

F00542

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

*Type of Survey*            FIELD EXAMINATION

*Field No*                    NRT4

*Registry No.*              F00542

### LOCALITY

*State*                        PENNSYLVANIA

*General Locality*        ERIE, PA

*Locality*                  PRESQUE ISLE BAY

2007

CHIEF OF PARTY  
LUCY HICK  
TEAM LEADER, NRT4

### LIBRARY & ARCHIVES

DATE

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  <b>HYDROGRAPHIC TITLE SHEET</b>	<b>REGISTRY No.</b> F00542
	<b>FIELD No.</b> NRT4
<p> <b>State</b> Pennsylvania  <b>General Locality</b> Erie, PA  <b>Sub-Locality</b> Presque Isle Bay  <b>Scale</b> 1:5,000 <b>Date of Survey</b> June 18 to June 22, 2007  <b>Instructions Dated</b> June 19, 2007 <b>Project No.</b> S-W904-NRT4-07  <b>Vessel</b> NOAA Launch S3001  <b>Chief of Party</b> Lucy Massimillo, Team Leader  <b>Surveyed by</b> Lucy Massimillo, Frank Younger, &amp; John Doroba  <b>Soundings by echo sounder</b> Odom CVX2 Vertical Beam Echosounder  <b>Graphic record scaled by</b> N/A  <b>Graphic record checked by</b> N/A <b>Automated Plot</b> N/A  <b>Verification by</b> Atlantic Hydrographic Branch  <b>Soundings in</b> meters <i><b>F</b></i> at Low Water Datum (LWD)         </p>	
<p> <b>REMARKS:</b> (1) All times are in UTC.            (2) Projection is UTM Zone 17N            (3) LWD is at elevation 173.5 meters International Great Lakes Datum of 1985 (IGLD85).  <i><b>Bold italic red notes in the Descriptive Report were made during office processing.</b></i> </p>	

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**DESCRIPTIVE REPORT**

to accompany  
Field Examination F00542  
S-W904-NRT4-07

Scale of Survey 1:5,000  
Year of Survey: 2007  
Navigation Response Team 4  
NOAA Launch S3001  
Lucy Massimillo - Team Leader

**A. AREA SURVEYED**

This Field Examination was conducted in accordance with the Project Letter Instructions\* for project S-W904-NRT4-07, Erie, PA. The instructions are dated June 19, 2007. *Concur.*

Erie Harbor, about 78 miles SW of Buffalo, is in Presque Isle Bay, enclosed from the lake by Presque Isle. The bay opens to the E and is about 4.5 miles long and 1.5 miles wide. Erie Harbor, serving the city of Erie, PA., is in the SE part of the bay.

Principal commerce at the port is in limestone, sand, salt, petroleum products, coke, steel products, pig iron, other alloys, gravel, clay, and general cargo in the domestic trade.

This survey was requested by the Great Lakes Environmental Research Lab (GLERL). The survey area assigned to NRT4 consisted of one area of 2.6 SNM, encompassing the majority of the area of Presque Isle Bay. Survey Limits for F00542 are as follows:

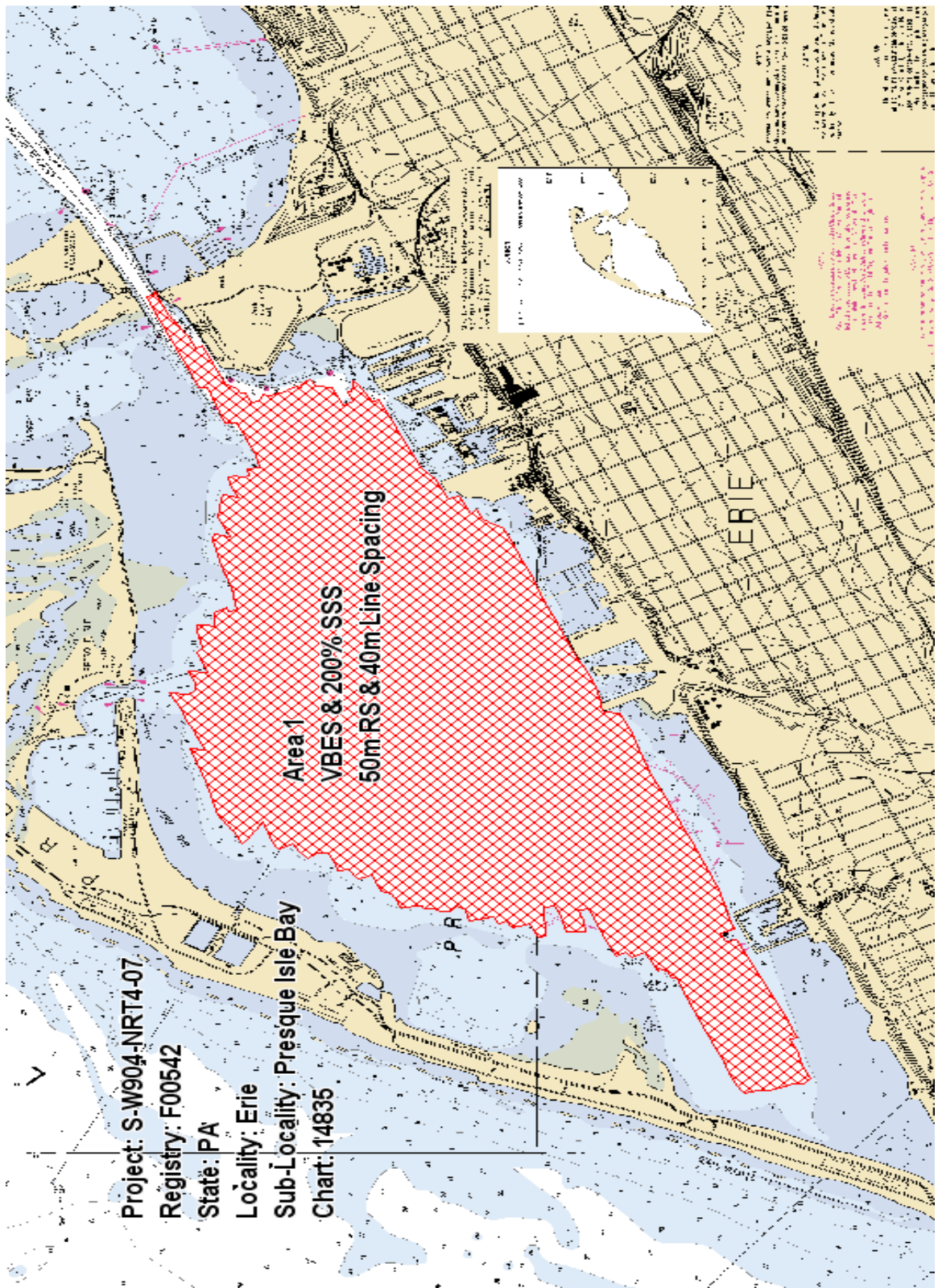
42° 7' 10.50" N	80° 8' 48.50" W
42° 9' 14.00" N	80° 4' 41.00" W

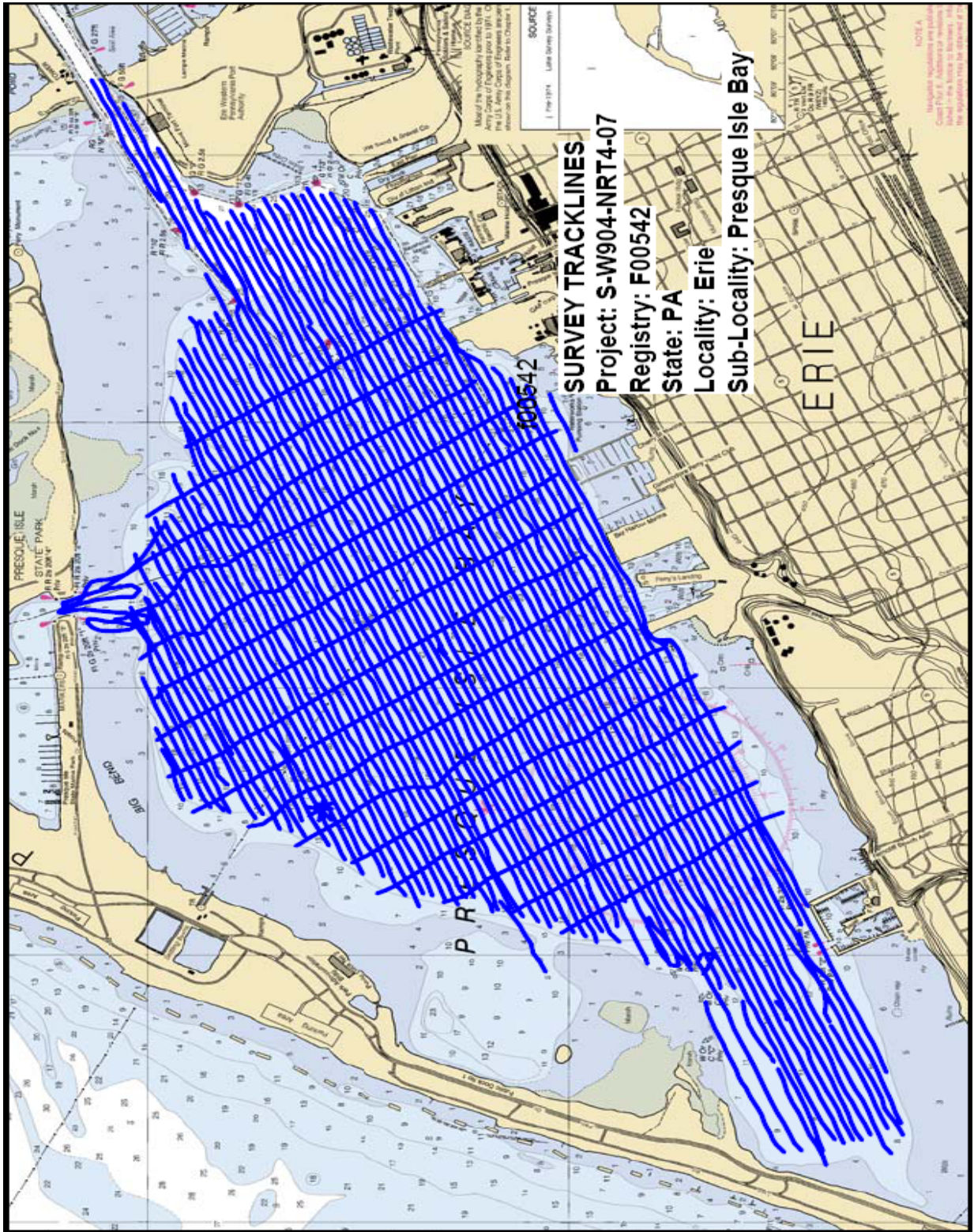
Survey Dates: June 18, 2007 (DN: 169) to June 22, 2007 (DN: 173) *Concur.*

Both 200% side scan sonar (SSS) data and vertical beam echosounder (VBES) data were collected in all areas. SSS data were collected at 50 meter range scale and with 40 meter line spacing, in order to maintain 1:5,000 survey scale specifications. *Concur.*

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

*\*Digitally filed with original field records.*





**B. DATA ACQUISITION AND PROCESSING *SEE ALSO THE EVALUATION REPORT*****B.1. EQUIPMENT**

Data were acquired by Navigation Response Team 4 using Survey Launch 3001. 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 3001 was 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 vertical 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.*

There were no unusual vessel configurations encountered during this project. *Concur.*

**B.2. QUALITY CONTROL**

Following the Field Procedures Manual dated March, 2007, and the NOS Hydrographic Surveys Specifications and Deliverables Manual, dated March, 2007, has insured the integrity of the survey data for F00542. *Concur with clarification. Refer to the Evaluation Report.*

Differential GPS (DGPS) was used for all hydrographic data acquired in this survey.

**Vertical Echosounder Quality Control**

The lake bottom in shallow areas of Presque Isle Bay was covered with dense vegetation. Usually, the VBES was unable to lock onto the true bottom in these areas. The VBES gains and power levels were adjusted; however it was often impossible to compensate for the vegetation. NRT4 personnel conservatively cleaned the vegetation from the digital during data post-processing, using the analog trace for guidance. *Concur. Refer to the Evaluation Report.*

During the initial processing of the echosounder data, many soundings were rejected, with the belief that they were “hits” on this bottom vegetation. Upon discussion with the Atlantic Hydrographic Branch (AHB) and further investigation of the side scan sonar, it was determined that these “hits” may instead be actual soundings submerged rocks. The project was returned to the field party to correct this. The VBES data were reprocessed and many of the soundings, which were originally rejected, have now been reaccepted. These re-accepted soundings are reflected in the Pydro PSS and in the MapInfo Tables. . *Concur. Refer to the Evaluation Report.*

*\*Filed with original field records and submitted to Hydrographic Surveys Division with survey deliverables.*



### **Side Scan Sonar Quality Control**

The SSS data were acquired at frequencies of 100kHz and 500kHz. The recorder was set to 50 meter range scale for the entire survey area. There were no water depths greater than 11 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 breakwaters and piers. 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. Side scan sonar coverage was conducted to the 12-foot depth curve where possible.

When operating in shoal waters, a short tow was required for the Klein towfish. When cable-out was approximately 7 meters or less, minor degradation of the side scan imagery may be noted due to cross-talk between the Klein towfish and the Odom echosounder.

Throughout the survey, high data lag values were indicated by the SonarPro software, resulting in a loss of SSS data. A data lag cutoff value of 200 seconds was established. Several methods were used to attempt to correct this problem. In the end, it was determined that the SSS computer and the Topside Processing Unit (TPU) Central Processing Unit (CPU) board both needed to be upgraded. NRT4 was unable to complete this upgrade, while in Erie. Therefore a work-around was developed. Any time the data lag value exceeded 200, the survey line was ended. The SonarPro software was then shut down and restarted, and surveying recommenced where the line was broken.

There are several holidays in the SSS data. These were mainly caused by the above mentioned data lags. It was the intention of the field party to return to the survey area to fill in these holidays. However, due to time restrictions and other considerations, that was not possible. None of these holidays occur in an area of an item disapproval.

During review of a subsequent project, the field party was notified by AHB that there may be problems with the towfish heading data. Rapid changes in heading could be seen over short periods of time. The field party sent the towfish to the manufacturer for testing. It was found that the tow fish's internal compass was not able to be calibrated. A new compass was installed and the towfish was returned to the field party. It is not known how long this systematic error existed in the towfish. However, the field party believes that same problem may exist in the heading data for this project. Because the problem was not noticed until after post-processing, all SSS data were processed using the towfish heading, not the Course Made Good (CMG).

It is normal survey practice to record SSS data in SDF format. However Steve Ruberg, of GLERL, requested that data for this project be delivered in XTF format. NRT4 attempted to collect data in both XTF and SDF format. However the data lag problem, described above, often made this impossible. Therefore, certain lines were collected in XTF format only. All data, regardless of format, were able to be post-processed in CARIS.

## **Crosslines**

Sixteen crosslines for a total of 16.04 linear nautical miles (LNM) were acquired by the field party. This is approximately 15.19 percent of mainscheme acquisition (105.63 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.**

## **B.3. CORRECTIONS TO ECHO SOUNDING**

Corrections to echo soundings did not deviate from the method explained in the Data Acquisition and Processing Report (DAPR)\*. A table detailing all sound velocity casts is located in Separate II.\*\*

***\*Filed with original field records and submitted to Hydrographic Surveys Division with survey deliverables.***

***\*\*Digitally filed with original field records.***

## **C. VERTICAL AND HORIZONTAL CONTROL**

### **C.1. VERTICAL CONTROL**

All soundings were reduced to Low Water Datum with verified water levels and final zoning. **Concur.**

The operating National Water Level Observation Network (NWLON) station at Erie, PA (9063038) served as datum control for the survey area. LWD for Erie, PA is at elevation 173.50 meters International Great Lakes Datum of 1985 (IGLD 85).

Verified water levels from the N/OPS1 CO-OPS website were downloaded and applied to all soundings for this sheet. Water level corrections were applied to the soundings using CARIS HIPS and SIPS. **Concur.**

Water level zoning was provided on the project CD. Field personnel made no changes to zoning, time correctors, or range ratios. ***Preliminary zoning is accepted as final zoning. No water level correction required by AHB.***

A Request for Approved Water Levels letter was sent to N/OPS1 on October 15, 2007. A **Final** Tide Note, stating that Preliminary Zoning would be accepted as final zoning, was received on October 22, 2007. Both of these memos are included in Appendix IV. **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 in Hypack. At no point did HDOP exceed 4.00, and adequate satellite coverage was maintained throughout the survey period.

All positioning equipment was operated in a manner consistent with the manufacturer requirements and as described in the DAPR. There were no equipment malfunctions which affected the positional quality of the data.

## D. RESULTS AND RECOMMENDATIONS *SEE ALSO THE EVALUATION REPORT*

### D.1. CHART COMPARISON

There were six charts and three ENC's affected by this survey:

Chart	Edition	Edition Date	Issue Date	Update No.	Scale
14500	27th	10/1/2002	10/13/2007	217	1:500,000
14820	21st	10/1/2005	6/9/2007	65	1:400,000
14824	26th	10/1/2003	10/13/2007	165	1:80,000
14828	6th	4/1/2005	10/13/2007	102	1:100,000
14835	32nd	5/1/2005	10/13/2007	95	1:15,000
14838	4th	4/1/2005	10/13/2007	109	1:120,000

ENC Cell	Edition	Update Application Date	Issue Date	Corresponding Chart
US4PA21M	3	6/8/2006	6/8/2006	14824
US4PA20M	3	8/16/2005	8/16/2005	14828
US5PA22M	4	8/7/2006	8/7/2006	14835



### Significant Contacts

During survey operations, the field party decided to only develop contacts, which appeared to have a height greater than 1m (based on the measured shadow in SonarPro) and could be seen in both 100% and 200% side scan data. Not many features met this criterion. After discussion with AHB, it was decided that there were in fact several significant features in the side scan data, which should have merited further investigation. Since, the field party is not able to return to the survey area, these items will be submitted to AHB and recommended for charted with “reported depths”. See the Survey Features Report in Appendix II for more information on these items.

**Concur.**

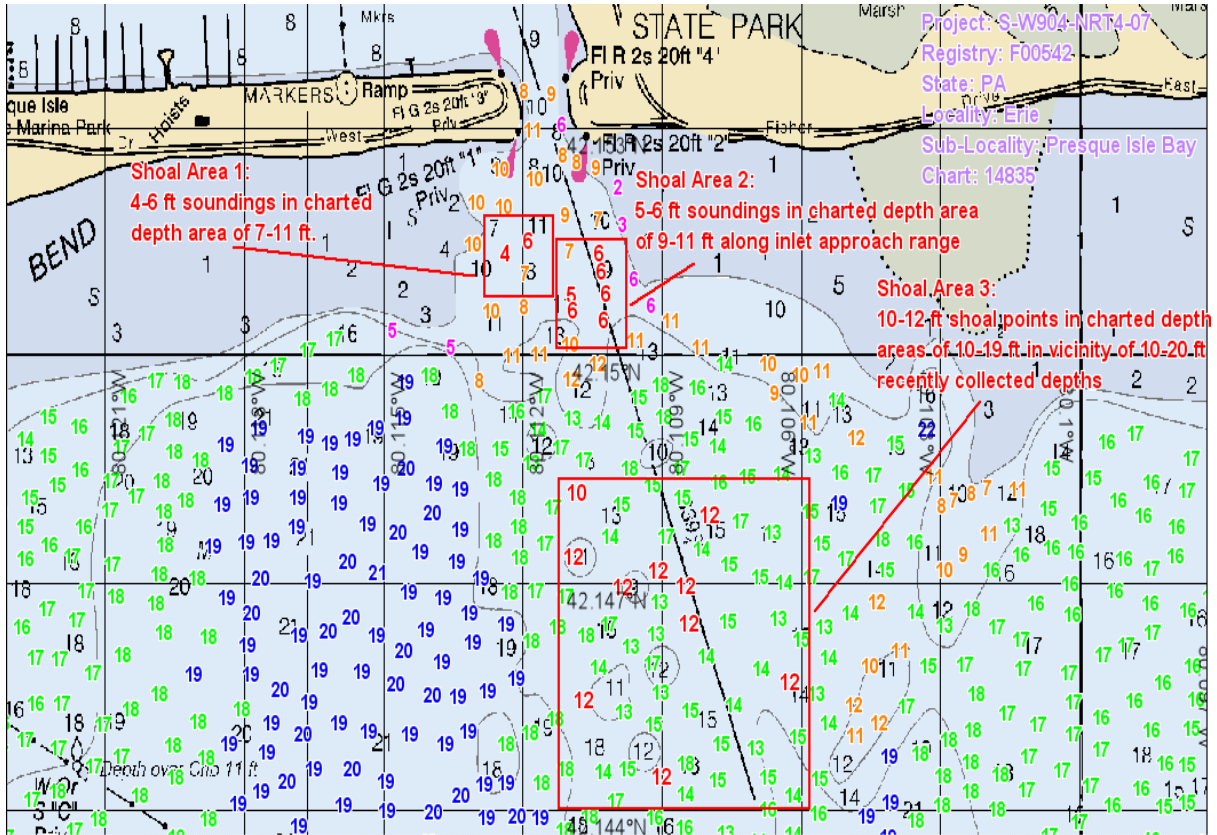
### General Agreement with Charted soundings

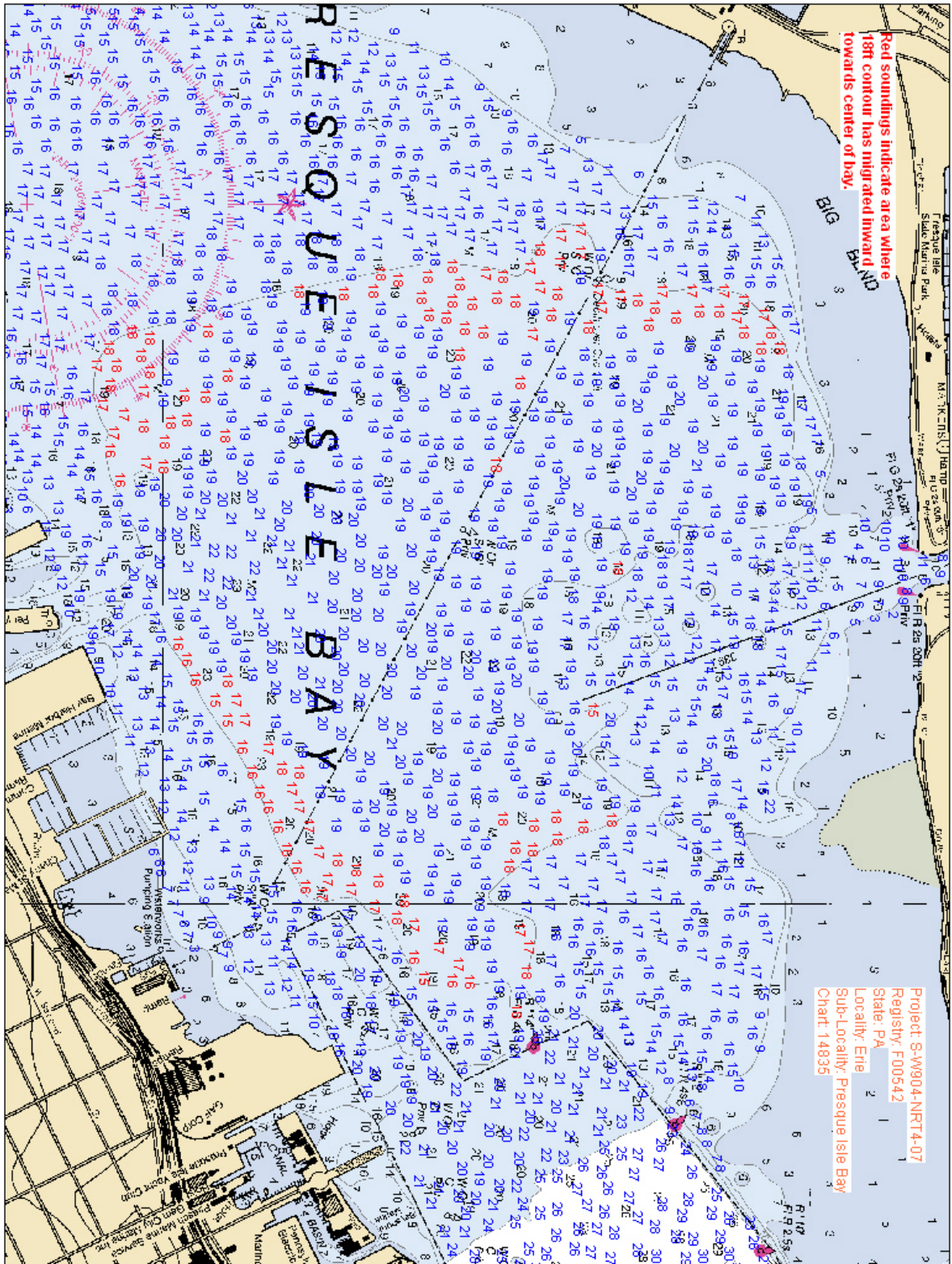
In general, survey soundings compared favorably with charted depths within 1-3 feet. There were four notable exceptions in which survey depths differed from charted depths.

The following is a list of notable sounding discrepancies on the chart:

- 1) 42°9'5.170"N, 80°6'43.646" W - 4-6 ft. soundings occur in charted depth area of 7-11 ft near entrance to park marina. 2) 42°9'4.151"N, 80°6'36.148"W – 5-6 ft soundings occur in charted depth area of 9-11 ft along approach range to park marina. **Do not concur. The shoaler depths in this vicinity were echo-sounder depths on grass beds. The VBES bathymetric data was compared to the raw digital graphic record and was edited. See Evaluation Report.**
- 3) 42°8'47.760"N, 80°6'32.328"W – Several 10-12 ft. soundings occur in an area with 10-18 ft currently charted depths along approach range to park marina. **Concur**
- 4) The 18-ft contour has migrated inward towards the center of Presque Isle Bay. This is most prevalent in the western and southern portions of the bay. In the southwestern area, the contour has migrated up to 500 meters in the northeast direction. This is shown graphically below. The Red soundings are 15-18 foot soundings that occur in areas deeper than the currently charted 18ft contour line. **Concur with clarification. Update the depth curves based upon the final sounding selections from the F00542\_SS deliverable.**

See the following pages for graphical representations of the above described shoaling areas. **The shoaling mentioned above and portrayed in the images below has been revised based upon the final bathymetric data editing in areas of the grass beds.**





### **AWOIS Item Investigations**

No AWOIS items were assigned within the sheet boundaries. *Concur.*

### **Dangers to Navigation**

At the request of the Atlantic Hydrographic Branch (AHB) a Danger to Navigation (DToN) was submitted to the Marine Chart Division (MCD) on 4/3/2008. Three additional DToNs were discovered, while the field party was reviewing the charted sounding data. These DToNs were sent in a separate email to MCD on 4/14/2008. *Concur.* For more information about this DToN, please see Appendix I of this report.

### **Bottom Samples**

NRT4 does not possess a bottom sampler, therefore no bottom samples were obtained for this project. *Concur with clarification The Letter Instructions did not assign the field unit to obtain sediment samples.*

## **D. 2. ADDITIONAL RESULTS**

### **Aids to Navigation and Other Detached Positions**

The Marine Chart Division (MCD) did not assign any Aids to Navigation (AToNs) to NRT4. Therefore, no AToNs were positioned by the field party. However, all AToNs in the survey area were visually identified and appeared to be on position and serving their intended purposes. *Concur with clarification. The charted private navigational aids were neither verified nor disproved during F00542. Recommend to retain all private and USCG maintained navigational aids as charted.*

### **Ferry Routes**

There are no charted Ferry routes within the survey area. *Concur.*

### **Submarine Cables and Pipelines**

There is one charted submarine pipeline in the F00542 survey area. It runs SE from settling tanks on Presque Isle, past a crib, and terminates at the Waterworks Pumping Station. The crib was identified in the SSS data, however it was not investigated and a least depth was not determined. There are no charted submarine cables in the survey area. No submarine pipelines or cables were investigated by the field party. *Concur. Recommend to retain the crib and water intake pipeline as charted.*



**Bridges and Overhead Cables**

A new bridge was construction at the western entrance of the Canal Basin. This bridge is currently not charted. *No charting action required. The bridge has been applied to the latest versions of ENC US5PA22M and Chart #14835\_1, Ed. 32, 05/01/2008.* There are no charted overhead cables in the survey area. *Concur.*

**APPROVAL SHEET**

**S-W904-NRT4-07  
Field Examination  
Erie  
Presque Isle Bay  
Pennsylvania  
Registry No. F00542**

This project was originally submitted to the Atlantic Hydrographic Branch (AHB) on 10/24/2007. It was rejected and returned to Navigation Response Team 4 (NRT4) on 3/31/2008. AHB cited several problems with the data and requested that NRT4 complete additional work. This is the second submission of F00542.

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  
Massimillo**

Digitally signed by Lucy Massimillo  
DN: cn=Lucy Massimillo, c=US, o=NOAA,  
ou=Navigation Response Team 4,  
email=Lucy.Massimillo@noaa.gov  
Reason: I am approving this document  
Date: 2008.04.15 13:55:09 -0400

Lucy Massimillo  
Team Leader, Navigation Response Team 4

# DR Appendix 1 DtoNs

**Registry Number:** F00542  
**State:** Pennsylvania  
**Locality:** Lake Erie  
**Sub-locality:** Presque Isle Bay  
**Project Number:** S-W904-NRT4-07  
**Survey Dates:** 06/19/2007 - 07/25/2007

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
14835	32nd	05/01/2005	1:15,000 (14835_1)	USCG LNM: 05/15/2007 (11/18/2008) CHS NTM: None (10/31/2008) NGA NTM: None (11/29/2008)
14824	26th	10/01/2003	1:80,000 (14824_1)	[L]NTM: ?
14828	6th	04/01/2005	1:100,000 (14828_1)	[L]NTM: ?
14838	4th	04/01/2005	1:120,000 (14838_1)	[L]NTM: ?
14820	21st	10/01/2005	1:400,000 (14820_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	Delete Charted 5-ft Rock 0002	SSS	[None]	42° 07' 21.0" N	080° 08' 05.4" W	---
1.2	7ft RK (rep 2007) AHB DtoN #1	Rock	[None]	42° 07' 23.8" N	080° 08' 02.5" W	---
1.3	7-ft Rk (rep 2007) AHB DtoN#3, Item 1.2	Rock	[None]	42° 07' 26.4" N	080° 08' 08.2" W	---
1.4	9-ft Obstn 4543/1	Obstruction	4.04 m	42° 07' 38.9" N	080° 07' 10.3" W	---
1.5	Do not chart 7-ft Sounding Dton #2,Item 1.1 5488/1	Rock	3.92 m	42° 08' 44.6" N	080° 06' 14.1" W	---
1.6	Delete charted 4-ft Sounding 213/1	Shoal	3.30 m	42° 08' 55.3" N	080° 05' 42.3" W	---
1.7	Delete Charted 5-ft Sounding 5389/1	Shoal	3.36 m	42° 08' 44.7" N	080° 06' 13.5" W	---
1.8	10-ft Sounding 2812/1	Shoal	3.17 m	42° 08' 53.5" N	080° 06' 38.9" W	---
1.9	Charted 11-ft Sounding 11641/1	Rock	3.50 m	42° 07' 47.8" N	080° 06' 56.6" W	---
1.10	Delete Charted 3-ft Sounding 2789/1	Shoal	2.49 m	42° 08' 51.9" N	080° 06' 10.0" W	---

1.11	Delete Charted 5-ft Sounding 1218/1	Shoal	2.83 m	42° 09' 00.1" N	080° 06' 36.1" W	---
1.12	Delete Charted 2-ft Sounding; append with 5-ft 1378/1	Shoal	2.04 m	42° 09' 00.3" N	080° 06' 49.1" W	---
1.13	Delete Charted 4-ft Sounding 21459/1	Shoal	2.19 m	42° 08' 47.5" N	080° 05' 35.8" W	---
1.14	Charted 2-ft Sounding 122/1	Shoal	2.33 m	42° 08' 50.4" N	080° 05' 36.0" W	---
1.15	Delete charted 5-ft Sounding 371/1	Shoal	3.14 m	42° 09' 02.6" N	080° 06' 46.6" W	---
1.16	Delete Charted 4-ft sounding 11081/1	Shoal	2.88 m	42° 09' 02.3" N	080° 06' 39.3" W	---
1.17	Delete Charted 2-ft Sounding 11859/1	Shoal	3.10 m	42° 09' 02.4" N	080° 06' 36.6" W	---
1.18	Charted 2-ft Sounding 19841/1	Shoal	2.73 m	42° 08' 58.1" N	080° 06' 23.5" W	---

**1 - DR Appendix 1 DToN**

## 1.1) Delete Charted 5-ft Rock 0002

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 42° 07' 21.0" N, 080° 08' 05.4" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2007-206.01:47:31 (07/25/2007)  
**Survey Line:** f00542 / 3001sss500k / 2007-169 / e070618063200  
**Contact/Point:** 0002/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14820\_1, 14500\_1

#### Remarks:

Rock .85m height in 10ft depth within boulder field. Rock not considered significant to navigation and not investigated by field party.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sss500k/2007-169/e070618063200	0002	0.00	000.0	Primary
f00542/3001sss500k/2007-169/e070618063200	0006	2.15	180.9	Secondary (grouped)

#### Hydrographer Recommendations

Hydrographer recommends charting area as rocky and charting current surveyed soundings.

#### S-57 Data

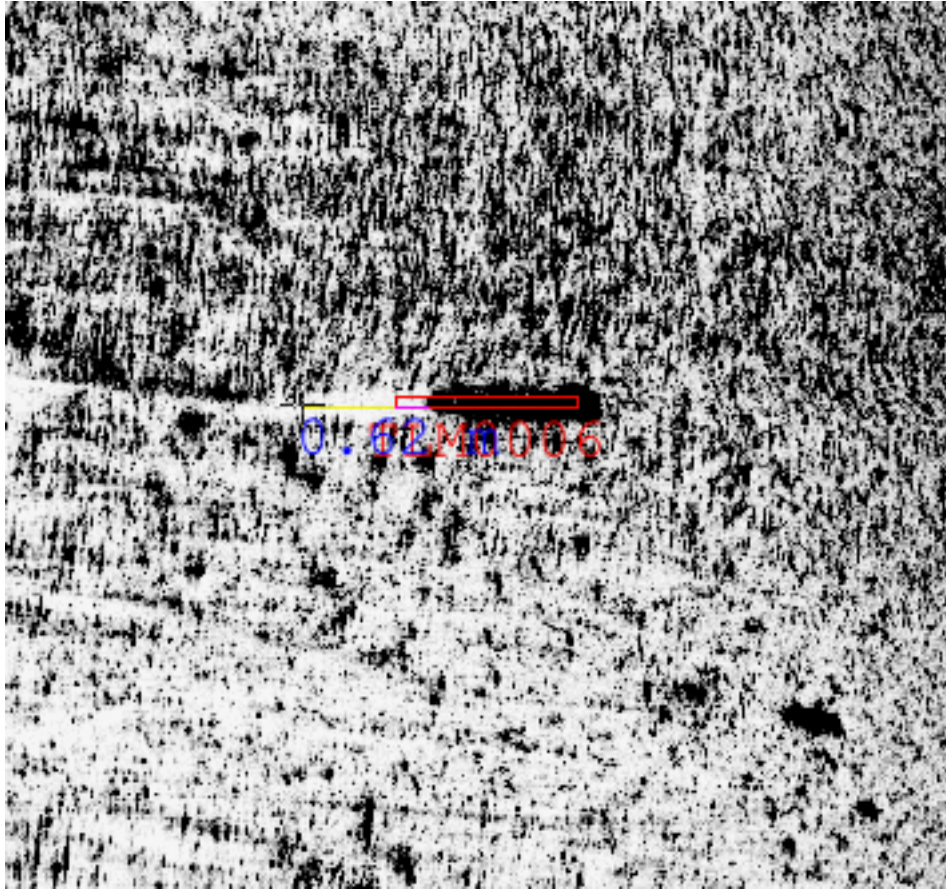
[None]

## Office Notes

Do Not Concur. This rock was submitted as F00542's third DtoN submission, Item 1.1, 5-ft Rock, with least depth 1.6m (5.2ft). Final data review indicates the side scan estimated height off the sea floor is 0.62m (2.034-ft). Data review indicates the DtoN submission over exaggerated the side scan shadow height and thus over-estimated the depth based upon the sounding data within the common area. The side scan data is marginal and with the over measurement of shadow heights subtracted from the echo sounder depths within the common area, final verification does not agree with the DtoN submission. Final reported depth was obtained from VBES bathy data within the immediate vicinity minus the estimated height (0.62m) of the rock for an estimated depth of 2.709m (8.888-ft).

Recommend to delete the charted 5-ft Rock at the reported DtoN location 42°07'21.027"N, 080°08'05.420"W.

## Feature Images



*Figure 1.1.1*



## 1.2) 7ft RK (rep 2007) AHB DtoN #1

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 42° 07' 23.8" N, 080° 08' 02.5" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2007-206.02:34:17 (07/25/2007)  
**Survey Line:** f00542 / 3001sss500k / 2007-169 / e070618063200  
**Contact/Point:** 0004/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14820\_1, 14500\_1

#### Remarks:

Rock 1.14m height in approximately 12ft depth. The rock is located approximately 117m with an approximate azimuth of 285° from the marina entrance. Rock was not originally thought to be navigationally significant. But, further review from AHB has determined this rock to be a Danger to Navigation. Rock was not investigated by field party at the time of survey so, no Least Depth was obtained.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sss500k/2007-169/e070618063200	0004	0.00	000.0	Primary

#### Hydrographer Recommendations

Upon advice from AHB, hydrographer recommend charting submerged rock with depth reported.

#### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** OBJNAM - 7ft RK (rep 2007)  
 QUASOU - 9:value reported (not confirmed)  
 SORDAT - 20070622  
 SORIND - US,US,survey,F00542  
 TECSOU - 2:found by side scan sonar  
 VERDAT - 13:Low water

WATLEV - 3:always under water/submerged

### **Office Notes**

Concur with clarification. Originally submitted as F00542's first DtoN submission, #1. Recommend to delete charted rock with depth unknown as submitted for DtoN #1. Recommend to chart feature as 7-ft Rock (rep 2007); estimated least depth of 7.74-ft (2.36m).

### Feature Images

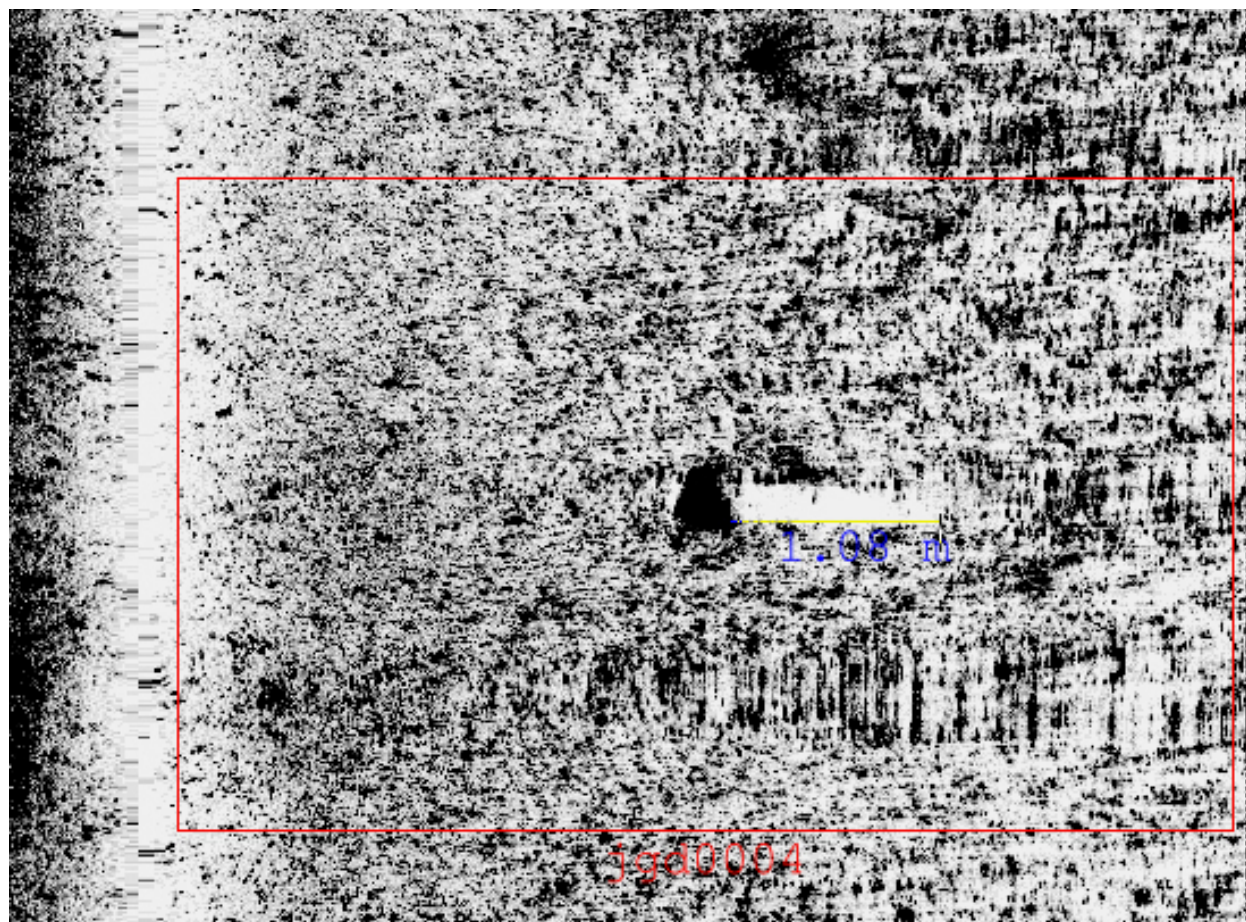


Figure 1.2.1

### 1.3) 7-ft Rk (rep 2007) AHB DtoN#3, Item 1.2

## DANGER TO NAVIGATION

### Survey Summary

**Survey Position:** 42° 07' 26.4" N, 080° 08' 08.2" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2007-206.03:17:45 (07/25/2007)  
**Survey Line:** f00542 / 3001sss500k / 2007-170 / e070619012900  
**Contact/Point:** 0001/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14820\_1, 14500\_1

#### Remarks:

Rk at nadir 1.72m ht. in a field of many rocks. Ht suspect d/t location at nadir. Rock not considered significant to navigation and not investigated by field party.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sss500k/2007-170/e070619012900	0001	0.00	000.0	Primary

### Hydrographer Recommendations

Hydrographer recommends charting area as rocky and charting current surveyed soundings.

### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** OBJNAM - 7-ft Rk (rep 2007)  
 QUASOU - 9:value reported (not confirmed)  
 SORDAT - 20070622  
 SORIND - US,US,survey,F00542  
 TECSOU - 2:found by side scan sonar  
 VERDAT - 12:Mean lower low water  
 WATLEV - 3:always under water/submerged

## Office Notes

Originally submitted as F00542's third DtoN submission, Item 1.2. Feature is charted as a 7-ft rock, attributed as a depth known. AHB recommends to chart rock with an estimated depth of 7-ft Rock (rep 2007). The feature is located in an area with no VBES depths. The feature's estimated depth was derived by subtracting the shadow height (height off the sea floor) from the sounding data within the immediate area. The feature was not developed with echo sounding, thus the recommended estimated depth and reported status.

**1.4) 9-ft Obstrn 4543/1****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 42° 07' 38.9" N, 080° 07' 10.3" W  
**Least Depth:** 4.04 m (= 13.27 ft = 2.211 fm = 2 fm 1.27 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-172.18:53:00.999 (06/21/2007)  
**Survey Line:** f00542 / 3001sb / 2007-172 / 201\_1848  
**Profile/Beam:** 4543/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-172/201_1848	4543/1	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

13ft (14835\_1, 14824\_1, 14838\_1)

2 ¼fm (14500\_1)

4.0m (14828\_1, 14820\_1)

**S-57 Data**

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** INFORM - 9-ft Obstrn  
 QUASOU - 1:depth known  
 SORDAT - 20070622  
 SORIND - US,US,survey,F00542

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

VALSOU - 4.044 m

VERDAT - 12:Mean lower low water

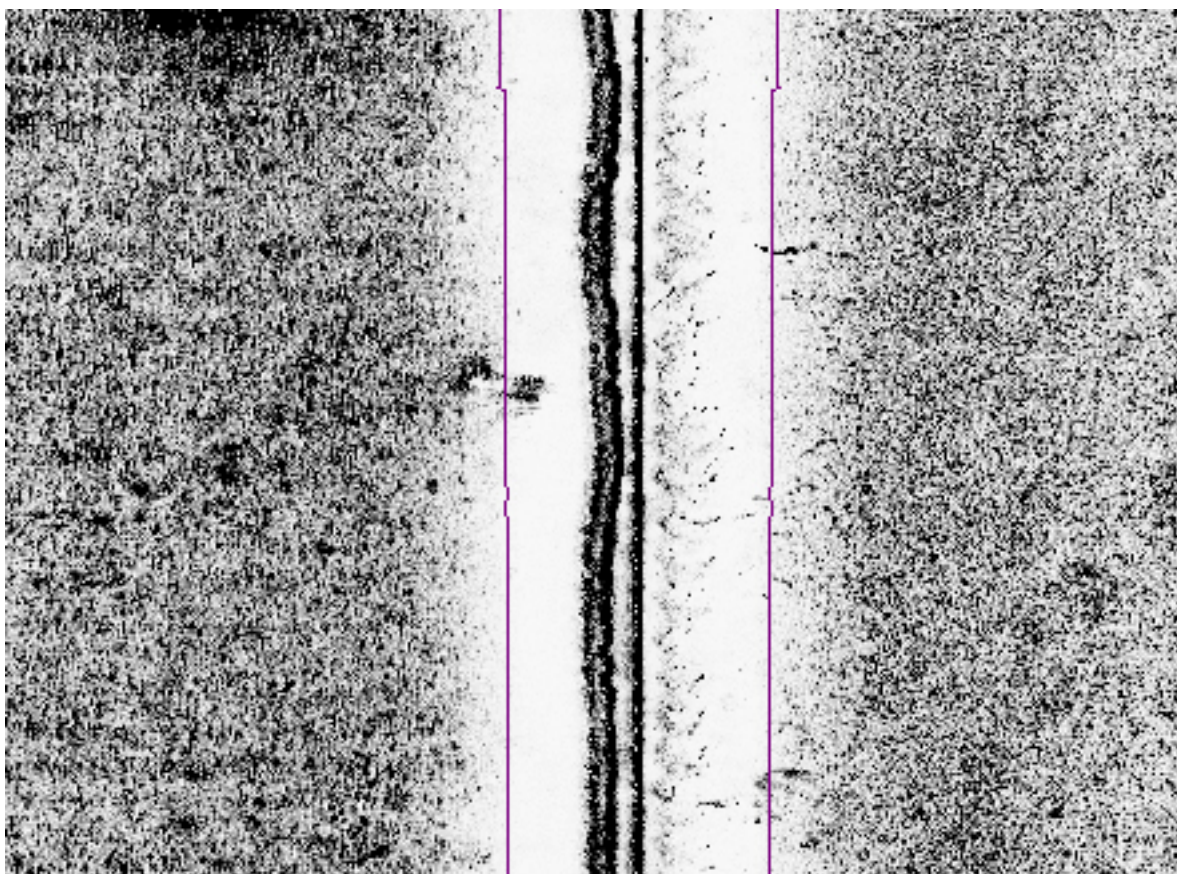
WATLEV - 3:always under water/submerged

### **Office Notes**

Concur with clarification. Originally submitted as F00542's third DtoN submission, Item 1.3. Significant feature not developed with echo sounder, but captured during mainscheme hydrography. Feature's least depth was originally sourcing the incorrect ping number of 4543. The correct ping is 4557 with a least depth of 2.732m.

The feature has been applied to Chart 14835\_1 at the time of AHB's compilation. Submitted feature is incorrectly attributed when comparing the SSS contact location and to the rejected bathymetric data. Recommend to retain 9-ft (2.732m (8.963-ft))Obstn at the charted location.

### Feature Images



*Figure 1.4.1*



**1.5) Do not chart 7-ft Sounding Dton #2,Item 1.1 5488/1****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 42° 08' 44.6" N, 080° 06' 14.1" W  
**Least Depth:** 3.92 m (= 12.88 ft = 2.146 fm = 2 fm 0.88 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-171.13:41:29.394 (06/20/2007)  
**Survey Line:** f00542 / 3001sb / 2007-171 / 120\_1336  
**Profile/Beam:** 5488/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

**Remarks:**

Seven foot sounding found in 11-12 foot charted depths.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-171/120_1336	5488/1	0.00	000.0	Primary

**Hydrographer Recommendations**

Hydrographer recommends charting 7 ft sounding.

**Cartographically-Rounded Depth (Affected Charts):**

13ft (14835\_1, 14824\_1, 14838\_1)

2fm (14500\_1)

3.9m (14828\_1, 14820\_1)

**S-57 Data**

[None]

## Office Notes

Originally submitted as F00542 second DtoN submission, Item 1.1. Do not concur. At the time of AHB compilation the 7-ft depth is not charted. No charting action is required.

Data verification indicates that the submitted DtoN shoal depth was echo sounder returns on grass. Data review of raw graphic records and data editing indicates the shoal depth within the immediate common area is 10-ft. Recommended to not to chart the 7-ft sounding located in 42°08'44.716"N, 080°06'14.1"W. Recommend updating the chart to reflect edited survey depths within the common area.

### Feature Images

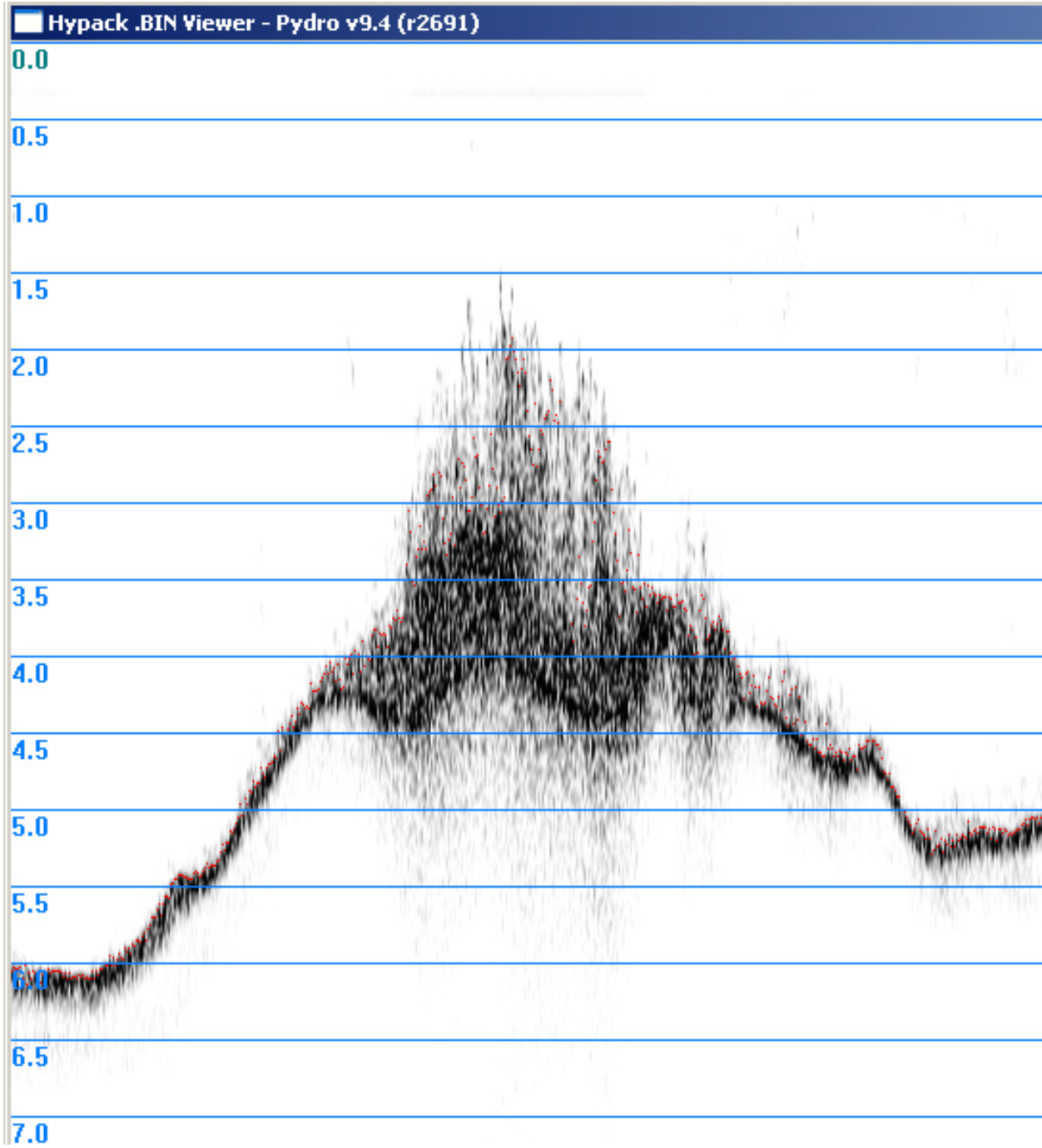


Figure 1.5.1

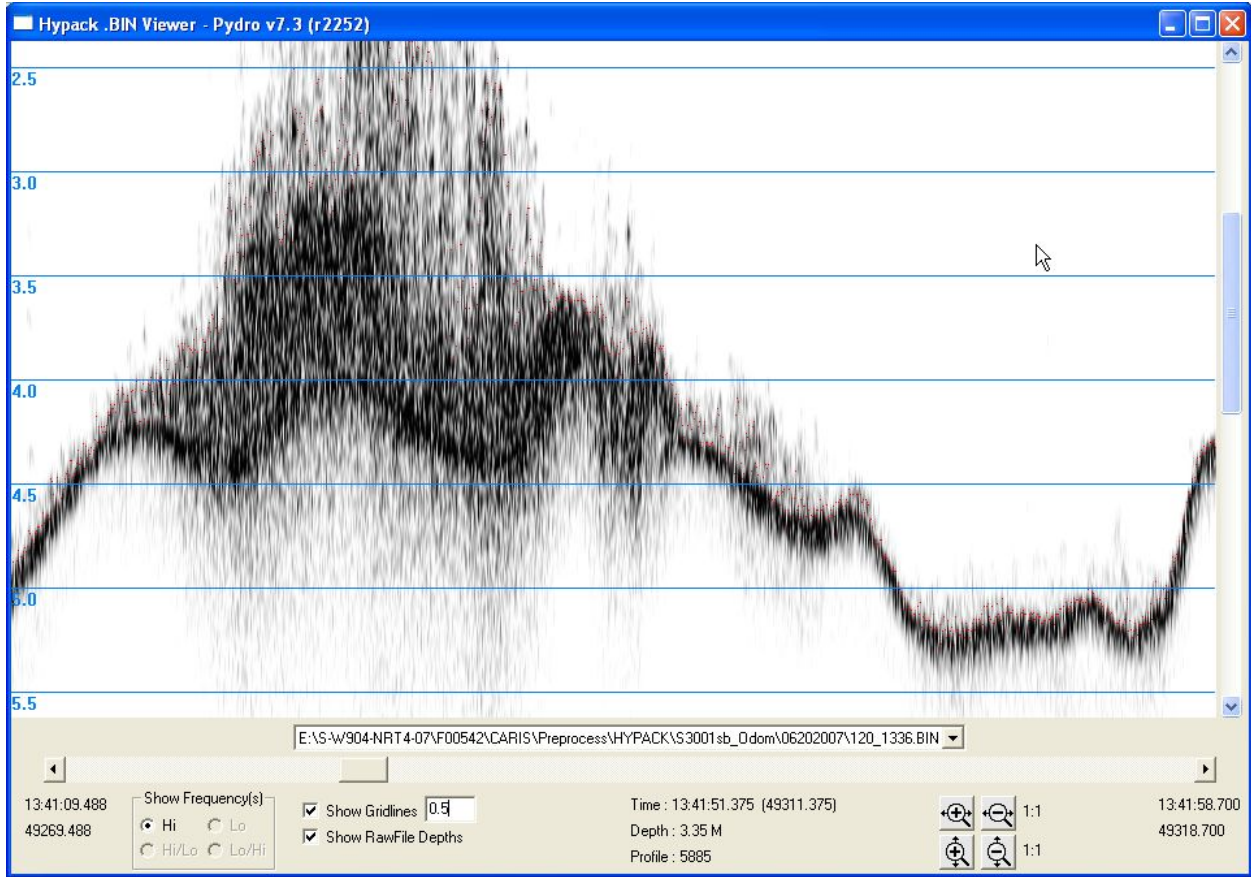


Figure 1.5.2

## 1.6) Delete charted 4-ft Sounding 213/1

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 42° 08' 55.3" N, 080° 05' 42.3" W  
**Least Depth:** 3.30 m (= 10.83 ft = 1.804 fm = 1 fm 4.83 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-171.13:36:48.968 (06/20/2007)  
**Survey Line:** f00542 / 3001sb / 2007-171 / 120\_1336  
**Profile/Beam:** 213/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-171/120_1336	213/1	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

11ft (14835\_1, 14824\_1, 14838\_1)

1  $\frac{3}{4}$ fm (14500\_1)

3.3m (14828\_1, 14820\_1)

#### S-57 Data

[None]

## Office Notes

Do not concur. Originally submitted as F00542's third DtoN submission, Item 1.4. Data verification indicates that the shoal depths were echo sounder returns on grass. Data review of raw graphic records and data editing indicates the shoal depth within the immediate common area is 8-ft. Recommended to delete the charted 4-ft sounding located in 42°08'55.326"N, 080°05'42.265"W. Recommend updating the chart to reflect edited survey depths within the common area.

### Feature Images

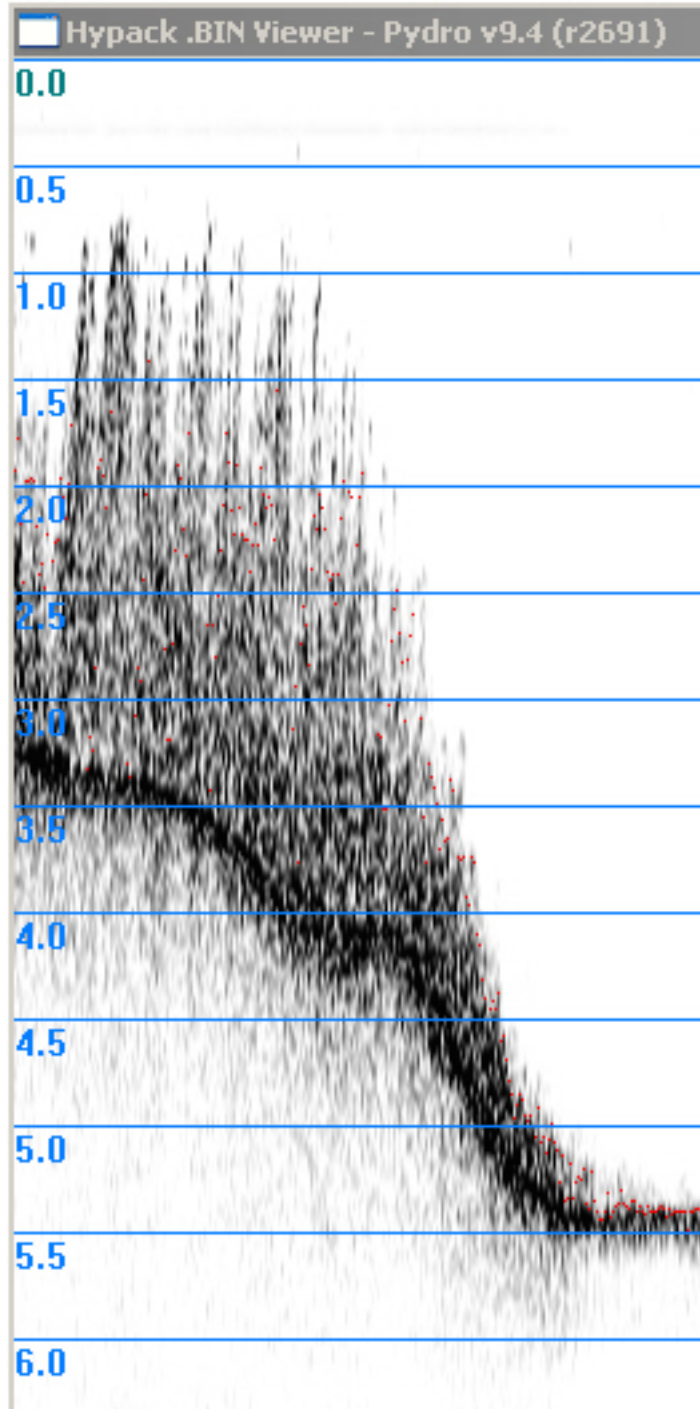


Figure 1.6.1

## 1.7) Delete Charted 5-ft Sounding 5389/1

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 42° 08' 44.7" N, 080° 06' 13.5" W  
**Least Depth:** 3.36 m (= 11.03 ft = 1.838 fm = 1 fm 5.03 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-171.13:41:24.121 (06/20/2007)  
**Survey Line:** f00542 / 3001sb / 2007-171 / 120\_1336  
**Profile/Beam:** 5389/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-171/120_1336	5389/1	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

11ft (14835\_1, 14824\_1, 14838\_1)

1  $\frac{3}{4}$ fm (14500\_1)

3.4m (14828\_1, 14820\_1)

#### S-57 Data

[None]



## Office Notes

Originally submitted as F00542's third DtoN submission, Item 1.5 from AHB. Data verification indicates that the shoal depths were echo sounder returns on grass. Data review of raw graphic records and data editing indicates the shoal depth within the immediate common area is 10-ft. Recommend to delete the charted 5-ft sounding located in 42°08'44.716"N, 080°06'13.506"W. Recommend updating the chart to reflect edited survey depths within the common area.

## 1.8) 10-ft Sounding 2812/1

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 42° 08' 53.5" N, 080° 06' 38.9" W  
**Least Depth:** 3.17 m (= 10.40 ft = 1.733 fm = 1 fm 4.40 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-171.15:43:54.808 (06/20/2007)  
**Survey Line:** f00542 / 3001sb / 2007-171 / 129\_1541  
**Profile/Beam:** 2812/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

10 ft sounding found in 18 ft charted depth area.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-171/129_1541	2812/1	0.00	000.0	Primary

#### Hydrographer Recommendations

Hydrographer recommends charting 10ft sounding.

#### Cartographically-Rounded Depth (Affected Charts):

10ft (14835\_1, 14824\_1, 14838\_1)

1  $\frac{3}{4}$ fm (14500\_1)

3.2m (14828\_1, 14820\_1)

#### S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** EXPSOU - 2:shoaler than range of depth of the surrounding depth area  
 INFORM - 10-ft Sounding  
 QUASOU - 1:depth known  
 SORDAT - 20070622

SORIND - US,US,nsurf,F00542

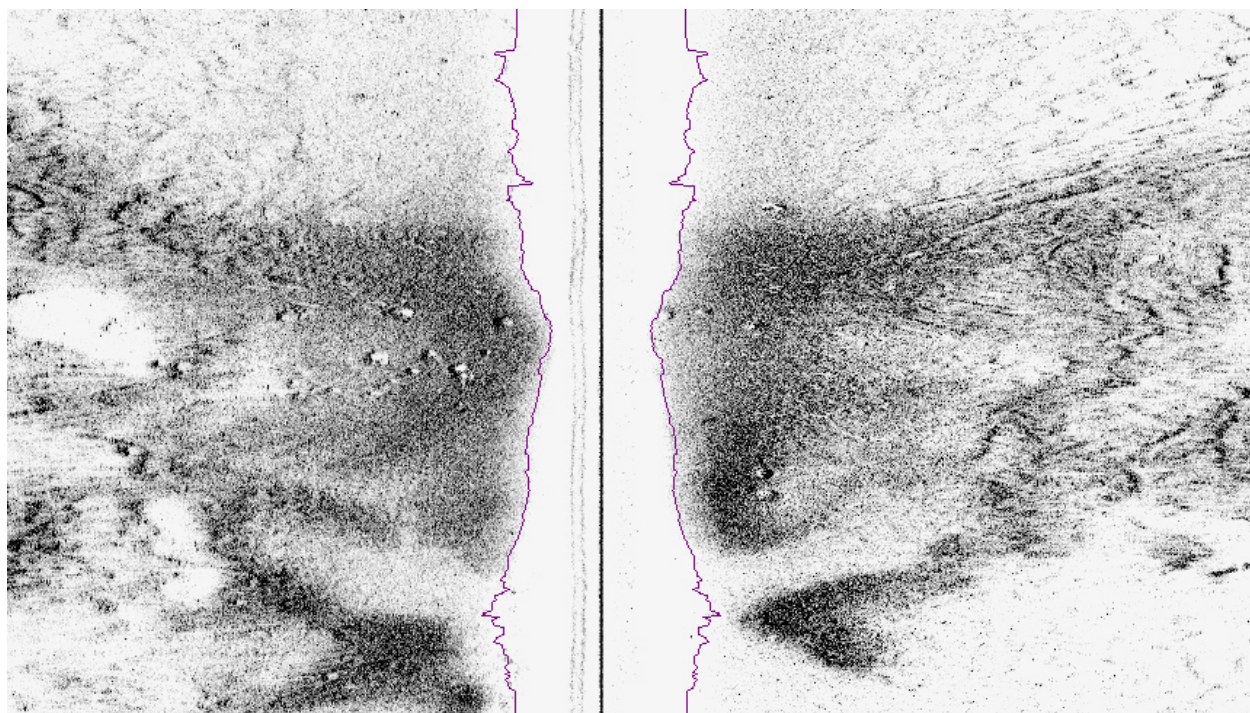
TECSOU - 1,2:found by echo-sounder,found by side scan sonar

VERDAT - 13:Low water

## Office Notes

Originally submitted as F00542's second DtoN submission, Item 1.2. AHB concurs w/ the field. Retain as charted, no cartographic action required.

### Feature Images



*Figure 1.8.1*

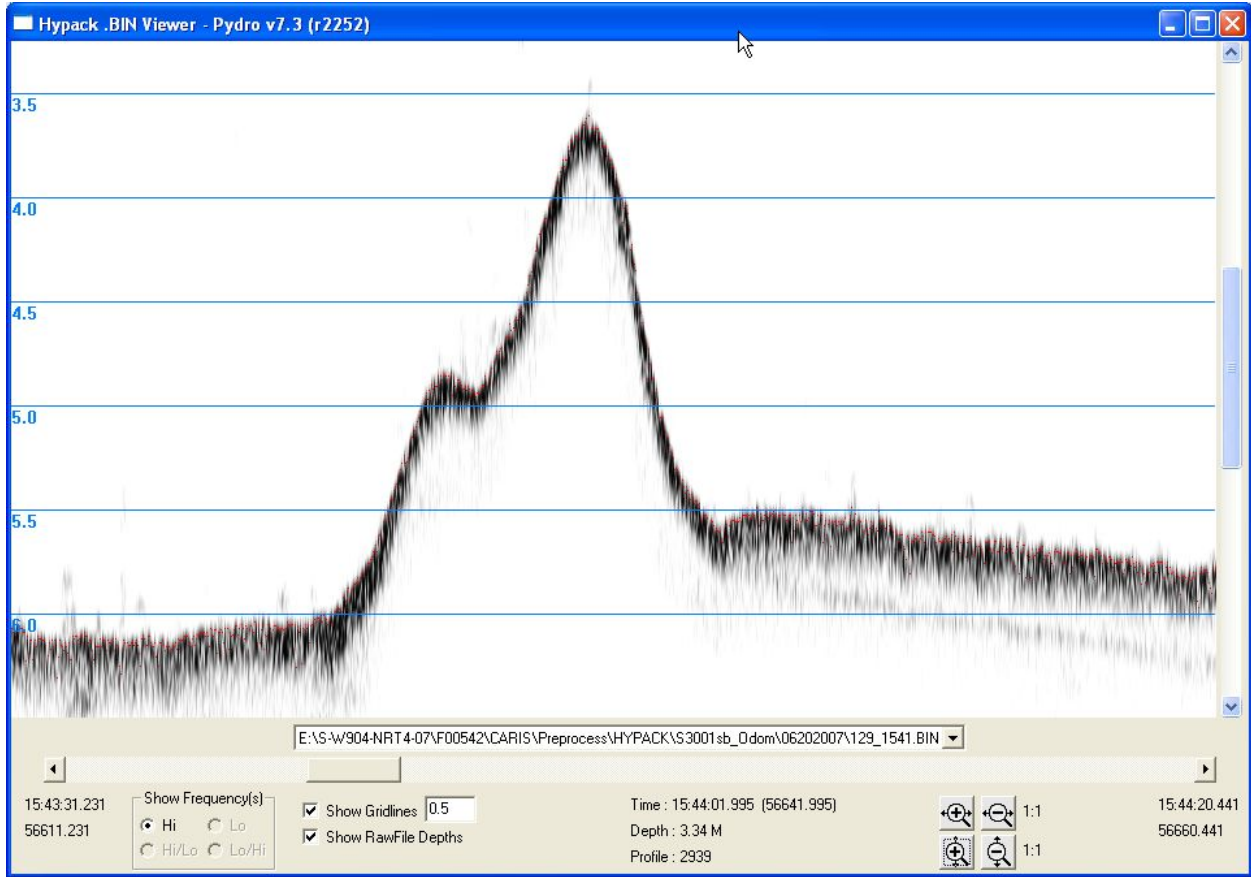


Figure 1.8.2

## 1.9) Charted 11-ft Sounding 11641/1

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 42° 07' 47.8" N, 080° 06' 56.6" W  
**Least Depth:** 3.50 m (= 11.48 ft = 1.913 fm = 1 fm 5.48 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-170.12:56:06.636 (06/19/2007)  
**Survey Line:** f00542 / 3001sb / 2007-170 / 102\_1245  
**Profile/Beam:** 11641/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

11 ft sounding found in 16 ft charted depth area.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-170/102_1245	11641/1	0.00	000.0	Primary

#### Hydrographer Recommendations

Hydrographer recommends charting 11 ft sounding.

#### Cartographically-Rounded Depth (Affected Charts):

11ft (14835\_1, 14824\_1, 14838\_1)

1  $\frac{3}{4}$ fm (14500\_1)

3.5m (14828\_1, 14820\_1)

#### S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** EXPSOU - 2:shoaler than range of depth of the surrounding depth area  
 QUASOU - 1:depth known  
 TECSOU - 1:found by echo-sounder  
 VERDAT - 13:Low water

**Geo object 2:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - Chart 11ft Sounding submitted as DToN.  
QUASOU - 1:depth known  
SORDAT - 20070622  
SORIND - US,US,nsurf,F00542  
STATUS - 1:permanent  
TECSOU - 1:found by echo-sounder  
VALSOU - 3.499 m  
VERDAT - 13:Low water  
WATLEV - 3:always under water/submerged

### Office Notes

Originally submitted as F00542's second DtoN submission, Item 1.3. AHB concurs w/ the field. Retain 11-ft depth as charted. No cartographic action required.

## 1.10) Delete Charted 3-ft Sounding 2789/1

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 42° 08' 51.9" N, 080° 06' 10.0" W  
**Least Depth:** 2.49 m (= 8.16 ft = 1.360 fm = 1 fm 2.16 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-171.14:46:54.493 (06/20/2007)  
**Survey Line:** f00542 / 3001sb / 2007-171 / 122\_1444  
**Profile/Beam:** 2789/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-171/122_1444	2789/1	0.00	000.0	Primary

#### Hydrographer Recommendations

Chart 3ft Sounding

#### Cartographically-Rounded Depth (Affected Charts):

8ft (14835\_1, 14824\_1, 14838\_1)

1 ¼fm (14500\_1)

2.5m (14828\_1, 14820\_1)

#### S-57 Data

[None]



## Office Notes

Originally submitted as F00542's third DtoN submission, Item 1.6. Data verification indicates that the shoal depths were echo sounder returns on grass bed. Data review of raw graphic records and data editing indicates the shoal depth within the immediate common area is 11-ft. Recommend to delete the charted 3-ft sounding located in 42°08'51.896"N, 080°06'09.953"W. Recommend updating the chart to reflect edited survey depths within the common area.

### Feature Images

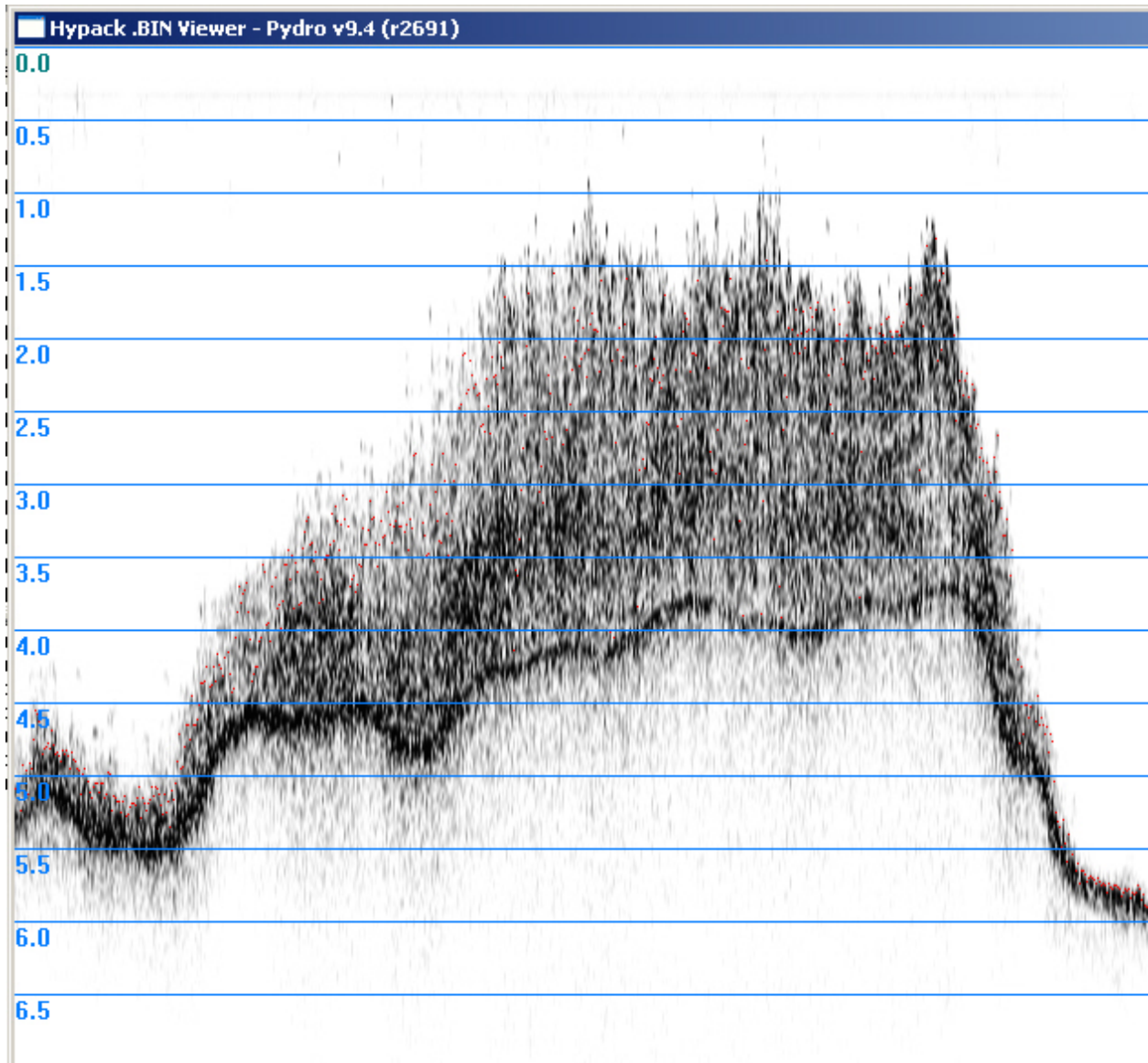


Figure 1.10.1

## 1.11) Delete Charted 5-ft Sounding 1218/1

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 42° 09' 00.1" N, 080° 06' 36.1" W  
**Least Depth:** 2.83 m (= 9.29 ft = 1.549 fm = 1 fm 3.29 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-171.16:08:51.380 (06/20/2007)  
**Survey Line:** f00542 / 3001sb / 2007-171 / 133\_1607  
**Profile/Beam:** 1218/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-171/133_1607	1218/1	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

9ft (14835\_1, 14824\_1, 14838\_1)

1 ½fm (14500\_1)

2.8m (14828\_1, 14820\_1)

#### S-57 Data

[None]

## Office Notes

Originally submitted as F00542 third DtoN submission, Item 1.7, 5-ft Sounding. Data verification indicates that the shoal depths were echo sounder returns on grass. Data review of raw graphic records and data editing indicates the shoal depth within the immediate common area is 11-ft to 12-ft. Recommended to delete the charted 5-ft sounding located in 42°09'00.131"N, 080°06'36.137"W. Recommend updating the chart to reflect edited survey depths within the common area.

### Feature Images

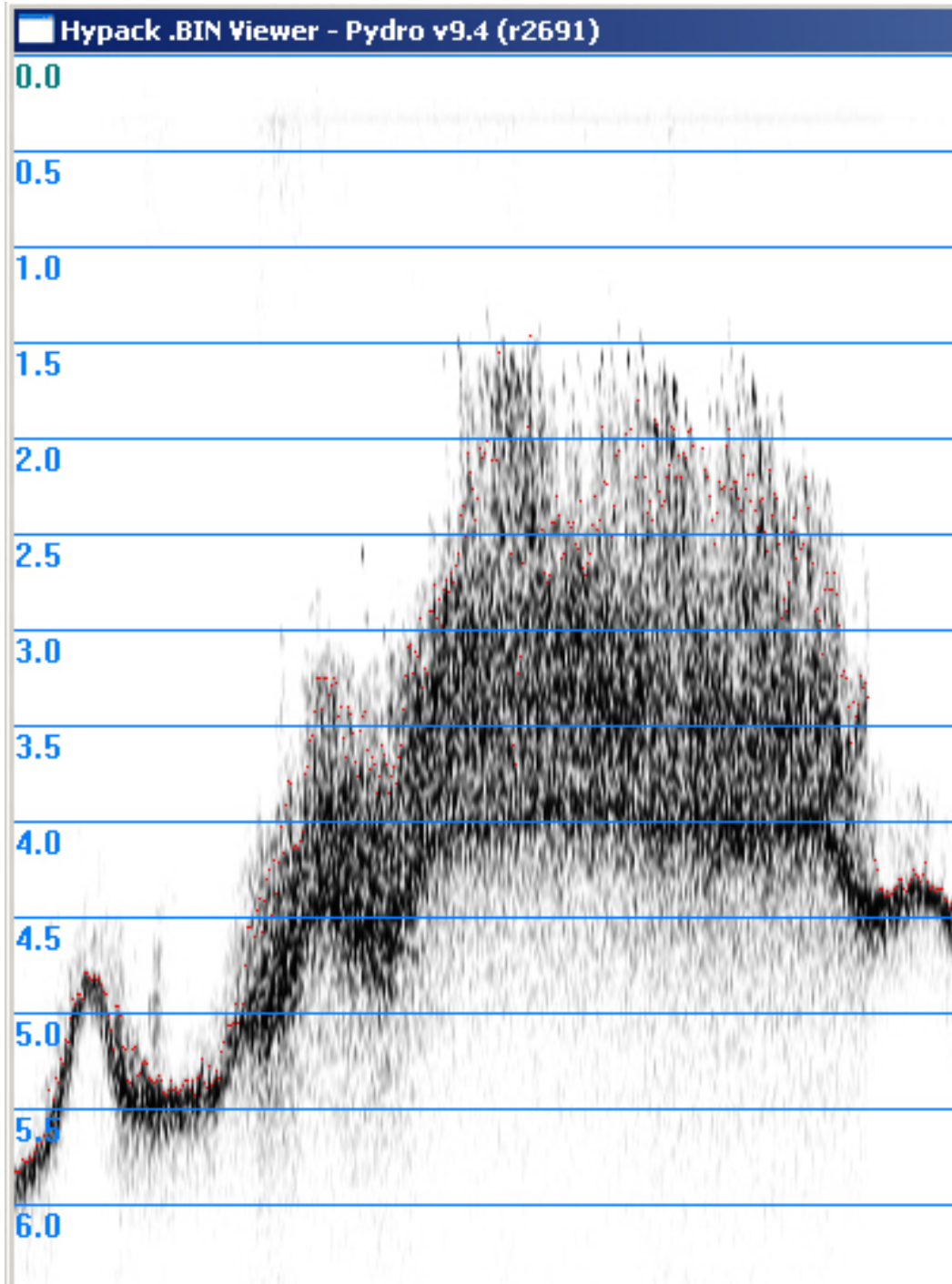


Figure 1.11.1

**1.12) Delete Charted 2-ft Sounding; append with 5-ft 1378/1****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 42° 09' 00.3" N, 080° 06' 49.1" W  
**Least Depth:** 2.04 m (= 6.70 ft = 1.116 fm = 1 fm 0.70 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-171.16:26:40.200 (06/20/2007)  
**Survey Line:** f00542 / 3001sb / 2007-171 / 135\_1625  
**Profile/Beam:** 1378/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-171/135_1625	1378/1	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

6ft (14835\_1, 14824\_1, 14838\_1)

1fm (14500\_1)

2.0m (14828\_1, 14820\_1)

**S-57 Data**

[None]

## Office Notes

The 2-ft shoal sounding was submitted as AHB DtoN 1.8. Data verification compared to the raw graphic record indicates that the shoal sounding was represented as grass. Post editing of VBES data indicates that survey shoal depth is 1.594m (5.229-ft). Recommend to delete the 2-ft sounding and append chart with 5-ft sounding located in 42°09'00.467"N, 080°06'48.627"W.

### Feature Images

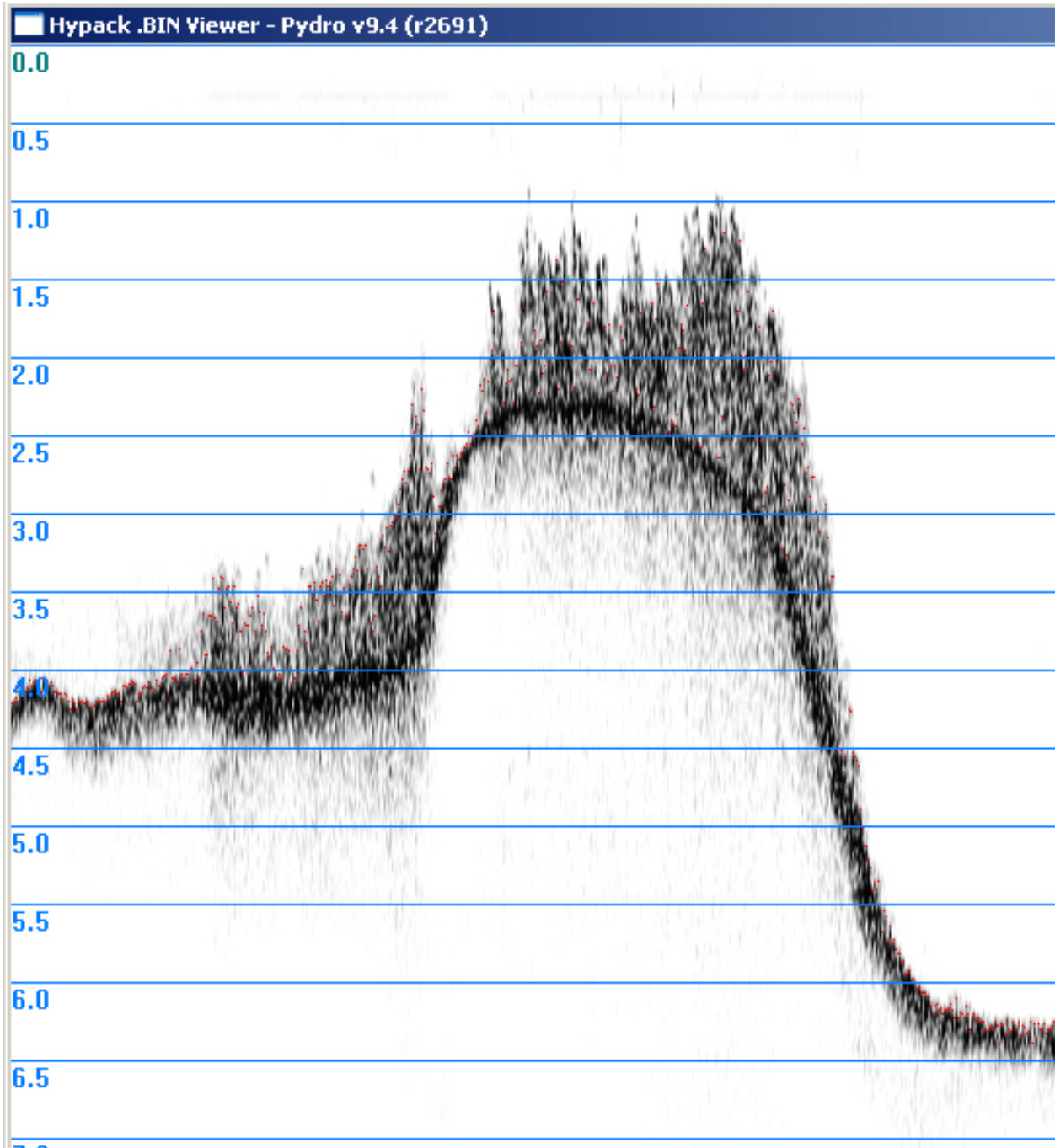


Figure 1.12.1



## 1.13) Delete Charted 4-ft Sounding 21459/1

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 42° 08' 47.5" N, 080° 05' 35.8" W  
**Least Depth:** 2.19 m (= 7.18 ft = 1.197 fm = 1 fm 1.18 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-171.20:26:51.023 (06/20/2007)  
**Survey Line:** f00542 / 3001sb / 2007-171 / 216\_2007  
**Profile/Beam:** 21459/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-171/216_2007	21459/1	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

7ft (14835\_1, 14824\_1, 14838\_1)

1 ¼fm (14500\_1)

2.2m (14828\_1, 14820\_1)

#### S-57 Data

[None]

## Office Notes

Originally submitted as F00542's third DtoN submission, Item 1.9 4-ft Sounding. Data review indicated that the submitted shoal sounding was represented as a grass bed. Data editing indicates that current accepted survey depths ranges between 7-ft to 8-ft within the immediate common area. Recommend to delete the charted 4-ft depth and append chart with final survey depths within the common area.

### Feature Images

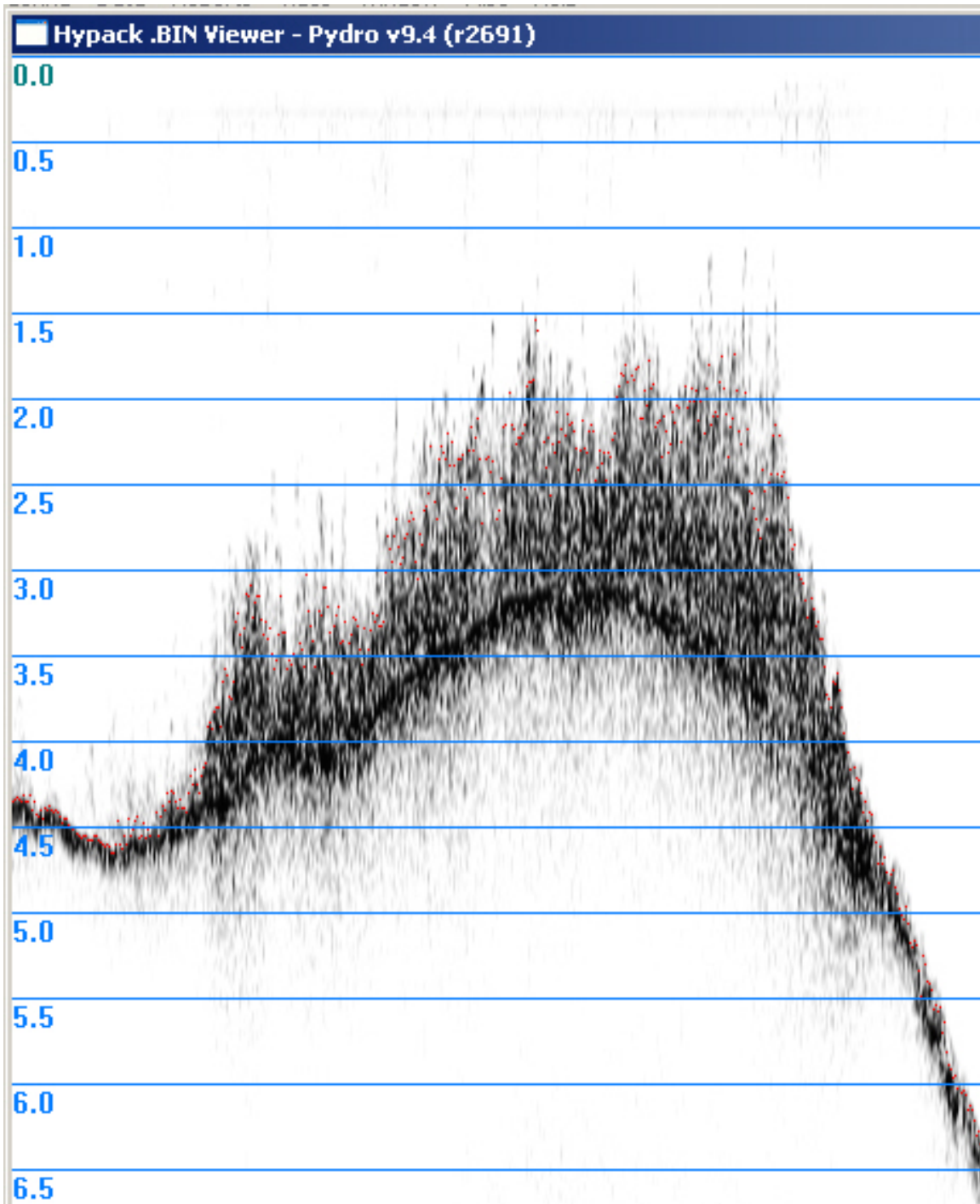


Figure 1.13.1

**1.14) Charted 2-ft Sounding 122/1****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 42° 08' 50.4" N, 080° 05' 36.0" W  
**Least Depth:** 2.33 m (= 7.65 ft = 1.275 fm = 1 fm 1.65 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-171.19:48:32.706 (06/20/2007)  
**Survey Line:** f00542 / 3001sb / 2007-171 / 219\_1948  
**Profile/Beam:** 122/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-171/219_1948	122/1	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

7ft (14835\_1, 14824\_1, 14838\_1)

1 ¼fm (14500\_1)

2.3m (14828\_1, 14820\_1)

**S-57 Data**

[None]

## Office Notes

Originally submitted as F00542's third DtoN submission, Item 1.10, 2-ft Sounding. Data review indicated that the submitted shoal sounding was represented as grass beds. Data editing indicates that current accepted survey depths ranges between 7-ft to 8-ft within the immediate common area. Recommend to delete the charted 2-ft sounding and append chart with final survey depths within the common area.

### Feature Images

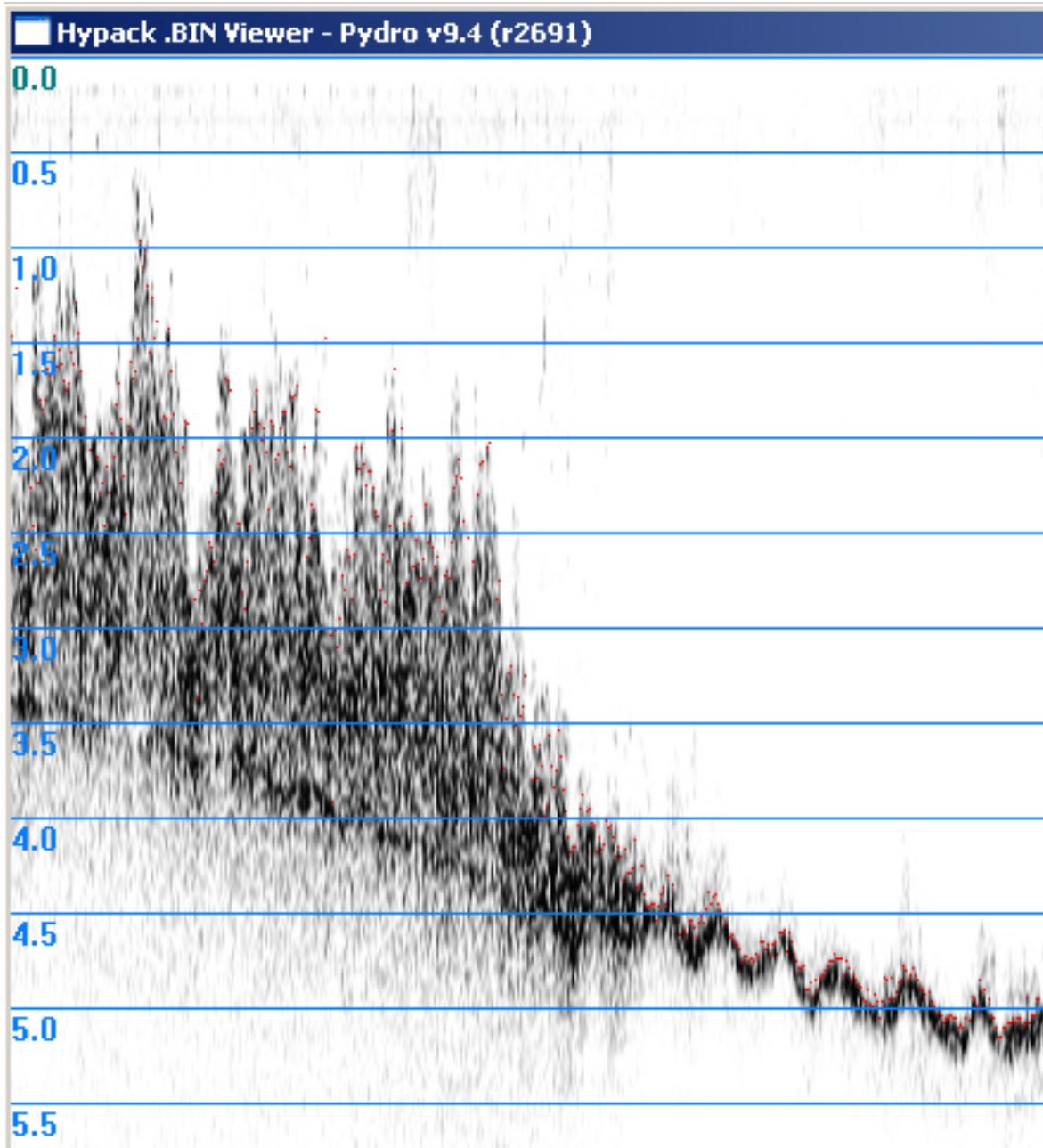


Figure 1.14.1

**1.15) Delete charted 5-ft Sounding 371/1****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 42° 09' 02.6" N, 080° 06' 46.6" W  
**Least Depth:** 3.14 m (= 10.31 ft = 1.719 fm = 1 fm 4.31 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-172.19:45:38.676 (06/21/2007)  
**Survey Line:** f00542 / 3001sb / 2007-172 / 235\_1945  
**Profile/Beam:** 371/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-172/235_1945	371/1	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

10ft (14835\_1, 14824\_1, 14838\_1)

1  $\frac{3}{4}$ fm (14500\_1)

3.1m (14828\_1, 14820\_1)

**S-57 Data**

[None]

## Office Notes

Originally submitted as F00542's third DtoN submission, Item 1.11, 5-ft Sounding. Data verification indicates that the shoal depths were echo sounder returns on grass. Data review of raw graphic records and data editing indicates the shoal depth within the immediate common area is 10-ft to 11-ft. Recommended to delete the charted 5-ft sounding located in 42°09'02.572"N, 080°06'46.627"W. Recommend updating the chart to reflect edited survey depths within the common area.



### Feature Images

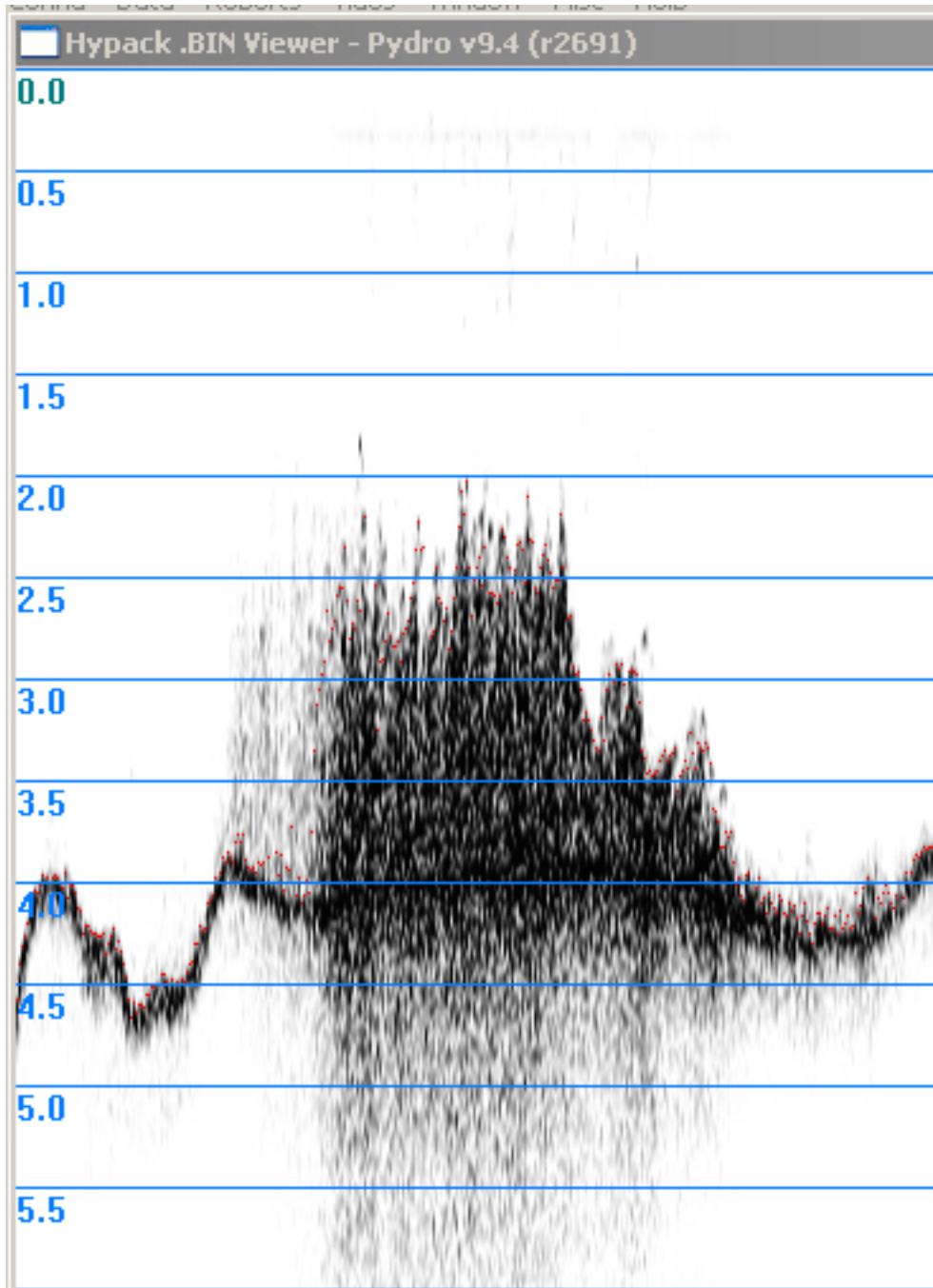


Figure 1.15.1

**1.16) Delete Charted 4-ft sounding 11081/1****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 42° 09' 02.3" N, 080° 06' 39.3" W  
**Least Depth:** 2.88 m (= 9.47 ft = 1.578 fm = 1 fm 3.47 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-172.19:55:08.038 (06/21/2007)  
**Survey Line:** f00542 / 3001sb / 2007-172 / 235\_1945  
**Profile/Beam:** 11081/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-172/235_1945	11081/1	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

9ft (14835\_1, 14824\_1, 14838\_1)

1 ½fm (14500\_1)

2.9m (14828\_1, 14820\_1)

**S-57 Data**

[None]

## Office Notes

Originally submitted as F00542's third DtoN submission, Item 1.12. Data review indicated that the submitted shoal sounding was represented as grass beds. Data editing indicates that current accepted survey depths ranges between 9-ft to 10-ft within the immediate common area. Recommend to delete the charted 4-ft sounding and append chart with final survey depths within the common area.

### Feature Images

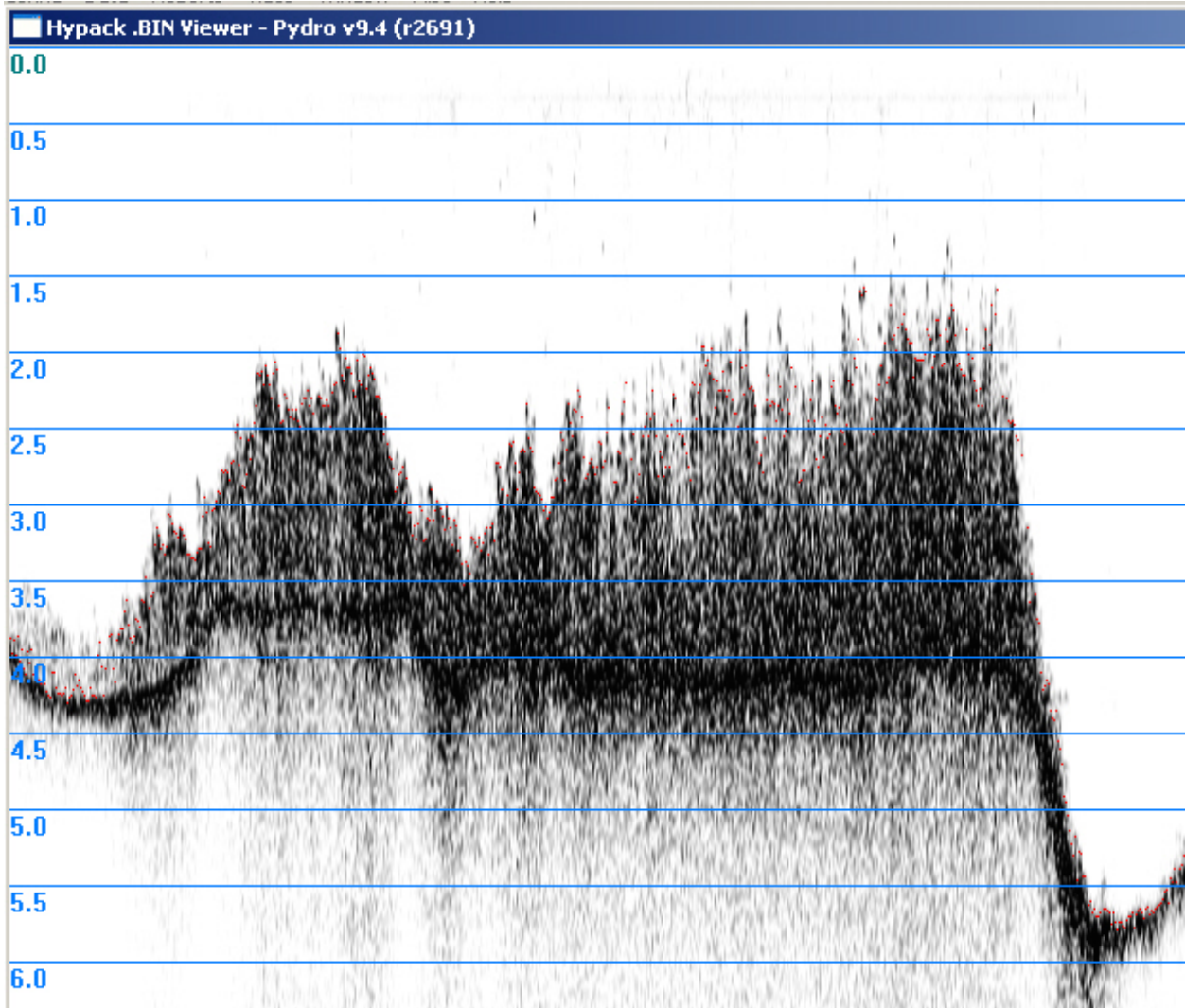


Figure 1.16.1

## 1.17) Delete Charted 2-ft Sounding 11859/1

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 42° 09' 02.4" N, 080° 06' 36.6" W  
**Least Depth:** 3.10 m (= 10.18 ft = 1.696 fm = 1 fm 4.18 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-172.19:55:49.413 (06/21/2007)  
**Survey Line:** f00542 / 3001sb / 2007-172 / 235\_1945  
**Profile/Beam:** 11859/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-172/235_1945	11859/1	0.00	000.0	Primary

#### Hydrographer Recommendations

[None]

**Cartographically-Rounded Depth (Affected Charts):**

10ft (14835\_1, 14824\_1, 14838\_1)

1  $\frac{3}{4}$ fm (14500\_1)

3.1m (14828\_1, 14820\_1)

#### S-57 Data

[None]

## Office Notes

Originally submitted as F00542's third DtoN submission, Item 1.13, 2-ft Sounding. Do not concur with DtoN submission status. Data review entail editing the VBES data to reflect the sea floor and not the grass beds. Edited survey depth within the immediate common area is 9-ft. Chart survey depths within the common area.

### Feature Images

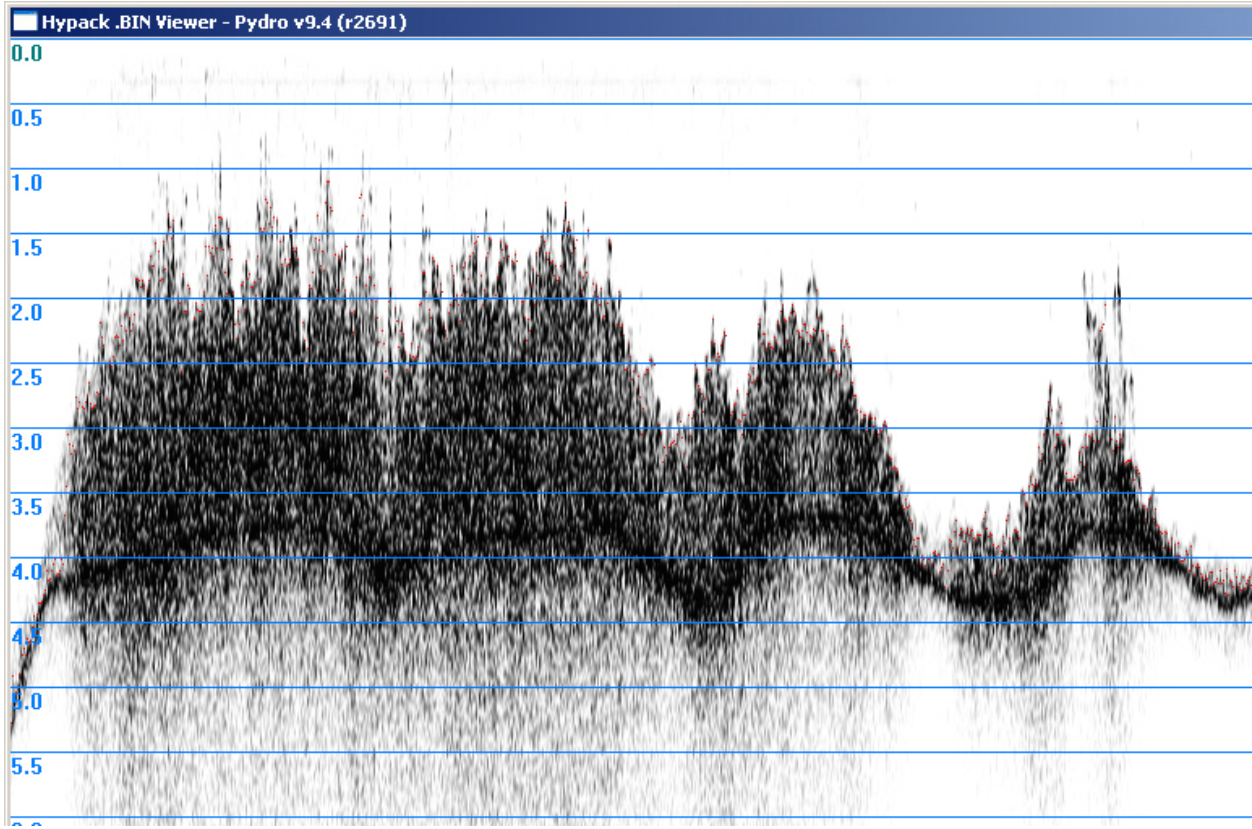


Figure 1.17.1

**1.18) Charted 2-ft Sounding 19841/1****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 42° 08' 58.1" N, 080° 06' 23.5" W  
**Least Depth:** 2.73 m (= 8.96 ft = 1.494 fm = 1 fm 2.96 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-172.20:02:53.391 (06/21/2007)  
**Survey Line:** f00542 / 3001sb / 2007-172 / 235\_1945  
**Profile/Beam:** 19841/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-172/235_1945	19841/1	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

9ft (14835\_1, 14824\_1, 14838\_1)

1 ½fm (14500\_1)

2.7m (14828\_1, 14820\_1)

**S-57 Data**

[None]



## Office Notes

Originally submitted as F00542's third DtoN submission, Item 1.14. Do not concur with DtoN submission status. Data review entail editing the VBES data to reflect the sea floor and not the grass beds. Edited survey depths within the immediate common area indicate the shoal depth at this location is 9-ft. Chart survey depths within the common area.

### Feature Images

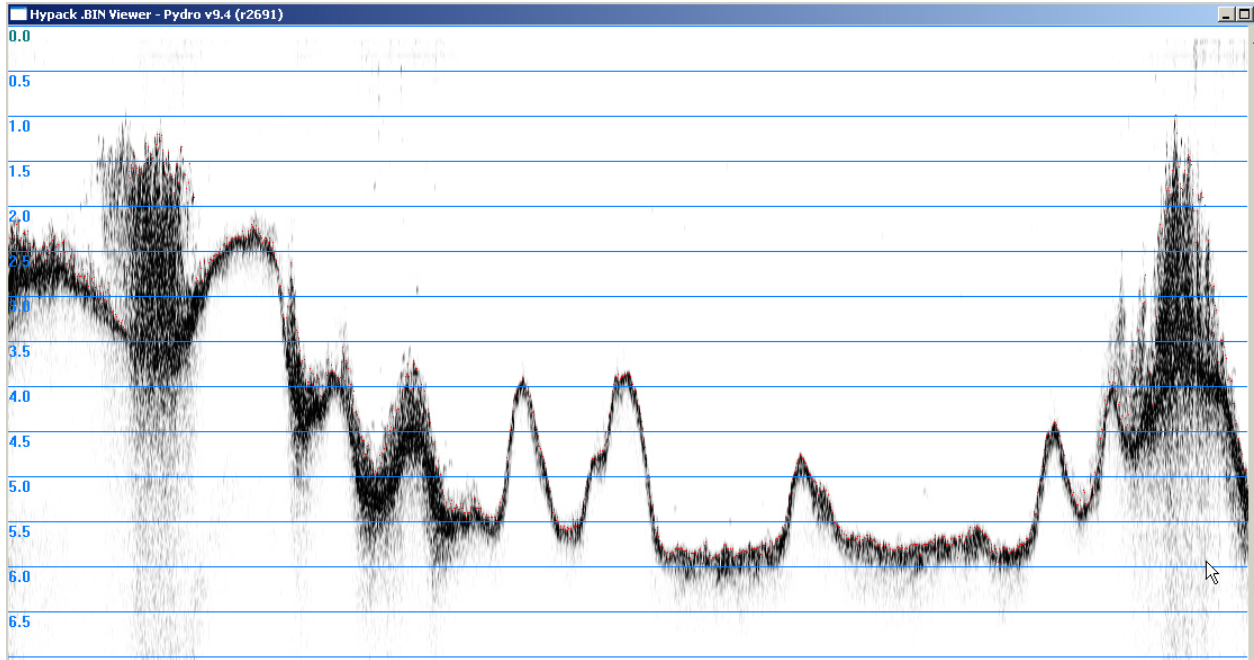


Figure 1.18.1

## DR Appendix 2 Charted Features

**Registry Number:** F00542  
**State:** Pennsylvania  
**Locality:** Lake Erie  
**Sub-locality:** Presque Isle Bay  
**Project Number:** S-W904-NRT4-07  
**Survey Dates:** 06/21/2007 - 07/25/2007

### Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
14835	32nd	05/01/2005	1:15,000 (14835_1)	USCG LNM: 05/15/2007 (11/18/2008) CHS NTM: None (10/31/2008) NGA NTM: None (11/29/2008)
14824	26th	10/01/2003	1:80,000 (14824_1)	[L]NTM: ?
14828	6th	04/01/2005	1:100,000 (14828_1)	[L]NTM: ?
14838	4th	04/01/2005	1:120,000 (14838_1)	[L]NTM: ?
14820	21st	10/01/2005	1:400,000 (14820_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	Charted Crib 0001	Obstruction	[None]	42° 08' 39.4" N	080° 07' 17.8" W	---
1.2	3-ft Wreck 784/1	Wreck	0.86 m	42° 07' 45.6" N	080° 06' 49.0" W	---

**1 - DR\_Charted**

## 1.1) Charted Crib 0001

### Survey Summary

**Survey Position:** 42° 08' 39.4" N, 080° 07' 17.8" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2007-206.02:11:13 (07/25/2007)  
**Survey Line:** f00542 / 3001sss500k / 2007-171 / e070620035700  
**Contact/Point:** 0001/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

Charted Subm Crib. Approx 2m ht. Not investigated by Field Party, therefore LD not confirmed.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sss500k/2007-171/e070620035700	0001	0.00	000.0	Primary
f00542/3001sss500k/2007-171/e070620055600	0001	11.36	242.8	Secondary

### Hydrographer Recommendations

Hydrographer recommends retaining crib as charted and charting surrounding current surveyed soundings.

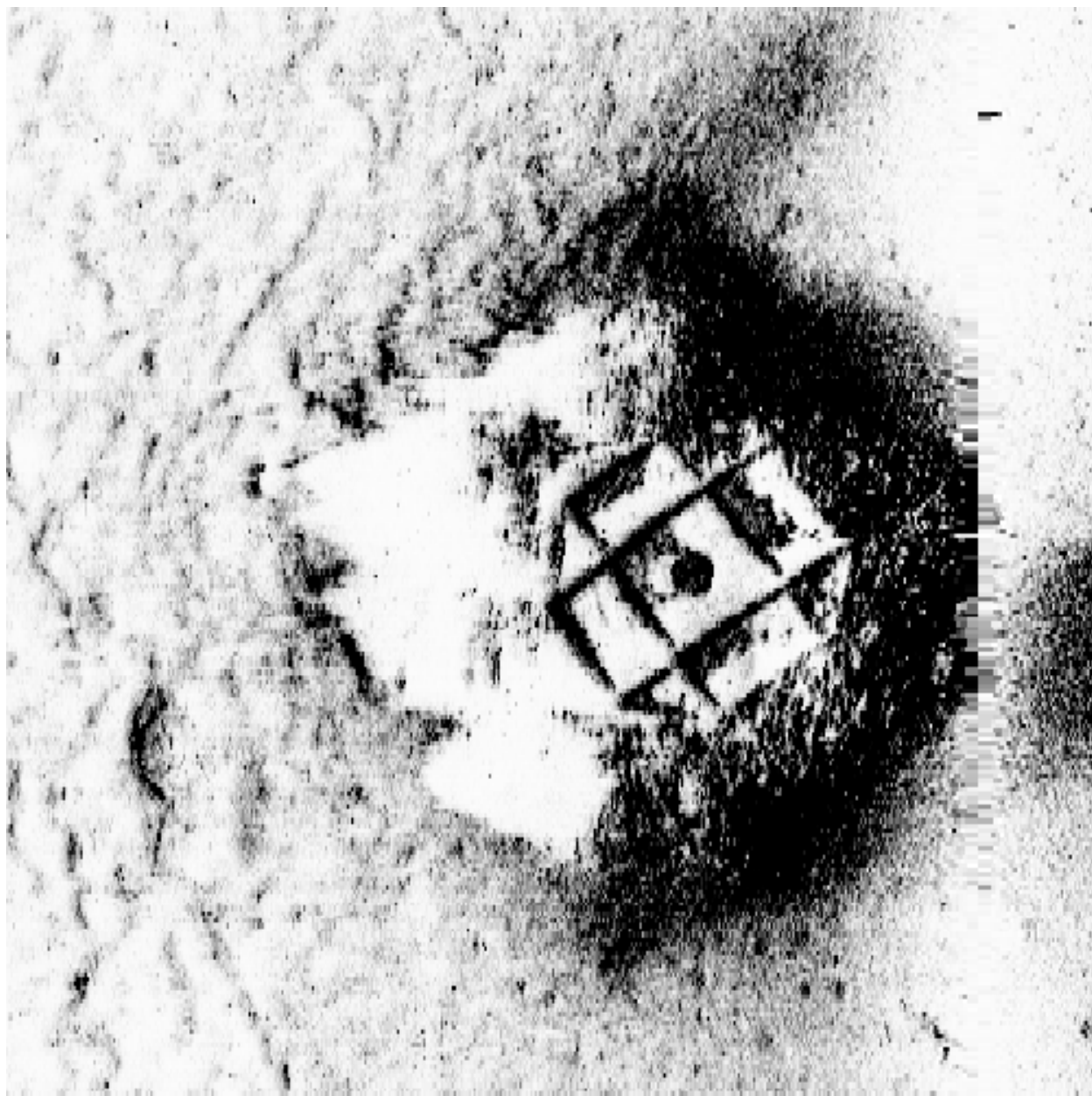
### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** CATOBS - 4:crib  
 WATLEV - 3:always under water/submerged

### Office Notes

Concur. Inadequate bathymetric development does not allow F00542 data to supersede or validate the crib's least depth. Recommend to retain chart notation "Depth over Crib 11ft" and crib location.

## Feature Images



*Figure 1.1.1*

## 1.2) 3-ft Wreck 784/1

### Survey Summary

**Survey Position:** 42° 07' 45.6" N, 080° 06' 49.0" W  
**Least Depth:** 0.86 m (= 2.83 ft = 0.472 fm = 0 fm 2.83 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-172.18:49:41.208 (06/21/2007)  
**Survey Line:** f00542 / 3001sb / 2007-172 / 201\_1848  
**Profile/Beam:** 784/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

Charted Subm Wk. Field party was unable to acquire SSS data in this area d/t shallow depths. Wk was seen in VBES data. LD of 0.863m was acquired. Ht of approx 2m was seen in VBES trace. A lot of sea grass exists in this area.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-172/201_1848	784/1	0.00	000.0	Primary

### Hydrographer Recommendations

Hydrographer recommends retaining Subm Wk as charted. Hydrographer also recommends charting current surrounding surveyed depths.

#### Cartographically-Rounded Depth (Affected Charts):

3ft (14835\_1, 14824\_1, 14838\_1)

0 ½fm (14500\_1)

.9m (14828\_1, 14820\_1)

### S-57 Data

**Geo object 1:** Wreck (WRECKS)  
**Attributes:** CATWRK - 2:dangerous wreck  
 OBJNAM - 3-ft Wreck  
 QUASOU - 1:depth known  
 SORDAT - 20070622

SORIND - US,US,nsurf,F00542

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

VALSOU - 0.863 m

WATLEV - 3:always under water/submerged

## Office Notes

VBES sounding data indicates the least depth of wreck is 0.863m (2.831-ft) Chart 3-ft dangerous sunken wreck at the surveyed location in 42°07'45.584"N, 080°06'49.012"W. Recommend to delete wreck charted located in 42°07'45.382"N, 080°06'50.182"W.



## DR Appendix 2 DR Uncharted

**Registry Number:** F00542  
**State:** Pennsylvania  
**Locality:** Lake Erie  
**Sub-locality:** Presque Isle Bay  
**Project Number:** S-W904-NRT4-07  
**Survey Dates:** 06/18/2007 - 05/21/2008

### Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
14835	32nd	05/01/2005	1:15,000 (14835_1)	USCG LNM: 05/15/2007 (11/18/2008) CHS NTM: None (10/31/2008) NGA NTM: None (11/29/2008)
14824	26th	10/01/2003	1:80,000 (14824_1)	[L]NTM: ?
14828	6th	04/01/2005	1:100,000 (14828_1)	[L]NTM: ?
14838	4th	04/01/2005	1:120,000 (14838_1)	[L]NTM: ?
14820	21st	10/01/2005	1:400,000 (14820_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	11-ft Obstrn (rep 2007) 0001	Obstruction	[None]	42° 07' 38.3" N	080° 07' 13.4" W	---
1.2	18-ft Wreck (rep 2007) 0001	Wreck	[None]	42° 08' 23.5" N	080° 07' 05.5" W	---
1.3	Foul Area (subm piles) 0004	Obstruction	[None]	42° 08' 57.0" N	080° 06' 54.7" W	---
1.4	Foul Area (NE limit of subm piles) 0005	Obstruction	[None]	42° 09' 00.2" N	080° 06' 47.9" W	---
1.5	16-ft Wk (barge) 561/1	Wreck	4.86 m	42° 08' 35.4" N	080° 07' 27.2" W	---
1.6	9-ft Rk 22784/1	Rock	2.94 m	42° 07' 25.6" N	080° 08' 02.5" W	---
1.7	10-ft Rock 3547/1	Rock	3.20 m	42° 07' 24.2" N	080° 08' 07.0" W	---
1.8	9-ft RK (rep 2007) 0003	Rock	[None]	42° 07' 27.3" N	080° 07' 60.0" W	---
1.9	8-ft Rock 23593/1	Rock	2.66 m	42° 07' 21.8" N	080° 08' 05.4" W	---
1.10	10-ft Rock 4331/1	Rock	3.07 m	42° 07' 21.7" N	080° 08' 09.9" W	---

1.11	9-ft Rock 4923/1	Rock	2.67 m	42° 07' 23.0" N	080° 08' 06.3" W	---
1.12	18-ft Wreck 4406/1	Wreck	5.69 m	42° 08' 36.7" N	080° 06' 52.4" W	---

## **1 - DR Appendix 2 UnCharted**

## 1.1) 11-ft Obstrn (rep 2007) 0001

### Survey Summary

**Survey Position:** 42° 07' 38.3" N, 080° 07' 13.4" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2007-206.01:42:30 (07/25/2007)  
**Survey Line:** f00542 / 3001sss500k / 2007-169 / e070618063200  
**Contact/Point:** 0001/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

Rock 1.05m height in 14ft depth. Rock not determined to be significant until post-processing, after NRT4 already left the survey area. Rock not investigated by field party at time of survey, so no least depth obtained.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sss500k/2007-169/e070618063200	0001	0.00	000.0	Primary

### Hydrographer Recommendations

After post-processing and discussions with AHB, hydrographer recommends charting rock with reported depth and charting current surveyed soundings.

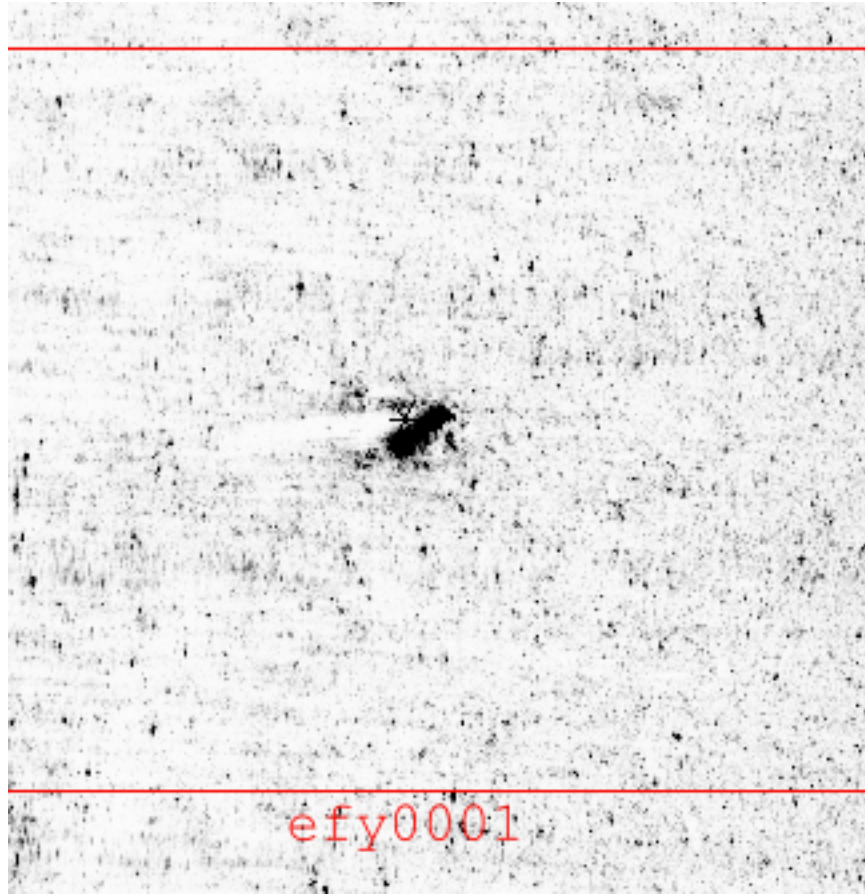
### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** OBJNAM - 11-ft Obstrn  
 QUASOU - 9:value reported (not confirmed)  
 SORDAT - 20070622  
 SORIND - US,US,survey,F00542  
 TECSOU - 2:found by side scan sonar  
 WATLEV - 3:always under water/submerged

## Office Notes

Concur with clarification. The feature was not interpreted as a rock during verification. The feature is interpreted as an obstruction based upon the straight edges and square corners as portrayed in the SS imagery. The feature was not developed for a least depth during survey operations. Recommend to chart 11-ft Obstn (rep 2007) located in  $42^{\circ}07'38.267''\text{N}$ ,  $080^{\circ}07'13.385''\text{W}$ . The reported depth is estimated using the shadow height (height off the sea floor) minus the water depth within the immediate area. Shadow height was measured as 0.92m above the seafloor. The estimated depth is 3.407m (11.17-ft).

## Feature Images



*Figure 1.1.1*

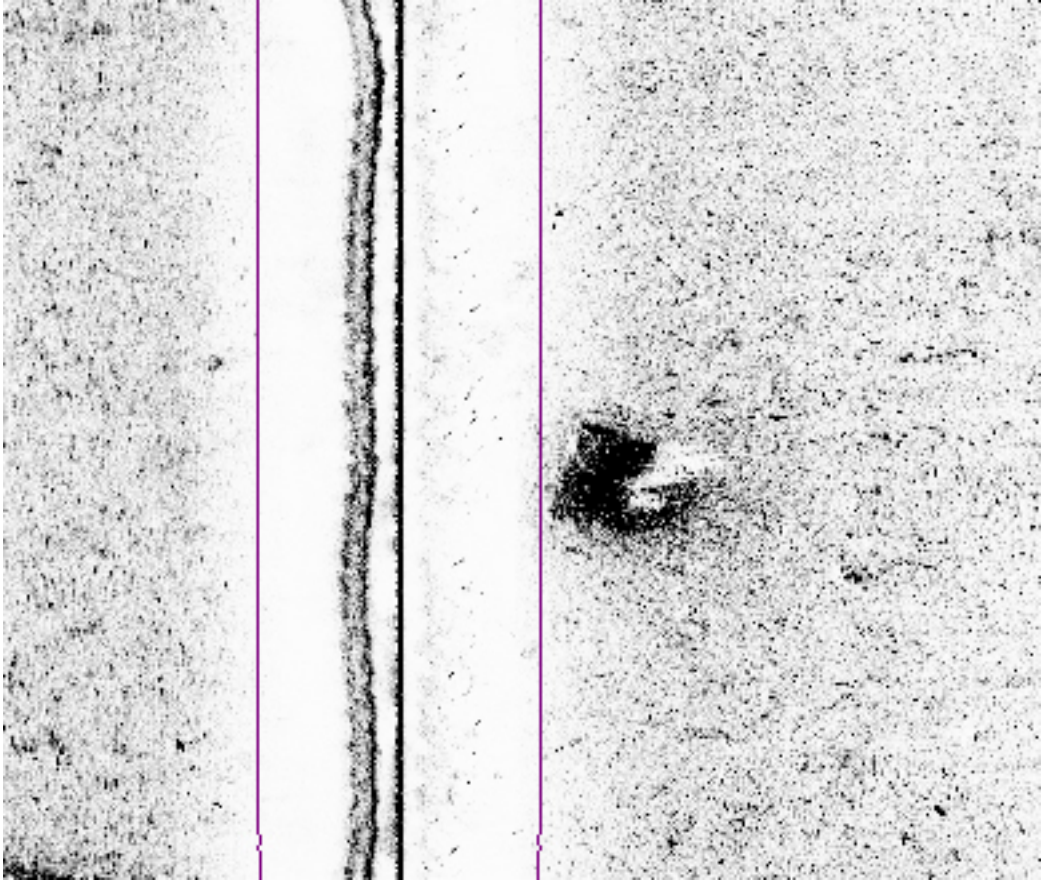


Figure 1.1.2

## 1.2) 18-ft Wreck (rep 2007) 0001

### Survey Summary

**Survey Position:** 42° 08' 23.5" N, 080° 07' 05.5" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2007-206.03:01:56 (07/25/2007)  
**Survey Line:** f00542 / 3001sss500k / 2007-170 / e070619060500  
**Contact/Point:** 0001/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

Small subm wreck. Approx 13 m long. Shadow measures 0.52m height. Possible pleasure craft. Not investigated by field party, therefore LD not obtained.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sss500k/2007-170/e070619060500	0001	0.00	000.0	Primary
f00542/3001sss500k/2007-171/e070620074500	0001	14.81	244.3	Secondary

### Hydrographer Recommendations

Hydrographer recommends charting Subm Wk PA and current surveyed soundings.

### S-57 Data

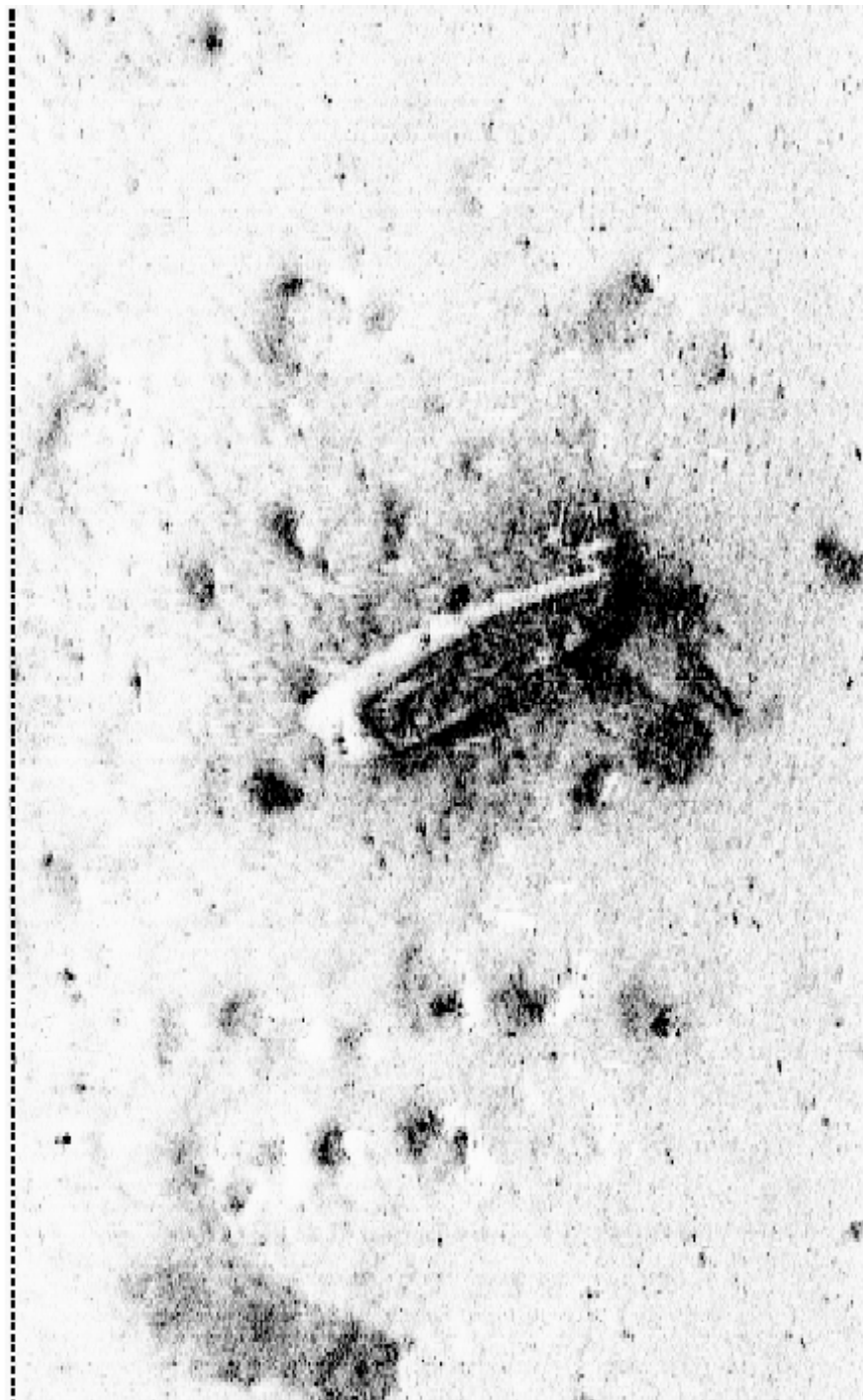
**Geo object 1:** Wreck (WRECKS)  
**Attributes:** CATWRK - 2:dangerous wreck  
 OBJNAM - 18-ft Wk (rep 2007)  
 QUASOU - 9:value reported (not confirmed)  
 SORDAT - 20070622  
 SORIND - US,US,survey,F00542  
 TECSOU - 2:found by side scan sonar  
 WATLEV - 3:always under water/submerged



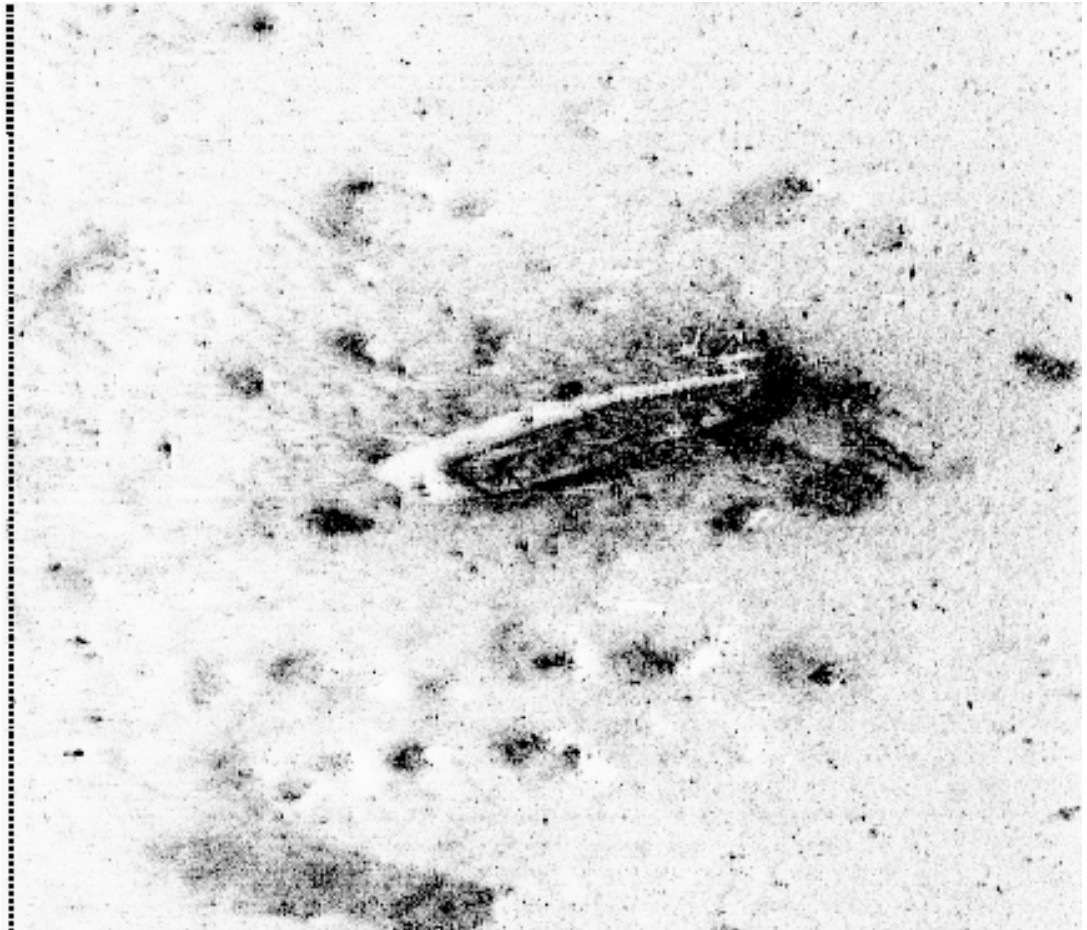
## Office Notes

Concur with clarification. Recommend to chart 18-ft Wreck (rep 2007) located in 42°08'23.686"N, 080°07'5.675"W. The reported depth of 5.5m (18.04-ft) is estimated based upon the side scan shadow height (height off the sea floor) subtracted from the shoalest VBES depths within the common area.

## Feature Images



*Figure 1.2.1*



*Figure 1.2.2*

### 1.3) Foul Area (subm piles) 0004

#### Survey Summary

**Survey Position:** 42° 08' 57.0" N, 080° 06' 54.7" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2007-285.04:15:42 (10/12/2007)  
**Survey Line:** f00542 / 3001sss500k / 2007-171 / e070620051000  
**Contact/Point:** 0004/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

Western point of series of subm piles. Shadow meas >1m. Not investigated by field party.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sss500k/2007-171/e070620051000	0004	0.00	000.0	Primary

#### Hydrographer Recommendations

Hydrographer recommends charting area as Foul w/ Subm Piles. Hydrographer also recommends charting current surveyed soundings.

#### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** CATOBS - 6:foul area  
 INFORM - Foul Area (subm piles)  
 QUASOU - 2:depth unknown  
 SORDAT - 20070622  
 SORIND - US,US,survey,F00542  
 TECSOU - 2:found by side scan sonar  
 WATLEV - 3:always under water/submerged

## Office Notes

AHB concurs w/ the field. Chart foul area with limits as portrayed in F00542 H-cell (Obstn area object), depth unknown.

### Feature Images



*Figure 1.3.1*

## 1.4) Foul Area (NE limit of subm piles) 0005

### Survey Summary

**Survey Position:** 42° 09' 00.2" N, 080° 06' 47.9" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2007-285.04:16:35 (10/12/2007)  
**Survey Line:** f00542 / 3001sss500k / 2007-171 / e070620051000  
**Contact/Point:** 0005/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

Eastern point of series of subm piles. Shadow meas >1m. Not investigated by field party.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sss500k/2007-171/e070620051000	0005	0.00	000.0	Primary

### Hydrographer Recommendations

Hydrographer recommends charting area as Foul w/ Subm Piles. Hydrographer also recommends charting current surveyed soundings.

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** INFORM - Foul area (subm piles)  
 QUASOU - 2:depth unknown  
 SORDAT - 20070622  
 SORIND - US,US,survey,F00542  
 TECSOU - 2:found by side scan sonar  
 WATLEV - 3:always under water/submerged

## Office Notes

AHB concurs w/ the field.



### Feature Images



Figure 1.4.1

## 1.5) 16-ft Wk (barge) 561/1

### Survey Summary

**Survey Position:** 42° 08' 35.4" N, 080° 07' 27.2" W  
**Least Depth:** 4.86 m (= 15.94 ft = 2.657 fm = 2 fm 3.94 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-173.15:10:46.900 (06/22/2007)  
**Survey Line:** f00542 / 3001sb / 2007-173 / 002\_1510  
**Profile/Beam:** 561/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

#### Remarks:

Wreck 1m height. Investigated by VBES in a start shaped pattern. From VBES trace, Wk. appears to be approx 1.5 m high and is sitting in a hole. Manager at local marina informed field party that wreck could possibly be a barge that sank during construction on nearby crib.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-173/002_1510	561/1	0.00	000.0	Primary
f00542/3001sss500k/2007-171/e070620055600	0002	5.35	095.6	Secondary
f00542/3001sss500k/2007-171/e070620034600	0001	7.73	102.3	Secondary

### Hydrographer Recommendations

Hydrographer recommends charting Subm Wk and current surveyed soundings.

#### Cartographically-Rounded Depth (Affected Charts):

16ft (14835\_1, 14824\_1, 14838\_1)

2 ½fm (14500\_1)

4.9m (14828\_1, 14820\_1)

### S-57 Data

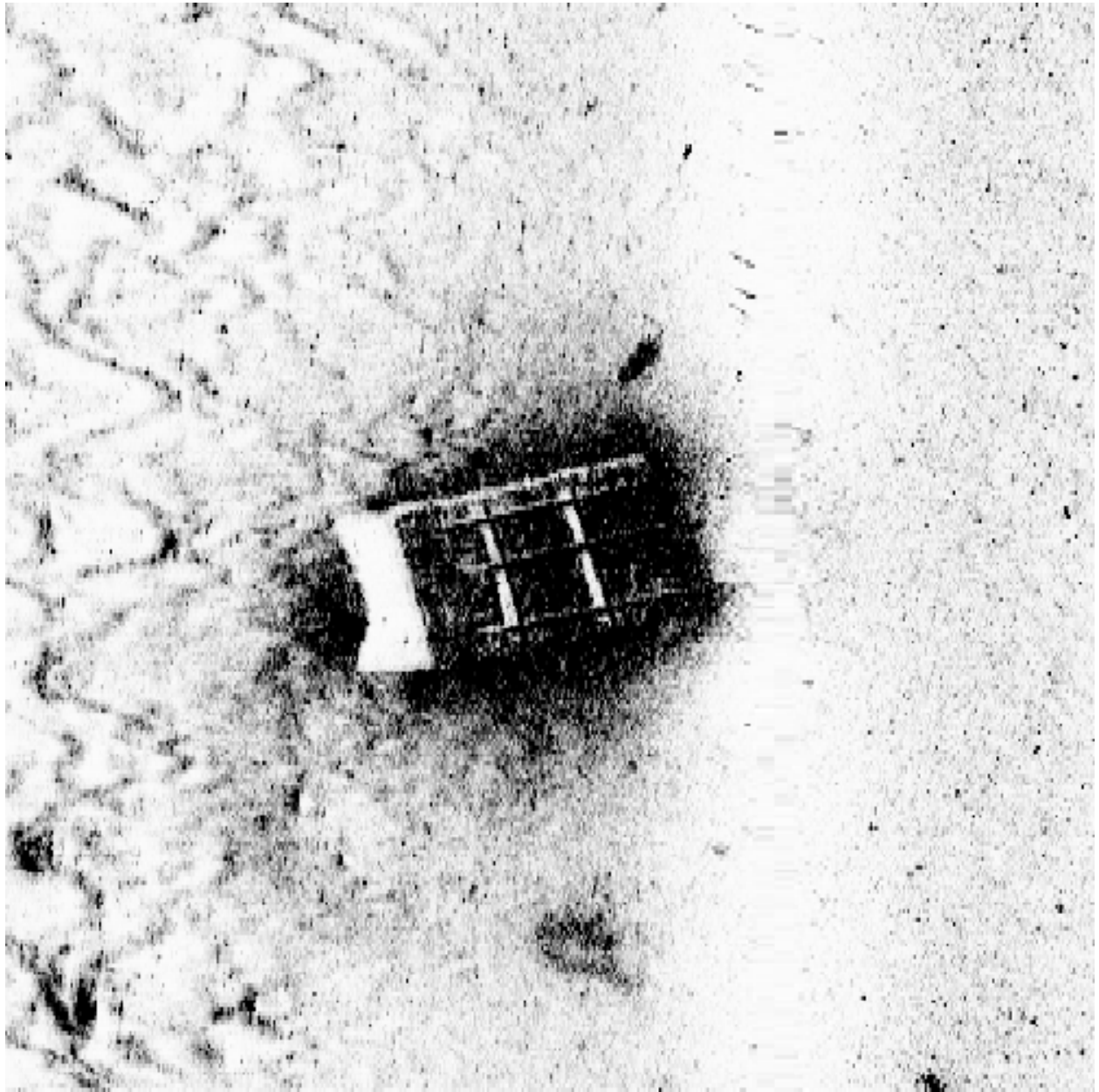
**Geo object 1:** Wreck (WRECKS)  
**Attributes:** CATWRK - 2:dangerous wreck  
 CONVIS - 2:not visual conspicuous  
 INFORM - barge

PICREP - e07062000002\_s.tif  
QUASOU - 6:least depth known  
SORDAT - 20070622  
SORIND - US,US,nsurf,F00542  
STATUS - 1:permanent  
TECSOU - 1,2:found by echo-sounder,found by side scan sonar  
VALSOU - 4.859 m  
VERDAT - 13:Low water  
WATLEV - 3:always under water/submerged

### **Office Notes**

Concur. Chart 16-ft (4.859m (15.942-ft)) Wreck at the surveyed location.

## Feature Images



*Figure 1.5.1*

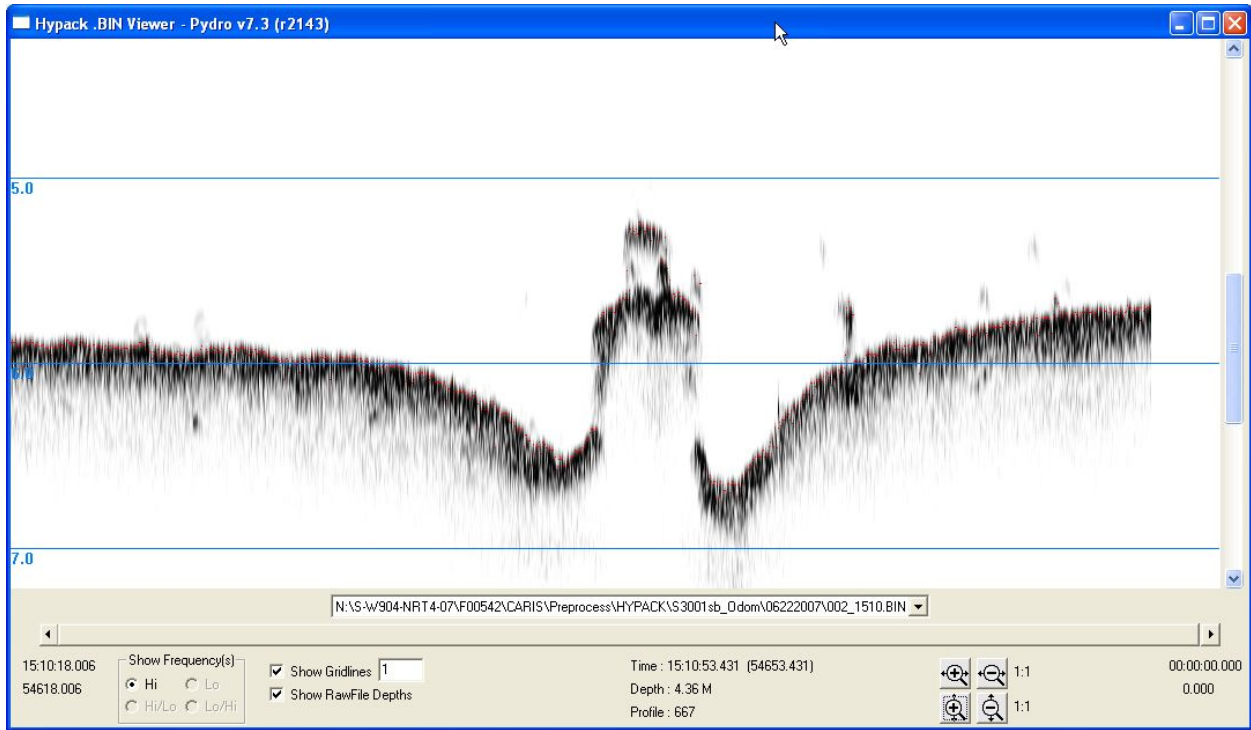


Figure 1.5.2

**1.6) 9-ft Rk 22784/1****Survey Summary**

**Survey Position:** 42° 07' 25.6" N, 080° 08' 02.5" W  
**Least Depth:** 2.94 m (= 9.63 ft = 1.605 fm = 1 fm 3.63 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-170.13:05:58.846 (06/19/2007)  
**Survey Line:** f00542 / 3001sb / 2007-170 / 102\_1245  
**Profile/Beam:** 22784/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-170/102_1245	22784/1	0.00	000.0	Primary
f00542/3001sss500k/2007-172/e070621063000	0001	2.68	212.9	Secondary
f00542/3001sss500k/2007-170/e070619010100	0004	8.79	009.9	Secondary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

9ft (14835\_1, 14824\_1)

1 ½fm (14500\_1)

2.9m (14828\_1, 14820\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** OBJNAM - 9-ft Rock  
 QUASOU - 1:depth known  
 SORDAT - 20070622  
 SORIND - US,US,nsurf,F00542

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

VALSOU - 2.936 m

WATLEV - 3:always under water/submerged

### **Office Notes**

Feature noted during verification as documented with VBES bathy and SSS data. Least depth is 2.936m (9.633-ft). Recommend to chart 9-ft rock at surveyed location.

### Feature Images

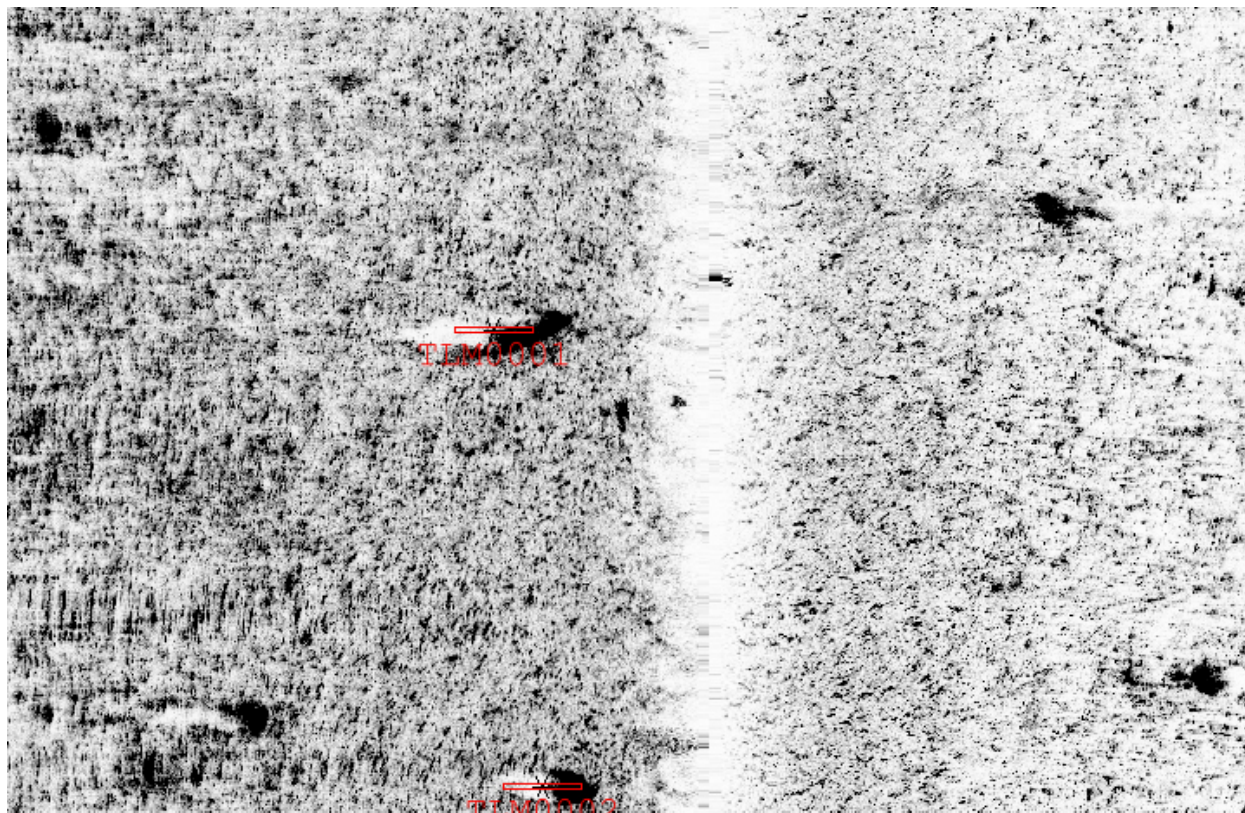


Figure 1.6.1



**1.7) 10-ft Rock 3547/1****Survey Summary**

**Survey Position:** 42° 07' 24.2" N, 080° 08' 07.0" W  
**Least Depth:** 3.20 m (= 10.50 ft = 1.750 fm = 1 fm 4.50 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm$ -1.000 m ; **TVU (TPEv)**  $\pm$ -1.000 m  
**Timestamp:** 2007-170.13:06:39.368 (06/19/2007)  
**Survey Line:** f00542 / 3001sb / 2007-170 / 102\_1245  
**Profile/Beam:** 23547/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-170/102_1245	23547/1	0.00	000.0	Primary
f00542/3001sss500k/2007-170/e070619010100	0001	14.41	309.6	Secondary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

10ft (14835\_1, 14824\_1)

1  $\frac{3}{4}$ fm (14500\_1)

3.2m (14828\_1, 14820\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** OBJNAM - 10-ft Rock  
 QUASOU - 1:depth known  
 SORDAT - 20070622  
 SORIND - US,US,nsurf,F00542  
 TECSOU - 1,2:found by echo-sounder,found by side scan sonar

VALSOU - 3.200 m

WATLEV - 3:always under water/submerged

### **Office Notes**

Recommend to chart rock 3.20m (10.499-ft). Chart 10-ft Rock at the surveyed location.

### Feature Images



Figure 1.7.1

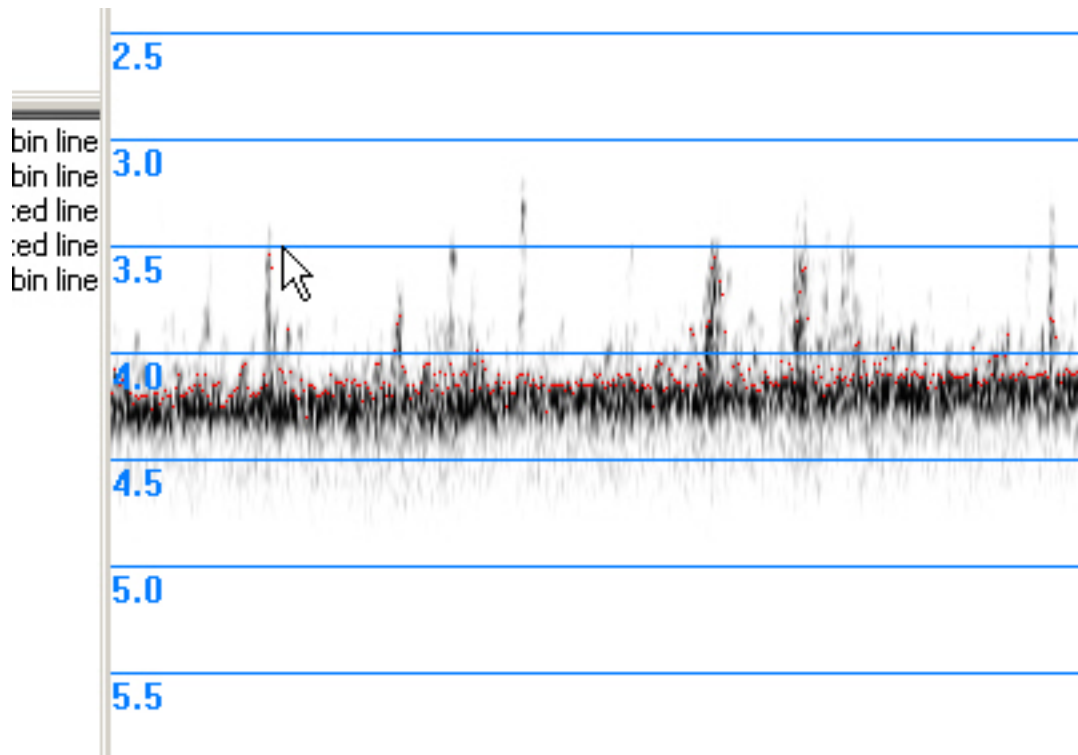


Figure 1.7.2

**1.8) 9-ft RK (rep 2007) 0003****Survey Summary**

**Survey Position:** 42° 07' 27.3" N, 080° 07' 59.962" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)** [None] ; **TVU (TPEv)** [None]  
**Timestamp:** 2008-142.06:50:37 (05/21/2008)  
**Survey Line:** f00542 / 3001sss500k / 2007-170 / e070619010100  
**Contact/Point:** 0003/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14820\_1, 14500\_1

**Remarks:**

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sss500k/2007-170/e070619010100	0003	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** OBJNAM - 9-ft Rk (rep 2007)  
 QUASOU - 9:value reported (not confirmed)  
 SORDAT - 20070622  
 SORIND - US,US,survey,F00542  
 TECSOU - 2:found by side scan sonar  
 VERDAT - 13:Low water  
 WATLEV - 3:always under water/submerged

**Office Notes**

Chart 2.9m (9.514-ft) rock. Chart as 9-ft Rk (rep 2007) at the surveyed location. Depth of rock is estimated sourcing side scan. The reported depth is estimated using the shadow height (height off the sea floor) minus the water depth

within the immediate area.

## 1.9) 8-ft Rock 23593/1

### Survey Summary

**Survey Position:** 42° 07' 21.8" N, 080° 08' 05.4" W  
**Least Depth:** 2.66 m (= 8.74 ft = 1.456 fm = 1 fm 2.74 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-169.18:37:03.749 (06/18/2007)  
**Survey Line:** f00542 / 3001sb / 2007-169 / 101\_1816  
**Profile/Beam:** 23593/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-169/101_1816	23593/1	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

**Cartographically-Rounded Depth (Affected Charts):**

8ft (14835\_1, 14824\_1)

1 ½fm (14500\_1)

2.7m (14828\_1, 14820\_1)

### S-57 Data

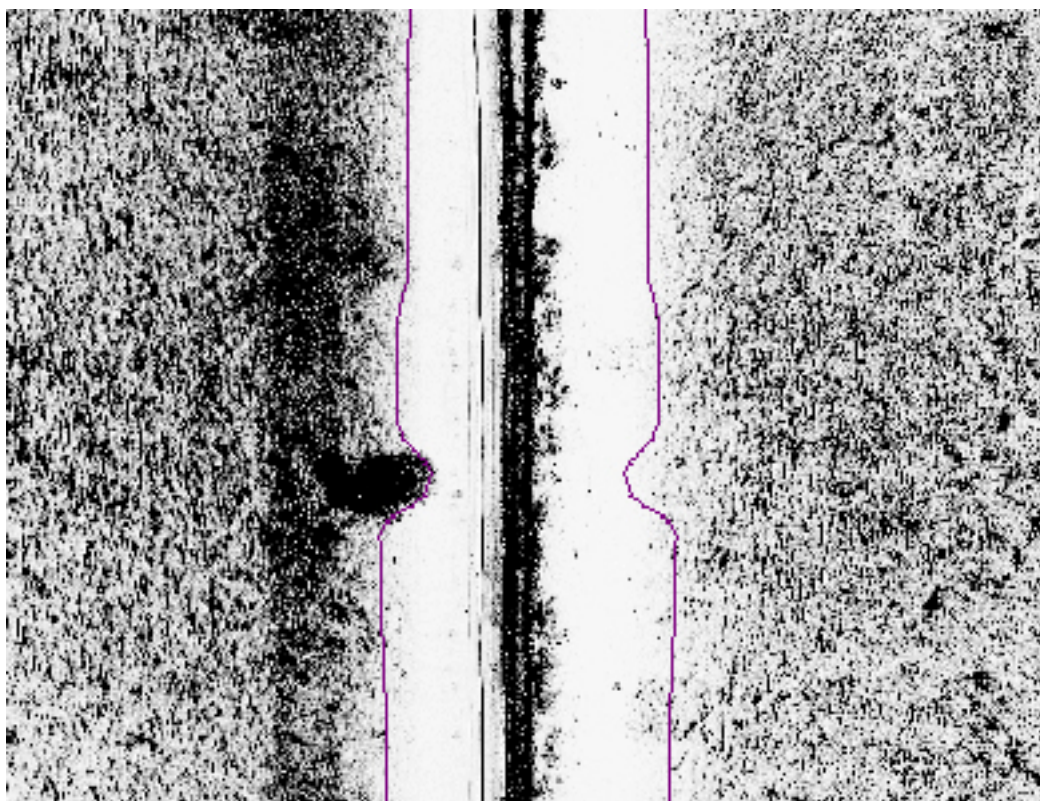
**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** OBJNAM - 8-ft Rk  
 QUASOU - 1:depth known  
 SORDAT - 20070622  
 SORIND - US,US,nsurf,F00542  
 TECSOU - 1,2:found by echo-sounder,found by side scan sonar  
 VALSOU - 2.663 m

WATLEV - 3:always under water/submerged

## Office Notes

Rock noted during bathy data verification. Recommended to chart 8-ft rock due located in 42°07'21.838"N, 080°08'5.449"W.

### Feature Images



*Figure 1.9.1*



**1.10) 10-ft Rock 4331/1****Survey Summary**

**Survey Position:** 42° 07' 21.7" N, 080° 08' 09.9" W  
**Least Depth:** 3.07 m (= 10.07 ft = 1.679 fm = 1 fm 4.07 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm$ -1.000 m ; **TVU (TPEv)**  $\pm$ -1.000 m  
**Timestamp:** 2007-172.18:17:51.650 (06/21/2007)  
**Survey Line:** f00542 / 3001sb / 2007-172 / 203\_1814  
**Profile/Beam:** 4331/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-172/203_1814	4331/1	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

10ft (14835\_1, 14824\_1)

1 ½fm (14500\_1)

3.1m (14828\_1, 14820\_1)

**S-57 Data**

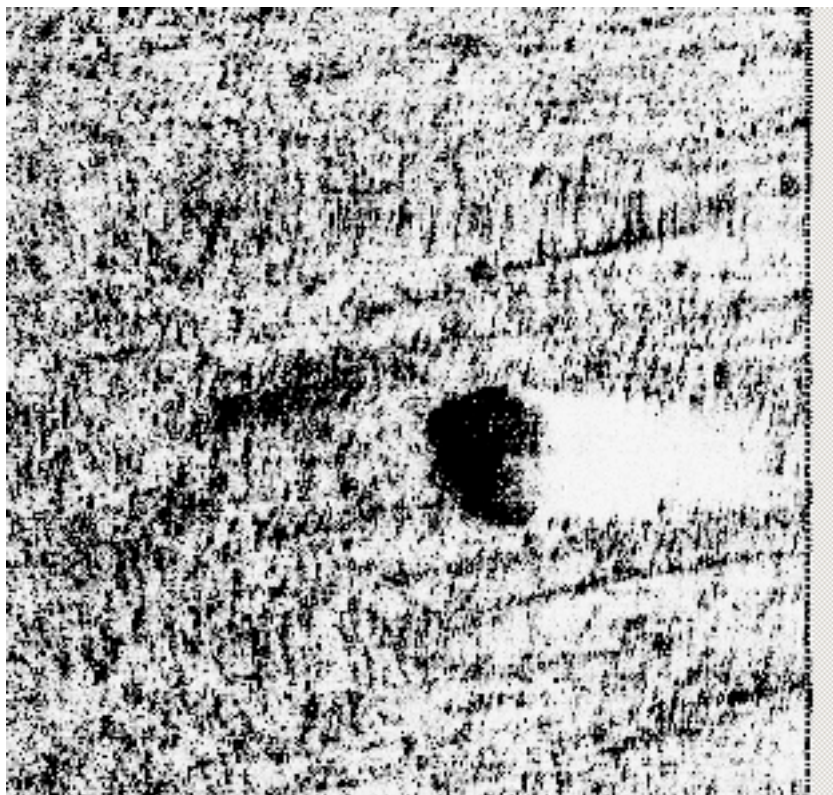
**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** OBJNAM - 10-ft Rock  
 QUASOU - 1:depth known  
 SORDAT - 20070622  
 SORIND - US,US,nsurf,F00542  
 TECSOU - 1,2:found by echo-sounder,found by side scan sonar  
 VALSOU - 3.070 m

WATLEV - 3:always under water/submerged

## **Office Notes**

Bathy data verification noted a rock with a depth known of 3.070m (10.072-ft). Recommend to chart a 10-ft Rock at the surveyed location.

## Feature Images



*Figure 1.10.1*

**1.11) 9-ft Rock 4923/1****Survey Summary**

**Survey Position:** 42° 07' 23.0" N, 080° 08' 06.3" W  
**Least Depth:** 2.67 m (= 8.78 ft = 1.463 fm = 1 fm 2.78 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.000$  m ; **TVU (TPEv)**  $\pm 1.000$  m  
**Timestamp:** 2007-172.18:18:23.101 (06/21/2007)  
**Survey Line:** f00542 / 3001sb / 2007-172 / 203\_1814  
**Profile/Beam:** 4923/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-172/203_1814	4923/1	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

9ft (14835\_1, 14824\_1)

1 ½fm (14500\_1)

2.7m (14828\_1, 14820\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** OBJNAM - 9-ft Rk  
 QUASOU - 1:depth known  
 TECSOU - 1,2:found by echo-sounder,found by side scan sonar  
 VALSOU - 2.675 m

## Office Notes

Bathy data verification noted a rock with a depth known of 2.675m (8.776-ft). Recommend to chart a 9-ft Rock at the surveyed location.

## 1.12) 18-ft Wreck 4406/1

### Survey Summary

**Survey Position:** 42° 08' 36.7" N, 080° 06' 52.4" W  
**Least Depth:** 5.69 m (= 18.68 ft = 3.114 fm = 3 fm 0.68 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm$ -1.000 m ; **TVU (TPEv)**  $\pm$ -1.000 m  
**Timestamp:** 2007-173.13:52:08.019 (06/22/2007)  
**Survey Line:** f00542 / 3001sb / 2007-173 / 013\_1348  
**Profile/Beam:** 4406/1  
**Charts Affected:** 14835\_1, 14824\_1, 14828\_1, 14838\_1, 14820\_1, 14500\_1

**Remarks:**

[None]

### Feature Correlation

Address	Feature	Range	Azimuth	Status
f00542/3001sb/2007-173/013_1348	4406/1	0.00	000.0	Primary
f00542/3001sss500k/2007-171/e070620065100	0001	1.40	311.0	Secondary
f00542/3001sss500k/2007-171/e070620030000	0001	11.23	073.6	Secondary

### Hydrographer Recommendations

[None]

**Cartographically-Rounded Depth (Affected Charts):**

18ft (14835\_1, 14824\_1, 14838\_1)

3fm (14500\_1)

5.7m (14828\_1, 14820\_1)

### S-57 Data

**Geo object 1:** Wreck (WRECKS)  
**Attributes:** CATWRK - 2:dangerous wreck  
 INFORM - wreck  
 QUASOU - 1:depth known  
 SORDAT - 20070622

SORIND - US,US,nsurf,F00542

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

VALSOU - 5.694 m

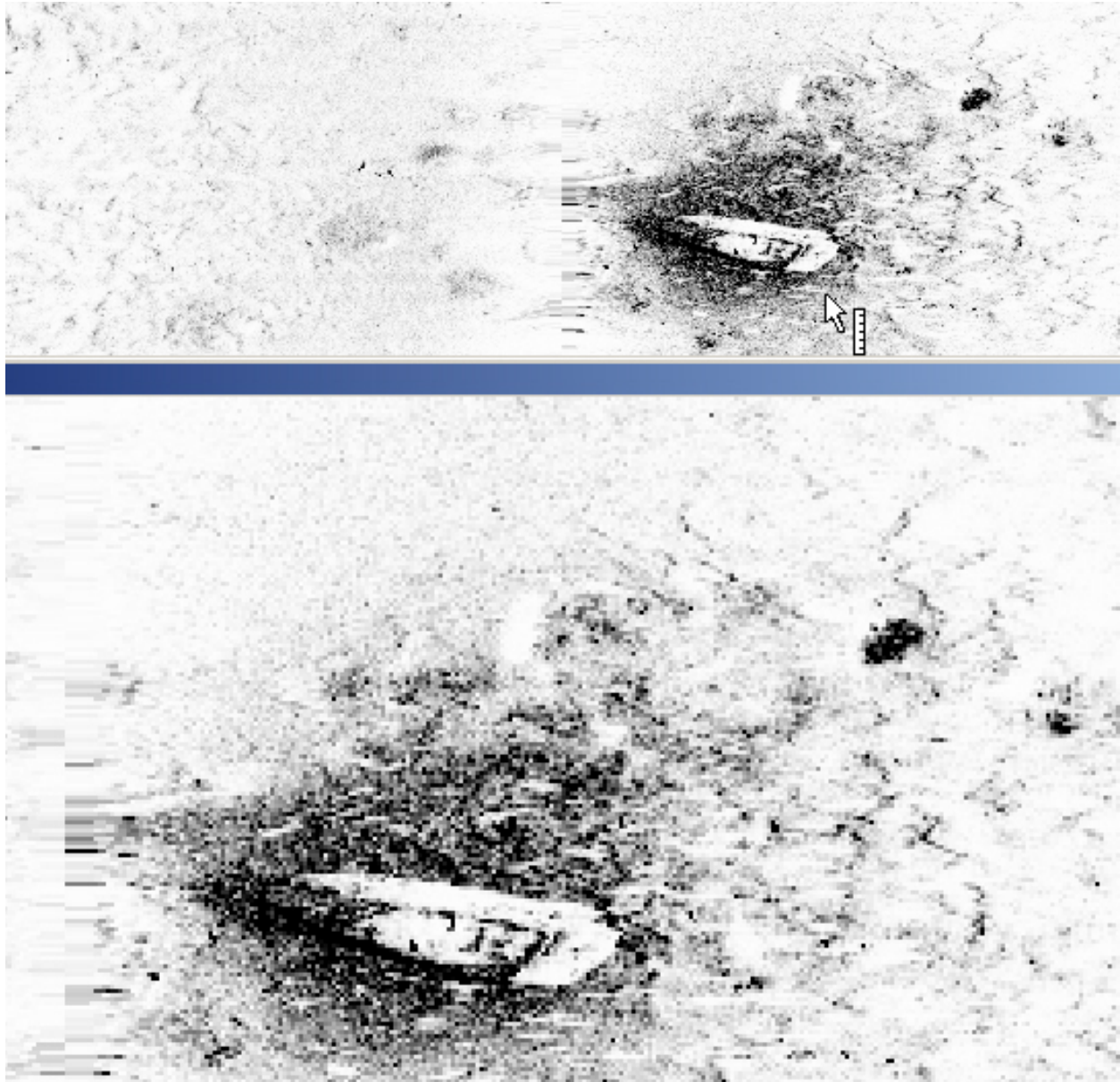
VERDAT - 13:Low water

WATLEV - 3:always under water/submerged

## Office Notes

Office review indicates this feature is a sunken wreck. Height above the sea floor is 1.42m. Recommend to chart 18-ft (5.694m) Wreck located in 42°08'36.689"N, 080°06'52.372"W. The depth acquired sources VBES crossline sounding data. The wreck was not developed and is considered as incomplete bathymetric coverage for least depth determination. The feature is attributed as depth known, as opposed to least depth known.

### Feature Images



*Figure 1.12.1*



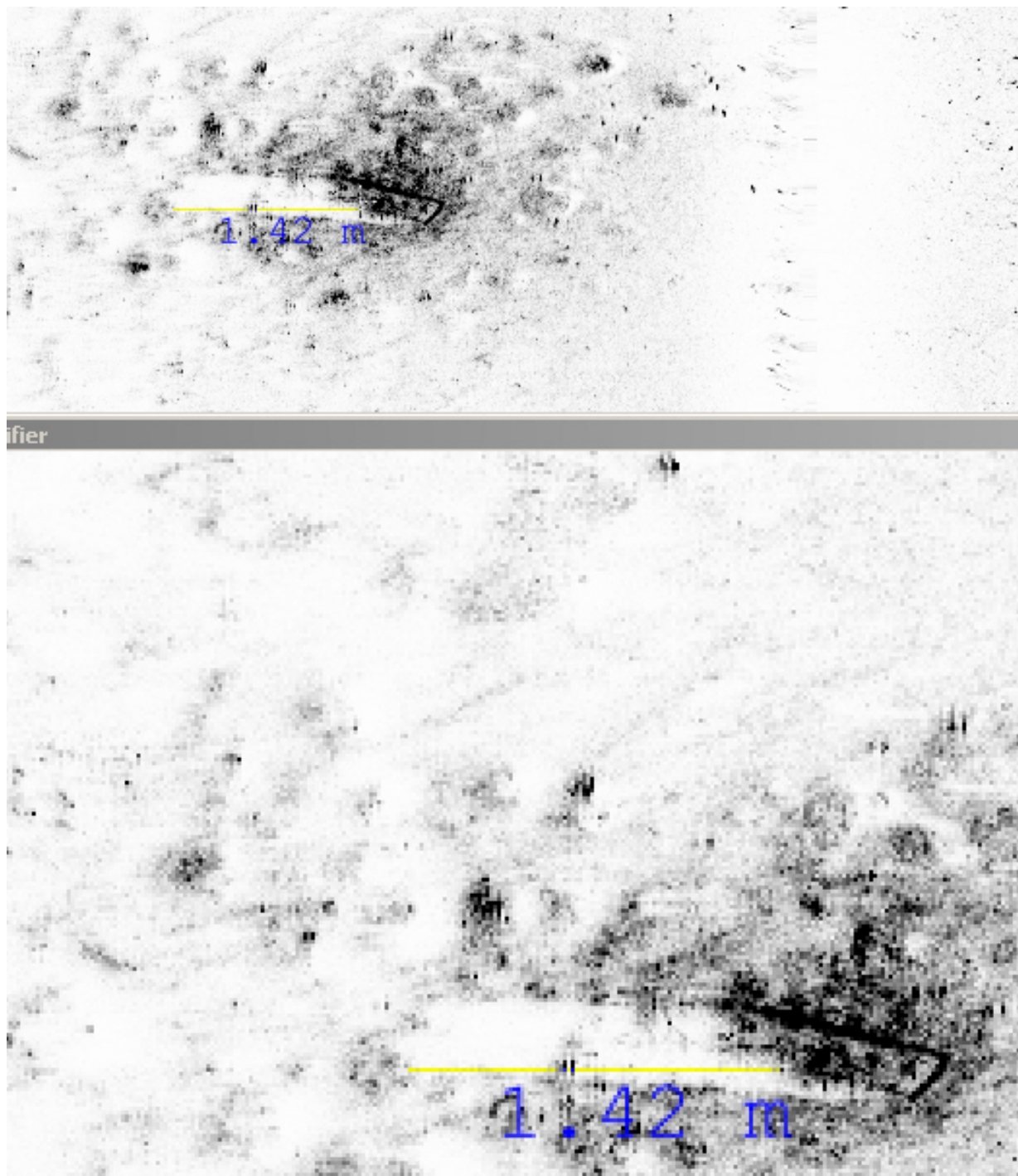
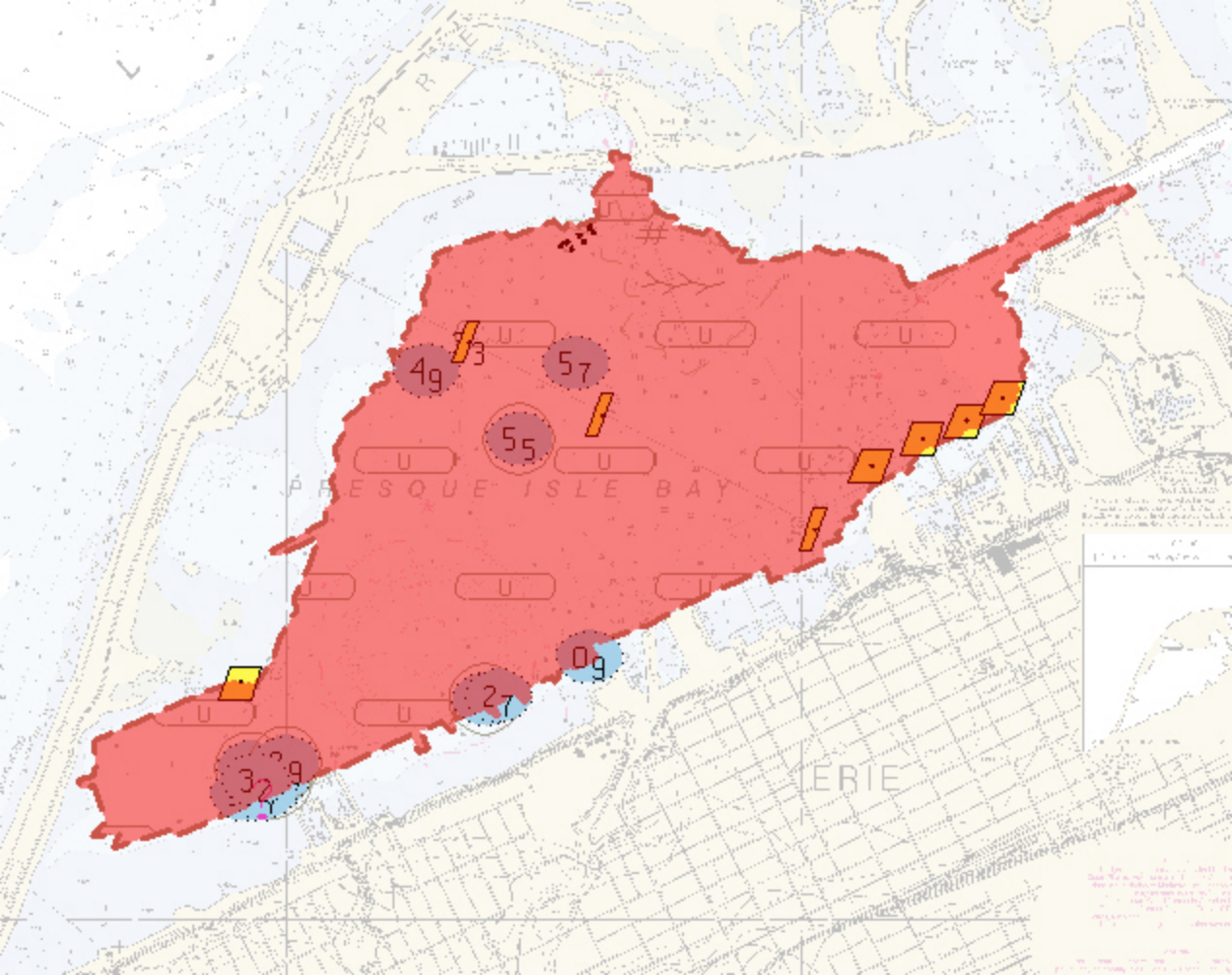


Figure 1.12.2





UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NOAA NRT-4 (N/CS53x4)  
12295 State Hwy 180, c/o Bon Secour NWR  
Gulf Shores, AL 36542

October 15, 2007

MEMORANDUM FOR: Chief, Requirements and Development Division, N/OPS1

FROM: Lucy Massimillo, NOAA NRT-4 (N/CS53x4)

SUBJECT: Request for Approved Tides/Water Levels

Please provide the following data:

1. Tide Note
2. Final zoning in MapInfo and .MIX format
3. Six Minute Water Level data (Co-ops web site)

Transmit data to the following:

NOAA/NOS/Atlantic Hydrographic Branch  
N/CS33, Building #2  
439 West York Street  
Norfolk, VA 23510  
ATTN: Chief AHB

NOAA NRT4  
c/o USACE Ohio Area Office  
1035 E Ninth St.  
Cleveland, OH 44114-1003  
(216) 583-0845

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

Project No.: S-W904-NRT4-07  
Registry No.: F00542  
State: Pennsylvania  
Locality: Lake Erie  
Sublocality: Presque Isle Bay

Attachments containing:

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

cc: N/CS33  
N/CS53x4



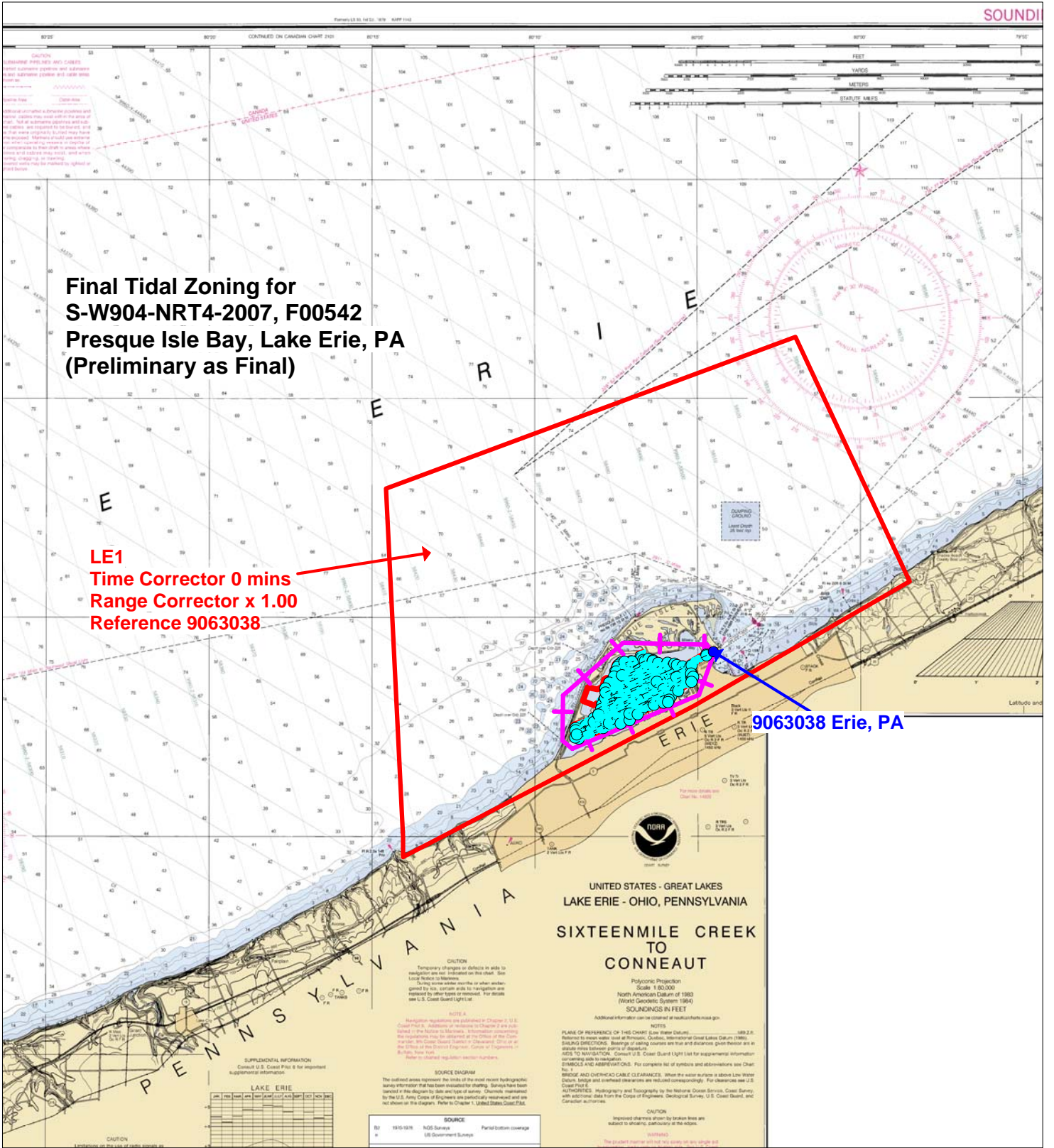
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Year_DOY	Min Time	Max Time
2007_169	18:06:15	20:59:14
2007_170	12:45:48	18:10:13
2007_171	13:27:00	20:40:14
2007_172	12:45:22	20:02:59
2007_173	12:50:09	15:16:18



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





**Final Tidal Zoning for  
S-W904-NRT4-2007, F00542  
Presque Isle Bay, Lake Erie, PA  
(Preliminary as Final)**

**LE1**  
Time Corrector 0 mins  
Range Corrector x 1.00  
Reference 9063038

**9063038 Erie, PA**

UNITED STATES - GREAT LAKES  
LAKE ERIE - OHIO, PENNSYLVANIA  
**SIXTEENMILE CREEK  
TO  
CONNEAUT**



Polyconic Projection  
Scale: 1:80,000  
North American Datum of 1983  
(World Geodetic System 1984)  
SOUNDINGS IN FEET

**CAUTION**  
Temporary changes or deficits in aids to navigation are not indicated on this chart. See Local Notice to Mariners.  
Sounding lines under currents or when modified by tide, current, or other factors are indicated by other types or notations. For details see U.S. Coast Guard Light List.

**NOTE**  
Navigation regulations are published in Chapter 11 of the U.S. Coast Pilot 8, Addenda or referred to Chapter 2 and indicated in the Notice to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, the Coast Guard Station in Cleveland, Ohio, or at the Office of the District Engineer, Coast of Engineers or 8th, New York.  
Refer to chapter regulation section numbers.

**SOURCE DIAGRAM**  
The soundings were derived from the data of the most recent hydrographic survey information that has been received by charting. Soundings have been sounded in this diagram by date and type of sound. Channels measured by the U.S. Army Corps of Engineers are indicated by dashed lines and are not shown in this diagram. Refer to Chapter 1, United States Coast Pilot.

**SOURCE**  
By: 1975-1978 NGS Survey Partial bottom coverage  
U.S. Government Survey

**SUPPLEMENTAL INFORMATION**  
Consult U.S. Coast Pilot 8 for important supplemental information.

Unit	Mean	Low	Very Low	Lowest	Mean	High	Very High	Highest
ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**LAKE ERIE**

**NOTES**  
PLANE OF REFERENCE ON THIS CHART IS LOW WATER DATUM. 1885 Z.P. Returns to mean water level at Toronto, Quebec, International Great Lakes Datum (1985).  
SOUNDING DIRECTIONS: Bearings of sailing courses are true and distance given in feet as a straight line between points of departure.  
AIDS TO NAVIGATION: Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.  
EMERGENCY AND ABERRATIONS: For complete list of symbols and abbreviations see Chart No. 1.  
BRIDGE AND OVERHEAD CABLE CLEARANCES: When the water surface is above Low Water Datum, bridge and overhead clearances are reduced correspondingly. For clearances see U.S. Coast Pilot 8.  
HYDROGRAPHY AND TOPOGRAPHY by the National Ocean Service, Coast Survey, with additional data from the Corps of Engineers, Geological Survey, U.S. Coast Guard, and Canadian authorities.  
**CAUTION**  
Improved channels shown by broken lines are subject to changing conditions at the bottom.  
The present number will not be given on any single or subsequent editions of this chart.

**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT to ACCOMPANY  
SURVEY F00542 (2007)**

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:

HSTP PYDRO version 9.4 r2691  
CARIS HIPS/SIPS version 6.1 SP2 HF 1-8  
CARIS Bathy Manager version 2.1 HF 1-10  
DKART INSPECTOR, version 5.0 Build 732 SP1  
CARIS HOM version 3.3  
CARIS S57 Composer version 2.0

**B.2. QUALITY CONTROL**

The submitted bathymetric grid was found to contain data gaps and shoal depths that did not accurately depict the lake's bathymetry. Certain area contained grass beds from which the echo sounder digitized and considered as the bottom of the lake. Based upon these observations, F00542's Vertical Beam Echo Sounder (VBES) data required additional processing. The bathymetric survey data contained shoal depths that had been interpreted as grass beds when compared to the raw bin file or digital graphic record. The additional processing modified the Observed Depth files to match the digital graphic record, re-applied sound velocity correction in order to re-write the Slant Range file, followed by the merge process. The edited line was then removed from the working grid, and re-inserted using a resolution of 2m. The Shoal child layer was extracted and then extended to include the depth layer for BAG format export. The Shoal and Depth child layer is equivalent to shoal biased binning.

**B.2.1. H-Cell**

AHB's source depth grid for the nautical chart update product referenced a 2m shoal biased grid. The survey scale selected soundings were extracted from the final 2m grid referencing the Shoal child layer which was extracted and extended to create the Depth child layer. The survey scale selected sounding set was extracted from the grid at an interval of 1.5mm at a 1:15,000 scale, which approximates a survey sounding interval of 22m. The final selected chart scale depths were manually selected and are a subset of the survey scale selected soundings. The bathymetric surface model was referenced when selecting the chart scale soundings, to ensure that the selected soundings honored the bathymetry within the common area.

A Triangular Irregular Network (TIN) model was generated from the Survey Sounding selection. The TIN model was shifted vertically -0.229m from which all charted depth curves were generated. The curves were utilized during chart scale sounding selection and quality assurances efforts at AHB. The depth curves are incorporated in the F00542\_SS.000 deliverable for reference only and is not meant to be portrayed on the nautical chart or ENC as submitted within the F00542\_SS.000 deliverable.

The compilation products or components (Stand Alone HOB files (SAHOB)) included all feature objects represented within the chart scale product. The H-Cell feature objects include sounding selections (SOUNDG), features (OBSTRN, WRECKS, WEDKLP, BOYSPP, UWTROC, and SBDARE), DEPARE (depth area), Meta objects (M\_COVR, M\_QUAL, M\_NSYS), and cartographic Blue Notes (\$CSYMB). The individual SAHOB files were inserted into one BASE Manager feature layer and exported to S57 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 ENCM.000 file was then converted to NOAA chart units (ENC\_CS.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 Marine Chart Division, Silver Spring, Maryland.

The F00542 CARIS H-Cell final deliverables include the following products:

F00542_CS.000 1	:15,000 Scale	F00542 H-Cell with Chart Scale Selected Soundings
F00542_SS.000	1:5,000 Scale	F00542 Selected Soundings (Survey Scale)

**B.22. Junctions**

No contemporary surveys exist for junctioning.

**C. VERTICAL AND HORIZONTAL CONTROL**

Final vertical correction processing was completed by the field unit with no additional correction required by Atlantic Hydrographic Branch. Field unit personnel 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 F00542. Sounding datum is referenced to Low Water (LWD). Vertical datum is referenced to 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. Office ENC processing of this survey required translating the datum to meet S-57 ENC requirements.



## **D. RESULTS AND RECOMMENDATIONS**

### **D.1 CHART COMPARISON**

14835, edition 32, 20050501  
Corrected through NM 05/09/2009  
Corrected through. LNM 04/28/2009  
Scale 1:15,000

#### **ENC Comparison**

#### **US5PA22M**

Erie Harbor  
Edition 7  
Application Date 2009-01-06  
Issue Date 22009-01-08  
Chart 14835

#### **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 Appendix 1 & 2 of the Descriptive Report. The following exceptions are noted:

- a. The field unit was not directed to obtain bottom samples in the Letter Instructions, therefore all charted sea bed characteristic (SBDARE) objects were retained as charted. The spatial and feature attributes of the SBDARE point features were carried forward from ENC US5PA22M.
- b. The AHB survey review process highlighted several areas which contained rocks that were not adequately addresses during the survey. Several of these underwater rocks features were located within the VBES bathymetric data after comparing the VBES raw graphic records to the side scan data. For unknown reason the field rejected a large number of shoals, primarily around the entrance to the Presque Isle State Marina Park. After editing the VBES data, the field unit and AHB submitted a total of 18 DTONs were submitted to Nautical Data Branch / Marine Chart Division. The DTON’s submitted can be found in Appendix 1 with all other features discussed within Appendix 2. As a result of preliminary Dton submission, prior to the final VBES editing, most of the submitted Dangers have been superceded by the edited and final version of the VBES data.
- c. Features noted in areas of side scan coverage that were not investigated with an echo-sounder are attributed as “reported” features. The distinction within the H-cell is noted with the attribute “QUSAOU” that describes the quality of the sounding. The “reported” feature’s depth estimate was derived by referencing sounding data within the immediate common area and subtracting the shadow height of the contact or height off the lake bottom. Thus the item’s depth value is estimated and is considered as a reported feature which has been surveyed (SSS) but not confirmed with depth data

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**  
**F00542**

**Initial Approvals:**

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

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**Castle Eugene Parker**  
Physical Scientist  
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: \_\_\_\_\_  
**Shepard Smith**  
Commander, NOAA  
Chief, Atlantic Hydrographic Branch