

C.1 VERTICAL CONTROL

The vertical datum for H12161 is Mean Lower-Low Water (MLLW). NOAA tide station 8651370 Duck, NC (latitude 36° 11'N, longitude 075° 44.8'W) was the source of all verified water level heights for determining correctors to soundings. All data for H12161 were contained within tide zones SA46 and SA46A; which were provided from NOAA.

The H12161 zone correctors were the same for both zones and therefore crossing zone boundaries was not an issue within the data. Details regarding zone correctors and analysis can be found in Section C.5 of the DAPR. SAIC did not revise the delivered tide zones for H12161. The water level zoning parameters provided by National Ocean Service (NOS), Table C-1, were adequate for application of the observed verified water levels. As a result, they were accepted as final and applied to all H12161 multibeam data.

Table C-1. Water Level Zoning Parameters Applied on Sheet H12161

Zone	Time Corrector (minutes)	Range Ratio	Reference Station
SA46	00:00	1.08	8651370
SA46A	00:00	1.08	8651370

No final tide note was provided by the NOAA Center for Operational Oceanographic Products and Services (CO-OPS). SAIC is not required to have a final tide note from CO-OPS. SAIC has provided a final tide note in Appendix IV. **Concur.**

C.2 HORIZONTAL CONTROL

The survey data for sheet H12161 were collected in horizontal datum North American Datum of 1983 (NAD-83), using geodetic coordinates, while data display and products used the UTM Zone 18, North projection. The following equipment was used for positioning on the *M/V Atlantic Surveyor*:

- POS/MV Model 320 Version 4, Serial Number 2575 with a Trimble Probeacon Differential Receiver (primary sensor)
- Trimble 7400 Rsi GPS Receiver with a Trimble Probeacon Differential Receiver (secondary sensor)

Please refer to the DAPR for details regarding all antenna and transducer offsets.

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

Horizontal positioning of the multibeam transducer by the POS/MV was verified by frequent comparison checks against an independent Trimble DGPS system. During survey data acquisition, the **ISS-2000** real-time system provided a continuous view of the positioning comparison between the POS/MV and the Trimble DGPS. An alarm was triggered within **ISS-2000** if the comparisons were not within an acceptable range. All positioning confidence checks for H12161, were within 1.05 meters which falls within the ten meter limit specified in Section 3.4 of the *NOS Hydrographic Survey Specifications and Deliverables*, April 2010. These daily positional checks are presented in a standalone file, "H12161_Daily_Positioning_Confidence_Checks", within Separates I. Also, as stated previously, all soundings with total horizontal uncertainties which exceeded the maximum allowable IHO S-44 5th edition Order 1a specifications were flagged as invalid and therefore were not used in the CUBE depth calculations as stated in Section 3.1 of the *NOS Hydrographic Survey Specifications and Deliverables*, April 2010.