

## C. HORIZONTAL AND VERTICAL CONTROL

NOAA tide station 8651370 Duck, NC was the source of verified water level heights for determining correctors to soundings. The primary means for analyzing the adequacy of zoning was observing zone boundary crossings in the navigated swath editor, SAIC's **Multi View Editor (MVE)**. Comparisons between overlapping crossline data and outer swath data (in deeper water) were also used to assess potential tidal zoning impacts. As addressed in the CUBE Uncertainty Analysis discussion (Section B.2), there were a few instances where overlapping data had an observed vertical offset of 20 to 30 centimeters. This observed vertical offset between adjacent lines was likely due to minor tidal zoning impacts caused by differing environmental conditions between the survey area and the primary tide gauge location in Duck, NC. The water level zoning parameters provided by NOS, Table C-1, were adequate for application of the observed verified water levels.

**Table C-1. Water Level Zoning Parameters Applied on Sheet H12002**

Zone	Time Corrector (minutes)	Range Ratio	Reference Station
SA45	0	1.05	8651370
SA46A	0	1.08	8651370

The survey data for sheet H12002 were collected in horizontal datum NAD-83, using geodetic coordinates, while data display and products used the UTM Zone 18 projection. The following equipment was used for positioning on the *M/V Atlantic Surveyor*:

- TSS POS/MV, Serial Number 2575 with a Trimble Probeacon Differential Receiver (primary sensor)
- Trimble 4000 DSi GPS Receiver, Serial Number 3504A09516 with a Trimble Probeacon Differential Receiver (12 July 2009-16 July 2009).
- Trimble 7400 RSi GPS Receiver, Serial Number 3815A22469 with a Trimble Probeacon Differential Receiver (16 July 2009-17 April 2010).

Differential correctors used for online data were from the U.S. Coast Guard Stations at Driver, VA, Annapolis, MD, and Reedy Point, DE. The differential receivers were programmed to only receive differential corrector data from these three stations.

Daily position confidence checks were conducted using the independent Trimble DGPS. A real-time **ISS-2000** survey monitor also raised an alarm to alert the survey watch if the position differences exceeded the maximum allowable distance. All positioning confidence checks were within an inverse distance of five meters.

Please refer to the Horizontal and Vertical Control Report for detailed descriptions of the procedures and systems used to attain hydrographic positioning. This report will be delivered with the Descriptive Report for the last sheet of this task order. ***Concur with clarification. The Horizontal and Vertical Control Report was added to the submitted field records for this survey upon its submission.***