H11689

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey **Hydrographic**

Registry No. **H11689**

LOCALITY

State **Ohio**

General Locality **Cleveland, Ohio**

Sub-locality **Approaches to Cleveland Harbor**

2007

CHIEF OF PARTY
Lucy Massimillo
Navigation Response Team 4

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DATE

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION **HYDROGRAPHIC TITLE SHEET**	**REGISTRY No.** H11689
	FIELD No. NRT4

State Ohio

General Locality Cleveland

Sub-Locality Approaches to Cleveland Harbor

Scale 1:5,000 **Date of Survey** July 5 to September 25, 2007

Instructions Dated May 7, 2007 **Project No.** S-W920-NRT4-07

Vessel NOAA Launch S3001

Chief of Party Lucy Massimillo, Team Leader

Surveyed by Lucy Massimillo, Frank Younger, & John Doroba

Soundings by echo sounder Odom CVX2 Vertical Beam Echosounder

Graphic record scaled by N/A

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

Verification by Atlantic Hydrographic Branch

Soundings in ~~meters~~ ***Feet*** at Low Water Datum (LWD)

Bold italic red notes in the Descriptive Report were made during office processing.

REMARKS: (1) All times are in UTC.

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

(3) Projection is UTM Zone 17N

(4) LWD is at elevation 173.5 meters International Great Lakes Datum of 1985 (IGLD85).

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DESCRIPTIVE REPORT

to accompany
Hydrographic Survey H11689
S-W920-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 Basic Hydrographic survey was conducted in accordance with the Project Letter Instructions* for project S-W920-NRT-07, Cleveland, Ohio. The instructions are dated May 7, 2007.

Cleveland Harbor, about 175 miles SW of Buffalo, NY and 95 miles E of Toledo, OH, consists of an outer harbor formed by breakwaters and an inner harbor made up of the Cuyahoga River, and the Old River which was the original outflow channel of the Cuyahoga River. The city of Cleveland, Ohio, is one of the major industrial centers on Lake Erie. The major commodities handled at the port are iron, steel, and aluminum products; limestone, iron ore, sand, stone, salt, and other minerals; petroleum products and other liquid bulk cargo; and general and containerized cargo in the foreign trade.

The survey area, assigned to NRT4, consisted of two separate areas. The first, 2.5 SNM, encompassed the area directly outside the breakwater and included the approaches and fairway. The second, 0.5 SNM, encompassed a charted fish haven and shoals west of the harbor. Additionally, at the request of the USCG, an area approximately 0.2 SNM was surveyed in-between the two assigned areas.

Survey Limits for Sheet A, H-11689 are as follows:

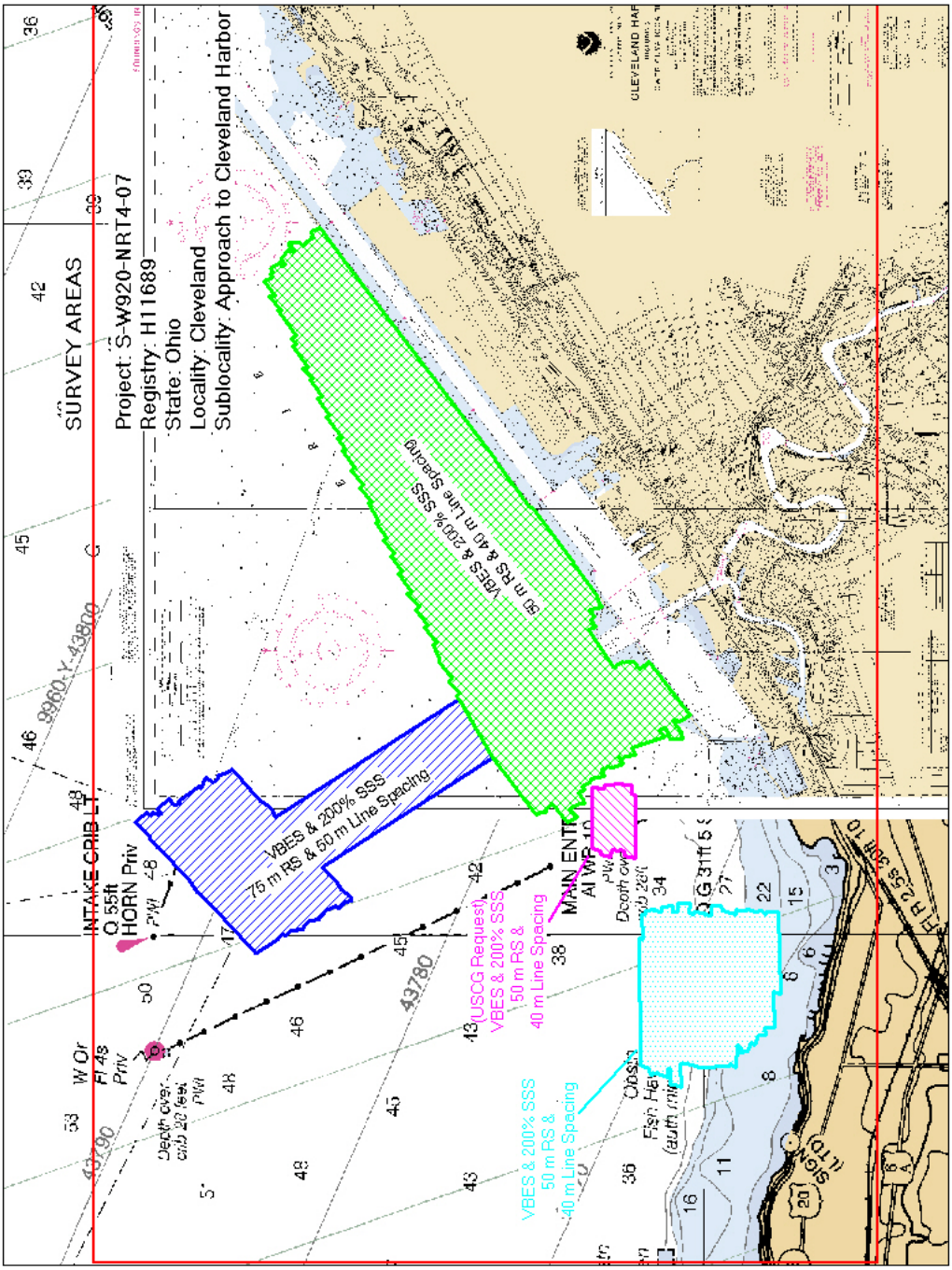
41° 29' 07.27" N	81° 47' 17.11" W
41° 33' 13.32" N	81° 38' 27.41" W

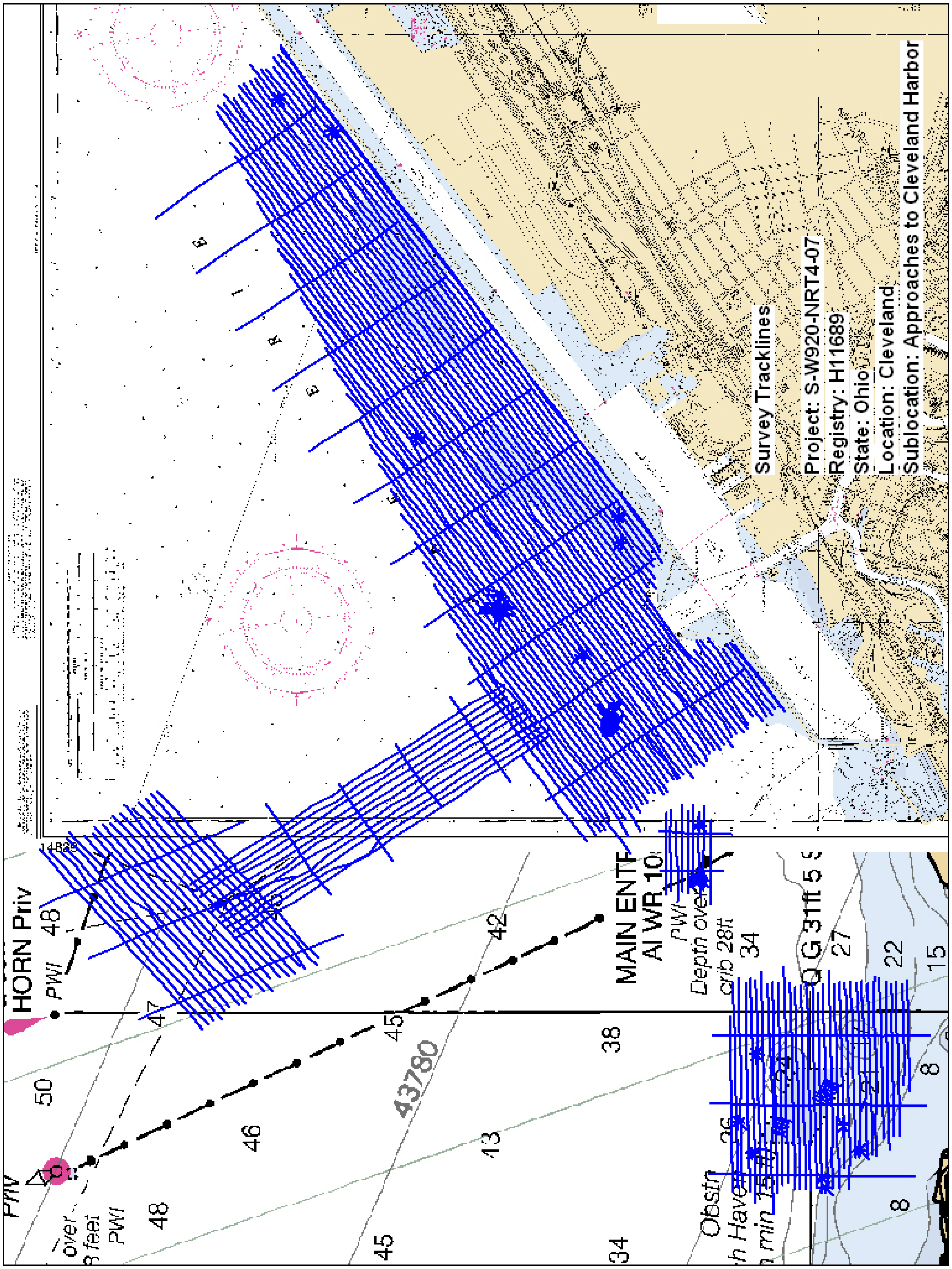
Survey Dates: July 5, 2007 (DN: 186) to September 25, 2007 (DN: 268)

Both 200% side scan sonar (SSS) data and vertical beam echosounder (VBES) data were collected in all areas. Because of greater depth, SSS data in the fairway and approach area were collected at a 75 meter range scale. However, in order to meet the 1:5,000 survey scale requirements, line spacing was kept at 50 meters. SSS data in all other areas were collected at a 50 meter range scale with 40 meter line spacing.

Filed digitally at Atlantic Hydrographic Branch (AHB).

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




Survey Tracklines
Project: S-W920-NRT4-07
Registry: H11689
State: Ohio
Location: Cleveland
Sublocation: Approaches to Cleveland Harbor

B. DATA ACQUISITION AND PROCESSING *See also 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 single-beam echosounder (VBES) system. Imagery was acquired with a stern-towed KLEIN 3000 side scan sonar (SSS) system. Water column sound velocity data was acquired with an ODOM Digibar Pro DB1200 sound velocity profiler. ***All system configurations are documented in the Data Acquisition and Processing Report. Document filed digitally at AHB.***

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

B.2. QUALITY CONTROL

Following the Field Procedures Manual v2.1, dated March 2007, and the NOS Hydrographic Surveys Specifications and Deliverables Manual, dated March 2007, has insured the integrity of the survey data for H11689.

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

Vertical Echosounder Quality Control

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

Side Scan Sonar Quality Control

The SSS data were acquired at frequencies of 100kHz and 500kHz. The recorder was set to 75 meter range scale in the fairways and approach and 50 meter range scale everywhere else. There were no water depths greater than 15 meters in areas where side scan data were collected

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

Filed with original survey records at AHB.

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.

While processing SSS data collected on September 4, 2007 (DN 247) & September 5, 2007 (DN 248), it was observed that there was a problem with the towfish gyro heading. When the survey lines were being steered in a west-east direction, data from the port and starboard transducers appeared to be switched. It was determined that there was a calibration problem with the towfish compass. On September 19, 2007 (DN 262), a compass calibration was performed and a test line was acquired. This calibration fixed the problem.

In order to save the September 4 & 5 data, lines were imported in CARIS with the "Convert SSGyro" left unchecked. This oriented the data to the vessel gyro (Course Made Good) and not to the towfish gyro. This was reasonable, because of the relatively short tow length (~10 meters) of towfish. Data was then processed normally.

Crosslines

Twenty-three checklines for a total of 16.07 linear nautical miles (LNM) were acquired by the field party. This is approximately 9.86 percent of mainscheme acquisition (162.94 LNM). A visual inspection of crossline data and main scheme data showed good comparison. ***Concur.***

Junctions

No junction surveys were provided for comparison with this project. ***Concur.***

B.3. CORRECTIONS TO ECHO SOUNDING

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

Filed digitally with original field records at AHB.

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

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 Cleveland, OH (906-3063) served as datum control for the survey area. LWD for Calumet Harbor is at elevation 173.5 meters International Great Lakes Datum of 1985 (IGLD 85). ***Concur.***

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.

Water level zoning was provided on the project CD. Field personnel made no changes to zoning, time correctors, or range ratios.

A Request for Approved Water Levels letter was sent to N/OPS1 on September 28, 2007. A Tide Note, stating that Preliminary Zoning would be accepted as final zoning, was received on October 9, 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 on Hypack. At no point did HDOP exceed 4.00, and adequate satellite coverage was maintained throughout most of the survey period.

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

A few instances of GPS dropout were observed. If the dropout was short, data continued to be collected and the navigation was interpolated in CARIS. If the dropout continued for a significant period of time, the survey line was ended and acquisition was restarted when the GPS signal returned.

Filed digitally with original field records at AHB.

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

D.1. CHART COMPARISON

There are five charts and two ENCs affected by this survey:

Chart	Edition	Edition Date	Issue Date	Update #	Scale
14500	27th	10/1/2002	9/22/2007	215	1:500,000
14820	21st	10/1/2005	6/9/2007	65	1:400,000
14826	27th	11/1/2002	9/22/2007	180	1:80,000
14829	6th	12/1/1003	9/22/2007	155	1:100,000
14839	36th	12/1/2002	9/22/2007	177	1:10,000

ENC Cell	Edition	Update Application Date	Issue Date	Corresponding Chart
US4OH01M	5	8/17/2007	8/17/2007	14826
US5OH11M	7	8/9/2007	8/9/2007	14839

General Agreement with Charted Soundings

Soundings acquired in the approach & fairway to Cleveland Harbor agreed favorably (within 2 feet) with currently charted soundings. However, soundings acquired in the southern part of the survey area were found to be much deeper than the currently charted soundings. This difference is most noticeable in the shoal areas just north of the breakwater, where the difference between the acquired soundings and the charted soundings can be as great as 10 feet. This deepening effect was also seen in the Fish Haven survey area, west of Cleveland Harbor. ***Concur.***

No evidence of new shoaling was seen in the newly acquired data. Also, many of the currently charted shoals were not seen in the new data. A plot of new soundings, plotted over the existing chart, was sent to the Great Lakes Navigation Manager, Brian Link. On September 24, 2007, a phone conversation was held with Mr. Link, regarding the large difference in depths. It was decided that due to the density of soundings, the general deepening trend, and the line spacing (40 m, except in the approach & fairway), it would not be necessary to develop any of these charted shoals unless a SSS contact existed.

NRT4 recommends replacing all currently charted soundings in the survey area with the newly acquired soundings. ***Concur.***

AWOIS Item Investigations

There were no AWOIS items assigned within the Hydro Survey boundaries. There were three AWOIS items assigned outside the survey area boundaries. However, these will be addressed in the Field Examination report, FE00539. ***Concur.***

Dangers to Navigation

There were no Dangers to Navigation submitted for this project. ***Concur.***

Bottom Samples

NRT4 does not possess a bottom sampler, therefore no bottom samples were obtained for this project. ***Concur. All charted sediment characteristics were retained as charted. ENC SBDARE were copied from the associated ENC US5OH11M.***

D. 2. ADDITIONAL RESULTS

Aids to Navigation and Other Detached Positions

A list of Aids to Navigation (AToNs) was received from Stephen Hill, of the Marine Chart Division (MCD), on June 1, 2007. This list included 24 fixed AToNs, for which MCD was requesting an accurate position. These AToNs will be addressed in the Field Examination Report, FE00539. ***Concur. No navigational aids were addresses with H11689.***

Ferry Routes

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

Submarine Cables and Pipelines

There are no charted submarine cables in the H11689 Hydro Survey area. There are two charted submarine pipelines in this area. The pipelines extend from two water intake cribs, north of the approach to Cleveland Harbor) to the shore. Several more cribs are located along the length of these pipelines. None of these pipelines were investigated by NRT4. However, one crib was visible in the SSS data, collected while completing the USCG request. This crib was later investigated with VBES and a least depth was obtained. Information about this crib can be found in the Survey Features Report in Appendix II. ***Concur. Appendix II is attached to this report. Recommend retain submarine pipelines as charted.***

No other cribs were investigated by NRT4.

All other submarine cables and pipelines, located outside of the survey area, will be discussed in the Field Examination report, FE00539.

Bridges and Overhead Cables

There are no charted bridges or overhead cables in the H11689 Hydro Survey area. Any bridges and overhead cables, located outside of the survey area, will de discussed in the Field Examination report, FE00539. ***Concur.***

Fish Havens

A fish haven, located west of Cleveland Harbor, offshore of the Gold Coast area, was included in the Hydro Survey area for this project. Two rocky reefs, and seven additional contacts were identified in the SSS for this area, and investigated with VBES. Information about these contacts can be found in the Survey Features Report in Appendix II. ***Concur. Refer to Appendix II, Item 1.2.***

Shipwrecks

While surveying Sheet A, NRT4 found three submerged wrecks in the SSS data. These wrecks were then developed with VBES, in order to find a least depth. None of these wrecks were determined to be a Danger to Navigation (DToN). ***Concur.***

Research by NRT4 found as many as five historical wrecks within the boundaries of Sheet A. These wrecks are listed and described on various websites, but are not currently charted. Two websites, www.michiganshipwrecks.com & www.alcheminc.com, listed the GPS positions of these wrecks. Therefore it was possible to compare them with the wrecks found by NRT4.

The following are descriptions and positions of these historical wrecks, provided by michiganshipwrecks.com.

The 117th Street Wreck (41º 30.777’ N, 81º 43.751’ W) ***(41°30’46.62”N, 081°43’45.06”W)*** lies 1 mile off Lakewood, Ohio. The wreck is mostly scattered with part of the port bow intact. Sunk in 39' of water. The position provided for the 117th Street Wreck does not put it off of Lakewood, Ohio, nor does it put it near 117th Street. NRT4 was unable to find this wreck.

The ALGERIA (41º 31.225’ N, 81º 42.944’ W) ***(41°31’13.5”N, 081°42’56.64”W)*** was a 288' schooner-barge built in 1896 by James Davidson. Sunk in 40’ of water on May 9, 1906. The ship was lost in a storm and now lies to the east side of the Cleveland Harbor Entrance. NRT4 identified a submerged wreck at this location. ***Refer to Appendix II, Item 2.7.***

The CHARLES H. DAVIS (41º 30.780’ N, 81º 43.52’ W) ***(41°30’46.8”N, 081°43’31.2”W)*** was a 145' propeller. Sunk in 40’ of water on June 13, 1903. The ship was lost in a storm and not much remains but boards and a boiler. The wreck lies north of Cleveland Harbor. NRT4 identified a submerged wreck at this location. A position of 41.513000º N, 81.731117º W was provided by alcheminc.com for the CHARLES H. DAVIS. However, NRT4 did not find any

evidence of a wreck at this location. Additionally, in the description, provided by alcheminc.com it states that the "watcher gives a DGPS location of 41deg 30.78', 81deg 43.52'," which corresponds with the position provided by michiganshipwrecks.com. ***Refer to Appendix II, Item 2.8.***

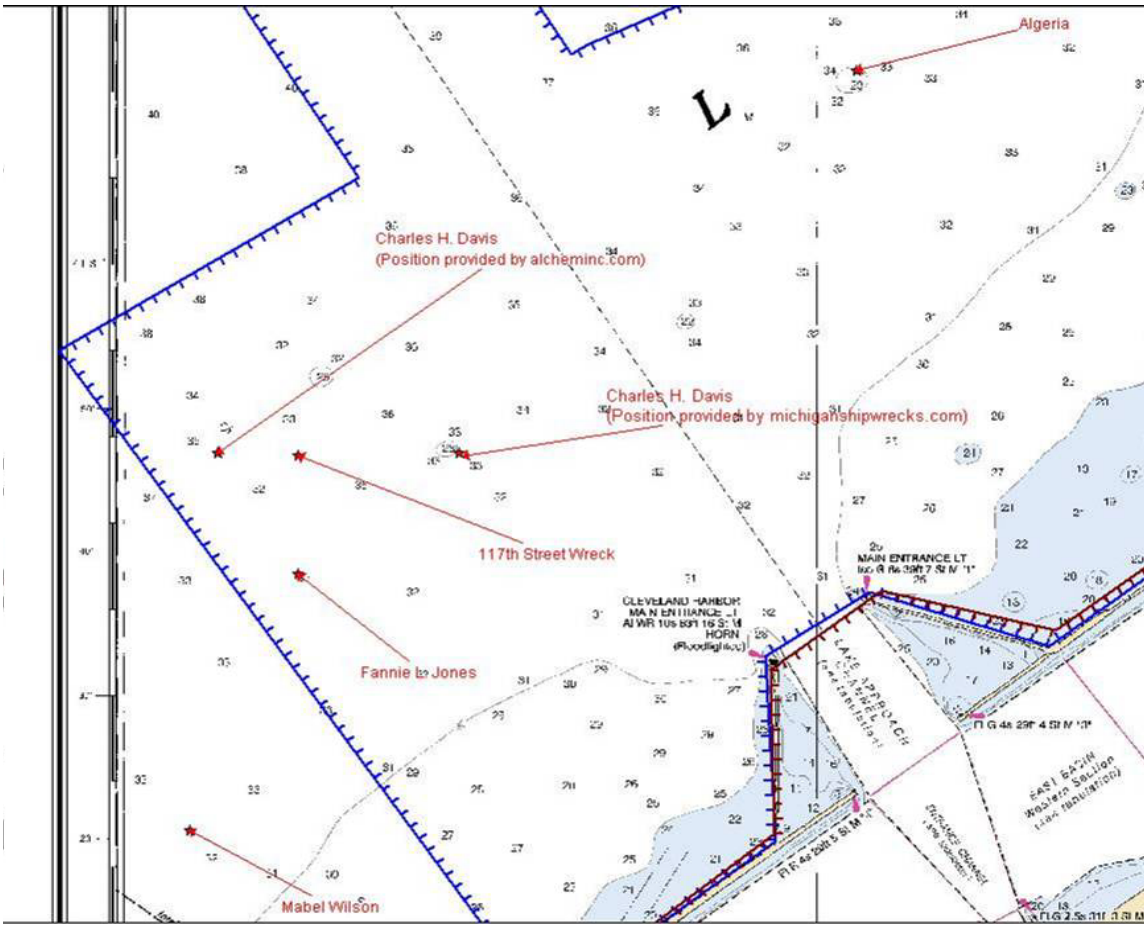
The FANNIE L. JONES (41º 30.640' N, 81º 43.751' W) ***(41°30'38.4"N, 081°43'45.06"W)*** was a wooden bulk-freight schooner. Sunk in 36' of water on August 10, 1890. According to boatnerd.com, the FANNY (FANNIE) L. JONES was bound from Kelley's Island for Ashtabula, Ohio. She tried to put in to Cleveland to shelter from a summer gale. As she was entering the harbor during the night she suddenly sank. While the crew scrambled into the rigging, her captain/owner went down with her. USLS rescued the crewmen as dawn broke. The website also states the place of loss as Avon Pint, Ohio. However the position provided does not put the wreck anywhere near Avon Point. NRT4 was unable to find this wreck. ***This wreck is not charted nor portrayed on Chart 14839_1 or 14826_1. No charting action required.***

The MABEL WILSON (41º 30.342 N, 81º 43.907 W) ***(41°30'20.52"N, 081°43'54.42"W)*** was a wooden 4-masted schooner barge. Sunk in 36' of water on May 28, 1906. According to boatnerd.com, the MABEL WILSON tore loose in a gale and was driven on the breakwater, where she pounded apart and sank. The tug T.C. LUTZ and the Lifesaving Service saved her crew. The remains were later dynamited as a shipping hazard. This wreck is located outside on the hydro survey area and was not investigated by NRT4. ***This wreck is not charted nor portrayed on Chart 14839_1 or 14826_1. No charting action required.***

The third wreck, found by NRT4, is located approximately 640 m east of the main entrance to Cleveland Harbor, and 300 m north of the breakwater. No information could be found about any historical wrecks at this location. ***Refer to Appendix II, Item 2.9.***

More detailed information about the submerged wrecks, found by NRT4, can be found in the Survey Features Report in Appendix II. ***Appendix II is attached to this report.***

The locations provided for these historical wrecks are displayed graphically on the following page.


Algeria
Charles H. Davis
(Position provided by alcheminc.com)
Charles H. Davis
(Position provided by michiganshipwrecks.com)
117th Street Wreck
Fannie B Jones
Mabel Wilson
MAIN ENTRANCE LT
EAST BASIN
Western Section

APPROVAL SHEET

S-W920-NRT4-07
Basic Hydrographic Survey
Cleveland
Approaches to Cleveland Harbor
Ohio
Registry No. H11689

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
I am approving this document
2007.10.09 14:22:50 -04'00'

Lucy Massimillo
Team Leader, Navigation Response Team 4

No Dangers to Navigation (DToNs) were submitted for H11689.

H11689 Appendix II Survey Features Report

Registry Number: H11689

State: Ohio

Locality: Cleveland, OH

Sub-locality: Approach to Cleveland Harbor

Project Number: S-W920-NRT4-07

Survey Dates: July 5, 2007 - September 25, 2007

This report contains a list of all significant charted, uncharted, DToN, and AWOIS features located during survey H11689.

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
14839	36th	12/01/2002	1:10,000 (14839_1)	NGA NTM: None (05/03/2008)
14826	27th	11/01/2002	1:80,000 (14826_1)	USCG LNM: 03/18/2008 (04/22/2008) CHS NTM: 03/27/1998 (04/25/2008) NGA NTM: 01/10/1998 (05/03/2008)
14829	6th	12/01/2003	1:100,000 (14829_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	28-ft Obstn (crib) 298/1	Crib (covered at MHW)	8.61 m	41° 30' 26.3" N	081° 44' 19.1" W	---
1.2	Fish Haven 311/1	Sounding	6.10 m	41° 29' 57.4" N	081° 45' 22.7" W	---
2.1	22-ft Rk 0007	Rock	[None]	41° 29' 57.9" N	081° 45' 53.8" W	---
2.2	26-ft Wk 0009	Wreck	[None]	41° 29' 54.3" N	081° 45' 34.8" W	---
2.3	26-ft Rk 0012	Rock	[None]	41° 29' 58.8" N	081° 45' 50.8" W	---
2.4	17-ft Rk 0002	Rock	[None]	41° 31' 33.7" N	081° 41' 10.4" W	---
2.5	19-ft Obstn 0024	Obstruction	[None]	41° 31' 51.9" N	081° 40' 29.7" W	---
2.6	27-ft Obstn 0025	Obstruction	[None]	41° 32' 04.3" N	081° 40' 20.0" W	---
2.7	32-ft Wk ALGERIA 9813/1	Wreck	9.64 m	41° 31' 13.6" N	081° 42' 57.9" W	---
2.8	28-ft Wk Charles H. Davis 15636/1	Wreck	8.54 m	41° 30' 47.5" N	081° 43' 30.2" W	---

Generated by Pydro v8.6 (r2366) on Tue Jul 29 11:32:11 2008 [UTC]

2.9	22-ft Wk (barge) 560/1	Wreck	6.68 m	41° 30' 45.8" N	081° 42' 35.6" W	---
2.10	30-ft Rk 450/1	Rock	9.31 m	41° 30' 27.3" N	081° 44' 02.3" W	---
2.11	26-ft Obstn 836/1	Obstruction	8.14 m	41° 30' 26.5" N	081° 44' 20.9" W	---
2.12	28-ft Rk 2803/1	Rock	8.48 m	41° 30' 18.4" N	081° 45' 33.7" W	---
2.13	13-ft RK 412/1	Rock	3.90 m	41° 29' 50.2" N	081° 45' 42.4" W	---
2.14	29-ft Rk 548/1	Rock	8.77 m	41° 31' 32.6" N	081° 42' 03.3" W	---
2.15	32-ft RK 140/1	Rock	9.89 m	41° 30' 55.6" N	081° 43' 11.4" W	---
2.16	21-ft RK 535/1	Rock	6.43 m	41° 30' 45.9" N	081° 42' 28.0" W	---

1 - Charted Features

1.1) 28-ft Obstn (crib) 298/1

Survey Summary

Survey Position: 41° 30' 26.3" N, 081° 44' 19.1" W

Least Depth: 8.61 m (= 28.25 ft = 4.709 fm = 4 fm 4.25 ft)

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

Timestamp: 2007-267.17:34:39.000 (09/24/2007)

Survey Line: h11689 / 3001sb / 2007-267 / 034_1734

Profile/Beam: 298/1

Charts Affected: 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Charted crib found with SSS, no significant shadow. Investigated with VBES in star shaped pattern, least depth of 28.25ft in charted depths of 28ft. Height of 2.5m seen in VBES trace.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-267/034_1734	298/1	0.00	000.0	Primary
h11689/3001sb/2007-267/041_1736	630/1	8.56	115.7	Secondary
h11689/3001sss500k/2007-198/c070717025600	0002	10.47	215.0	Secondary
h11689/3001sss500k/2007-198/c070717025100	0004	12.47	170.1	Secondary

Hydrographer Recommendations

Hydrographer recommends retaining crib as charted and charting surrounding survey depths.

Cartographically-Rounded Depth (Affected Charts):

28ft (14826_1)

4 ¾fm (14500_1)

8.6m (14829_1, 14820_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: CATOBS - 4:crib

INFORM - H11689, Crib

QUASOU - 6:least depth known

SORDAT - 20070925

SORIND - US,US,Nsurf,H11689

STATUS - 1:permanent

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

VALSOU - 8.612 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart submerged obstruction, crib, least depth known 28-ft (28.254ft (8.612m)) at Latitude 41°30'26.327"N, Longitude 081°44'19.108"W.

Feature Images

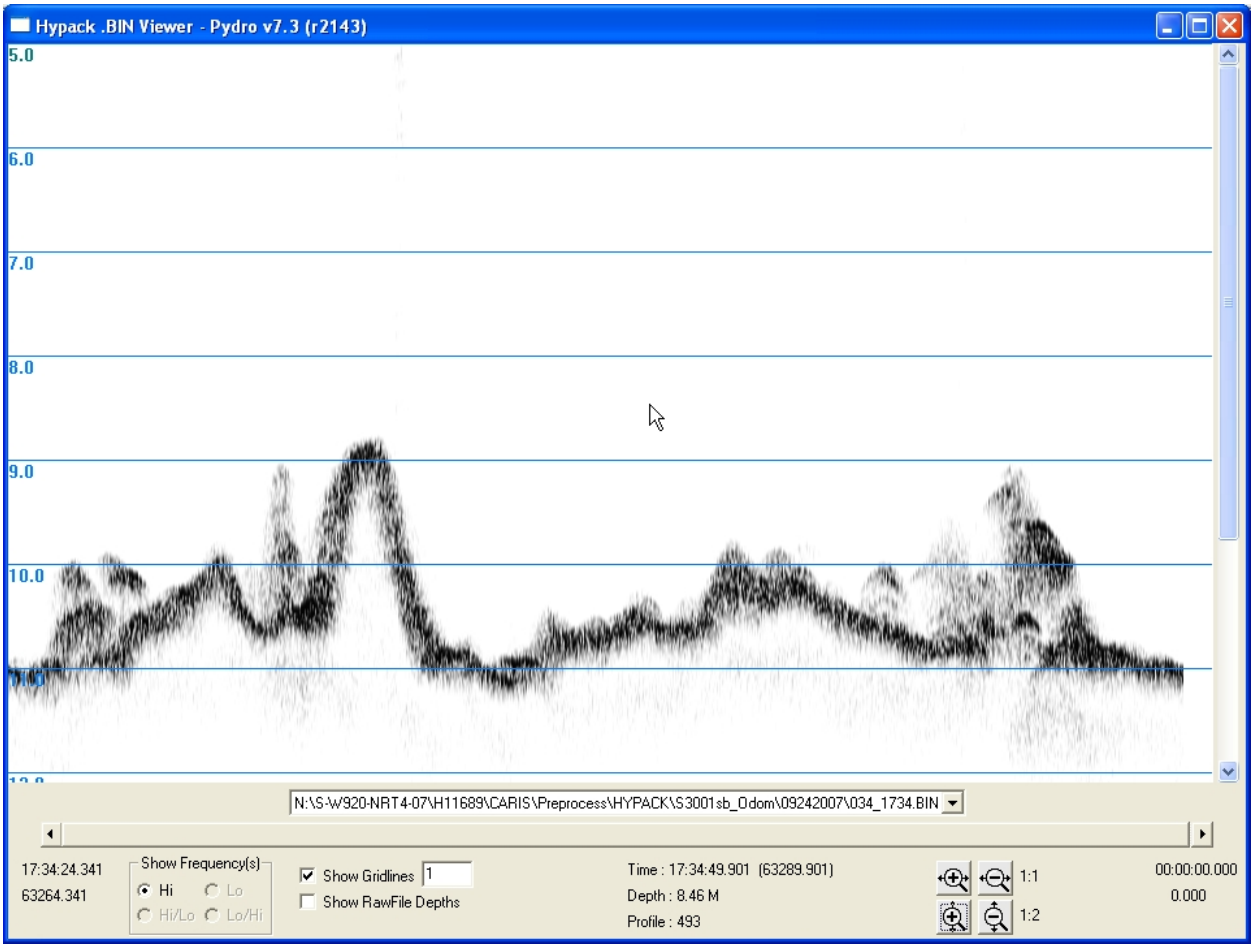


Figure 1.1.1

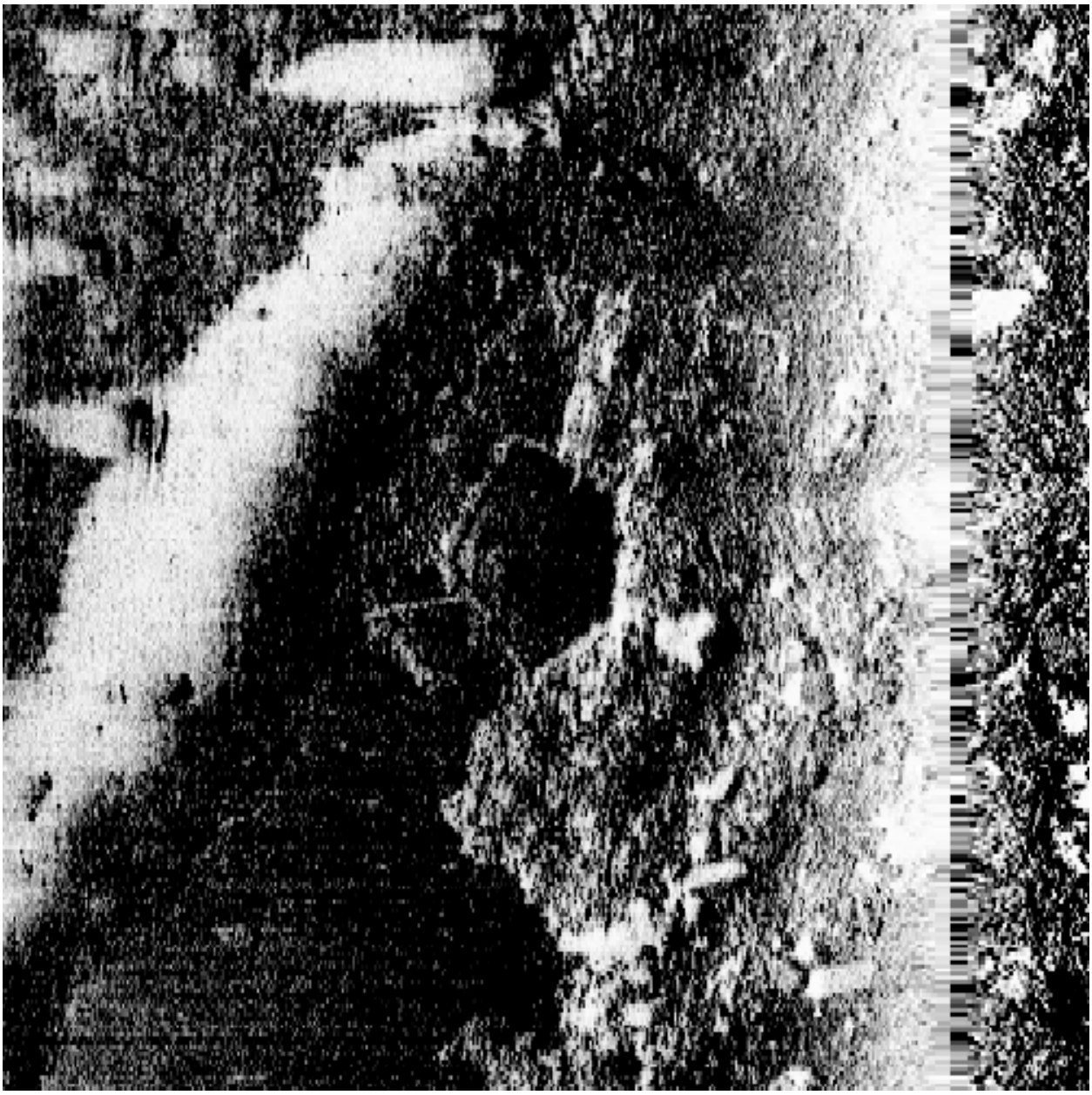


Figure 1.1.2

1.2) Fish Haven 311/1

Survey Summary

Survey Position: 41° 29' 57.4" N, 081° 45' 22.7" W

Least Depth: 6.10 m (= 20.00 ft = 3.334 fm = 3 fm 2.00 ft)

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

Timestamp: 2007-267.18:53:23.600 (09/24/2007)

Survey Line: h11689 / 3001sb / 2007-267 / 080_1853

Profile/Beam: 311/1

Charts Affected: 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Reef found in bounds of charted "Obstn Fish Haven (auth min 15 ft)" using SSS. Investigated using VBES with 20m line spacing. Least depth of 20.00 ft in charted depth area of 15 ft. Reef is approx 3m high in VBES trace.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-267/080_1853	311/1	0.00	000.0	Primary
h11689/3001sss500k/2007-191/c070710065900	0004	23.14	300.2	Secondary
h11689/3001sss500k/2007-191/c070710044200	0001	31.34	301.1	Secondary (grouped)
h11689/3001sss500k/2007-191/c070710065900	0006	48.87	118.7	Secondary
h11689/3001sss500k/2007-191/c070710070700	0002	104.30	119.9	Secondary (grouped)
h11689/3001sss500k/2007-191/c070710065900	0005	117.85	119.7	Secondary (grouped)
h11689/3001sss500k/2007-191/c070710043100	0001	124.45	119.0	Secondary (grouped)

Hydrographer Recommendations

Hydrographer recommends retaining "Obstn/Fish Haven (auth min 15 ft)".

S-57 Data

[None]

Office Notes

Concur. Retain Obstrn/Fish Haven at charted limits with the authorized minimum depth of 15ft.

Feature Images

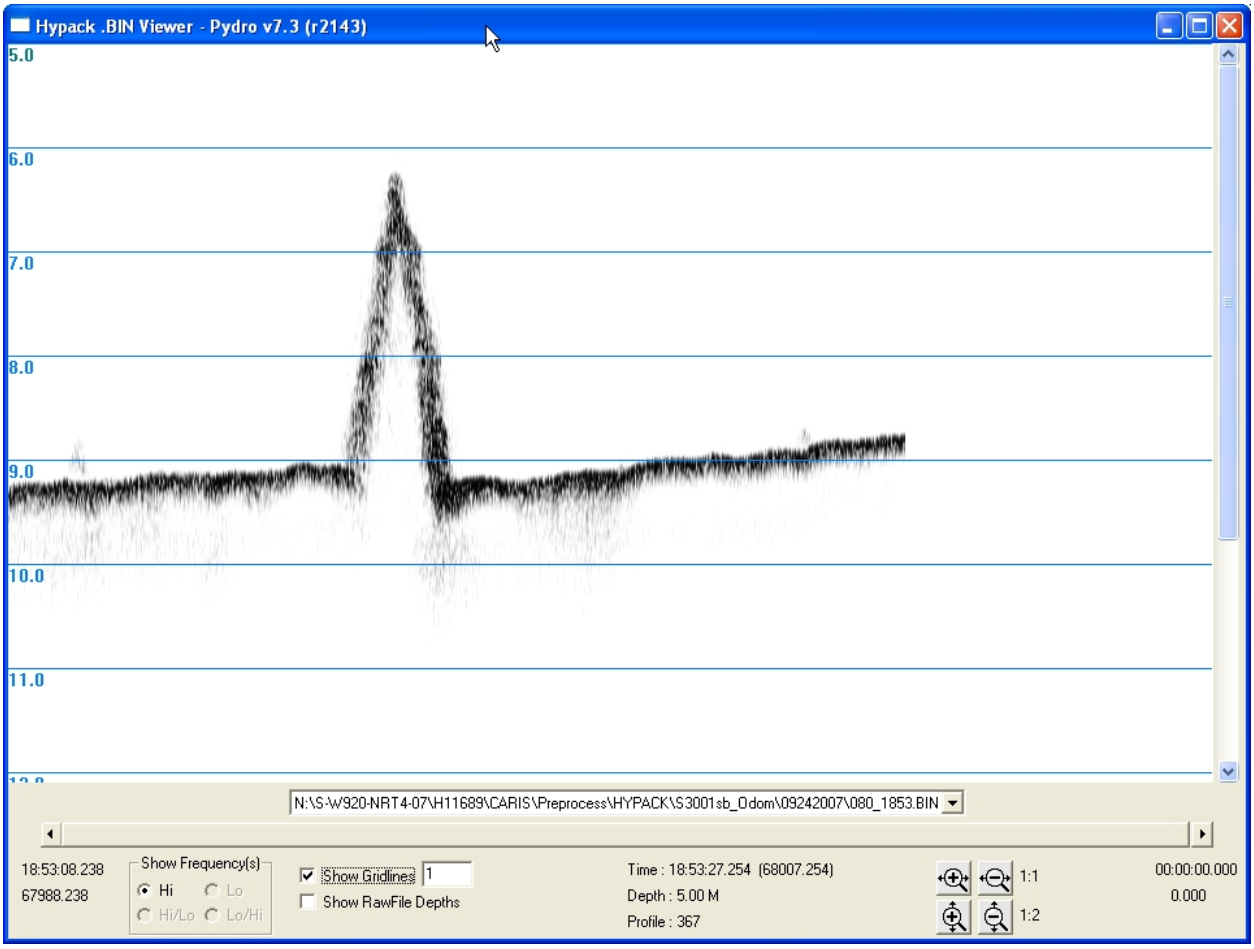


Figure 1.2.1

Figure 1.2.2

2 - New Features

2.1) 22-ft Rk 0007

Survey Summary

Survey Position: 41° 29' 57.9" N, 081° 45' 53.8" W

Least Depth: [None]

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

Timestamp: 2007-227.05:43:50 (08/15/2007)

Survey Line: h11689 / 3001sss500k / 2007-191 / c070710043100

Contact/Point: 0002/1

Charts Affected: 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Rock 1.750m height in approx 20ft water. Atop rocky reef.

Field party investigated with VBES in a star shaped pattern. Contact was not found.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sss500k/2007-191/c070710043100	0002	0.00	000.0	Primary
h11689/3001sss500k/2007-191/c070710065900	0003	5.63	307.5	Secondary

Hydrographer Recommendations

Chart current surveyed soundings.

S-57 Data

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

Attributes:

INFORM - H11689, rock

QUASOU - 9:value reported (not confirmed)

SORDAT - 20070925

SORIND - US,US,Survy,H11689

STATUS - 1:permanent

TECSOU - 2:found by side scan sonar

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Chart submerged rock least depth 22ft (6.760m) at latitude 41°29'57.72"N, longitude 081°45'53.73"W. Ht of Approx 1.75m measured from shadow.

Feature Images

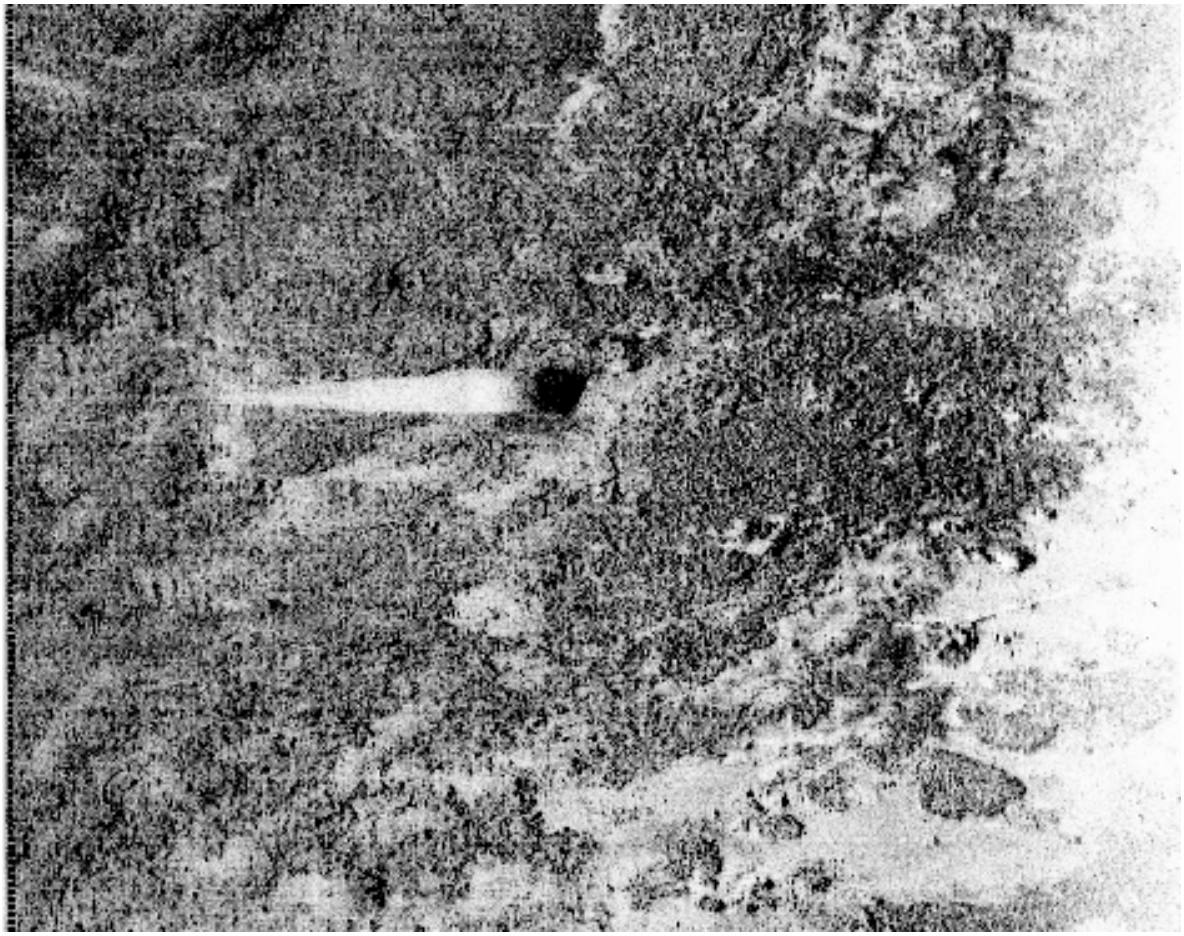


Figure 2.1.1

2.2) 26-ft Wk 0009

Survey Summary

Survey Position: 41° 29' 54.3" N, 081° 45' 34.8" W

Least Depth: [None]

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

Timestamp: 2007-227.05:51:56 (08/15/2007)

Survey Line: h11689 / 3001sss500k / 2007-191 / c070710045200

Contact/Point: 0001/1

Charts Affected: 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Small boat. no significant shadow.

Field party investigated with VBES in a star shaped pattern. Contact was not found.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sss500k/2007-191/c070710045200	0001	0.00	000.0	Primary
h11689/3001sss500k/2007-191/c070710064800	0001	1.33	088.6	Secondary

Hydrographer Recommendations

Chart current surveyed soundings.

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes:

CATWRK - 2:dangerous wreck

CONVIS - 2:not visual conspicuous

INFORM - H11689, wreck

SORDAT - 20070925

SORIND - US,US,Survy,H11689

TECSOU - 2:found by side scan sonar

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Chart dangerous submerged wreck estimated least depth of 26-ft (7.925m) determined from water depth and SSS contact height 0.62m; at Latitude 41°29'53.824"N, Longitude 081°45'34.535"W.

Feature Images

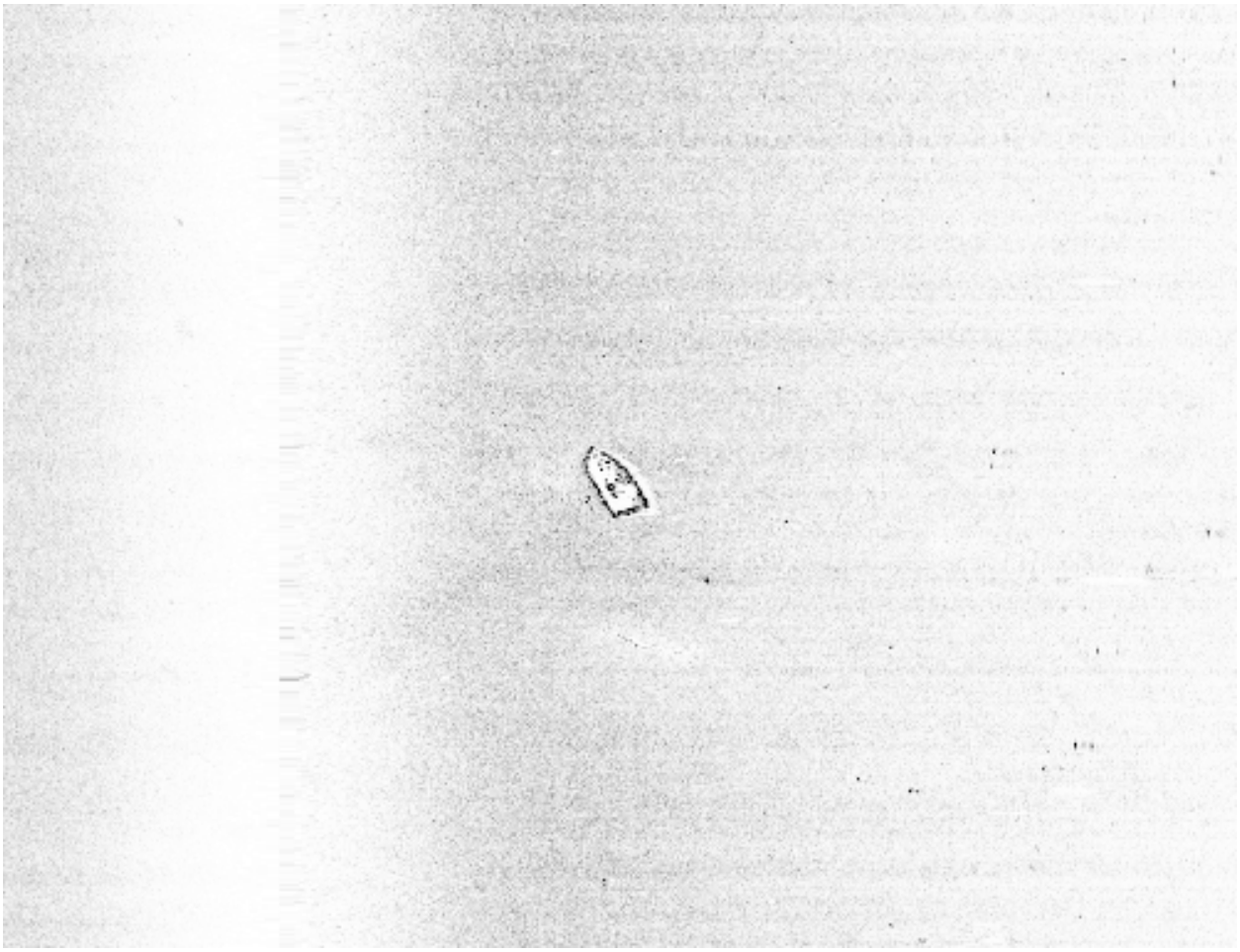


Figure 2.2.1

2.3) 26-ft Rk 0012

Survey Summary

Survey Position: 41° 29' 58.8" N, 081° 45' 50.8" W

Least Depth: [None]

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

Timestamp: 2007-260.05:41:57 (09/17/2007)

Survey Line: h11689 / 3001sss500k / 2007-191 / c070710065900

Contact/Point: 0007/1

Charts Affected: 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Large rock adj rocky reef.

Field party investigated with VBES in a star shaped pattern. Contact was not found.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sss500k/2007-191/c070710065900	0007	0.00	000.0	Primary
h11689/3001sss500k/2007-191/c070710070700	0001	11.43	095.3	Secondary

Hydrographer Recommendations

Chart current surveyed soundings.

S-57 Data

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

Attributes: INFORM - H11689, rock

QUASOU - 9:value reported (not confirmed)

SORDAT - 20070925

SORIND - US,US,Survy,H11689

STATUS - 1:permanent

TECSOU - 2:found by side scan sonar

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Chart submerged rock estimated least depth 26ft (7.878m) as determined from water depth and SSS height of 1.17m at latitude 41°29'58.77"N, longitude 081°45'51.41"W.

Feature Images

Figure 2.3.1

2.4) 17-ft Rk 0002

Survey Summary

Survey Position: 41° 31' 33.7" N, 081° 41' 10.4" W

Least Depth: [None]

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

Timestamp: 2008-137.04:36:39 (05/16/2008)

Survey Line: h11689 / 3001sss500k / 2007-248 / c070905153100

Contact/Point: 0002/1

Charts Affected: 14839_1, 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Large Rock. Insignificant height measured on overlapping line. Not investigated by field party.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sss500k/2007-248/c070905153100	0002	0.00	000.0	Primary
h11689/3001sss500k/2007-248/c070920105300	0002	10.37	077.6	Secondary

Hydrographer Recommendations

Hydrographer recommends charting current surveyed soundings.

S-57 Data

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

Attributes: INFORM - H11689, rock. Estimated least depth of 17.4ft as determined by water depth and SSS height of 1.08m. Feature not seen in VBES.

QUASOU - 9:value reported (not confirmed)

SORDAT - 20070925

SORIND - US,US,survy,H11689

TECSOU - 1:found by echo-sounder

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart submerged rock estimated least depth of 17.39ft (5.303m), determined from water depth and SSS height of 1.08m at latitude 41°31'33.673"N, longitude 081°41'10.452"W.

2.5) 19-ft Obstn 0024

Survey Summary

Survey Position: 41° 31' 51.9" N, 081° 40' 29.7" W

Least Depth: [None]

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

Timestamp: 2007-263.06:39:16 (09/20/2007)

Survey Line: h11689 / 3001sss500k / 2007-248 / c070920104300

Contact/Point: 0002/1

Charts Affected: 14839_1, 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Subm Pile. 3.5 meters high.

Field party investigated with VBES in a star shaped pattern. Contact was not found.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sss500k/2007-248/c070920104300	0002	0.00	000.0	Primary

Hydrographer Recommendations

Chart current surveyed soundings.

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: CATOBS - 1:snag / stump

INFORM - H11689, submerged pile. Estimated least depth of 19.2ft as determined by water depth and SSS height of 3.32m. Feature was not visible in VBES.

QUASOU - 9:value reported (not confirmed)

SORDAT - 20070925

SORIND - US,US,Survy,H11689

TECSOU - 2:found by side scan sonar

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Chart submerged pile estimated least depth 19-ft (19.2ft (5.852m)) as determined from water depth and SSS height of 3.32m at latitude 41°31'51.882"N, longitude 081°40'29.657"W.

Feature Images

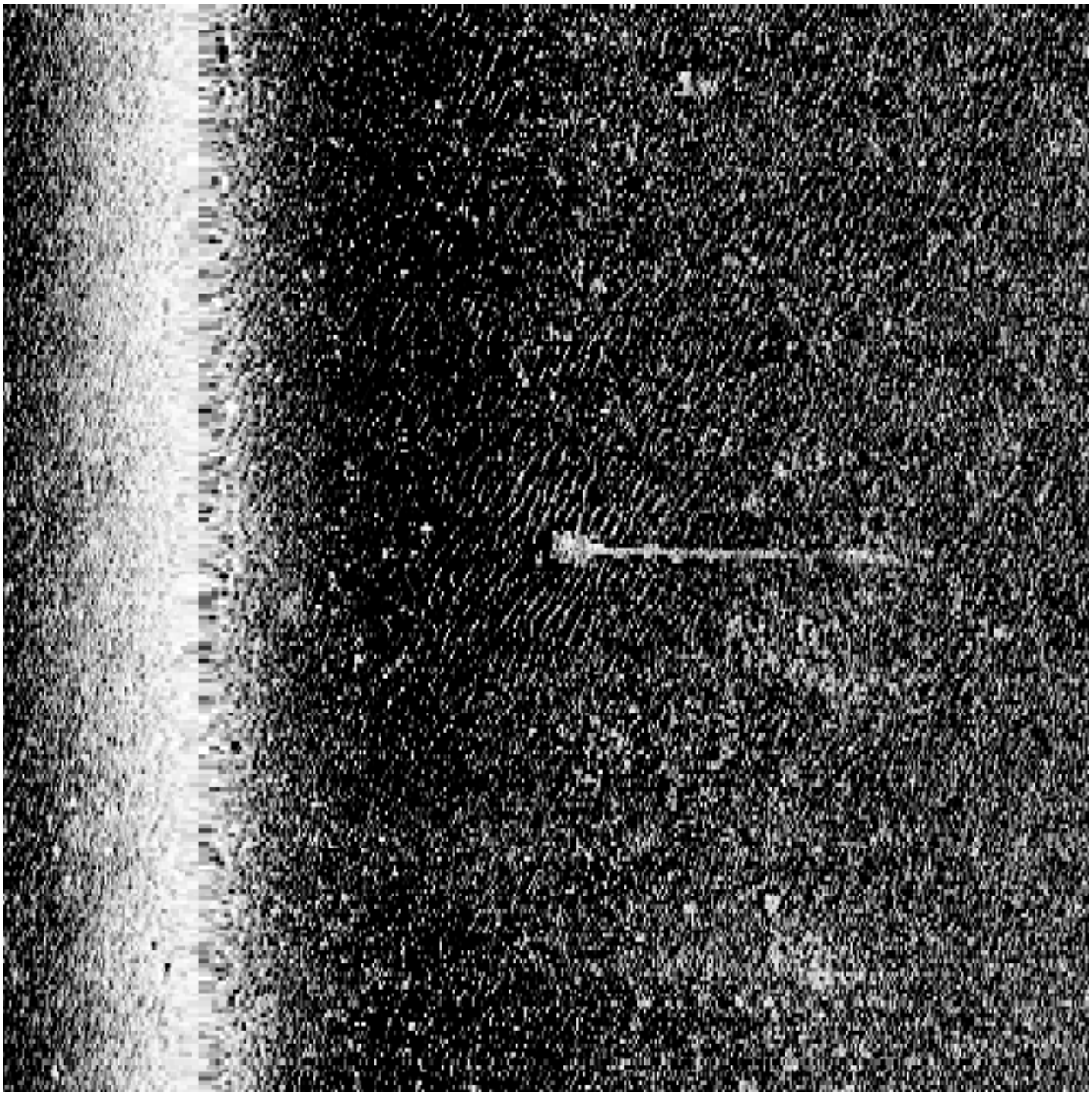


Figure 2.5.1

2.6) 27-ft Obstn 0025

Survey Summary

Survey Position: 41° 32' 04.3" N, 081° 40' 20.0" W

Least Depth: [None]

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

Timestamp: 2007-263.06:44:13 (09/20/2007)

Survey Line: h11689 / 3001sss500k / 2007-248 / c070920105300

Contact/Point: 0003/1

Charts Affected: 14839_1, 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Rk. Approx 2m high. Also seen on overlapping line.

Field party investigated with VBES in a star shaped pattern. Contact was not found.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sss500k/2007-248/c070920105300	0003	0.00	000.0	Primary
h11689/3001sss500k/2007-199/c070718055000	0002	4.97	320.2	Secondary

Hydrographer Recommendations

Chart current charted soundings.

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: CATOBS - 1:snag / stump

INFORM - H11689, submerged pile. Estimated least depth of 26.8ft as determined by water depth and SSS height of 1.92m. Feature was not visible in VBES.

QUASOU - 9:value reported (not confirmed)

SORDAT - 20070925

SORIND - US,US,Survy,H11689

STATUS - 1:permanent

TECSOU - 2:found by side scan sonar

VERDAT - 13:Low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Chart submerged pile estimated least depth of 26-ft (26.801-ft (8.169m)), determined from water depth and SSS height of 1.92m) at Latitude 41°32'04.297"N, Longitude 081°40'20.009"W.

Feature Images

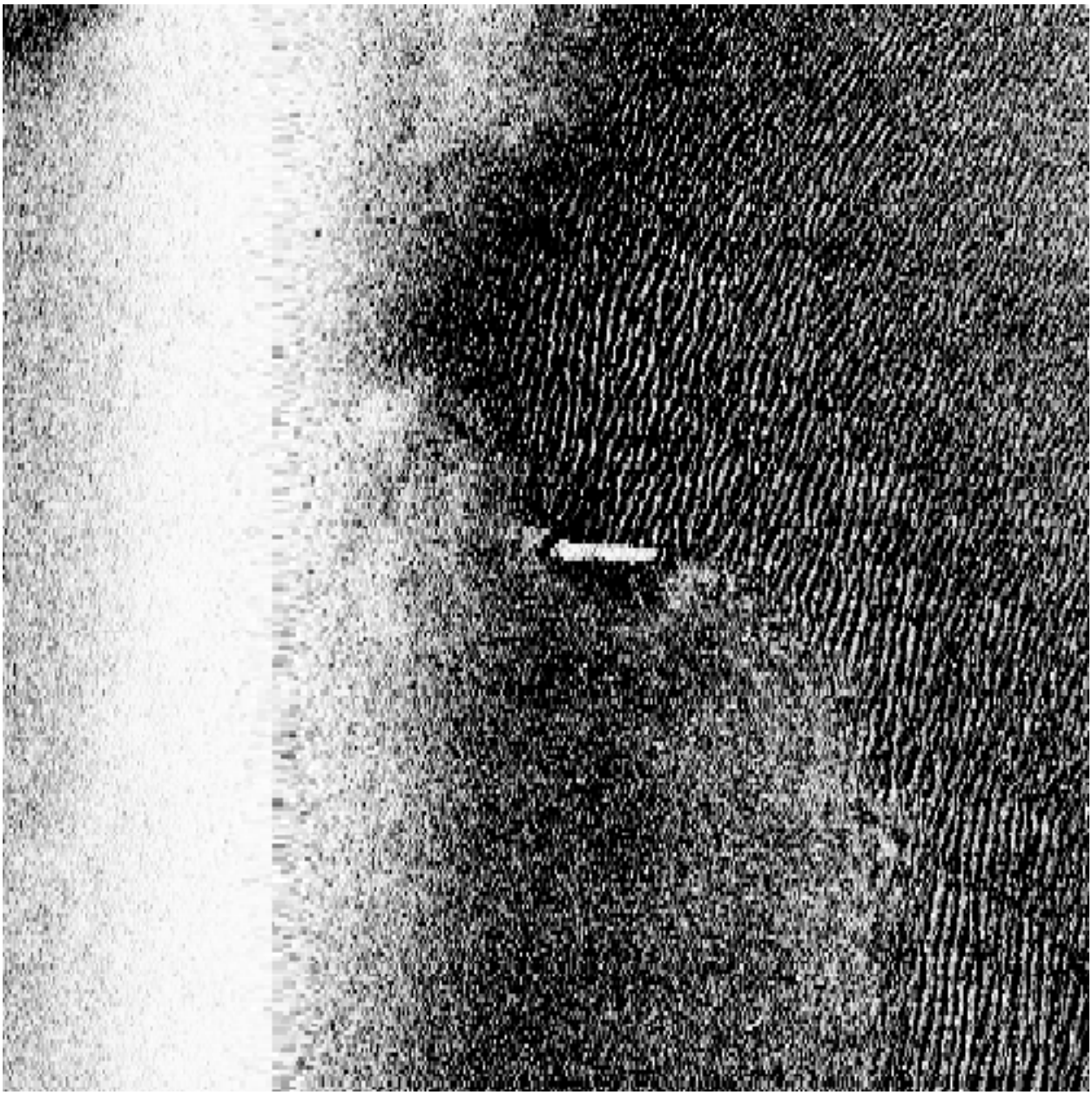


Figure 2.6.1

2.7) 32-ft Wk ALGERIA 9813/1

Survey Summary

Survey Position: 41° 31' 13.6" N, 081° 42' 57.9" W

Least Depth: 9.64 m (= 31.64 ft = 5.273 fm = 5 fm 1.64 ft)

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

Timestamp: 2007-218.17:01:12.000 (08/06/2007)

Survey Line: h11689 / 3001sb / 2007-218 / 250_1652

Profile/Beam: 9813/1

Charts Affected: 14839_1, 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Large submerged wreck debris seen in SSS. Shadow measured 1-3 meters high.

Wreck investigated w/ VBES with very tight line spacing.

LD of 31.64 ft found in charted 29 ft depth area. Wk appears to be approximately 1.5 m high from VBES trace.

In location of shipwreck ALGERIA. According to Michiganshipwrecks.com, the ALGERIA was a 288' schooner-barge built in 1896 by James Davidson. The ship was lost in a storm and now lies to the east side of the Cleveland Harbor Entrance. The ALGERIA sank on 05-09-1906.

According to Alcheminc.com, the ALGERIA was a schooner barge of 285 ft that sank due to sudden hull failure 6/9/1906 while departing the harbor at Cleveland, Ohio. The vessel carried a cargo of iron ore at the time. Wachter gives a DGPS location of 41deg 31.23', 81deg 42.94'.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-218/250_1652	9813/1	0.00	000.0	Primary
h11689/3001sss500k/2007-262/c070919160700	0001	4.35	318.3	Secondary
h11689/3001sss500k/2007-218/c070806165300	0001	8.07	276.6	Secondary
h11689/3001sss500k/2007-197/c070716040900	0001	11.56	351.5	Secondary
h11689/3001sss500k/2007-197/c070716042900	0001	33.58	297.9	Secondary
h11689/3001sss500k/2007-197/c070716044900	0002	84.76	319.8	Secondary (grouped)

Hydrographer Recommendations

Hydrographer recommends charting Subm Wk. Hydrographer also recommends charting current surveyed soundings.

Cartographically-Rounded Depth (Affected Charts):

31ft (14839_1, 14826_1)

5 ¼fm (14500_1)

9.6m (14829_1, 14820_1)

S-57 Data

Geo object 1:	Wreck (WRECKS)
Attributes:	CATWRK - 2:dangerous wreck
	CONVIS - 2:not visual conspicuous
	INFORM - H11689, wreck
	OBJNAM - ALGERIA
	PICREP - c07091910001_s.tif;9813.jpg
	SORDAT - 20070806
	SORIND - US,US,nsurf,H11689
	STATUS - 1:permanent
	TECSOU - 1,2:found by echo-sounder,found by side scan sonar
	VALSOU - 9.643 m
	VERDAT - 12:Mean lower low water
	WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart dangerous submerged wreck least depth known 32-ft ((31.784ft)9.688m) at Latitude 41°31'13.612"N, Longitude 081°42'57.875"W. Recommend consultation with Ohio State Historic Preservation Office for determination of historic significance. Defer final charting disposition to MCD.

Feature Images

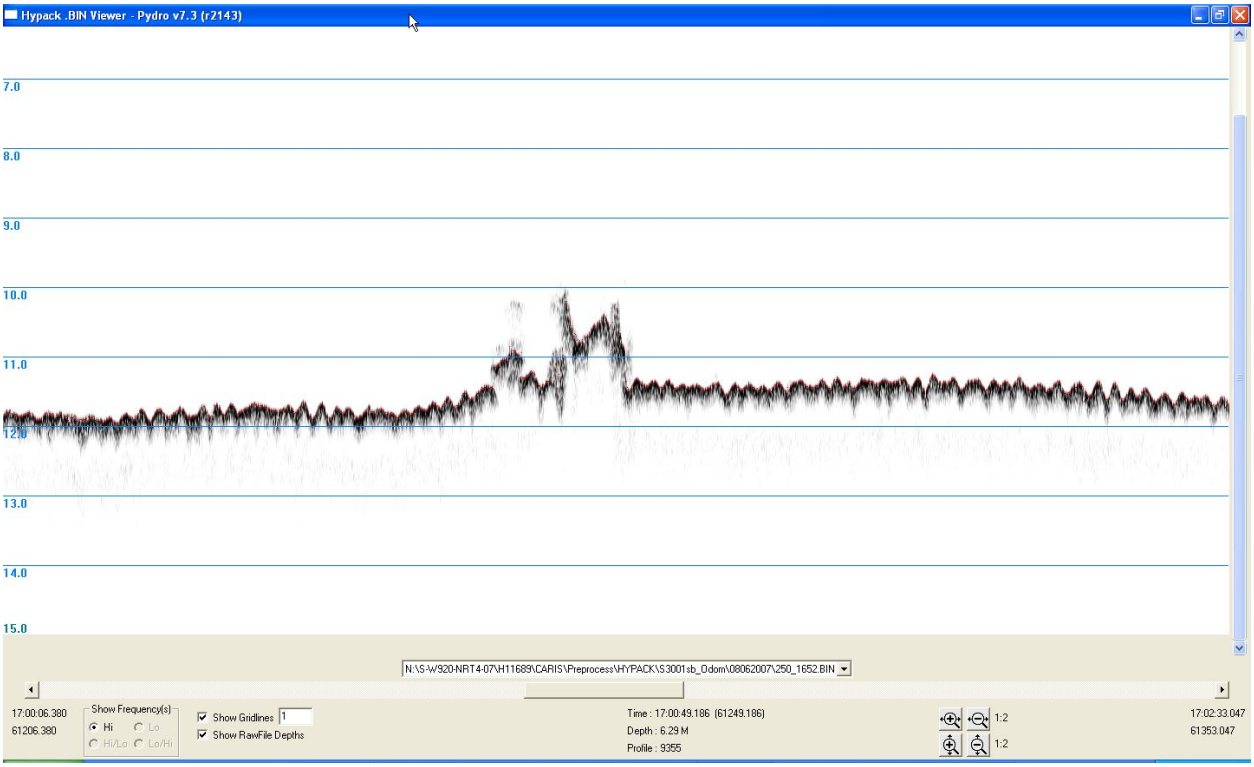


Figure 2.7.1

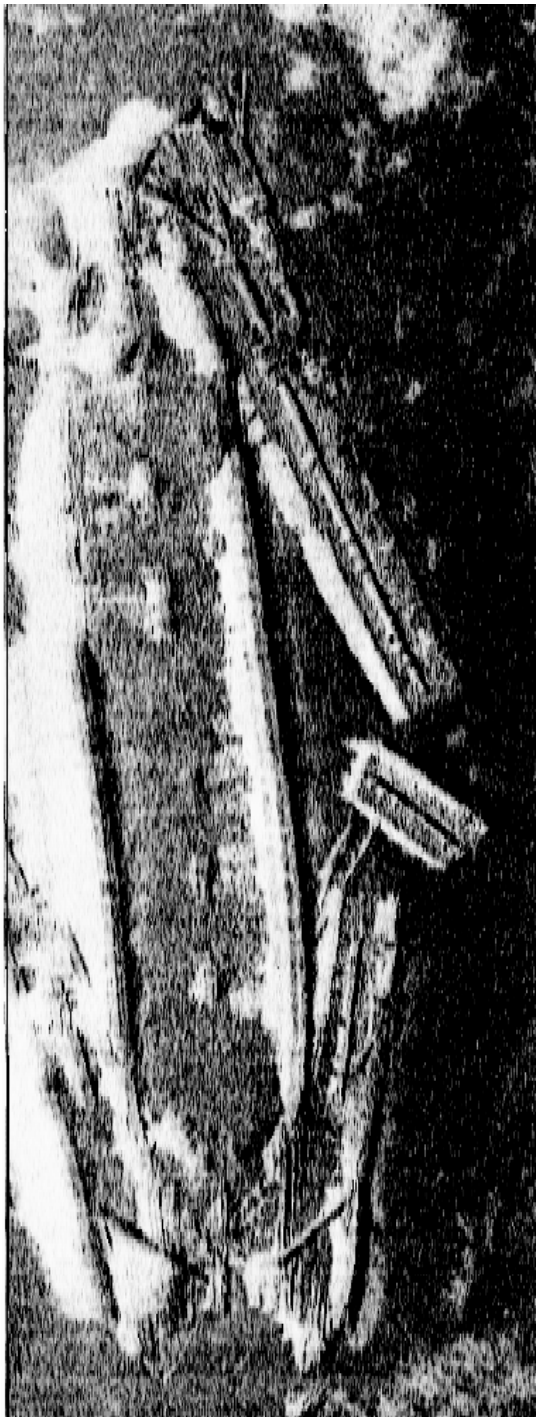


Figure 2.7.2

2.8) 28-ft Wk Charles H. Davis 15636/1

Survey Summary

Survey Position: 41° 30' 47.5" N, 081° 43' 30.2" W

Least Depth: 8.54 m (= 28.00 ft = 4.667 fm = 4 fm 4.00 ft)

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

Timestamp: 2007-198.15:18:02.000 (07/17/2007)

Survey Line: h11689 / 3001sb / 2007-198 / 005_1504

Profile/Beam: 15636/1

Charts Affected: 14839_1, 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Submerged Wk debris seen in SSS data. Shadow measured 1-3 meters high.

Contact investigated with VBES with very tight line spacing. LD of 28ft found. Wk is in location of currently charted 26 ft depths.

Field party believes this may the Shipwreck CHARLES H. DAVIS. According to michiganshipwrecks.com, the CHARLES H. DAVIS was a 145'. The ship was lost in a storm and not much remains but boards and a boiler. The wreck lies North of Cleveland Harbor. The website gives the location of the shipwreck as 41 30.780 N, 81 43.52 W, which corresponds to this subm wk.

The website alcheminc.com states that the CHARLES H. DAVIS was a wooden freighter of 145 ft that sank after opening at the seams in a storm 6/13/1903 off the breakwall at Cleveland, Ohio. The vessel carried a cargo of limestone at the time of the wreck. Watcher gives a DGPS location of 41deg 30.78', 81deg 43.52' and claims the remains are badly broken.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-198/005_1504	15636/1	0.00	000.0	Primary
h11689/3001sss500k/2007-197/c070716051200	0001	12.76	043.6	Secondary
h11689/3001sss500k/2007-218/c070806173600	0002	18.81	075.8	Secondary
h11689/3001sss500k/2007-218/c070806173600	0003	20.47	129.6	Secondary
h11689/3001sss500k/2007-197/c070716044900	0003	26.53	162.8	Secondary

Hydrographer Recommendations

Hydrographer recommends charting Subm Wk and also charting current surveyed soundings.

Cartographically-Rounded Depth (Affected Charts):

28ft (14839_1, 14826_1)

4 ½fm (14500_1)

8.5m (14829_1, 14820_1)

S-57 Data

Geo object 1:	Wreck (WRECKS)
Attributes:	CATWRK - 2:dangerous wreck
	CONVIS - 2:not visual conspicuous
	INFORM - H11689, wreck
	OBJNAM - Charles H. Davis
	PICREP - c07071600001_s.tif;15636.jpg;c07080610003_s.tif
	SORDAT - 20070717
	SORIND - US,US,nsurf,H11689
	STATUS - 1:permanent
	TECSOU - 1,2:found by echo-sounder,found by side scan sonar
	VALSOU - 8.535 m
	VERDAT - 13:Low water
	WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart dangerous submerged wreck with least depth known 28ft (8.662m) at latitude 41°30'47.497"N, longitude 081°43'30.163"W. Recommend consultation with Ohio State Historic Preservation Office for determination of historic significance. Defer final charting disposition to MCD.

Feature Images

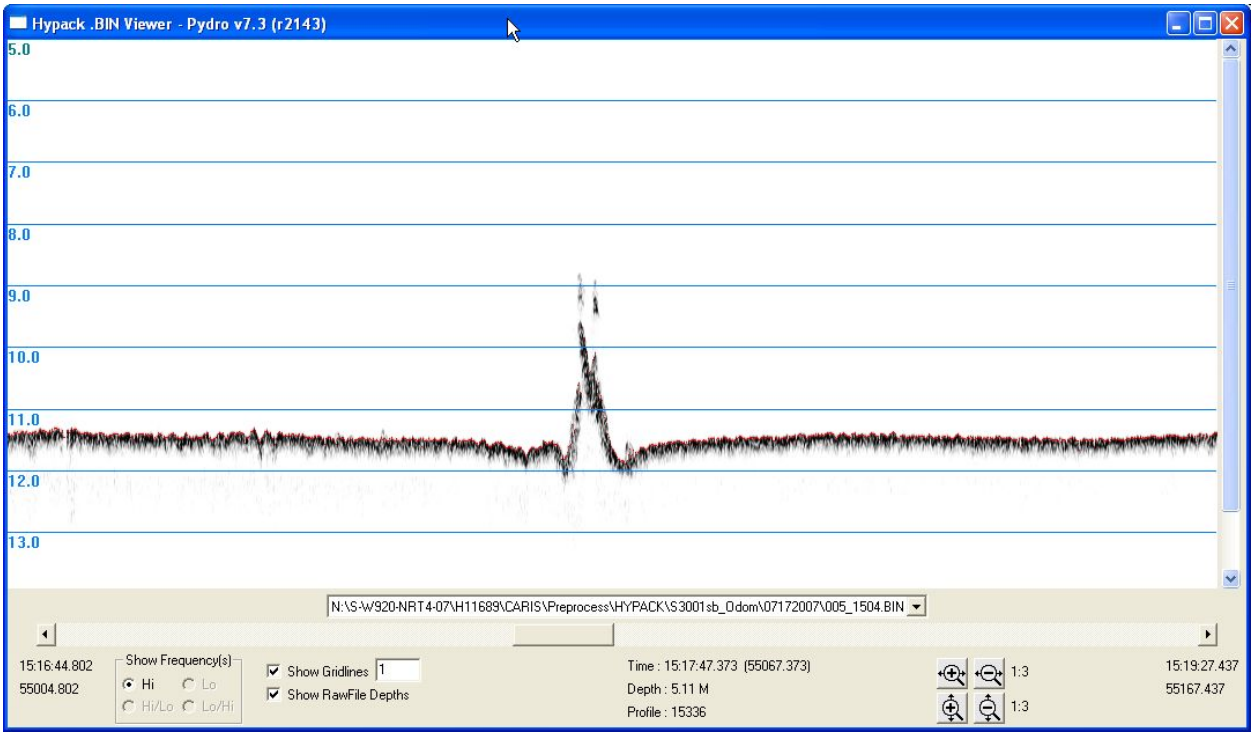


Figure 2.8.1

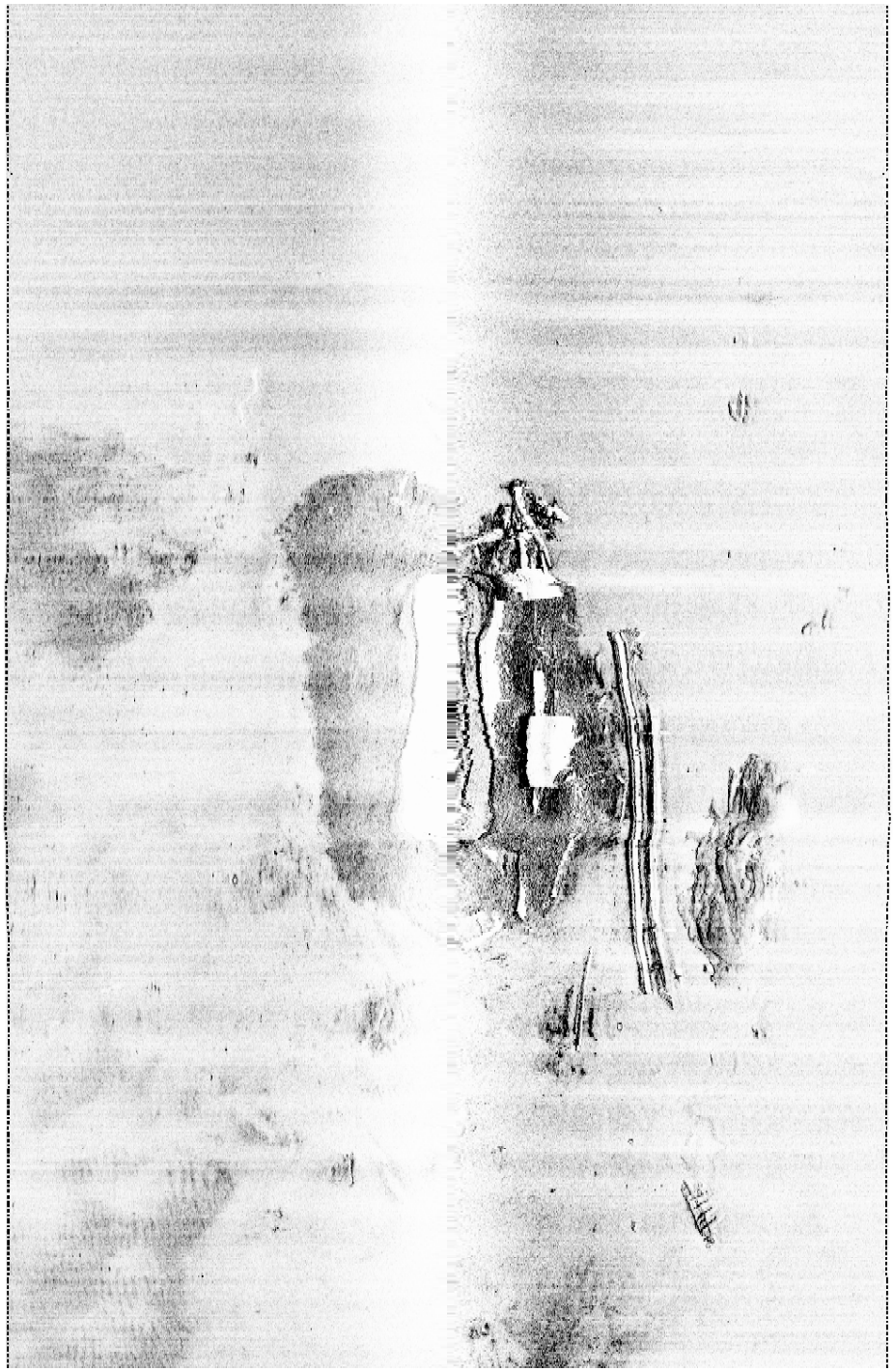


Figure 2.8.2

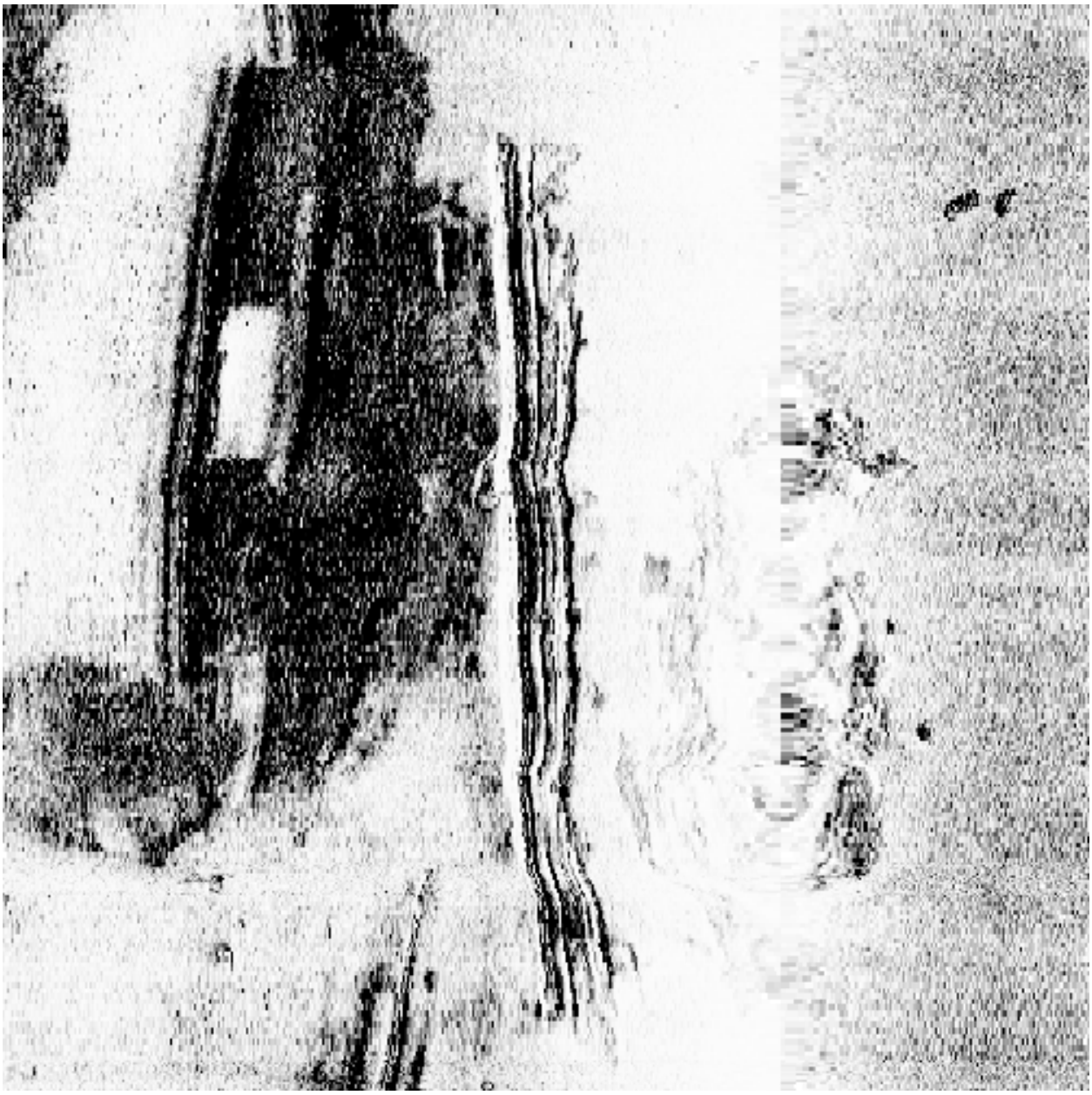


Figure 2.8.3

2.9) 22-ft Wk (barge) 560/1

Survey Summary

Survey Position: 41° 30' 45.8" N, 081° 42' 35.6" W

Least Depth: 6.68 m (= 21.90 ft = 3.650 fm = 3 fm 3.90 ft)

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

Timestamp: 2007-267.16:55:58.604 (09/24/2007)

Survey Line: h11689 / 3001sb / 2007-267 / 018_1655

Profile/Beam: 560/1

Charts Affected: 14839_1, 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Subm Wk seen in SSS data. Appears to be a barge, lying oriented in a SW-NE direction. Shadow measured approx 1-2.5 m high.

Wreck investigated by field party with VBES in a star-shaped pattern. LD of 21.90' obtained in 19 ft depth area. Wreck appears to be 2m high in VBES trace.

No evidence of a historic wreck recorded at this location was found by field party.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-267/018_1655	560/1	0.00	000.0	Primary
h11689/3001sss500k/2007-199/c070718055000	0001	7.80	317.9	Secondary
h11689/3001sss500k/2007-248/c070905153100	0001	13.10	033.3	Secondary
h11689/3001sss500k/2007-248/c070920105300	0001	23.89	049.2	Secondary

Hydrographer Recommendations

Hydrographer recommends charting Subm Wk current surveyed soundings.

Cartographically-Rounded Depth (Affected Charts):

22ft (14839_1, 14826_1)

3 ½fm (14500_1)

6.7m (14829_1, 14820_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes:

CATWRK - 2:dangerous wreck

CONVIS - 2:not visual conspicuous

INFORM - H11689, Wreck 22-ft

PICREP - c07090510001_s.tif;560.jpg

SORDAT - 20070924

SORIND - US,US,nsurf,H11689

STATUS - 1:permanent

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

VALSOU - 6.676 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart dangerous submerged wreck least depth known 22-ft (21.90ft (6.676m)) at Latitude 41°30'45.766"N, Longitude 081°42'35.563"W.

Feature Images

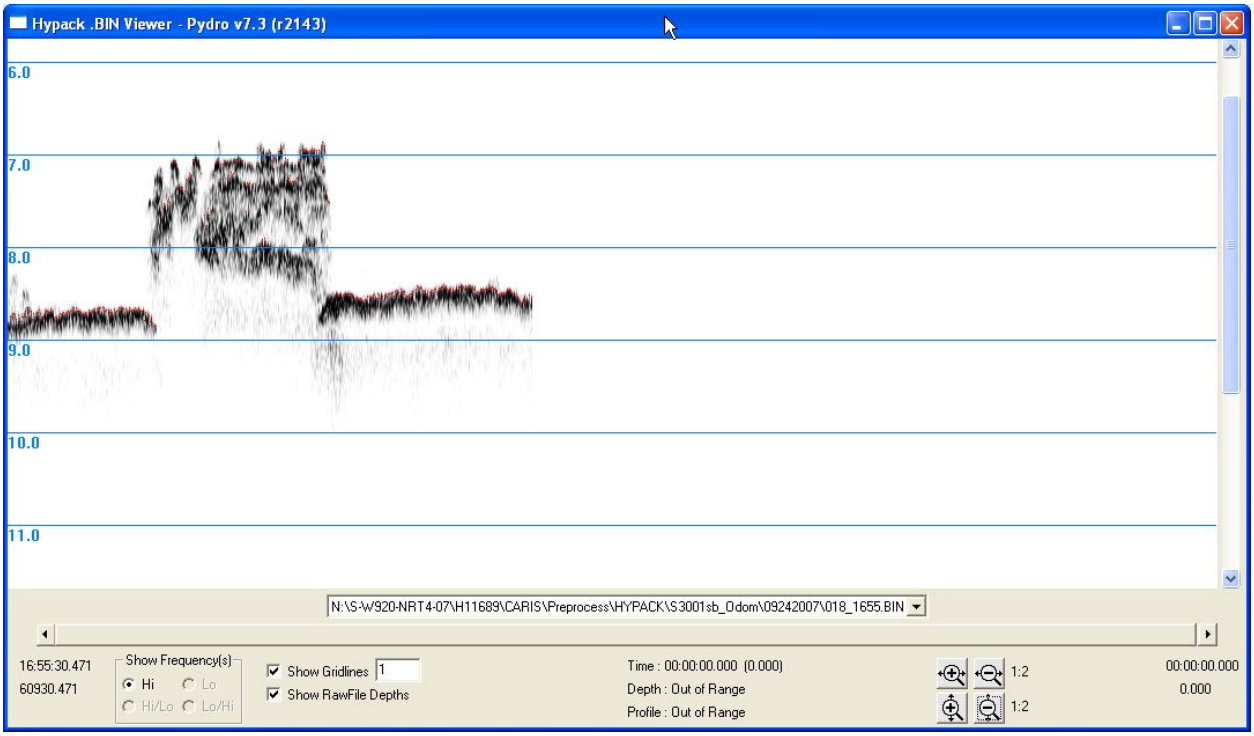


Figure 2.9.1

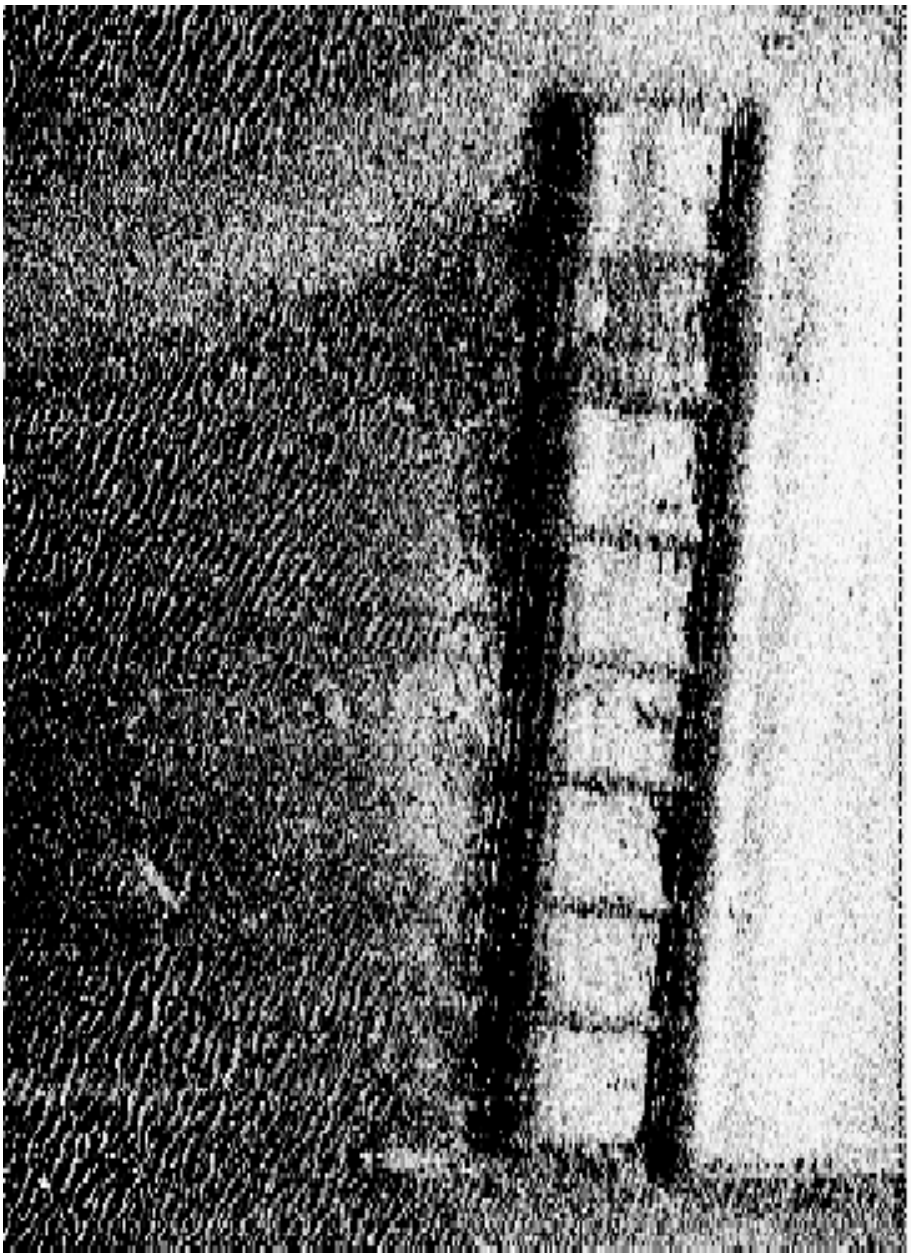


Figure 2.9.2

2.10) 30-ft Rk 450/1

Survey Summary

Survey Position: 41° 30' 27.3" N, 081° 44' 02.3" W

Least Depth: 9.31 m (= 30.54 ft = 5.090 fm = 5 fm 0.54 ft)

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

Timestamp: 2007-267.17:25:14.700 (09/24/2007)

Survey Line: h11689 / 3001sb / 2007-267 / 022_1724

Profile/Beam: 450/1

Charts Affected: 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Rock Pile seen in SSS data. Shadow measured approx. 1.5m.

Rock pile investigated by field party w/ VBES in start-shaped pattern. Rock appears to be approx 1.0m high in VBES trace.

LD of 30.54 ft found in charted 33 ft depth area.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-267/022_1724	450/1	0.00	000.0	Primary
h11689/3001sss500k/2007-198/c070717024600	0002	1.65	085.9	Secondary
h11689/3001sss500k/2007-198/c070717025100	0001	6.24	163.8	Secondary

Hydrographer Recommendations

Hydrographer recommends charting Subm Rk current surveyed soundings.

Cartographically-Rounded Depth (Affected Charts):

30ft (14826_1)

5fm (14500_1)

9.3m (14829_1, 14820_1)

S-57 Data

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

Attributes: INFORM - H11689, rock

QUASOU - 6:least depth known

SORDAT - 20070924

SORIND - US,US,nsurf,H11689

STATUS - 1:permanent

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

VALSOU - 9.309 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart submerged rock least depth known 30.54ft (9.309m) at latitude 41°30'27.289"N, longitude 081°44'02.318"W.

Feature Images

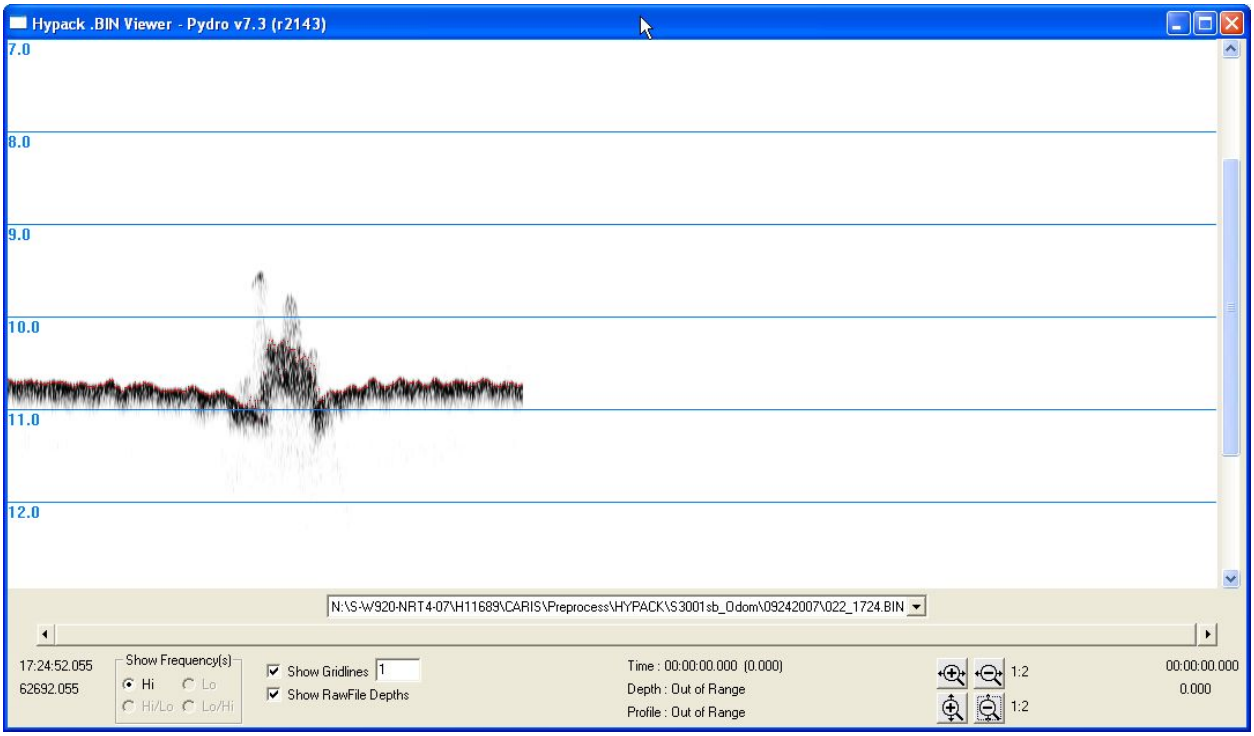


Figure 2.10.1

Figure 2.10.2

2.11) 26-ft Obstn 836/1

Survey Summary

Survey Position: 41° 30' 26.5" N, 081° 44' 20.9" W

Least Depth: 8.14 m (= 26.72 ft = 4.454 fm = 4 fm 2.72 ft)

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

Timestamp: 2007-267.17:48:54.000 (09/24/2007)

Survey Line: h11689 / 3001sb / 2007-267 / 038_1748

Profile/Beam: 836/1

Charts Affected: 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Uncharted reef surrounding charted crib found with SSS. Investigation with VBES at 20m line spacing found least depth of 26.72ft in charted depths of 34ft. Height of 2.5m seen in VBES trace.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-267/038_1748	836/1	0.00	000.0	Primary
h11689/3001sss500k/2007-198/c070717025100	0003	18.50	262.1	Secondary
h11689/3001sss500k/2007-198/c070717025600	0001	26.69	272.8	Secondary
h11689/3001sss500k/2007-198/c070717024600	0001	59.93	233.5	Secondary (grouped)
h11689/3001sss500k/2007-198/c070717030100	0002	68.42	286.5	Secondary (grouped)
h11689/3001sss500k/2007-198/c070717024000	0001	77.24	196.4	Secondary (grouped)

Hydrographer Recommendations

Hydrographer recommends charting submerged obstruction using current survey soundings.

Cartographically-Rounded Depth (Affected Charts):

26ft (14826_1)

4 ½fm (14500_1)

8.1m (14829_1, 14820_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes:

INFORM - H11689,26-ft Obstn

QUASOU - 6:least depth known

SORDAT - 20070925

SORIND - US,US,Nsurf,H11689

STATUS - 1:permanent

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

VALSOU - 8.145 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart sumberged obstruction least depth known 26-ft (26.722ft (8.145m) at latitude 41°30'26.516"N, longitude 081°44'20.942"W.

Feature Images

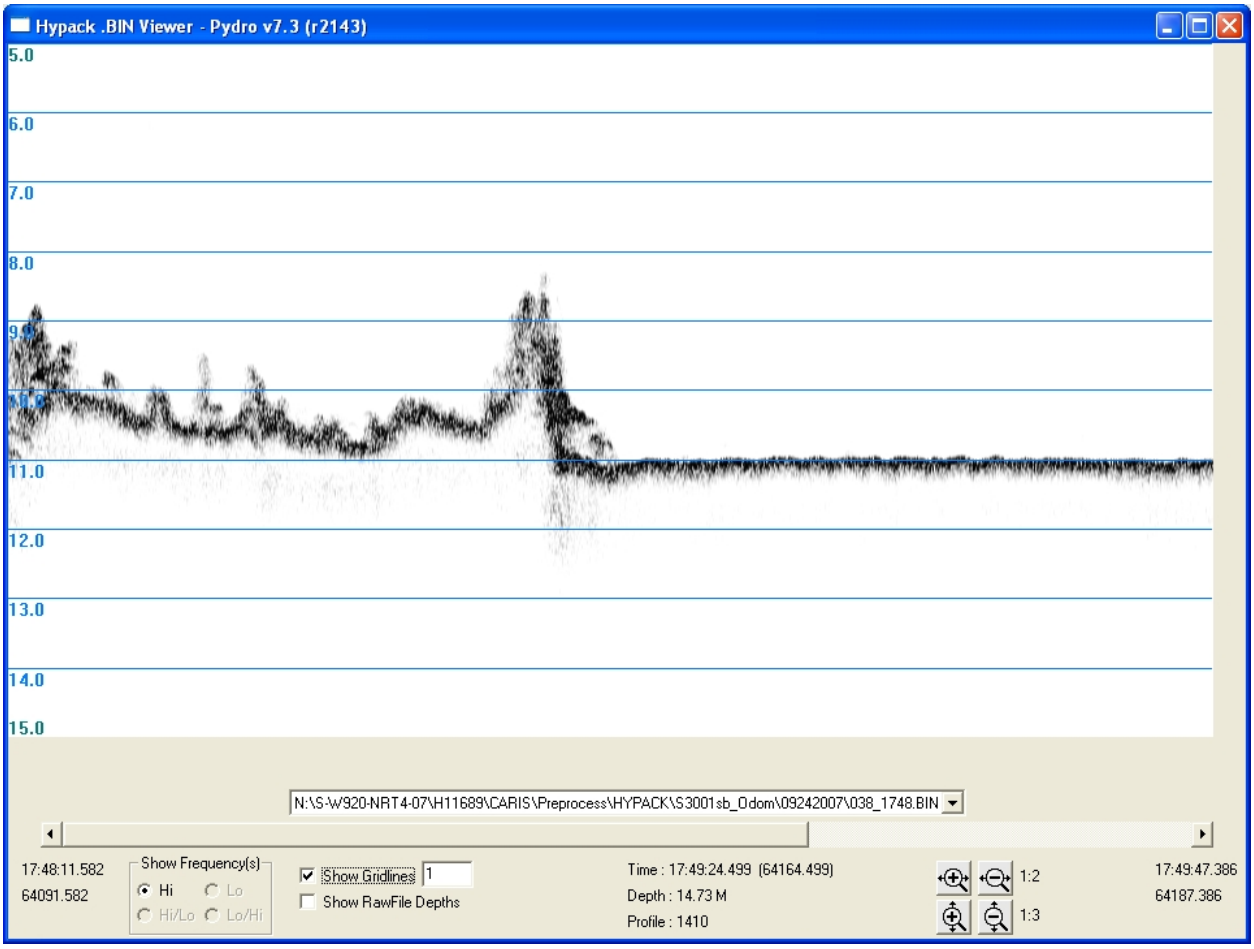


Figure 2.11.1

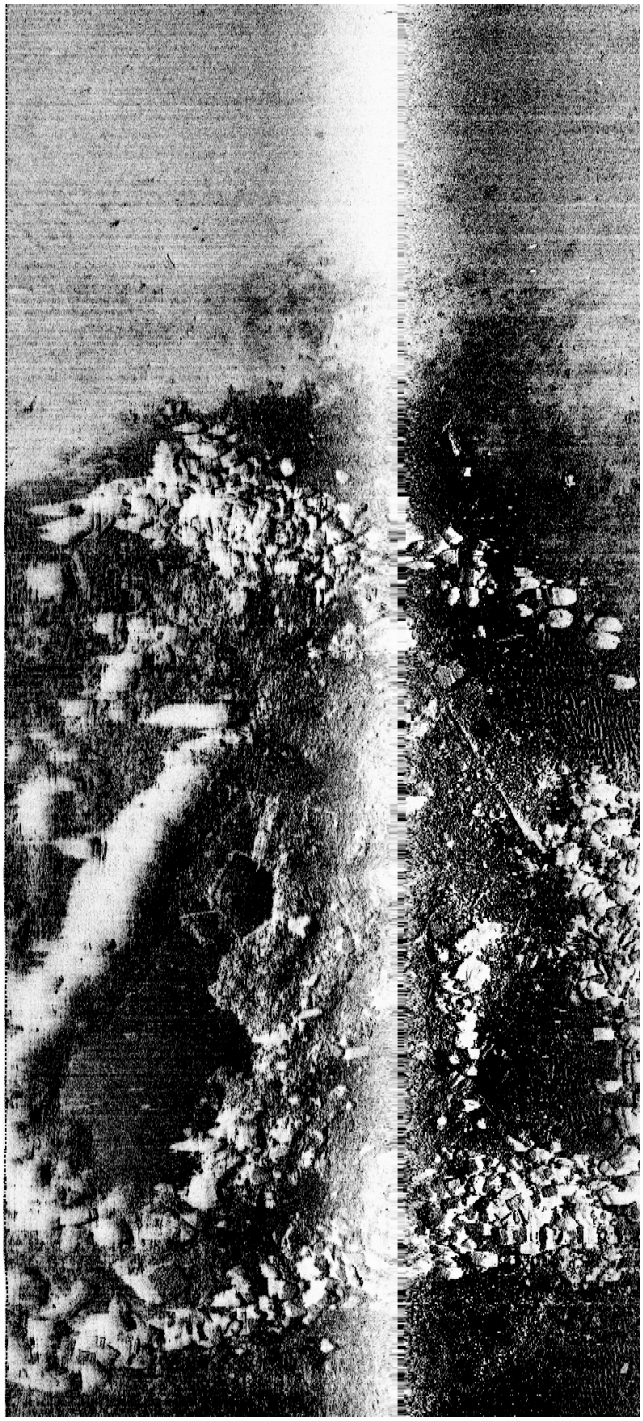


Figure 2.11.2

2.12) 28-ft Rk 2803/1

Survey Summary

Survey Position: 41° 30' 18.4" N, 081° 45' 33.7" W

Least Depth: 8.48 m (= 27.84 ft = 4.640 fm = 4 fm 3.84 ft)

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

Timestamp: 2007-197.14:38:34.000 (07/16/2007)

Survey Line: h11689 / 3001sb / 2007-197 / 201_1436

Profile/Beam: 2803/1

Charts Affected: 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Rock pile found with SSS. Investigation with VBES star pattern found least depth of 27.84ft in charted depths of 36ft. Height of approx 2.5m seen in VBES trace.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-197/201_1436	2803/1	0.00	000.0	Primary
h11689/3001sss500k/2007-197/c070716025300	0002	2.82	315.0	Secondary
h11689/3001sss500k/2007-191/c070710031200	0001	3.87	287.6	Secondary
h11689/3001sss500k/2007-191/c070710030300	0001	20.43	104.1	Secondary

Hydrographer Recommendations

Hydrographer recommends charting Rk using current survey soundings.

Cartographically-Rounded Depth (Affected Charts):

28ft (14826_1)

4 ½fm (14500_1)

8.5m (14829_1, 14820_1)

S-57 Data

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

Attributes: INFORM - H11689, UWTROC 28-ft

QUASOU - 2:depth unknown

SORDAT - 20070716

SORIND - US,US,nsurf,H11689

STATUS - 1:permanent

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

VALSOU - 8.485 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarificiation. Chart submerged rock with least depth known 28-ft ((27.839ft) 8.485m) at latitude 41°30'18.377"N, longitude 081°45'33.718"W.

Feature Images

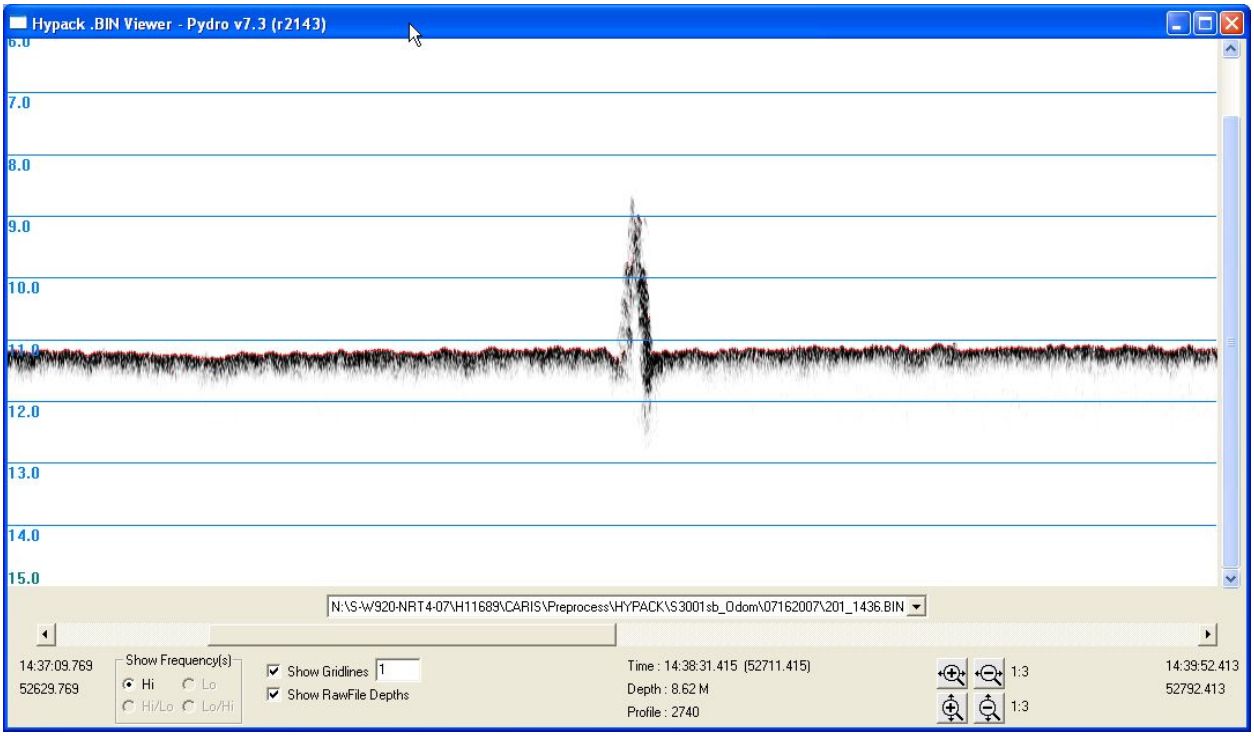


Figure 2.12.1

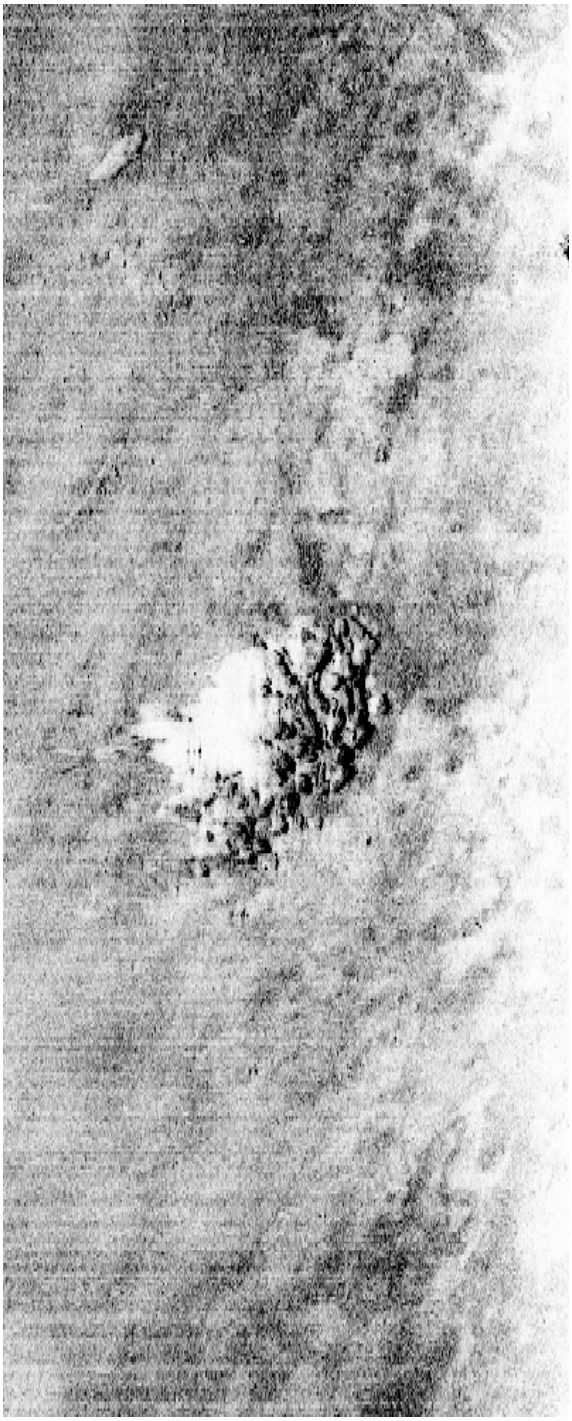


Figure 2.12.2

2.13) 13-ft RK 412/1

Survey Summary

Survey Position: 41° 29' 50.2" N, 081° 45' 42.4" W

Least Depth: 3.90 m (= 12.81 ft = 2.135 fm = 2 fm 0.81 ft)

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

Timestamp: 2007-268.13:48:21.103 (09/25/2007)

Survey Line: h11689 / 3001sb / 2007-268 / 066_1347

Profile/Beam: 412/1

Charts Affected: 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Rock ledge found with SSS. Investigated with VBES in star shaped pattern. Least depth found was 12.81 ft in surrounding depths of +18ft. Height of object in VBES trace is approximately 3m.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-268/066_1347	412/1	0.00	000.0	Primary
h11689/3001sss500k/2007-191/c070710050200	0001	3.98	277.9	Secondary
h11689/3001sss500k/2007-191/c070710062900	0001	4.30	062.3	Secondary

Hydrographer Recommendations

Hydrographer recommends charting current survey depths.

Cartographically-Rounded Depth (Affected Charts):

13ft (14826_1)

2fm (14500_1)

3.9m (14829_1, 14820_1)

S-57 Data

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

Attributes: INFORM - H11689, UWTROC 13-ft

QUASOU - 6:least depth known

SORDAT - 20070925

SORIND - US,US,nsurf,H11689

STATUS - 1:permanent

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

VALSOU - 3.904 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Do not concur. Chart as submerged rock with least depth known 13-ft ((12.808ft)3.904m) at Latitude 41°29'50.187"N, Longitude 081°45'42.443"W.

Feature Images

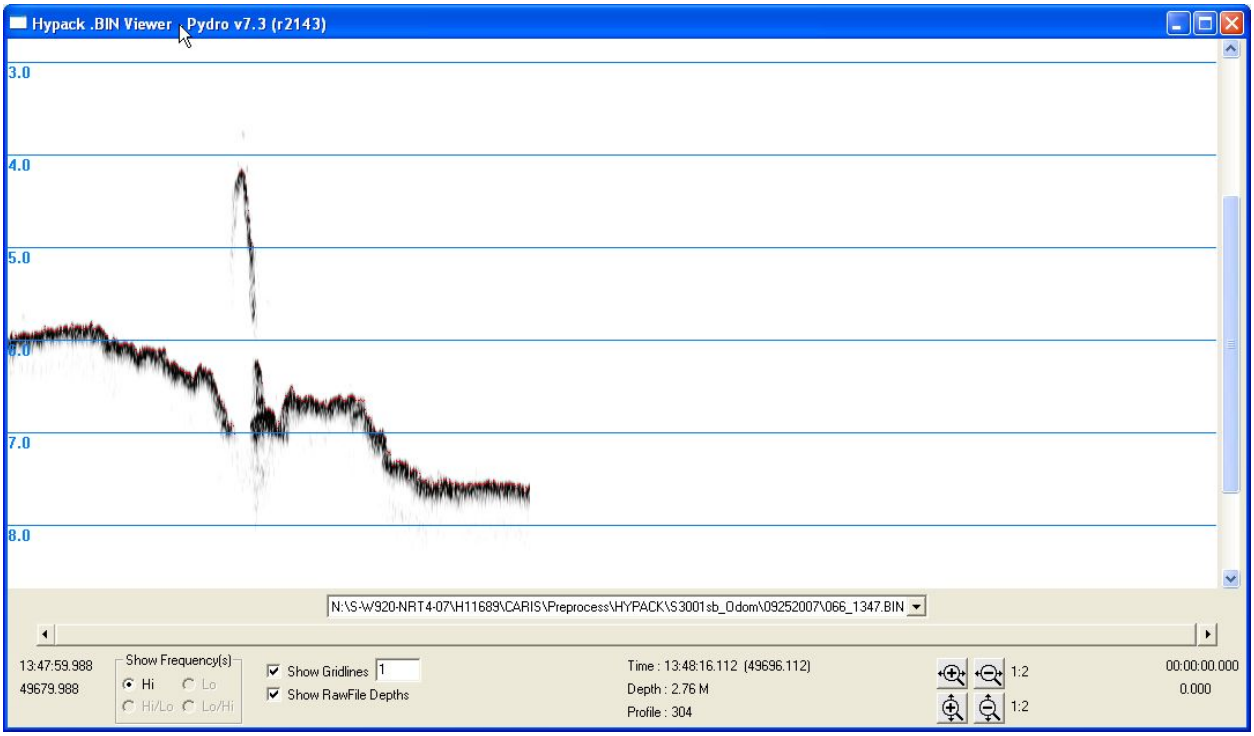


Figure 2.13.1

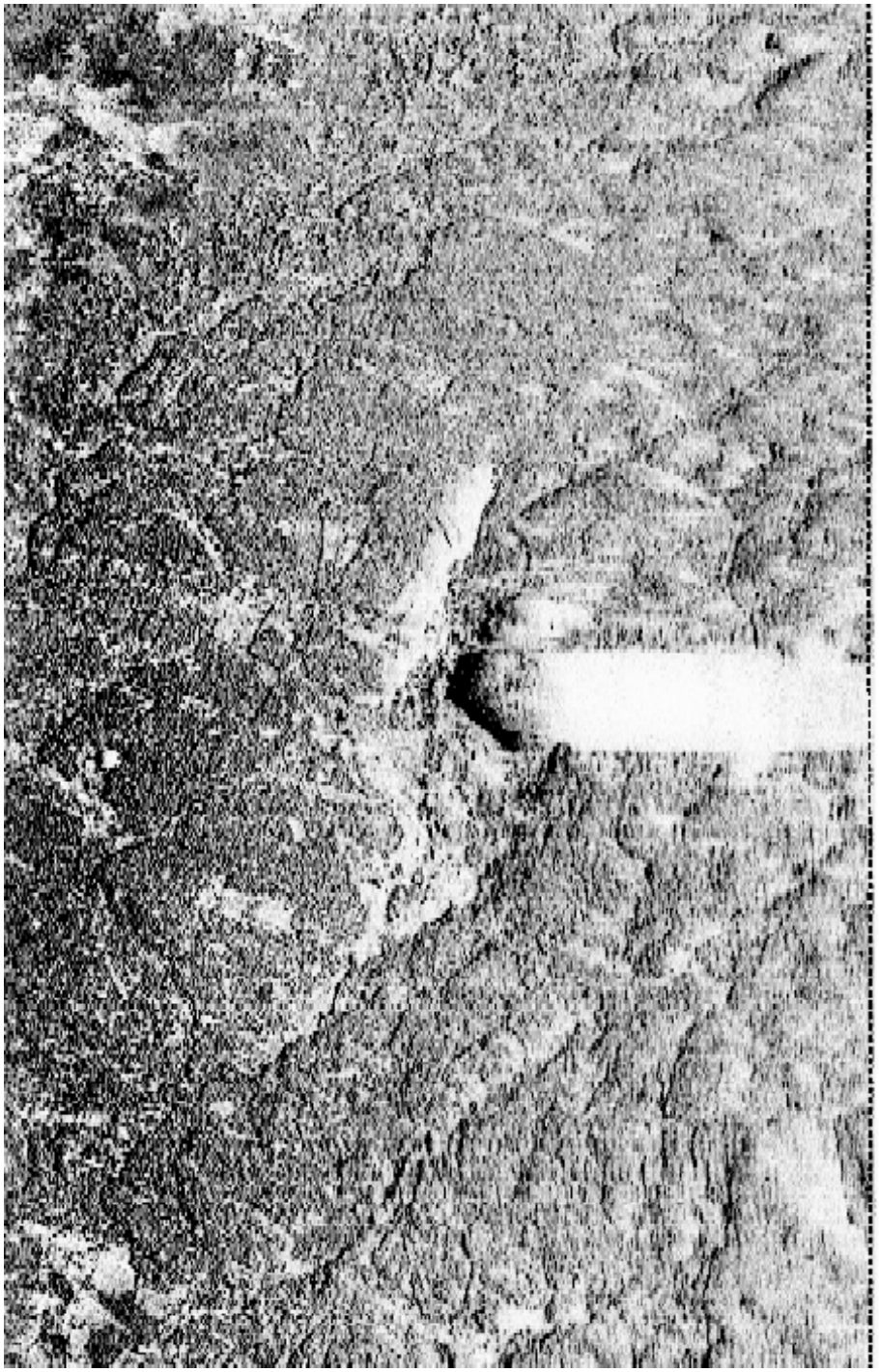


Figure 2.13.2

2.14) 29-ft Rk 548/1

Survey Summary

Survey Position: 41° 31' 32.6" N, 081° 42' 03.3" W

Least Depth: 8.77 m (= 28.77 ft = 4.795 fm = 4 fm 4.77 ft)

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

Timestamp: 2007-267.16:33:45.274 (09/24/2007)

Survey Line: h11689 / 3001sb / 2007-267 / 011_1633

Profile/Beam: 548/1

Charts Affected: 14839_1, 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Rock found with SSS. Investigated contact with VBES in star shaped pattern. Least depth is 28.77 ft in surrounding charted depths of 30 ft. Height of contact approximately 1.5m in VBES trace.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-267/011_1633	548/1	0.00	000.0	Primary
h11689/3001sss500k/2007-218/c070806182800	0002	4.57	341.1	Secondary
h11689/3001sss500k/2007-198/c070717044300	0003	5.87	053.5	Secondary

Hydrographer Recommendations

Hydrographer recommends charting Rk and surrounding survey depths.

Cartographically-Rounded Depth (Affected Charts):

29ft (14839_1, 14826_1)

4 ¾fm (14500_1)

8.8m (14829_1, 14820_1)

S-57 Data

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

Attributes: INFORM - H11689, rock 29-ft

QUASOU - 6:least depth known

SORDAT - 20070925

SORIND - US,US,nsurf,H11689

STATUS - 1:permanent

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

VALSOU - 8.770 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart submerged rock least depth known 29-ft (28.77ft) at Latitude 41°31'32.610"N, Longitude 081°42'03.348"W.

Feature Images

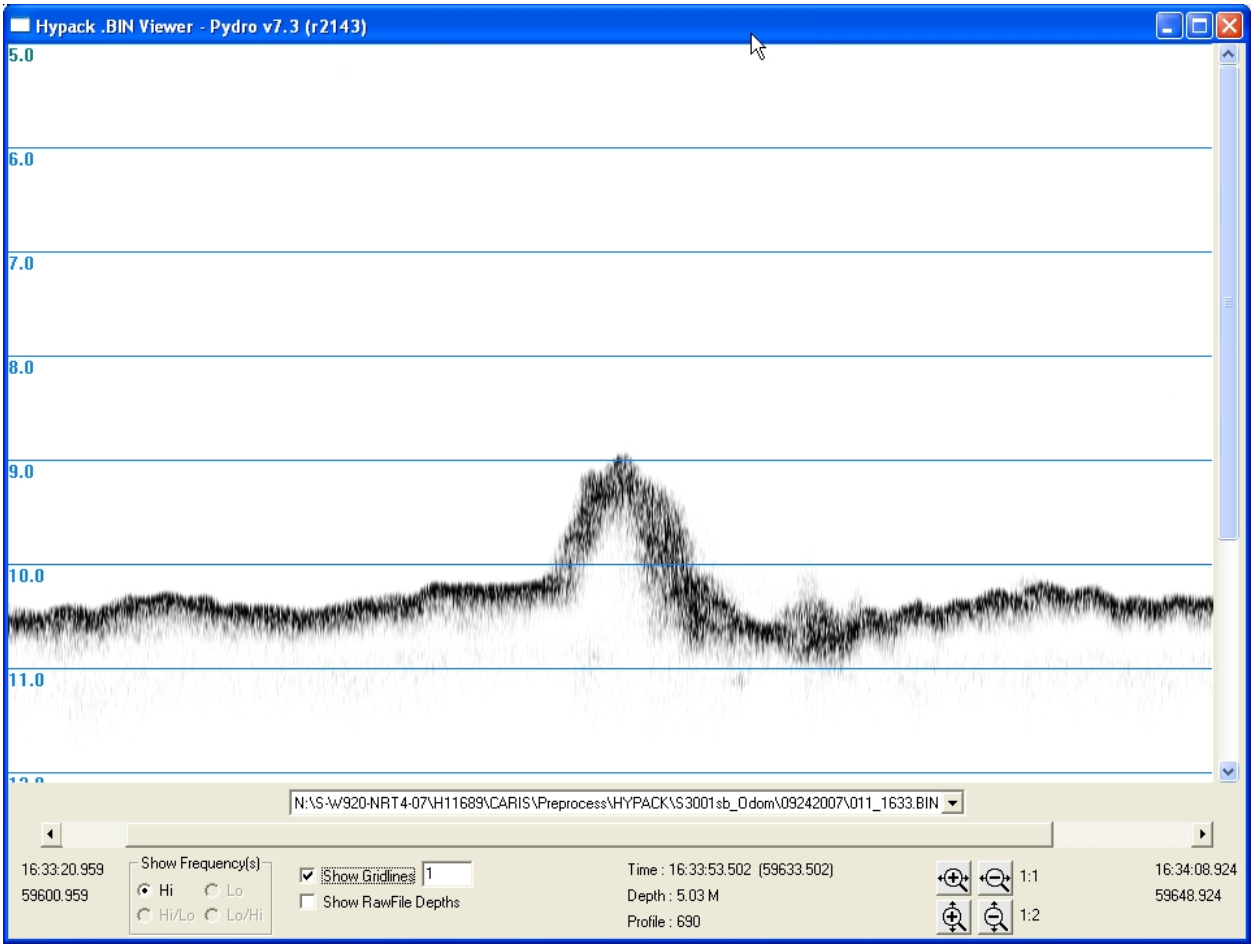


Figure 2.14.1

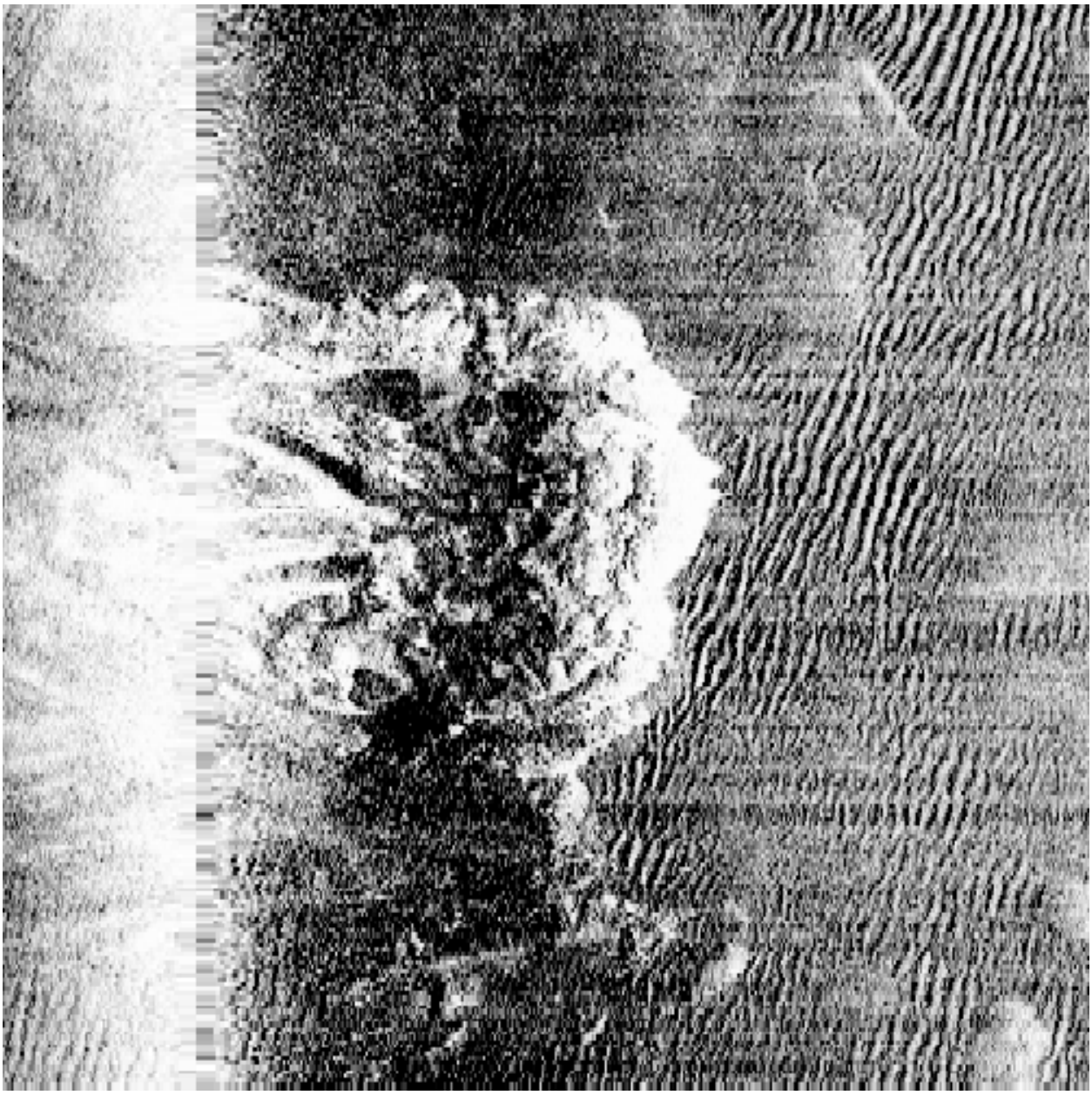


Figure 2.14.2

2.15) 32-ft RK 140/1

Survey Summary

Survey Position: 41° 30' 55.6" N, 081° 43' 11.4" W

Least Depth: 9.89 m (= 32.45 ft = 5.408 fm = 5 fm 2.45 ft)

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

Timestamp: 2007-267.17:10:03.000 (09/24/2007)

Survey Line: h11689 / 3001sb / 2007-267 / 025_1709

Profile/Beam: 140/1

Charts Affected: 14839_1, 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Contact found with SSS. Investigated by field party with VBES using 20m line spacing. Found least depth of 32.45 ft in charted surrounding depths of 29ft. Contact height is approximately 1.25m in VBES trace.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-267/025_1709	140/1	0.00	000.0	Primary
h11689/3001sss500k/2007-198/c070717044300	0001	14.57	280.8	Secondary
h11689/3001sss500k/2007-218/c070806180000	0001	17.37	115.4	Secondary
h11689/3001sss500k/2007-218/c070806180000	0002	26.28	302.7	Secondary
h11689/3001sss500k/2007-218/c070806182800	0001	82.01	337.3	Secondary (grouped)
h11689/3001sss500k/2007-198/c070717051300	0002	97.47	326.7	Secondary (grouped)
h11689/3001sss500k/2007-247/c070904145900	0001	131.17	328.4	Secondary (grouped)

Hydrographer Recommendations

Hydrographer recommends charting extent of reef using current survey soundings.

Cartographically-Rounded Depth (Affected Charts):

32ft (14839_1, 14826_1)

5 ¼fm (14500_1)

9.9m (14829_1, 14820_1)

S-57 Data

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

Attributes:

INFORM - H11689,32-ft UWTROC

QUASOU - 6:least depth known

SORDAT - 20070925

SORIND - US,US,nsurf,H11689

STATUS - 1:permanent

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

VALSOU - 9.891 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart submerged rock least depth known 32-ft ((32.45ft) 9.891m) located in Latitude 41°30'55.567"N, Longitude 081°43'11.358"W.

Feature Images

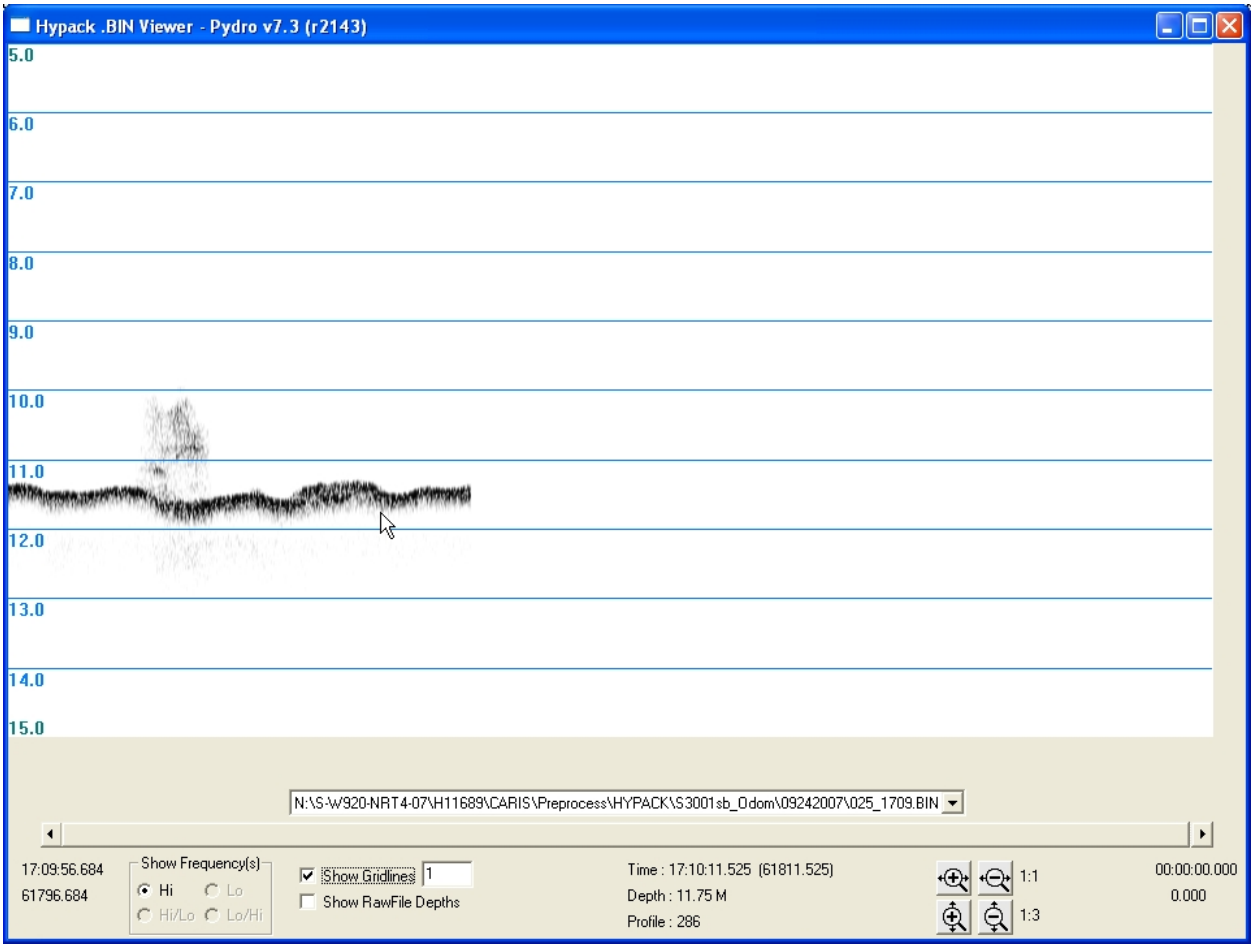


Figure 2.15.1

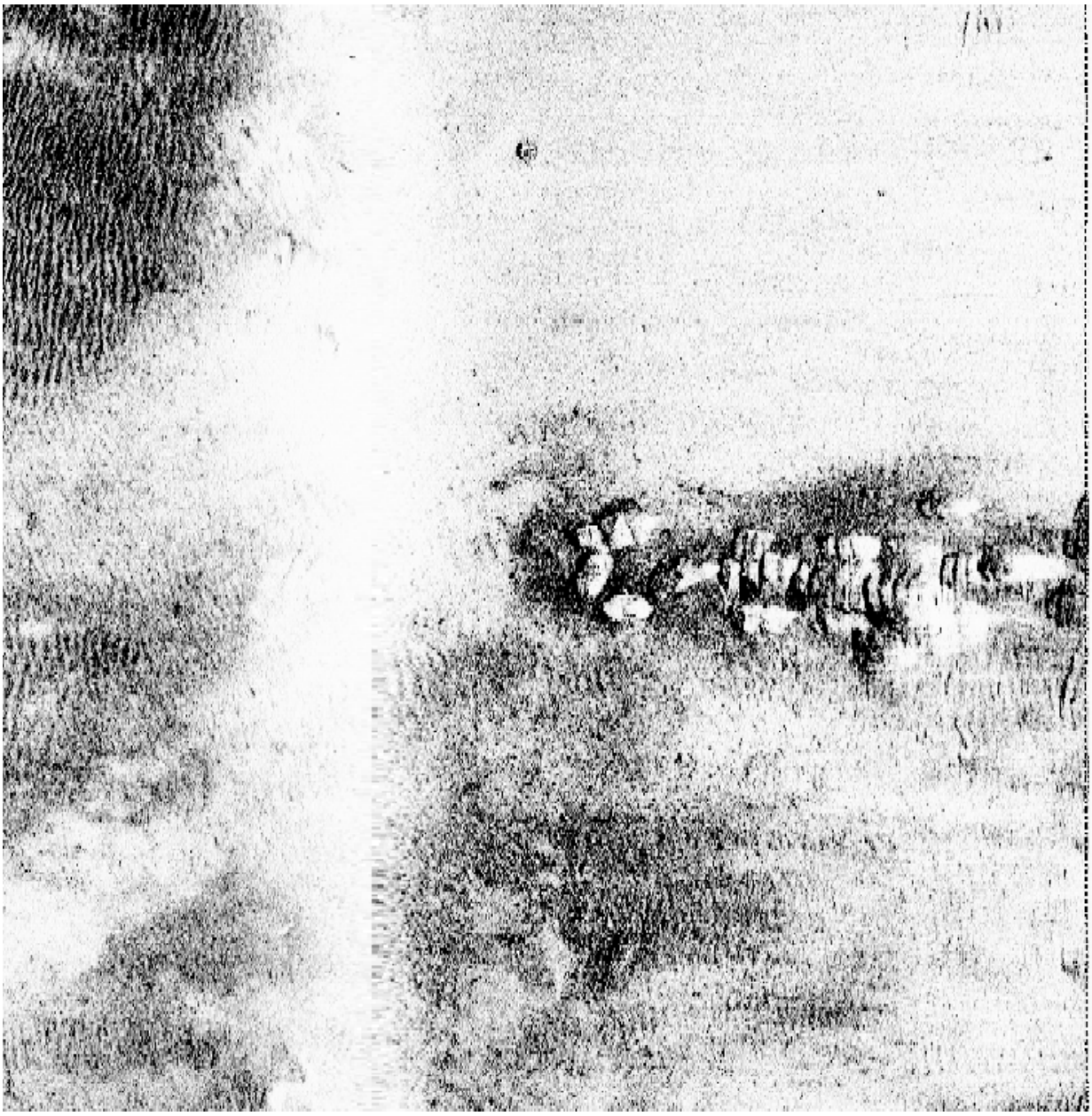


Figure 2.15.2

2.16) 21-ft RK 535/1

Survey Summary

Survey Position: 41° 30' 45.9" N, 081° 42' 28.0" W

Least Depth: 6.43 m (= 21.10 ft = 3.517 fm = 3 fm 3.10 ft)

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

Timestamp: 2007-267.16:46:41.000 (09/24/2007)

Survey Line: h11689 / 3001sb / 2007-267 / 015_1646

Profile/Beam: 535/1

Charts Affected: 14839_1, 14826_1, 14829_1, 14820_1, 14500_1

Remarks:

Group of rocks found with SSS. Investigated with VBES star pattern. Least depth found was 21.10ft in surrounding soundings of 25.19ft. Surrounding area has charted depths of 22ft, but was found to be deeper than charted. Height was 1.5m in VBES trace.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11689/3001sb/2007-267/015_1646	535/1	0.00	000.0	Primary
h11689/3001sss500k/2007-248/c070920104300	0001	1.96	243.4	Secondary

Hydrographer Recommendations

Hydrographer recommends charting rocks and surrounding soundings using current survey data.

Cartographically-Rounded Depth (Affected Charts):

21ft (14839_1, 14826_1)

3 ½fm (14500_1)

6.4m (14829_1, 14820_1)

S-57 Data

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

Attributes: INFORM - HY11689, 21-ft Rk

QUASOU - 6:least depth known

SORDAT - 20070924

SORIND - US,US,nsurf,H11689

STATUS - 1:permanent

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

VALSOU - 6.432 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart submerged rock least depth known 21-ft ((21.10ft) 6.432m) in Latitude 41°30'45.865"N, Longitude 081°42'27.989"W.

Feature Images

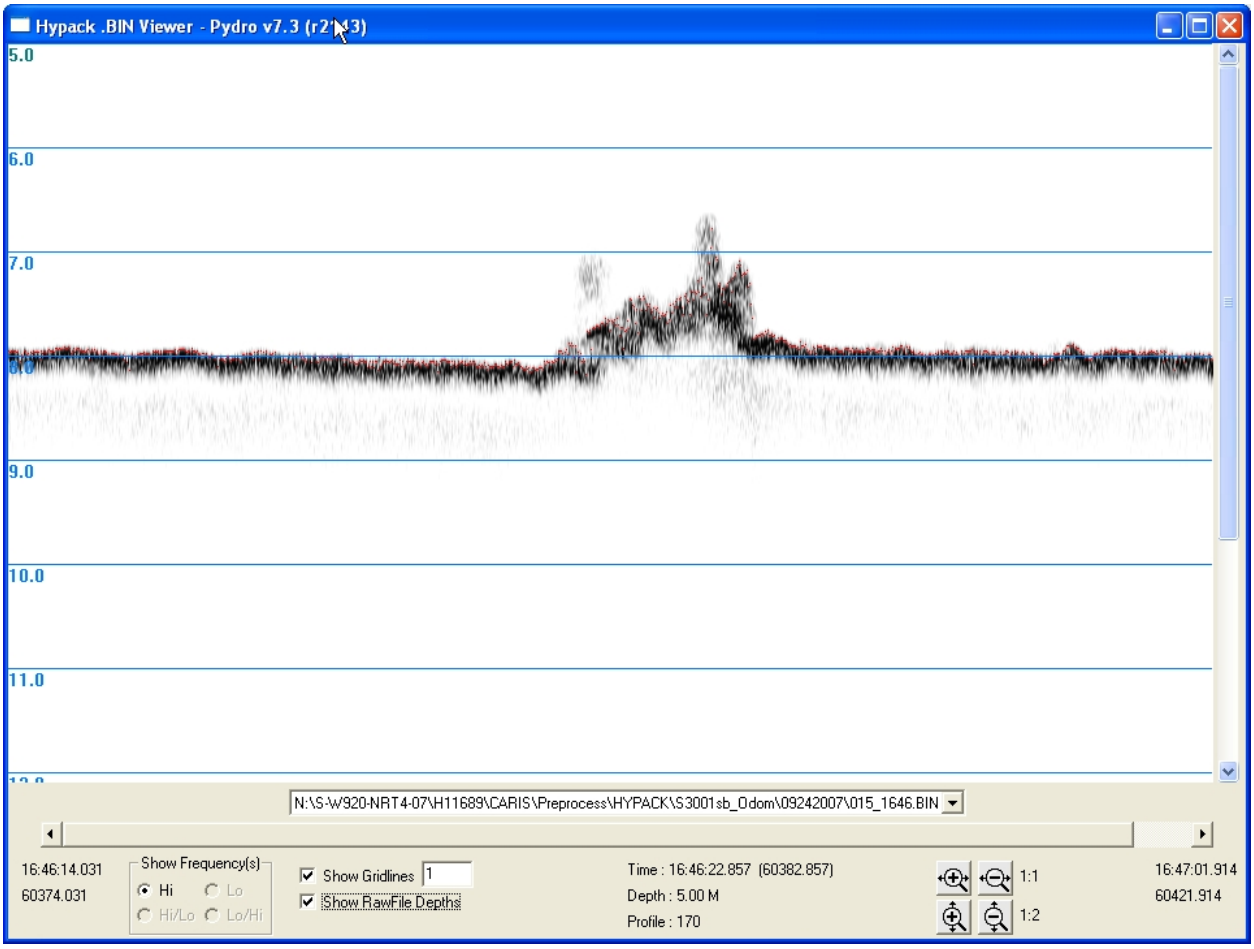


Figure 2.16.1

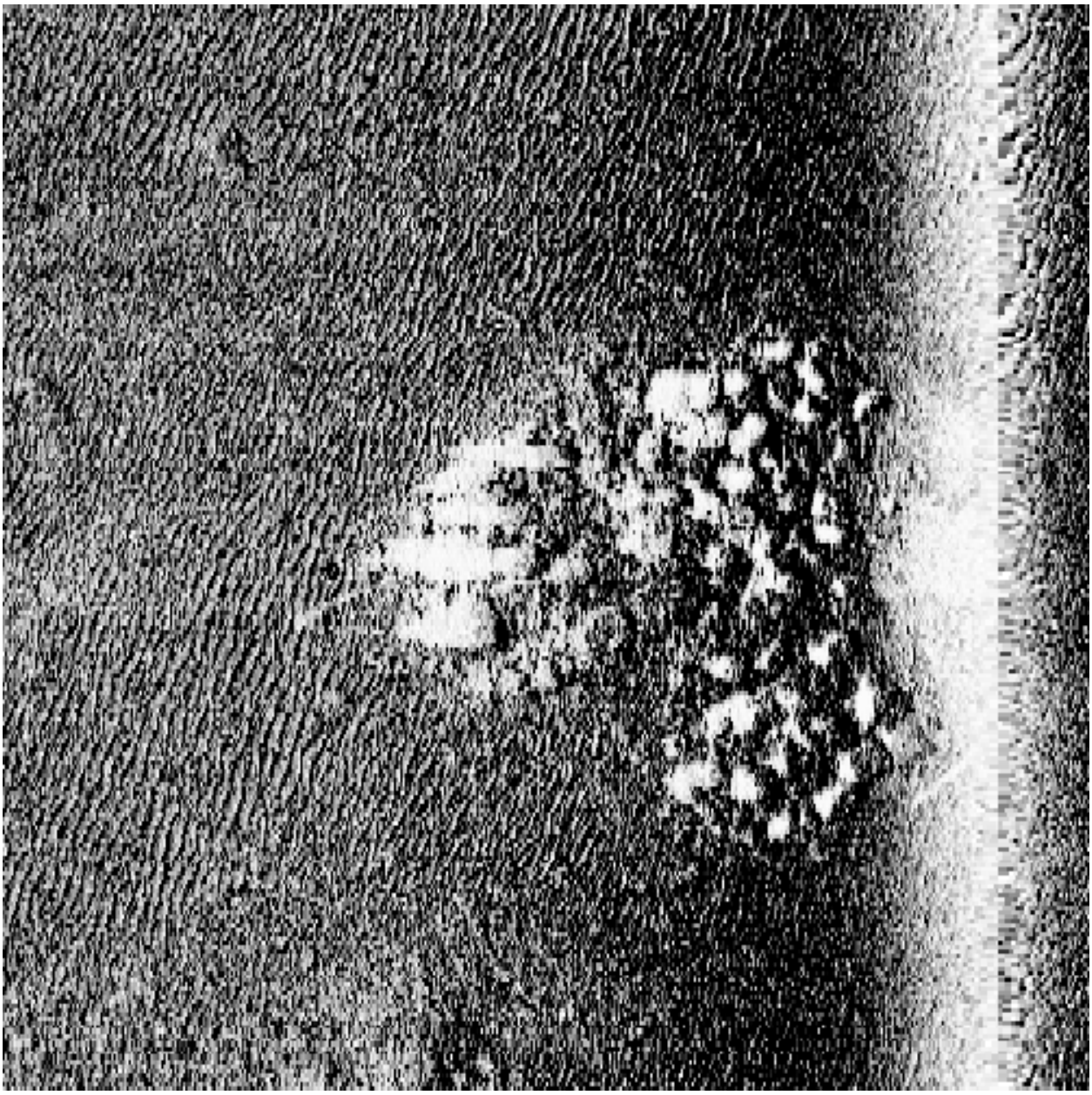
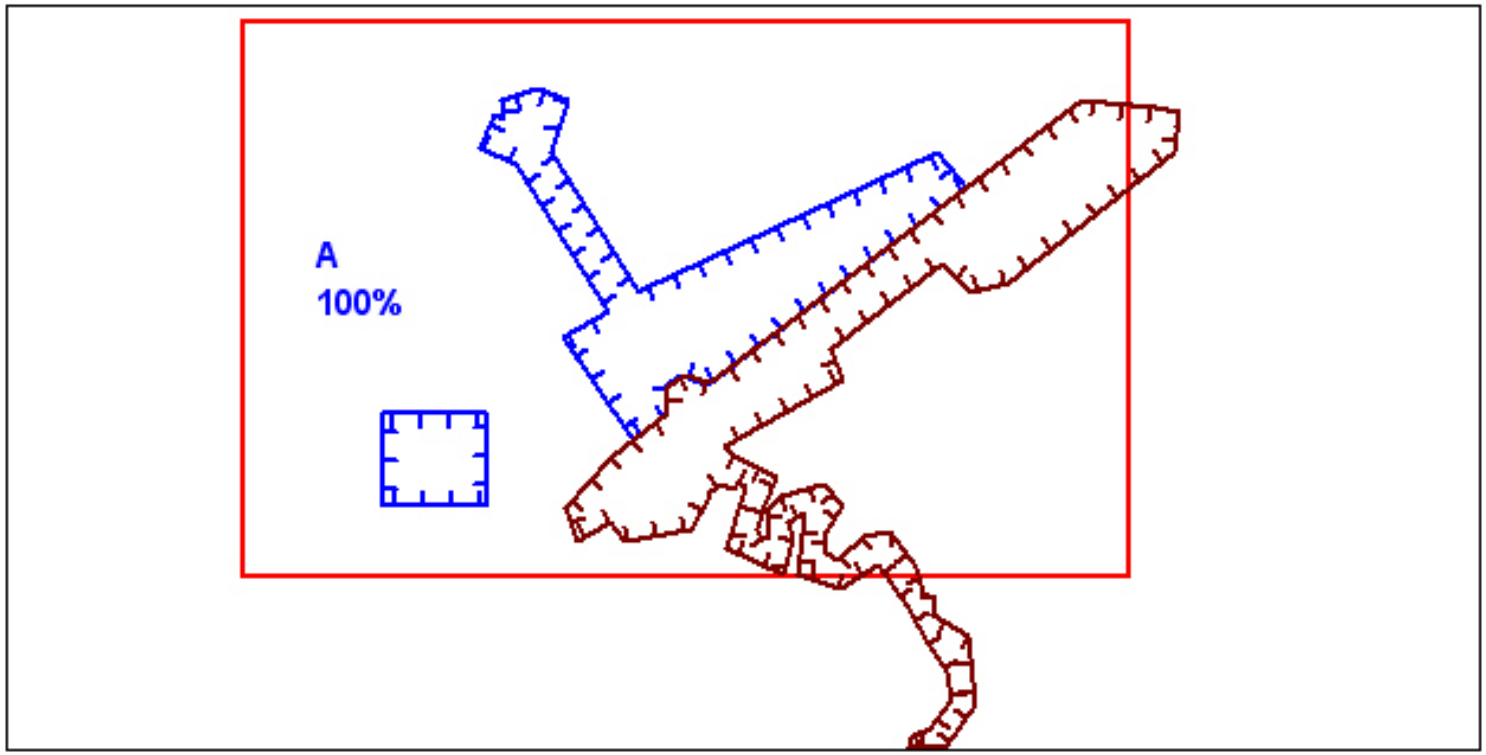


Figure 2.16.2



Project	Sheet_Letter	H_num	HQ_Ect_SNM	CumlPercCompPrev	CumlPercCompCu	SNM_CompCurW	CumSNMcom
S-W920	A	H11689	3	75	100	2	3
S-W920	B	FB00539	0	0	0	0	0

Project	Month	LNM_Hydro	LNM_MB	SV_Casts	Bottom_Samp	AWOIS_Item	Tide_Guage_Inst	DAS	DTime_equip_H	DTime_Weather_	D_Time_other_H
S-W920	July	116.89	0.00	5.00	0.00	0.00	0.00	6.00	3.00	5.00	3.00
S-W920	Aug	16.83	0.00	1.00	0.00	0.00	0.00	1.00	5.00	7.00	4.00
S-W920	Sept	40.62	0.00	3.00	0.00	0.00	0.00	4.00	4.00	8.00	3.00

Progress Sketch S-W920-NRT4-07
FINAL

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : October 2, 2007

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: S-W920-NRT4-2007
HYDROGRAPHIC SHEET: H11689

LOCALITY: Approaches to Cleveland Harbor, Cleveland, OH
TIME PERIOD: July 5 - September 25, 2007

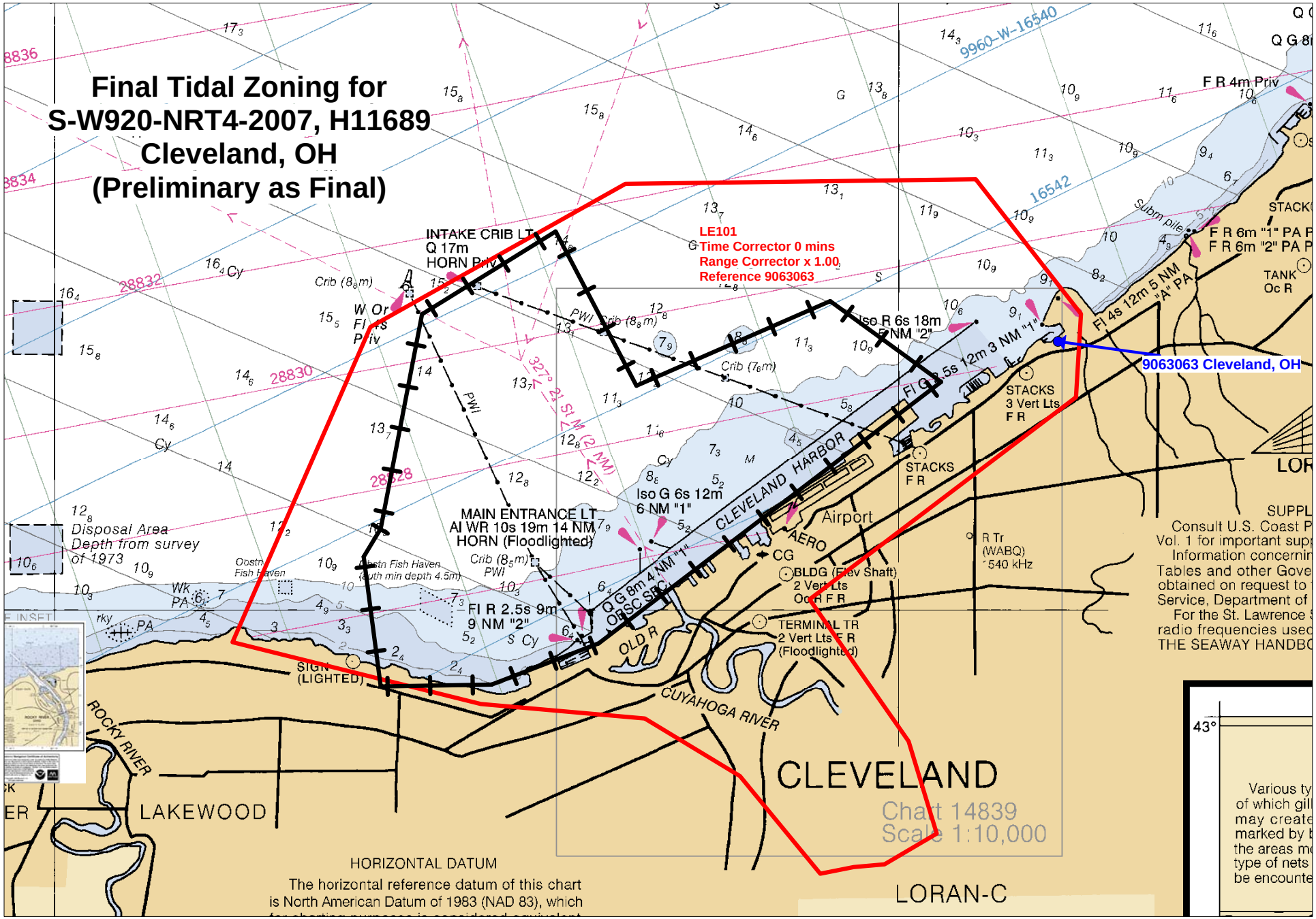
WATER LEVEL STATION: 906-3063 Cleveland, OH
Lat. 41° 32.5'N Long. 81° 38.1' W
PLANE OF REFERENCE (IGLD 85): 173.5 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: LE101

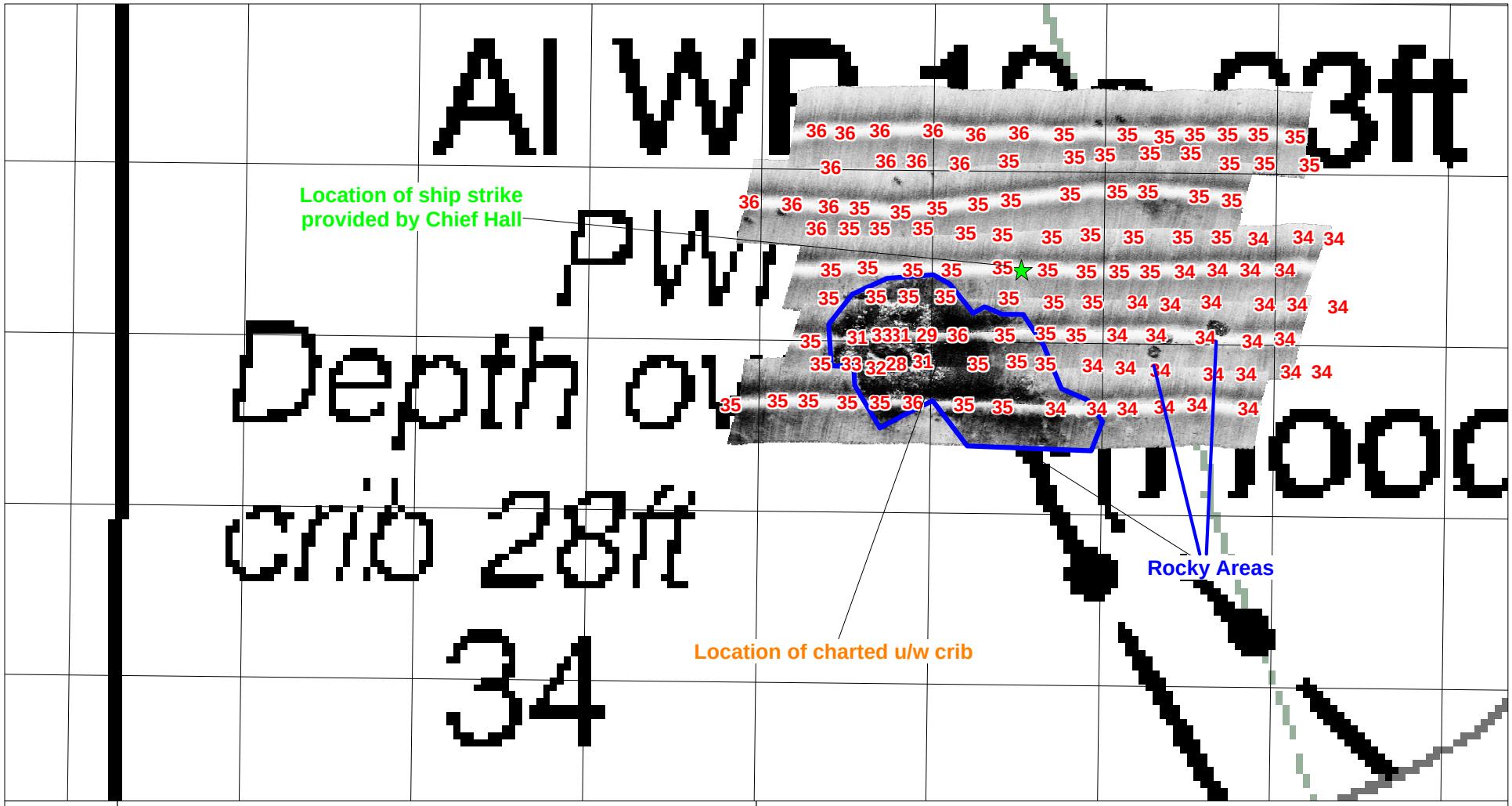
Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to International Great Lakes Datum of 1985 (IGLD 85) and on Greenwich Mean Time.

_____
CHIEF, PRODUCTS AND SERVICES DIVISION


Final Tidal Zoning for
S-W920-NRT4-2007, H11689
Cleveland, OH
(Preliminary as Final)
LE101
Time Corrector 0 mins
Range Corrector x 1.00
Reference 9063063
9063063 Cleveland, OH
INTAKE CRIB LT
Q 17m
HORN Priv
MAIN ENTRANCE LT
Al WR 10s 19m 14 NM
HORN (Floodlighted)
Fl R 2.5s 9m
9 NM "2"
Iso G 6s 12m
6 NM "1"
Iso R 6s 18m
F NM "2"
Fl G 2.5s 12m 3 NM "1"
Fl 4s 12m 5 NM
"A" PA
Q G 8m 4 NM "1"
OBSC SPCL
Crib (8m)
PWI
Crib (7.6m)
Crib (8.8m)
327° 21 St M (2 NM)
CLEVELAND HARBOR
Airport
AERO
CG
BLDG (Flev Shaft)
2 Vert Lts
Oc R F R
TERMINAL TR
2 Vert Lts F R
(Floodlighted)
STACKS
3 Vert Lts
F R
STACKS
F R
F R 4m Priv
F R 6m "1" PA
F R 6m "2" PA
TANK
Oc R
Subm pile
Disposal Area
Depth from survey
of 1973
Obstn
Fish Haven
(South min depth 4.5m)
Wk
PA
SIGN
(LIGHTED)
OLD R
CUYAHOGA RIVER
ROCKY RIVER
LAKEWOOD
CLEVELAND
Chart 14839
Scale 1:10,000
HORIZONTAL DATUM
The horizontal reference datum of this chart
is North American Datum of 1983 (NAD 83), which
LORAN-C
9960-W-16540
16542
28832
28830
28828
R Tr
(WABQ)
540 kHz
SUPPL
Consult U.S. Coast P
Vol. 1 for important sup
Information concernin
Tables and other Gove
obtained on request to
Service, Department of
For the St. Lawrence
radio frequencies used
THE SEAWAY HANDBO
43°
Various ty
of which gil
may create
marked by
the areas m
type of nets
be encounte

Survey line spacing: 40m
200% Sidescan Sonar and Singlebeam Ecosounder data aqcuired.



NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

This Chartlet has been corrected through Notice to Mariners NOVEMBER 2002
NOT FOR NAVIGATION

PRELIMINARY FIELD SHEET
CHART 14826, 27TH EDITION, NOVEMBER 2002, SCALE 1:80,000, MOSS POINT TO VERMILION

SURVEYED BY: NOAA NRT-4 (N/CS53X4)
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(312) 330-5074
Lucy.Massimillo@noaa.gov
DATE :JULY 17, 2007

HYDROGRAPHIC SURVEY: H11689
PROJECT: S-W920-NRT4-07
FIELD SHEET NUMBER: A
STATE: OHIO
LOCALITY: CLEVELAND, OH
SUB-LOCALITY: APPROACH TO CLEVELAND HARBOR

HORIZONTAL DATUM: NAD83
SOUNDING DATUM : LWD 569.2 FT
SOUNDING UNITS: FEET
SURVEY SCALE: 5,000
TIDE QUALITY: PRELIM OBSERVED

CHARTLET VISIBLE AREA
CENTER LATITUDE: 41/30/24.48 N
CENTER LONGITUDE: 81/44/25.80 W
PLOT SCALE: 1: 6929
1 in = 176 m

GRID SPACING: 200 METERS

Data reflect the state of the seafloor in existence
on the day and at the time the survey was conducted.
PRELIMINARY DATA SUBJECT TO OFFICE REVIEW.

W Or
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Priv

INTAKE CRIB LT
Q 55ft
HORN Priv

PWI

9960-Y-43800

43780

MAIN ENTR
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PWI
Depth ove
crib 28ft

Q G 31ft 5 S

Obstn

50 48 47 46 45 43 42 38 36 34 27 22 15 8 6 3 48 47 42 40

This nautical chart has been designed to promote safe navigation. The National Ocean Service encourages users to submit corrections, additions, or comments for improving this chart to the Chief, Marine Chart Division (NCS2), National Ocean Service, NOAA, Silver Spring, Maryland 20910-3282.

PRINT-ON-DEMAND CHARTS

NOAA and its partner, OceanGrafix, offer this chart updated weekly by NOAA for Notices to Mariners and critical corrections. Charts are printed when ordered using Print-on-Demand technology. New Editions are available 5-8 weeks before their release as traditional NOAA charts. Ask your chart agent about Print-on-Demand charts or contact NOAA at 1-800-584-4683, http://NauticalCharts.gov, help@NauticalCharts.gov, or OceanGrafix at 1-877-56CHART, http://OceanGrafix.com, or help@OceanGrafix.com.

Formerly LS - 364, 1st Ed., Sept., 1901 KAPP 1181

FEET
METERS
STATUTE MILES
LOGARITHMIC SPEED SCALE

To find SPEED, place one point of dividers on distance run (or any unit) and the other on minutes run. Without changing divider spread, place right point on 60 and left point will then indicate speed in units per hour. Example: with 4.0 nautical miles run in 15 minutes, the speed is 16.0 knots.

81°44' 81°43' 81°42' 81°41'

LAKE ERIE

Being filled

EAST BASIN AIRPORT RANGE (195ft elevation)

BURKE LAKEFRONT AIRPORT

EAST BASIN EASTERN SECTION (Not Operational)

EAST BASIN WESTERN SECTION (Not Operational)

LAKE ERIE ENTRANCE CHANNEL (Not Operational)

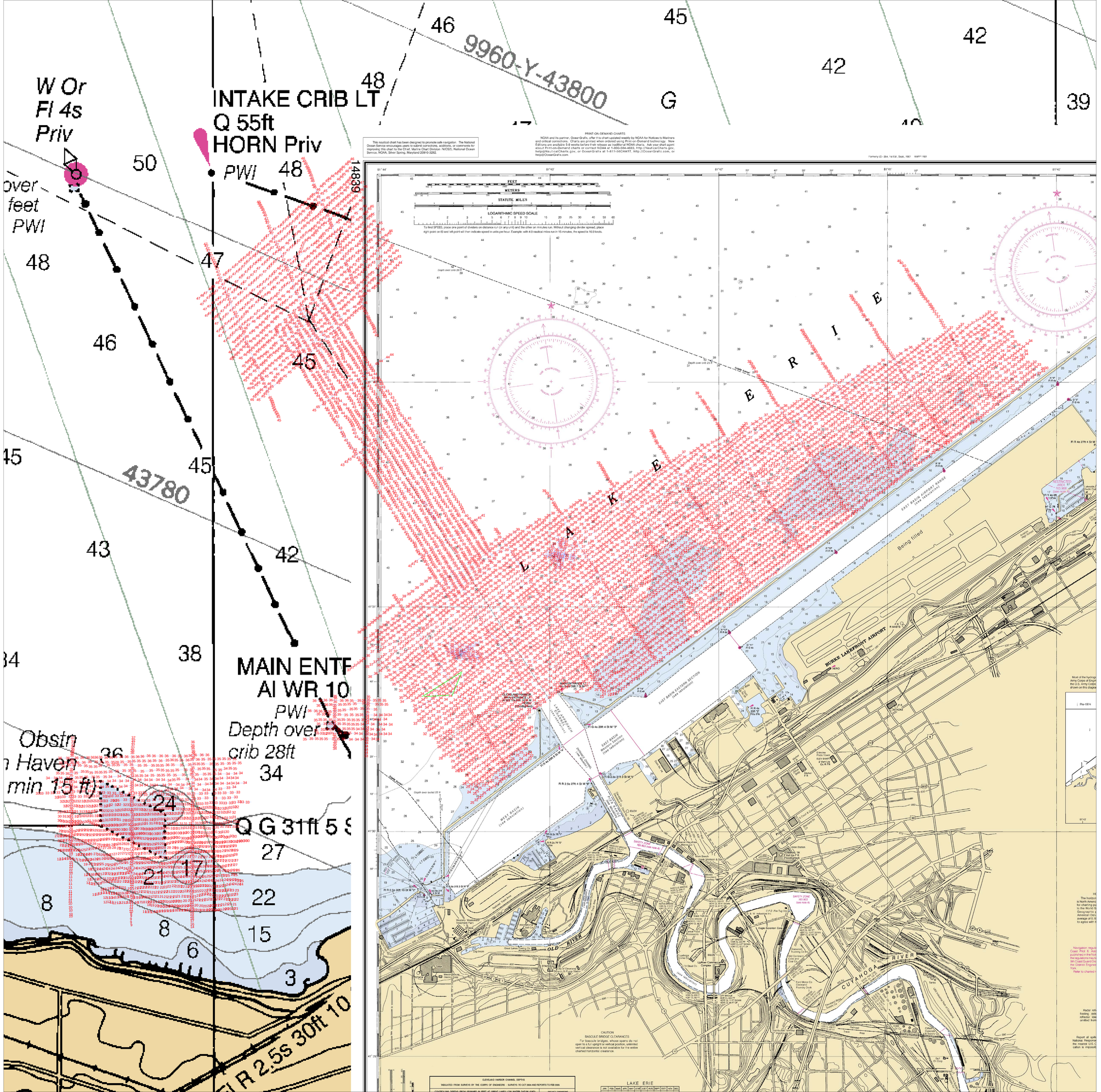
WEST BASIN (Not Operational)

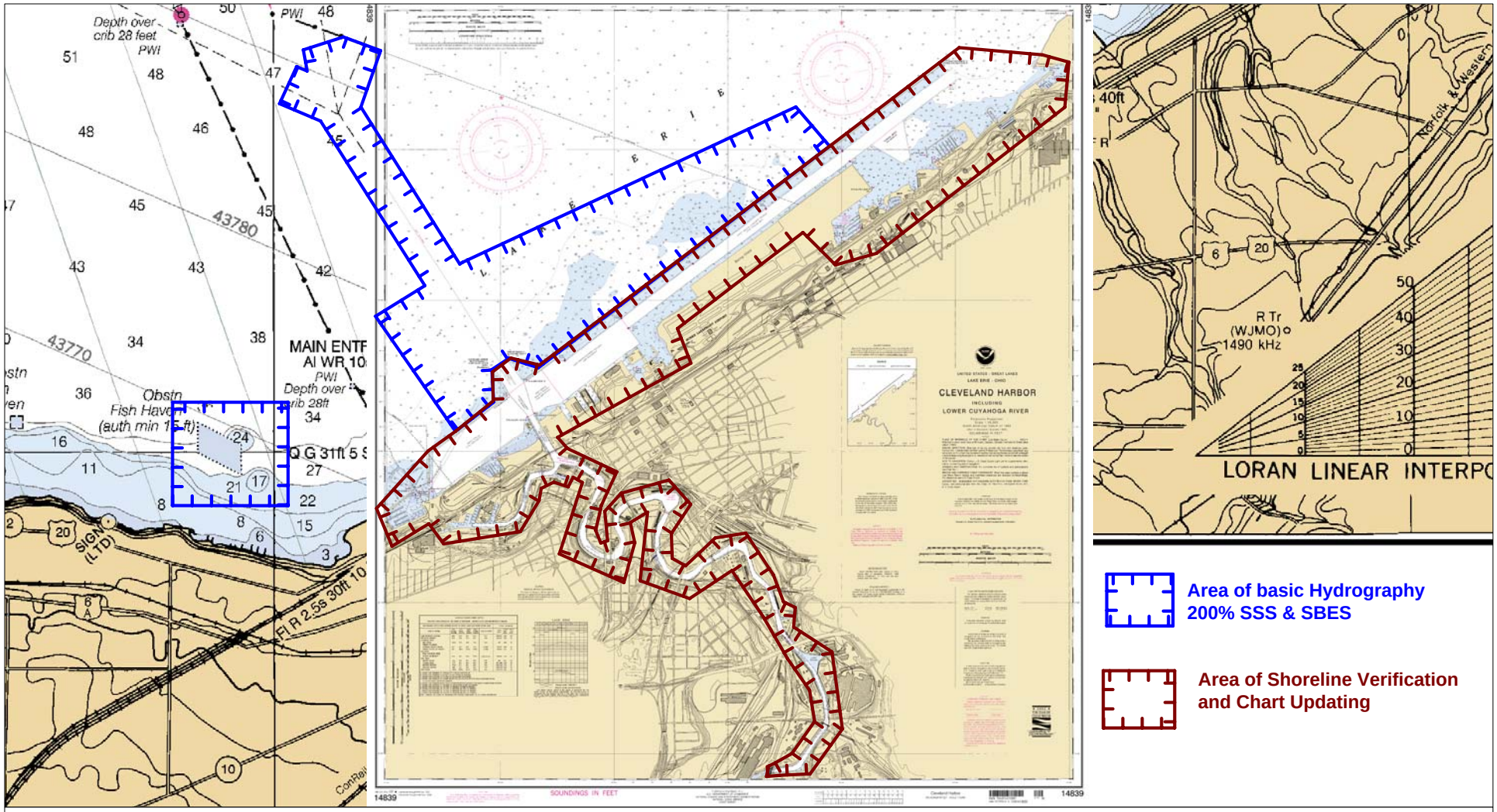
OLD RIVER

CUYAHOGA RIVER

SAFETY ZONE 165 903 (see note A)

CAUTION
BASCULE BRIDGE CLEARANCES
For bascule bridges, whose spans do not open to a full upright or vertical position, unlimited vertical clearance is not available for the entire


W Or
Fl 4s
Priv
INTAKE CRIB LT
Q 55ft
HORN Priv
PWI
9960-Y-43800
43780
14839
MAIN ENTR
Al WR 10
PWI
Depth over
crib 28ft
Obstn
Haven
min 15 ft)
Q G 31ft 5 S
FR 2.5s 30ft 10
PRINT-ON-DEMAND CHARTS
FEET
METERS
STATUTE MILES
LOGARITHMIC SPEED SCALE
BURKE LAKEFRONT AIRPORT
OLD RIVER
CUYAHOGA RIVER
Being filled
CAUTION
BASCULE BRIDGE CLEARANCES
CLEVELAND HARBOR CHANNEL DEPTHS
LAKE ERIE



Chartlet 1 of 1

Cleveland Survey Areas
Survey Start Date: July 5, 2007
Charts 14839, 36th Ed. Dec 2002 & 14826, 27th Ed. Oct 2002

This chartlet has been corrected through Local Notice to Mariners October 2002
NOT FOR NAVIGATION.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

Project: *S-W920-NRT4-07*
Survey: *H11689 & F00539*
State: *Ohio*
Locality: *Cleveland*
Sub-locality: *Cleveland Harbor & Cuyahoga River*
Survey Scale: *1:5,000*

Sounding Units: *Meters*
Sounding Datum: *MLW*
Horizontal Datum: *NAD 83*
Projection: *UTM 17*
Central Meridian: *081° 00 00*
Scale Factor: *0.9996*

NOAA NRT-4
Lucy Massimillo
Team Leader
(216) 583-0845
Lucy.Massimillo@noaa.gov

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT to Accompany
Survey H11689 (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.

A. AREA SURVEYED

This hydrographic survey was partially conducted in accordance with Hydrographic Survey Letter Instructions for project S-W920-NRT4-07. The original instructions are dated May 7, 2004. No change letters were issued for this project.

This Descriptive Report (DR) applies to sheet "A" of project S-W920-NRT4-07, which covers the approach to Cleveland Harbor. The registry number of this sheet is H11689 with the survey area encompasses approximately 3.634 square nautical miles. The survey area is located in the vicinity of the approaches to Cleveland and portions of Lake Erie just offshore of the land area separating West Basin, East Basin, and Lake Erie.

B. DATA ACQUISITION AND PROCESSING

DATA PROCESSING

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

HSTP PYDRO version 8.6 (r2366)
CARIS HIPS/SIPS version 6.1 SP1 HF 1-13
CARIS Bathy Manager version 2.1 SP1 HF 1-8
DKART INSPECTOR, version 5.0 Build 732 SP1
CARIS HOM version 3.3 SP3 HF 1-8

B.2. QUALITY CONTROL

B.2.1. H-Cell

The source depth grid for the survey's nautical chart update product referenced a 2m grid generated at AHB. The source grid entailed generating a shoal biased weighted mean angle dependant grid. AHB then extracted the shoal layer and extended that layer to be duplicated and named the depth layer that is required for BAG grid export. An Uncertainty layer was also added for uncertainty values associated with the BAG Depth layer.

The survey scale deliverable (US511689_SS.000) selected soundings were extracted from the 2m shoal biased layer. The sounding spacing was defined to yield distance interval of 10m to 15m over ground. This spacing interval provided a dense sounding selection adequate for chart scale selection.

The chart scale selected soundings are a subset of the survey scale selected soundings. The chart scale deliverable (US511689_CS.000) soundings were originally selected from the 2m source grid at an interval of 25mm at a scale of 1:10,000. This chart scale selection was used as a guide to ensure the final chart scale sounding selections had parity with the survey scale. The scale dependant sounding selection was then referenced to the grid and compared to the raster chart for final chart scale sounding selections, ensuring that the selected soundings portrayed the bathymetry within the common area.

Depth curves were created from a 40m product surface grid. The 40m grid resolution product surface model was generated at a scale of 1:10,000, generalization radius of 100m with no defocusing. AHB compiler modified the computer generated depth contours in order to have parity with the survey scale soundings. The depth curves contained within the H-Cell (US511689_CS.000) are forwarded to MCD for reference only. The curves were utilized during chart scale sounding selection and quality assurances efforts at AHB.

The pre-compilation products or components (Stand Alone HOB files (SAHOB)) are detailed in the Pre-Compile Process Log attached at the end of this document. The SAHOB files included depth curves (DEPCNT), sounding selections (SOUNDG), features (SBDARE), depth area (DEPARE) Meta objects (M_COVR, M_QUAL, M_CSL, and cartographic Blue Notes. 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.

H11689's H-Cell was compiled to Chart 14839_1 (1:10k scale) within the common area. Chart 14839 did not cover the entire survey area and thus required compilation to Chart 14826 (1:80k scale). Meta object M_CSL Compilation Scale is incorporated into H11689 H-cell and exists as a polygon indicating the area of coverage compiled to the smaller scale chart (14826_1).

The completed H-Cell was exported as a Base Cell File (ENC.000) in S-57 format with all values in metric units. The metric equivalent ENC.000 file was then converted to NOAA chart units (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 H11689 CARIS H-Cell final deliverables include the following products:

US511689_CS.000	1:10,000 Scale	H11689 H-Cell with Chart Scale Selected Soundings and Features
US511689_SS.000	1:5,000 Scale	H11689 Selected Soundings (Survey Scale)
H11689_BlueNotes.000	1:10,000 Scale	H11689 Cartographic Notes

B.2.2. Junctions

No contemporary junction surveys exist.

C. VERTICAL AND HORIZONTAL CONTROL

Final vertical correction processing was completed by the field unit personnel 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 H11689. Sounding datum is Low Water Datum (LWD) International Great Lakes Datum 1985 (IGLD 85). Vertical datum is Mean High Water (MHW)

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 17N. Office ENC processing of this survey required translating the datum to Latitude Longitude (LLDG) WG84 meet S-57 ENC requirements.

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

14839_1 (36th Edition, 12/01/2002)
Corrected through NM 05/30/2008
Corrected through LNM 02/05/2008
Scale 1:10,000

14826_1 (27th Edition, 11/01/2002)
Corrected through NM 05/30/2008
Corrected through LNM 02/05/2008
Scale 1:80,000

ENC Comparison

US5OH11M
Cleveland Harbor Including Lower Cuyahoga River
Edition 8
Update Application Date 2008-07-18
Issue Date 200807-18
References: Chart 14839

US4OH01M
Moss Point to Vermilion
Edition 7
Update Application Date 2008-06-04
Issue Date 2008-06-17
References: Chart 14826

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 2 of the Descriptive Report. The following exceptions are noted:

The field unit did not obtain bottom samples as prescribed in the Letter Instructions. H11689 H-Cell's sea bed characteristic (SBDARE) objects were retained as charted. The spatial and feature attributes of the SBDARE point features sourced the charted SBDARE as portrayed in ENC US5OH11M.

D.3. MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. See Section D.1. of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey:

D.4. ADEQUACY OF SURVEY

The present survey is adequate to supersede the charted bathymetry within the common area. Any features not specifically addressed either in the H-Cell File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further recommendations by the hydrographer.

AHB PRE-COMPILATION PROCESS

REGISTRY No.	H11689
PROJECT No.	S-W920-NRT3-07
FIELD UNIT	NOAA S/V NRT 4 (S3001)
PRE-COMPILER	Bridget Williams \ Castle Eugene Parker
LARGEST SCALE CHART	14839, edition 36, 20021207 (1:10k) 14826, edition 27, 20021102 (1:80k)
CHART SCALE	1:10,000 1:80,000
SURVEY SCALE	1:5,000
DATE OF SURVEY	20070705-20070925
CONTENT REVIEW DATE	May 19, 2008

Components	File Names
Product Surface	PS10k200mRad40mRes.hns
Shifted Surface	N/A
Contour Layer	N/A
Survey Scale Soundings	H11689_SS_Soundings.hob
Chart Scale Soundings	H11689_CS_Soundings.hob
Feature Layer	H11689_Features.hob
Meta-Objects Layer	H11689_MetaObjects_RRV.hob
Blue Notes	H11689_BlueNotes.hob

SPECIFICATIONS:

I. COMBINED SURFACE:
No Combined Surface. The VBES 2m grid resolution was generated. The shoal layer was extracted from the multiple grid layers and then extended to the Depth layer from which a BAG could be exported.
   a. Fieldsheet Location:

II. PRODUCT SURFACE: Source named PS10k200mRad40mRes.hns (generated for depth curves only)
   a. Scale: 1:10,000
   b. Radius: 200 m
   c. Resolution: 40 m

   d. Depth
      i. Minimum: 2.63 m
      ii. Maximum: 14.73 m

   PRODUCT SURFACE (CONTOURS): Computer generated, then modified during AHB compilation.

III. SHIFTED SURFACE:
   a. Single Shift Value: N/A *[-0.229m (feet) / -1.372 m (fathoms)]*

      CONTOUR LAYER: Use a Depth List:
      0.229
      1.143
      2.057
      3.886
      5.715

```
9.373
11.201
18.517
```

IV. SOUNDING SELECTION:

a. Selection Criteria:

i. Depth Layer: Shoal

ii. Radius N/A

iii. Shoal biased Yes

iv. Use Single-Defined Radius: 10-15m distance on ground (m) for SS deliverable.

V. FEATURES:

a. Brought in from Survey

Total No. 17

b. Brought in from ENC

ENC: US5OH01M, US5OH11M

Total No. 6

VI. META-OBJECTS:

a. M_COVR attributes

Acronym	Value
INFORM	H11689
SORDAT	20070925
CATCOV	1
SORIND	US,US,survy,H11689

b. M_QUAL attributes

Acronym	Value
CATZOC	B
INFORM	H11689, S-W920-NRT4-07, NOAA S/V NRT 4 (s3001)
POSACC	10
SORDAT	20070925
SORIND	US,US,survy,H11689
SUREND	20070925
SURSTA	20070705
TECSOU	1

c. DEPARE attributes

Acronym	Value
DRVALV 1	2.63
DRVALV2	14.73
SORDAT	20070925
SORIND	US,US,survy,H11689
INFORM	H11689

d. M_CSCL attributes

Acronym	Value
CSCALE	10,000
INFORM	H11689
SORDAT	20070925
SORIND	US,US,survy,H11689

VII. NOTES:

ESAR lists that Merged Status of lines was yes; No TPE computed “3001 Single Beam Echosounder data has no TPE computed. The DAPR (S-W920-NRT4-07) states that “Because neither multibeam nor lidar was used, Total Propagated Error (TPE) was not calculated for soundings”.” ESAR, H11689

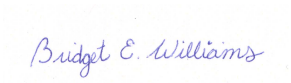
Tow fish was not computed for all, 2 days (9/4 & 9/5 because of problem with gyro heading)

APPROVAL SHEET
H11689

Initial Approvals:

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

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



Bridget E. Williams
2008.07.31
11:13:08 -04'00'

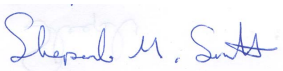
Bridget Williams
Hydrographic Intern
Atlantic Hydrographic Branch

Digitally signed by Castle Eugene Parker
DN: cn=Castle Eugene Parker, c=US, o=NOAA, ou=Atlantic Hydrographic Branch, email=castle.e.parker@noaa.gov
Reason: I attest to the accuracy and integrity of this document
Date: 2008.07.31 11:11:37 -04'00'

Castle Eugene Parker
Physical Scientist
Hydrographic Team Lead
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
I am approving this document
2008.07.31 14:13:28 -04'00'

Shepard Smith
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

Christopher Hare
AWOIS and SURF Check
2008.08.14 13:27:44 -04'00'