

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of the horizontal and vertical control for survey H12353 can be found under the OPR-J348-KR-11 *Horizontal and Vertical Control Report*, submitted under separate cover. A complete description of Global Positioning System (GPS) post-processing methodology for survey H12353 can be found in the DAPR. A summary of horizontal and vertical control for this survey follows.

Real-time differential GPS navigation logged during acquisition was overwritten with a post-processed navigation solution, created from Applanix POSPac MMS using the SingleBase option. A GPS base station with a dual frequency (L1/L2) receiver was established on Ship Island, Mississippi to enable post-processing using Single Base solutions. The base station was strategically located near the project site in order to meet the 20-kilometer maximum baseline length for single base post-processing defined in the NOS HSSD (April 2011). NAD83 (CORS96) coordinates of the base station are included in the OPR-J348-KR-11 *Horizontal and Vertical Control Report*.

C1. Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). Soundings were reduced to MLLW using post-processed GPS derived water levels. The VDatum derived separation model, *MS_Sound.bin*, was used to reduce NAD83 ellipsoid heights to MLLW as described in the DAPR. The separation model has been included in the digital deliverables.

Traditional discrete tidal zoning from water level stations was not used for sounding reduction in this survey, though zoning provided by the Center for Operational Oceanographic Products and Services (CO-OPS) and verified water level files for the survey have been included with the digital deliverables.

C2. Horizontal Control

The horizontal datum for this project is NAD83 projected in UTM Zone 16. All of the real-time navigation data were collected in Differential GPS (DGPS) mode. DGPS corrections were received from the U.S. Coast Guard (USCG) beacon at English Turn, Louisiana (293 kHz) or from the secondary beacon at Eglin, Florida (295 kHz). During survey operations, some DGPS outages from the primary beacon occurred. The system was set up to automatically switch to the secondary beacon when the primary signal was lost. Real-time navigation data were overwritten by post-processed Smoothed Best Estimate of Trajectory (SBET) data referenced to NAD83 (CORS96) (2002).