

W00237

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

<i>Type of Survey</i>	Outside Source Data
<i>Project No.</i>	OSD-AHB-12
<i>Registry No.</i>	W00237

LOCALITY

<i>State</i>	North Carolina
<i>General Locality</i>	Offshore North Carolina
<i>Sub-locality</i>	Vicinity of Onslow Bay

2010

CHIEF OF PARTY
Data collected ancillary to
project NF-10-11

LIBRARY & ARCHIVES

DATE

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
HYDROGRAPHIC TITLE SHEET	
REGISTRY NUMBER: W00237	
State: <u>North Carolina</u>	
General Locality: <u>Offshore North Carolina</u>	
Locality: <u>Vicinity of Onslow Bay</u>	
Scale: <u>1:80,000</u> Date of Survey: <u>05 Sep 2010 - 09 Sep 2010</u>	
Instructions Dated: <u>27 Aug 2010</u> Project Number: <u>OSD-AHB-12</u>	
Vessels: <u>NOAA Ship Nancy Foster</u>	
Chief of Party: <u>Data collected ancillary to project NF-10-11</u>	
Surveyed by: <u>Nancy Foster personnel</u>	
Soundings by: <u>Kongsburg-Simrad EM 1002 MultiBeam system</u>	
Graphic record scaled by: <u>N/A</u>	
Graphic record checked by: <u>N/A</u>	
Protracted by: <u>N/A</u> Automated plot by: <u>N/A</u>	
Verification by: <u>Atlantic Hydrographic Branch</u>	
Soundings in: Feet: _____ Fathoms: _____ Meters: <u>X</u> at MLW: _____ MLLW: <u>X</u>	
<i>The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Revisions and Red notes were generated during office processing. The processing branch concurs with all information and recommendations in the DR unless otherwise noted. Page numbering may be interrupted or non-sequential. All pertinent records for this survey, including the Descriptive Report, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via http://www.ngdc.noaa.gov/.</i>	
<i>Outside source survey W00237 was submitted without a formal report. The following was included as the body of the Descriptive Report and contains the metadata for this survey.</i>	
Remarks: <u>All times are in UTC</u> <u>UTM Zone 20</u>	



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
NOAA Marine and Aviation Operations
Marine Operations Center
439 W. York Street
Norfolk, VA 23510-1114

AUG 27 2010

MEMORANDUM FOR: LCDR Stephen S. Meador, NOAA
Commanding Officer, NOAA Ship *Nancy Foster*

FROM: CAPT Michael S. Devany, NOAA
Commanding Officer, NOAA Marine Operations Center—Atlantic

SUBJECT: Project Instruction for NF-10-11
Assessment of Lionfish Ecosystem Impacts

Attached is the final Project Instruction for NF-10-11 Assessment of Lionfish Ecosystem Impacts, which is scheduled aboard NOAA Ship *Nancy Foster* during the period of 2 – 10 September 2010. Acknowledge receipt of these instructions via e-mail to OpsMgr.MOA@noaa.gov at Marine Operations Center—Atlantic.

Attachment

cc:
MOA1





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

Center for Coastal Fisheries and Habitat Research
101 Pivers Island Road
Beaufort, North Carolina 28516-9722

Final Cruise Instructions

Date Submitted: 28 May 2010
Platform: NOAA Ship *Nancy Foster*
Cruise Number: NF-10-11-LF
Project Title: Assessment of Lionfish Ecosystem Impacts
Cruise Dates: 03 Sept – 11 Sept 2010

AUG 27 2010

Prepared by:

Paula Whitfield

Dated:

8/10/2010

Chief Scientist Name
Chief Scientist
Affiliation (Program or Lab)

Approved by:

John S. Burk
Program Director Name
Title *Acting for Mark F.*
Affiliation (Program or Lab)

Dated:

8-10-2010

Approved by:

Pat Jester
Lab Director Name
Title
Affiliation (Program or Lab)

Dated:

8/16/2010

Approved by:

Michael S. Devany
Captain Michael S. Devany, NOAA
Commanding Officer
Marine Operations Center – Atlantic

Dated:

8/27/2010



I. OVERVIEW: Project Number NF-10-11 Lionfish

A. Cruise Period: 02 Sept – 10 Sept 2010

B. Operation Area: Onslow Bay, NC (see Figure 1)

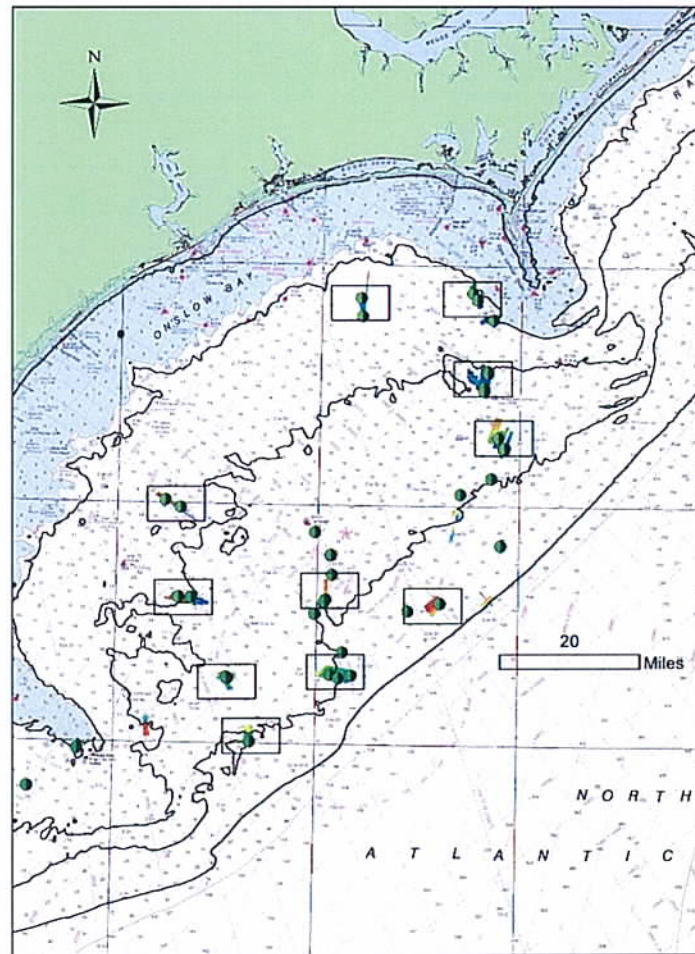


Figure 1. Map of Onslow Bay study site area (chart number 11520). Green dots represent potential site locations from 75 to 150ft. Squares (not to scale for illustrative purposes) indicate potential multi-beaming locations to fill in around existing multi-beam sonar maps created previously. Additional multibeam sites may be chosen based on their proximity to potential targets of interest by the Monitor National Marine Sanctuary.

C. Summary of Objectives:

The Indo-Pacific lionfish, *Pterois volitans*, is a non-native venomous fish that is now established and reproducing along the continental shelf from Florida to North Carolina. Since 2000, lionfish have been found primarily in water depths greater than 130fsw, due to year-round gulf stream moderated bottom water temperatures at these depths. However lionfish are now dispersing and potentially surviving closer to shore. In addition to lionfish, there are other stressors currently to hardbottom habitats including climate change and overfishing. In 2010 NOAA researchers will continue with their research to examine the ecosystem and fisheries impacts of lionfish and other stressors on the North Carolina hardbottom communities within Onslow Bay.

Specifically, researchers will conduct quantitative lionfish, native fish and habitat surveys at up to 16 different locations in water depths from 75 – 150fsw (Figure 1), utilizing decompression dive protocols. This information will allow researchers to assess the potential impact of the lionfish to native communities and add to the baseline community dataset established in 2006. Year round temperature sensors will be retrieved and deployed at these shallower locations to monitor bottom water temperature and verify the laboratory thermal tolerance limits for lionfish. Our final objective will be to simultaneously multi-beam additional habitat and conduct fisheries acoustic sonar operations using NOAA Ship *Nancy Foster*'s sonar capability at specified locations. Multi-beam will also be conducted to search for additional targets of interest to the Monitor National Marine Sanctuary (Figure 1, Appendix A. Exact area to be determined and supplied to ship as shape files).

Shipboard and Underwater Activities include:

- 1) Conduct visual transect surveys to quantify lionfish, native fish populations and characterize habitat on SCUBA at locations within Onslow Bay (Figure 1). (Dive Operations)
- 2) Conduct video transect surveys to quantify, smaller potential prey fish populations and characterize habitat (Dive Operations)
- 3) Conduct cryptic/prey fish sampling using special netted quadrat and quinaldine.
- 4) Characterize and quantify habitat and macroalgae with digital still photography and specimen collections (Dive Operations)
- 5) Conduct multi-beam and fisheries acoustic sonar transects using NOAA Ship *Nancy Foster* near locations where we will be diving (Ship Operation). Multibeam boxes to be sent as shape files.
- 5) Collect lionfish opportunistically for reproduction, genetics and life history studies (Dive Operations)
- 6) Deploy and retrieve temperature sensors as necessary (Dive Operations)

D. Participating Institutions:

National Ocean Service in Beaufort NC
National Marine Fisheries Service in Beaufort NC
Monitor National Marine Sanctuary
National Undersea Research Center in Wilmington

E. Personnel (Science Party) (no foreign nationals)

(The list of participants is subject to change)

Name (gender)	Title	Affiliation
1) Paula Whitfield (F)	Chief Scientist/diver	NOS, Beaufort, NC
2) Doug Kesling (M)	Dive operations/supervisor	NURC/UNCW
3) Brian Degan (M)	research diver	NOS, Beaufort NC
4) Roldan Munoz (M)	research diver	NOS, Beaufort NC
5) Brett Harrison (M)	research diver	NMFS, Beaufort NC
6) Wilson Freshwater (M)	research diver	UNCW
7) Christine Addison (F)	research diver	NOS, Beaufort NC
8) Thor Dunmire (M)	Dive supervisor	NURC/UNCW
9) Joe Hoyt (M)	research diver	Monitor Sanctuary (MNMS)
10) Brandon Pucket (M)	scientist/safety diver	NCSU
11) Kathryn O'Shaughnessy(F)	scientist/safety diver	UNCW
12) Michael Winfield(M)	safety diver	UNCW
13) Lauren Heeseman (F)	scientist	Monitor Sanctuary(MNMS)

F. Administrative:

1. POC/Chief Scientist: Paula Whitfield 252-728-8714 Paula.Whitfield@noaa.gov
101 Pivers Island Rd, Beaufort NC 28516
Alternate: Roldan Muñoz 252 728-8613 roldan.munoz@noaa.gov
101 Pivers Island Rd, Beaufort NC 28516
POC/Ops Officer: Lt Abigail Higgins ops.nancy.foster@noaa.gov
Officer/alternate: N/A
2. Diplomatic Clearances: N/A
3. Licenses and Permits N/A

II. OPERATIONS**A. Cruise Plan Itinerary:**

Date	Depart/Arrive
02 Sept 2010	Depart Charleston, SC
10 Sept 2010	Arrive Charleston, SC

EXAMPLE DAY OPERATION from previous cruise (personnel names to be finalized):

Morning: Finish up multi-beam operations and transit to dive location

Site: woo6 ~125ft
 34 07.336'N
 76 32.369'W
 0700 Deploy buoy from *Nancy Foster*

0745 coxwain meeting (others can attend)

0800 deploy Sea Arc:

Coxswain:

Dive Supervisor: TBD:

Standby Safety diver: TBD

0815 Deploy NF3:

Coxswain:

Safety diver: TBD

Top side dive ops communication: TBD

Stand by bottom diver: TBD

~0830 Dive team 1 deploys from *Nancy Foster* (surveys, video, photo quads)

TBD, TBD (surveys, video)

TBD, TBD (surveys, photo quads)

~0945 Dive team 2 deploys from *Nancy Foster* as soon as dive team 1 comes back

0845 NF3: dive team 2 (cryptic quad, rotenone, photo)

TBD, TBD, TBD

Top side dive ops communication: TBD

Stand by bottom diver: TBD

Afternoon: Transit to Big Fish1 ~22 miles during lunch.

site: Bigfish1 ~150ft

33 47.562' N

76 42.183'W

1300 Deploy buoy from *Nancy Foster* as soon as practicable after arrival on site

1400 deploy Sea Arc:

Coxswain:

Dive Supervisor: TBD

Standby Safety diver: TBD

1415 Deploy NF3:

Coxswain:

Safety diver: TBD

Top side dive ops communication: TBD

Stand by bottom diver: TBD

~1430 Dive team 1 deploys from *Nancy Foster* (surveys, video, photo quads)

TBD, TBD (surveys, video)
TBD, TBD (surveys, photo quads)

Top side dive ops communication: TBD

Stand by bottom diver: TBD

Dive team 2 deploys from *Nancy Foster* as soon as dive team 1 comes back

0845 NF3: dive team 2 (cryptic quad, rotenone, photo)

TBD, TBD, TBD

B. Staging and Destaging:

02 Sept 2010 mob and leave in same day.

10 Sept 2010 scientists plan to demob upon arrival to port

C. Operations to be conducted:

All operations will occur in Onslow Bay NC extending from Cape Lookout to Cape Fear from 75 to 150 fsw (Figure 1). Decompression dive operations will be conducted during daylight hours. Most site locations will be determined from Table 1 (but see Appendix A, Table 2) but may also be selected from existing multi-beam imagery. All site locations will be surveyed with *Nancy Foster's* fathometer prior to dropping marker buoy to insure the divers drop onto suitable structure. Between dive operations in the day and/or overnight *Nancy Foster* will survey and map potential habitat or shipwreck targets with multi-beam sonar and assess fisheries resources simultaneously with acoustic sonar in locations near the existing research sites locations (Figure 1, Table 3 and *multibeam boxes sent as shape files before cruise*).

Prior to each operational dive all key personnel will assemble for a briefing, to include a discussion of the dive profile, objectives, personnel assignments, and other pertinent information. Each dive will consist of a bottom team of at least two divers and a minimum of one safety diver (chase boat) and a fully equipped standby diver (on *Nancy Foster*). ***Nancy Foster* will be used as the primary dive platform for all divers as well as for habitat location and buoy deployment. For each dive evolution, once the habitat is located and a buoy is dropped, two chase boats will be deployed from *Nancy Foster* and will remain in the vicinity of the dive site (buoy). One chase boat will include additional oxygen tanks as back ups for the research divers during the decompression process.**

Next, the research divers (2 to 4 divers) will enter the water together on the port side entry point on *Nancy Foster*, and will follow the marker buoy line to the bottom. Due to the high amount of freeboard on *Nancy Foster* and the risk of damaging camera equipment the video and still cameras will be handed off by the inflatable boat (chase boat) to the divers on the surface of the water, directly after they enter the water and before they descend. **Planned maximum depth will be 150 fsw.** Bottom times during the expedition will generally be limited to 25-30 minutes (this time may be extended at the discretion of the Expedition Diving Supervisor). At the end of each dive, the divers will free drift off the bottom releasing a large lift

bag that can be seen from the surface, making the necessary required decompression stops in the water column before returning to the surface.

On the surface as soon as the lift bag is spotted the safety diver(s) will be deployed near the lift bag from the larger chase boat so that the safety diver(s) can descend down the line no deeper than 130 fsw to check on the divers and retrieve any extra equipment for the divers while they are decompressing. Extra oxygen tank(s) will be carried by the safety diver in case the on bottom divers need it. After the decompression is completed and all the divers are on the surface the larger chase boat will retrieve the safety diver(s) and the research divers and return to *Nancy Foster*. The research divers will be carrying two air cylinders on their backs and one, 45 cu.in. tank of oxygen on their sides. Divers will also have at least 1 video camera with lights, mesh bags with sampling gear, a still camera and possibly live and dead lionfish. All equipment will need to be retrieved in the chase boats.

Each team member will be permitted to conduct two dives a day with a minimum surface interval of from one (1) to three (3) hours between dives. There will be an a.m. and p.m. dive evolution for both dive teams (i.e., same two teams will dive in the morning and the evening) with the possibility of each dive member conducting 18 dives total for the cruise. **Each dive will be supported by the Diving Supervisor who will be in the large chase boat during dive operations. There will also be stand-by divers in full gear on *Nancy Foster* in the event of an on-bottom diver emergency. A dive tender will also accompany the rigid inflatable boat operator to assist as needed and to recover samples and equipment from the safety diver as needed.**

Underwater tasks include:

- 1) Conduct visual transect surveys to quantify lionfish, native fish populations and characterize habitat on SCUBA at locations within Onslow Bay (Figure 1). (Dive Operations)
- 2) Conduct video transect surveys to quantify, smaller potential prey fish populations and characterize habitat (Dive Operations)
- 3) Conduct cryptic/prey fish sampling using special netted quadrat and quinaldine.
- 4) Characterize and quantify habitat and macroalgae with digital still photography and specimen collections (Dive Operations)
- 5) Collect lionfish* opportunistically for reproduction, genetics and life history studies (Dive Operations)
- 6) Deploy and retrieve temperature sensors as necessary (Dive Operations)

** Lionfish possess venomous spines and can cause painful injuries to humans. There has never been a documented case of a human fatality from a sting. Nets will be used to obtain live specimens of lionfish. Pole spears will be used to kill and capture dead specimens for processing, if needed. Each specimen will be transferred to a plastic zip lock bag or zip lock container, sealed and then placed in a canvas tool bag to protect the specimen and prevent accidental envenomation of a research diver or safety diver during transport to the surface. Gloves will be worn at all times while handling specimens and transferring specimens to sample bags.*

D. Dive Plan (See Appendix B)

All dive operations and techniques (including decompression protocols) have been previously used and are currently under review by the NOAA dive program and will be supplied to *Nancy Foster* and NMAO as part of this cruise plan when approval process is complete. All dive techniques and protocols are in accord with R. Adm. S.P. De Bow Jr's 13 October 2004 memo 'New Dive Accident Management Procedures.' Contact Dave Dinsmore 206-526-6705 Dave.Dinsmore@noaa.gov.

E. Applicable Restrictions

N/A

III. EQUIPMENT

A. Equipment and capabilities provided by the ship

1. ***Functioning air compressor and banks***
2. **Dive benches will need to be attached to the deck near the fill station.**
3. Multi-beam sonar for habitat mapping, survey techs
4. Freezer space for biological samples (-80C and 4C)
5. At least two and up to three small boats to operate simultaneously
6. Fathometer on *Nancy Foster*.
7. (if possible) We may request one or two NOAA Divers from *Nancy Foster* to act as safety diver in support of decompression dive operations.
8. Certified *Nancy Foster* crew members to operate two small boats simultaneously is required
9. Deck space for 12 large oxygen cylinders in a ~5' by 5' container.

B. Equipment and capabilities provided by NOAA Beaufort Laboratory

1. Dive benches and tank holders for tank storage
2. **Long tank fill hoses will be supplied by science party.**
3. Sample processing supplies
4. 8-9 sets of double tanks, 14-20, 120 cu ft steel and/or 100 cu ft tanks for scientists
5. Two Oxygen kits will be supplied by science party
6. Large Oxygen cylinders (12).
7. Chief Scientist will provide multi-beam imagery, multibeam polygon shape files, and waypoint files to survey technicians to upload into GPS system of *Nancy Foster* before cruise commences. Probably sending a DVD to Norfolk address.
8. We will provide one scientist to aid with acoustic sonar activation/deactivation and file transfer.
9. We will provide Hyperlite recompression chamber and all dive gear needed to conduct decompression dive operations.

IV. HAZARDOUS MATERIALS

A. Policy and Compliance The Chief Scientist is responsible for complying with MOCDOC 15, Fleet Environmental Compliance #07, Hazardous Material and Hazardous Waste Management Requirements for Visiting Scientists, released July 2002. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, and/or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard. The amount of hazardous material arriving and leaving the vessel shall be accounted for by the Chief Scientist.

B. Radioactive Isotopes: N/A

C. Inventory

An inventory list and a MSDS of each hazardous material brought on board the ship will be provided to the Commanding Officer by the Chief Scientist. On departure from the ship, the Chief Scientist will provide an inventory showing all hazardous materials have been used or removed or removed from the ship.

Expected hazardous materials to be brought on board for this cruise are:

1. Ethanol (5 gal. 95%)
2. Formalin (1 gal.)
3. Quinaldine (3 liters 90%)

V. ADDITIONAL Projects

A. Supplementary ("Piggyback") Projects

Multibeaming during nighttime operations may in part support science objectives of the *Monitor* National Marine Sanctuary, we will be examining potential targets of interest that are near research sites already designated for this project. Latitude and Longitude of potential targets in Table 3.

B. NOAA Fleet Ancillary Projects: N/A

VI. DISPOSITION OF DATA AND REPORTS

A. Data Responsibilities

The CS will be responsible for maintaining biological and associated hydrographic data. The CS will also submit a ROSCOP II form (NOAA form 2423) to the National Oceanographic Data Center within 30 days after cruise termination.

B. Pre and Post Cruise Meeting

Pre-Cruise Meeting: Prior to departure, the Chief Scientist will conduct a meeting of the scientific party to train them in sample collection and inform them of cruise objectives. Some vessel protocols, e.g., meals, watches, etiquette, etc. will be presented by the ship's Operations Officer.

Post-Cruise Meeting: Upon completion of the cruise, a meeting will normally be held at 0830 (unless prior alternate arrangements are made) and attended by the ship's officers, the Chief Scientist and members of the scientific party, the Vessel Coordinator and the Port Captain to review the cruise. Concerns regarding safety, efficiency, and suggestions for improvements for future cruises should be discussed. Minutes of the post-cruise meeting will be distributed to all participants by email, and to the Commanding Officer and Chief of Operations, Marine Operations Center.

C. Ship Operation Evaluation Report

Within seven days of the completion of the cruise, a Ship Operation Evaluation form is to be completed by the Chief Scientist. The preferred method of transmittal of this form is via email to OMAO.Customer.Satisfaction@noaa.gov. If email is not an option, a hard copy may be forwarded to:

Director, NOAA Marine and Aviation Operations
NOAA Office of Marine and Aviation Operations
8403 Colesville Road, Suite 500
Silver Spring, MD 20910

VII. MISCELLANEOUS

A. Meals and Berthing

Meals and berthing are required for up to 13__ scientists. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the cruise, and ending two hours after the termination of the cruise. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the survey.

Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of

sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Extra gatorade for scientists is necessary and essential due to high loss of fluids during extended time underwater breathing compressed (dry) gas.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the cruise and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 7, 1999 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, Revised: 08/08) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website at [NOAA HEALTH SERVICES QUESTIONNAIRE](#). The completed form should be sent to the Regional Director of Health Services at Marine Operations Center. The participant can mail, fax, or scan the form into an email using the contact information below. The NHSQ should reach the Health Services Office no later than 4 weeks prior to the cruise to allow time for the participant to obtain and submit additional information that health services might require before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of the NHSQ. Be sure to include proof of tuberculosis (TB) testing, sign and date the form, and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

Contact information:

Regional Director of Health Services
Marine Operations Center – Atlantic
439 W. York Street
Norfolk, VA 23510
Telephone 757.441.6320
Fax 757.441.3760
E-mail: MOA.Health.Services@noaa.gov

Prior to departure, the Chief Scientist must provide a listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: name, address, relationship to member, and telephone number.

C. Shipboard Safety

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. Steel-toed shoes are required to participate in any work dealing with suspended loads, including CTD deployments and recovery. The ship does not provide steel-toed boots. Hard hats are also required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

D. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various modes of communication, the ship is able to maintain contact with the Marine Operations Center on an as needed basis. These methods will be made available to the Chief Scientist upon request, in order to conduct official business. Due to a new directive from Marine Operations Center, the ship must charge the science party for all calls made on the cell or sky-cell telephone. INMARSAT, Sky Cell and cellular communication costs shall be reimbursed to the ship for telephone calls made by all scientific personnel. Currently, Sky Cell and cellular telephone services are about \$0.89 per minute and INMARSAT Mini M is around \$1.68 per minute for voice. These charges will be assessed against the program after the ship receives the bill. There is generally a three month delay receiving the bill for review. The Chief Scientist will be required to keep a log of all calls made by the science party.

E. IT Security

Any computer that will be hooked into the ship's network must comply with the NMAO Fleet IT Security Policy prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

1. Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
2. Installation of the latest critical operating system security patches.
3. No external public Internet Service Provider (ISP) connections.

Completion of these requirements prior to boarding the ship is preferable.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

F. Foreign National Guests N/A

Appendix A

Table 1. Study Site locations priorities

	Date visited	Site	Lat (N)	Long (W)	Temp sensor
1	June 2009	210 rock (pete)	34 14.434	76 35.526	Yes
2	June 2009	Bigtentemp	34° 23.301	76° 34.234	Yes
3	June 2009	Witzig2	34°16.668	76°34.949	yes
4	June 2009	3NW6	34°25.795	76°36.686	yes
5	June 2009	SWledge1	34°23.576	76°53.924	yes
6	June 2009	23milerock1	33°59.470	77°20.630	yes
7	June 2009	Capdan2	33°48.202	77°18.793	Yes(numbers good)
8	June 2009	Danspot2	33°38.134	77°13.301	yes
9	June 2009	Woo6	34°07.336	76°32.369	yes
10	June 2009	Lobrocksth4	33°48.053	76°58.840	yes
11	June 2009	Bigfish1	33°47.562	76°42.183	yes
12	June 2009	K3	33°38.323	76°56.519	yes
13	June 2009	Setower2	33°30.198	77°09.962	yes

Table 2: Potential Study Site locations time dependent of course.

	Date visited	Site	Data type	Lat (N)	Long (W)	Temp sensor
1	June 2009	210 rock (pete)	surveys all	34 14.434	76 35.526	Yes(1)
	Aug 2007	210rockN1	surveys all	34°14.851	76°35.549	no
2	June 2009	Bigtentemp	surveys all	34° 23.301	76° 34.234	Yes
	Aug 2007	Witzig1	surveys all	34°16.825	76°35.004	no
3	June 2009	Witzig2	surveys all	34°16.668	76°34.949	yes
4	June 2009	3NW6	surveys all	34°25.795	76°36.686	yes
	Aug 2007	3NW3	surveys all	34°26.613	76°37.402	no
5	June 2009	SWledge1	surveys all	34°23.576	76°53.924	yes
	Aug 2007	SWledge2	surveys all	34°25.875	76°54.185	no
6	June2009	23milerock1	surveys all	33°59.470	77°20.630	yes
	Aug 2007	23milerock2	surveys all	34°00.394	77°22.952	no
7	June 2009	Capdan2	surveys all	33°48.202	77°18.793	Yes(number s good)
	Aug 2007	Capdan1	surveys all	33°48.232	77°20.683	no
8	June 2009	Danspot2	tech	33°38.134	77°13.301	yes
	Sept 2007	Danspot3	Survey all	33°38.166	77°13.170	no
	Sept 2007	Danspot4	Survey all	33°38.106	77°13.269	no
		Danspot1		33 38.317	77 13.397	no
	Mar 2007	Woo5		34°08.563	76°33.274	yes?
	Aug 2007	Woo2	Survey all	34°07.516	76°32.241	no
9	June 2009	Woo6	Survey all	34°07.336	76°32.369	yes
	Mar 2007	Woo1		34°07.126	76°32.431	no

10	June 2009	Lobrocksth4	Surveys all	33°48.053	76°58.840	yes
	June 2007	Lobrocksth3	tech	33°47.919	76°58.948	no
	July 2006	Lobrocksth5	tech	33°48.258	76°58.744	no
	Not sure 2005?	Lobrocksth1	tech	33°48.162	76°58.764	no
11	July 2006	CF001	tech	33 46.256	77 00.450	no
	June 2009	Bigfish1	Surveys all	33°47.562	76°42.183	yes
	June 2007	Bigfish2	tech	33°47.460	76°42.318	no
	June 2007	Bigfish3	tech	33°47.760	76°41.941	no
12	June 2007	Gerryswreck	tech	33°47.827	76°41.707	no
	June 2009	K3	Surveys ex, no cryptic	33°38.323	76°56.519	yes
	June 2007	K1	tech	33°38.725	76°57.902	no
	Aug 2006	K4	tech	33°38.919	76°59.511	no
13	Aug 2006	K2	tech	33°38.198	76°55.222	no
	June 2009	Setower2	surveys all	33°30.198	77°09.962	yes
	Aug 2006	Setower3	tech	33 31.633	77 10.015	
	July 2006	Lobnor4	tech	33°54.028	76°57.957	
	July 2006	Lobnor1	tech	33°53.708	76°58.139	
	July 2006	Lobnor7	tech	33°53.570	76°58.169	
	April 2007	Lobnor2	Fish only/ no tech	33°53.729	76°58.119	
	Aug 2005	Frying Pan tower	Temp retr. Jan 2007	33 29.127	77 35.401	
	Aug 2006	18fathom	Survey/ collect	33°12.127	77°47.564	
	Aug 2006	City of houston	Survey/ collect	33°24.311	77°42.717	
	never	Kens fish mounds		33°59.028	76°47.366	
	never	Lindquist et al.		34°06.230	77°45.450	

Table 3. Potential Multi-beam wreck targets (MNMS)

	Target	Lat (N)	Long (W)	Temp sensor
1	Cassimir (WR2)	33°57.952	77°01.825	No (check #'s)
2	Normania	33°51.534	77°09.367	Yes (check #'s)
3	Lobsterwreck	33°51.271	76°57.858	Yes (check #'s)
4	Esso Nashville	33°52.731	77°13.615	No
5	Naeco-bow	34°03.500	76°34.260	No
6	Naeco-stern	34°01.510	76°38.880	Yes
7	Schurz	34°11.231	76°36.131	No
8	Papoose	34°08.605	76°39.146	Yes
9	Suloid	34°32.700	76°53.690	Yes
10	Hutton	34°29.980	76°53.890	No
11	WR-8	34°33.040	76°36.080	No

Appendix B.

Detailed Dive Plan in approval process by NOAA Dive Center

APPENDIX I

Tides and Water Levels

No tidal records were submitted with the survey deliverables

APPENDIX II

Supplemental Survey Records and Correspondence

**SHIP NOTES:**

Source: Gentile, Gary, Shipwrecks of North Carolina: From Hatteras Inlet South, [Gary Gentile Productions](#), 1992

Name: ESSO NASHVILLE

Type: Tanker

Date Sunk: 3/21/42

Cause: Torpedoed by U-124

Size (ft.): 445 x 64 x 34

Tonnage: 7943 tons

Propulsion: Two oil-fired steam turbines

Location

DIVING NOTES:

Diving Depths: 100-120 ft.

Current: none to slight

Visibility: 50+ feet

Summer Temperature: mid to high 70s in the summer

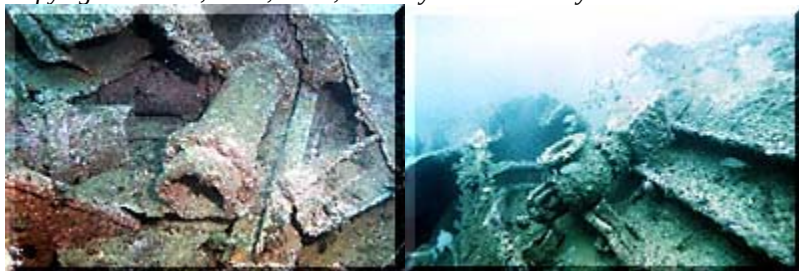
Points of Interest: Intact, but upside down bow with both port and starboard anchors. Lots of tropical marine life.

Fish/Animal Life: There seems to be an abundance of tropical marine life on this wreck including nudibranchs, lobster, frogfish, angelfish, etc. I should also mention that I recently saw my first open ocean shark in quite a while when I was hanging after a dive on this wreck.

Description: This is the bow half of the Esso Nashville. The stern section never sank and was towed back to port and re-fitted to another ship. The bow is intact and lying upside down with a slight list to the starboard side of the wreck. This is the highest relief on the wreck, rising some 15-20 feet above the sand. The deck area is buried in the sand, but the hull is starting to break way and fall to the side. This is most evident near the anchors where there is a deep sand washout. The wreck can be penetrated at this point to deeper than 120 feet. Aft of the bow, the bow flattens out in a series of collapsed hull plates, masts and pipes. The wreck can be easily circumnavigated in one dive. The site is similar in size and character to the bow of the Naeco.

PHOTOS:

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Remains of tanker pipes and connectors



Port, bow anchor



Starboard, bow anchor



Hawse pipe on the
port anchor



Nose of the bow



Schooling fish



Detail of keel



Bollards & angelfish



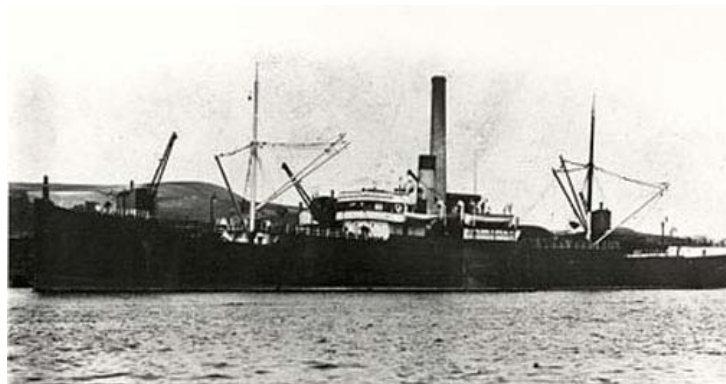
Remains of forward mast

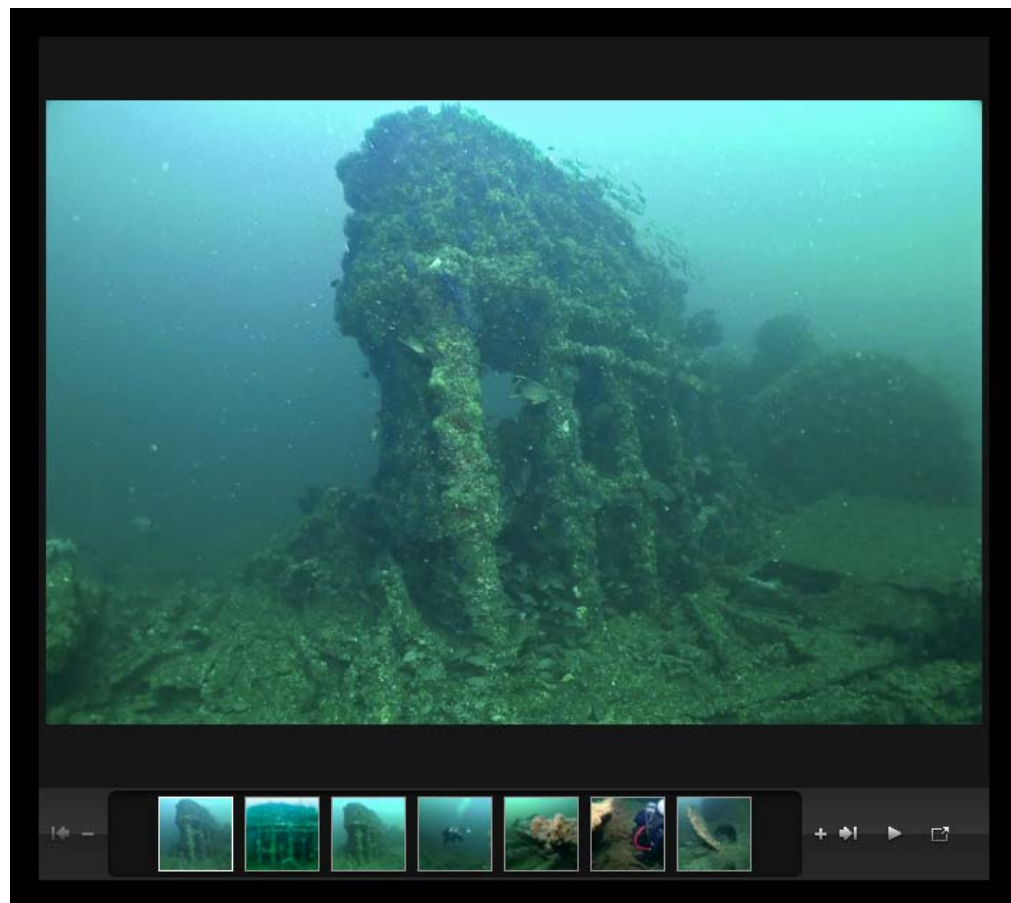
[HOME](#)[WRECKS](#)[LEDGES](#)[LIFE](#)[LINKS](#)[VIDEO](#)[AUTHOR](#)[GUESTBOOK](#)

Normannia

The Normannia is a 312 ft. long freighter that was over taken by rough seas in 1924. It was carrying a load of mahogany logs from Jamaica to Charleston SC. It sunk in 110 ft of water 35 miles southeast of Masonboro Inlet. Now the wreck sits upright on the bottom. The 80+ years the wreck has been on the ocean floor has left a shell behind. The outline of the wreck is clearly visible with it structure collapsing in on itself. The boilers, engine room, bow and stern remain somewhat intact and comprise the major structure of the wreck.

The Normannia is an incredible dive. Because it is so far offshore it is bathed in blue water most of the time. Visibility averages around 60 ft but vis in excess of 100 ft is not uncommon. The blue water also brings in a host of tropical marine life. Animals that are not supposed to be this far north are not uncommon. Spanish and Cuban hogfish, coney's, graysby's, and hamlets can be seen along with the common fish associated with offshore wrecks. This is one of my favorite dive's off our coast.





Archival Newspaper Articles (pdf)

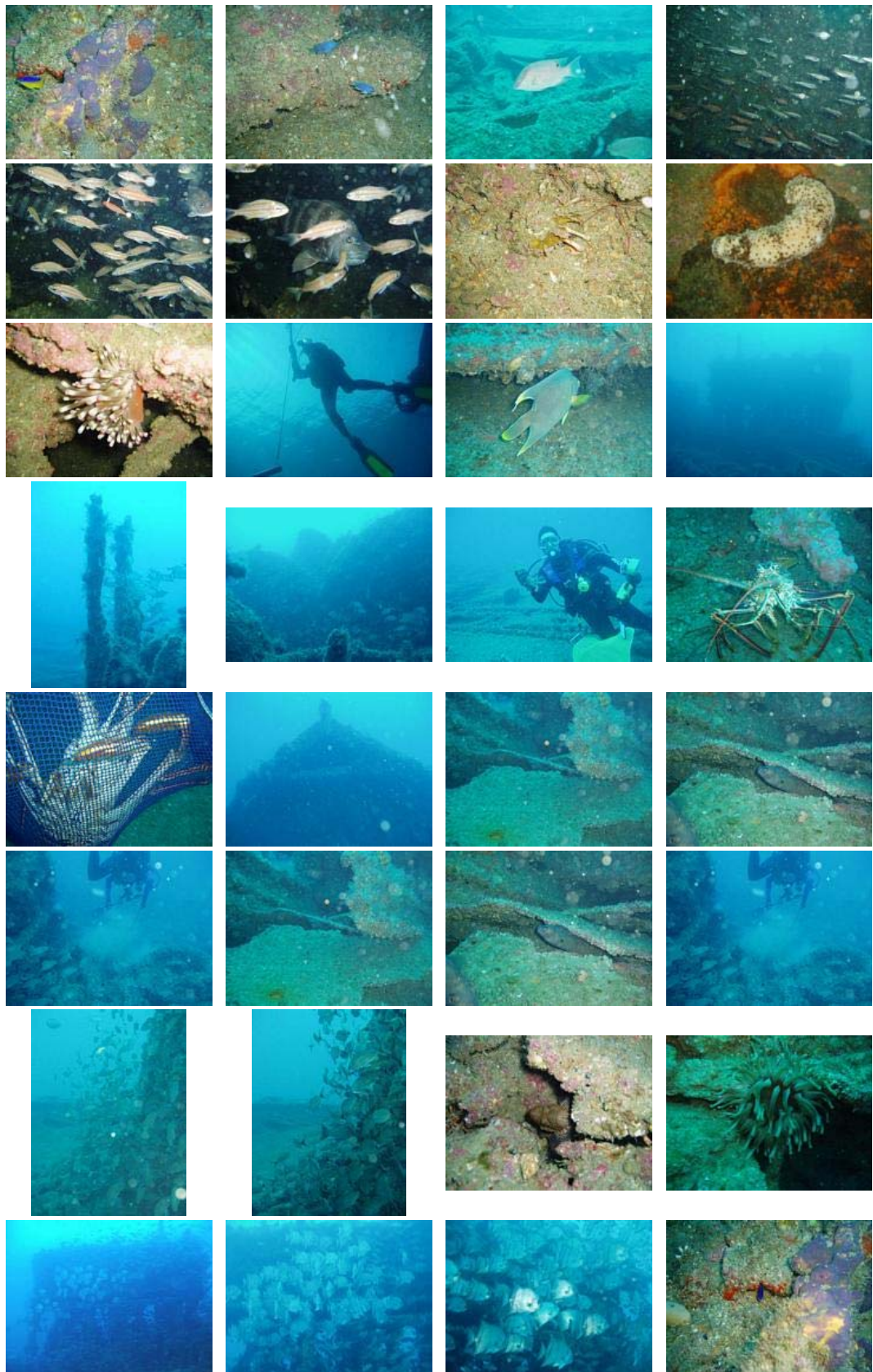
[Wilmington Star: January 17, 1924](#)

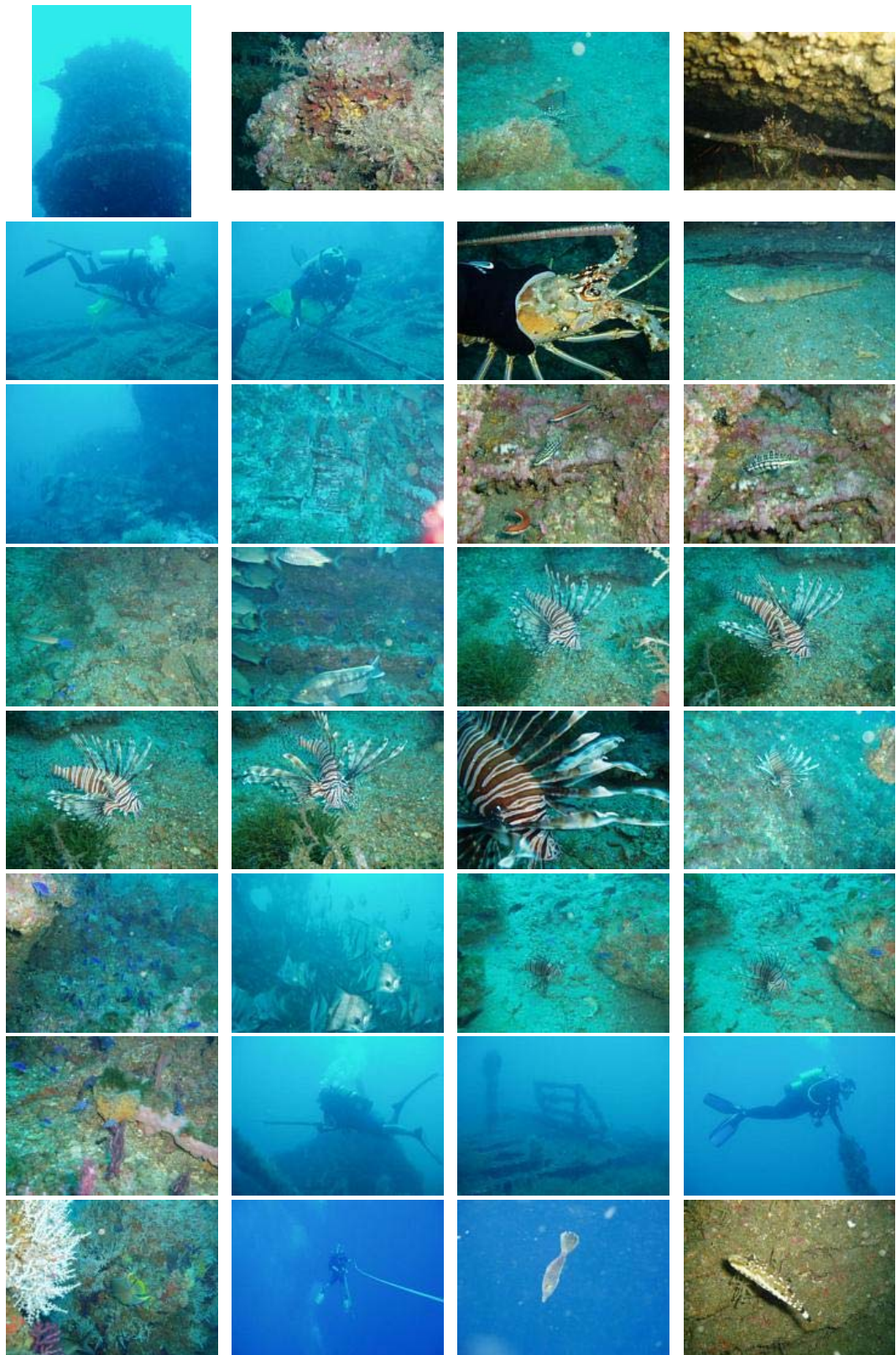
[New York Times: January 17, 1924](#)

[New York Times: January 19, 1924](#)



May 13, 2006







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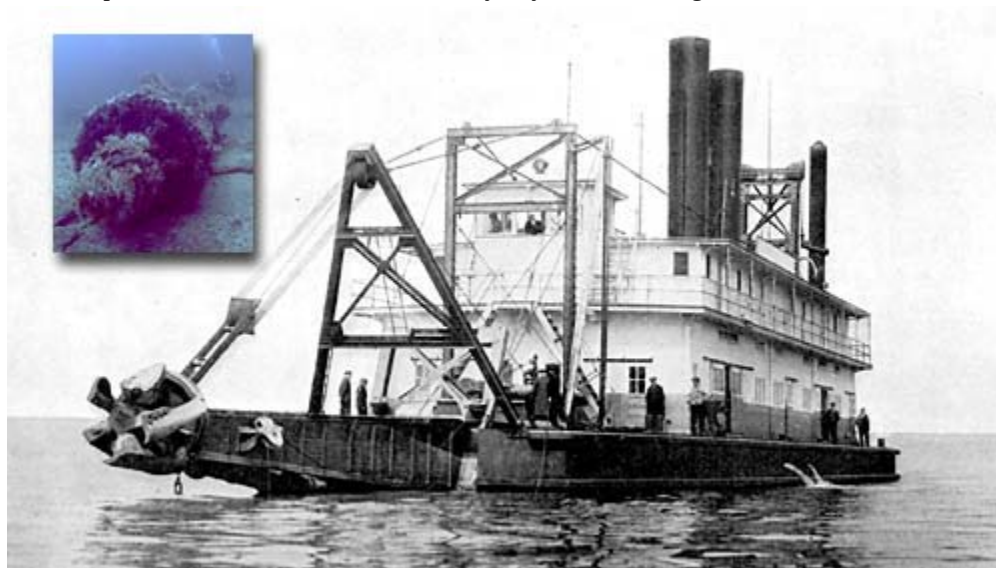
**SHIP NOTES:****Name:** Porta Allegra**Type:** Dredge**Date Sunk:** Unknown...later than 1909?**Cause:** Unknown**Size (ft.):** 175? x 75?**Tonnage:** Unknown**Propulsion:** No apparent means of self-propulsion **Location** N33° 51.280'/W76° 57.860'**SHIP HISTORY:**

It has been suspected for a while that the "lobster wreck" was a dredge. Recently, there was a confirmation of that suspicion plus a probable identification. In August of 2000, Bryan Tate, of Wilmington, NC, found a windlass/winch from the "lobster wreck". With two lift bags, he and dive buddy Steve Lewis recovered the piece from the wreck. On the winch, Bryan found a name plate for the Ellicott Machine Company. The Ellicott Machine Company is still in business and after some correspondence, a company representative matched the contract number and reported to Bryan that the winch was originally installed on the dredge, *Porta Allegra*. The *Porta Allegra* was built around 1908 and was outfitted with a 20 inch cutter. Company records do not indicate whether this dredge sank or whether this winch has been reinstalled on another dredge.



"Ellicott Machine Co., Baltimore, Md.,
Contract No. 4300-F
Mark No. 3888
Shop No"

Brass plate from the windlass recovered by Bryan Tate in August 2000. (Photo: Byran Tate)



Steam dredge, contemporary of the *Porta Allegra*, with 20" cutter (Photo: Ellicot Machine Co.)

INSET: 20" cutter of the *Porta Allegra* as it appears today on the ocean bottom.

DIVING NOTES:

Diving Depths: 115-125 ft.

Current: none to slight

Visibility: 50+ feet

Summer Temperature: High 70s to lo 80s

Points of Interest: Four boilers and large steam engine, bow and stern anchors, derrick posts and dredge auger. Lots of tropical marine life.

Fish/Animal Life: There seems to be an abundance of tropical marine life on this wreck. Lots of angelfish and other small tropicals as well as lobster (but of course!) and hogfish. The lionfish (see below) is also a frequent and recent resident to this wreck.



Numerous lionfish — Pterois volitans — now make this wreck home

Description: I first dove this wreck in the mid/late 80's on the *Whipsaw* out of Wrightsville Beach, NC with the late Captain Ed Wolfe. As far as I know, Ed, an "old-salt" fishing captain, was the first to take divers to this site. It is referred to as the "Lobster Wreck" because on the opening day of the old lobster season (before March 1 and after August 6), at least one dive boat would make the long trek to the site and come back with dozen or so large spiny lobster. Since the lobster season is now year-around with a two-per-diver limit, this wreck is visited less often.

The wreck has not been identified, but it appears to be some type of dredge. A date of 1909 on a steam gauge recovered by Gordon Smith offers the only clue as to the time of its sinking. [See update on identification above] The wreck site is rectangular in shape and contiguous over its length. The wreck is quite small and appears to be somewhere between 150 and 200 feet in length and less than 100 feet wide. There are four boilers and a large steam engine which were used to power the dredge. These offer the highest point of relief on the wreck. Aft of the engine, there are two large posts rising up from the wreck. These were used to support the dredge derrick and deck structure. The dredge auger is extending out from the "stern" of the wreck and is lying out in the sand much like a propeller shaft. The wreck can be easily circum-navigated in a single dive. In spite of its small size, the "Lobster Wreck" is one of the more beautiful dives off of North Carolina and has a lot to offer both photographer and hunter. In the last couple of years, the coastal waters of NC have been the home of "invasive" species of fish normally only seen in the tropical Pacific — *Pterois volitans*, more commonly know as a lionfish. No one knows exactly how the fish were introduced, but scientists have been tracking the fish as they spread from Florida. The "lobster wreck" seems to have a pretty consistent resident population of lionfish. I have seen as many as 6 different ones in a single dive.

ALL PHOTOS :

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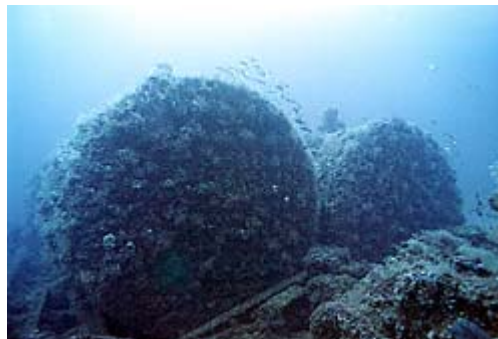
Flywheel



Anchor



Steam engine with boilers in the background



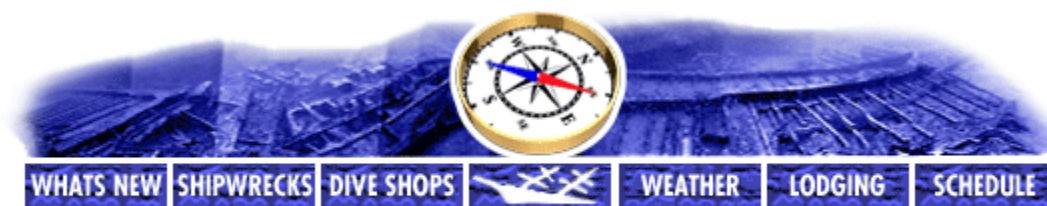
Two of the 4 boilers



20" cutter dredge head



Boiler, engine and dredge shaft — inline



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webmaster@nc-wreckdiving.com



APPENDIX III

Feature Report

AWOIS: Eight

DtonS: NONE

MARITIME BOUNDARY: NONE

WRECKS: Eleven(Eight discussed in AWOIS)

W00237_AWOIS

Registry Number: W00237
State: North Carolina
Locality: Offshore North Carolina
Sub-locality: Vicinity of Onslow Bay
Project Number: OSD-AHB-12
Survey Dates: 09/05/2010 - 09/09/2010

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
11543	23rd	06/01/2005	1:80,000 (11543_1)	[L]NTM: ?
11520	43rd	10/01/2008	1:432,720 (11520_1)	[L]NTM: ?
11009	38th	12/01/2006	1:1,200,000 (11009_1)	[L]NTM: ?

* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	AWOIS 564 - Cassimer - 26.8m Wreck	Wreck	26.83 m	33° 57' 56.1" N	077° 01' 49.1" W	564
1.2	AWOIS_594 - W.E. Hutton - 15.5 m wreck	Wreck	15.50 m	34° 29' 56.4" N	076° 53' 52.3" W	594
1.3	AWOIS 598 - Suloide - 14.9m Wreck	Wreck	14.89 m	34° 32' 41.2" N	076° 53' 42.0" W	598
1.4	AWOIS 574 - Papoose - 25.4m Wreck	Wreck	25.43 m	34° 08' 36.7" N	076° 39' 08.4" W	574
1.5	AWOIS 571 Naeco (Bow)	Wreck	34.68 m	34° 01' 31.3" N	076° 38' 52.6" W	571
1.6	AWOIS 577 -Schurz - 28.9m Wreck	Wreck	28.90 m	34° 11' 14.6" N	076° 36' 08.5" W	577
1.7	AWOIS 2838 - Naeco (Stern) - 31.7m Wreck	Wreck	31.70 m	34° 03' 28.8" N	076° 34' 17.2" W	2838
1.8	AWOIS 578 - U-352 Rathke - 27.8 m Wreck	Wreck	27.81 m	34° 13' 40.9" N	076° 33' 53.5" W	578

1 - S57DR_AWOIS

1.1) AWOIS 564 - Cassimer - 26.8m Wreck

Primary Feature for AWOIS Item #564

Search Position: 33° 57' 56.1" N, 077° 01' 49.1" W
Historical Depth: 25.69 m
Search Radius: 0
Search Technique: SD, S2, DI
Technique Notes: [None]

History Notes:

[None]

Survey Summary

Survey Position: 33° 57' 56.1" N, 077° 01' 49.1" W
Least Depth: 26.83 m (= 88.02 ft = 14.671 fm = 14 fm 4.02 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2010-245.00:00:00.000 (09/02/2010)
Dataset: W00237_Features.000
FOID: US 0000079476 00001(0226000136740001)
Charts Affected: 11520_1, 11009_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00237_Features.000	US 0000079476 00001	0.00	000.0	Primary
AWOIS_EXPORT	AWOIS # 564	1.01	024.9	Secondary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

14fm (11520_1, 11009_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
INFORM - Cassimer
NINFOM - Add wreck
QUASOU - 6:least depth known
SORDAT - 20100902
SORIND - US,US,graph,W00237
VALSOU - 26.830 m
WATLEV - 3:always under water/submerged

Office Notes

SAR: Wreck positioned at 33-57-56.0997N, 077-01-49.0741W. Least depth of 26.830m.

Compile:Delete charted non-dangerous wreck , least depth unknown. Chart non-dangerous wreck , least depth 14.67 fathoms at the survey position.

Feature Images



Figure 1.1.1

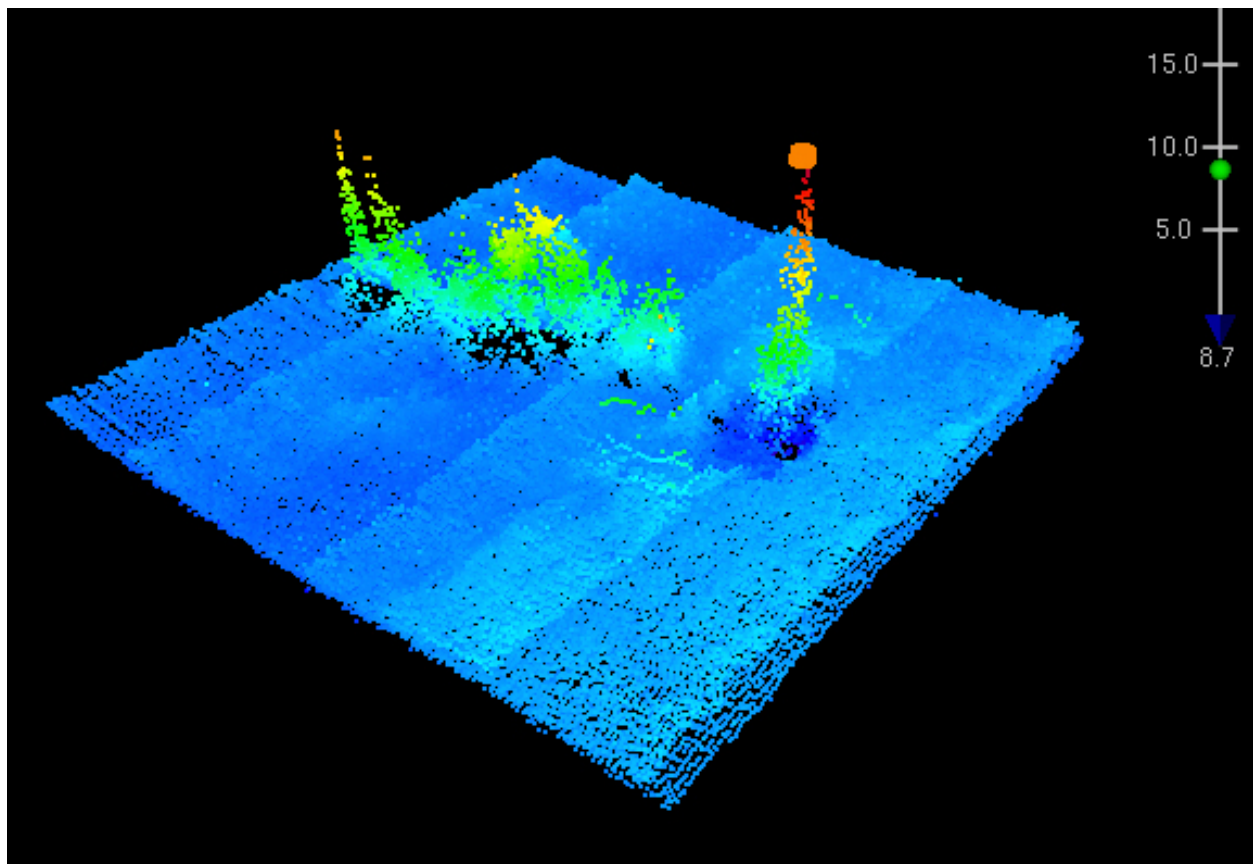


Figure 1.1.2

1.2) AWOIS_594 - W.E. Hutton - 15.5 m wreck

Primary Feature for AWOIS Item #594

Search Position: 34° 29' 58.1" N, 076° 53' 52.0" W
Historical Depth: [None]
Search Radius: 200
Search Technique: ES,MB,S2,BD,DI,SD
Technique Notes: [None]

History Notes:

[None]

Survey Summary

Survey Position: 34° 29' 56.4" N, 076° 53' 52.3" W
Least Depth: 15.50 m (= 50.86 ft = 8.477 fm = 8 fm 2.86 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2010-245.00:00:00.000 (09/02/2010)
Dataset: W00237_Features.000
FOID: US 0000079480 00001(0226000136780001)
Charts Affected: 11543_1, 11520_1, 11009_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00237_Features.000	US 0000079480 00001	0.00	000.0	Primary
AWOIS_EXPORT	AWOIS # 594	54.32	188.2	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

51ft (11543_1)

8 ½fm (11520_1, 11009_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 2:dangerous wreck
INFORM - WE Hutton
NINFOM - Add wreck
QUASOU - 6:least depth known
SORDAT - 20100902
SORIND - US,US,graph,W00237
VALSOU - 15.503 m
WATLEV - 3:always under water/submerged

Office Notes

SAR: Wreck positioned at 34-29-56.3819N,076-53-52.2812W. Least depth updated to 15.503m. AWOIS 594 W.E. Hutton; search radius not completely ensonified.

Compile: Delete charted dangerous wreck , least depth unknown. Chart non-dangerous wreck , least depth 50.86 feet at the survey position.

Feature Images

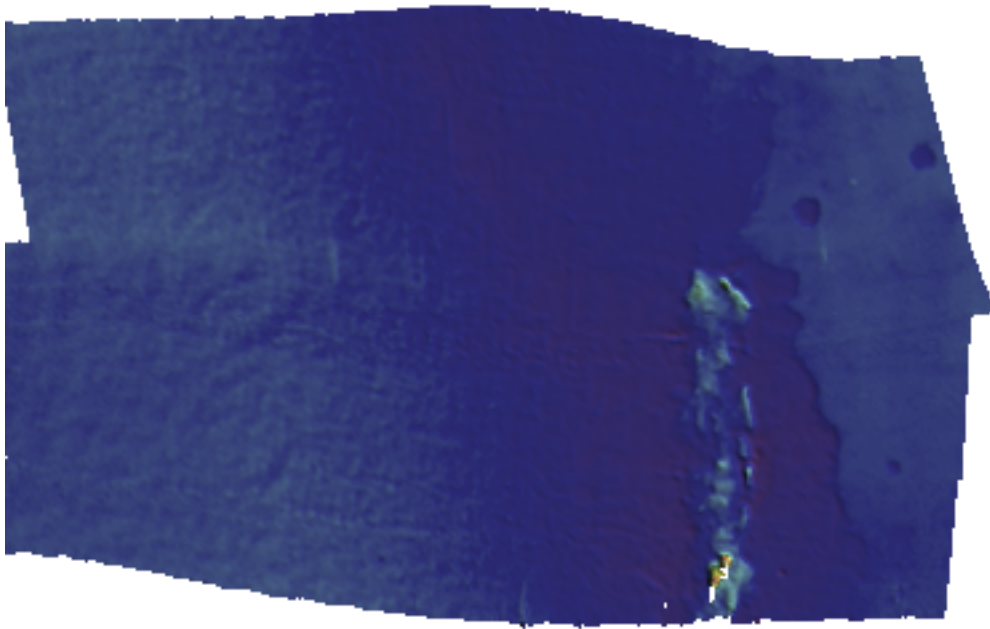


Figure 1.2.1

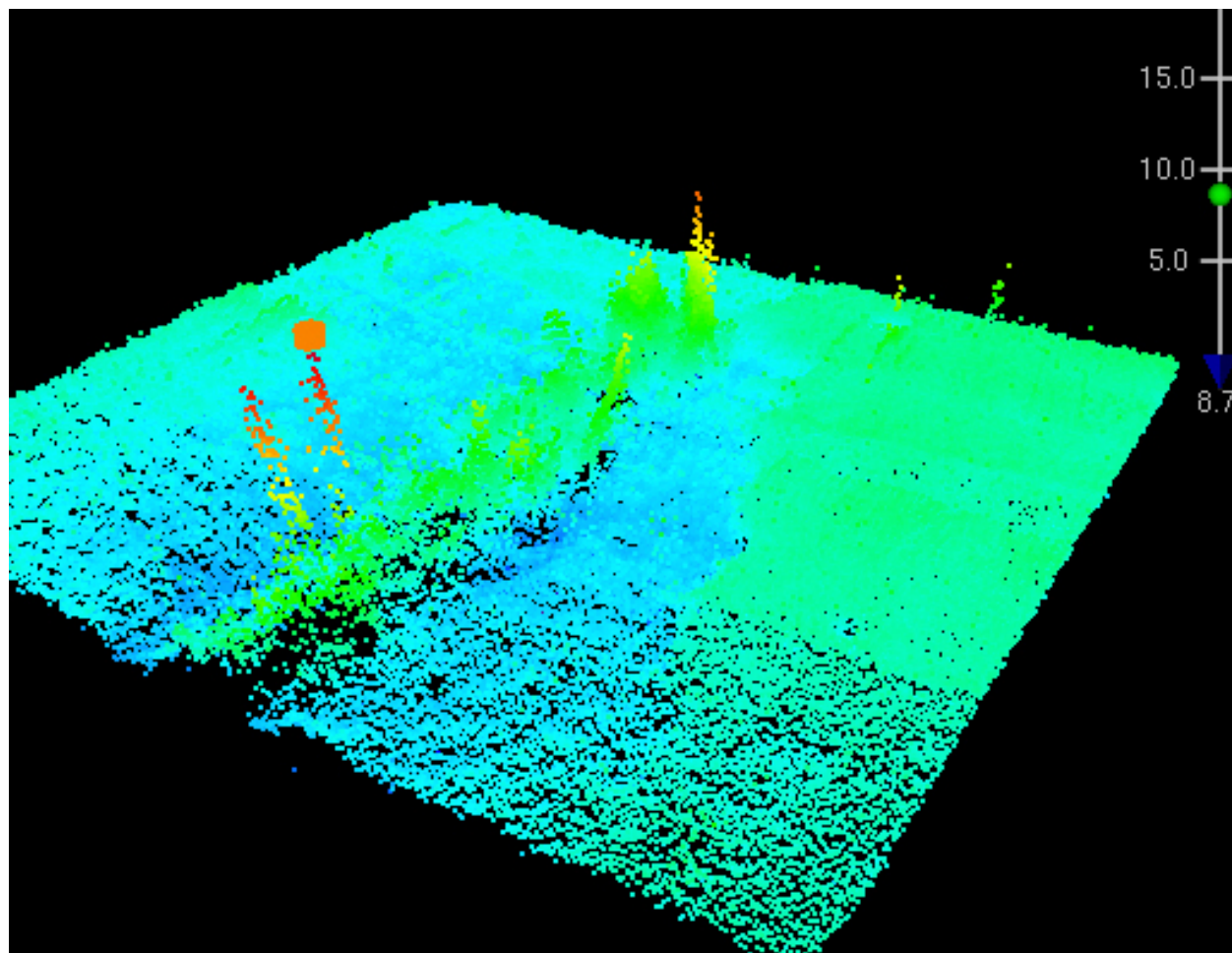


Figure 1.2.2

1.3) AWOIS 598 - Suloide - 14.9m Wreck

Primary Feature for AWOIS Item #598

Search Position: 34° 32' 41.9" N, 076° 53' 42.2" W
Historical Depth: 15.39 m
Search Radius: 200
Search Technique: ES,MB,S2,BD,DI,SD
Technique Notes: [None]

History Notes:

[None]

Survey Summary

Survey Position: 34° 32' 41.2" N, 076° 53' 42.0" W
Least Depth: 14.89 m (= 48.85 ft = 8.142 fm = 8 fm 0.85 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2010-245.00:00:00.000 (09/02/2010)
Dataset: W00237_Features.000
FOID: US 0000079481 00001(0226000136790001)
Charts Affected: 11543_1, 11520_1, 11009_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00237_Features.000	US 0000079481 00001	0.00	000.0	Primary
AWOIS_EXPORT	AWOIS # 598	22.14	166.4	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

49ft (11543_1)

8fm (11520_1, 11009_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 2:dangerous wreck
INFORM - Suloide
NINFOM - Add wreck
QUASOU - 6:least depth known
SORDAT - 20100902
SORIND - US,US,graph,W00237
VALSOU - 14.891 m
WATLEV - 3:always under water/submerged

Office Notes

SAR: Wreck positioned at 34-32-41.2429N, 076-53-42.0421W. AWOIS 598 Suloide, search radius not completely ensonified.

Compile: Delete charted non-dangerous wreck , least depth unknown. Chart non-dangerous wreck , least depth 48.85 feet at the survey position.

Feature Images

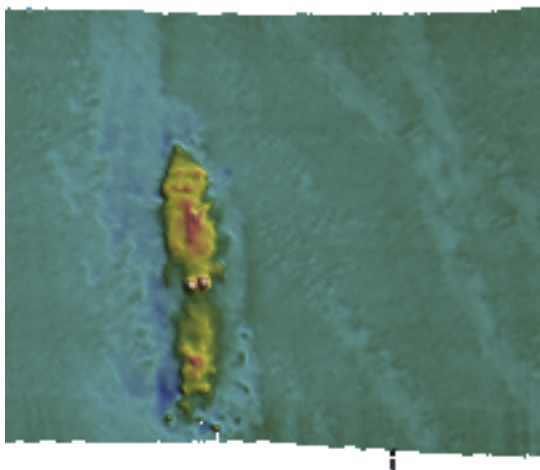


Figure 1.3.1

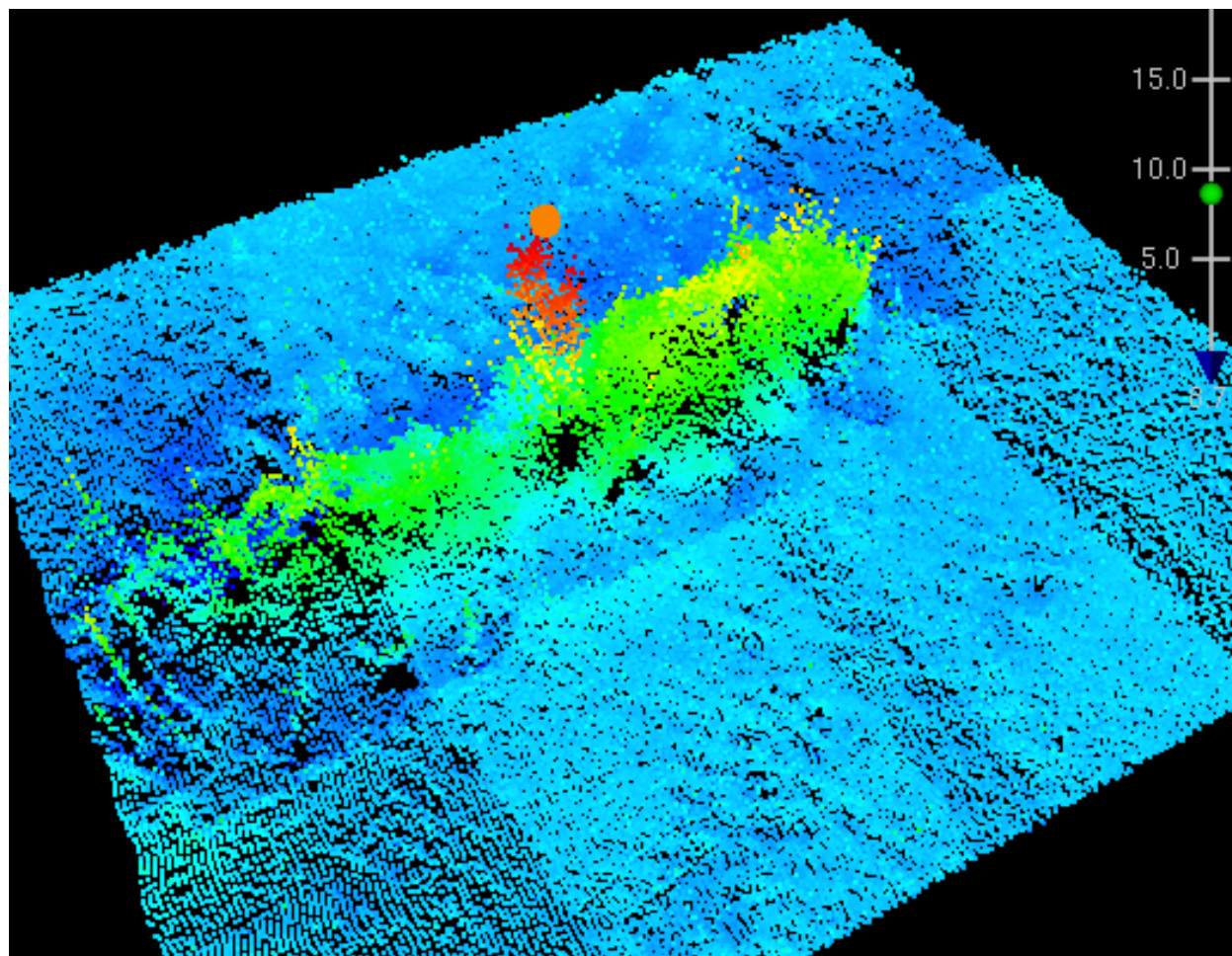


Figure 1.3.2

1.4) AWOIS 574 - Papoose - 25.4m Wreck

Primary Feature for AWOIS Item #574

Search Position: 34° 08' 36.6" N, 076° 39' 08.3" W
Historical Depth: 18.29 m
Search Radius: 200
Search Technique: ES,S2,MB,BD,DI,SD
Technique Notes: [None]

History Notes:

[None]

Survey Summary

Survey Position: 34° 08' 36.7" N, 076° 39' 08.4" W
Least Depth: 25.43 m (= 83.45 ft = 13.908 fm = 13 fm 5.45 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2010-245.00:00:00.000 (09/02/2010)
Dataset: W00237_Features.000
FOID: US 0000079477 00001(0226000136750001)
Charts Affected: 11520_1, 11009_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00237_Features.000	US 0000079477 00001	0.00	000.0	Primary
AWOIS_EXPORT	AWOIS # 574	2.49	324.4	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

14fm (11520_1, 11009_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
EXPSOU - 2:shoaler than range of depth of the surrounding depth area
INFORM - Papoose
NINFOM - Add wreck
QUASOU - 6:least depth known
SORDAT - 20100902
SORIND - US,US,graph,W00237
VALSOU - 25.435 m
WATLEV - 3:always under water/submerged

Office Notes

SAR: Wreck positioned at 34-08-36.6763N, 076-39-08.3870W. Least depth of 25.435m. AWOIS #574
Papoose; search radius not completely ensonified.

Compile: Delete charted non-dangerous wreck , least depth unknown. Chart non-dangerous wreck , least
depth 13.91 fathoms at the survey position.

Feature Images

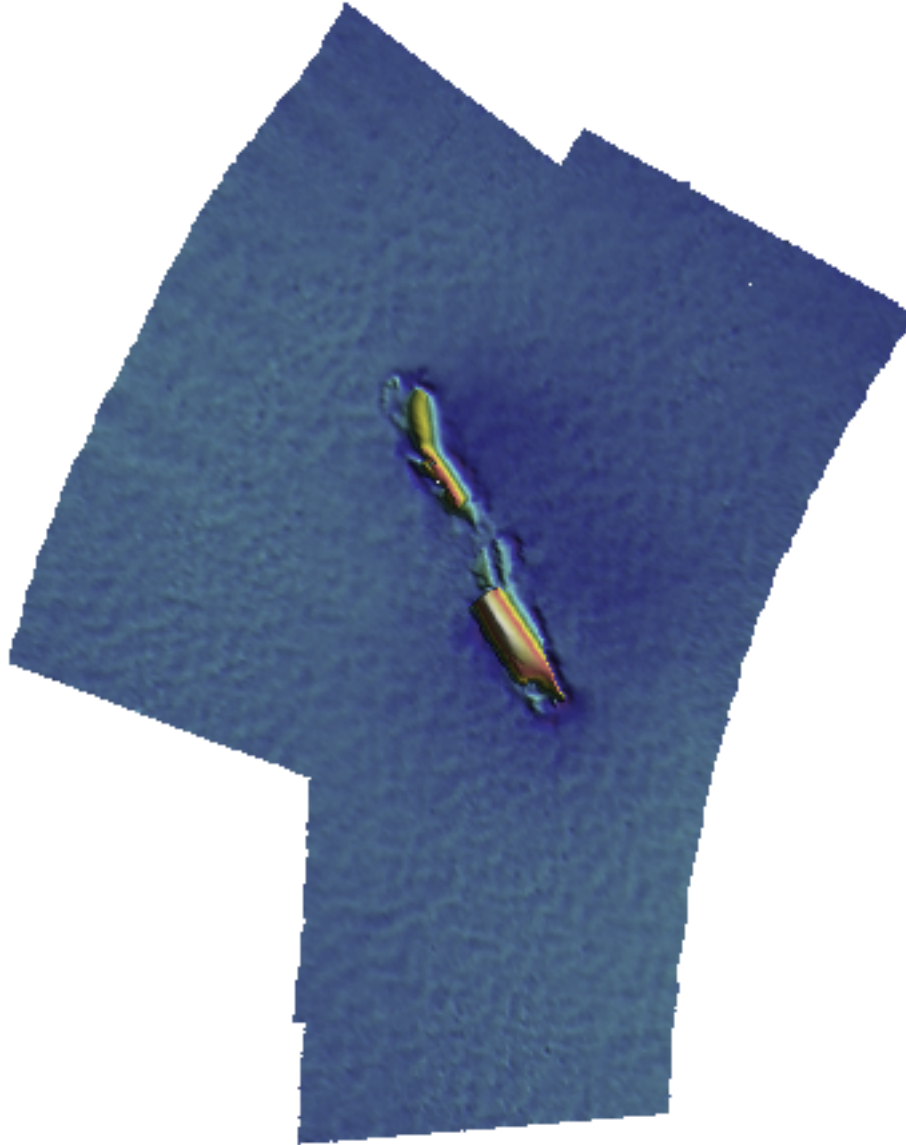


Figure 1.4.1

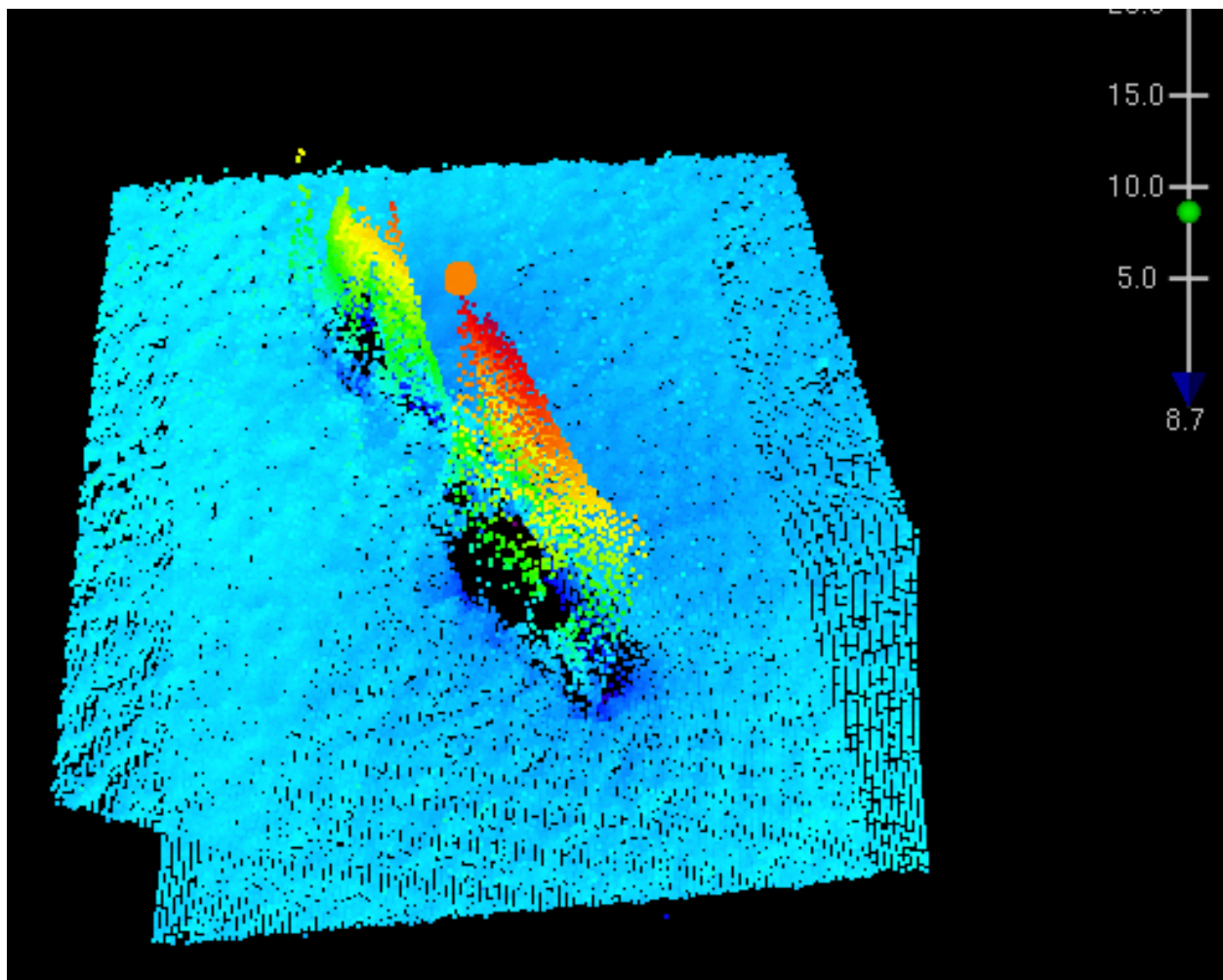


Figure 1.4.2

1.5) AWOIS 571 Naeco (Bow)

Primary Feature for AWOIS Item #571

Search Position: 34° 01' 24.6" N, 076° 38' 50.3" W
Historical Depth: [None]
Search Radius: 0
Search Technique: ES,S2,MB,BD,DI,SD##
Technique Notes: [None]

History Notes:

[None]

Survey Summary

Survey Position: 34° 01' 31.3" N, 076° 38' 52.6" W
Least Depth: 34.68 m (= 113.79 ft = 18.964 fm = 18 fm 5.79 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2010-245.00:00:00.000 (09/02/2010)
Dataset: W00237_Features.000
FOID: US 0000079474 00001(0226000136720001)
Charts Affected: 11520_1, 11009_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00237_Features.000	US 0000079474 00001	0.00	000.0	Primary
AWOIS_EXPORT	AWOIS # 571	213.36	344.1	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

19fm (11520_1, 11009_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
INFORM - Naeco-bow
NINFOM - Add wreck
QUASOU - 6:least depth known
SORDAT - 20100902
SORIND - US,US,graph,W00237
VALSOU - 34.682 m
WATLEV - 3:always under water/submerged

Office Notes

SAR: Wreck (Naeco bow AWOIS #571) positioned at 34-01-31.2572N, 076-38-52.6020W. Least depth of 34.682m.

Compile: Delete charted non-dangerous wreck , least depth unknown. Chart non-dangerous wreck , least depth 18.96 fathoms at the survey position.

Feature Images

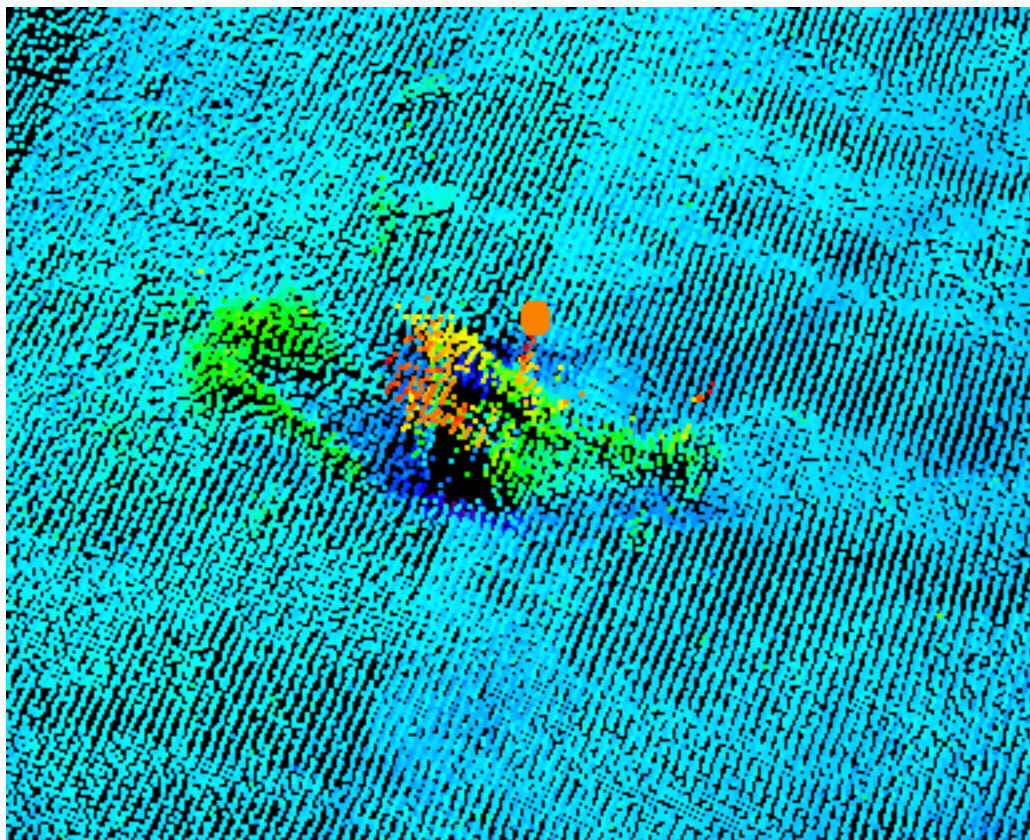


Figure 1.5.1

1.6) AWOIS 577 -Schurz - 28.9m Wreck

Primary Feature for AWOIS Item #577

Search Position: 34° 11' 12.6" N, 076° 36' 04.7" W
Historical Depth: [None]
Search Radius: 200
Search Technique: ES,S2,MB,BD,DI,SD
Technique Notes: [None]

History Notes:

[None]

Survey Summary

Survey Position: 34° 11' 14.6" N, 076° 36' 08.5" W
Least Depth: 28.90 m (= 94.81 ft = 15.802 fm = 15 fm 4.81 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2010-245.00:00:00.000 (09/02/2010)
Dataset: W00237_Features.000
FOID: US 0000079478 00001(0226000136760001)
Charts Affected: 11520_1, 11009_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00237_Features.000	US 0000079478 00001	0.00	000.0	Primary
AWOIS_EXPORT	AWOIS # 577	115.45	302.7	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

16fm (11520_1, 11009_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
NINFOM - Add wreck
QUASOU - 6:least depth known
SORDAT - 20100902
SORIND - US,US,graph,W00237
VALSOU - 28.899 m
WATLEV - 3:always under water/submerged

Office Notes

SAR: Wreck positioned at 34-11-14.6275N, 076-36-08.5088W. Least depth of 28.899m. AWOIS 577 Unknown; search radius not completely ensonified.

Compile: Delete charted non-dangerous wreck , least depth unknown. Chart non-dangerous wreck , least depth 15.80 fathoms at the survey position.

Feature Images

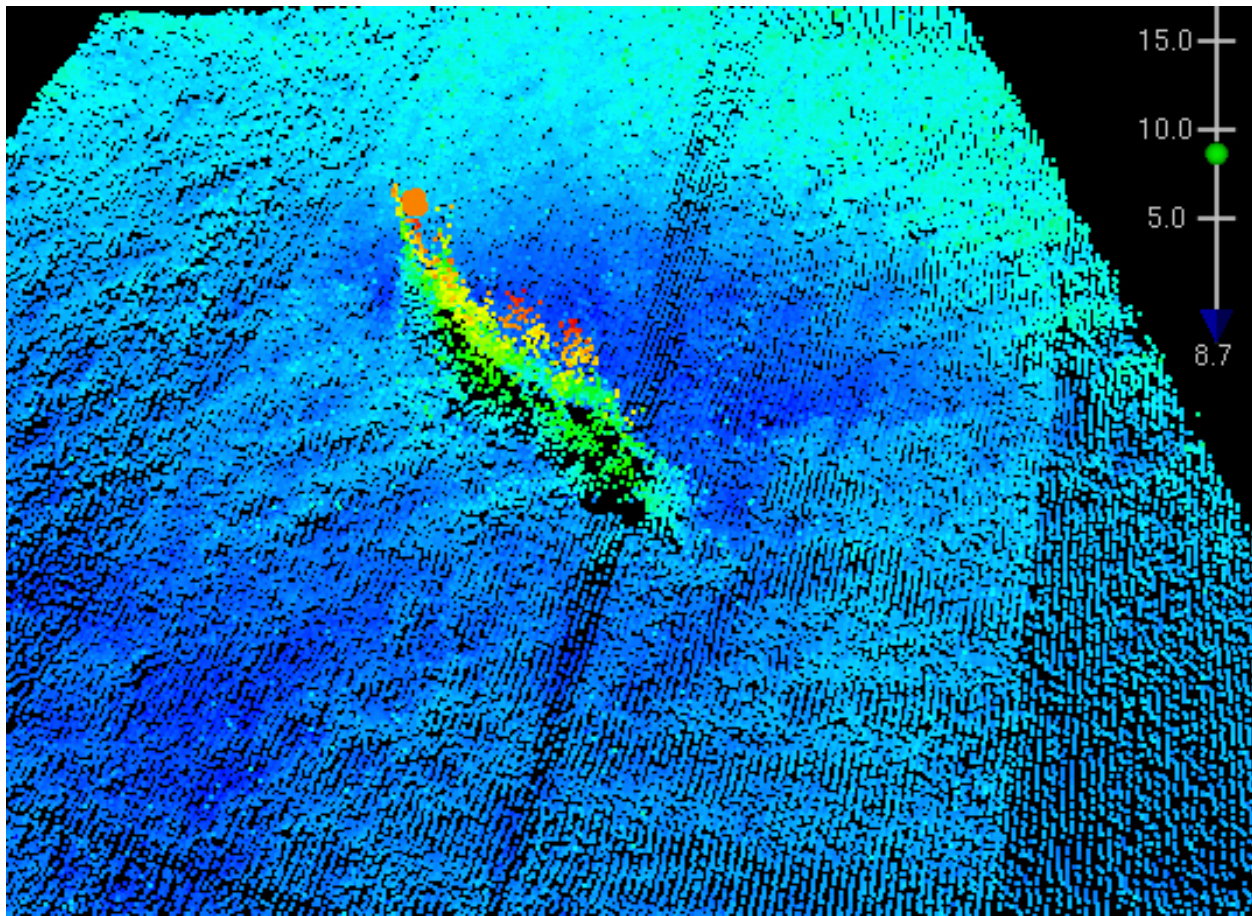


Figure 1.6.1

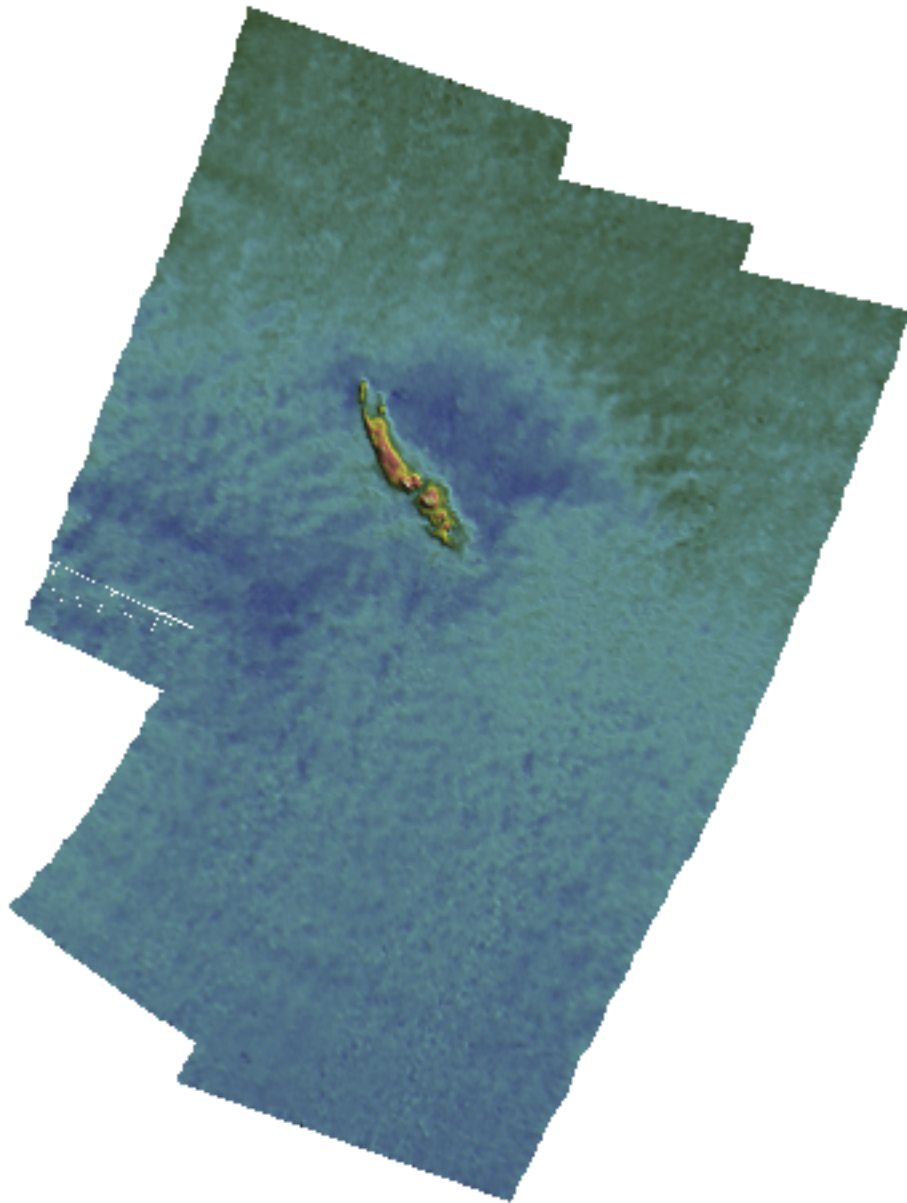


Figure 1.6.2

1.7) AWOIS 2838 - Naeco (Stern) - 31.7m Wreck

Primary Feature for AWOIS Item #2838

Search Position: 34° 03' 24.6" N, 076° 34' 17.9" W
Historical Depth: 29.87 m
Search Radius: 0
Search Technique: ES,S2,MB,BD,DI,SD##
Technique Notes: [None]

History Notes:

[None]

Survey Summary

Survey Position: 34° 03' 28.8" N, 076° 34' 17.2" W
Least Depth: 31.70 m (= 104.01 ft = 17.335 fm = 17 fm 2.01 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2010-245.00:00:00.000 (09/02/2010)
Dataset: W00237_Features.000
FOID: US 0000079475 00001(0226000136730001)
Charts Affected: 11520_1, 11009_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00237_Features.000	US 0000079475 00001	0.00	000.0	Primary
AWOIS_EXPORT	AWOIS # 2838	131.83	007.8	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

17fm (11520_1, 11009_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
INFORM - Naeco-stern
NINFOM - Add wreck
QUASOU - 6:least depth known
SORDAT - 20100902
SORIND - US,US,graph,W00237
VALSOU - 31.702 m
WATLEV - 3:always under water/submerged

Office Notes

SAR: Wreck Naeco (Stern). Wreck positioned at 34-03-28.8443N, 076-34-17.2121W with a least depth of 31.702m. Also associated with AWOIS 2838 Naeco.

Compile:Delete charted non-dangerous wreck , least depth unknown. Chart non-dangerous wreck , least depth 17.33 fathoms at the survey position.

Feature Images

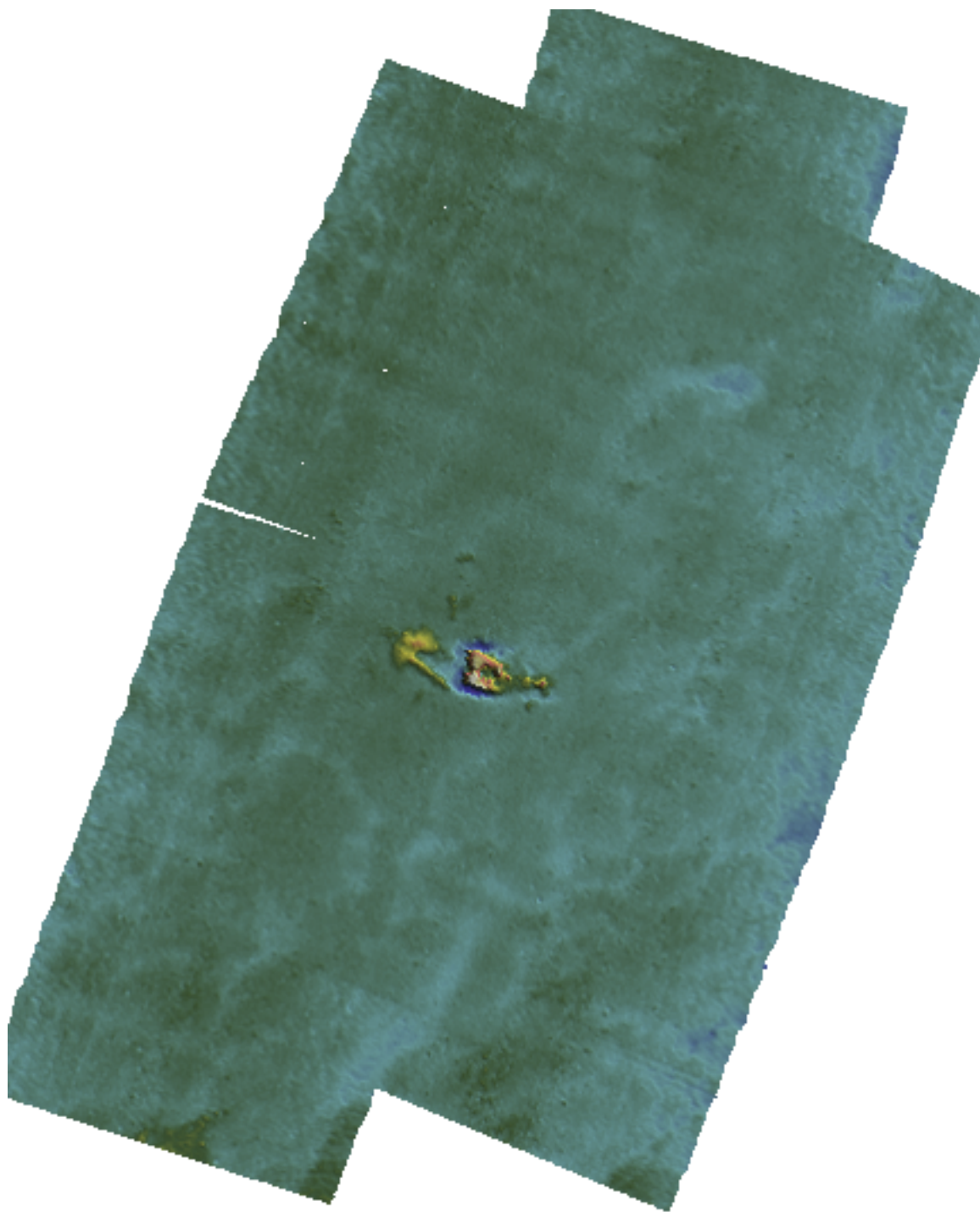
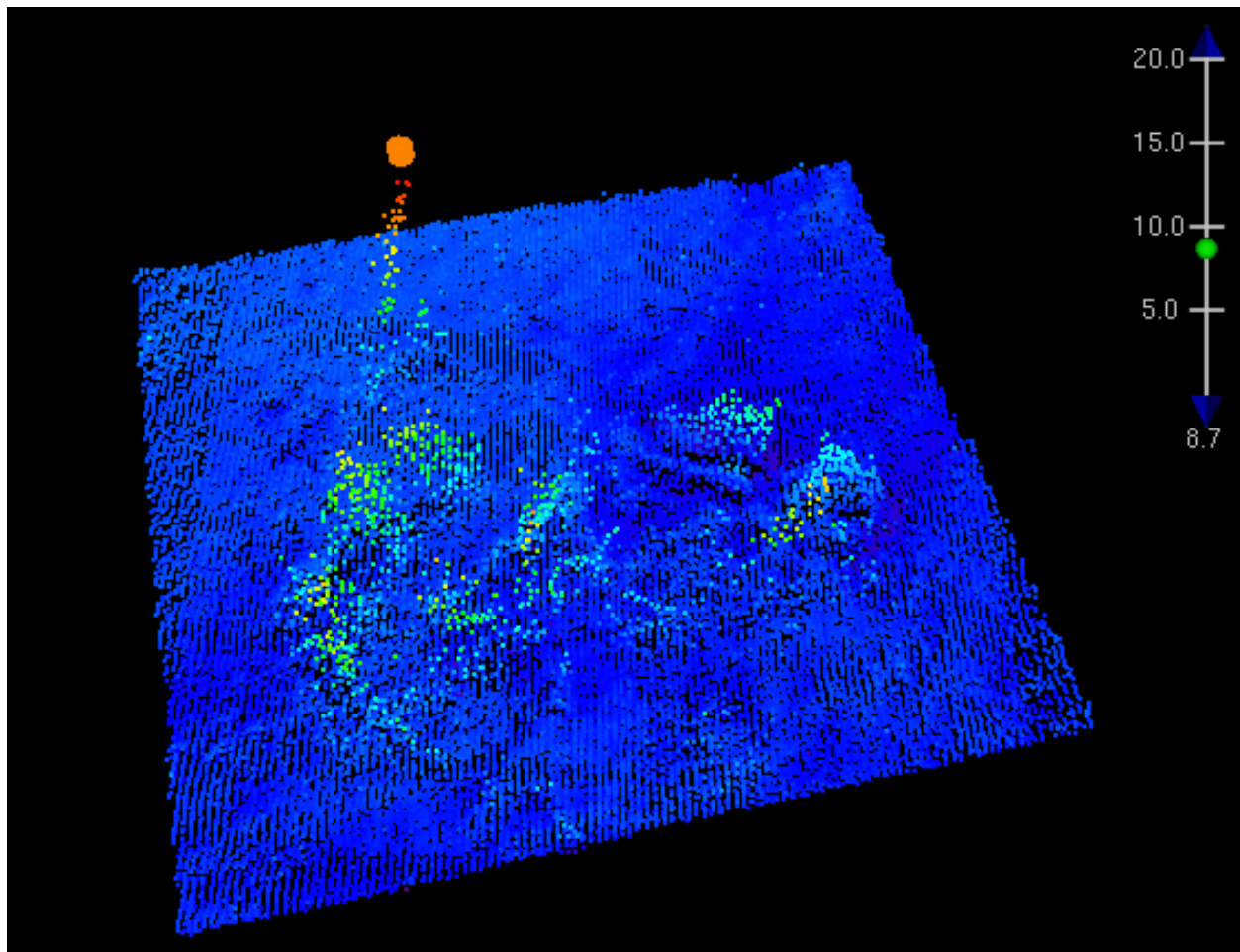


Figure 1.7.1

*Figure 1.7.2*

1.8) AWOIS 578 - U-352 Rathke - 27.8 m Wreck

Primary Feature for AWOIS Item #578

Search Position: 34° 13' 39.6" N, 076° 33' 57.5" W
Historical Depth: [None]
Search Radius: 200
Search Technique: ES,S2,MB,DI,SD,VS
Technique Notes: BE AWARE OF THE UNEXPLODED ORDNANCE IF DIVING THIS WRECK.
MINIMUM RADIUS 200M.

History Notes:

[None]

Survey Summary

Survey Position: 34° 13' 40.9" N, 076° 33' 53.5" W
Least Depth: 27.81 m (= 91.22 ft = 15.204 fm = 15 fm 1.22 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2010-245.00:00:00.000 (09/02/2010)
Dataset: W00237_Features.000
FOID: US 0000079479 00001(0226000136770001)
Charts Affected: 11520_1, 11009_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00237_Features.000	US 0000079479 00001	0.00	000.0	Primary
AWOIS_EXPORT	AWOIS # 578	109.93	068.7	Secondary (grouped)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

15fm (11520_1, 11009_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
INFORM - Rathke
NINFOM - Add wreck
QUASOU - 6:least depth known
SORDAT - 20100902
SORIND - US,US,graph,W00237
VALSOU - 27.805 m
WATLEV - 3:always under water/submerged

Office Notes

SAR: Unexploded ordinance positioned at 34-13-40.9024N, 076-33-53.5157W. Least depth of 27.805m. AWOIS 578 U-352 (Rathke); search radius not completely ensonified.

Compile:Delete charted non-dangerous wreck , least depth unknown. Chart non-dangerous wreck , least depth 15.20 fathoms at the survey position.

Feature Images

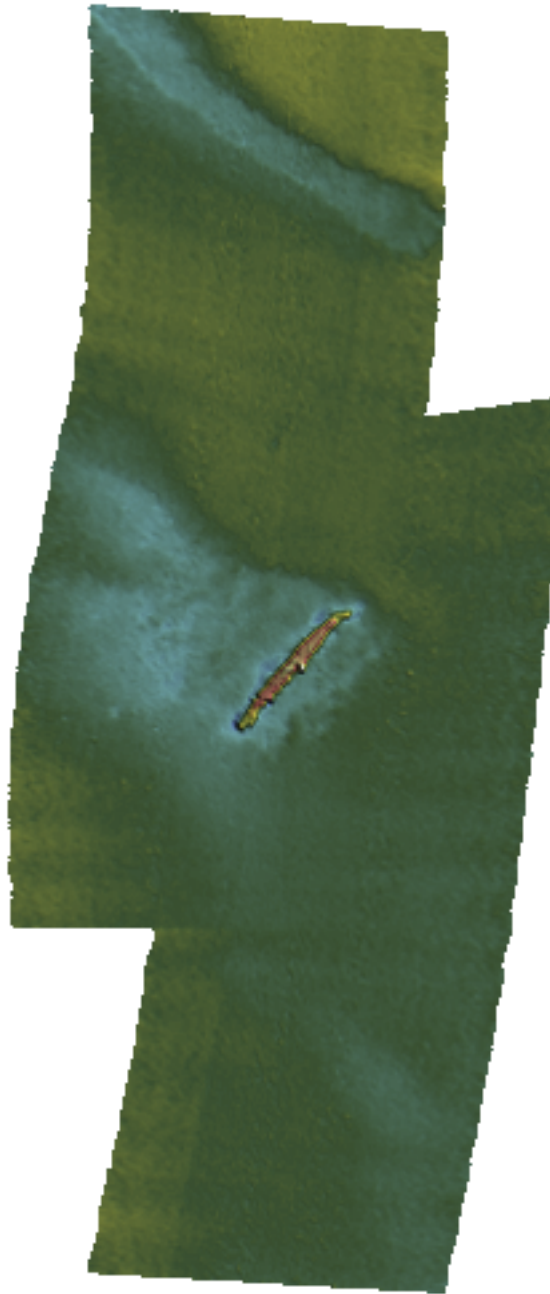


Figure 1.8.1

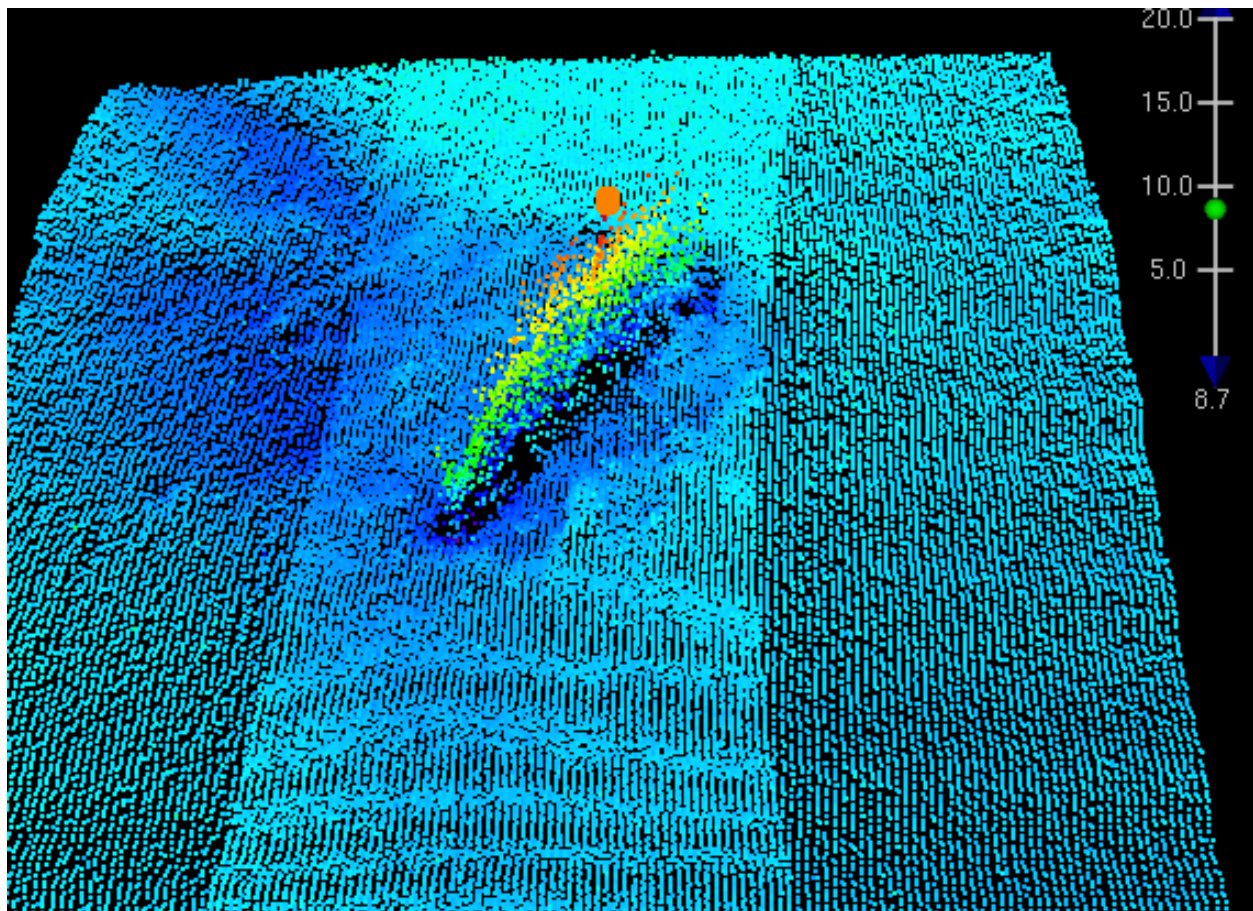


Figure 1.8.2

W00237_WRECKS

Registry Number: W00237
State: North Carolina
Locality: Offshore North Carolina
Sub-locality: Vicinity of Onslow Bay
Project Number: OSD-AHB-12
Survey Dates: 09/05/2010 - 09/09/2010

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
11520	44th	10/01/2010	1:432,720 (11520_1)	USCG LNM: 5/29/2012 (7/17/2012) NGA NTM: 11/27/2010 (7/28/2012)
11009	38th	12/01/2006	1:1,200,000 (11009_1)	[L]NTM: ?

* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Wreck Esso Nashville	Wreck	28.19 m	33° 52' 44.8" N	077° 13' 36.3" W	---
1.2	Wreck Normania	Wreck	27.92 m	33° 51' 32.0" N	077° 09' 22.0" W	---
1.3	Wreck Porta Allegra	Wreck	31.96 m	33° 51' 15.7" N	076° 57' 51.1" W	---

1 - Wrecks

1.1) Wreck Esso Nashville

Survey Summary

Survey Position: 33° 52' 44.8" N, 077° 13' 36.3" W
Least Depth: 28.19 m (= 92.50 ft = 15.417 fm = 15 fm 2.50 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2010-252.00:00:00.000 (09/09/2010)
Dataset: W00237_Features.000
FOID: US 0000109937 00001(02260001AD710001)
Charts Affected: 11520_1, 11009_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00237_Features.000	US 0000109937 00001	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
 INFORM - Esso Nashville
 NINFOM - Chart wreck
 QUASOU - 6:least depth known
 SORDAT - 20100909
 SORIND - US,US,graph,W00237
 VALSOU - 28.194 m
 WATLEV - 3:always under water/submerged

Office Notes

Compile: Chart non-dangerous wreck , least depth 15.42 fathoms at the survey position. See appendix II for more information.

Feature Images

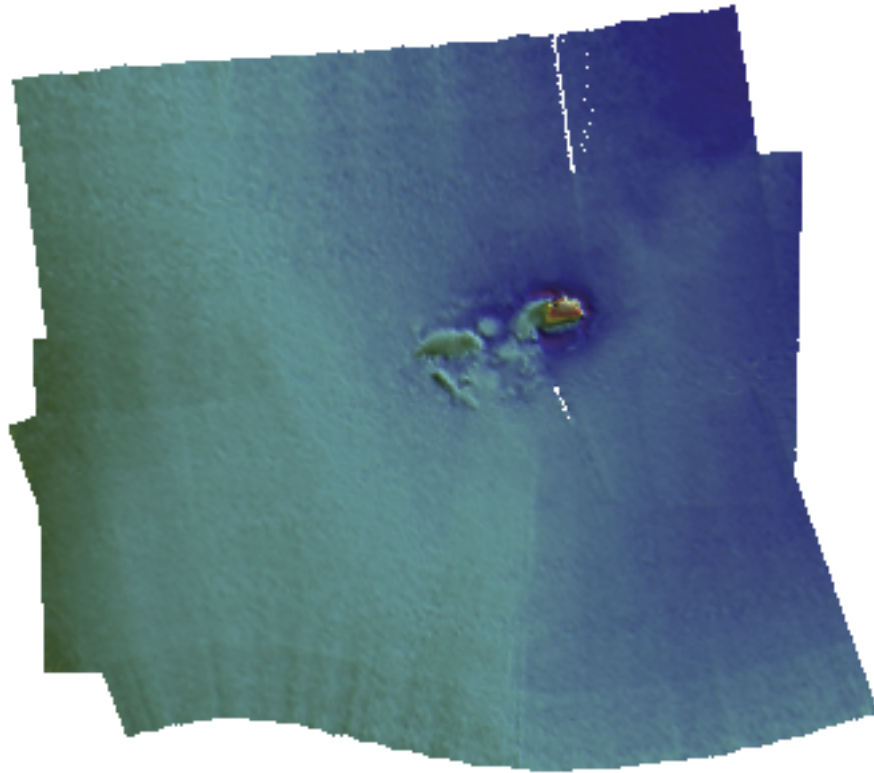


Figure 1.1.1

1.2) Wreck Normania

Survey Summary

Survey Position: 33° 51' 32.0" N, 077° 09' 22.0" W
Least Depth: 27.92 m (= 91.61 ft = 15.268 fm = 15 fm 1.61 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2010-252.00:00:00.000 (09/09/2010)
Dataset: W00237_Features.000
FOID: US 0000109935 00001(02260001AD6F0001)
Charts Affected: 11520_1, 11009_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00237_Features.000	US 0000109935 00001	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
 INFORM - Normania
 NINFOM - Chart wreck
 QUASOU - 6:least depth known
 SORDAT - 20100909
 SORIND - US,US,graph,W00237
 VALSOU - 27.923 m
 WATLEV - 3:always under water/submerged

Office Notes

Compile: Chart non-dangerous wreck , least depth 15.27 fathoms at the survey position. See appendix II for more information.

Feature Images

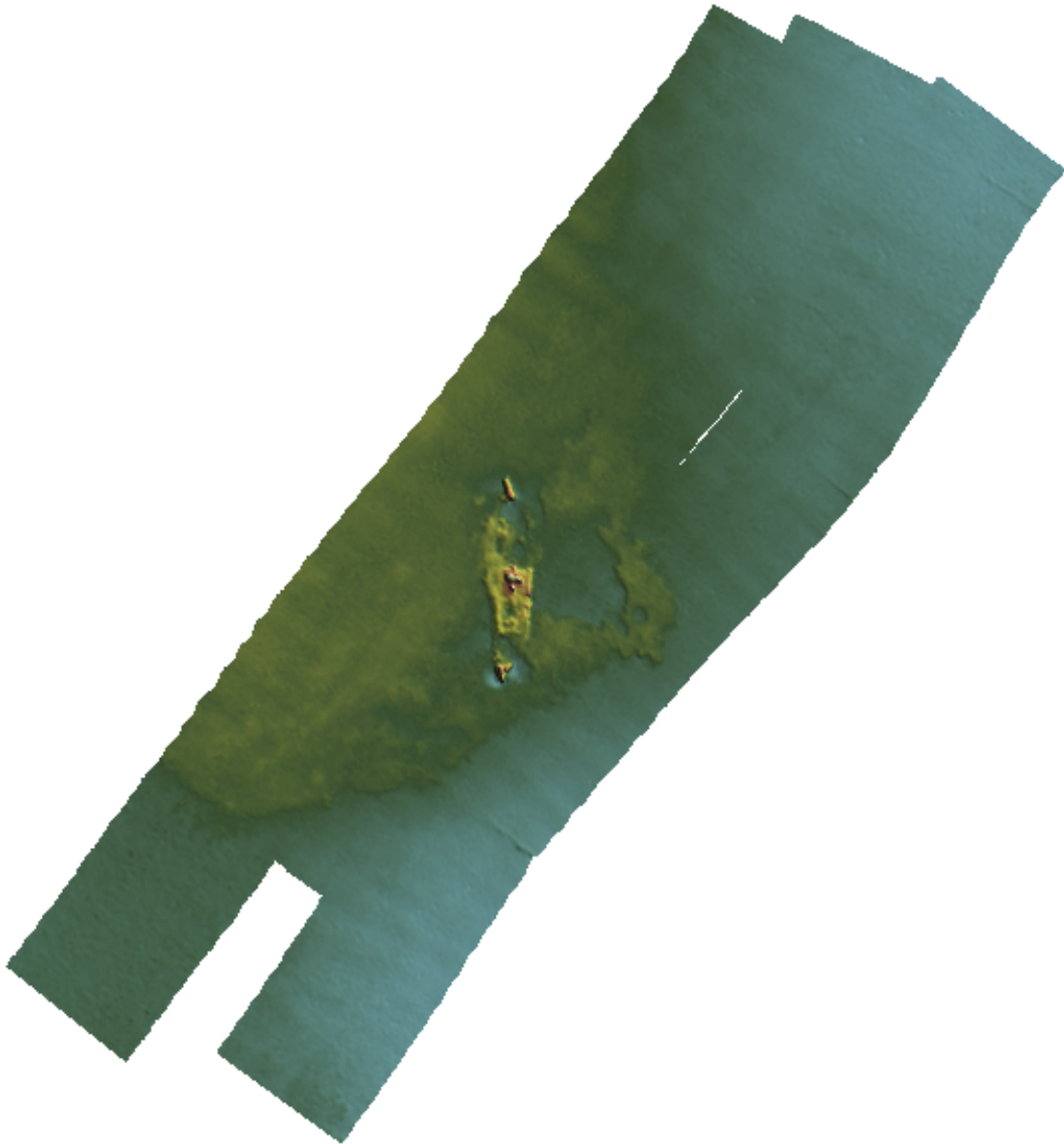


Figure 1.2.1

1.3) Wreck Porta Allegra

Survey Summary

Survey Position: 33° 51' 15.7" N, 076° 57' 51.1" W
Least Depth: 31.96 m (= 104.85 ft = 17.475 fm = 17 fm 2.85 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2010-252.00:00:00.000 (09/09/2010)
Dataset: W00237_Features.000
FOID: US 0000109939 00001(02260001AD730001)
Charts Affected: 11520_1, 11009_1

Remarks:

[None]

Feature Correlation

Source	Feature	Range	Azimuth	Status
W00237_Features.000	US 0000109939 00001	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 1:non-dangerous wreck
 INFORM - Porta Allegra
 NINFOM - Chart wreck
 QUASOU - 6:least depth known
 SORDAT - 20100909
 SORIND - US,US,graph,W00237
 VALSOU - 31.958 m
 WATLEV - 3:always under water/submerged

Office Notes

Compile: Chart non-dangerous wreck , least depth 17.48 fathoms at the survey position. See appendix II for more information.

Feature Images

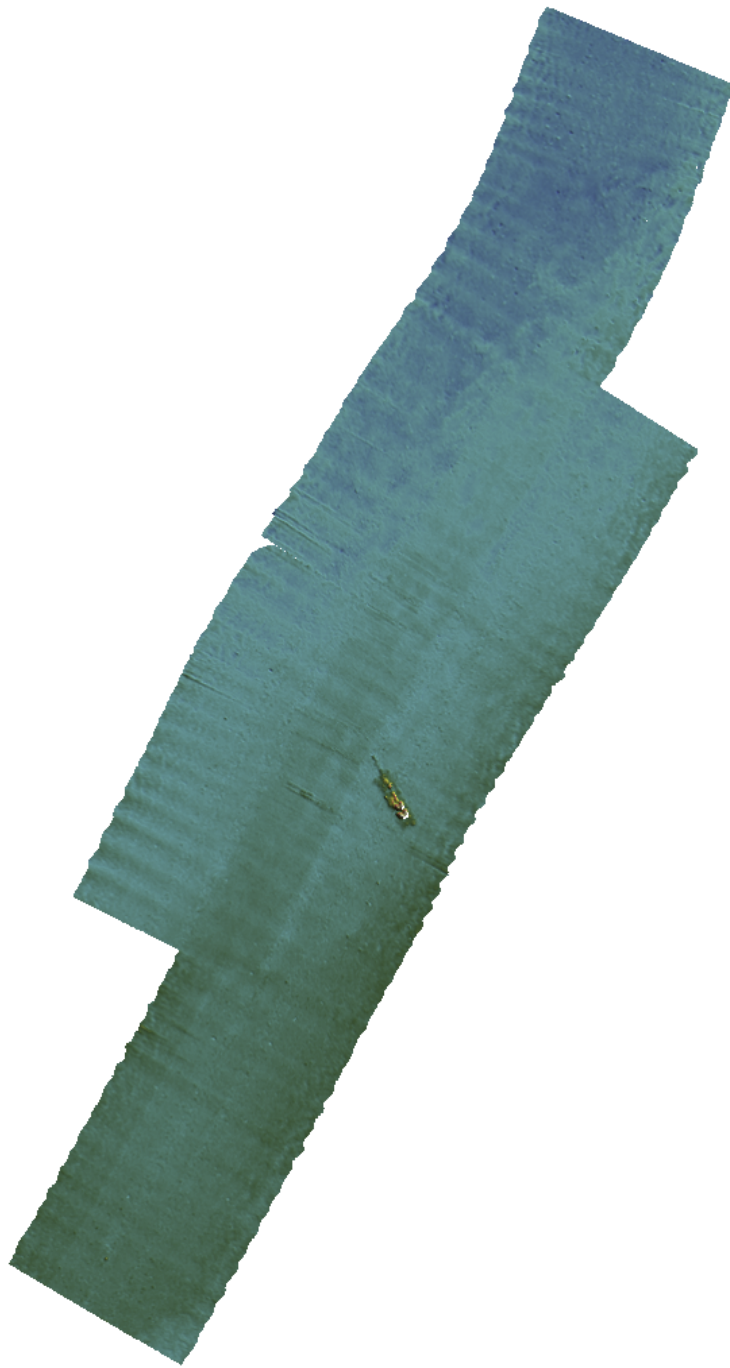


Figure 1.3.1

APPROVAL PAGE

W00237

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NGDC for archive

- W00237_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- W00237_GeoImage.pdf

The survey evaluation and verification has been conducted according to current OCS Specifications, and the survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: _____

LT Abigail Higgins

Chief, Atlantic Hydrographic Branch