

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Multibeam and Side Scan Sonar

Field No. L

Registry No. H11536

LOCALITY

State New Jersey

General Locality Atlantic Ocean

Sublocality Seagirt to Chadwick Beach

2006

CHIEF OF PARTY

PAUL L. DONALDSON

Science Applications International Corporation

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DATE _____

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NO. H11536
HYDROGRAPHIC TITLE SHEET		FIELD NO. L
INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.		
State <u>New Jersey</u>		
General locality <u>Atlantic Ocean</u>		
Sub-Locality <u>Seagirt to Chadwick Beach</u>		
Scale <u>1:20,000</u> Date of survey <u>3 May 2006 – 15 September 2006</u>		
Instructions Dated <u>February 1, 2006</u>		Project No. <u>OPR-C303-KR-06</u>
Vessel <u>M/V Atlantic Surveyor D582365</u>		
Chief of Party <u>PAUL L. DONALDSON</u>		
Surveyed by: <u>Gary Davis, Paul Donaldson, Sean Halpin, Karen Hart, Chuck Holloway, Jason Infantino, Evan Robertson, Jeremy Shambaugh, Deb Smith, Rick Nadeau, Meme Lobecker, Matt Meyer, John Kiernan and Curtis Clement.</u>		
Soundings taken by <u>echo sounder</u> hand lead, pole <u>MULTIBEAM RESON SEABAT 8101</u>		
Graphic record scaled by _____		
Graphic record checked by _____		
Protracted by _____		Automated Plot _____
Verification by: <i>Atlantic Hydrographic Branch Personnel. Bold, Italic, Red notes in Descriptive Report were made during office processing. Charted depths in feet at MLLW.</i>		
Soundings in fathoms, <u>meters</u> , feet at MLW, <u>MLLW</u>		
REMARKS: <u>Contract: DG-133C-05-CQ-1088</u> <u>Contractor: Science Applications International Corp., 221 Third Street; Newport, RI 02840 USA</u> <u>Subcontractors: Williamson & Associates, 1124 NW 53rd Street, Seattle WA 98107; Rotator Staffing Services, PO Box 366, 557 Cranbury Rd, E. Brunswick NJ 08816</u> <u>Times: All times are recorded in UTC</u> <u>UTM Zone: Zone 18</u> <u>Purpose: To provide NOAA with modern, accurate hydrographic survey data with which to update the nautical charts of the assigned area: Sheet L (H11536) in Mid-Atlantic Corridor, Coast of New Jersey.</u>		

Science Applications International Corporation (SAIC) warrants only that the survey data acquired by SAIC and delivered to NOAA under Contract DG-133C-05-CQ-1088 reflects the state of the sea floor in existence on the day and at the time the survey was conducted.

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**Descriptive Report to Accompany
Hydrographic Survey H11536
Scale 1:20,000, Surveyed 2006
M/V Atlantic Surveyor
Science Applications International Corporation (SAIC)
Paul L. Donaldson, Hydrographer**

PROJECT

Project Number: OPR-C303-KR-06

Original: OPR-C303-KR-06

Dates of Instructions: 1 February 2006

Task Order#: T0001

Dates of Supplemental Instructions: 27 March 2006, 5 October 2006, 12 October 2006, 26 October 2006, and 19 July 2007

Sheet Letter: L

Registry Number: H11536

Purpose: To provide NOAA with modern, accurate hydrographic survey data with which to update the nautical charts of the assigned area.

A. AREA SURVEYED

The area surveyed was a section of the Atlantic Ocean off of New Jersey, Seagirt to Chadwick Beach (Figure A-1). The line kilometers, bottom samples, item investigations and other survey parameters are located in Table A-1 entitled "Hydrographic Survey Statistics". The area was surveyed at set line spacing with multibeam sonar and towed side-scan sonar from 3 May 2006 to 15 September 2006 (Table A-2). The depth range encountered in this area was from 4.22 to 27.04 meters. *Concur.*

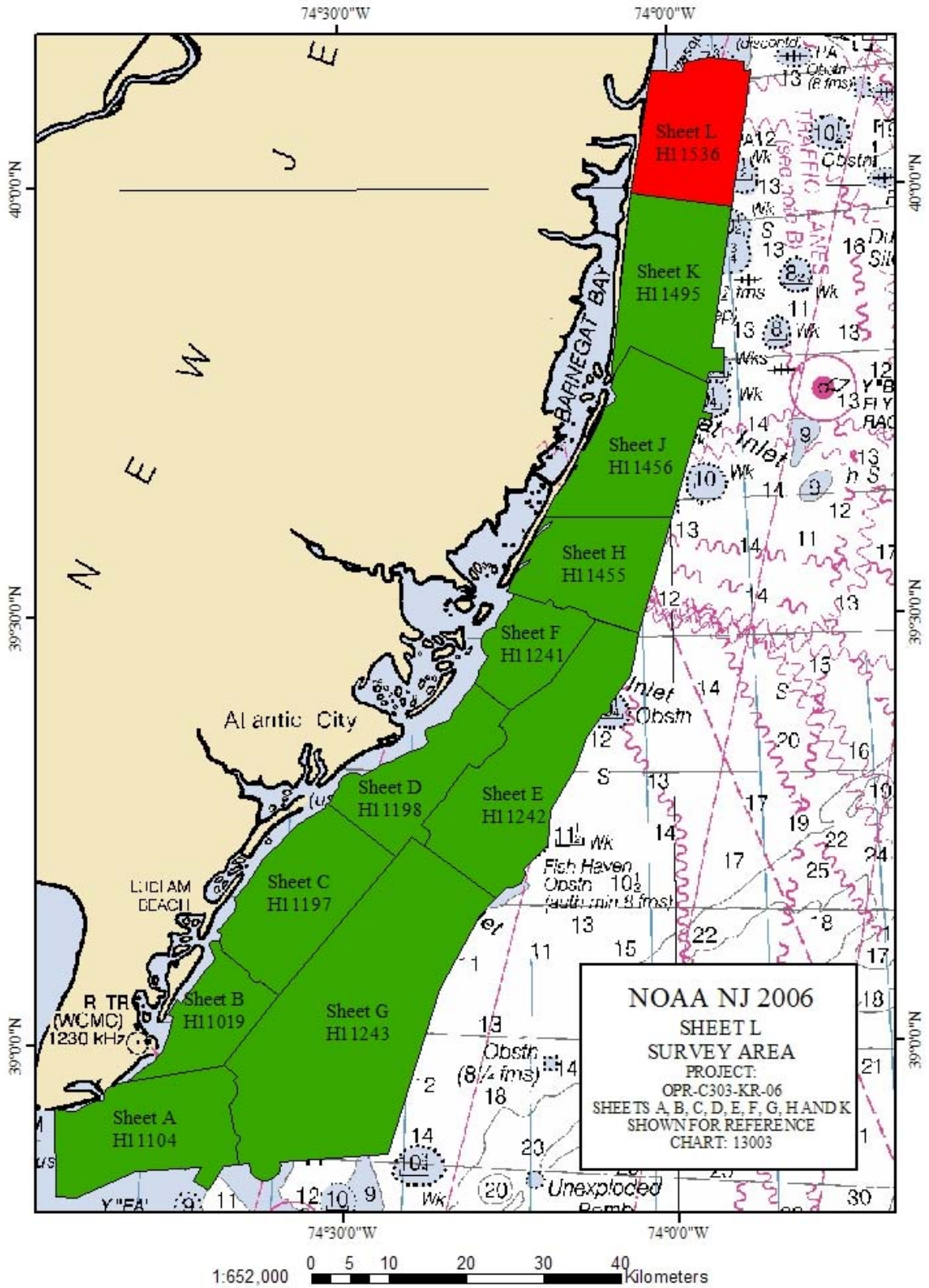


Figure A-1. H11536 Survey Bounds

Table A-1. Hydrographic Survey Statistics

M/V Atlantic Surveyor, Sheet L H11536	
LNM Single beam mainscheme only	N/A
LNM Multibeam mainscheme only	3283.53
LNM Lidar mainscheme only	N/A
LNM Side Scan Sonar mainscheme only	3283.53
Lineal nautical miles of any combination of the above techniques (specify methods)	3283.53
LNM Crosslines singlebeam and multibeam combined	159.49
LNM Lidar Crosslines	N/A
LNM development lines non mainscheme	10.26
LNM shoreline/nearshore investigations	0
Number of Bottom Samples	35
Number of items investigated that required additional time/effort in the field beyond the above survey operations	17
Total number of square nautical miles	67.10

Table A-2. Dates of Multibeam Data Acquisition in Calendar and Julian Days

Calendar Date	Julian Day	Calendar Date	Julian Day
03-May-2006	123	19-May-2006	139
04-May-2006	124	20-May-2006	140
05-May-2006	125	21-May-2006	141
06-May-2006	126	23-May-2006	143
07-May-2006	127	24-May-2006	144
08-May-2006	128	25-May-2006	145
10-May-2006	130	26-May-2006	146
11-May-2006	131	27-May-2006	147
13-May-2006	133	28-May-2006	148
14-May-2006	134	29-May-2006	149
15-May-2006	135	07-September-2006	250
16-May-2006	136	08-September-2006	251
17-May-2006	137	15-September-2006	258
18-May-2006	138		

B. DATA ACQUISITION AND PROCESSING

B.1 EQUIPMENT

A detailed description of the systems used to acquire and process these data has been included in the separate Data Acquisition and Processing Report for OPR-C303-KR-06 delivered with Sheet H11536 on 07 August 2007 (SAIC document number 06-TR-016). There were no variations from the equipment configuration described. The information in Table B-1 below summarizes the information in the report. *Concur.*

Table B-1. Major Systems by Manufacturer and Model Number

	Manufacturer / Model Number	Subsystem
Multibeam Sonar	RESON SeaBat 8101 ER	81P Sonar Processor
Side Scan Sonar	Klein 3000 Towfish	K-1 K-Wing Depressor, Transceiver/Processing Unit
Vessel Attitude System	TSS POS/MV Inertial Navigation System	
Positioning Systems	TSS POS/MV 320	
	Trimble 4000 GPS Receiver	
	Trimble Probeacon Differential Beacon Receiver	
	Leica MX41R Differential Beacon Receiver	
Sound Speed Systems	Brooke Ocean Technology Ltd., Moving Vessel Profiler-30	Applied Microsystems Ltd. Smart SV and Pressure Sensor
	Sea-Bird Electronics, Inc. SBE 19 CTD Profiler	

Survey Vessel

The *M/V Atlantic Surveyor* was the platform for multibeam sonar, side-scan sonar and sound velocity data collection. Three 20-foot ISO containers were secured on the aft deck. One was used as the real-time, survey data collection office, one as a data processing office and the third for maintenance and repairs as well as spares storage. All data were shipped to the Data Processing Center in the SAIC Newport, RI office for final data processing. The Position Orientation System/Marine Vessels (POS/MV) Inertial Measurement Unit (IMU) was mounted below the main deck of the vessel, 0.34 meters port of centerline and 0.34 meters forward, 0.12 meters starboard of and 1.64 meters above the RESON 8101 transducer. The multibeam sounder transducer was mounted on the hull 0.46 meters port of centerline. A Brooke Ocean Technologies Moving Vessel Profiler 30 (MVP-30) was mounted to the starboard stern quarter. Table B-2 is a list of vessel characteristics for the *M/V Atlantic Surveyor*.

Table B-2. Survey Vessel Characteristics

Vessel Name	LOA	Beam	Draft	Max Speed	Gross Tonnage	Power (Hp)	Registration Number
<i>M/V Atlantic Surveyor</i>	110'	26'	9'	14 knots	Displacement 68 net tons Deck load 65 long tons	900	D582365

Major Systems

SAIC used their Integrated Survey System (**ISS-2000**) software on a Windows XP platform to acquire these survey data. Survey planning and data analysis were conducted using SAIC's **SABER** software on Red Hat Enterprise 4 Linux platforms. Klein 3000 side-scan data were collected on a Windows XP platform using Klein's **SonarPro version 9.6** software. The Klein 3000 side scan sonar data were collected in eXtended Triton Format (XTF) and maintained at full resolution, with no conversion or down sampling techniques applied. All side-scan data were reviewed using Triton **Isis** software, while coverage mosaics were produced using **SABER** on a Linux platform. A description of the software and versions used to acquire and process these data has been included in the separate Data Acquisition and Processing Report for OPR-C303-KR-06 delivered with Sheet H11536 on 07 August 2007 (SAIC document number 06-TR-013).

B.2 QUALITY CONTROL

There were approximately 177 linear nautical miles of crosslines surveyed and approximately 3172 linear nautical miles of main scheme lines surveyed. This resulted in approximately 5 percent of linear nautical miles of crosslines compared to main scheme survey lines. The crosslines were oriented at 97.6°/277.7° and were spaced approximately 800 meters apart, while the main scheme lines were oriented at 10.7°/190.7° and were spaced 40 meters apart. The range scale was set to 50 meters for the side-scan acquisition, while the swath width for the multibeam varied with depth.

Concur.

A Brooke Ocean Technology Moving Vessel Profiler (MVP) with an Applied Microsystems SV&P Smart Sensor or a Seabird Electronics SBE-19 CTD was used to collect sound speed profile (SSP) data. SSP data were obtained at intervals frequent enough to reduce sound speed errors. The frequency of casts was based on observed sound speed changes from previously collected profiles and time elapsed since the last cast. Multiple casts were taken along a survey line to identify the rate and location of sound speed changes. Subsequent casts were made based on the observed trend of sound speed changes. As the sound speed profiles changed, cast frequency and location were modified accordingly. Confidence checks of the sound speed profile casts were conducted weekly by comparing two consecutive casts taken with different SV&P Smart Sensors or with a SV&P Smart Sensor and a Seabird SBE-19 CTD.

Static draft measurements were taken on each side of the vessel at each port call, both after arrival and before departure, in order to prorate the daily draft for fuel and water consumption. Dynamic draft was determined from a look up table using shaft rpm counters for the input. The dynamic draft table was constructed from measurements taken during the pre-survey Sea Acceptance Trials.

Horizontal positioning of the multibeam transducer by the POS/MV was verified by daily confidence checks against an independent Trimble DGPS system. In addition this comparison was running full time with an alarm to alert the survey watch should the position differences exceed the maximum allowable distance.

Multibeam confidence checks were conducted at least weekly by lead line measurement while in port. Table B-3 presents a summary of these comparisons showing mean differences of 3 centimeters between the lead line and the multibeam. On JD 125 and 142 there are no valid readings available for the starboard side due to dock and tide restrictions.

Table B-3. Comparison Lead Line minus Multibeam

DAY	DATE	PORT	PORT	STBD	STBD
		MEAN	STDEV	MEAN	STDEV
MEAN OF SETS =		0.019	0.024	0.030	0.033
119	4/29/2006	0.044	0.030	0.042	0.027
125*	5/5/2006	-0.018	0.025		
128	5/8/2006	0.025	0.018	0.054	0.020
135	5/15/2006	0.027	0.027	0.021	0.039
142*	5/22/2006	-0.001	0.021		
149	5/29/2006	0.005	0.027	0.022	0.029
249	9/6/2006	0.056	0.023	0.011	0.044
258	9/15/2006	0.010	0.023	0.031	0.036
* STBD Measurements not possible due to piling at measurement location.					

All individual soundings applied to the grid meet the Horizontal Position Accuracy and Vertical Accuracy specified in the NOS Specifications and Deliverables. There are numerous areas where the CUBE node uncertainty exceeds the specified values. Each of these high uncertainty nodes was examined for validity. In all cases the nodes were found to be valid. All high uncertainty nodes occur at steep surfaces of wrecks, obstructions, disposal mounds, holes, and ledges.. There were no designated soundings set on these areas, except on the least depth of reported features. Designated soundings were set on several small objects that were not large enough to justify a feature designation, but were important for proper depiction of the bottom.

Comparisons of all crossing data in H11536 show that 97.63% of comparisons are within 25 centimeters and 99.94% of comparisons are within 50 centimeters. Forty seven of the fifty five comparisons larger than 50 centimeters are accounted for by normal small DGPS position scatter around features within the two fish havens (AWOIS 6825 and 12982). The remaining eight comparisons larger than 50 cm are accounted for by normal small DGPS position scatter around features and slopes throughout the survey area. The

main and cross grids that were used for this comparison were 5-meter, shoal biased grids. Table B-4 shows the comparisons using all crossings in H11536.

Table B-4. Junction Analysis All Main Scheme vs. Crosslines Near Nadir, H11536

Depth Difference Range (cm)	All		Positive		Negative		Zero	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0-5	33112	35.42	13953	38.63	15272	28.56	3887	4.16
5-10	28199	65.59	12204	72.42	15995	58.47		
10-15	19372	86.31	7173	92.28	12199	81.28		
15-20	6566	93.34	1772	97.19	4794	90.25		
20-25	4016	97.63	797	99.4	3219	96.27		
25-30	1523	99.26	180	99.89	1343	98.78		
30-35	447	99.74	24	99.96	423	99.57		
35-40	118	99.87	4	99.97	114	99.78		
40-45	57	99.93	2	99.98	55	99.89		
45-50	13	99.94	0	99.98	13	99.91		
50-60	14	99.96	1	99.98	13	99.94		
60-70	7	99.96	1	99.98	6	99.95		
70-80	3	99.97	1	99.99	2	99.95		
80-90	9	99.98	2	99.99	7	99.96		
90-100	4	99.98	0	99.99	4	99.97		
100-120	6	99.99	0	99.99	6	99.98		
120-140	9	99.99	3	99.99	6	99.99		
140-160	3	100	0	100	3	100		
Total	113041	100%	36117	38.64%	53474	57.20%	3887	4.16%

Details of 25 selected nadir or near-nadir crossings in different areas of H11536 are listed in the Separates to this report. The detailed comparisons were randomly selected for spatial and temporal distribution over the entire survey area.

Table B-5 depicts the junction analysis using all comparisons in the common area between H11495 and H11536. H11495 is a 1:20,000 sheet surveyed between October 2005 and May 2006 and is located between Barnegat Inlet and Chadwick Beach. For both survey areas the grids that were used for this comparison were 5-meter, shoal biased grids. These comparisons show 98.98% were within 25 centimeters and 99.99% were within 50 centimeters. The seven comparisons larger than 50 centimeters are between 50 and 52 cm and are accounted for by the normal small DGPS position scatter in areas of near shore shoals or features.

Table B-5. Junction Analysis, H11536 vs. H11495 (all comparisons)

Depth Difference Range (cm)	All		Positive		Negative		Zero	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0-5	24638	38.48	9856	42.04	11856	31.49	2926	4.57
5-10	20886	71.11	8016	76.23	12870	65.67		

Depth Difference Range (cm)	All		Positive		Negative		Zero	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
10-15	13133	91.62	4104	93.73	9029	89.65		
15-20	3271	96.73	959	97.82	2312	95.79		
20-25	1442	98.98	396	99.51	1046	98.57		
25-30	463	99.7	107	99.97	356	99.52		
30-35	111	99.88	8	100	103	99.79		
35-40	39	99.94	0	100	39	99.89		
40-45	22	99.97	0	100	22	99.95		
45-50	11	99.99	0	100	11	99.98		
50 - 52	7	100	0	100	7	100		
Totals	64023	100.00	23446	36.62	37651	58.81	2926	4.57

On many days high sea state resulted in heave and pitch artifacts seen in the CUBE Depth surface with a magnitude of approximately 10 cm. Analysis of crossings in these areas as well as the final depth uncertainties verifies that the data meet the specified accuracies.

Concur.

The Klein 3000 side scan sonar was operated on 50-meter range scale for 200% bottom coverage. Vessel speed was controlled so that there were always more than three pings per meter along track for object detection. The Reson 8101ER multibeam was used for bathymetry and object detection in a fixed line spacing mode. Vessel speed resulted in more than 3.2 pings per three meters along track. In depths greater than about 16 to 18 meters there was more than 100% bottom coverage with the multibeam whilst maintaining a 54° cutoff angle. **Concur.**

Multibeam Coverage Analysis

The Mid-Atlantic Corridor, Coast of New Jersey survey operations were conducted at line spacing optimized to achieve 200% side scan sonar coverage. Multibeam coverage was not required to be 100%. Main scheme lines were run at 40-meter line spacing while running the side scan at 50-meter range scale. The 1-meter node BAG (H11555_1_of_4.bag) made from the 1-meter node **PFM CUBED Surface** was used for the demonstration of coverage. The **SABER Gapchecker** routine flagged multibeam data gaps exceeding the allowable. In addition the entire surface was visually scanned for holidays. Additional survey lines were run to fill any detected holidays. Due to bubble sweep along the hull, there was one area identified in final processing, in which there remained greater than three contiguous nodes without data. The holiday was isolated to the outer most beams while the near nadir swath contained valid data. There were no other remaining holidays identified.

Survey Systems Error Model

The Total Propagated Error (TPE) model that SAIC has adopted has its genesis at the Naval Oceanographic Office (NAVOCEANO), and is based on years of work by Rob Hare and others. The fidelity of any error model is coupled to the applicability of the equations that are used to estimate each of the components that contribute to the overall

error that is inherent in each sounding. SAIC's approach to quantifying the TPE is to decompose the cumulative errors into many individual components and then further decompose those into a horizontal and vertical component. The model then combines the horizontal and vertical error components to yield an estimate of the system error as a whole. This cumulative system error is the Total Propagated Error (TPE). By using this approach, SAIC can more easily incorporate future error information provided by sensor manufacturers into the model. This also allows SAIC to continuously improve the fidelity of the model as our understanding of the sensors increases or as more sophisticated sensors are added to a system.

The data needed to drive the error model are captured as parameters taken from the Error Parameter File (EPF), which is an ASCII text file typically created during survey system installation and integration. The parameters are also obtained from values recorded in the GSF file(s) during data collection and processing. While the input units vary, all error values that contribute to the cumulative TPE estimate are converted to meters by **SABER's Errors** program or have units of meters to begin with. The cumulative TPE estimates are separated into a horizontal and vertical component, and are recorded as the Horizontal Error and Vertical Error records in the GSF file. These error values are at the 95% confidence level. The intent is to use these error estimates to gauge the accuracy of each sounding's coordinates and depth.

Tables B-5 and B-6 show the values entered in the errors parameter file. All parameter uncertainties in this file are entered at the 68% confidence level but the outputs from **SABER's Errors** program are at the 95% confidence level. Sign conventions are: X = positive forward, Y = positive starboard, Z = positive down.

Table B-6. 2006 M/V Atlantic Surveyor TPE Parameter File

Parameter	Value	Units
static_draft	2.32	Meters
draft_error (uncertainty)	0.01	Meters
squat_error (uncertainty)	0.02	Meters
fixed_heave_error_component (uncertainty)	0.05	Meters
perc_swellheave_err_component (uncertainty)	5.00	Percent
roll_measurement_error (uncertainty)	0.02	Degrees
pitch_measurement_error (uncertainty)	0.02	Degrees
heading_measurement_error (uncertainty)	0.02	Degrees
speed_measurement_error (uncertainty)	0.016	meters/second (m/s)
SSSV_measurement_error (uncertainty)	1.00	meters/second (m/s)
predicted_tide_measurement_error (uncertainty)	0.17	Meters
observed_tide_measurement_error (uncertainty)	0.07	Meters
tide_zone_error (uncertainty)	0.10	Meters
positioning_device_x_offset	4.59	Meters
positioning_device_xoffset_err (uncertainty)	0.05	Meters
positioning_device_y_offset	-0.54	Meters
positioning_device_yoffset_err (uncertainty)	0.05	Meters
positioning_device_z_offset	-8.02	Meters
positioning_device_zoffset_err (uncertainty)	0.05	Meters
VRU_device_x_offset	0.34	Meters

VRU_device_x_offset_error (uncertainty)	0.01	Meters
VRU_device_y_offset	0.12	Meters
VRU_device_y_offset_error (uncertainty)	0.01	Meters
VRU_device_z_offset	-1.64	Meters
VRU_device_z_offset_error (uncertainty)	0.01	Meters
gps_latency	0.00	milliseconds (msec)
vrु_latency	0.00	milliseconds (msec)
gps_latency_error (uncertainty)	1.00	milliseconds (msec)
vrु_latency_error (uncertainty)	1.00	milliseconds (msec)
horizontal_navigation_error (uncertainty)	0.75	Meters
svp_measurement_error (uncertainty)	1.00	meters/second (m/s)

Table B-7. SONAR Parameters Reson8101

Parameter	Value	Units
transducer_device_x_offset	0.00	Meters
transducer_device_xoffset_error (uncertainty)	0.00	Meters
transducer_device_y_offset	0.00	Meters
transducer_device_yoffset_error (uncertainty)	0.00	Meters
transducer_device_z_offset	0.00	Meters
transducer_device_zoffset_error (uncertainty)	0.00	Meters
roll_offset_error (uncertainty)	0.005	Degrees
pitch_offset_error (uncertainty)	0.05	Degrees
heading_offset_error (uncertainty)	0.05	Degrees
sounder_latency	0.00	
sounder_latency_error (uncertainty)	1.00	milliseconds (msec)
range_sampling_res	0.05	Meters

B.3 CORRECTIONS TO ECHO SOUNDINGS

Please refer to the Data Acquisition and Processing Report SAIC Doc 06-TR-013 for a description of all corrections applied to echo soundings. There were no deviations from the corrections described therein.

B.4 DATA PROCESSING

One BAG at 1-meter grid resolution (H1155536_1_of_4.bag) is submitted for the entire area. This BAG serves for as demonstration of coverage for this set line spacing survey as well as the bathymetric model for the areas of the survey that are 14 meters or deeper. Three additional BAGs at half-meter resolution are submitted to cover the areas where the depths are less than 15 meters (H1155536_2_of_4.bag, H1155536_3_of_4.bag and H1155536_4_of_4.bag). The data fully support these resolutions. Note that the 1-meter BAG (H1155536_1_of_4.bag) completely overlays the areas of the other three BAGs.

C. HORIZONTAL AND VERTICAL CONTROL

NOAA tide station 8534720 Atlantic City, NJ was the source of verified water level heights for determining correctors to soundings. The primary means for analyzing the adequacy of zoning was observing zone boundary crossings in the navigated swath editor, SAIC's **Multi View Editor (MVE)**. In addition the sun illuminated coverage plots were examined on screen for adequacy of zoning. Crossline comparisons were used to analyze zoning for the influence of wind and weather

Table C-1. Water Level Zoning Parameters Applied on Sheet H11536

Zone	Time Corrector (minutes)	Range Ratio	Reference Station
SA13	-12	1.02	8534720
SA14	-6	1.07	8534720
SA15	0	1.06	8534720

The survey data for sheet H11536 were collected in horizontal datum NAD-83, using geodetic coordinates, while data display and products used the UTM Zone 18 projection. The following equipment was used for positioning on the *M/V Atlantic Surveyor*:

- TSS POS/MV, Serial Number 314
- Trimble 4000 DSi GPS Receiver, Serial Number 3504A09516

Differential correctors used for online data were from the U.S. Coast Guard Stations at Moriches, NY, Reedy Point, DE and Sandy Hook, NJ. The differential receiver was set to only receive data from these three corrector stations. No additional stations were used.

Daily position confidence checks were established using a Trimble DGPS. A real-time monitor raised an alarm to alert the survey watch should the position differences exceed the maximum allowable distance. Positioning confidence checks were well within an inverse distance of 5 meters.

Please refer to the Horizontal and Vertical Control Report* (SAIC Doc 06-TR-014) for detailed descriptions of the procedures and systems used to attain hydrographic positioning, which will be delivered with the H11536 (Sheet L) Descriptive Report.

****included in original field submission.***

D. RESULTS AND RECOMMENDATIONS

The H-Cell and the corresponding blue notes contain the set of verified and disproved features, the positions and least depths of which were examined during the survey review and pre-compilation processes. The positions and least depths contained in the Descriptive Report are for reference only. Refer to the Evaluation Report.

D.1 CHART COMPARISON

H11536 was compared to the largest scale charts covering the area as follows:

- **Chart 12324_1**, 1/40,000 scale, 32nd Edition 03/01/2006 corrected by NTM through 07/14/2007
- **Chart 12324_3**, 1/20,000 scale, 32nd Edition 03/01/2006 corrected by NTM through 07/14/2007
- **Chart 12324_5**, 1/40,000 scale, 32nd Edition 03/01/2006 corrected by NTM through 07/14/2007
- **Chart 12323**, 1/80,000 scale, 24th Edition 02/01/2007 corrected by NTM through 07/14/2007
- **Chart 12326**, 1/80,000 scale, 50th Edition 05/01/2006 corrected by NTM through 07/14/2007
- **ENC US3NY01M**, 12th Edition Issued 7/26/2007 Update 7/26/2007, area common to chart 12300, overlays charts 12323, 12324, and 12326
- **ENC US4NY1AM**, 9th Edition Issued 1/26/2007 Update 4/13/2007, area common to chart 12326

The chart comparisons were conducted by using SAIC's **SABER** software to view the BSB Raster charts with overlain layers of H11536 data such as the CUBE gridded surface, selected soundings, and features. For ENC comparisons a combination of HydroService's **dKart Inspector** and 7C's **SeeMyDENC** were used in conjunction with **SABER**. Results from the comparisons are described below. Recommend reconstruction of the common areas of all charts using data from this survey. Sand waves exist throughout the majority of the area; therefore, soundings are subject to change. *Concur*

AWOIS Item Investigations

A listing of all Full and Informational Only AWOIS investigations assigned for the H11536 sheet L survey is provided in Table D-1. Discussions of all Full Investigation AWOIS and Informational AWOIS are provided below. AWOIS field notes are provided in an Access data base format in Appendix II.

Table D-1. Complete AWOIS Listing Received from NOAA for H11536

AWOIS Number	Chart 12323	Chart 12324_1	Chart 12324_3	Chart 12324_5	Chart 12326
Full AWOIS Investigation					
AWOIS 1469	x				
AWOIS 1477	x	x			
AWOIS 1478	x	x			
AWOIS 1480	x	x			
AWOIS 1496	x				
AWOIS 1504	x	x			x
AWOIS 4277	x				
AWOIS 4278	x	x			
AWOIS 4279	x	x			
AWOIS 6825	x	x			x
AWOIS 7716	x	x			
AWOIS 7778	x				x
AWOIS 7779	x				
AWOIS 7780	x				
AWOIS 12863	x				x
AWOIS 12864	x				x
AWOIS 12865	x				x
AWOIS 12866	x				x
AWOIS 12868	x				
AWOIS 12897	x	x			
AWOIS 12982	x	x		x	
Informational AWOIS Only					
AWOIS 1482	x	x			
AWOIS 1483	x	x			
AWOIS 1485	x	x			
AWOIS 1486	x	x			
AWOIS 1493	x	x			
AWOIS 1498	x				
AWOIS 7798	x				
AWOIS 7799	x				x
AWOIS 12874	x			x	

AWOIS 1466 (Full Investigation) was not an AWOIS assigned by NOAA as part of H11536 but was assigned as part of H11495 which was surveyed by SAIC in 2005-2006. A partial search of the 2000-meter radius with 200% side scan and resulting multibeam sonar coverage was completed during the survey of H11495 (Sheet K) conducted in 2005-2006. The remainder of the radius was covered during this survey. The results from both surveys were fully reported in the Descriptive Report delivered for H11495 which stated that one obstruction was located during this survey approximately 1440

meters north of the AWOIS position (Feature 18). Two wrecks were found during the H11495 survey inside the search radius, or very near. A wreck was found approximately 2000 meters southeast of the AWOIS position and is closer to the position of AWOIS 12872 and a wreck was found approximately 1535 meters west of the AWOIS position and is closer to AWOIS 1465. Recommend removing the dangerous wreck symbol, blue tint and label PA charted in 39° 58' 50.04"N 074° 01' 59.36"W (NAD83)". **Concur with clarification. Item is covered by H11495; therefore, no cartographic recommendation is required as part of present survey.**

AWOIS 1469 (Full Investigation) – A full search of the 500-meter radius with 200% side scan and more than 100% multibeam coverage was completed. A wreck (Feature 28) with a least depth of 18.90 meters (62 feet), 0.28 meter uncertainty, was found in 40° 01' 24.09"N 073° 54' 17.44"W (NAD83). The wreck is a deteriorated wreck and oriented 145 degrees, about 106 meters long and 25 meters wide. Position is on the north end of the wreck. Recommend removing the label Wk, danger circle, blue tint and sounding cleared to 51 feet in 40° 01' 22.94"N 073° 54' 19.23"W (NAD83) and chart a 62 foot sounding, danger circle, blue tint and label Wk in 40° 01' 24.09"N 073° 54' 17.44"W (NAD83).

AWOIS 1477 (Full Investigation) – A full search of the 500-meter radius with 200% side scan and more than 100% multibeam coverage was completed. Five closely spaced obstructions (Feature 5) with a least depth of 18.02 meters (59 feet), 0.28 meter uncertainty, were found in 40° 03' 00.79"N 074° 01' 22.66"W (NAD83). The side-scan sonar and multibeam data were inconclusive as to the object being identified as a wreck. Recommend removing label (55 ft rep), dangerous wreck symbol, blue tint, and danger circle and in 40° 03' 03.59"N 074° 01' 20.65"W (NAD83) and the charted 65 foot sounding in 40° 03' 06.95"N 074° 01' 17.79"W (NAD83). Recommend charting a 59 foot sounding, danger circle, blue tint and label Obstns in 40° 03' 00.79"N 074° 01' 22.66"W (NAD83).

AWOIS 1478 (Full Investigation) – A full search of the 300-meter radius with 200% side scan and more than 100% multibeam coverage was completed. A wreck (Feature 80) with a least depth of 15.55 meters (51 feet), 0.28 meter uncertainty, was found in 40° 03' 40.22"N 074° 00' 29.10"W (NAD83). The wreck is deteriorated and oriented north south, about 78 meters long and 15 meters wide. Position is near the center of the wreck. Recommend removing the label Wk, danger circle, blue tint, and sounding cleared to 49 feet in 40° 03' 40.51"N 074° 00' 29.86"W (NAD83) and chart a 51 foot sounding, danger circle, blue tint, and label Wk in 40° 03' 40.22"N 074° 00' 29.10"W (NAD83).

AWOIS 1480 (Full Investigation) – A full search of the 300-meter radius with 200% side scan and more than 100% multibeam coverage was completed. Note that AWOIS 1482 is completely within the AWOIS 1480 area. There were two wrecks found inside the 1480 300-meter radius. A wreck (Feature 165) with a least depth of 19.50 meters (64 feet), 0.28 meter uncertainty, was found in 40° 04' 32.88"N 073° 58' 31.93"W (NAD83) approximately 40 meters southwest of AWOIS 1480 and 145 meters south of AWOIS

1482. The wreck is oriented 031 degrees, about 70 meters long and 12 meters wide. See AWOIS 1482 for information about the other wreck and for charting recommendation.

AWOIS 1482 (Information Only) – A wreck (Feature 166) with a least depth of 18.37 meters (60 feet), 0.28 meter uncertainty, was found in 40° 04' 37.45"N 073° 58' 31.06"W (NAD83). The wreck is badly deteriorated and oriented 023 degrees, about 42 meters long and 8 meters wide. Position is near the center of the wreck. Recommend removing the label Wk, danger circle, blue tint and sounding cleared to 56 feet and chart a 60 foot sounding, danger circle, blue tint and label Wks in 40° 04' 37.45"N 073° 58' 31.06"W (NAD83). See AWOIS 1480.

AWOIS 1483 (Information only) – A rectangular obstruction (Feature 4) about 7 meters by 6 meters with a least depth of 16.82 meters (55 feet), 0.28 meter uncertainty was found in 40° 04' 59.96"N, 074° 00' 57.78"W, (NAD83). Obstruction looks like a scallop dredge. Recommend charting a 55 foot sounding and label Obstn in 40° 04' 59.96"N, 074° 00' 57.78"W, (NAD83).

AWOIS 1485 (Information only) – No wreck or obstruction within a 1000 meter radius covered with 200% side scan sonar and more than 100% multibeam sounder.

AWOIS 1486 (Information only) – A submerged pipe was found about 500 meters north of this AWOIS. No other wreck or obstruction within the eastern half of a 1000 meter radius covered with 200% side scan sonar and more than 100% multibeam sounder. The survey extended only about 50 meters shoreward (west) of this AWOIS.

AWOIS 1493 (Information only) – No wreck or obstruction within a 300 meter radius covered with 200% side scan sonar and more than 100% multibeam sounder. This area is within a Fish Haven (AWOIS 6825) with an authorized minimum depth 50 feet.

AWOIS 1496 (Full Investigation) – A full search of the 300-meter radius with 200% side scan sonar and more than 100% multibeam sounder was completed. No obstructions or wrecks were found. Minimum depth in the area was 16.73 meters (55 feet), 0.28 meter uncertainty. Recommend removing label Obstn, danger circle, blue tint, and sounding cleared to 50 feet in 40° 07' 25.69"N 073° 55' 55.64"W (NAD83).

AWOIS 1498 (Information only) – No wreck or obstruction within a 1000 meter radius covered with 200% side scan sonar and more than 100% multibeam sounder. The northeast quadrant of this radius was not covered by this survey.

AWOIS 1504 (Full Investigation) – A full search of the 100-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. A wreck (Feature 149) with a least depth of 14.38 meters (47 feet), 0.28 meter uncertainty, was found 40° 08' 31.14"N 073° 58' 13.83"W, (NAD83). Wreck appears to be a rectangular barge oriented 140 degrees, 20 meters long and 12 meters wide. Recommend removing the charted 46 and charting a 47 foot sounding within the danger circle and blue tint and symbol Wk in 40° 08' 31.14"N 073° 58' 13.83"W, (NAD83).

AWOIS 4277 (Full Investigation) – A full search of the 500-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. No wrecks or obstructions were found. Recommend removing the charted label PA, dangerous wreck symbol, danger circle and blue tint in 40° 03' 12.90"N 073° 56' 43.66"W (NAD83).

AWOIS 4278 (Full Investigation) – A full search of the 300-meter radius with 200% side scan sonar and more than 100% multibeam sounder was completed. An obstruction (Feature 163) with a least depth of 21.70 meters (71 feet), 0.28 meter uncertainty was found in 40° 04' 13.30"N, 073° 58' 46.52"W, (NAD83), approximately 270 meters south west of the reported position. Recommend removing the charted label Obstn, danger circle, blue tint, and sounding cleared to 55 feet in 40° 04' 17.25"N, 073° 58' 36.64"W (NAD83), and chart a 71 foot sounding and label Obstn in 40° 04' 13.30"N, 073° 58' 46.52"W, (NAD83).

AWOIS 4279 (Full Investigation) – A full search of the 500-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. Two obstructions were found. An obstruction (Feature 1) with a least depth of 15.50 meters (51 feet), 0.28 meter uncertainty, was found in 40° 05' 13.66"N 74° 01' 00.99"W (NAD83), approximately 340 meters north west of the reported position. A second obstruction (Feature 4) with a least depth of 16.82 meters (55 feet), 0.28 meter uncertainty, was found in 40° 04' 59.96"N 74° 00' 57.78"W (NAD83), approximately 225 meters south west of the reported position. The second obstruction is about 7 meters by 6 meters and appears to be a scallop dredge. It is within 25 meters of the reported position of informational AWOIS 1483. No wrecks were found within the search radius. Recommend removing the charted label (25 ft rep) PA, dangerous wreck symbol, danger circle and blue tint and chart a 51 foot sounding and label Obstn in 40° 05' 13.66"N 74° 01' 00.99"W (NAD83).

AWOIS 6825 (Full Investigation) – A full search of the Fish Haven with 200% side scan sonar and more than 100% multibeam sounder was completed. Danger to Navigation Report 3 was submitted based on predicted tides and reported two wrecks that were shoaler than the authorized minimum depth of 50 feet. After applying final correctors and verified tides there is no change to the charted 39 foot dangerous wreck (Feature 121) in 40° 07' 30.78"N 073° 56' 29.38"W (NAD83). See AWOIS 7780 for recommendations for the second wreck (Feature 120) charted as a 48 foot sounding in 40° 07' 45.78"N 073° 56' 20.53"W (NAD83). Danger to Navigation Report 7 was submitted based on predicted tides and reported a wreck (Feature 128) that was shoaler than the authorized minimum depth of 50 feet. Recommend removing the charted 49 foot sounding in 40° 06' 58.80"N 073° 56' 52.62"W (NAD83) and charting a 48 foot sounding in 40° 06' 58.80"N 073° 56' 52.62"W (NAD83) based on verified tides. Danger to Navigation Report 10 was submitted based on verified tides and reported a wreck (Feature 115) that was shoaler than the authorized minimum depth of 50 feet. Recommend charting a 48 foot sounding and label WK in 40° 08' 11.40"N 073° 56' 06.22"W (NAD83).

AWOIS 7716 (Full Investigation) – A full search of the 300-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. No wreck or obstruction found within the area.

AWOIS 7778 (Full Investigation) – A full search of the 200-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. A wreck (Feature 113) with a least depth of 20.11 meters (66 feet), 0.28 meter uncertainty, was found in 40° 08' 51.17"N 073° 55' 49.41"W (NAD83). The wreck is badly deteriorated and oriented 264 degrees, 40 meters long, 9 meters wide at mid-length, tapering to both ends. The least depth position is on a mound at the east end. The remainder of the wreck appears to be flush with the bottom with scouring along the southern edge of the wreck. Recommend removing of the danger circle, blue tint, 65 foot sounding and label Obstrn rep and chart a 66 foot sounding and label Wk in 40° 08' 51.17"N 073° 55' 49.41"W (NAD83).

AWOIS 7779 (Full Investigation) – A full search of the 200-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. Two wrecks were found and reported in Danger to Navigation Report 3. The shoalest wreck (Feature 99) with a least depth of 17.06 meters (56 feet), 0.28 meter uncertainty, is located in 40° 07' 56.02"N 073° 55' 53.61"W (NAD83). This wreck appears to be an intact barge approximately 30 meters long by 10 meters wide and oriented 160°. It is located approximately 70 meters east of the Fish Haven (AWOIS 6825) with an authorized minimum depth of 50 feet. The second wreck (Feature 112) with a least depth of 16.77 meters (55 feet), 0.28 meter uncertainty, is approximately 75 meters west of Feature 99 in 40° 07' 56.05"N 073° 55' 56.83"W (NAD83). This wreck also appears to be an intact barge approximately 72 meters long by 13 meters wide and oriented 160°. Approximately two thirds of this wreck lies within the Fish Haven with the shoalest depth on the boundary of the fish haven. These wrecks were reported in Danger to Navigation Report number 3 based on predicted tides. After applying final correctors and verified tides recommend removing the charted 57 foot sounding in 40° 07' 55.62"N 073° 55' 52.68"W (NAD83) and chart a 56 foot sounding in 40° 07' 56.02"N 073° 55' 53.61"W (NAD83) and changing the label from Wk to Wks. Informational AWOIS 7799 slightly overlaps AWOIS 7779, see AWOIS 7799 for additional charting recommendations.

AWOIS 7780 (Full Investigation) – A full search of the 200-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. Two wrecks were found within the radius. Neither matches the diver description. Both wrecks are within the Fish Haven (AWOIS 6825) with an authorized minimum depth of 50 feet. The shoalest wreck (Feature 120) reported in Danger to Navigation Report 3 with a least depth of 14.55 meters (47 feet), 0.28 meter uncertainty, was found in 40° 07' 45.78"N 73° 56' 20.53"W (NAD83). This wreck appears to be the front half of a vessel and measures approximately 23 meters long by 9 meters wide and oriented 224°. The second wreck (Feature 119) with a least depth of 18.47 (60 feet), 0.28 meter uncertainty, was found in 40° 07' 44.43"N 073° 56' 24.75"W (NAD83) approximately 100 meters west southwest of Feature 120. It is a rectangular wreck approximately 40 meters long by 20 meters wide and oriented 54 degrees. Recommend removing the charted 48 foot sounding in 40°

07° 45.78''N 73° 56' 20.53''W (NAD83) and charting a 47 foot sounding and label Wks in 40° 07' 45.78''N 73° 56' 20.53''W (NAD83) based on verified tides.

AWOIS 7798 (Information only) – Area covered with 200% side scan sonar and more than 100% multibeam sounder. This area is on the southeast edge a Fish Haven (AWOIS 6825) with an authorized minimum depth 50 feet. Nearest objects are 50 meters away and within the fish haven.

AWOIS 7799 (Information only) – Area covered with 200% side scan sonar and more than 100% multibeam sounder. This area is on the northeast edge a Fish Haven (AWOIS 6825) with an authorized minimum depth 50 feet. Obstructions within the Fish Haven are about 100 meters distant and are deeper than 50 feet. Recommend removing the charted label Obstn rep in 40° 08' 00.88''N 073° 55' 42.53''W (NAD83). See AWOIS 7779 for additional charting recommendations.

AWOIS 12863 (Full Investigation) – A full search of the 100-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. An obstruction (Feature 114) with a least depth of 17.44 meters (57 feet), 0.28 meter uncertainty) was found in 40° 08' 40.08''N 073° 55' 54.40''W (NAD83). Recommend removing the charted danger circle, blue tint, 47 foot sounding and label Obstn rep in LAT 40° 08' 39.88''N 073° 55' 55.32''W (NAD83) and charting a 57 foot sounding and label Obstn in 40° 08' 40.08''N 073° 55' 54.40''W, (NAD83).

AWOIS 12864 (Full Investigation) – A full search of the 100-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. No wrecks or obstructions were found within the assigned radius; however, the radius does not cover the area reported in the history. This survey covered approximately the southern three fourths of the history area with 200% side scan sonar and more than 100% multibeam sounder. Seven small obstructions were found in the history area:

Obstruction (Feature 89) with a least depth of 17.02 meters (56 feet), 0.28 meter uncertainty, in 40° 08' 52.86''N 073° 55' 01.29''W (NAD83).

Obstruction (Feature 92) with a least depth of 18.87 meters (62 feet), 0.28 meter uncertainty, in 40° 08' 47.77''N 073° 55' 27.74''W (NAD83).

Obstruction (Feature 93) with a least depth of 18.96 meters (62 feet), 0.28 meter uncertainty, in 40° 08' 54.69''N 073° 55' 17.59''W (NAD83).

Obstruction (Feature 95) with a least depth of 18.42 meters (60 feet), 0.28 meter uncertainty, in 40° 08' 51.49''N 073° 55' 24.58''W (NAD83).

Obstruction (Feature 103) with a least depth of 16.87 meters (55 feet), 0.28 meter uncertainty, in 40° 08' 41.90''N 073° 55' 34.19''W (NAD83).

Obstruction (Feature 107) with a least depth of 16.23 meters (53 feet), 0.28 meter uncertainty, in 40° 08' 39.89''N 073° 55' 36.01''W (NAD83).

Obstruction (Feature 108) with a least depth of 17.17 meters (56 feet), 0.28 meter uncertainty, in 40° 08' 42.80''N 073° 55' 41.24''W (NAD83).

The depths in this area range from 16.23 meters to 20.50 meters (53 to 67 feet). Recommend removing charted label Obstn rep 2002 in 40° 08' 51.3"N 073° 55' 19.3"W (NAD83) and chart the above soundings and label Obstns.

AWOIS 12865 (Full Investigation) – A full search of the 100-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. No wrecks or obstruction were found. Recommend removing the charted danger circle, blue tint, 63 foot sounding and label Obstn rep in 40° 08' 41.20"N 073° 54' 24.23"W (NAD83).

AWOIS 12866 (Full Investigation) – A full search of the 100-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. An obstruction (Feature 82) with a least depth of 22.36 meters (73 feet), 0.28 meter uncertainty, was found in 40° 08' 30.38"N 073° 53' 12.54"W (NAD83). The obstruction is the shoalest of several rock outcrops located within the search radius. Recommend removing the charted 71 foot sounding and label Obstn rep in 40° 08' 29.47"N 073° 53' 15.25"W (NAD83) and charting a 73 foot sounding and label Obstns in 40° 08' 30.38"N 073° 53' 12.54"W (NAD83).

AWOIS 12868 (Full Investigation) – A full search of the 100-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. A wreck (Feature 172) with a least depth of 15.87 meters (52 feet), 0.28 meter uncertainty, was found in 40° 06' 23.57"N 073° 57' 05.77"W (NAD83). The wreck appears to be a barge approximately 38 meters long by 11 meters wide and oriented 310 degrees. It is within a Fish Haven (AWOIS 6825) with an authorized minimum depth of 50 feet. Recommend removing charted dangerous wreck symbol, danger circle and blue tint in 40° 06' 24"N 073° 57' 04"W (NAD83).

AWOIS 12874 (Information Only) – Single sewer pipe found with offshore end (Feature 196) in 40° 01' 48.04"N 074° 01' 39.26"W (NAD83) with a least depth of 18.51 meters (60 feet), 0.28 meter uncertainty. The pipe is buried from the shoreline to Feature 194 in 40° 01' 58.77"N 074° 02' 42.49"W (NAD83) with a least depth of 8.89 meters (29 feet), 0.280 meter uncertainty. Projection of the exposed pipe alignment to the shore intersects the charted high water line in 40° 02' 02.11"N 074° 03' 02.49"W (NAD83). Recommend charting the sewer pipeline from 40° 02' 02.11"N 074° 03' 02.49"W (NAD83) to 40° 01' 58.77"N 074° 02' 42.49"W (NAD83), to 40° 01' 48.04"N 074° 01' 39.26"W (NAD83). Recommend charting a 60 foot (18.51 meter) sounding in 40° 01' 48.04"N 074° 01' 39.26"W (NAD83) at the offshore end of the pipe (Feature 196).

In addition to the sewer pipeline there are anchor block obstructions on both the north and south sides of the pipeline: ***The pipeline support structures shall not be charted as obstructions. Refer to the Evaluation Report.***

Obstruction (Feature 2) with a least depth of 19.02 meters (62 feet), 0.28 meter uncertainty in 40° 01' 49.45"N 074° 01' 49.36"W, (NAD83).

Obstruction (Feature 3) with a least depth of 18.68 meters (61 feet), 0.28 meter uncertainty in 40° 01' 49.24"N 074° 01' 44.31"W (NAD83).

Obstruction (Feature 6) with a least depth of 19.24 meters (63feet), 0.28 meter uncertainty in 40° 01' 47.70"N 074° 01' 39.40"W (NAD83).

Obstruction (Feature 7) with a least depth of 19.10 meters (62feet), 0.28 meter uncertainty in 40° 01' 48.33"N 074° 01' 39.20"W (NAD83).

Obstruction (Feature 9) with a least depth of 19.37 meters (63 feet), 0.28 meter uncertainty in 40° 01' 49.90"N 074° 01' 51.90"W (NAD83).

Obstruction (Feature 11) with a least depth of 18.65 meters (61 feet), 0.28 meter uncertainty in 40° 01' 49.62"N 074° 01' 46.67"W (NAD83).

Obstruction (Feature 12) with a least depth of 19.46 meters (64 feet), 0.28 meter uncertainty in 40° 01' 49.04"N 074° 01' 46.97"W (NAD83).

Obstruction (Feature 13) with a least depth of 18.92 meters (62 feet), 0.28 meter uncertainty in 40° 01' 48.77"N 074° 01' 41.85"W (NAD83).

Obstruction (Feature 30) with a least depth of 11.83 meters (39 feet), 0.27 meter uncertainty in 40° 01' 56.62"N 074° 02' 31.96"W (NAD83).

Obstruction (Feature 31) with a least depth of 11.06 meters (36 feet), 0.27 meter uncertainty in 40° 01' 57.31"N 074° 02' 31.71"W (NAD83).

Obstruction (Feature 33) with a least depth of 12.23 meters (40 feet), 0.27 meter uncertainty in 40° 01' 56.39"N 074° 02' 27.04"W (NAD83).

Obstruction (Feature 34) with a least depth of 13.01 meters (42 feet), 0.27 meter uncertainty in 40° 01' 55.76"N 074° 02' 27.09"W (NAD83).

Obstruction (Feature 35) with a least depth of 11.42 meters (37 feet), 0.27 meter uncertainty in 40° 01' 57.10"N 074° 02' 34.39"W (NAD83).

Obstruction (Feature 36) with a least depth of 13.98 meters (46 feet), 0.28 meter uncertainty in 40° 01' 55.32"N 074° 02' 24.31"W (NAD83).

Obstruction (Feature 37) with a least depth of 13.03 meters (43 feet), 0.27 meter uncertainty in 40° 01' 55.97"N 074° 02' 24.22"W (NAD83). **Recommend** charting 43 feet (13.03m) in 40° 01' 55.97"N 074° 02' 24.22"W (NAD83) and label Obstns.

Obstruction (Feature 43) with a least depth of 13.59 meters (44 feet), 0.28 meter uncertainty in 40° 01' 55.53"N 074° 02' 21.74"W (NAD83).

Obstruction (Feature 44) with a least depth of 14.49 meters (47 feet), 0.28 meter uncertainty in 40° 01' 54.74"N 074° 02' 16.76"W (NAD83).

Obstruction (Feature 47) with a least depth of 15.47 meters (51 feet), 0.28 meter uncertainty in 40° 01' 53.93"N 074° 02' 11.83"W (NAD83). **Recommend** charting 51 feet (15.47m) in 40° 01' 53.93"N 074° 02' 11.83"W (NAD83) and label Obstns..

Obstruction (Feature 48) with a least depth of 16.77 meters (55 feet), 0.28 meter uncertainty in 40° 01' 53.34"N 074° 02' 11.87"W (NAD83).

Obstruction (Feature 49) with a least depth of 14.00 meters (46 feet), 0.28 meter uncertainty in 40° 01' 55.20"N 074° 02' 19.16"W (NAD83).

Obstruction (Feature 50) with a least depth of 15.05 meters (49 feet), 0.28 meter uncertainty in 40° 01' 54.38"N 074° 02' 14.24"W (NAD83).

Obstruction (Feature 51) with a least depth of 16.02 meters (52 feet), 0.28 meter uncertainty in 40° 01' 53.77"N 074° 02' 14.54"W (NAD83).

Obstruction (Feature 52) with a least depth of 17.25 meters (56 feet), 0.28 meter uncertainty in 40° 01' 52.88"N 074° 02' 09.49"W (NAD83).

Obstruction (Feature 53) with a least depth of 16.00 meters (52 feet), 0.28 meter uncertainty in 40° 01' 53.54"N 074° 02' 09.22"W (NAD83).

Obstruction (Feature 54) with a least depth of 16.86 meters (55 feet), 0.28 meter uncertainty in 40° 01' 52.69"N 074° 02' 04.30"W, (NAD83).

Obstruction (Feature 55) with a least depth of 17.92 meters (59 feet), 0.28 meter uncertainty in 40° 01' 52.06"N 074° 02' 04.35"W (NAD83).

Obstruction (Feature 57) with a least depth of 17.55 meters (57 feet), 0.28 meter uncertainty in 40° 01' 51.79"N 074° 01' 59.16"W (NAD83).

Obstruction (Feature 58) with a least depth of 18.58 meters (61 feet), 0.28 meter uncertainty in 40° 01' 51.18"N 074° 01' 59.37"W (NAD83).

Obstruction (Feature 59) with a least depth of 17.51 meters (57 feet), 0.28 meter uncertainty in 40° 01' 52.50"N 074° 02' 07.09"W (NAD83).

Obstruction (Feature 60) with a least depth of 16.46 meters (54 feet), 0.28 meter uncertainty in 40° 01' 53.09"N 074° 02' 06.83"W (NAD83).

Obstruction (Feature 63) with a least depth of 17.25 meters (56 feet), 0.28 meter uncertainty in 40° 01' 52.24"N 074° 02' 01.72"W (NAD83).

Obstruction (Feature 64) with a least depth of 18.38 meters (60 feet), 0.28 meter uncertainty in 40° 01' 51.64"N 074° 02' 02.02"W (NAD83).

Obstruction (Feature 65) with a least depth of 18.68 meters (61 feet), 0.28 meter uncertainty in 40° 01' 50.80"N 074° 01' 56.91"W (NAD83).

Obstruction (Feature 66) with a least depth of 17.83 meters (58 feet), 0.28 meter uncertainty in 40° 01' 51.39"N 074° 01' 56.73"W (NAD83). **Recommend** charting 58 feet (17.83m) sounding in 40° 01' 51.39"N 074° 01' 56.73"W (NAD83) and label Obstns.

Obstruction (Feature 68) with a least depth of 19.08 meters (62 feet), 0.28 meter uncertainty in 40° 01' 50.34"N 074° 01' 54.36"W, (NAD83).

Obstruction (Feature 186) with a least depth of 19.50 meters (64 feet), 0.28 meter uncertainty in 40° 01' 48.63"N 074° 01' 44.62"W (NAD83).

Obstruction (Feature 187) with a least depth of 18.51 meters (60 feet), 0.28 meter uncertainty in 40° 01' 50.07"N 074° 01' 49.19"W (NAD83).

Obstruction (Feature 188) with a least depth of 18.43 meters (60 feet), 0.28 meter uncertainty in 40° 01' 50.51"N 074° 01' 51.81"W (NAD83).

Obstruction (Feature 189) with a least depth of 15.46 meters (50 feet), 0.28 meter uncertainty in 40° 01' 54.13"N 074° 02' 16.96"W (NAD83).

Obstruction (Feature 190) with a least depth of 14.75 meters (48 feet), 0.28 meter uncertainty in 40° 01' 54.56"N 074° 02' 19.45"W (NAD83).

Obstruction (Feature 191) with a least depth of 12.49 meters (41 feet), 0.27 meter uncertainty in 40° 01' 56.19"N 074° 02' 29.30"W (NAD83).

Obstruction (Feature 192) with a least depth of 11.95 meters (39 feet), 0.28 meter uncertainty in 40° 01' 56.83"N 074° 02' 29.04"W (NAD83).

Obstruction (Feature 193) with a least depth of 10.64 meters (35 feet), 0.28 meter uncertainty in 40° 01' 57.71"N 074° 02' 34.07"W (NAD83). **Recommend** charting 35 feet (10.64m) in 40° 01' 57.71"N 074° 02' 34.07"W (NAD83) and label Obstns.

Obstruction (Feature 195) with a least depth of 18.09 meters (59 feet), 0.28 meter uncertainty in 40° 01' 50.92"N 074° 01' 54.13'W (NAD83).

Obstruction (Feature 197) with a least depth of 19.61 meters (64 feet), 0.28 meter uncertainty in 40° 01' 48.23"N 074° 01' 42.03"W (NAD83).

Obstruction (Feature 198) with a least depth of 14.64 meters (48 feet), 0.28 meter uncertainty in 40° 01' 55.01"N 074° 02' 21.90"W (NAD83).

AWOIS 12897 (Full Investigation) – A full search of the 50-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. A wreck (Feature 142) with a least depth of 14.49 meters (47 feet), 0.28 meter uncertainty was found in 40° 03' 23.46"N 073° 59' 33.50"W, (NAD83). It is approximately 28 meters long by 8 meters wide and oriented 236 degrees. The wreck is intact, sitting upright and appears to be a tug boat. The authorized minimum depth for the Fish Haven (AWOIS 12982) has been changed to 40 feet after Corps of Engineers disposal mounds were reported by SAIC as less than the previously authorized minimum of 50 feet. Therefore, this wreck is no longer charted. Recommend no change to the chart.

AWOIS 12982 (Full Investigation) – A full search of the Fish Haven with 200% side scan sonar and more than 100% multibeam sounder was completed. Danger to Navigation Report 8 was submitted for disposal mounds that were shoaler than the authorized minimum depth of 50 feet. One mound (Feature 138) with a least depth of 15.03 meters (49 feet), 0.28 meter uncertainty is located in 40° 01' 05.67"N 074° 00' 23.64"W (NAD83). A second mound (Feature 139) with a least depth of 14.10 meters (46 feet), 0.28 meter uncertainty, is located in 40° 00' 59.23"N 074° 00' 24.50"W (NAD83). Subsequent to the submittal of this report, the Corps of Engineers changed the authorized minimum depth to 40 feet. There are no features shoaler than 40 feet within this Fish Haven. Two previously charted wrecks in 40° 03' 23.38"N 073° 59' 33.68"W (NAD83) and 40° 03' 12.45"N 073° 59' 16.19"W (NAD83) have been removed from the chart based on the new authorized minimum depth of 40 feet. The least depth on the wreck in 40° 03' 12.45"N 073° 59' 16.19"W (NAD83) was reported as 42 feet in 40° 03' 12.38"N 073° 59' 16.44"W in a Chart Correction Letter submitted on 12 April, 2005, by SAIC to NOAA. The least depth was set on an object attached to the top of the wreck. This object on the top of the wreck was not seen in this survey. The least depth of this wreck (Feature 157) was found to be 15.40 meters (50 feet), 0.28 meter uncertainty in 40° 03' 12.79"N 073° 59' 16.45"W (NAD83).

Chart 12324, 1:40,000 scale

See Table D-1 above for AWOIS items on this chart.

At the mouth of Manasquan Inlet the 30-foot curve is about as charted, but about 700 meters south the 30-foot curve is about 175 meters shoreward. From about 500 meters to 1500 meters north of Manasquan Inlet the 30-foot curve is about 180 meters shoreward of the charted curve.

Charted soundings are generally within 3 feet (1 meter) of those found in this survey, except near the shoreline where surveyed depths of 26 feet (8 meters) are about 100 to 200 meters west of charted depths, and are generally in charted depths of 19 or 20 feet.

The charted dangerous obstruction with a 29 foot sounding in 40° 03' 01.65"N 074° 01' 40.54"W (NAD83) was reported in Danger to Navigation Report 1 based on predicted

tides. After applying final correctors and verified tides the obstruction (Feature 182) has a least depth of 8.76 meters (28 feet), 0.27 meter uncertainty, in 40° 03' 01.67"N 074° 01' 40.98"W (NAD83). There is another obstruction 45 meters to the west with a least depth of 11.77 meters (38 feet), 0.27 meter uncertainty (Feature 62). Recommend replacing the charted 29 foot sounding with a 28 foot sounding and changing the label from Obstn to Obstns.

The charted Dangerous obstructions with a 40 foot sounding in 40° 04' 44.06"N 074° 01' 14.27"W (NAD83) was reported in Danger to Navigation Report 2. The four obstructions reported resulting in a charted 40 feet Obstns danger circle and blue tint covering all items was based on predicted tides. After applying final correctors and verified tides the least depth of obstructions (Features 69, 205, 206, and 207) is 12.15 meters (40 feet), 0.27 meter uncertainty, in 40° 04' 44.06"N 074° 01' 14.27"W (NAD83), Feature 69. Maintain as charted.

The charted dangerous wreck with a 47 foot sounding in 40° 06' 58.62"N 073° 57' 31.02"W (NAD83) was reported in Danger to Navigation Report 6 based on predicted tides. After applying final correctors and verified tides the wreck (Feature 183) has a least depth of 13.93 meters (45 feet), 0.28 meter uncertainty, in 40° 06' 57.63"N 073° 57' 33.50"W (NAD83). Recommend removing the danger circle, blue tint, 47 foot sounding and label Wk and chart a 45 foot sounding, danger circle, blue tint and label Wk in 40° 06' 57.63"N 073° 57' 33.50"W (NAD83).

The sewer pipeline charted in 40° 04' 15.04"N 074° 02' 17.98"W (NAD83) was not seen in the data. The offshore area was covered by 100 percent multibeam sounder.

Charted subm pile in 40° 00' 54.58"N 074° 03' 04.69"W (NAD83) was covered by 100% side scan sonar and resulting multibeam sounder data in depths less than 7.0 meters (23 feet). No pile or obstruction was seen. Recommend removal of the charted submerged pile symbol and label subm pile.

Charted subm piles in 39° 59' 46.74"N 074° 03' 19.78"W (NAD83) and 39° 59' 48.86"N 074° 03' 19.14"W (NAD83) were covered by 200% side scan sonar and resulting multibeam sounder data. No piles or obstructions were seen in the data. Recommend removal of the two charted submerged pile symbols and the label subm piles.

An exposed section of pipe is 0.6 meters (2 feet) shoaler than surrounding bottom. This pipe runs from 40° 05' 36.68"N 074° 01' 57.78"W (NAD83), Feature 204, 7.53 meters (24.70 feet), 0.27 meter uncertainty to 40° 05' 36.49"N 074° 01' 54.98"W (NAD83), Feature 40, 8.19 meters (26.87 feet), 0.28 meter uncertainty. This exposed pipe is off of a pier charted in 40° 05' 36.59"N 074° 02' 04.31"W (NAD83).

Chart 12323, 1:80,000 scale

See Table D-1 above for AWOIS items on this chart.

Only comparisons which differ from comparisons discussed within Chart 12324 are discussed for chart 12323.

The 30-foot curve is generally 50 to 150 meters shoreward of the charted 30-foot curve.

Charted soundings are generally within 3 feet (1 meter) of those found in this survey. Depths greater than 50 feet are generally within 1 to 3 feet of the charted depths. This survey shows much more detail so there are occasional areas where soundings on the chart are 5 feet different from the survey. Near the shoreline surveyed depths of 26 feet (8 meters) are about 100 to 200 meters west of charted depths, and are generally in charted depths of 19 or 20 feet.

The along shore 60-foot depth is generally as charted with some variation especially where finger shoals extend to the east. Off shore the 60-foot depth curves generally encompass smaller areas than charted with a slight shift to the south.

The charted 68 foot sounding with label *Obstn* in 40° 06' 01.11"N 073° 56' 09.30W (NAD83) was reported in Danger to Navigation Report 3 as multiple obstructions and based on predicted tides. After applying final correctors and verified tides the least depth of obstructions (Features 91, 96, 98, 104, 105, and 111) is 20.55 meters (67 feet), 0.28 meter uncertainty, in 40° 06' 01.11"N 073° 56' 09.30"W (NAD83), Feature 91. Recommend changing the charted sounding to 67 feet and the label to *Obstns*.

The charted dangerous wreck with a 53 foot sounding in 40° 07' 26.00N 073° 56' 13.11"W (NAD83) was reported in Danger to Navigation Report 3 based on predicted tides. After applying final correctors and verified tides the least depth of the wreck (Feature 118) is 16.05 meters (52 feet), 0.28 meter uncertainty, in 40° 07' 26.00N 073° 56' 13.12"W (NAD83). Recommend changing the charted sounding to 52 feet.

The charted 68 foot sounding and label *Wk* in 40° 02' 01.66"N 073° 57' 56.81 (NAD83) was reported in Danger to Navigation Report 4 based on predicted tides. After applying final correctors and verified tides the least depth of the wreck (Feature 122) is 20.54 meters (67 feet), 0.28 meter uncertainty, in 40° 02' 01.75"N 073° 57' 57.23"W. Recommend changing charted sounding to 67 feet.

The charted dangerous wreck with a 50 foot sounding in 40° 06' 09.43"N 073° 57' 11.75"W (NAD83) was reported in Danger to Navigation Report 5 based on predicted tides. After applying final correctors and verified tides the least depth of the wreck (Feature 134) is 15.06 meters (49 feet), 0.28 meter uncertainty in 40° 06' 09.43"N 073° 57' 11.75"W (NAD 83). Recommend changing the charted sounding to 49 feet.

Chart 12326, 1:80,000 scale

There are no differences in chart 12326 which were not previously discussed for charts 12324 and 12323.

ENC US3NY01M

There are no differences from the comparisons to charts 12324 and 12323.

ENC US4NY1AM

There are no differences from the comparisons to charts 12324 and 12323.

Table D-2. lists other uncharted wrecks and obstructions that should be considered for charting. See correlator sheets located in Appendix II for charting recommendations.

Table D-2. Additional Features to be Considered for Charting

Feature Number	Latitude, North (NAD83)			Longitude, West (NAD83)			Depth Feet	Depth Meters	Description
10	40	04	11.463	074	01	18.112	54.89	16.73	OBSTR
14	40	05	55.689	074	00	42.017	54.10	16.49	OBSTR
15	40	02	03.073	074	01	27.250	60.89	18.56	OBSTR
16	40	04	38.972	074	00	49.088	58.76	17.91	OBSTR
17	40	06	05.365	074	00	28.132	55.22	16.83	OBSTR
18	39	59	36.701	074	01	53.405	60.83	18.54	OBSTR
19	40	05	35.149	074	00	25.219	60.43	18.42	OBSTR
23	40	04	03.429	074	02	07.794	33.01	10.06	OBSTR
24	40	07	52.371	074	01	11.883	32.71	9.97	OBSTR
25	40	06	37.281	074	01	34.988	35.14	10.71	OBSTR
26	40	03	49.285	074	02	17.894	28.44	8.67	OBSTR
27	40	04	02.111	074	02	14.889	28.41	8.66	OBSTR
32	40	05	58.623	074	01	27.906	39.90	12.16	OBSTR
38	40	06	57.470	074	01	42.233	23.06	7.03	OBSTR
39	40	06	26.954	074	01	50.029	21.62	6.59	OBSTR
42	40	06	33.822	074	01	13.265	46.69	14.23	OBSTR
45	40	03	02.266	074	01	59.438	48.65	14.83	OBSTR
46	40	05	43.126	074	01	20.238	41.57	12.67	OBSTR
56	40	06	10.648	074	00	54.729	49.15	14.98	OBSTR
61	40	02	37.163	074	01	54.981	51.08	15.57	OBSTR
67	40	06	26.868	074	00	50.168	47.90	14.6	OBSTR
71	40	05	33.618	073	53	33.352	70.57	21.51	OBSTR
72	40	05	27.938	074	00	28.884	57.55	17.54	OBSTR
73	40	06	12.997	074	00	12.380	56.30	17.16	OBSTR
75	40	04	10.946	074	00	43.752	67.88	20.69	OBSTR

Feature Number	Latitude, North (NAD83)			Longitude, West (NAD83)			Depth Feet	Depth Meters	Description
77	40	03	34.912	074	00	51.730	71.06	21.66	OBSTR
78	40	04	20.298	074	00	24.233	68.14	20.77	OBSTR
79	40	04	29.167	074	00	18.026	70.80	21.58	OBSTR
81	39	59	54.615	073	55	12.953	65.39	19.93	OBSTR
84	40	07	21.213	073	53	41.501	73.85	22.51	OBSTR
85	40	07	45.959	073	53	36.659	75.79	23.1	OBSTR
86	40	02	47.522	073	55	58.763	72.74	22.17	OBSTR
87	40	08	39.549	073	54	56.949	44.13	13.45	OBSTR
88	40	06	30.614	073	55	33.497	61.75	18.82	OBSTR
90	40	05	12.870	073	55	45.924	71.26	21.72	OBSTR
94	40	05	52.951	073	56	13.433	71.69	21.85	OBSTR
106	40	07	17.207	073	56	04.709	51.71	15.76	OBSTR
125	40	06	28.069	073	56	58.281	48.36	14.74	OBSTR
126	40	06	33.112	073	56	49.337	50.03	15.25	OBSTRS
127	40	06	27.189	073	57	01.474	48.62	14.82	OBSTR
131	40	01	55.549	073	58	16.791	68.54	20.89	WRECK
137	40	04	33.653	073	59	38.147	64.17	19.56	OBSTR
150	40	06	54.871	073	58	32.048	59.55	18.15	OBSTR
151	40	07	20.455	073	58	24.896	63.25	19.28	OBSTR
159	40	03	59.316	073	58	42.930	70.93	21.62	OBSTR
161	40	06	33.086	073	58	08.653	52.36	15.96	WRECK
164	40	04	36.898	073	58	41.192	70.18	21.39	OBSTR
168	40	06	41.707	073	57	50.720	56.56	17.24	OBSTRS
169	40	05	53.474	073	58	00.117	71.82	21.89	OBSTR
170	40	04	35.234	073	58	22.496	66.70	20.33	OBSTR
171	40	01	33.381	073	58	58.298	64.60	19.69	WRECK
174	40	05	40.763	073	57	26.259	65.26	19.89	OBSTR
176	40	03	58.752	073	57	58.417	68.24	20.8	OBSTR
177	39	59	13.713	073	59	25.188	63.98	19.5	OBSTR
178	40	03	54.804	074	00	19.711	68.57	20.9	OBSTR
181	40	05	03.021	074	01	17.456	48.65	14.83	OBSTR
184	40	00	55.570	073	57	28.101	66.34	20.22	OBSTR
185	40	01	17.382	074	02	40.084	34.74	10.59	WRECK
200	40	06	06.077	074	01	38.162	37.34	11.38	OBSTR
201	40	07	15.912	074	01	25.536	29.92	9.12	OBSTR
202	40	07	30.620	074	01	07.237	44.49	13.56	OBSTR
203	40	08	00.212	074	01	08.381	36.22	11.04	OBSTR

Navigational Aids

The charted buoy R “2M” Fl R 4s BELL in 40° 05 30.8”N 074° 00’ 48.4”W (NAD83) was found (Feature 160) in 40° 05 31.968”N 074° 00’ 48.246”W (NAD83). This agreed with The USCG Light List, Volume II, Atlantic Coast, Shrewsbury River, New Jersey to Little River, South Carolina. This buoy adequately serves its intended purpose. **Concur**

Table D-3. Aids to Navigation

Buoy Name	Multibeam File Name	Confirmed Position (NAD83) From Multibeam		Feature Number
		Latitude (N)	Longitude (W)	
R “2M” FL R 4S BELL	asmba06123.d07	040 05 31.968	074 00 48.246	160

D.2 ADDITIONAL RESULTS

Shoreline verification was not required for this survey. Comparison with prior surveys was not required under this task order. See Section D.1 for comparison to the nautical charts.

Aids to Navigation

The charted buoy R “2M” Fl R 4s BELL in 40° 05 30.8”N 074° 00’ 48.4”W (NAD83) was found (Feature 160) in 40° 05 31.968”N 074° 00’ 48.246”W (NAD83). This agreed with The USCG Light List, Volume II, Atlantic Coast, Shrewsbury River, New Jersey to Little River, South Carolina. **Concur**

E. APPROVAL SHEET

07 August 2007

LETTER OF APPROVAL

REGISTRY NUMBER: H11536

This report and the accompanying digital data for project OPR-C303-KR-06, Mid-Atlantic Corridor, Coast of New Jersey Project is respectfully submitted.

Field operations and data processing contributing to the accomplishment of this survey, H11536, were conducted under supervision of myself and lead hydrographer Gary R. Davis with frequent personal checks of progress and adequacy. This report and accompanying deliverable data items have been closely reviewed and are considered complete and adequate as per the Statement of Work.

Reports concurrently submitted to NOAA for this project include:

<u>Report</u>	<u>Submission Date</u>
Data Acquisition and Processing Report	07 August 2007
Horizontal and Vertical Control Report	07 August 2007

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Paul L. Donaldson
Lead Hydrographer
Science Applications International Corporation
07 August 2007

APPENDIX I. DANGER TO NAVIGATION REPORTS

Danger to Navigation Report 1

Hydrographic Survey Registry Number: H11536

State: New Jersey
 Locality: Atlantic Ocean
 Sublocality: Seagirt to Chadwick Beach
 Project Number: OPR_C303-KR-06
 Survey Date: May 03, 2006 and on going

Depths are reduced to Mean Lower Low Water using predicted tides based on preliminary zoning. Positions are based on NAD-83. Positions were obtained using DGPS from a US Coast Guard Station.

Charts affected:

- 12323_1 23rd Edition 03/11/2000 1:80,000 scale; Corrected through NM 04/29/2006
- 12324_1 32nd Edition 03/01/2006 1:40,000 scale Corrected through NM 04/29/2006

The following items were found during hydrographic survey operations:

<u>FEATURE</u>	<u>DEPTH (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
Obstruction	29	40° 03' 01.662"N	074° 01' 40.956"W
Obstruction	39	40° 03' 02.165"N	074° 01' 42.814"W

RECOMMENDATIONS:

Chart 12324_1:

Chart 29 foot sounding, symbol Obstns, and danger circle with blue tint (K-41) in 40° 03' 01.662"N / 074° 01' 40.956"W

Chart 12323_1:

Chart 29 foot sounding, symbol Obstns, and danger circle with blue tint (K-41) in 40° 03' 01.662"N / 074° 01' 40.956"W

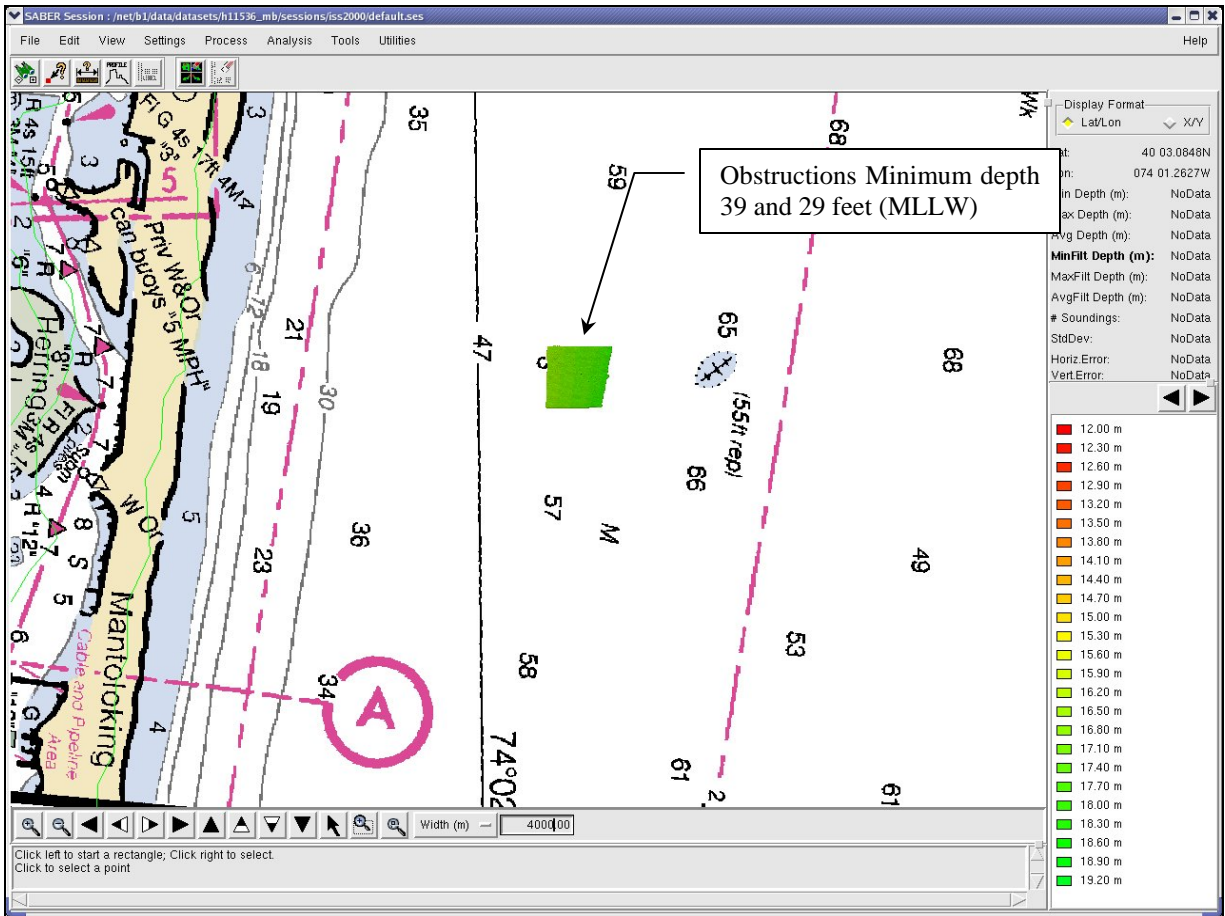


Figure 1 Chart 12324_1 Showing Area Covered by This Report with Location of Obstructions within H11536.

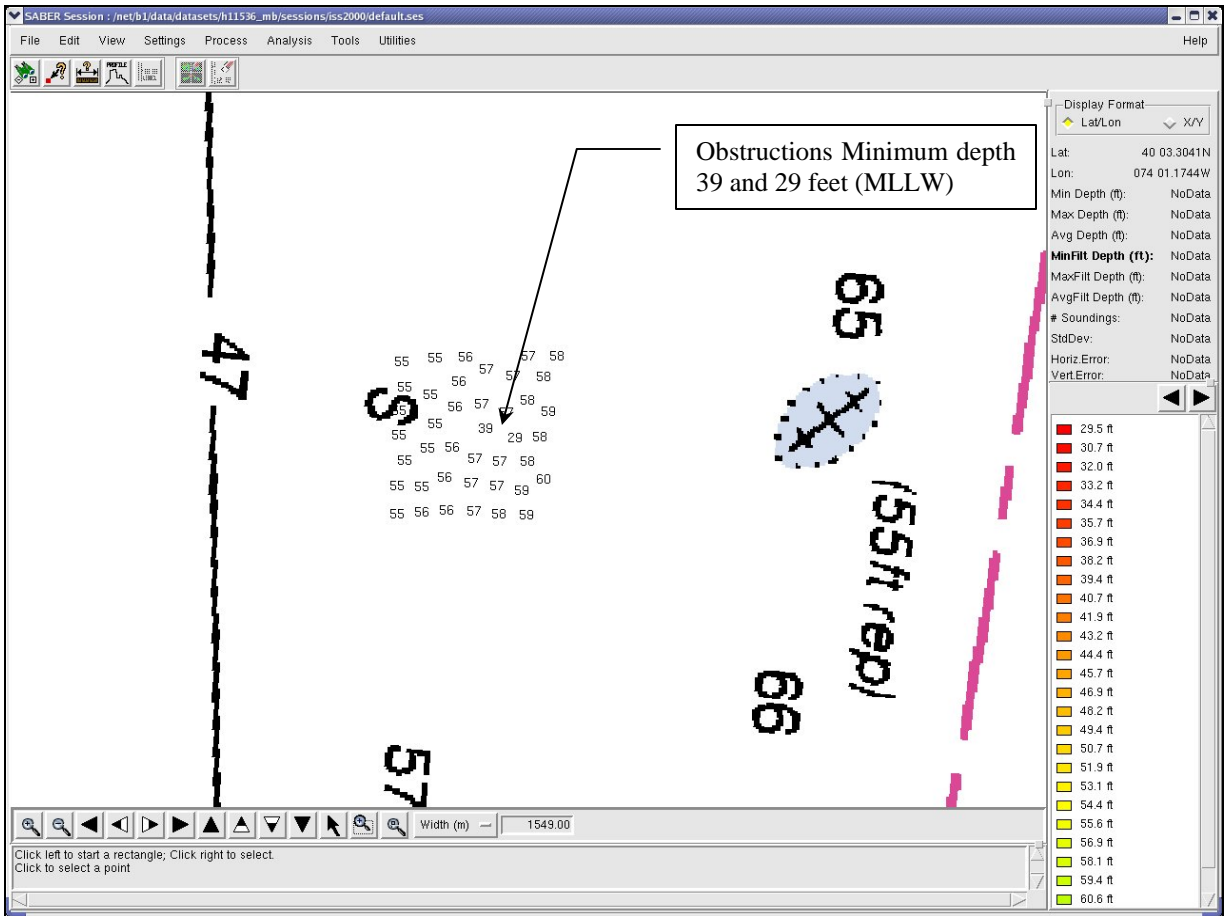


Figure 2 Chart 12324_1 Showing Selected Soundings of Obstructions within H11536.

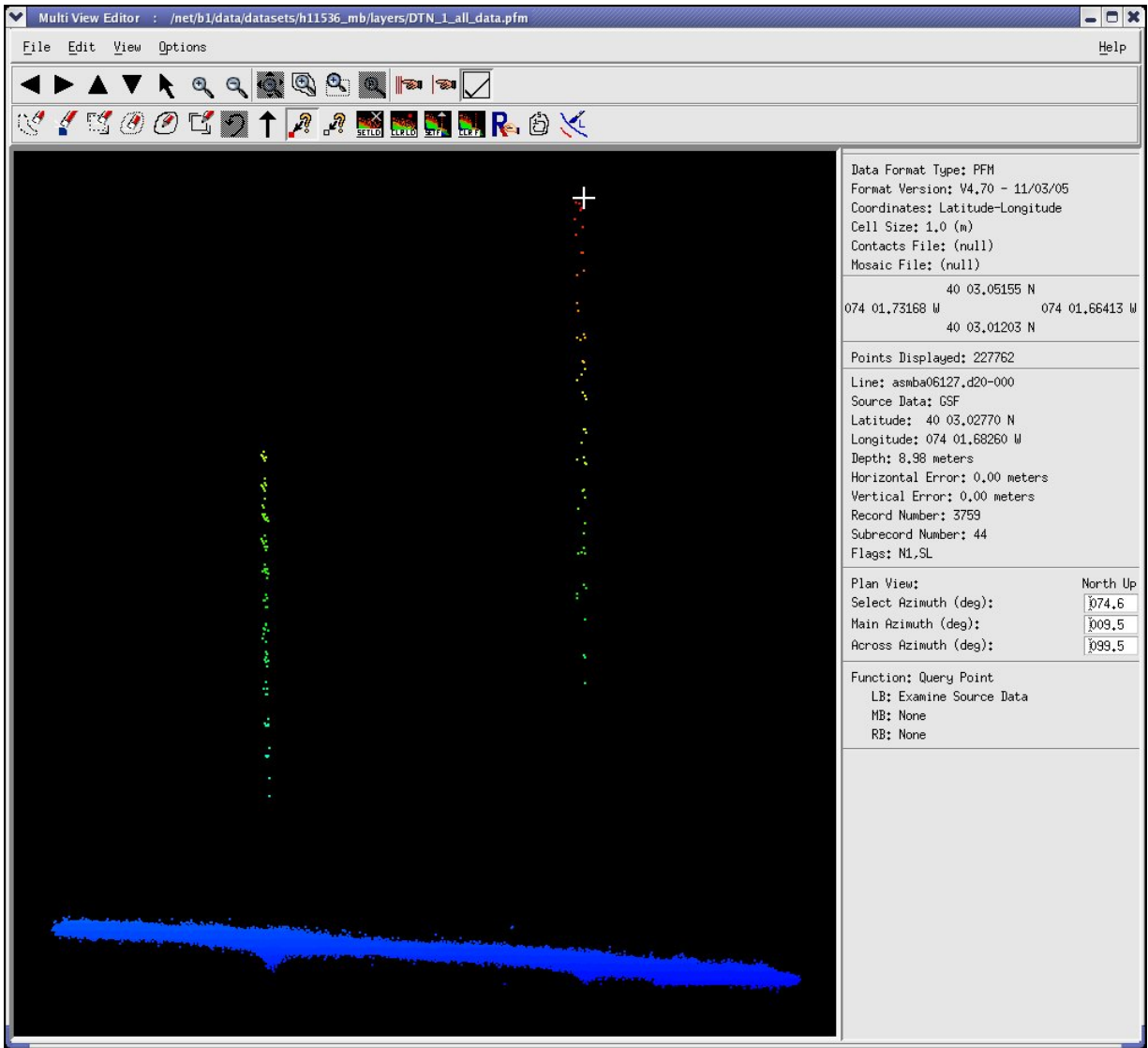


Figure 3 Multi-View Editor of a PFM Showing Obstructions located within H11536.

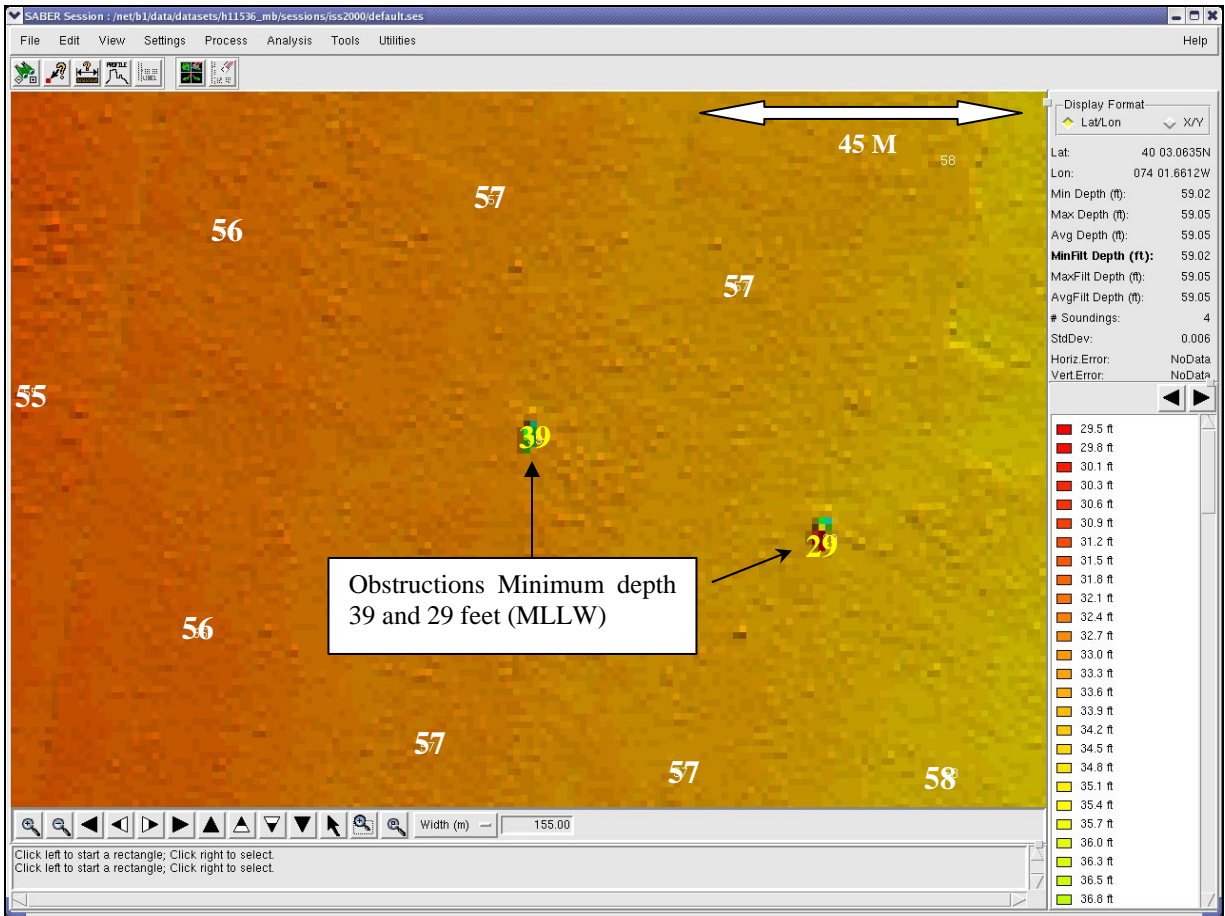


Figure 4 Color Coded Depth Grid and Selected Soundings Showing Obstructions within H11536.

Danger to Navigation Report 2

Hydrographic Survey Registry Number: H11536

State: New Jersey

Locality: Atlantic Ocean

Sublocality: Seagirt to Chadwick Beach

Project Number: OPR_C303-KR-06

Survey Date: May 03, 2006 and on going

Depths are reduced to Mean Lower Low Water using *predicted* tides based on preliminary zoning. Positions are based on NAD-83. Positions were obtained using DGPS from a US Coast Guard Station.

Charts affected:

- 12323_1 23rd Edition 03/11/2000 1:80,000 scale; Corrected through NM 04/29/2006
- 12324_1 32nd Edition 03/01/2006 1:40,000 scale Corrected through NM 04/29/2006

The following items were found during hydrographic survey operations:

<u>FEATURE</u>	<u>DEPTH (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
Obstruction	40	40° 04' 44.062"N	074° 01' 14.270"W
Obstruction	42	40° 04' 44.353"N	074° 01' 12.484"W
Obstruction	44	40° 04' 45.295"N	074° 01' 13.202"W
Obstruction	48	40° 04' 44.002"N	074° 01' 12.969"W

RECOMMENDATIONS:

Chart 12324_1:

Chart 40 foot sounding, symbol Obstns, and danger circle with blue tint (K-41) in 40° 04' 44.062"N / 074° 01' 14.270"W

Chart 12323_1:

Chart 40 foot sounding, symbol Obstns, and danger circle with blue tint (K-41) in 40° 04' 44.062"N / 074° 01' 14.270"W

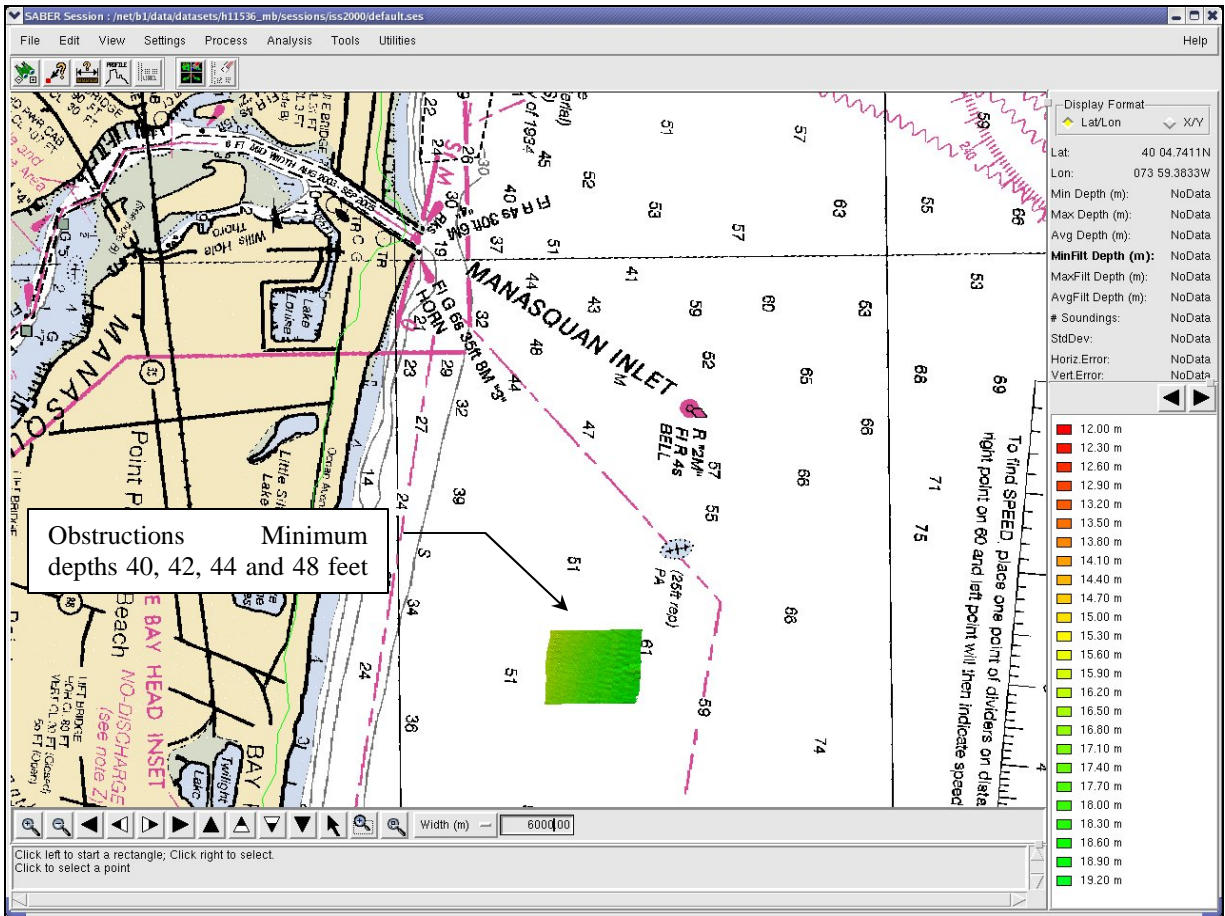


Figure 1 Chart 12324_1 Showing Area Covered by This Report with Location of Obstructions within H11536.

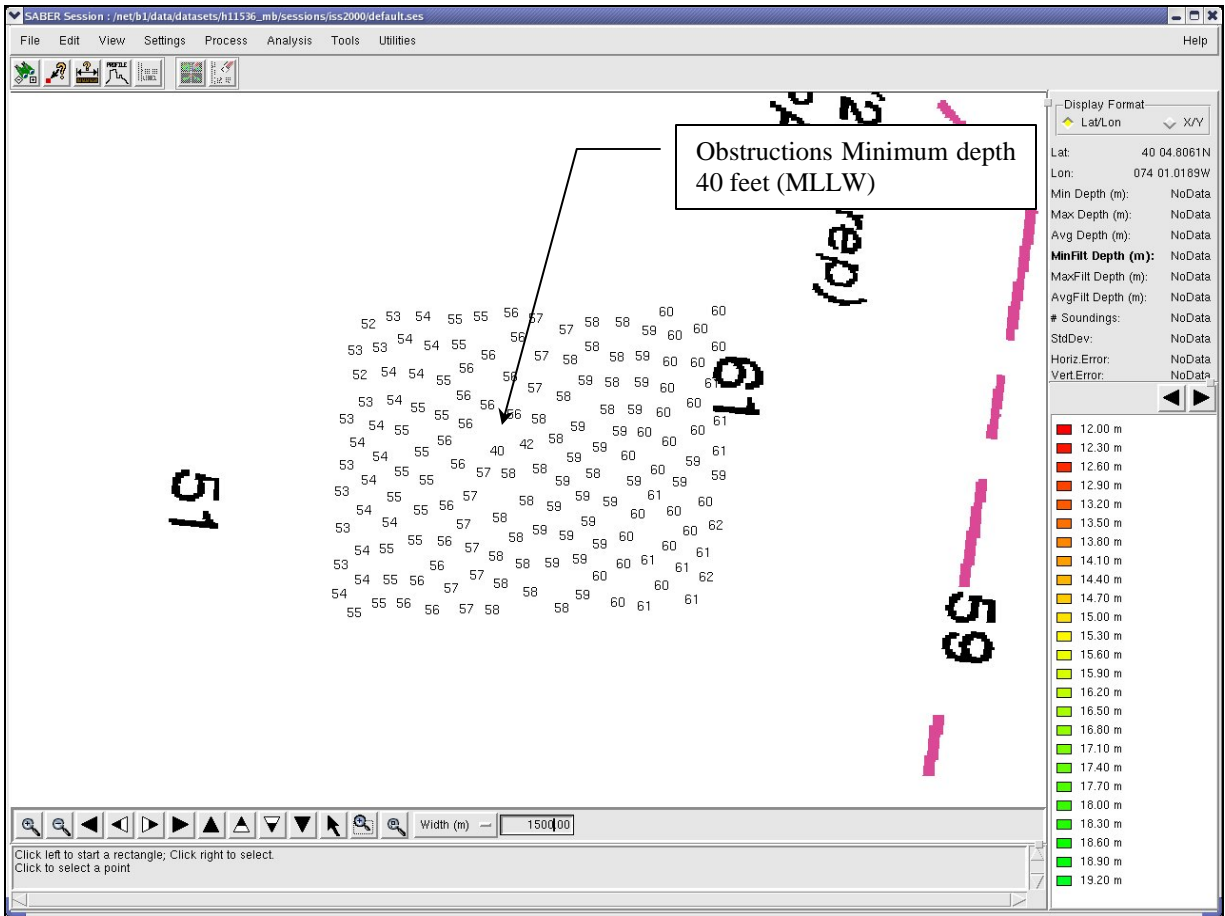


Figure 2 Chart 12324_1 Showing Selected Soundings of Obstructions within H11536.

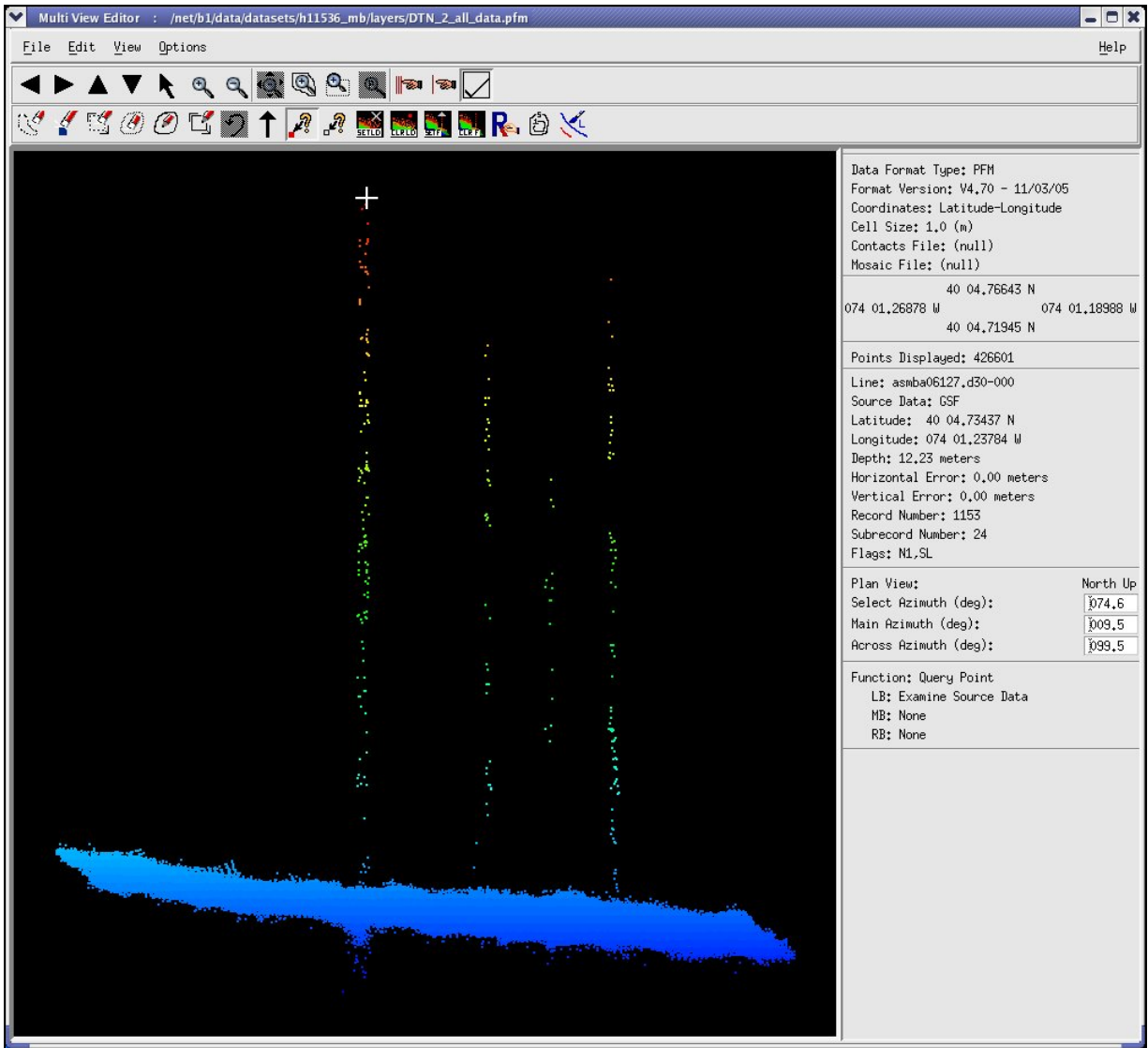


Figure 3 Multi-View Editor of a PFM Showing Obstructions located within H11536.

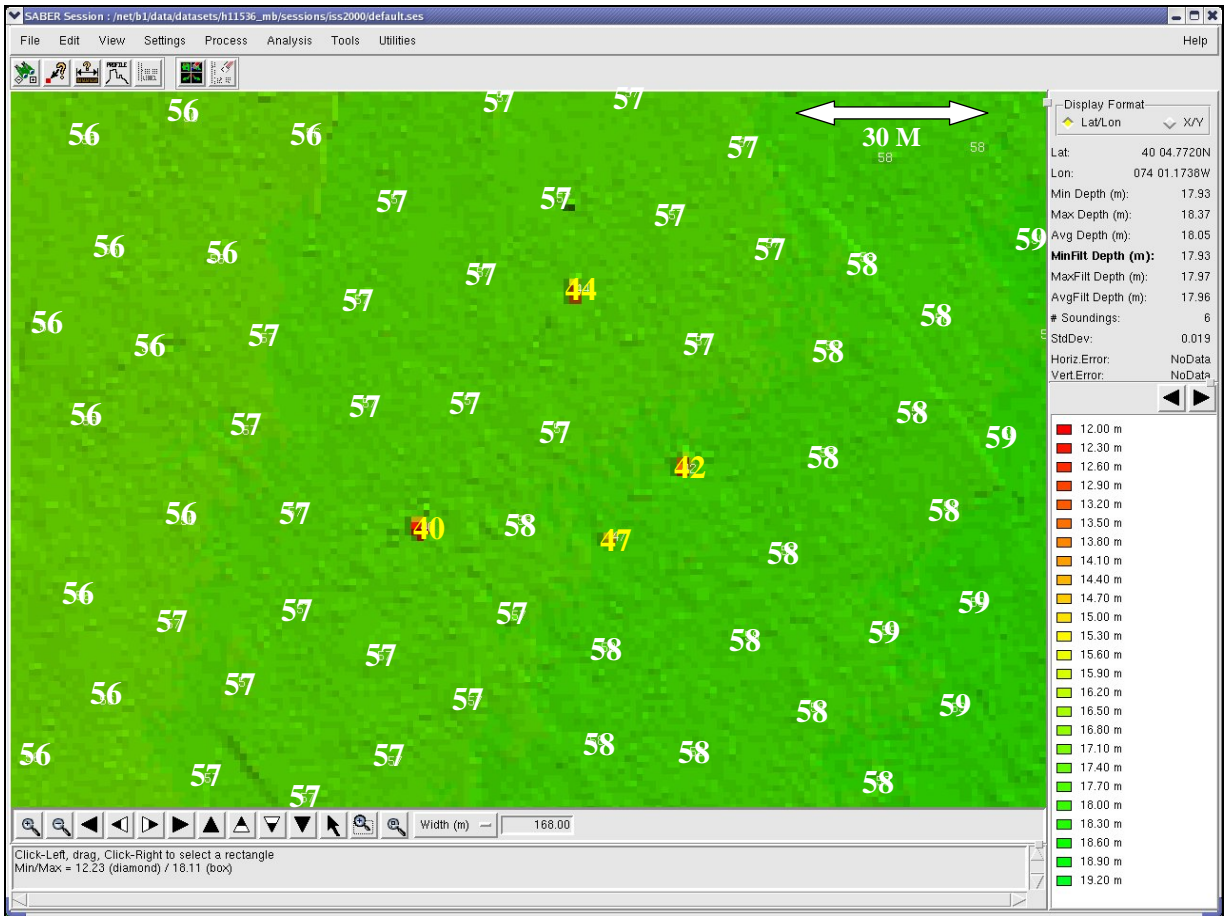


Figure 4 Color Coded Depth Grid and Selected Soundings Showing Obstructions Within H11536.

Danger to Navigation Report 3

Hydrographic Survey Registry Number: H11536

State: New Jersey

Locality: Atlantic Ocean

Sublocality: Seagirt to Chadwick Beach

Project Number: OPR_C303-KR-06

Survey Date: May 19, 20, and 21, 2006

Depths are reduced to Mean Lower Low Water using predicted tides based on preliminary zoning. Positions are based on NAD-83. Positions were obtained using DGPS from a US Coast Guard Station.

Charts affected:

- 12323 23rd Edition 03/11/2000 1:80,000 scale; Corrected through NM 05/06/2006
- 12300 45th Edition 03/01/2005 1;400,000 scale Corrected through NM 05/06/2006
- 13003 48th Edition 10/01/2004 1675,000 scale Corrected through NM 05/06/2006

The following features were found during hydrographic survey operations:

<u>FEATURE</u>	<u>DEPTH (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
1. Wreck	55	40° 07' 56.053"N	073° 55' 56.830"W
2. Wreck	57	40° 07' 56.503"N	073° 55' 53.093"W
3. Obstructions	68	40° 06' 01.110"N	073° 56' 09.298"W
4. Wreck	39	40° 07' 30.779"N	073° 56' 29.378"W
5. Wreck	48	40° 07' 45.780"N	073° 56' 20.525"W
6. Wreck	53	40° 07' 26.004"N	073° 56' 13.115"W

RECOMMENDATIONS:

Chart 12323:

Remove 61 foot sounding, symbol Obsn rep and danger circle with blue tint in 40° 07' 57.75"N/073° 55' 49.15"W. Chart 55 foot sounding, symbol Wks, and danger circle with blue tint (K-28) in 40° 07' 56.053"N/073° 55' 56.830"W.

Chart 68 foot sounding, symbol Obstns, and danger circle with blue tint (K-41) in 40° 06' 01.110"N/073° 56' 09.298"W.

Chart 39 foot sounding, symbol Wks, and danger circle with blue tint (K-28) in 40° 07' 30.779"N/073° 56' 29.378"W.

Chart 48 foot sounding, symbol Wks, and danger circle with blue tint (K-28) in 40° 07' 45.780"N/073° 56' 20.525"W.

Chart 53 foot sounding, symbol Wks, and danger circle with blue tint (K-28) in 40° 07' 26.004"N/073° 56' 13.115"W.

Chart 12300:

Remove 8 ¼ fathom sounding, danger circle, blue tint, and symbol Obstn in 40° 07' 25.663"N/073° 55' 50.932"W. Chart 6 ½ fathom sounding, danger circle, blue tint, and symbol Wks (K-28) in 40° 07' 30.779"N/073° 56' 29.378"W.

Chart 13003:

Remove 7 ¾ fathom sounding in 40° 08' 49.460"N/073° 55' 52.730"W. Chart 6 ½ fathom sounding, danger circle, blue tint, and symbol Wks (K-28) in 40° 07' 30.779"N/073° 56' 29.378"W.

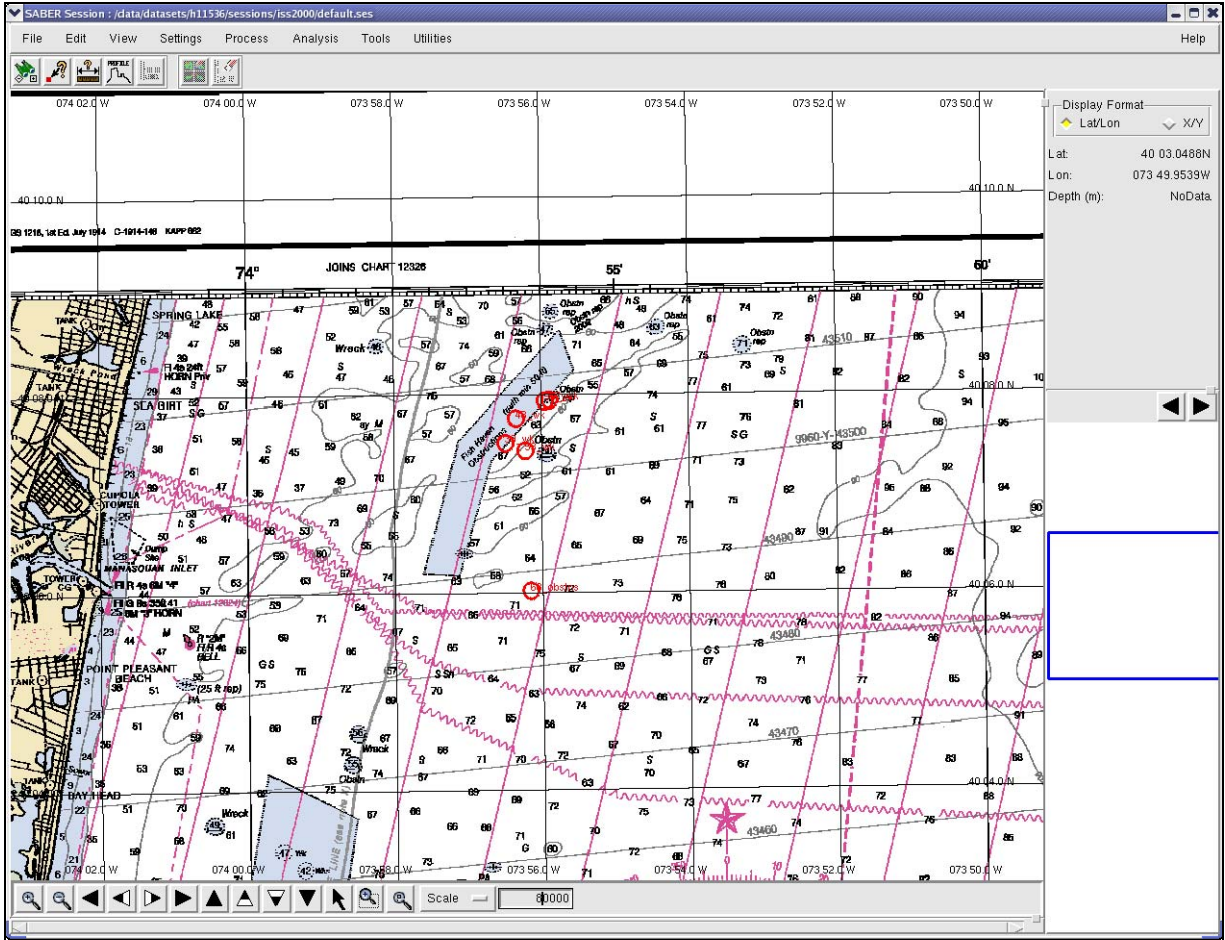


Figure 1 Chart 12323 Showing Area Covered by This Report within H11536.

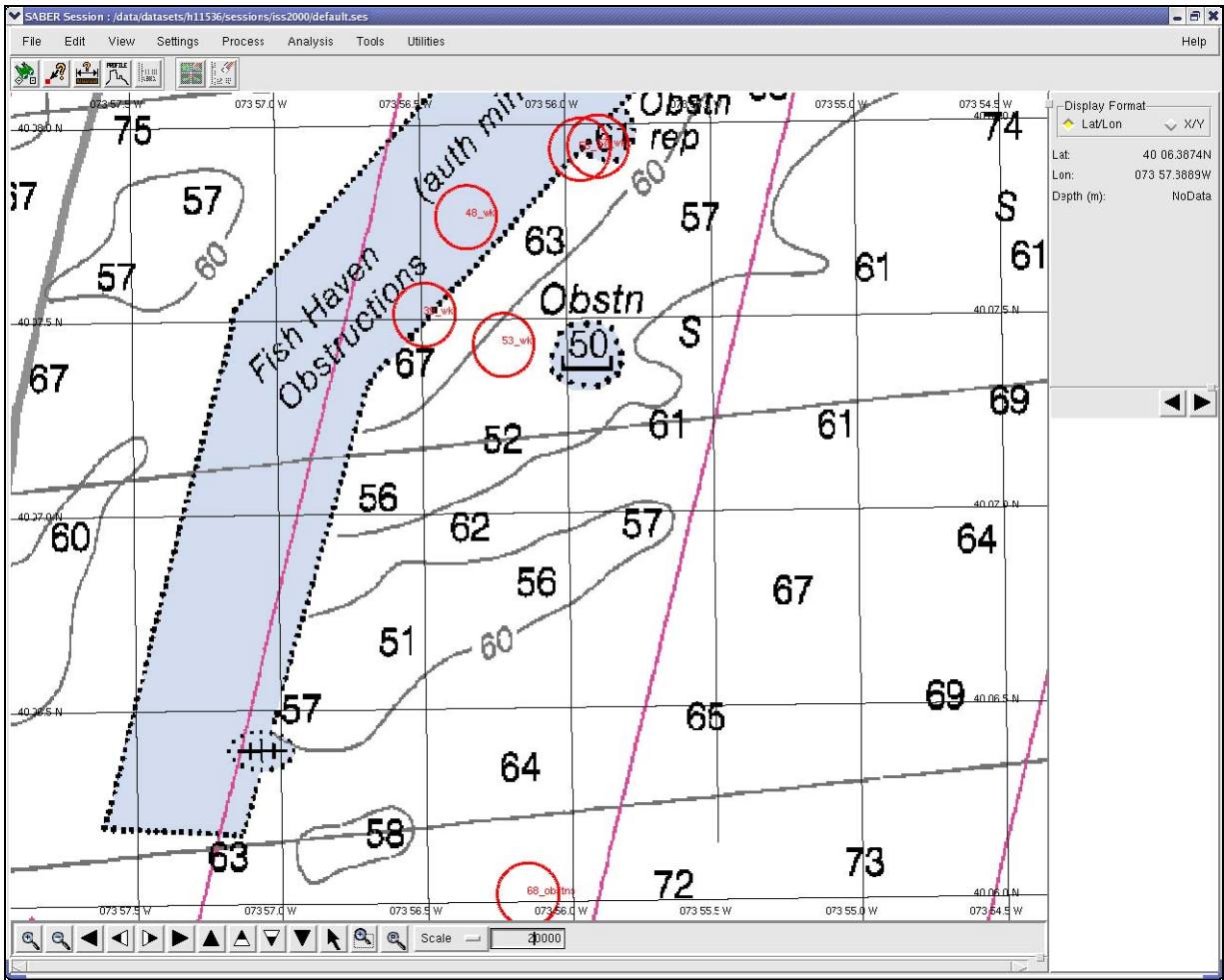


Figure 2 Chart 12323 (enlarged) Showing Area Covered by This Report within H11536.

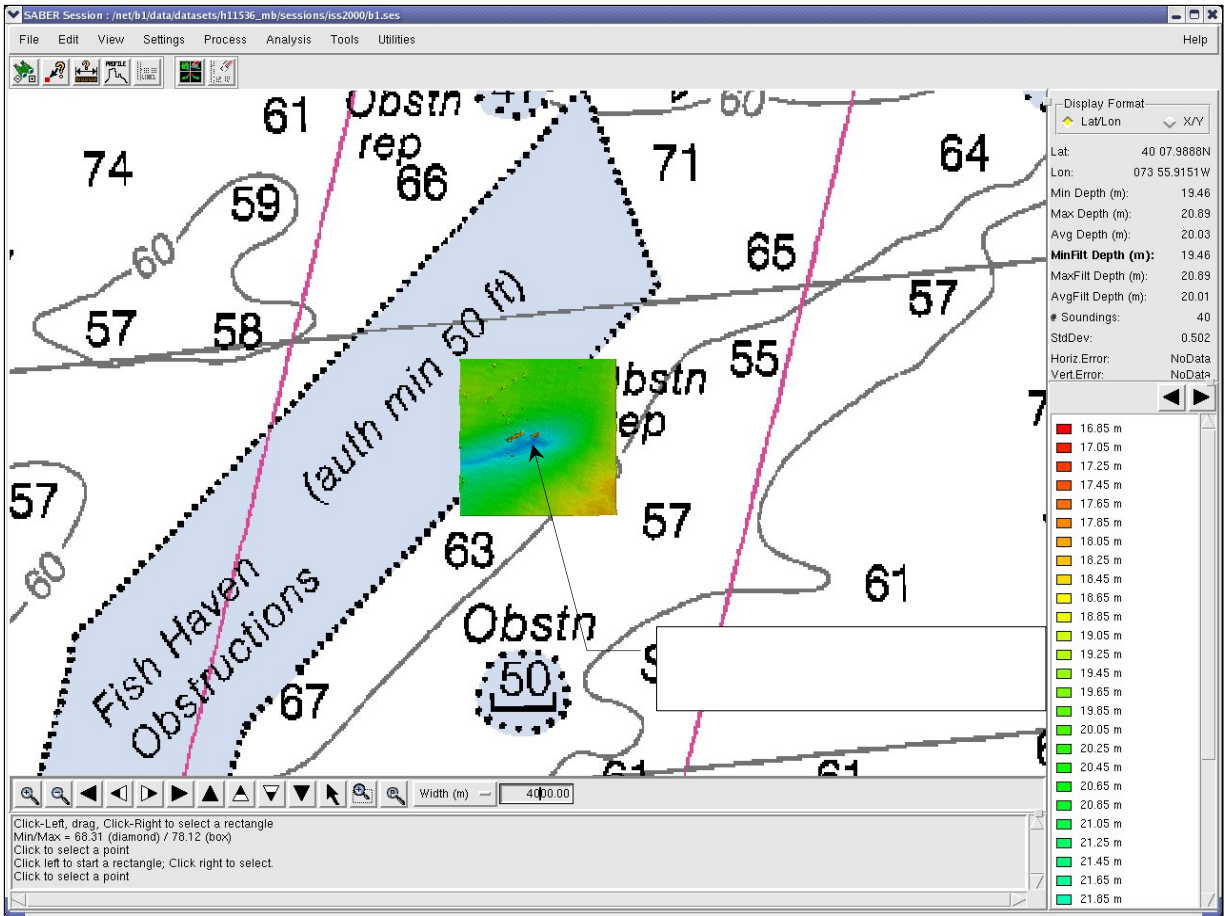


Figure 3 Chart 12323 Showing Area Covered by This Report with Location of Wrecks 1 and 2 within H11536.

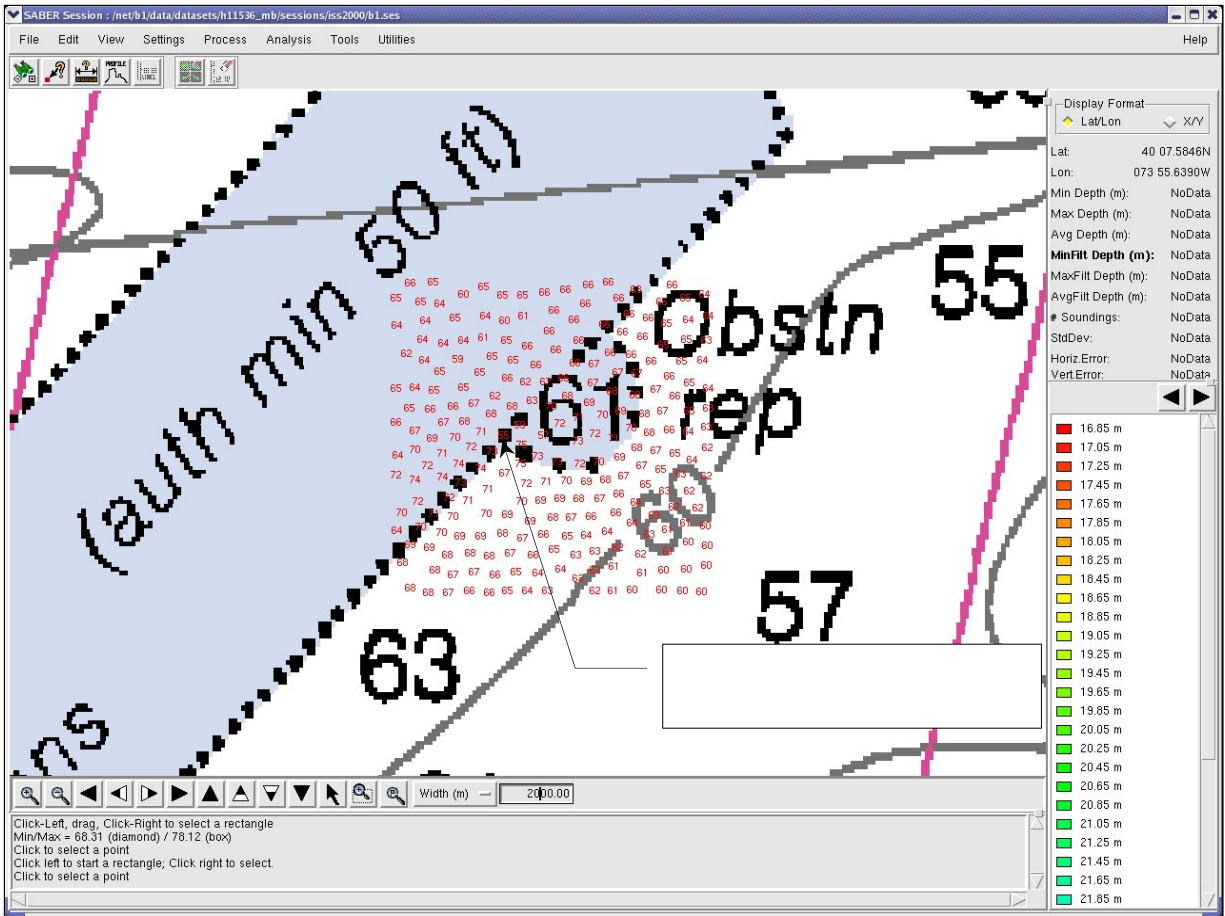


Figure 4 Chart 12323 Showing Selected Soundings of Wrecks 1 and 2 within H11536.

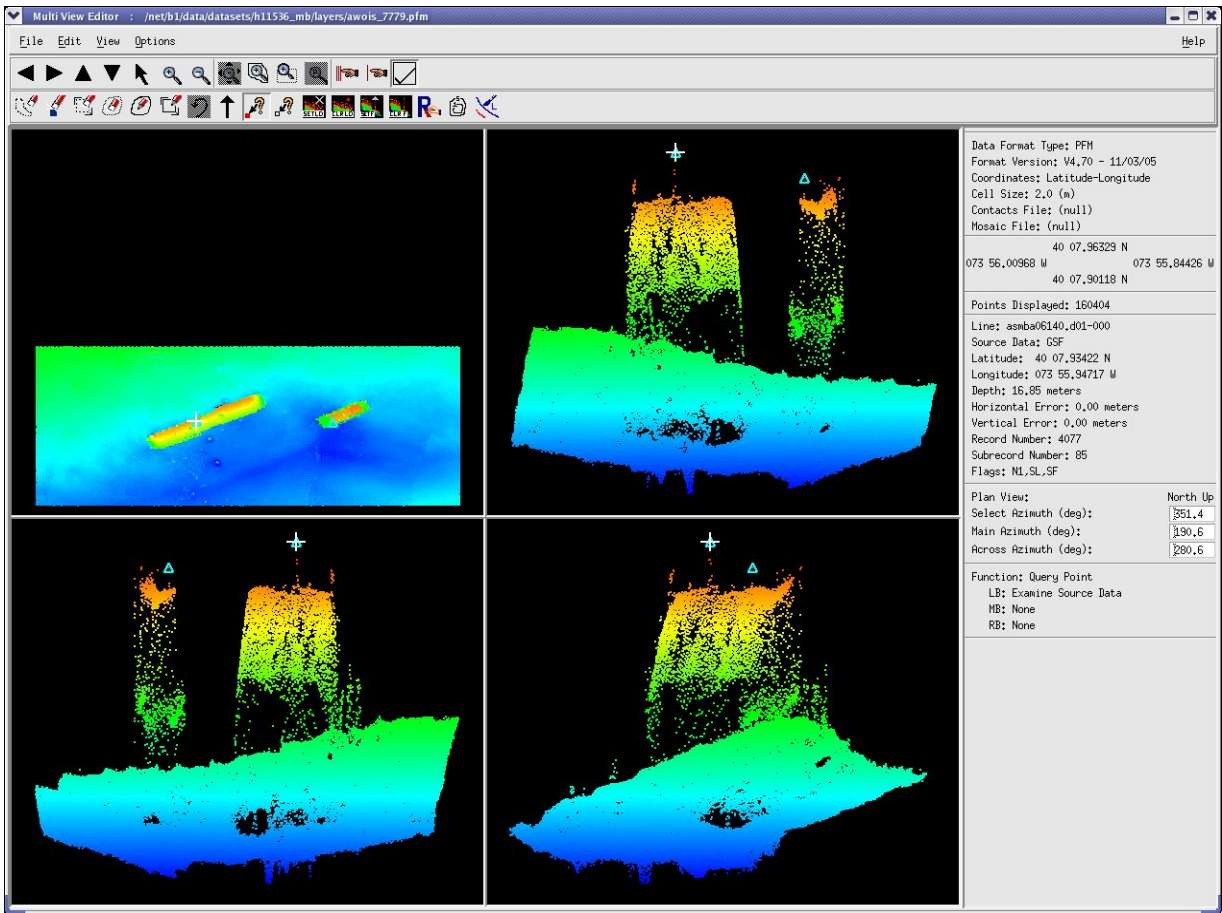


Figure 5 Multi-View Editor of a PFM Showing Wrecks 1 and 2 located within H11536.

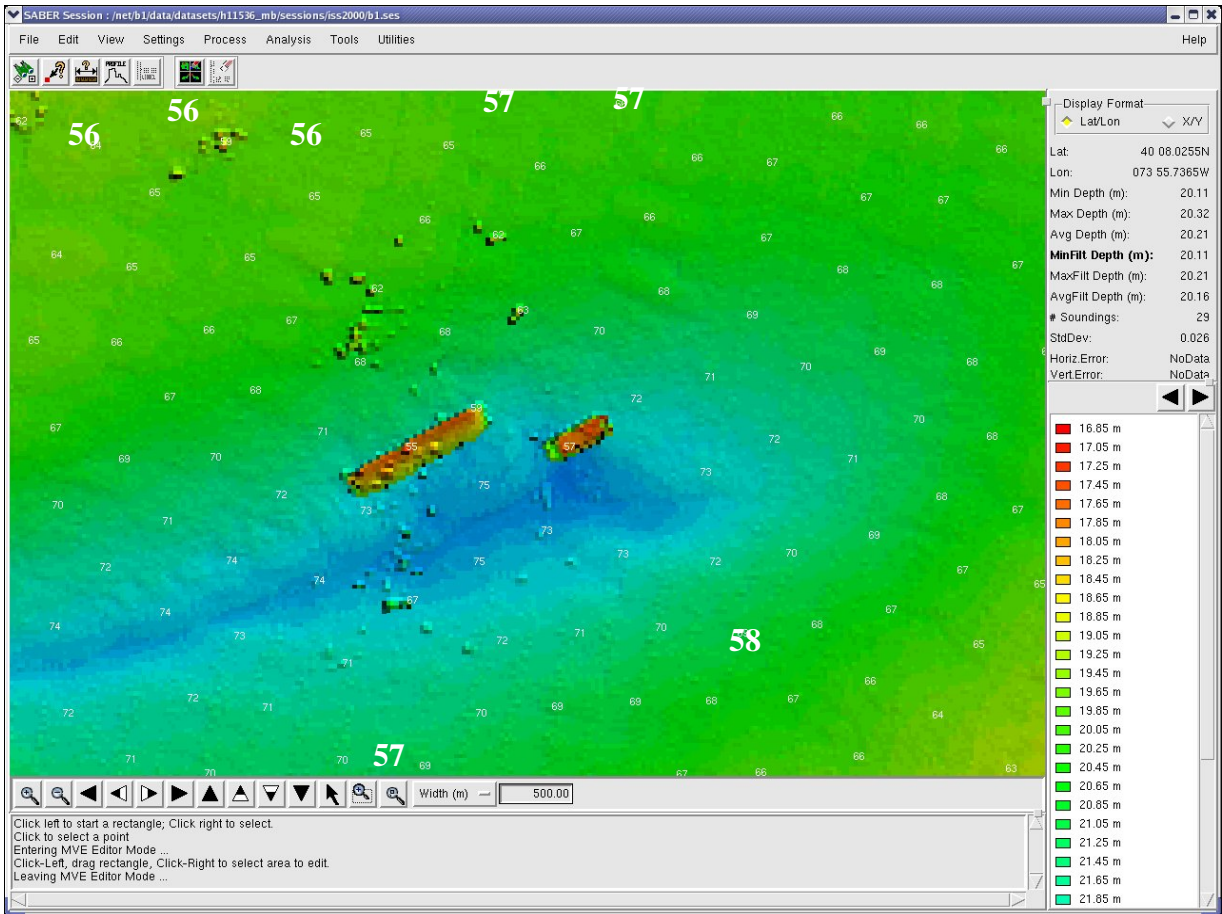


Figure 6 Color Coded Depth Grid and Selected Soundings Showing Wrecks 1 and 2 Within H11536.

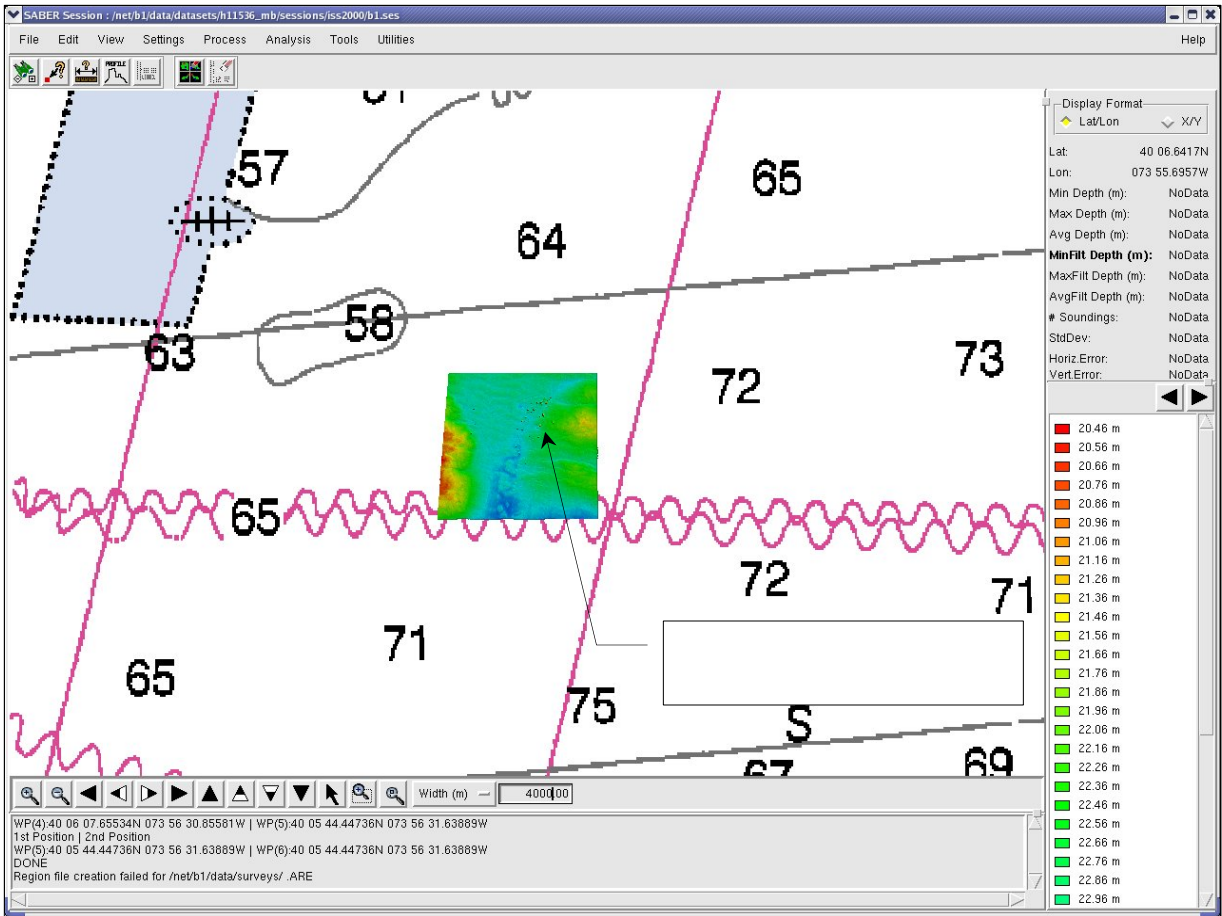


Figure 7 Chart 12323 Showing Area Covered by This Report with Location of Obstructions within H11536.

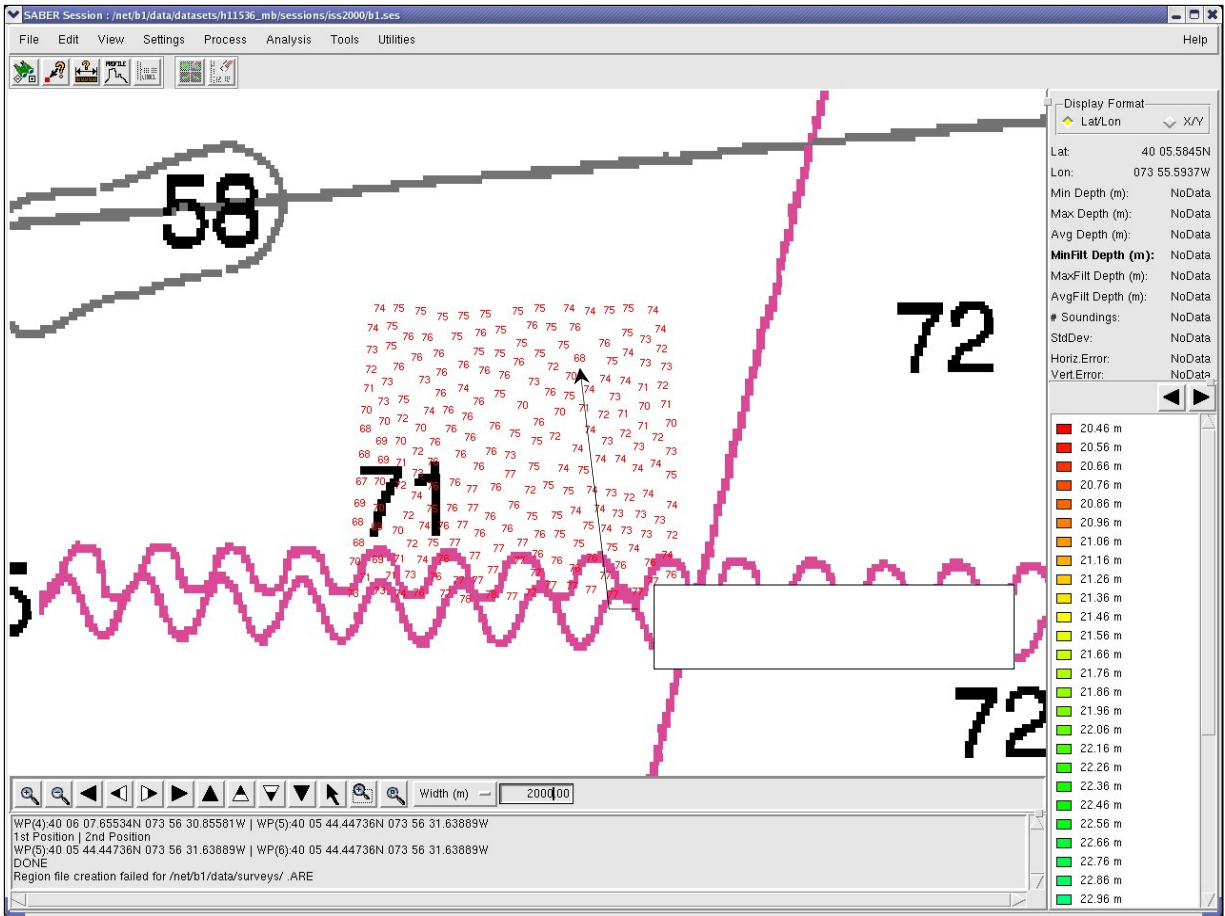


Figure 8 Chart 12323 Showing Selected Soundings of Obstructions within H11536.

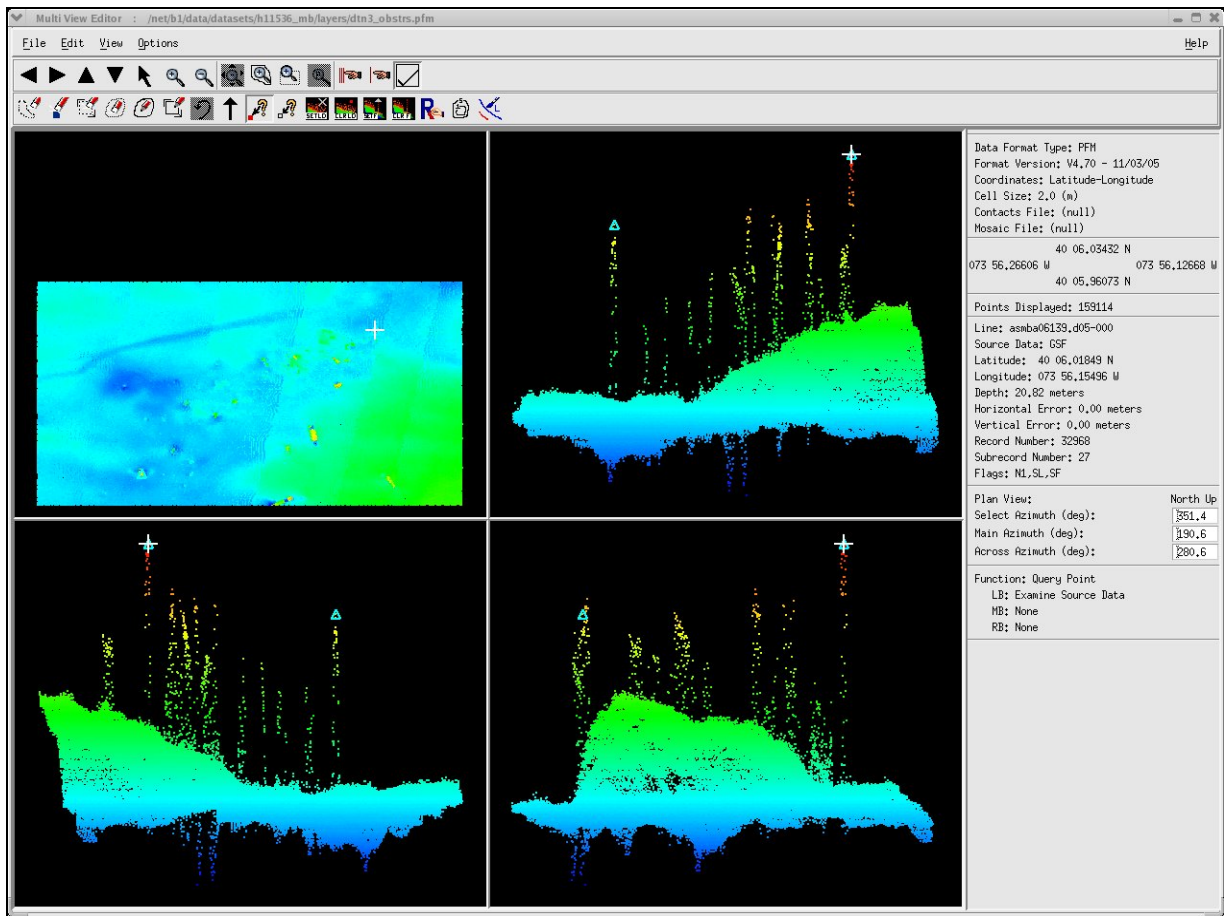


Figure 9 Multi-View Editor of a PFM Showing Obstructions located within H11536.

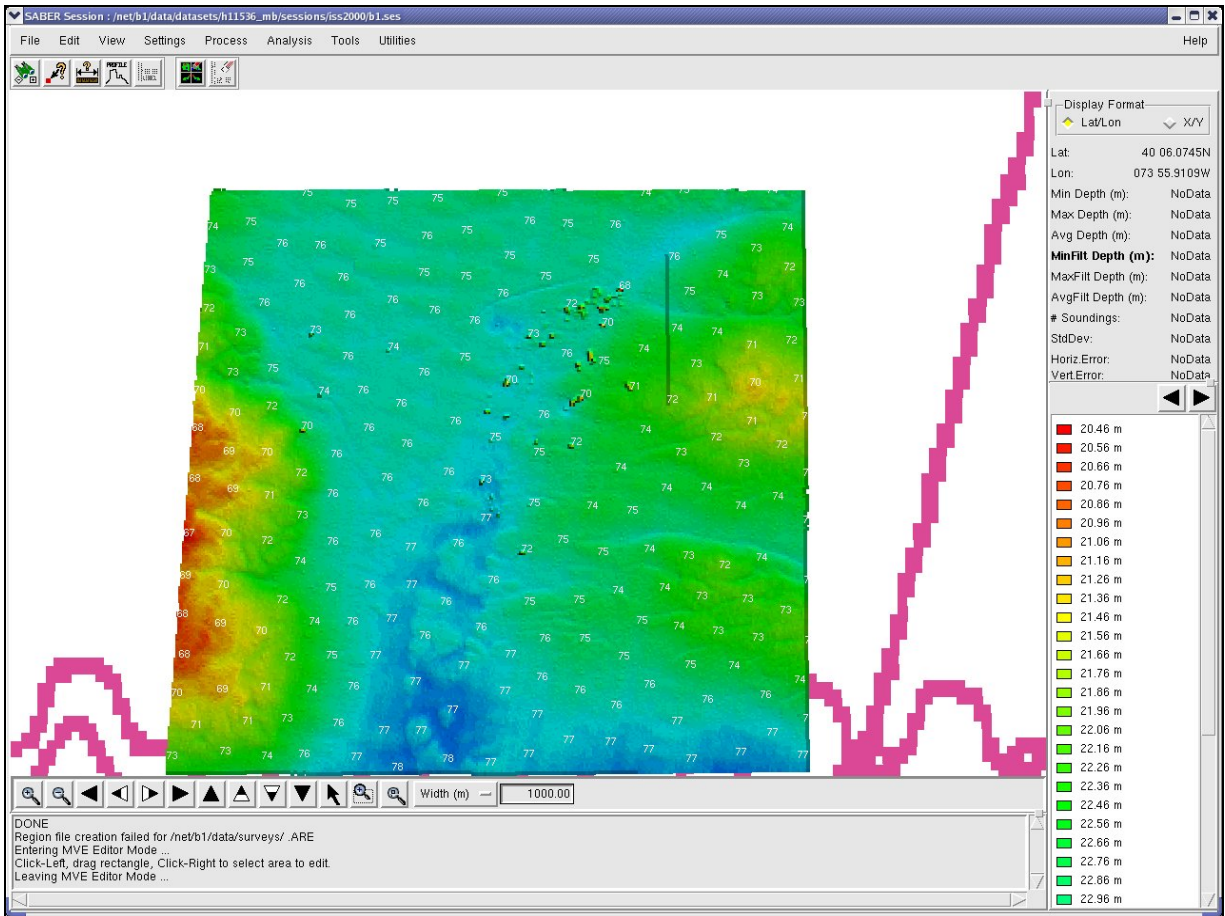


Figure 10 Color Coded Depth Grid and Selected Soundings Showing Obstructions Within H11536.

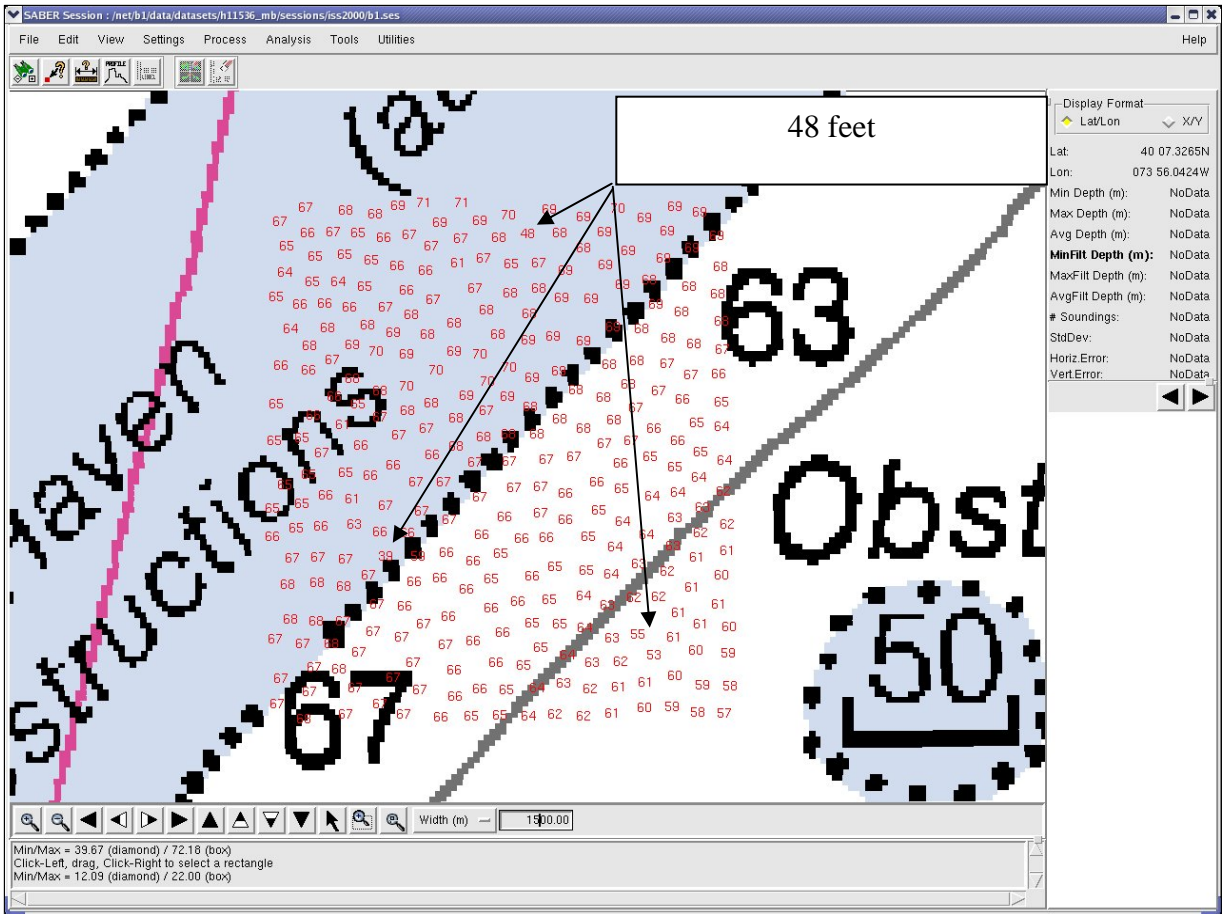


Figure 11 Chart 12323 Showing Area Covered by This Report with Location of Wrecks 4, 5 and 6 and selected soundings within H11536.

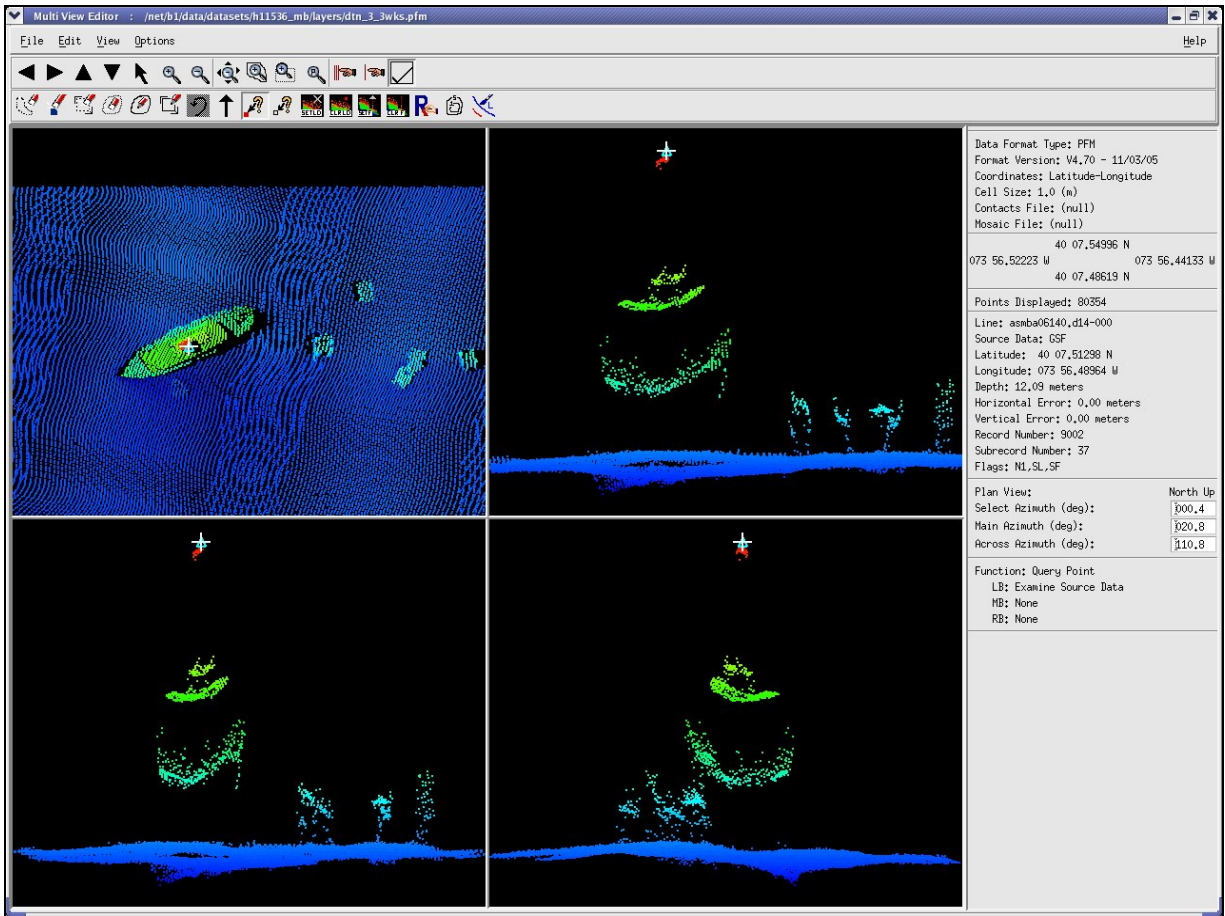


Figure 12 Multi-View Editor of a PFM Showing Wreck 4 with Minimum depth of 39 feet (MLLW) located within H11536.

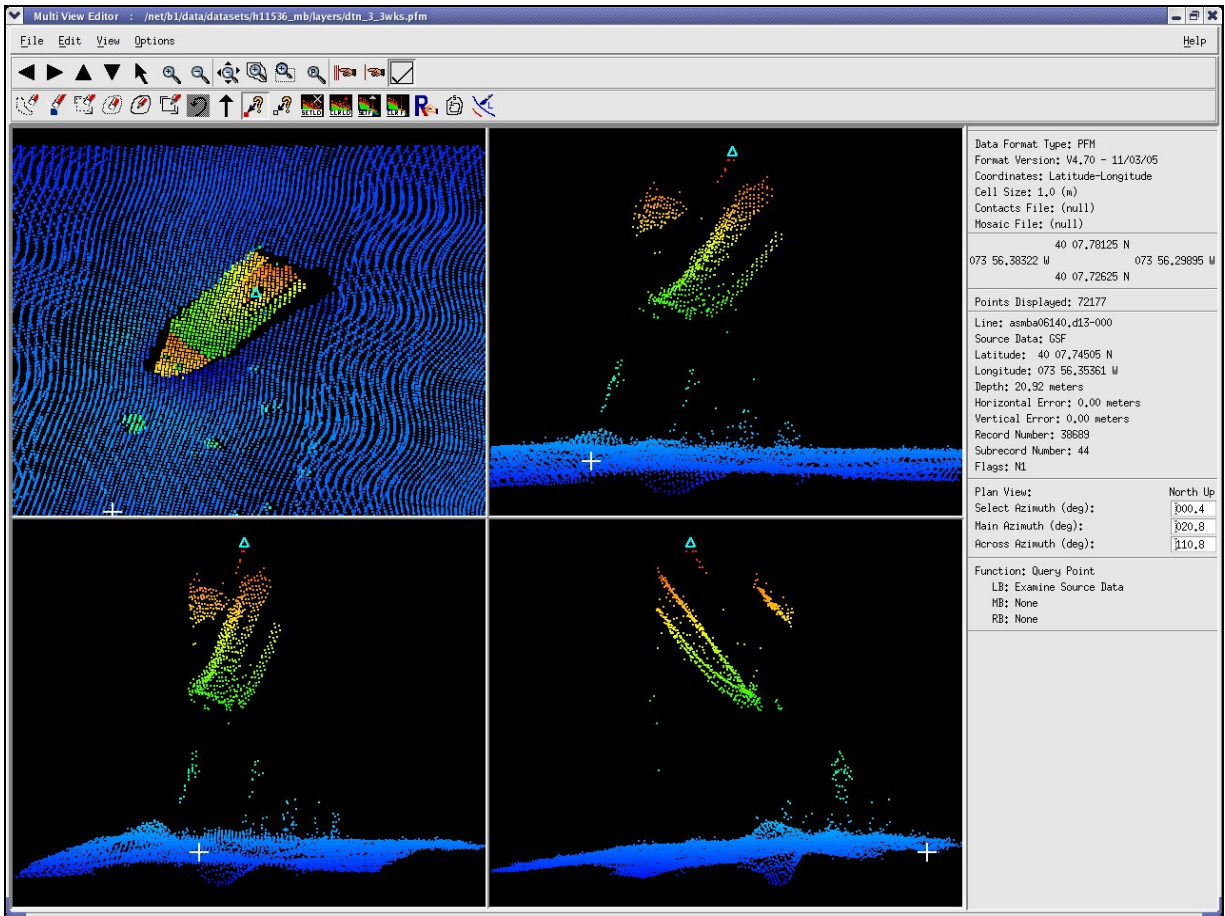


Figure 13 Multi-View Editor of a PFM Showing Wreck 5 with Minimum depth of 48 feet (MLLW) located within H11536.

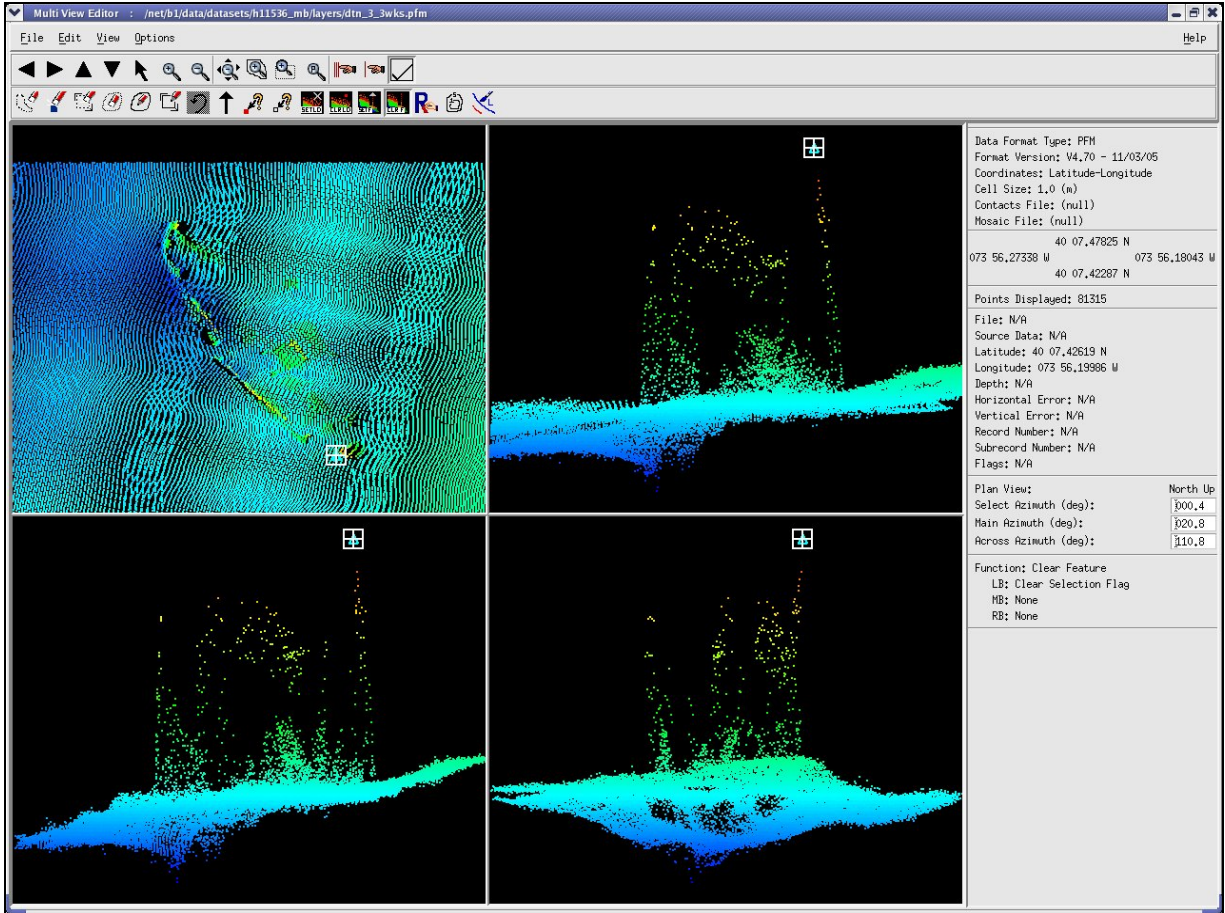


Figure 14 Multi-View Editor of a PFM Showing Wreck 6 with Minimum depth of 55 feet (MLLW) located within H11536.

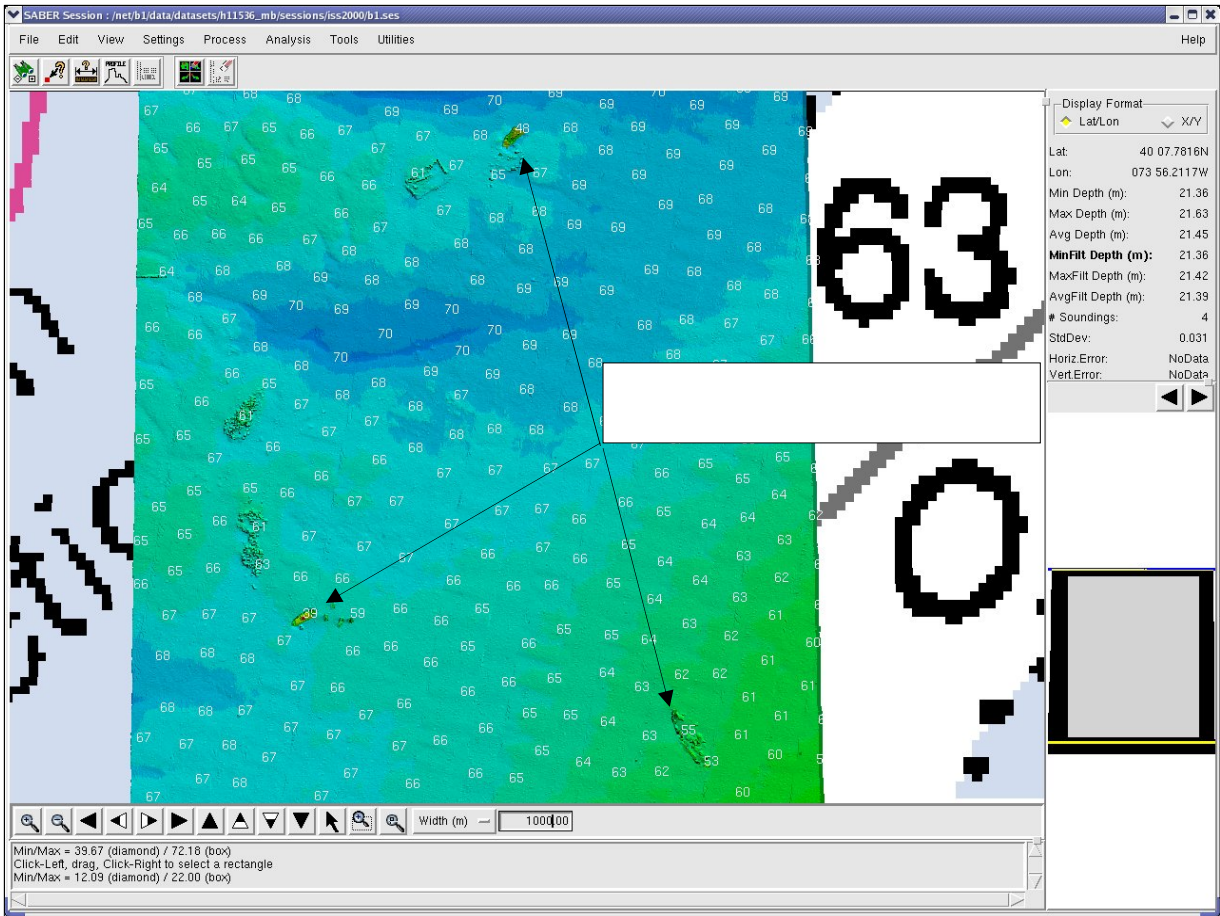


Figure 15 Color Coded Depth Grid and Selected Soundings Showing Wrecks Within H11536.

Danger to Navigation Report 4

Hydrographic Survey Registry Number: H11536

State: New Jersey
 Locality: Atlantic Ocean
 Sublocality: Seagirt to Chadwick Beach
 Project Number: OPR_C303-KR-06
 Survey Date: May 20, 2006

Depths are reduced to Mean Lower Low Water using predicted tides based on preliminary zoning. Positions are based on NAD-83. Positions were obtained using DGPS from a US Coast Guard Station.

Charts affected:

- 12323 23rd Edition 03/11/2000 1:80,000 scale; Corrected through NM 05/06/2006

The following features were found during hydrographic survey operations:

<u>FEATURE</u>	<u>DEPTH (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
Wreck	68	40° 02' 02.041"N	073° 57' 56.967"W

RECOMMENDATIONS:

Remove 72 foot sounding in 40° 02' 00.129"N/073° 57' 57.482"W. Chart 68 foot sounding, symbol Wk, and danger circle with blue tint (K-28) in 40° 02' 02.041"N/073° 57' 56.967"W

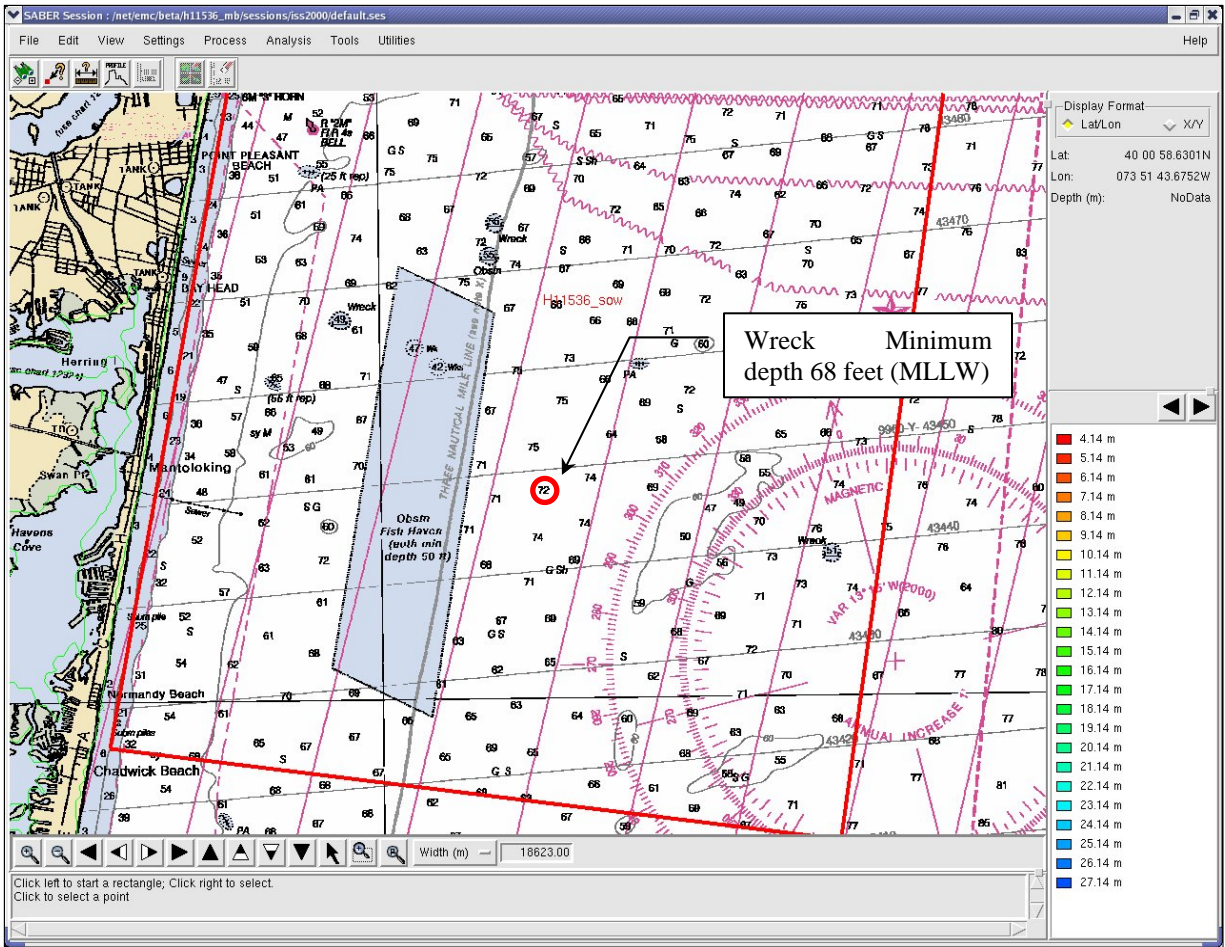


Figure 1 Chart 12323 Showing Area Covered by This Report within H11536.

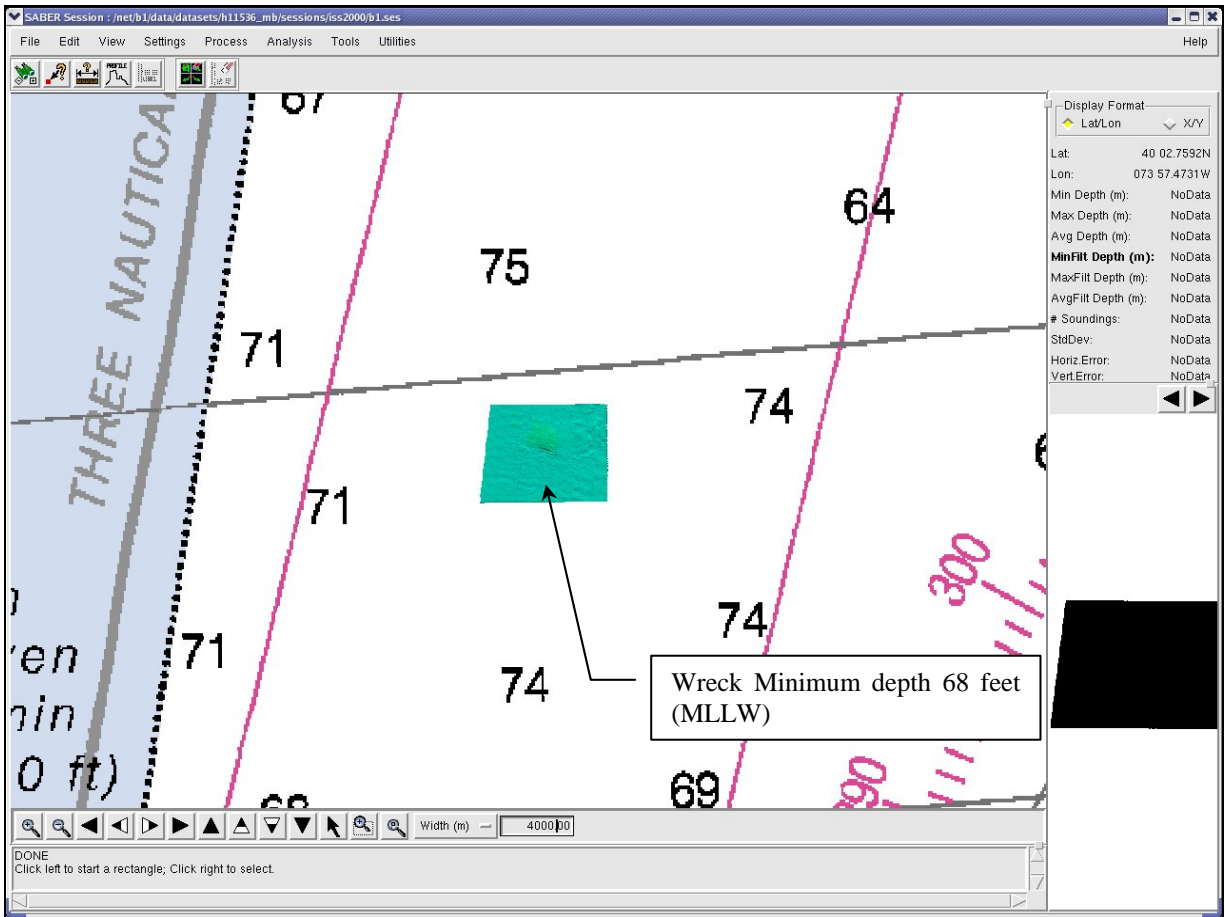


Figure 2 Chart 12323 Showing Area Covered by This Report with Location of Wreck within H11536.

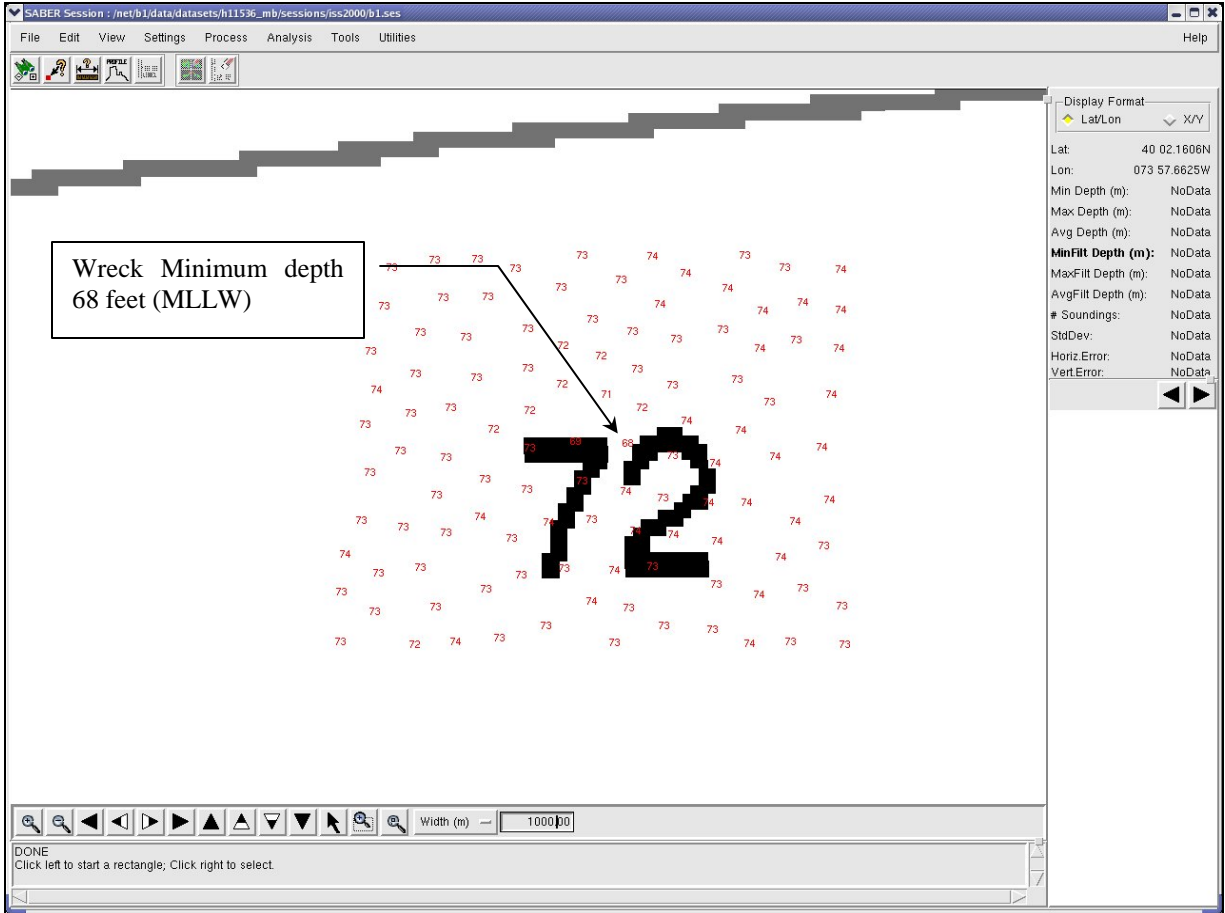


Figure 3 Chart 12323 Showing Selected Soundings of Wreck with Minimum Depth of 68 Feet (MLLW) within H11536.

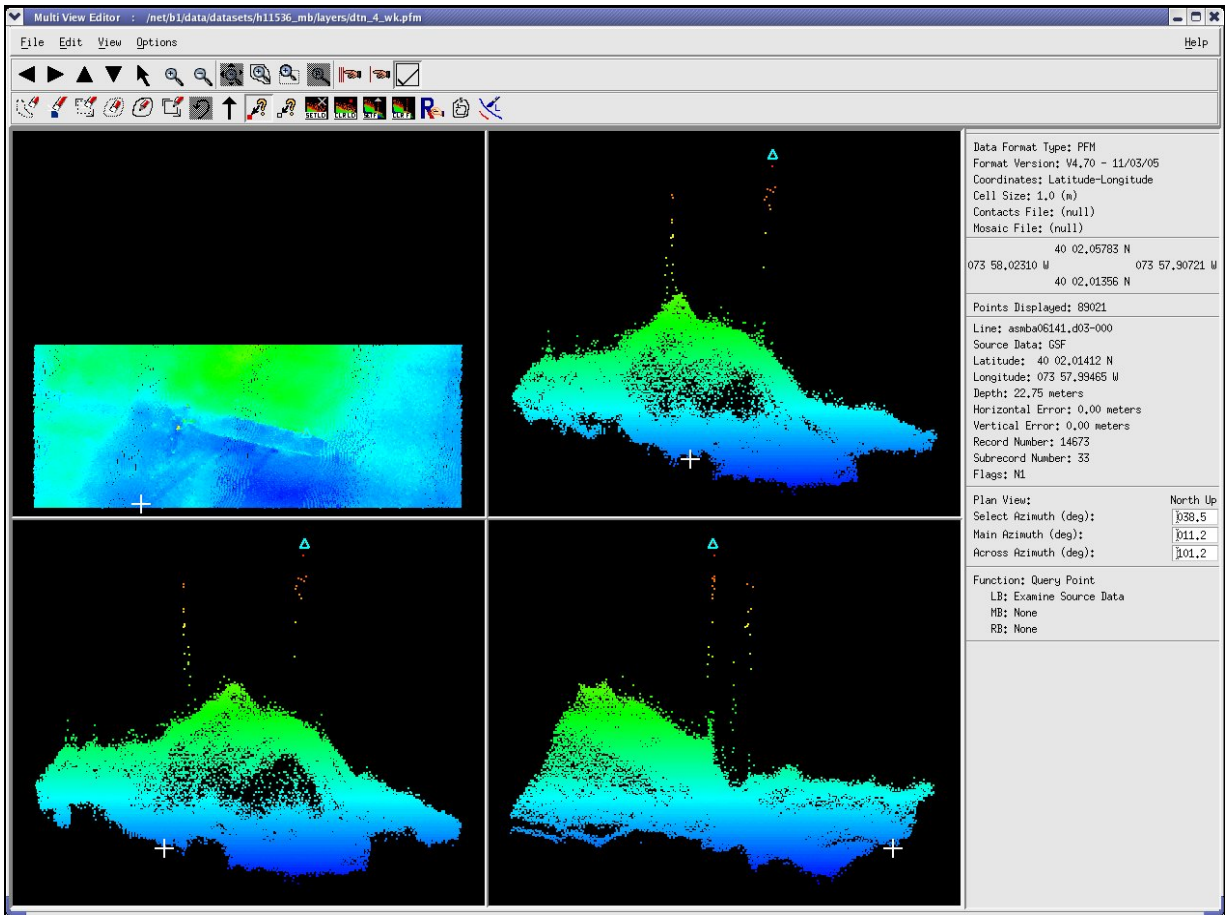


Figure 4 Multi-View Editor of a PFM Showing Wreck with Minimum Depth of 68 Feet (MLLW) located within H11536.

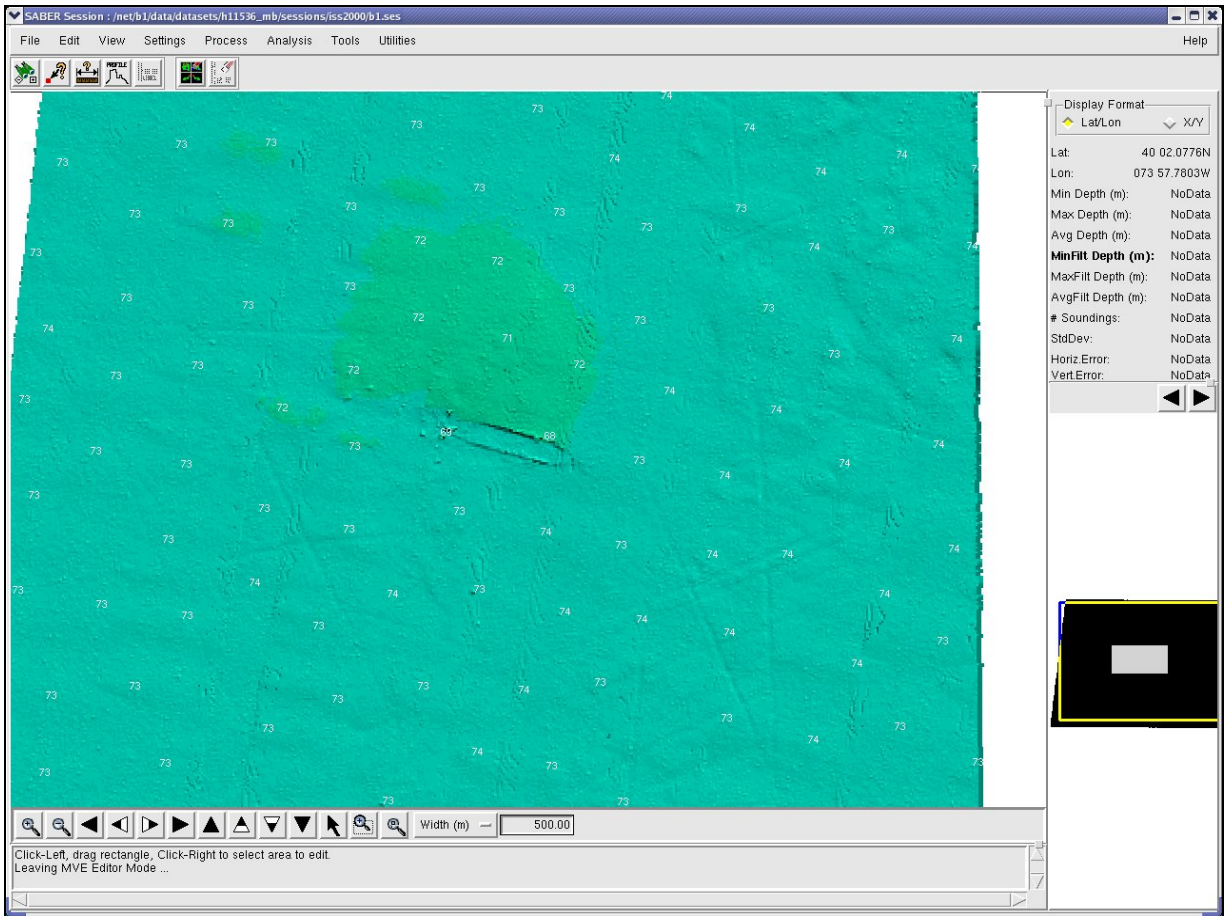


Figure 5 Color Coded Depth Grid and Selected Soundings Showing Wreck with Minimum Depth of 68 Feet (MLLW) within H11536.

Danger to Navigation Report 5

Hydrographic Survey Registry Number: H11536

State: New Jersey
 Locality: Atlantic Ocean
 Sublocality: Seagirt to Chadwick Beach
 Project Number: OPR_C303-KR-06
 Survey Date: May 21, 2006 and on going

Depths are reduced to Mean Lower Low Water using predicted tides based on preliminary zoning. Positions are based on NAD-83. Positions were obtained using DGPS from a US Coast Guard Station.

Charts affected:

- 12323 23rd Edition 03/11/2000 1:80,000 scale; Corrected through NM 05/06/2006

The following features were found during hydrographic survey operations:

<u>FEATURE</u>	<u>DEPTH (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
Wreck	50	40° 06' 09.432"N	073° 57' 11.747"W

RECOMMENDATIONS:

Remove 63 foot sounding in 40° 06' 07.484"N/073° 57' 11.041"W. Chart 50 foot sounding, symbol Wk, and danger circle with blue tint (K-28) in 40° 06' 09.432"N/073° 57' 11.747"W

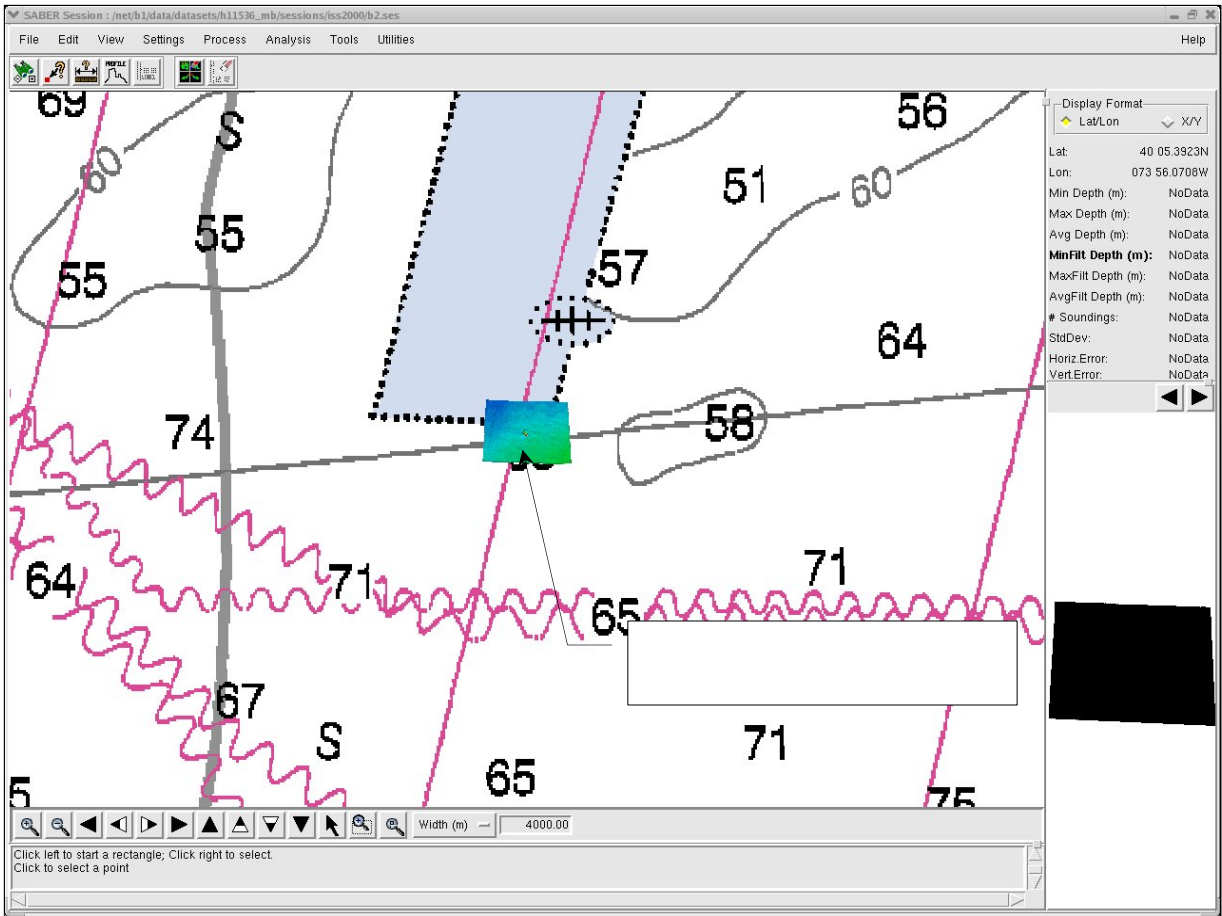


Figure 1 Chart 12323 Showing Area Covered by This Report with Location of Wreck with Minimum Depth of 50 feet within H11536.

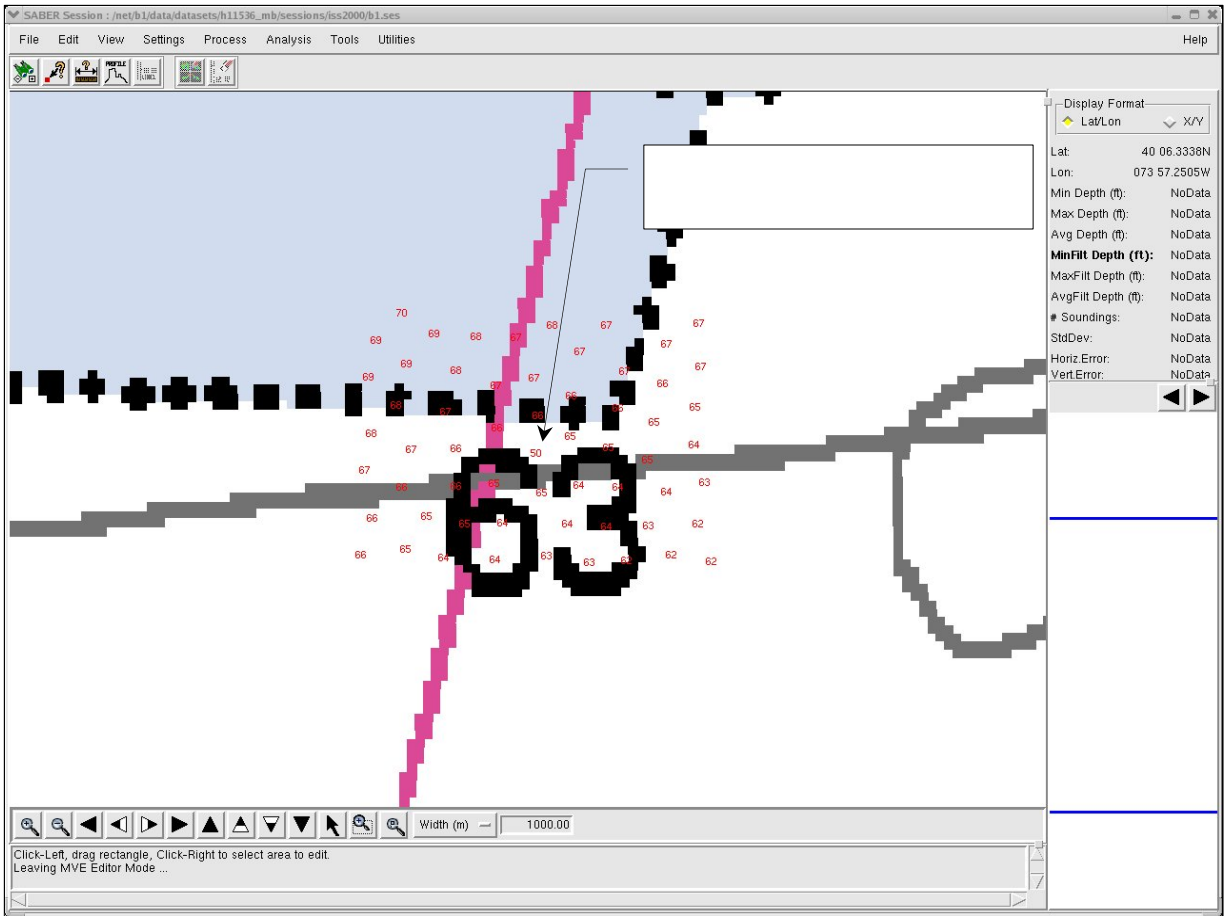


Figure 2 Chart 12323 Showing Selected Soundings of Wreck with Minimum Depth of 50 Feet (MLLW) within H11536.

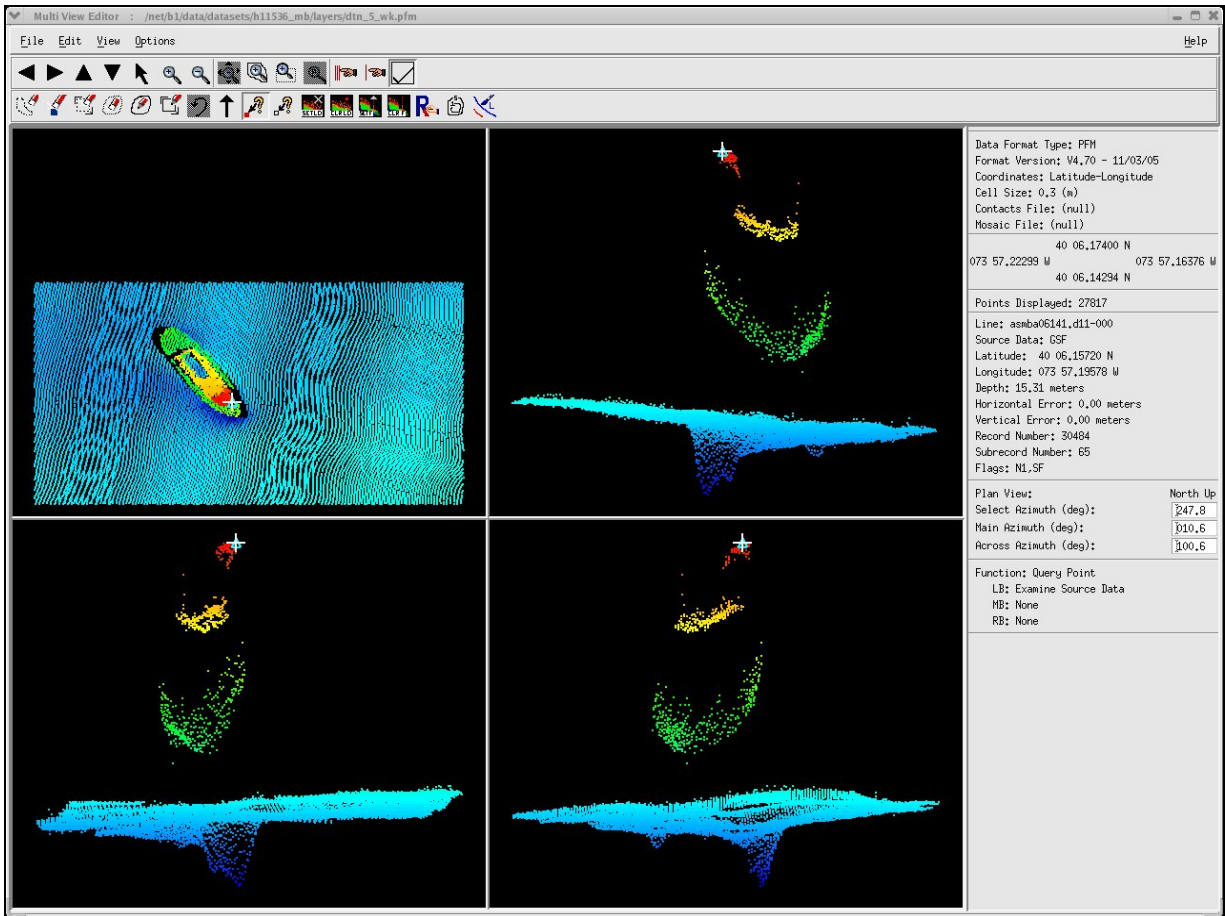


Figure 3 Multi-View Editor of a PFM Showing Wreck with Minimum Depth of 50 Feet (MLLW) located within H11536.

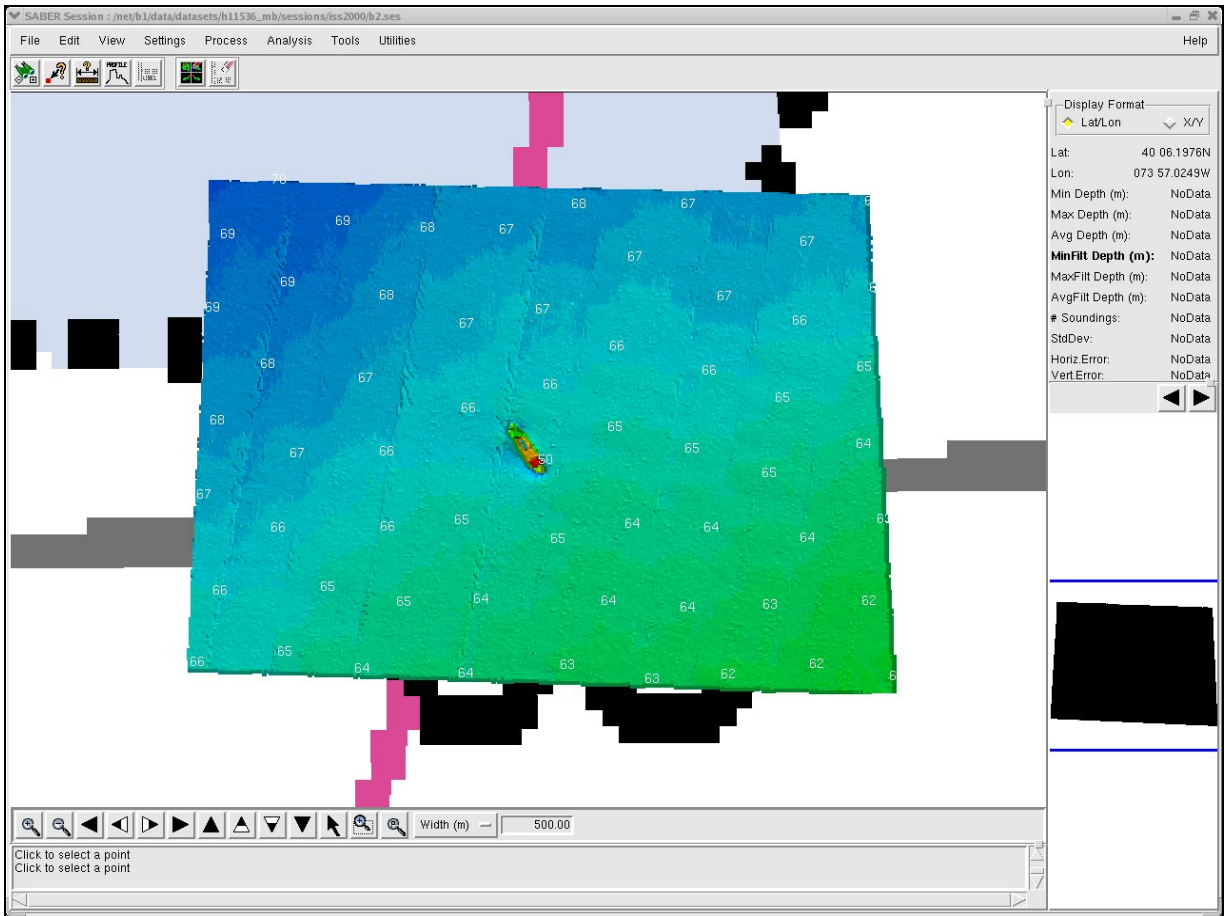


Figure 4 Color Coded Depth Grid and Selected Soundings Showing Wreck with Minimum Depth of 50 Feet within H11536.

Danger to Navigation Report 6

Hydrographic Survey Registry Number: H11536

State: New Jersey

Locality: Atlantic Ocean

Sublocality: Seagirt to Chadwick Beach

Project Number: OPR_C303-KR-06

Survey Date: May 21, 2006 and on going

Depths are reduced to Mean Lower Low Water using predicted tides based on preliminary zoning. Positions are based on NAD-83. Positions were obtained using DGPS from a US Coast Guard Station.

Charts affected:

- 12323 23rd Edition 03/11/2000 1:80,000 scale; Corrected through NM 05/06/2006

The following features were found during hydrographic survey operations:

<u>FEATURE</u>	<u>DEPTH (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
Wreck	47	40° 06' 58.712"N	073° 57' 31.203"W

RECOMMENDATIONS:

Chart 47 foot sounding, symbol Wk, and danger circle with blue tint (K-28) in 40° 06' 58.712"N/073° 57' 31.203"W

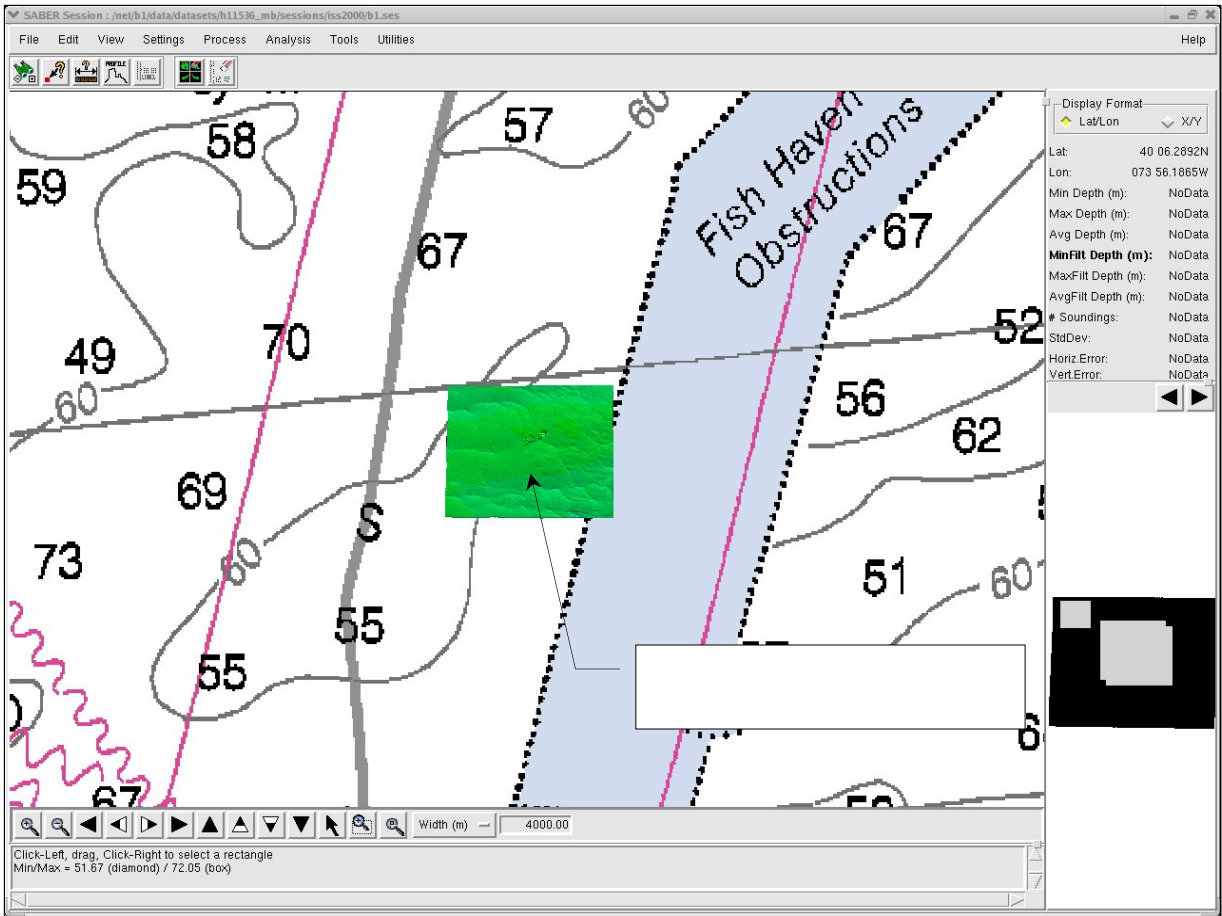


Figure 1 Chart 12323 Showing Area Covered by This Report with Location of Wreck with Minimum Depth of 47 feet within H11536.

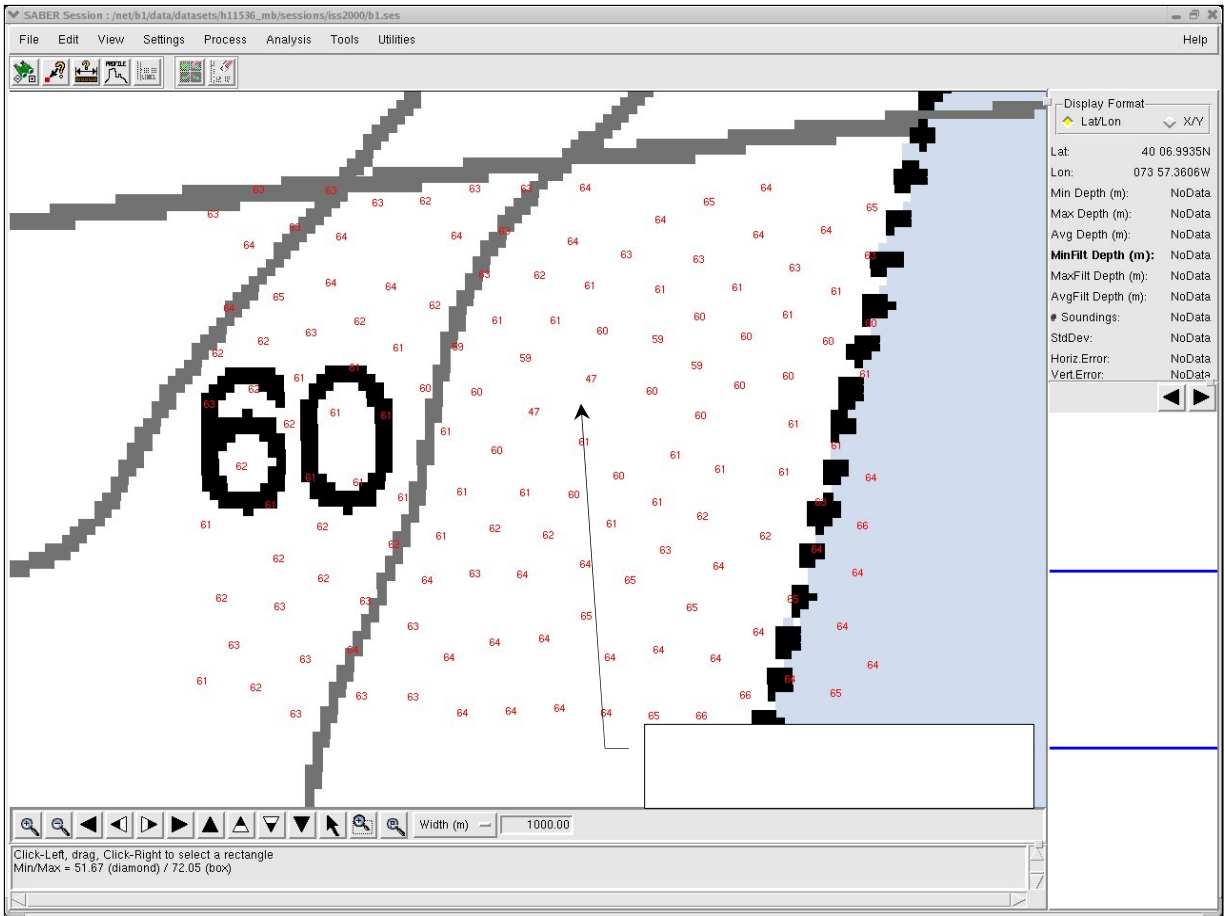


Figure 2 Chart 12323 Showing Selected Soundings of Wreck with Minimum Depth of 47 Feet (MLLW) within H11536.

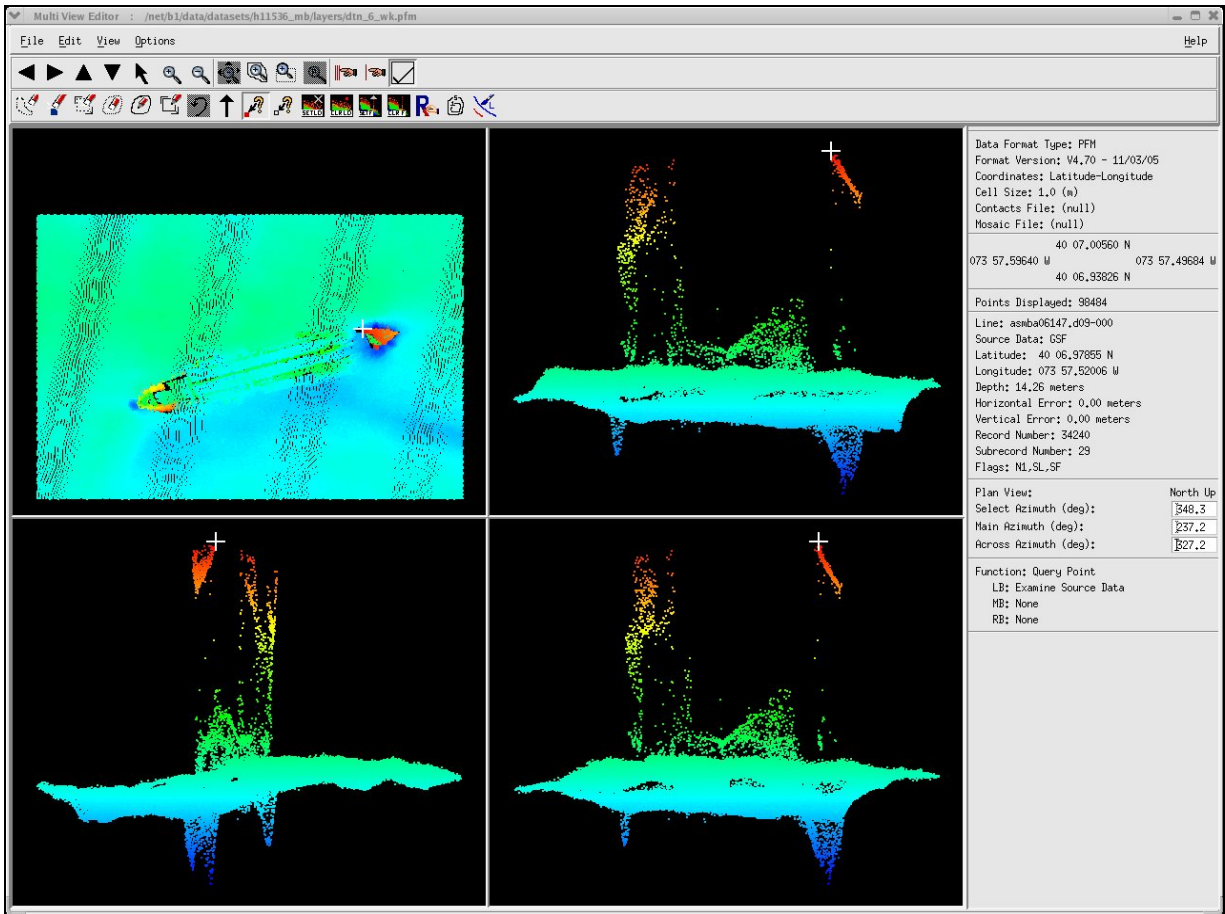


Figure 3 Multi-View Editor of a PFM Showing Wreck with Minimum Depth of 47 Feet (MLLW) located within H11536.

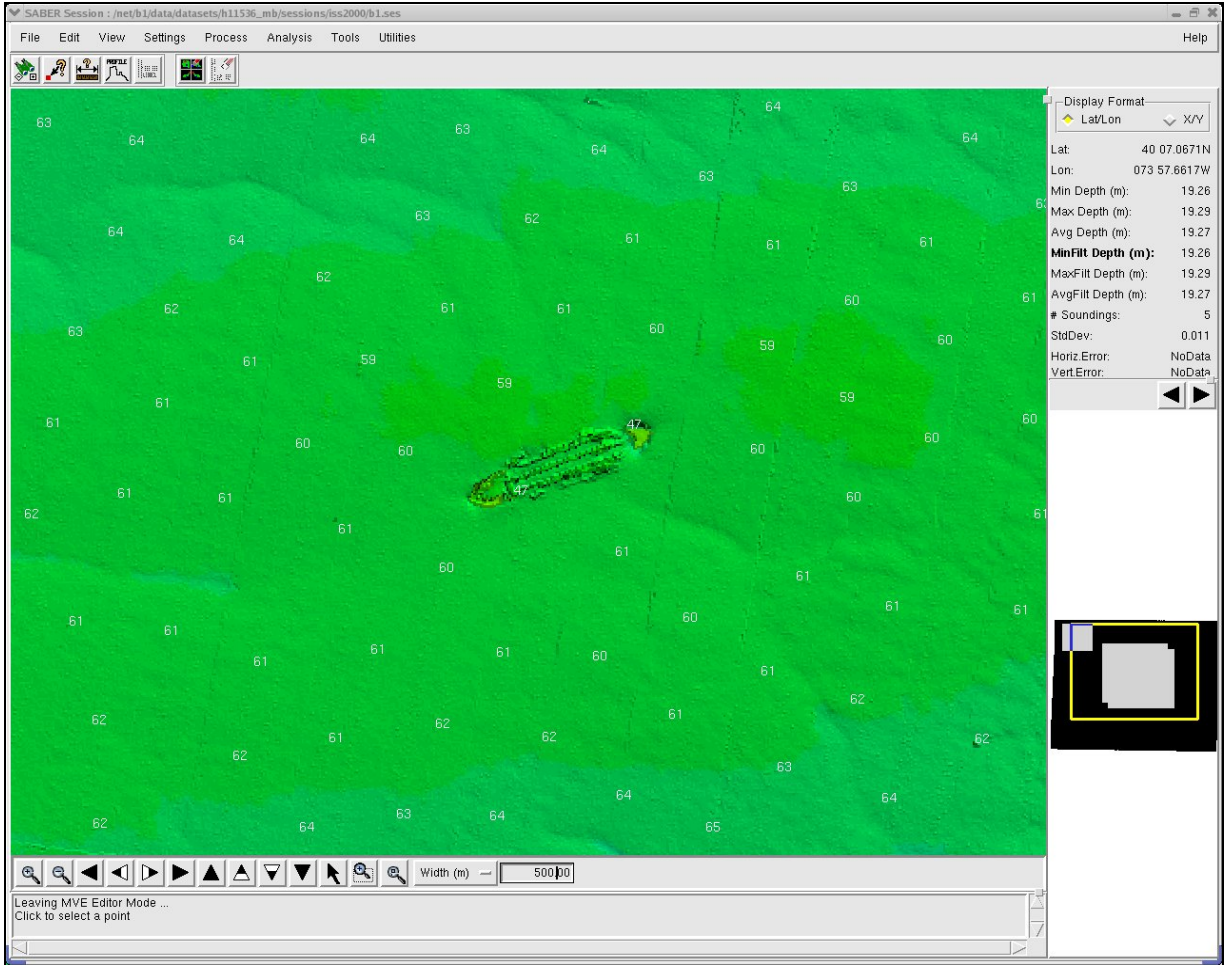


Figure 4 Color Coded Depth Grid and Selected Soundings Showing Wreck with Minimum Depth of 47 Feet within H11536.

Danger to Navigation Report 7

Hydrographic Survey Registry Number: H11536

State: New Jersey

Locality: Atlantic Ocean

Sublocality: Seagirt to Chadwick Beach

Project Number: OPR_C303-KR-06

Survey Date: May 21, 2006 and on going

Depths are reduced to Mean Lower Low Water using predicted tides based on preliminary zoning. Positions are based on NAD-83. Positions were obtained using DGPS from a US Coast Guard Station.

Charts affected:

- 12323 23rd Edition 03/11/2000 1:80,000 scale; Corrected through NM 05/06/2006

The following features were found during hydrographic survey operations:

<u>FEATURE</u>	<u>DEPTH (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
Wreck	49	40° 06' 58.803"N	073° 56' 52.622"W

RECOMMENDATIONS:

Chart 49 foot sounding, symbol Wk, and danger circle with blue tint (K-28) in 40° 06' 58.803"N/073° 57' 52.622"W

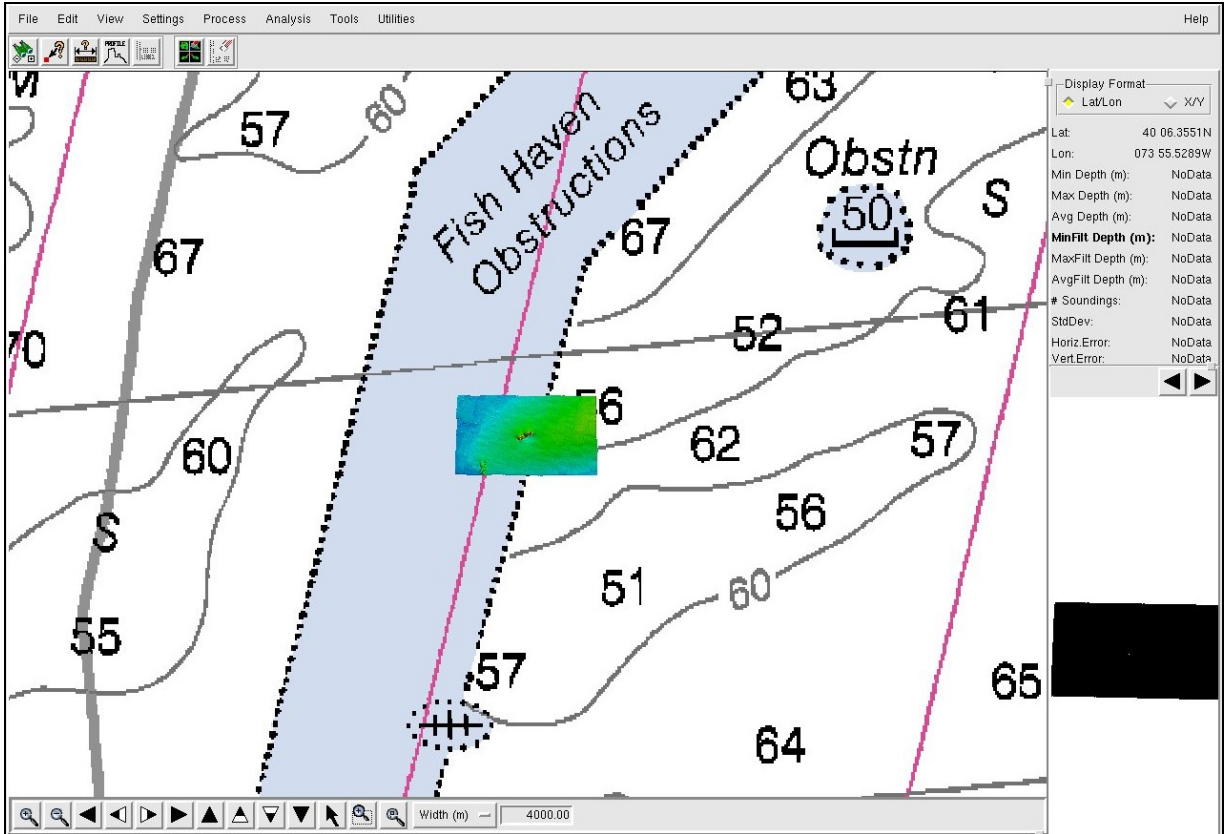


Figure 1 Chart 12323 Showing Area Covered by This Report with Location of Wreck with Minimum Depth of 49 feet within H11536.

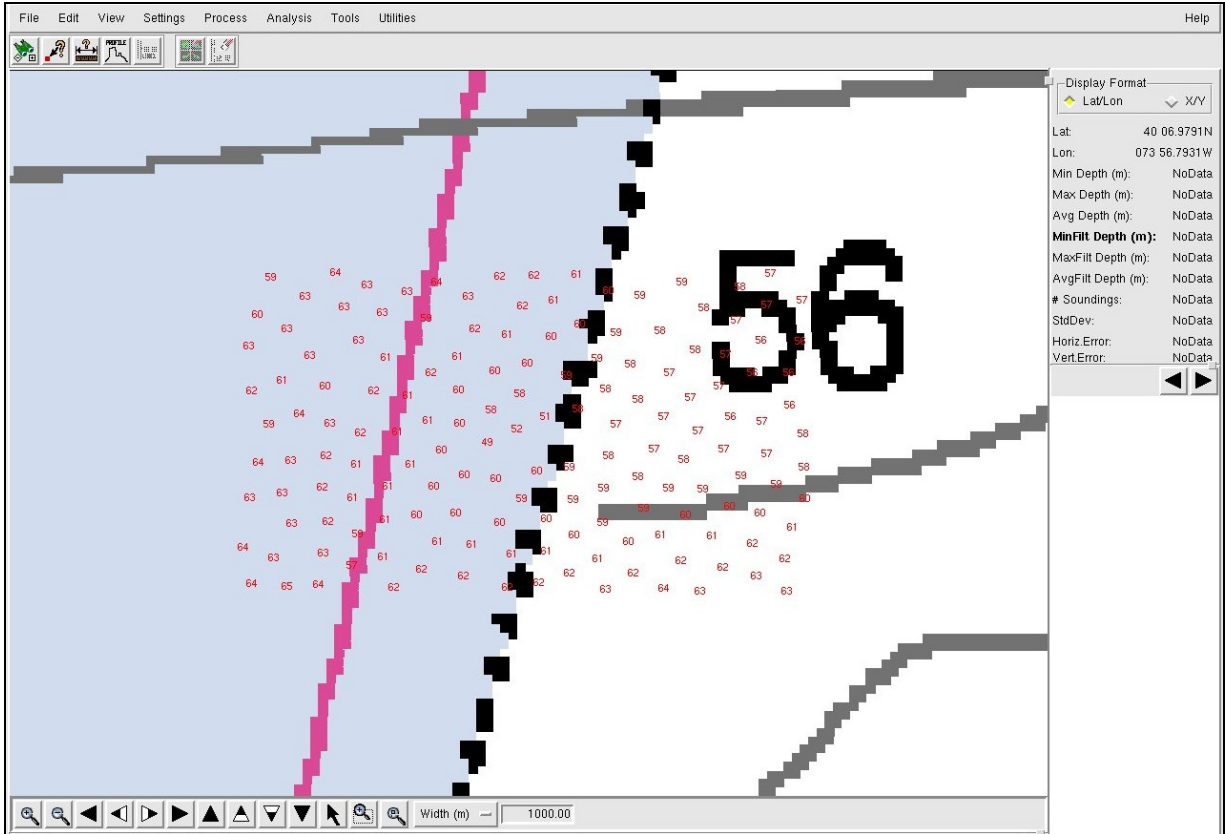


Figure 2 Chart 12323 Showing Selected Soundings of Wreck with Minimum Depth of 49

Feet (MLLW) within H11536.

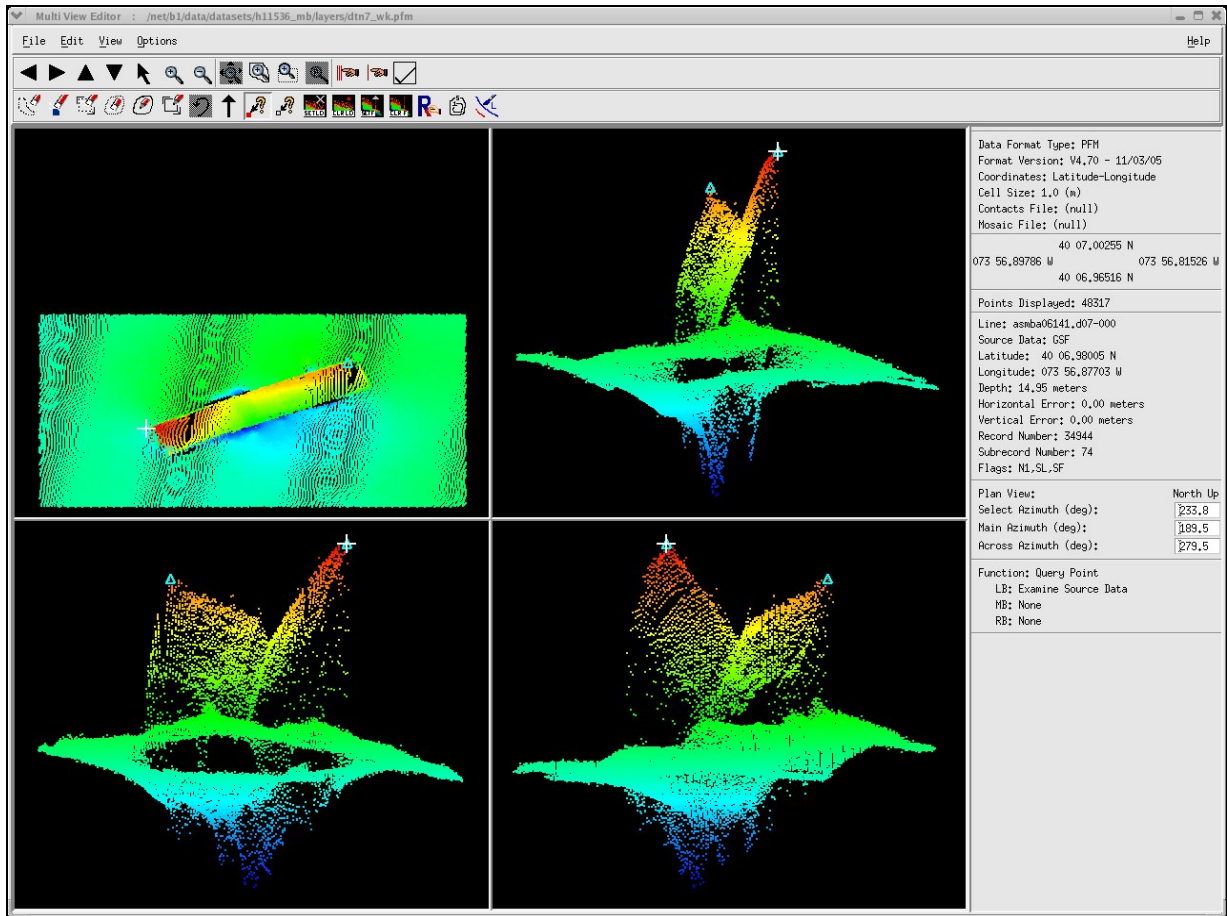


Figure 3 Multi-View Editor of a PFM Showing Wreck with Minimum Depth of 49 Feet (MLLW) located within H11536.

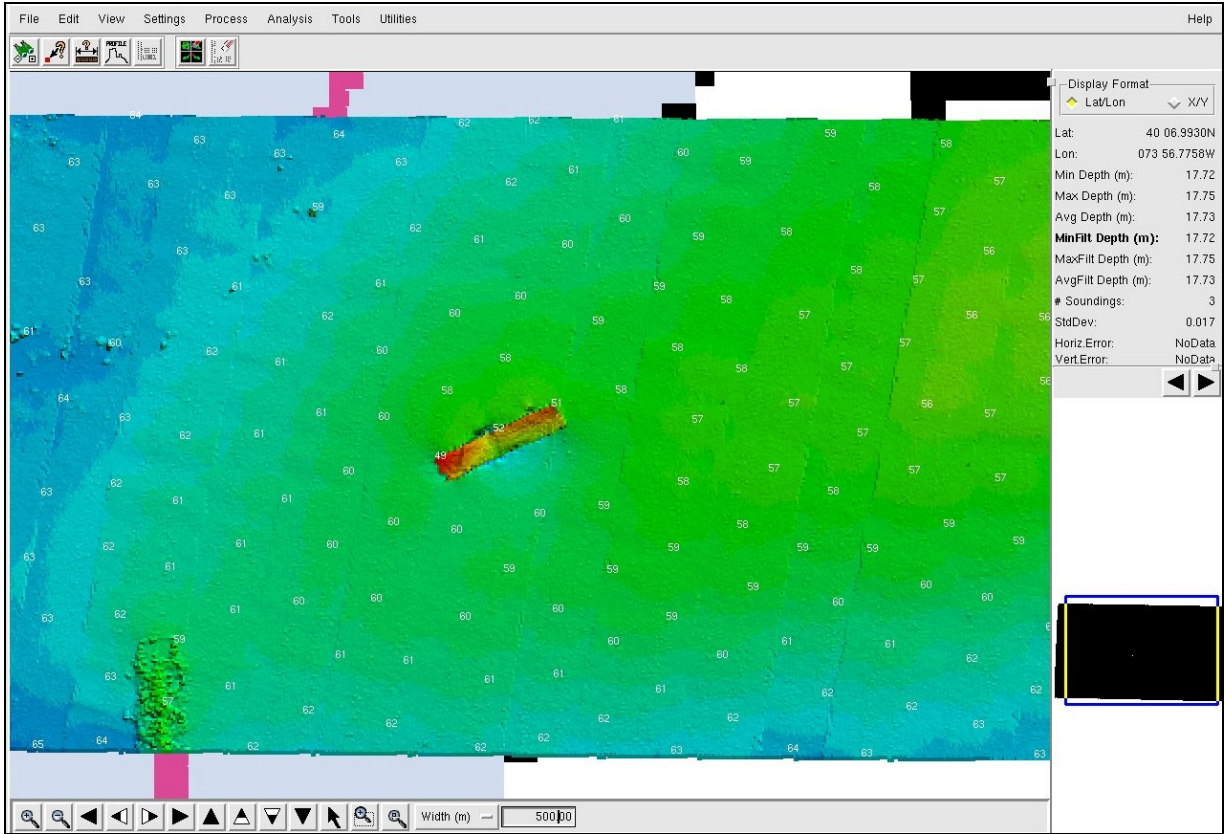


Figure 4 Color Coded Depth Grid and Selected Soundings Showing Wreck with Minimum Depth of 49 Feet within H11536.

Danger to Navigation Report 8

Hydrographic Survey Registry Number: H11536

State: New Jersey
 Locality: Atlantic Ocean
 Sublocality: Seagirt to Chadwick Beach
 Project Number: OPR_C303-KR-06
 Survey Date: May 23, 2006

Depths are reduced to Mean Lower Low Water using verified observed tides based on final zoning. Positions are based on NAD-83. Positions were obtained using DGPS from a US Coast Guard Station.

Charts affected:

- 12323 23rd Edition 03/11/2000 1:80,000 scale; Corrected through NM 06/10/2006
- 12324 32nd Edition 03/01/2006 1:40,000 scale; Corrected through NM 06/10/2006

The following features were found during hydrographic survey operations:

<u>FEATURE</u>	<u>DEPTH (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
Obstruction	46	40° 00' 59.230"N	074° 00' 24.499"W

This is a USACE disposal mound within the fish haven, authorized minimum depth 50 feet. It is approximately 80 meters wide by 140 meters long, a tear drop shape oriented north south with the pointed end north and the least depth near the south end.

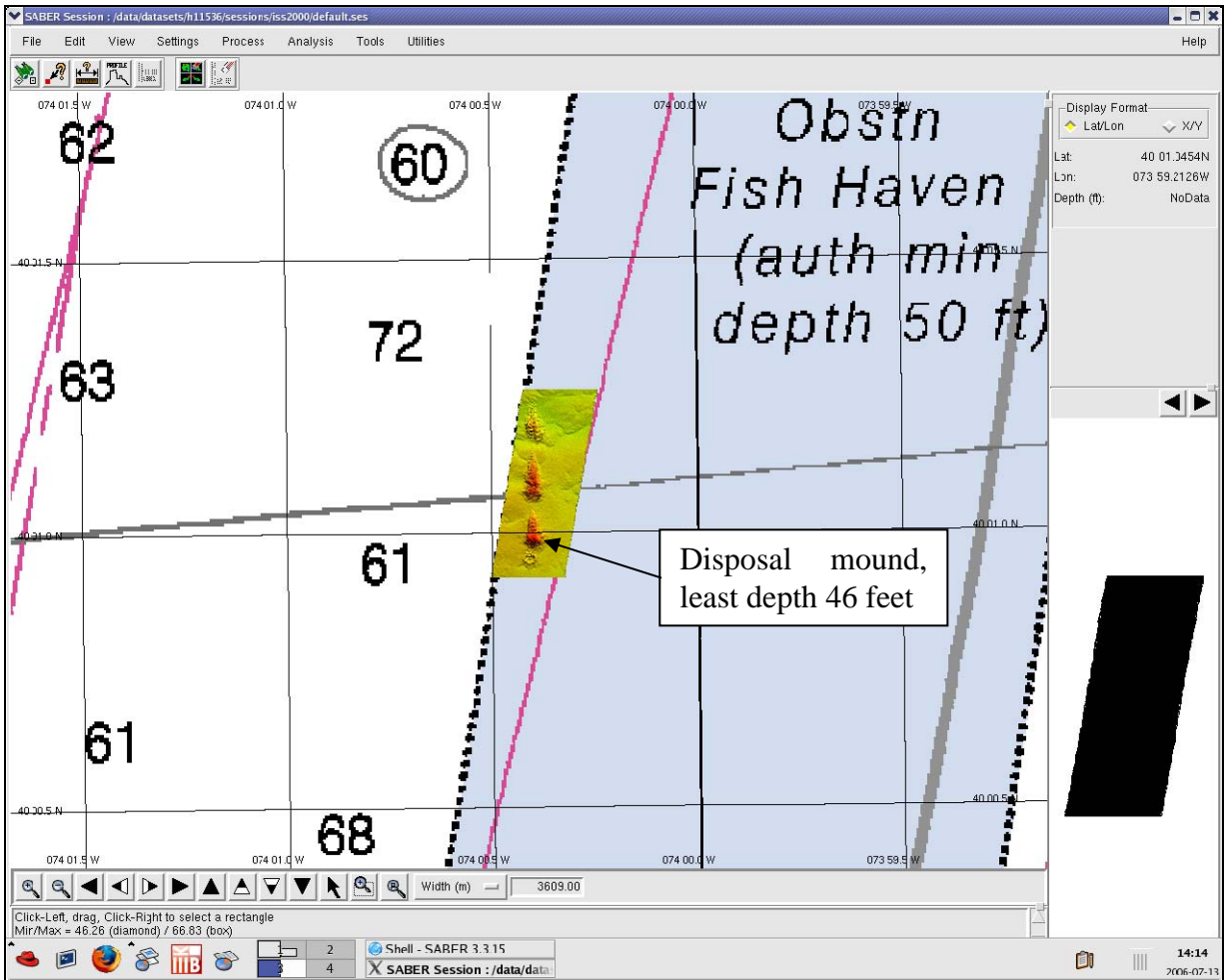


Figure 1 Chart 12323 Showing Location of Disposal Mound with Minimum Depth of 46 feet (MLLW) within H11536.

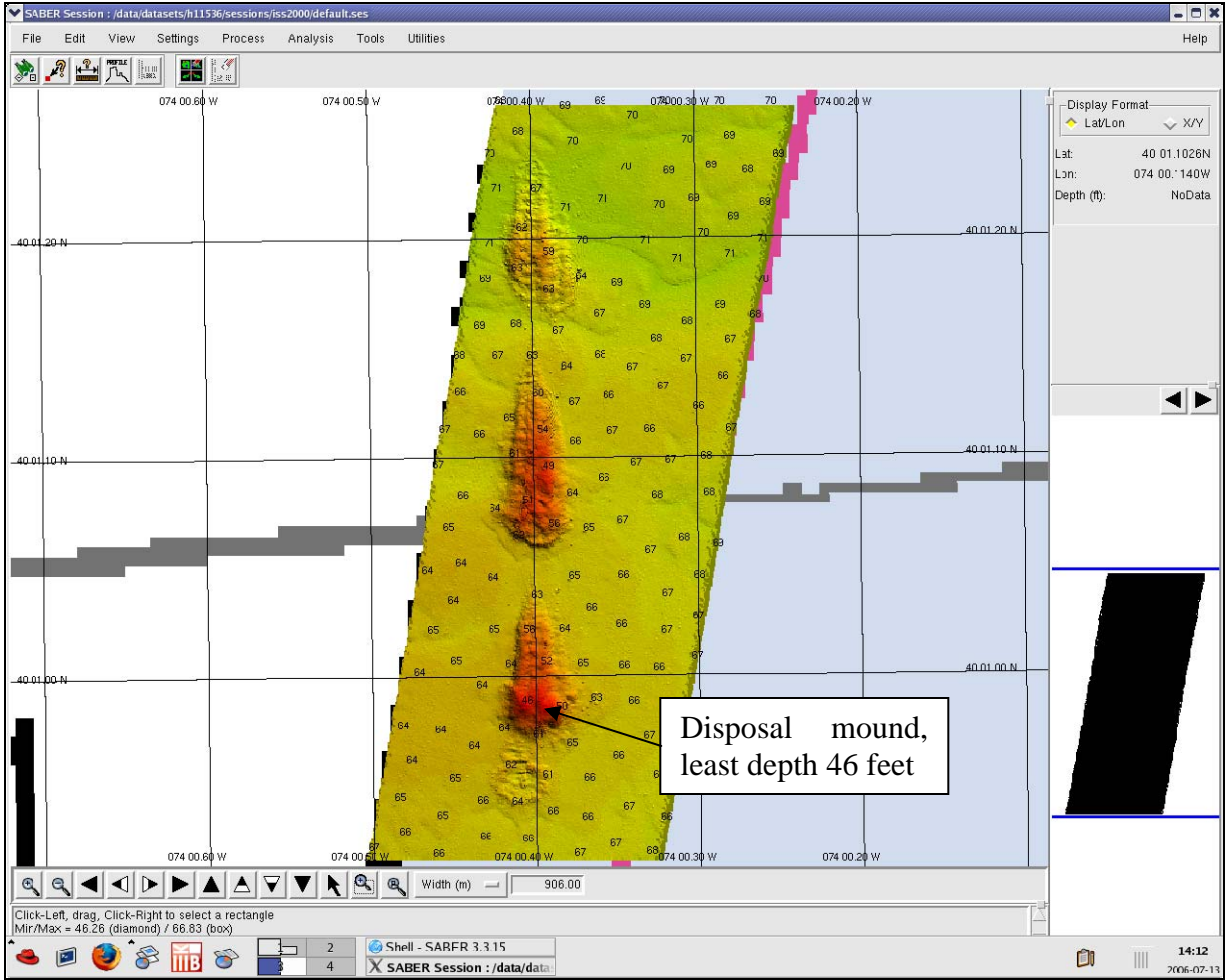


Figure 2 Chart 12323 Showing Selected Soundings of Disposal Mound with Minimum Depth of 46 Feet (MLLW) within H11536.

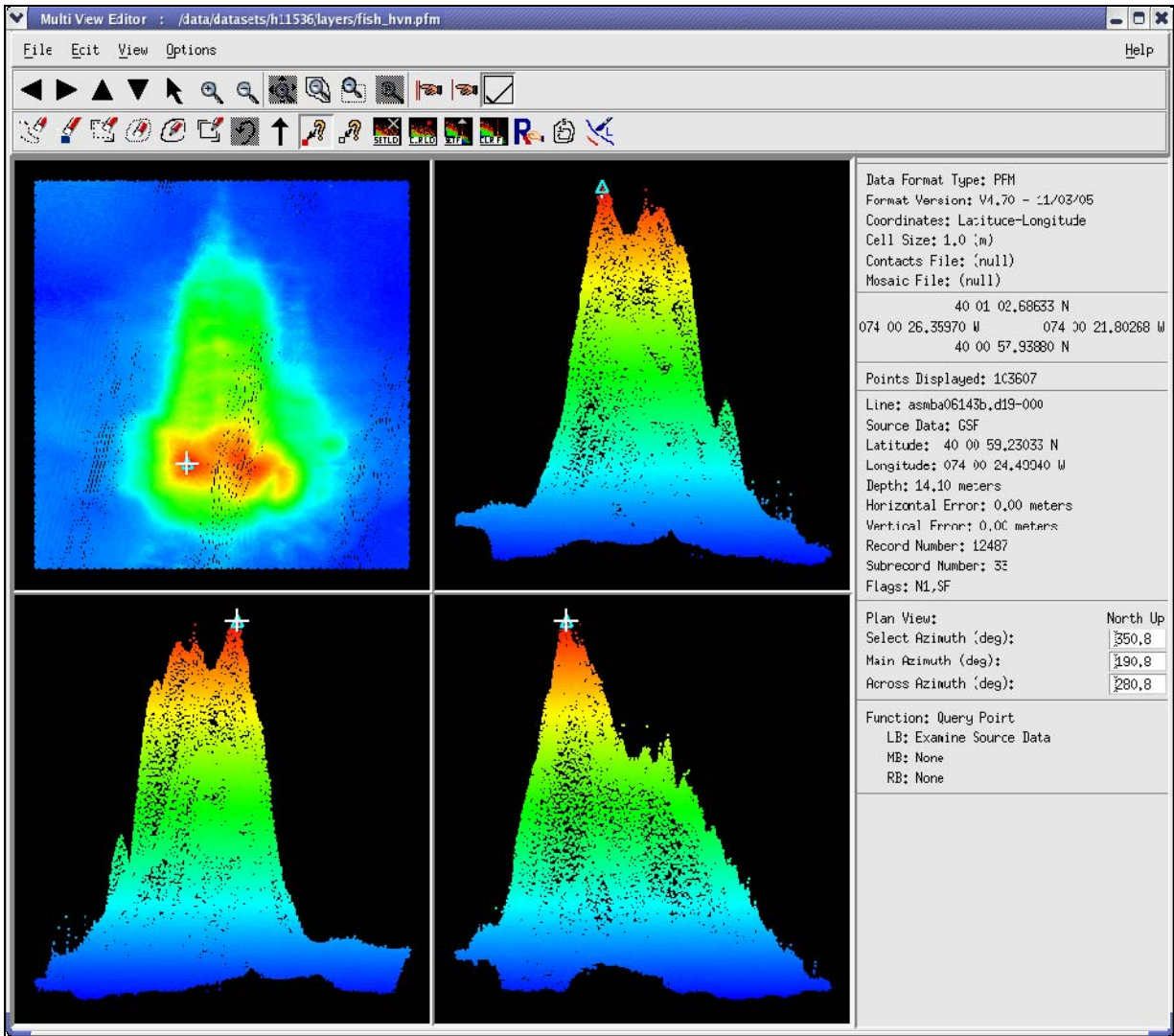


Figure 3 Multi-View Editor of a PFM Showing Disposal Mound with Minimum Depth of 46 Feet (MLLW) located within H11536.

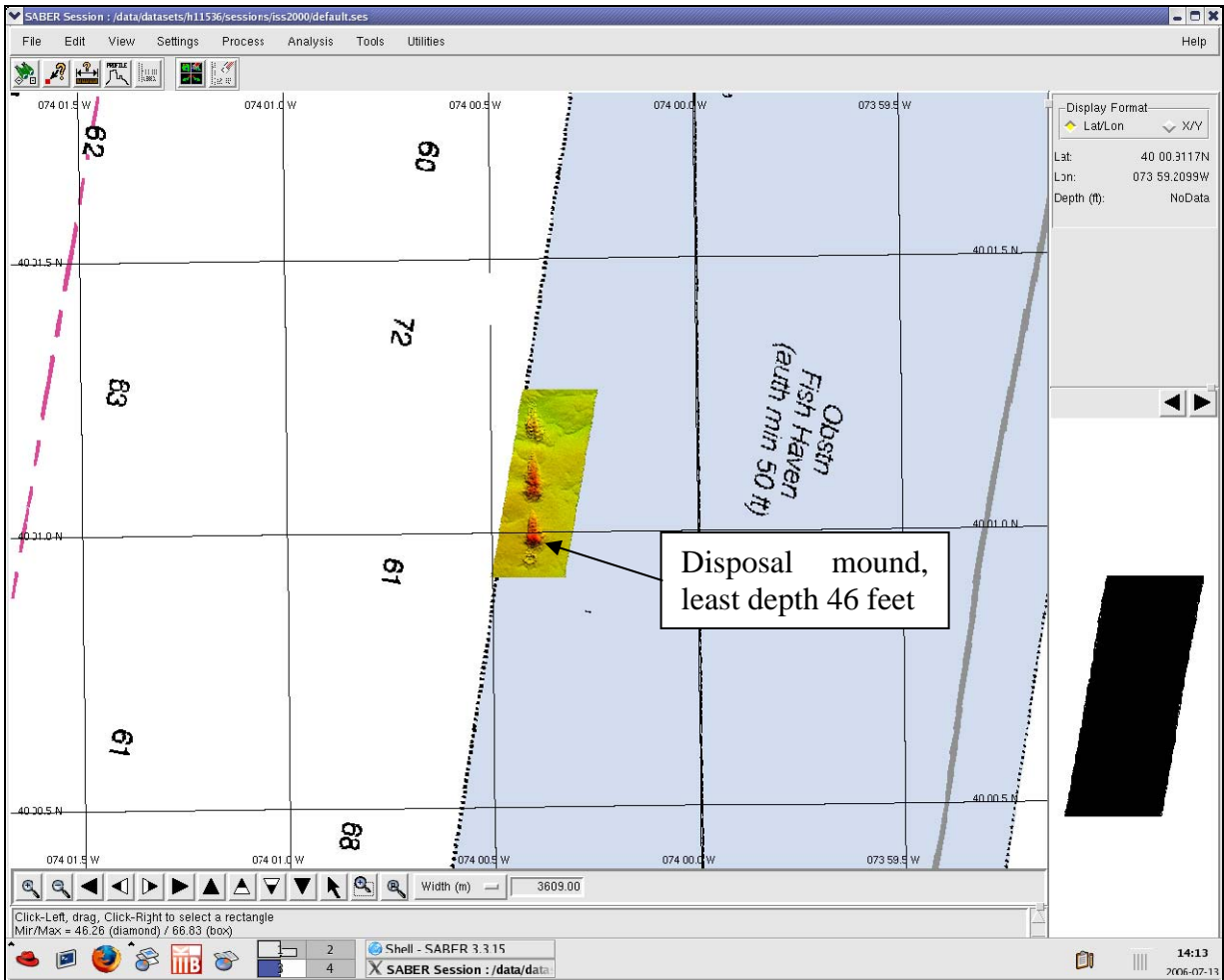


Figure 4 Chart 12324 Showing Location of Disposal Mound with Minimum Depth of 46 feet (MLLW) within H11536.

Danger to Navigation Report 9

Hydrographic Survey Registry Number: H11536

State: New Jersey
 Locality: Atlantic Ocean
 Sublocality: Seagirt to Chadwick Beach
 Project Number: OPR_C303-KR-06
 Survey Date: May 23, 2006

Depths are reduced to Mean Lower Low Water using verified observed tides based on final zoning. Positions are based on NAD-83. Positions were obtained using DGPS from a US Coast Guard Station.

Charts affected:

- 12323 23rd Edition 03/11/2000 1:80,000 scale; Corrected through NM 09/16/2006
- 12324 32nd Edition 03/01/2006 1:40,000 scale; Corrected through NM 09/16/2006

The following features were found during hydrographic survey operations:

<u>FEATURE</u>	<u>DEPTH (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
Wreck	46	40° 03' 05.5"N	073° 59' 02.3"W

This is a wreck sitting upright within the fish haven, authorized minimum depth 50 feet. It is approximately 8 meters wide by 34 meters long, oriented northwest/southeast with the bow northwest and the least depth atop the house about 11 meters from the bow.

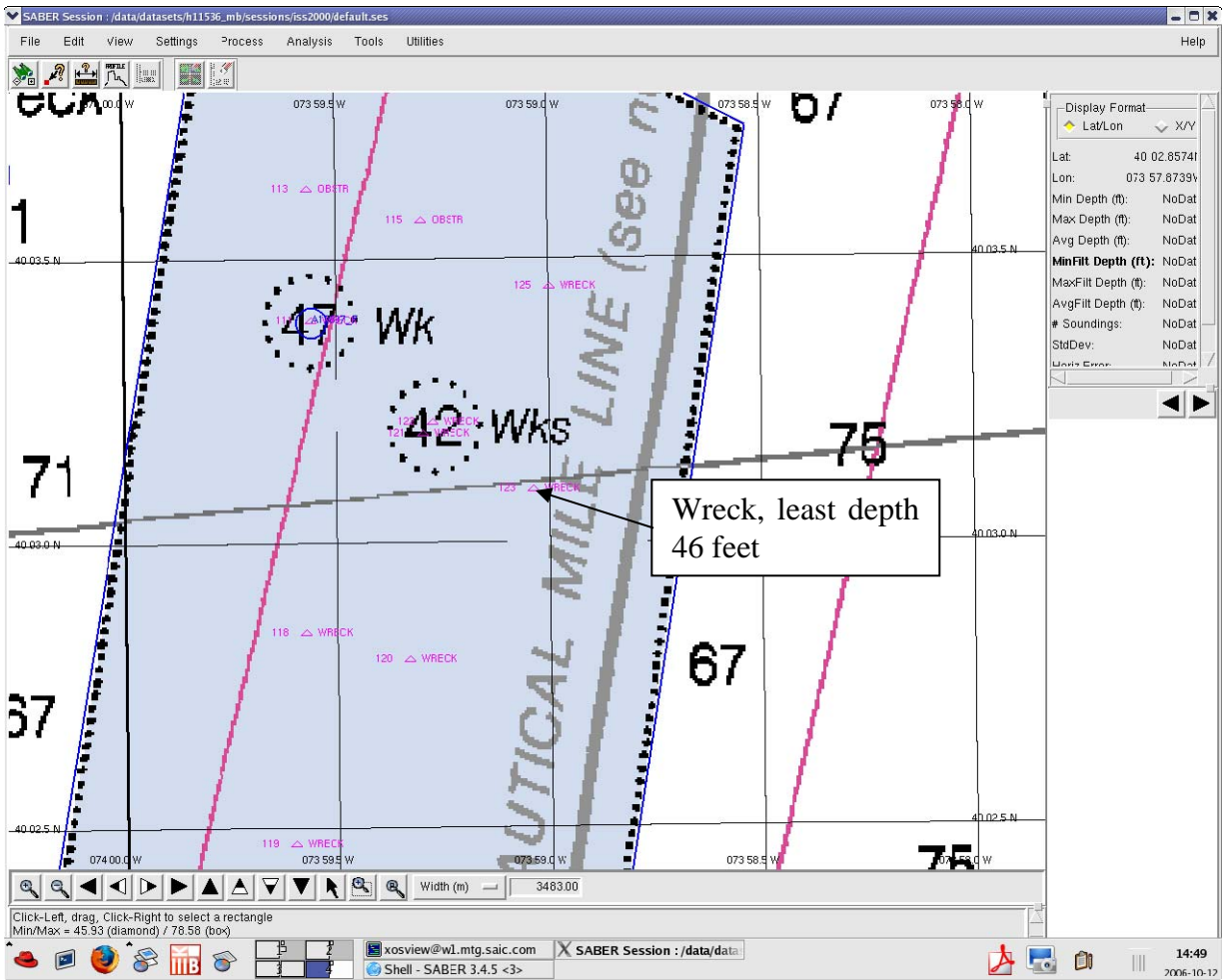


Figure 1 Chart 12323 Showing Location of Wreck with Minimum Depth of 46 feet (MLLW) within H11536.

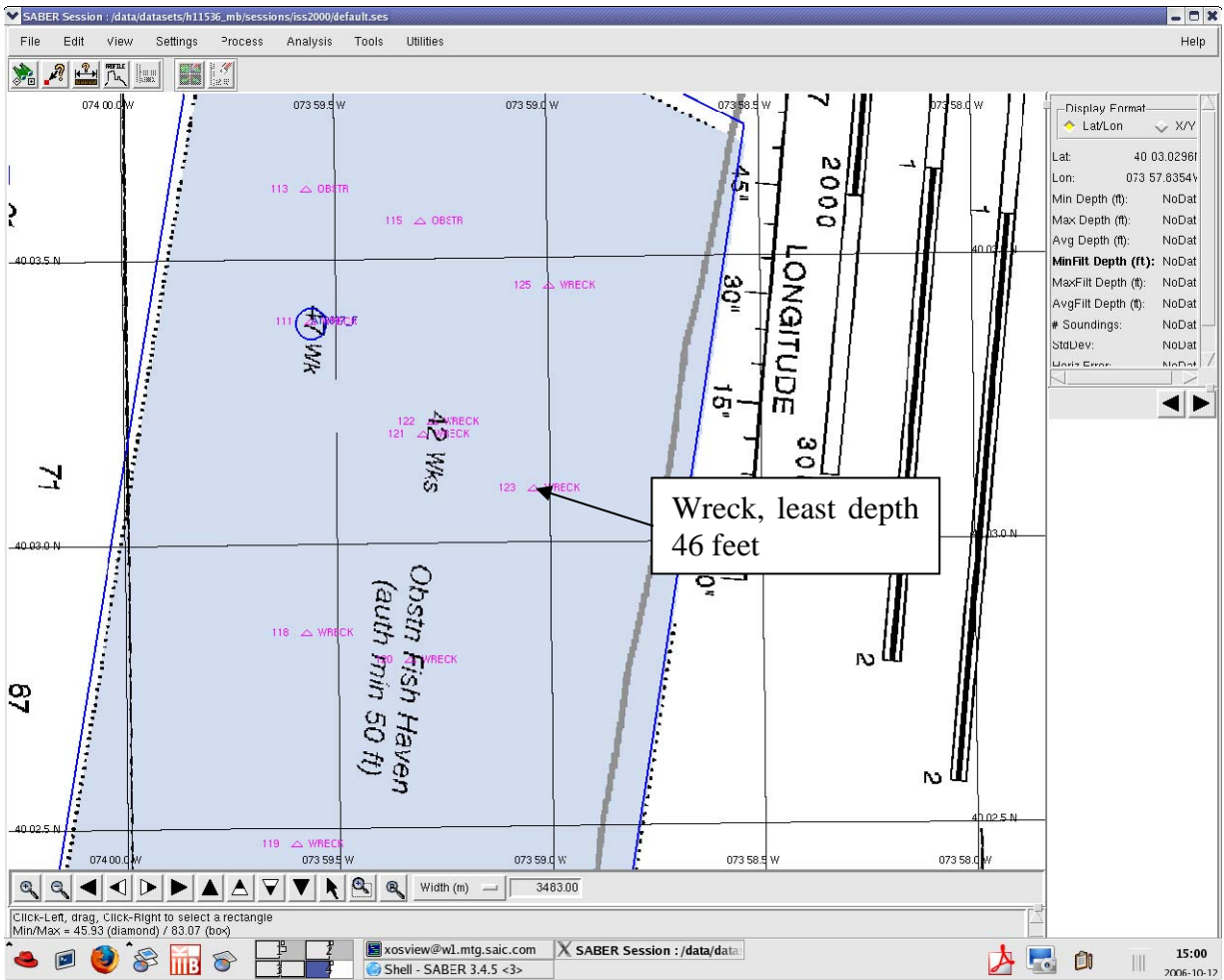


Figure 2 Chart 12324 Showing Location of Wreck with Minimum Depth of 46 Feet (MLLW) within H11536.

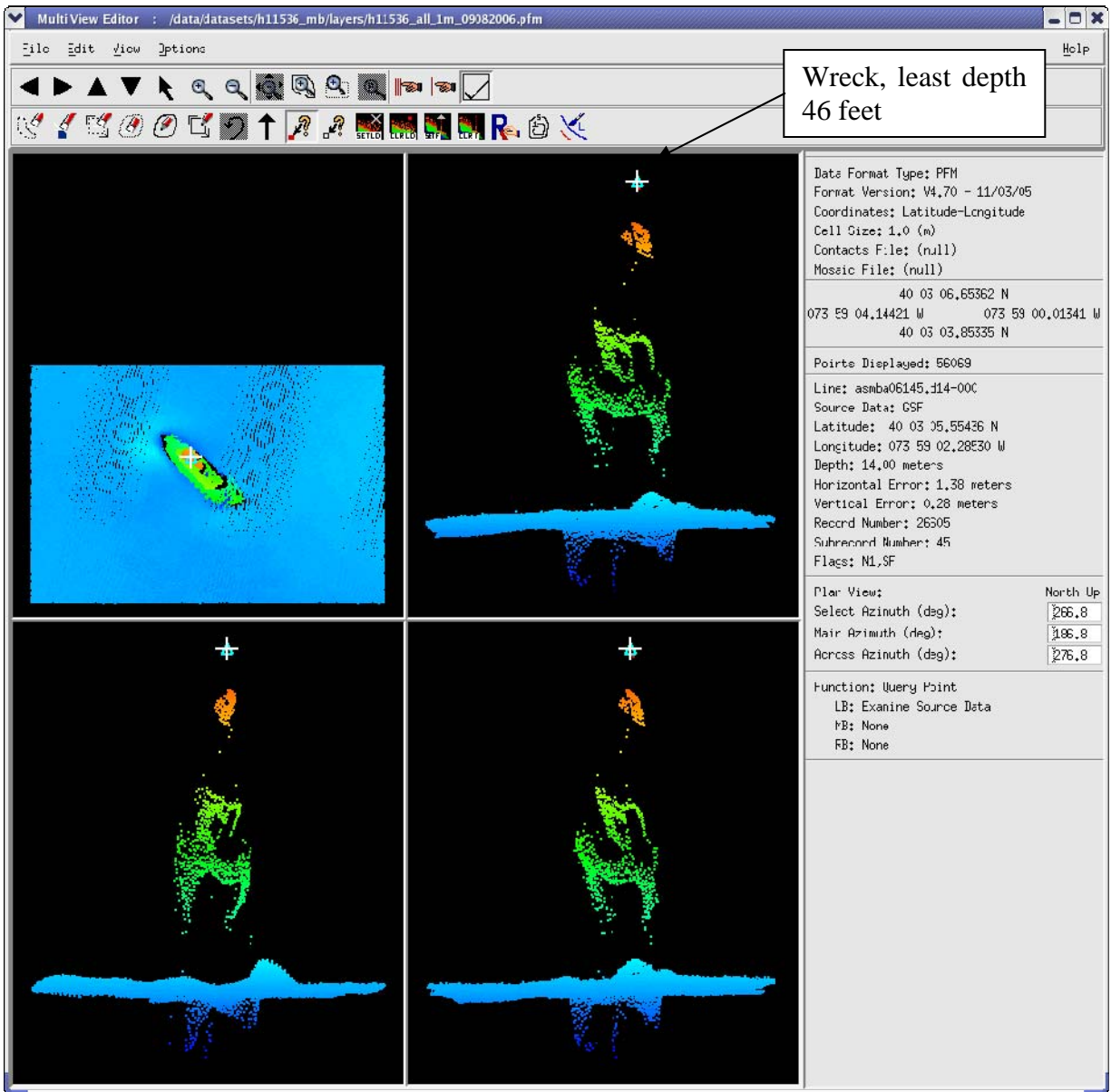


Figure 3 Multi-View Editor of a PFM Showing Wreck with Minimum Depth of 46 Feet (MLLW) located within H11536.

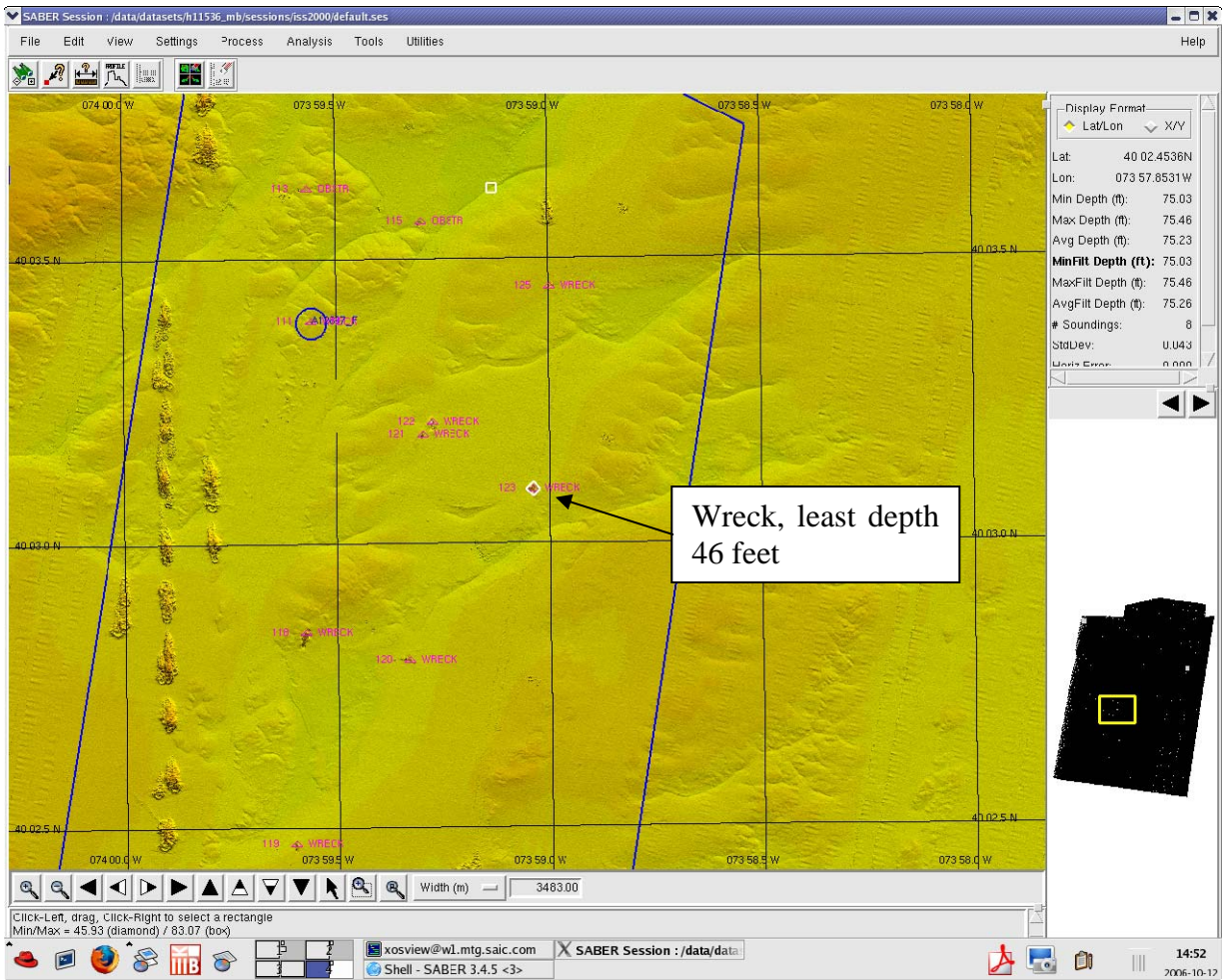


Figure 4 Bathymetric Grid Showing Location of Wreck with Minimum Depth of 46 feet (MLLW) within H11536.

Danger to Navigation Report 10

Hydrographic Survey Registry Number: H11536

State: New Jersey

Locality: Atlantic Ocean

Sublocality: Seagirt to Chadwick Beach

Project Number: OPR_C303-KR-06

Survey Date: May 23, 2006

Depths are reduced to Mean Lower Low Water using verified observed tides based on final zoning. Positions are based on NAD-83. Positions were obtained using DGPS from a US Coast Guard Station.

Charts affected:

Chart 12323, 24th Edition 02/01/2007 corrected by NTM through 07/07/2007

The following features were found during hydrographic survey operations:

<u>FEATURE</u>	<u>DEPTH (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
Wreck	48	40° 08' 11.396"N	073° 56' 06.224"W

This is a 48 feet sounding on an intact wreck sitting upright within the fish haven with an authorized minimum depth 50 feet (AWOIS 6825). The wreck is approximately 7 meters wide by 24 meters long, oriented approximately 230°.

RECOMMENDATIONS:

Chart 48 foot sounding in 40° 08' 11.396"N/073° 56' 06.224"W

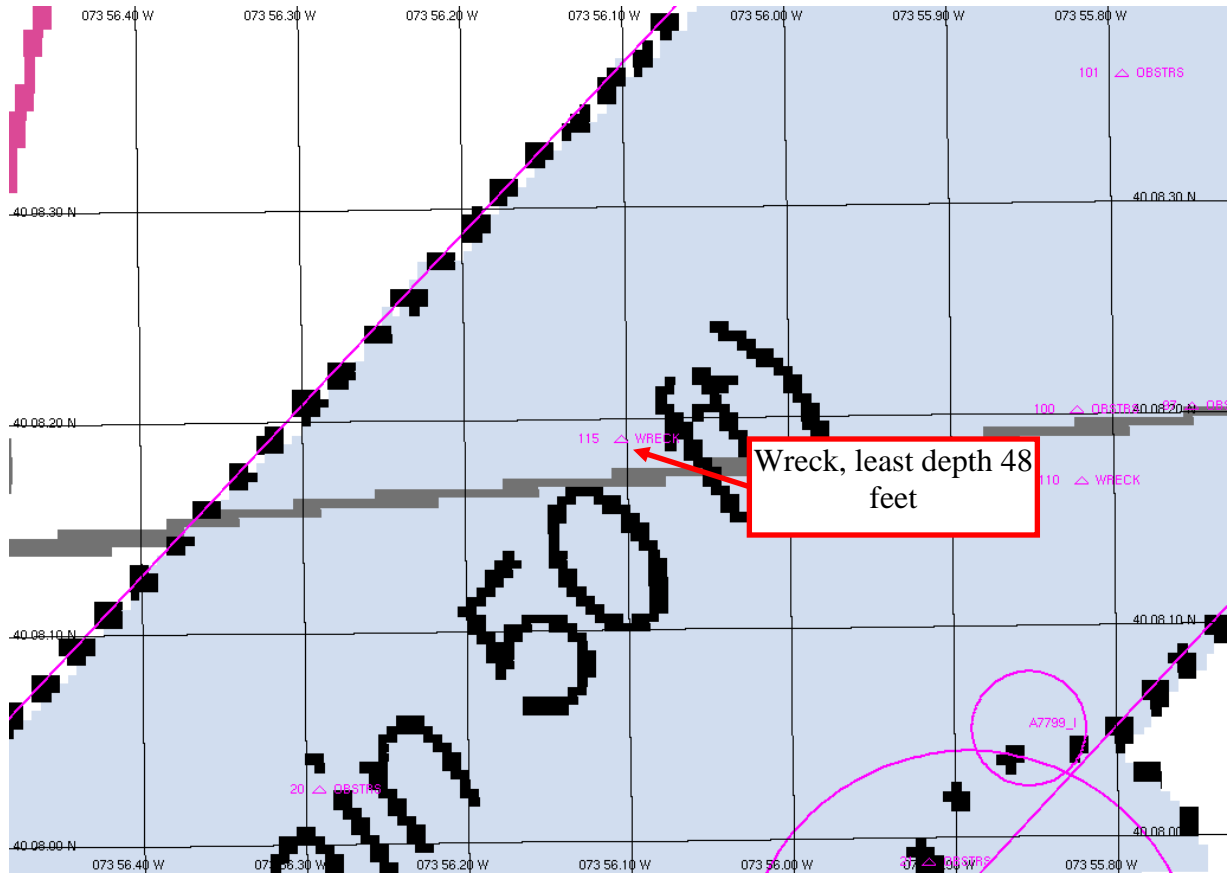


Figure 1 Chart 12323 Showing Location of Wreck with Least Depth of 48 feet (MLLW) within H11536.

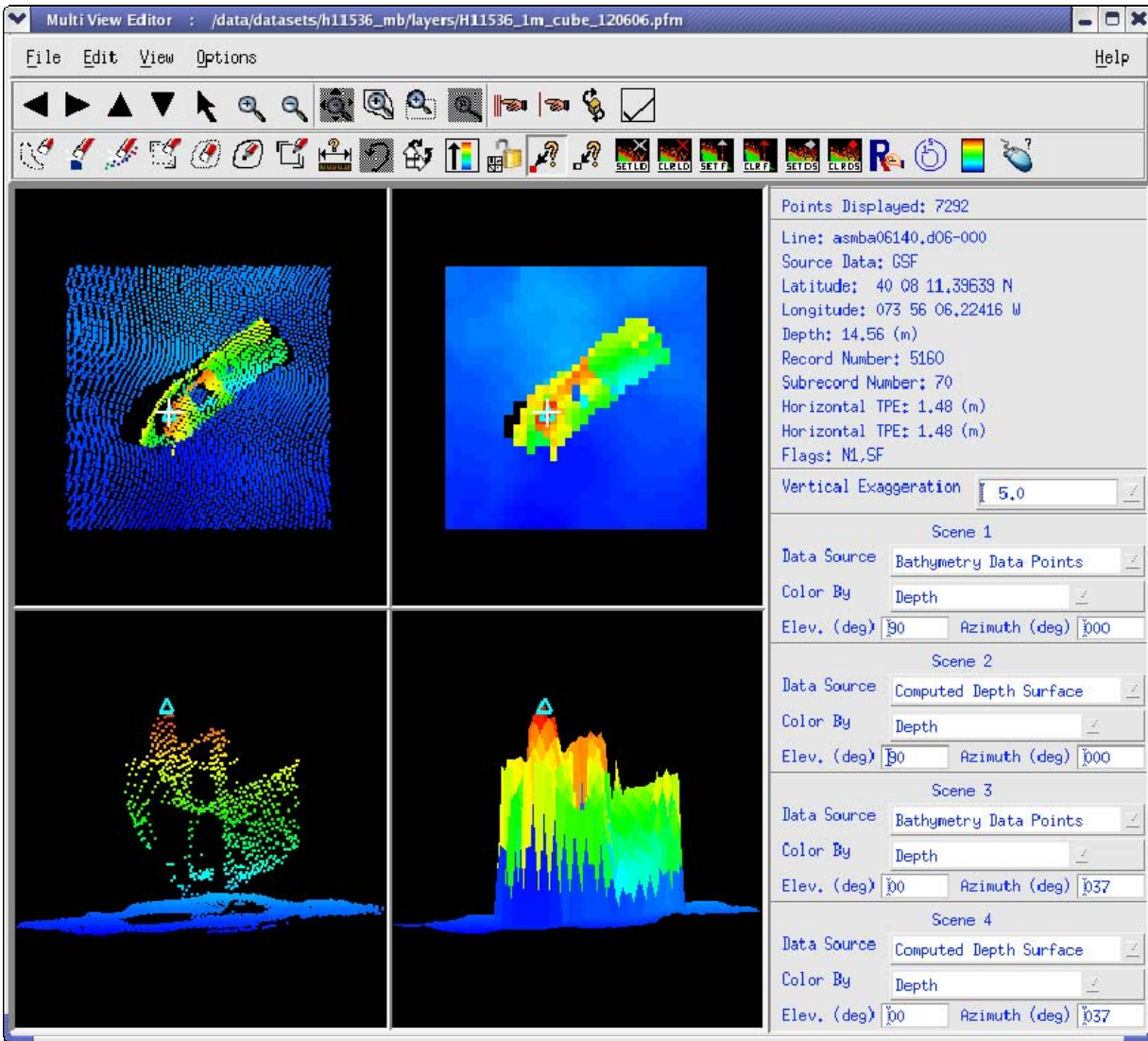


Figure 2 Multi-View Editor of a PFM Showing Wreck with Minimum Depth of 48 Feet (MLLW) located within H11536.

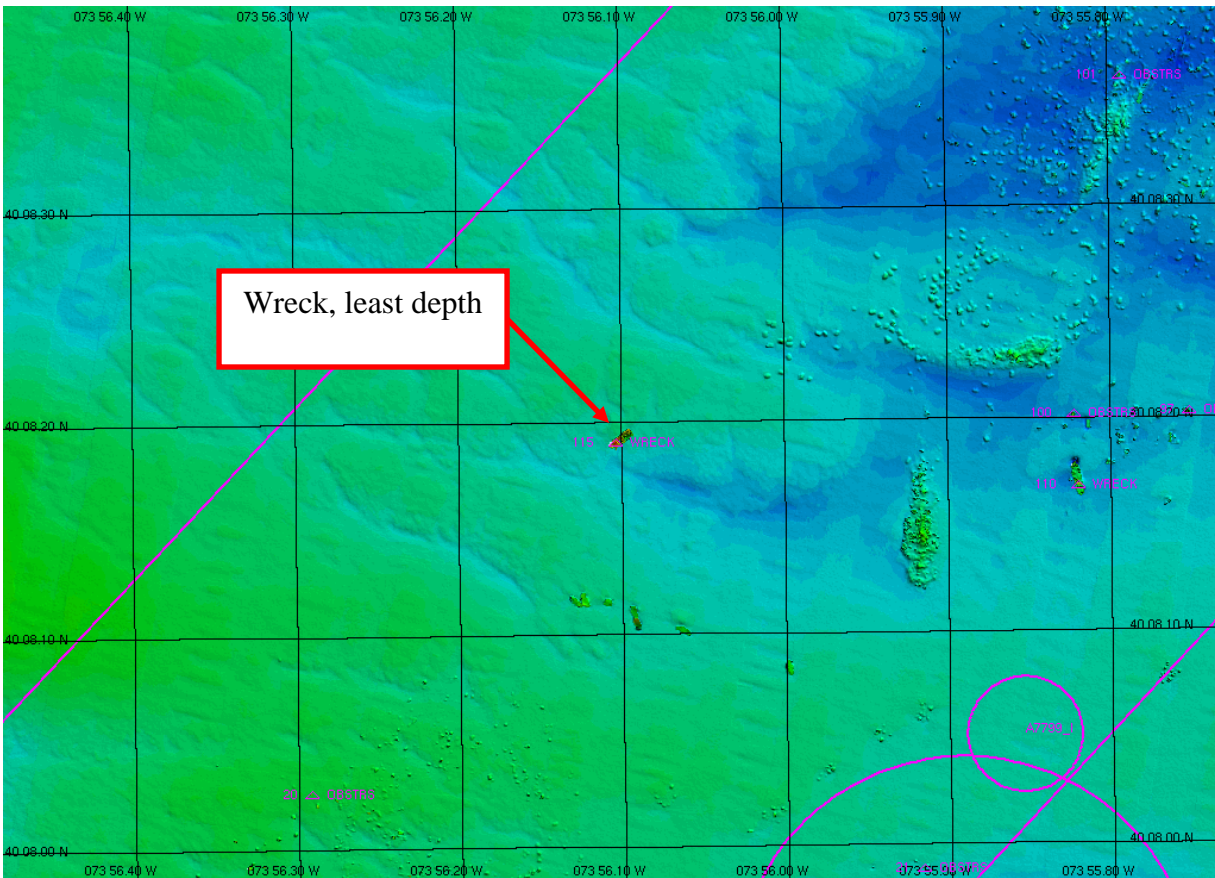


Figure 3 Bathymetric Grid Showing Location of Wreck with Minimum Depth of 48 feet (MLLW) within H11536.

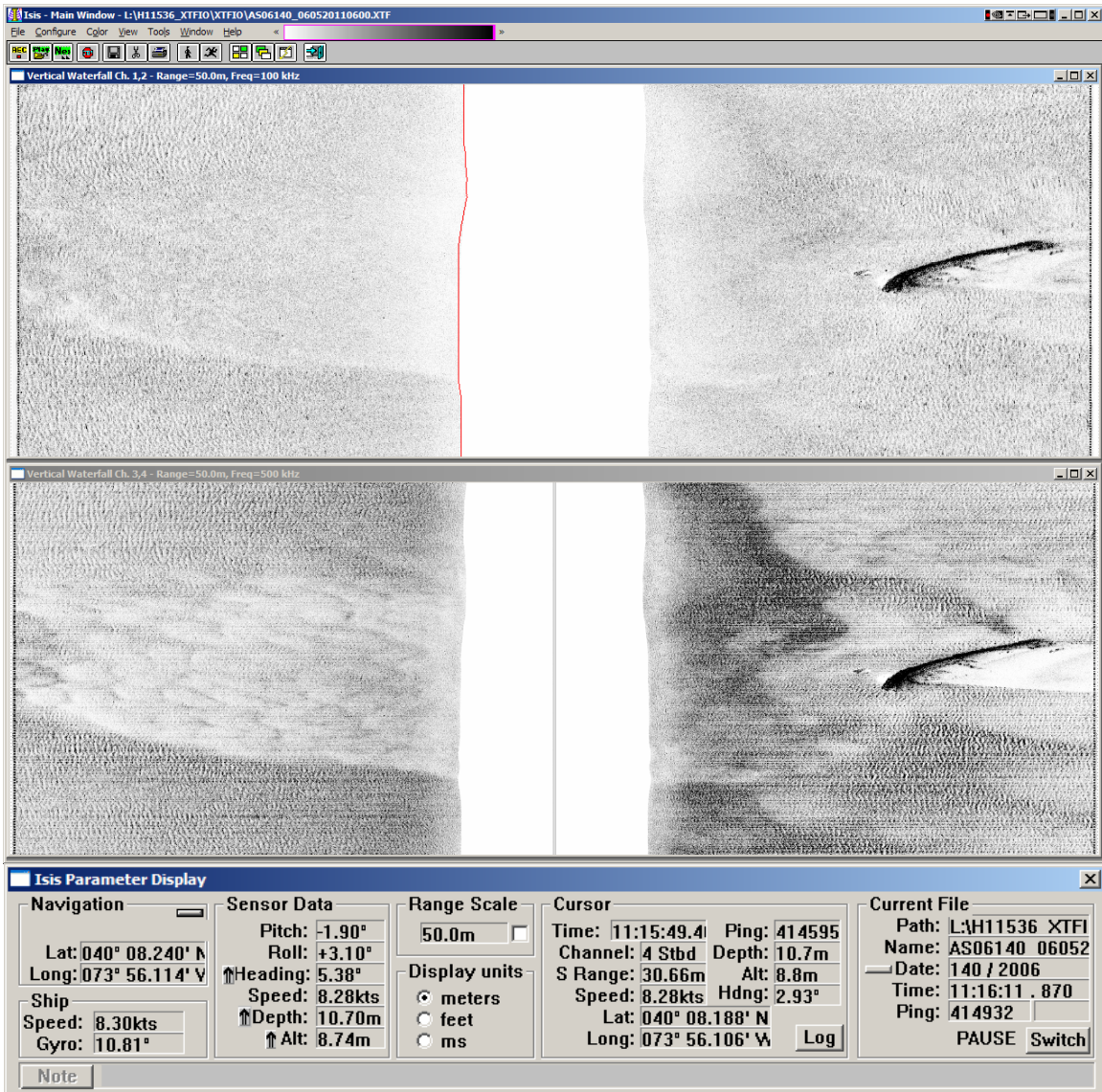


Figure 4 Side Scan Data Showing Wreck with Minimum Depth of 48 feet (MLLW) within H11536.

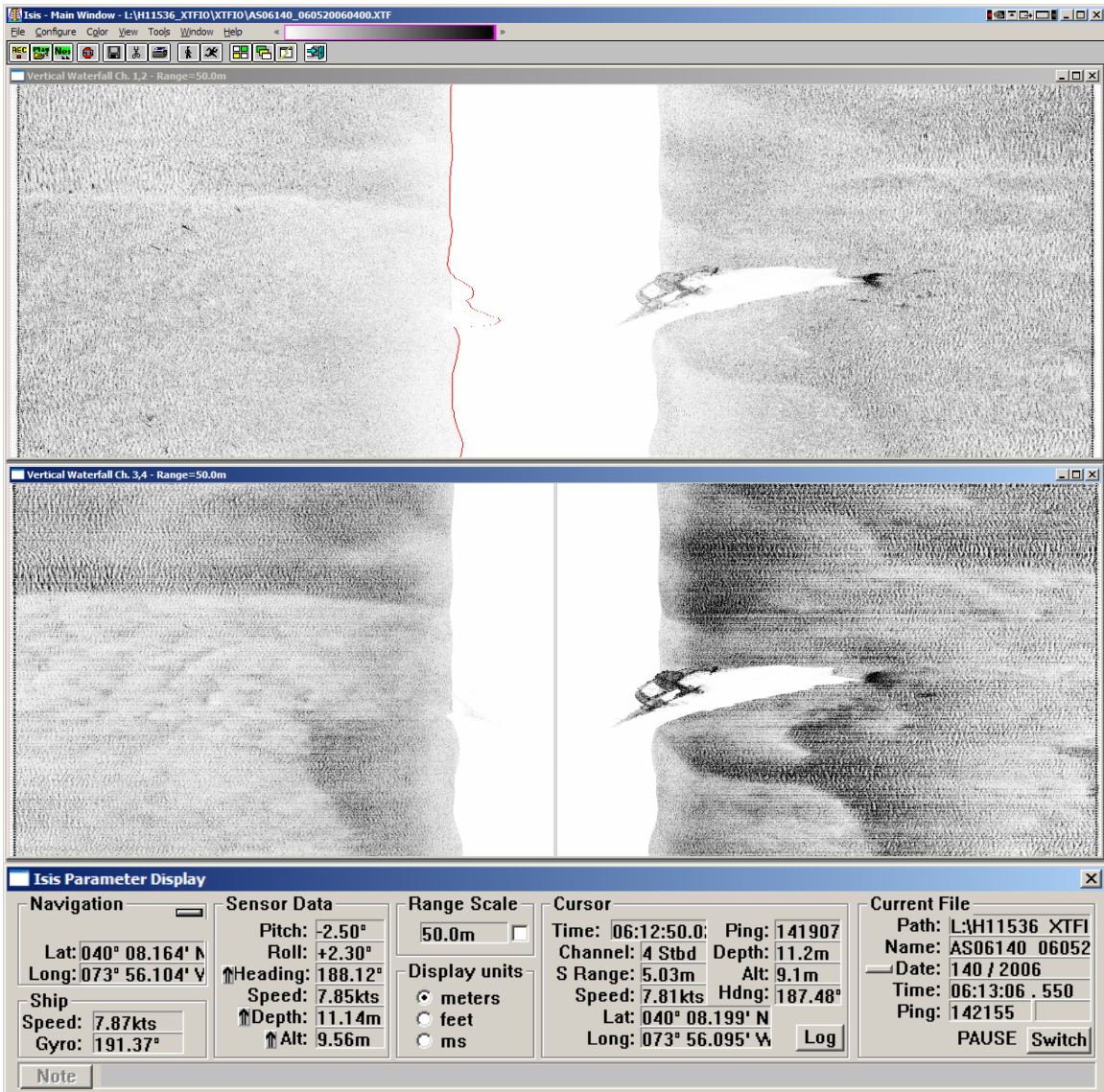


Figure 5 Side Scan Data Showing Wreck with Minimum Depth of 48 feet (MLLW) within H11536.

APPENDIX II. SURVEY FEATURE REPORT

This survey feature report consists of 213 files, including:

- One excel spreadsheet and one corresponding PDF file, titled *H11536_Multibeam_Feature_List.xls*, describing all multibeam features that can be observed in the S-57 feature file,
- One excel spreadsheet and one corresponding PDF file, titled *H11536_Side_Scan_Contact_List.xls*, describing all side scan contacts identified on H11536,
- One Microsoft Access Database .mdb file and One PDF file containing the 31 AWOIS data base records relative to H11536, and
- 207 PDF files containing feature correlator sheets, listed below,

H11536_F01.pdf	H11536_F70.pdf	H11536_F139.pdf
H11536_F02.pdf	H11536_F71.pdf	H11536_F140.pdf
H11536_F03.pdf	H11536_F72.pdf	H11536_F141.pdf
H11536_F04.pdf	H11536_F73.pdf	H11536_F142.pdf
H11536_F05.pdf	H11536_F74.pdf	H11536_F143.pdf
H11536_F06.pdf	H11536_F75.pdf	H11536_F144.pdf
H11536_F07.pdf	H11536_F76.pdf	H11536_F145.pdf
H11536_F08.pdf	H11536_F77.pdf	H11536_F146.pdf
H11536_F09.pdf	H11536_F78.pdf	H11536_F147.pdf
H11536_F10.pdf	H11536_F79.pdf	H11536_F148.pdf
H11536_F11.pdf	H11536_F80.pdf	H11536_F149.pdf
H11536_F12.pdf	H11536_F81.pdf	H11536_F150.pdf
H11536_F13.pdf	H11536_F82.pdf	H11536_F151.pdf
H11536_F14.pdf	H11536_F83.pdf	H11536_F152.pdf
H11536_F15.pdf	H11536_F84.pdf	H11536_F153.pdf
H11536_F16.pdf	H11536_F85.pdf	H11536_F154.pdf
H11536_F17.pdf	H11536_F86.pdf	H11536_F155.pdf
H11536_F18.pdf	H11536_F87.pdf	H11536_F156.pdf
H11536_F19.pdf	H11536_F88.pdf	H11536_F157.pdf
H11536_F20.pdf	H11536_F89.pdf	H11536_F158.pdf
H11536_F21.pdf	H11536_F90.pdf	H11536_F159.pdf
H11536_F22.pdf	H11536_F91.pdf	H11536_F160.pdf
H11536_F23.pdf	H11536_F92.pdf	H11536_F161.pdf
H11536_F24.pdf	H11536_F93.pdf	H11536_F162.pdf
H11536_F25.pdf	H11536_F94.pdf	H11536_F163.pdf
H11536_F26.pdf	H11536_F95.pdf	H11536_F164.pdf
H11536_F27.pdf	H11536_F96.pdf	H11536_F165.pdf
H11536_F28.pdf	H11536_F97.pdf	H11536_F166.pdf
H11536_F29.pdf	H11536_F98.pdf	H11536_F167.pdf
H11536_F30.pdf	H11536_F99.pdf	H11536_F168.pdf
H11536_F31.pdf	H11536_F100.pdf	H11536_F169.pdf

H11536_F32.pdf	H11536_F101.pdf	H11536_F170.pdf
H11536_F33.pdf	H11536_F102.pdf	H11536_F171.pdf
H11536_F34.pdf	H11536_F103.pdf	H11536_F172.pdf
H11536_F35.pdf	H11536_F104.pdf	H11536_F173.pdf
H11536_F36.pdf	H11536_F105.pdf	H11536_F174.pdf
H11536_F37.pdf	H11536_F106.pdf	H11536_F175.pdf
H11536_F38.pdf	H11536_F107.pdf	H11536_F176.pdf
H11536_F39.pdf	H11536_F108.pdf	H11536_F177.pdf
H11536_F40.pdf	H11536_F109.pdf	H11536_F178.pdf
H11536_F41.pdf	H11536_F110.pdf	H11536_F179.pdf
H11536_F42.pdf	H11536_F111.pdf	H11536_F180.pdf
H11536_F43.pdf	H11536_F112.pdf	H11536_F181.pdf
H11536_F44.pdf	H11536_F113.pdf	H11536_F182.pdf
H11536_F45.pdf	H11536_F114.pdf	H11536_F183.pdf
H11536_F46.pdf	H11536_F115.pdf	H11536_F184.pdf
H11536_F47.pdf	H11536_F116.pdf	H11536_F185.pdf
H11536_F48.pdf	H11536_F117.pdf	H11536_F186.pdf
H11536_F49.pdf	H11536_F118.pdf	H11536_F187.pdf
H11536_F50.pdf	H11536_F119.pdf	H11536_F188.pdf
H11536_F51.pdf	H11536_F120.pdf	H11536_F189.pdf
H11536_F52.pdf	H11536_F121.pdf	H11536_F190.pdf
H11536_F53.pdf	H11536_F122.pdf	H11536_F191.pdf
H11536_F54.pdf	H11536_F123.pdf	H11536_F192.pdf
H11536_F55.pdf	H11536_F124.pdf	H11536_F193.pdf
H11536_F56.pdf	H11536_F125.pdf	H11536_F194.pdf
H11536_F57.pdf	H11536_F126.pdf	H11536_F195.pdf
H11536_F58.pdf	H11536_F127.pdf	H11536_F196.pdf
H11536_F59.pdf	H11536_F128.pdf	H11536_F197.pdf
H11536_F60.pdf	H11536_F129.pdf	H11536_F198.pdf
H11536_F61.pdf	H11536_F130.pdf	H11536_F199.pdf
H11536_F62.pdf	H11536_F131.pdf	H11536_F200.pdf
H11536_F63.pdf	H11536_F132.pdf	H11536_F201.pdf
H11536_F64.pdf	H11536_F133.pdf	H11536_F202.pdf
H11536_F65.pdf	H11536_F134.pdf	H11536_F203.pdf
H11536_F66.pdf	H11536_F135.pdf	H11536_F204.pdf
H11536_F67.pdf	H11536_F136.pdf	H11536_F205.pdf
H11536_F68.pdf	H11536_F137.pdf	H11536_F206.pdf
H11536_F69.pdf	H11536_F138.pdf	H11536_F207.pdf

Feature Number	Feature Position (NAD83)		Category	Multibeam File	Ping	Beam	Depth (Meters)	Vertical Error (Meters)	Horizontal Error (Meters)	Time (UTC)
	Latitude (N)	Longitude (W)								
1	40 05 13.66	074 01 00.99	OBSTR	asmba06123.d03	9148	73	15.50	0.28	1.34	06:05:15.045
2	40 01 49.45	074 01 49.36	OBSTR	asmba06123.d03	28746	17	19.02	0.28	1.27	06:30:22.188
3	40 01 49.24	074 01 44.31	OBSTR	asmba06123.d04	12785	85	18.68	0.28	1.40	07:10:34.588
4	40 04 59.96	074 00 57.78	OBSTR	asmba06123.d04	27642	87	16.82	0.28	1.58	07:36:06.695
5	40 03 00.79	074 01 22.66	OBSTRS	asmba06123.d05	25524	53	18.02	0.28	1.49	08:40:52.310
6	40 01 47.70	074 01 39.40	OBSTR	asmba06123.d07	12550	24	19.24	0.28	1.16	11:48:47.780
7	40 01 48.33	074 01 39.20	OBSTR	asmba06123.d07	12598	26	19.10	0.28	1.23	11:48:52.756
8	40 01 22.37	073 59 24.63	OBSTRS	asmba06123.d13	18562	18	19.46	0.28	1.69	16:59:57.986
9	40 01 49.90	074 01 51.90	OBSTR	asmba06123.d15	4107	54	19.37	0.28	1.27	18:28:22.986
10	40 04 11.46	074 01 18.11	OBSTR	asmba06123.d15	13589	20	16.73	0.28	1.35	18:44:45.985
11	40 01 49.62	074 01 46.67	OBSTR	asmba06123.d16	29450	41	18.65	0.28	1.27	20:01:01.233
12	40 01 49.04	074 01 46.97	OBSTR	asmba06123.d16	29494	50	19.46	0.28	1.31	20:01:05.795
13	40 01 48.77	074 01 41.85	OBSTR	asmba06123.d17	12013	53	18.92	0.28	1.57	20:41:34.303
14	40 05 55.69	074 00 42.02	OBSTR	asmba06123.d17	28856	30	16.49	0.28	1.26	21:10:40.416
15	40 02 03.07	074 01 27.25	OBSTR	asmba06123.d19	11960	83	18.56	0.28	1.41	22:58:08.852
16	40 04 38.97	074 00 49.09	OBSTR	asmba06123.d19	22293	87	17.91	0.28	1.57	23:16:00.075
17	40 06 05.37	074 00 28.13	OBSTR	asmba06123.d19	29478	84	16.83	0.28	1.32	23:26:13.943
18	39 59 36.70	074 01 53.40	OBSTR	asmba06124.d02	1776	60	18.54	0.28	1.18	00:55:24.838
19	40 05 35.15	074 00 25.22	OBSTR	asmba06124.d02	25646	85	18.42	0.28	1.30	01:36:39.541
20	40 08 01.56	073 56 17.53	OBSTRS	asmba06124.d05	11953	28	16.72	0.28	1.36	04:31:25.844
21	40 07 59.30	073 55 55.03	OBSTRS	asmba06124.d05	13149	25	18.56	0.28	1.43	04:33:29.833
22	40 06 22.05	073 57 17.44	WRECK	asmba06124.d08	17031	19	17.84	0.28	1.57	07:30:32.790
23	40 04 03.43	074 02 07.79	OBSTR	asmba06124.d19	48021	23	10.06	0.27	1.25	15:45:34.244
24	40 07 52.37	074 01 11.88	OBSTR	asmba06124.d19	78254	23	9.97	0.27	1.27	16:14:50.998
25	40 06 37.28	074 01 34.99	OBSTR	asmba06124.d22	17887	48	10.71	0.28	1.33	18:50:20.917
26	40 03 49.28	074 02 17.89	OBSTR	asmba06124.d23	51363	39	8.67	0.27	1.58	20:20:18.275
27	40 04 02.11	074 02 14.89	OBSTR	asmba06124.d23	53672	29	8.66	0.27	1.54	20:21:54.793
28	40 01 24.09	073 54 17.44	WRECK	asmba06126.d02	11649	78	18.90	0.28	1.31	01:16:03.003
29	40 06 48.25	073 57 17.97	OBSTR	asmba06126.d08	21756	18	18.71	0.28	1.43	07:42:47.910
30	40 01 56.62	074 02 31.96	OBSTR	asmba06126.d10	24111	20	11.83	0.27	1.17	09:27:37.985
31	40 01 57.31	074 02 31.71	OBSTR	asmba06126.d10	24213	25	11.06	0.27	1.16	09:27:42.951
32	40 05 58.62	074 01 27.91	OBSTR	asmba06126.d11	18730	87	12.16	0.27	1.42	10:29:54.359
33	40 01 56.39	074 02 27.04	OBSTR	asmba06126.d11	50016	87	12.23	0.27	1.27	10:58:51.953
34	40 01 55.76	074 02 27.09	OBSTR	asmba06126.d11	50097	83	13.01	0.27	1.24	10:58:56.453
35	40 01 57.10	074 02 34.39	OBSTR	asmba06126.d12	22776	85	11.42	0.27	1.17	11:37:49.677
36	40 01 55.32	074 02 24.31	OBSTR	asmba06126.d14	20938	86	13.98	0.28	1.42	13:47:54.032
37	40 01 55.97	074 02 24.22	OBSTR	asmba06126.d14	21019	86	13.03	0.27	1.42	13:47:58.530
38	40 06 57.47	074 01 42.23	OBSTR	asmba06126.d20	13962	69	7.03	0.27	1.36	18:12:29.727
39	40 06 26.95	074 01 50.03	OBSTR	asmba06126.d20	18397	92	6.59	0.27	1.28	18:16:05.572
40	40 05 36.49	074 01 54.98	Pipe	asmba06126.d25	8318	44	8.19	0.28	1.45	19:21:43.785
41	40 01 26.92	074 02 20.56	OBSTR	asmba06126.d28	16224	19	15.70	0.28	1.2	22:45:19.016
42	40 06 33.82	074 01 13.27	OBSTR	asmba06126.d29	11475	34	14.23	0.28	1.19	23:52:33.860
43	40 01 55.53	074 02 21.74	OBSTR	asmba06127.d01	21534	70	13.59	0.28	1.17	00:24:52.974
44	40 01 54.74	074 02 16.76	OBSTR	asmba06127.d02	19905	33	14.49	0.28	1.29	01:06:02.065
45	40 03 02.27	074 01 59.44	OBSTR	asmba06127.d02	28239	82	14.83	0.28	1.31	01:15:39.351

Feature Number	Feature Position (NAD83)		Category	Multibeam File	Ping	Beam	Depth (Meters)	Vertical Error (Meters)	Horizontal Error (Meters)	Time (UTC)
	Latitude (N)	Longitude (W)								
46	40 05 43.13	074 01 20.24	OBSTR	asmba06127.d02	48054	84	12.67	0.27	1.16	01:38:31.985
47	40 01 53.93	074 02 11.83	OBSTR	asmba06127.d03	38042	64	15.47	0.28	1.39	02:44:02.787
48	40 01 53.34	074 02 11.87	OBSTR	asmba06127.d03	38099	58	16.77	0.28	1.39	02:44:06.735
49	40 01 55.20	074 02 19.16	OBSTR	asmba06127.d04	20630	87	14.00	0.28	1.46	03:25:32.658
50	40 01 54.38	074 02 14.24	OBSTR	asmba06127.d05	38332	18	15.05	0.28	1.14	05:04:43.411
51	40 01 53.77	074 02 14.54	OBSTR	asmba06127.d05	38393	26	16.02	0.28	1.13	05:04:47.637
52	40 01 52.88	074 02 09.49	OBSTR	asmba06127.d06	21117	79	17.25	0.28	1.32	05:46:48.818
53	40 01 53.54	074 02 09.22	OBSTR	asmba06127.d06	21204	84	16.00	0.28	1.43	05:46:54.842
54	40 01 52.69	074 02 04.30	OBSTR	asmba06127.d07	37949	21	16.86	0.28	1.24	07:28:08.893
55	40 01 52.06	074 02 04.35	OBSTR	asmba06127.d07	38007	19	17.92	0.28	1.27	07:28:12.911
56	40 06 10.65	074 00 54.73	OBSTR	asmba06127.d14	12791	28	14.98	0.28	1.12	12:12:29.912
57	40 01 51.79	074 01 59.16	OBSTR	asmba06127.d14	37756	85	17.55	0.28	1.16	12:42:36.750
58	40 01 51.18	074 01 59.37	OBSTR	asmba06127.d14	37797	86	18.58	0.28	1.18	12:42:41.000
59	40 01 52.50	074 02 07.09	OBSTR	asmba06127.d15	23696	34	17.51	0.28	1.21	13:28:11.487
60	40 01 53.09	074 02 06.83	OBSTR	asmba06127.d15	23771	39	16.46	0.28	1.22	13:28:16.683
61	40 02 37.16	074 01 54.98	OBSTR	asmba06127.d15	29293	88	15.57	0.28	1.46	13:34:39.184
62	40 03 02.16	074 01 42.81	OBSTR	asmba06127.d17	5012	18	11.77	0.27	1.37	15:10:24.406
63	40 01 52.24	074 02 01.72	OBSTR	asmba06127.d21	11341	53	17.25	0.28	1.34	15:43:44.061
64	40 01 51.64	074 02 02.02	OBSTR	asmba06127.d21	11404	62	18.38	0.28	1.34	15:43:48.425
65	40 01 50.80	074 01 56.91	OBSTR	asmba06127.d22	20731	48	18.68	0.28	1.24	16:25:41.819
66	40 01 51.39	074 01 56.73	OBSTR	asmba06127.d22	20779	50	17.83	0.28	1.21	16:25:46.795
67	40 06 26.87	074 00 50.17	OBSTR	asmba06127.d22	49131	16	14.60	0.28	1.47	17:04:10.450
68	40 01 50.34	074 01 54.36	OBSTR	asmba06127.d23	37590	17	19.08	0.28	1.43	18:01:56.873
69	40 04 44.06	074 01 14.27	OBSTR	asmba06127.d30	1153	24	12.15	0.27	1.44	19:34:51.034
70	40 08 25.71	073 55 54.68	OBSTRS	asmba06127.d34	16401	15	18.34	0.28	1.34	20:43:09.324
71	40 05 33.62	073 53 33.35	OBSTR	asmba06128.d06	30490	74	21.51	0.28	1.25	06:20:51.330
72	40 05 27.94	074 00 28.88	OBSTR	asmba06130.d01	11347	23	17.54	0.28	1.32	20:30:35.499
73	40 06 13.00	074 00 12.38	OBSTR	asmba06130.d02	34620	18	17.16	0.28	1.27	22:15:16.517
74	40 04 07.89	074 00 44.85	OBSTR	asmba06131.d01	8442	79	20.59	0.28	1.21	00:14:35.036
75	40 04 10.95	074 00 43.75	OBSTR	asmba06131.d01	8674	86	20.69	0.28	1.31	00:14:59.085
76	40 06 12.61	074 00 09.02	OBSTR	asmba06131.d02	9192	16	17.88	0.28	1.37	01:01:09.797
77	40 03 34.91	074 00 51.73	OBSTR	asmba06131.d04	23076	42	21.66	0.28	1.19	03:36:51.932
78	40 04 20.30	074 00 24.23	OBSTR	asmba06131.d08	24530	88	20.77	0.28	1.48	07:27:21.062
79	40 04 29.17	074 00 18.03	OBSTR	asmba06131.d09	20411	48	21.58	0.28	1.81	08:27:39.068
80	40 03 40.22	074 00 29.10	WRECK	asmba06131.d09	23732	13	15.55	0.28	1.79	08:33:23.357
81	39 59 54.61	073 55 12.95	OBSTR	asmba06133.d04	40302	63	19.93	0.28	1.37	05:22:26.910
82	40 08 30.38	073 53 12.54	OBSTR	asmba06133.d08	2144	39	22.36	0.28	1.38	09:41:37.614
83	40 06 12.88	073 53 47.80	OBSTR	asmba06133.d08	12014	87	21.93	0.28	1.43	09:58:40.836
84	40 07 21.21	073 53 41.50	OBSTR	asmba06133.d13	41702	63	22.51	0.28	1.25	17:30:53.029
85	40 07 45.96	073 53 36.66	OBSTR	asmba06133.d16	6368	27	23.10	0.28	1.31	20:41:04.501
86	40 02 47.52	073 55 58.76	OBSTR	asmba06137.d04	28234	23	22.17	0.28	1.41	02:47:20.543
87	40 08 39.55	073 54 56.95	OBSTR	asmba06138.d03	2709	41	13.45	0.28	1.24	05:15:27.709
88	40 06 30.61	073 55 33.50	OBSTR	asmba06138.d04	35774	74	18.82	0.28	1.44	07:30:31.178
89	40 08 52.86	073 55 01.29	OBSTR	asmba06138.d07	2191	76	17.02	0.28	1.22	10:31:02.879
90	40 05 12.87	073 55 45.92	OBSTR	asmba06138.d08	28141	62	21.72	0.28	1.27	12:39:23.206

Feature Number	Feature Position (NAD83)		Category	Multibeam File	Ping	Beam	Depth (Meters)	Vertical Error (Meters)	Horizontal Error (Meters)	Time (UTC)
	Latitude (N)	Longitude (W)								
91	40 06 01.11	073 56 09.30	OBSTRS	asmba06139.d05	32968	27	20.55	0.28	1.29	05:02:40.062
92	40 08 47.77	073 55 27.74	OBSTR	asmba06139.d05	45483	51	18.87	0.28	1.25	05:24:17.492
93	40 08 54.69	073 55 17.59	OBSTR	asmba06139.d06	1596	60	18.96	0.28	1.24	05:29:30.679
94	40 05 52.95	073 56 13.43	OBSTR	asmba06139.d08	14483	84	21.85	0.28	1.3	08:32:12.537
95	40 08 51.49	073 55 24.58	OBSTR	asmba06139.d10	2466	16	18.42	0.28	1.35	10:49:33.197
96	40 05 58.15	073 56 09.06	OBSTRS	asmba06139.d10	15023	89	21.17	0.29	1.39	11:11:15.085
97	40 08 12.15	073 55 45.09	OBSTRS	asmba06139.d12	5253	50	18.19	0.28	1.26	13:33:29.160
98	40 05 59.81	073 56 21.85	OBSTR	asmba06139.d13	30306	81	22.03	0.28	1.32	15:42:01.583
99	40 07 56.02	073 55 53.61	WRECK	asmba06139.d13	40263	78	17.06	0.28	1.66	15:55:51.580
100	40 08 12.07	073 55 49.33	OBSTRS	asmba06139.d13	41372	87	17.59	0.28	1.66	15:57:46.550
101	40 08 21.63	073 55 47.52	OBSTRS	asmba06139.d13	42025	69	17.85	0.28	1.63	15:58:54.247
102	40 08 37.83	073 55 44.63	OBSTRS	asmba06139.d13	43235	19	15.72	0.28	1.61	16:00:49.175
103	40 08 41.90	073 55 34.19	OBSTR	asmba06139.d14	3308	46	16.87	0.28	1.51	16:10:00.223
104	40 05 58.23	073 56 13.95	OBSTRS	asmba06139.d14	15897	29	21.22	0.28	1.22	16:31:45.326
105	40 05 59.27	073 56 18.75	OBSTR	asmba06139.d15	30961	76	22.51	0.28	1.42	18:22:53.273
106	40 07 17.21	073 56 04.71	OBSTR	asmba06139.d16	10322	16	15.76	0.28	1.25	19:02:46.808
107	40 08 39.89	073 55 36.01	OBSTR	asmba06139.d17	44395	78	16.23	0.28	1.42	21:28:00.271
108	40 08 42.80	073 55 41.24	OBSTR	asmba06139.d18	3520	64	17.17	0.28	1.4	21:37:06.196
109	40 08 33.59	073 55 42.63	OBSTRS	asmba06139.d18	4197	21	18.39	0.28	1.42	21:38:16.382
110	40 08 10.07	073 55 49.18	WRECK	asmba06139.d18	5968	62	16.89	0.28	1.38	21:41:19.981
111	40 05 56.85	073 56 22.28	OBSTR	asmba06139.d18	16060	72	21.31	0.28	1.62	21:58:46.218
112	40 07 56.05	073 55 56.83	WRECK	asmba06140.d01	4077	85	16.77	0.28	1.37	00:07:03.506
113	40 08 51.17	073 55 49.41	WRECK	asmba06140.d02	1965	57	20.11	0.28	1.41	00:19:34.802
114	40 08 40.08	073 55 54.40	OBSTR	asmba06140.d05	48248	22	17.44	0.28	1.34	06:00:33.657
115	40 08 11.40	073 56 06.22	WRECK	asmba06140.d06	5160	70	14.56	0.28	1.48	06:12:41.421
116	40 07 55.21	073 56 09.82	WRECK	asmba06140.d06	6360	49	18.15	0.28	1.49	06:14:45.822
117	40 07 54.62	073 56 05.78	WRECK	asmba06140.d08	6112	19	17.13	0.28	1.22	08:54:44.316
118	40 07 26.00	073 56 13.12	WRECK	asmba06140.d08	8260	26	16.05	0.28	1.44	08:58:26.999
119	40 07 44.43	073 56 24.75	WRECK	asmba06140.d11	39271	39	18.47	0.28	1.26	13:53:34.282
120	40 07 45.78	073 56 20.53	WRECK	asmba06140.d13	38768	67	14.55	0.28	1.22	16:35:35.695
121	40 07 30.78	073 56 29.38	WRECK	asmba06140.d14	9002	37	11.92	0.28	1.22	17:01:21.416
122	40 02 01.75	073 57 57.23	WRECK	asmba06140.d18	31646	53	20.54	0.28	1.21	23:04:41.449
123	40 07 35.94	073 56 41.41	OBSTRS	asmba06141.d04	7442	20	16.41	0.28	1.25	03:47:51.608
124	40 07 21.70	073 56 46.03	WRECK	asmba06141.d04	8492	73	15.65	0.28	1.18	03:49:40.460
125	40 06 28.07	073 56 58.28	OBSTR	asmba06141.d04	12398	24	14.74	0.28	1.22	03:56:25.397
126	40 06 33.11	073 56 49.34	OBSTRS	asmba06141.d05	33617	31	15.25	0.28	1.25	05:51:31.371
127	40 06 27.19	073 57 01.47	OBSTR	asmba06141.d07	32742	17	14.82	0.28	1.22	08:27:04.572
128	40 06 58.80	073 56 52.62	WRECK	asmba06141.d07	34944	74	14.69	0.28	1.19	08:30:52.853
129	40 07 17.22	073 56 52.62	WRECK	asmba06141.d08	8756	16	18.10	0.28	1.61	09:01:35.482
130	40 07 07.65	073 56 55.06	WRECK	asmba06141.d08	9487	16	17.45	0.28	1.56	09:02:51.266
131	40 01 55.55	073 58 16.79	WRECK	asmba06141.d09	13359	83	20.89	0.28	1.26	10:29:10.512
132	40 06 53.21	073 57 05.27	OBSTRS	asmba06141.d09	33987	25	16.61	0.28	1.33	11:04:49.017
133	40 07 31.15	073 56 46.24	OBSTRS	asmba06141.d10	12213	24	15.48	0.28	1.17	11:41:39.778
134	40 06 09.43	073 57 11.75	WRECK	asmba06141.d11	30484	65	15.06	0.28	1.29	13:39:59.862
135	40 01 49.09	073 59 40.42	WRECK	asmba06143.d10	21468	26	18.20	0.28	1.31	13:47:34.341

Feature Number	Feature Position (NAD83)		Category	Multibeam File	Ping	Beam	Depth (Meters)	Vertical Error (Meters)	Horizontal Error (Meters)	Time (UTC)
	Latitude (N)	Longitude (W)								
136	40 03 57.90	073 59 38.30	OBSTRS	asmba06143.d17	18826	81	17.09	0.28	1.3	20:54:30.334
137	40 04 33.65	073 59 38.15	OBSTR	asmba06143.d18	27313	25	19.56	0.28	1.16	22:20:19.057
138	40 01 05.67	074 00 23.64	Disposal_Mound	asmba06143.d19	28575	78	15.03	0.28	1.22	23:41:05.456
139	40 00 59.23	074 00 24.50	Disposal_Mound	asmba06143.d19	28976	33	14.10	0.28	1.22	23:41:50.264
140	40 03 13.05	073 59 36.97	OBSTRS	asmba06144.d03	18733	33	21.45	0.28	1.4	03:09:10.062
141	40 03 14.99	073 59 37.01	OBSTR	asmba06144.d03	18858	17	19.98	0.28	1.42	03:09:24.030
142	40 03 23.46	073 59 33.50	WRECK	asmba06144.d03	19437	81	14.49	0.28	1.37	03:10:28.726
143	40 03 13.27	073 59 39.80	WRECK	asmba06144.d06	19276	59	19.99	0.28	1.47	05:54:48.566
144	40 03 37.42	073 59 34.02	OBSTRS	asmba06144.d06	20846	51	20.52	0.28	1.49	05:57:43.995
145	40 03 16.81	073 59 34.19	OBSTRS	asmba06144.d07	27453	64	19.88	0.28	1.88	07:21:09.724
146	40 00 35.43	074 00 13.51	WRECK	asmba06144.d07	38264	57	19.76	0.28	1.62	07:41:17.712
147	40 03 35.49	073 59 23.58	WRECK	asmba06144.d52	21947	84	22.90	0.28	1.53	20:57:29.656
148	40 03 33.94	073 59 17.87	WRECK	asmba06144.d53	18386	44	21.36	0.28	1.25	22:06:08.277
149	40 08 31.14	073 58 13.83	WRECK	asmba06144.d54	3036	71	14.38	0.28	1.21	22:48:13.084
150	40 06 54.87	073 58 32.05	OBSTR	asmba06145.d01	31911	45	18.15	0.28	1.13	00:59:26.178
151	40 07 20.45	073 58 24.90	OBSTR	asmba06145.d01	33622	82	19.28	0.28	1.17	01:02:37.361
152	40 00 47.31	073 59 58.03	WRECK	asmba06145.d02	35756	73	21.44	0.28	1.36	02:20:27.343
153	40 02 50.59	073 59 34.60	WRECK	asmba06145.d03	16703	79	17.52	0.28	1.38	03:03:12.041
154	40 02 28.29	073 59 36.22	WRECK	asmba06145.d04	27401	84	17.06	0.28	1.31	04:34:15.563
155	40 02 47.69	073 59 19.87	WRECK	asmba06145.d06	25781	24	16.78	0.28	1.42	07:00:51.940
156	40 03 11.47	073 59 17.77	WRECK	asmba06145.d08	23582	37	18.33	0.28	1.39	09:26:16.692
157	40 03 12.79	073 59 16.45	WRECK	asmba06145.d11	17137	27	15.40	0.28	1.25	12:56:13.910
158	40 03 05.55	073 59 02.29	WRECK	asmba06145.d14	26605	45	14.00	0.28	1.39	16:52:01.543
159	40 03 59.32	073 58 42.93	OBSTR	asmba06145.d15	19194	86	21.62	0.28	1.44	17:59:25.970
160	40 03 26.92	073 58 59.85	WRECK	asmba06145.d16	24278	21	17.11	0.28	1.55	19:17:18.809
161	40 06 33.09	073 58 08.65	WRECK	asmba06145.d17	27759	91	15.96	0.28	1.33	20:44:04.746
162	40 00 34.80	073 59 32.72	WRECK	asmba06145.d18	36571	69	18.09	0.28	1.15	22:07:50.561
163	40 04 13.30	073 58 46.52	OBSTR	asmba06145.d19	20496	81	21.70	0.28	1.35	22:57:34.161
164	40 04 36.90	073 58 41.19	OBSTR	asmba06145.d19	21939	68	21.39	0.28	1.36	23:00:15.396
165	40 04 32.88	073 58 31.93	WRECK	asmba06146.d02	21332	69	19.50	0.28	1.92	01:28:07.420
166	40 04 37.45	073 58 31.06	WRECK	asmba06146.d02	21613	61	18.37	0.28	1.92	01:28:38.820
167	40 01 18.98	073 59 15.18	OBSTRS	asmba06146.d03	32927	74	19.39	0.28	1.46	03:00:23.425
168	40 06 41.71	073 57 50.72	OBSTRS	asmba06146.d04	31403	37	17.24	0.28	1.14	04:15:39.498
169	40 05 53.47	073 58 00.12	OBSTR	asmba06146.d07	18771	32	21.89	0.28	1.69	07:37:54.238
170	40 04 35.23	073 58 22.50	OBSTR	asmba06146.d09	20369	24	20.33	0.28	1.19	10:21:23.958
171	40 01 33.38	073 58 58.30	WRECK	asmba06146.d11	31016	84	19.69	0.28	1.13	13:13:40.852
172	40 06 23.57	073 57 05.77	WRECK	asmba06146.d17	14117	83	15.87	0.28	1.18	20:14:14.883
173	40 06 29.26	073 57 13.69	WRECK	asmba06146.d19	14324	36	15.22	0.28	1.34	22:50:22.814
174	40 05 40.76	073 57 26.26	OBSTR	asmba06146.d19	17799	70	19.89	0.28	1.29	22:56:23.068
175	40 06 16.73	073 57 27.10	WRECK	asmba06147.d02	15025	39	18.23	0.28	1.57	01:31:00.912
176	40 03 58.75	073 57 58.42	OBSTR	asmba06147.d04	25678	77	20.80	0.28	1.34	04:29:01.929
177	39 59 13.71	073 59 25.19	OBSTR	asmba06147.d09	2464	25	19.50	0.28	1.26	10:30:47.630
178	40 03 54.80	074 00 19.71	OBSTR	asmba06148.d11	23592	57	20.90	0.28	1.2	10:07:23.430
179	40 05 53.15	073 59 55.07	OBSTR	asmba06148.d12	30022	83	17.04	0.28	1.15	11:32:04.816
180	40 06 00.06	073 59 53.29	OBSTR	asmba06148.d17	13832	86	18.99	0.28	1.54	16:36:13.407

Feature Number	Feature Position (NAD83)		Category	Multibeam File	Ping	Beam	Depth (Meters)	Vertical Error (Meters)	Horizontal Error (Meters)	Time (UTC)
	Latitude (N)	Longitude (W)								
181	40 05 03.02	074 01 17.46	OBSTR	asmba06148.d32	7836	25	14.83	0.28	1.32	20:28:15.719
182	40 03 01.67	074 01 40.98	OBSTR	asmba06149.d13	4903	20	8.76	0.27	1.24	10:41:01.756
183	40 06 57.63	073 57 33.50	WRECK	asmba06250.d05	3838	28	13.93	0.28	1.28	02:23:00.808
184	40 00 55.57	073 57 28.10	OBSTR	asmba06250.d13	6447	71	20.22	0.28	1.19	04:33:49.307
185	40 01 17.38	074 02 40.08	WRECK	asmba06250.d39	11280	31	10.59	0.28	1.33	11:15:05.820
186	40 01 48.63	074 01 44.62	OBSTR	asmba06250.d40	8768	29	19.50	0.28	1.34	11:27:54.276
187	40 01 50.07	074 01 49.19	OBSTR	asmba06250.d40	9025	63	18.51	0.28	1.32	11:28:20.920
188	40 01 50.51	074 01 51.81	OBSTR	asmba06250.d40	9161	61	18.43	0.28	1.3	11:28:35.020
189	40 01 54.13	074 02 16.96	OBSTR	asmba06250.d40	10449	23	15.46	0.28	1.3	11:30:48.546
190	40 01 54.56	074 02 19.45	OBSTR	asmba06250.d40	10580	23	14.75	0.28	1.3	11:31:02.128
191	40 01 56.19	074 02 29.30	OBSTR	asmba06250.d40	11084	16	12.49	0.27	1.31	11:31:54.375
192	40 01 56.83	074 02 29.04	OBSTR	asmba06250.d40	11085	70	11.95	0.28	1.29	11:31:54.479
193	40 01 57.71	074 02 34.07	OBSTR	asmba06250.d40	11342	73	10.64	0.28	1.34	11:32:21.123
194	40 01 58.77	074 02 42.49	Pipe	asmba06250.d40	12025	35	8.89	0.28	1.27	11:33:05.425
195	40 01 50.92	074 01 54.13	OBSTR	asmba06250.d40	19481	60	18.09	0.28	1.72	11:40:21.808
196	40 01 48.04	074 01 39.26	Pipe	asmba06250.d41	1323	79	18.51	0.28	1.74	11:45:27.220
197	40 01 48.23	074 01 42.03	OBSTR	asmba06250.d41	1463	67	19.61	0.28	1.7	11:45:41.734
198	40 01 55.01	074 02 21.90	OBSTR	asmba06250.d41	3544	64	14.64	0.28	1.69	11:49:17.471
199	40 06 00.23	074 01 20.95	OBSTR	asmba06250.d46	19163	34	13.72	0.28	1.22	13:39:39.496
200	40 06 06.08	074 01 38.16	OBSTR	asmba06250.d47	3127	63	11.38	0.28	1.21	13:51:13.089
201	40 07 15.91	074 01 25.54	OBSTR	asmba06250.d48	16357	52	9.12	0.28	1.17	14:13:23.921
202	40 07 30.62	074 01 07.24	OBSTR	asmba06250.d50	4560	15	13.56	0.27	1.45	14:23:48.450
203	40 08 00.21	074 01 08.38	OBSTR	asmba06250.d52	4097	36	11.04	0.28	1.42	14:35:51.243
204	40 05 36.68	074 01 57.78	Pipe	asmba06258.d40	6362	17	7.53	0.27	1.19	16:11:09.652
205	40 04 45.29	074 01 13.20	OBSTR	asmba06127.d25	642	82	13.26	0.28	1.37	19:13:32.952
206	40 04 44.35	074 01 12.48	OBSTR	asmba06127.d30	1340	71	12.79	0.28	1.44	19:35:03.986
207	40 04 44.00	074 01 12.97	OBSTR	asmba06127.d30	1263	75	14.30	0.28	1.5	19:34:58.652

Year / JD	Time (UTC)	Contact Position (NAD83)		Contact Number	Range (M)	Fish Altitude (M)	Range Scale (M)	Shadow Length (M)	Contact Length (M)	Contact Width (M)	Contact Height (M)	Feature Number	Depth (M)	Type
		Latitude (N)	Longitude (W)											
2006/123	06:05:26.50	40 05 13.37	074 01 00.44	123060526	9.59	5.88	50	1.60	1.72	1.32	0.88	1	15.5	DONE
2006/123	06:30:34.05	40 01 49.45	074 01 49.40	123063033	-23.44	8.26	50	2.57	2.21	2.91	0.77	2	19.02	DONE
2006/123	07:10:42.60	40 01 48.67	074 01 44.65	123071042	19.53	7.98	50	1.98	4.22	3.26	0.68	186	19.5	DONE
2006/123	07:36:16.21	40 04 59.85	074 00 57.89	123073616	19.06	8.39	50	2.65	7.67	6.44	0.82	4	16.82	DONE
2006/123	08:25:49.71	40 05 03.12	074 00 51.62	123082549	-28.72	9.84	50	2.78	1.44	0.33	0.90	0	0	NONSIG
2006/123	08:41:05.38	40 03 00.59	074 01 23.04	123084105	12.09	9.03	50	1.67	6.45	4.59	1.64	5	18.02	DONE
2006/123	08:50:02.59	40 01 47.81	074 01 39.31	123085002	-28.31	9.25	50	2.92	3.00	2.79	0.84	6	19.23	DONE
2006/123	10:36:18.52	40 06 05.20	074 00 28.17	123103618	23.44	8.63	50	3.55	1.97	1.24	1.15	17	16.82	DONE
2006/123	10:47:12.26	40 04 38.95	074 00 49.06	123104712	18.19	9.20	50	2.40	1.37	0.90	1.20	16	17.91	DONE
2006/123	11:06:49.74	40 02 03.08	074 01 27.13	123110649	18.12	7.71	50	2.31	1.60	0.76	0.92	15	18.55	DONE
2006/123	11:48:59.57	40 01 47.76	074 01 39.31	123114859	-15.88	8.37	50	1.67	3.90	2.90	0.94	6	19.23	DONE
2006/123	11:58:26.24	40 03 00.39	074 01 22.68	123115826	-40.5	8.83	50	3.87	4.98	0.67	0.77	5	18.02	DONE
2006/123	12:14:38.92	40 05 03.01	074 00 51.66	123121438	-16.88	8.74	50	1.61	2.36	0.99	0.83	0	0	NONSIG
2006/123	12:18:16.32	40 05 30.89	074 00 43.70	123121816	14.06	8.80	50	4.07	2.19	1.98	2.03	0	0	NONSIG
2006/123	12:57:17.81	40 05 55.51	074 00 42.11	123125717	-31.56	9.54	50	3.23	1.59	1.54	0.87	14	16.48	DONE
2006/123	13:00:19.68	40 05 31.94	074 00 48.39	123130019	-30.56	9.92	50	2.75	5.19	1.55	0.82	0	0	NONSIG
2006/123	13:04:29.68	40 04 59.90	074 00 57.84	123130429	20.84	10.08	50	2.21	7.16	4.01	0.96	4	16.82	DONE
2006/123	13:28:09.90	40 01 48.60	074 01 44.54	123132809	21.53	9.80	50	2.01	4.20	2.71	0.78	186	19.5	DONE
2006/123	14:08:17.79	40 01 49.13	074 01 46.98	123140817	40.72	9.16	50	2.88	2.86	2.41	0.58	12	19.46	DONE
2006/123	14:08:18.46	40 01 49.42	074 01 49.39	123140818	-20.38	9.16	50	2.43	3.47	2.78	0.95	2	19.02	DONE
2006/123	14:08:22.79	40 01 49.65	074 01 46.75	123140822	42.59	7.89	50	3.68	2.06	1.27	0.62	11	18.64	DONE
2006/123	14:08:23.52	40 01 50.06	074 01 49.24	123140823	-20.12	9.16	50	0.84	2.45	2.78	0.30	187	18.51	DONE
2006/123	15:25:31.90	40 04 44.35	074 01 12.39	123152531	31.25	9.09	50	15.73	0.56	0.92	3.06	206	12.79	DONE
2006/123	15:29:38.37	40 04 11.47	074 01 18.05	123152938	-27.81	9.38	50	3.88	1.44	1.00	1.17	10	16.73	DONE
2006/123	15:47:40.19	40 01 50.53	074 01 51.85	123154740	-40.22	8.64	50	2.65	3.44	2.94	0.50	188	18.43	DONE
2006/123	15:47:44.39	40 01 50.25	074 01 54.37	123154744	20.12	9.48	50	2.05	2.10	2.68	0.87	68	19.07	DONE
2006/123	15:47:45.32	40 01 49.87	074 01 52.01	123154745	-40.5	9.48	50	2.85	2.61	2.99	0.59	9	19.37	DONE
2006/123	18:44:56.81	40 04 11.49	074 01 18.08	123184456	-17.97	7.85	50	3.51	1.15	0.52	1.36	10	16.73	DONE
2006/123	20:01:12.19	40 01 49.64	074 01 46.67	123200112	-9.94	8.46	50	0.76	0.11	2.97	0.70	11	18.64	DONE
2006/123	21:07:57.76	40 05 32.01	074 00 48.21	123210757	-22.06	8.56	50	3.00	2.24	0.96	1.07	0	0	NONSIG
2006/123	21:10:49.76	40 05 55.66	074 00 42.05	123211049	-13.47	8.21	50	1.56	1.21	0.55	1.03	14	16.48	DONE
2006/123	21:48:32.98	40 05 30.26	074 00 42.40	123214832	-11.75	7.88	50	0.86	0.89	0.51	0.67	0	0	NONSIG
2006/123	22:58:19.88	40 02 03.11	074 01 27.17	123225819	22.75	7.62	50	2.73	1.46	0.27	0.85	15	18.55	DONE
2006/123	23:16:10.89	40 04 39.00	074 00 49.10	123231610	23.34	7.55	50	5.10	0.49	0.83	1.39	16	17.91	DONE
2006/123	23:26:24.56	40 06 05.37	074 00 28.15	123232624	18.16	6.96	50	4.28	1.44	1.01	1.34	17	16.82	DONE
2006/124	01:35:58.11	40 05 27.93	074 00 28.88	124013558	-28.5	6.17	50	4.11	2.77	1.43	0.76	72	17.54	DONE
2006/124	01:36:51.37	40 05 35.20	074 00 25.25	124013651	18.41	6.95	50	4.89	2.05	1.38	1.43	19	18.42	DONE
2006/124	01:37:17.44	40 05 39.13	074 00 26.34	124013717	-32.75	7.00	50	5.32	2.10	1.15	0.96	0	0	NONSIG
2006/124	05:06:12.63	40 06 17.43	073 52 46.07	124050612	-21.78	8.23	50	2.70	5.72	1.79	0.89	0	0	NONSIG
2006/124	06:32:55.21	40 02 28.89	073 53 39.15	124063255	-26.41	7.69	50	2.47	1.79	1.01	0.66	0	0	NONSIG
2006/124	09:07:41.84	40 02 28.56	073 53 38.30	124090741	43.72	8.19	50	4.98	2.64	0.80	0.84	0	0	NONSIG
2006/124	11:16:38.25	40 02 29.78	073 53 39.07	124111638	-14.53	7.57	50	1.79	1.85	0.37	0.93	0	0	NONSIG
2006/124	11:16:43.58	40 02 29.05	073 53 39.39	124111643	-12.44	7.53	50	1.15	0.99	0.24	0.77	0	0	NONSIG
2006/124	11:16:45.98	40 02 28.67	073 53 38.31	124111645	-37.22	7.57	50	4.65	0.90	2.36	0.84	0	0	NONSIG
2006/124	15:45:42.40	40 04 03.50	074 02 07.74	124154542	-10.19	6.16	50	1.55	1.68	0.35	0.95	23	10.06	DONE
2006/124	16:01:34.74	40 06 06.20	074 01 38.15	124160134	-18.03	7.06	50	1.85	1.55	0.41	0.70	200	11.38	DONE
2006/124	16:14:58.95	40 07 52.43	074 01 11.86	124161458	-9.84	5.72	50	1.82	1.78	0.46	1.01	24	9.97	DONE
2006/124	16:36:35.96	40 06 06.06	074 01 38.17	124163635	-25.84	5.75	50	2.40	1.86	0.55	0.49	200	11.38	DONE
2006/124	16:51:19.84	40 04 03.38	074 02 07.78	124165119	-34.31	5.78	50	3.26	1.74	0.63	0.50	23	10.06	DONE
2006/124	18:45:38.23	40 07 15.94	074 01 25.70	124184538	6.53	6.33	50	0.00	1.99	1.97	0.00	201	9.11	DONE
2006/124	20:46:18.43	40 07 16.22	074 01 25.70	124204618	34.5	4.72	50	6.20	4.81	1.42	0.70	201	9.11	DONE
2006/126	01:16:16.97	40 01 24.19	073 54 17.27	126011616	19.62	9.06	50	11.14	3.69	2.51	3.49	28	18.89	DONE
2006/126	05:17:11.16	40 01 24.26	073 54 17.47	126051711	28.22	10.18	50	16.35	7.04	1.88	3.87	28	18.89	DONE
2006/126	09:23:08.54	40 01 17.42	074 02 39.97	126092308	27.28	6.66	50	6.39	4.91	5.14	1.12	185	10.59	DONE

Year / JD	Time (UTC)	Contact Position (NAD83)		Contact Number	Range (M)	Fish Altitude (M)	Range Scale (M)	Shadow Length (M)	Contact Length (M)	Contact Width (M)	Contact Height (M)	Feature Number	Depth (M)	Type
		Latitude (N)	Longitude (W)											
2006/126	09:27:50.28	40 01 57.30	074 02 31.68	126092750	-10.72	6.78	50	1.82	3.91	1.93	1.19	31	11.06	DONE
2006/126	09:39:40.16	40 03 36.37	074 02 06.61	126093940	14.69	7.58	50	1.07	2.96	0.95	0.59	0	0	NONSIG
2006/126	10:30:24.48	40 05 55.47	074 01 28.29	126103024	8	6.31	50	0.91	1.88	1.07	0.82	0	0	NONSIG
2006/126	10:59:04.31	40 01 55.73	074 02 27.16	126105904	14.66	8.03	50	2.19	3.20	1.95	1.05	34	13.01	DONE
2006/126	11:37:56.29	40 01 57.09	074 02 34.33	126113756	13.69	6.89	50	1.86	5.07	2.15	0.80	35	11.42	DONE
2006/126	13:09:11.45	40 01 56.13	074 02 29.34	126130911	-15.88	6.73	50	2.32	3.15	2.35	0.81	191	12.49	DONE
2006/126	13:13:57.65	40 01 17.27	074 02 39.99	126131357	14.19	6.22	50	6.75	4.30	4.21	2.23	185	10.59	DONE
2006/126	13:48:02.55	40 01 55.39	074 02 24.24	126134802	17.53	6.82	50	2.66	2.98	2.20	0.85	36	13.98	DONE
2006/126	15:20:38.65	40 01 57.20	074 02 31.80	126152038	-31.84	6.28	50	4.07	2.60	2.52	0.66	31	11.06	DONE
2006/126	15:59:17.82	40 01 56.16	074 02 29.18	126155917	-24.78	6.16	50	4.01	3.44	2.66	0.80	191	12.49	DONE
2006/126	15:59:18.09	40 01 55.78	074 02 26.96	126155918	30.56	6.15	50	4.83	3.56	2.68	0.79	34	13.01	DONE
2006/126	17:42:02.26	40 06 11.81	074 01 47.55	126174202	-13.66	4.03	50	1.66	2.91	0.85	0.43	0	0	NONSIG
2006/126	17:42:11.99	40 06 10.50	074 01 48.72	126174211	8.19	3.71	50	1.16	4.27	1.73	0.42	0	0	NONSIG
2006/126	18:16:12.43	40 06 26.83	074 01 50.00	126181612	8.66	3.51	50	1.46	1.63	2.70	0.54	39	6.59	DONE
2006/126	18:26:02.30	40 06 27.11	074 01 50.12	126182602	26.81	3.70	50	1.39	3.29	2.11	0.17	39	6.59	DONE
2006/126	19:34:23.17	40 03 48.01	074 02 21.22	126193423	-8.44	4.63	50	1.11	1.06	1.47	0.53	0	0	NONSIG
2006/126	19:34:32.57	40 03 46.75	074 02 22.03	126193432	6.47	4.76	50	1.55	1.06	1.27	0.99	0	0	NONSIG
2006/126	20:30:14.03	40 01 56.06	074 02 24.08	126203014	-24.84	6.44	50	3.28	3.61	2.33	0.71	37	13.03	DONE
2006/126	22:08:52.59	40 01 54.47	074 02 19.43	126220852	27.31	8.64	50	4.49	3.96	2.53	1.16	190	14.75	DONE
2006/126	22:49:06.17	40 01 53.85	074 02 14.47	126224906	-28.12	8.31	50	2.53	4.17	2.75	0.66	51	16.02	DONE
2006/126	23:56:38.17	40 06 00.19	074 01 20.97	126235638	-18.66	7.31	50	1.74	1.16	0.82	0.64	199	13.72	DONE
2006/126	23:59:25.38	40 05 36.36	074 01 27.33	126235925	-9.66	7.44	50	1.23	2.53	1.00	1.10	0	0	NONSIG
2006/127	00:25:00.87	40 01 55.48	074 02 21.71	127002500	9.03	7.63	50	1.50	2.85	3.37	1.05	43	13.59	DONE
2006/127	00:25:05.20	40 01 54.89	074 02 21.95	127002505	11.84	9.17	50	1.51	3.10	1.87	1.25	198	14.64	DONE
2006/127	00:31:38.41	40 00 57.78	074 02 33.67	127003138	-45.03	8.07	50	3.52	2.24	1.49	0.57	0	0	NONSIG
2006/127	01:06:07.45	40 01 54.13	074 02 16.94	127010607	-11.62	7.97	50	1.57	3.28	2.35	1.02	189	15.46	DONE
2006/127	01:06:12.45	40 01 54.72	074 02 16.64	127010612	-8.22	6.63	50	1.47	3.09	2.81	1.01	44	14.49	DONE
2006/127	01:15:49.92	40 03 02.28	074 01 59.38	127011549	15.69	6.72	50	1.37	2.90	1.14	0.55	45	14.83	DONE
2006/127	01:38:41.88	40 05 43.14	074 01 20.21	127013841	13.34	6.82	50	2.99	1.71	0.65	1.34	46	12.67	DONE
2006/127	01:39:58.35	40 05 52.20	074 01 18.25	127013958	10.09	7.82	50	0.98	1.05	0.60	0.97	0	0	NONSIG
2006/127	02:16:39.86	40 05 56.20	074 01 11.65	127021639	-18.94	6.72	50	1.88	1.18	2.24	0.58	0	0	NONSIG
2006/127	02:44:11.42	40 01 53.90	074 02 11.77	127024411	8.59	7.82	50	1.83	3.53	4.16	1.23	47	15.47	DONE
2006/127	02:44:15.75	40 01 53.25	074 02 11.85	127024415	8.91	8.71	50	1.93	4.25	3.34	1.64	48	16.77	DONE
2006/127	03:25:38.00	40 01 55.14	074 02 21.75	127032537	-45.56	7.99	50	2.66	2.87	1.14	0.44	198	14.64	DONE
2006/127	03:25:37.26	40 01 54.58	074 02 19.39	127032538	16.03	8.07	50	2.64	2.65	1.23	1.20	190	14.75	DONE
2006/127	03:25:42.53	40 01 55.25	074 02 19.14	127032542	17.31	6.91	50	4.74	2.87	0.44	1.54	49	14	DONE
2006/127	03:25:43.33	40 01 55.60	074 02 21.55	127032543	-42.81	6.98	50	5.97	4.38	1.30	0.84	43	13.59	DONE
2006/127	04:01:26.57	40 06 00.28	074 01 20.80	127040126	-19.47	7.44	50	1.38	1.81	0.61	0.51	199	13.72	DONE
2006/127	04:38:56.88	40 05 43.18	074 01 20.21	127043856	27.94	7.98	50	6.84	1.61	1.30	1.54	46	12.67	DONE
2006/127	04:57:08.96	40 03 02.26	074 01 59.52	127045708	28.06	8.33	50	2.99	5.99	0.98	0.81	45	14.83	DONE
2006/127	05:04:50.97	40 01 54.81	074 02 16.73	127050450	44	8.54	50	5.12	3.79	0.32	0.90	44	14.49	DONE
2006/127	05:04:51.24	40 01 54.37	074 02 14.38	127050451	-16.56	8.53	50	3.95	2.75	0.62	1.79	50	15.05	DONE
2006/127	05:04:55.31	40 01 53.80	074 02 14.57	127050455	-15.38	9.67	50	1.84	3.08	1.69	1.13	51	16.02	DONE
2006/127	05:47:01.62	40 01 52.96	074 02 09.55	127054701	15.66	9.03	50	3.84	2.54	0.50	2.02	52	17.25	DONE
2006/127	05:47:03.35	40 01 53.40	074 02 11.75	127054703	-41.94	9.04	50	4.40	3.94	0.51	0.86	48	16.77	DONE
2006/127	05:47:07.02	40 01 53.50	074 02 09.25	127054706	19.34	7.92	50	4.44	2.48	0.55	1.55	53	16	DONE
2006/127	05:47:08.82	40 01 54.12	074 02 11.63	127054708	-42.59	7.94	50	4.67	2.78	0.76	0.78	47	15.47	DONE
2006/127	05:52:31.69	40 02 29.24	074 01 59.89	127055231	32.09	7.78	50	3.34	1.71	0.77	0.74	0	0	NONSIG
2006/127	06:24:28.99	40 05 56.31	074 01 11.47	127062428	-21.41	9.53	50	1.55	1.22	1.84	0.70	0	0	NONSIG
2006/127	07:07:10.44	40 05 02.92	074 01 17.49	127070710	-27.06	8.28	50	4.41	1.36	0.91	1.17	181	14.83	DONE
2006/127	07:23:29.59	40 02 37.22	074 01 55.04	127072329	23.09	7.41	50	7.37	2.16	1.48	1.75	61	15.57	DONE
2006/127	07:28:18.86	40 01 53.20	074 02 06.80	127072818	45.22	6.13	50	3.75	4.00	0.33	0.47	60	16.46	DONE
2006/127	07:28:20.00	40 01 52.71	074 02 04.40	127072819	-15.09	6.07	50	4.27	2.61	0.48	1.38	54	16.86	DONE
2006/127	07:28:24.13	40 01 52.05	074 02 04.59	127072824	-15.38	7.30	50	5.45	2.61	0.43	2.05	55	17.92	DONE

Year / JD	Time (UTC)	Contact Position (NAD83)		Contact Number	Range (M)	Fish Altitude (M)	Range Scale (M)	Shadow Length (M)	Contact Length (M)	Contact Width (M)	Contact Height (M)	Feature Number	Depth (M)	Type
		Latitude (N)	Longitude (W)											
2006/127	08:10:27.71	40 01 51.18	074 01 59.33	127081027	20.34	5.91	50	4.95	2.78	0.49	1.19	58	18.57	DONE
2006/127	08:10:29.57	40 01 51.73	074 02 01.87	127081029	-43.34	5.81	50	4.89	4.16	1.17	0.58	64	18.38	DONE
2006/127	08:10:33.24	40 01 51.72	074 01 59.15	127081033	21.28	4.73	50	3.15	3.19	3.10	0.53	57	17.55	DONE
2006/127	08:10:34.97	40 01 52.30	074 02 01.53	127081034	-38.47	4.77	50	5.63	3.35	0.35	0.61	63	17.25	DONE
2006/127	08:21:31.98	40 03 02.23	074 01 42.64	127082131	6.38	4.79	50	27.55	1.48	3.35	2.52	62	11.77	DONE
2006/127	09:57:35.68	40 02 29.23	074 01 59.99	127095735	13.97	7.50	50	1.62	2.00	1.11	0.83	0	0	NONSIG
2006/127	10:01:29.02	40 01 53.52	074 02 09.34	127100128	27.06	7.66	50	2.53	4.36	2.74	0.63	53	16	DONE
2006/127	10:01:29.76	40 01 53.02	074 02 06.92	127100129	-34.16	7.66	50	2.62	2.94	2.70	0.52	60	16.46	DONE
2006/127	10:01:32.89	40 01 52.87	074 02 09.61	127100132	30.78	9.06	50	2.69	3.64	2.71	0.70	52	17.25	DONE
2006/127	10:01:33.82	40 01 52.39	074 02 07.13	127100133	-32.34	8.98	50	2.56	4.26	2.80	0.63	59	17.51	DONE
2006/127	10:43:26.53	40 01 51.71	074 02 01.94	127104326	36.91	8.74	50	3.14	3.49	2.45	0.67	64	18.38	DONE
2006/127	10:43:27.13	40 01 52.06	074 02 04.35	127104327	-23.97	8.75	50	2.85	4.16	2.76	0.89	55	17.92	DONE
2006/127	10:43:31.93	40 01 52.24	074 02 01.64	127104331	40.69	7.82	50	1.78	4.55	2.61	0.31	63	17.25	DONE
2006/127	10:43:32.53	40 01 52.67	074 02 04.17	127104332	-23	7.75	50	2.43	3.03	2.76	0.69	54	16.86	DONE
2006/127	11:11:35.36	40 05 01.05	074 01 18.17	127111135	-23.12	6.13	50	5.05	1.01	0.39	1.12	0	0	NONSIG
2006/127	11:24:59.64	40 05 13.63	074 01 01.09	127112459	13.53	7.31	50	1.59	2.21	0.71	0.85	1	15.5	DONE
2006/127	11:29:08.58	40 05 03.38	074 01 16.39	127112908	-13.94	6.83	50	2.96	1.30	0.97	1.25	0	0	NONSIG
2006/127	12:12:39.09	40 06 10.66	074 00 54.81	127121239	-10.22	5.41	50	2.94	3.06	1.29	1.21	56	14.98	DONE
2006/127	12:34:25.32	40 03 01.76	074 01 41.17	127123425	-7.75	6.59	50	15.75	2.18	6.87	6.71	182	8.76	DONE
2006/127	12:42:47.66	40 01 51.81	074 01 59.23	127124247	20.5	6.88	50	1.97	3.19	3.49	0.54	57	17.55	DONE
2006/127	12:42:48.33	40 01 51.28	074 01 56.81	127124248	-40.78	6.88	50	2.94	2.83	1.97	0.45	66	17.82	DONE
2006/127	12:42:52.13	40 01 51.12	074 01 59.45	127124252	22.66	7.97	50	2.18	4.63	2.14	0.68	58	18.57	DONE
2006/127	12:42:53.13	40 01 50.66	074 01 57.00	127124253	-39.31	7.99	50	3.72	4.62	2.81	0.65	65	18.68	DONE
2006/127	13:28:24.91	40 01 52.46	074 02 06.86	127132824	-7.28	6.98	50	2.05	3.05	3.48	1.28	59	17.51	DONE
2006/127	13:34:52.05	40 02 37.16	074 01 54.90	127133451	23.12	5.36	50	12.37	1.79	1.55	1.82	61	15.57	DONE
2006/127	15:01:39.40	40 03 02.32	074 01 42.88	127150139	-40.84	6.75	50	7.96	1.77	1.29	1.09	62	11.77	DONE
2006/127	15:43:54.05	40 01 52.26	074 02 01.80	127154353	7.44	6.87	50	1.90	3.66	2.42	1.56	63	17.25	DONE
2006/127	15:43:58.38	40 01 51.65	074 02 02.05	127154358	9.91	8.62	50	1.08	3.39	3.85	0.84	64	18.38	DONE
2006/127	16:25:56.62	40 01 51.02	074 01 56.67	127162556	8.69	8.10	50	0.00	4.13	4.29	0.00	0	0	NONSIG
2006/127	16:35:49.24	40 03 01.78	074 01 40.79	127163549	-30.41	8.63	50	16.30	1.19	1.38	2.98	182	8.76	DONE
2006/127	16:50:05.65	40 04 44.12	074 01 14.26	127165005	10.41	8.44	50	11.44	2.37	3.83	3.80	69	12.15	DONE
2006/127	16:50:16.12	40 04 45.21	074 01 13.21	127165016	26	8.38	50	14.82	0.80	1.97	2.95	205	13.26	DONE
2006/127	16:57:36.93	40 05 37.94	074 01 00.44	127165736	23.78	7.50	50	2.26	1.82	1.40	0.64	0	0	NONSIG
2006/127	17:02:07.93	40 06 10.68	074 00 54.65	127170207	-29.91	5.69	50	7.42	1.75	1.02	1.10	56	14.98	DONE
2006/127	17:04:22.47	40 06 26.86	074 00 50.05	127170422	-15.16	5.45	50	2.67	2.51	1.23	0.79	67	14.6	DONE
2006/127	17:43:05.70	40 04 45.38	074 01 13.17	127174305	17.5	10.06	50	11.82	0.98	2.64	4.59	205	13.26	DONE
2006/127	17:43:11.10	40 04 44.44	074 01 12.69	127174311	-10.28	10.16	50	5.68	1.10	5.39	2.61	206	12.79	DONE
2006/127	18:02:02.39	40 01 51.33	074 01 56.78	127180202	39.78	8.06	50	4.14	3.22	2.08	0.74	66	17.82	DONE
2006/127	18:02:03.19	40 01 50.95	074 01 54.22	127180203	-24.19	8.00	50	3.06	2.84	2.13	0.87	195	18.09	DONE
2006/127	18:02:06.92	40 01 50.39	074 01 54.41	127180206	-23.12	9.37	50	1.89	5.47	2.75	0.70	68	19.07	DONE
2006/127	18:02:07.39	40 01 50.31	074 01 54.44	127180207	-22.84	9.48	50	1.89	4.49	2.86	0.70	68	19.07	DONE
2006/127	18:53:08.24	40 02 49.68	074 01 09.16	127185308	17.31	7.09	50	1.55	2.20	1.58	0.58	0	0	NONSIG
2006/127	21:52:50.23	40 01 23.72	073 54 18.40	127215250	-35.34	7.85	50	5.62	4.07	1.00	1.09	28	18.89	DONE
2006/127	22:36:34.74	40 01 22.20	073 54 16.39	127223634	-31.81	7.75	50	10.80	1.22	1.03	1.95	28	18.89	DONE
2006/128	02:12:36.16	40 05 33.31	073 53 33.57	128021236	33.53	8.01	50	3.56	2.47	0.51	0.78	71	21.51	DONE
2006/128	06:21:07.10	40 05 33.86	073 53 33.10	128062107	16.72	6.97	50	2.00	1.70	1.24	0.75	71	21.51	DONE
2006/128	13:55:43.65	40 05 09.15	073 53 49.69	128135543	-29.12	7.60	50	2.78	0.26	0.06	0.68	0	0	NONSIG
2006/128	14:00:30.39	40 05 42.83	073 53 39.95	128140030	9.53	7.57	50	0.68	1.07	0.31	0.76	0	0	NONSIG
2006/128	14:07:06.59	40 06 30.54	073 53 28.29	128140706	9	8.13	50	0.75	1.11	0.42	1.14	0	0	NONSIG
2006/128	14:10:00.73	40 06 51.32	073 53 23.14	128141000	10.03	8.44	50	0.44	1.56	0.29	0.60	0	0	NONSIG
2006/128	14:42:43.37	40 06 29.91	073 53 28.68	128144243	41.34	7.06	50	3.26	1.89	0.82	0.51	0	0	NONSIG
2006/130	20:29:28.22	40 05 39.25	074 00 26.34	130202928	-14.69	7.69	50	1.89	0.82	1.36	0.91	0	0	NONSIG
2006/130	20:30:46.29	40 05 27.90	074 00 28.84	130203046	-16.97	6.75	50	1.67	3.08	1.76	0.59	72	17.54	DONE
2006/130	21:13:04.32	39 59 36.80	074 01 53.48	130211304	-42.5	7.59	50	4.44	4.51	2.06	0.69	18	18.54	DONE

Year / JD	Time (UTC)	Contact Position (NAD83)		Contact Number	Range (M)	Fish Altitude (M)	Range Scale (M)	Shadow Length (M)	Contact Length (M)	Contact Width (M)	Contact Height (M)	Feature Number	Depth (M)	Type
		Latitude (N)	Longitude (W)											
2006/130	21:58:13.62	40 04 09.79	074 00 43.05	130215813	-33.25	7.69	50	3.54	5.55	4.72	0.67	75	20.69	DONE
2006/130	22:15:28.97	40 06 12.88	074 00 12.37	130221528	-20.59	7.74	50	5.94	8.53	4.49	1.52	73	17.16	DONE
2006/130	23:00:58.01	40 04 01.52	074 00 39.73	130230057	27.91	8.00	50	2.40	8.60	2.19	0.61	0	0	NONSIG
2006/130	23:40:57.64	39 59 36.73	074 01 53.43	130234057	-38.06	7.06	50	4.09	2.71	1.02	0.68	18	18.54	DONE
2006/131	00:15:14.40	40 04 10.92	074 00 43.75	131001514	26.72	7.16	50	2.45	2.49	1.26	0.59	75	20.69	DONE
2006/131	00:26:06.75	40 05 35.24	074 00 25.14	131002606	-22.97	8.00	50	3.69	0.94	1.50	1.10	19	18.42	DONE
2006/131	01:01:20.64	40 06 12.63	074 00 09.04	131010120	-23.19	6.95	50	2.44	1.69	0.95	0.67	76	17.88	DONE
2006/131	03:18:24.42	40 06 12.92	074 00 12.32	131031824	-24.53	8.63	50	2.19	1.36	0.50	0.74	73	17.16	DONE
2006/131	03:32:48.03	40 04 10.92	074 00 43.70	131033247	14.5	7.94	50	1.39	2.71	0.34	0.79	75	20.69	DONE
2006/131	04:46:28.49	40 04 01.71	074 00 39.59	131044628	16.28	7.41	50	1.25	1.89	0.46	0.57	0	0	NONSIG
2006/131	05:03:19.17	40 06 12.69	074 00 08.91	131050319	-17.56	6.57	50	2.20	1.84	1.22	0.73	76	17.88	DONE
2006/131	07:27:37.29	40 04 20.38	074 00 24.21	131072737	27.94	6.47	50	4.06	3.21	1.22	0.80	78	20.77	DONE
2006/131	07:40:49.77	40 05 54.08	074 00 02.58	131074049	-7.75	6.93	50	2.26	2.10	1.36	2.05	0	0	NONSIG
2006/131	08:27:51.94	40 04 29.04	074 00 17.93	131082751	-8.81	8.15	50	0.73	5.89	1.29	1.09	79	21.58	DONE
2006/131	08:33:35.35	40 03 40.04	074 00 29.17	131083335	-23.16	9.54	50	15.45	7.58	2.84	4.04	80	15.55	DONE
2006/133	05:22:41.82	39 59 54.60	073 55 12.96	133052241	10.44	5.39	50	3.77	11.79	9.89	0.79	81	19.93	DONE
2006/133	07:02:33.50	40 08 19.15	073 53 04.93	133070233	-11	7.20	50	0.87	1.32	0.74	0.61	0	0	NONSIG
2006/133	07:25:36.45	40 05 08.93	073 53 50.23	133072536	-41.72	5.75	50	5.17	2.22	1.36	0.63	0	0	NONSIG
2006/133	08:25:52.50	39 59 54.49	073 55 12.68	133082552	40.53	8.16	50	4.06	2.11	1.21	0.75	81	19.93	DONE
2006/133	09:14:46.08	40 05 54.48	073 53 46.15	133091446	-10.81	8.45	50	2.17	1.65	0.35	1.96	0	0	NONSIG
2006/133	09:58:57.85	40 06 13.00	073 53 47.97	133095857	34.38	7.16	50	8.48	2.25	1.41	1.38	83	21.93	DONE
2006/133	11:07:53.37	39 59 54.33	073 55 12.33	133110753	-31.84	8.96	50	2.43	3.46	1.69	0.62	81	19.93	DONE
2006/133	12:43:32.78	40 05 54.62	073 53 46.70	133124332	-23.88	6.81	50	7.90	3.29	1.11	1.70	0	0	NONSIG
2006/133	14:41:14.40	40 06 12.68	073 53 47.52	133144114	18.69	7.89	50	3.80	4.35	1.71	1.31	83	21.93	DONE
2006/133	17:04:03.85	40 03 55.47	073 54 31.56	133170403	21.75	7.79	50	3.30	0.41	1.66	1.01	0	0	NONSIG
2006/133	17:31:08.14	40 07 21.07	073 53 41.35	133173108	12.78	8.31	50	1.88	2.69	0.87	1.37	84	22.51	DONE
2006/133	18:29:47.52	40 02 47.77	073 54 41.35	133182947	21.03	7.25	50	2.35	3.29	0.50	0.75	0	0	NONSIG
2006/133	20:18:47.88	40 07 16.51	073 53 39.13	133201847	11.16	7.31	50	1.36	1.22	0.42	1.02	0	0	NONSIG
2006/133	20:44:27.96	40 07 21.25	073 53 41.69	133204427	-42.53	7.19	50	5.44	2.57	0.61	0.82	84	22.51	DONE
2006/133	22:48:58.59	40 02 47.62	073 54 40.92	133224858	31.12	8.72	50	2.47	0.86	0.46	0.66	0	0	NONSIG
2006/133	23:47:46.04	40 07 21.34	073 53 41.67	133234745	40.12	6.62	50	6.55	1.58	0.82	0.93	84	22.51	DONE
2006/133	23:48:14.98	40 07 16.94	073 53 39.58	133234814	-37.25	7.28	50	2.77	1.92	0.86	0.50	0	0	NONSIG
2006/134	00:13:14.26	40 03 55.74	073 54 31.87	134001314	28.75	8.94	50	3.40	0.90	1.34	0.95	0	0	NONSIG
2006/134	13:02:29.35	40 07 49.14	073 53 59.51	134130229	15.56	7.74	50	1.50	2.40	1.98	0.67	0	0	NONSIG
2006/134	15:40:02.81	40 07 49.00	073 53 59.56	134154002	-26.44	7.63	50	2.47	2.22	0.55	0.66	0	0	NONSIG
2006/135	05:05:14.59	40 06 52.34	073 54 30.75	135050514	-16.34	5.04	50	2.38	1.53	0.95	0.63	0	0	NONSIG
2006/135	08:27:35.62	40 06 52.36	073 54 31.04	135082735	-19.41	6.85	50	2.91	1.31	0.97	0.90	0	0	NONSIG
2006/136	19:10:23.62	40 02 47.44	073 55 58.54	136191023	-21.34	8.31	50	6.93	12.15	1.87	1.96	86	22.17	DONE
2006/137	02:47:38.73	40 02 47.60	073 55 58.94	137024738	-16.53	8.53	50	4.67	9.41	2.44	2.09	86	22.17	DONE
2006/138	05:40:48.00	40 05 18.44	073 55 48.44	138054047	45.88	9.37	50	2.93	1.18	0.86	0.56	0	0	NONSIG
2006/138	07:30:46.31	40 06 30.45	073 55 33.29	138073046	16.34	6.94	50	2.58	1.07	0.67	0.86	88	18.82	DONE
2006/138	08:20:33.89	40 05 13.18	073 55 46.10	138082033	40.22	7.66	50	3.75	3.50	0.67	0.65	90	21.72	DONE
2006/138	10:25:16.22	40 08 39.59	073 54 56.94	138102516	42.22	8.19	50	4.51	2.05	5.35	0.72	87	13.45	DONE
2006/138	10:31:14.09	40 08 52.96	073 55 01.16	138103114	13.5	7.34	50	2.17	1.77	1.37	1.02	89	17.02	DONE
2006/138	12:39:33.03	40 05 12.18	073 55 46.28	138123932	8.78	8.60	50	2.42	1.27	0.89	3.56	90	21.72	DONE
2006/138	13:04:41.85	40 08 39.35	073 54 56.91	138130441	-36.91	6.77	50	6.05	1.97	2.15	0.92	87	13.45	DONE
2006/138	13:30:27.15	40 06 30.76	073 55 33.67	138133027	34.38	6.27	50	9.46	0.72	0.70	1.34	88	18.82	DONE
2006/138	15:47:04.88	40 08 52.72	073 55 01.20	138154704	29.12	8.78	50	5.22	2.09	2.82	1.27	89	17.02	DONE
2006/138	16:54:38.28	40 01 20.60	073 56 59.85	138165438	28.94	6.03	50	5.44	2.45	0.64	0.95	0	0	NONSIG
2006/138	20:21:10.96	40 01 20.26	073 56 59.60	138202110	19.91	7.82	50	3.81	0.80	0.51	1.31	0	0	NONSIG
2006/139	02:43:54.42	40 08 54.42	073 55 17.38	139024354	-40.66	8.10	50	4.52	2.33	1.60	0.79	93	18.96	DONE
2006/139	04:58:21.55	40 05 25.51	073 56 17.04	139045821	10.78	7.75	50	2.49	1.15	0.53	1.78	0	0	NONSIG
2006/139	05:02:18.23	40 05 56.08	073 56 11.21	139050218	-31.09	6.91	50	2.71	5.31	1.90	0.53	0	0	NONSIG
2006/139	05:02:34.96	40 05 57.91	073 56 08.83	139050234	15.75	6.98	50	2.45	1.06	5.30	0.75	96	21.17	DONE

Year / JD	Time (UTC)	Contact Position (NAD83)		Contact Number	Range (M)	Fish Altitude (M)	Range Scale (M)	Shadow Length (M)	Contact Length (M)	Contact Width (M)	Contact Height (M)	Feature Number	Depth (M)	Type
		Latitude (N)	Longitude (W)											
2006/139	05:02:40.63	40 05 58.89	073 56 10.22	139050240	-25.84	6.97	50	8.14	10.75	4.63	1.48	0	0	NONSIG
2006/139	05:02:48.23	40 05 59.79	073 56 09.83	139050248	-21.66	7.05	50	8.57	4.96	2.78	1.88	91	20.55	DONE
2006/139	05:02:57.56	40 06 00.91	073 56 09.05	139050257	-11.56	7.72	50	6.74	3.27	2.48	2.73	91	20.55	DONE
2006/139	05:24:31.05	40 08 47.65	073 55 27.71	139052430	8.09	8.03	50	1.48	1.77	2.38	1.54	92	18.87	DONE
2006/139	05:29:43.45	40 08 54.87	073 55 17.91	139052943	9.97	8.53	50	2.40	1.47	3.29	1.72	93	18.96	DONE
2006/139	08:05:41.21	40 08 51.37	073 55 24.52	139080541	-28.97	8.45	50	5.47	2.68	1.73	1.33	95	18.42	DONE
2006/139	08:10:50.08	40 08 47.95	073 55 27.99	139081050	-37.16	7.11	50	3.43	1.05	0.86	0.60	92	18.87	DONE
2006/139	08:31:25.64	40 06 01.33	073 56 09.48	139083125	-23	8.41	50	9.99	4.18	1.92	2.50	91	20.55	DONE
2006/139	08:31:34.64	40 06 00.20	073 56 10.28	139083134	-12.94	8.56	50	4.39	2.92	1.47	2.70	91	20.55	DONE
2006/139	08:31:52.71	40 05 57.76	073 56 11.44	139083152	8.84	7.34	50	2.35	3.18	4.64	1.38	0	0	NONSIG
2006/139	08:32:27.04	40 05 53.05	073 56 13.58	139083226	28.38	8.50	50	4.42	3.22	2.07	1.13	94	21.85	DONE
2006/139	08:35:40.18	40 05 26.07	073 56 17.34	139083540	-41.56	9.00	50	3.22	1.88	1.51	0.64	0	0	NONSIG
2006/139	10:49:46.72	40 08 51.56	073 55 24.63	139104946	-19.31	7.75	50	5.47	2.65	1.61	1.71	95	18.42	DONE
2006/139	10:50:17.72	40 08 47.95	073 55 27.99	139105017	40.84	7.54	50	3.33	1.75	1.24	0.56	92	18.87	DONE
2006/139	11:11:32.27	40 05 58.27	073 56 09.09	139111132	32.72	6.10	50	4.69	1.93	5.31	0.68	96	21.17	DONE
2006/139	11:15:40.75	40 05 25.81	073 56 17.27	139111540	36.75	7.50	50	3.66	1.52	0.61	0.69	0	0	NONSIG
2006/139	11:15:47.35	40 05 24.86	073 56 16.68	139111547	18.16	7.56	50	1.60	1.57	0.90	0.65	0	0	NONSIG
2006/139	12:24:20.15	40 00 55.42	073 57 27.93	139122420	-20.5	7.53	50	2.97	1.33	1.75	0.93	184	20.22	DONE
2006/139	13:00:40.99	40 05 52.76	073 56 13.33	139130040	21.12	7.81	50	3.78	3.60	1.01	1.20	94	21.85	DONE
2006/139	13:00:49.32	40 05 54.09	073 56 14.44	139130049	-16.25	7.81	50	1.72	3.12	0.39	0.82	94	21.85	DONE
2006/139	13:01:18.06	40 05 58.14	073 56 13.70	139130117	-20.88	7.69	50	7.23	4.16	1.01	1.97	104	21.22	DONE
2006/139	13:21:18.14	40 08 41.73	073 55 34.01	139132118	-32.47	7.38	50	9.30	3.12	3.10	1.53	103	16.87	DONE
2006/139	13:30:49.02	40 08 34.18	073 55 40.67	139133048	20.47	9.31	50	2.02	6.02	4.41	0.76	109	18.39	DONE
2006/139	13:31:20.75	40 08 30.68	073 55 42.20	139133120	37.34	7.18	50	3.74	5.78	4.42	0.60	0	0	NONSIG
2006/139	13:32:06.89	40 08 24.86	073 55 42.99	139133206	22.59	7.66	50	7.37	2.55	1.23	1.86	0	0	NONSIG
2006/139	13:51:19.91	40 05 59.44	073 56 18.91	139135119	27.84	7.08	50	2.58	3.75	0.52	0.61	105	22.51	DONE
2006/139	14:45:21.30	39 59 21.74	073 57 56.15	139144521	21.5	7.28	50	1.75	2.94	0.63	0.56	0	0	NONSIG
2006/139	15:41:55.03	40 05 56.59	073 56 22.11	139154154	33.03	7.76	50	5.55	4.47	1.53	1.10	111	21.31	DONE
2006/139	15:42:02.83	40 05 57.60	073 56 21.47	139154202	42.75	8.81	50	3.31	3.99	1.11	0.63	0	0	NONSIG
2006/139	15:42:15.89	40 05 59.69	073 56 21.74	139154215	24.84	9.17	50	2.21	3.70	0.47	0.79	98	22.03	DONE
2006/139	15:56:04.71	40 07 55.83	073 55 53.78	139155604	13.88	9.67	50	22.61	11.82	11.33	3.36	99	17.05	DONE
2006/139	15:56:07.97	40 07 56.48	073 55 55.19	139155607	-28.25	9.07	50	19.23	14.62	4.92	3.37	112	16.77	DONE
2006/139	15:56:19.44	40 07 57.99	073 55 54.37	139155619	-17.56	7.45	50	5.13	1.73	1.77	1.67	21	18.55	DONE
2006/139	15:57:47.51	40 08 10.00	073 55 49.13	139155747	38.28	8.63	50	5.57	13.97	12.35	0.85	110	16.89	DONE
2006/139	16:01:07.58	40 08 38.74	073 55 44.98	139160107	-30.66	7.32	50	2.66	6.75	2.25	0.55	102	15.72	DONE
2006/139	16:01:38.78	40 08 42.65	073 55 41.16	139160138	36.91	8.23	50	10.03	3.73	1.92	1.71	108	17.17	DONE
2006/139	16:10:30.66	40 08 40.07	073 55 36.21	139161030	32	5.97	50	9.18	2.83	2.13	1.28	107	16.23	DONE
2006/139	16:12:50.19	40 08 22.56	073 55 40.07	139161250	25.03	8.57	50	3.99	3.50	2.55	1.10	0	0	NONSIG
2006/139	16:31:50.81	40 05 59.78	073 56 13.15	139163150	-24.47	8.03	50	4.29	2.14	1.59	1.18	104	21.22	DONE
2006/139	16:32:02.88	40 05 58.38	073 56 14.18	139163202	-11.53	8.03	50	5.67	5.71	1.05	3.34	104	21.22	DONE
2006/139	16:32:10.48	40 05 57.50	073 56 14.88	139163210	8.44	7.90	50	1.86	2.25	1.16	2.25	104	21.22	DONE
2006/139	17:12:31.19	40 00 56.64	073 57 28.43	139171231	-12.5	6.43	50	0.00	13.65	21.13	0.00	184	20.22	DONE
2006/139	17:12:39.05	40 00 55.51	073 57 27.83	139171238	-24.62	6.41	50	3.28	1.88	2.01	0.71	184	20.22	DONE
2006/139	17:35:42.94	39 59 21.36	073 57 55.87	139173542	24.69	7.94	50	2.62	1.47	0.43	0.79	0	0	NONSIG
2006/139	18:22:56.59	40 05 57.81	073 56 21.34	139182256	-37.06	7.87	50	4.18	3.16	0.35	0.81	0	0	NONSIG
2006/139	18:23:09.26	40 05 59.06	073 56 18.58	139182309	21.16	7.83	50	2.40	4.03	0.37	0.84	105	22.51	DONE
2006/139	18:38:35.61	40 08 10.07	073 55 49.12	139183835	-44.78	8.08	50	0.00	18.64	11.24	0.00	110	16.89	DONE
2006/139	18:38:40.14	40 08 10.61	073 55 47.84	139183840	-19.81	8.41	50	5.36	3.18	6.06	1.45	0	0	NONSIG
2006/139	18:38:47.14	40 08 11.24	073 55 45.69	139183847	30.25	8.12	50	7.20	7.42	1.90	1.47	97	18.19	DONE
2006/139	18:42:26.75	40 08 42.63	073 55 41.15	139184226	-44.66	7.29	50	4.12	3.33	1.59	0.60	108	17.17	DONE
2006/139	18:51:50.49	40 08 38.98	073 55 45.03	139185150	-7.88	6.84	50	1.05	4.87	3.91	0.69	102	15.72	DONE
2006/139	18:51:51.16	40 08 38.94	073 55 45.30	139185151	7.22	6.84	50	0.94	3.38	2.91	0.84	102	15.72	DONE
2006/139	18:51:57.56	40 08 37.98	073 55 44.62	139185157	-21.16	7.24	50	1.58	3.42	1.66	0.49	102	15.72	DONE
2006/139	21:07:43.96	40 05 57.03	073 56 14.58	139210743	43.91	6.81	50	4.99	4.56	0.74	0.69	104	21.22	DONE

Year / JD	Time (UTC)	Contact Position (NAD83)		Contact Number	Range (M)	Fish Altitude (M)	Range Scale (M)	Shadow Length (M)	Contact Length (M)	Contact Width (M)	Contact Height (M)	Feature Number	Depth (M)	Type
		Latitude (N)	Longitude (W)											
2006/139	21:23:45.78	40 08 04.57	073 55 45.43	139212345	-10.28	6.69	50	1.84	1.21	0.94	1.12	0	0	NONSIG
2006/139	21:28:11.38	40 08 39.76	073 55 35.97	139212811	13.66	7.35	50	2.02	3.86	1.91	0.92	107	16.23	DONE
2006/139	21:37:19.19	40 08 42.98	073 55 41.26	139213719	11.59	5.39	50	4.76	2.89	2.32	1.40	108	17.17	DONE
2006/139	21:41:31.46	40 08 10.44	073 55 49.24	139214131	13.19	8.01	50	11.04	28.86	6.58	4.17	110	16.89	DONE
2006/139	21:43:22.73	40 07 56.28	073 55 53.47	139214322	28.25	10.13	50	7.14	10.16	25.04	1.09	99	17.05	DONE
2006/139	21:58:38.28	40 05 59.97	073 56 22.01	139215838	25.72	7.84	50	2.67	4.34	0.72	0.75	98	22.03	DONE
2006/139	21:59:01.95	40 05 57.07	073 56 22.38	139215901	17.34	7.72	50	4.00	4.20	2.17	1.41	111	21.31	DONE
2006/140	00:07:11.88	40 07 55.40	073 55 57.37	140000711	10.75	7.42	50	4.11	19.53	7.25	3.64	112	16.77	DONE
2006/140	00:12:42.42	40 08 38.84	073 55 45.30	140001242	40.28	7.50	50	2.91	5.00	1.91	0.50	102	15.72	DONE
2006/140	00:19:46.96	40 08 51.59	073 55 49.40	140001946	10.69	9.19	50	1.21	2.35	1.54	1.32	113	20.11	DONE
2006/140	00:22:53.50	40 08 26.79	073 55 54.78	140002253	-14	9.69	50	2.68	-14	1.62	1.72	70	18.34	DONE
2006/140	02:27:52.23	40 05 16.58	073 56 46.83	140022752	10.66	8.86	50	0.82	1.16	0.67	0.96	0	0	NONSIG
2006/140	02:44:37.58	40 07 27.20	073 56 14.39	140024437	17.34	10.17	50	1.45	7.03	1.46	0.84	118	16.05	DONE
2006/140	02:47:55.11	40 07 53.35	073 56 09.92	140024755	-33.88	10.08	50	8.29	3.76	1.41	1.99	0	0	NONSIG
2006/140	05:51:23.94	40 07 25.73	073 56 12.89	140055123	-24.91	8.47	50	12.57	5.34	4.33	3.02	118	16.05	DONE
2006/140	05:55:03.34	40 07 54.47	073 56 05.58	140055503	-19.84	9.60	50	18.38	16.71	5.47	3.87	117	17.13	DONE
2006/140	06:00:47.01	40 08 39.73	073 55 54.32	140060046	-15.91	6.52	50	3.56	3.03	0.68	1.23	114	17.44	DONE
2006/140	06:02:13.21	40 08 50.95	073 55 49.34	140060213	39.34	8.75	50	3.07	4.01	1.83	0.62	113	20.11	DONE
2006/140	06:12:53.28	40 08 11.57	073 56 06.12	140061254	10.38	7.60	50	13.86	10.68	11.55	6.76	115	14.56	DONE
2006/140	08:36:10.77	40 08 04.67	073 55 59.73	140083609	-21.78	8.97	50	5.42	13.35	2.81	1.93	0	0	NONSIG
2006/140	08:49:01.58	40 08 40.26	073 55 54.50	140084901	-20.06	6.50	50	4.40	2.41	1.69	1.13	114	17.44	DONE
2006/140	08:54:56.25	40 07 54.99	073 56 05.90	140085456	-16.19	9.00	50	14.12	10.65	2.72	4.07	117	17.13	DONE
2006/140	08:58:32.98	40 07 27.63	073 56 13.91	140085832	19.97	7.22	50	7.33	5.35	3.54	1.62	118	16.05	DONE
2006/140	11:15:49.73	40 08 11.35	073 56 06.23	140111549	33.28	8.81	50	13.88	7.94	5.29	2.34	115	14.56	DONE
2006/140	11:33:50.68	40 08 01.44	073 56 15.38	140113350	8.94	8.19	50	3.61	3.12	2.80	2.32	20	16.72	DONE
2006/140	11:35:55.75	40 07 45.78	073 56 20.73	140113555	40.28	7.82	50	7.20	20.94	8.76	1.01	120	14.55	DONE
2006/140	13:52:09.29	40 07 30.89	073 56 28.91	140135209	-25.41	7.51	50	12.57	7.99	8.35	1.92	121	11.92	DONE
2006/140	13:53:50.56	40 07 44.55	073 56 23.43	140135350	26.69	7.36	50	7.37	3.32	1.56	1.55	119	18.47	DONE
2006/140	16:35:49.32	40 07 45.53	073 56 20.36	140163549	10.88	6.16	50	19.41	3.24	2.40	3.61	120	14.55	DONE
2006/140	16:59:45.60	40 07 44.30	073 56 24.98	140165945	-36.12	8.66	50	8.69	2.60	1.03	1.62	119	18.47	DONE
2006/140	17:01:33.07	40 07 31.30	073 56 29.15	140170134	-11.16	4.11	50	9.82	6.69	5.97	4.20	121	11.92	DONE
2006/140	19:19:03.88	40 07 55.31	073 56 15.43	140191903	-15.28	8.38	50	5.13	3.29	1.16	2.23	0	0	NONSIG
2006/140	19:41:16.63	40 07 45.64	073 56 21.09	140194117	-34.69	8.99	50	12.95	20.52	2.76	2.32	120	14.55	DONE
2006/140	19:41:24.96	40 07 44.88	073 56 23.54	140194124	20.38	8.78	50	4.54	2.42	1.97	1.56	119	18.47	DONE
2006/140	21:57:55.31	40 07 30.22	073 56 29.54	140215755	45.91	9.01	50	2.77	1.07	0.83	0.52	121	11.92	DONE
2006/140	22:24:44.72	40 07 25.37	073 56 38.65	140222444	22.5	8.05	50	2.78	5.14	0.37	0.92	0	0	NONSIG
2006/140	22:31:09.99	40 06 33.38	073 56 49.31	140223109	-32.06	7.06	50	5.95	2.51	0.54	1.10	126	15.25	DONE
2006/140	23:04:56.81	40 02 02.11	073 57 57.21	140230456	7.75	7.13	50	1.67	1.73	0.52	1.99	122	20.54	DONE
2006/141	00:39:22.93	40 06 28.08	073 56 58.36	141003922	-31.59	8.12	50	13.84	1.90	0.91	2.49	125	14.74	DONE
2006/141	00:43:23.87	40 06 59.48	073 56 50.06	141004323	-20.16	9.05	50	4.83	13.79	4.52	1.52	128	14.69	DONE
2006/141	01:20:19.89	40 06 33.07	073 56 47.94	141012019	17.03	7.62	50	2.77	2.57	1.01	1.10	126	15.25	DONE
2006/141	01:47:09.51	40 02 54.20	073 57 40.40	141014709	-17.44	8.70	50	1.34	1.39	1.04	0.66	0	0	NONSIG
2006/141	02:41:59.01	40 02 02.11	073 57 58.78	141024158	9.5	9.38	50	2.03	0.80	3.10	1.81	122	20.54	DONE
2006/141	03:15:42.09	40 06 29.44	073 56 53.47	141031542	-8.06	6.52	50	1.27	2.32	1.10	1.16	0	0	NONSIG
2006/141	05:18:40.37	40 02 01.72	073 57 57.00	141051840	-36	8.41	50	0.00	12.86	31.88	0.00	122	20.54	DONE
2006/141	05:51:43.05	40 06 32.39	073 56 47.99	141055142	27.84	5.63	50	8.05	4.94	3.60	1.14	126	15.25	DONE
2006/141	05:51:43.39	40 06 32.56	073 56 49.36	141055143	-8.03	5.63	50	4.42	4.44	2.04	1.94	126	15.25	DONE
2006/141	05:58:03.52	40 07 24.87	073 56 38.14	141055803	-46	8.31	50	2.76	11.77	2.48	0.46	0	0	NONSIG
2006/141	07:06:45.96	40 02 02.14	073 57 59.34	141070645	-31.56	7.50	50	8.28	3.77	1.67	1.54	122	20.54	DONE
2006/141	08:31:04.22	40 06 58.80	073 56 51.86	141083104	26.59	8.50	50	0.00	14.97	32.17	0.00	128	14.69	DONE
2006/141	09:08:45.84	40 06 23.81	073 57 06.05	141090845	-18.75	9.94	50	8.02	12.69	27.05	1.04	172	15.87	DONE
2006/141	09:10:43.17	40 06 09.38	073 57 11.88	141091043	38.53	8.82	50	8.86	7.12	3.67	1.53	134	15.06	DONE
2006/141	10:29:24.75	40 01 55.58	073 58 16.41	141102924	29.22	8.54	50	0.00	10.53	24.24	0.00	131	20.89	DONE
2006/141	11:45:58.27	40 06 58.81	073 56 52.66	141114558	-48.28	9.72	50	0.00	8.09	3.87	0.00	128	14.69	DONE

Year / JD	Time (UTC)	Contact Position (NAD83)		Contact Number	Range (M)	Fish Altitude (M)	Range Scale (M)	Shadow Length (M)	Contact Length (M)	Contact Width (M)	Contact Height (M)	Feature Number	Depth (M)	Type
		Latitude (N)	Longitude (W)											
2006/141	13:10:37.92	40 01 55.78	073 58 16.01	141131037	-45.09	9.06	50	0.00	9.06	9.67	0.00	131	20.89	DONE
2006/141	13:40:10.94	40 06 09.46	073 57 11.73	141134010	6.78	4.41	50	10.47	13.49	4.27	2.77	134	15.06	DONE
2006/141	14:22:23.76	40 06 45.11	073 57 24.54	141142223	-25.38	8.35	50	3.18	3.59	1.25	0.94	0	0	NONSIG
2006/141	16:54:19.31	40 06 58.24	073 57 31.87	141165419	-20	6.41	50	0.00	18.40	29.87	0.00	183	13.93	DONE
2006/141	16:54:22.91	40 06 57.91	073 57 33.60	141165422	20.53	8.49	50	0.00	17.89	36.41	0.00	183	13.93	DONE
2006/141	17:59:30.62	39 59 13.64	073 59 25.34	141175930	-27.75	7.19	50	7.93	4.03	2.28	1.56	177	19.5	DONE
2006/141	19:39:27.94	40 06 58.62	073 57 03.79	141193927	-29.66	9.51	50	13.90	3.89	4.12	2.77	0	0	NONSIG
2006/141	19:45:00.88	40 06 29.21	073 57 13.61	141194500	34.59	8.77	50	13.57	6.51	4.69	2.30	173	15.22	DONE
2006/143	17:30:22.95	40 03 57.47	073 59 38.37	143173022	24.59	6.91	50	15.61	5.09	2.67	2.54	136	17.09	DONE
2006/143	18:31:02.54	40 04 34.03	073 59 38.33	143183102	-19.28	7.56	50	2.31	1.64	2.35	0.77	137	19.55	DONE
2006/143	19:01:56.36	40 00 23.54	074 00 38.96	143190156	-33.03	9.78	50	8.32	3.97	1.96	1.94	0	0	NONSIG
2006/143	20:41:54.51	40 05 43.97	073 59 11.30	143204154	-11.28	7.59	50	1.88	2.10	0.55	1.33	0	0	NONSIG
2006/143	20:54:42.65	40 03 58.28	073 59 38.36	143205442	20.97	8.44	50	10.41	5.67	3.89	2.51	136	17.09	DONE
2006/143	21:02:42.12	40 02 52.98	073 59 54.90	143210242	32.91	8.20	50	11.06	2.00	0.94	2.05	0	0	NONSIG
2006/143	22:20:33.79	40 04 33.18	073 59 38.03	143222033	-13.44	6.81	50	2.83	1.39	1.57	1.19	137	19.55	DONE
2006/144	00:43:46.77	40 03 56.54	073 59 36.44	144004346	-9	7.02	50	5.09	4.79	4.84	2.17	136	17.09	DONE
2006/144	00:57:32.58	40 05 43.16	073 59 11.11	144005732	-24.66	7.72	50	4.95	1.69	1.32	1.28	0	0	NONSIG
2006/144	02:01:49.24	40 03 37.58	073 59 35.44	144020149	-11.25	8.53	50	4.12	1.83	1.99	2.49	144	20.52	DONE
2006/144	02:04:47.57	40 03 12.96	073 59 40.30	144020447	-35.5	8.38	50	11.72	4.85	5.44	1.88	143	19.98	DONE
2006/144	02:49:55.21	40 00 35.45	074 00 14.46	144024955	17.34	7.97	50	1.89	0.54	0.56	0.84	146	19.76	DONE
2006/144	03:10:40.16	40 03 22.98	073 59 33.52	144031040	17	9.79	50	20.24	11.27	11.16	6.91	142	14.49	DONE
2006/144	03:33:13.18	40 06 24.61	073 58 49.97	144033313	-10.25	6.90	50	1.08	7.06	1.73	0.81	0	0	NONSIG
2006/144	05:52:33.96	40 02 52.53	073 59 44.42	144055233	16.41	9.53	50	4.95	2.01	1.11	2.39	0	0	NONSIG
2006/144	05:55:00.36	40 03 12.76	073 59 39.81	144055500	11.56	10.09	50	3.66	4.75	9.36	1.42	143	19.98	DONE
2006/144	07:20:32.56	40 03 24.02	073 59 33.21	144072032	25.34	10.49	50	0.00	11.77	21.14	0.00	142	14.49	DONE
2006/144	07:41:30.85	40 00 35.92	074 00 12.56	144074130	-19	7.94	50	0.00	12.55	26.74	0.00	146	19.76	DONE
2006/144	09:27:50.67	40 06 25.31	073 58 50.19	144092750	-25.97	8.41	50	2.76	6.09	0.69	0.83	0	0	NONSIG
2006/144	09:48:41.22	40 03 37.63	073 59 34.06	144094841	41.5	8.00	50	4.03	2.37	0.96	0.70	144	20.52	DONE
2006/144	09:50:19.62	40 03 23.81	073 59 33.70	144095019	-45.62	7.90	50	0.00	45.62	7.79	0.00	142	14.49	DONE
2006/144	09:51:22.82	40 03 15.51	073 59 37.20	144095122	-14.84	8.19	50	9.04	6.81	2.45	2.99	141	19.98	DONE
2006/144	19:19:12.97	40 00 35.66	074 00 11.88	144191912	-9.16	6.67	50	0.00	11.06	5.85	0.00	146	19.76	DONE
2006/144	20:13:54.42	40 08 31.63	073 58 14.05	144201354	25.22	7.33	50	9.87	15.45	15.81	2.09	149	14.38	DONE
2006/144	20:32:18.17	40 06 54.66	073 58 32.33	144203218	-34.09	6.79	50	13.62	1.61	2.36	1.84	150	18.14	DONE
2006/144	21:03:34.73	40 02 49.52	073 59 34.91	144210334	28.75	10.03	50	9.03	51.65	10.81	1.81	153	17.52	DONE
2006/144	21:54:30.63	40 01 49.98	073 59 41.50	144215430	38.88	9.41	50	0.00	13.75	22.48	0.00	135	18.2	DONE
2006/144	21:58:47.57	40 02 28.14	073 59 35.84	144215847	-48.59	8.50	50	0.00	18.17	2.13	0.00	154	17.05	DONE
2006/144	22:06:21.91	40 03 34.12	073 59 17.82	144220621	-8.81	7.34	50	4.62	23.45	6.08	1.94	148	21.36	DONE
2006/144	22:48:24.94	40 08 30.91	073 58 14.12	144224824	16.59	7.22	50	3.77	11.84	3.79	1.20	149	14.38	DONE
2006/144	23:29:12.91	40 02 49.84	073 59 35.68	144232912	-34.41	9.60	50	4.81	5.16	3.29	1.21	153	17.52	DONE
2006/145	00:26:46.96	40 02 28.44	073 59 36.06	145002646	27.06	10.62	50	20.11	26.92	5.47	4.82	154	17.05	DONE
2006/145	02:13:29.51	40 01 48.65	073 59 40.65	145021329	-27.09	7.15	50	13.52	17.59	3.14	3.09	135	18.2	DONE
2006/145	03:03:19.89	40 02 49.91	073 59 34.58	145030319	19.28	9.72	50	7.61	55.06	13.14	1.75	153	17.52	DONE
2006/145	03:45:45.59	40 08 31.17	073 58 13.80	145034545	-49.03	9.56	50	0.00	4.73	1.66	0.00	149	14.38	DONE
2006/145	04:26:55.96	40 03 33.67	073 59 18.21	145042655	-31.75	9.10	50	12.81	23.11	8.23	2.17	148	21.36	DONE
2006/145	04:34:29.70	40 02 28.10	073 59 36.28	145043429	19.41	8.44	50	23.11	29.62	8.28	3.50	154	17.05	DONE
2006/145	05:21:49.67	40 01 49.19	073 59 40.02	145052149	-9.34	8.31	50	0.00	11.84	3.97	0.00	135	18.2	DONE
2006/145	05:31:49.61	40 03 11.18	073 59 17.90	145053149	44.88	8.53	50	2.29	18.62	3.38	0.41	156	18.32	DONE
2006/145	07:01:05.22	40 02 47.97	073 59 20.13	145070105	-7.78	3.95	50	23.71	8.93	5.74	6.03	155	16.78	DONE
2006/145	07:42:52.45	40 00 44.13	073 59 46.46	145074252	-24	9.00	50	8.21	2.72	1.59	2.29	0	0	NONSIG
2006/145	09:26:23.67	40 03 12.42	073 59 16.59	145092623	-30.56	8.61	50	15.51	34.05	8.24	2.44	157	15.4	DONE
2006/145	10:29:39.85	40 02 47.55	073 59 20.02	145102939	-30.31	9.88	50	12.93	6.91	14.92	2.10	155	16.78	DONE
2006/145	12:56:26.64	40 03 12.59	073 59 16.40	145125626	-9.12	5.40	50	13.32	33.49	10.84	7.27	157	15.4	DONE
2006/145	15:41:02.77	40 05 23.03	073 58 32.18	145154102	37.56	7.80	50	4.84	2.68	1.44	0.88	0	0	NONSIG
2006/145	16:40:13.95	40 04 37.14	073 58 41.40	145164013	34.53	6.91	50	4.99	16.50	2.49	0.82	164	21.39	DONE

Year / JD	Time (UTC)	Contact Position (NAD83)		Contact Number	Range (M)	Fish Altitude (M)	Range Scale (M)	Shadow Length (M)	Contact Length (M)	Contact Width (M)	Contact Height (M)	Feature Number	Depth (M)	Type
		Latitude (N)	Longitude (W)											
2006/145	16:52:17.50	40 03 05.24	073 59 02.05	145165217	-11.16	5.87	50	10.06	14.47	10.23	5.60	158	14	DONE
2006/145	18:03:32.35	40 04 34.87	073 58 33.59	145180332	40	8.91	50	4.82	10.73	2.60	0.92	0	0	NONSIG
2006/145	19:02:03.07	40 05 23.15	073 58 32.53	145190203	13.47	9.35	50	1.43	2.66	1.66	1.03	0	0	NONSIG
2006/145	19:17:32.55	40 03 27.09	073 58 59.88	145191732	-16.28	9.57	50	13.52	9.50	18.19	2.16	160	17.11	DONE
2006/145	20:21:03.00	40 03 05.24	073 59 01.72	145202102	-26.91	8.56	50	0.00	8.65	27.86	0.00	158	14	DONE
2006/145	20:44:15.82	40 06 33.27	073 58 08.54	145204415	27.75	7.63	50	3.52	10.58	1.65	0.83	161	15.96	DONE
2006/145	21:36:31.66	40 04 37.55	073 58 31.21	145213631	-40.03	7.47	50	8.30	15.42	1.49	1.25	166	18.37	DONE
2006/145	21:37:07.19	40 04 32.98	073 58 32.17	145213707	-43.72	7.06	50	4.52	20.20	2.47	0.64	165	19.5	DONE
2006/145	22:08:04.02	40 00 34.96	073 59 33.43	145220803	27.47	9.39	50	0.00	15.26	35.94	0.00	162	18.09	DONE
2006/145	22:10:25.82	40 00 16.46	073 59 37.89	145221025	26.47	9.84	50	8.27	2.53	2.33	2.30	0	0	NONSIG
2006/145	22:50:07.25	40 03 05.69	073 59 02.17	145225007	41.91	9.53	50	0.00	9.39	12.95	0.00	158	14	DONE
2006/145	22:52:30.25	40 03 26.95	073 58 59.35	145225230	-16.19	8.75	50	10.31	9.86	18.38	1.62	160	17.11	DONE
2006/145	22:57:50.93	40 04 13.29	073 58 46.30	145225750	25.34	6.54	50	3.09	5.05	1.71	0.69	163	21.7	DONE
2006/145	23:00:31.33	40 04 36.89	073 58 41.03	145230031	14.31	7.14	50	1.80	14.70	1.71	0.76	164	21.39	DONE
2006/145	23:05:46.20	40 05 22.90	073 58 32.11	145230546	-40.94	6.68	50	7.27	3.24	1.81	0.98	0	0	NONSIG
2006/145	23:50:37.37	40 06 33.19	073 58 08.76	145235037	18.88	7.19	50	4.69	11.65	1.85	1.36	161	15.96	DONE
2006/146	00:35:25.27	40 00 34.99	073 59 34.22	146003525	-36.84	9.31	50	0.00	16.00	28.20	0.00	160	18.09	DONE
2006/146	01:00:39.16	40 00 34.59	073 59 32.58	146010039	-45.62	10.16	50	0.00	13.27	8.25	0.00	162	18.09	DONE
2006/146	01:28:19.72	40 04 32.85	073 58 31.34	146012819	23.94	9.63	50	5.38	3.20	1.74	1.77	165	19.5	DONE
2006/146	01:34:59.12	40 05 30.34	073 58 17.30	146013459	22.41	7.37	50	3.47	3.20	1.30	0.98	0	0	NONSIG
2006/146	03:07:53.33	40 00 19.49	073 59 28.66	146030753	-16.41	9.03	50	6.64	1.98	2.17	2.58	0	0	NONSIG
2006/146	04:01:12.84	40 04 35.17	073 58 22.30	146040112	-21.78	7.13	50	3.62	6.24	2.38	0.95	170	20.32	DONE
2006/146	04:15:49.26	40 06 41.73	073 57 50.60	146041549	-9.19	8.35	50	2.12	1.96	1.00	2.46	168	17.23	DONE
2006/146	05:02:46.16	40 05 30.43	073 58 17.77	146050246	29.81	6.46	50	4.56	2.57	1.31	0.83	0	0	NONSIG
2006/146	05:09:19.30	40 04 37.60	073 58 31.23	146050919	41.25	8.77	50	6.94	2.65	1.89	1.23	166	18.37	DONE
2006/146	05:09:47.17	40 04 33.63	073 58 31.36	146050947	23.41	9.41	50	5.57	28.81	31.76	0.70	165	19.5	DONE
2006/146	06:33:17.70	40 04 35.08	073 58 23.13	146063317	42.38	6.59	50	0.00	4.10	11.04	0.00	170	20.32	DONE
2006/146	07:32:06.01	40 06 42.10	073 57 50.21	146073205	36.28	6.03	50	8.12	3.29	1.49	1.08	168	17.23	DONE
2006/146	07:38:09.95	40 05 53.54	073 58 00.38	146073809	-9.41	7.93	50	2.63	-9.41	2.73	1.86	169	21.89	DONE
2006/146	09:13:20.63	40 04 33.97	073 58 30.41	146091320	-41.69	8.28	50	5.25	4.98	1.47	0.91	165	19.5	DONE
2006/146	10:06:05.21	40 06 42.01	073 57 50.94	146100605	-28.06	6.61	50	5.31	2.62	1.38	1.04	168	17.23	DONE
2006/146	10:21:40.09	40 04 35.24	073 58 22.76	146102140	-13.25	6.56	50	3.38	2.63	1.84	1.30	170	20.32	DONE
2006/146	11:54:23.17	40 05 53.42	073 57 59.91	146115423	-26.28	8.00	50	4.74	3.39	2.20	1.19	169	21.89	DONE
2006/146	13:13:58.30	40 01 33.08	073 58 58.12	146131358	15.62	6.46	50	5.84	13.87	20.97	0.72	171	19.69	DONE
2006/146	14:32:18.70	40 06 57.58	073 57 33.97	146143218	14.41	7.07	50	27.47	3.32	2.11	5.02	183	13.93	DONE
2006/146	16:24:19.66	40 01 32.91	073 58 57.13	146162419	-32.97	7.67	50	0.00	27.07	31.99	0.00	171	19.69	DONE
2006/146	17:01:03.09	40 06 57.80	073 57 34.14	146170103	47.72	6.53	50	0.00	11.22	4.70	0.00	183	13.93	DONE
2006/146	18:16:51.95	40 01 32.97	073 58 58.07	146181651	-27.53	7.23	50	0.00	22.67	29.11	0.00	171	19.69	DONE
2006/146	19:01:25.85	40 01 55.32	073 58 18.39	146190125	23.69	7.91	50	0.00	34.47	12.83	0.00	131	20.89	DONE
2006/146	19:32:29.81	40 06 29.41	073 57 13.64	146193229	-35.94	8.81	50	4.93	6.77	17.49	0.72	173	15.22	DONE
2006/146	20:07:23.83	40 07 17.72	073 56 53.02	146200723	31.22	9.75	50	4.12	38.66	6.44	0.95	129	18.1	DONE
2006/146	20:08:49.03	40 07 06.80	073 56 55.73	146200848	31.88	9.28	50	10.13	85.85	12.07	1.73	130	17.45	DONE
2006/146	20:14:23.24	40 06 23.81	073 57 06.04	146201423	26.12	9.21	50	0.00	12.64	32.37	0.00	172	15.87	DONE
2006/146	21:35:06.63	40 01 55.55	073 58 16.47	146213506	-16.19	7.71	50	0.00	9.03	23.17	0.00	131	20.89	DONE
2006/146	22:05:15.52	40 06 09.80	073 57 12.02	146220515	36.25	8.82	50	0.00	8.74	19.66	0.00	134	15.06	DONE
2006/146	22:50:35.48	40 06 29.19	073 57 13.70	146225035	-8.09	4.51	50	6.65	7.69	4.89	2.36	173	15.22	DONE
2006/146	22:51:31.22	40 06 21.79	073 57 17.40	146225131	38.09	10.57	50	0.00	8.24	23.44	0.00	22	17.84	DONE
2006/146	22:56:37.22	40 05 40.82	073 57 26.44	146225637	15.78	8.59	50	4.95	1.42	1.42	2.14	174	19.89	DONE
2006/147	01:31:08.94	40 06 17.46	073 57 26.42	147013108	-20.78	10.31	50	0.00	23.29	31.29	0.00	175	18.23	DONE
2006/147	03:20:40.03	40 05 40.70	073 57 26.08	147032039	35.69	7.98	50	10.80	2.29	1.70	1.81	174	19.89	DONE
2006/147	03:25:32.10	40 06 22.14	073 57 17.87	147032532	-12.88	7.13	50	6.13	8.89	14.93	1.14	22	17.84	DONE
2006/147	04:11:51.54	40 06 17.95	073 57 25.64	147041151	47.31	10.58	50	0.00	18.63	9.30	0.00	175	18.23	DONE
2006/147	04:29:17.08	40 03 58.73	073 57 58.75	147042917	22.47	7.66	50	4.68	8.27	3.50	1.21	175	20.8	DONE
2006/147	06:04:04.96	40 06 16.73	073 57 27.12	147060404	45.09	8.30	50	0.00	22.73	10.04	0.00	176	18.23	DONE

Year / JD	Time (UTC)	Contact Position (NAD83)		Contact Number	Range (M)	Fish Altitude (M)	Range Scale (M)	Shadow Length (M)	Contact Length (M)	Contact Width (M)	Contact Height (M)	Feature Number	Depth (M)	Type
		Latitude (N)	Longitude (W)											
2006/147	06:45:55.99	40 06 48.97	073 57 12.79	147064555	9.38	7.77	50	5.23	8.32	6.39	1.75	0	0	NONSIG
2006/147	06:49:23.33	40 06 21.96	073 57 17.88	147064923	-31.47	7.93	50	0.00	8.07	29.68	0.00	22	17.84	DONE
2006/147	06:58:21.54	40 05 12.72	073 57 34.83	147065821	-32.5	8.13	50	5.07	2.95	1.90	1.06	0	0	NONSIG
2006/147	08:27:15.54	40 03 58.62	073 57 58.25	147082715	28.88	8.12	50	6.98	7.56	3.58	1.45	176	20.8	DONE
2006/147	08:43:17.82	40 06 17.36	073 57 26.14	147084317	-18.12	9.11	50	0.00	22.88	28.74	0.00	175	18.23	DONE
2006/147	10:30:59.64	39 59 13.64	073 59 24.86	147103059	-11.59	7.97	50	3.08	2.95	4.95	1.32	177	19.5	DONE
2006/147	11:25:51.09	40 06 58.36	073 57 31.61	147112551	-18.94	6.60	50	0.00	23.16	25.31	0.00	183	13.93	DONE
2006/147	14:00:29.44	40 06 58.49	073 57 30.82	147140029	-41.59	6.69	50	0.00	13.72	15.08	0.00	183	13.93	DONE
2006/147	18:55:28.65	40 07 52.76	073 58 55.02	147185528	15.22	9.81	50	1.15	1.47	0.57	0.84	0	0	NONSIG
2006/148	04:48:48.89	40 04 34.26	074 00 04.07	148044848	24.44	9.16	50	3.99	1.91	0.77	1.32	0	0	NONSIG
2006/148	06:06:48.56	40 03 54.99	074 00 19.33	148060648	-36.28	8.53	50	5.39	0.79	9.33	0.89	178	20.9	DONE
2006/148	09:00:24.70	40 04 34.20	074 00 03.56	148090024	30.25	8.82	50	3.99	2.93	0.62	1.04	0	0	NONSIG
2006/148	10:07:38.35	40 03 54.82	074 00 20.05	148100738	12.5	7.68	50	2.22	2.79	0.95	1.26	178	20.9	DONE
2006/148	11:15:55.94	40 03 40.17	074 00 28.80	148111555	-15.28	10.22	50	19.84	4.90	1.74	6.74	80	15.55	DONE
2006/148	11:19:36.41	40 04 09.61	074 00 20.08	148111936	25.34	9.35	50	2.86	2.40	1.58	0.95	0	0	NONSIG
2006/148	11:21:57.61	40 04 29.19	074 00 17.70	148112157	-33.59	7.97	50	3.43	6.85	2.54	0.70	79	21.58	DONE
2006/148	12:18:05.32	40 04 20.28	074 00 24.48	148121805	18.81	7.35	50	2.22	3.02	0.91	0.80	78	20.77	DONE
2006/148	13:31:11.38	40 03 54.68	074 00 19.48	148133111	43.84	7.98	50	4.19	8.07	3.33	0.67	178	20.9	DONE
2006/148	14:31:39.90	40 04 29.06	074 00 18.29	148143139	-36.94	8.41	50	4.41	7.37	2.34	0.87	79	21.58	DONE
2006/148	15:55:43.50	40 05 12.49	074 00 13.94	148155543	11.06	6.76	50	3.91	1.73	1.38	2.18	0	0	NONSIG
2006/148	16:00:59.24	40 05 54.17	074 00 02.46	148160059	39.47	8.06	50	5.91	3.17	1.57	1.03	0	0	NONSIG
2006/148	16:49:02.75	40 04 09.62	074 00 20.60	148164902	28	7.63	50	3.86	1.64	1.98	0.88	0	0	NONSIG
2006/148	16:52:27.55	40 03 39.52	074 00 28.45	148165227	39.28	8.20	50	3.76	2.06	1.15	0.71	80	15.55	DONE
2006/148	17:54:16.27	40 00 47.34	073 59 57.71	148175416	-25.81	9.88	50	3.15	1.94	2.60	1.01	152	21.44	DONE
2006/148	18:01:00.94	40 00 47.29	073 59 58.47	148180100	-14.06	9.47	50	2.19	2.15	1.42	1.48	152	21.44	DONE
2006/148	18:14:18.09	40 00 35.56	073 59 34.46	148181418	13.41	9.53	50	1.76	3.41	3.06	1.49	162	18.09	DONE
2006/148	18:14:20.42	40 00 35.18	073 59 34.57	148181420	12	6.73	50	4.05	8.73	11.06	1.17	162	18.09	DONE
2006/148	18:15:23.29	40 00 26.49	073 59 37.45	148181523	26.69	8.39	50	6.70	1.39	1.28	1.68	0	0	NONSIG
2006/149	09:18:15.19	40 07 55.82	073 55 57.75	149091815	-41.31	10.07	50	7.81	1.57	0.48	1.59	112	16.77	DONE
2006/149	09:44:20.02	40 06 24.37	073 57 06.34	149094419	44	8.49	50	4.20	2.50	1.91	0.73	172	15.87	DONE
2006/250	12:48:35.76	40 05 36.85	074 01 56.90	250124835	-6.97	4.35	50	0.00	0.26	0.40	0.00	0	0	NONSIG
2006/250	15:57:22.96	40 07 36.12	073 56 40.50	250155722	36.34	10.17	50	10.24	5.54	1.86	2.21	123	16.41	DONE
2006/250	16:27:19.97	40 06 53.26	073 57 04.96	250162719	-13.31	7.94	50	12.64	3.07	3.34	4.55	132	16.61	DONE
2006/250	16:57:55.58	40 07 22.43	073 56 46.21	250165758	16.56	8.11	50	8.20	27.51	11.60	1.59	124	15.65	DONE
2006/250	17:00:38.99	40 06 58.61	073 56 52.38	250170037	23.88	8.86	50	17.15	14.43	15.35	2.25	128	14.69	DONE
2006/250	18:41:30.35	40 00 34.76	073 59 33.38	250184130	-16.81	7.13	50	15.12	11.14	17.84	2.02	162	18.09	DONE
2006/250	23:47:56.14	40 06 17.31	073 52 45.61	250234756	-14.38	11.22	50	1.70	3.60	1.05	1.61	0	0	NONSIG

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History
 DESCRIPTION
 24 NO.317; CARGO, 5896 GT; POS. ACCURACY 1-3 MILES; REPORTED THRU OCGR; ì WD CLEARED TO 51 FT
 27 NO.211; 5896 GT.
 195 LORAN-C RATES HAVE BEEN PROVIDED BY MR. RICHARD TARACKA, GREENWICH, CT. ì POLICE DEPT., TEL. NO. 203-622-8020; 9960-X 26867.8, 9960-Y 43670.7. ì (ENTERED MSM 6/89)

Fieldnote
 SAIC 2006

Proprietary
 YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECHNIQ

Techniqnote

History

 DESCRIPTION

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
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 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECHNIQ

Techniqnote

History
 DESCRIPTION
 24 NO.593; CARGO, 1478 GT; SUNK 8/29/42 BY MARINE CASUALTY; POSITION ACCUR.
 WITHIN 1 MILE; WD CLEARED TO 50 FT REPORTED THROUGH H.O. CHART RECORDS

Fieldnote
 SAIC 2006

Proprietary
 YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECHNIQ

Techniqnote

History

 DESCRIPTION

 SURVEY REQUIREMENTS

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History
 DESCRIPTION
 24 NO.316; BARGE; POSITION ACCURACY WITHIN 1 MILE; LOCATED 1950 (SOURCE UNK)
 27 NO.209; WOODEN BARGE LOCATED BY USS SAGAMORE IN 50 FT.
 195 LORAN C RATES PROVIDED BY MR. RICHARD TARACKA, GREENWICH, ì CT. POLICE DEPARTMENT, TEL NO 203-622-8020; 9960-X 26916.4, ì 9960-Y 43476.0; IDENTIFIED AS "BRUNETTE". (ENTERED MSM 4/90)

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECHNIQ

Techniqnote

History
 DESCRIPTION
 195 LORAN C RATES PROVIDED BY MR. RICHARD TARACKA, GREENWICH, CT. POLICE DEPARTMENT, TEL NO 203-622-8020; 9960-X 26928.4, 9960-Y 43467.5. (ENTERED MSM 4/90)

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History
 CL664/38--CGS; 10/29/38; BARGE, IN TOW OF A TUG, BOUND FROM PHILADELPHIA TO NEW YORK LOADED WITH 1200 TONS OF COAL, SANK IN 10 FMS OF WATER, 3 1/2 MILES, 104 DEGREES TRUE FROM SEA GIRT LIGHTHOUSE WITH THE MAST SHOWING 4 FT ABOVE THE WATER.
 CL632/50--CGS; 9/1/50; WIRE DRAG FOR 1 MILE AT EFFECTIVE DEPTH OF 50.5 - 57.5 FT; WK NOT FOUND BUT WIRE PICKED UP A PIECE OF WOODEN DECKING AND CORNER TIMBERS; AREA LATER CLEARED TO 57 FT; WK DELETED FROM CHART. (ENTERED MSM 11/85)
 FE10/51--CLEARED TO 58 FT (SURVEY OTHERWISE NOT EVALUATED.)
 DESCRIPTION
 24 NO.346; BARGE, SUNK 10/29/38; POSITION ACCURACY WITHIN 1 MILE AT ABOVE POSITION; REP. THRU BUREAU OF MARINE INSPECTION AND NAVIGATION, DEPT. OF COMMERCE.
 27 NO.590; BARGE, SUNK 10/29/38, BUREAU OF MARINE INSPECTION AND NAV. DEPARTMENT OF COMMERCE.

Fieldnote
 AWOIS 1493 (Information only) - No wreck or obstruction within a 300 meter radius covered with 200% side scan sonar and more than 100% multibeam sounder. This area is within a Fish Haven (AWOIS 6825) with an authorized minimum depth 50 feet.
 SAIC 2006.

Proprietary
 11 SANK 10/28/38 IN 55 FT
 16 SUNK 10/29/38; BARGE
 20 BARGE, SUNK 10/29/38; POSITION ACCURACY WITHIN 1 MILE AT ABOVE

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83	<input type="text" value="40/07/26.41"/>	LONG83	<input type="text" value="073/55/54.48"/>	NATVDATUM	<input type="text" value="6"/>
LATDEC:	<input type="text" value="40.124002777778"/>	LONDEC:	<input type="text" value="73.9318"/>	GPQUALITY	<input type="text" value="Low"/>
				GPSOURCE	<input type="text" value="Direct"/>

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECHNIQ

Techniqnote

History
 DESCRIPTION
 24 NO.595; POS. ACCURACY WITHIN 1 MILE; WD CLEARED TO 50 FT.;ì REPORTED THROUGH H.O. CHART RECORDS, DATED 1950.

Fieldnote
 SAIC 2006.

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History
DESCRIPTION
24 NO.135; CARGO, 3875 GT; SUNK 8/12/18 BY SUBMARINE; POS. ACCURACY 1-3 ì MILES REPORTED THROUGH CGS SURVEY, DATED 4/1/23 (REG. NO. NOT ì ASCERTAINED) SEE SOMMERSTAD

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECHNIQ

Techniqnote

History

NM14/65--WK BUOY ESTABLISHED 50 YDS 060 DEGREES FROM SUNKEN BARGE WHICH LIES IN SOUTH SOUTHWESTERLY POSITION WITH A LEAST DEPTH OF 15 FT.
 NM30/65--BY DISCONTINUED; COE REPORTS SUNKEN BARGE CANNOT BE LOCATED.
 FE221/78-79--OPR-C622, ITEM 9; LOCATED W/O WD THRU LORAN-C POS. PROVIDED BY GENE GEER, AMER. LITTORAL SOCIETY; DIVER VERIFIED AS BARGE W/DERRICK, 65 FT. L, 30 FT. W, RESTING IN INVERTED POS.; POSITION AND LEADLINE LEAST DEPTH OF 46 FT. DETERMINED; MRS. SCHWARTZ, SEC. FOR ATLANTIC, GULF AND PACIFIC CO. WV, IDENTIFIED VESSEL AS BARGE NO. 10.
 CL1958/78--NOS; REVISE POS OF WK AND CHANGE SYMBOL TO 46 FT SNDG WITH DANGER CURVE & TYPE WK.
 H10291/88--OPR-C147-WH-88; BARGE-LIKE SIDE SCAN SONAR CONTACT FOUND IN LAT 40-08-31.297N, LONG 73-58-14.176W (NAD 27); POSITION SCALED FROM SONARGRAMS; NO DIVER INVESTIGATION, PER INSTRUCTIONS; ACCURATE POSITION AND LEAST DEPTH TO BE DETERMINED BY HECK IN 1989; HEIGHT OF 11.4 FT. SCALED FROM SONARGRAMS; PRELIMINARY LEAST DEPTH OF 42 FT.; EVALUATOR RECOMMENDED CHARTING 42 FT. OBSTRUCTION AS SHOWN ON SMOOTH SHEET INSTEAD OF CHARTED 46 FT. WRECK PENDING FURTHER INVESTIGATION. (UPDATED MSM 10/89)
 FE334SS/89--OPR-C147-HE-89; DIVER INVESTIGATION OF SIDE SCAN SONAR CONTACT FOUND ON SURVEY H10291/88; A LARGE METAL BARGE LYING INVERTED ON A SANDY BOTTOM RISING 6-8 FT. OFF THE BOTTOM ON ONE SIDE AND 3 FT. ON THE OTHER; VERY GOOD VISIBILITY; NO SIGN OF DERRICK, BUT DIVERS SPECULATED THAT SINCE THE WRECK IS HIGHER ON ONE SIDE THAN THE OTHER, THE DERRICK IS LIKELY UNDER THE WRECK AND WORKING INTO THE SAND; LEAST DEPTH OF 47 FT. TAKE ON HIGHER SIDE; LORAN RATES: 9960-W 15516.4, 9960-X 26924.3, 9960-Y 43516.0, 9960-Z 59772.5; LAT 41-08-31.398N, LONG 73-58-14.02W; HYDROGRAPHER AND EVALUATOR RECOMMENDED REPLACING CHARTED 46 FT. DEPTH WITH 47WK AS FOUND BY THIS SURVEY. (UPDATED MSM 5/90)

Fieldnote

AWOIS 1504 (Full Investigation) - A full search of the 100-meter radius with 200% side scan sonar and resulting multibeam sounder was completed. A wreck (Feature 149) with a least depth of 14.38 meters (47 feet), 0.28 meter uncertainty, was found 40-08-31.14N 073-58-13.83W, (NAD83). Wreck appears to be a rectangular barge oriented 140 degrees, 20 meters long and 12 meters wide. Recommend removing the charted 46 and charting a 47 foot sounding within the danger circle and blue tint and symbol Wk in 40-08-31.14N 073-58-13.83W, (NAD83).
 SAIC 2006

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

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 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECHNIQ

Techniqnote

History
 DESCRIPTION
 **** REF. CL395/50, SUPPLEMENTAL INSTRUCTIONS FOR PROJECT CS-326; BARGE JOHN H WINSTEAD SANK IN LAT 40-04-15N, LONG 73-59-10W IN 1927; BARGE MILLVILLE SANK IN LAT 40-04-20N, LONG 73-59-00W IN 1927
 SURVEY REQUIREMENTS
 NOT ASSIGNED

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECHNIQ

Techniqnote

History

Fieldnote
 SAIC 2006.

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SENDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECHNIQ

Techniqnote

History

Fieldnote

SAIC 2006.

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECHNIQ

Techniqnote

History

Fieldnote

SAIC 2006

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
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GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD
VESLTERMS
CHART
AREA

CARTOCODE
SNDCODE
DEPTH

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LONG83
NATVDATUM

LATDEC:
LONDEC:
GPQUALITY

GPSOURCE

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Techniqnote

History

Fieldnote

Proprietary

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NIMANUM

RECRD VESSLTERMS CHART AREA
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LAT83 LONG83 NATIVDATUM
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 TECHNIQ

Techniqnote

History

Fieldnote

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YEARSUNK NIMANUM

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GPSOURCE

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TECNIQ

Techniqnote

History

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PROJECT ITEMSTATUS SEARCHTYPE
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 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History

Fieldnote

AWOIS 12874 (Information Only) - Single sewer pipe found with offshore end (Feature 196) in 40-01-48.04N 074-01-39.26W (NAD83) with a least depth of 18.51 meters (60 feet), 0.28 meter uncertainty. The pipe is buried from the shoreline to Feature 194 in 40-01-58.77N 074-02-42.49W (NAD83) with a least depth of 8.89 meters (29 feet), 0.280 meter uncertainty. Projection of the exposed pipe alignment to the shore intersects the charted high water line in 40-02-02.11N 074-03-02.49W (NAD83). Recommend charting the sewer pipeline from 40-02-02.11N 074-03-02.49W (NAD83) to 40-01-58.77N 074-02-42.49W (NAD83), to 40-01-48.04N 074-01-39.26W (NAD83). Recommend charting a 60 feet (18.51m) sounding in 40-01-48.04N 074-01-39.26W (NAD83) at the offshore end of the pipe (Feature 196).

In addition to the sewer pipeline there are anchor block obstructions on both the north and south sides of the pipeline:

- Obstruction (Feature 2) with a least depth of 19.02 meters (62 feet), 0.28 meter uncertainty in 40-01-49.45N 074-01-49.36W, (NAD83).
- Obstruction (Feature 3) with a least depth of 18.68 meters (61 feet), 0.28 meter uncertainty in 40-01-49.24N 074-01-44.31W (NAD83).
- Obstruction (Feature 6) with a least depth of 19.24 meters (63feet), 0.28 meter uncertainty in 40-01-47.70N 074-01-39.40W (NAD83).
- Obstruction (Feature 7) with a least depth of 19.10 meters (62feet), 0.28 meter uncertainty in 40-01-48.33N 074-01-39.20W (NAD83).
- Obstruction (Feature 9) with a least depth of 19.37 meters (63 feet), 0.28 meter uncertainty in 40-01-49.90N 074-01-51.90W (NAD83).
- Obstruction (Feature 11) with a least depth of 18.65 meters (61 feet), 0.28 meter uncertainty in 40-01-49.62N 074-01-46.67W (NAD83).
- Obstruction (Feature 12) with a least depth of 19.46 meters (64 feet), 0.28 meter uncertainty in 40-01-49.04N 074-01-46.97W (NAD83).
- Obstruction (Feature 13) with a least depth of 18.92 meters (62 feet), 0.28 meter uncertainty in 40-01-48.77N 074-01-41.85W (NAD83).
- Obstruction (Feature 30) with a least depth of 11.83 meters (39 feet), 0.27 meter uncertainty in 40-01-56.62N 074-02-31.96W (NAD83).
- Obstruction (Feature 31) with a least depth of 11.06 meters (36 feet), 0.27 meter uncertainty in 40-01-57.31N 074-02-31.71W (NAD83).
- Obstruction (Feature 33) with a least depth of 12.23 meters (40 feet), 0.27 meter uncertainty in 40-01-56.39N 074-02-27.04W (NAD83).
- Obstruction (Feature 34) with a least depth of 13.01 meters (42 feet), 0.27 meter uncertainty in 40-01-55.76N 074-02' 27.09W (NAD83).
- Obstruction (Feature 35) with a least depth of 11.42 meters (37 feet), 0.27 meter uncertainty in 40-01-57.10N 074-02-34.39W (NAD83).
- Obstruction (Feature 36) with a least depth of 13.98 meters (46 feet), 0.28 meter uncertainty in 40-01-55.32N 074-02-24.31W (NAD83).
- Obstruction (Feature 37) with a least depth of 13.03 meters (43 feet), 0.27 meter uncertainty in 40-01-55.97N 074-02-24.22W (NAD83). Recommend charting 43 feet (13.03m) in 40-01-55.97N 074-02-24.22W (NAD83) and label Obstns.
- Obstruction (Feature 43) with a least depth of 13.59 meters (44 feet), 0.28 meter uncertainty in 40-01-55.53N 074-02-21.74W (NAD83).
- Obstruction (Feature 44) with a least depth of 14.49 meters (47 feet), 0.28 meter uncertainty in 40-01-54.74N 074-02-16.76W (NAD83).
- Obstruction (Feature 47) with a least depth of 15.47 meters (51 feet), 0.28 meter uncertainty in 40-01-53.93N 074-02-11.83W (NAD83). Recommend charting 51 feet (15.47m) in 40-01-53.93N 074-02-11.83W (NAD83) and label Obstns.
- Obstruction (Feature 48) with a least depth of 16.77 meters (55 feet), 0.28 meter uncertainty in 40-01-53.34N 074-02-11.87W (NAD83).
- Obstruction (Feature 49) with a least depth of 14.00 meters (46 feet), 0.28 meter uncertainty in 40-01-55.20N 074-02-19.16W (NAD83).
- Obstruction (Feature 50) with a least depth of 15.05 meters (49 feet), 0.28 meter uncertainty in 40-01-54.38N 074-02-14.24W (NAD83).
- Obstruction (Feature 51) with a least depth of 16.02 meters (52 feet), 0.28 meter uncertainty in 40-01-53.77N 074-02-14.54W (NAD83).

Obstruction (Feature 52) with a least depth of 17.25 meters (56 feet), 0.28 meter uncertainty in 40-01-52.88N 074-02-09.49W (NAD83).
Obstruction (Feature 53) with a least depth of 16.00 meters (52 feet), 0.28 meter uncertainty in 40-01-53.54N 074-02-09.22W (NAD83).
Obstruction (Feature 54) with a least depth of 16.86 meters (55 feet), 0.28 meter uncertainty in 40-01-52.69N 074-02-04.30W, (NAD83).
Obstruction (Feature 55) with a least depth of 17.92 meters (59 feet), 0.28 meter uncertainty in 40-01-52.06N 074-02-04.35W (NAD83).
Obstruction (Feature 57) with a least depth of 17.55 meters (57 feet), 0.28 meter uncertainty in 40-01-51.79N 074-01-59.16W (NAD83).
Obstruction (Feature 58) with a least depth of 18.58 meters (61 feet), 0.28 meter uncertainty in 40-01-51.18N 074-01-59.37W (NAD83).
Obstruction (Feature 59) with a least depth of 17.51 meters (57 feet), 0.28 meter uncertainty in 40-01-52.50N 074-02-07.09W (NAD83).
Obstruction (Feature 60) with a least depth of 16.46 meters (54 feet), 0.28 meter uncertainty in 40-01-53.09N 074-02-06.83W (NAD83).
Obstruction (Feature 63) with a least depth of 17.25 meters (56 feet), 0.28 meter uncertainty in 40-01-52.24N 074-02-01.72W (NAD83).
Obstruction (Feature 64) with a least depth of 18.38 meters (60 feet), 0.28 meter uncertainty in 40-01-51.64N 074-02-02.02W (NAD83).
Obstruction (Feature 65) with a least depth of 18.68 meters (61 feet), 0.28 meter uncertainty in 40-01-50.80N 074-01-56.91W (NAD83).
Obstruction (Feature 66) with a least depth of 17.83 meters (58 feet), 0.28 meter uncertainty in 40-01-51.39N 074-01-56.73W (NAD83). Recommend charting 58 feet (17.83m) sounding in 40-01-51.39N 074-01-56.73W (NAD83) and label Obstns.
Obstruction (Feature 68) with a least depth of 19.08 meters (62 feet), 0.28 meter uncertainty in 40-01-50.34N 074-01-54.36W, (NAD83).
Obstruction (Feature 186) with a least depth of 19.50 meters (64 feet), 0.28 meter uncertainty in 40-01-48.63N 074-01-44.62W (NAD83).
Obstruction (Feature 187) with a least depth of 18.51 meters (60 feet), 0.28 meter uncertainty in 40-01-50.07N 074-01-49.19W (NAD83).
Obstruction (Feature 188) with a least depth of 18.43 meters (60 feet), 0.28 meter uncertainty in 40-01-50.51N 074-01-51.81W (NAD83).
Obstruction (Feature 189) with a least depth of 15.46 meters (50 feet), 0.28 meter uncertainty in 40-01-54.13N 074-02-16.96W (NAD83).
Obstruction (Feature 190) with a least depth of 14.75 meters (48 feet), 0.28 meter uncertainty in 40-01-54.56N 074-02-19.45W (NAD83).
Obstruction (Feature 191) with a least depth of 12.49 meters (41 feet), 0.27 meter uncertainty in 40-01-56.19N 074-02-29.30W (NAD83).
Obstruction (Feature 192) with a least depth of 11.95 meters (39 feet), 0.27 meter uncertainty in 40-01-56.83N 074-02-29.04W (NAD83).
Obstruction (Feature 193) with a least depth of 10.64 meters (35 feet), 0.27 meter uncertainty in 40-01-57.71N 074-02-34.07W (NAD83). Recommend charting 35 feet (10.64m) in 40-01-57.71N 074-02-34.07W (NAD83) and label Obstns.
Obstruction (Feature 195) with a least depth of 18.09 meters (59 feet), 0.28 meter uncertainty in 40-01-50.92N 074-01-54.13W (NAD83).
Obstruction (Feature 197) with a least depth of 19.61 meters (64 feet), 0.28 meter uncertainty in 40-01-48.23N 074-01-42.03W (NAD83).
Obstruction (Feature 198) with a least depth of 14.64 meters (48 feet), 0.28 meter uncertainty in 40-01-55.01N 074-02-21.90W (NAD83).

SAIC 2006

Proprietary

YEARSUNK

NIMANUM

[Print Record](#)

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD 12982 VESSLTERMS OBSTRUCTION CHART 12323 AREA C
CARTOCODE 067 SENDINGCODE 127 DEPTH 50

LAT83 40-02-08.16 LONG83 073-59-34.4 NATIVDATUM 31
LATDEC: 40.0356 LONDEC: 73.992888888889 GPQUALITY Poor
GPSOURCE Scaled

PROJECT OPR-C303-KR-06 ITEMSTATUS Assigned SEARCHTYPE Full
RADIUS INIT JRS ASSIGNED 12/17/2004
TECNIQ SD, S2, SWMB
Techniqnote SEARCH IN COORDINATES BELOW

History SOURCE UNKNOWN -- FISH HAVEN AUTH MIN DEPTH 50 FT NW 40-4-10.81N, 73-59-44.48W; NE 40-3-43.2N, 73-58-32.48W; SE 39-59-49.3N, 73-59-23.06W; NW 40-0-18N, 74-0-37.94W. (ENT. 12/17/04, JRS)

Fieldnote AWOIS 12982 (Full Investigation) - A full search of the Fish Haven with 200% side scan sonar and more than 100% multibeam sounder was completed. Danger to Navigation Report 8 was submitted for disposal mounds that were shoaler than the authorized minimum depth of 50 feet. One mound (Feature 138) with a least depth of 15.03 meters (49 feet), 0.28 meter uncertainty is located in 40-01-05.67N 074-00-23.64W (NAD83). A second mound (Feature 139) with a least depth of 14.10 meters (46 feet), 0.280 meter uncertainty, is located in 40-00-59.23N 074-00-24.50W (NAD83). Subsequent to the submittal of this report, the Corps of Engineers changed the authorized minimum depth to 40 feet. There are no features shoaler than 40 feet within this Fish Haven. Two previously charted wrecks in 40-03-23.38N 073-59-33.68W (NAD83) and 40-03-12.45N 073-59-16.19W (NAD83) have been removed from the chart based on the new authorized minimum depth of 40 feet. The least depth on the wreck in 40-03-12.45N 073-59-16.19W (NAD83) was reported as 42 feet in 40-03-12.38N 073-59-16.44W in a Chart Correction Letter submitted on 12 April, 2005, by SAIC to NOAA. The least depth was set on an object attached to the top of the wreck. This object on the top of the wreck was not seen in this survey. The least depth of this wreck was found to be 15.40 meters (50 feet), 0.28 meter uncertainty in 40-03-12.79N 073-59-16.45W (NAD83).
SAIC 2006

Proprietary

YEARSUNK NIMANUM

Print Record

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

AWOIS 1466 (Full Investigation) was not an AWOIS assigned by NOAA as part of H11536 but was assigned as part of H11495 which was surveyed by SAIC in 2005-2006. A partial search of the 2000-meter radius with 200% side scan and resulting multibeam sonar coverage was completed. The remainder of the radius was covered during the survey of H11495 (Sheet K) conducted in 2005-2006. During this survey only one obstruction was located approximately 1440 meters north of the AWOIS position. Two wrecks were found during the H11495 survey inside the search radius, or very near. A wreck was found approximately 2000 meters southeast of the AWOIS position and is closer to the position of AWOIS 12872 and a wreck was found approximately 1535 meters west of the AWOIS position and is closer to AWOIS 1465. Recommend removing the dangerous wreck symbol, blue tint and label PA charted in 39-58-50.04N 074-01-59.36W (NAD83).

SAIC 2006

Proprietary

YEARSUNK NIMANUM

[Print Record](#)

APPENDIX III. FINAL PROGRESS SKETCH AND SURVEY OUTLINE

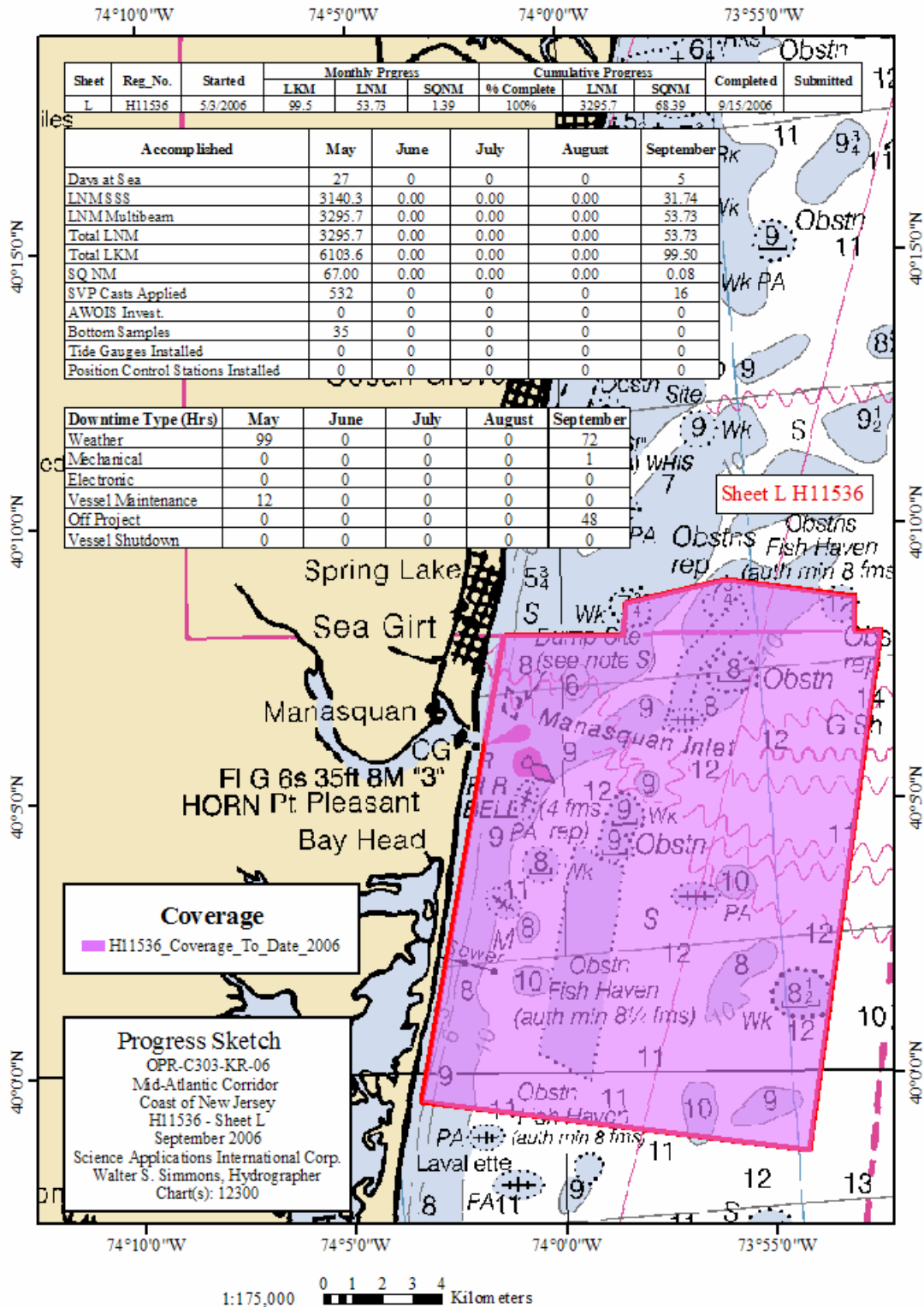


Figure App. III-1. Final Progress Sketch for H11536

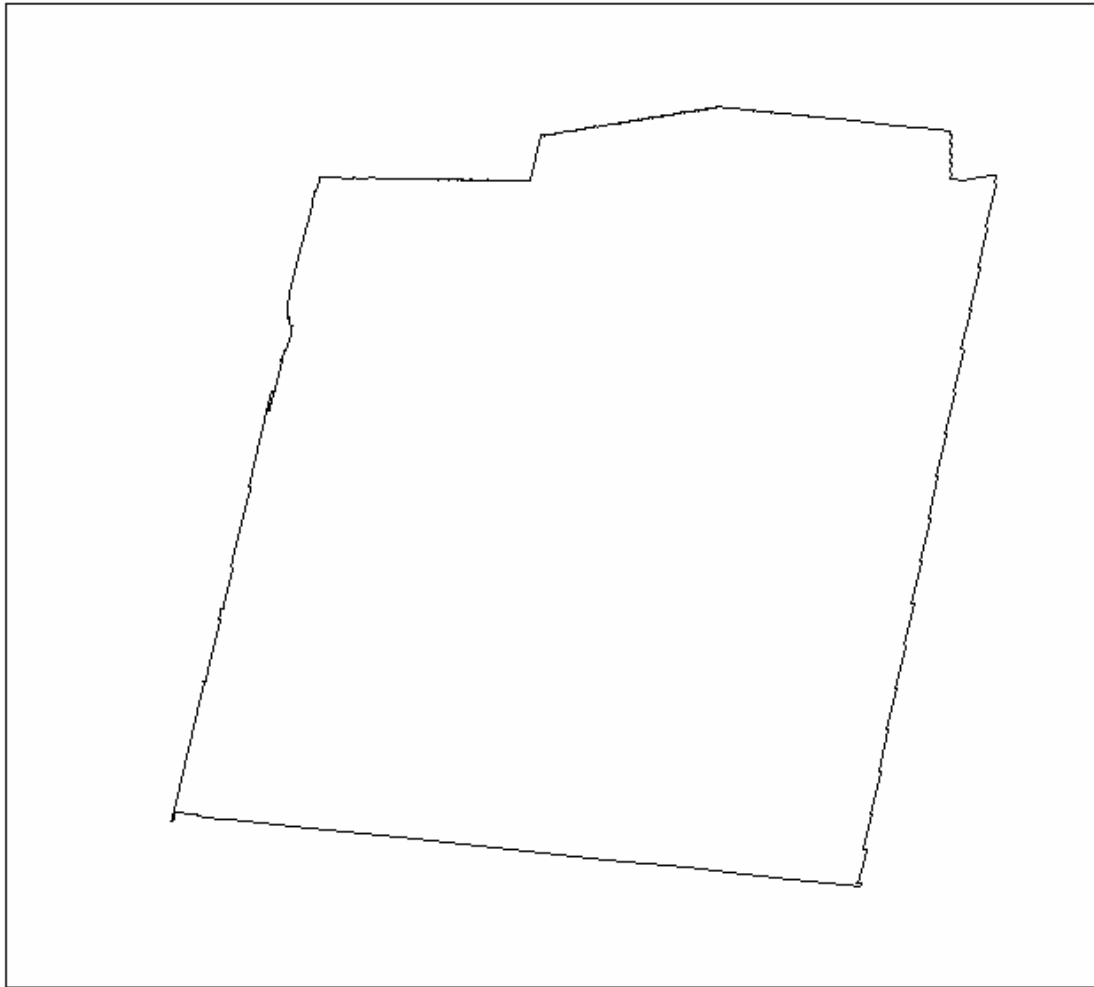


Figure App. III-2. Survey Outline for H11536

APPENDIX IV. TIDES AND WATER LEVELS

The on-line times for acquisition of valid hydrographic data are presented in Abstract of Times of Hydrography, H11536.

Project: OPR-C303-KR-06

Registry No.: H11536

Contractor Name: Science Applications International Corporation

Date: 15 September 2006

Sheet Letter: L

Inclusive Dates: 3 May 2006 – 15 September 2006

Field work is complete.

Table App. IV- 1. Abstract Times of Hydrography, H11536

Year	Julian Day	Begin Time	Julian Day	End Time
2006	123	04:39:51	125	06:36:16
2006	125	19:54:54	128	15:43:33
2006	130	20:28:00	131	10:52:56
2006	133	02:26:41	135	10:58:36
2006	136	00:12:56	137	13:58:21
2006	138	02:31:29	141	20:02:46
2006	143	09:40:03	144	10:20:53
2006	144	19:09:42	149	11:19:31
2006	250	00:59:33	251	02:06:28
2006	258	06:34:02	258	16:20:41

Final Tide Note

Observed verified water levels were downloaded from the <http://tidesandcurrents.noaa.gov/> web site for Atlantic City, NJ (8534720). Water Level correctors were prepared for each zone using the **SABER/Tools/Create Water Level Files** software. **SABER/Apply Correctors/Tides** software applied these files to the multibeam data according to the zone containing the nadir beam of each ping.

Analysis of the H11536 multibeam data in the **SABER Multi-View Editor** and in depth grids revealed minimal depth jumps across the junction of zones based on Atlantic City, NJ (8534720). A spreadsheet analysis also confirmed the adequacy of zoning correctors based on Atlantic City, NJ (8534720). The water level zoning correctors based entirely on Atlantic City, NJ (8534720) were applied to all multibeam data for H11536.

APPENDIX V. SUPPLEMENTAL SURVEY RECORDS & CORRESPONDENCE

This appendix contains five email correspondences. The emails are 1) 26 October 2006 Mark Lathrop to Rod Evans regarding which specification and deliverables to deliver sheet L, A and B to; 2) 5 October 2006 Paul Donaldson to Mark Lathrop regarding DtoN #3; 3) 12 October 2006 Gene Parker to Paul Donaldson regarding DtoN report #3; 4) 27 March 2006 Jeff Ferguson to Rod Evans Discussing AWOIS areas for Task order #1; and 5) 19 July 2007 Gene Parker to Paul Donaldson dicussing AWOIS reporting in the Descriptive Report.

From: Mark.T.Lathrop@noaa.gov on behalf of mark.t.lathrop
[Mark.T.Lathrop@noaa.gov]
Sent: Thursday, October 26, 2006 10:53 AM
To: Evans, Rhodri E.
Cc: Jeffrey.Ferguson@noaa.gov; Quintal, Rebecca T.
Subject: Re: Task Order #1 Sheet L (NJ) and A-B (Del)
Rod,
Please refer to the June 2006 Specs for all your current surveys.

Thanks,
Mark

"Evans, Rhodri E." wrote:

Mark,

We are in the process of drafting specific questions regarding our deliverables for Sheet L, A&B (H11536, H11554 and H11555, respectively) and the new NOS Specifications and Deliverables. However we would like to ask one question up front which will help us determine the follow on questions. Our SOW for these sheets is from May 2006 and states that Specifications and Deliverables (dated February, 2006 and marked DRAFT) are the technical specifications. We would like permission to deliver Sheet L, A&B (H11536, H11554 and H11555, respectively) products based on the official June 2006 Specifications and Deliverables. While the differences between the two documents are fairly minor, they do exist and we feel it would be more straightforward to work toward the official version. Is this change acceptable?

I have copied Jeff Ferguson, as Jeff was the POC for us during the proposal phase and discussions on this Task Order #1.

Regards, RE.

Rod Evans Ph.D.,
Assistant Vice President,
Marine Survey Manager,

SAIC Marine Science and Technology Division,
221 Third Street,
NewportRI02840
USA.
Tel (401) 848.4783.
Mobile (401) 439.1037.
Email: evansrh@saic.com
<http://www.saic.com>

From: Donaldson, Paul L.
Sent: Thursday, October 05, 2006 4:46 PM
To: 'Mark Lathrop'
Cc: 'Gary Davis'; 'Walter Simmons'
Subject: RE: H11536 Danger to Navigation Report #3

Mark,

As you are aware we are currently in the process of reviewing our survey data for the remaining sheets off the coast of New Jersey and Delaware. During review it has come to our attention that the information submitted on May 23, 2006 with regards to the third Danger to Navigation Report for H11536 (Sheet L) is not captured in the Notice to Mariners. I wanted to confirm that you received the PDF attachment with the e-mail sent on May 23, 2006. I can re-submit the Danger to Navigation Report if needed. Please advise if there is anything further you would like from us.

Thank you,

Paul Donaldson
Marine Scientist/Lead Hydrographer
221 Third Street
Building A
Newport, RI 02840
Telephone: (401) 847-4210
Fax: (401) 849-1585
Email; paul.l.donaldson@saic.com
<https://www.saic.com>

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

From: Donaldson, Paul L.
Sent: Tuesday, May 23, 2006 10:18 AM
To: 'Mark Lathrop'
Cc: Gary Davis; 'Walter Simmons'
Subject: H11536 Danger to Navigation Report #3

Mark,

The attached zipped file contains a PDF file which is the third Danger to Navigation Report for H11536 (Sheet L). If you have any problems with either the zipped file or the PDF file please let me know and I will re-send the document.

Thank you,

Paul Donaldson
Marine Scientist/Lead Hydrographer
221 Third Street
Building A
Newport, RI 02840
Telephone: (401) 847-4210
Fax: (401) 489-1585
Email; paul.l.donaldson@saic.com
<https://www.saic.com>

From: Castle.E.Parker@noaa.gov [mailto:Castle.E.Parker@noaa.gov]
Sent: Thursday, October 12, 2006 2:54 PM
To: Donaldson, Paul L.
Subject: [Fwd: H11536 DtoN H11536 DtoN#3 (5 Items) Submission from AHB to MCD]

Hey Paul, Thanks for the note concerning H11536 DtoN #3. The email listed at the bottom of this email is the original submission from AHB to MCD. It was submitted on May 30, 2006. I have received an email from MCD on 05/31/06 but it only addresses one wreck. I had submitted five items on 05/30/06. MCD email reply is not specific and do not which wreck and where it's located. I'll have to contact MCD DtoN and check to see if they only processed one of five items.

Thanks for the notice. Good luck to ya during travels. In retrospect, I'm starting to miss the field time this office stuff keeps piling up and then new issues emerge! There no end to it! I'm working on the survey acceptance for H11456 right now and not having any questions or issues with the data or products. It's like these surveys have become very routine! That's good!

Take care and yak at you later, Gene

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

Subject:

FW: H11536 Danger to Navigation Report #3

Date: Thu, 12 Oct 2006 14:25:11 -0400

From: "Donaldson, Paul L." <PAUL.L.DONALDSON@saic.com>

To: "Gene Parker (castle.e.parker@noaa.gov)"

<Castle.E.Parker@noaa.gov>

CC: Mark Lathrop <Mark.T.Lathrop@noaa.gov>,
WALTER.S.SIMMONS@saic.com, "Gary Davis (gdavis@mtg.saic.com)"
<gdavis@mtg.saic.com>

Gene,

Last week I sent an e-mail to Mark Lathrop and have not heard from him yet. I thought he may be on travel or out of the office so I am forwarding you the e-mail. You may have already received this from Mark but I am on travel as of Monday and wanted to make sure I did not forget to follow up. If this is a non issue and you have everything you need let me know. Hope all is well.

Paul Donaldson
Marine Scientist/Lead Hydrographer
221 Third Street
Building A
Newport, RI 02840
Telephone: (401) 847-4210
Fax: (401) 849-1585
Email; paul.l.donaldson@saic.com
<https://www.saic.com>

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

Subject: H11536 DtoN H11536 DtoN#3 (5 Items) Submission from AHB to MCD
Date: Tue, 30 May 2006 10:31:28 -0400
From: gene_parker <castle.e.parker@noaa.gov>
Organization: NOAA / Atlantic Hydrographic Branch
To: _NOS OCS MCD Navigation Dangers <mcd.dton@noaa.gov>
CC: Doug Baird <Doug.Baird@noaa.gov>, Tod Schattgen <Tod.Schattgen@noaa.gov>

Good Day: Please find attached zip file concerning survey H11536 Danger to Navigation #3, containing 5 items for submission to Marine Chart Division (MCD). The information submitted by the contractor is preliminary and has not been verified; the survey is not complete and remains ongoing. The DtoN contains four wrecks and one obstruction as described in the attached documentation.

The contents of the attached WinZip file were generated at Atlantic Hydrographic Branch by Contract Data Section. The attached zip file contains DtoN #3 PDF document, a Pydro XML file, and two jpeg image files.

If you have any questions, please direct them back to me; email at address below or call 757-441-6413.

Thank you for your assistance with this matter, Gene Parker

All,

See attached files on AWOIS items for the new NOAA task order. Thx, RE.

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

From: Jeffrey Ferguson [<mailto:Jeffrey.Ferguson@noaa.gov>]

Sent: Monday, March 27, 2006 4:12 PM

To: Evans, Rhodri E.

Subject: Re: AWOIS

try this...

"Evans, Rhodri E." wrote:

I spoke too soon! The files were blocked by our firewall. Could you kindly re-send them within a zip file. That should get through to me.

Thanks, RE.

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

From: Evans, Rhodri E.

Sent: Monday, March 27, 2006 4:02 PM

To: 'Jeffrey Ferguson'

Subject: RE: AWOIS

Jeff,

Received with thanks. I mentioned to Mark Lathrop earlier today that I will resume the weekly status report soon. We are re-commencing on Sheet J and K off New Jersey by mid-April 2006, then straight into Task Order #1 which was awarded last week (our thanks!).

Regards, RE.

Rod Evans Ph.D.,
Assistant Vice President,
Marine Survey Manager,
SAIC Marine Science and Technology Division,
221 Third Street,
Newport RI 02840
USA.

Tel (401) 848.4783.

Mobile (401) 439.1037.

Email: evansrh@saic.com

<http://www.saic.com>

<http://www.saicnewport.com>

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

From: Jeffrey Ferguson [<mailto:Jeffrey.Ferguson@noaa.gov>]

Sent: Monday, March 27, 2006 3:59 PM
To: Evans, Rhodri E.
Subject: AWOIS

Rod,

Attached are two Access Database files for the AWOIS items assigned to TO1.

As mentioned previously, none of the items require any additional field work over the area already assigned. The assigned items will just need to be discussed in the Descriptive Report and the info will help in your planning process.

Let me know if you have any questions.
Jeff

From: Castle.E.Parker@noaa.gov [mailto:Castle.E.Parker@noaa.gov]
Sent: Thursday, July 19, 2007 9:12 AM
To: Donaldson, Paul L.
Cc: Daniel.Wright@noaa.gov
Subject: Re: Deliverable Preference for AWOIS

Hey Paul, I might have an answer for your question! Good to hear from ya. Busy as usual. I'm on leave till Monday and didn't want to keep you waiting. IF you want to put the AWOIS investigation findings in Appendix 2 that's OK. Appendix 2 is for the item investigation forms which also includes AWOIS items and any other items that are specifically detailed within the survey.

I prefer to choose what makes the documentation easier for you. Normally with NOAA surveys Section D does not detail the majority of the feature descriptions within the body of the DR. The feature forms that reside in Appendix 2 does detail the features, final findings or attributes concerning the feature, and the charting recommendations. Also, include the AWOIS database in printed PDF format; this could be place in Appendix 2 either at the first like a item list or contents list, or at the end of the items forms.

Is having the AWOIS database field notes filled out useful as a deliverable? YES. Submit the database in print form in Appendix 2 and submit digital database *.mdb if a MS Access. Just place the database file in the Appendix 2 directory.

IF you need to discuss further call me or write. I'll be back in the office on Monday!
Hope this helps, Gene

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

From: "Donaldson, Paul L." <PAUL.L.DONALDSON@saic.com>
Date: Wednesday, July 18, 2007 9:59 am

Subject: Deliverable Preference for AWOIS

Gene,

I should really try to find the time to drop you a line just to say hello and not just when I have a question for you. Having said that "Hello" and I have a question for you.

I am putting together the DR for Sheet L and was thinking of changing how we discuss the AWOIS items. Previously we have included the AWOIS discussion within the body of the DR (Section D) as we had not had access to the field sheets data base. More recently we have gotten the access data base with the delivery of information from NOAA.

Under Section D, I was thinking that I would continue to discuss the AWOIS as normal however I could also then direct the reader to an appendix which will have the printout of the data base AWOIS sheet. This will have the field notes section filled out with our findings and recommendations.

It would be cleaner to not discuss the AWOIS in section D in detail but just have a short paragraph about the AWOIS within the sheet and a table that list the full and information only AWOIS items and then refer the reader to the Appendix with the field notes filled out. This deviates quite a bit from the Spec's so did not want to do this approach without your input.

We would also include the data base with the deliveries so the data base would be easier to update.

Would you prefer section D to stay the same with the AWOIS Sheet as an Appendix or a short discussion with a referral to the Appendix? Would you prefer that we keep Section D as we have been delivering it and not include the AWOIS database printouts as an Appendix?

Is having the AWOIS database field notes filled out useful as a deliverable?

I look forward to your perspective on this. I think it would be useful to have the field notes filled in but do not know how you use the information.

Thanks,

Paul Donaldson
Operations Manager/Lead Hydrographer
221 Third Street
Building A
Newport, RI 02840
Telephone: (401) 847-4210
Mobil: (401) 855-5909
Fax: (401) 849-1585

Email; paul.l.donaldson@saic.com
<https://www.saic.com>

BOTTOM COMPOSITION

There were 35 bottom samples taken to verify the bottom types charted for H11536. Table App. V - 1 compares information for each sample collected to the charted bottom type. Charts 12324_3, 12326, 13003 and 13006 had no charted bottom types that fell within the survey area.

Table App. V - 1. H11536 Bottom Sample Characteristics

Bottom Sample Position (NAD83)		Sample Number	Depth of Bottom Sample (m)	Depth Uncertainty	Observed Bottom Type	Charted Bottom Type			
Latitude (N)	Longitude (W)					12323	12324_1	12324_5	12300
39° 59' 11.7"	073° 55' 30.1"	BS-5	17.7	0.28	medS fineP	S G			S G
40° 00' 22.6"	073° 57' 04.1"	BS-6	21.1	0.28	crsS medP	S			S
40° 01' 05.9"	073° 56' 09.5"	BS-7	17.0	0.28	medG	G			
40° 01' 15.1"	073° 57' 53.7"	BS-8	22.0	0.28	medG fineP Sh	G Sh			
40° 00' 37.6"	073° 58' 43.5"	BS-9	21.1	0.28	hard no sample acquired	G S			
40° 00' 52.4"	074° 00' 14.1"	BS-10	21.9	0.28	crsS				S
40° 01' 53.7"	074° 00' 57.5"	BS-11	19.8	0.28	fineG fineP Sh	S G		S G	S
40° 02' 29.4"	074° 01' 41.7"	BS-12	19.3	0.28	M	Sy M	M		
40° 03' 03.7"	074° 01' 51.3"	BS-13	16.2	0.28	syM	S	S		
40° 05' 05.9"	074° 01' 53.8"	BS-14	10.0	0.28	medS		S		
40° 05' 36.3"	074° 01' 04.3"	BS-33	16.1	0.28	medS	M	M		
40° 02' 56.1"	073° 54' 32.4"	BS-32	21.6	0.28	S P	S			
40° 02' 50.6"	073° 56' 15.0"	BS-31	23.1	0.28	crs S med P Sh	S			
40° 03' 27.9"	073° 56' 19.3"	BS-30	22.0	0.28	crs S P	G			
40° 04' 16.5"	073° 54' 39.2"	BS-29	21.2	0.28	med P	S			
40° 05' 21.2"	073° 55' 29.3"	BS-28	21.2	0.28	crs S G	S			
40° 05' 24.0"	073° 53' 42.8"	BS-27	22.3	0.28	G medP S	G S			
40° 07' 32.6"	073° 53' 16.6"	BS-26	23.6	0.28	crs S	S G			
40° 07' 48.2"	073° 54' 26.1"	BS-25	20.9	0.28	med S G	S			
40° 07' 27.3"	073° 55' 33.9"	BS-24	17.6	0.28	crs S	S			
40° 06' 48.9"	073° 57' 56.1"	BS-23	18.7	0.28	med S	S	S		
40° 07' 44.1"	073° 58' 18.4"	BS-22	20.4	0.28	fine S	Sy M			S
40° 07' 30.4"	073° 59' 42.7"	BS-21	15.2	0.28	fine S	S			

Bottom Sample Position (NAD83)		Sample Number	Depth of Bottom Sample (m)	Depth Uncertainty	Observed Bottom Type	Charted Bottom Type			
Latitude (N)	Longitude (W)					12323	12324_1	12324_5	12300
40 07' 51.0"	074° 00' 40.3"	BS-20	16.1	0.28	fne S	S G	S G		S
40 07' 54.6"	074° 01' 19.2"	BS-35	9.6	0.27	fneS M		S		S
40 06' 37.8"	074° 00' 53.2"	BS-19	16.5	0.28	Silt	hS	hS		
40 05' 28.5"	073° 57' 41.9"	BS-18	21.4	0.28	crs S	S	S		
40 05' 10.1"	073° 57' 22.9"	BS-17	23.5	0.28	fneS M brkSh	S Sh			
40 04' 21.2"	073° 57' 39.9"	BS-16	21.7	0.28	crsS crsP G	S			
40 05' 15.8"	073° 59' 45.8"	BS-15	21.9	0.28	hard no sample acquired	G S			
40 01' 17.7"	074° 02' 46.0"	BS-34	10.4	0.276	Silt	S			
40 00' 40.9"	074° 02' 29.7"	BS-1	16.5	0.28	fneS brk Sh	S		S	S
39 59' 29.2"	074° 02' 52.7"	BS-2	15.3	0.28	Silt	Sy		Sy	
39 59' 21.2"	074° 01' 20.5"	BS-3	21.3	0.28	hard no sample acquired	S			
39 59' 15.4"	073° 58' 27.6"	BS-4	21.4	0.28	crs S G	G S			

It is recommended that the bottom type charted be updated where necessary based on the information collected during the latest survey.

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT to Accompany
Survey H11536 (2006)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

B. DATA ACQUISITION AND PROCESSING

B.1 DATA PROCESSING

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

CARIS HIPS/SIPS version 6.1 SP1 HF 1-7
CARIS Bathy Manager version 2.1 HF 1-6
DKART INSPECTOR, version 5.0 Build 707
CARIS HOM version 3.3
CARIS S57 Composer version 1.0

B.2. QUALITY CONTROL

B.2.1 H-Cell

Refer to the appended pre-compilation log for H-Cell process metadata.

C. VERTICAL AND HORIZONTAL CONTROL

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

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

<u>RNC</u>	<u>Scale</u>	<u>Edition</u>	<u>Updated through LNM</u>
12323_1	80000	24	10/23/07
12324_1	40000	32	3/18/08
12324_3	20000	32	3/18/08

<u>ENC</u>	<u>Edition</u>	<u>Update</u>	<u>Issue Date</u>
US4NJ23M	1	0	20071030
US4NY1AM	11	0	20071218

D.1.1 Hydrography

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

The H-Cell and the corresponding blue notes contain the set of verified and disproved features, the positions and least depths of which were examined during the survey review and pre-compilation processes. The positions and least depths contained in the Descriptive Report are for reference only.

Features within the fish havens charted on RNCs 12324_1 and 12323_1 were not included in the H-Cell if the feature least depth was deeper than the authorized minimum depth.

Features within the fish haven charted on ENC US4NY1AM but not RNCs 12324_1 and 12323_1 were included in the H-Cell. AHB defers these features, including the fish haven, to MCD.

The 46 sewer-pipeline support structures that are classified as obstructions in the DR were not included in the H-Cell; however, the sewer pipeline itself is included in the bluenotes.

D.3 MISCELLANEOUS

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

D.4 ADEQUACY OF SURVEY

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

APPROVAL SHEET
H11536

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 Williams
Hydrographic Intern
Atlantic Hydrographic Branch

Nicholas A. Forfinski
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
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch