

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

Horizontal and Vertical Control Report

Type of Survey Hydrographic
Project OPR-F345-KR-19
Contract No EA-133C-14-CQ-0031
Task Order No T0011
Time Frame September 2019 - December 2019

State North Carolina
General Locality Wilmington, NC

2019
CHIEF OF PARTY
David R. Neff, C.H.

LIBRARY & ARCHIVES

Date _____

HYDROGRAPHIC TITLE SHEET

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>North Carolina</u>		
General Locality	<u>Wilmington, NC</u>		
Sub-Locality	<u>Entrance to the Port of Wilmington and Beaufort, NC</u>		
Scale	<u>F00790 1:20000 & F00791 1:5,000</u>	Date of Survey	<u>September 2019</u>
Instructions Dated	<u>September 6, 2019</u>	Project No.	<u>OPR-F345-KR-19</u>
Vessel	<u>R/V Benthos, R/V 4-Points</u>		
Chief of Party	<u>David R. Neff, C.H.</u>		
Surveyed by	<u>eTrac Inc.</u>		
Soundings by echo sounder	<u>Kongsberg 2040c</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 MLLW</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: Geodynamics, LLC, 310A Greenfield Drive, Newport, NC 28570

Contents

A. Vertical Control	1
B. Horizontal Control.....	1
C. Approval Sheet.....	2

A. Vertical Control

Per the project instructions, survey data for OPR-F345-KR-19 were vertically referenced to the ellipsoid. Using VDatum, a vertical separation model was created to transform the ellipsoidally referenced data from ITRF-08 to MLLW. This separation model was applied in post-processing in QPS Qimera.

R/V Benthos and R/V 4-Points received GNSS satellite corrections on the Applanix POS MV 320 over the G2+ 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. It should be noted that the G2+ carrier is a recent upgrade from the G2 carrier used in previous years. Improved accuracy was observed in the real-time solution as a result of this upgrade. Accuracies in the 9-13cm range were observed throughout the project, an improvement over the 13-20cm accuracies observed with the previous G2 string.

For OPR-F345-KR-19, Applanix PosPac MMS was utilized 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. A Smoothed Best Estimate of Trajectory (SBET) is provided by PosPac MMS and applied to survey data in Qimera 1.7.6.

B. Horizontal Control

Survey data for OPR-F345-KR-19 were collected in NAD83 (2011) horizontal datum, UTM Zone 18N Projection.

R/V Benthos and R/V 4-Points horizontal positioning was achieved using the same equipment and methods as described in the Vertical Control section of this document.

C. Approval Sheet



OPR-F345-KR-19

Registry Nos.
F00790
F00791

Horizontal and Vertical Control Report

This report and the accompanying data are respectfully submitted.

Field operations contributing to the accomplishment of OPR-F345-KR-19 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 Inc. | Lead Hydrographer | October 24, 2019

eTrac Inc.
October 2019