C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the accompanying HVCR and DAPR.

C.1 Vertical Control

The vertical datum for this project is Low Water Datum IGLD-1985.

ERS Datum Transformation

The following ellipsoid-to-chart vertical datum transformation was used:

Method	Ellipsoid to Chart Datum Separation File
ERS via VDATUM	OPR_Y390_KR_21_NAD83_to_LWD_IGLD85.qgfvom

Table 11: ERS method and SEP file

Survey data were vertically referenced to the ellipsoid. A time dependent, 7 parameter transformation from ITRF-2014 to NAD83_2011 was performed in QPS Qinsy. Using VDatum, a vertical separation model was created to transform the ellipsoidally referenced data from NAD83_2011 to LWD_IGLD85. The transformation and the separation model were applied in QPS Qinsy on the vessels in real-time to achieve LWD_IGLD85 in the field.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD 83).

The projection used for this project is Universal Transverse Mercator (UTM) Zone 16.

The following PPK methods were used for horizontal control:

- RTX

Applanix PosPac MMS was utilized to post process realtime positioning data utilizing Trimble's PP-RTX implementation of Trimble CenterPoint RTX to create a Smoothed Best Estimate of Trajectory (SBET).

RTK

GNSS satellite corrections were received on each vessel using the G2+ carrier signal from the Marinestar Global Correction System maintained by Fugro.