

C – VERTICAL AND HORIZONTAL CONTROL

Refer to the OPR-O180-KR-07 Horizontal and Vertical Control Report for a detailed description of the horizontal and vertical control used on this Survey. A summary of the projects horizontal and vertical control follows. No deviations from the report occurred.

Horizontal Control

The horizontal control datum for this survey was the North American Datum of 1983 (NAD83), UTM Zone 8 (Central Meridian 135°W). All real-time positions were also collected in NAD83 using Omnistar differential corrections.

It was necessary to acquire dual frequency GPS data at a known location on the ground so that a KGPS solution could be used for final horizontal positioning. Two ground control points were established in the project, one at Kake runway (KAK1) and the other at Petersburg runway (PAPG). Both stations were used during all flights whenever possible. Refer to the Horizontal and vertical Control report for more Horizontal Control results and procedures.

Vertical Control

All soundings data were reduced to MLLW from verified tidal data from the installed tide station located at Monte Carlo Island (ID#: 9451247) and The Summit Island (ID#: 9451349) In Keku Strait, AK (Table 4).

Table 4 – Tide Gauges

STATION	MODEL	GAUGE TYPE	LOCATION	LATITUDE	LONGITUDE
9451247	H350XL	Digital bubbler	Monte Carlo, AK	56° 32’ 04’’N	133° 46’ 02’’ W
9451349	H350XL	Digital bubbler	The Summit, AK	56° 40’ 54’’N	133° 44’ 12’’ W

The final tide zones height and time corrections were modified to use the Monte Carlo and Summit gauges. Time and height corrections are listed in the Table 5 below.

Table 5 – Final Tide Zones

ZONE	PRIMARY			
	SITE	NUMBER	TIME	RANGE
SA197	Monte Carlo	9451247	0 min	1.00
SA200	Monte Carlo	9451247	0 min	1.01
SA417	Monte Carlo	9451247	6 min	1.02
SA408	Summit	9451349	0 min	1.00
SA409	Summit	9451349	0 min	0.99
SA411	Summit	9451349	0 min	0.93
SA412	Summit	9451349	0 min	0.92
SA413	Summit	9451349	0 min	0.90
SA414	Summit	9451349	0 min	0.89
SA415	Summit	9451349	0 min	0.87
SA416	Summit	9451349	0 min	0.85
SA410	Summit	9451349	0 min	0.98
SA410A	Summit	9451349	0 min	0.96
SA410B	Summit	9451349	0 min	0.95

During Keku Strait Survey, there were no unusual conditions regarding tidal information to note. Refer to the Horizontal and Vertical Control Report OPR-O180-KRL-07 and to John Oswald and Associates LLC submitted reports for a more detailed description of the tidal data.

Additionally, it was required to know the elevations of tidal benchmarks in both the ellipsoidal datum and the final charting datum, in this case NAD83 and MLLW respectively (Table 6). The offset between these two datum planes was applied to the data on land (drying area) during post-processing to depict data in the final charting datum. It should be noted that only KGPS horizontal position was applied to bathymetric LIDAR data and that at no time LIDAR depths were corrected with KGPS height data.

Table 6 - MLLW to Ellipsoid (NAD 83) Offset

LOCATION	LATITUDE	LONGITUDE	ELLIPSOID HEIGHT	MLLW HEIGHT	DIFFERENCE
Monte Carlo, AK (Tidal 5 1973)	56° 32' 06"N	133° 46' 02" W	2.736 m	4.879 m	2.143 m
Summit, AK (Tidal 1 1929)	56° 40' 54"N	133° 44' 12" W	3.261 m	5.451 m	2.190 m