H10989

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic / Side Scan Sonar

Field No. WH-40-02-00

Registry No. H10989

LOCALITY

State New Jersey -- Delaware

General Locality Approaches to Delaware Bay

Locality 14 NM East of Indian River Inlet

2000

CHIEF OF PARTY
Gerd F. Glang, LCDR, NOAA

LIBRARY & ARCHIVES

DATE

NOAA FORM 77-28 (11-72) U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET	**H10989**
INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.	FIELD NUMBER: **WH-40-02-00**

State: **New Jersey - Delaware**

General Locality: **Approaches to Delaware Bay**

Sub-Locality: **14 miles East of Indian River Inlet**

Scale: **1:40,000** Date of Survey: **07/13/00 - 09/15/00**

Instructions Dated: **July 1, 1999** Project Number: **OPR-D392-WH**

Vessel: **NOAA Ship WHITING, S-329**

Chief of Party: **Lieutenant Commander Gerd F. Glang, NOAA**

Surveyed by: **WHITING Personnel**

Soundings by: **Odom Echotrac DF3200 MK 11 and RESON 8101 SWMB**

Graphic record scaled by: **WHITING Personnel**

Graphic record checked by: **WHITING Personnel**

Protracted by: **N/A** Automated Plot: ~~HP-DesignJet 2500-CP~~ **HP-750C**

Verification by: **Atlantic Hydrographic Branch** personnel

Soundings in: feet ~~Meters~~ in MLLW

Remarks:

1) All Times are UTC.

2) This is a Navigable Area Survey with 200% side scan sonar coverage and Shallow Water Multibeam developments.

3) Projection is UTM Zone 18.

Handwritten notes in the Descriptive Report were made during office processing

Awois/Supp ✓ 7/11/08 SJ

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* Data filed with original field records

A. PROJECT

A.1. This Navigable Area survey was conducted in accordance with Hydrographic Survey Letter Instructions OPR-D392-WH, for Approaches to Delaware Bay, New Jersey-Delaware.

A.2. The original project instructions are dated July 1, 1999.

A.3. One change to the original letter instructions was issued on July 11, 2000. This change combines sheets "I", "J", "K", "L", "M", and "N" into one sheet, "G", at a scale of 1:40,000.

A.4. This Descriptive Report applies to Survey H10989. Survey H10989 corresponds to Sheet "G" of Project OPR-D392-WH as prescribed in the Hydrographic Survey Letter Instructions.

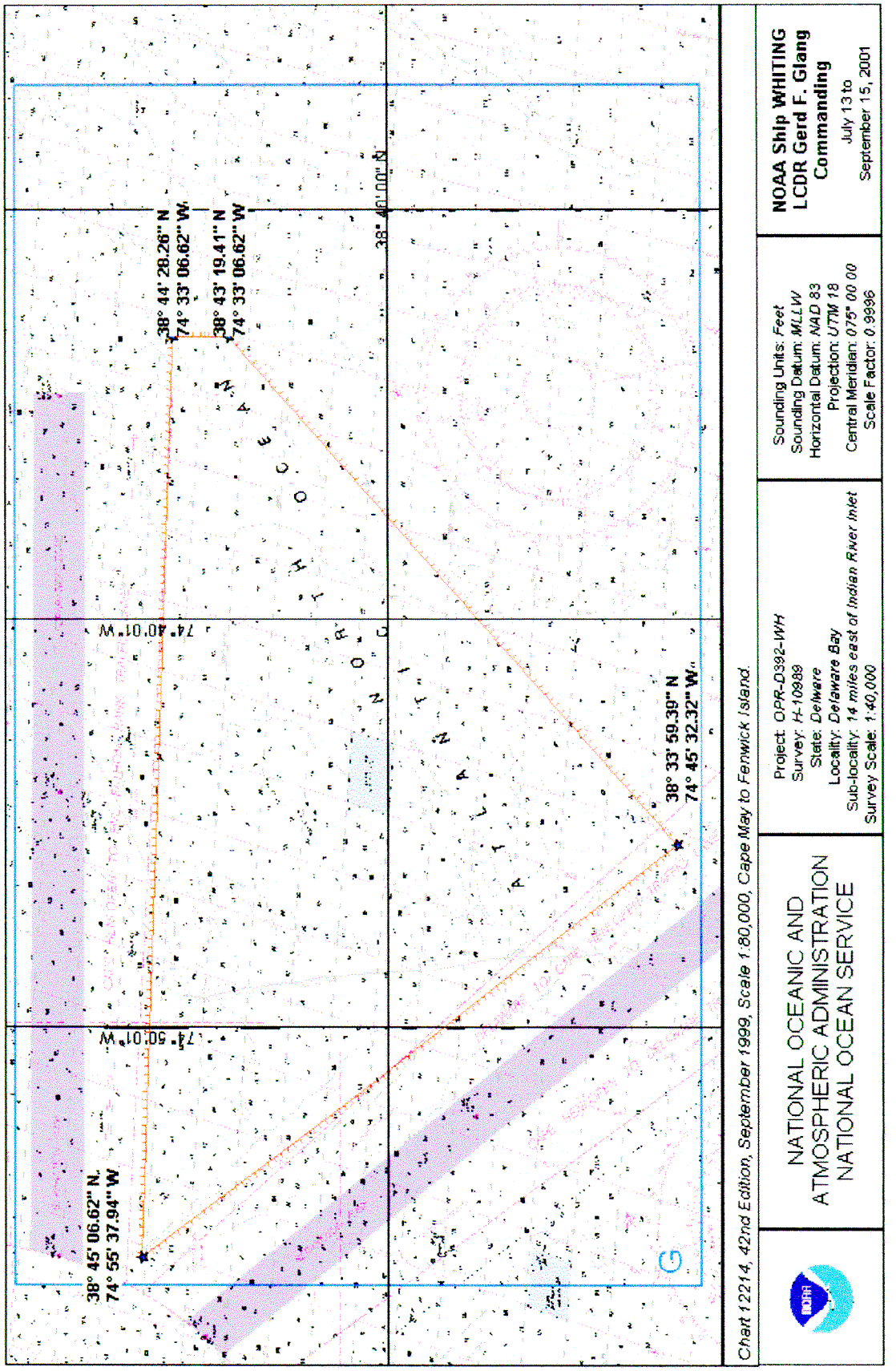
A.5. Project OPR-D392-WH responds to requests from The Pilots' Association Bay and River, Delaware, and the Mariners Advisory Committee for the Bay and River, Delaware. Both groups are concerned with routing vessel traffic in and out of Delaware Bay. The acquisition of modern hydrography and the detection or disapproval of wrecks and obstructions will provide more options for vessel traffic management.

B. AREA SURVEYED

B.1. Survey H10989 has irregular geographic boundaries. For complete survey limits, see the chartlet on the following page (**Figure 1**).

B.2. This survey covered a triangular-shaped region 14 miles east of Indian River Inlet.

B.3. Data acquisition for this survey began on July 13, 2000 (DN 195) and ended on September 15, 2000 (DN 259).



C.

Figure 1 Chartlet of H10989 survey boundaries created using MapInfo (v. 5.0)

SURVEY VESSELS

C.1. The following vessels were used for data acquisition during this survey:

Vessel	Operations
NOAA Ship WHITING	Vertical Beam Bathymetry, High Speed High Resolution Side Scan Operations, and bottom sample collection
NOAA Launch 1005	Multibeam Bathymetry, side scan sonar, and bottom sample collection

C.2. The transducer for the shallow water multibeam (SWMB) sonar was hull-mounted approximately amidships on Launch 1005. A section of the keel was removed, and the Reson 8101 transducer was mounted along the centerline of the vessel. See the CARIS-HIPS Vessel Configuration File (VCF) in Separates* IV for offset values.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

See also section "D" in the Evaluation Report

D.1. A detailed list of data acquisition and processing software used for this survey can be found in appendix H.

Survey H10989 contains sounding information acquired by both the WHITING vertical beam echosounder (VBES) system as well as the Launch 1005 shallow water multibeam (SWMB) sytstem. Both sets of data have been combined under the HPS sheet directory. **VBES data acquired simultaneously with SWMB data were not processed and has been stored under a separate directory, and should be used for information purposes only.**

VBES data acquisition was accomplished using Coastal Oceanographics **HYPACK** (version 10.03) software. VBES data processing was accomplished using **HYDROGRAPHIC PROCESSING SYSTEM (HPS)** software and assorted utility programs contained on the **HYDROSOFT** (version 10.6.1) compact disk provided by the Hydrographic Systems and Technology Programs (N/CS32).

All side scan sonar (SSS) and SWMB data were acquired digitally using Triton Elics International (TEI) **ISIS** software. **ISIS** (versions 4.32 and 4.88) was used for HSHRSSS data acquisition, and **ISIS** (version 4.54) was used for SWMB data acquisition. Digital SSS data and SWMB data was processed using Universal Systems Limited (USL) **CARIS/SIPS** and **HIPS** (versions 4.3.2) , UNIX-based software.

The Sea-Bird Electronics SBE-19 Seacat Profilers were initialized and configured using **SEASOFT**(version 3.3M) and **SEACAT** (version 2.0) software. The program **VELOCIWIN** (version 5.0) was used to process CTD data and calculate sound velocity corrections.

* Data filed with original field records

D.2. Reson SeaBat 8101 SWMB data were monitored using ISIS during acquisition and processed utilizing **CARIS/HIPS** multibeam data cleaning programs. Depth profiles were visually reviewed and cleaned. Depth fliers were identified and flagged as "rejected". Vessel navigation data from DGPS and attitude data from heave, pitch, roll, and gyro sensors were displayed and manually cleaned in a similar fashion. Soundings beyond 60° off nadir after roll compensation were filtered and flagged as rejected to minimize potential refraction errors. Outer beams were selectively "re-accepted" or not rejected during swath editing if an item of significance was noticed, the quality flags were good, and continuity was observed from beam to beam and ping to ping.

After review and cleaning, SWMB depth data were merged with sound velocity, tide, system offsets and attitude data to compute the true depth and position of each sounding. Processed soundings were imported into a **CARIS** workfile using shoal-biased line-by-line thinning with a 15 meter bin. **CARIS** workfile soundings were transferred into **HPS** and **MapInfo** using the **HIPS Converter** found in **HPTools** (version 10.6.1).

ODOM ECHOTRAC fathograms were monitored during acquisition. Data were acquired digitally using **HYPACK** and converted in **HPTools**. Analog paper records of vertical-beam echo soundings were manually compared with digitized selected soundings and scanned for missed depths. Additional selected soundings were inserted where necessary to define peaks and abrupt changes in slope. Edits and inserted depths were entered into HPS. Fixes were flagged for rejection if the Horizontal Dilution of Precision (HDOP) exceeded 3.0. Data were smoothed or rejected if unusually high values for heave, roll, or pitch were noted. Offset and velocity tables were applied in **HPS**. Tide zoning and corrections were applied in **HPTools**. After review and editing, depths were drawn into MapInfo. Due to the density of multibeam soundings, depth data were excessed with **ZOOM EDIT** in **HPTools**. Depths flagged as excess level "0" were utilized for all final plots.

E. SONAR EQUIPMENT

E.1. HSHRSSS operations were conducted using the Klein T-5500 HSHRSSS system (S/N 101) towed from the WHITING's stern mounted A-frame.

Launch 1005 conducted SSS developments using a 100 kHz Edgetech Model 272-T tow fish, which was deployed from the J-arm on its starboard quarter.

E.2. The Klein T-5500 tow fish and Edgetech Model 272 is configured with a standard 20° below-horizontal beam angle depression.

E.3. The Klein side scan sonar towfish operates at a frequency of 455 kHz. The Edgetech operates at a frequency of 100 kHz.

E.4.(a) Two hundred percent SSS coverage was achieved using the 100 meter range scale and a line spacing of 80 meters throughout the majority of the survey area. In the areas affected by

the thermocline, specifically the western half of the sheet limits, a side scan range scale of 75 meters, with line spacing of 60 meters, was utilized to obtained 200% coverage. This line spacing is in accordance with section 6.4 of the Field Procedures Manual (FPM, dated March 1999). Multibeam development lines were run over significant side scan sonar contacts with a nominal line spacing of three times the water depth.

E.4.(b) Daily confidence checks were conducted during data acquisition by observing bottom features such as sand waves, scours, and naturally-occurring contrast of sea floor characteristics in the side scan imagery.

E.4.(c) Two hundred percent side scan sonar coverage was completed for this survey. Side scan sonar coverage was checked using mosaics generated in **CARIS SIPS** and imported into **Mapinfo** for coverage assessment. Any gaps in the primary SSS coverage with a length of 200 meters or less which were sufficiently covered by the secondary coverage scheme were not scheduled for holiday coverage. This method of coverage evaluation was also applied to the second 100% of coverage. All contacts deemed significant by the hydrographer were investigated using SWMB.

E.4.(d) Significant portions of the initial mainscheme side scan data were rejected due to poor image quality as a result of thermoclines. This created a number of holidays. All holidays greater than 200 meters were rerun when conditions and data quality improved.

E.4.(e) Aboard WHITING, the Klein T-5500 towfish was deployed using a SEA-MAC winch and armored coaxial cable from the stern A-frame. Aboard Launch 1005, the Edgetech was deployed on a Kevlar jacketed cable over the vessel's side using a Superwinch or a "clam steamer" and J-arm, **See Figure 2.** The "clam steamer" is used to manually deploy the towfish and is typically used in waters deeper than 25m.

E.4.(f) Cable-out aboard WHITING was determined using an MD-TOTCO digital sheave meter installed on the stern A-frame block. The MD-TOTCO digitized cable-out values were acquired in real-time into HYPACK via an RS-232 serial cable. Cable-out values were verified before deploying the towfish by checking the cable out value with the fish at the water's surface. This value was compared to the measured value. If the digital measurement differed from the tape measurement, the counter was reset.

Cable-out aboard Launch 1005 was determined manually and entered in HYPACK during acquisition.

E.5. Contacts flagged as significant were developed with SWMB sonar, using a nominal line spacing of three times the water depth. Final positioning and least depth determination of significant contacts were determined from SWMB data.

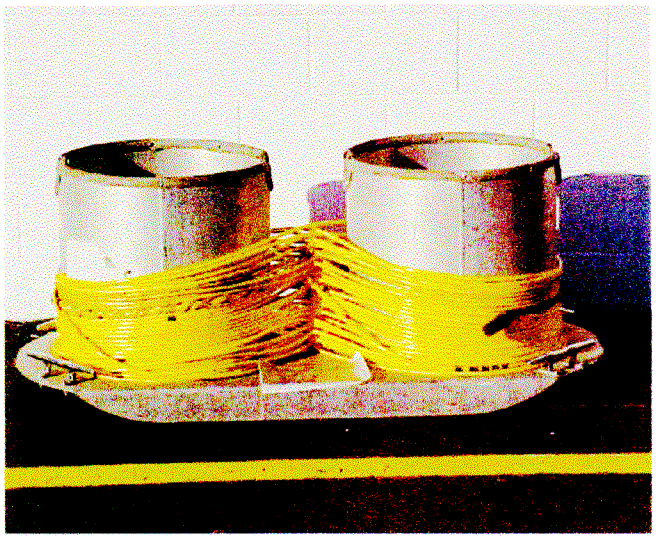


Figure 2
The 'Clam Steamer' is used on the launches for towing the EG&G towfish in deep water.

E.6. All contacts were digitized in Caris SIPS. Digitizing a contact included measuring apparent height, and creating a "snapshot" of each image. All contacts were added to the HPS contact database. Snapshots for each contact were also integrated into the HPS data structure. Contacts appearing significant were further investigated by multibeam. Contact significance is primarily determined by the contact height to water depth ratio (i.e. contact height greater than 1 meter in water depths of 20 meters or less, or contact height greater than 10% of the water depth in deeper waters). Contacts not meeting this criteria may also be deemed significant if the item appears to be manufactured (i.e an obstruction) as opposed to a natural feature. Final positioning and least depth determination of significant items was accomplished using multibeam and/or diver investigation.

All information concerning a contact was displayed in the Correlator program, including comparisons between contacts and AWOIS item positions, surrounding depths, contact cross references, and SWMB DTMs. Correlator chartlets for all investigated contacts are included in the Separates, section IV. *

Positions of significant contacts were exported into **HYPACK** target files and further investigated for exact positioning and least depths using SWMB. SWMB swath coverage was monitored during data acquisition to insure 100% multibeam swath ensonification of significant contacts.

F. SOUNDING EQUIPMENT

F.1. WHITING used an ODOM ECHOTRAC DF3200 MKII precision survey echosounder (VBES) to acquire bathymetric data.
* Data filed with original field records

Both SWMB and VBES data were acquired by Launch 1005. SWMB data were acquired using a single-frequency (240 kHz) Reson SeaBat 8101 shallow water multibeam sonar system equipped with an extended range projector. The extended range projector increases the Reson SeaBat 8101's operational depth from a maximum slant range of 320 meters to a max slant range of 450 meters. VBES data was acquired with an ODOM ECHOTRAC DF3200 MKII echosounder, but was not processed. These data were primarily used for bottom tracking for the SWMB as well as for bottom feature cross-referencing with the SWMB system.

Vessel	Instrument	S/N
NOAA Ship WHITING	ODOM ECHOTRAC	9656
NOAA Launch 1005	ODOM ECHOTRAC Reson Processor Reson 8101	9644 13976 020800JCG

F.2. No other sounding equipment was used during the course of the survey.

F.3. There were no faults with any of the equipment which negatively impacted the data acquisition.

F.4. Both high (100kHz) and low (24kHz) frequency depths were recorded during VBES data acquisition. The high frequency digitized depths were used for analysis and all sounding data.

F.5. The 8101's combined transmit and receive beams yield 101 soundings per ping; each beam having a 1.5°x 1.5° footprint. The majority of soundings beyond 60° off nadir were rejected to minimize potential noise and refraction errors noted in the outer beams. Outer beams were selectively "re-accepted" or not rejected if an item of significance was noticed, the quality flags were good, and continuity was observed from beam to beam and ping to ping. Line spacing for item investigations and development lines using multibeam sonar were based on two times water depth to ensure 100% multibeam coverage.

F.6. Klein T-5500 SSS operations were limited to a speed-over-ground of 7.5 knots while towed from the WHITING. SWMB operations were limited to a speed-over-ground of 6.5 knots. Edgetech operations were limited to a speed-over-ground of 5.5 knots.

G. CORRECTIONS TO SOUNDINGS

G.1.(a) Velocity of sound through water in areas surveyed by Launch 1005 was determined using SeaBird SBE 19 SeaCat Sound Velocity Profiler (s/n 192472-1060) and SeaCat Profiler (s/n 196093-286). Both of the above SeaCat units were also utilized by WHITING. SeaCat Data Quality Assurance Tests were conducted in accordance with the Field Procedures Manual (FPM) after each cast. SeaCat unit 286 was calibrated December 1, 1999, and unit 1060 was calibrated

February 23, 2000. Both calibrations were completed by SEA-BIRD ELECTRONICS, INC.

All sound velocity data were processed using **VELOCIWIN** (version 5.0) software. Computed velocity correctors were entered into HPS sound velocity tables and re-applied during post-processing to both high and low frequency depths. Velocity corrector tables created for CARIS/HIPS multibeam processing.

SOUND VELOCITY CASTS					
FILE	DN	VESSEL	LATITUDE	LONGITUDE	CAST DEPTH (M)
00198142	198	WHITING	38° 43' 48" N	074° 35' 37" W	42.6
00205143	205	WHITING	38° 44' 54" N	074° 55' 46" W	42.3
00217151	217	WHITING	38° 44' 54" N	074° 55' 43" W	46.3
00218201	218	Launch 1005	38° 36' 38" N	074° 36' 50" W	31.6
00218185	218	Launch 1005	38° 35' 54" N	074° 40' 55" W	23.5
00224153	224	Launch 1005	38° 44' 37" N	075° 02' 16" W	12.7
00224125	224	Launch 1005	38° 43' 51" N	075° 01' 17" W	13.3
00224165	224	Launch 1005	38° 44' 55" N	074° 55' 45" W	44.4
00229195	229	WHITING	38° 44' 48" N	074° 55' 29" W	41.7
00238172	238	WHITING	38° 44' 13" N	074° 37' 08" W	50
00238133	238	Launch 1005	38° 36' 42" N	074° 37' 06" W	50
00241150	241	WHITING	38° 44' 56" N	074° 55' 36" W	46.2
00252171	252	Launch 1005	38° 44' 54" N	074° 55' 43" W	45.4
00254192	254	Launch 1005	38° 39' 52" N	074° 43' 25" W	21.7
00254163	254	Launch 1005	38° 40' 49" N	074° 43' 12" W	21.8
00254124	254	Launch 1005	38° 39' 51" N	074° 43' 57" W	24.9
00255230	255	Launch 1005	38° 39' 32" N	074° 45' 41" W	24.5
00255204	255	Launch 1005	38° 35' 33" N	074° 47' 03" W	31.6
00255180	255	Launch 1005	38° 41' 27" N	074° 40' 52" W	28.5
00255155	255	Launch 1005	38° 42' 08" N	074° 47' 40" W	19.4
00255130	255	Launch 1005	38° 44' 45" N	074° 53' 46" W	16.7
00258135	258	Launch 1005	38° 37' 35" N	074° 54' 44" W	21.4
00258172	258	Launch 1005	38° 36' 16" N	074° 46' 31" W	19.6

G.1.(b) The following dual Leadline comparisons with the ECHOTRAC DF 3200 MKII were conducted for WHITING for this project and apply to this survey, H10989:

VESSEL	AREA	LATITUDE	LONGITUDE	DN
2930	Harbor of Refuge	38°49'51"N	075°04'47"W	257

Weather and sea conditions were calm and proved ideal for the leadline comparisons. No corrections to soundings were needed. Leadlines were calibrated on March 13, 2000; and the calibrations confirmed that leadline errors were negligible. Leadline calibration forms are included in Appendix E.5. *

G.1.(c) Static draft corrections for launch 1005 were each measured April 14, 2000, (Offset Tables 3 and 4, respectively). The static draft correction for WHITING (3.2 meters) was measured on May 3, 1999 at Mayport Naval Station, Florida. This value was verified April 20, 2000. Static draft correctors were applied during data post-processing for each survey vessel.

Refer to **Appendix E.1.** * for data records.

G.1.(d) Settlement and squat values for WHITING were determined on April 19, 1999. The settlement and squat correctors were entered into HPS (offset table 1) for use in VBES processing.

Settlement and squat values for launch 1005 are an historical value supplied by NOAA Ship Rainier on April 13, 2000. Settlement and squat values were verified using OTF ("On-the-Fly" GPS techniques) by Jack Riley and Barry Gallagher of Hydrographic Systems and Technology Programs (N/CS11), in Delaware Bay, DE on July 26, 2000.

Static draft values were measured March 15, 2000 and checked on May 1, 2000 (Offset Table 3). Correctors for launch 1005 were stored in the CARIS-HIPS VCF for multibeam processing and HPS (Offset Table 3) for use in VBES processing.

Refer to **Separates III** * for data records.

G.1.(e) WHITING is equipped with a TSS DMS-05 Dynamic Motion Sensor. Launch 1005 is equipped with a POS/MV Model 320/V2 Position and Orientation System (POS). Performance specifications for each of these systems are tabularized below:

* Data filed with original field records

MOTION SENSOR	HEAVE	ROLL	PITCH
DMS-05	Resolution: 1 cm Accuracy: the greater of 5 cm or 5 %	Resolution: 0.01° Accuracy: ±0.05°	Resolution: 0.01° Accuracy: ±0.05°
POS/MV	Resolution: 1 cm Accuracy: the greater of 5 cm or 5 %heave amplitude for periods up to 20 seconds	Resolution: 0.01° Accuracy: ±0.05° RMS	Resolution: 0.01° Accuracy: ±0.05° RMS

Heading accuracy of the POS/MV is 0.5°. Heave, pitch and roll correctors determined by these sensors were recorded in **HYPACK** and **ISIS** during data acquisition. Heave, pitch, and roll biases were applied to raw SSS and SWMB data during conversion in **CARIS**. Correctors for VBES data were applied to raw data in **HPTools** during conversion. Serial numbers for the specified motion sensors are as follows:

VESSEL	SENSOR S/N
NOAA Ship WHITING	DMS-05 S/N 2040
Launch 1005	POS M/V S/N 020

G.2. No unusual or unique methods or instruments were necessary for determination of corrections to echo soundings.

G.3. Sound velocity casts were conducted several times a day, with no more than four hours between casts, unless it rained, upon which another cast was taken immediately there after. Typically, one cast was acquired at the start of the day (before data acquisition commenced), another at noon, and a third at the end of the day. The deepest areas of the survey area were chosen as locations for the casts.

The data were immediately processed on board for quality assurance. The second and any subsequent casts were compared with the first cast of the day using a zone comparison sub-program in **VELOCIWIN** to determine if the correctors had changed. During data processing, all the casts for that day were then concatenated into one file and applied to the corresponding **CARIS** data.

G.4. No Diver Least Depth Gauges (DLDG) were used during the survey.

G.5. No other factors were determined to impact the sounding corrections.

G.6.(a) The tidal datum for this project is Mean Lower Low Water (MLLW). The operating tide station at Lewes, Delaware (855-7380) served as control for datum determination.

Upon completion of H10989, verified water level data from station 855-7380 were applied to all sounding data.

G.6.(b) Zoning for this survey is consistent with the project instructions. **HPTools** was used for tide table creation and was used for the application of Preliminary Water Level Data and Verified Water Level Data during data processing. The following zones were used:

ZONE STATION	TIME CORRECTOR (MINUTES)	RANGE RATIO	PREDICTED REFERENCE
MAC300	-66	x0.84	855-7380
MAC301	-66	x0.89	855-7380
MAC302	-66	x0.89	855-7380
MAC306	-66	x0.94	855-7380
MAC307	-66	x0.94	855-7380

Approved tides for H10989 were requested by letter to N/OPS1 dated December 19, 2000. See **Appendix D.** * — Approved tides and zoning were applied during office processing

H. HYDROGRAPHIC POSITION CONTROL

See also section "D" in the Evaluation Report

H.1. The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83).

H.2. Sounding positional control was obtained using Global Positioning System (GPS) corrected by the U.S. Coast Guard differential beacon stations.

H.3. USCG differential beacon stations used were Cape Henry, VA and Cape Henlopen, DE.

H.4. No horizontal control stations were established for this survey.

H.5. The Horizontal Dilution of Precision (HDOP) and Expected Position Error (EPE) specified by the Draft NOAA Hydrographic Project Instructions were monitored during on-line data acquisition. If the positioning degraded beyond the acceptable limits while on-line, the data were either smoothed or rejected during post-processing.

* Data filed with original field records

Performance checks for WHITING and both launches were conducted during survey operations. Launch performance checks were conducted with launches secured in WHITING's davits using the program **Pcheck** (from the Hydrosoft 10.6 CD-ROM). Differential correctors from the Cape Henlopen USCG DGPS station were used to correct GPS signals. Simultaneous **HYPACK** positions on both platforms were acquired and an offset distance and azimuth computed between the launch systems. The computed offset distances and azimuths were compared to measured values.

Performance checks for WHITING were conducted using the program **Shipdim** (version 1.2) to compare simultaneous positioning using both the Cape Henry and Cape Henlopen USCG differential beacons to correct GPS signals. All DGPS performance checks confirmed that the equipment was working properly.

A summary of the DGPS performance checks is included in **Appendix F**. *

H.6. Each vessel is equipped with a Trimble DSM212L DGPS receiver. Serial numbers for each Trimble DSM212L receiver are included in the following table. WHITING utilizes only the Trimble system for DGPS positioning information. Launch 1005 acquires non-differential, code and carrier phase position information from the POS/MV Model 320/V2 (see Section G.1(e)). The Trimble unit is configured such that it provides differential correctors to the POS/MV. Trimble receivers were initialized to the appropriate station and frequency using the Trimble **TSIP TALKER** software.

VESSEL	DSM212L S/N
NOAA Ship WHITING	System 1: 0220159721 System 2: 0220159722
NOAA Launch 1005	0220168291

H.7.(a) There were no unusual methods for operating the positioning equipment.

H.7.(b) There were no equipment malfunctions impacting the data quality.

H.7.(c) There were no unusual atmospheric conditions that affected data quality.

H.7.(d) Adequate satellite coverage was maintained throughout the project.

H.7.(e) No systematic errors were detected which required adjustments.

* Data filed with original field records

H.7.(f) For Launch 1005, the reference point is the IMU, which is located amidships and along the centerline of the vessel.

H.7.(g) The HSHRSSS offset and layback distances for WHITING's A-frame were measured on March 18, 1999 and verified May 3, 1999 after antennae adjustment.

The offset and layback values were entered into the appropriate **CARIS** Vessel Configuration Files (VCF) and **HPS** (offset tables #4 and #9 for launch 1005 and WHITING, respectively) and applied during **CARIS/SIPS** data processing.

I. SHORELINE

I.1. No shoreline was contained within the survey limits of this sheet.

J. CROSSLINES

J.1. A total of 159.6 linear nautical miles of crossline hydrography, representing approximately 10.1% of the 1573.27 lnm of mainscheme (based on 100% SSS coverage) were acquired for this survey.

J.2. Mainscheme-to-crossline soundings were compared at their common intersections. Agreement was adequate, with the majority of soundings found to be within 1 to 2 feet of each other.

K. JUNCTIONS

See also section "K" in the Evaluation Report

K.1. Western edge of survey H10989 junctions with surveys H-10854 and H-10931. The general agreement between soundings averaged between 1 and 2 feet. In areas with steep slopes, such as the northeastern edge of the Delaware to Cape Henlopen traffic lane soundings differed by as much as 5 to 7 feet.

L. COMPARISON WITH PRIOR SURVEYS

See also section "L" in the Evaluation Report

The Atlantic Hydrographic Branch will perform a comparison with prior surveys during preliminary review.

M. ITEM INVESTIGATION REPORTS

Assigned AWOIS items are summarized in the following pages. The associated **CORRELATOR** page(s) are included following each item investigation.

AWOIS No: 1099

Item Description: Dangerous Wreck, depth unknown

Source: NM 9/12/35

AWOIS Position: 38°36'45.00" N, 074°55'00.00" W

Required Investigation: SD, S2, DI Radius: 1500m

Charts Affected: 12214

INVESTIGATION

Contact No. : N/A

Date(s): DN 256, 258

Investigation Used: 200% SSS, SWMB

Least Depth Position: N/A

Position Determined By: Differential GPS

Investigation Summary: The entire search radius of AWOIS 1099 was covered with 200% side scan sonar. All significant items found within this radius fell within the charted fish haven, none of which matched the AWOIS description. Significant items falling within the fish haven were developed with SWMB to insure compliance with the minimum least depth of the fish haven.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing the dangerous wreck symbol at 38° 36' 45" N 074°55' 00" W and charting survey soundings. Concur

AWOIS No: 1095

Item Description: This is the wreck of the *Cherokee,* 120 ft long steam tug sunk July 26, 1918. The wreck was previously wire drag cleared to a depth of 71 ft.

Source: Shipwrecks of Delaware and Maryland by Gary Gentile

AWOIS Position: 38°35'54.00" N, 074°39'30.00" W

Required Investigation: SD, S2, DI Radius: 500m

Charts Affected: 12214

INVESTIGATION

Contact No: N/A

Date(s): DN 203

Investigation Used: SWMB

Surveyed Position: 38° 35' 53.693" N, 074° 39' 29.377" W

Position Determined By: Differential GPS

Investigation Summary: This wreck was initially surveyed during WHITING 1999 field season, however, due to WHITING's involvement in the EgyptAir search operation, only side scan data were acquired. During 2000, this item was investigated using SWMB. Orthogonal lines were run with a line spacing of approximately twice the water depth. A least depth of 78 feet corrected using verified tides was found at the surveyed position.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing the wreck swept by wire drag symbol and charting a wreck with least depth of 78ft at the surveyed position:

Lat: 38° 35' 53.693" N

Lon: 74° 39' 29.377" W

AWOIS No: 1094

Item Description: This item is locally known as "Jake's Wreck", a wooden wreck in 65 ft with 5-8 ft of relief.

Source: Telcon., 6/15/99, S. Verry (N/CS31) with Capt. Potter (Del. Bay & River Pilots Assoc.)

AWOIS Position: 38°34'54.00" N, 074° 44' 54.00" W

Required Investigation: SD, S2, DI Radius: 500m

Charts Affected: 12214

INVESTIGATION

Contact No.: 201_111_0339_1

Date(s): DN 255

Investigation Used: SWMB

Surveyed Position: 38°34'~~52.14~~ 57.926" N, 074°44'~~51.96~~ 44.759" W

Position Determined By: Differential GPS

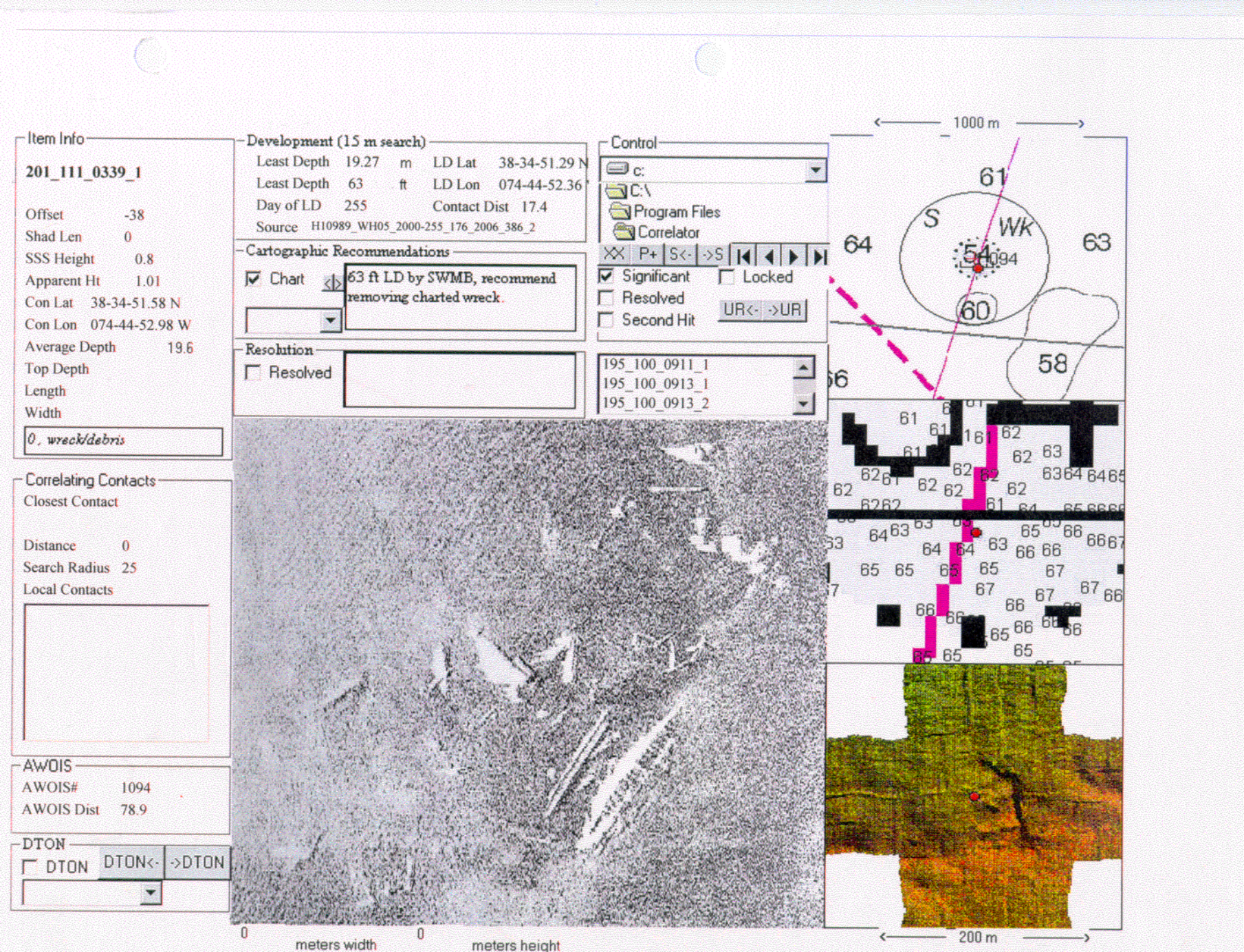
Investigation Summary: Two hundred percent SSS coverage was achieved over the entire 500 m search radius. One contact, identified as debris was located. SWMB development was then conducted on DN 255. Multibeam lines were run in a cross pattern over the contact position, with a line spacing in each direction of approximately two times the water depth. A least depth of ~~61~~ 53 feet (18.74 meters) corrected using verified tides was acquired at the survey position.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing the 54 foot wire drag cleared wreck and charting a wreck with least depth ~~61~~ 53 feet at the surveyed position: Concur

Lat: 38°34'~~52.14~~ 57.926" N

Lon:74°44'~~51.96~~ 44.759" W


Item Info
201_111_0339_1
Offset -38
Shad Len 0
SSS Height 0.8
Apparent Ht 1.01
Con Lat 38-34-51.58 N
Con Lon 074-44-52.98 W
Average Depth 19.6
Top Depth
Length
Width
0, wreck/debris
Correlating Contacts
Closest Contact
Distance 0
Search Radius 25
Local Contacts
AWOIS
AWOIS# 1094
AWOIS Dist 78.9
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 19.27 m
LD Lat 38-34-51.29 N
Least Depth 63 ft
LD Lon 074-44-52.36 W
Day of LD 255
Contact Dist 17.4
Source H10989_WH05_2000-255_176_2006_386_2
Cartographic Recommendations
Chart
63 ft LD by SWMB, recommend removing charted wreck.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
1000 m
S
Wk
1094
61
64
63
60
58
200 m
0
meters width
0
meters height

AWOIS No: 1133

Item Description: Barge J.R. Williams

Source: OPR-D368-WH/H-10444 (1992)

AWOIS Position: 38°45'09.30" N, 074°54'23.51" W

Required Investigation: Unassigned Radius: N/A

Charts Affected: 12214

INVESTIGATION

Contact No: 256_839_0225_1, 217_715_1622_1, 242_564_0930_1, 252_049_0232_1

Date(s): DN 255

Investigation Used: 200% SSS, SWMB

Least Depth Position: 38° 45' 09.57~~8~~2" N, 074° 54' 24.0~~40~~29" W
DN 255, LN 146_1324, Ping 461, Beam 31

Position Determined By: Differential GPS

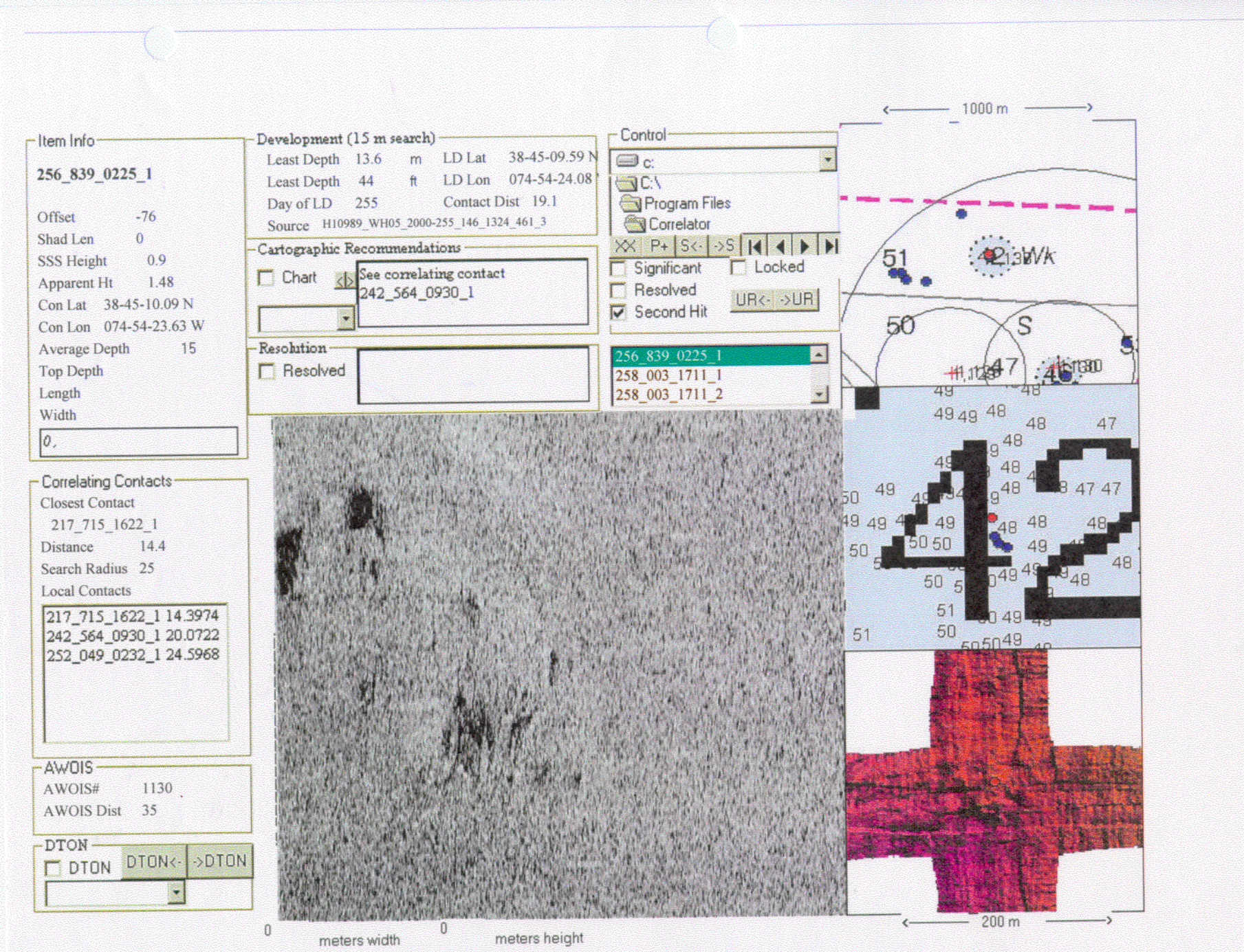
Investigation Summary: Two hundred percent SSS coverage was achieved over this item during mainscheme coverage. Four small contacts were identified near the AWOIS position. A multibeam investigation was then conducted on DN 255. Multibeam lines were run in a cross pattern over the contact position, with a line spacing in each direction of approximately two times the water depth. A least depth of 44 feet (13.6 meters) corrected using verified tides was acquired by multibeam at the survey position.

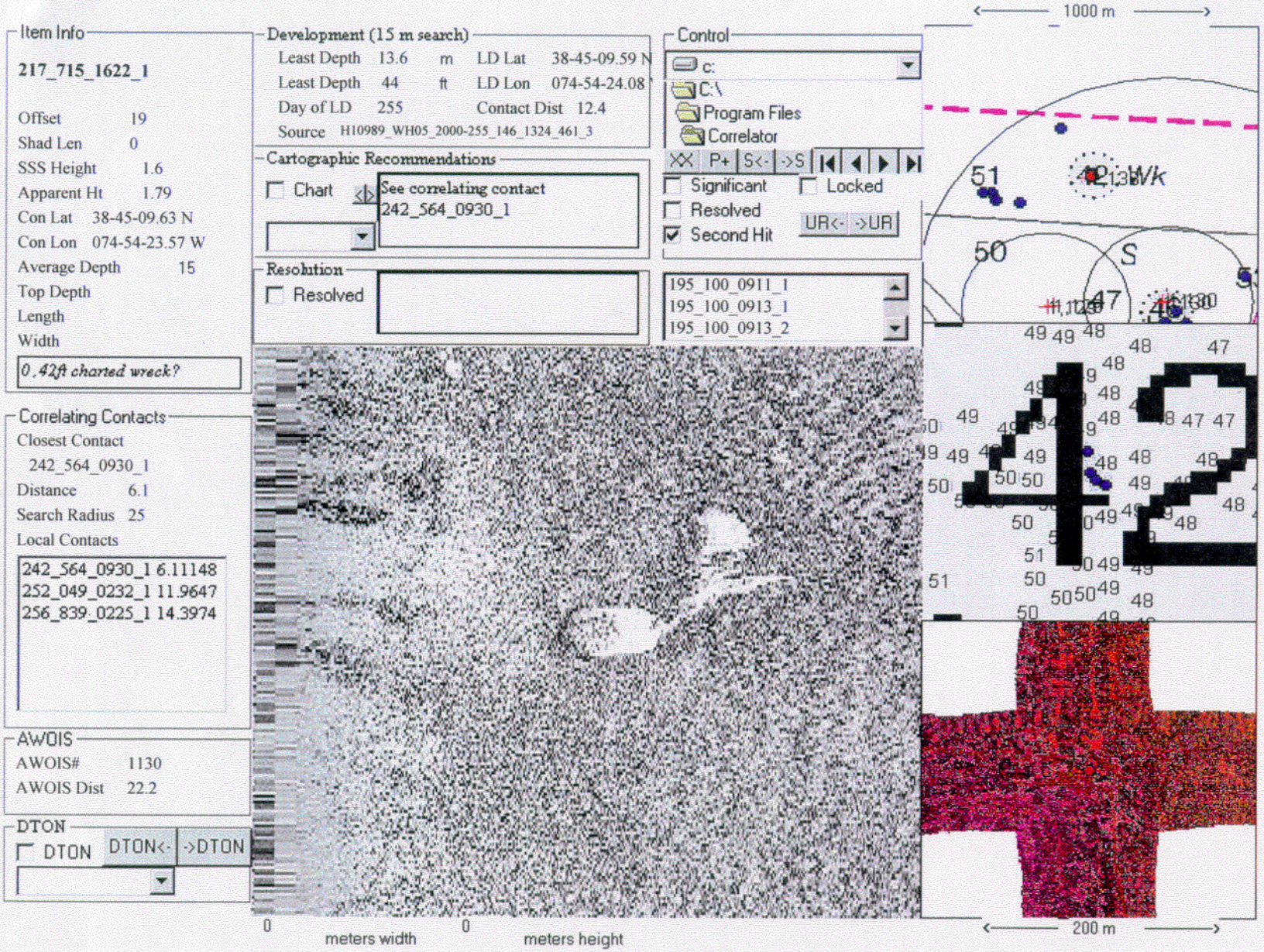
CHARTING RECOMMENDATION

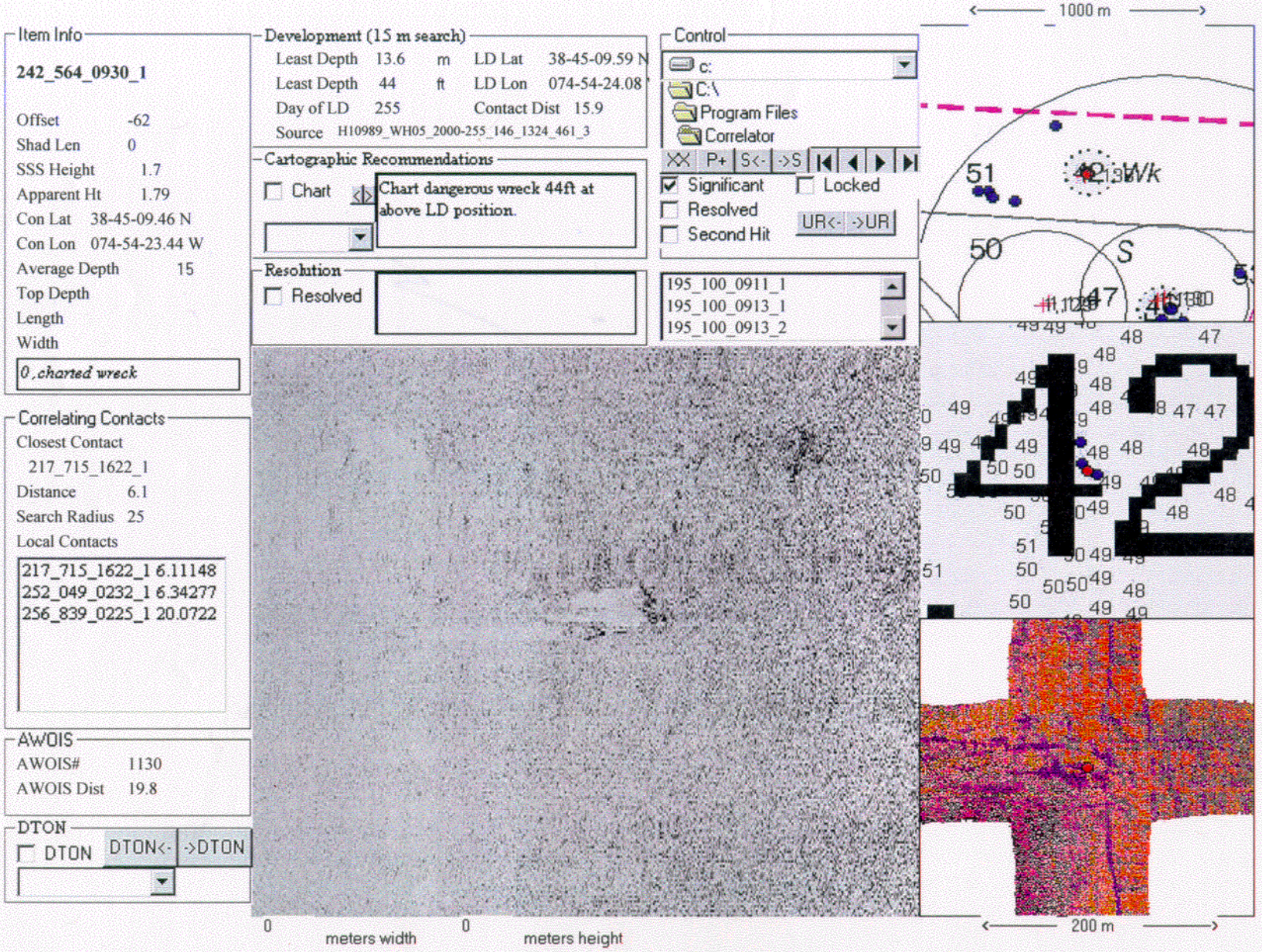
Recommendation: The hydrographer recommends removing the 42 foot charted wreck and charting a 44 foot charted wreck at the survey position: Concur

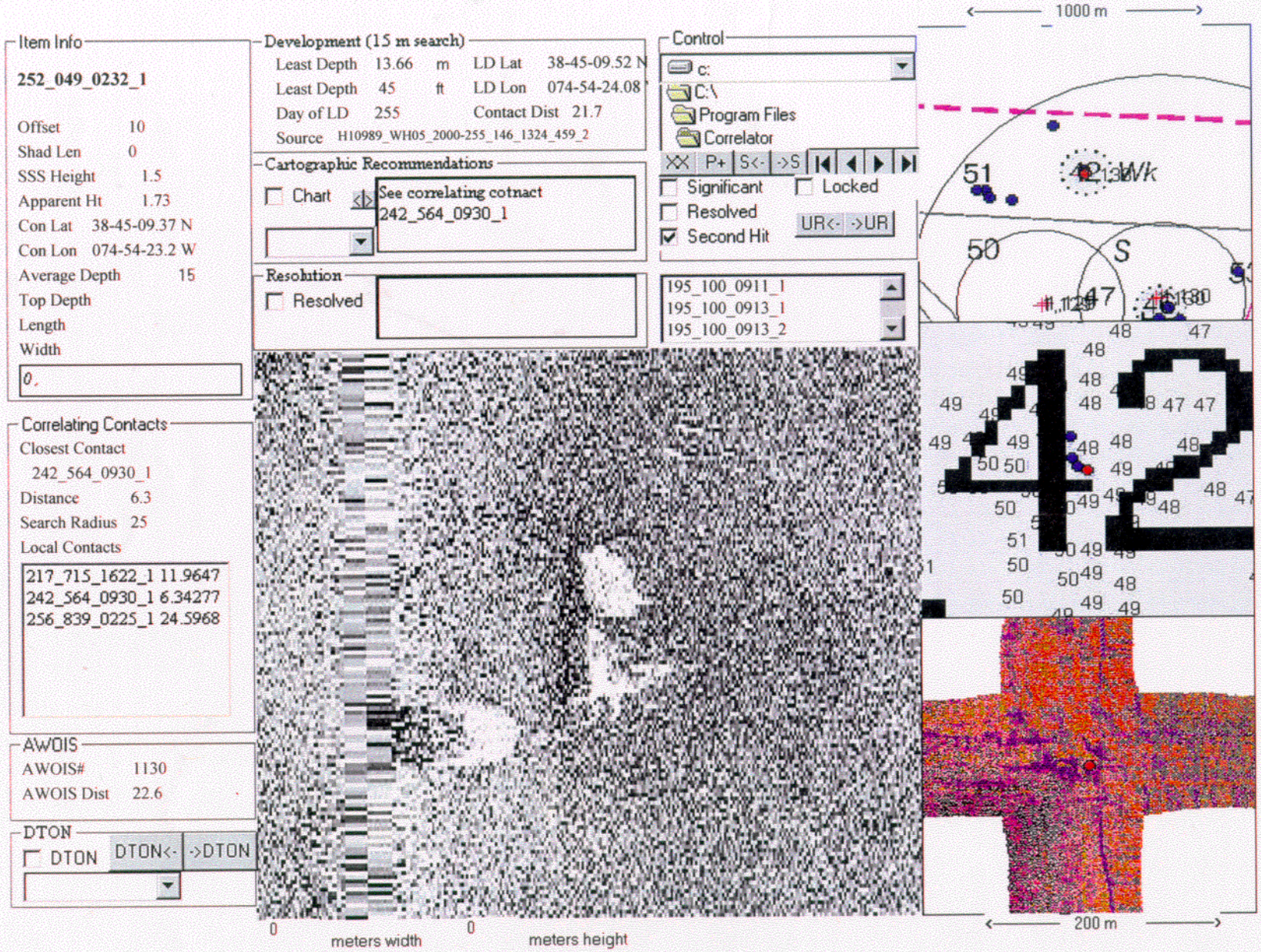
Lat: 38° 45' 09.57~~8~~2" N

Lon: 74° 54' 24.0~~40~~29" W


Item Info
256_839_0225_1
Offset -76
Shad Len 0
SSS Height 0.9
Apparent Ht 1.48
Con Lat 38-45-10.09 N
Con Lon 074-54-23.63 W
Average Depth 15
Top Depth
Length
Width
0,
Development (15 m search)
Least Depth 13.6 m
Least Depth 44 ft
Day of LD 255
Source H10989_WH05_2000-255_146_1324_461_3
LD Lat 38-45-09.59 N
LD Lon 074-54-24.08
Contact Dist 19.1
Cartographic Recommendations
Chart
See correlating contact
242_564_0930_1
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+ S<- ->S
Significant
Locked
Resolved
Second Hit
UR<- ->UR
256_839_0225_1
258_003_1711_1
258_003_1711_2
Correlating Contacts
Closest Contact
217_715_1622_1
Distance 14.4
Search Radius 25
Local Contacts
217_715_1622_1 14.3974
242_564_0930_1 20.0722
252_049_0232_1 24.5968
AWOIS
AWOIS# 1130
AWOIS Dist 35
DTON
DTON
DTON<- ->DTON
1000 m
200 m
0
meters width
0
meters height


Item Info
217_715_1622_1
Offset 19
Shad Len 0
SSS Height 1.6
Apparent Ht 1.79
Con Lat 38-45-09.63 N
Con Lon 074-54-23.57 W
Average Depth 15
Top Depth
Length
Width
0.42ft charted wreck?
Correlating Contacts
Closest Contact
242_564_0930_1
Distance 6.1
Search Radius 25
Local Contacts
242_564_0930_1 6.11148
252_049_0232_1 11.9647
256_839_0225_1 14.3974
AWOIS
AWOIS# 1130
AWOIS Dist 22.2
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 13.6 m
LD Lat 38-45-09.59 N
Least Depth 44 ft
LD Lon 074-54-24.08
Day of LD 255
Contact Dist 12.4
Source H10989_WH05_2000-255_146_1324_461_3
Cartographic Recommendations
Chart
See correlating contact
242_564_0930_1
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
1000 m
200 m
0
meters width
0
meters height


Item Info
242_564_0930_1
Offset -62
Shad Len 0
SSS Height 1.7
Apparent Ht 1.79
Con Lat 38-45-09.46 N
Con Lon 074-54-23.44 W
Average Depth 15
Top Depth
Length
Width
0,charted wreck
Development (15 m search)
Least Depth 13.6 m
LD Lat 38-45-09.59 N
Least Depth 44 ft
LD Lon 074-54-24.08
Day of LD 255
Contact Dist 15.9
Source H10989_WH05_2000-255_146_1324_461_3
Cartographic Recommendations
Chart
Chart dangerous wreck 44ft at above LD position.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+ S<- ->S
Significant
Locked
Resolved
Second Hit
UR<- ->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
Correlating Contacts
Closest Contact
217_715_1622_1
Distance 6.1
Search Radius 25
Local Contacts
217_715_1622_1 6.11148
252_049_0232_1 6.34277
256_839_0225_1 20.0722
AWOIS
AWOIS# 1130
AWOIS Dist 19.8
DTON
DTON
DTON<- ->DTON
0
meters width
0
meters height
1000 m
200 m


Item Info
252_049_0232_1
Offset 10
Shad Len 0
SSS Height 1.5
Apparent Ht 1.73
Con Lat 38-45-09.37 N
Con Lon 074-54-23.2 W
Average Depth 15
Top Depth
Length
Width
0.
Development (15 m search)
Least Depth 13.66 m
Least Depth 45 ft
Day of LD 255
Source H10989_WH05_2000-255_146_1324_459_2
LD Lat 38-45-09.52 N
LD Lon 074-54-24.08
Contact Dist 21.7
Cartographic Recommendations
Chart
See correlating cotnact
242_564_0930_1
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+ S<- ->S
Significant
Locked
Resolved
Second Hit
UR<- ->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
Correlating Contacts
Closest Contact
242_564_0930_1
Distance 6.3
Search Radius 25
Local Contacts
217_715_1622_1 11.9647
242_564_0930_1 6.34277
256_839_0225_1 24.5968
AWOIS
AWOIS# 1130
AWOIS Dist 22.6
DTON
DTON
DTON<- ->DTON
0
meters width
0
meters height
1000 m
200 m

AWOIS No: 9936

Item Description: F/V Ocean Quest

Source: LNM 3/1/87

AWOIS Position: 38°38'48.00" N, 074°48'00.00" W

Required Investigation: SD, S2, DI Radius: 500 m

Charts Affected: 12214

INVESTIGATION

Contact No: 240_414_1538_1, 253_271_2252_2 , 240_414_1538_2, 253_271_2252_1, 203_700_1810_1

Date(s): DN 203, 240, 253

Investigation Used: 200% SSS, SWMB

Least Depth Position: 38° 38' 45.89 N, 074° 47' 59.1 " W
DN 255, Line 109_2220, Ping 346, Beam 4

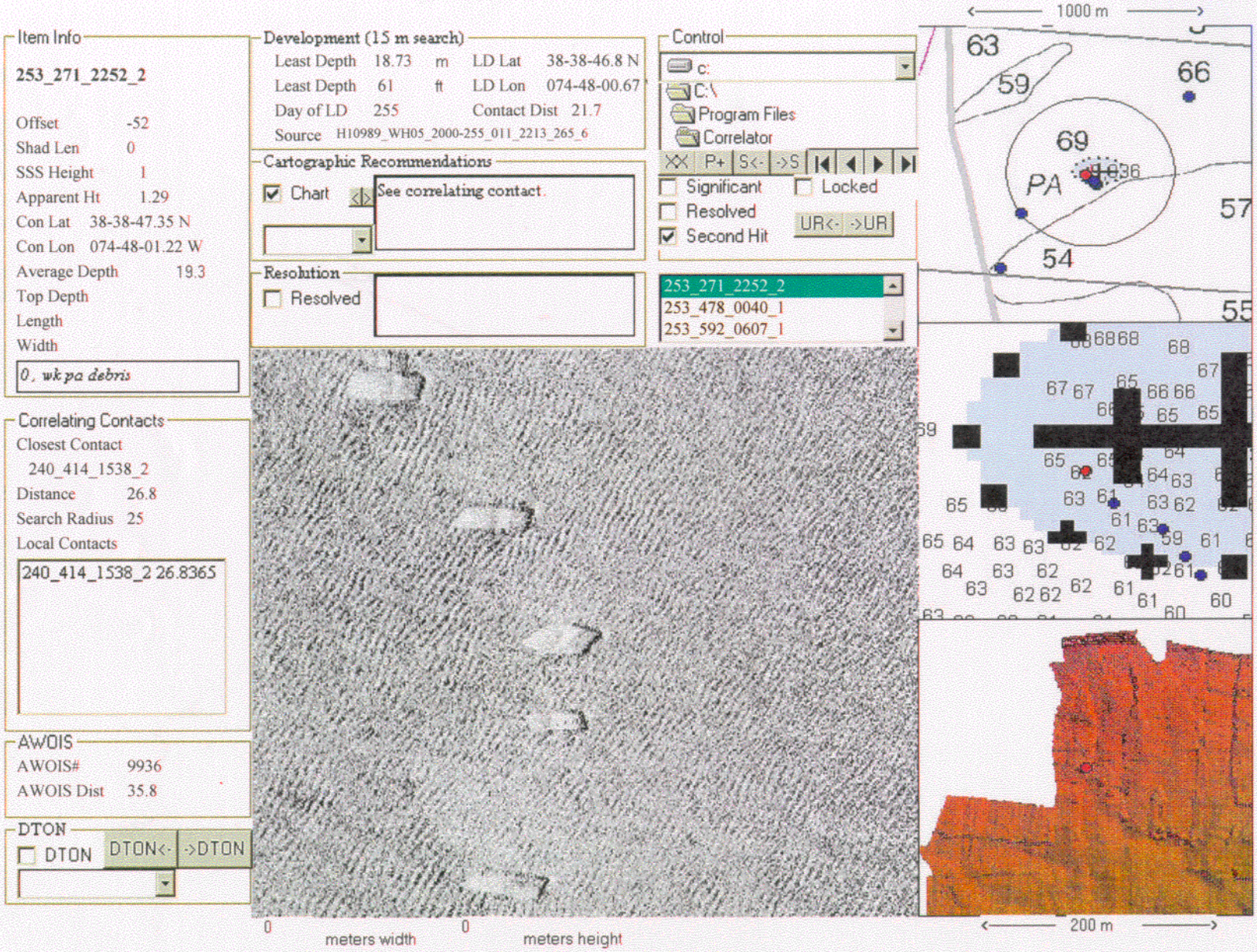
Position Determined By: Differential GPS

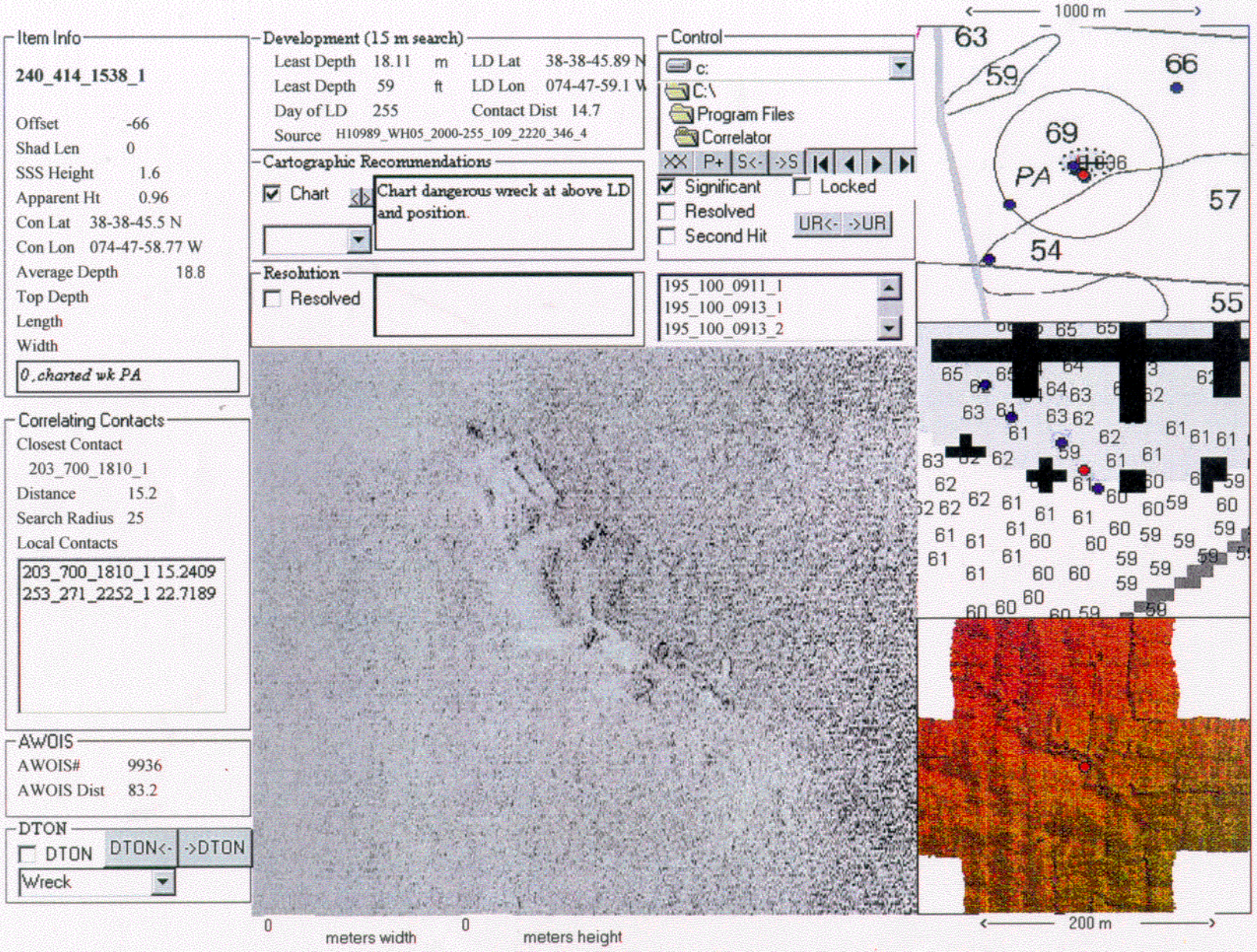
Investigation Summary: Two hundred percent SSS coverage was achieved over the entire search radius. Several contacts were identified within the radius. A SWMB development was then conducted on DN 255. Multibeam lines were run in a cross pattern over the contact position, with a line spacing in each direction of approximately two times the water depth. A least depth of 59 feet (18.1 meters) corrected using verified tides was acquired at the surveyed position.

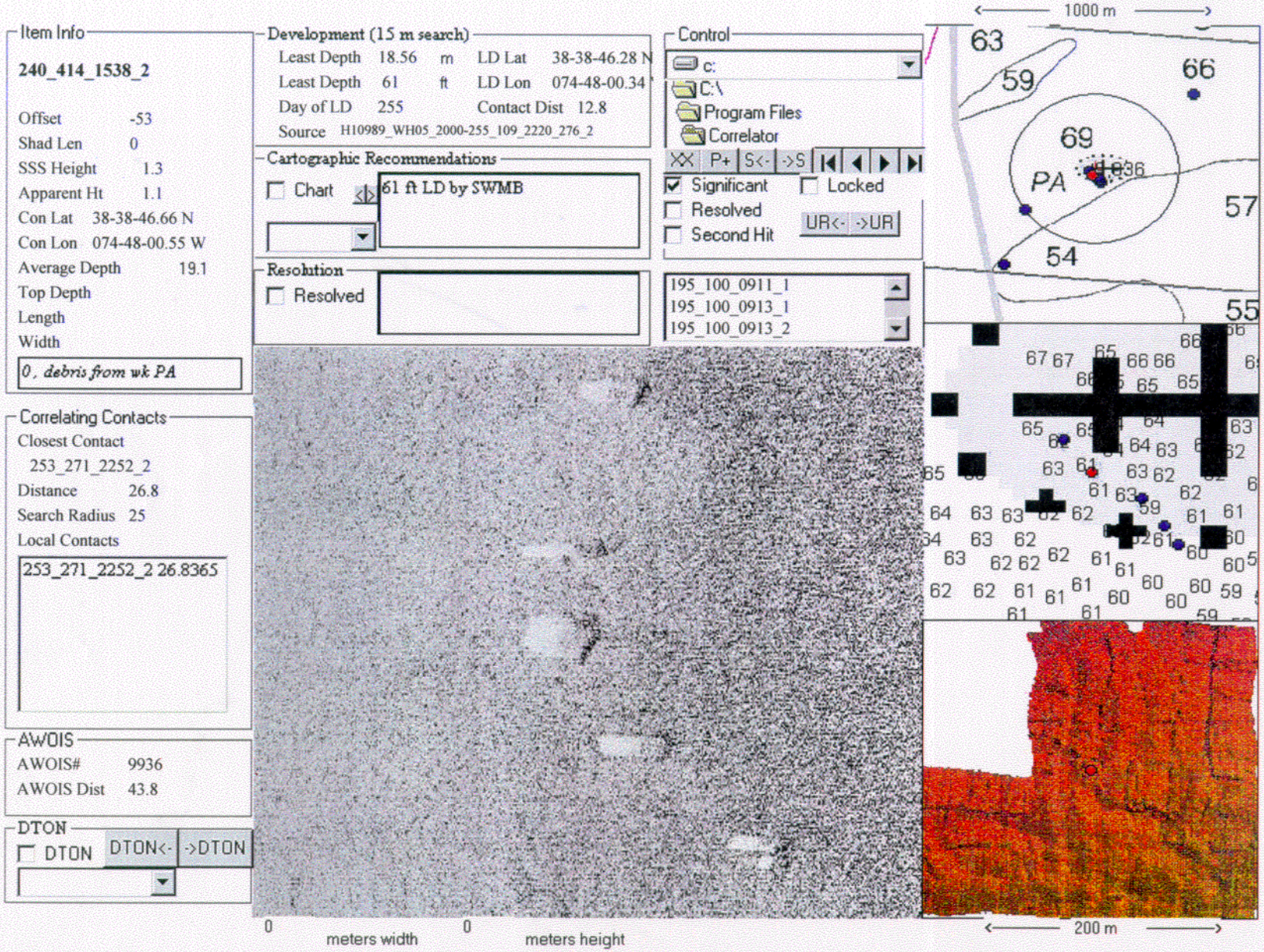
CHARTING RECOMMENDATION

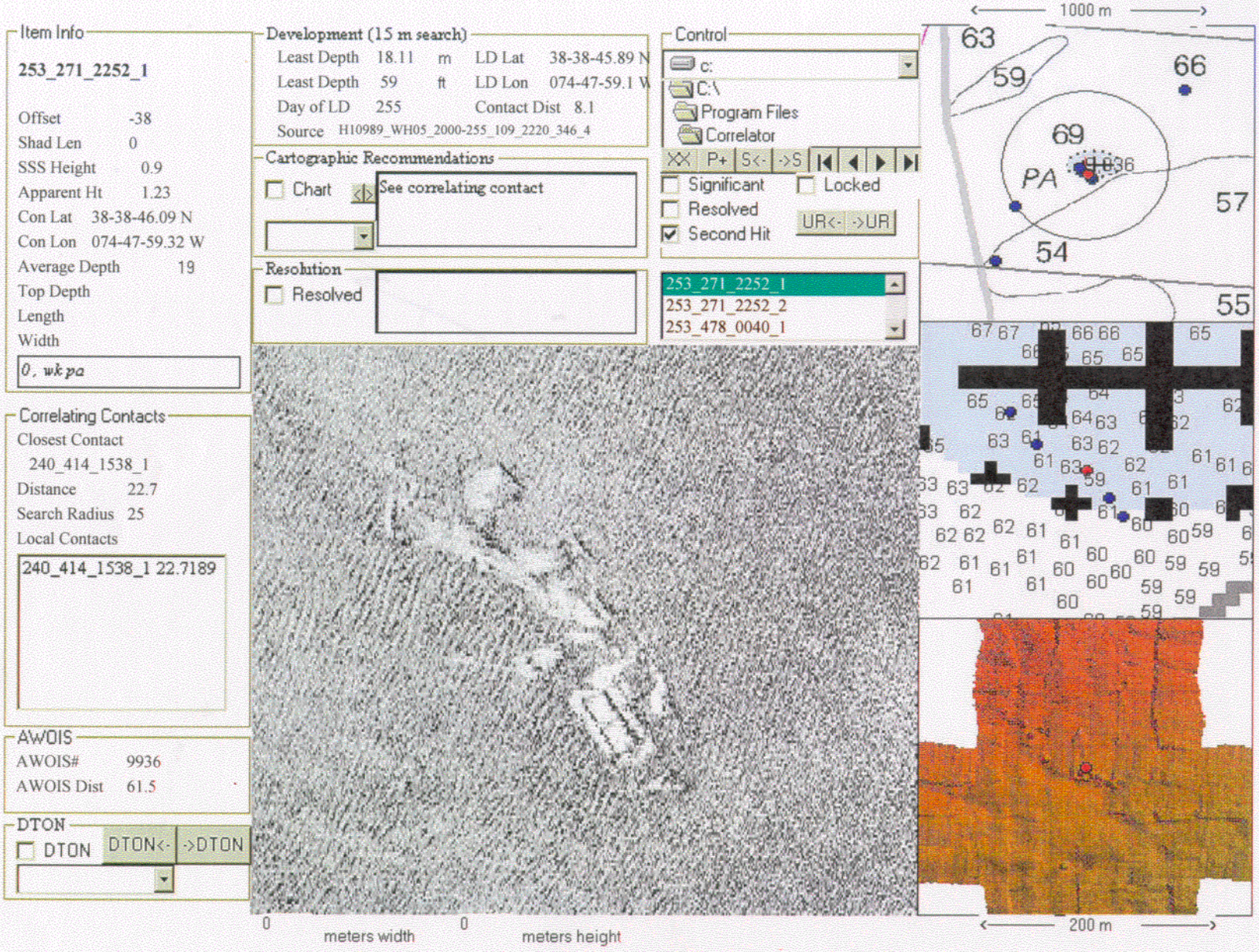
Recommendation: The hydrographer recommends removing the charted dangerous wreck, PA and charting a wreck with least depth of 59 feet at 38° 38' 45.89" N, 074° 47' 59.1" W.

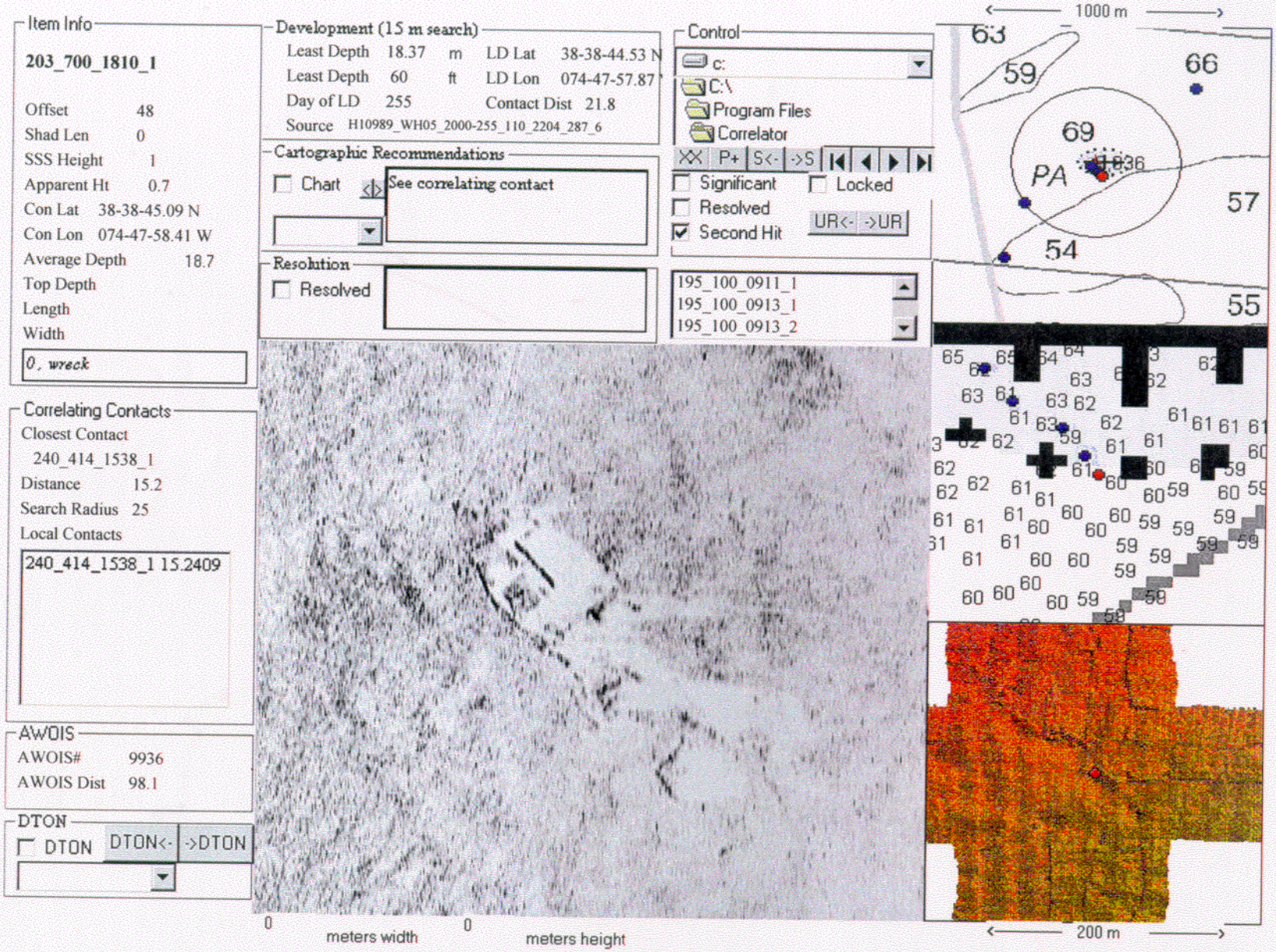
Concur


Item Info
253_271_2252_2
Offset -52
Shad Len 0
SSS Height 1
Apparent Ht 1.29
Con Lat 38-38-47.35 N
Con Lon 074-48-01.22 W
Average Depth 19.3
Top Depth
Length
Width
0, wk pa debris
Correlating Contacts
Closest Contact
240_414_1538_2
Distance 26.8
Search Radius 25
Local Contacts
240_414_1538_2 26.8365
AWOIS
AWOIS# 9936
AWOIS Dist 35.8
DTON
DTON
DTON<- ->DTON
Development (15 m search)
Least Depth 18.73 m LD Lat 38-38-46.8 N
Least Depth 61 ft LD Lon 074-48-00.67
Day of LD 255 Contact Dist 21.7
Source H10989_WH05_2000-255_011_2213_265_6
Cartographic Recommendations
Chart
See correlating contact.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+ S<- ->S
Significant
Locked
Resolved
Second Hit
UR<- ->UR
253_271_2252_2
253_478_0040_1
253_592_0607_1
0
meters width
0
meters height
1000 m
200 m
PA
63
59
66
69
57
54
55


Item Info
240_414_1538_1
Offset -66
Shad Len 0
SSS Height 1.6
Apparent Ht 0.96
Con Lat 38-38-45.5 N
Con Lon 074-47-58.77 W
Average Depth 18.8
Top Depth
Length
Width
0 ,charted wk PA
Correlating Contacts
Closest Contact
203_700_1810_1
Distance 15.2
Search Radius 25
Local Contacts
203_700_1810_1 15.2409
253_271_2252_1 22.7189
AWOIS
AWOIS# 9936
AWOIS Dist 83.2
DTON
DTON
DTON<-
->DTON
Wreck
Development (15 m search)
Least Depth 18.11 m
LD Lat 38-38-45.89 N
Least Depth 59 ft
LD Lon 074-47-59.1 W
Day of LD 255
Contact Dist 14.7
Source H10989_WH05_2000-255_109_2220_346_4
Cartographic Recommendations
Chart
Chart dangerous wreck at above LD and position.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
1000 m
63
59
66
69
PA
57
54
55
200 m
0
meters width
0
meters height


Item Info
240_414_1538_2
Offset -53
Shad Len 0
SSS Height 1.3
Apparent Ht 1.1
Con Lat 38-38-46.66 N
Con Lon 074-48-00.55 W
Average Depth 19.1
Top Depth
Length
Width
0, debris from wk PA
Correlating Contacts
Closest Contact
253_271_2252_2
Distance 26.8
Search Radius 25
Local Contacts
253_271_2252_2 26.8365
AWOIS
AWOIS# 9936
AWOIS Dist 43.8
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 18.56 m
LD Lat 38-38-46.28 N
Least Depth 61 ft
LD Lon 074-48-00.34
Day of LD 255
Contact Dist 12.8
Source H10989_WH05_2000-255_109_2220_276_2
Cartographic Recommendations
Chart
61 ft LD by SWMB
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
1000 m
PA
200 m
0
meters width
0
meters height


Item Info
253_271_2252_1
Offset -38
Shad Len 0
SSS Height 0.9
Apparent Ht 1.23
Con Lat 38-38-46.09 N
Con Lon 074-47-59.32 W
Average Depth 19
Top Depth
Length
Width
0, wkpa
Correlating Contacts
Closest Contact
240_414_1538_1
Distance 22.7
Search Radius 25
Local Contacts
240_414_1538_1 22.7189
AWOIS
AWOIS# 9936
AWOIS Dist 61.5
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 18.11 m
LD Lat 38-38-45.89 N
Least Depth 59 ft
LD Lon 074-47-59.1 W
Day of LD 255
Contact Dist 8.1
Source H10989_WH05_2000-255_109_2220_346_4
Cartographic Recommendations
Chart
See correlating contact
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
253_271_2252_1
253_271_2252_2
253_478_0040_1
0
meters width
0
meters height
1000 m
200 m
PA
9936


Item Info
203_700_1810_1
Offset 48
Shad Len 0
SSS Height 1
Apparent Ht 0.7
Con Lat 38-38-45.09 N
Con Lon 074-47-58.41 W
Average Depth 18.7
Top Depth
Length
Width
0, wreck
Correlating Contacts
Closest Contact
240_414_1538_1
Distance 15.2
Search Radius 25
Local Contacts
240_414_1538_1 15.2409
AWOIS
AWOIS# 9936
AWOIS Dist 98.1
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 18.37 m
Least Depth 60 ft
Day of LD 255
Source H10989_WH05_2000-255_110_2204_287_6
LD Lat 38-38-44.53 N
LD Lon 074-47-57.87
Contact Dist 21.8
Cartographic Recommendations
Chart
See correlating contact
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
1000 m
63
59
66
69
PA
1936
57
54
55
200 m
0
meters width
0
meters height

AWOIS No: 1130

Item Description: Scattered wreckage reported 7/4/42 by unknown source

Source: NM 11/7/43

AWOIS Position: 38°44'42.00" N, 074°54'06.00" W

Required Investigation: SD, S2, SWMB, DI Radius: 1500 m

Charts Affected: 12214

INVESTIGATION

Contact No: 252_051_0249_2, 252_051_0249_3, 252_051_0249_1

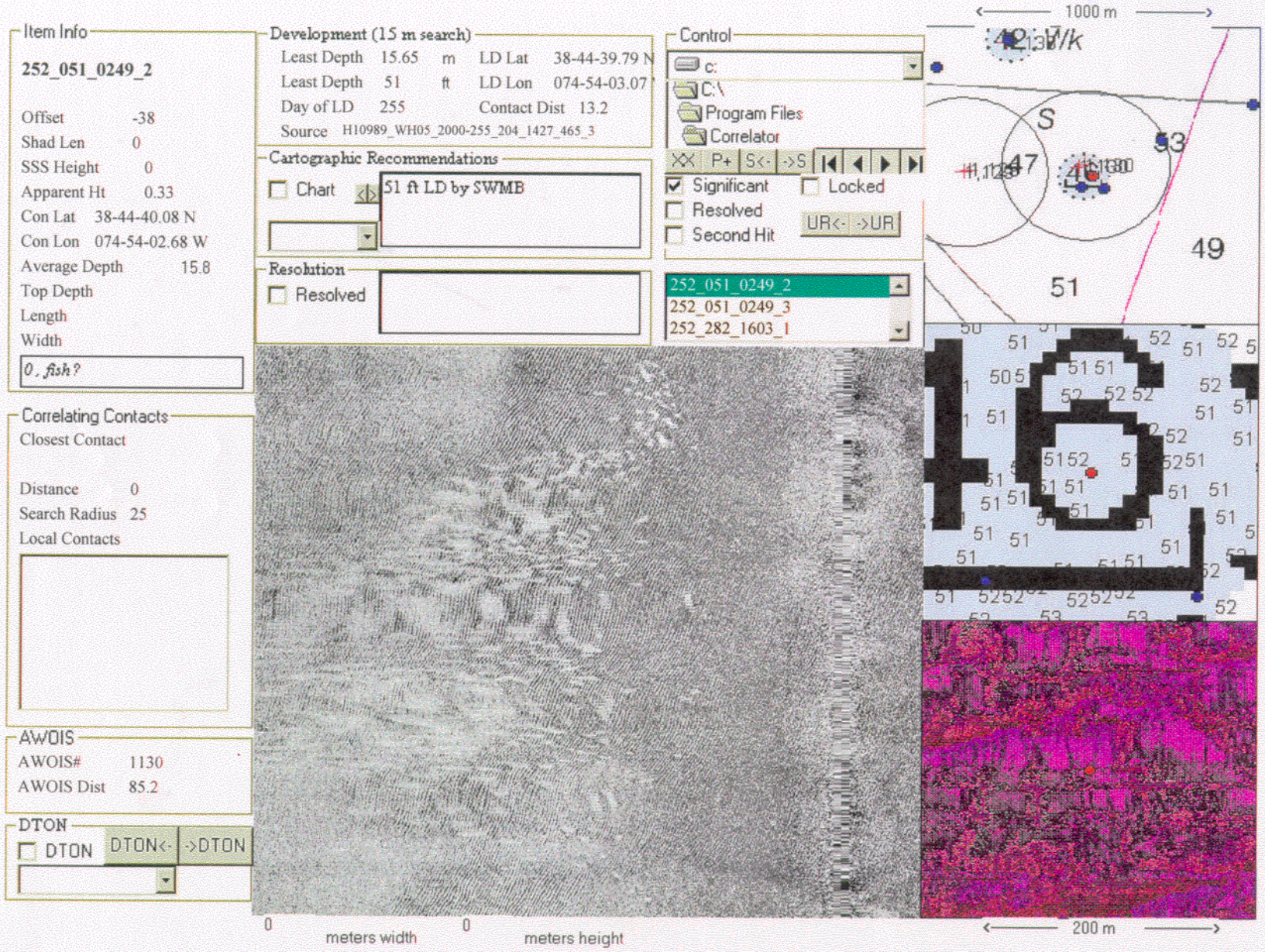
Date(s): DN 255

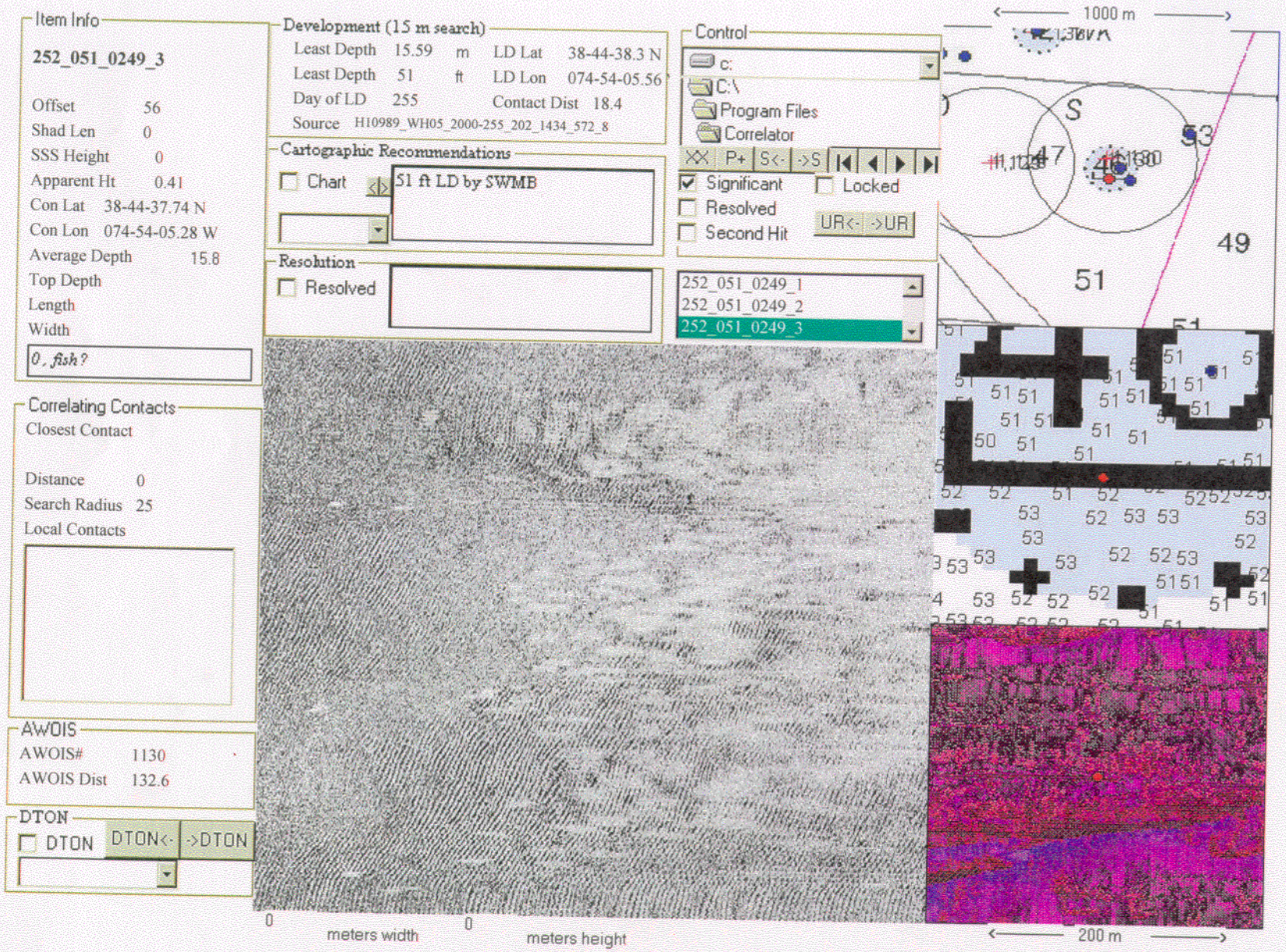
Investigation Used: 200% SSS, SWMB

Investigation Summary: Two hundred percent SSS coverage was achieved over the search radius during mainscheme coverage. Three contacts, believed to be fish, were identified. These entire items were then investigated with SWMB on DN 255. No contacts were found during multibeam investigation.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing the 46 ft wire drag cleared depth and surrounding danger circle and charting survey soundings. Concur


Item Info
252_051_0249_2
Offset -38
Shad Len 0
SSS Height 0
Apparent Ht 0.33
Con Lat 38-44-40.08 N
Con Lon 074-54-02.68 W
Average Depth 15.8
Top Depth
Length
Width
0, fish?
Correlating Contacts
Closest Contact
Distance 0
Search Radius 25
Local Contacts
AWOIS
AWOIS# 1130
AWOIS Dist 85.2
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 15.65 m
Least Depth 51 ft
Day of LD 255
Source H10989_WH05_2000-255_204_1427_465_3
LD Lat 38-44-39.79 N
LD Lon 074-54-03.07
Contact Dist 13.2
Cartographic Recommendations
Chart
51 ft LD by SWMB
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
252_051_0249_2
252_051_0249_3
252_282_1603_1
1000 m
200 m
0
meters width
0
meters height


Item Info
252_051_0249_3
Offset 56
Shad Len 0
SSS Height 0
Apparent Ht 0.41
Con Lat 38-44-37.74 N
Con Lon 074-54-05.28 W
Average Depth 15.8
Top Depth
Length
Width
0, fish?
Development (15 m search)
Least Depth 15.59 m
Least Depth 51 ft
Day of LD 255
Source H10989_WH05_2000-255_202_1434_572_8
LD Lat 38-44-38.3 N
LD Lon 074-54-05.56
Contact Dist 18.4
Cartographic Recommendations
Chart
51 ft LD by SWMB
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+ S<- ->S
Significant
Locked
Resolved
Second Hit
UR<- ->UR
252_051_0249_1
252_051_0249_2
252_051_0249_3
Correlating Contacts
Closest Contact
Distance 0
Search Radius 25
Local Contacts
AWOIS
AWOIS# 1130
AWOIS Dist 132.6
DTON
DTON
DTON<- ->DTON
0
meters width
0
meters height
1000 m
200 m

AWOIS No: 1129

Item Description: Unknown

Source: Unknown

AWOIS Position: 38°44'41.24" N, 074°54'33.04" W

Required Investigation: SD, S2, SWMB, DI Radius: 1000 m

Charts Affected: 12214

INVESTIGATION

Contact No: N/A

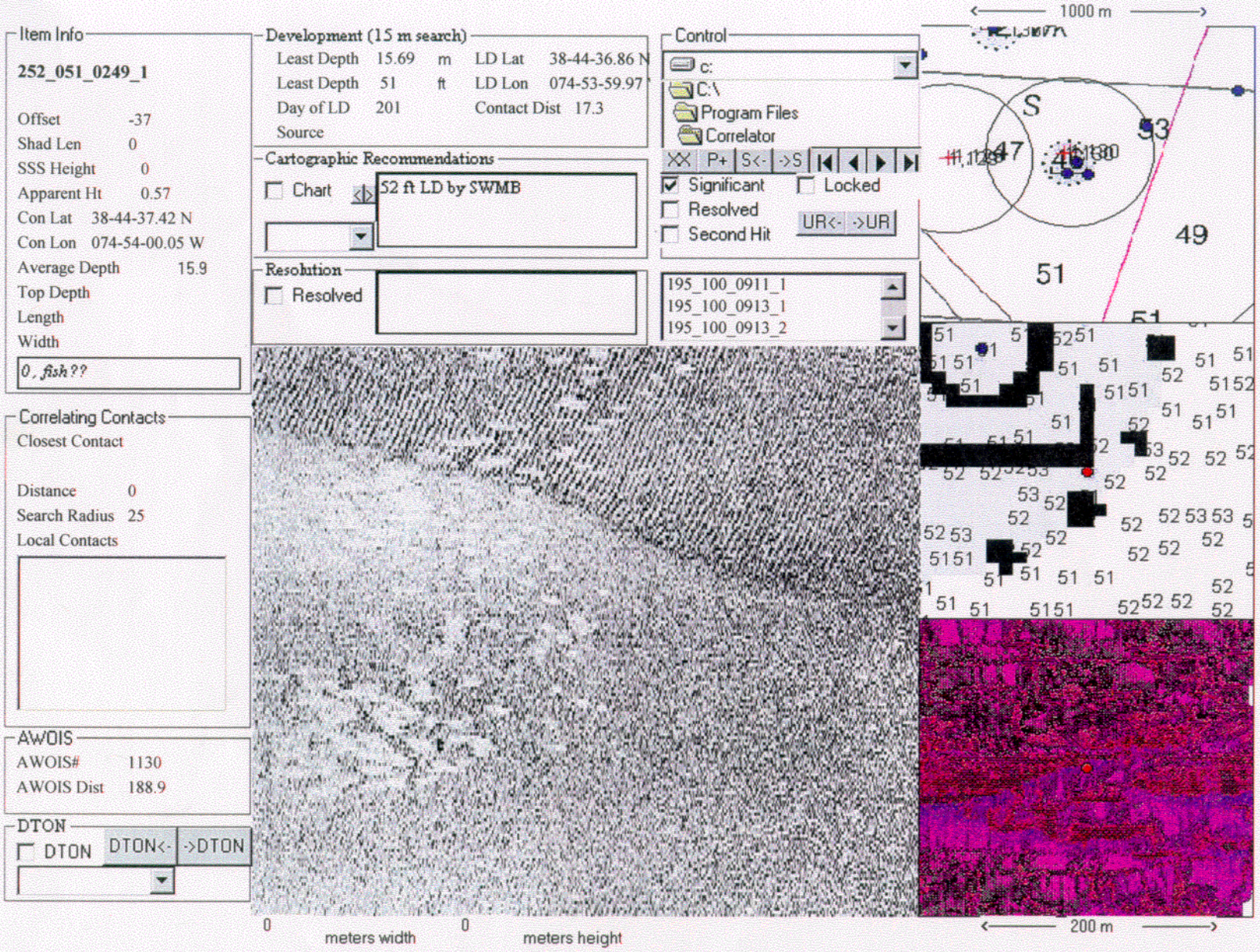
Date(s): SWMB: DN 255

Investigation Used: 200% SSS, SWMB

Investigation Summary: Two hundred percent SSS coverage was achieved over the entire search radius during mainscheme coverage. No contacts were identified within the radius. The area was also investigated with SWMB on DN 255. A 400 meter square, centered at the AWOIS position, was covered with mulitbeam lines run parallel to each other. No contacts were identified during the SWMB investigation.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends charting survey soundings. Concur


Item Info
252_051_0249_1
Offset -37
Shad Len 0
SSS Height 0
Apparent Ht 0.57
Con Lat 38-44-37.42 N
Con Lon 074-54-00.05 W
Average Depth 15.9
Top Depth
Length
Width
0, fish??
Development (15 m search)
Least Depth 15.69 m
Least Depth 51 ft
Day of LD 201
Source
LD Lat 38-44-36.86 N
LD Lon 074-53-59.97 W
Contact Dist 17.3
Cartographic Recommendations
Chart
52 ft LD by SWMB
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+ S<- ->S
Significant
Locked
Resolved
Second Hit
UR<- ->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
Correlating Contacts
Closest Contact
Distance 0
Search Radius 25
Local Contacts
AWOIS
AWOIS# 1130
AWOIS Dist 188.9
DTON
DTON
DTON<- ->DTON
1000 m
200 m
0
meters width
0
meters height

AWOIS No: 1104

Item Description: Barge, *Marion O. Boyle*

Source: NM 4/18/24

AWOIS Position: 38°37'57.40" N, 074°55'32.62" W

Required Investigation: SD, S2,SWMB, DI Radius: 1000 m

Charts Affected: 12214

INVESTIGATION

Contact No: N/A

Date(s): DN 256

Investigation Used: 200% SSS

Investigation Summary: The search radius of AWOIS 1104 falling within the limits of survey H10854 was investigated by WHITING during the 1999 field season using 200% SSS. No contacts were identified within this portion of the radius at that time. The remainder of the search radius was investigated by WHITING during this survey. Again, no significant contacts were identified. Concur

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing the charted wreck at 38°37'57.40" N, 074°55'32.62" W and charting survey soundings. Concur

AWOIS No: 9937

Item Description: This item is believed to be the remains of a vessel, locally known as "Wendy's wreck"

Source: CL1575/93-USPS Investigation

AWOIS Position: 38°36'00.00" N, 074°36'24.00" W

Required Investigation: SD, S2, DI Radius: 500 m

Charts Affected: 12214

INVESTIGATION

Contact No: 258_006_1749_1, 258_008_1811_1, 258_005_1740_2, 258_006_1749_2, 258_006_1759_1, 258_006_1759_2, 258_008_1811_2, 218_202_1401_1, 218_203_1411_1

Date(s): DN 218, 258

Investigation Used: SSS, SWMB

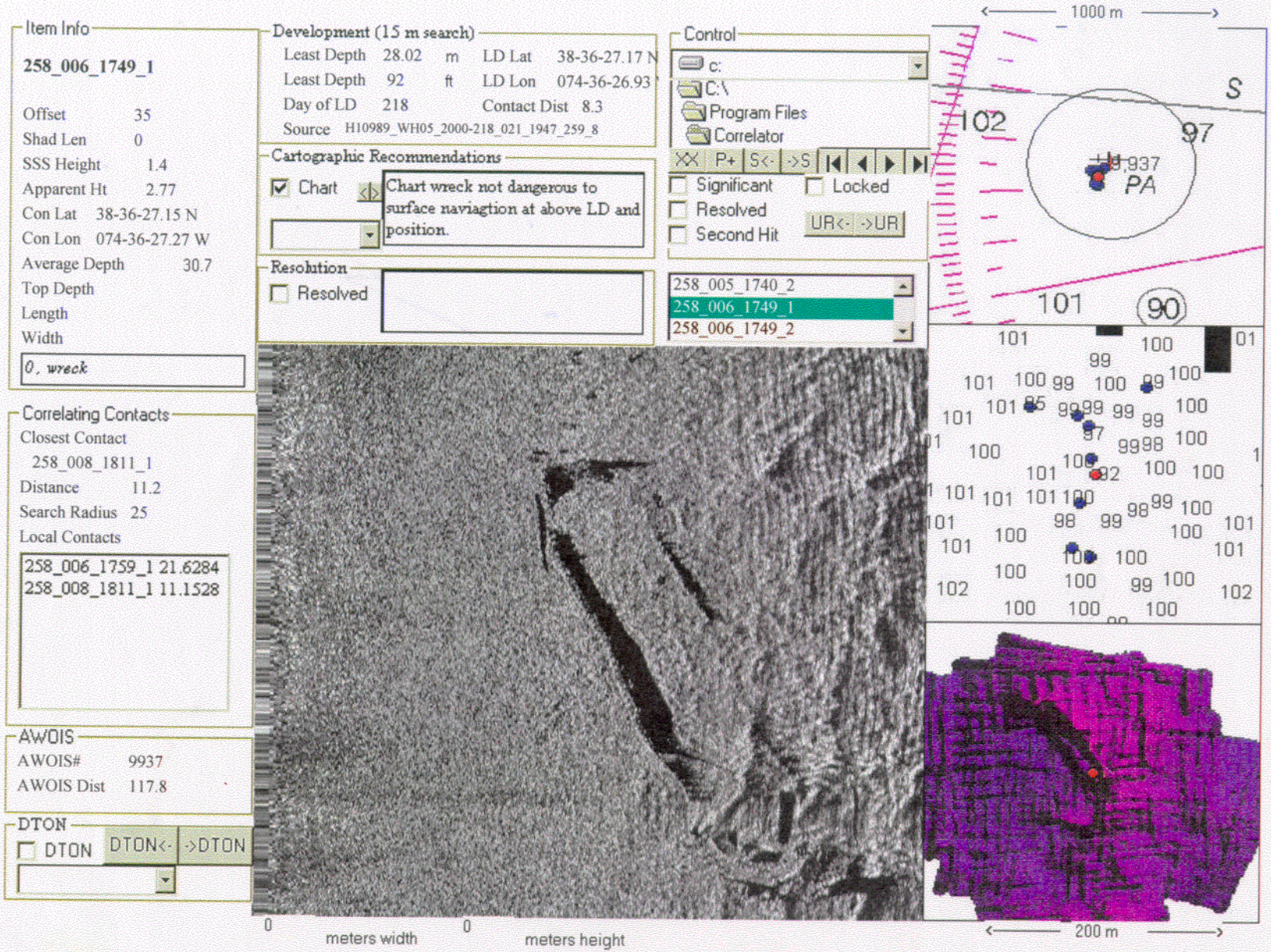
Least Depth Position: 38° 36' 27.14" N, 074° 36' 26.92" W
DN 218, Line 021_1947, Ping 259, Beam 82

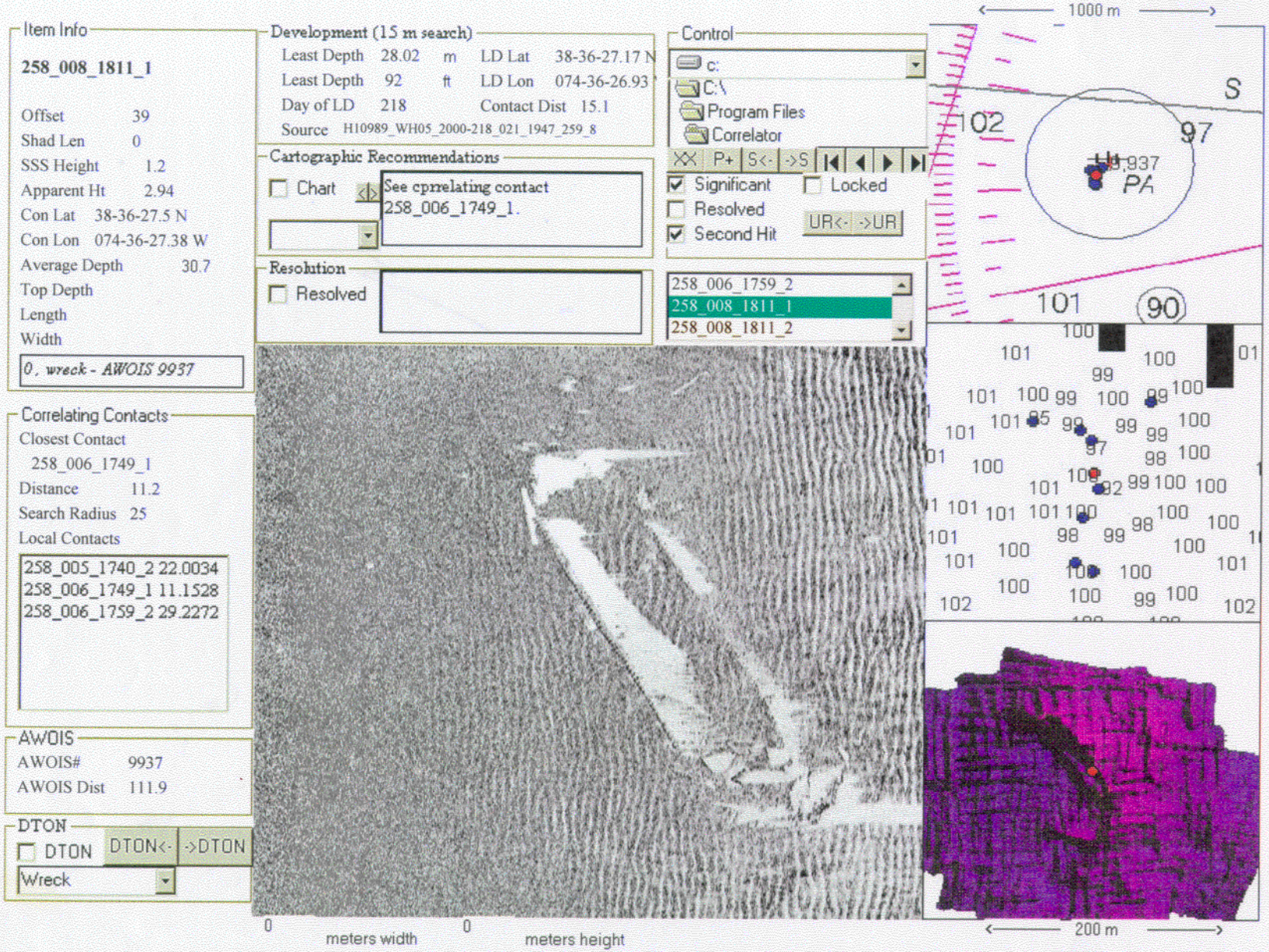
Position Determined By: Differential GPS

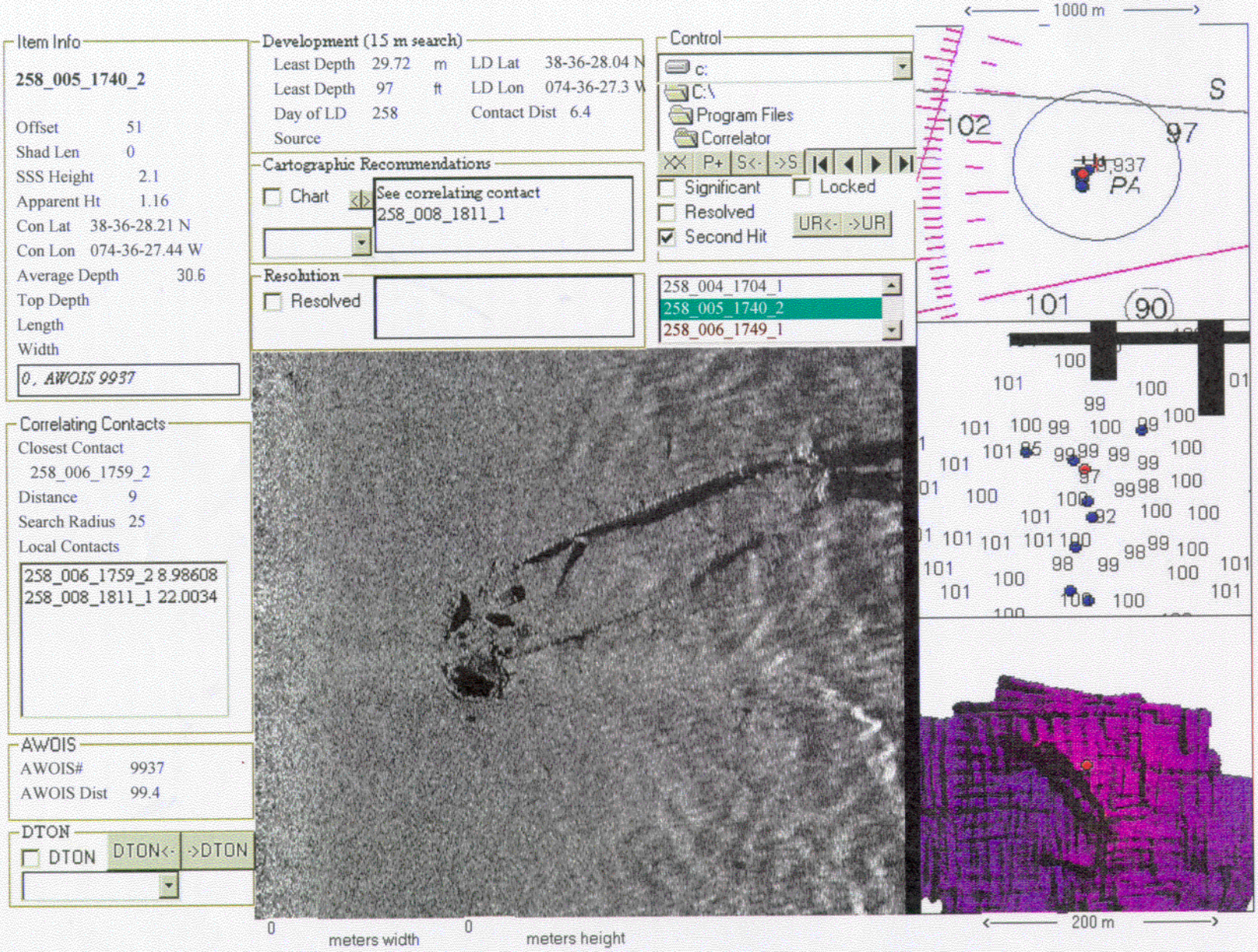
Investigation Summary: A SSS investigation was conducted on DN 218 and DN 258. Nine contacts, identified as a wreck and debris, were located. SWMB investigation was then conducted on DN 218. Multibeam lines were run in a cross pattern over the contact positions, with a line spacing in each direction of approximately two times the water depth. A least depth of 92 feet (28.02 meters) corrected using verified tides was acquired at the survey position.

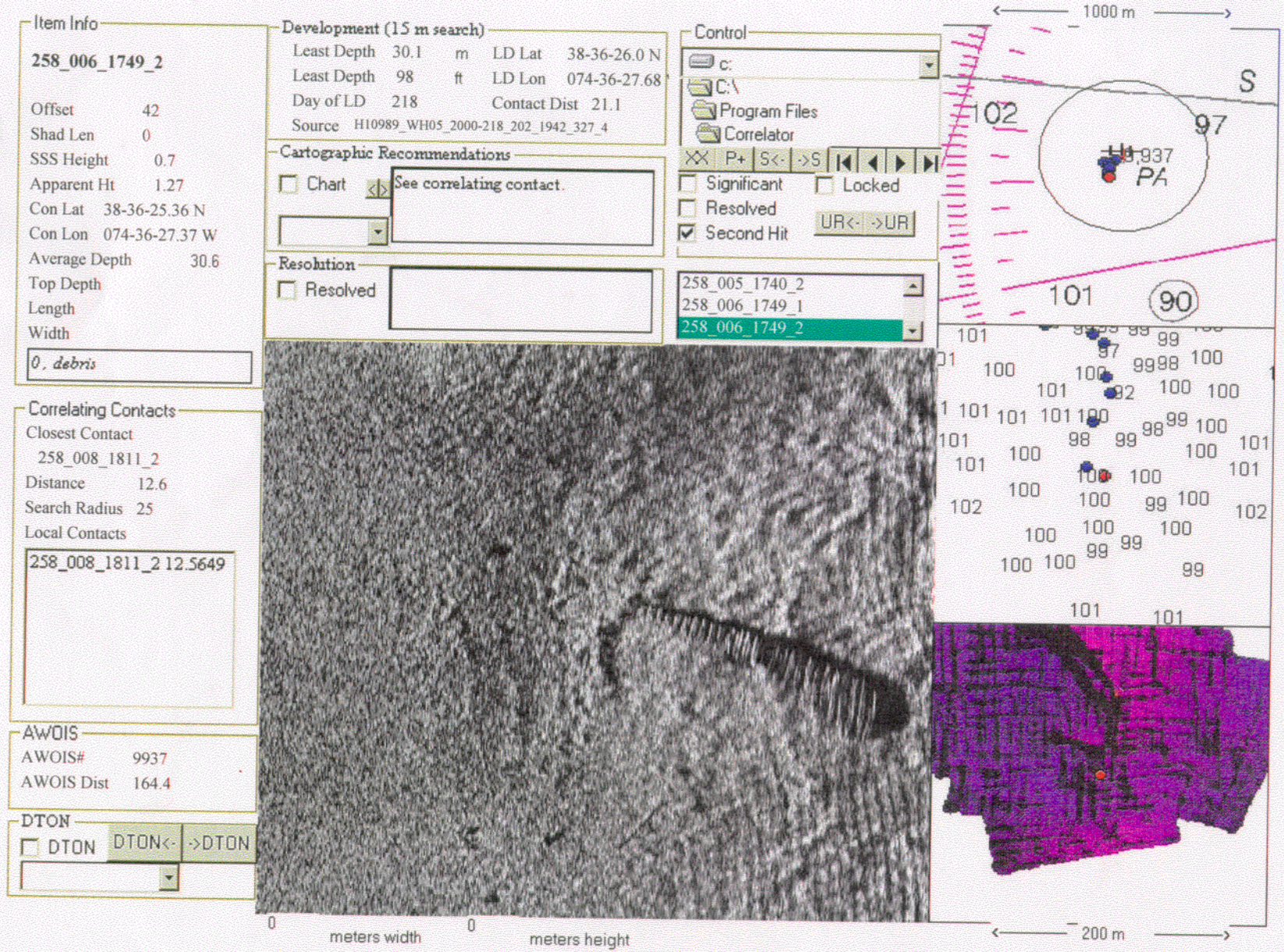
CHARTING RECOMMENDATION

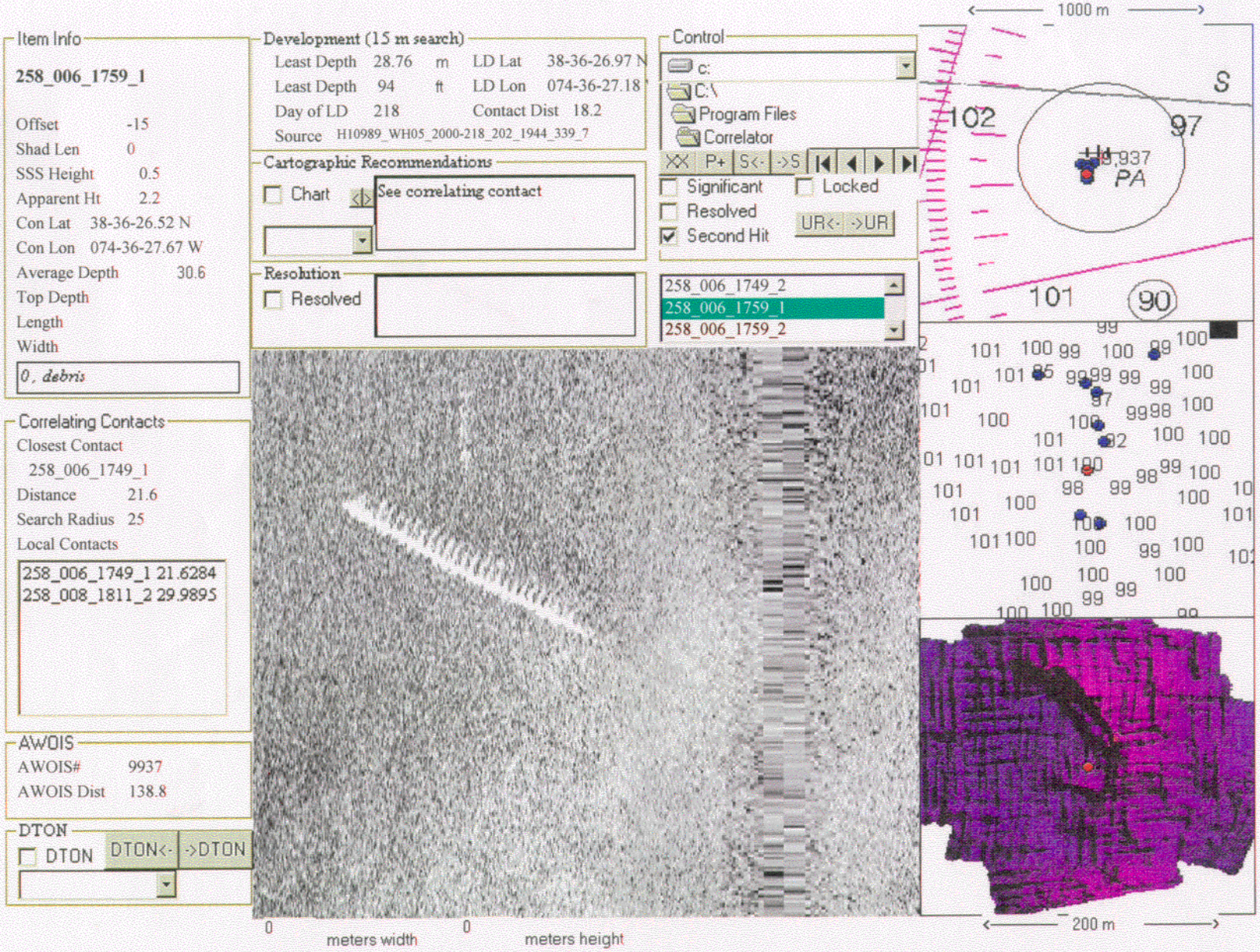
Recommendation: The hydrographer recommends removing the charted wreck (PA) and charting a wreck with a least depth of 92 feet, not dangerous to surface navigation at 38° 36' 27.14" N, 074° 36' 26.92" W.

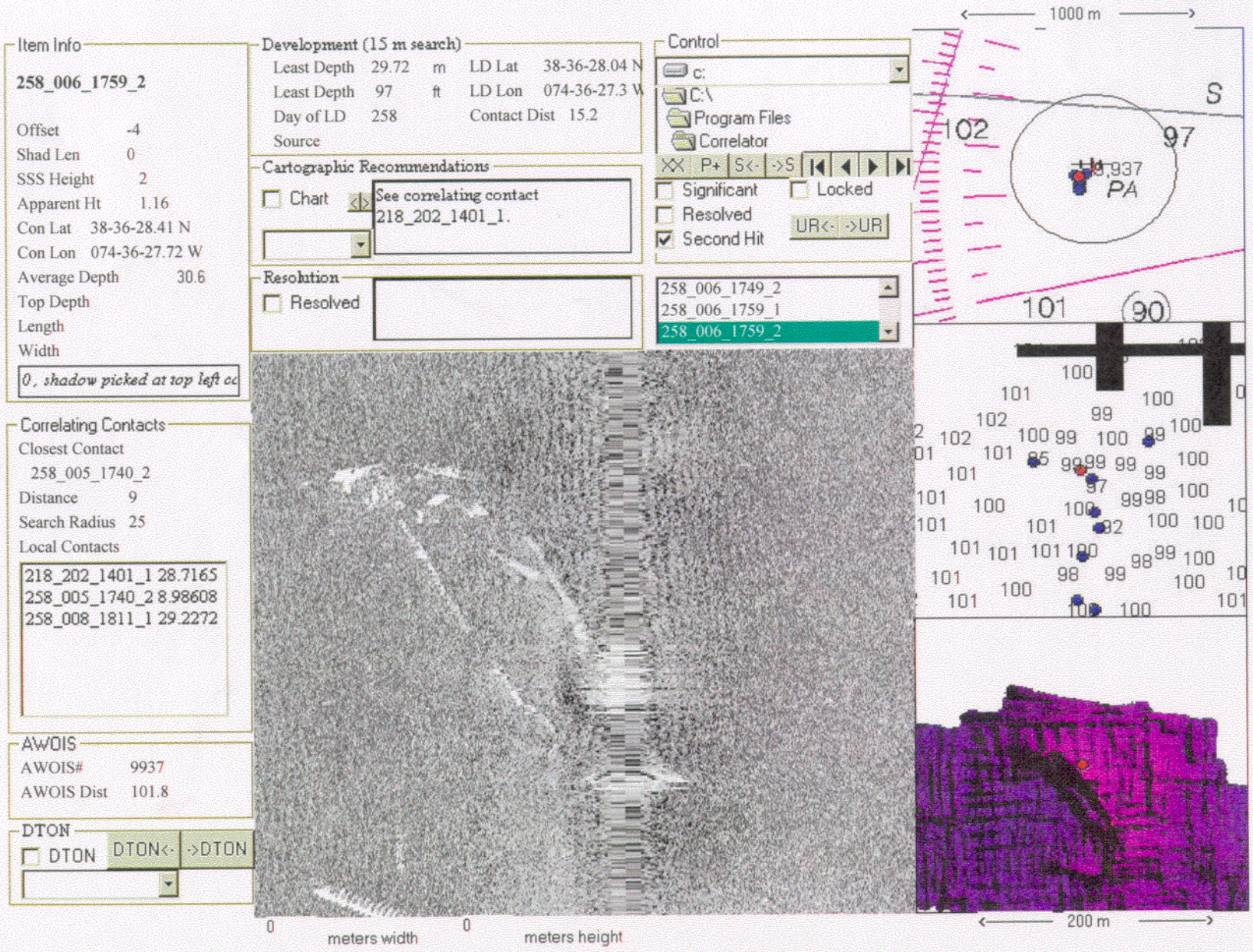

Item Info
258_006_1749_1
Offset 35
Shad Len 0
SSS Height 1.4
Apparent Ht 2.77
Con Lat 38-36-27.15 N
Con Lon 074-36-27.27 W
Average Depth 30.7
Top Depth
Length
Width
0, wreck
Correlating Contacts
Closest Contact
258_008_1811_1
Distance 11.2
Search Radius 25
Local Contacts
258_006_1759_1 21.6284
258_008_1811_1 11.1528
AWOIS
AWOIS# 9937
AWOIS Dist 117.8
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 28.02 m
Least Depth 92 ft
Day of LD 218
Source H10989_WH05_2000-218_021_1947_259_8
LD Lat 38-36-27.17 N
LD Lon 074-36-26.93
Contact Dist 8.3
Cartographic Recommendations
Chart
Chart wreck not dangerous to surface naviagtion at above LD and position.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
258_005_1740_2
258_006_1749_1
258_006_1749_2
1000 m
S
102
97
9937
PA
101
90
200 m
0
meters width
0
meters height

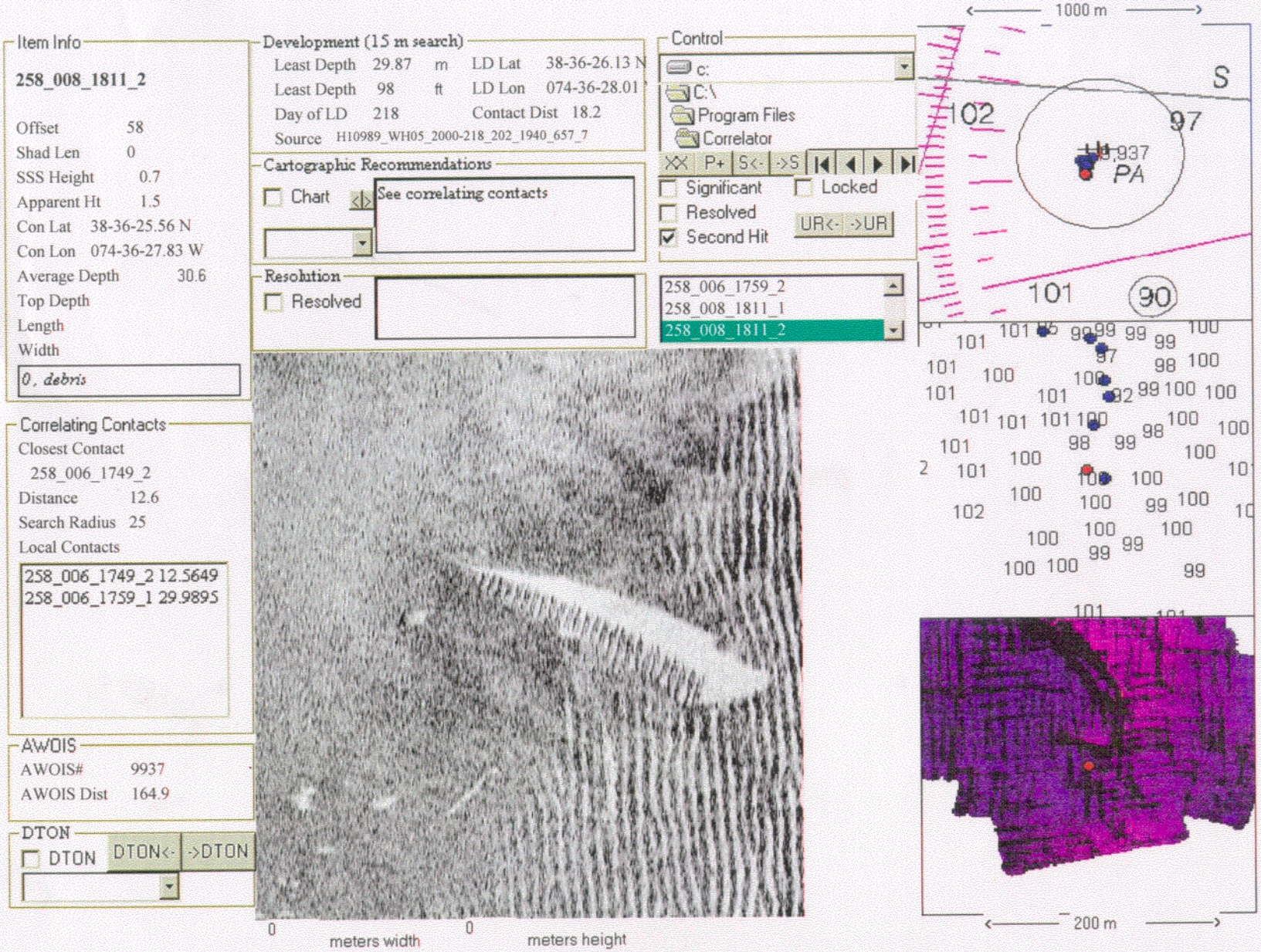

Item Info
258_008_1811_1
Offset 39
Shad Len 0
SSS Height 1.2
Apparent Ht 2.94
Con Lat 38-36-27.5 N
Con Lon 074-36-27.38 W
Average Depth 30.7
Top Depth
Length
Width
0, wreck - AWOIS 9937
Correlating Contacts
Closest Contact
258_006_1749_1
Distance 11.2
Search Radius 25
Local Contacts
258_005_1740_2 22.0034
258_006_1749_1 11.1528
258_006_1759_2 29.2272
AWOIS
AWOIS# 9937
AWOIS Dist 111.9
DTON
DTON
DTON<-
->DTON
Wreck
Development (15 m search)
Least Depth 28.02 m
LD Lat 38-36-27.17 N
Least Depth 92 ft
LD Lon 074-36-26.93
Day of LD 218
Contact Dist 15.1
Source H10989_WH05_2000-218_021_1947_259_8
Cartographic Recommendations
Chart
See correlating contact
258_006_1749_1.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
258_006_1759_2
258_008_1811_1
258_008_1811_2
1000 m
S
102
97
9937
PA
101
90
200 m
0
meters width
0
meters height

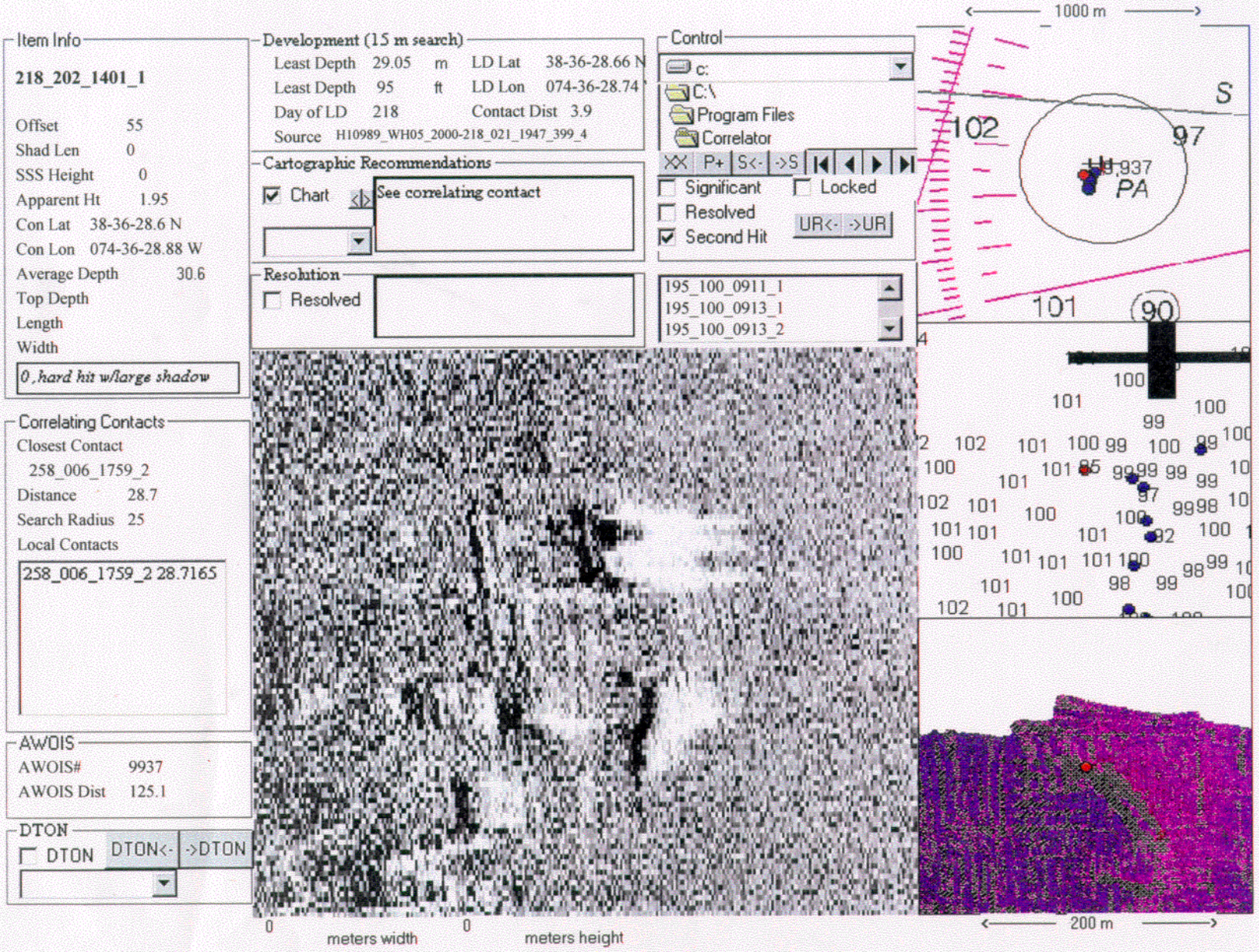

Item Info
258_005_1740_2
Offset 51
Shad Len 0
SSS Height 2.1
Apparent Ht 1.16
Con Lat 38-36-28.21 N
Con Lon 074-36-27.44 W
Average Depth 30.6
Top Depth
Length
Width
0, AWOIS 9937
Correlating Contacts
Closest Contact
258_006_1759_2
Distance 9
Search Radius 25
Local Contacts
258_006_1759_2 8.98608
258_008_1811_1 22.0034
AWOIS
AWOIS# 9937
AWOIS Dist 99.4
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 29.72 m
Least Depth 97 ft
Day of LD 258
Source
LD Lat 38-36-28.04 N
LD Lon 074-36-27.3 W
Contact Dist 6.4
Cartographic Recommendations
Chart
See correlating contact
258_008_1811_1
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
258_004_1704_1
258_005_1740_2
258_006_1749_1
1000 m
S
102
97
9937
PA
101
90
200 m
0
meters width
0
meters height

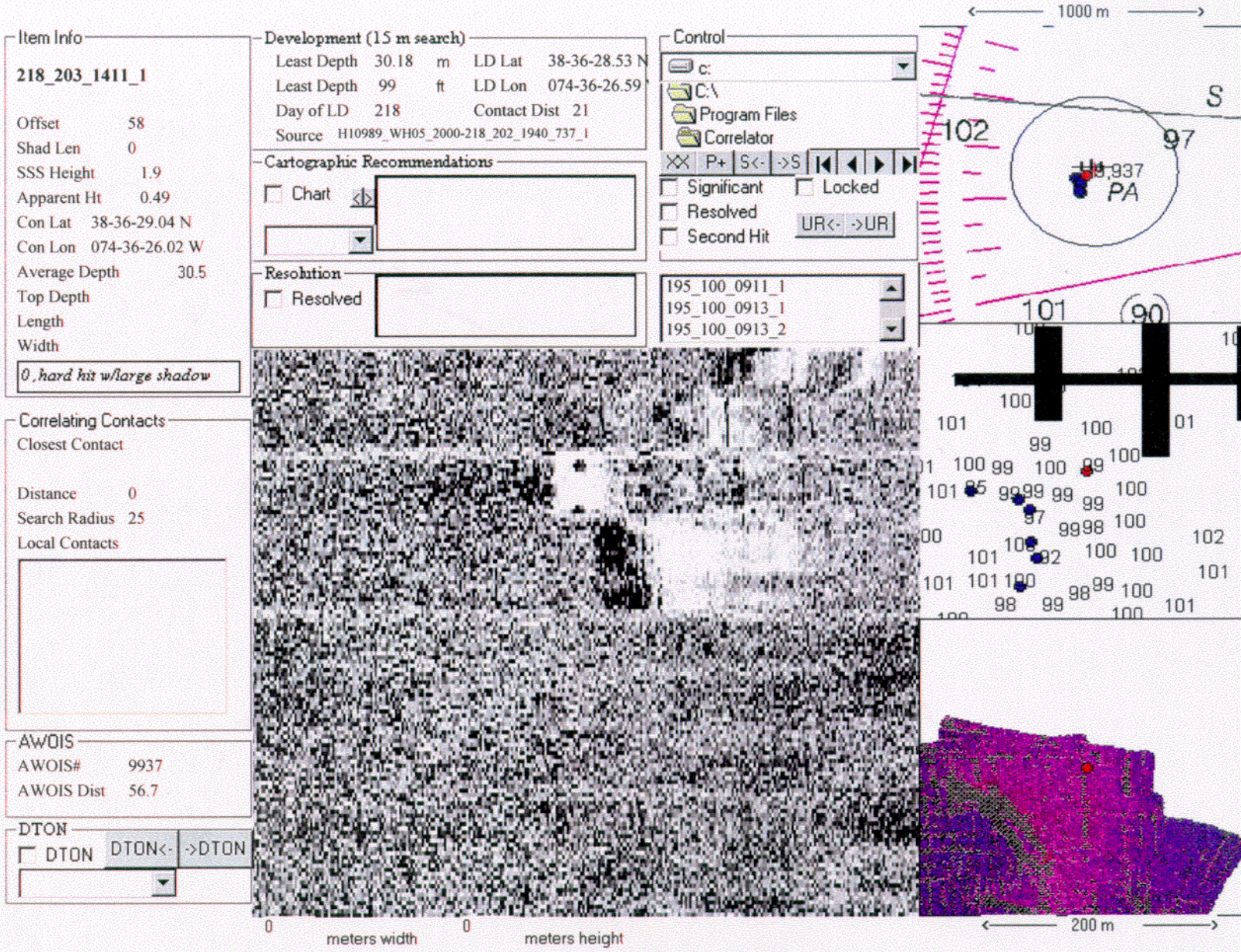

Item Info
258_006_1749_2
Offset 42
Shad Len 0
SSS Height 0.7
Apparent Ht 1.27
Con Lat 38-36-25.36 N
Con Lon 074-36-27.37 W
Average Depth 30.6
Top Depth
Length
Width
0, debris
Correlating Contacts
Closest Contact
258_008_1811_2
Distance 12.6
Search Radius 25
Local Contacts
258_008_1811_2 12.5649
AWOIS
AWOIS# 9937
AWOIS Dist 164.4
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 30.1 m
Least Depth 98 ft
Day of LD 218
Source H10989_WH05_2000-218_202_1942_327_4
LD Lat 38-36-26.0 N
LD Lon 074-36-27.68
Contact Dist 21.1
Cartographic Recommendations
Chart
See correlating contact.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
258_005_1740_2
258_006_1749_2
258_006_1749_1
1000 m
200 m
S
102
97
101
90
9937
PA
0
meters width
0
meters height


Item Info
258_006_1759_1
Offset -15
Shad Len 0
SSS Height 0.5
Apparent Ht 2.2
Con Lat 38-36-26.52 N
Con Lon 074-36-27.67 W
Average Depth 30.6
Top Depth
Length
Width
0, debris
Correlating Contacts
Closest Contact
258_006_1749_1
Distance 21.6
Search Radius 25
Local Contacts
258_006_1749_1 21.6284
258_008_1811_2 29.9895
AWOIS
AWOIS# 9937
AWOIS Dist 138.8
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 28.76 m
LD Lat 38-36-26.97 N
Least Depth 94 ft
LD Lon 074-36-27.18
Day of LD 218
Contact Dist 18.2
Source H10989_WH05_2000-218_202_1944_339_7
Cartographic Recommendations
Chart
See correlating contact
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
258_006_1749_2
258_006_1759_1
258_006_1759_2
0
meters width
0
meters height
1000 m
200 m
S
102
97
101
90
9937
PA


Item Info
258_006_1759_2
Offset -4
Shad Len 0
SSS Height 2
Apparent Ht 1.16
Con Lat 38-36-28.41 N
Con Lon 074-36-27.72 W
Average Depth 30.6
Top Depth
Length
Width
0, shadow picked at top left cc
Correlating Contacts
Closest Contact
258_005_1740_2
Distance 9
Search Radius 25
Local Contacts
218_202_1401_1 28.7165
258_005_1740_2 8.98608
258_008_1811_1 29.2272
AWOIS
AWOIS# 9937
AWOIS Dist 101.8
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 29.72 m
LD Lat 38-36-28.04 N
Least Depth 97 ft
LD Lon 074-36-27.3 W
Day of LD 258
Contact Dist 15.2
Source
Cartographic Recommendations
Chart
See correlating contact
218_202_1401_1.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
258_006_1749_2
258_006_1759_1
258_006_1759_2
0
meters width
0
meters height
1000 m
200 m
S
102
97
9,937
PA
101
90


Item Info
258_008_1811_2
Offset 58
Shad Len 0
SSS Height 0.7
Apparent Ht 1.5
Con Lat 38-36-25.56 N
Con Lon 074-36-27.83 W
Average Depth 30.6
Top Depth
Length
Width
0, debris
Correlating Contacts
Closest Contact
258_006_1749_2
Distance 12.6
Search Radius 25
Local Contacts
258_006_1749_2 12.5649
258_006_1759_1 29.9895
AWOIS
AWOIS# 9937
AWOIS Dist 164.9
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 29.87 m
LD Lat 38-36-26.13 N
Least Depth 98 ft
LD Lon 074-36-28.01
Day of LD 218
Contact Dist 18.2
Source H10989_WH05_2000-218_202_1940_657_7
Cartographic Recommendations
Chart
See correlating contacts
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
258_006_1759_2
258_008_1811_1
258_008_1811_2
0
meters width
0
meters height
1000 m
S
102
97
9937
PA
101
90
200 m


Item Info
218_202_1401_1
Offset 55
Shad Len 0
SSS Height 0
Apparent Ht 1.95
Con Lat 38-36-28.6 N
Con Lon 074-36-28.88 W
Average Depth 30.6
Top Depth
Length
Width
0, hard hit w/large shadow
Development (15 m search)
Least Depth 29.05 m
Least Depth 95 ft
Day of LD 218
Source H10989_WH05_2000-218_021_1947_399_4
LD Lat 38-36-28.66 N
LD Lon 074-36-28.74 W
Contact Dist 3.9
Cartographic Recommendations
Chart
See correlating contact
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+ S<- ->S
Significant
Locked
Resolved
Second Hit
UR<- ->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
Correlating Contacts
Closest Contact
258_006_1759_2
Distance 28.7
Search Radius 25
Local Contacts
258_006_1759_2 28.7165
AWOIS
AWOIS# 9937
AWOIS Dist 125.1
DTON
DTON
DTON<- ->DTON
0
meters width
0
meters height
1000 m
S
102
97
9937
PA
101
90
200 m


Item Info
218_203_1411_1
Offset 58
Shad Len 0
SSS Height 1.9
Apparent Ht 0.49
Con Lat 38-36-29.04 N
Con Lon 074-36-26.02 W
Average Depth 30.5
Top Depth
Length
Width
0 , hard hit w/large shadow
Correlating Contacts
Closest Contact
Distance 0
Search Radius 25
Local Contacts
AWOIS
AWOIS# 9937
AWOIS Dist 56.7
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 30.18 m
Least Depth 99 ft
Day of LD 218
Source H10989_WH05_2000-218_202_1940_737_1
LD Lat 38-36-28.53 N
LD Lon 074-36-26.59
Contact Dist 21
Cartographic Recommendations
Chart
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
0
meters width
0
meters height
1000 m
S
102
97
9937
PA
101
90
200 m

AWOIS No: 10652

Item Description: Wooden and steel wreckage believed to be a vessel, known locally as "Jennifer's wreck"

Source: USPS investigation 7/19/93

AWOIS Position: 38°36'06.00" N, 074°40'42.00" W

Required Investigation: SD, S2, SWMB, DI Radius: 500 m

Charts Affected: 12214

INVESTIGATION

Contact No: 218_109_1515_1, 218_208_1506_1, 218_209_1457_1, 258_004_1704_1, 258_003_1711_1, 258_003_1711_2

Date(s): DN 218, 258

Investigation Used: SWMB

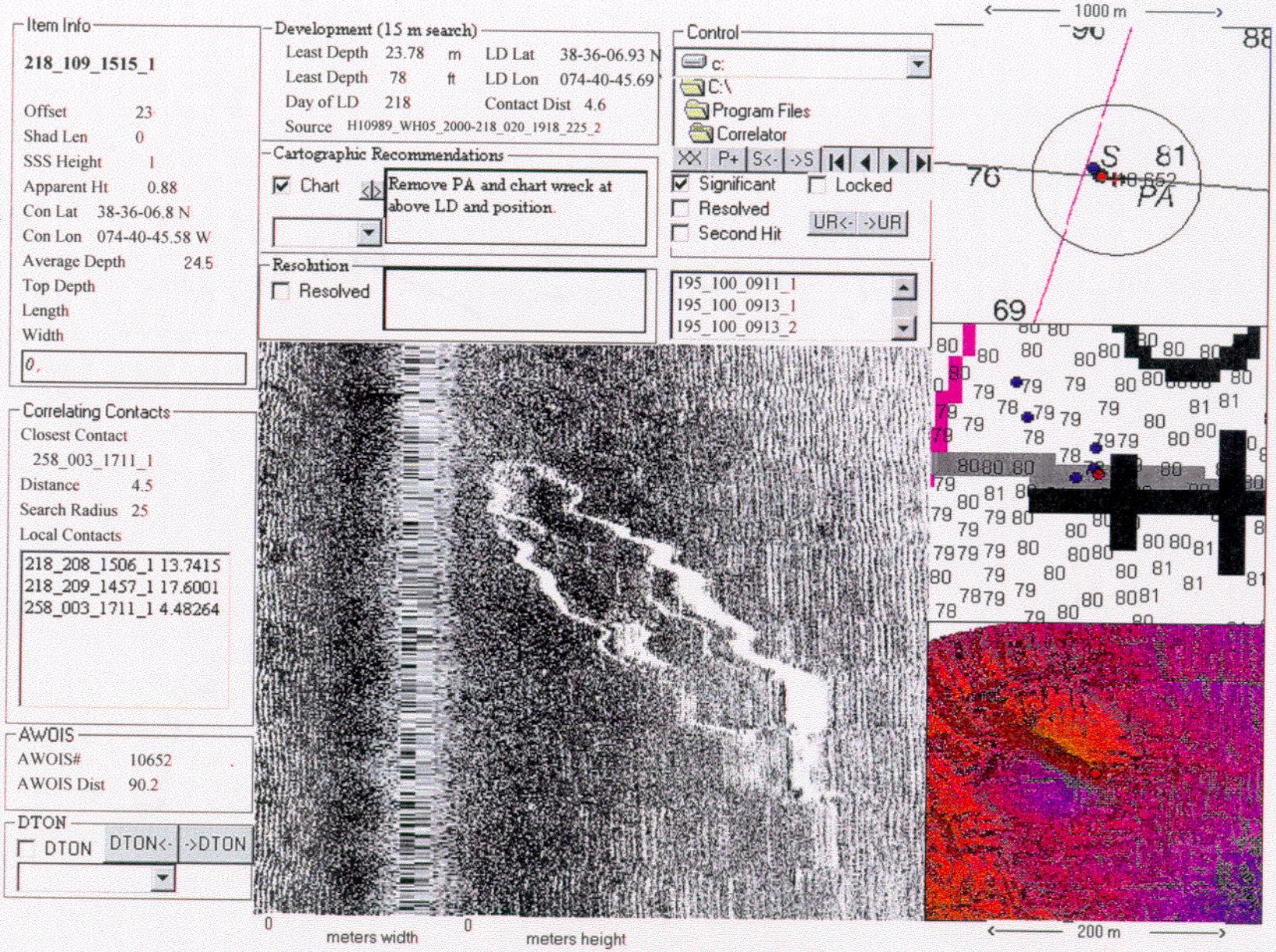
Least Depth Position: 38° 36' ~~06.93~~ 7.37" N, 074° 40' ~~45.69~~ 7.1" W
DN 218, Line 020_1918, Ping 225, Beam 23

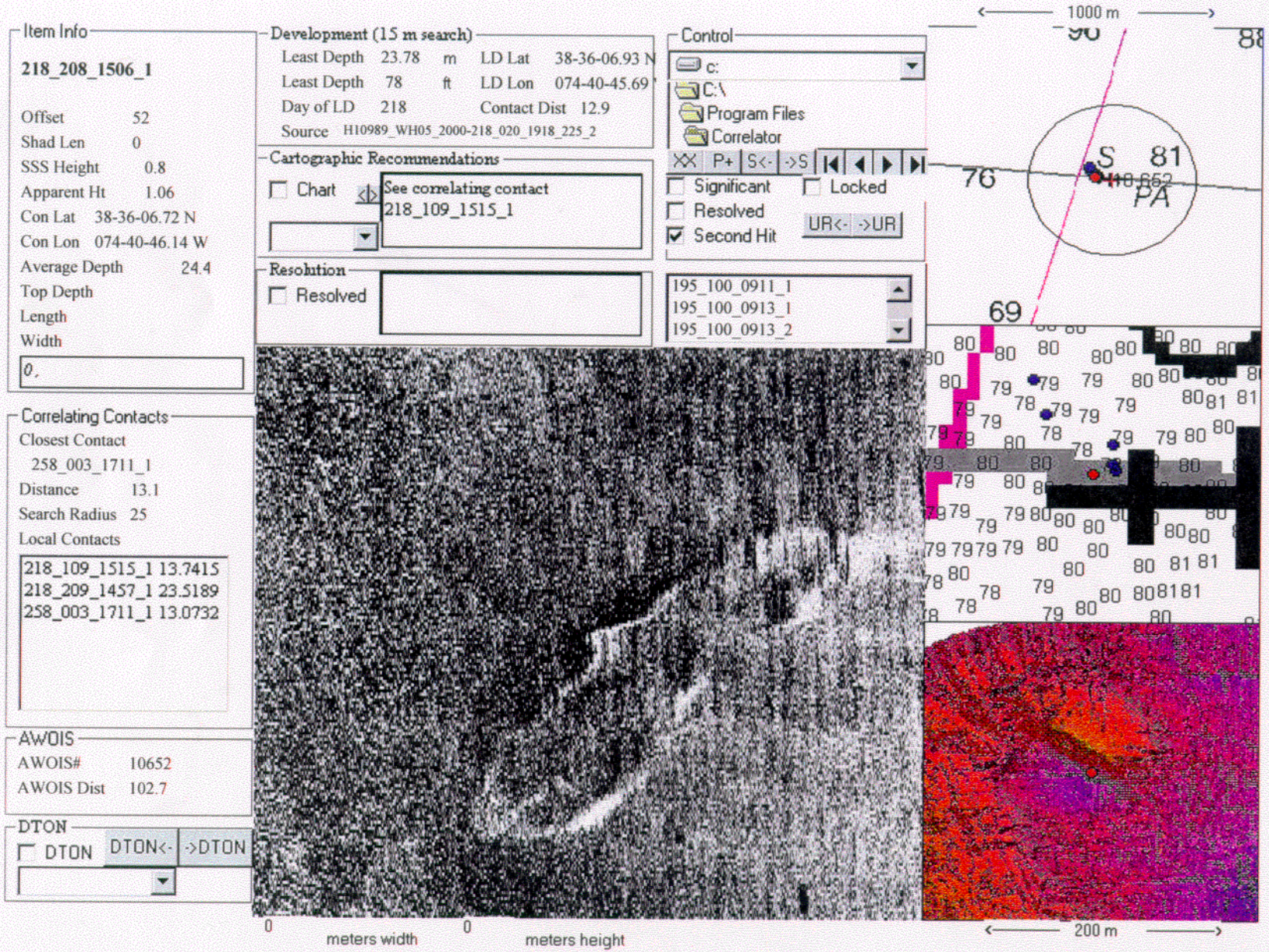
Position Determined By: Differential GPS

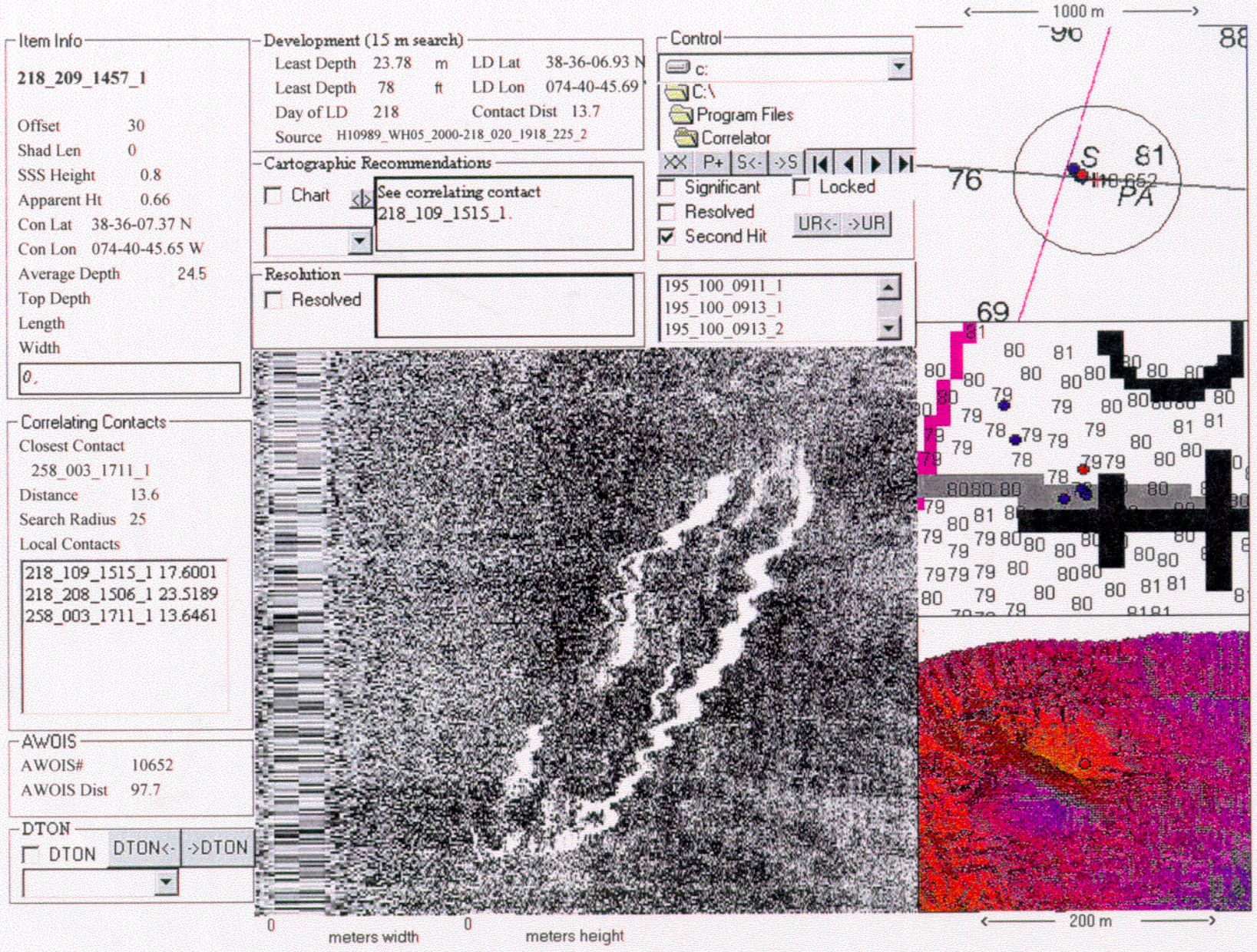
Investigation Summary: A SSS investigation was conducted on DN 218 and DN 258. Several lines were run over the AWOIS position. Several significant contacts, identified as a wreck and debris, were located. SWMB investigation was then conducted on DN 218. Two parallel multibeam lines were run over the contact positions, with a line spacing of approximately two times the water depth. A contact least depth of 77 feet (23.6m) corrected using verified tides was acquired from multibeam.

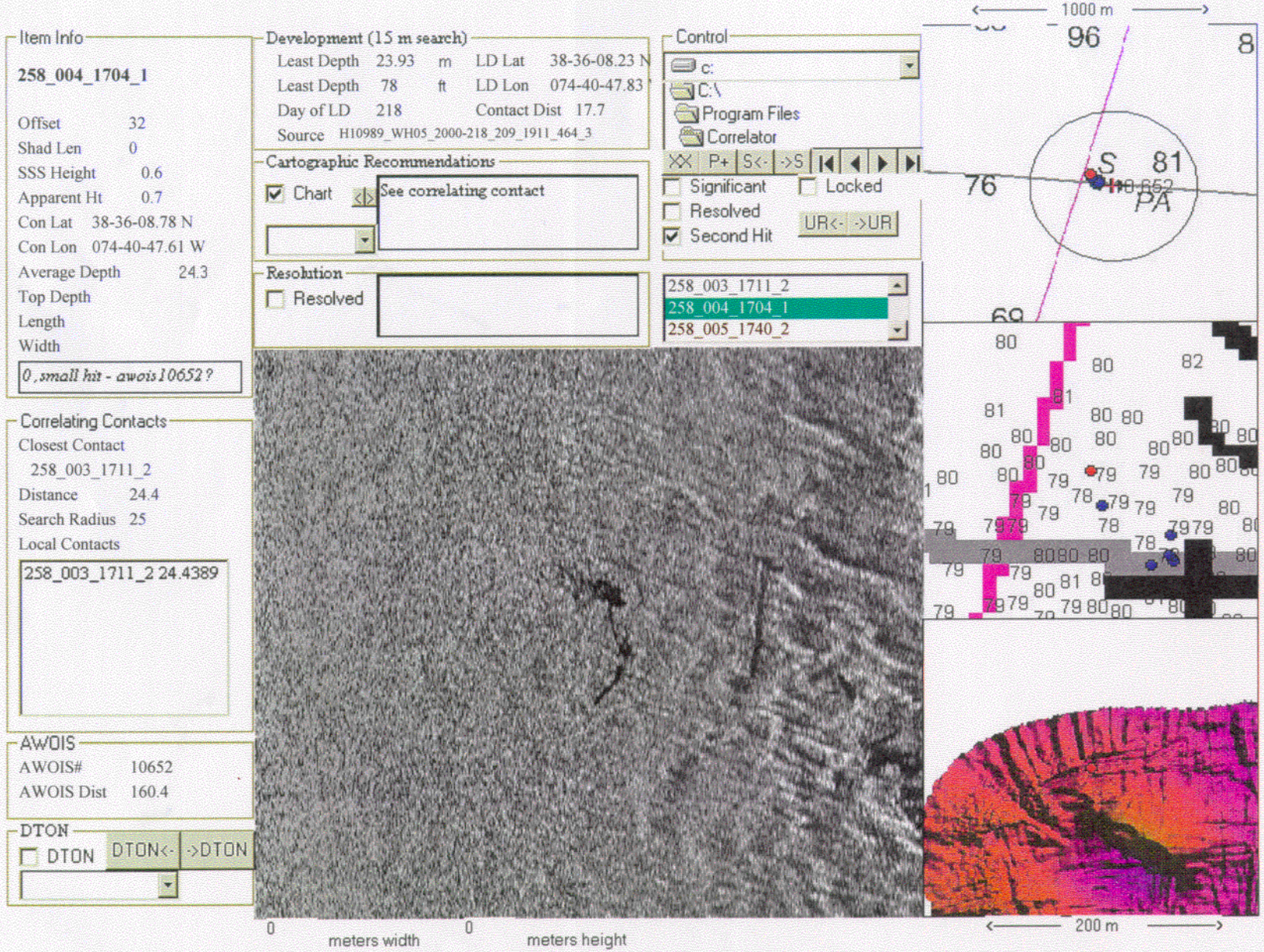
CHARTING RECOMMENDATION

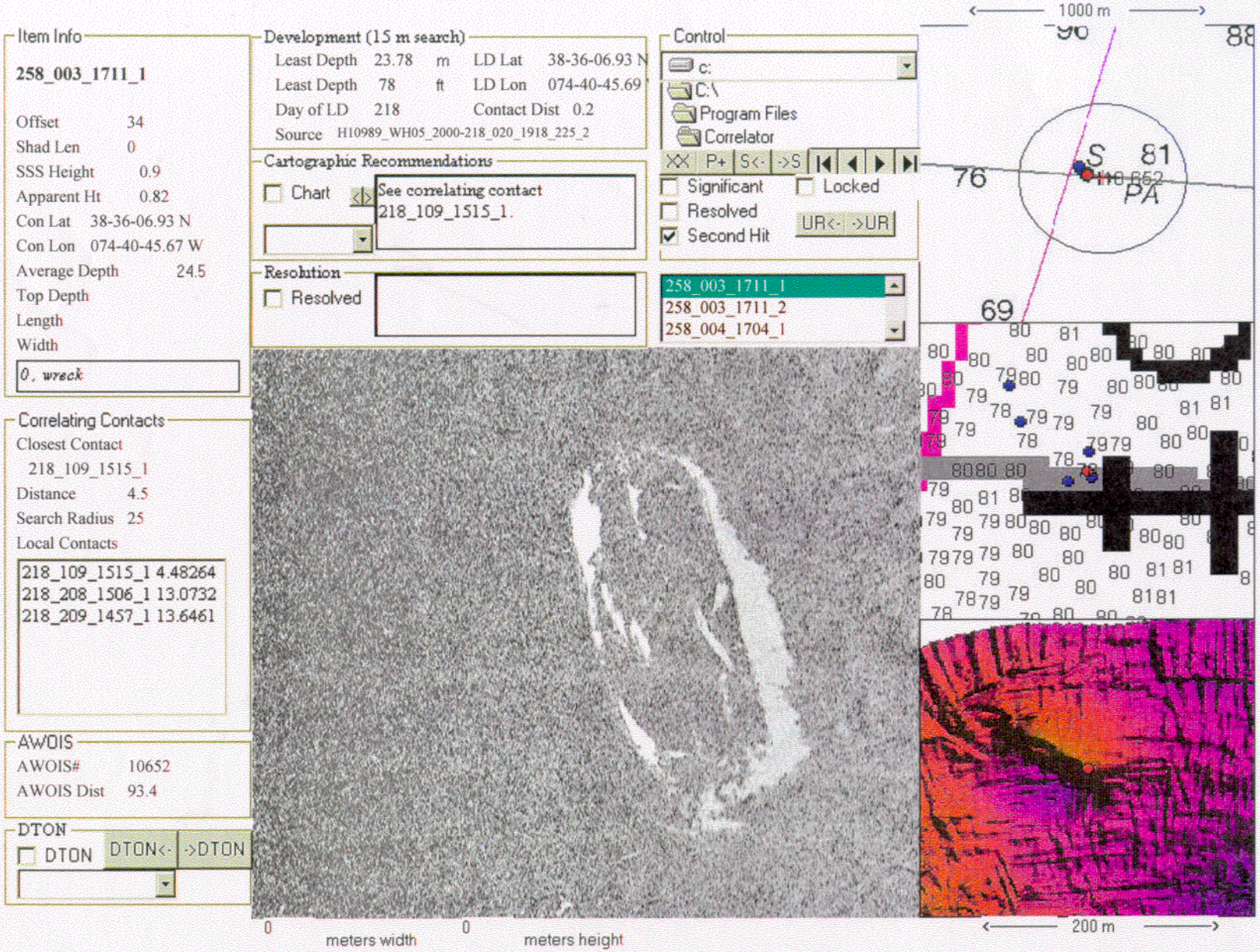
Recommendation: The hydrographer recommends removing the wreck (PA) and charting a wreck with a least depth of 77 feet at 38° 36' ~~06.93~~ 7.37" N, 074° 40' ~~45.69~~ 7.1" W. Concur

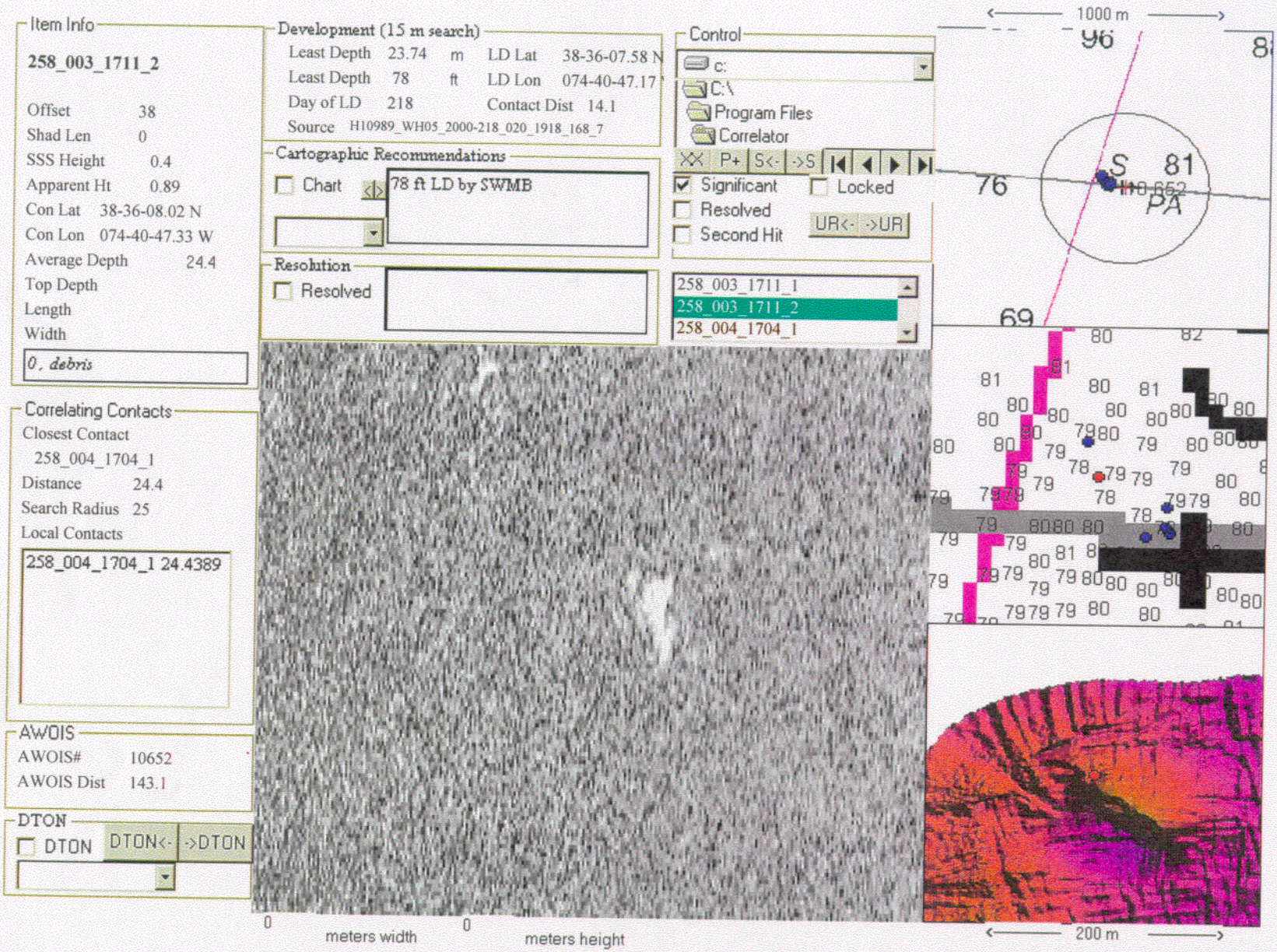

Item Info
218_109_1515_1
Offset 23
Shad Len 0
SSS Height 1
Apparent Ht 0.88
Con Lat 38-36-06.8 N
Con Lon 074-40-45.58 W
Average Depth 24.5
Top Depth
Length
Width
0.
Correlating Contacts
Closest Contact
258_003_1711_1
Distance 4.5
Search Radius 25
Local Contacts
218_208_1506_1 13.7415
218_209_1457_1 17.6001
258_003_1711_1 4.48264
AWOIS
AWOIS# 10652
AWOIS Dist 90.2
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 23.78 m
Least Depth 78 ft
Day of LD 218
Source H10989_WH05_2000-218_020_1918_225_2
LD Lat 38-36-06.93 N
LD Lon 074-40-45.69
Contact Dist 4.6
Cartographic Recommendations
Chart
Remove PA and chart wreck at above LD and position.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
1000 m
S
81
PA
76
69
200 m
0
meters width
0
meters height


Item Info
218_208_1506_1
Offset 52
Shad Len 0
SSS Height 0.8
Apparent Ht 1.06
Con Lat 38-36-06.72 N
Con Lon 074-40-46.14 W
Average Depth 24.4
Top Depth
Length
Width
0,
Correlating Contacts
Closest Contact
258_003_1711_1
Distance 13.1
Search Radius 25
Local Contacts
218_109_1515_1 13.7415
218_209_1457_1 23.5189
258_003_1711_1 13.0732
AWOIS
AWOIS# 10652
AWOIS Dist 102.7
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 23.78 m
LD Lat 38-36-06.93 N
Least Depth 78 ft
LD Lon 074-40-45.69
Day of LD 218
Contact Dist 12.9
Source H10989_WH05_2000-218_020_1918_225_2
Cartographic Recommendations
Chart
See correlating contact
218_109_1515_1
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
1000 m
S 81
PA
76
69
200 m
0
meters width
0
meters height


Item Info
218_209_1457_1
Offset 30
Shad Len 0
SSS Height 0.8
Apparent Ht 0.66
Con Lat 38-36-07.37 N
Con Lon 074-40-45.65 W
Average Depth 24.5
Top Depth
Length
Width
0.
Correlating Contacts
Closest Contact
258_003_1711_1
Distance 13.6
Search Radius 25
Local Contacts
218_109_1515_1 17.6001
218_208_1506_1 23.5189
258_003_1711_1 13.6461
AWOIS
AWOIS# 10652
AWOIS Dist 97.7
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 23.78 m
Least Depth 78 ft
Day of LD 218
Source H10989_WH05_2000-218_020_1918_225_2
LD Lat 38-36-06.93 N
LD Lon 074-40-45.69
Contact Dist 13.7
Cartographic Recommendations
Chart
See correlating contact 218_109_1515_1.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
1000 m
S
81
PA
76
69
200 m
0
meters width
0
meters height


Item Info
258_004_1704_1
Offset 32
Shad Len 0
SSS Height 0.6
Apparent Ht 0.7
Con Lat 38-36-08.78 N
Con Lon 074-40-47.61 W
Average Depth 24.3
Top Depth
Length
Width
0, small hit - awois10652?
Correlating Contacts
Closest Contact
258_003_1711_2
Distance 24.4
Search Radius 25
Local Contacts
258_003_1711_2 24.4389
AWOIS
AWOIS# 10652
AWOIS Dist 160.4
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 23.93 m
Least Depth 78 ft
Day of LD 218
Source H10989_WH05_2000-218_209_1911_464_3
LD Lat 38-36-08.23 N
LD Lon 074-40-47.83
Contact Dist 17.7
Cartographic Recommendations
Chart
See correlating contact
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
258_003_1711_2
258_004_1704_1
258_005_1740_2
1000 m
96
8
S 81
76
PA
200 m
0
meters width
0
meters height


Item Info
258_003_1711_1
Offset 34
Shad Len 0
SSS Height 0.9
Apparent Ht 0.82
Con Lat 38-36-06.93 N
Con Lon 074-40-45.67 W
Average Depth 24.5
Top Depth
Length
Width
0, wreck
Correlating Contacts
Closest Contact
218_109_1515_1
Distance 4.5
Search Radius 25
Local Contacts
218_109_1515_1 4.48264
218_208_1506_1 13.0732
218_209_1457_1 13.6461
AWOIS
AWOIS# 10652
AWOIS Dist 93.4
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 23.78 m
LD Lat 38-36-06.93 N
Least Depth 78 ft
LD Lon 074-40-45.69
Day of LD 218
Contact Dist 0.2
Source H10989_WH05_2000-218_020_1918_225_2
Cartographic Recommendations
Chart
See correlating contact
218_109_1515_1.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
258_003_1711_1
258_003_1711_2
258_004_1704_1
1000 m
200 m
0
meters width
0
meters height


Item Info
258_003_1711_2
Offset 38
Shad Len 0
SSS Height 0.4
Apparent Ht 0.89
Con Lat 38-36-08.02 N
Con Lon 074-40-47.33 W
Average Depth 24.4
Top Depth
Length
Width
0, debris
Correlating Contacts
Closest Contact
258_004_1704_1
Distance 24.4
Search Radius 25
Local Contacts
258_004_1704_1 24.4389
AWOIS
AWOIS# 10652
AWOIS Dist 143.1
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 23.74 m
Least Depth 78 ft
Day of LD 218
Source H10989_WH05_2000-218_020_1918_168_7
LD Lat 38-36-07.58 N
LD Lon 074-40-47.17
Contact Dist 14.1
Cartographic Recommendations
Chart
78 ft LD by SWMB
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
258_003_1711_1
258_003_1711_2
258_004_1704_1
1000 m
200 m
0
meters width
0
meters height

AWOIS No: 1092

Item Description: This item is the scattered wreckage of the *Marie Beasley*. A previous side scan investigation found no contacts.

Source: NM 3/28/27; FOO-453/99 - OPR-D392WH

AWOIS Position: 38°34'24.00" N, 074°41'30.00" W

Required Investigation: SD, S2, DI Radius: 500 m

Charts Affected: 12214

INVESTIGATION

Contact No: 218_114_1540_1

Date(s): DN 218

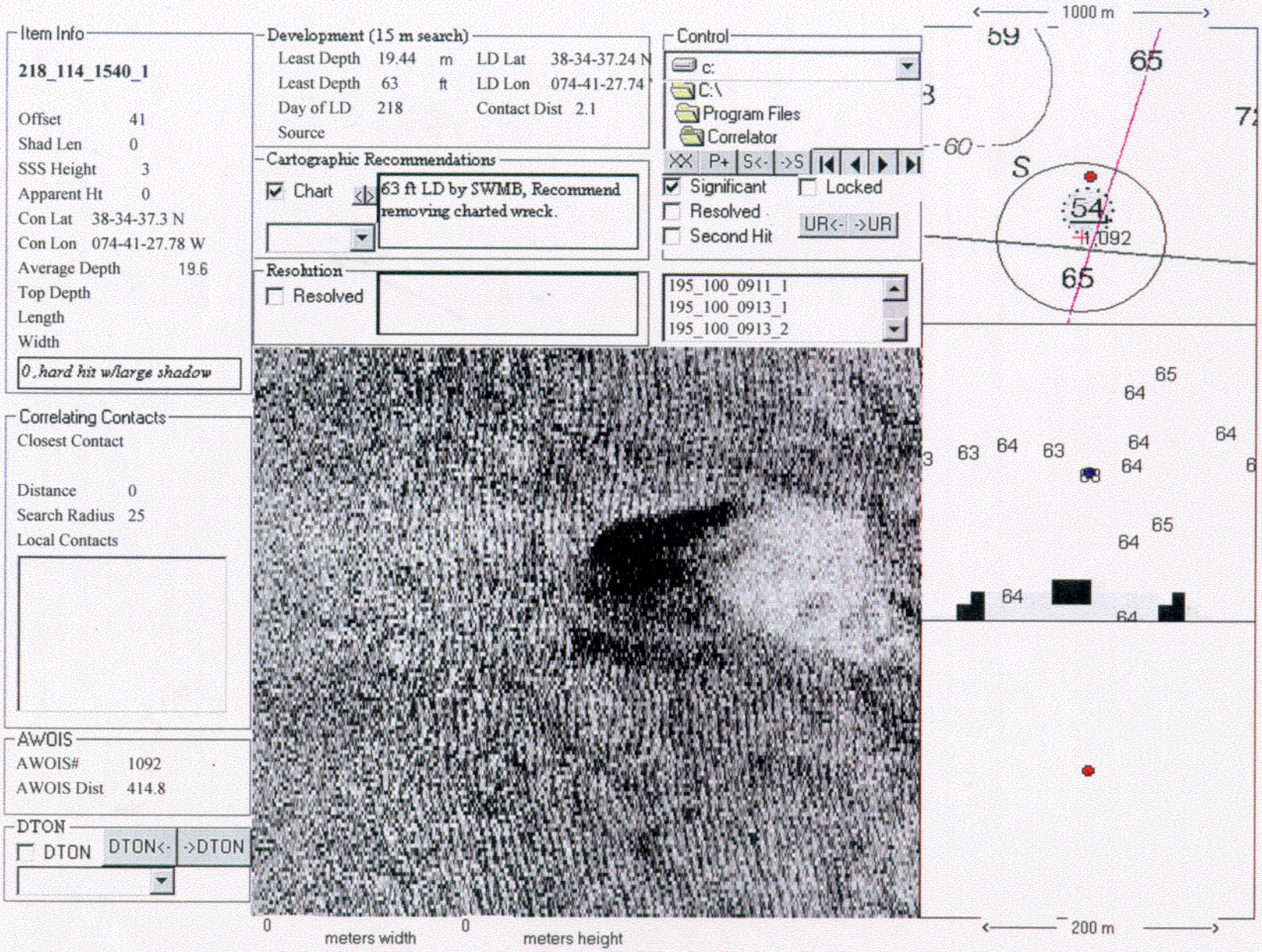
Investigation Used: 200% SSS

Position Determined By: Differential GPS

Investigation Summary: Two hundred percent SSS coverage was achieved over the entire 500 meter search radius. One contact, identified as fish, was found within the search radius.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing the charted wreck and charting survey soundings. Concur w/ Clarification
(Remove charted 54ft depth w/ WD Basket and Danger Curve)


Item Info
218_114_1540_1
Offset 41
Shad Len 0
SSS Height 3
Apparent Ht 0
Con Lat 38-34-37.3 N
Con Lon 074-41-27.78 W
Average Depth 19.6
Top Depth
Length
Width
0 , hard hit w/large shadow
Correlating Contacts
Closest Contact
Distance 0
Search Radius 25
Local Contacts
AWOIS
AWOIS# 1092
AWOIS Dist 414.8
DTON
DTON
DTON<-
->DTON
Development (15 m search)
Least Depth 19.44 m
LD Lat 38-34-37.24 N
Least Depth 63 ft
LD Lon 074-41-27.74
Day of LD 218
Contact Dist 2.1
Source
Cartographic Recommendations
Chart
63 ft LD by SWMB, Recommend removing charted wreck.
Resolution
Resolved
Control
c:
C:\
Program Files
Correlator
P+
S<-
->S
Significant
Locked
Resolved
Second Hit
UR<-
->UR
195_100_0911_1
195_100_0913_1
195_100_0913_2
0
meters width
0
meters height
1000 m
200 m
AWOIS#1092

AWOIS No: 2767

Item Description: Wreck, New Orleans

Source: Unknown

AWOIS Position: 38°41'~~.04~~ 00.4" N, 074°50' 58.61" W

Required Investigation: SD, S2, SWMBDI Radius: 1000 m

Charts Affected: 12214

INVESTIGATION

Contact No: N/A

Date(s): DN 218

Investigation Used: 200% SSS

Position Determined By: Differential GPS

Investigation Summary: Two hundred percent SSS coverage was achieved over the entire 1000 meter search radius during mainscheme coverage. One contact, believed to be fish was identified.

CHARTING RECOMMENDATION

Recommendation: The hydrographer recommends removing the charted wreck and charting survey soundings. Concur

N. COMPARISON WITH THE CHART

See also section "N" in the Evaluation Report

N.1. One chart is affected by this survey:

Chart No. 12214
Cape May to Fenwick Island
42 Ed., September 25, 1999
1:80,000

N.2. One danger to navigation (DTON) letter was issued on March 29, 2001.
Appended to Descriptive Report

N.3.(a) Survey depths were converted from meters to feet and overlaid on the largest scale raster chart covering the entire survey area using MapInfo (chart 12214, 42th Ed., September 25, 1999). In general, survey depths agreed well with charted soundings. Concur

N.3.(b) Few contacts, aside from those in the charted fish havens, were identified within the survey limits. Significant contacts have been addressed in **Section M**.

Any survey soundings found to be shoaler by three or more feet than the charted depth were investigated using SWMB with a nominal line spacing of three times the water depth. Swath coverage mosaics utilized during SWMB developments were monitored to insure 100% ensonification.

Survey depths found to be more than three feet deeper than charted soundings were evaluated with a combination of 200% SSS and SWMB. Contacts in the vicinity of these soundings were investigated with 100% SWMB coverage. If no contact was identified in close proximity, the side scan imagery was reviewed to confirm a relatively level sea floor and consistency between the sea floor trends and the present survey soundings.

Shoaling is occurring inside the 60 foot curve near the charted 71 foot depth at 38° 44' 27.5" N, 074° 46' 12.5" W. Depths in the vicinity are between 58 and 66 feet. Concur

Similarly, shoaling is occurring inside the 60ft curve near the charted 69 foot depth at 38° 40' 55.6" N, 074° 47' 43.8" W. The 60 ft curve has migrated south and west. Concur

Shoaling was also detected on the eastern edge of the survey near the charted 105 ft depth at 38° 44' 00.3" N, 074° 33' 24.8" W. Depths in the vicinity are between 86 and 103 feet. Concur

The 62 foot charted rock at 38° 44' 59.6" N, 074° 42' 22.0" W was not located during mainscheme side scan sonar coverage. See section "M.1.J" in the Evaluation Report

All other charted items have been addressed in **Section M.**

N.3.(c) All special hydrographic findings for this survey have been previously addressed in this report.

N.3.(d) There are no channels that lie within the limits of the survey.

N.3.(e) This survey does not include any safety fairways or traffic schemes.

N.4.(a) No non-sounding features are located for this survey.

N.4.(b) No non-sounding listings are needed for this survey.

N.4.(c) All "PA", "ED", "PD", or "Rep" features have been addressed in section M-Item Investigations and section N-Comparison with the Chart.

N.4.(d) Information pertaining to wrecks which was obtained from miscellaneous sources (i.e. local knowledge) has been incorporated into section M . Item Investigations.

N.4.(e) No bridges or overhead pipelines are located within the survey area.

N.4.(f) No submarine cables are located within this survey.

N.4.(g) No pipelines are associated with this survey.

N.4.(h) No ferry routes are currently located within the survey limits.

N.4.(i) No ferry terminals are located within the survey limits.

N.5. The hydrographer recommends no changes be made to the scale, coverage or format of published charts of the survey area.

N.6.(a-k) No field examinations were conducted for this survey.

O. ADEQUACY OF SURVEY See also section "O" in the Evaluation Report

O.1. All AWOIS items and contacts within this sheet have been resolved. This survey is sufficiently complete and adequate to supersede prior surveys. Do Not Concur See section "N" in the Evaluation Report

O.2. There are no incomplete parts of this survey.

P. AIDS TO NAVIGATION

P.1. There are no ATONs located within the limits of the survey.

Q. STATISTICS

Q.1. The following is a list of the statistics compiled for this survey:

	NOAA Ship WHITING	NOAA Launch 1005	Total
Linear nautical miles of SSS	3336.51	9.42	3345.93
Linear nautical miles of VBES	3496.15	81.11	3577.26
Linear nautical miles of SWMB	0	71.69	71.69
Square nautical miles of SSS	115.1	.00228	115.1
Square nautical miles of VBES	115.1	0.07618	115.2
Square nautical miles of SWMB	0	0.0739	0.0739

Q.2. The following is a list of overall survey statistics:

Item	Total
Days of acquisition	41
Total number of soundings	869132
Number of bottom samples	40
Number of velocity casts	23
Number of tide gauges installed	1

R. MISCELLANEOUS See also section "R" in the Evaluation Report

R.1. Bottom samples were collected in close proximity to each bottom characteristic position currently identified on chart 12214. Samples were collected to confirm bottom characteristics currently charted. A descriptive table of these samples can be found in the Separates, Section II. *

S. RECOMMENDATIONS

S.1. No further survey work is recommended.

T. REFERRAL TO REPORTS

Sections of the Coast Pilot pertinent to this survey were reviewed and no changes are recommended at this time.

A Tide Station Report for station 855-4399 (Mahon River Entrance) has been submitted to N/OPS1

* Data filed with original field records

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: **H-10989**

State: Delaware
Locality: Atlantic Ocean
Sub-locality: Approaches to Delaware Bay

Project Number: **OPR-D392-WH**

Survey Date(s): July 13 - September 15, 2000

Soundings are reduced to Mean Lower Low Water (MLLW) using Verified Water Levels. Horizontal datum is NAD 83.

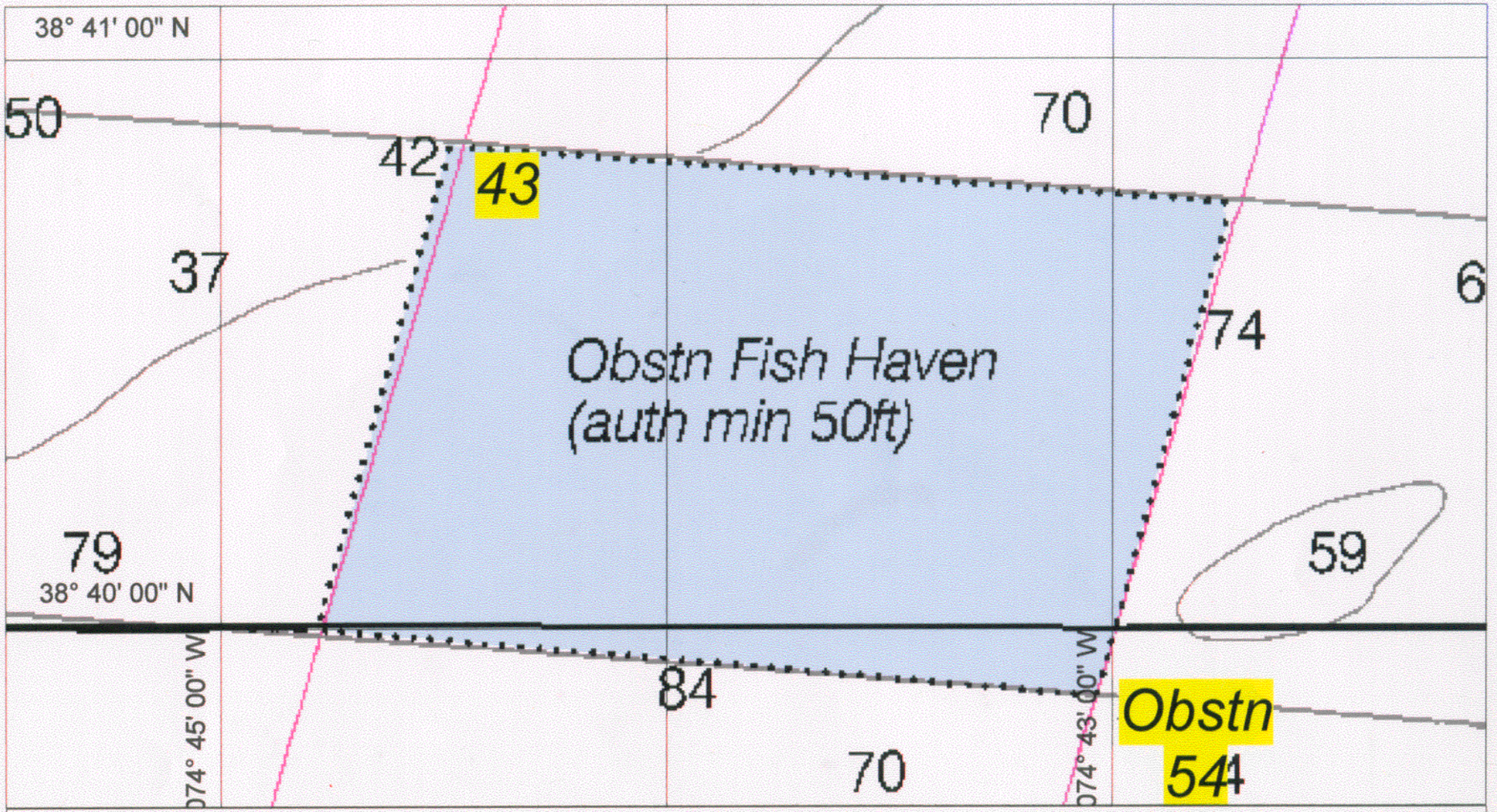
Chart(s) Affected: **12214,** 42nd edition, September, 1999, 1:80,000, NAD83

DANGERS TO NAVIGATION

Four dangers to navigation were discovered during hydrographic survey operations on survey H-10989, Approaches to Delaware Bay .

Item	Latitude	Longitude
43 ft sounding	38° 40' 48.83" N	074° 44' 24.70" W
54 ft Obstruction	38° 39' 51.90" N	074° 42' 54.69" W
60 ft sounding	38° 44' 22.85" N	074° 46' 18.05" W
55 ft sounding	38° 40' 55.44" N	074° 47' 36.63" W

Questions concerning this report should be directed to the Chief, Atlantic Hydrographic Branch at 757-441-6746.



Chartlet 1 of 3 *Chart 12214, 42nd Edition, Spetember 25, 1999, Scale 1:80,000, Cape May to Fenwick Island.*

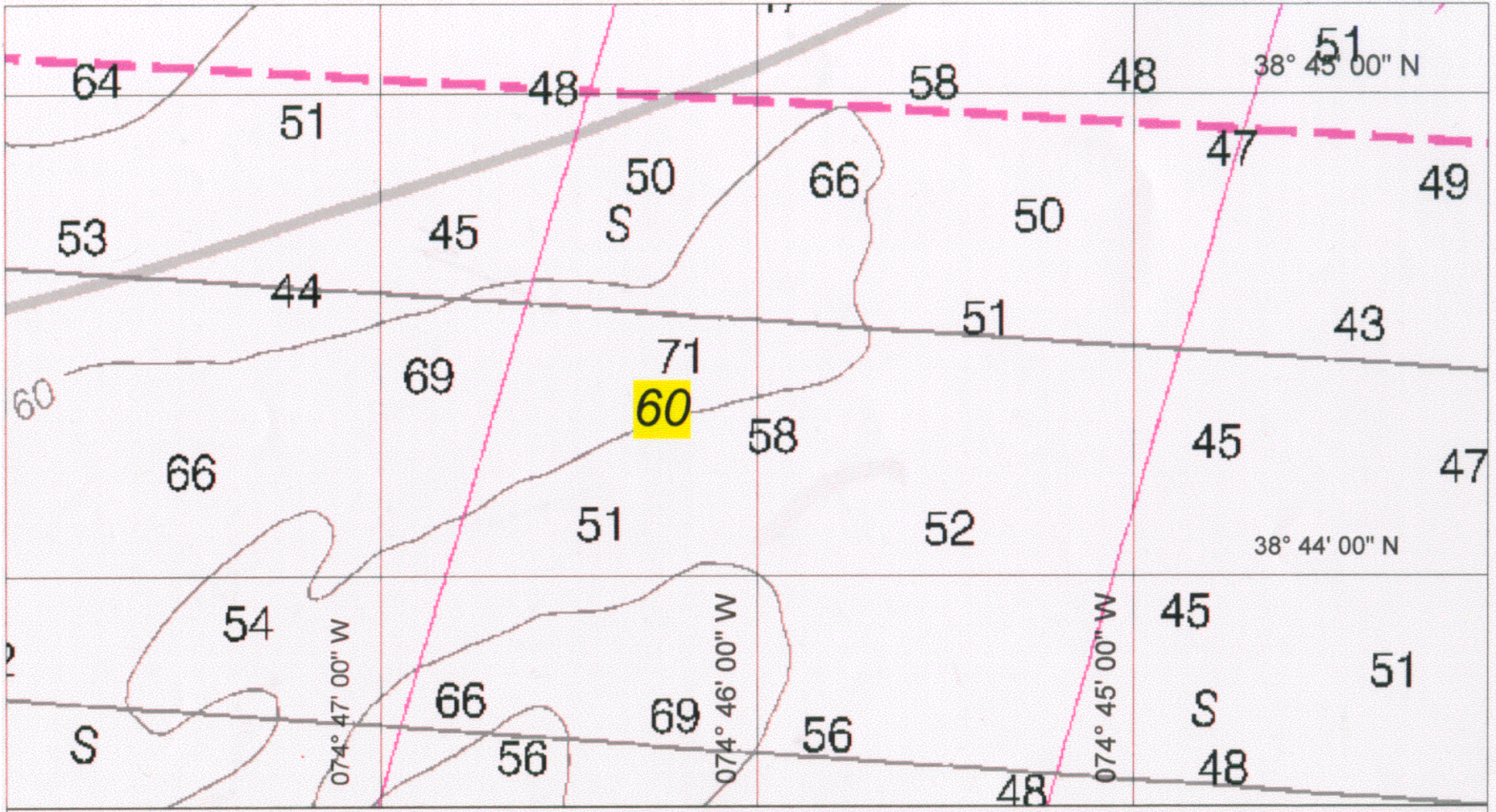
This chartlet may not be up to date with the latest Local Notice to Mariners information.
NOT FOR NAVIGATION.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

Project:	*OPR-D392-WH*
Survey:	*H-10989*
State:	*Delware*
Locality:	*Approaches to Delaware Bay*
Sub-locality:	*14 miles east of Indian River Inlet*
Survey Scale:	*1:40,000*

Sounding Units:	*Feet*
Sounding Datum:	*MLLW*
Horizontal Datum:	*NAD 83*
Projection:	*UTM 18*
Central Meridian:	*075° 00 00*
Scale Factor:	*0.9996*

NOAA Ship WHITING
LCDR Gerd F. Glang
Commanding
July 13, 2000 to
September 15, 2000



Chartlet 2 of 3 *Chart 12214, 42nd Edition, September 25, 1999, Scale 1:80,000, Cape May to Fenwick Island.*

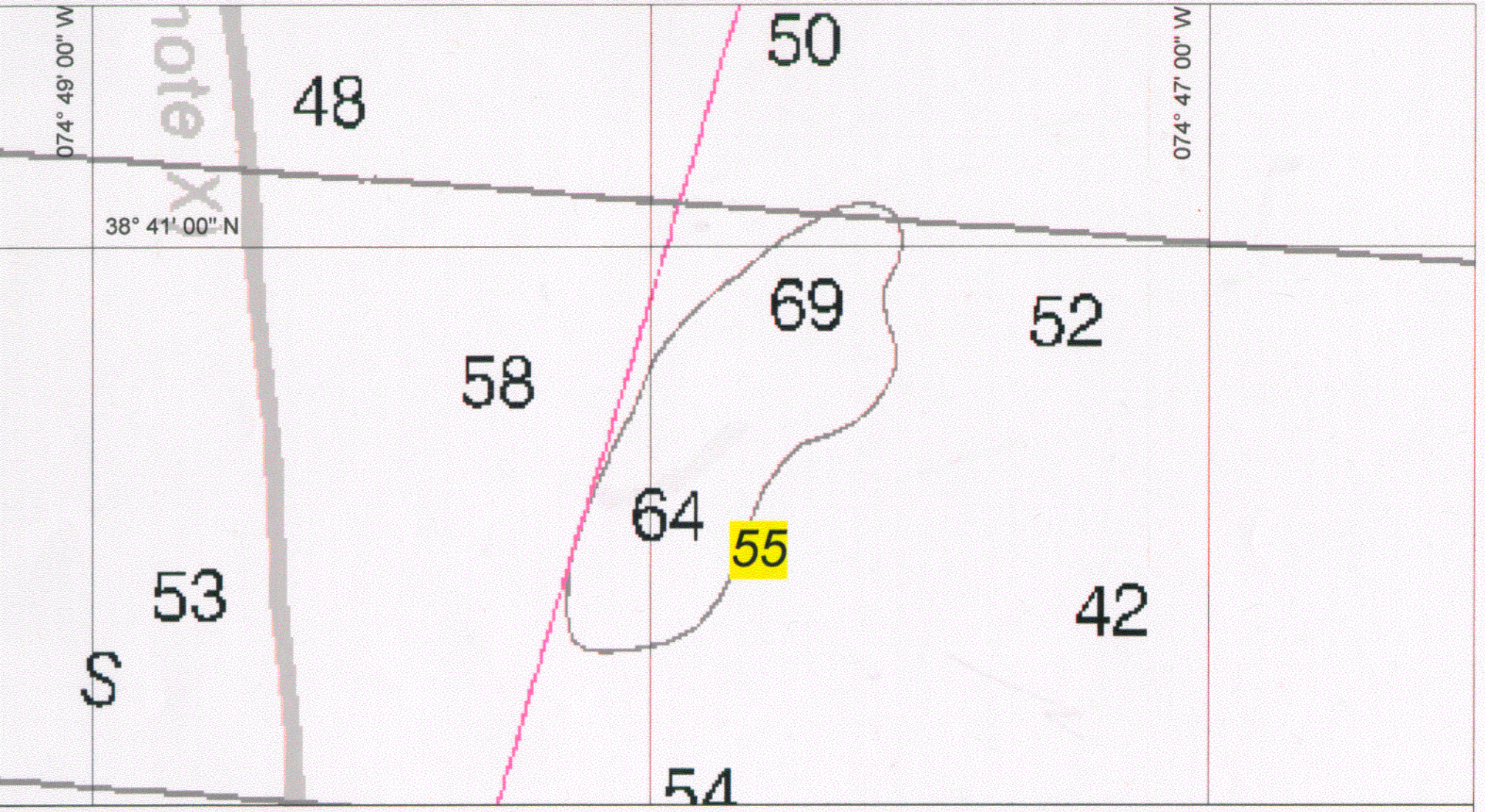
This chartlet may not be up to date with the latest Local Notice to Mariners information.
NOT FOR NAVIGATION.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

Project:	*OPR-D392-WH*
Survey:	*H-10989*
State:	*Delaware*
Locality:	*Approaches to Delaware Bay*
Sub-locality:	*14 miles east of Indian River Inlet*
Survey Scale:	*1:40,000*

Sounding Units:	*Feet*
Sounding Datum:	*MLLW*
Horizontal Datum:	*NAD 83*
Projection:	*UTM 17*
Central Meridian:	*075° 00 00*
Scale Factor:	*0.9996*

NOAA Ship WHITING
LCDR Gerd F. Glang
Commanding
July 13, 2000 to
September 15, 2000



Chartlet 3 of 3 *Chart 12214, 42nd Edition, Septmeber 25, 1999, Scale 1:80,000, Cape May to Fenwick Island.*

This chartlet may not be up to date with the latest Local Notice to Mariners information.
NOT FOR NAVIGATION.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

Project:	*OPR-D392-WH*
Survey:	*H-10989*
State:	*Delaware*
Locality:	*Approaches to Delaware Bay*
Sub-locality:	*14 miles east of Indian River Inlet*
Survey Scale:	*1:40,000*

Sounding Units:	*Feet*
Sounding Datum:	*MLLW*
Horizontal Datum:	*NAD 83*
Projection:	*UTM 17*
Central Meridian:	*075° 00 00*
Scale Factor:	*0.9996*

NOAA Ship WHITING
LCDR Gerd F. Glang
Commanding

July 13, 2000 to
September 15, 2000

APPENDIX C

LIST OF GEOGRAPHIC NAMES

No new names were discovered during the course of this survey.

APPENDIX L

APPROVAL SHEET

OPR-D392-WH
Approaches to Delaware Bay
New Jersey-Delaware

Survey Registry No. H-10989

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

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

Respectfully, Monica M. Castonella
for Richard T. Brennan
Lieutenant, NOAA
Operations Officer
NOAA Ship WHITING

June 12, 2001
Date

Gerd F. Glang
Lieutenant Commander, NOAA
Commanding Officer
NOAA Ship WHITING

JUNE 12, 2001
Date

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: May 2, 2001

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-D392-WH-2000
HYDROGRAPHIC SHEET: H10989

LOCALITY: Delaware Bay and Approaches, DE
TIME PERIOD: July 13 - Sept. 14, 2000

TIDE STATION USED: 855-7380 Lewes, DE
Lat. 38° 47.0'N Lon. 75° 7.1'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.314 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: ATL526, ATL527, ATL528, ATL530 & ATL531

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

Thomas N. Mero 5/2/01

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

NOAA FORM 76-155
(11-72)

U.S DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

SURVEY NUMBER

H10989

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO 12214	B ON PREVIOUS SURVEY NO	C ON U S QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P O GUIDE OR MAP	G RAND MCNALLY ATLAS	H U S LIGHT LIST	K	
CAPE HENLOPEN	X		X							1
DELAWARE	X		X							2
DELAWARE BAY	X		X							3
FIVE FATHOM BANK	X		X							4
INDIAN RIVER INLET	X		X							5
NEW JERSEY (title)	X		X							6
NORTH ATLANTIC										7
OCEAN	X									8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

Approved: Chief Geographer NOV 28 2001

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 61-29
(12-71)

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

LETTER TRANSMITTING DATA

REFERENCE NO.
N/CS33-18-02

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY (Check)

- [ ] ORDINARY MAIL
- [ ] AIR MAIL
- [ ] REGISTERED MAIL
- [X] EXPRESS
- [ ] GBL (Give number)_____

DATE FORWARDED
07/08/2002

NUMBER OF PACKAGES
1

TO:

CHIEF, DATA CONTROL GROUP, N/CS3x1
NOAA / NATIONAL OCEAN SERVICE
STATION 6815, SSMC3
1315 EAST-WEST HIGHWAY
SILVER SPRING, MARYLAND 20910-3282

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H10989

NEW JERSEY - - DELAWARE, APPROACHES TO DELAWARE BAY, 14 NM EAST OF INDIAN RIVER INLET

ONE TUBE CONTAINING THE FOLLOWING:

1 SMOOTH SHEET FOR SURVEY H10989
1 H-DRAWING FOR H10989 ON MYLAR FOR CHART 12214
1 DESCRIPTIVE REPORT FOR H10989

FROM: (Signature) Robert R. Hall

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

NOAA \ NATIONAL OCEAN SERVICE
ATLANTIC HYDROGRAPHIC BRANCH N/CS33
439 WEST YORK STREET
NORFOLK, VA. 23510-1114

NOAA FORM 61-29 SUPERCEDES FORM C AND GS 413 WHICH MAY BE USED.

U.S. GOVERNMENT PRINTING OFFICE: 1988 - 554-006-61309

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10989 (2000)

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.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

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

CARIS HIPS/SIPS
Hydrographic Processing System (HPS)
MicroStation 95, version 5.05
NADCON, version 2.10
I/RAS B, version 5.01

The smooth sheet was plotted using an Hewlett Packard DesignJet 2500CP plotter.

H. CONTROL

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). The smooth sheet has been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on the NAD 27, move the projection lines 0.408 seconds (12.58 meters or 1.26 mm at the scale of the survey) north in latitude, and 1.403 seconds (33.92 meters or 3.39 mm at the scale of the survey) east in longitude.

K. JUNCTIONS

H10854 (1999) to the west
H10931 (1999) to the southsouthwest

A standard junction was effected between the present survey and surveys H10854 (1999) and H10931 (1999).

There are no junctional surveys to the north or east. Present survey depths are in harmony with the charted hydrography to the north and east.

L. COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not done during

office processing in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

N. COMPARISON WITH CHARTS 12214 (43nd Edition DEC. 16/00)

1. Hydrography

The charted hydrography originates with the prior surveys and requires no further consideration. The hydrographer makes adequate chart comparison in section M. and N. of the Descriptive Report. Attention is directed to the following:

a. Automated Wreck and Obstruction Information System (AWOIS) Item #9283, a charted dangerous submerged obstruction with a least depth of 64 feet, in Latitude 38°38'52.72"N, Longitude 74°55'09.64"W, originates with H10476 (1993). This feature was investigated by the field unit using a shallow water multibeam sonar system with negative results. It is recommended that the feature be removed from the chart.

b. AWOIS Item #9284, a charted dangerous submerged rock with a least depth of 66 feet, in Latitude 38°39'01.11"N, Longitude 74°55'02.49"W, originates with H10476 (1993). This feature was investigated by the field unit using a shallow water multibeam sonar system. A rock with a least depth of 65 feet (19^{8} m) was located in Latitude 38°39'01.13"N, Longitude 74°55'02.33"W. It is recommended this feature be charted as shown on the present survey.

c. AWOIS Item #9286, a charted dangerous submerged rock with a least depth of 68 feet, in Latitude 38°39'27.56"N, Longitude 74°54'14.87"W, originates with H10476 (1993). This feature was investigated by the field unit using a shallow water multibeam sonar system. A rock with a least depth of 66 feet (20^{1} m) was located in Latitude 38°39'26.75"N, Longitude 74°54'14.87"W. It is recommended this feature be charted as shown on the present survey.

d. AWOIS Item #1101, a charted dangerous sunken wreck with the note 36 ft reported, in Latitude 38°36'59.40"N, Longitude 74°55'50.62"W, originates with a Notice to Mariners dated December 12, 1954. This feature was not addressed by the hydrographer. A wreck with a least depth of 47 feet (14^{3} m), in Latitude 38°36'56.91"N, Longitude 74°55'49.33"W, was located. It is recommended that a dangerous sunken wreck with

a depth of 47ft be charted as shown on the present survey and the dangerous sunken wreck with the note 36 ft reported be removed.

e. A charted dangerous sunken wreck with a least depth of 65 feet, in Latitude 38°38'40"N, Longitude 74°55'23"W, originates with an unknown source. This wreck was investigated by the field unit using a shallow water multibeam sonar system with negative results. It is recommended that this feature be removed from the chart.

f. A charted sunken wreck with a least depth of 69 feet, in Latitude 38°37'56"N, Longitude 74°50'45"W, originates Notice to Mariners 24 of 1971 (NM24/71). This feature was investigated by the field unit using a shallow water multibeam sonar system. A sunken wreck with a least depth of 71 feet (21[6] m), in Latitude 38°37'55.63"N, Longitude 74°50'45.20"W was located. It is recommended that this feature be charted as shown on the present survey.

g. A charted sunken wreck with a least depth of 95 feet, in Latitude 38°44'30"N, Longitude 74°36'39"W, originates with an unknown source. This feature was investigated by the field unit using a shallow water multibeam sonar system. A wreck with a depth of 97ft (29[6] m), in Latitude 38°44'37.38"N, Longitude 74°36'38.93"W, was located. It is recommended that this feature be charted as shown on the present survey.

h. A charted Obstruction Fish Haven, in Latitude 38°40'27"N, Longitude 74°43'45"W, originates with an unknown source. The charted authorized minimum depth is 50 feet. A conflict between the present survey and the authorized minimum exists in Latitude 38°40'48.9"N, Longitude 74°44'25.1"W. The present survey indicates shoaling to 43 feet (13[1] m) and it is recommended that this sounding be charted as shown on the present survey.

i. An uncharted obstruction with a depth of 54 feet (16[5] m), in Latitude 38°39'51.89"N, Longitude 74°42'54.65"W, was located by the field unit. This feature was not addressed by the hydrographer. It is recommended that this feature be charted as shown on the present survey.

j. A charted dangerous submerged rock with a least depth of 62 feet, in Latitude 38°44'59.6"N, Longitude 74°48'22.0"W, originates with an unknown source. This feature

was neither adequately investigated nor addressed by the present survey. It is recommended that this feature be retained as charted.

k. Two "Shoaling" notes, charted in Latitude 38°42'25"N, Longitude 74°44'15"W and Latitude 38°41'45"N, Longitude 74°44'59"W originate with an unknown source. These features were not addressed by the hydrographer. The present survey shows shoaling in these areas. No change in charting is recommended.

The present survey is adequate to supersede the chart in the common area.

2. Dangers to Navigation

One Danger to Navigation report was submitted to Commander(oan), Fifth Coast Guard District, Portsmouth, Virginia for inclusion in the Local Notice to Mariners, and to the Marine Chart Division, N/CS3x1, Silver Spring, Maryland. A copy of this report is appended to the Descriptive Report.

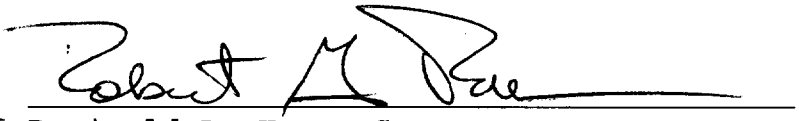
O. ADEQUACY OF SURVEY

This is an adequate hydrographic/side scan sonar survey. No additional work is recommended.

R. 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. The following National Ocean Survey Charts were compiled using the present survey:

12214 (43rd Edition, Dec 16/00)



Reginald L. Keene Sr.
Cartographic Technician
Verification and Evaluation and Analysis

APPROVAL SHEET
H10989

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Robert R. Hill Date: 7-2-02

Robert R. Hill
Cartographer
Atlantic Hydrographic Branch

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Emily B. Christman Date: 7/5/2002

Emily B. Christman
Commander, NOAA
Chief, Atlantic Hydrographic Branch

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Final Approval:

Approved: Samuel P. DeBow Date: July 12, 2002

Samuel P. DeBow
Captain, NOAA
Chief, Hydrographic Surveys Division

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H 10989

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
12214	7-8-02	Robert Hill	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED