

The final S57 file for this project is called “H12130\_S57\_Features.000”.<sup>12</sup> This file contains the object and metadata S57 objects as required in the Specifications and Deliverables.

## **C. VERTICAL AND HORIZONTAL CONTROL**

Refer to the M-M928-KR-09 Horizontal and Vertical Control Report for a detailed description of the horizontal and vertical control used on this survey. No deviations from the report occurred. A summary of the project’s horizontal and vertical control follows.

### Horizontal Control

The horizontal control datum for this survey was the North American Datum of 1983 (NAD83).

For real-time DGPS corrections, a CSI MBX-3 unit was tuned to the Cape Mendocino, CA. USCG DGPS site. The unit output differentially corrected positions at 1 Hz to the (POS MV) 320 V4 where it was integrated with inertial data, and a position for the top-center of the IMU was generated. This position was logged concurrently with the bathymetry from WinFrog and the POS file by WinFrog PosMvLogger. It was later corrected for offsets to the multibeam echosounder (MBES) by CARIS HIPS in processing.

Final positioning, however, was done using post-processed kinematic (PPK) methods. Applanix POSpac software was used in conjunction with the POS files and local base station data to generate a higher accuracy position which was applied in processing, replacing the real-time position records.

See M-M928-KR-09 Horizontal and Vertical Control Report for a more detailed description of PPK positioning methods used.

### Vertical Control

All sounding data were initially reduced to mean lower low water (MLLW) using predicted tidal data. Predicted tidal data for a month long period, was assembled (for gauges 9419750 & 9431647) from the National Water Level Observation Program accessed through the NOAA tides and currents website (<http://tidesandcurrents.noaa.gov/>). A cumulative file for the gauges was updated monthly by appending the new data. It should be noted that predicted tides were used in the field for preliminary processing only.

On March 1, 2010, verified tide data was acquired from the National Water Level Observation Program accessed through the NOAA tides and currents website (<http://tidesandcurrents.noaa.gov/>). Tidal zoning file was developed and provided by NOAA. From March 1, 2010 to March 2, 2010, all sounding data were re-merged using CARIS HIPS and SIPS tide routine. Verified tidal data from the Crescent City, CA. (9419750), and the Port



Orford, OR. (9431647) tidal stations were used for the final Navigation Base Surfaces and S-57 Feature files.<sup>13</sup> Tidal Stations were owned and operated by the NOAA's National Ocean Service through the National Water Level Observation Program.

**Table 2 – Tide Gauge**

<b>Gauge</b>	<b>Location</b>	<b>Latitude</b>	<b>Longitude</b>
9419750	Crescent City, CA	41° 44.7' N	124° 10.9' W
9431647	Port Orford, OR	42° 44.4' N	124° 29.8' W