

**F00663**

NOAA Form 76-35A

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

**DESCRIPTIVE REPORT**

Type of Survey: Navigable Area

Registry Number: F00663

**LOCALITY**

State: Alaska

General Locality: Hog Island

Sub-locality: Captains Bay

**2015**

CHIEF OF PARTY  
CDR David J. Zezula, NOAA

LIBRARY & ARCHIVES

Date:

**HYDROGRAPHIC TITLE SHEET**

**F00663**

**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: **Hog Island**

Sub-Locality: **Captains Bay**

Scale: **1: 10,000**

Dates of Survey: **07/08/2015 to 07/08/2015**

Instructions Dated: **07/09/2015**

Project Number: **OPR-Q328-FA-15**

Field Unit: **NOAA Ship Fairweather S220, and Fairweather Launch 2806**

Chief of Party: **CDR David J. Zezula, NOAA**

Soundings by: **Multibeam Echo Sounder**

Imagery by:

Verification by: **Pacific Hydrographic Branch**

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

H-Cell Compilation Units: ***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. Notes in red were generated during office processing. The processing branch concurs with all information and recommendations in the DR unless otherwise noted. Page numbering may be interrupted or non-sequential. All pertinent records for this survey, including the Descriptive Report, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via <http://www.ngdc.noaa.gov/>.*

**Descriptive Report to Accompany Survey F00663**

Project: OPR-Q328-FA-15

Locality: Hog Island

Sublocality: Captains Bay

Scale: 1:10,000

July 2013

NOAA Ship Fairweather

Chief of Party: CDR David J. Zezula, NOAA

**A. Area Surveyed**

This hydrographic survey was acquired in accordance with the requirements defined in the Project Instruction OPR-Q328-FA-15. All requirements set forth in the NOS Field Procedures Manual for Hydrographic Surveying (FPM) dated May 2014; NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSD) dated April 2015 and Hydrographic Survey Technical Directive (HTD) 2013-5 were met.

Data was acquired within the following survey limits:

Northeast Limit	Southwest Limit
53/54/02.17 N	53/53/31.88 N
166/33/49.09 W	166/33/46.7W

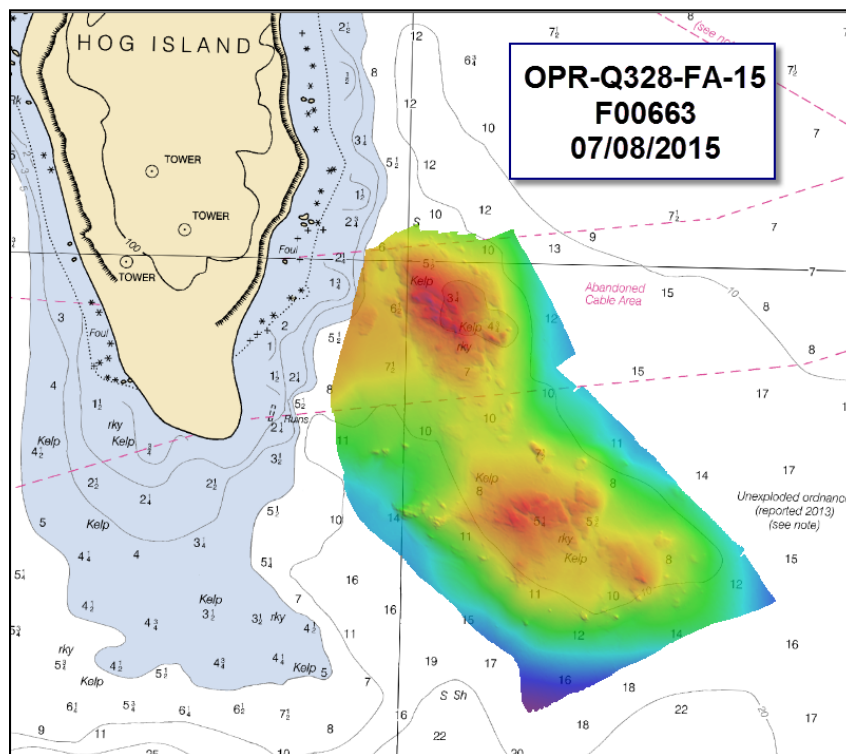


Figure 1: F00663 Overview

## B. Survey Purpose

The purpose of this field examination is to respond to a survey request from the Alaska Marine Pilots and USCG regarding a reported hull breach on a vessel transiting near Hog Island, AK. This survey will also provide a contemporary survey to update National Ocean Service (NOS) nautical charting products. The intended use of data from this survey is to supersede all prior survey data in the common area.

## C. Data Acquisition and Processing

Please reference Data Acquisition and Processing Report *OPR-Q328-FA-15* for a complete description of data acquisition and processing systems, survey vessels, quality control procedures, and data processing methods.

## D. Uncertainty

### IHO and Density:

All data meet the data accuracy specifications as stated in the HSSD. It was found that 99.98 % of nodes in the 50cm and 1m grids meet or exceed IHO Order 1 specifications for all depths of survey F00663, see Standards Compliance Review in Appendix II. To assess vertical accuracy standards, a child layer titled "IHO\_1" was created for the 50cm and 1m BASE surfaces using the equations stated in section C. 2.1 of the DAPR.

Density requirements for F00663 were achieved with at least 98.01% of finalized surface nodes containing five or more soundings; see Standards Compliance Review in Appendix II.

*Density standards were not met for the 1 meter finalized object detection surface. The finalized 1m surface computed density was 60.60% for nodes with 5 or more soundings. The finalized 50cm surface computed density for the object detection requirement was 98.02% for nodes with 5 or more soundings. The 1 meter surface covers only the periphery of the survey area in comparatively deep water, so in this case failure to meet the density requirement does not affect the suitability of the data for charting.*

## E. Results and Recommendations

The following are the largest scale RNC and ENC, which cover the survey area:

### Raster Charts

Chart	Scale	Edition	Edition Date	LNM Date	NM Date
16530	10000	7	05/2010	7/7/2015	6/20/2015

### Electronic Navigation Chart

ENC Name	Scale	Edition	Update Application Date	Issue Date	Preliminary
US5AK6EM	10000	6	10/11/2013	3/13/2014	No

Chart 16530: Soundings from Survey F00663 showed numerous discrepancies to charted depths on chart 16530. The seven soundings East of Hog Island, labeled “A, B, C” in Figure 2 were submitted as Dangers to Navigation (DTONs) and attributed as UWTRC. Seven additional soundings were submitted as DTONs to aid in the delineation of updated 5 fathom and 10 fathom contours, all submitted DTONs are included in the F00663\_FFF.

*The file submitted is called F00663\_Final\_Feature\_File.000.*

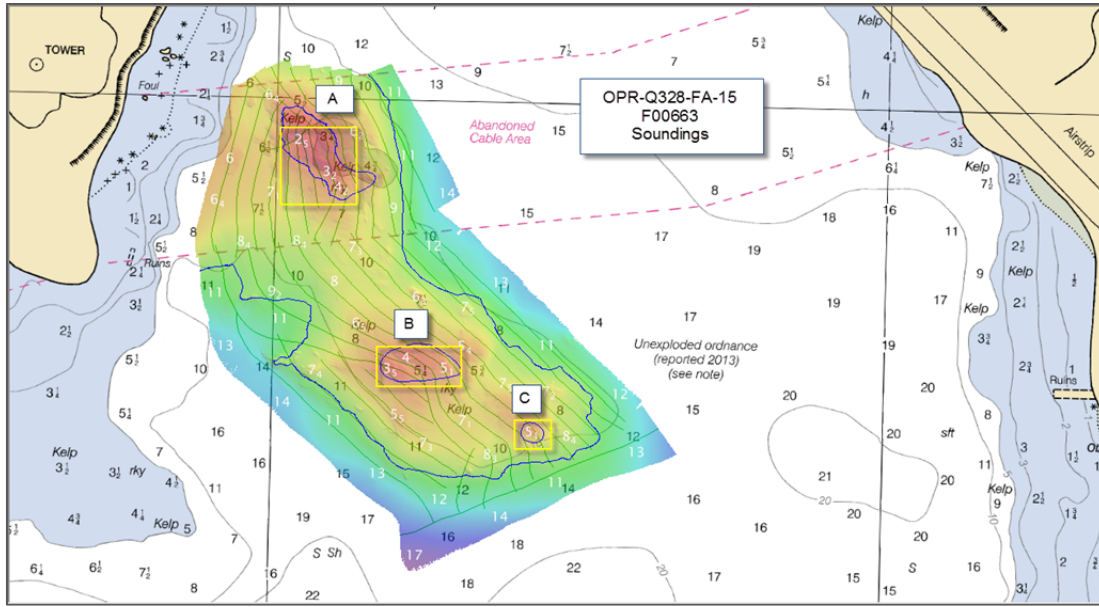


Figure 2: Sounding discrepancies Chart 16530

Figure 3 shows contour discrepancies where the red contours indicate surveyed 5 fathoms and blue contours indicate surveyed 10 fathoms.

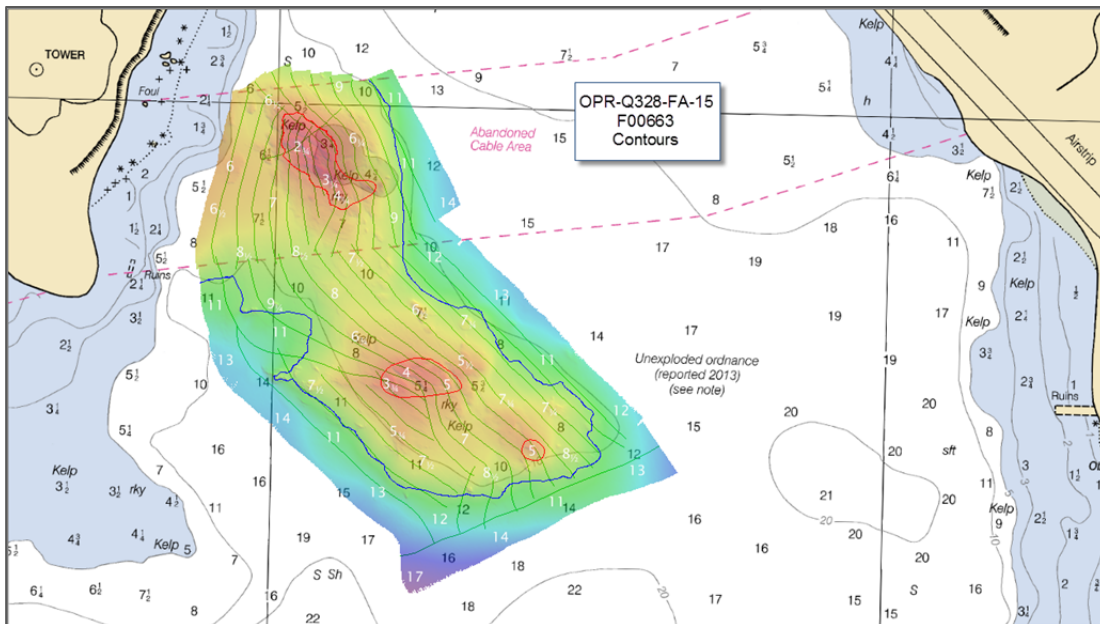


Figure 3: Contour discrepancies Chart 16530

ENC US5AK6EM: A 1m interpolated surface was created from the triangular irregular network (TIN) of extracted US5AK6EM ENC soundings and differenced from the F00663\_MB\_1m\_MLLW\_Combined.csar surface. The difference surface results are shown in Figure 4, where orange and red areas indicate general shoaling from the existing chart.

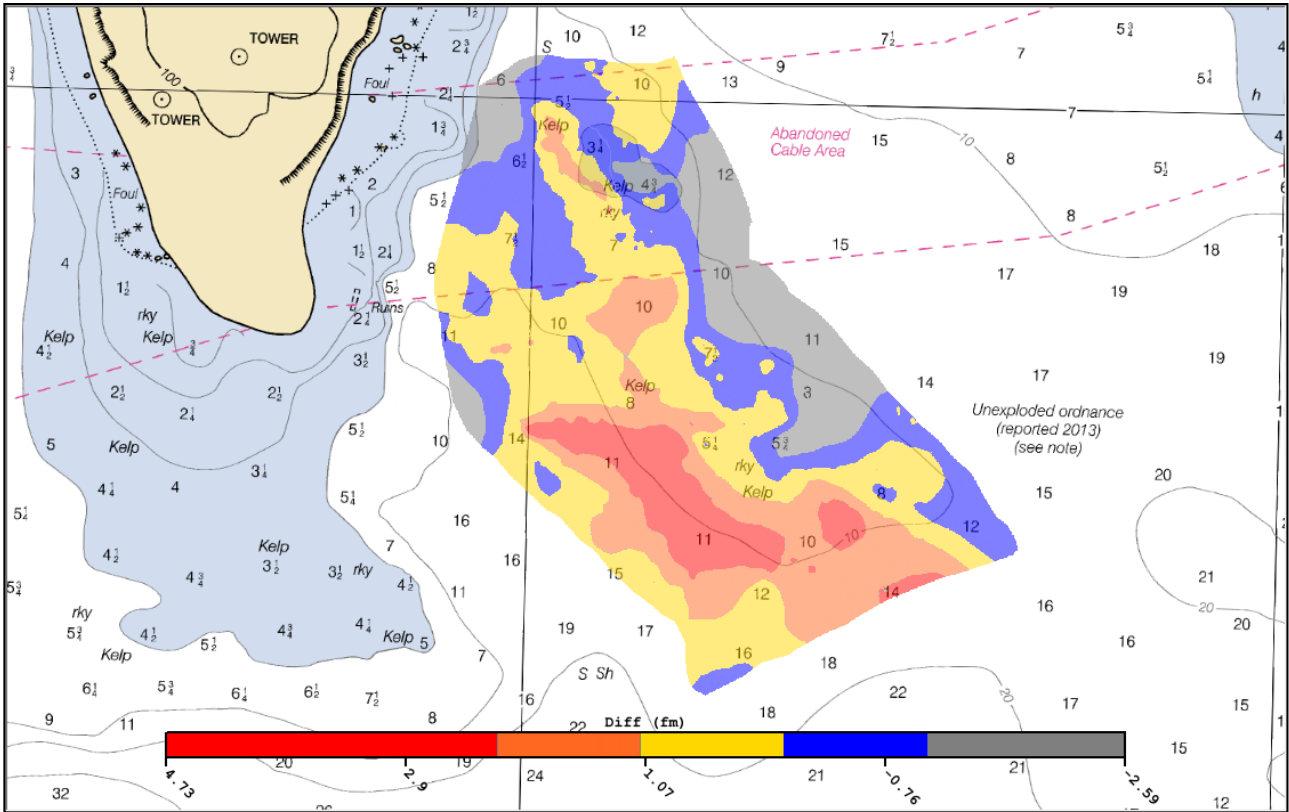


Figure 4: Difference surface between interpolated TIN surface of ENC soundings and F00663\_MB\_1m\_MLLW\_Combined.csar surface.

**Dangers to Navigation**

The following DTON report was submitted to the processing branch:

DTON Report Name	Date Submitted
F00663_DTON	07/09/2015

*The DTON report was submitted to Nautical Data Branch, not the processing branch, as per the HSSD.*

A DTON report with seven soundings and seven rocks (Figure 5) was submitted to represent the chart discrepancies. All of the DTON features are included in the F00663\_FFF.000 final feature file

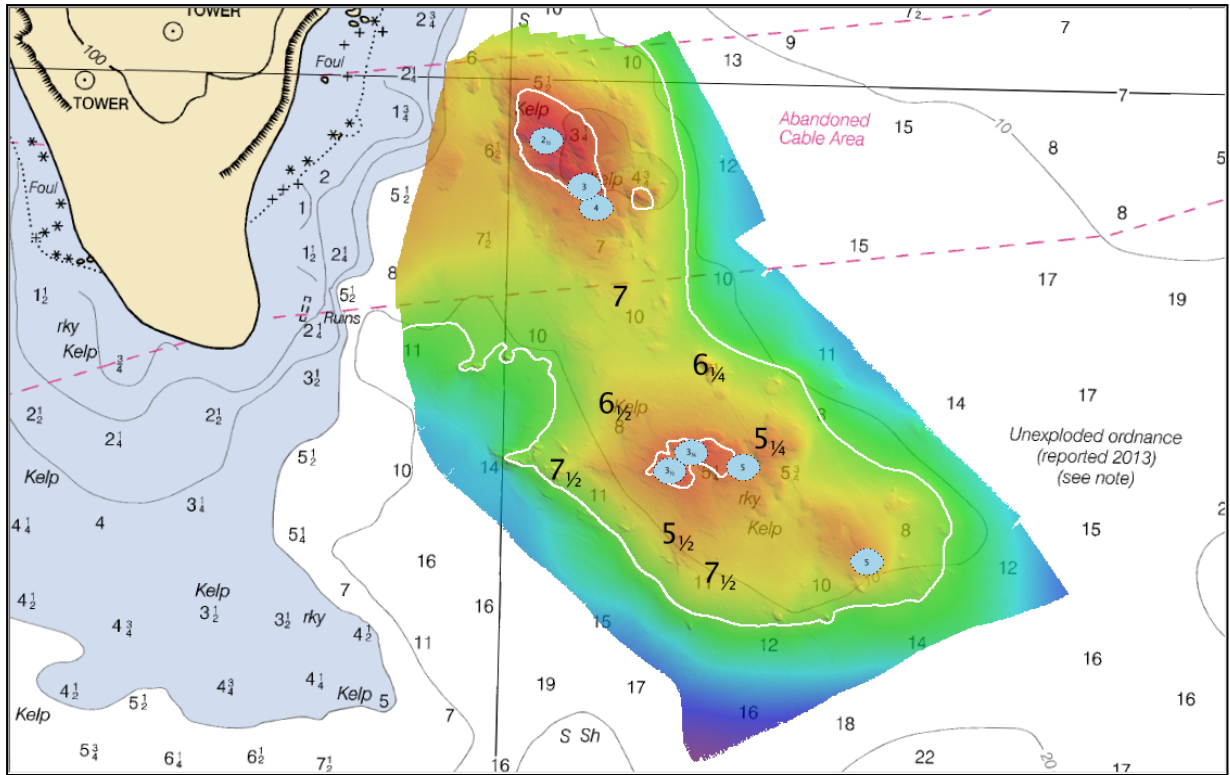


Figure 5: F00663 Danger to Navigation features; 7 soundings and 7 rocks. Surveyed contour in white.

**Submitted Surfaces**

The following surfaces were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
F00663_MB_50cm_MLLW	CUBE	50cm		NOAA_50cm	Object Detection
F00663_MB_1m_MLLW	CUBE	1m		NOAA_1m	Object Detection
F00663_MB_50cm_MLLW_Final	CUBE	50cm	0-20m	NOAA_50cm	Object Detection
F00663_MB_1m_MLLW_Final	CUBE	1m	18-40m	NOAA_1m	Object Detection
F00663_MB_1m_MLLW_Combined	CUBE	1m	0-40m	NOAA_1m	Object Detection

**F. Vertical and Horizontal Control**

The vertical datum for this project is Mean Lower Low Water. A request for final tides was submitted on July 13, 2015. Final tides were received on July 15, 2015. Preliminary zoning is accepted as the final zoning for project OPR-Q328-FA-15. Zoned tide file Q328FA2011CORP.zdf was applied with a verified observed tide file. The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

**NWLON Gauges**

<i>Operating Water Level Station</i>	<i>Station ID</i>
Unalaska, AK	9462620

The horizontal datum for this project is North American Datum of 1983 (NAD83). Differential correctors from the U.S. Coast Guard beacon at Cold Bay (289 kHz) were used during real-time acquisition. The following DGPS Station was used for horizontal control:

DGPS Stations
Cold Bay 289 kHz

The following PPK methods were used for horizontal control:

Single Base

Vessel kinematic data were post-processed using Applanix POSPac processing software with SingleBase methods as described in the DAPR. Smooth Best Estimate of Trajectory (SBET) and associated error data (RMS) were applied to all MBES data in CARIS HIPS. For further details regarding the processing and quality control checks performed see the F00663 POSPac Processing Logs spreadsheet located in the SBET folder with the GNSS data.

The following CORS station was used for horizontal control:

<b>HVCR Site ID</b>	<b>Base Station ID</b>
AV09	Unalaska, AK

***Tide Note is appended to this report.***

**G. Additional Results****Data Artifact**

There is a data artifact in the surface of approximately 10cm or less that is likely due to a combination of dynamic draft, roll, and sound velocity. Most of the artifact correlates to launch line direction which implies a larger contribution from dynamic draft. An example of this mixed surface artifact is shown in Figure 6. This data artifact was examined and found to be well within HSSD specifications. Despite the presence of the artifact, the hydrographer determined that the data is adequate to supersede existing charted data in common areas.

***The data artifact is 20cm or less, which is still within the allowable uncertainty budget for this type of error at this depth.***



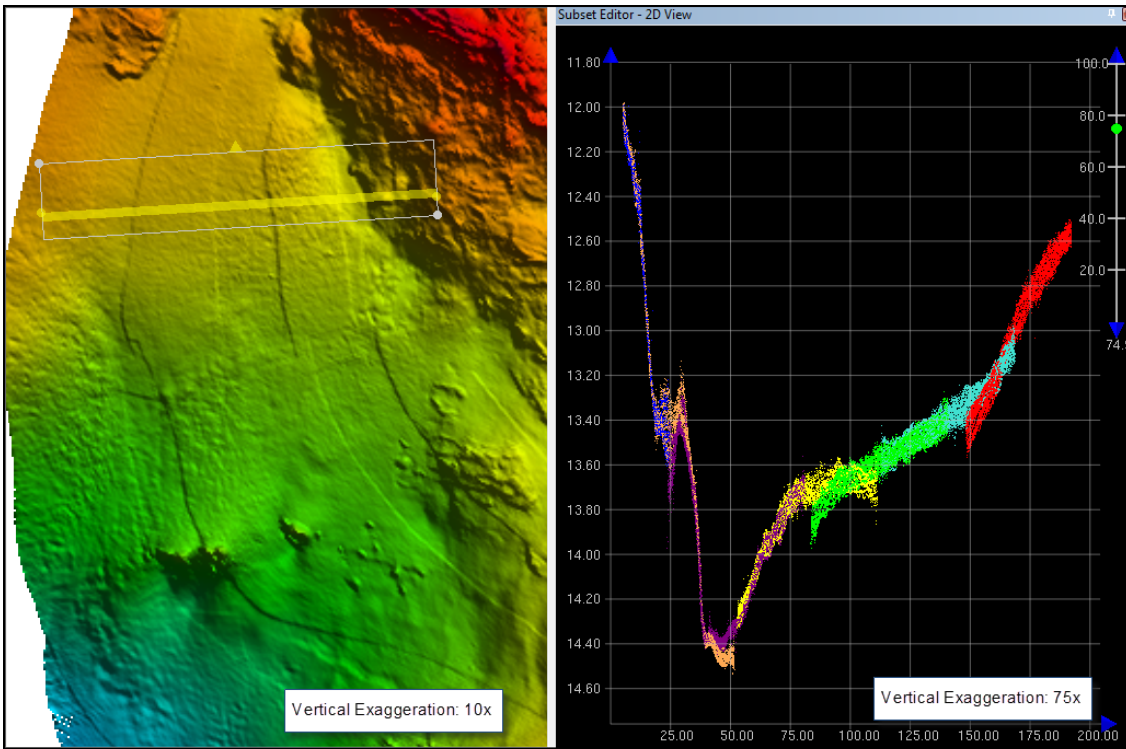


Figure 6: F00663 Data Artifact

### Sound Speed Casts

Three manual CTD casts were taken at approximately one hour intervals and were applied to the data with a nearest in distance within time of 1 hour.

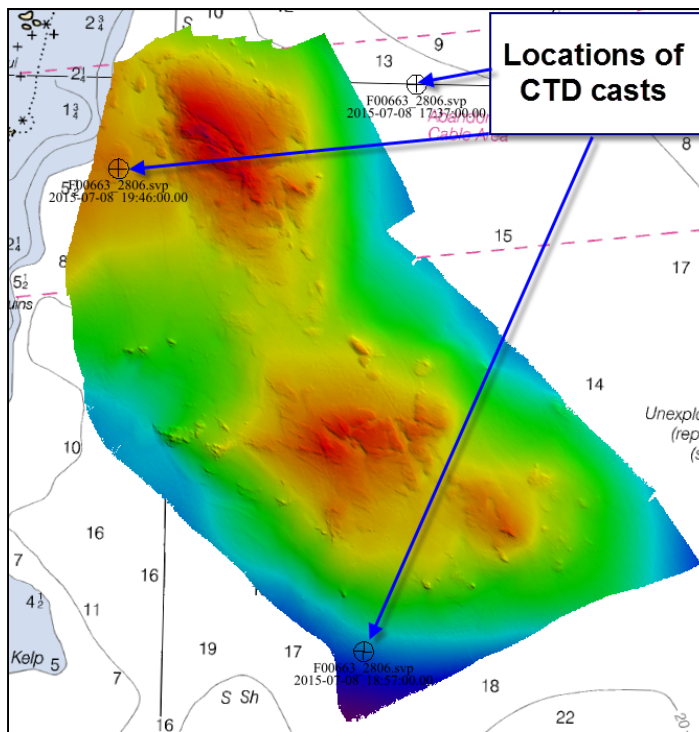


Figure 7: Locations of manual CTD casts.

### Multibeam Water Column

Multibeam water column development data was collected with the Reson 7125 sonar over the two large rock outcrops, Figure 8. The Reson \*.s7k water column files were converted in Fledermaus FMMidwater software and reviewed for any objects in the water column not present in the bathymetry bottom detection algorithm solution. Kelp and schools of fish were visible in the water column data due to the gases in kelp (pneumatocysts) and fish swim bladders. An example of a kelp and fish in an FMMidwater water column stacked view is shown in Figure 9. The same example line is displayed as a beam fan time series snapshot in Figure 10, where the combined bathymetry surface is in grayscale. The Fledermaus FMMidwater GeoPick tool was used to select the locations of kelp stems in each line of water column data and the resulting ASCII file was imported into CARIS HIPS using the object import utility tool as kelp (WEDKLP) points from which a kelp area (WEDKLP) was digitized for submission in the F00663\_FFF (see Figure 11). No kelp stalks or other water column features were identified in the three lines of multibeam water column data collected over the southern rock outcrop. It is possible kelp exists elsewhere in the survey area where water column developments were not conducted.

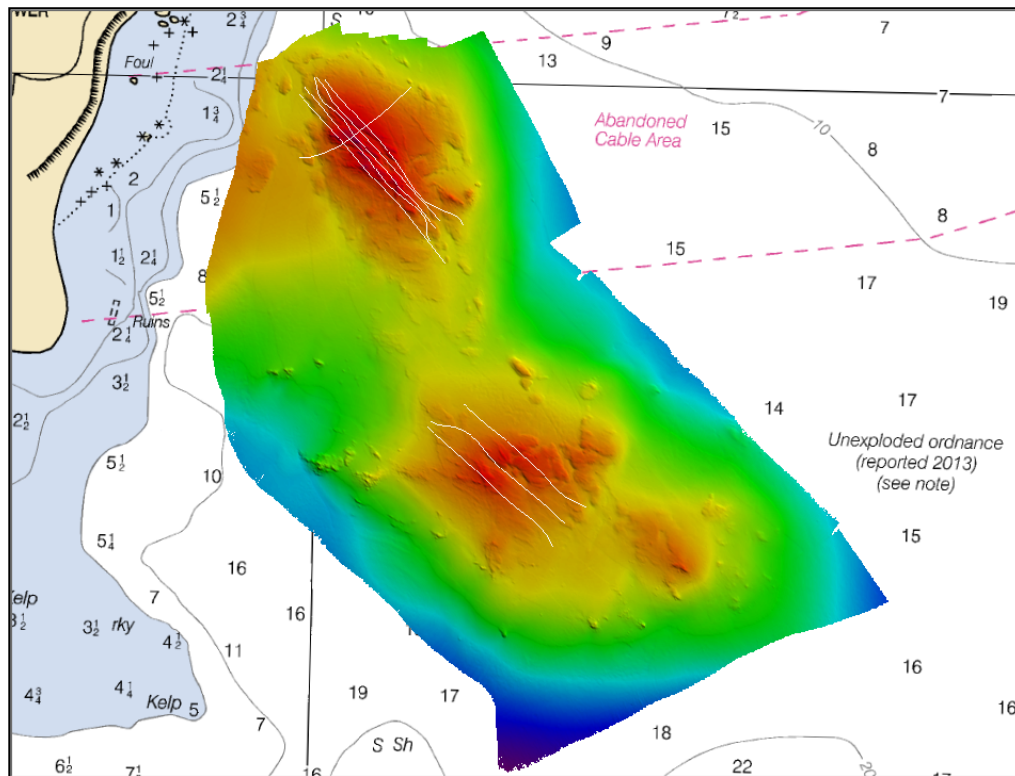
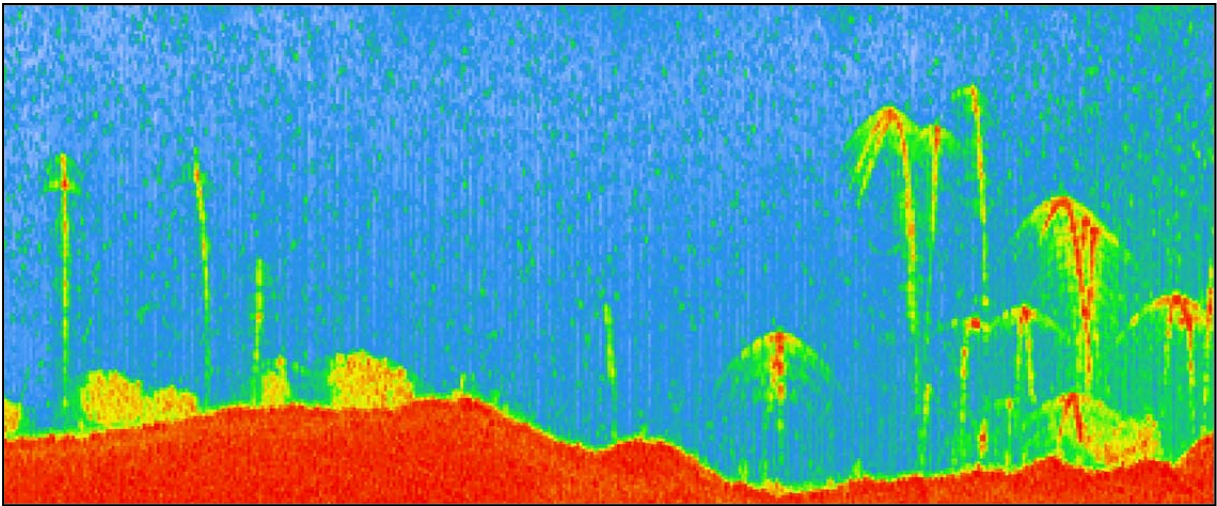
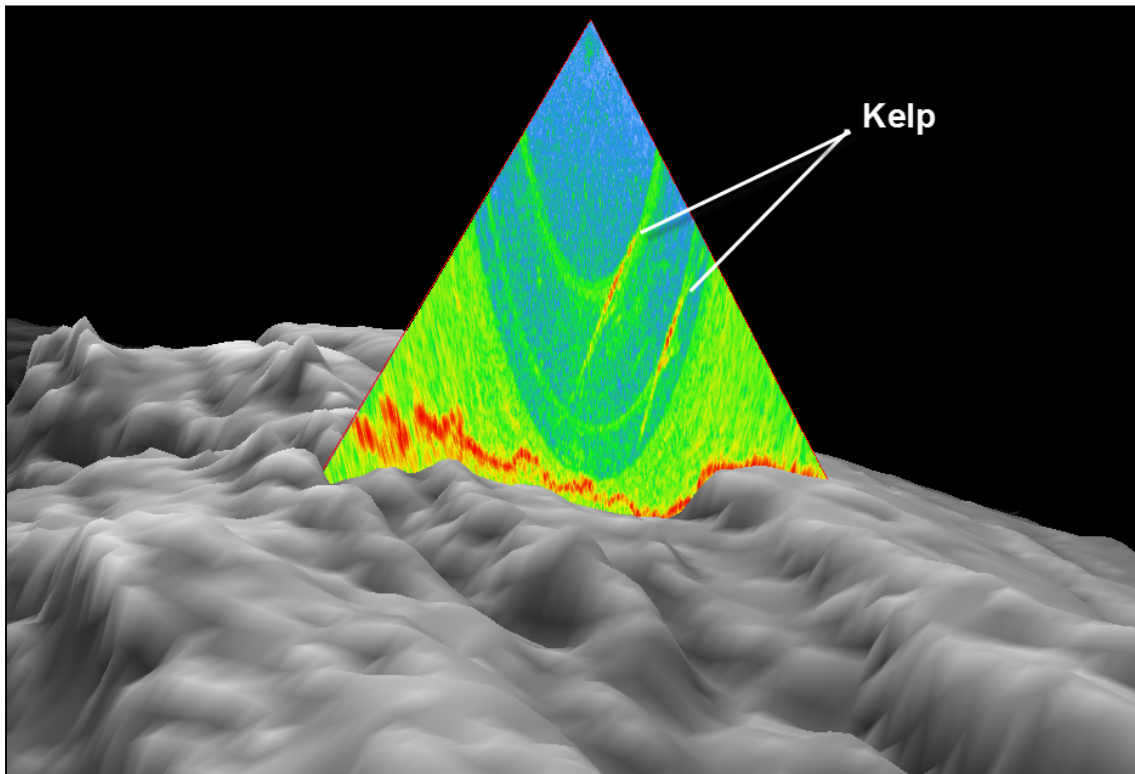


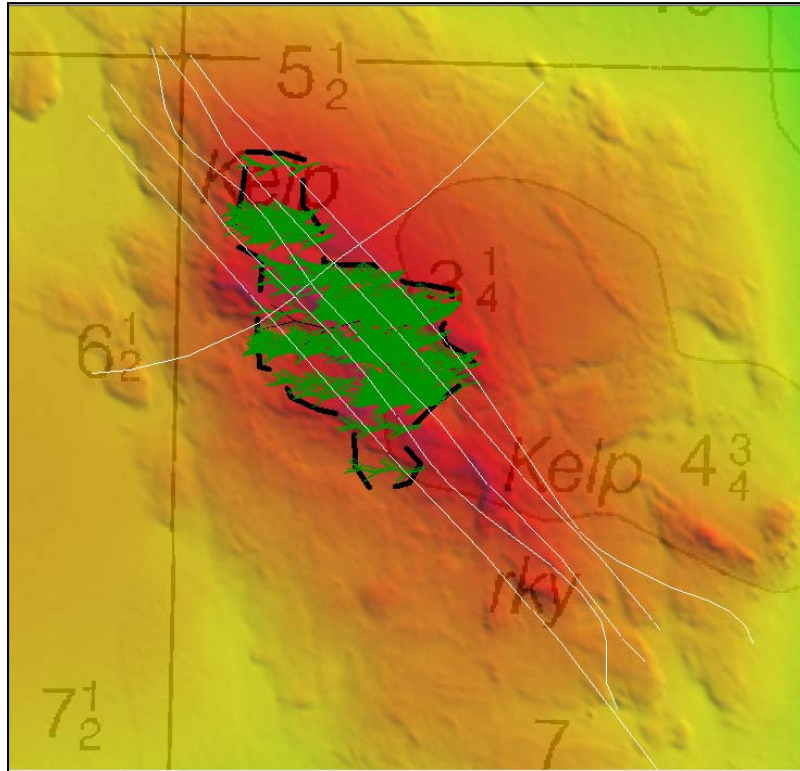
Figure 8: Lines of Reson 7125 water column data, shown in white, collected over two rock outcrops



*Figure 9: Kelp and fish as illustrated in the stacked view of multibeam water column data line 20150708\_202738.s7k*



*Figure 10: Fan view time series snapshot of line 20150708\_202738.s7k, shown with 1m bathymetry surface in grayscale*



*Figure 11: Kelp point features (in green) as identified from multibeam water column data (white tracklines) that were used to digitize the kelp area feature (in black) included in the FFF deliverable.*

**H. 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 Manual, Field Procedures Manual, 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.

Report Name	Report Date Sent
Data Acquisition and Processing Report	July 19, 2015
Coast Pilot Report	July 18, 2015

Approver Name	Approver Title	Approval Date	Signature
CDR David J. Zezula, NOAA	Chief of Party	July 20, 2015	 David Zezula 2015.07.19 20:36:47 -08'00'
LT Matthew M. Forney	Operations Officer	July 20, 2015	 Matthew Forney 2015.07.19 16:02:41 -08'00'
HCST Douglas Bravo	Chief Survey Technician	July 20, 2015	 2015.07.19 17:45:15 -08'00'
HSST Clinton Marcus	Sheet Manager	July 20, 2015	 Digitally signed by Clinton Marcus Date: 2015.07.20 01:25:52 Z



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

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE :** July 14, 2015

**HYDROGRAPHIC BRANCH:** Pacific  
**HYDROGRAPHIC PROJECT:** OPR-Q328-FA-2015  
**HYDROGRAPHIC SHEET:** F00663

**LOCALITY:** Hog Island, Unalaska, AK  
**TIME PERIOD:** July 08, 2015

**TIDE STATION USED:** 9462620 Unalaska, AK  
Lat. 53° 52.8'N Long. 166° 32.4' W  
**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 1.011 meters

**REMARKS: RECOMMENDED ZONING**

Preliminary zoning is accepted as the final zoning for project OPR-Q328-FA-2015, F00663, during the time period on July 08, 2015.

Please use the zoning file Q328FA2015CORP submitted with the project instructions for OPR-Q328-FA-2015. Zone BGS89 is the applicable zones for F00663.

**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).

**HOVIS.GERALD.THOMAS.JR.1365860250**

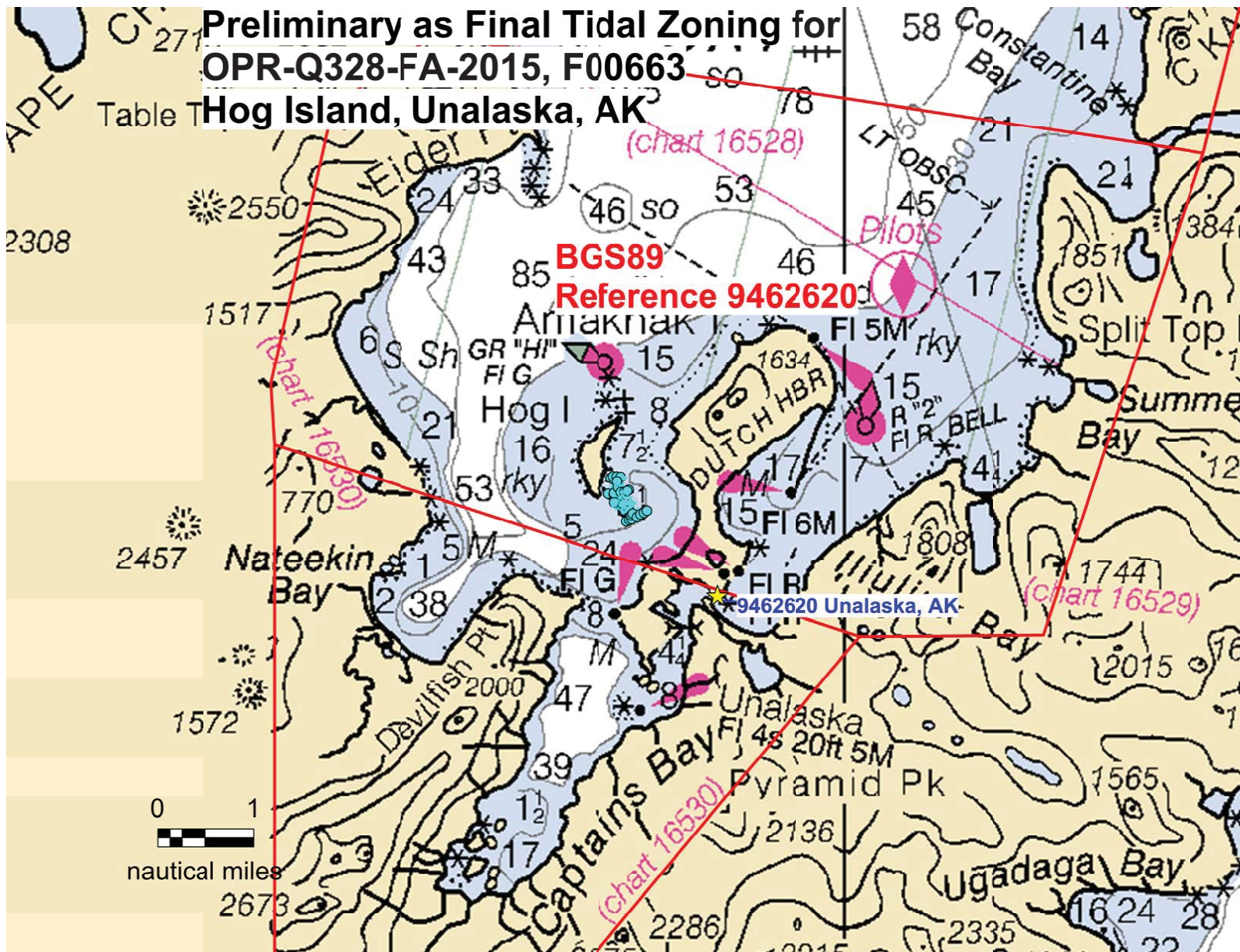
Digitally signed by  
HOVIS.GERALD.THOMAS.JR.1365860250  
DN: c=US, o=U.S. Government, ou=DoD,  
ou=PKI, ou=OTHER,  
cn=HOVIS.GERALD.THOMAS.JR.1365860250  
Date: 2015.07.15 15:28:46 -04'00'

CHIEF, PRODUCTS AND SERVICES BRANCH



**Preliminary as Final Tidal Zoning for  
OPR-Q328-FA-2015, F00663**

Table T **Hog Island, Unalaska, AK**





Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>

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## Fwd: Fwd: FA response survey

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David J. Zezula <co.fairweather@noaa.gov>

Thu, Jul 23, 2015 at 5:11 PM

To: martha.herzog@noaa.gov

Not sure if you go these yet but here is some other emails on Project and F numbers

DZ

PS Sorry for not getting all these correspondence in the submission package. That one is on me... I got side tracked with engineering staffing issues and the survey was getting packages.... I never got my correspondence in to CHST.

----- Forwarded Message -----

**Subject:**Fwd: FA response survey

**Date:**Thu, 23 Jul 2015 14:17:36 -0800

**From:**Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>

**To:**Clinton Marcus - NOAA Federal <clinton.r.marcus@noaa.gov>, Douglas Bravo - NOAA Federal <douglas.a.bravo@noaa.gov>, David Zezula <co.fairweather@noaa.gov>

F00663 Project Correspondence.

----- Forwarded message -----

**From:** Katrina Wyllie - NOAA Federal <katrina.wyllie@noaa.gov>

**Date:** Tue, Jul 7, 2015 at 6:59 PM

**Subject:** FA response survey

**To:** Jacklyn James - NOAA Federal <jacklyn.c.james@noaa.gov>

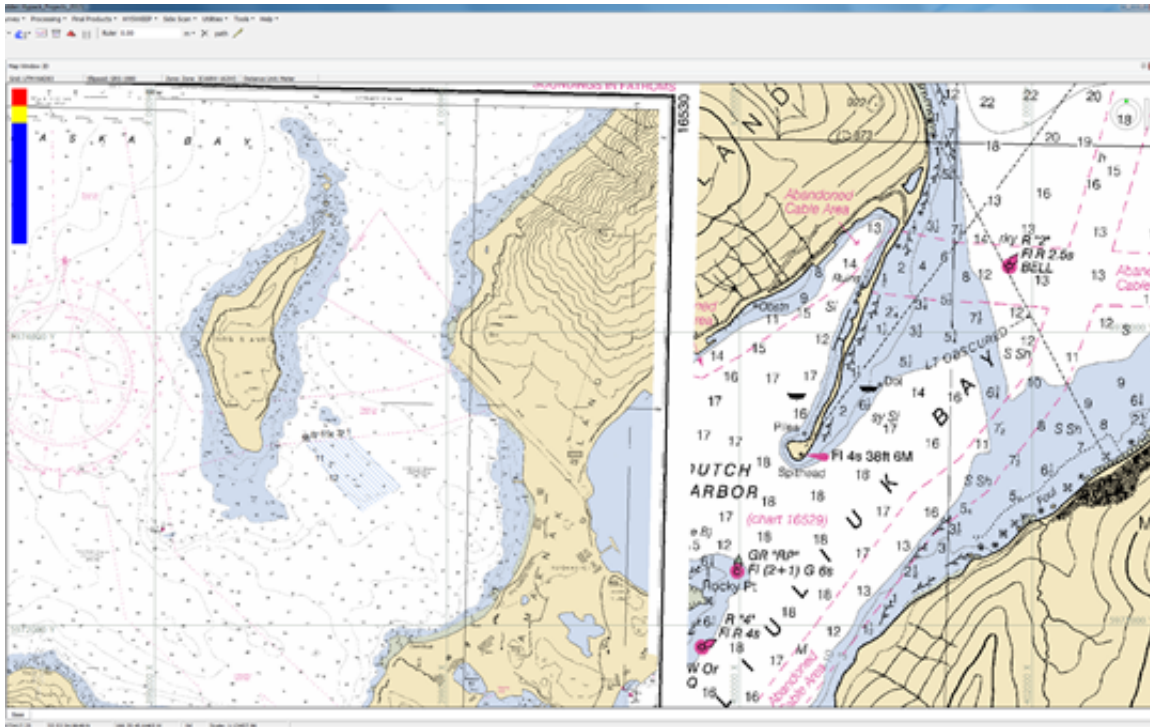
**Cc:** Michael Gonsalves - NOAA Federal <michael.gonsalves@noaa.gov>

Hi Jackie,

I hope you're well and enjoying summer in Silver Spring! The FA is doing a response survey tomorrow morning (9am our time, 1pm your time) around Hog Island (image below). We are planning to take a launch and collect multibeam bathymetry and water column data over a shoal area that one of the ships here transited through and punctured their hull on a rock or a shipwreck (!). Would you be able to go into survey tracker and assign us a project number and F survey number for this response survey?

Thank you,  
Katrina





# F00663 Danger to Navigation Report

**Registry Number:** F00663  
**State:** Alaska  
**Locality:** Unalaska  
**Sub-locality:** Hog Island  
**Project Number:** OPR-Q328-FA-15  
**Survey Date:** 07/08/2015

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
16530	6th	04/27/1996	1:10,000 (16530_1)	[L]NTM: ?
16529	15th	04/01/2004	1:10,000 (16529_1)	[L]NTM: ?
16528	17th	07/01/2008	1:40,000 (16528_1)	[L]NTM: ?
16520	23rd	08/01/2008	1:300,000 (16520_1)	[L]NTM: ?
16500	10th	05/01/2005	1:300,000 (16500_1)	[L]NTM: ?
16011	37th	11/01/2007	1:1,023,188 (16011_1)	[L]NTM: ?
16006	35th	04/01/2008	1:1,534,076 (16006_1)	[L]NTM: ?
513	7th	06/01/2004	1:3,500,000 (513_1)	[L]NTM: ?
530	32nd	06/01/2007	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Shoal	11.88 m	53° 53' 48.2" N	166° 33' 45.7" W	---
1.2	Rock	9.31 m	53° 53' 40.3" N	166° 33' 34.4" W	---
1.3	Shoal	10.03 m	53° 53' 45.2" N	166° 33' 41.3" W	---
1.4	Shoal	13.36 m	53° 53' 51.1" N	166° 33' 52.1" W	---
1.5	Rock	9.34 m	53° 53' 44.0" N	166° 33' 42.9" W	---
1.6	Shoal	12.29 m	53° 53' 46.5" N	166° 33' 52.3" W	---
1.7	Rock	7.29 m	53° 53' 44.7" N	166° 33' 46.8" W	---

1.8	Rock	6.98 m	53° 53' 43.9" N	166° 33' 48.3" W	---
1.9	Shoal	13.82 m	53° 53' 39.6" N	166° 33' 44.6" W	---
1.10	Shoal	13.97 m	53° 53' 43.7" N	166° 33' 55.6" W	---
1.11	Shoal	10.50 m	53° 53' 41.2" N	166° 33' 47.6" W	---
1.12	Rock	5.66 m	53° 53' 55.7" N	166° 33' 54.7" W	---
1.13	Rock	7.89 m	53° 53' 54.7" N	166° 33' 53.6" W	---
1.14	Rock	5.15 m	53° 53' 57.5" N	166° 33' 57.5" W	---

# **1 - Dangers To Navigation**

**1.1) 655/147****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 53° 53' 48.2" N, 166° 33' 45.7" W  
**Least Depth:** 11.88 m (= 38.97 ft = 6.495 fm = 6 fm 2.97 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.983$  m ; **TVU (TPEv)**  $\pm 0.316$  m  
**Timestamp:** 2015-189.18:17:20.773 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891816  
**Profile/Beam:** 655/147  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 6.3 fms (11.878m) with predicted tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891816	655/147	0.00	000.0	Primary

**Hydrographer Recommendations**

Chart sounding as surveyed.

**Cartographically-Rounded Depth (Affected Charts):**

6 ½fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)

11.9m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20150708  
 SORIND - US,US,Graph,F00663  
 TECSOU - 3:found by multi-beam

**1.2) 143/194**

**DANGER TO NAVIGATION**

**Survey Summary**

**Survey Position:** 53° 53' 40.3" N, 166° 33' 34.4" W  
**Least Depth:** 9.31 m (= 30.56 ft = 5.094 fm = 5 fm 0.56 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.983$  m ; **TVU (TPEv)**  $\pm 0.314$  m  
**Timestamp:** 2015-189.18:20:32.833 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891820  
**Profile/Beam:** 143/194  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 5 fms (9.315m) with predicted tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891820	143/194	0.00	000.0	Primary

**Hydrographer Recommendations**

This area is routinely used to anchor small to mid size vessels. Recommend cartographer chart as surveyed but include redrawing of the five fathom contour surrounding the identified critical soundings. Refer to contour layer in attached .000 file.

**Cartographically-Rounded Depth (Affected Charts):**

5fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)

9.3m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - FA; AK; 10,000  
 NINFOM - MBES

QUASOU - 6:least depth known

SORDAT - 20150708

SORIND - US,US,Graph,F00663

TECSOU - 3:found by multi-beam

VALSOU - 9.315 m

WATLEV - 3:always under water/submerged

**Concur. Charted a 5 fm submerged rock.**

### Feature Images

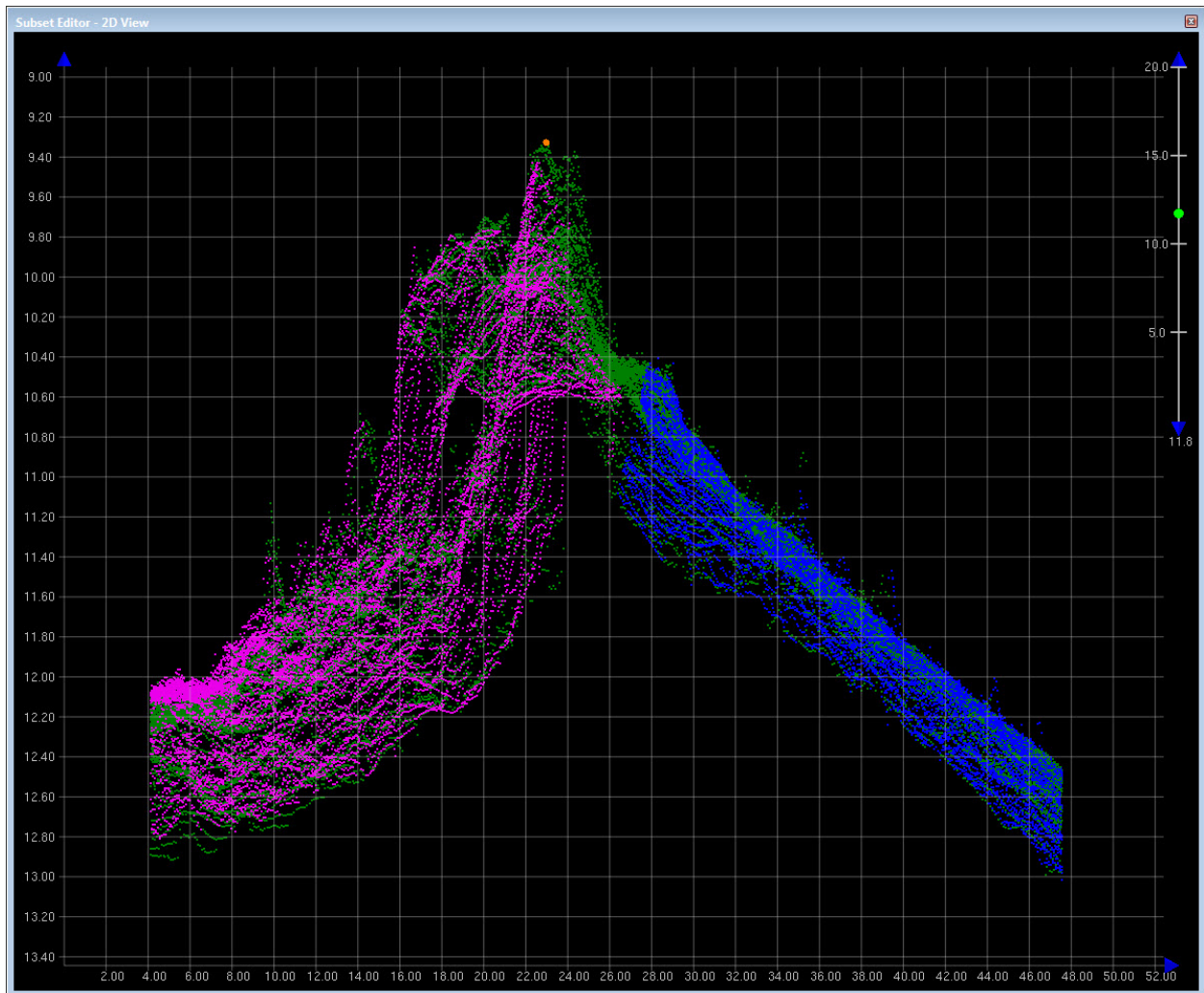


Figure 1.2.1



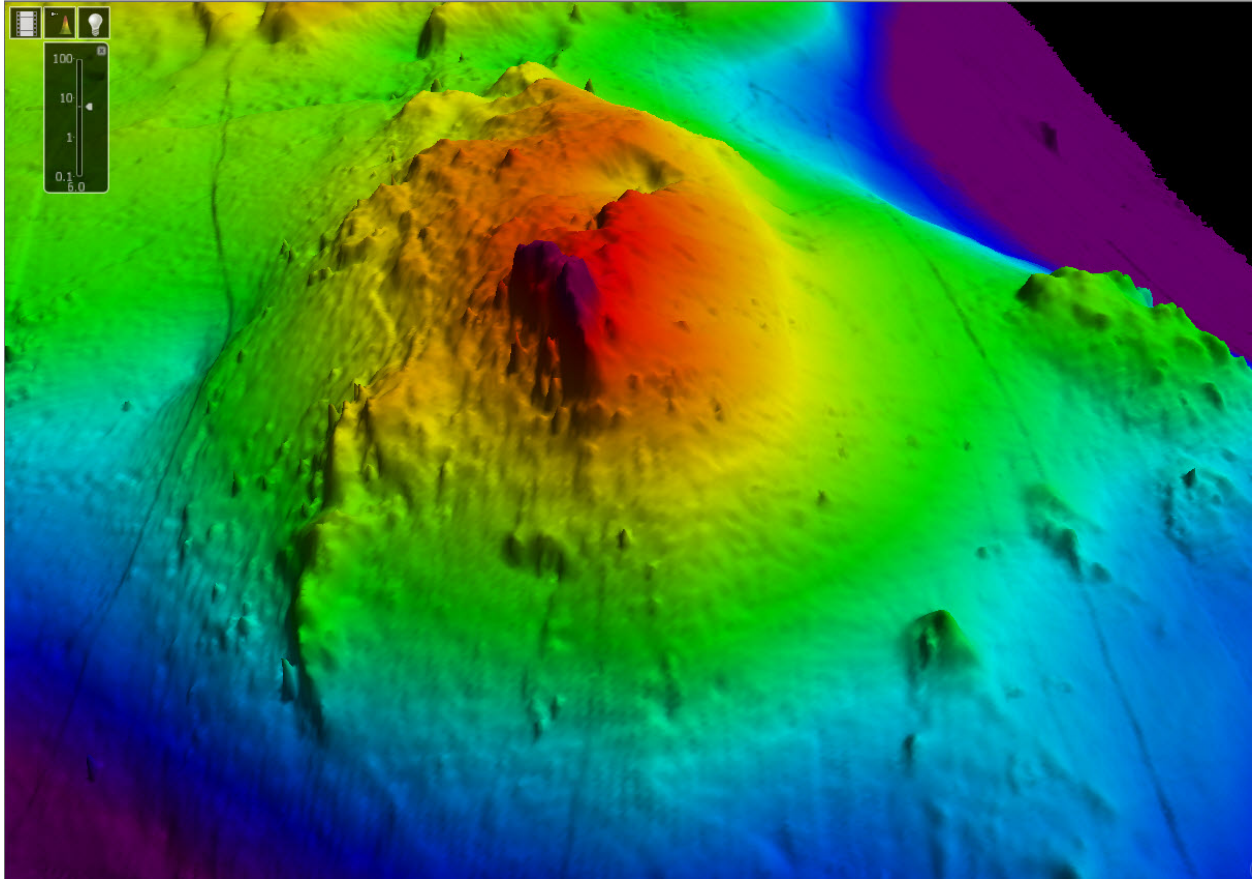


Figure 1.2.2

**1.3) 884/396****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 53° 53' 45.2" N, 166° 33' 41.3" W  
**Least Depth:** 10.03 m (= 32.89 ft = 5.482 fm = 5 fm 2.89 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.983$  m ; **TVU (TPEv)**  $\pm 0.316$  m  
**Timestamp:** 2015-189.18:21:30.090 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891820  
**Profile/Beam:** 884/396  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 5.3 fms (10.026m) with predicted tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891820	884/396	0.00	000.0	Primary

**Hydrographer Recommendations**

Chart sounding as surveyed.

**Cartographically-Rounded Depth (Affected Charts):**

5 ½fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)

10.0m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20150708  
 SORIND - US,US,Graph,F00663  
 TECSOU - 3:found by multi-beam

**1.4) 1822/433****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 53° 53' 51.1" N, 166° 33' 52.1" W  
**Least Depth:** 13.36 m (= 43.82 ft = 7.303 fm = 7 fm 1.82 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.986$  m ; **TVU (TPEv)**  $\pm 0.323$  m  
**Timestamp:** 2015-189.18:22:48.424 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891820  
**Profile/Beam:** 1822/433  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 7.2 fms (13.356m) with predicted tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891820	1822/433	0.00	000.0	Primary

**Hydrographer Recommendations**

Chart sounding as surveyed.

**Cartographically-Rounded Depth (Affected Charts):**

7 ¼fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)

13.3m (513\_1, 50\_1)

**S-57 Data**

[None]

**Do not concur. Upon receipt and processing of the entire data set it was determined that an alternate configuration of sounding selections was more appropriate.**

**1.5) 888/353****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 53° 53' 44.0" N, 166° 33' 42.9" W  
**Least Depth:** 9.34 m (= 30.65 ft = 5.108 fm = 5 fm 0.65 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.983$  m ; **TVU (TPEv)**  $\pm 0.314$  m  
**Timestamp:** 2015-189.18:28:00.239 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891826  
**Profile/Beam:** 888/353  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 5 fms (9.341m) with predicted tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891826	888/353	0.00	000.0	Primary

**Hydrographer Recommendations**

This area is routinely used to anchor small to mid size vessels. Recommend cartographer chart as surveyed but include redrawing of the five fathom contour surrounding the identified critical soundings. Refer to contour layer in attached .000 file.

**Cartographically-Rounded Depth (Affected Charts):**

5fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)

9.3m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - FA; AK; 10,000  
 NINFOM - MBES

QUASOU - 6:least depth known  
SORDAT - 20150708  
SORIND - US,US,Graph,F00663  
TECSOU - 3:found by multi-beam  
VALSOU - 9.341 m  
WATLEV - 3:always under water/submerged

**Concur. Charted a 5 fm submerged rock.**

### Feature Images

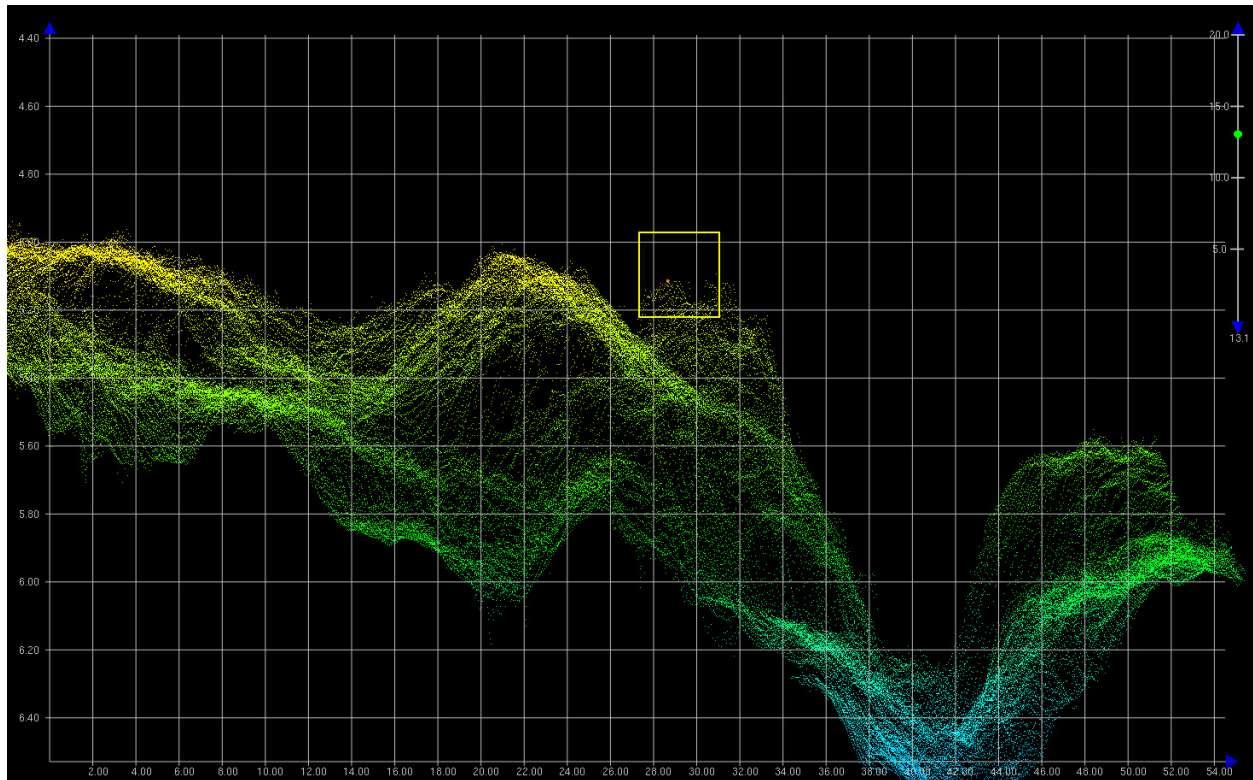


Figure 1.5.1

**1.6) 1477/4****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 53° 53' 46.5" N, 166° 33' 52.3" W  
**Least Depth:** 12.29 m (= 40.31 ft = 6.718 fm = 6 fm 4.31 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.987$  m ; **TVU (TPEv)**  $\pm 0.332$  m  
**Timestamp:** 2015-189.18:28:53.481 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891826  
**Profile/Beam:** 1477/4  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 6.4 fms (12.286m) with preliminary tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891826	1477/4	0.00	000.0	Primary

**Hydrographer Recommendations**

Chart sounding as surveyed.

**Cartographically-Rounded Depth (Affected Charts):**

6  $\frac{3}{4}$ fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)

12.3m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20150708  
 SORIND - US,US,Graph,F00663  
 TECSOU - 3:found by multi-beam

**Do not concur. Upon receipt and processing of the entire data set it was determined that an alternate configuration of sounding selections was more appropriate.**

**1.7) 1120/355**

**DANGER TO NAVIGATION**

**Survey Summary**

**Survey Position:** 53° 53' 44.7" N, 166° 33' 46.8" W  
**Least Depth:** 7.29 m (= 23.92 ft = 3.987 fm = 3 fm 5.92 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.982$  m ; **TVU (TPEv)**  $\pm 0.314$  m  
**Timestamp:** 2015-189.18:31:51.987 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891830  
**Profile/Beam:** 1120/355  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 4 fms (7.291m) with preliminary tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891830	1120/355	0.00	000.0	Primary

**Hydrographer Recommendations**

"This area is routinely used to anchor small to mid size vessels. Recommend cartographer chart as surveyed but include redrawing of the five fathom contour surrounding the identified critical soundings. Refer to contour layer in attached .000 file."

**Cartographically-Rounded Depth (Affected Charts):**

4fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)

7.3m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - FA; AK; 10,000  
 NINFOM - MBES



QUASOU - 6:least depth known  
SORDAT - 20150708  
SORIND - US,US,Graph,F00663  
TECSOU - 3:found by multi-beam  
VALSOU - 7.291 m  
WATLEV - 3:always under water/submerged

**Concur. Charted a 3 fm 5 ft submerged rock.**

### Feature Images

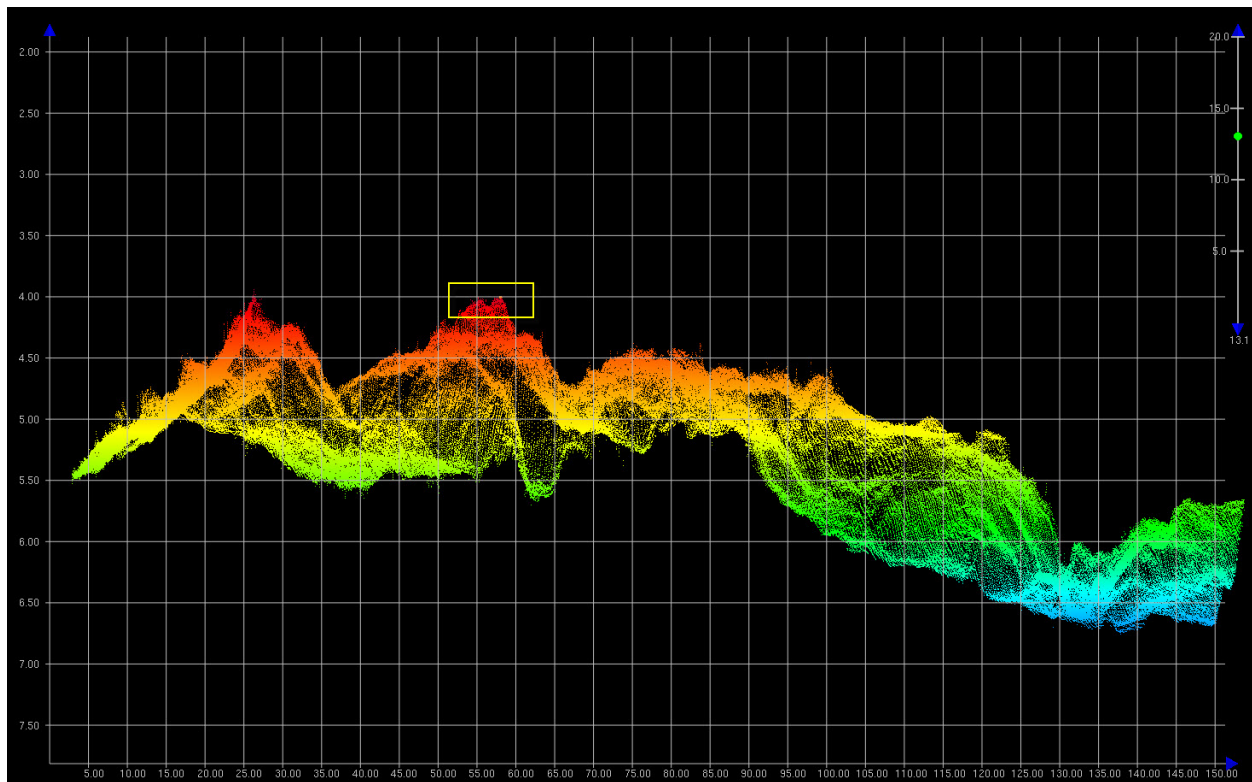


Figure 1.7.1

**1.8) 1006/332****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 53° 53' 43.9" N, 166° 33' 48.3" W  
**Least Depth:** 6.98 m (= 22.89 ft = 3.816 fm = 3 fm 4.89 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.982$  m ; **TVU (TPEv)**  $\pm 0.313$  m  
**Timestamp:** 2015-189.18:41:02.782 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891838  
**Profile/Beam:** 1006/332  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 3.5 fms (6.977m) with preliminary tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891838	1006/332	0.00	000.0	Primary

**Hydrographer Recommendations**

"This area is routinely used to anchor small to mid size vessels. Recommend cartographer chart as surveyed but include redrawing of the five fathom contour surrounding the identified critical soundings. Refer to contour layer in attached .000 file."

**Cartographically-Rounded Depth (Affected Charts):**

3  $\frac{3}{4}$ fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)  
 7.0m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - FA; AK; 10,000

NINFOM - MBES

QUASOU - 6:least depth known

SORDAT - 20150708

SORIND - US,US,Graph,F00663

TECSOU - 3:found by multi-beam

VALSOU - 6.978 m

WATLEV - 3:always under water/submerged

**Concur. Charted a 3 fm 4 ft submerged rock .**

## Feature Images

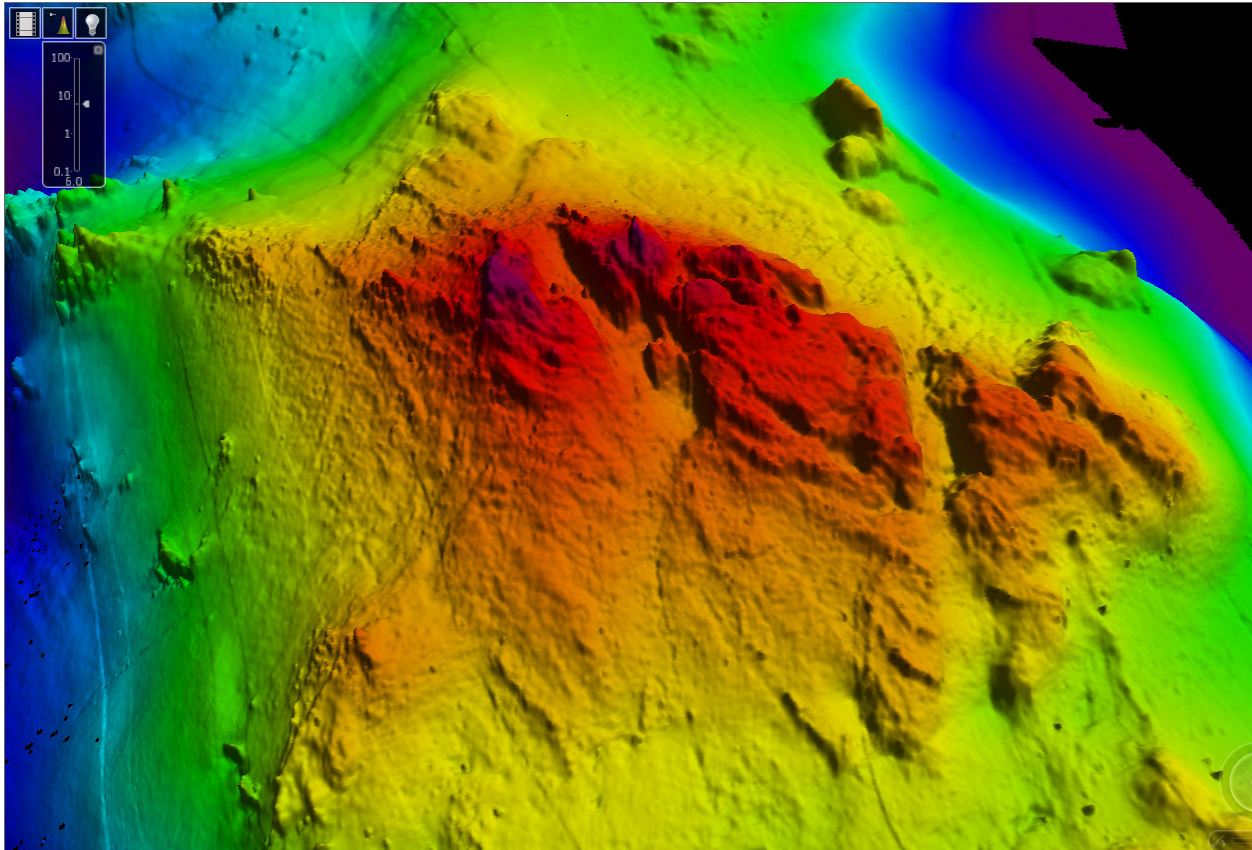


Figure 1.8.1

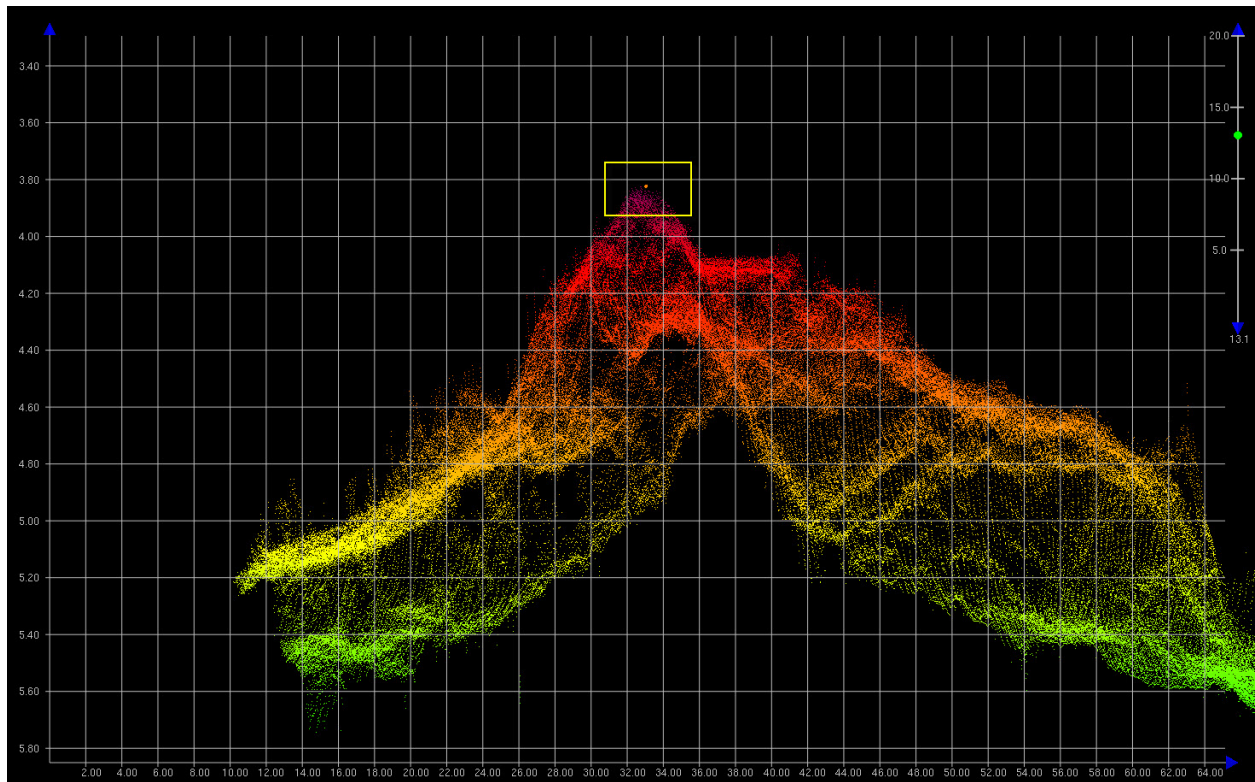


Figure 1.8.2

**1.9) 94/432****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 53° 53' 39.6" N, 166° 33' 44.6" W  
**Least Depth:** 13.82 m (= 45.35 ft = 7.558 fm = 7 fm 3.35 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.987$  m ; **TVU (TPEv)**  $\pm 0.324$  m  
**Timestamp:** 2015-189.18:48:57.503 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891848  
**Profile/Beam:** 94/432  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 7.3 fms (13.822m) with preliminary tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891848	94/432	0.00	000.0	Primary

**Hydrographer Recommendations**

Chart sounding as surveyed.

**Cartographically-Rounded Depth (Affected Charts):**

7 ½fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)

13.8m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20150708  
 SORIND - US,US,Graph,F00663  
 TECSOU - 3:found by multi-beam

**1.10) 800/102**

**DANGER TO NAVIGATION**

**Survey Summary**

**Survey Position:** 53° 53' 43.7" N, 166° 33' 55.6" W  
**Least Depth:** 13.97 m (= 45.83 ft = 7.638 fm = 7 fm 3.83 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.986$  m ; **TVU (TPEv)**  $\pm 0.321$  m  
**Timestamp:** 2015-189.18:50:06.341 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891848  
**Profile/Beam:** 800/102  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 7.4 fms (13.969m) with preliminary tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891848	800/102	0.00	000.0	Primary

**Hydrographer Recommendations**

[None]

**Cartographically-Rounded Depth (Affected Charts):**

7 ½fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)  
 13.9m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20150708  
 SORIND - US,US,Graph,F00663



TECSOU - 3:found by multi-beam

**Concur. The sounding was selected for compilation to the chart.**

**1.11) 186/26****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 53° 53' 41.2" N, 166° 33' 47.6" W  
**Least Depth:** 10.50 m (= 34.45 ft = 5.742 fm = 5 fm 4.45 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.985$  m ; **TVU (TPEv)**  $\pm 0.338$  m  
**Timestamp:** 2015-189.18:52:33.076 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891852  
**Profile/Beam:** 186/26  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 5.4 fms (10.501m) with preliminary tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891852	186/26	0.00	000.0	Primary

**Hydrographer Recommendations**

Chart sounding as surveyed.

**Cartographically-Rounded Depth (Affected Charts):**

5  $\frac{3}{4}$ fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)

10.5m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** QUASOU - 6:least depth known  
 SORDAT - 20150708  
 SORIND - US,US,Graph,F00663  
 TECSOU - 3:found by multi-beam

**1.12) 1054/512****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 53° 53' 55.7" N, 166° 33' 54.7" W  
**Least Depth:** 5.66 m (= 18.57 ft = 3.094 fm = 3 fm 0.57 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.982$  m ; **TVU (TPEv)**  $\pm 0.317$  m  
**Timestamp:** 2015-189.19:26:40.628 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891925  
**Profile/Beam:** 1054/512  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 3 fms (5.659m) with predicted tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891925	1054/512	0.00	000.0	Primary

**Hydrographer Recommendations**

This area is routinely used to anchor small to mid size vessels. Recommend cartographer chart as surveyed but include redrawing of the five fathom contour surrounding the identified critical soundings. Refer to contour layer in attached .000 file.

**Cartographically-Rounded Depth (Affected Charts):**

3fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)

5.6m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - FA; AK; 10,000  
 NINFOM - MBES

QUASOU - 6:least depth known  
SORDAT - 20150708  
SORIND - US,US,Graph,F00663  
TECSOU - 3:found by multi-beam  
VALSOU - 5.659 m  
WATLEV - 3:always under water/submerged

**Concur with clarification. Compiled the rock as a 3 fm sounding inside a rocky seabed area.**

### Feature Images

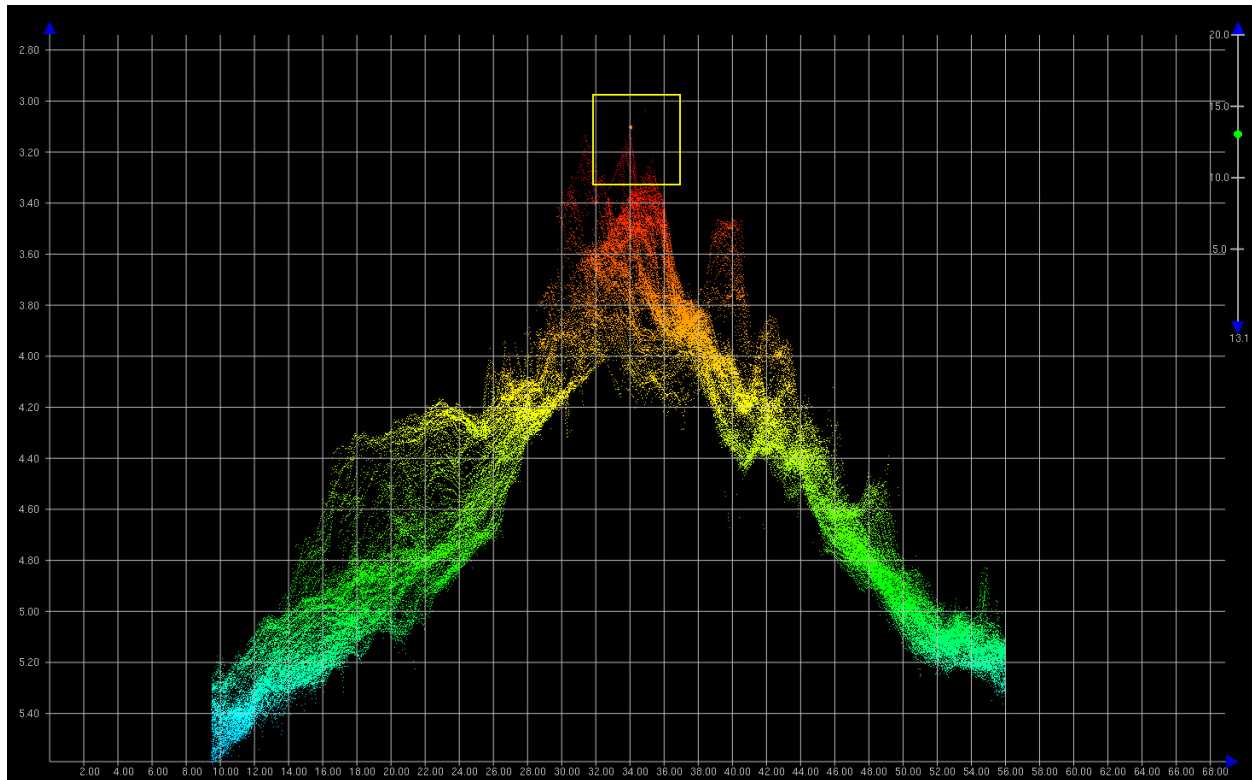


Figure 1.12.1

**1.13) 401/448**

**DANGER TO NAVIGATION**

**Survey Summary**

**Survey Position:** 53° 53' 54.7" N, 166° 33' 53.6" W  
**Least Depth:** 7.89 m (= 25.89 ft = 4.314 fm = 4 fm 1.89 ft)  
**TPU (±1.96σ):** **THU (TPEh)** ±0.983 m ; **TVU (TPEv)** ±0.317 m  
**Timestamp:** 2015-189.19:28:24.192 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891927  
**Profile/Beam:** 401/448  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 4.2 fms (7.89m) with predicted tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891927	401/448	0.00	000.0	Primary

**Hydrographer Recommendations**

This area is routinely used to anchor small to mid size vessels. Recommend cartographer chart as surveyed but include redrawing of the five fathom contour surrounding the identified critical soundings. Refer to contour layer in attached .000 file.

**Cartographically-Rounded Depth (Affected Charts):**

4 ¼fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)  
 7.9m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - FA; AK; 10,000  
 NINFOM - MBES

QUASOU - 6:least depth known  
SORDAT - 20150708  
SORIND - US,US,Graph,F00663  
TECSOU - 3:found by multi-beam  
VALSOU - 7.890 m  
WATLEV - 3:always under water/submerged

**Concur with clarification. Compiled the rock as a 4 fm 1 ft sounding inside a rocky seabed area.**

### Feature Images

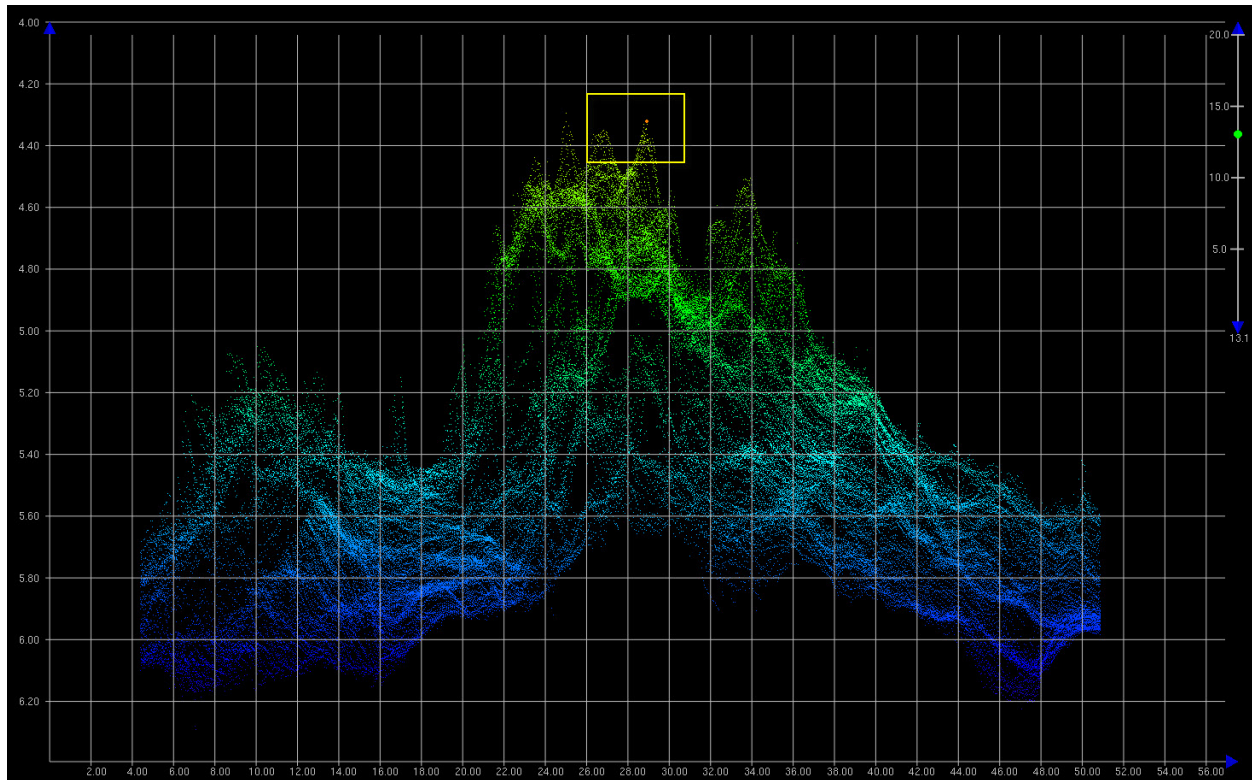


Figure 1.13.1



**1.14) 208/209****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 53° 53' 57.5" N, 166° 33' 57.5" W  
**Least Depth:** 5.15 m (= 16.88 ft = 2.814 fm = 2 fm 4.88 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 0.981$  m ; **TVU (TPEv)**  $\pm 0.313$  m  
**Timestamp:** 2015-189.19:41:15.369 (07/08/2015)  
**Survey Line:** f00663 / fa\_2806\_400khz\_7125\_512bms\_2015 / 2015-189 / 2015\_\_1891940  
**Profile/Beam:** 208/209  
**Charts Affected:** 16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 513\_1, 530\_1, 50\_1

**Remarks:**

Found with 100% Reson 7125 MBES coverage, the least depth on this feature is 2.5fms (5.14m) with predicted tides applied.

**Feature Correlation**

Source	Feature	Range	Azimuth	Status
2015__1891940	208/209	0.00	000.0	Primary

**Hydrographer Recommendations**

This area is routinely used to anchor small to mid size vessels. Recommend cartographer chart as surveyed but include redrawing of the five fathom contour surrounding the identified critical soundings. Refer to contour layer in attached .000 file.

**Cartographically-Rounded Depth (Affected Charts):**

2  $\frac{3}{4}$ fm (16529\_1, 16530\_1, 16528\_1, 16500\_1, 16520\_1, 16011\_1, 16006\_1, 530\_1)

5.1m (513\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - FA; AK; 10,000  
 NINFOM - MBES

QUASOU - 6:least depth known

SORDAT - 20150708

SORIND - US,US,Graph,F00663

TECSOU - 3:found by multi-beam

VALSOU - 5.146 m

WATLEV - 3:always under water/submerged

**Concur. Charted 2 fm 4 ft submerged rock.**

### Feature Images

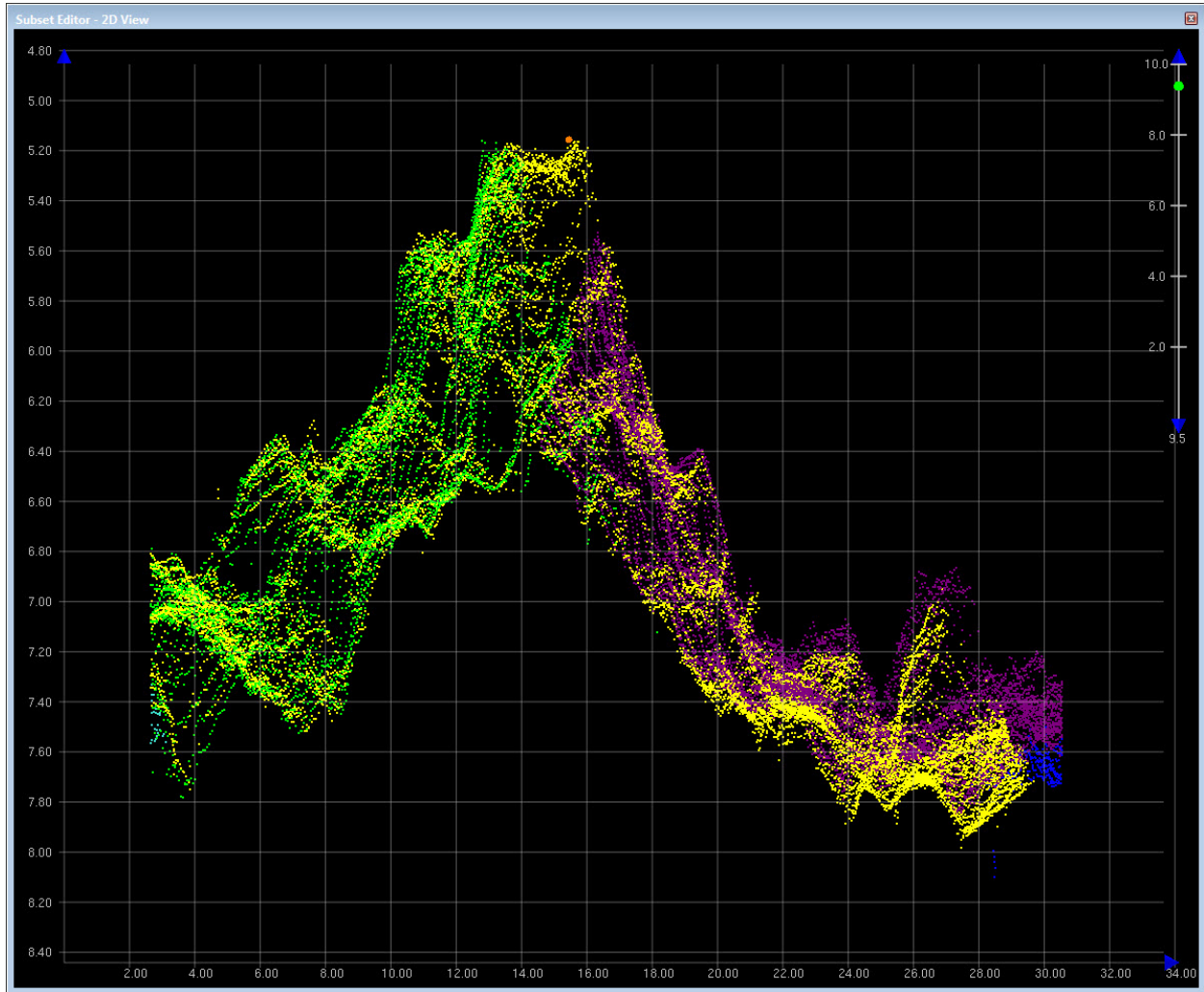


Figure 1.14.1

APPROVAL PAGE

F00663

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 NGDC for archive

- F00663\_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- F00663\_GeoImage.pdf

The survey evaluation and verification has been conducted according current OCS Specifications.

Approved: \_\_\_\_\_

**Peter Holmberg**

Cartographic Team Lead, Pacific Hydrographic Branch

The survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: \_\_\_\_\_

**Grant Froelich**

Acting Chief, Pacific Hydrographic Branch