

H11897

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE

**Vertical and Horizontal  
Control Report**

Type of Survey *Shallow Water Multibeam  
Hydrographic and Side Scan Sonar Survey*

Field No. *OPR-H328-OS-08-B*

Registry No. *H11897*

**Locality**

State *Florida*

General Locality *Atlantic Ocean*

Sub locality *East of Miami*

**2009**

CHIEF OF PARTY

*George G. Reynolds*

**Library & Archives**

Date.....

**HYDROGRAPHIC TITLE SHEET**

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 NO.  
OPR-H328-OS-08-B

State *Florida*

General Locality *Atlantic Ocean*

Locality *East of Miami*

Scale *N/A* Date of Survey *March 13, 2009 - July 5, 2009*

Instructions Dated *May 7, 2008* Project No. *OPR-H328-OS-08-B*

Vessel *R.V. Able II - Registration Number CT4788BB*

Chief of Party *George G. Reynolds*

Surveyed By *John G. Wetmur, Robert M, Wallace*

Soundings taken by (*Echo Sounder*) *Reson Seabat 8101*

Graphic Record Scaled by *N/A*

Graphic Record Checked by *N/A*

Protracted by *N/A* Automated Plot by *Angela M. Rizzo*

Verification by *Michael J. Engels*

Soundings in *Meters (MLLW)*

REMARKS: *All Times Recorded in UTC**Data Recorded and Presented relative to UTM Zone 17 North**Original SOW modified by Oct 28, 2008 e-mail from COTR Mark Lathrop. (Refer to Appendix IV of the Descriptive Report.)*

*Contractor: Ocean Surveys, Inc.  
91 Sheffield St.  
Old Saybrook, CT. 06475*

THE INFORMATION PRESENTED IN THIS REPORT AND THE ACCOMPANYING BASE SURFACE REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY OCEAN SURVEYS, INC. DURING THE PERIOD OF 13 MARCH 2009 TO 5 JULY 2009 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO OSI.

**TABLE OF CONTENTS**

	<u>Page</u>
A. VERTICAL CONTROL .....	1
A.1 Tide Station .....	1
A.2 Unusual Tide Conditions .....	1
B. HORIZONTAL CONTROL .....	2
B.1 Horizontal Datum .....	2
B.2 Horizontal Control .....	2
C. APPROVAL SHEET	

## A. VERTICAL CONTROL

### A.1 Tide Station

Tide/water levels for this project were provided exclusively by NOAA as verified data from NOAA Tide Station 872-3214, Virginia Key, FL. The survey site is located entirely within Zones FSE1, FSE6, SA227 and SA228 as indicated by preliminary tidal zoning data included in the project Statement of Work. Time and range corrections were applied to all Virginia Key (872-3214) verified data according to Table 1. Figure 1 depicts the survey area, tide zone delimiters and the location of the Virginia Key tide gauge.

**Table 1**  
**Tide Zones Associated with Survey H11897**

<b>Zone</b>	<b>Time Correction</b>	<b>Range Correction</b>
FSE1	-48 min	1.12
FSE6	-30 min	1.07
SA227	-54 min	1.22
SA228	-48 min	1.20

Coordinated Universal Time (UTC) was used to annotate the tide records and all other data obtained in this project.

Preliminary tide correctors were retrieved daily from the CO-OPS website. Verified tides were retrieved on a weekly basis once they were made available by CO-OPS. Tide data were applied to processed soundings employing the CARIS “apply tides” function. The “multiple station” function was used allowing for correction of the verified tide data for zoning factors.

Based on the results of the cross line analysis presented in Separate IV, it appears that the time and range factors for Zones FSE1, FSE6, SA227 and SA228, as provided in the preliminary zoning scheme, are adequate. Concur with clarification. Zones FSE1 and FSE6 were adjusted to include a small portion of the survey near the Government cut section of the channel. DR B.2.5

### A.2 Unusual Tide Conditions

OSI home office and field personnel monitored preliminary tide data available on the NOAA CO-OPS website. The NOAA Virginia Key (872-3214) gauge experienced an approximate one week data gap between May 21 (DN 141) at approximately 23:18 UTC and May 27 (DN 147) at approximately 20:18 UTC. According to email correspondence, the gap in water level data was the result of a lightning strike. Verified water level data for the data gap were made available on July 21 (DN 202).

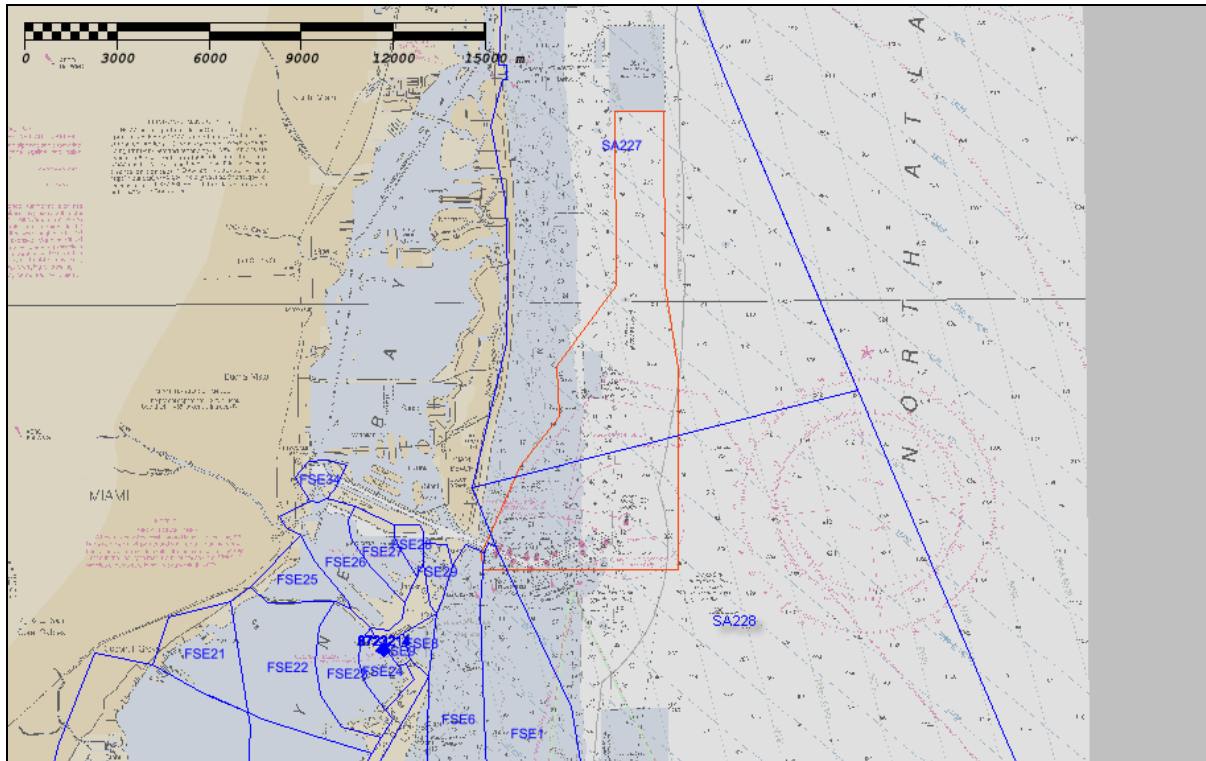


Figure 1. NOAA chart showing the Virginia Key tide station, tide zone scheme and approximate survey area.

## B. HORIZONTAL CONTROL

### B.1 Horizontal Datum

The horizontal datum for this project was the North American Datum of 1983 (NAD83). Horizontal coordinates are provided in Latitude/Longitude and Universal Transverse Mercator (UTM) Zone 17, in meters.

### B.2 Horizontal Control

All survey tasks were executed employing Differential GPS (DGPS) positioning. Miami USCG DGPS beacon correctors were input to the primary navigation system. Cape Canaveral USCG DGPS beacon correctors were input to the secondary (alarm) navigation system.

Prior to commencing survey operations, the OSI field team established a temporary XY navigation checkpoint (CG2-031309) adjacent to the survey vessel's berth at the U.S. Coast Guard Station, Miami, FL. "CG2-031309" was established by occupying the point with a GPS capable of recording dual-frequency GPS observables. Recorded data were submitted to the National Geodetic Survey's Online Users Positioning Service (OPUS). The OPUS-

reported position solution was assigned to the point and “CG2-031309” was then later used as the reference for daily navigation system accuracy verification.

The temporary XY point was established using  $\geq$  3-hour OPUS observations. The location established for this point is given in Table 2. The OPUS report follows Table 2.

**Table 2**  
**OPUS Solution**

<b>Reference ID</b>	<b>Easting UTM 17N, NAD83 (meters)</b>	<b>Northing UTM 17N, NAD83 (meters)</b>
CG1-031309	585574.34	2850707.45





NEAREST NGS PUBLISHED CONTROL POINT  
AC2251      V 238      N254619.      W0800852.      119.9

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

**C. APPROVAL SHEET****LETTER OF APPROVAL  
REGISTRY NO. H11897**

This report and the accompanying data are respectfully submitted.

Field operations contributing to the accomplishment of Survey H11897 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report and associated data have been closely reviewed and are considered complete and adequate as per the Statement of Work.



George G. Reynolds  
Ocean Surveys, Inc.  
Chief of Party – H11897  
October 5, 2009