

C. Vertical and Horizontal Control

No vertical or horizontal controls were established, recovered, or occupied during data acquisition for OPR-D302-KR-13, which includes H12559. Therefore a Horizontal and Vertical Control Report was not required.

C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

Standard Vertical Control Methods Used:

Discrete Zoning

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

| Station Name | Station ID |
|---------------------|-------------------|
| Duck, NC | 8651370 |

Table 8: NWLON Tide Stations

| File Name | Status |
|--|-------------------|
| 8651370_verified_07102013_10062013.tid | Verified Observed |

Table 9: Water Level Files (.tid)

| File Name | Status |
|--------------------|--------|
| D302KR2013CORP.zdf | Final |

Table 10: Tide Correctors (.zdf or .tc)

No final tide note was provided by the NOAA Center for Operational Oceanographic Products and Services (CO-OPS). Leidos is not required to have a final tide note from CO-OPS for H12559 however, a final tide note has been provided by Leidos in Appendix I.

The Project Instructions specified NOAA tide station 8651370 Duck, NC as the source for water level correctors. A full explanation of the tide zone assessment is detailed in Section C.4 of the DAPR. For H12559, 8651370 Duck, NC was the source of all final verified water level heights for determining correctors to soundings. All data for H12559 were contained within five tide zones (SA50, SA53, SA54, SA54A, and SA56) which were provided from NOAA.

Leidos did not revise the delivered tide zones for tide station 8651370 Duck, NC as the water level zoning parameters in the file D302KR2013CORP.zdf, provided by National Ocean Service (NOS) were deemed adequate for the application of observed verified water levels. As a result, they were accepted as final and applied to all H12559 bathymetry data.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The projection used for this project is UTM Zone 18, North.

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

Horizontal positioning of the multibeam transducer by the POS/MV was verified by frequent comparison checks against an independent 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. Any soundings with total horizontal uncertainties exceeding the maximum allowable IHO S-44 5th edition Order

1a specifications were flagged as invalid and therefore not used in the CUBE Depth calculations. Daily positioning confidence checks for H12559 were conducted several times throughout the day and a daily value is presented as a table within Separates I, “Daily Positioning Confidence Checks”. Daily positioning confidence checks for the M/V Atlantic Surveyor were within 0.85 meters.

The following DGPS Stations were used for horizontal control:

| DGPS Stations |
|-------------------------|
| Driver, VA (289 kHz) |
| Annapolis, MD (301 kHz) |
| New Bern, NC (294 kHz) |

Table 11: USCG DGPS Stations