

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

Horizontal and Vertical Control Report

Type of Survey Hydrographic
Project OPR-E351-KR-22
Contract No 1305M220DNCNJ0053
Task Order No 1305M223FNCNJ0128
Time Frame February 2023 - March 2024

State Maryland and Virginia
General Locality Southwest Chesapeake Bay

2023

CHIEF OF PARTY

David R. Neff, C.H.

LIBRARY & ARCHIVES

Date _____

HYDROGRAPHIC TITLE SHEET

H13765
H13766
H13767
H13768
H13769
H13770
H13771
H13772
H13773

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the office.

FIELD No

eTrac Inc.

State	<u>Maryland and Virginia</u>		
General Locality	<u>February 2023 - March 2024</u>		
Project Name	<u>Southwest Chesapeake Bay Rivers</u>		
Scale	<u>1:5,000 ; 1:10,000 ; 1:20,000</u>	Date of Survey	<u>February 2023 - March 2024</u>
Instructions Dated	<u>March 8, 2023</u>	Project No.	<u>OPR-E351-KR-22</u>
Vessel	<u>R/V Endeavor, R/V Taku, R/V Voxel, R/V Pulse, R/V Spectrum, R/V 505</u>		
Chief of Party	<u>David Neff</u>		
Surveyed by	<u>eTrac, a Woolpert Company</u>		
Soundings by echo sounder	<u>R2 Sonic 2024, R2Sonic 2022</u>		
Graphic record scaled by	<u>N/A</u>		
Graphic record checked by	<u>N/A</u>	Automated Plot	<u>N/A</u>
Verification by	<u>Atlantic Hydrographic Branch</u>		
Soundings in	<u>Meters at Mean Lower Low Water</u>		

REMARKS: NAD 83 (2011), UTM Zone 18N
Times are in UTC
The purpose of this contract is to provide NOAA with modern, accurate hydrographic
survey data with which to update the nautical charts of the assigned area.

SUBCONSULTANTS: _____

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A. Vertical Control

Per the project instructions, survey data for OPR-E351-KR-22 were vertically referenced to the ellipsoid. A time dependant, 7 parameter transformation from ITRF-2014 to NAD83_2011 was performed in QPS Qinsy. A vertical separation model was provided by NOAA to transform the ellipsoidally referenced data from NAD83_2011 to MLLW. The transformation and the separation model were applied in QPS Qinsy on the vessels in real-time to achieve MLLW in the field. Achieving MLLW in the field was extremely efficient for field operations as the NALL was easily identified in realtime. The separation model was carried through the processing pipeline maintaining MLLW throughout all processing efforts.

All Vessels received GNSS satellite corrections on the Applanix POS MV 320 over the G2+ or G4+ carrier signal from the Marinestar Global Correction System maintained by Fugro. The Marinestar system is a global real-time GNSS broadcast system that delivers corrections from a network of base stations around the world via geo-stationary satellites. The Marinestar corrections system was utilized for both vertical and horizontal positioning. Accuracies in the 10-15cm range were observed throughout the project.

For OPR-E351-KR-22, Applanix PosPac MMS was utilized for all survey data to post-process real-time positioning data utilizing Trimble’s PP-RTX implementation of Trimble CenterPoint RTX. The Trimble CenterPoint RTX correction service is delivered via internet connection and integrated into Applanix PosPac MMS 8, to aid in post processed trajectories. Improved accuracies in the 4 – 6cm range were observed in the PP-RTX results. A Smoothed Best Estimate of Trajectory (SBET) is provided by PosPac MMS and applied to survey data in Qimera.

An additional assigned task for this project was to include interpolated grids in North American Vertical Datum of 1988 (NAVD88) datum. In order to reference soundings to NAVD88 Datum, a separation model was provided by NOAA and was applied to the gridded MLLW data in QGIS.

B. Horizontal Control

Survey data for OPR-E351-KR-22 were collected in NAD83_2011 UTM Zone 18N Projection.

Horizontal positioning was achieved using the same equipment and methods as described in the Vertical Control section of this document.

C. Approval Sheet



OPR-E351-KR-22

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Horizontal and Vertical Control Report

This report and the accompanying data are respectfully submitted.

Field operations contributing to the accomplishment of OPR-E351-KR-22 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report and associated data have been closely reviewed and are considered complete and adequate as per the Statement of Work.

David R. Neff | eTrac, a Woolpert Company | Chief of Party | August 18, 2023

eTrac, a Woolpert Company
August 2023