

D00269

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: D00269

LOCALITY

State(s): Oregon

General Locality: Approaches to Yaquina Bay

Sub-locality: Stonewall Bank

2020

CHIEF OF PARTY
Samuel F. Greenaway CDR/NOAA

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

D00269

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): **Oregon**

General Locality: **Approaches to Yaquina Bay**

Sub-Locality: **Stonewall Bank**

Scale: **50000**

Dates of Survey: **02/17/2020 to 02/18/2020**

Instructions Dated: **N/A**

Project Number: **S-M363-RA-20**

Field Unit: **NOAA Ship *Rainier***

Chief of Party: **Samuel F. Greenaway CDR/NOAA**

Soundings by: **Kongsberg Maritime EM 710-MK2 (MBES)**

Imagery by: **Kongsberg Maritime EM 710-MK2 (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 MEMO

February 19, 2020

MEMORANDUM FOR: Pacific Hydrographic Branch

THROUGH: CDR Samuel F. Greenaway
Chief of Party, NOAA Ship *Rainier*



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Date: 2020.02.19 16:25:14
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FROM: LTJG Nicholas J. Azzopardi
Sheet Manager, NOAA Ship *Rainier*



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SUBJECT: Submission of Survey D00269

This survey was conducted to take advantage of the resources of NOAA Ship RAINIER during extra ship time allotted for weather contingencies during a transit from Vallejo, CA to Newport, OR. The area surveyed was an area of geologic and nautical charting interest just offshore of the ship's homeport of Newport, OR. This survey also served as a start to the 2020 field season for RAINIER, in which we tested the recently upgraded EM710 Mark II MBES system, and sonar operators and bridge personnel built experience and refreshed shipboard acquisition procedures. Stonewall Bank is a shallow area 10-15 nautical miles offshore along the central Oregon coast and has a survey vintage of 1928. Data from this project will support the Seabed 2030 mapping initiative and the National Bathymetric Source Project. It will also serve to update nautical charts in the area, which largely depict depths derived from outdated acquisition methods.

One variable resolution CUBE surface and one finalized variable resolution CUBE surface are provided as a part of this survey. Surfaces were computed using NOAA complete coverage depth-based resolution standards as specified in HSSD 2019. Raw backscatter data is provided as .all files and processed backscatter is provided as .gsf files. One backscatter mosaic was generated for submission in accordance with the HSSD.

All soundings were reduced to Mean Lower Low Water using VDatum. 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.

The associated uncertainty for the separation model used was applied in Caris HIPS 11.1.03 with a value of 19.34 cm. The separation model and this uncertainty value was derived from NOAA's VDatum SEP from Shapefile tool included in Pydro 19.4.

Due to the rapid acquisition and submission of the survey, an outdated 2019 DAPR is being provided with this survey. All information remains essentially correct, with the exception of EM 710-MK2 system, which is detailed in the DAPR as an EM 710.

A total of 105.22 linear nautical miles (LNM) of mainscheme data was collected for this survey of Stonewall Bank for a total of 6.81 square nautical miles (SNM) of survey coverage. Crosslines collected total 8.4 LNM, amounting to 6.5 percent of mainscheme LNM for this survey. Crossline data is adequate for verifying and evaluating the internal consistency of survey data. The Compare Grids function in Pydro Explorer analyzed finalized VR surfaces mainscheme survey data and crossline survey data. In the difference surface, over 99.5% of nodes met HSSD allowable Total Vertical Uncertainty (TVU) standards.

Multibeam bathymetry data was converted and processed in Caris HIPS 11.1.03, obvious noise was rejected by the hydrographer.

Raw backscatter data processed by the field unit in Fledermaus Geocoder Toolbox version 7.8.1.

All sound speed data were collected with an AML Oceanographic MVP200 Moving Vessel Profiler and applied with an associated uncertainty of 1.0 meter per second. Casts were applied in Caris HIPS and SIPS 11.1.03 via the "nearest in distance" method. Due to proximity of fixed fishing gear endangering the towed MVP200, casts were not collected during nighttime survey operations. During daylight survey operations, casts were collected approximately once per hour. Two casts derived from the World Ocean Atlas 2013 data were applied to the data due to the temporal absence of casts overnight. Surface sound speed was collected with a Teledyne RESON SVP 70 and has an associated uncertainty of 0.05 meters per second.

NOAA's Pydro version 19.4 was used to conduct quality control analysis on the finalized VR surface. The Flier Finder tool was used to analyze data for fliers, and none were found. Pydro's Holiday Finder tool was used to identify holidays in the finalized surface, and none were found using complete coverage standards. Pydro was also used to analyze data for agreement with density and resolution requirements specified in HSSD 2019. The finalized VR surface met complete coverage standards for node resolution and density in over 99.5 percent of grid nodes.

Total Propagated Uncertainty (TPU) values for this survey were derived from a combination of fixed values for equipment and vessel characteristics, as well as from field assigned values for sound speed uncertainties. Tidal uncertainty was calculated from the NOAA Vertical Datum Transformation Model generated by Pydro's VDatum SEP from Shapefile tool. In addition to the usual a priori estimates of uncertainty, some real-time and post-processed uncertainty sources were also incorporated into the depth estimates. Real-time uncertainties for position, navigation, attitude, and vessel motion data from Applanix POS MV were applied during acquisition and initially in post-processing. However, the SBET and RMS files, which were generated using POSpac MMS 8.3 software and applied in CARIS HIPS to supersede POS MV data, have post-processed uncertainties associated with the GPS height and position. Uncertainty values of the submitted finalized grid was calculated in Caris using "Greater of the Two" of uncertainty and standard deviation (scaled to

95%). Grid QA v5 within Pydro QC Tools was used to analyze TVU compliance. This survey met HSSD requirements in over 99.5 percent of grid nodes.

All data were reviewed for DTONs and none were identified in this survey.

Survey data indicates that soundings are generally deeper than charted data for the survey area. Overall, survey data did not depict the same shoal areas represented by the chart. For example, the shallowest surveyed depth was approximately 20 fathoms in contrast to the charted least depth of 13 fathoms. We suspect the surveyors in 1928, working with then new technology of the Dorsey Fathometer, mistook shoals of fish for shoals of rock, as surveyed depths generally matched the previous survey in flat areas adjacent to the bank.

No final feature file is being provided with this report. The survey area contains one charted feature in the form of an obstruction of unknown depth in the vicinity of 46°29'46" N, 124°24'57" W. Survey data was acquired over the obstruction with a search radius of approximately 500 meters, and no obstruction was observed in the data. The hydrographer recommends the obstruction be removed from the chart.

This survey does meet charting specifications and is adequate to supersede prior data.

APPROVAL PAGE

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The survey data meet or exceed the current requirements of the Office of Coast Survey hydrographic data review process and may be used to update NOAA products. The following survey products will be archived at the National Centers for Environmental Information:

- Descriptive Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Collection of acoustic backscatter mosaics
- Geospatial PDF of survey products

Approved: _____

James Miller

Chief, Pacific Hydrographic Branch