

D00226

NOAA Form 76-35A

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

**DESCRIPTIVE REPORT**

Type of Survey: Transit Survey

Registry Number: D00226

**LOCALITY**

State: Alaska

General Locality: Bering Strait and Vicinity

Sub-locality: Bering Strait

**2017**

CHIEF OF PARTY  
CDR Mark Van Waes, NOAA

LIBRARY & ARCHIVES

Date:

**HYDROGRAPHIC TITLE SHEET**

**D00226**

**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: **Alaska**

General Locality: **Bering Strait and Vicinity**

Sub-Locality: **Bering Strait**

Scale: **1: 40,000**

Dates of Survey: **07/11/2017 to 09/04/2017**

Instructions Dated: **09/12/2011**

Project Number: **OPR-R365-FA-17**

Field Unit: **NOAA Ship *Fairweather***

Chief of Party: **CDR Mark Van Waes, NOAA**

Soundings by: **Multibeam Echo Sounder**

Imagery by: **Multibeam Echo Sounder**

Verification by: **Pacific Hydrographic Branch**

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

Remarks:

*The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via <http://www.ncei.noaa.gov/>.*

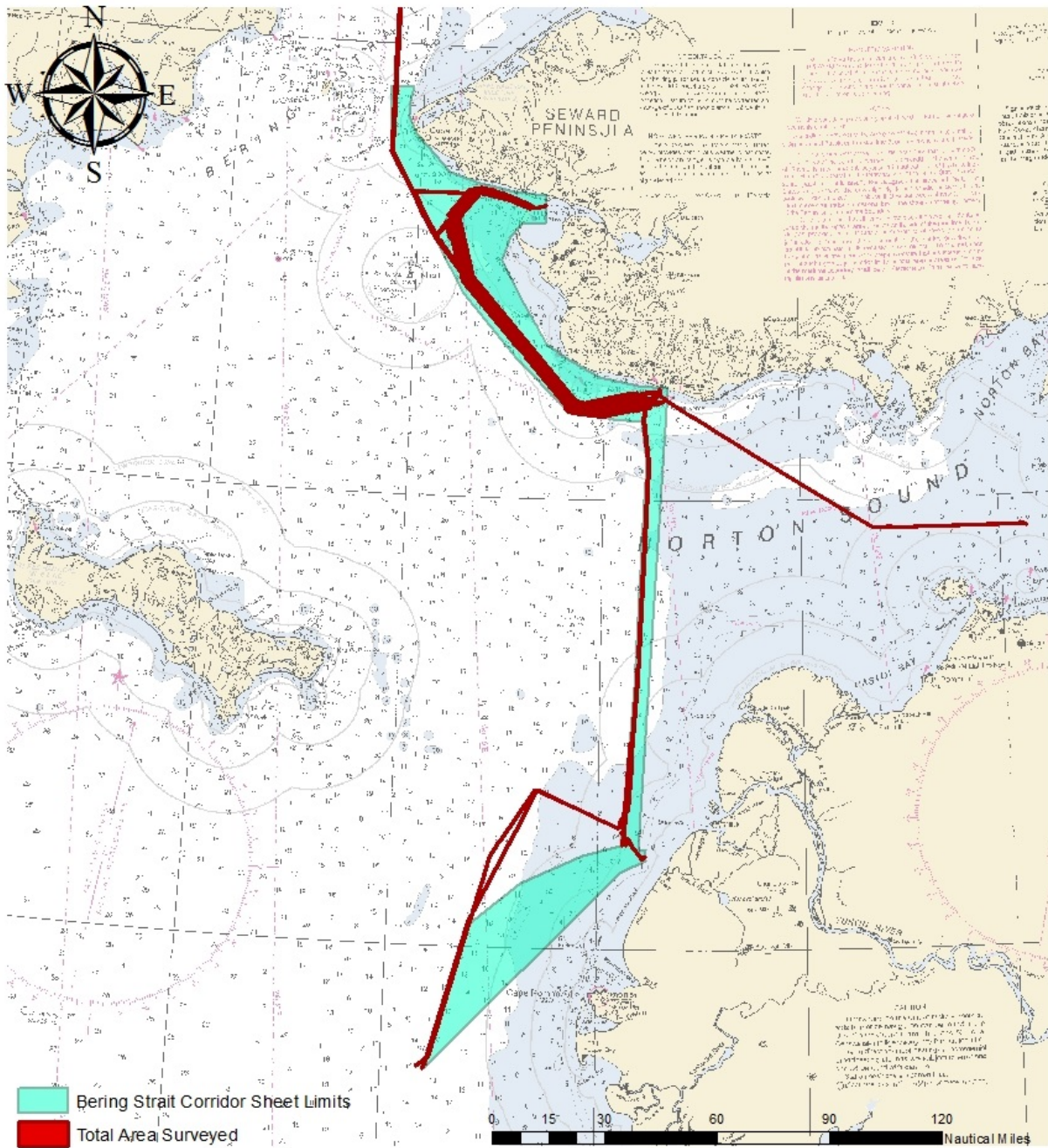
<b>Descriptive Report Summary</b> <b>D00226</b>	
Project	OPR-R365-FA-17
Survey	D00226
State	Alaska
Locality	Bering Strait and Vicinity
Sub Locality	Bering Strait
Scale of Survey	1:40000
Sonars Used	Kongsberg EM710 (MULTIBEAM ECHO SOUNDER) Kongsberg EM2040 (MULTIBEAM ECHO SOUNDER)
Horizontal Datum	North American Datum of 1983 (NAD83)
Vertical Datum	Mean Lower Low Water
Vertical Datum Correction	TCARI
Projection	UTM Zone 03N
Field Unit	NOAA Ship <i>Fairweather</i>
Survey Dates	07/11/2017 - 09/04/2017
Chief of Party	CDR Mark Van Waes, NOAA

### A. Area Surveyed

This hydrographic survey was acquired in accordance with the requirements defined in the Project Instructions for OPR-R365-FA-17, and the NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSD), April 2017. Data for D00226 were obtained opportunistically while the Fairweather was operating in Port Clarence, AK. Data were acquired via 500 meter set line spacing, as per the Project Instructions.

Data were acquired within the following survey limits:

<b>Northwest Limit</b>	<b>Southeast Limit</b>
66° 36' 43.12" N 168° 19' 13.09" W	61° 27' 5.96" N 167° 36' 41.97" W



	Sq.km	Sq.nm
<b>Bering Strait Corridor</b>	<b>10062.23</b>	<b>2933.68</b>
<b>Total Surveyed Area</b>	<b>548.87</b>	<b>160.03</b>
<b>Surveyed Area Within Sheet Limits</b>	<b>497.5</b>	<b>145.05</b>

Figure 1: D00226 Survey overview

## **B. Survey Purpose**

Based on AIS data, the Bering Strait Corridor is the most heavily trafficked route for local vessels transiting in the area. This survey aims to provide contemporary bathymetric data to promote safe and secure transit throughout this corridor.

## **C. Intended Use of Survey**

The entire survey is adequate to supersede previous data.

Data from this survey is intended to supersede all prior survey data in the common area.

## **D. Data Acquisition and Processing**

Please reference OPR-R365-FA-17 Data Acquisition and Processing Report for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods.

One exception to the standard processing workflow employed by the Fairweather was that due to high uncertainty in the outer beams attributed primarily to the sonar angle, all data were filtered to a swath of 60 degrees on both the port and starboard. This allowed the data in this survey to meet NOAA specifications for allowable uncertainty.

## **E. Uncertainty**

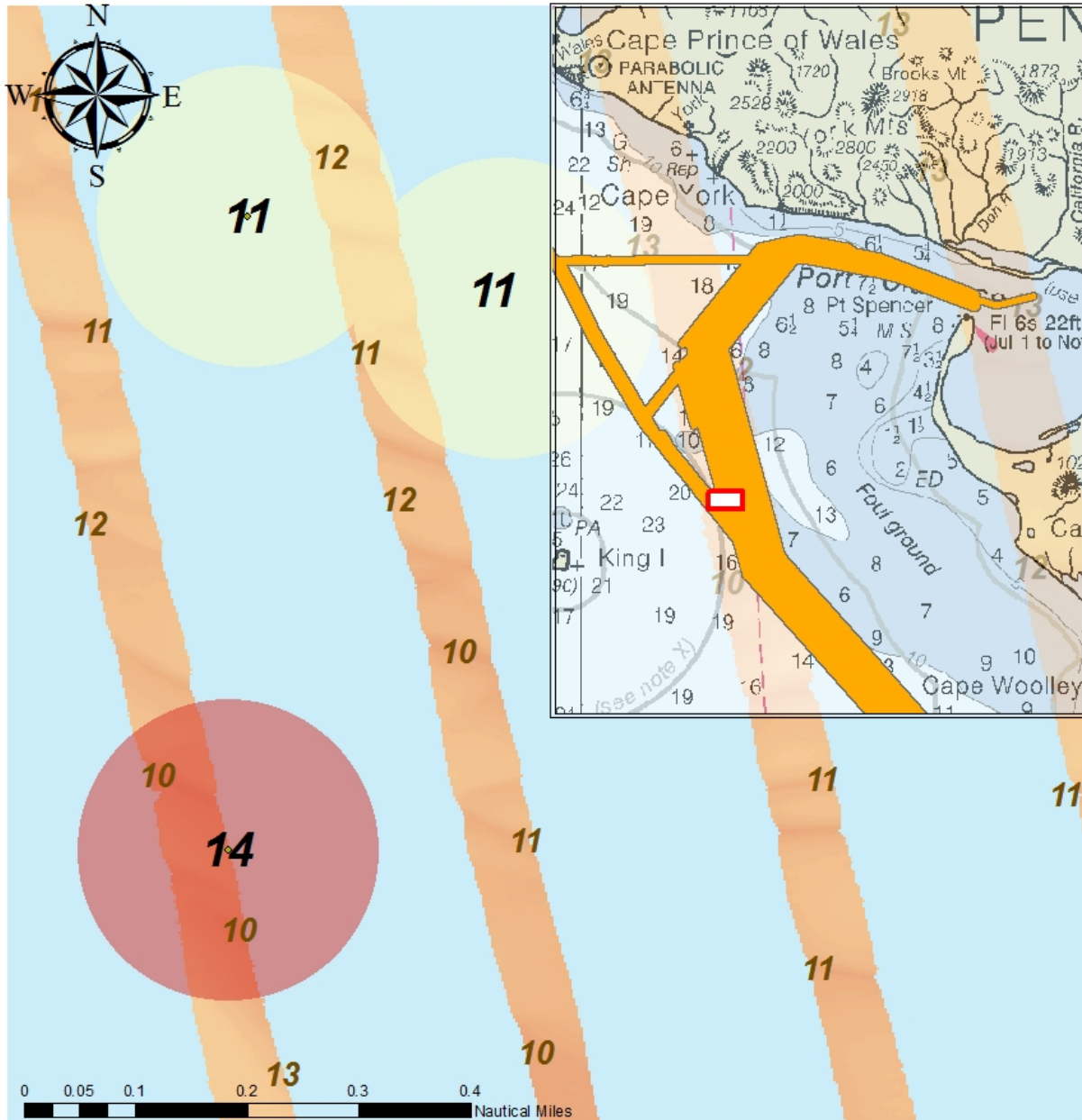
To determine NOAA Allowable Uncertainty statistics, a 4 meter resolution surface generated from the data was entered into the Grid QA function in PydroXL. It was found that more than 99% of nodes meet NOAA allowable uncertainty specifications survey D00226.

## **F. Results and Recommendations**

The following are the largest scale ENC that cover the survey area:

<b>ENC</b>	<b>Scale</b>	<b>Edition</b>	<b>Update Application Date</b>	<b>Issue Date</b>	<b>Preliminary?</b>
US3AK83M	1:300000	8	08/26/2015	08/26/2015	NO
US3AK80M	1:400000	8	04/17/2017	04/17/2017	NO
US4AK81M	1:100000	12	04/27/2016	04/27/2016	NO
US4AK98M	1:90000	1	11/09/2015	11/09/2015	NO
US5AK82M	1:20000	5	03/08/2017	03/08/2017	NO
US2AK92M	1:700000	13	10/03/2017	08/31/2017	NO
US2AK95M	1:1534076	7	08/03/2017	08/03/2017	NO
US3AK89M	1:315350	8	10/03/2017	05/30/2017	NO
US4AK8DM	1:100000	6	10/03/2017	05/30/2017	NO

To compare charted soundings with surveyed data, the Zonal Statistics tool was utilized in ArcMap 10.5. Soundings from the ENC were extracted, buffered with a radius of 250 meters and compared to the surveyed data. In general, soundings from D00226 are in agreement with charted depths throughout the survey area. The mean difference between charted soundings and surveyed soundings is -0.13 fathoms, with a standard deviation of +/- 0.79 fathoms. An example of an area where the depth discrepancy between charted and surveyed soundings exceeds 2 fathoms is shown in Figure 3 below



**Difference  
ENC & Surveyed Data**

- Less than -2 ftm
- 2 ftm - 2 ftm
- Greater than 2 ftm

**Surveyed Area**

- High : 32 ftm
- Low : 1 ftm

Figure 3: Discrepancy between D00226 data and ENC US4AK81M

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

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
D00226_MB_4m_MLLW.csar	CUBE	4 m	2.3 m - 62.6 m	NOAA 4m	Trackline
D00226_MB_4m_MLLW_Final.csar	CUBE	4 m	2.3 m - 62.6 m	NOAA 4m	Trackline

### G. Vertical and Horizontal Control

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

The vertical control method used for this survey was TCARI.

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

Station Name	Station ID
Village Cove, AK	9464212
Nome, AK	9468756
Red Dog Dock, AK	9491094

A request for final tides was submitted on September 8, 2017.

The horizontal datum for this project is North American Datum of 1983 (NAD83). The projection used for this survey is UTM Zone 03N.

During real-time acquisition, S220 and launches 2806 and 2807 received correctors from the Wide Area Augmentation System (WAAS) for increased accuracies similar to USCG DGPS stations. WAAS was the sole method of positioning for survey D00226.

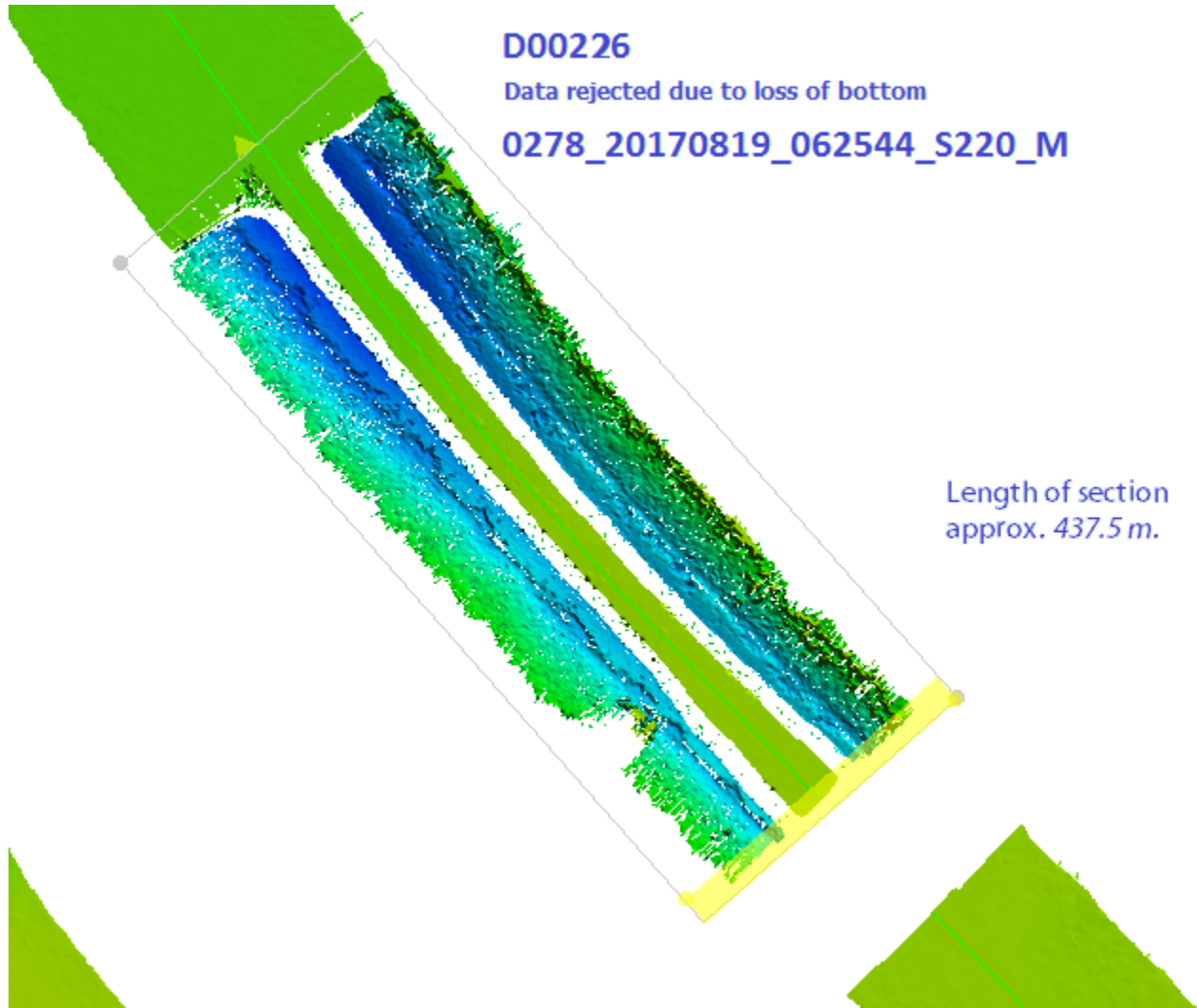
### H. Additional Results

Fairweather utilized the AML Oceanographic MVP 200 system and SeaBird 19plus CTD for the acquisition of sound velocity casts. Casts were conducted ever 2-10 hours during acquisition, with an average interval of 4 hours. Sound velocity profiles were sent to the Kongsberg Seafloor Information System (SIS) through Pydro Velocipy after each cast.



### Holidays

Holidays exist in the delivered data due to the transit trackline acquisition technique of this survey. One exceptional holiday was created when the EM710 lost bottom tracking, and the data had to be rejected. See Figures 4 and 5 below.



*Figure 4: Rejected data due to loss of bottom tracking*

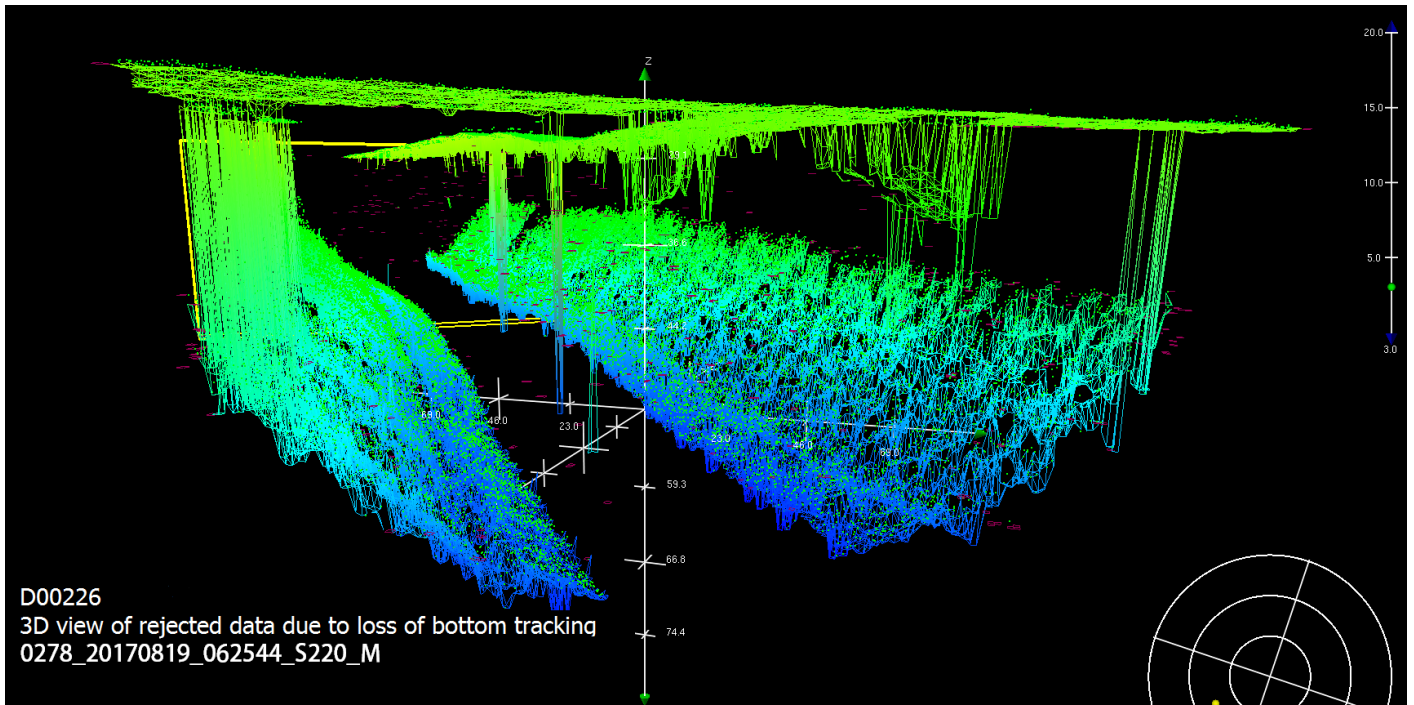






Figure 5: 3D view of rejected data due to loss of bottom tracking

## 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 and Specifications 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.

Approver Name	Title	Date	Signature
CDR Mark Van Waes, NOAA	Chief of Party	03/26/2018	 VAN WAES.MARK.1240076329 2018.03.27 11:07:40 -07'00'
LT Damian Manda, NOAA	Field Operations Officer	03/26/2018	 VAN WAES.MARK.1240076329 Signed for LT Damian Manda 2018.03.27 11:07:16 -07'00'
HCST Sam Candio	Chief Survey Technician	03/26/2018	 Digitally signed by CANDIO.SAMUELLOUIS.1515897743 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=CANDIO.SAMUELLOUIS.1515897743 Date: 2018.03.26 17:00:28 -07'00'
HAST Dmitry Malinkin	Sheet Manager	03/26/2018	 Digitally signed by MALINKIN.DMITRY.VALERIEVICH.1535499655 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=MALINKIN.DMITRY.VALERIEVICH.1535499655 Date: 2018.03.27 10:42:07 -07'00'



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
National Ocean Service  
Silver Spring, Maryland 20910

**PROVISIONAL TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE :** September 14, 2017  
**HYDROGRAPHIC BRANCH:** Pacific  
**HYDROGRAPHIC PROJECT:** OPR-R365-FA-17  
**HYDROGRAPHIC SHEET:** D00226  
**LOCALITY:** Bering Strait Corridor, Bering Strait and Vicinity, AK  
**TIME PERIOD:** July 19 - September 04, 2017  
**TIDE STATION USED:** 9468756 Nome, AK  
Lat. 64° 29.7'N Long. 165° 26.4' W  
**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 0.406 meters

**REMARKS: RECOMMENDED ZONING**

Please use the TCARI grid "R9452017.tc" as the final grid for project OPR-R365-FA-17, D00226, during the time period between July 19 and September 04, 2017.

**Refer to attachments for zoning information.**

**Note 1:** Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

**Note 2:** Annual leveling in FY17 for 9468756 Nome, AK was not verified at time of this note. A review of the verified leveling records from June 2008 to June 2016 shows the tide station benchmark network to be stable within an allowable 0.009 m tolerance. This Tide Note may be used as final stability verification for survey OPR-R365-FA-17, D00226. CO-OPS will immediately provide a revised Tide Note should subsequent leveling records indicate any benchmark network stability movement beyond the allowable 0.009 m tolerance.

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CHIEF, PRODUCTS AND SERVICES BRANCH



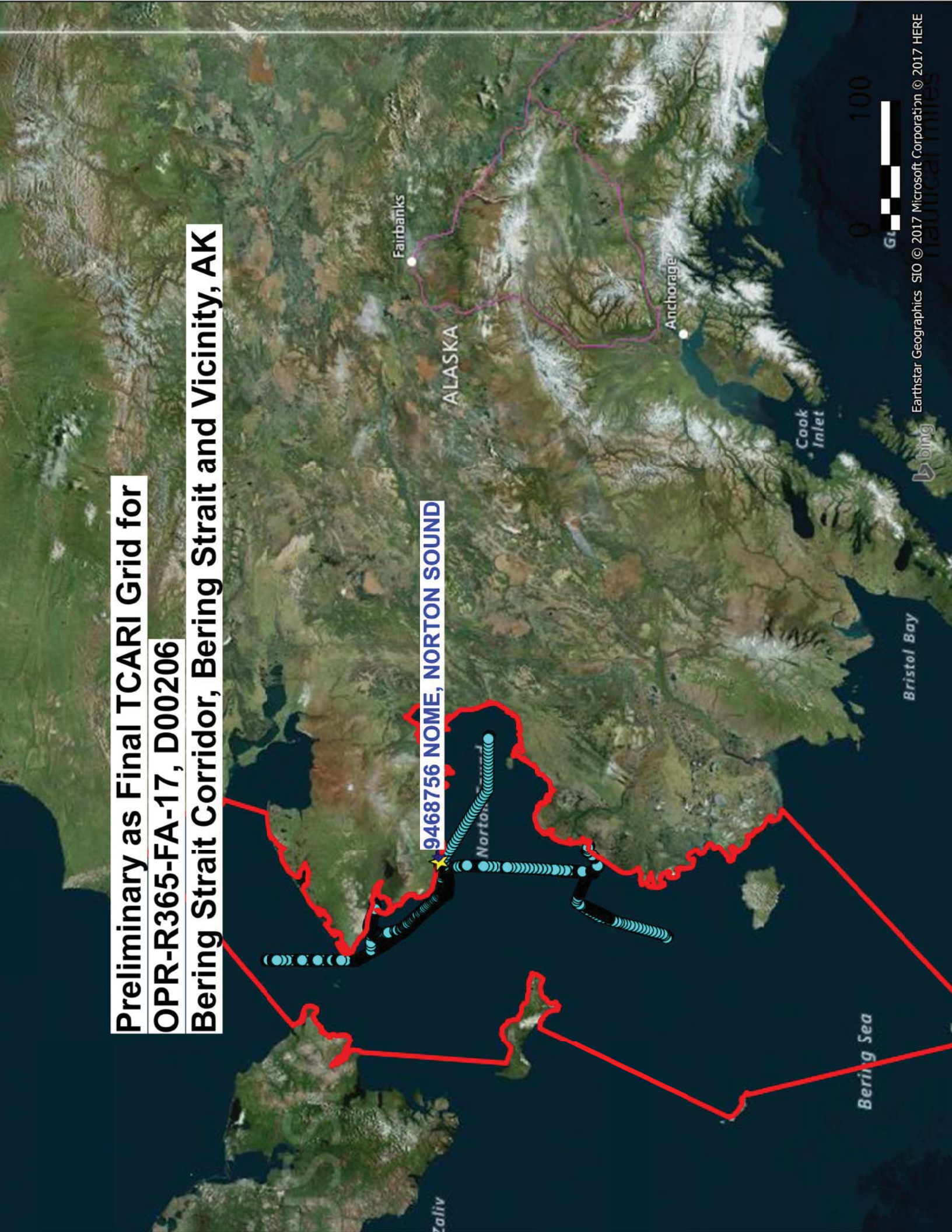


**Preliminary as Final TCARI Grid for**

**OPR-R365-FA-17, D00206**

**Bering Strait Corridor, Bering Strait and Vicinity, AK**

**9468756 NOME, NORTON SOUND**



APPROVAL PAGE

D00223

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 product

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