



2.8.2 Vertical Datum

The vertical control datum for this survey was the Mean Lower Low Water (MLLW).

All sounding data were initially reduced to mean lower low water (MLLW) using unverified tidal data from tide stations (**Table 2-3**) located within close proximity of the survey site. Tidal Stations are owned and operated by National Oceanic and Atmospheric Administration (NOAA)/National Ocean Service's (NOS) Center for Operational Oceanographic Products and Services (CO-OPS). Observed tidal data were assembled from the National Water Level Observation Network (NWLON) program accessed through the NOAA tides and currents website (<http://tidesandcurrents.noaa.gov/>). A cumulative file for the gauge in use was updated daily by appending the new data as it became available.

Table 2-3: Tide Gauge

Gauge	Model	Gauge Type	Location	Latitude	Longitude
9451054	AquaTrak	Acoustic	Port Alexander, AK	56° 14.8'N	134° 38.8' W
9451600	AquaTrak	Acoustic	Sitka, AK	57° 03.1'N	135° 20.5' W
9453220	AquaTrak	Acoustic	Yakutat Bay, AK	59° 32.9'N	139° 44.0' W
9459450	AquaTrak	Acoustic	Sand Point, AK	55° 20.2'N	160° 30.1' W

2.9 CALIBRATIONS AND QUALITY CONTROL

In addition to the online QC tools and displays available in POS MV and WFMB, as described in previous sections, the following calibrations and checks were also performed.

2.9.1 Vessel Offset Survey

All vessel and sensor offsets were derived via conventional survey techniques using total stations, while the vessel was dry docked. The results yielded standard deviations of 0.005m to 0.010m, vessel and survey dependent. Results are given in **Appendix B**.

2.9.2 POS MV GAMS Calibration

Vessel headings were measured by the Applanix POS MV 320 V4, by way of a GPS Azimuth Measurement Subsystem (GAMS). GAMS computes a carrier phase differential GPS position solution of a Slave antenna with respect to a Master antenna position, thereby computing the heading between the two. In order for this to provide a heading accuracy of 0.01°, the system needs to know and resolve the spatial relationship between the two antennas. During the GAMS calibration, since the offset from the IMU to the Master antenna is known (from the vessel offset survey), the location of the Slave antenna is calculated by computing the baselines between the two antennas with respect to the IMU axes.