

H11174

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

*Type of Survey* Hydrographic/Multibeam

*Field No.* Sheet A

*Registry No.* H11174

### LOCALITY

*State* Georgia

*General Locality* North Atlantic Ocean

*Locality* Offshore Gray's Reef NMS

2002

CHIEF OF PARTY  
CDR Steven R. Barnum, NOAA

### LIBRARY & ARCHIVES

DATE



<b>HYDROGRAPHIC TITLE SHEET</b>		PROJECT NUMBER: <b>H11174</b>	
State:	Georgia		
General Locality:	North Atlantic Ocean		
Sub-Locality:	Offshore Gray's Reef NMS		
Scale:	1:50,000	Date of Survey:	5/14/02 to 5/24/02
Proposal Dated:	03/25/02	Project Number:	S-G341-WH
Vessel:	NOAA Ship WHITING, S-329		
Chief of Party:	CDR Steven R. Barnum, NOAA		
Surveyed by:	WHITING Personnel		
Soundings by:	KongsbergSimrad EM1002 multibeam sonar		
Graphic record scaled by:	WHITING Personnel		
Graphic record checked by:	WHITING Personnel		
Protracted by:	N/A	Automated Plot:	HP-750C (field) <i>Hewlett Packard Design Jet 2500CP (office)</i>
Verification by:	<del>WHITING Personnel</del> <i>Atlantic Hydrographic Branch Personnel</i>		
Soundings in:	Meters <i>Fathoms</i> at MLLW		
Remarks: <i>Red notes in the Descriptive Report were made during office processing.</i> 1) All Times are UTC. 2) Projection is UTM Zone 17.			
<i>AS 11/14/02 15/03 556</i>			



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*\* Data filed with original field records.*



**PRELIMINARY REPORT**  
***DESCRIPTIVE REPORT***

to accompany  
HYDROGRAPHIC SURVEY H11174  
S-G341-WH

Scale of Survey: 1:50,000  
Date of Survey: May 14 - 24  
Year of Survey: 2002  
NOAA Ship WHITING  
CDR Steven R. Barnum, Commanding

**A. AREA SURVEYED**

This hydrographic survey was conducted in response to a project proposal set forth by Gray's Reef National Marine Sanctuary entitled *Georgia Deepwater Snapper / Grouper Habitat Characterization*. The hydrographic survey project is S-G341-WH, Offshore - Proposed addition to Gray's Reef National Marine Sanctuary. The survey took place from May 14 - 24, though inclement weather limited survey operations to May 15 - 19, 2002. The original proposal is dated March 25, 2002.

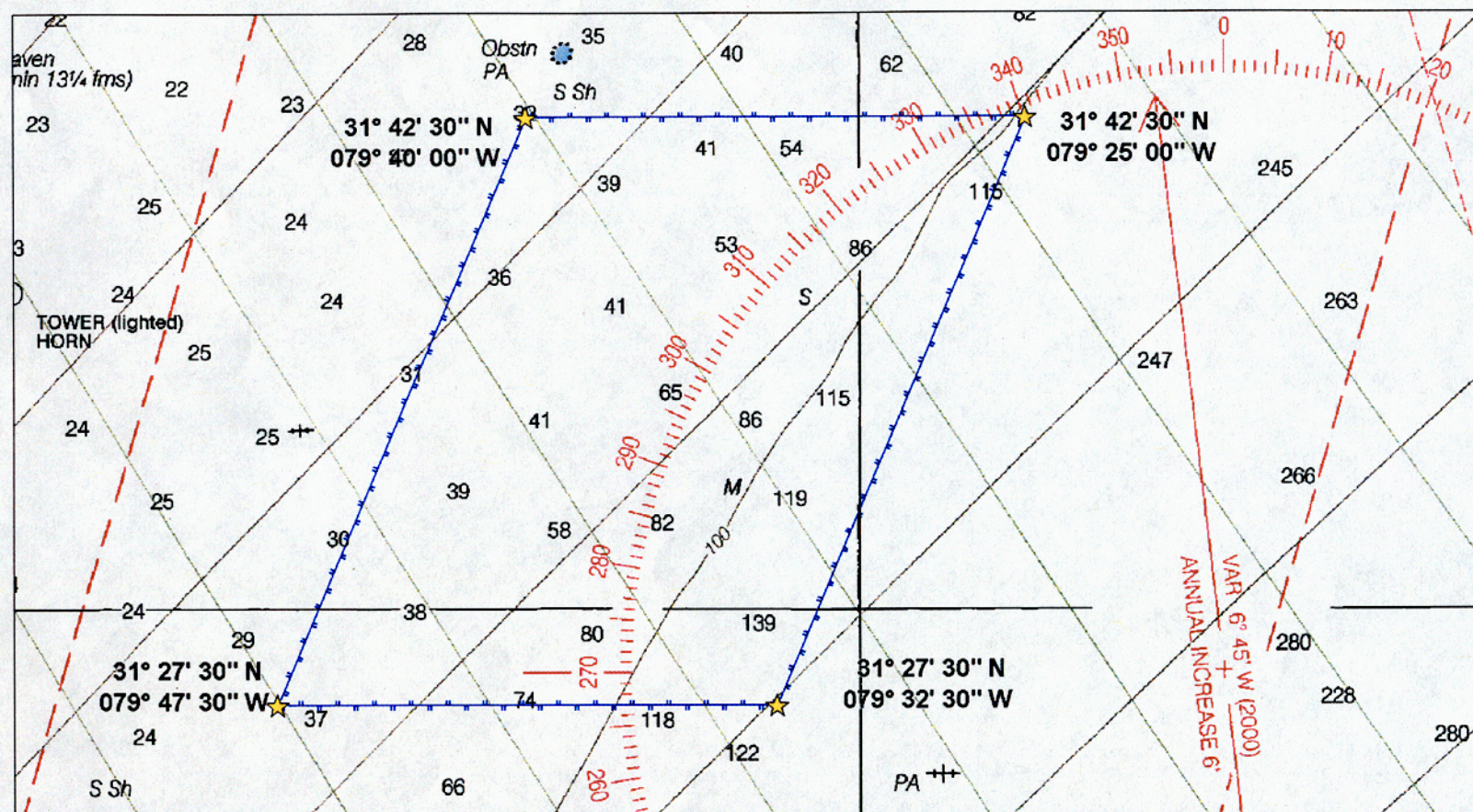
This Descriptive Report pertains to project S-G341-WH, which includes the survey area located 62 nautical miles east of Tybee Island on the Georgia coast. The following excerpt from the *Georgia Deepwater Snapper/Grouper Habitat Characterization* proposal describes the area and its selection as a survey area.

Only one area is being requested for consideration during FY2002. This area has been selected for investigation because of: 1) its proposed status as a Marine Protected Area (MPA) by NOAA's South Atlantic Fishery Management Council (SAFMC) and; 2) the biological resource proximity of the area to NOAA's Gray's Reef National Marine Sanctuary. The investigation of this area has been initiated under a NOAA Memorandum of Understanding between the South Atlantic Fishery Management Council, National Marine Fisheries Service and the National Ocean Service. The proposed area is being considered to protect deepwater snapper / grouper fish assemblages.

This area is of particular interest for biological / geological investigations. Physical aspects of the area are required to evaluate the significance of various substrates and benthic communities and their potential to serve as essential fish habitat to protect overfished species of deep-water snapper and grouper. The South Atlantic Fisheries Management Council will additionally use the information obtained from this survey for planning the boundaries of the proposed Marine Protected Area.

For complete survey limits, see the chartlet on the following page.





Chartlet 1 of 1

Chart 11480, 37th Edition, October 21st, 2000, Scale 1:449,659. Survey limits for S-G341-WH

This chartlet has been corrected through  
Notice to Mariners dated March 16, 2002  
NOT FOR NAVIGATION.



NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE

Project: S-G341-WH  
Survey: Gray's Reef NMS  
State: Georgia  
Locality: North Atlantic Ocean  
Sub-locality: Special Project Offshore  
Survey Scale: 1:40,000

Sounding Units: Fathoms  
Sounding Datum: MLLW  
Horizontal Datum: NAD 83  
Projection: UTM 17  
Central Meridian: 081° 00 00  
Scale Factor: 0.9996

NOAA Ship WHITING  
CDR Steven R. Barnum  
Commanding  
May 15 to  
May 22, 2001



## **B. DATA ACQUISITION AND PROCESSING** *See Also the Evaluation Report*

### **EQUIPMENT**

Data were acquired by NOAA Ship WHITING. WHITING acquired vertical beam echosounder (VBES)<sup>1</sup> and multibeam echosounder (MBES) data. An Odom Echotrac DF3200 MK II echosounder was used for VBES hydrography, and a Simrad EM 1002 multibeam system was used for MBES hydrography. Positioning was determined with a Trimble DSM212L integrated differential GPS receiver. Attitude data were acquired using a TSS DMS-05 attitude sensor.

No unusual vessel configurations or problems were encountered. Refer to the Data Acquisition and Processing Report (DAPR)\* for detailed equipment and vessel configuration information.

### **QUALITY CONTROL**

#### **Multibeam Echosounder Quality Control**

There were two faults with the MBES system which affected data integrity. Refer to this project's DAPR \* for detailed discussion of MBES system calibrations, data acquisition, and data processing.

One condition existed that was addressed prior to data acquisition. Fliers, or outliers, appeared in the outermost beams on the starboard side. The hydrographer believes these outliers were attributable to the Simrad acquisition software as subsequent software versions did not display this tendency. The transducer itself functioned properly, as evidenced by the absence of these outliers, when the swath angle was reduced from 75 to 72 degrees on the starboard side. The reduction in swath angle resulted in a narrower swath but full bottom coverage was still obtained with negligible other effects.

Sound velocity posed a problem. The Simrad EM 1002 uses SBE 45 MicroTSG (Thermosalinograph) sound velocity information for beam forming. The SBE 45 MicroTSG was outputting erroneous sound velocity values during the survey period. The problem was diagnosed as a firmware bug that required the instrument to be sent to Seabird Electronics for a firmware upgrade. Because of this fault, precise real-time sound velocity values at the transducer face were unavailable. This is a significant source of error because the Simrad EM 1002 uses the sound velocity at the transducer face for beam formation. To ameliorate the situation, sound velocity at transducer depth was manually entered from the most recent sound velocity cast, which resulted in a substantial increase in post-processing man-hours. While this was a considerable problem, the survey was completed within specifications largely due to the

*\* Data filed with original field records.*

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<sup>1</sup> WHITING VBES data were not processed when MBES data were acquired.



depth of the survey area. A similar situation could become a critical issue in shoaler water. See also the Corrections to Echo Sounding section.

### **Crosslines**

Due to time constraints, crosslines were not run for this survey.

### **Junctions**

No contemporary surveys were available for junction comparisons.

## **CORRECTIONS TO ECHO SOUNDING**

All methods and instruments used were as described in the project DAPR \*. A table detailing all sound velocity casts is located in Separate III. \* In addition to the standard processing of the multibeam data, sound velocity errors experienced during data acquisition were remedied using the refraction correction tool in CARIS NT. The refraction corrector is an empirical tool used to correct for refraction problems during data acquisition. Each line was examined and an appropriate refraction corrector was applied based on the apparent refraction along the entire line. This process improved the apparent refraction evident when comparing inner beams to outer beams. Actual depth correction arising from the use of the refraction corrector was generally less than 1 meter.

*\* Data filed with original digital data.*



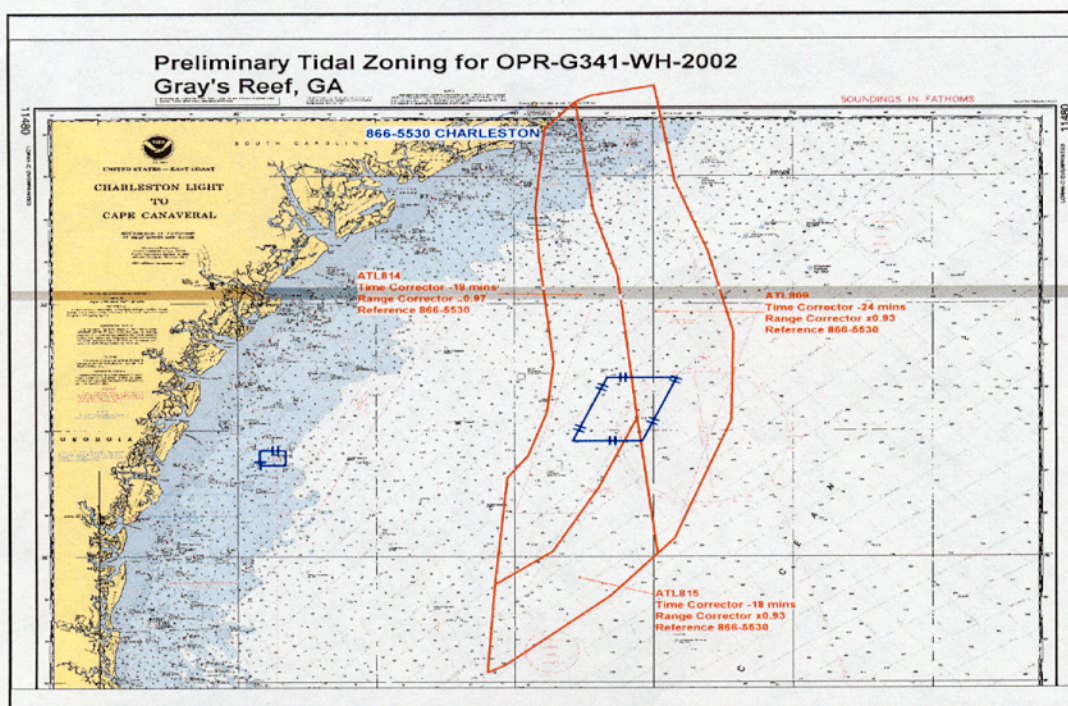
## C. VERTICAL AND HORIZONTAL CONTROL

### VERTICAL CONTROL

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating tide station at Charleston, SC (866-5530) served as control for datum determination. Preliminary unverified tides were applied to the sounding data. *Approved tides and zones were applied during office processing.*

The zones used for this survey are as follows:

STATION	CORRECTOR (min)	RATIO	REFERENCE
ATL815	-18	x0.93	866-5530
ATL814	-18	x0.97	866-5530
ATL809	-24	x0.93	866-5530





**HORIZONTAL CONTROL** *See also the Evaluation Report*

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 17.

Sounding positional control was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon stations. The primary and only DGPS beacon used for this survey was Charleston, SC. No horizontal control stations were established for this survey.

Horizontal dilution of precision (HDOP) was monitored daily. The value did not exceed 4.00, and adequate satellite coverage was maintained throughout the survey period.



## **D. RESULTS AND RECOMMENDATIONS**

### **CHART COMPARISON** *See also the Evaluation Report*

The chart affected by this survey:

11480, 37<sup>th</sup> edition, October 21, 2000, scale 1:449,659

#### **General Agreement with Charted soundings**

Sounding data agreed well with charted depths. This area ranges in depth from 35 to 120 fathoms. Differences between charted depths and survey soundings is generally 1 fathom or less. These findings are based on preliminary unverified tidal information.

#### **AWOIS Items and Significant Contacts**

There were no AWOIS items within the survey limits.

#### **Dangers to Navigation**

There were no Dangers to Navigation (Dton) in the survey area.

#### **Charted Features**

There are no wire drag items, or any other charted features, that need disproving on this survey.

#### **Charting Recommendations**

The hydrographer recommends charting survey soundings.

## **ADDITIONAL RESULTS**

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

There were no aids to navigation located within the survey area.

#### **Submarine Cables and Pipelines**

There were no submarine cables or pipelines positioned during this survey.



**E. APPROVAL SHEET**

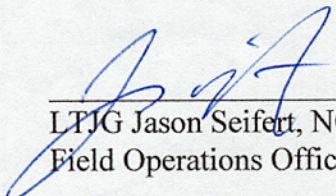
**S-G341-WH  
H11174  
Gray's Reef National Marine Sanctuary  
Georgia**

**Special Project Area: Offshore - Proposed Addition to Gray's Reef NMS**

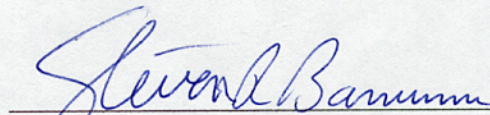
Field operations for this hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. This Descriptive Report and all accompanying records and data are approved.

Respectfully,

Submitted:

  
\_\_\_\_\_  
LTJG Jason Seifert, NOAA  
Field Operations Officer

Approved and Forwarded:

  
\_\_\_\_\_  
CDR Steven R. Barnum, NOAA  
Commanding Officer



**LETTER TRANSMITTING DATA**

**TO:**

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

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

☐ ORDINARY MAIL

☐ AIR MAIL

☐ REGISTERED MAIL

☒ EXPRESS

☐ GBL (Give number) \_\_\_\_\_

DATE FORWARDED

12/26/2002

NUMBER OF PACKAGES

1

**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.

H11174

Georgia, North Atlantic Ocean, Offshore Gray's Reef

**ONE TUBE CONTAINING THE FOLLOWING:**

- 1 (AHB) SMOOTH SHEET FOR SURVEY H11174
- 1 H-DRAWING FOR NOS CHART 11480
- 1 DTM PAPER PLOT OF H11174
- 1 DESCRIPTIVE REPORT FOR H11174
- 1 RECORD OF APPLICATION TO CHART FORM (NOAA FORM #75-96)

FROM: (Signature)

*Richard Blum*

**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



**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR H11174 (2002)**

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

**B. AUTOMATED DATA ACQUISITION AND PROCESSING**

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

Hydrographic Processing System  
MicroStation J, version 7.1  
I/RAS B, version 5.01  
NADCON, version 2.10  
MapInfo, version 6.5  
CARIS HIPS/SIPS 2000  
PYDRO, version 2.9.1

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

**JUNCTIONS**

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

**C. HORIZONTAL CONTROL**

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. 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 0.782 seconds (24.078 meters or 0.48 mm at the scale of the survey) north in latitude, and 0.773 seconds (20.371 meters or 0.41 mm at the scale of the survey) east in longitude.



D. COMPARISON WITH CHARTS 11480 (37<sup>th</sup> Edition, OCT. 21/00)

Hydrography

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

Except as noted above, the present survey is adequate to supersede the charted hydrography within the common area.

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 NOS Chart was used for compilation of the present survey:

11480 (37<sup>th</sup> Edition, OCT. 21/00)

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.

ADEQUACY OF SURVEY

This is an adequate hydrographic/multibeam survey. No additional field work is recommended.



H11174

Robert Snow

**Robert Snow**

Cartographic Technician  
Verification of Field Data  
Evaluation and Analysis



# APPROVAL SHEET

H11174

## 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 disproof 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.

Richard W. Blevins Date: DEC. 6, 2002  
Richard W. Blevins  
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 CDR/NOAA Date: 12/13/2002  
Emily B. Christman  
Commander, NOAA  
Chief, Atlantic Hydrographic Branch

\*\*\*\*\*

## Final Approval:

Approved: Samuel P. De Bow, Jr. Date: 2/21/03  
Samuel P. De Bow, Jr.  
Captain, NOAA  
Chief, Hydrographic Surveys Division

AW015/SURF 1/8/03 55V



FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. \_\_\_\_\_

**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.

[illegible]