

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

HORIZONTAL AND VERTICAL CONTROL REPORT

Type of Survey

Hydrographic

Project

OPR-J977-DE-08

Contract No

DG133C-05CQ-1078

Task Order No

T0005

Time Frame

April 2008 - January 2009

LOCALITY

State

Louisiana

General Locality

Gulf of Mexico

2009

CHIEF OF PARTY

Jonathan L. Dasler, David Evans and Associates, Inc.

LIBRARY & ARCHIVES

DATE _____

NOAA FORM 77-28
(11-72)

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

REGISTRY No

HYDROGRAPHIC TITLE SHEET

**H11833, H11834,
H11835, H11836**

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

David Evans and Associates, Inc.

State **Louisiana**

General Locality **Gulf of Mexico**

Sub-Locality **Southwest Pass to Blind Bay**

Scale **1:10,000** Date of Survey **April 15, 2008 to January 31, 2009**

Instructions dated **March 1, 2008** Project No. **OPR-I977-DE-08**

Vessel **R/V Chinook, R/V Taku**

Chief of party **Jonathan L. Dasler, PE (OR), PLS (OR,CA)**

Surveyed by **John Staly and Mike Hill**

Soundings by echo sounder, hand lead, pole **RESON 8101, Odom CV100, EdgeTech 4200-FS, EdgeTech 4200-HFL**

Graphic record scaled by **N/A**

Graphic record checked by **N/A** Automated Plot **N/A**

Verification by _____

Soundings in **Meters at MLLW**

REMARKS: **All times are UTC.**

The purpose of this contract is to detect and map debris for the Gulf of Mexico Marine Debris Project and provide NOAA with modern, accurate hydrographic survey data with which to update nautical charts of the assigned area.

SUBCONSULTANTS: **Zephyr Marine, P.O. Box 1575 Petersburg Ak, 99833**

John Oswald and Associates, 2000 E Dowling Road, Suite 10, Anchorage, AK 99507

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Acronyms and Abbreviations

CORS	Continuously Operating Reference Station
CO-OPS	Center for Operational Oceanographic Products and Services
COTR	Contracting Officer's Technical Representative
DGPS	Differential Global Positioning System
GPS	Global Positioning System
GOMMDP	Gulf of Mexico Marine Debris Project
kHz	kilo Hertz
MBES	Multibeam Echo Sounder
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD83	North American Datum of 1983
NGS	National Geodetic Survey
NOS	National Ocean Service
NWLON	National Water Level Observation Network
POS/MV	Position and Orientation System for Marine Vessels
OPUS	Online Positioning User Service
R/V	Research Vessel
SSS	Side Scan Sonar
USCG	United States Coast Guard
UTC	Coordinated Universal Time
UTM	Universal Transverse Mercator
VBES	Vertical Beam Echo Sounder

Horizontal and Vertical Control Report

OPR-J977-DE-08

Gulf of Mexico, Louisiana

April 2008 – January 2009

R/V Chinook, R/V Taku

David Evans and Associates, Inc.

Lead Hydrographers: Jonathan L. Dasler, Jason C. Creech

INTRODUCTION

This report applies to Gulf of Mexico Marine Debris Project (GOMMDP) surveys H11833, H11834, H11835 and H11836 located in the Mississippi River Delta, Louisiana. These contract surveys were performed under project OPR-J977-DE-08 as specified in the Statement of Work dated March 1, 2008. Survey methods meet or exceed requirements as defined in the National Ocean Service (NOS) *Hydrographic Surveys Specifications and Deliverables (April 2007)*. Project instruction requirements were met with 200% side scan sonar (SSS) coverage acquired in conjunction with vertical beam echo sounder (VBES) data.

A. VERTICAL CONTROL

The tidal datum for this project is chart datum, Mean Lower Low Water (MLLW) and Mean High Water (MHW). All soundings are referenced to MLLW. Heights of baring piles, wellheads, and beacons are referenced to MHW. All data (tidal, position, attitude, sonar, survey logs, etc.) were acquired in Coordinated Universal Time (UTC).

A1. Tide and Water Level Corrections

The operating National Water Level Observation Network (NWLON) station at Pilots Station East, Southwest Pass, LA (876-0922) served as datum control for the project. The *Tides and Water Levels* requirement provided to David Evans and Associates, Inc from NOAA is included in Appendix I.

With approval from the Contracting Officer's Technical Representative (COTR) and Center for Operational Oceanographic Products and Services (CO-OPS), verified water levels from Pilots Station East, Southwest Pass, LA were smoothed using a fifth order polynomial function with five-hour data spans in order to remove localized data spikes caused by shipping traffic passing the gauge site. Zoned water levels from Pilots Station East, Southwest Pass were applied to surveys H11833 and H11834.

MLLW was recomputed by CO-OPS for the Pilots Station East, Southwest Pass (876-0922) station in February 2009. OPR-J977-DE-08 was acquired, processed, and submitted with the datum that preceded February 2009 and was valid during survey operations. Comparison of water levels submitted with this project to currently available verified water levels, which are computed on the new datum, will show a 5.3 cm shift between the two water level files as a result of the adjustment made by CO-OPS in February 2009.

A subordinate water level station was installed at Devon Energy Facility, North Pass, LA (876-0417) by the field unit as a supplemental station to Pilots Station East, Southwest Pass, LA (876-0922). Zoned water levels from Devon Energy Facility, North Pass were applied to surveys H11835 and H11836.

A2. Subordinate Tide Stations

As specified in the OPR-J977-DE-08 *Statement of Work*, the tertiary station at Devon Energy Facility, North Pass, LA (876-0417) provided water level correctors for the project as well as information on tidal datums, zoning refinement and harmonic constituents for tide predictions.

The Devon Energy Facility, North Pass (876-0417) station is located at 29-12-02.70N, 89-02-04.08W and was operated from April 4, 2008 (DN 095) to August 26, 2008 under OPR-J977-DE-08 and continued until February 09, 2009 (DN 040) under another contract survey (S-J977-KR-TE-08) performed by TerraSond Ltd.

Table 1. Devon Energy Facility water level sensors

	Sensor	Serial Number	Data Logger	Radio	Antenna
Gauge # 1	Aquatrak 3000 in 4" stilling well	1654-3280	Sutron Xlite 8200 DCP	GOES	Yagi
Gauge # 2	Design Analysis H3611i	1581	H522+ DCP/SE	GOES	Yagi

Each gauge system was powered by a separate 12v battery with 20W solar panel for recharging. Separate Global Positioning System (GPS) modules provided time syncing for each gauge. At the time of establishment, a vitrified staff (3.0 m) was installed for water level observations and five bench marks were set.

The NOS brass discs bench marks established at the Devon Energy Facility Main Pass were set in concrete cat walk support beams of the main walkway near the water tank and tide station. Elevations were established and leveled based on the NOS publication *User's Guide for the Installation of Bench Marks and Leveling Requirements for Water Level Stations* (1987). The sensor leveling points were measured directly from the bench marks. A static GPS survey was used to determine the ellipsoidal height of the primary bench mark in accordance with CO-OPS *Users Guide for GPS Observations*. GPS observations were submitted to NGS for processing through the Online Positioning User Service (OPUS). The following is a summary table of the OPUS solution for the primary bench mark:

Table 2. Static GPS survey of primary bench mark

Station	Bench Mark	NAVD88 Elevation	NAD83 Geographic Coordinates	
			Latitude	Longitude
Devon Energy Facility	0417A 2008	3.026 m	29-12-3.36199 N	89-2-41.00718 W

The Aquatrak acoustic distance measurements at the Devon Energy Facility station were converted to water level heights by subtracting the measured distance from the sensor "0" station datum elevation. Outliers were then removed from the data set by smoothing with a five-hour fifth degree polynomial. Daily high and low readings were then picked from the data set and monthly means were computed. The monthly means from Devon Energy Facility were compared to the verified monthly means at Pilots Station East. From these comparisons, tidal datums were computed for Devon Energy Facility. A MLLW corrector file for Devon Energy Facility was created by applying the offset from station datum to MLLW to the smoothed Devon Energy station datum six minute water level file.

Tide zoning for Devon Energy Facility, North Pass, LA (876-0417) was created by modifying the preliminary CO-OPS zoning files tied to Pilots Station East, Southwest Pass, LA (876-0922). No changes were made to the preliminary zone boundaries except for snapping the vertices of several zones to remove small gaps and extending the boundaries of CGM243 and CMG244 (approximately 225 meters eastward) to cover the full extent of the survey area. The Devon Energy Facility zone file used the same boundaries as the modified Pilots Station East, Southwest Pass, LA, but the time and range correctors were back-zoned from Pilots Station East, Southwest Pass to transfer relative to Devon Energy Facility.

All OPR-J977-DE-08 depths were reduced to MLLW using water level files from the NWLON station at Pilots Station East, SW Pass, LA and the tertiary station at Devon Energy Facility, North Pass, LA. MLLW at Devon Energy Facility was computed using a four-month datum determination, which corresponds to the time that the gauge was deployed specifically for OPR-J977-DE-08 (April 2008 - August 2008). The subordinate water level station at the Devon Energy Facility, North Pass continued to operate after the completion of this survey and provided water levels for another contract survey (S-J977-KR-TE-08) performed by TerraSond Ltd. with a nine month datum determination. Comparison of water levels submitted with this project to those used on S-J977-KR-TE-08, which are computed on the new datum, will show a shift between the two water level files as a result of the nine month datum determination and the revised datum at Pilots Station East, SW Pass, LA. This difference was discussed with the Office of Coast Survey, Chief of Hydrographic Surveys, and a determination was made to hold datums valid for the duration of this survey.

It is difficult to associate a precise vertical error due to tides. Errors observed are a composite from various sources such as measurement error, tides, heave, refraction, transducer draft, and settlement and squat. Small vertical offsets may be observed in the data; however there are no areas that exceed the maximum allowable error of 20 cm to 45 cm for water levels.

Detailed information pertaining to bench mark descriptions, opening and closing levels runs, staff-to-gauge observations, and datum determination are included in the station reports submitted to CO-OPS by David Evans and Associates, Inc.

B. HORIZONTAL CONTROL

No permanent control stations were established during this survey period.

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Position data consist of both geographic coordinates and projected coordinates. Projected coordinates are in meters using the Universal Transverse Mercator (UTM) Zone 16 projection. All horizontal positioning for soundings followed the OPR-J977-DE-08 *Statement of Work (March 2008)* and the NOS *Hydrographic Surveys Specifications and Deliverables (April 2007)*.

B1. Differential Corrections

The Research Vessels (*R/V Taku* and *Chinook*) used Differential Global Positioning Systems (DGPS) for navigation and acquired differential corrections from the U.S. Coast Guard (USCG) Maritime DGPS Service. The beacon at English Turn, Louisiana (broadcast site ID 814 at 293 kilo Hertz [kHz]) was used for the entire survey.

B2. Positioning System Confidence Checks

The primary positioning system aboard the *R/V Taku* was an Applanix POS/MV320 version 4, (Serial Number 22024). A secondary positioning system consisting of a Trimble DSM132 DGPS receiver (Serial Number 220014495) was used during the survey to provide real-time quality control aboard the *R/V Taku*. The primary positioning system aboard the *R/V Chinook* was a Trimble SPS750 MAX DGPS receiver (Serial Number 4706K04156) with a Trimble DSM132 DGPS receiver (Serial Number 224093932) used for secondary positions. All receivers used DGPS corrections from English Turn, Louisiana.

A weekly comparison between positions from the primary and the secondary positioning system of each research vessel was documented while the vessel was stationary in port. After accounting for antenna offsets the greatest computed difference between the two positions was 0.81 meters for the *R/V Taku* and 0.49 meters for the *R/V Chinook*, which are well within the National Ocean Service (NOS) specification of hydrographic positioning.

C. LETTER OF APPROVAL



LETTER OF APPROVAL

OPR-J977-DE-08
Horizontal and Vertical Control Report

This report and the accompanying data are respectfully submitted. Field operations contributing to the accomplishment of OPR-J977-DE-08 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 OPR-J977-DE-08 *Statement of Work* (March 1, 2008).

Jonathan L. Dasler, PE (OR), PLS (OR,CA)
Lead Hydrographer

Jason Creech
Lead Hydrographer

David Evans and Associates, Inc.
January 2009

APPENDIX I
TIDES AND WATER LEVELS REQUIREMENT

STATEMENT OF WORK

OPR-JN77-DE-08 Louisiana, Gulf of Mexico

March 1, 2008

1.0. TIDES AND WATER LEVELS

1.1. Specifications

Tidal data acquisition, data processing, tidal datum computation and final tidal zoning shall be performed utilizing sound engineering and oceanographic practices as specified in National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables (April 2007).

1.2. Vertical Datums

The tidal datums for this project are Chart Datum, Mean Lower Low Water (MLLW) and Mean High Water (MHW). Soundings are referenced to MLLW and heights of overhead obstructions (bridges and cables) are referenced to MHW.

1.2.1. The operating National Water Level Observation Network (NWLON) station at Pilot Station East, LA (8760922) will serve as datum control for the survey area as well as control for datum determination at each subordinate station. Therefore, it is critical that this station remain in operation during all periods of hydrography.

The contractor and the Center for Operational Oceanographic Products and Services (CO-OPS) are jointly responsible for ensuring that valid water level data are collected during periods of hydrography. The contractor is required to monitor the pertinent water level data via the CO-OPS Web site at <http://tidesandcurrents.noaa.gov/hydro.shtml> or through regular communications with the COTR or the COTR's CO-OPS authorized representative (Thomas Landon at 301-713-2897 x191 or via e-mail: Thomas.Landon@noaa.gov) before and during operations. The COTR or the COTR's CO-OPS authorized representative (Thomas Landon) will serve as liaison between the contractor and NOS/CO-OPS (CO-OPS) to confirm operation of this station and to ensure the acquisition of valid water level data during periods of hydrography. Problems or concerns regarding the acquisition of valid water level data identified by the contractor shall be communicated with the COTR or the COTR's CO-OPS authorized representative (Thomas Landon) to coordinate the appropriate course of action to be taken such as gauge repair and/or developing contingency plans for hydrographic survey operations.

1.3. Tide Reducer Stations

1.3.1. For this project, it will be necessary to install and continuously operate a water level measurement system (tide gauge) at a subordinate station location. This station will provide information on tidal datums, water level reducers, refinement of final zoning and harmonic constituents for predictions. The station listed in Section 1.2.1. will provide control for datum computation at subordinate station by using the NOS method of comparison of simultaneous observations.

A 30-day minimum of continuous data acquisition is required. For the subordinate station, data must be collected throughout the entire survey period in specified areas for which it is applicable, from 4 hours

before to 4 hours after the period of hydrography and not less than 30 continuous days. This is necessary to facilitate the computation of an accurate datum reference as per NOS standards. Additionally, supplemental and/or back-up stations may also be necessary based upon the complexity of the hydrodynamics and/or the severity of environmental conditions of the project area. The installation of additional stations is left to the discretion of the contractor, subject to the approval of the COTR.

The following subordinate stations are required:

<u>Station Number</u>	<u>Station Name</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
8760417**	Devon Energy Facility, North Pass, LA	29 12.04' N	089 02.70' W

** This station is required by S-J977-KR-TE-08 Plaquemines East, and S-J977 KR-DE-08 Plaquemines Southeast. This station will be installed and maintained under the OPR-J977-KR-DE-08 Plaquemines Southeast Statement of Work.

1.3.1.1. In the event that water level stations with Geostationary Operational Environmental Satellite (GOES) capability are utilized, information about the station is needed at CO-OPS/RDD so that the station can be configured in CO-OPS' Data Management System (DMS) before GOES data transmission is started. A minimum of two weeks prior to initiating data transmission, please contact the COTR's CO-OPS authorized representative (Thomas Landon) at 301-713-2897 ext. 191 or FAX 301-713-4465 to provide the station number, platform ID, transmit time and channel. In addition, FAX a copy of the site report before beginning transmission.

GOES data transmissions must use a message format identical to the format currently implemented in NOS' Next Generation Water Level Measurement System (NGWLMS). Refer to Section 1.1. for information on the NGWLMS data format. The document, **NGWLMS GOES MESSAGE FORMATTING**, found under the Publications option of the CO-OPS web site at <http://tidesandcurrents.noaa.gov/> will give an explanation of the NGWLMS GOES message format.

The following preliminary satellite antenna pointing angles are provided for the stations in Sections 1.3.1. to facilitate GOES satellite transmission. Complete GOES information will be provided after the station location is finalized and reported to CO-OPS/RDD . If a suitable site for transmitting via satellite cannot be found within the required area, then a station should be established within the area and the data downloaded onto diskette/CD and forwarded to CO-OPS/RDD. As a backup for all stations, data must be forwarded to CO-OPS/RDD on diskette.

<u>STATION</u>	<u>GOES East & Central</u>
8760417	ELEV. 55.9° AZIMUTH (T) 181.9o

1.3.2 Water Level Records: Submit water level data, such as leveling records, field reports, and any other relevant data/reports, including the data downloaded onto diskette/CD within 1 week after the end of each month or the end of hydrography to CO-OPS/RDD. Refer to Section 1.1.

1.3.2.1. Water level records should be forwarded to the following address:

NOAA/National Ocean Service/CO-OPS
 Chief, Requirements and Development Division
 N/OPS1 - SSMC4, Station 6531
 1305 East-West Highway
 Silver Spring, MD 20910

1.3.3. Recover all historical bench marks at each required subordinate water level station. If any bench marks are destroyed or not found, install new bench marks to replace them. In the event of a new station with no historical marks, installation of a minimum of five bench marks will be required. Third-order levels from the tide staff or sensor to a minimum of five bench marks (including the primary bench mark) are required at the beginning and end of the survey period. See Section 1.1. for clarification of requirements.

1.3.3.1. Hand held GPS latitude and longitude positions on all historical subordinate water level station bench marks are required. In addition, one of the subordinate water level station bench marks shall be selected for high accuracy static differential GPS observations to obtain ties between the tidal datums and GPS derived datums. Refer to Section 1.1 for further details on the GPS positioning requirements.

1.3.4. Operate the water level stations listed in Section 1.3.1. of this Statement of Work for the following hydrographic area(s) or zone(s):

<u>Station Number</u>	<u>Hydrographic Area(s) or Zone(s)</u>
8760417	Zones CGM243, CGM244, CGM245, CGM246, CGM247, CGM248, CGM249, CGM250, CGM250A, CGM252A, CGM680, CGM681, CGM681A, CGM681B & CGM699A

1.4. Zoning

1.4.1. The water level station at Pilot Station East, LA (8760922) is the reference station for predicted tides for hydrography in the area of Plaquemines Southeast, LA. The time and height correctors listed below for applicable zones should be applied to the predicted tides at the station indicated during the acquisition and preliminary processing phases of this project. Predictions may be retrieved in one month increments over the Internet from the CO-OPS Home Page at <http://tidesandcurrents.noaa.gov/olddata> and then clicking on “Predicted Water Level”. The contractor must notify the COTR or the COTR's authorized representative immediately of any problems concerning the predicted tides. Predictions are six-minute time series data relative to MLLW in metric units on Greenwich Mean Time. For the time corrections, a negative (-) time correction indicates that the time of tide in that zone is earlier than (before) the predicted tides at the reference station. A positive (+) time correction indicates that the time of tide in that zone is later than (after) the predicted tides at the reference station. For height corrections, the water level heights **relative to MLLW** at the reference station are multiplied by the range ratio to estimate the water level heights relative to MLLW in the applicable zone.

<u>Zone</u>	<u>Time Corrector(mins)</u>	<u>Range Ratio</u>	<u>Predicted Reference Station</u>
CGM243	+18	x0.98	8760922
CGM244	+24	x0.98	8760922
CGM245	+30	x0.98	8760922

CGM246	+36	x0.98	8760922
CGM247	+42	x0.98	8760922
CGM248	+48	x0.98	8760922
CGM249	+54	x0.98	8760922
CMG250A	+48	x0.85	8760922
CGM250	+54	x0.98	8760922
CGM252A	+60	x0.85	8760922
CGM376	0	x1.06	8760922
CGM680	+6	x0.98	8760922
CGM681A	0	x0.98	8760922
CGM681B	0	x0.85	8760922
CGM681	-6	x1.02	8760922
CGM697	0	x1.02	8760922
CGM698A	-6	x1.06	8760922
CGM698	-6	x1.02	8760922
CGM699A	-6	x1.02	8760922
CGM701	-6	x1.10	8760922

1.4.2. Polygon nodes and water level corrections referencing Pilot Station East, LA (8760922) are provided in ASCII format denoted by a *.mix extension file name. Polygon nodes are also provided as a WordPerfect attachment. Zoning diagrams, created in MapInfo[®], are provided in both digital and hard copy format to assist with the zoning. Longitude and latitude coordinates are in decimal degrees. Negative (-) longitude is a MapInfo[®] representation of West longitude.

“Preliminary” data for the control water level station, Pilot Station East, LA (8760922), are available in near real-time and verified data will be available on a weekly basis for the previous week. These water level data may be obtained from the CO-OPS web site at <http://tidesandcurrents.noaa.gov/olddata>. From this site, click on either “Preliminary Water Level” or “Verified Water Level” to obtain preliminary or verified/historical water level data as appropriate.

Please contact the **Office of Coast Survey COTR before** survey operations begin and **once survey operations are completed** so that the appropriate CO-OPS NWLON (National Water Level Observation Network) water level stations are added to or removed from the CO-OPS Hydro Hotlist (<http://tidesandcurrents.noaa.gov/hydro>). Contractor installed secondary gauges for OCS contract survey projects are not monitored through the CO-OPS Hydro Hotlist.

Final Zoning

1.5.1. For final processing, apply tidal zoning correctors to “verified” observed data of the NOS control station and/or the final processed data of the subordinate stations. The final zoning scheme in MapInfo[®] or ArcView[®] digital format and all data utilized in its development shall be documented and submitted to CO-OPS at the address referenced in section 1.3.2.1. Refer to Section 1.1. for details.

APPENDIX II
CORRESPONDENCE

Jason Creech

From: Jason Creech
Sent: Monday, July 21, 2008 1:06 PM
To: 'Manoj.Samant@noaa.gov'
Cc: Jon Dasler; 'thomas.landon@noaa.gov'; Crescent Moegling
Subject: OPR-J977-DE-08 Proposed Zoning
Attachments: OPR-J977-DE-08_proposed_zoning.pdf; Devon zoning-8760417.zip; SW Pass zoning-8760922.zip

Manoj

I've attached the Pilot Station East, SW Pass, LA (8760922) and Devon Energy Facility (8760417) zoning files in shapefile format that we propose to use for survey OPR-J977-DE-08. Each polygon has fields for an average time and range correction. I've also attached a graphic of our survey areas color coded by the primary gauge we propose to use for each of the four survey areas. This essentially follows the same format that we provided for our 2007 Chesapeake Bay Project.

We made a few minor modifications to the preliminary Pilot Station East, SW Pass, LA file that was submitted to us before the project started by moving the vertices of several zones so that adjacent zones have vertices that match exactly to remove some very small slivers from the file and by extending the boundaries of CGM243 and CMG244 (approximately 225 meters eastward) so the zones fully encompass our survey area. The Devon Energy Facility zone file uses the same boundaries as the modified Pilot Station East, SW Pass, LA, but the time and range correctors have been back zoned from Pilot Station East, SW Pass to transfer relative to Devon Energy Facility. The Devon gauge does not fall within a zone polygon so we made the assumption that it should be back applied from zone CGM 247 which junctions with the entrance to North Pass.

As you can see in the graphic, zones CGM698A and CGM681 are used relative to Pilot Station East, SW Pass, LA for H11834 and relative to Devon Energy Facility for H11835. We kept the original zoning boundaries rather than subdivide these zones with breaks at the sheet limits.

Please let me know if you have any questions or require any additional information.

Thanks,
Jason

Jason Creech
Lead Hydrographer
David Evans and Associates, Inc.
(804) 516-7829

Jason Creech

From: Crescent Moegling [Crescent.Moegling@noaa.gov]
Sent: Friday, June 27, 2008 1:41 PM
To: Jon Dasler; Jason Creech
Subject: [Fwd: Smoothing data for Contract Hydro S-J977-KR-DEA-2008 Plaquemines Southeast, LA]

FYI...

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

Subject: Smoothing data for Contract Hydro S-J977-KR-DEA-2008 Plaquemines Southeast, LA**Date:** Fri, 27 Jun 2008 13:46:47 -0400**From:** Gerald Hovis <Gerald.Hovis@noaa.gov>**Organization:** National Ocean Service**To:** Crescent Moegling <Crescent.Moegling@noaa.gov>**CC:** _NOS.CO-OPS.HTP <NOS.COOPS.HPT@noaa.gov>, Peter Stone
<Peter.Stone@noaa.gov>, Manoj Samant <Manoj.Samant@noaa.gov>, Stephen Gill
<Stephen.Gill@noaa.gov>

Crescent,

As per our phone discussion I spoke with Peter Stone so feel free to forward this to DEA for their records.

Observations collected at CO-OPS water level stations undergo a series of mechanical, mathematical, and analytical filters before being disseminated for use by the public. CO-OPS has evaluated the data being collected at Pilot Station East, LA (8760922) and determined that the "splashy" nature of the data is an accurate representation of the location. It is not the policy of CO-OPS to "smooth" data beyond the removal of obviously erroneous observations. However, CO-OPS also understands that the "splashy" observations at this location may be a result of ship traffic in the narrow channel where the station is located and may not accurately represent the conditions of several offshore zones in which DEA is collecting data. Under these circumstances CO-OPS supports the smoothing of data by contractor DEA for the sole purpose of survey S-J977-KR-DEA-2008 Plaquemines Southeast, LA. CO-OPS does request that DEA provide detailed documentation of the smoothing process to OCS and / or CO-OPS for NOAA records. The verified data collected, stored and disseminated by CO-OPS will not be altered.

Jerry

--

Jerry Hovis
Tidal Datums & Hydrographic Support Team
Center for Operational Oceanographic Products & Services
Products and Services Division
National Ocean Service
National Oceanographic Atmospheric Administration
<http://www.tidesandcurrents.noaa.gov/>

10/15/2008

gerald.hovis@noaa.gov

SSMC4, Sta. 7200

1305 East-West Highway

Silver Spring, MD 20910 USA

Work: (301) 713-2890 x109

cell: (240)-997-2651

Fax: (301) 713-4437

--

Crescent Moegling

NOAA Hydrographic Surveys Division

Branch Chief - Data Acquisition Control

301.713.2700 x111

Jason Creech

From: Jeffrey Ferguson [Jeffrey.Ferguson@noaa.gov]
Sent: Wednesday, March 18, 2009 12:41 PM
To: Jon Dasler
Cc: Jason Creech
Subject: Re: FW: [Fwd: [Fwd: Approval of DEA submitted Devon data]]
Attachments: Jeffrey_Ferguson.vcf

Approved.

Jon Dasler wrote:

Jeff,

Do we have your approval to hold the shorter series datum at Devon? John Oswald claims it is less than 1cm difference and all of our data is currently reduced to this datum.

Jon

Jon Dasler, P.E., P.L.S.
Vice President, Director of Marine Services

David Evans and Associates, Inc. | Marine Services Division
2801 SE Columbia Way, Ste. 130 | Vancouver, WA 98661
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Please consider the environment before printing this email.

From: Manoj Samant [<mailto:Manoj.Samant@noaa.gov>]
Sent: Wednesday, March 18, 2009 12:27 PM
To: Jeffrey Ferguson; Jon Dasler
Subject: [Fwd: [Fwd: Approval of DEA submitted Devon data]]

Hi Jon:

The approval has to come from OCS and on behalf of CO-OPS I can recommend what you are requesting.

Hi Jeff:

Jon Dassler of DEA has brought to CO-OPS' attention that DEA has submitted required deliverables to OCS based upon the verified data available for the control station at 8760922 Pilot Station east, S. W. Pass, LA. When the data was collected at a subordinate station installed by DEA between the time frame 7/1/2007 and 10/10/2007, the accepted MLLW above the station datum at the control station was 9.124 m based upon a shorter series. CO-OPS updated the datums based upon the longer series from September 2004 to August 2008 on February 9, 2009 for the NWLON control station at 8760922 Pilot Station and the new accepted MLLW is now 9.177 m above the station datum.

Since DEA has processed the data for the subordinate station based upon the verified data for the NWLON control station available from CO-OPS' website prior to February 9, 2009, CO-OPS recommends approval of Jon's request as listed below. DEA has already submitted the deliverables to OCS based upon the CO-OPS' verified data prior to February 9, 2009, and hence DEA does not have to re-process the data because CO-OPS updated the datums after February 9, 2009. Please inform DEA OCS decision. Thanks.

Manoj

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

Subject: Approval of DEA submitted Devon data

Date: Thu, 12 Mar 2009 14:59:06 -0700

From: Jon Dasler <Jld@deainc.com>

To: Manoj Samant <Manoj.Samant@noaa.gov>

CC: Jason Creech <Jasc@deainc.com>

Manoj

Based on our discussion today, can you approve the Devon site based on the datums in 08 (prior to the CO-OPS Feb adjustment)? I spoke with Erik and he thought the long term observation that ran through the Terra project was less than a cm difference. I know this was discussed at the start of our Task Order that we would close our observations at the end of our work but the station would keep running through TerraSond's work. We were to use the closing of our work for datum computations to move our deliverables forward. Do you need anything further from us to approve this portion of the Devon observations?

Jon

Jon Dasler, P.E., P.L.S.
Vice President, Director of Marine Services

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

Subject:Re: Pilots Station East, SW Pass (8760922) Inquiry
Date:Mon, 09 Mar 2009 18:27:17 -0400
From:Manoj Samant <Manoj.Samant@noaa.gov>
To:Jason Creech <Jasc@deainc.com>
CC:Jon Dasler <Jld@deainc.com>
References:<9504046871A48E4583F558EB6ECA9023052FBDFD@crpex1.deainc.com>

Hi Jason:

I know where the 5 cm difference is coming from. When the data was collected between the time frame 7/1/2007 and 10/10/2007 the accepted MLLW above the station datum was 9.124 m based upon a shorter series. CO-OPS updated the datums based upon the longer series from September 2004 to August 2008 and the new accepted MLLW is now 9.177 m above the station datum. Hence, you are seeing the 5 cm difference, now for the 2007 data when put on the MLLW.

Unless you have submitted the data to OCS, I recommend that you use the new accepted MLLW value 9.177 m i.e. use the 5.3 cm adjustment that is correct because of the datum recomputation and submit the required products to OCS based upon this new updated datum. At least we have solved the mystery now. Please let me know if you need any additional information.

Manoj

Jason Creech wrote:

Manoj

I've attached the verified file that we compiled from Verified data back in the fall of 2007.

We see a consistent 5.3 cm shift between this file and data that is currently available for download (our file has WL greater than the website). We also see the same relationship between our

preliminary file and the preliminary data that is currently available for download.

In addition when data are missing from the CO-OPS preliminary download and filled in the CO-OPS verified download this also occurs in the files that were downloaded in fall 2007 at the exact same records. It appears that there has just been a 5.3 cm adjustment applied to 8760922 since data were originally downloaded in 2007.

Let me know if you need anything else.

Thanks,

Jason

Feedback regarding water level data for 8760417_eml_021009.txt
From: Manoj Samant [mailto:Manoj.Samant@noaa.gov]
Sent: Tuesday, February 10, 2009 12:10 PM
To: Jon Dasler; Crescent Moegling
Subject: Feedback regarding water level data for 8760417 Devon Energy Facility, LA,
for OPR-J977 project

Hi Crescent and Jon:

CO-OPS has reviewed the submitted opening and closing packages and CO-OPS has accepted the opening and closing levels and all other station, DCP, sensor, bench mark information.

We have discovered that the data w1, w2, w3, w5, and w7 submitted does not meet the OCS specs and deliverables. Please have JOA reformat the data as requested in the OCS Specs, and resubmit the corrected data to CO-OPS. Please note that trailing blank spaces need to be removed for the w2, w3, w5 data. The 6 minute water level data submitted as A1 data needs to be relisted as Z1 data and not A1 data because it needs to be submitted in XXX.BWL format, so please adjust the data accordingly. According to the Readme file submitted with the digital data, the data has been put on the station datum by subtracting the raw data (distance measured down to water) from 15.721 m, so please submit the data in XXX.BWL format.

Should you need any additional information regarding resolving these issues, please contact me. Thanks.

Manoj

From: Crescent Moegling [Crescent.Moegling@noaa.gov]
Sent: Friday, June 27, 2008 1:41 PM
To: Jon Dasler; Jason Creech
Subject: [Fwd: Smoothing data for Contract Hydro S-J977-KR-DEA-2008 Plaquemines Southeast, LA]
 FYL...

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

Subject: Smoothing data for Contract Hydro S-J977-KR-DEA-2008 Plaquemines Southeast, LA
Date: Fri, 27 Jun 2008 13:46:47 -0400
From: Gerald Hovis <Gerald.Hovis@noaa.gov>
Organization: National Ocean Service
To: Crescent Moegling <Crescent.Moegling@noaa.gov>
CC: _NOS.CO-OPS.HTP <NOS.COOPS.HPT@noaa.gov>, Peter Stone
 <Peter.Stone@noaa.gov>, Manoj Samant <Manoj.Samant@noaa.gov>, Stephen Gill
 <Stephen.Gill@noaa.gov>

Crescent,

As per our phone discussion I spoke with Peter Stone so feel free to forward this to DEA for their records.

Observations collected at CO-OPS water level stations undergo a series of mechanical, mathematical, and analytical filters before being disseminated for use by the public. CO-OPS has evaluated the data being collected at Pilot Station East, LA (8760922) and determined that the "splashy" nature of the data is an accurate representation of the location. It is not the policy of CO-OPS to "smooth" data beyond the removal of obviously erroneous observations. However, CO-OPS also understands that the "splashy" observations at this location may be a result of ship traffic in the narrow channel where the station is located and may not accurately represent the conditions of several offshore zones in which DEA is collecting data. Under these circumstances CO-OPS supports the smoothing of data by contractor DEA for the sole purpose of survey S-J977-KR-DEA-2008 Plaquemines Southeast, LA. CO-OPS does request that DEA provide detailed documentation of the smoothing process to OCS and / or CO-OPS for NOAA records. The verified data collected, stored and disseminated by CO-OPS will not be altered.

Jerry

--

Jerry Hovis
 Tidal Datums & Hydrographic Support Team
 Center for Operational Oceanographic Products & Services
 Products and Services Division
 National Ocean Service
 National Oceanographic Atmospheric Administration
<http://www.tidesandcurrents.noaa.gov/>

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cell: (240)-997-2651
Fax: (301) 713-4437

--
Crescent Moegling
NOAA Hydrographic Surveys Division
Branch Chief - Data Acquisition Control
301.713.2700 x111

From: Jon Dasler
Sent: Thursday, September 18, 2008 2:21 PM
To: Mike Zieserl; Jason Creech
Cc: Shyla Allen
Subject: FW: OPR-J977-DE-08 Propsed Zoning

Attachments: OPR-J977-DE-08_proposed_zoning.pdf; Devon zoning-8760417.zip; SW Pass zoning-8760922.zip
[Here you go.](#)

Jon L. Dasler, P.E., P.L.S.
Vice President, Director of Marine Services
David Evans and Associates, Inc.
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Vancouver, WA 98661
Main: (360) 314-3200 FAX (360) 314-3250
Direct: (360) 314-3202 Mobile: (503) 799-0168
e-mail: jld@deainc.com

From: Jason Creech
Sent: Monday, July 21, 2008 1:06 PM
To: 'Manoj.Samant@noaa.gov'
Cc: Jon Dasler; 'thomas.landon@noaa.gov'; Crescent Moegling
Subject: OPR-J977-DE-08 Propsed Zoning

Manoj

I've attached the Pilot Station East, SW Pass, LA (8760922) and Devon Energy Facility (8760417) zoning files in shapefile format that we propose to use for survey OPR-J977-DE-08. Each polygon has fields for an average time and range correction. I've also attached a graphic of our survey areas color coded by the primary gauge we propose to use for each of the four survey areas. This essentially follows the same format that we provided for our 2007 Chesapeake Bay Project.

We made a few minor modifications to the preliminary Pilot Station East, SW Pass, LA file that was submitted to us before the project started by moving the vertices of several zones so that adjacent zones have vertices that match exactly to remove some very small slivers from the file and by extending the boundaries of CGM243 and CMG244 (approximately 225 meters eastward) so the zones fully encompass our survey area. The Devon Energy Facility zone file uses the same boundaries as the modified Pilot Station East, SW Pass, LA, but the time and range correctors have been back zoned from Pilot Station East, SW Pass to transfer relative to Devon Energy Facility. The Devon gauge does not fall within a zone polygon so we made the assumption that it should be back applied from zone CGM 247 which junctions with the entrance to North Pass.

As you can see in the graphic, zones CGM698A and CGM681 are used relative to Pilot Station East, SW Pass, LA for H11834 and relative to Devon Energy Facility for H11835. We kept the original zoning boundaries rather than subdivide these zones with breaks at the sheet limits.

Please let me know if you have any questions or require any additional information.

Thanks,
Jason

Jason Creech
Lead Hydrographer
David Evans and Associates, Inc.
(804) 516-7829

Jason Creech

From: Jon Dasler
Sent: Tuesday, February 10, 2009 3:40 PM
To: 'Manoj Samant'
Cc: Jennifer Mendiola; Jason Creech; Crescent Moegling
Subject: FW: FW: Feedback regarding water level data for 8760417 Devon Energy Facility, LA, for OPR-J977 project
Attachments: 8760417 Devon Energy CLOSING.zip; 8760417 Transmittal Letter 20090210.pdf

Manoj,

Thanks for calling me today. Attached are the revised files for Devon from JOA. Please let us know at your earliest opportunity if we can apply this data to our last two surveys.

Jon

Jon Dasler, P.E., P.L.S. Vice President, Director of Marine Services

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From: Mike Zieserl [mailto:mike@joasurveys.com]
Sent: Tuesday, February 10, 2009 3:27 PM
To: Jon Dasler
Cc: John Oswald; Jason Creech
Subject: Re: FW: Feedback regarding water level data for 8760417 Devon Energy Facility, LA, for OPR-J977 project

Jon,

Attached corrected Devon Energy digital data files in zip file.

3/19/2009

Mike Zieserl
John Oswald & Associates, LLC
2000 E. Dowling Rd., Suite 10
Anchorage, AK 99507
(907) 561-0136 office
(907) 230-5789 cell
mike@joasurveys.com

Jon Dasler wrote:

Erik,

Can you take care of this?

Jon Dasler, P.E., P.L.S.
Vice President, Director of Marine Services

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

From: Manoj Samant [<mailto:Manoj.Samant@noaa.gov>]
Sent: Tuesday, February 10, 2009 12:10 PM
To: Jon Dasler; Crescent Moegling
Subject: Feedback regarding water level data for 8760417 Devon Energy Facility, LA, for OPR-J977 project

Hi Crescent and Jon:

CO-OPS has reviewed the submitted opening and closing packages and CO-OPS has accepted the opening and closing levels and all other station, DCP, sensor, bench mark information.

We have discovered that the data w1, w2, w3, w5, and w7 submitted does not meet the OCS specs and deliverables. Please have JOA reformat the data as requested in the OCS Specs, and resubmit the corrected data to CO-OPS. Please note that trailing blank spaces need to be removed for the w2, w3, w5 data. The 6 minute water level data submitted as A1 data needs to be relisted as Z1 data and not A1 data because it needs to be submitted in XXX.BWL format, so please adjust the data accordingly. According to the Readme file submitted with the digital data, the data

3/19/2009

has been put on the station datum by subtracting the raw data (distance measured down to water) from 15.721 m, so please submit the data in XXX.BWL format.

Should you need any additional information regarding resolving these issues, please contact me. Thanks.

Manoj

Manoj Samant wrote:

Hi Crescent and Jon:

This is to acknowledge the receipt of 1 CD containing the closeout report and water level data for 8760417 Devon Energy Facility for OPR-J977-DE-08 hydro project. The CD was received on January 29, 2009. CO-OPS will evaluate the submissions and will provide the feedback to OCS as per CO-OPS SOP. Thanks.

Manoj Samant

From: Crescent Moegling [Crescent.Moegling@noaa.gov]
Sent: Friday, June 27, 2008 1:41 PM
To: Jon Dasler; Jason Creech
Subject: [Fwd: Smoothing data for Contract Hydro S-J977-KR-DEA-2008 Plaquemines Southeast, LA]
 FYL...

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

Subject: Smoothing data for Contract Hydro S-J977-KR-DEA-2008 Plaquemines Southeast, LA
Date: Fri, 27 Jun 2008 13:46:47 -0400
From: Gerald Hovis <Gerald.Hovis@noaa.gov>
Organization: National Ocean Service
To: Crescent Moegling <Crescent.Moegling@noaa.gov>
CC: _NOS.CO-OPS.HTP <NOS.COOPS.HPT@noaa.gov>, Peter Stone
 <Peter.Stone@noaa.gov>, Manoj Samant <Manoj.Samant@noaa.gov>, Stephen Gill
 <Stephen.Gill@noaa.gov>

Crescent,

As per our phone discussion I spoke with Peter Stone so feel free to forward this to DEA for their records.

Observations collected at CO-OPS water level stations undergo a series of mechanical, mathematical, and analytical filters before being disseminated for use by the public. CO-OPS has evaluated the data being collected at Pilot Station East, LA (8760922) and determined that the "splashy" nature of the data is an accurate representation of the location. It is not the policy of CO-OPS to "smooth" data beyond the removal of obviously erroneous observations. However, CO-OPS also understands that the "splashy" observations at this location may be a result of ship traffic in the narrow channel where the station is located and may not accurately represent the conditions of several offshore zones in which DEA is collecting data. Under these circumstances CO-OPS supports the smoothing of data by contractor DEA for the sole purpose of survey S-J977-KR-DEA-2008 Plaquemines Southeast, LA. CO-OPS does request that DEA provide detailed documentation of the smoothing process to OCS and / or CO-OPS for NOAA records. The verified data collected, stored and disseminated by CO-OPS will not be altered.

Jerry

--

Jerry Hovis
 Tidal Datums & Hydrographic Support Team
 Center for Operational Oceanographic Products & Services
 Products and Services Division
 National Ocean Service
 National Oceanographic Atmospheric Administration
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--
Crescent Moegling
NOAA Hydrographic Surveys Division
Branch Chief - Data Acquisition Control
301.713.2700 x111

Jason Creech

From: Jon Dasler
Sent: Monday, April 06, 2009 1:14 PM
To: Jason Creech; Shyla Allen
Subject: FW: FW: FW: Devon monthly mean revisions
Attachments: Jeffrey_Ferguson.vcf

FYI

From: Jeffrey Ferguson [mailto:Jeffrey.Ferguson@noaa.gov]
Sent: Monday, April 06, 2009 1:10 PM
To: Jon Dasler
Subject: Re: FW: FW: Devon monthly mean revisions

Approved.

Jon Dasler wrote:

Jeff,

Related to our discussion today, if we apply the adjustments listed below the depths will increase. Holding the original water levels from Devon will be conservative (shoaler by 9 cm). That said, do we have your approval to submit with the old Pilot Station datum and 4 month datum computation? This would be discussed in the DR.

Jon

Jon Dasler, P.E., P.L.S.
Vice President, Director of Marine Services

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From: Jon Dasler
Sent: Wednesday, April 01, 2009 10:29 AM
To: Jeffrey Ferguson
Subject: FW: FW: FW: Devon monthly mean revisions

Jeff,

Not to drag this on but wanted you to be aware that the final adjustment at Devon is 9.6cm. The 9 month observation (end of TerraSond survey) vs. 4 month observation (end of DEA survey) turned out to be slightly more than we anticipated. However, it is unclear which more accurately represents a full year as the added 5 months was during heavier weather. JOA stated that the tides are so flat here that weather plays a significant roll in datum computations. That said, the final adjustments tally up as follows:

New Pilot Station Datum adjustment +5.3cm (may not be exactly a 1:1 relationship)
3 revised monthly mean values adjustment - 0.5cm
9 month datum adjustment +4.8cm (inferred)

In the end it is a 9.6cm adjustment if all of these are applied. Currently the two sheets we submitted are based on the Old Pilot Station datum and our final two sheets are ready for delivery without any of the adjustments at Devon listed above. Let us know how you would like us to proceed so we can complete this survey.

On another note, any idea when we will be able to start on the Chesapeake? We are hoping to start in early May.

Jon

Jon Dasler, P.E., P.L.S.
Vice President, Director of Marine Services

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From: Mike Zieserl [<mailto:mzieserl@gmail.com>]
Sent: Friday, March 27, 2009 9:53 PM

To: Jon Dasler
Cc: Jason Creech; 'John Oswald (JOA)'
Subject: Re: FW: FW: Devon monthly mean revisions

I don't know if the pilot station datum changes the devon datum in a 1:1 way, but generally you're right.

Mike Z

Jon Dasler wrote:

Thanks Mike. Jason was seeing a 9cm difference and this documents that it is a 9.8 cm difference. The 4 to 9 month datum must have been more than the 1cm quoted by Erik. It must be 4.8 cm.

New Pilot Station Datum adjustment +5.3cm
 3 revised monthly mean values adjustment - 0.5cm
 9 month datum adjustment +4.8cm

If you apply all three you get a +9.6cm adjustment.

Does this look right?

From: Mike Zieserl [<mailto:mzieserl@gmail.com>]
Sent: Friday, March 27, 2009 3:38 PM
To: Jon Dasler
Cc: Jason Creech; John Oswald
Subject: Re: FW: FW: Devon monthly mean revisions

Jon,

Summary of the Devon "datum" movement, relative to local station datum.

- 1) Original Devon Energy MLLW (4 months, old Pilot Station Datum): **11.925m**
- 2) Revised Devon Energy MLLW (4 months, old Pilot Station Datum, 3 revised monthly mean values from COOPS): **11.920m**
- 3) Devon Energy MLLW for Terrasond (9 months, new Pilot Station Datum, 3 revised monthly mean values from COOPS): **12.021m**

The range of the tide did not change much, 4 months vs 9 months, but mean sea level did. Water levels at Devon Sept - Dec were higher relative to Pilot Station. This pushed Mean Tide Level up in the 9 month datum, which in turn brings MLLW up too. MLLW is relatively higher in the 9 month datum vs the 4 month datum. Original MLLW tides would seem slightly closer to the 9 month new datum than a "revised" 4 month datum.

It's easy to get turned around on this stuff, but I think that using the original MLLW tides we sent you, your charted depths are shoaler than if you used the 9 month datum.

For example, a station datum water level height of 12.000m:

Original MLLW height = $12.000 - 11.925 = 0.075\text{m}$
New datum MLLW height = $12.000 - 12.021 = -0.021\text{m}$

Sounding depth of 3.000m:
Original MLLW depth = $3.000 - 0.075 = 2.925\text{m}$
New MLLW depth = $3.000 + 0.021 = 3.021\text{m}$

Mike

Jon Dasler wrote:

Do we know if this is in addition to the 5.3cm datum adjustment for a 5.8 cm total difference or does this move the other way for a 4.8cm total adjustment?

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

From: Jeffrey Ferguson [<mailto:Jeffrey.Ferguson@noaa.gov>]
Sent: Friday, March 27, 2009 1:26 PM
To: Jon Dasler
Subject: Re: FW: Devon monthly mean revisions

Is this a 5mm on top of the 5mm, so we're really talking 10mm final depth error?...

Or is the 2nd a random error that may overlap the first?

Jeff

Jon Dasler wrote:

Jeff,

I know you commented about the 5cm datum revision issue on this project.

This is a slightly different issue relation to datum computation JOA on the order of 5mm. Currently our data is processed and rea

delivery based on JOA's original computation. We would like to h your thoughts on the need to reapply water levels for this 5mm

adjustment.

Our suggestion would be to have JOA resubmit to CO-OPS but not a

the 5mm adjustment to the data. Does HSD concur with this assess

Jon

Jon Dasler, P.E., P.L.S.
Vice President, Director of Marine Services

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

From: Mike Zieserl [<mailto:mike@joasurveys.com>]
Sent: Thursday, March 26, 2009 12:43 PM
To: Jason Creech
Cc: Jon Dasler
Subject: Devon monthly mean revisions

Jason,

I used the COOPS monthly mean revisions to recompute the datum f
Devon. I kept everything else the same (only 4 months of data,
the old Pilot Station Datum and monthly means).

The difference between what we submitted and a revised datum:

MLLW, 5mm
MHW, 3mm

COOPS has told us they use a 9mm tolerance when evaluating our
computations, so I hope we're in the clear on this. I asked Man
Samant if he could confirm this for me and he left me a message

"it's complicated, we'll have to talk to OCS" which sounds bad,

maybe OCS can talk some sense to COOPS.

I'm still traveling, will be back in the office Friday.

Mike Z

--

Mike Zieserl
John Oswald & Associates, LLC
2000 E. Dowling Rd., Suite 10
Anchorage, AK 99507
(907) 561-0136 office
(907) 230-5789 cell
mike@joasurveys.com

Jason Creech

From: Jon Dasler **Sent:** Thu 10/9/2008 11:39 AM
To: 'Manoj Samant'; 'Crescent Moegling'
Cc: 'Peter Stone'; 'Tom Mero'; '_NOS CO-OPS Hydro'; 'John Oswald (JOA)'; Jason Creech
Subject: RE: Acknowledgment of receipt of the close-out station package for 8760417 Devon Energy for OPR-J977-DE-08 - another set of closing levels required at the end of Terrasonde project
Attachments:

Manoj,

We will be working with JOA to do the closeout when TerraSond has completed their survey. Our intent with this submittal was to close out our portion of the project so we can move forward with final tides.

Jon

Jon L. Dasler, P.E., P.L.S.
 Vice President, Director of Marine Services
 David Evans and Associates, Inc.
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 Vancouver, WA 98661
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 e-mail: jld@deainc.com

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

From: Manoj Samant [<mailto:Manoj.Samant@noaa.gov>]
Sent: Thursday, October 09, 2008 10:35 AM
To: Jon Dasler; Crescent Moegling
Cc: Peter Stone; Tom Mero; _NOS CO-OPS Hydro
Subject: Re: Acknowledgment of receipt of the close-out station package for 8760417 Devon Energy for OPR-J977-DE-08 - another set of closing levels required at the end of Terrasonde project

Hi Jon and Crescent:

I understand the Devon Energy tide gauge was left running behind for another OCS contract project for Terrasonde. In that case when Terrasonde is done with that project, CO-OPS need another set of closing levels documenting the sensor stability. Crescent, could you please inform Terrasonde to run a set of closing levels when that project is done. Thanks.

Jon: The close-out CD provided by DEA did not include any water level data, so will JOA provide the required water level data to CO-OPS? Is so, would that be after the Terrasonde Project? Since the acoustic gauge was installed, there is no final staff-to-gauge constant is involved and

6-minute data may be submitted. The corresponding water level products hourly heights, high and low and monthly means also can be submitted.

But we would like station datums file based upon the whole series. So in this special case, if you or JOA needs to submit all the data after the completion of Terrasonde project, let us know and CO-OPS can wait for another month or two for Terrasonde to finish the project.

Thanks.

Manoj

Manoj Samant wrote:

> Hi Jon and Crescent:
 >
 > This is to acknowledge the receipt of 1 CD-ROM containing tide station
 > closeout report data for 8760417 Devon Energy for OPR-J977-DE-08. The

> package was received at CO-OPS today - Tuesday October 7, 2008.
>
> CO-OPS will evaluate the content for validation of the data and
> documentation submitted according our SOP and we will let you know our
> feedback within 45 days from today. If there are deficiencies found,
> we will also note that, and bring those to your attention as soon as
> they are noticed.
>
> Thanks.
>
> Manoj Samant, PE
> CO-OPS

Acknowledgment of receipt of closeout report_em1_012909.txt
From: Manoj Samant [mailto:Manoj.Samant@noaa.gov]
Sent: Thursday, January 29, 2009 10:52 AM
To: Jon Dasler; Crescent Moegling
Cc: Tom Mero; Peter Stone; _NOS.CO-OPS.HTP; David Scharff; Mark T Lathrop; Thomas Huppmann
Subject: Acknowledgment of receipt of closeout report and 1 CD of water level data for 8760417 Devon Energy Facility, LA, for OPR-J977 project

Hi Crescent and Jon:

This is to acknowledge the receipt of 1 CD containing the closeout report and water level data for 8760417 Devon Energy Facility for OPR-J977-DE-08 hydro project. The CD was received on January 29, 2009. CO-OPS will evaluate the submissions and will provide the feedback to OCS as per CO-OPS SOP. Thanks.

Manoj Samant

APPENDIX III
FINAL TIDE NOTE

H11833

FINAL TIDE NOTE and FINAL TIDE ZONING CHART

DATE: March 23, 2009

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-J977-DE-08

HYDROGRAPHIC SHEET: H11833

LOCALITY: Southwest Pass

TIME PERIOD:

2008: April 15-16, 20-21, 23-26, 28-30; May 04-07, 09-13, 18, 31; June 10, 26; July 04-05, 07, 09-11, 18-19; August 21-22.

TIDE STATIONS USED: 876-0922, Pilots Station East, Southwest Pass, LA
Lat. 28° 55' 54.0" N Lon. 89° 24' 24.0" W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

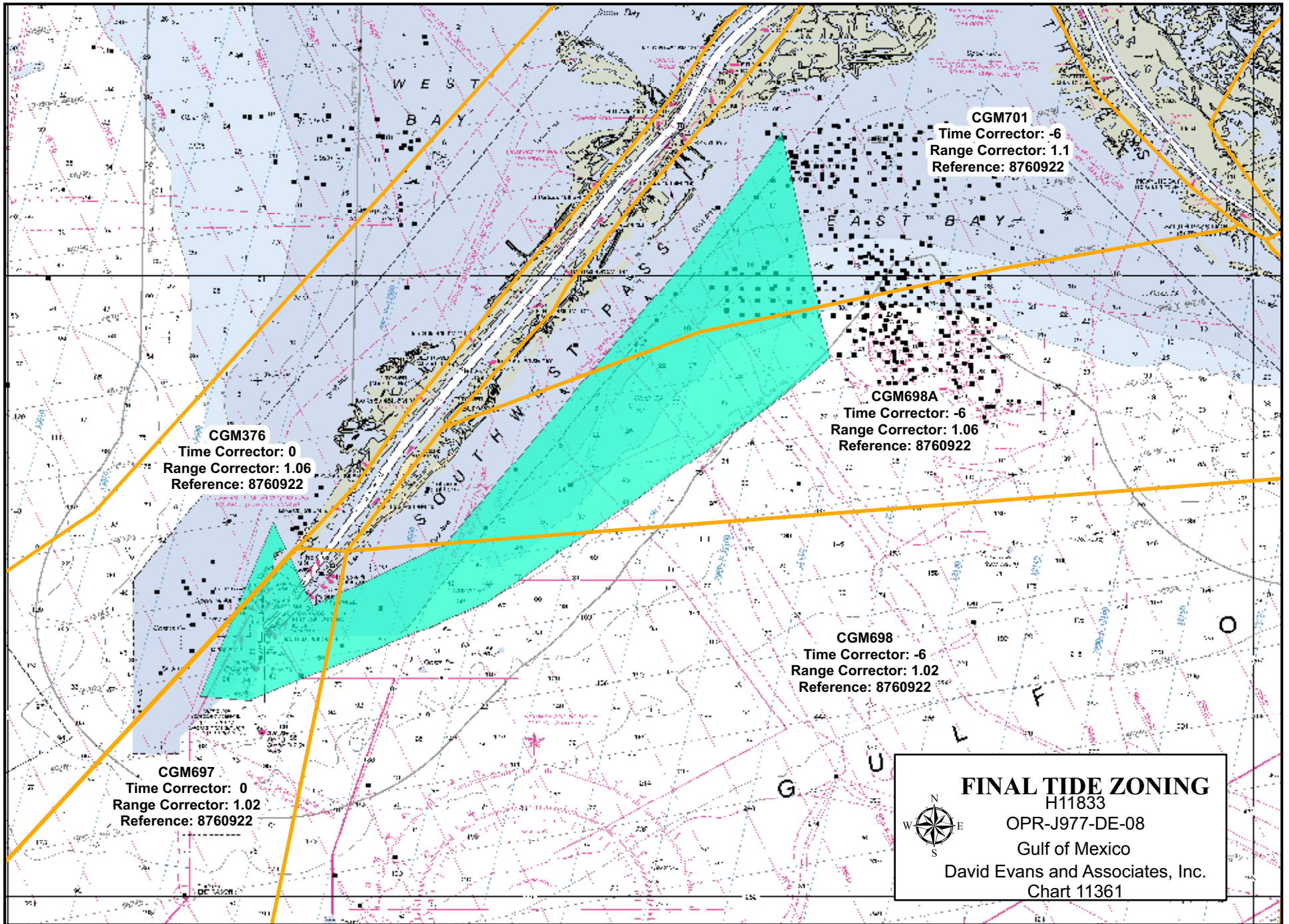
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.372 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as:

Zone	Time Corrector (Mins)	Range Ratio	Reference Station
CGM701	-6	x1.1	8760922
CGM698A	-6	x1.06	8760922
CGM698	-6	x1.02	8760922
CGM697	0	x1.02	8760922
CGM376	0	x1.06	8760922

Refer to the attached notes for additional zoning information.



CGM376
Time Corrector: 0
Range Corrector: 1.06
Reference: 8760922

CGM697
Time Corrector: 0
Range Corrector: 1.02
Reference: 8760922

CGM698
Time Corrector: -6
Range Corrector: 1.02
Reference: 8760922

CGM698A
Time Corrector: -6
Range Corrector: 1.06
Reference: 8760922

CGM701
Time Corrector: -6
Range Corrector: 1.1
Reference: 8760922

FINAL TIDE ZONING
H11833
OPR-J977-DE-08
Gulf of Mexico
David Evans and Associates, Inc.
Chart 11361



H11834

FINAL TIDE NOTE and FINAL TIDE ZONING CHART

DATE: March 23, 2009

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-J977-DE-08

HYDROGRAPHIC SHEET: H11834

LOCALITY: East Bay

TIME PERIOD:

2008: April 28, 30; May 09, 11-14, 17-21, 24-27, 29-31; June 01-03, 10-11; July 08, 10-13; August 03, 22.

TIDE STATIONS USED: 876-0922, Pilots Station East, Southwest Pass, LA
Lat. 28° 55' 54.0" N Lon. 89° 24' 24.0" W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

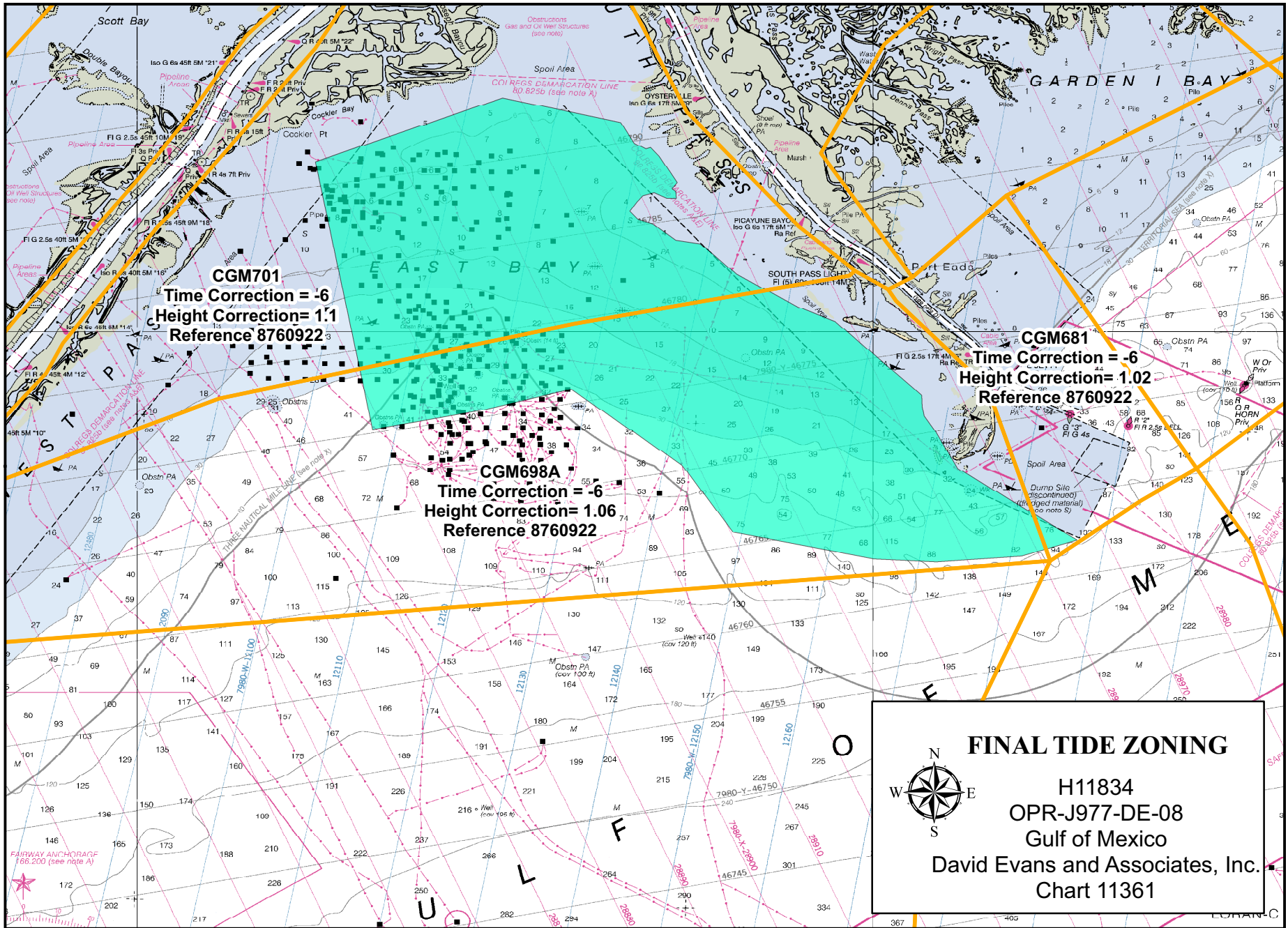
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.372 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as:

Zone	Time Corrector (Mins)	Range Ratio	Reference Station
CGM681	-6	x1.02	8760922
CGM698A	-6	x1.06	8760922
CGM701	-6	x1.1	8760922

Refer to the attached notes for additional zoning information.



H11835

FINAL TIDE NOTE and FINAL TIDE ZONING CHART

DATE: March 23, 2009

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-J977-DE-08

HYDROGRAPHIC SHEET: H11835

LOCALITY: Garden Bay

TIME PERIOD:

2008: May 21, 24, 27-29; June 4, 8, 10-14, 16-22; July 19-20, 26; August 20.

TIDE STATIONS USED: 876-0417, Devon Energy Facility, North Pass, LA
Lat. 29° 12' 02.7" N Lon. 89° 02' 40.1" W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

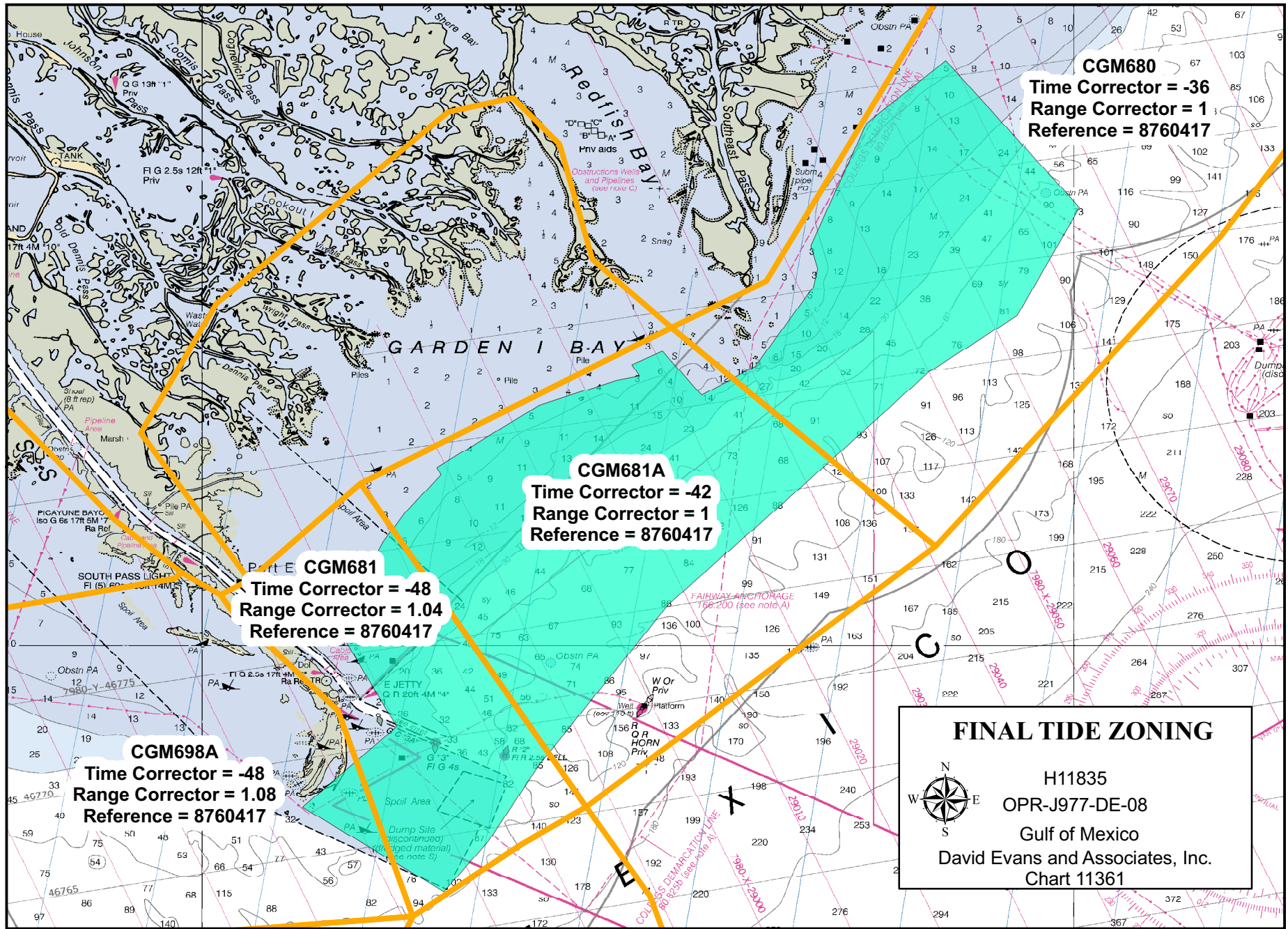
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.380 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as:

Zone	Time Corrector (Mins)	Range Ratio	Reference Station
CGM680	-36	x1.00	8760417
CGM681A	-42	x1.00	8760417
CGM681	-48	X1.04	8760417
CGM689A	-48	x1.08	8760417

Refer to the attached notes for additional zoning information.



H11836

FINAL TIDE NOTE and FINAL TIDE ZONING CHART

DATE: March 23, 2009

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-J977-DE-08

HYDROGRAPHIC SHEET: H11836

LOCALITY: Blind Bay

TIME PERIOD:

2008: June 22-30; July 01-05, 07-13, 15-25, 30; August 3, 5-7, 20, 31;

2009: January 31.

TIDE STATIONS USED: 876-0417, Devon Energy Facility, North Pass, LA
Lat. 29° 12' 02.7" N Lon. 89° 02' 40.1" W

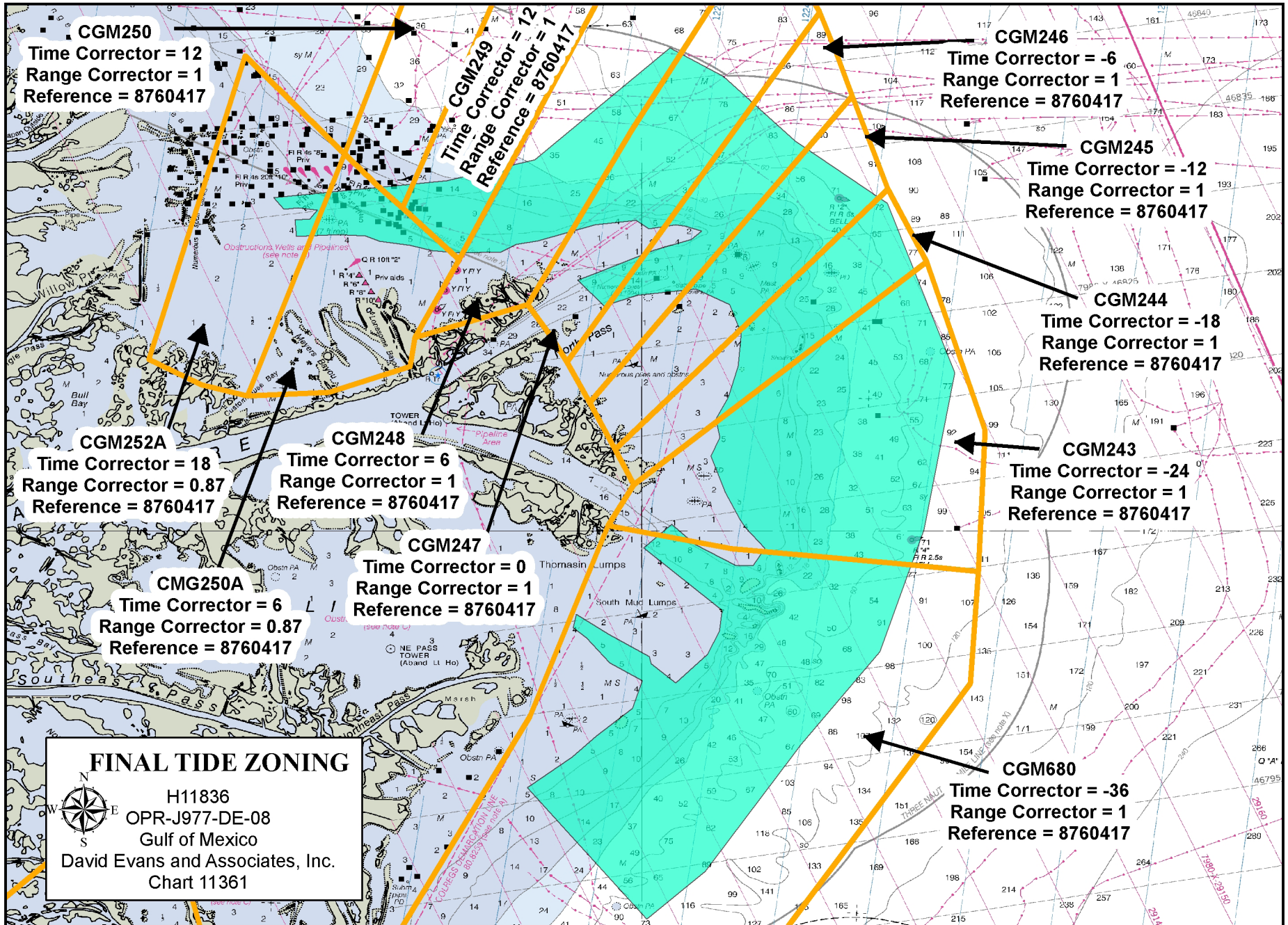
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.380 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as:

Zone	Time Corrector (Mins)	Range Ratio	Reference Station
CGM243	-24	x1.00	8760417
CGM244	-18	x1.00	8760417
CGM245	-12	x1.00	8760417
CGM246	-6	x1.00	8760417
CGM247	0	x1.00	8760417
CGM248	6	x1.00	8760417
CGM249	12	x1.00	8760417
CGM250	12	x1.00	8760417
CGM250A	6	x0.87	8760417
CGM252A	18	x0.87	8760417
CGM680	-36	x1.00	8760417



Refer to the attached notes for additional zoning information.

NOTES

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

Note 2: Pilots Station East (876-0922) served as the primary tide station and was used for tidal zoning in the hydrographic surveys for H11833 and H11834.

Note 3: Devon Energy Facility (876-0417) served as a supplemental station to Pilots Station East (876-0922) and was used for tidal zoning in the hydrographic surveys for H11835 and H11836. Tide zoning for the Devon Energy Facility station was created by modifying the preliminary CO-OPS zoning files tied to Pilots Station East. No changes were made to the preliminary zone boundaries except for moving the vertices of several zones so that adjacent zones have vertices that matched exactly to remove some very small slivers from the file and by extending the boundaries of CGM243 and CGM244 approximately 225 meters eastward. The Devon Energy Facility zone file used the same boundaries as the modified Pilots Station East, but the time and range correctors were back zoned from Pilots Station East to transfer relative to Devon Energy Facility.

Note 4: Verified Center for Operational Oceanographic Products and Services (CO-OPS) water levels from Pilots Station East, Southwest Pass, LA were smoothed using a 5th order polynomial function with 5 hour data spans in order to remove localized data spikes caused by shipping traffic passing the gauge site. Smoothing was approved by both the project Contracting Officer's Technical Representative (COTR) and CO-OPS staff and was performed by John Oswald and Associates. Documentation of this approval is included in Appendix 2 *Correspondence*.

Note 5: Tide Zone boundaries, time correctors, and range correctors were applied as delivered by the Contracting Officer's Technical Representative (COTR). No changes were made to the preliminary zone boundaries except for moving the vertices of several zones so that adjacent zones have vertices that matched exactly to remove some very small slivers from the file.