

W00476

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: W00476

LOCALITY

State(s): California

General Locality: Offshore South-Central California

Sub-locality: Noyo Canyon

2019

CHIEF OF PARTY
CAPT Marc Moser

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

W00476

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): **California**

General Locality: **Offshore South-Central California**

Sub-Locality: **Noyo Canyon**

Scale: **80000**

Dates of Survey: **09/07/2019 to 09/09/2019**

Instructions Dated: **08/23/2019**

Project Number: **OPR-L321-FA-19**

Field Unit: **NOAA Ship Fairweather**

Chief of Party: **CAPT Marc Moser**

Soundings by: **Kongsberg Maritime EM 710 (MBES)**

Imagery by: **Kongsberg Maritime EM 710 (MBES Backscatter)**

Verification by: **Pacific 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 10N, MLLW. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.

DESCRIPTIVE REPORT SUMMARY

A. Area Surveyed

This hydrographic survey was acquired in accordance with the requirements defined in the Project Instructions for OPR-L321-FA-19. The survey area is located in the vicinity of Noyo Canyon offshore of South-Central California. Coverage acquired in W00476 is shown in Figure 1 below.

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
39° 58' 37.57" N 124° 20' 51.67" W	39° 29' 31.45" N 123° 53' 57.99" W

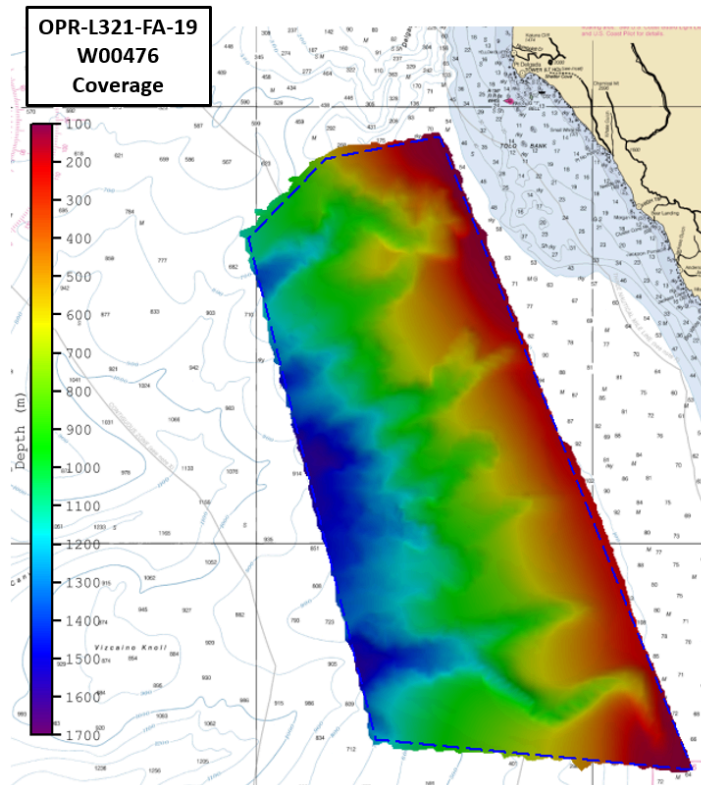


Figure 1: W00476 coverage overlaid on chart 18620 with sheet limits (in blue).

B. Survey Purpose

This project is being conducted in support of the Expanding Pacific Research and Exploration of Submerged Systems (EXPRESS) campaign which is comprised of a large and diverse team of federal and non-federal partners targeting deep water areas off of the U.S. Pacific Coast. The primary objective of this project is

to collect data for surficial geology, benthic habitats, subbottom faults, geologic hazards and sedimentary processes. Data from this project will support a variety of disciplines including offshore energy projects and infrastructure, marine spatial planning, ecosystem assessments and marine geohazards. NOAA, in collaboration with the USGS and BOEM will conduct a coordinated multibeam echo sounder survey of the project area to collect bathymetry, acoustic backscatter data and water column data. Bathymetric data from this project will be further used to update NOAA's nautical charting products within the area. This project will cover a total of 1,757 SNM and survey data from this project is intended to supersede all prior survey data in the common area.

C. Intended Use of Survey

The entire survey is adequate to supersede previous data.

Data acquired in W00476 meet multibeam echo sounder (MBES) coverage requirements for complete coverage, as required by the HSSD.

D. Data Acquisition and Processing

Please reference Data Acquisition and Processing Report OPR-L321-FA-19 for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods.

E. Uncertainty

The surface was analyzed using the HydrOffice QC Tools Grid QA feature to determine compliance with the specifications. Overall, 99.98% of nodes within the surface meet the NOAA Allowable Uncertainty specifications for W00476 (Figure 2). Density requirements were achieved for W00476 with 99% of surface nodes containing five or more soundings as required by the HSSD Section 5.2.2.3 (Figure 3).

Uncertainty Standards

Grid source: W00476_MB_VR_MLLW

99.5+% pass (7,183,793 of 7,183,811 nodes), min=0.01, mode=0.03, max=2.49

Percentiles: 2.5%=0.02, Q1=0.04, median=0.07, Q3=0.10, 97.5%=0.15

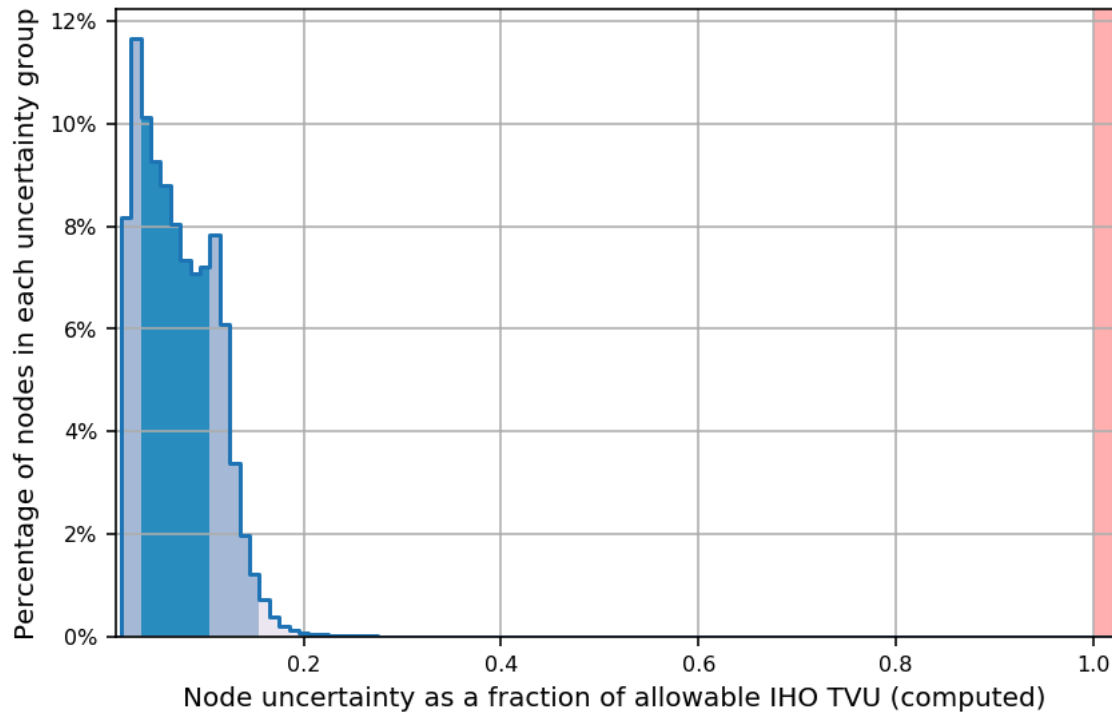


Figure 2: W00476 compliance with uncertainty standards.

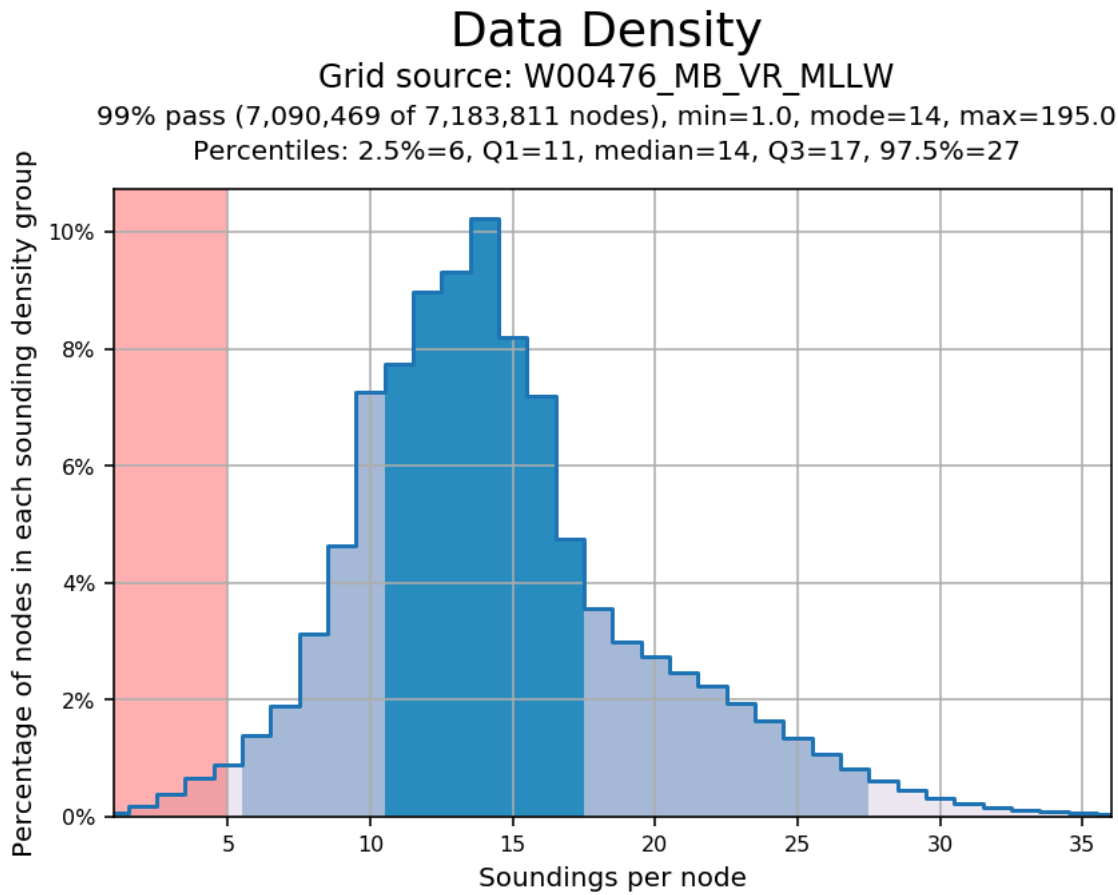


Figure 3: W00476 compliance with density requirements.

Grid QA was run on the finalized surface W00476_MB_VR_MLLW_Final during office review. This surface also met the density and uncertainty specifications.

F. Results and Recommendations

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

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US3CA15M	1:200000	22	05/02/2016	05/09/2019	NO

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

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
W00476_MB_VR_MLLW	CARIS VR Surface (CUBE)	Variable Resolution m	108.2 m - 1642.6 m	NOAA_VR	Complete MBES
W00476_MB_VR_MLLW_Final	CARIS VR Surface (CUBE)	Variable Resolution m	108.2 m - 1642.6 m	NOAA_VR	Complete MBES

The NOAA CUBE parameters defined in the HSSD were used for the creation of all CUBE surfaces for W00476. The surfaces have been reviewed where noisy data, or "fliers" are incorporated into the gridded solutions causing the surface to be shoaler or deeper than the true seafloor. Where these spurious soundings cause the gridded surface to be shoaler or deeper than the reliably measured seabed by greater than the maximum allowable Total Vertical Uncertainty at that depth, the noisy data have been rejected by the hydrographer and the surface recomputed.

Flier Finder, part of the QC Tools package within HydrOffice, was used to assist the search for spurious soundings following gross cleaning. Flier Finder was run iteratively until remaining flagged fliers were deemed to be valid aspects of the surface.

G. Vertical and Horizontal Control

The vertical datum for this project is Mean Lower Low Water. The vertical control method used was VDatum.

Per section 5.1.2.3 of the Field Procedures Manual (2014 ed), no Horizontal and Vertical Control Report has been generated for W00476.

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 10.

Vessel kinematic data were post-processed using Applanix POSPac processing software and RTX positioning methods described in the DAPR. Smoothed Best Estimate of Trajectory (SBET) and associated error (RMS) data were applied to all MBES data in CARIS HIPS and SIPS.

The Wide Area Augmentation System (WAAS) was used for real-time horizontal control during data acquisition.

H. Additional Results

Additional Results

ENC Comparison

Soundings from W00476 are in general disagreement with charted depths on ENC US3CA15M, with most depths disagreeing by about 10 fathoms as shown in Figure 4. The largest differences are seen in deeper areas and Noyo Canyon where differences range to 100 fathoms.

Backscatter

Raw backscatter data were stored in the .all file for Kongsberg systems. All backscatter were processed to GSF files, and a floating point mosaic was created by the field unit via Fledermaus FMGT 7.8.10 (Figure 5).

Water Column

Water Column data was not collected for DN250 and the first few lines of DN251 due to operator error. These lines were not reacquired due to operational time constraints.

Junction Analysis

No contemporary survey data exists adjacent to Survey W00476.

Crosslines

Crosslines were not required in project instructions and were not collected.

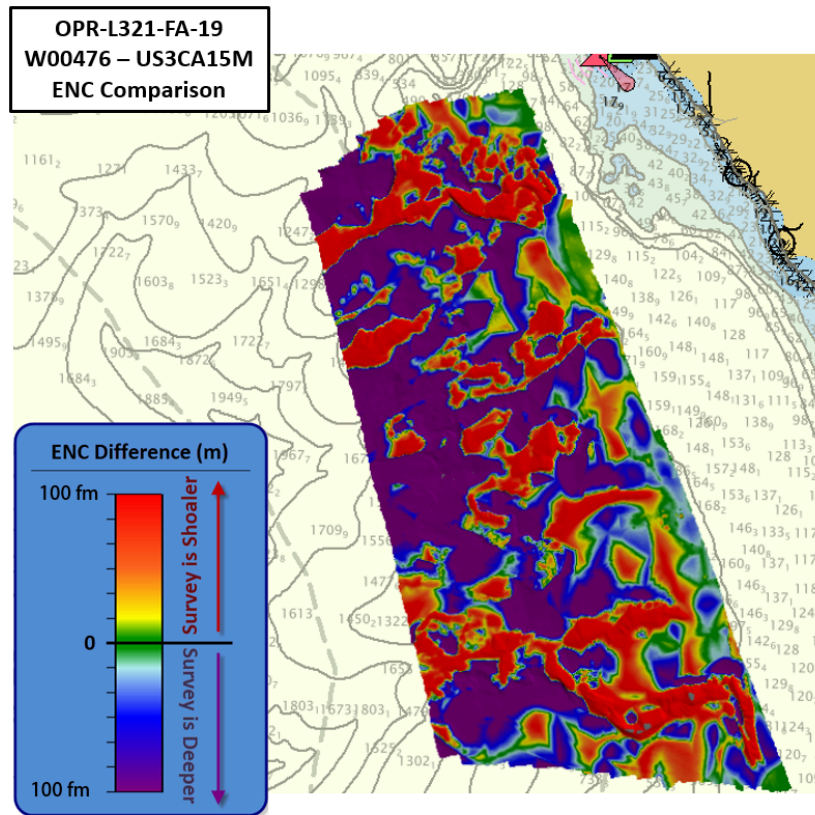


Figure 4: Comparison of W00476 and ENC US3CA15M

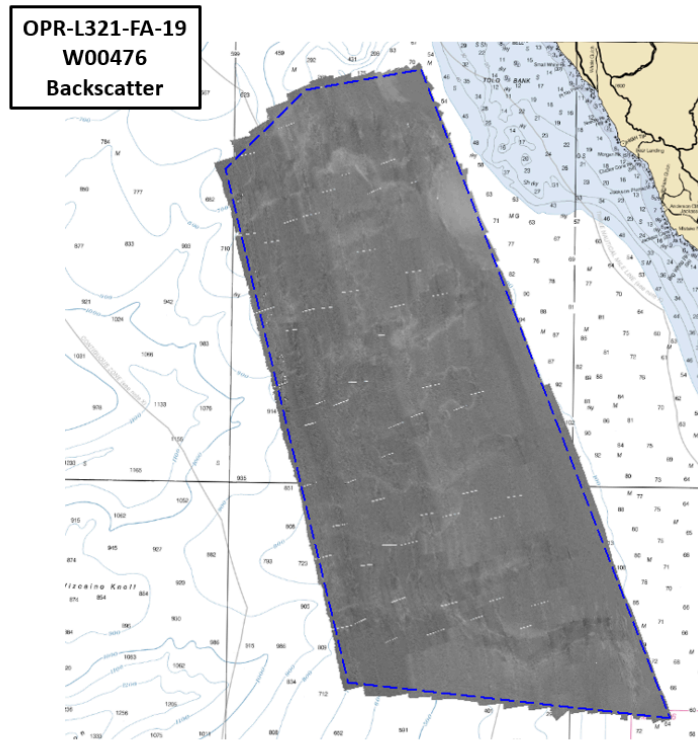


Figure 5: W00476 backscatter mosaic overlaid on chart 18620 with sheet limits (in blue).

I. Approval

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 Survey Summary 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, Standing and 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 Survey Summary Report.

Approver Name	Title	Date	Signature
CAPT Marc Moser	Chief of Party	01/02/2020	MOSER.MARC.STA NTON.1163193902 Digitally signed by MOSER.MARC.STANTON.1163193 902 Date: 2020.01.06 11:28:17 -08'00'
LT Stephen Moulton	Operations Officer	01/02/2020	MOULTON.STEPH EN.F.1282116835 Digitally signed by MOULTON.STEPHEN.F.12821168 35 Date: 2020.01.06 12:38:58 -08'00'
HSST Alyssa Johnson	Acting Chief Survey Technician	01/02/2020	WIEGERT.MICHELLE LYNN.1548600975 Digitally signed by WIEGERT.MICHELLE.LYNN.154860 0975 Date: 2020.01.06 12:07:28 -08'00'
LTJG Kevin Tennyson	Sheet Manager	01/02/2020	TENNYSON.KEVIN.AL EXANDER.153917068 2 Digitally signed by TENNYSON.KEVIN.ALEXANDER.1 539170682 Date: 2020.01.02 07:54:23 -08'00'

APPROVAL PAGE

W00476

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NCEI for archive

- Descriptive Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Collection of backscatter mosaics
- Processed survey data and records
- GeoPDF of survey products

The survey evaluation and verification has been conducted according current OCS Specifications, and the survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: _____

Commander Olivia Hauser, NOAA
Chief, Pacific Hydrographic Branch