

H13929

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H13929

LOCALITY

State(s): New York

General Locality: Long Island Sound

Sub-locality: Seven Miles North of Wildwood

2024

CHIEF OF PARTY
John R. Bean

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H13929

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

State(s): **New York**

General Locality: **Long Island Sound**

Sub-Locality: **Seven Miles North of Wildwood**

Scale: **10000**

Dates of Survey: **08/19/2024 to 09/27/2024**

Instructions Dated: **05/06/2024**

Project Number: **OPR-B342-KR-24**

Field Unit: **Ocean Surveys**

Chief of Party: **John R. Bean**

Soundings by: **Multibeam Echo Sounder**

Imagery by: **Multibeam Echo Sounder Backscatter**

Verification by: **Atlantic Hydrographic Branch**

Soundings Acquired in: **meters at Mean Lower Low Water**

Remarks:

Any revisions to the Descriptive Report (DR) applied during office processing are shown in red italic text. The DR is maintained as a field unit product, therefore all information and recommendations within this report are considered preliminary unless otherwise noted. The final disposition of survey data is represented in the NOAA nautical chart products. All pertinent records for this survey are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via <https://www.ncei.noaa.gov/>. Products created during office processing were generated in NAD83 UTM 18N, MLLW. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.

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Descriptive Report to Accompany Survey H13929

Project: OPR-B342-KR-24

Locality: Long Island Sound

Sublocality: Seven Miles North of Wildwood

Scale: 1:10000

August 2024 - September 2024

Ocean Surveys

Chief of Party: John R. Bean

A. Area Surveyed

This survey provides hydrographic data for waters in Long Island Sound, NY. The general locations of the survey limits are presented in Table 1.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
41° 1' 42.15" N 41° 7' 31.83" E	72° 57' 0.53" N 72° 44' 41.42" W

Table 1: Survey Limits

Survey limits were acquired in accordance with the requirements in the Project Instructions and the HSSD.

A.2 Survey Purpose

High resolution bathymetry and backscatter acquired in this survey will help with the identification of existing geologic and benthic characteristics for hazard and habitat mapping. The data will support management decisions regarding the effects of potential energy infrastructure projects and mitigation opportunities, including the Offshore Wind Cable Corridor Constraints Assessment being conducted by the New York State Energy Research Development Authority (NYSERDA).

This effort was made possible through a partnership with NOAA and the State of Connecticut Department of Energy and Environmental Protection (CTDEEP) through the FY24 Brennan Matching Fund and Long

Island Sound Research and Restoration Fund / Long Island Sound Cable Fund (LISCF). The members of the LISCF steering committee include representatives from CTDEEP, US EPA Regions 1 & 2 through the Long Island Sound Study, the New York Department of Environmental Conservation and Department of State, and both CT and NY Sea Grant offices. The efforts of this partnership will support habitat identification, resource management, and navigation of these important waterways.

Data from this project will supersede all prior survey data, providing modern hydrographic survey data for this area and updating the local charting products.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

The following table lists the coverage requirements for this survey as assigned in the project instructions:

Water Depth	Coverage Required
All waters in survey area	Complete Coverage (Refer to HSSD Section 5.2.2.3 Option A). Prioritize backscatter quality.

Table 2: Survey Coverage

Survey coverage was in accordance with the requirements listed above and in the HSSD.

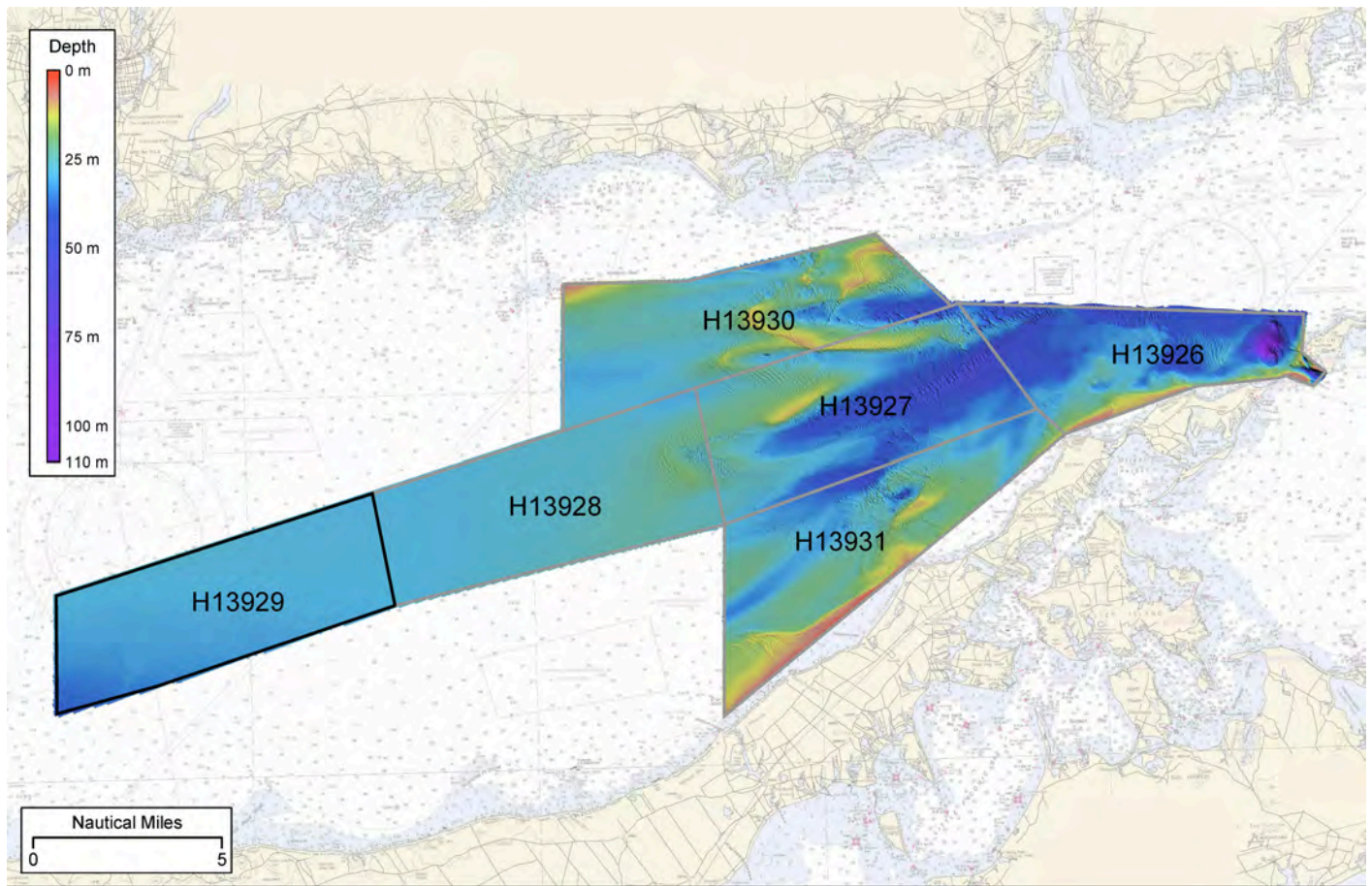


Figure 1: Project OPR-B342-KR-24 coverage with H13929 emphasized.

A.6 Survey Statistics

The following table lists the mainscheme and crossline acquisition mileage for this survey:

	HULL ID	<i>RV North Cove</i>	<i>Total</i>
LNM	SBES Mainscheme	0.0	0.0
	MBES Mainscheme	626.1	626.1
	Lidar Mainscheme	0.0	0.0
	SSS Mainscheme	0.0	0.0
	SBES/SSS Mainscheme	0.0	0.0
	MBES/SSS Mainscheme	0.0	0.0
	SBES/MBES Crosslines	29.9	29.9
	Lidar Crosslines	0.0	0.0
Number of Bottom Samples			2
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			29.8

Table 3: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

Survey Dates	Day of the Year
08/19/2024	232

Survey Dates	Day of the Year
08/21/2024	234
08/22/2024	235
08/23/2024	236
08/24/2024	237
08/25/2024	238
08/26/2024	239
08/27/2024	240
08/28/2024	241
09/03/2024	247
09/04/2024	248
09/12/2024	256
09/27/2024	271

Table 4: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR, are discussed in the following sections.

B.1.1 Vessels

The following vessels were used for data acquisition during this survey:

Hull ID	<i>RV North Cove</i>
LOA	11.1 meters
Draft	0.8 meters

Table 5: Vessels Used



Figure 2: RV North Cove configured for survey operations.

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
Teledyne RESON	SeaBat T50-R	MBES
Applanix	POS MV 320 v5	Positioning and Attitude System
Trimble	NetR9	Positioning System
AML Oceanographic	Micro SV-Xchange	Sound Speed System
AML Oceanographic	AML-3 LGR	Conductivity, Temperature, and Depth Sensor

Table 6: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Crossline mileage in H13929 totaled 4.8% of the mainscheme survey miles. Agreement between crosslines and mainscheme bathymetry was very good, with a mean difference of 0.0m in the 2m resolution surface.

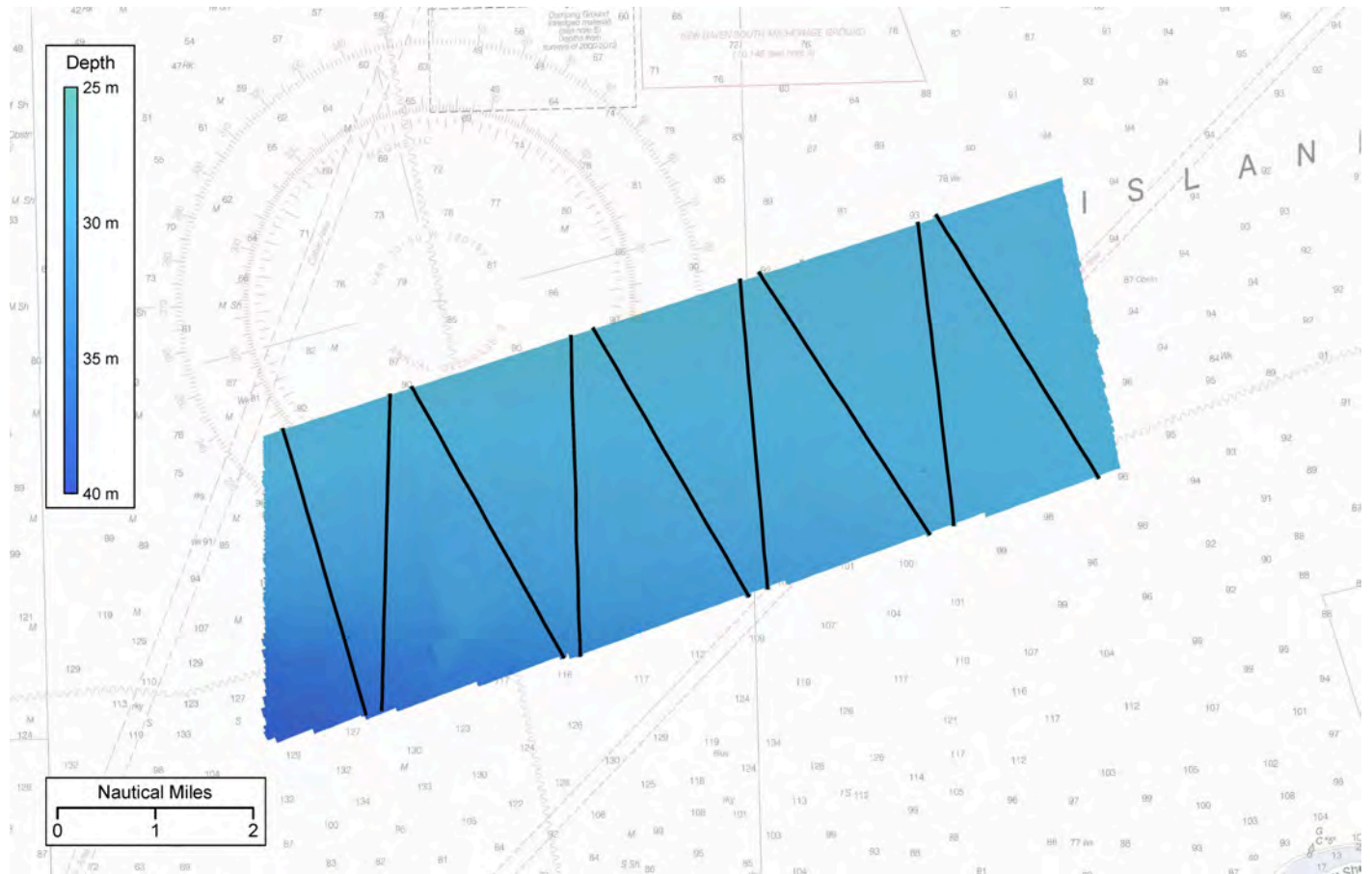


Figure 3: Crossline tracks overlaid on a coverage surface.

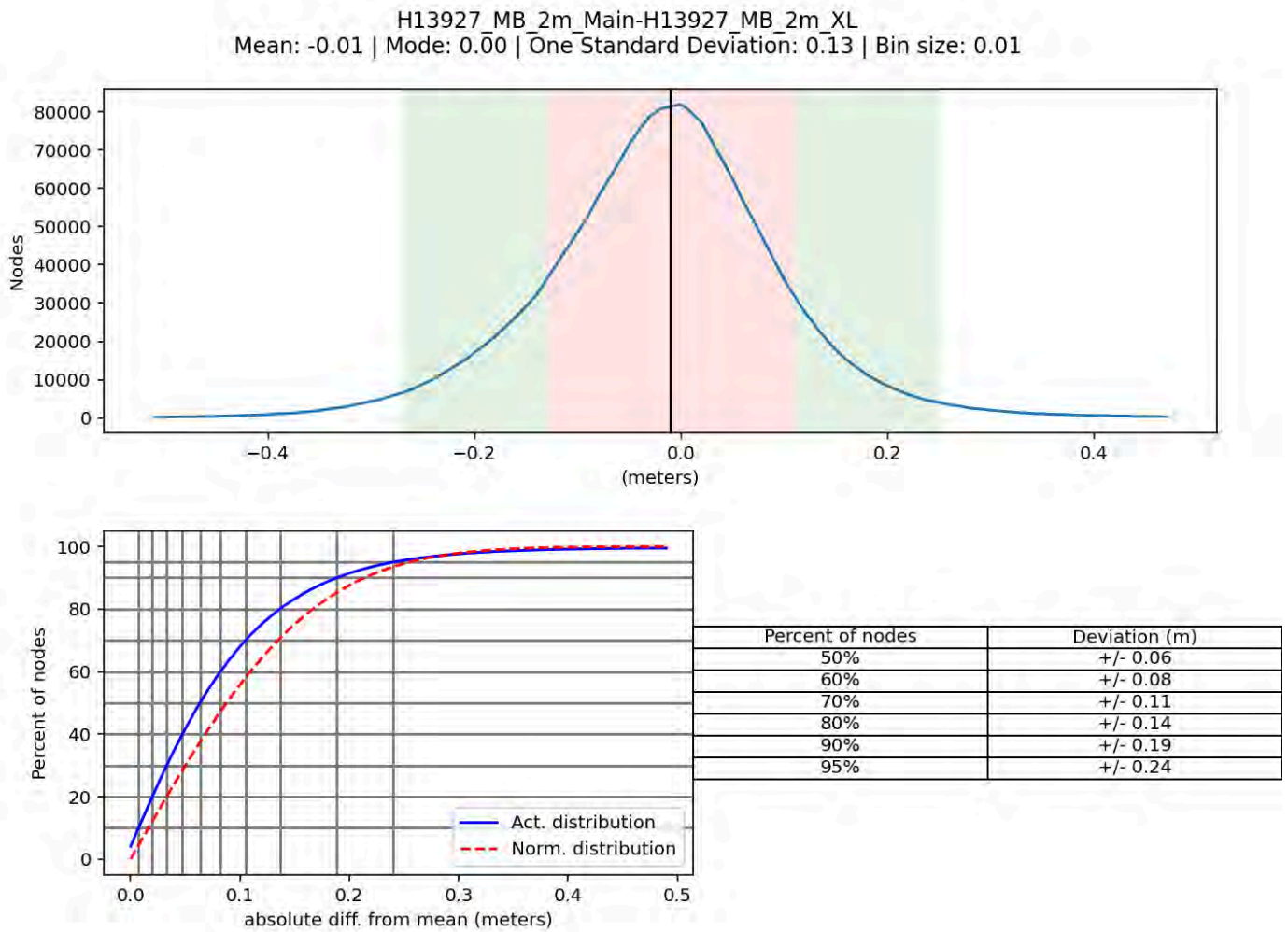


Figure 4: Depth differences between mainscheme and crossline data.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via VDATUM	N/A	7.91 centimeters

Table 7: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Measured - XBT	Surface
RV North Cove	2 meters/second	N/A	N/A	1 meters/second

Table 8: Survey Specific Sound Speed TPU Values.

The HydrOffice "QC Tools" application was used to calculate TVU QC, determined by a ratio of uncertainty to the allowable error per NOAA and IHO specification. A surface was finalized in CARIS HIPS using the "uncertainty" option to select the combination of a priori and realtime uncertainty estimates as the surface TVU source. The surface passed the uncertainty check, with 99.5+% of nodes meeting the uncertainty standards.

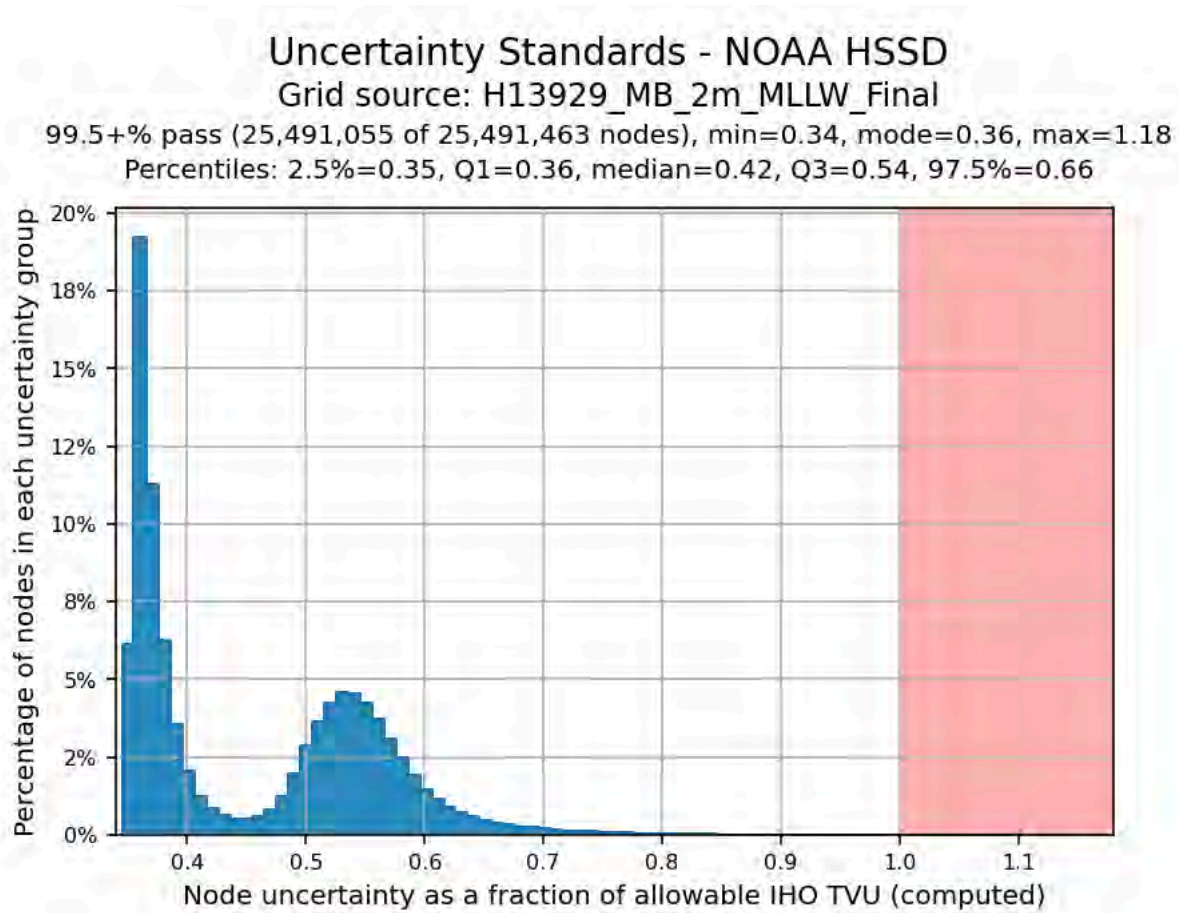


Figure 5: Uncertainty standards.

B.2.3 Junctions

No prior junctions were assigned for Project OPR-B342-KR-24. One current survey junctions with the eastern border of H13929.

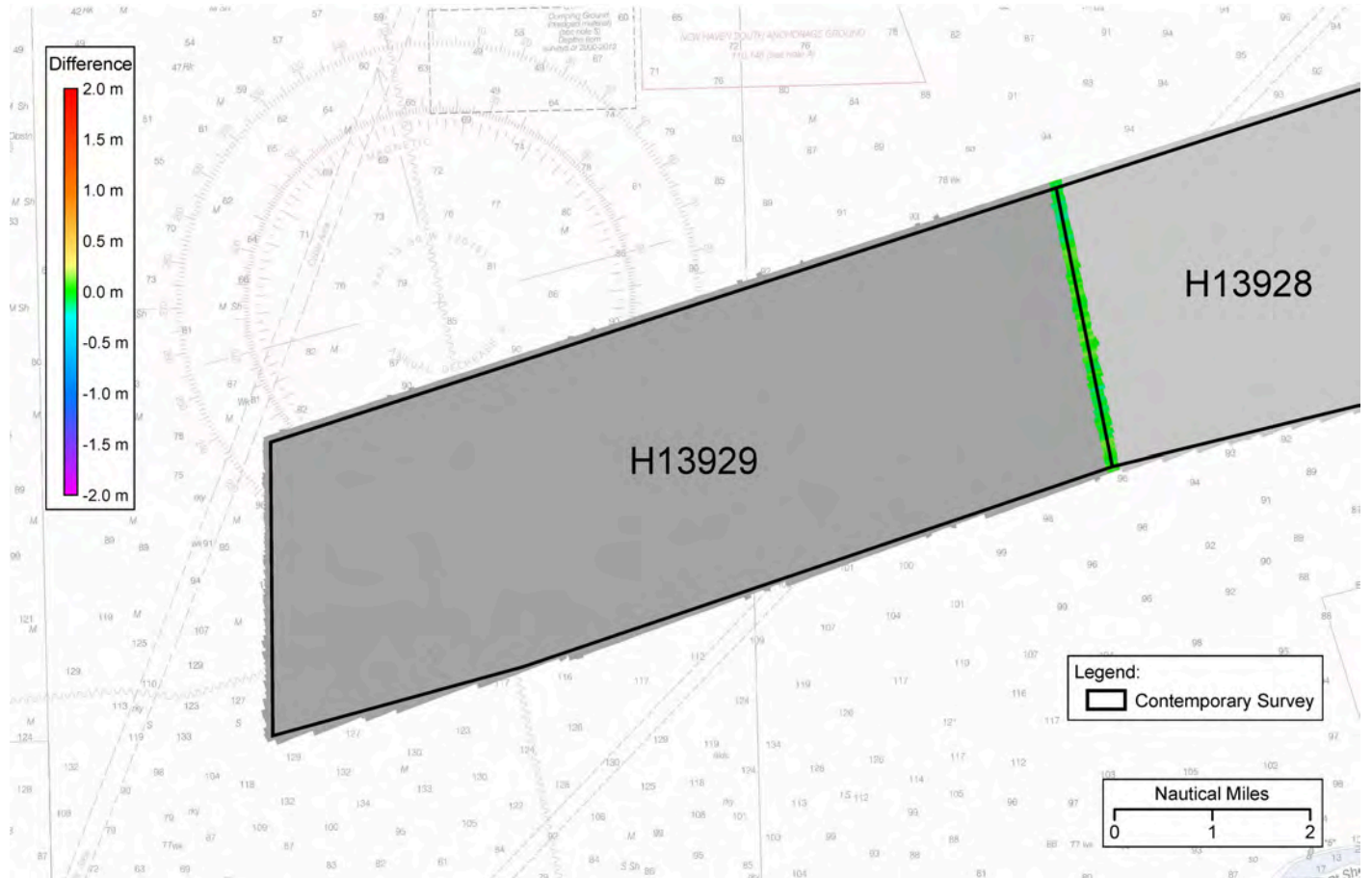


Figure 6: H13929 junction map with junction area depth differences.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H13928	1:10000	2024	OSI	E

Table 9: Junctioning Surveys

H13928

This junction is discussed in the H13928 DR.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

B.2.5 Equipment Effectiveness

There were no conditions or deficiencies that affected equipment operational effectiveness.

B.2.6 Factors Affecting Soundings

Sound Speed Variation

Sound speed variations were observed throughout the survey area, correlating to factors including the tide, weather, water depth, and bathymetric features, such as slopes or sand waves. In data processing, sound speed profiles that did not adequately reflect the surrounding water mass were identified and removed, edited, or replaced. Sound speed casts were primarily applied using the CARIS HIPS "Nearest in Distance within Time" method, therefore, removing a profile collected on a steep slope would allow deeper and shoaler casts on either side to be applied instead. Casts that were empirically found to represent a large water zone were added at additional locations within that zone to ensure proper corrections given the cast selection options available in the CARIS sound speed tools. Bathymetry, uncertainty, and standard deviation surfaces were used to direct editing and determine the accuracy of sound speed cast selection.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: RV North Cove acquired AML3 casts at intervals of approximately 60 minutes.

Hydrographers acquired more frequent sound speed profiles if high variability was noted in the surface sound speed from the AML Micro-X installed on the head of the transducer, or when the surface sound speed comparison threshold was exceeded (>2m/s change) between the profile reading at the draft of the transducer and the Micro-X.

OSI submitted a data package titled "SOUND VELOCITY collected from RV North Cove, RV South Cove, and RV West Cove II in North Atlantic Ocean, Long Island Sound from 2024-06-20 to 2024-09-27" in NetCDF format to the National Centers for Environmental Information (NCEI) on October 22, 2024.

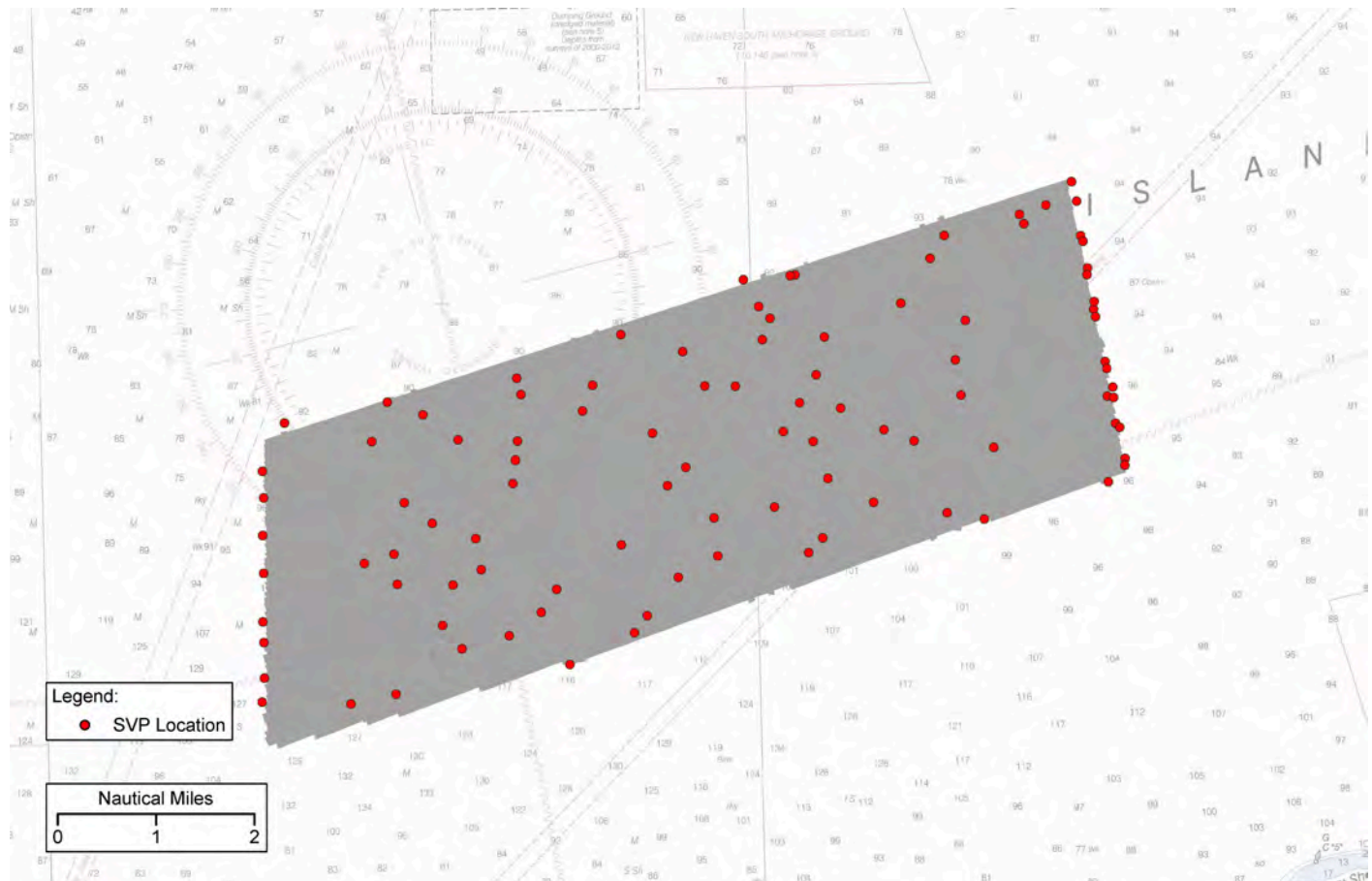


Figure 7: H13929 sound speed cast locations.

B.2.8 Coverage Equipment and Methods

This survey was conducted to achieve Complete Coverage with multibeam, as specified in HSSD 5.2.2.3, Option A. The survey methods used to meet coverage requirements did not deviate from those described in the DAPR.

The HydrOffice "QC Tools" application was used to verify that the multibeam data met the density coverage requirements, with 99.5+% of the grid nodes populated with at least 5 soundings.

The only surface submitted for this survey is of 2m resolution, which is appropriate for the depth of the seafloor as surveyed. In the finalized surface, the designated shoal sounding on a single tall feature is preserved, causing the minimum depth of the finalized surface to be shoaler than the specified depth range for a 2m resolution surface.

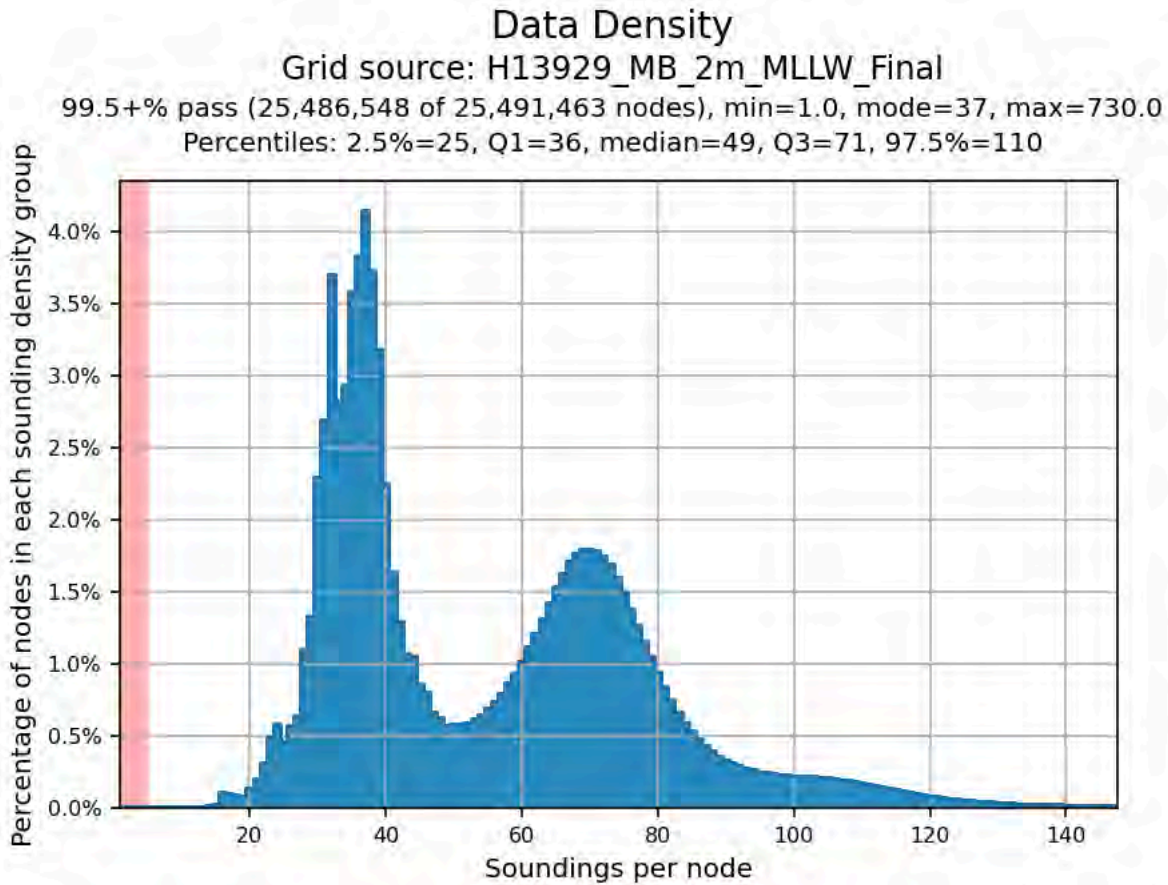


Figure 8: Data density, 2m resolution surface.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

All equipment and survey methods were used as detailed in the DAPR.

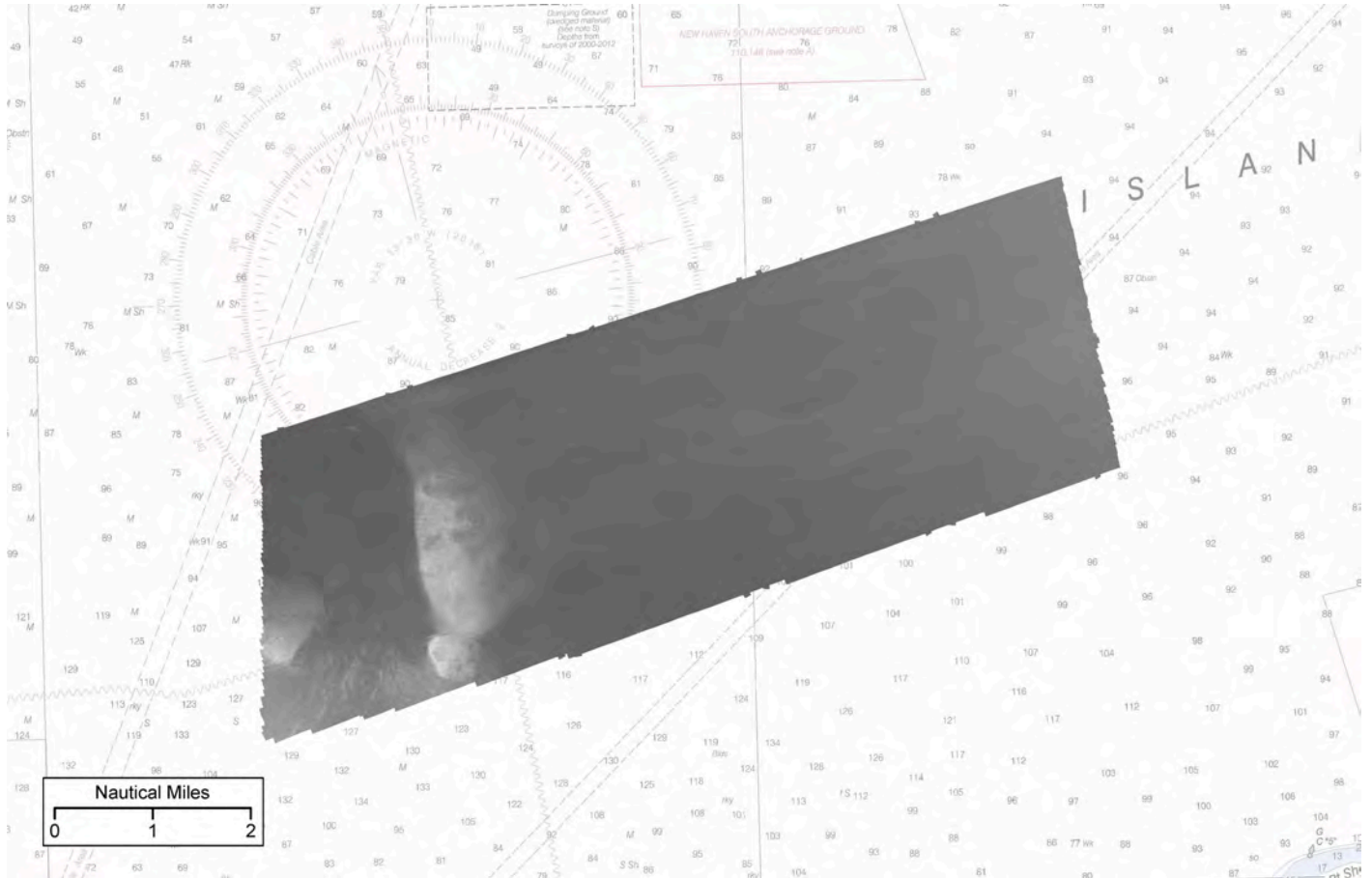


Figure 9: H13929 multibeam backscatter mosaic.

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following Feature Object Catalog was used: NOAA Profile Version 2023.

B.5.2 Surfaces

The following surfaces and/or BAGs were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H13929_MB_2m_MLLW_Final	CARIS Raster Surface (CUBE)	2 meters	15.0 meters - 39.6 meters	NOAA_2m	Complete MBES
H13929_MB_2m_MLLW	CARIS Raster Surface (CUBE)	2 meters	25.4 meters - 39.6 meters	NOAA_2m	Complete MBES
H13929_MBAB_2m_400kHz_1of1	MB Backscatter Mosaic	2 meters	-	N/A	Processed Backscatter

Table 10: Submitted Surfaces

C. Vertical and Horizontal Control

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

C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

ERS Datum Transformation

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

Method	Ellipsoid to Chart Datum Separation File
ERS via VDATUM	OPR-B342-KR-24_100m_NAD83_2011-MLLW_geoid18.csar

Table 11: ERS method and SEP file

C.2 Horizontal Control

The horizontal datum for this project is North American Datum 1983 (2011).

The projection used for this project is Universal Transverse Mercator (UTM) Zone 18.

The following PPK methods were used for horizontal control:

- Smart Base

The following CORS Stations were used for horizontal control:

HVCR Site ID	Base Station ID
BROOKFIELD	CTBK
DARIEN	CTDA
GROTON	CTGR
GUILFORD	CTGU
MANSFIELD	CTMA
PAQUETTE	CTNE
NEPTUNE TOWNSHIP	NJNT
CENTRAL ISLIP	NYCI
LAKE CARMEL	NYLC
NEWBURGH	NYNB
VALHALLA	NYVH
NEW YORK WAAS 1	ZNY1

Table 12: CORS Base Stations

The following user installed stations were used for horizontal control:

HVCR Site ID	Base Station ID
Ocean Surveys Connecticut	OSCT

Table 13: User Installed Base Stations

D. Results and Recommendations

D.1 Chart Comparison

D.1.1 Electronic Navigational Charts

The following are the largest scale ENC's, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date
US5CT1CL	1:20000	2	11/04/2021	11/04/2021
US5CT1CM	1:20000	2	11/04/2021	11/04/2021
US5NY9HR	1:20000	2	09/28/2021	09/28/2021
US5NY9HS	1:20000	2	10/28/2021	10/28/2021
US5NY9HT	1:20000	2	11/08/2021	11/08/2021

Table 14: Largest Scale ENC's

D.1.2 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey.

D.1.3 Charted Features

The charted features assigned in H13929 were 2 wrecks, both of which were found and included as new area features due to their size.

D.1.4 Uncharted Features

There were 2 new obstructions, 1 new wreck, and 2 possible buried wrecks surveyed in H13929. See the FFF for details.

D.1.5 Channels

No channels exist within the survey limits.

D.2 Additional Results

D.2.1 Aids to Navigation

No Aids to navigation (ATONs) exist for this survey.

D.2.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.2.3 Bottom Samples

Bottom sample locations for this project were selected based on the processed backscatter. Survey H13929 had 2 locations sampled, and both samples were primarily mud. See the FFF for details and photos.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

There are 2 charted cables and 1 cable area crossing H13929. The FA-1 (FLAG Atlantic 1) transatlantic submarine cable crosses the survey area in an east-west direction and the Cross-Sound Cable, an electric transmission cable, crosses the survey area in a N-S direction. A cable area for the MCI fiber optic cable crosses diagonally through the survey in the eastern end. The FA-1 and the Cross-Sound Cable each had a linear depression observed along their charted paths, measuring 1km and 500m long respectively. No other evidence of submarine cables was observed in the survey area.

D.2.6 Platforms

No platforms exist for this survey.

D.2.7 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.8 Abnormal Seafloor or Environmental Conditions

No abnormal seafloor or environmental conditions exist for this survey.

D.2.9 Construction and Dredging

No present or planned construction or dredging exist within the survey limits.

D.2.10 New Survey Recommendations

No new surveys or further investigations are recommended for this area.

D.2.11 ENC Scale Recommendations

No new ENC scales are recommended for this area.

E. Approval Sheet

As Chief of Party, field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys Specifications and Deliverables, Field Procedures Manual, Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Approver Name	Approver Title	Approval Date	Signature
John R. Bean	Chief of Party	12/06/2024	Digitally signed by John R. Bean
David T. Somers	Data Processing Manager	12/06/2024	Digitally signed by David T. Somers

F. Table of Acronyms

Acronym	Definition
AHB	Atlantic Hydrographic Branch
AST	Assistant Survey Technician
ATON	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
BASE	Bathymetry Associated with Statistical Error
CO	Commanding Officer
CO-OPS	Center for Operational Products and Services
CORS	Continuously Operating Reference Station
CTD	Conductivity Temperature Depth
CEF	Chart Evaluation File
CSF	Composite Source File
CST	Chief Survey Technician
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DGPS	Differential Global Positioning System
DP	Detached Position
DR	Descriptive Report
DTON	Danger to Navigation
ENC	Electronic Navigational Chart
ERS	Ellipsoidal Referenced Survey
ERTDM	Ellipsoidally Referenced Tidal Datum Model
ERZT	Ellipsoidally Referenced Zoned Tides
FFF	Final Feature File
FOO	Field Operations Officer
FPM	Field Procedures Manual
GAMS	GPS Azimuth Measurement Subsystem
GC	Geographic Cell
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division

Acronym	Definition
HSSD	Hydrographic Survey Specifications and Deliverables
HSTB	Hydrographic Systems Technology Branch
HSX	Hypack Hysweep File Format
HTD	Hydrographic Surveys Technical Directive
HVCR	Horizontal and Vertical Control Report
HVF	HIPS Vessel File
IHO	International Hydrographic Organization
IMU	Inertial Motion Unit
ITRF	International Terrestrial Reference Frame
LNM	Linear Nautical Miles
MBAB	Multibeam Echosounder Acoustic Backscatter
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NALL	Navigable Area Limit Line
NTM	Notice to Mariners
NMEA	National Marine Electronics Association
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NRT	Navigation Response Team
NSD	Navigation Services Division
OCS	Office of Coast Survey
OMAO	Office of Marine and Aviation Operations (NOAA)
OPS	Operations Branch
MBES	Multibeam Echosounder
NWLON	National Water Level Observation Network
PDBS	Phase Differencing Bathymetric Sonar
PHB	Pacific Hydrographic Branch
POS/MV	Position and Orientation System for Marine Vessels
PPK	Post Processed Kinematic
PPP	Precise Point Positioning
PPS	Pulse per second

Acronym	Definition
PRF	Project Reference File
PS	Physical Scientist
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
RTX	Real Time Extended
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
SSSAB	Side Scan Sonar Acoustic Backscatter
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPU	Total Propagated Uncertainty
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDF	Zone Definition File