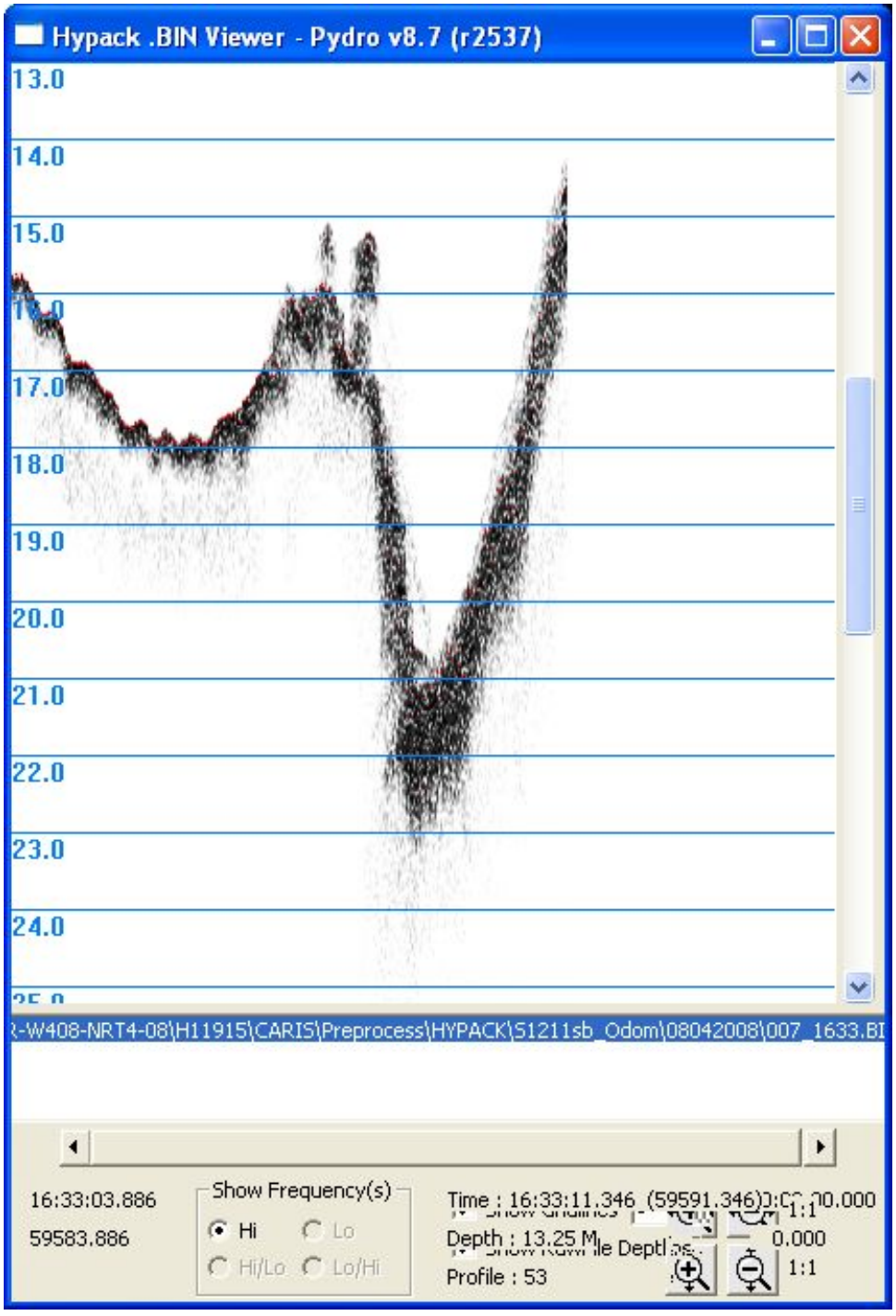


Figure 2.10.1

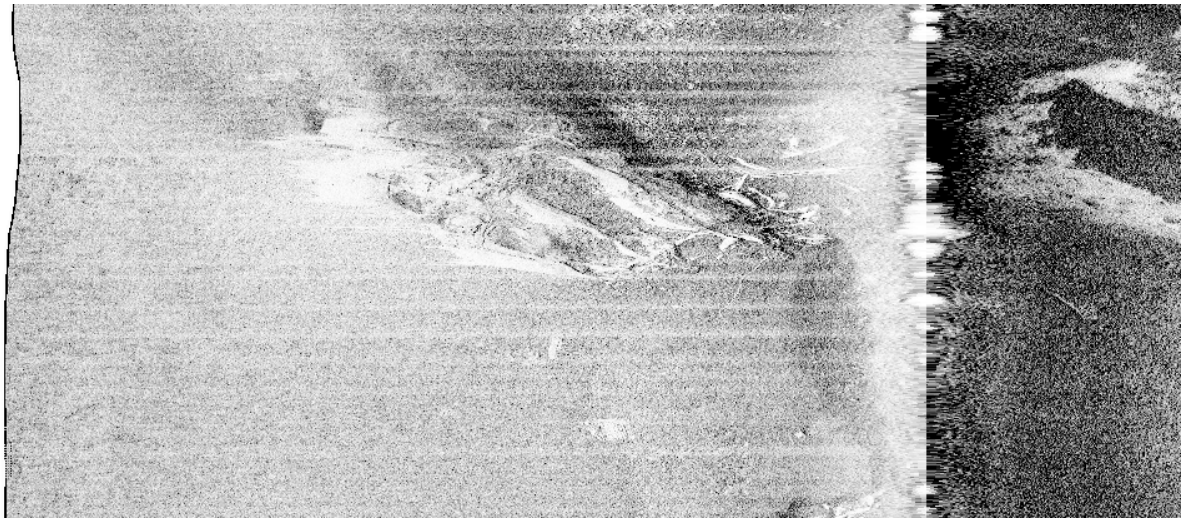


Figure 2.10.2

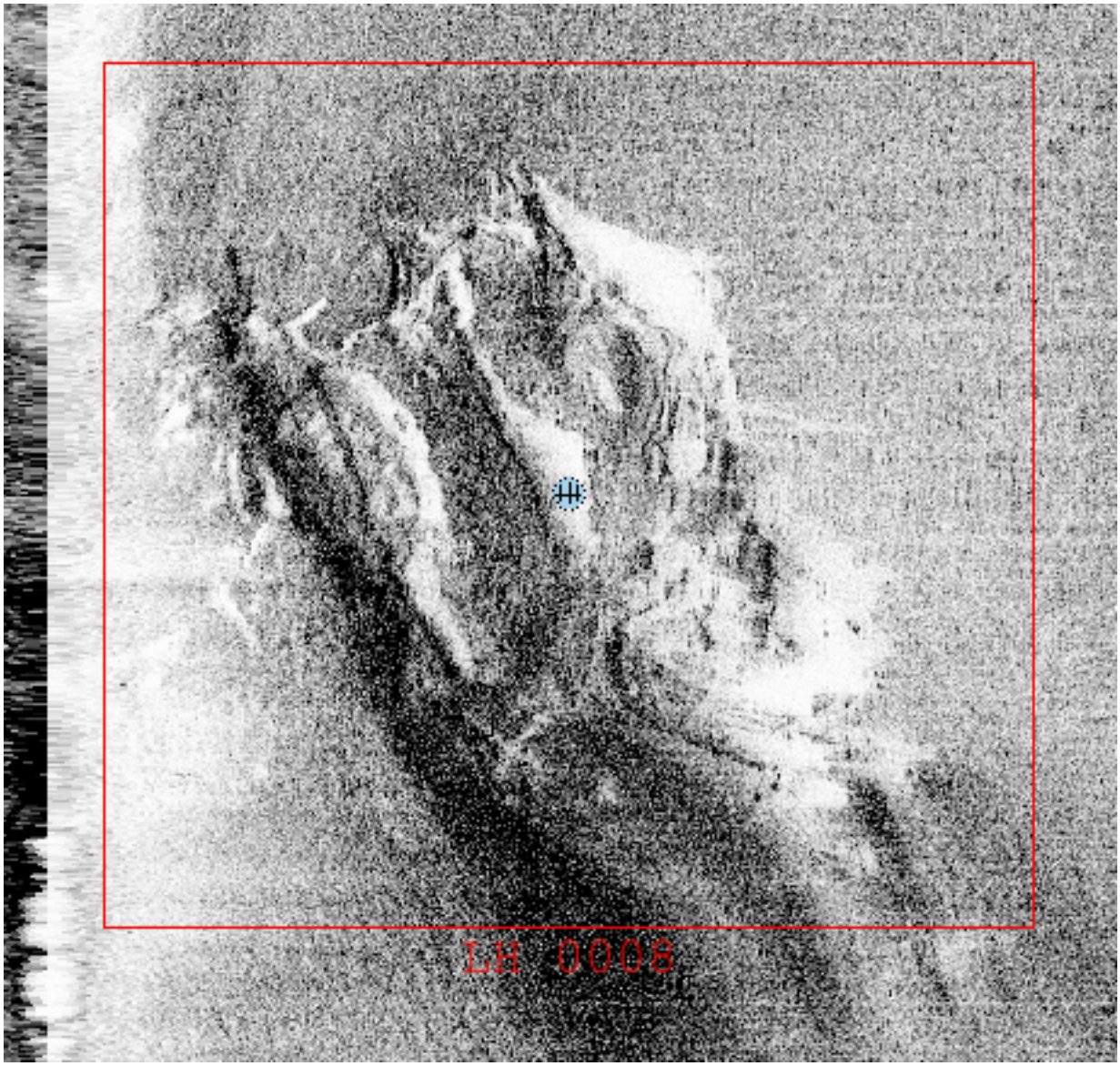


Figure 2.10.3

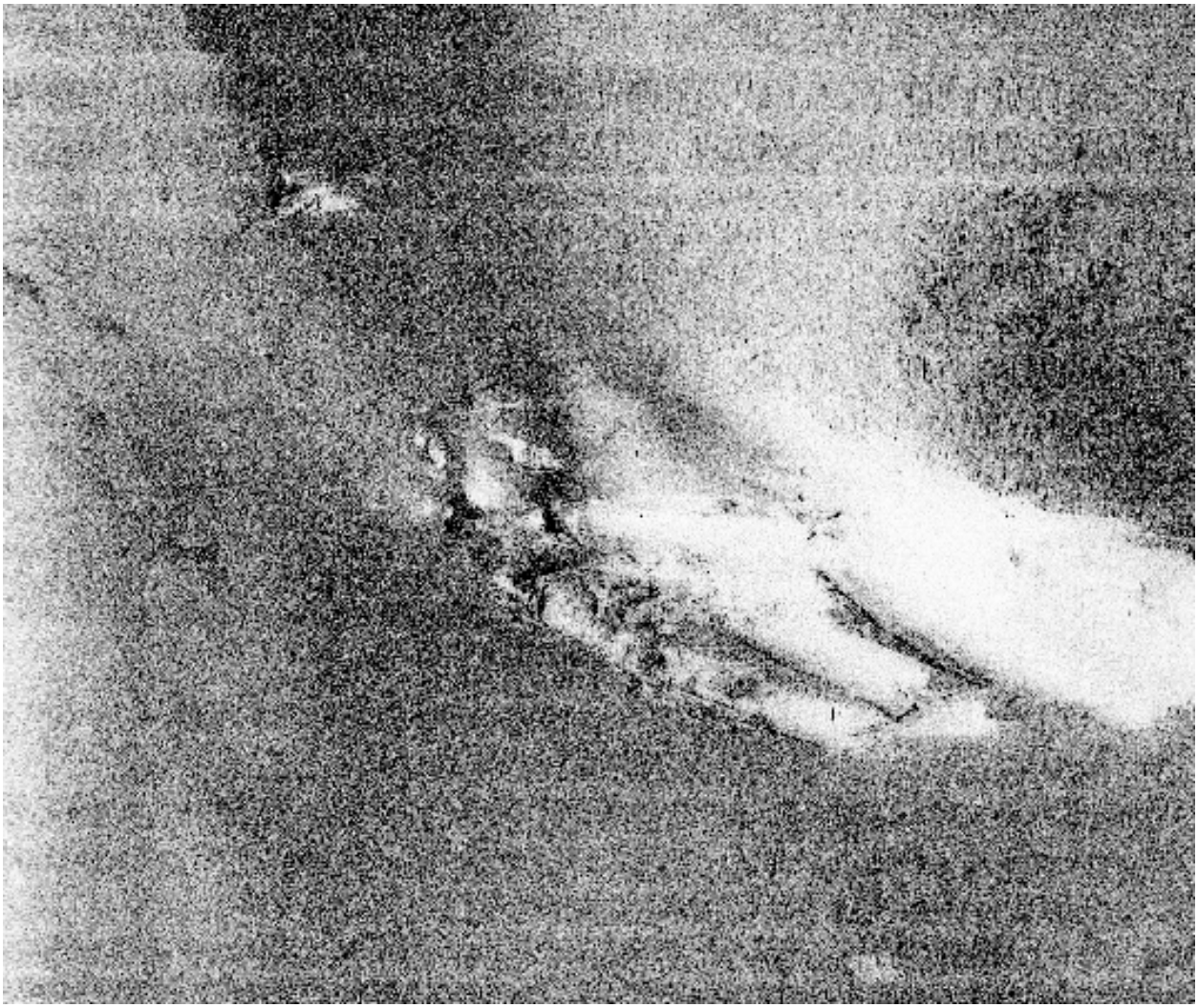


Figure 2.10.4

2.11) 29-ft Wreck (north end) 336/1

Survey Summary

Survey Position: 43° 00' 13.9" N, 082° 25' 11.0" W

Least Depth: 8.91 m (= 29.22 ft = 4.870 fm = 4 fm 5.22 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-219.13:12:03.115 (08/06/2008)

Survey Line: h11915 / 1211_sb / 2008-219 / 002_1311

Profile/Beam: 336/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Subm Wk seen in SSS imagery. Wk is oriented N-S in location of currently charted 27 ft shoal (Chart 14853_46.kap). SBES investigation lines were run E-W with 10 m line spacing over the entire length of the Wk. An additional SBES line was run down the length of the ship. LD of 29 ft was obtained directly over the currently charted 27 ft sounding.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-219/002_1311	336/1	0.00	000.0	Primary

Hydrographer Recommendations

Hydrographer recommends charting Subm Wk, 29 ft sounding as LD.

Cartographically-Rounded Depth (Affected Charts):

29ft (14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1)

4 ¾fm (14500_1)

29ft (14860_1)

8.9m (14820_1)

S-57 Data

[None]

Office Notes

Concur with clarification. Chart the data point which represents the LD on the center of the 29-ft Wk. The Wk is oriented N-S at 55.42 m and from E-W at 19.22m. The Wk symbol at the largest chart scale is not large enough to enclose the entire wreck. A wreck feature area is included in the H-Cell feature layer in conjuction with the LD data point.

Feature Images

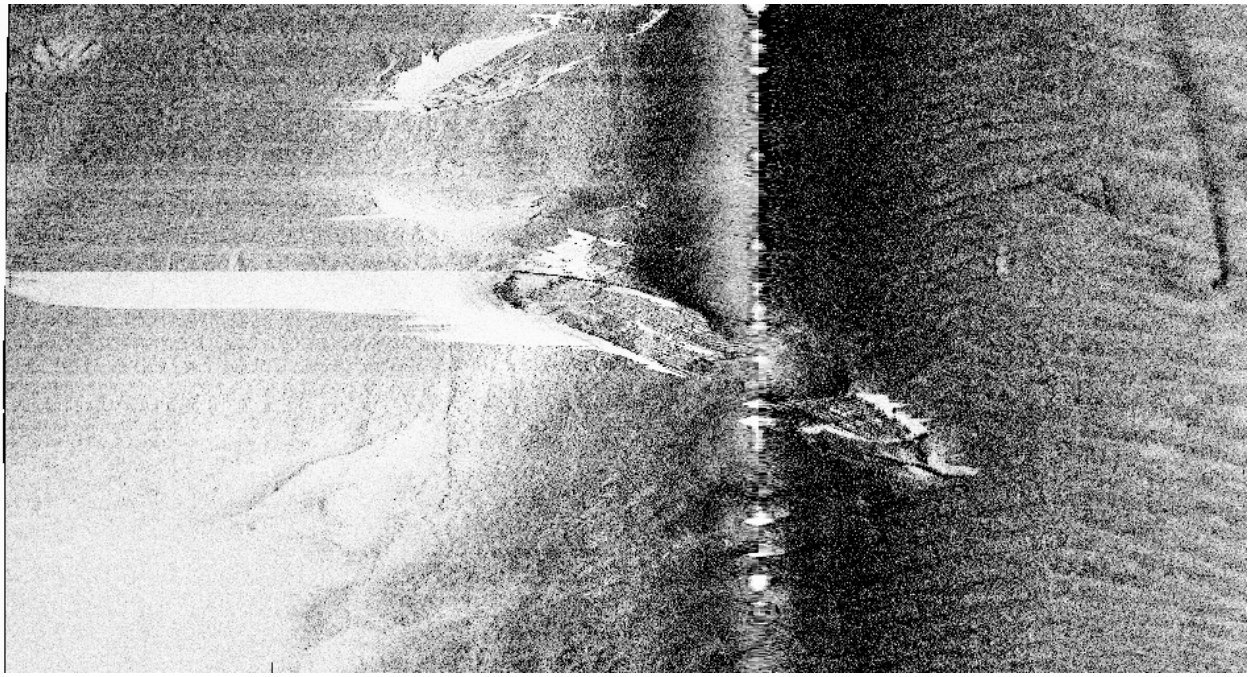


Figure 2.11.1

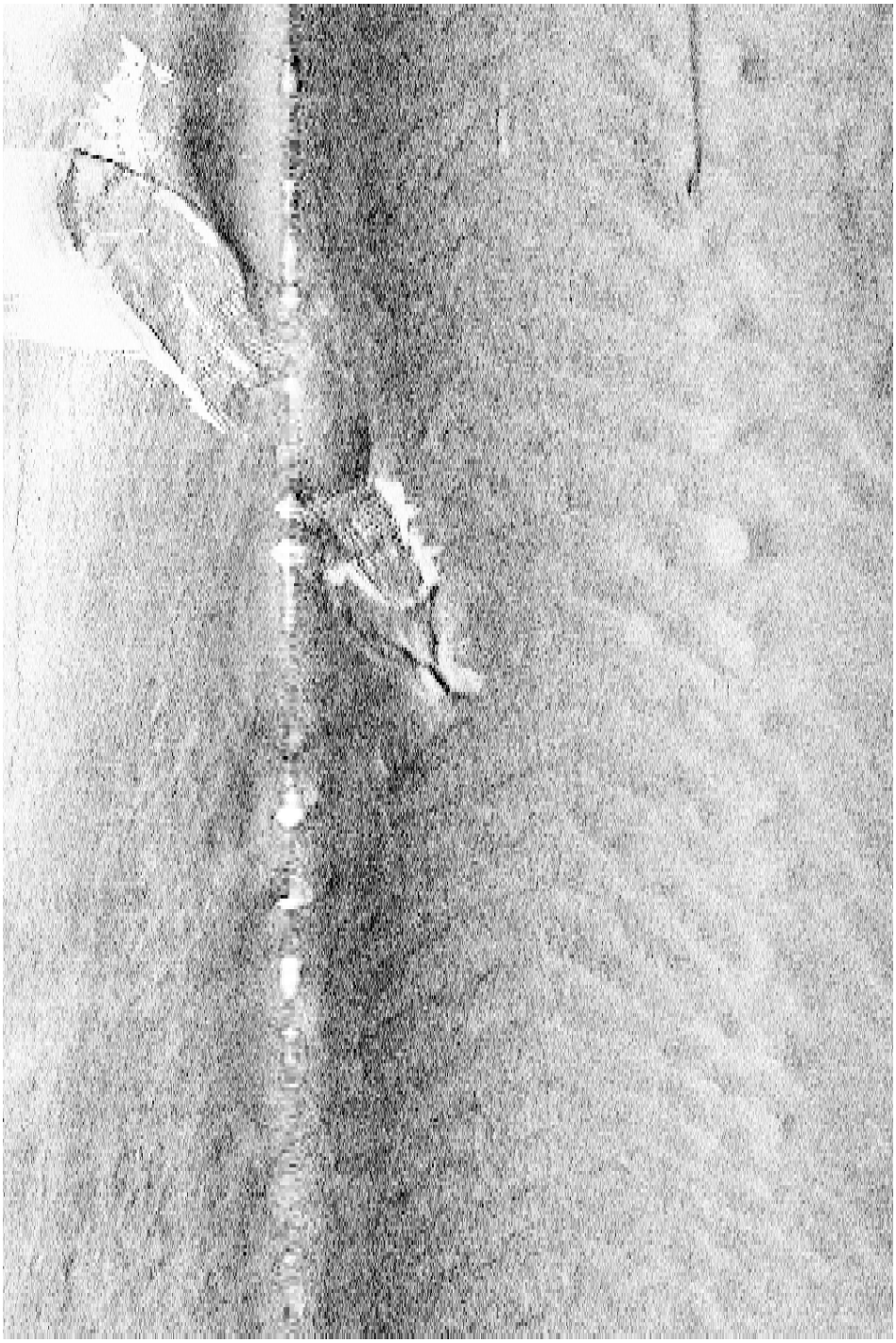


Figure 2.11.2

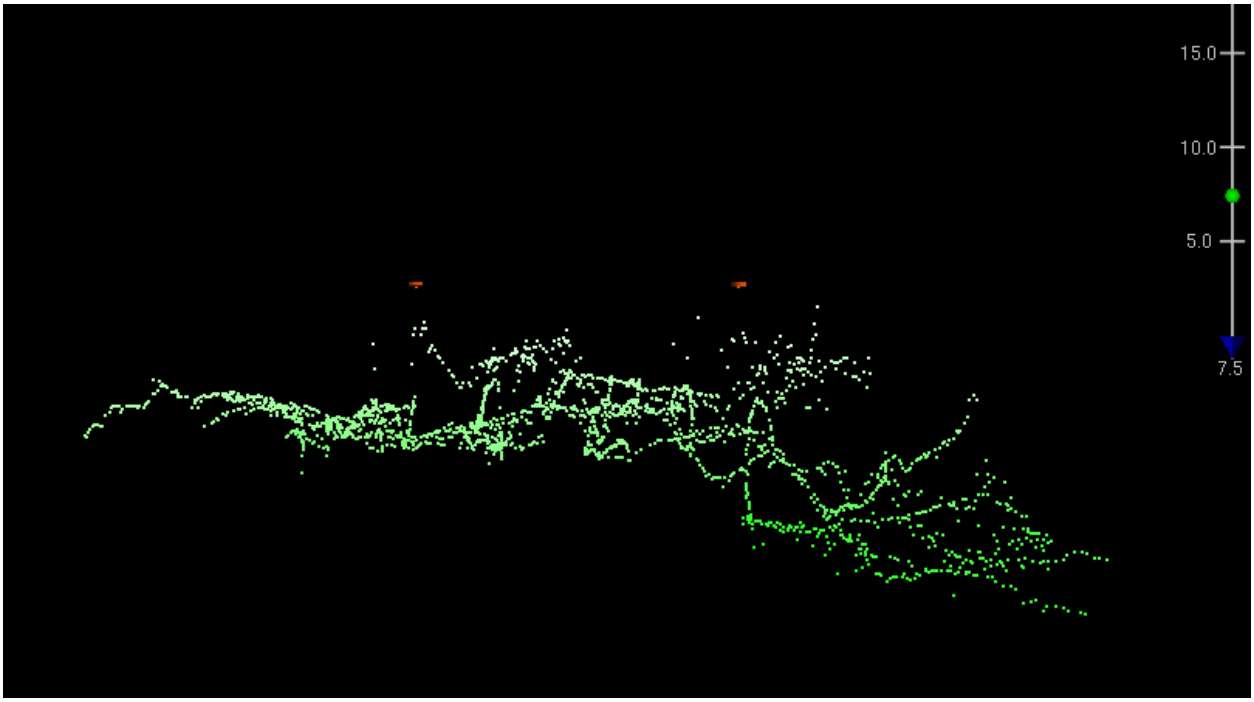


Figure 2.11.3

3 - AWOIS Features

3.1) AWOIS #14207 - AWOIS #14207 UNKOWN

No Primary Survey Feature for this AWOIS Item

Search Position: 42° 59' 36.5" N, 082° 25' 34.5" W

Historical Depth: 8.53 m

Search Radius: 50

Search Technique: S2, ES, MB

Technique Notes: [None]

History Notes:

CL 1883/1999-- The Canadian Hydrographic Services, while conducting a Multibeam Survey, found an uncharted wreck, approximately 20 meters from the breakwall. The position of the submerged wreck is 42°59'36.478"N - 082°25'34.527"W. The wreck is lying in 53 feet of water with the least depth of 28.5 feet over it. The overall size of the wreck is approx. 50 meters by 19 meters. (Entered CEH 5/2008)

Survey Summary

Charts Affected: 14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Survey data does not indicate the charted 28-ft Wk exists.

Feature Correlation

Address	Feature	Range	Azimuth	Status
AWOIS Items	AWOIS # 14207	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

[None]

Office Notes

AHB recommends to delete the 28-ft Wreck from the chart. H11915 located a 37-ft wreck located approximately 29.5m with an azimuth of 253° from the AWOIS 14207 target location. Reference feature report for 37-ft Wreck AWOIS 14207 1503/1, located within H11915 DR Appendix 2.

4 - Dangers to Navigation

4.1) 12-ft Sounding (Shoal) 64/1

DANGER TO NAVIGATION

Survey Summary

Survey Position:	43° 00' 01.0" N, 082° 25' 24.3" W
Least Depth:	3.71 m (= 12.17 ft = 2.028 fm = 2 fm 0.17 ft)
TPU (±1.96σ):	**THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m
Timestamp:	2008-218.17:05:57.058 (08/05/2008)
Survey Line:	h11915 / 1211_sb / 2008-218 / 834_1705
Profile/Beam:	64/1
Charts Affected:	14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

12-ft shoal sounding highlighted during AHB review and verification. A shoal exists on the west side of the river. Current charted depth in the near vicinity is 51-ft to the SSW. The shoal is located on top of the river's western inclined slope.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-218/834_1705	64/1	0.00	000.0	Primary

Hydrographer Recommendations

Recommend charting 12-ft sounding at the surveyed location. Submit as Danger to Navigation.

Cartographically-Rounded Depth (Affected Charts):

12ft (14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1)

2fm (14500_1)

12ft (14860_1)

3.7m (14820_1)

S-57 Data

Geo object 1:	Sounding (SOUNDG)
Attributes:	OBJNAM - 12-ft Sounding on Shoal

QUASOU - 1:depth known

SORDAT - 20080806

SORIND - US,Us,nsurf,H11915

TECSOU - 1:found by echo-sounder

VERDAT - 12:Mean lower low water

Office Notes

Concur. Submitted as DtoN.

Feature Images

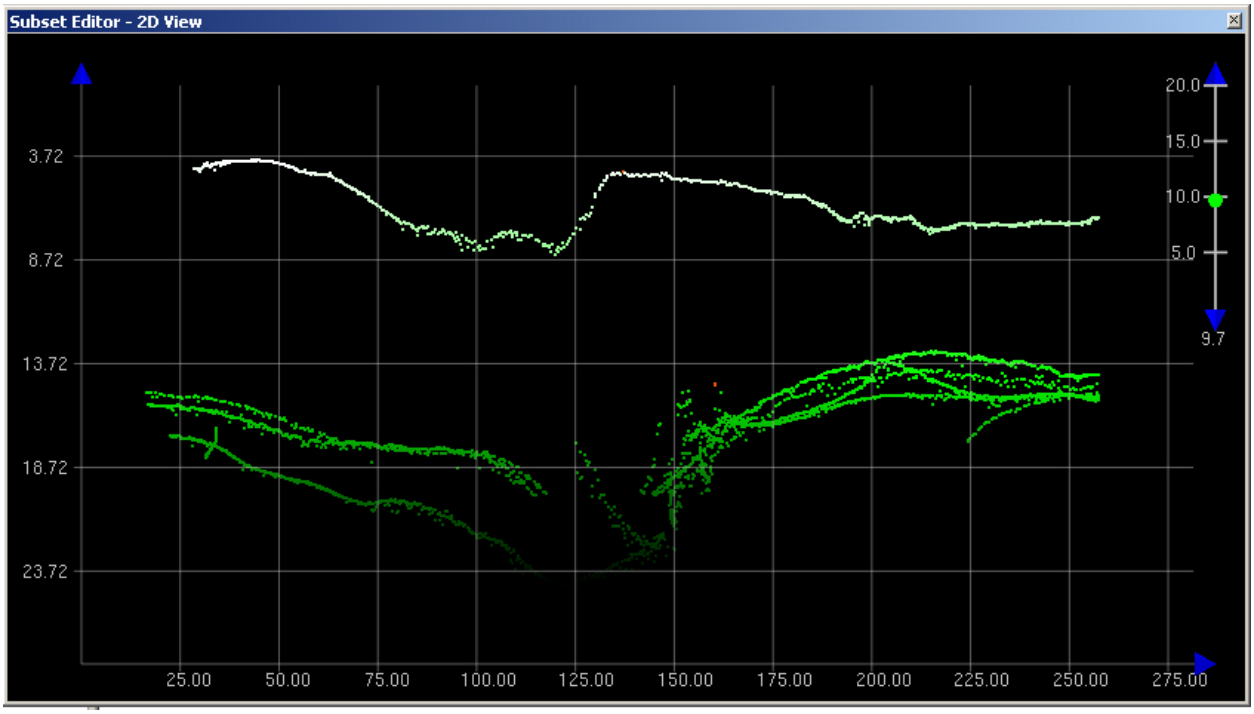


Figure 4.1.1

Figure 4.1.2

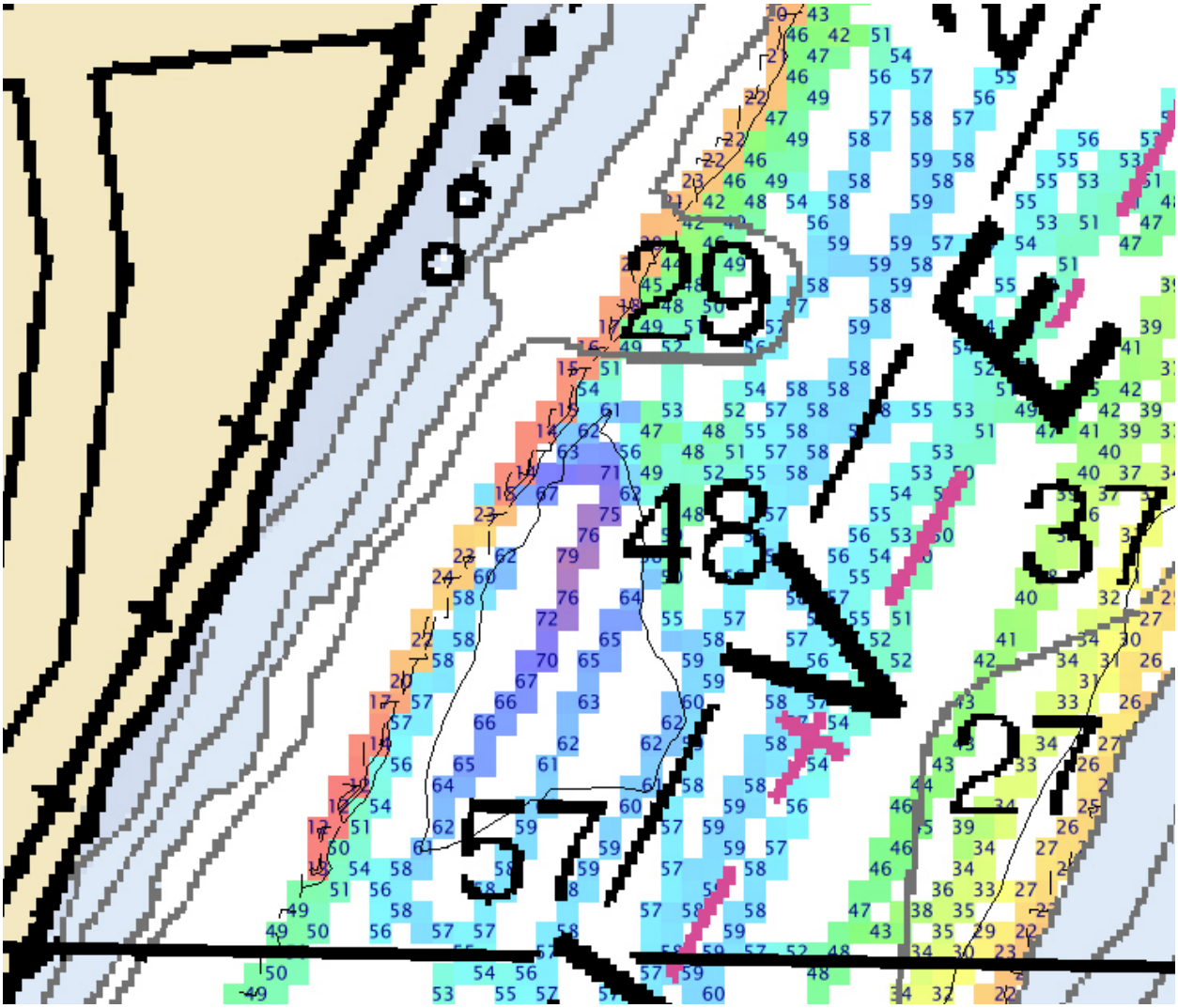


Figure 4.1.3

4.2) 14-ft Sounding (Shoal) 16/1

DANGER TO NAVIGATION

Survey Summary

Survey Position: 43° 00' 03.7" N, 082° 25' 22.4" W

Least Depth: 4.27 m (= 14.01 ft = 2.335 fm = 2 fm 2.01 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-218.17:06:31.784 (08/05/2008)

Survey Line: h11915 / 1211_sb / 2008-218 / 834_1705

Profile/Beam: 316/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

14-ft shoal sounding highlighted during AHB review and verification. A shoal exists on the west side of the river. Current charted depth in the near vicinity is 51-ft to the SSW. The shoal is located on top of the river's western inclined slope.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-218/834_1705	316/1	0.00	000.0	Primary

Hydrographer Recommendations

Recommend charting 14-ft sounding at the surveyed location. Submit as Danger to Navigation.

Cartographically-Rounded Depth (Affected Charts):

14ft (14852_2, 14853_46, 14853_47, 14865_1, 14852_3, 14862_1)

2 ¼fm (14500_1)

14ft (14860_1)

4.3m (14820_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)

Attributes: OBJNAM - 14-ft Sounding on Shoal

QUASOU - 1:depth known

SORDAT - 20080806

SORIND - US,US,nsruf,H11915

TECSOU - 1:found by echo-sounder

VERDAT - 12:Mean lower low water

Office Notes

Concur. Submitted as DtoN.

Feature Images

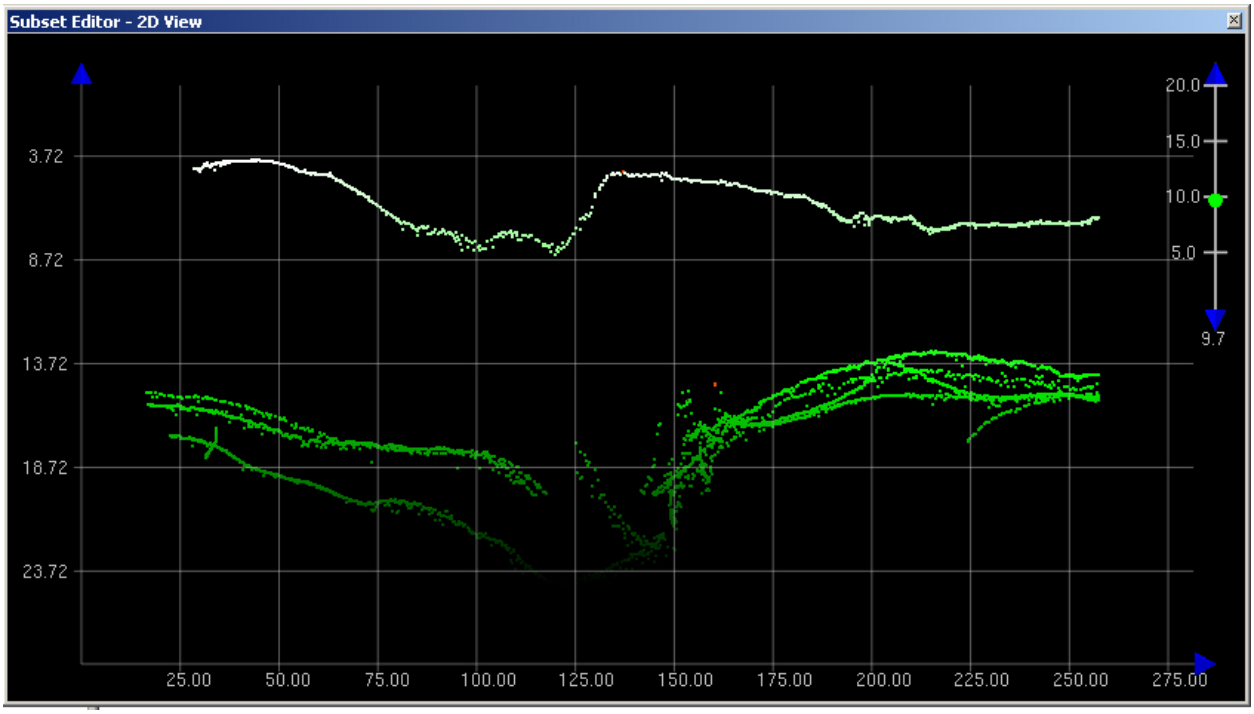


Figure 4.2.1

Figure 4.2.2

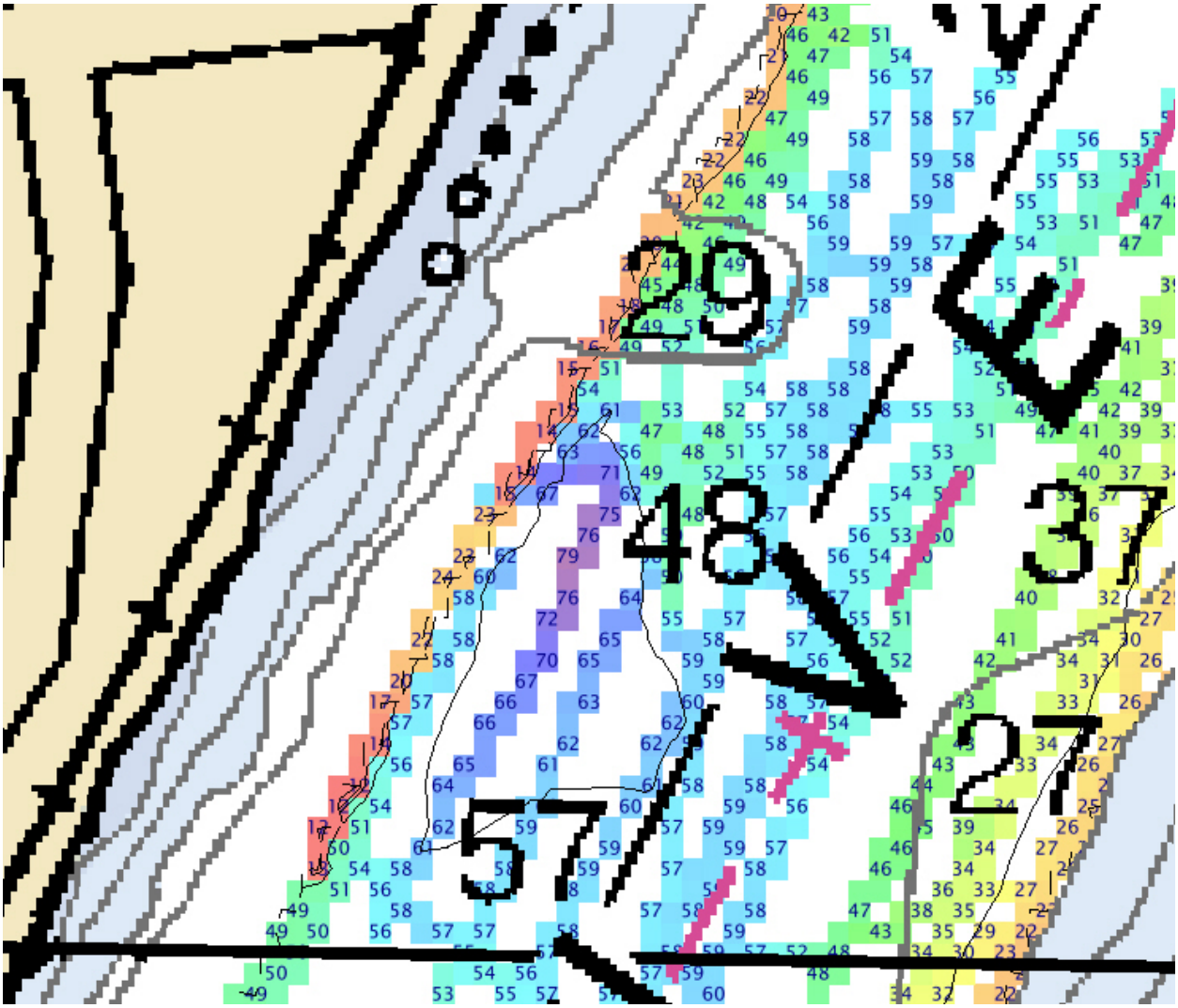


Figure 4.2.3

4.3) 33-ft Wreck 175/1

DANGER TO NAVIGATION

Survey Summary

Survey Position: 42° 58' 56.7" N, 082° 25' 06.8" W

Least Depth: 10.02 m (= 32.87 ft = 5.479 fm = 5 fm 2.87 ft)

TPU (±1.96σ): **THU (TPEh)** ±-1.000 m ; **TVU (TPEv)** ±-1.000 m

Timestamp: 2008-217.14:32:51.597 (08/04/2008)

Survey Line: h11915 / 1211_sb / 2008-217 / 079_1432

Profile/Beam: 175/1

Charts Affected: 14852_2, 14853_46, 14853_47, 14852_3, 14862_1, 14820_1, 14860_1, 14500_1

Remarks:

Subm Wk seen in SSS imagery. SBES investigation lines run in a star-shaped pattern. Wk not considered a DToN. LD (34 ft) would not be restricting to ships transiting the area, since they have to come through a shoaler area, immediately to the south.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11915/1211_sb/2008-217/079_1432	175/1	0.00	000.0	Primary

Hydrographer Recommendations

Hydrographer recommends charting Subm Wk.

Cartographically-Rounded Depth (Affected Charts):

33ft (14852_2, 14853_46, 14853_47, 14852_3, 14862_1)

5 ½fm (14500_1)

5fm (14860_1)

10.0m (14820_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 2:dangerous wreck

OBJNAM - 33-ft Wreck

QUASOU - 6:least depth known

SORDAT - 20080806

SORIND - US,US,nsurf,H11915

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

VALSOU - 10.020 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart 33-ft Sunken Wreck. Submitted as Danger to Navigation as the feature is not charted and it represents the shoalest depth within the common area (approximately 110m radius). Submitted as DtoN.

Feature Images

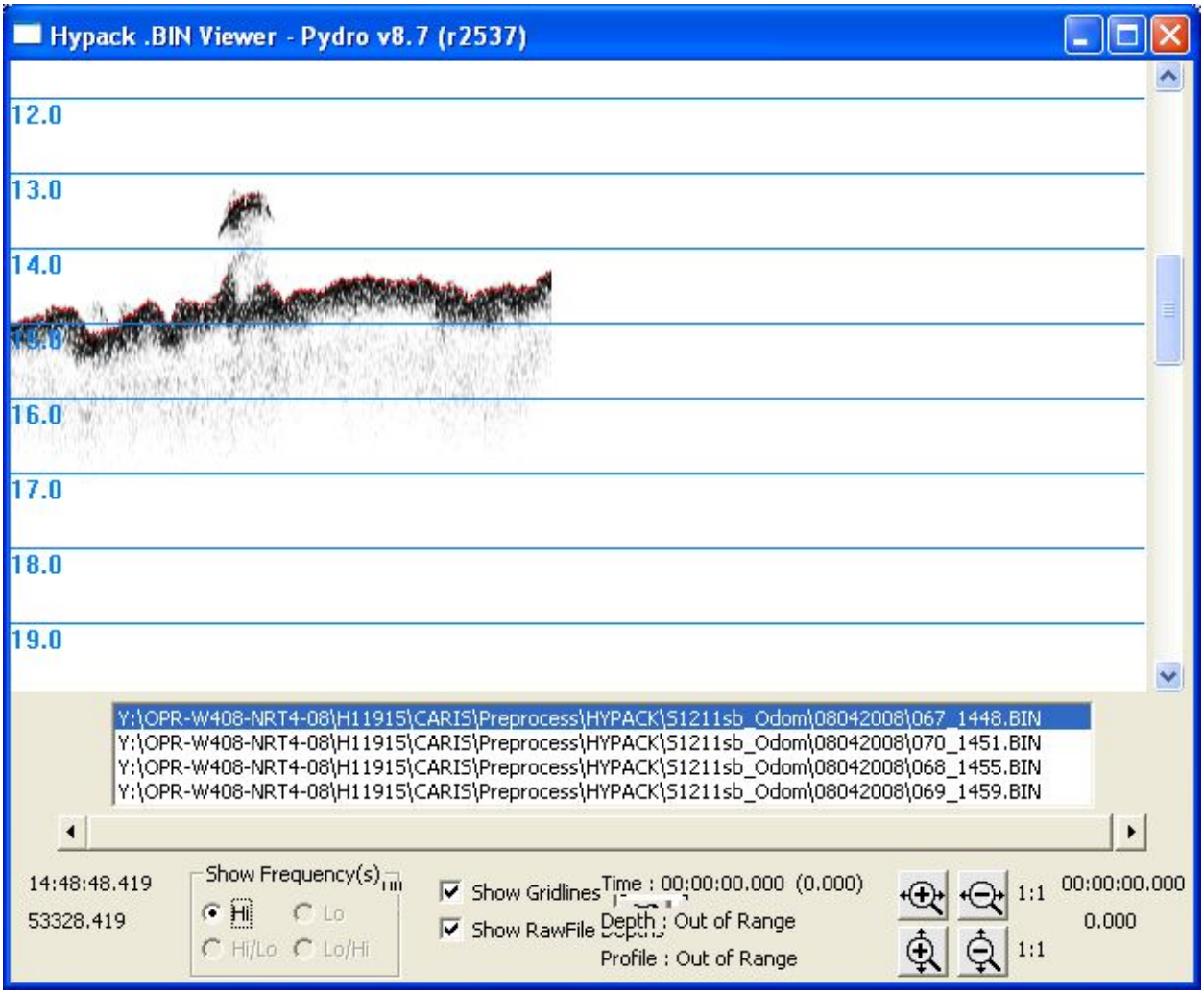


Figure 4.3.1

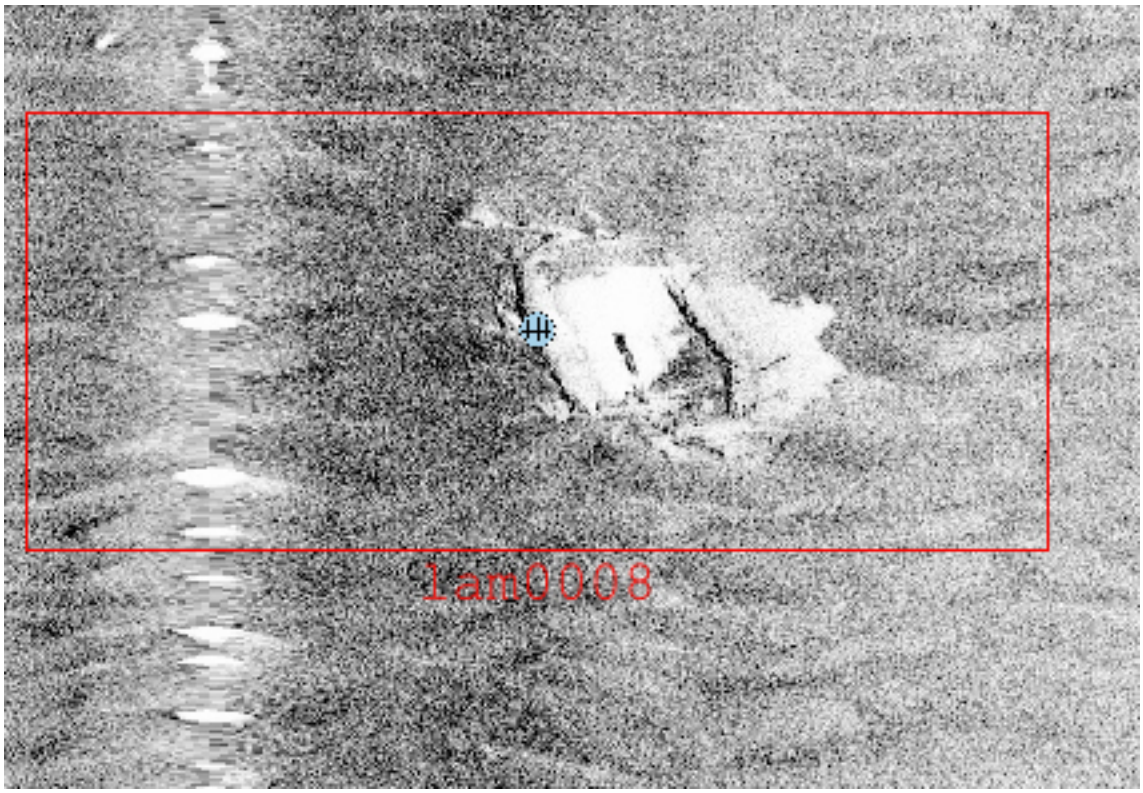


Figure 4.3.2

Figure 4.3.3

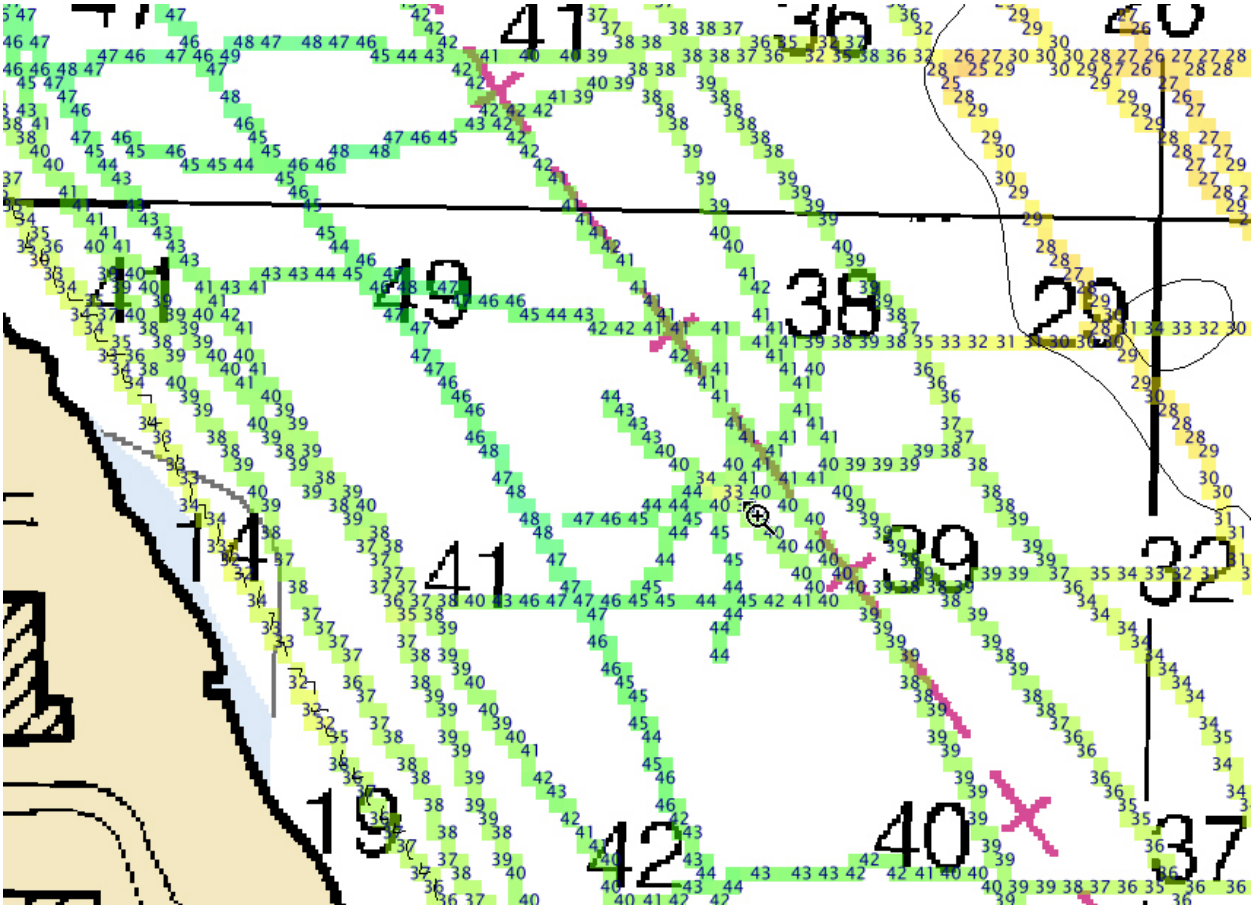


Figure 4.3.4

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.	H11915
PROJECT No.	OPR-W408-NRT4-08
FIELD UNIT	NRT-4
DATE OF SURVEY	20080408-20080806
LARGEST SCALE CHART	***14853_46/47, edition 17, 20090425, 1:15,000***
SOUNDING UNITS	**feet**
COMPILER	Nikki Trenholm

Source Grids	**File Name** H:\Compilation\H11915_W408_NRT4\AHB_H11915\E-SAR Final Products\GRIDS
	E-SAR Final Products\GRIDS\AHB_H11915_Final_ShoalExt.hns
Surfaces	**File Name** H:\Compilation\H11915_W408_NRT4\AHB_H11915\COMPILE\Working\Interpolated TIN
Combined	**H11915_3m_Combined.hns**
Interpolated TIN	\Interpolated TIN\ **H11915_3m_InterpTIN.hns**
Shifted Interpolated TIN	\Shifted Surface\ **H11915_3m_InterpTIN_Shifted.hns**
Final HOBs	**File Name** H:\Compilation\H11915_W408_NRT4\AHB_H11915\COMPILE\Working\HOB's
Survey Scale Soundings	**H11915_SS_Soundings.hob**
Chart Scale Soundings	**H11915_CS_Soundings.hob**
Contour Layer	**H11915_Contours_2.hob**
Feature Layer	**H11915_Features.hob**
Meta-Objects Layer	**H11915_MetaObjects.hob**
Blue Notes	**H11915_BlueNotes.hob**
ENC Retain Soundings	**H11915_ENC_Retain_Soundings.hob**
ENC Retain Features	**H11915_ENC_Retain_Features.hob**

Meta-Objects Attribution	
Acronym	**Value**
M_COVR	
CATCOV	1
SORDAT	20080806
SORIND	US,US,survy,H11915
M_QUAL	
CATZOC	1
INFORM	OPR-W408-NRT4-08, NRT4
POSACC	not assessed
SORDAT	20080806
SORIND	US,US,survy,H11915
SUREND	20080806
SURSTA	20080408
DEPARE	
DRVALV 1	6.9587
DRVALV2	78.0249
SORDAT	20080806

SORIND	US,US,survy,H11915

SPECIFICATIONS:

I. COMBINED SURFACE:
   a. Number of ESAR Final Grids: 1
   b. Resolution of Combined (m): 3

II. SURVEY SCALE SOUNDINGS (SS):
   a. Radius
   b. Shoal biased
   c. Use Single-Defined Radius (mm at Map Scale): 15,000 ; Radius Value = 0.5
   d. Queried Depth of All Soundings
      i. Minimum: 6.9587
      ii. Maximum: 78.0249

III. INTERPOLATED TIN SURFACE:
   a. Resolution (m): 3
   b. Linear
   c. Shifted value: -.229 *[-0.229m (feet), (≤ 10 fathoms)]*
      [-1.372m (fathoms), (> 10 fathoms)]

IV. CONTOURS:
   a. Use a Depth List: H11915_NOAA_depth_curves2_list.txt
   b. Line Object: DEPCNT
   c. Value Attribute: VALDCO

V. FEATURES:
   a. Total Number of Features: 14
   ~~b. Number of Insignificant Features:~~

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): 100
      ~~ii. Or use a Sounding Space Range Table (if applicable): HXXXXX_SSR.txt~~
   e. Filter: Interpolated != 1
   f. Number Survey CS Soundings: 210

VII. Notes:

-There are 14 cartographic bluenotes.
-See Evaluation Report for hydrographic recommendation on specific charted features.

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT to ACCOMPANY
SURVEY H11915 (2008)

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.

A. AREA SURVEYED

B. DATA ACQUISITION AND PROCESSING

B.1 DATA PROCESSING

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

HSTP PYDRO version 7.3 r2239
CARIS HIPS/SIPS version 6.1 SP1 HF 1-6
CARIS Bathy Manager version 2.1 HF 1-3
DKART INSPECTOR, version 5.0 Build 732 SP1
CARIS HOM version 3.3
CARIS S57 Composer version 1.0/2.0

B.2. QUALITY CONTROL

B.2.1. H-Cell

The AHB source depth grid for the survey's nautical chart update product entailed the field's original 1m shoal extracted grid which the survey scale selected soundings were extracted from. The chart scale selected soundings are a subset of the survey scale selected soundings. A TIN (triangulated irregular network) was created from the survey scale soundings and an interpolated TIN surface of 3m was produced in which the chart scale soundings were generated. The surface model was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area. The sounding sets were compiled at a scale of 1:15,000.

Depth curves were created from a shifted interpolated surface. The depth curves are forwarded to MCD for reference only. The curves were utilized during chart scale sounding selection and quality assurances efforts at AHB. The depth curves are incorporated into the S57 SS survey selected sounding deliverable.

The compilation products or components (Stand Alone HOB files (SAHOB)) are detailed in the Compile Process Log attached at the end of this document. The SAHOB files included depth curves (DEPCNT), sounding selections (SOUNDG), Meta objects (M_COVR, M_QUAL, DEPARE), ENC retained SOUNDG/Features. The individual

SAHOB files were inserted into one BASE Manager feature layer (.hob) and exported to S57(.000) format in order to create the H-Cell deliverable.

The completed H-Cell was exported as a Base Cell File (ENC.000) in S-57 format with all values in metric units. The metric equivalent ENC.000 file was then converted to NOAA chart units (H11915_CS.000 and H11915_SS.000) with all values measured in feet following NOAA sounding rounding rules.

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

The W00195 CARIS H-Cell final deliverables include the following products:

H11915_CS.000	**1:15,000 Scale**	**H11915 H-Cell with Chart Scale Selected Soundings, ENC retained soundings/features, Metaobjects, Cartographic Bluenotes**
H11915_SS.000	**1:15,000 Scale**	**H11915 Selected Soundings (Survey Scale), Contours**

B.22. Junctions

No contemporary surveys exist for junctioning.

D. RESULTS AND RECOMMENDATIONS

During the Enhanced Survey Acceptance Review at the Atlantic Hydrographic Branch chart discrepancies were addressed that all occupied the survey area at the same chart scale. Charts 14865_1, 14853_47, and 14852_2 are all 1:15,000 scale, Polyconic Projection, and NAD83. Because chart 14853 has a much more recent Edition date than the other charts, it was used for comparison purposes. Chart 14853_47 and 14853_46 were the sole charts used in compilation to create the H-CELL.

D.1 CHART COMPARISON

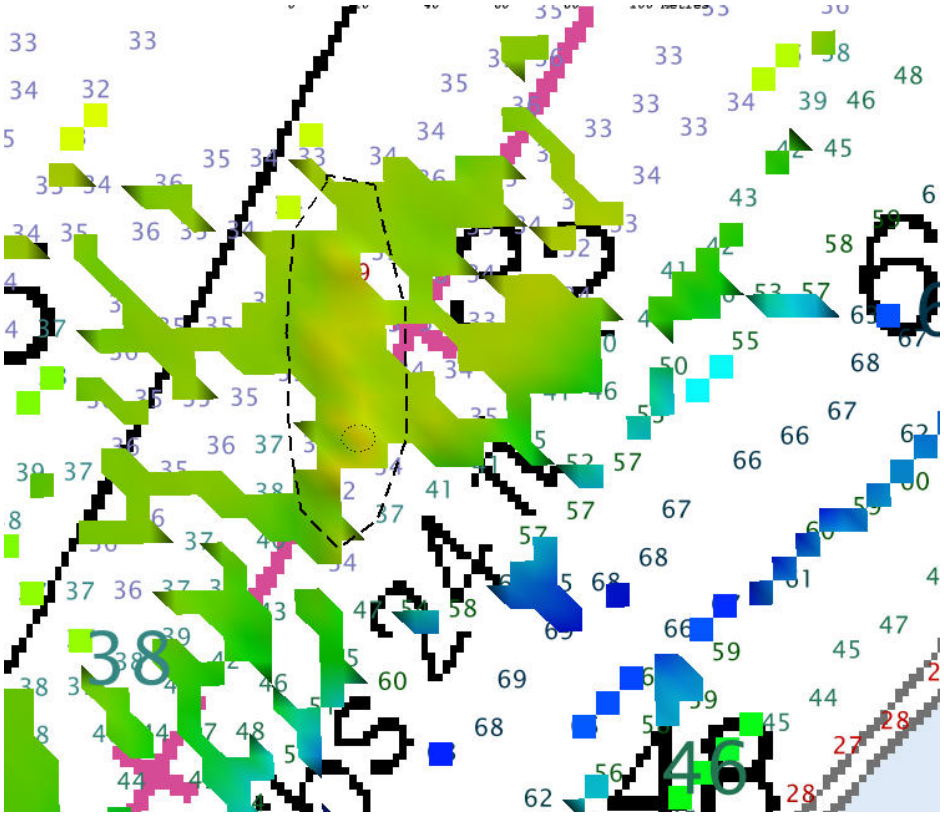
RNC 14853 (38th Edition, 20061201)
14853_46 and 14853_47
Edition 17
DETROIT RIVER
Application Date 2009-04-25
Scale 1:15,000

ENC US5MI33M
Edition 15
Saint Clair River Michigan B
Issue Date 2009-03-24
Issue Date 2009-03-24
Chart 14852

ENC US4MI42M
Edition 9

D.1.1 Hydrography

a. The wreck located at 43-00-13.9N, 082-25-11.0W at the least depth of 8.91m is oriented N-S at 55.42 m and from E-W 19.22m and is at the center of the wreck. The Wk symbol at the largest chart scale 15,000 is not large enough to enclose the entire wreck. A wreck feature area is in included in the H-Cell feature layer in conjunction with the least depth data point. See Appendix H11915 Survey Feature Report Appendix II.



b. The field unit was not directed to obtain bottom samples in the Letter Instructions, although there were no charted sea bed characteristic (SBDARE) objects to retained as charted as an alternative.

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 supersede the charted bathymetry within the common area. Any features 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.

APPROVAL SHEET
H11915

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, and 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.

Nicole Trenholm

Digitally signed by Nicole Trenholm
DN: cn=Nicole Trenholm, c=US, email=nicole.trenholm@noaa.gov
Date: 2009.05.27 09:49:12 -04'00'

Nicole Trenholm
Hydrographic Intern
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: ___

Digitally signed by Shepard Smith
DN: cn=Shepard Smith, o=NOAA, ou=AHB, email=shep.smith@noaa.gov, c=US
Date: 2009.05.27 10:21:38 -04'00'

Shepard Smith
Commander, NOAA
Chief, Atlantic Hydrographic Branch

Kelly Kriner
AWOIS Check
2009.06.10 11:03:55 -04'00'