H12683

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

DESCRIPTIVE REPORT

Type of Survey:	Navigable Area
Registry Number:	H12683

LOCALITY

State(s):	Alaska
General Locality:	South Coast of Kodiak Island
Sub-locality:	Sitkinak Strait

2014

CHIEF OF PARTY
CDR David J. Zezula, NOAA

LIBRARY & ARCHIVES

Date:

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET	**H12683**

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):	**Alaska**
General Locality:	**South Coast of Kodiak Island**
Sub-Locality:	**Sitkinak Strait**
Scale:	**40000**
Dates of Survey:	**06/26/2014 to 08/06/2014**
Instructions Dated:	**04/21/2014**
Project Number:	**OPR-P335-FA-14**
Field Unit:	**NOAA Ship *Fairweather***
Chief of Party:	**CDR David J. Zezula, NOAA**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	**Multibeam Echo Sounder Backscatter**
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. 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 Centers for Environmental Information (NCEI) and can be retrieved via http:// www.ngdc.noaa.gov/.

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Descriptive Report to Accompany Survey H12683

Project: OPR-P335-FA-14

Locality: South Coast of Kodiak Island

Sublocality: Sitkinak Strait

Scale: 1:40000

June 2014 - August 2014

NOAA Ship *Fairweather*

Chief of Party: CDR David J. Zezula, NOAA

A. Area Surveyed

The survey area is located off the South end of Kodiak Island with the sub-locality of Sitkinak Strait.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
56° 39' 46.52" N 154° 13' 47.78" W	56° 36' 26.59" N 153° 57' 57.21" W

Table 1: Survey Limits

Due to safe manning and mechanical issues, the Fairweather was unable to complete the entire survey area that was assigned within the H12683 sheet limits. Figure 1 illustrates two separate areas within the sheet limits that were not completed. There was also an area on the southern edge of the survey limits where the 4m curve (represented in red) was not reached due to early departure from the survey area, as shown in Figure 2.

Additionally, the 4m curve or the sheet limits was not reached in several other areas due to being fouled with kelp, rocks, or both. These areas are shown in Figures 3 and 4.

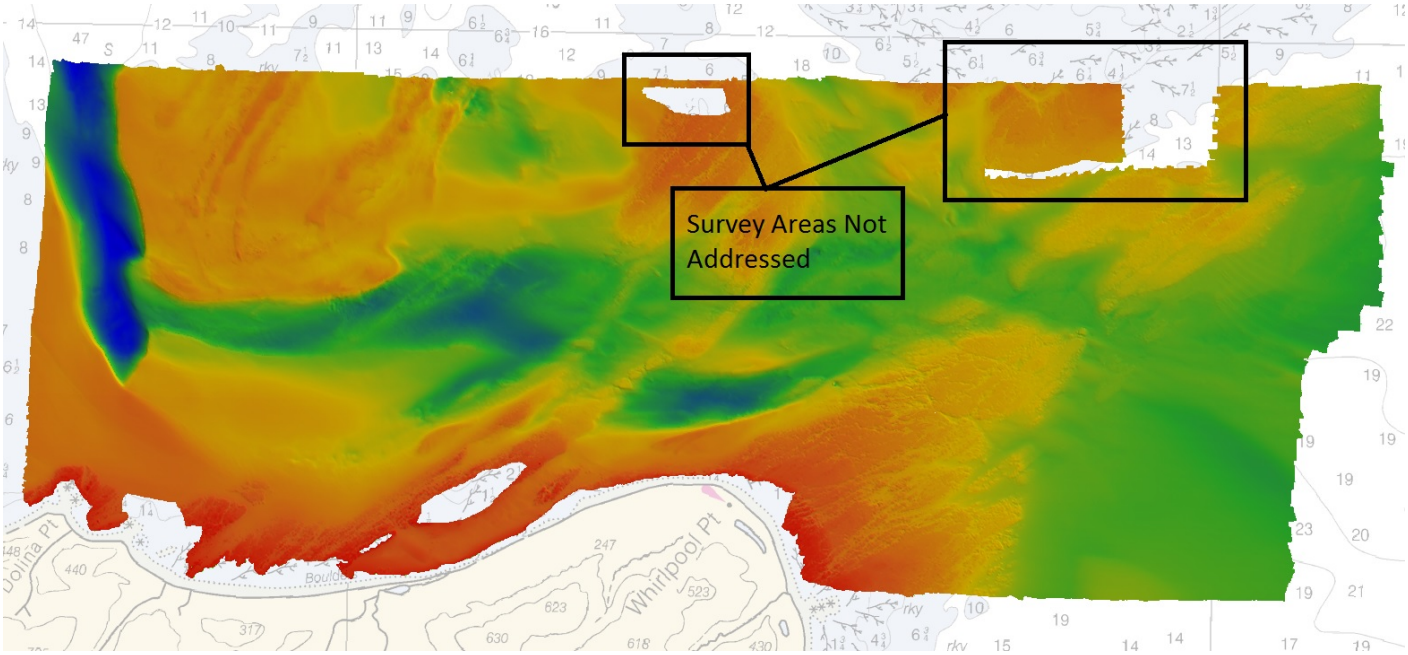


Figure 1: Two areas on the northern edge of the sheet limit that were not completed.

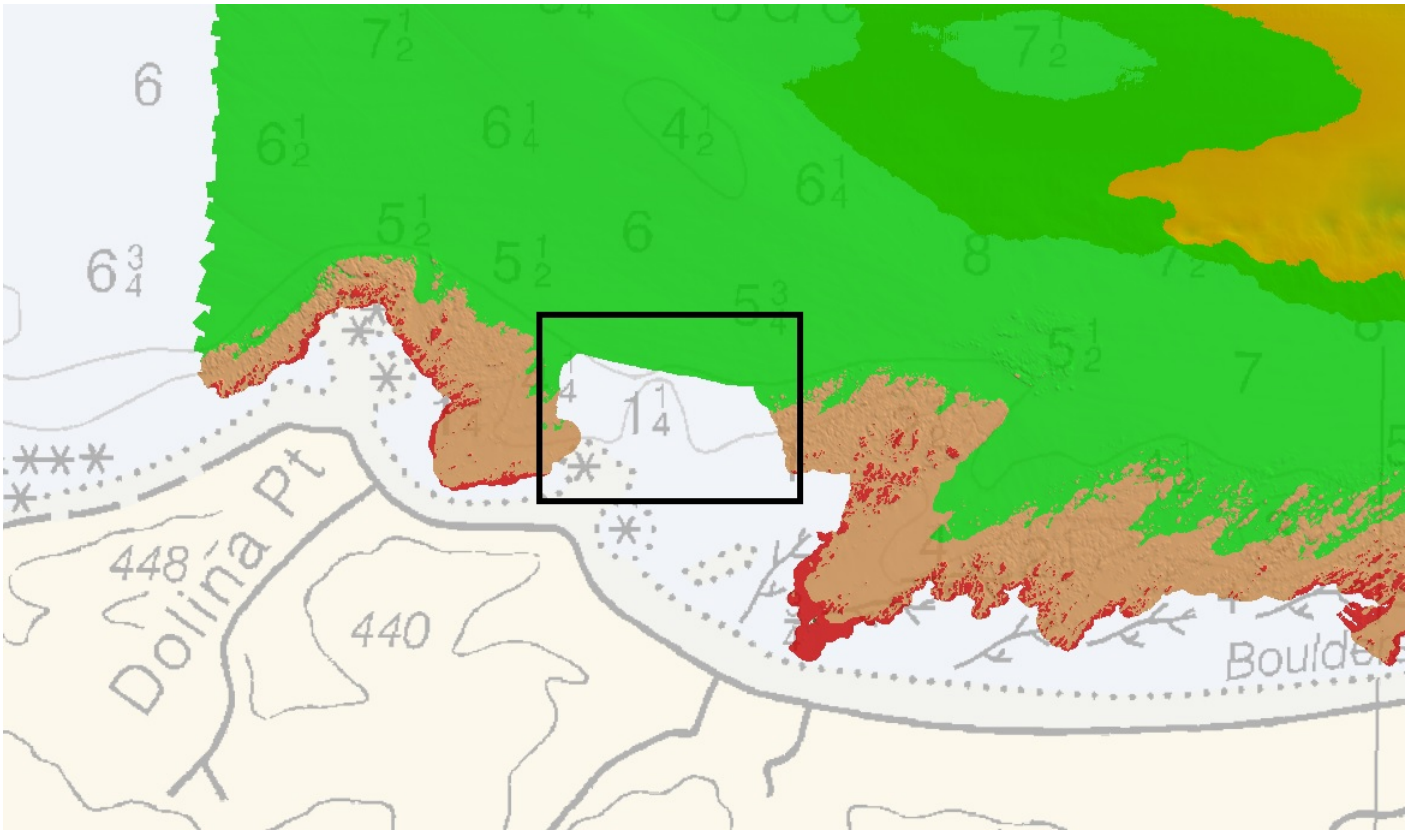


Figure 2: Southern area that was not completed to the 4 meter curve (in red) due to early departure.

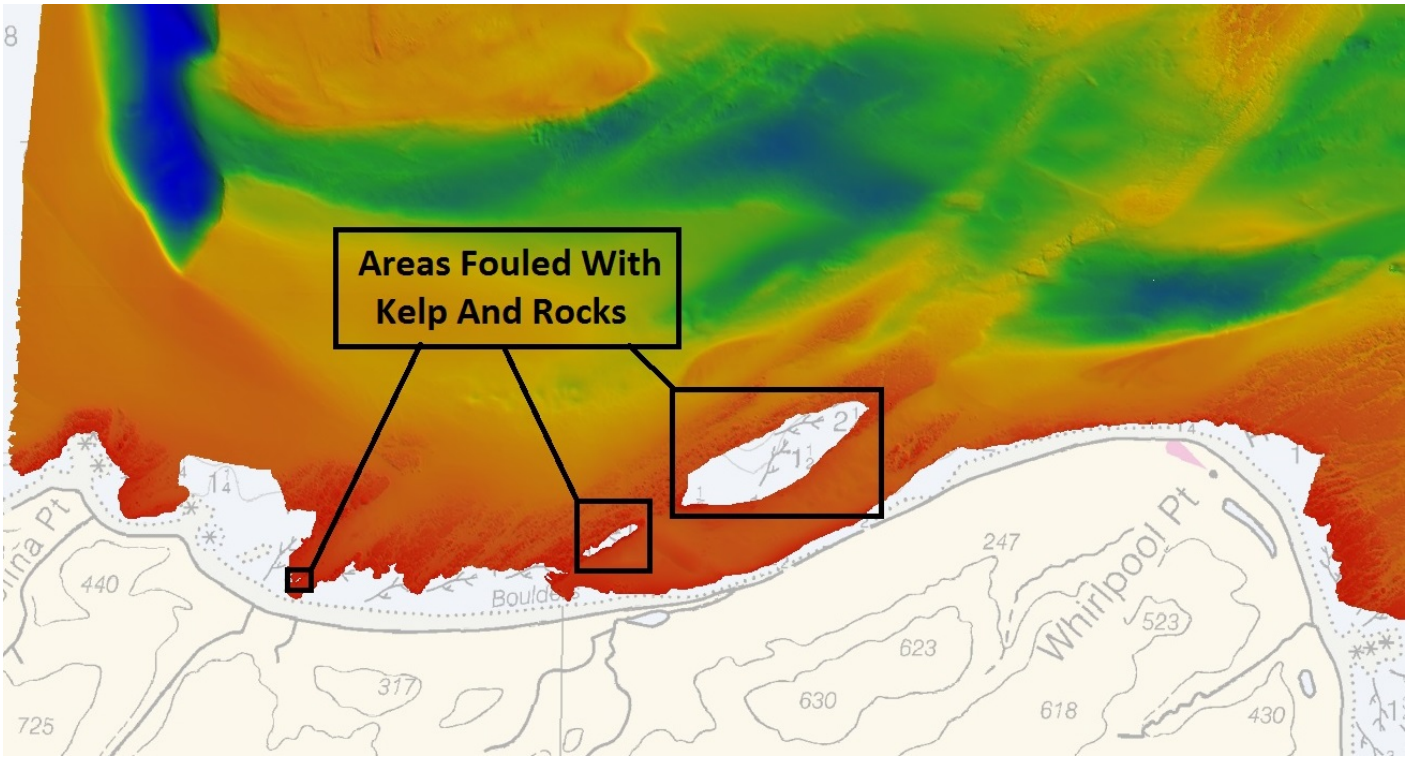


Figure 3: Areas fouled with rocks and kelp.

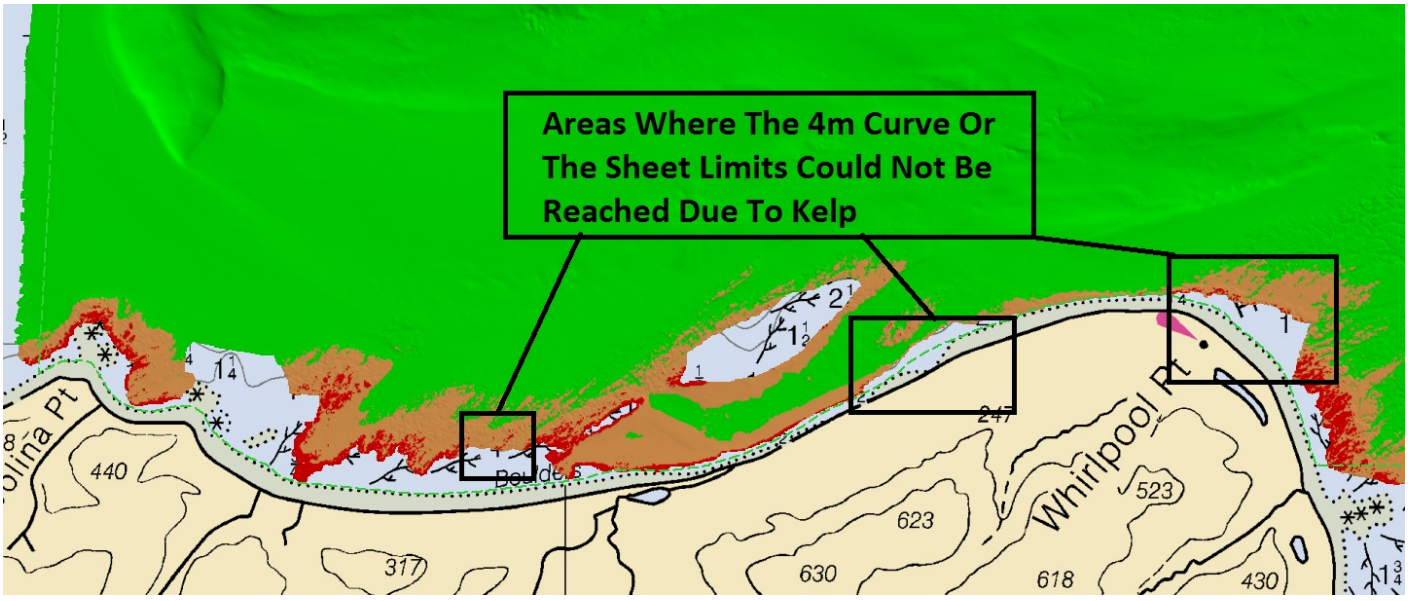


Figure 4: Areas where the sheet limits or the 4m curve could not be reached due to kelp and rocks.

A.2 Survey Purpose

The purpose of this project is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. The project will include areas off the south coast of Kodiak Island, AK. Project

area also addresses survey request number 030001, need for survey due to increasing number of passenger vessels, tour vessels, and large fishing fleet vessels.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

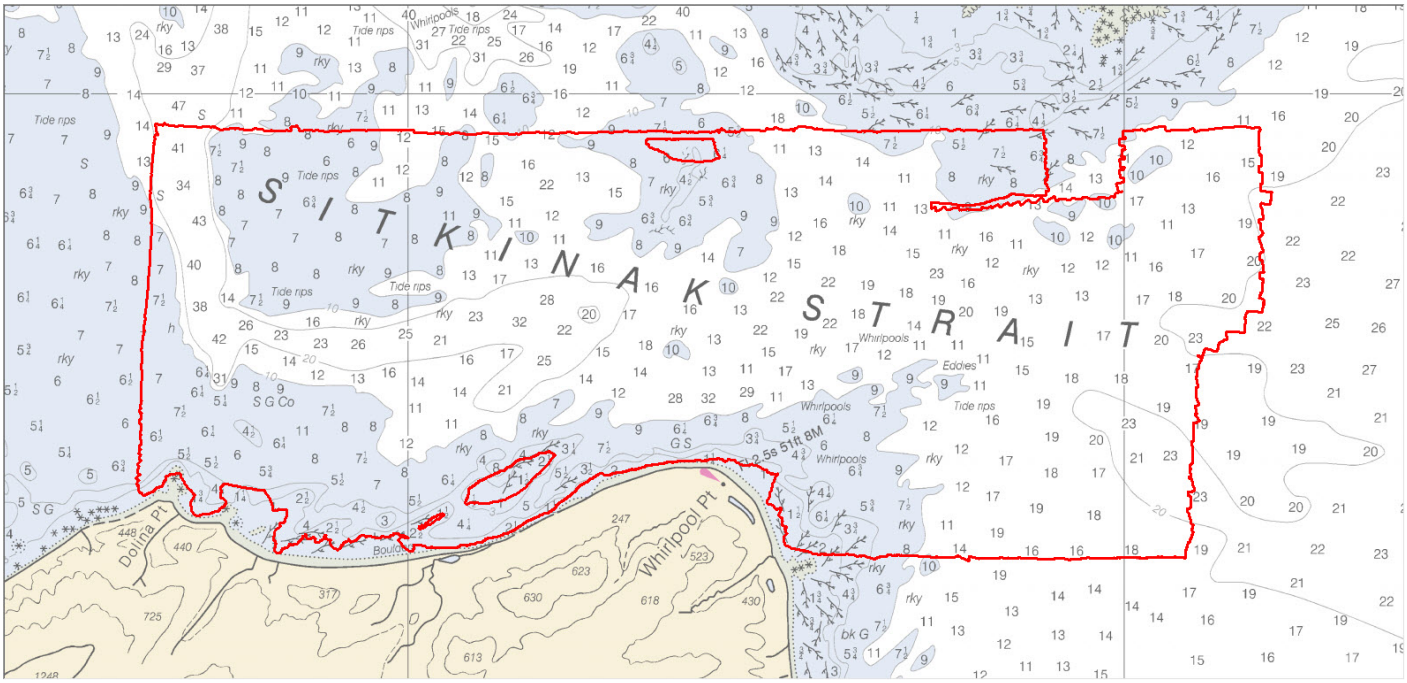


Figure 5: Survey Outline

Due to safe manning and mechanical issues the Fairweather was unable to complete the entire survey area that was assigned within the H12683 sheet limits.

A.5 Survey Statistics

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

	HULL ID	*2805*	*2806*	*2807*	*2808*	*Total*
LNM	SBES Mainscheme	0	0	0	0	0
	MBES Mainscheme	142.941	143.108	241.335	230.070	757.454
	Lidar Mainscheme	0	0	0	0	0
	SSS Mainscheme	0	0	0	0	0
	SBES/SSS Mainscheme	0	0	0	0	0
	MBES/SSS Mainscheme	0	0	0	0	0
	SBES/MBES Crosslines	1.138	1.582	7.452	4.506	14.678
	Lidar Crosslines	0	0	0	0	0
Number of Bottom Samples						0
Number of AWOIS Items Investigated						0
Number Maritime Boundary Points Investigated						1
Number of DPs						0
Number of Items Investigated by Dive Ops						0
Total SNM						24.84

Table 2: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
06/26/2014	177
06/27/2014	178
06/29/2014	180
06/30/2014	181
07/01/2014	182
08/06/2014	218

Table 3: Dates of Hydrography

Survey statistics were calculated in Pydro64. Two Pydro PSS files, H12683.pss and H12683_Xlines.pss, were submitted in the H12683 folder. As described in "B.2.1 crosslines" a number of mainscheme lines were selected to be used as crosslines as well, which is why a separate PSS was created with these selected lines to calculate crosslines statistics.

B. Data Acquisition and Processing

B.1 Equipment and Vessels

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

B.1.1 Vessels

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

Hull ID	*2805*	*2806*	*2807*	*2808*
LOA	8.64 meters	8.64 meters	8.64 meters	8.64 meters
Draft	1.12 meters	1.12 meters	1.12 meters	1.12 meters

Table 4: Vessels Used

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

B.1.2 Equipment

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

Manufacturer	Model	Type
Reson	7125	MBES
Seabird	19plus	Conductivity, Temperature, and Depth Sensor
Reson	SVP71	Sound Speed System
Applanix	POS/MV V4	Positioning and Attitude System

Table 5: Major Systems Used

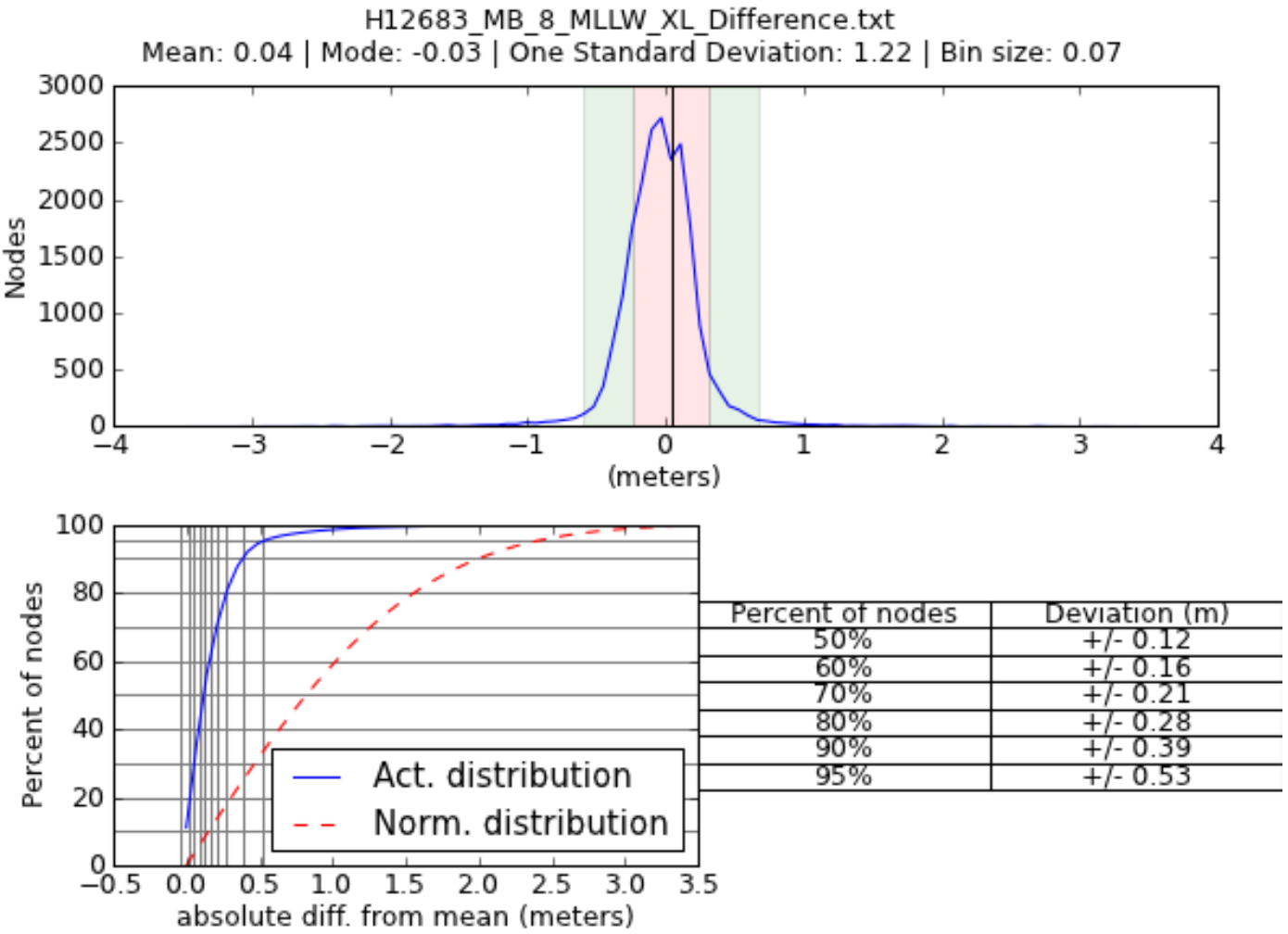
B.2 Quality Control

B.2.1 Crosslines

Crosslines acquired for this survey totaled 2% of mainscheme acquisition.

Traditional crosslines were not acquired for this survey. In order to conduct a crossline comparison, a number of main scheme lines were identified and selected as crosslines. The lines selected to be used as crosslines spanned across different days of the project and included lines driven by each of the four survey launches. The lack of crosslines data was mitigated by a post acquisition reference surface which is addressed in section B.3.2. Calibrations.

Surface differencing in CARIS Hips was used to assess crossline agreement with mainscheme lines. Figure 7 depicts an 8 meter surface made with main-scheme lines only and an 8 meter surface made with crosslines only. This difference surface is submitted digitally in the Separates/II_Digital_Data folder. The two surfaces had a deviation of +/- 0.39m at the 90% confidence of nodes which was within the Total Vertical Uncertainty (TVU) as defined in the 2014 Specs. At the 95% confidence level the deviation increased to +/- 0.53 meters which was likely influenced by outliers due to the surface at the edges of the crosslines not representing the true surface. At the 95% confidence level the deviation of the surfaces slightly exceeded TVU in some shoal areas. The required crossline percentage of 4% was not acquired due to unexpected departure of the project area due to mechanical problems.



Percent of nodes	Deviation (m)
50%	+/- 0.12
60%	+/- 0.16
70%	+/- 0.21
80%	+/- 0.28
90%	+/- 0.39
95%	+/- 0.53

Figure 6: 8m difference surface statistics for crossline comparison.

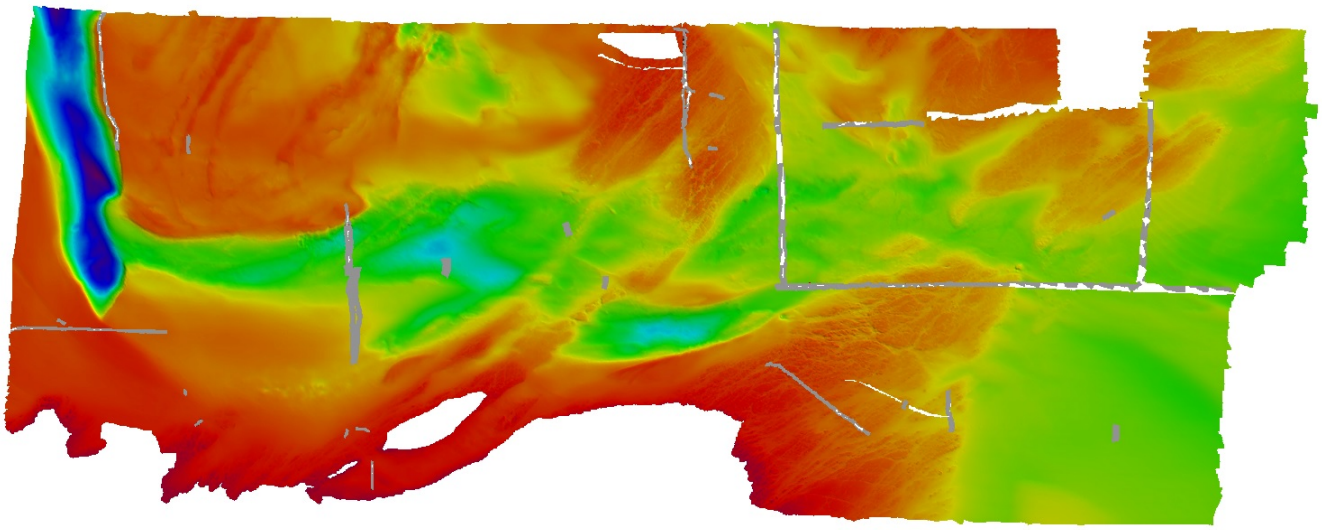


Figure 7: 8m difference surface for crossline comparison.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning
0.01 meters	0.08 meters

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
2805	2.0 meters/second	N/A meters/second	0.5 meters/second
2806	2.0 meters/second	N/A meters/second	0.5 meters/second
2807	2.0 meters/second	N/A meters/second	0.5 meters/second
2808	2.0 meters/second	N/A meters/second	0.5 meters/second

Table 7: Survey Specific Sound Speed TPU Values

Tidal Uncertainty Measurement Value has been incorrectly input as 0.01m in the TPU dialog both in the DR as well as in the CARIS Compute TPU dialog. The Tidal Uncertainty Measurement value should be input as 0.0m, and was corrected in review prior to regridding with the new TPU value.

B.2.3 Junctions

Surface differencing in CARIS HIPS AND SIPS was used to assess junction agreement between H12681_MB_8m_MLLW_Combined and H12683_MB_MLLW_Combined. The difference between the surfaces was generally less than 0.5m. See Figure 9 for a graphical representation, and Figure 8 for statistical information on the surface differencing.

Due to manning and mechanical problems, a large gap was not surveyed between H12683 and H12681. In this area there was a reduced amount of overlap between the two sheets.

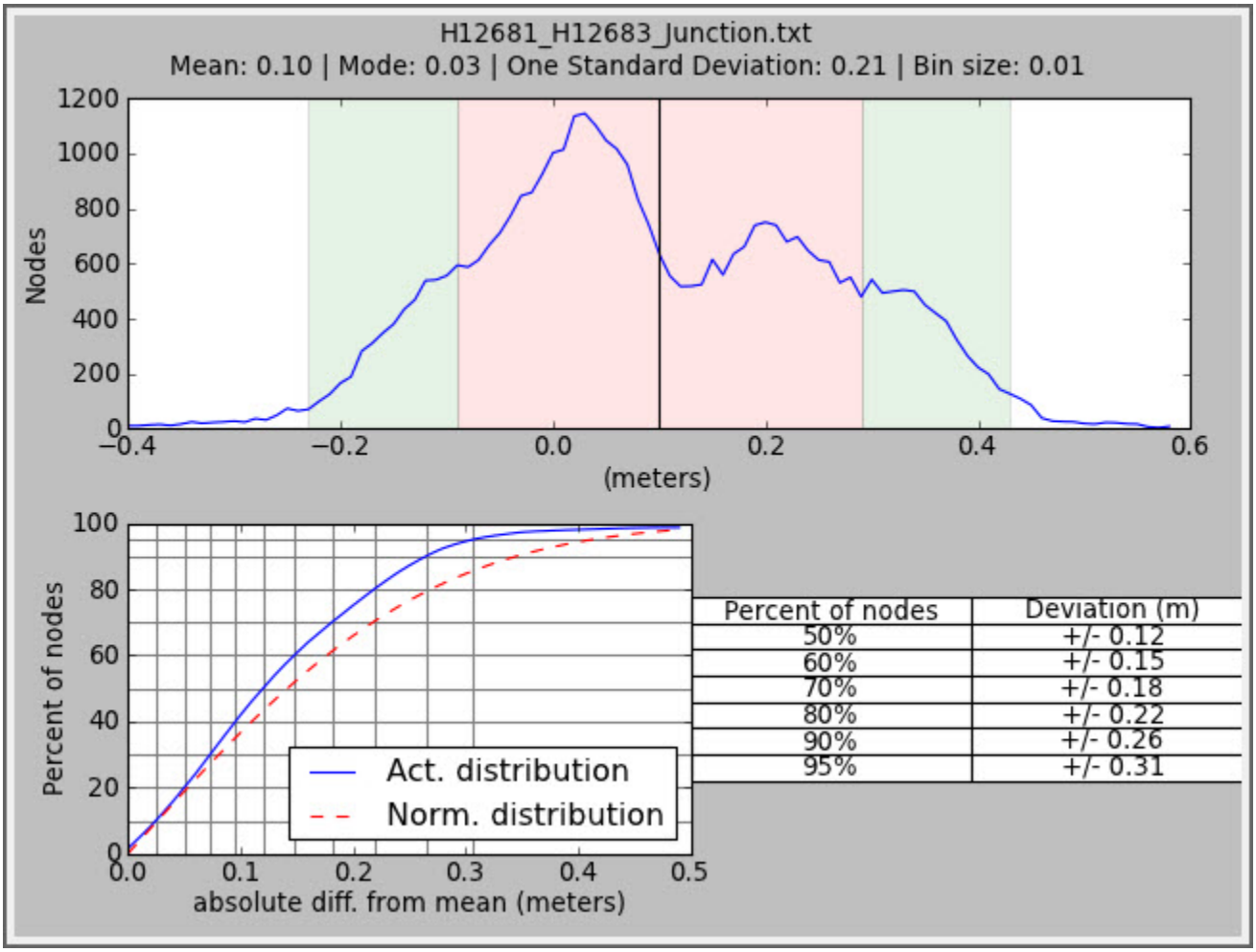


Figure 8: Statistical information for the junction between sheet H12681 and H12683.

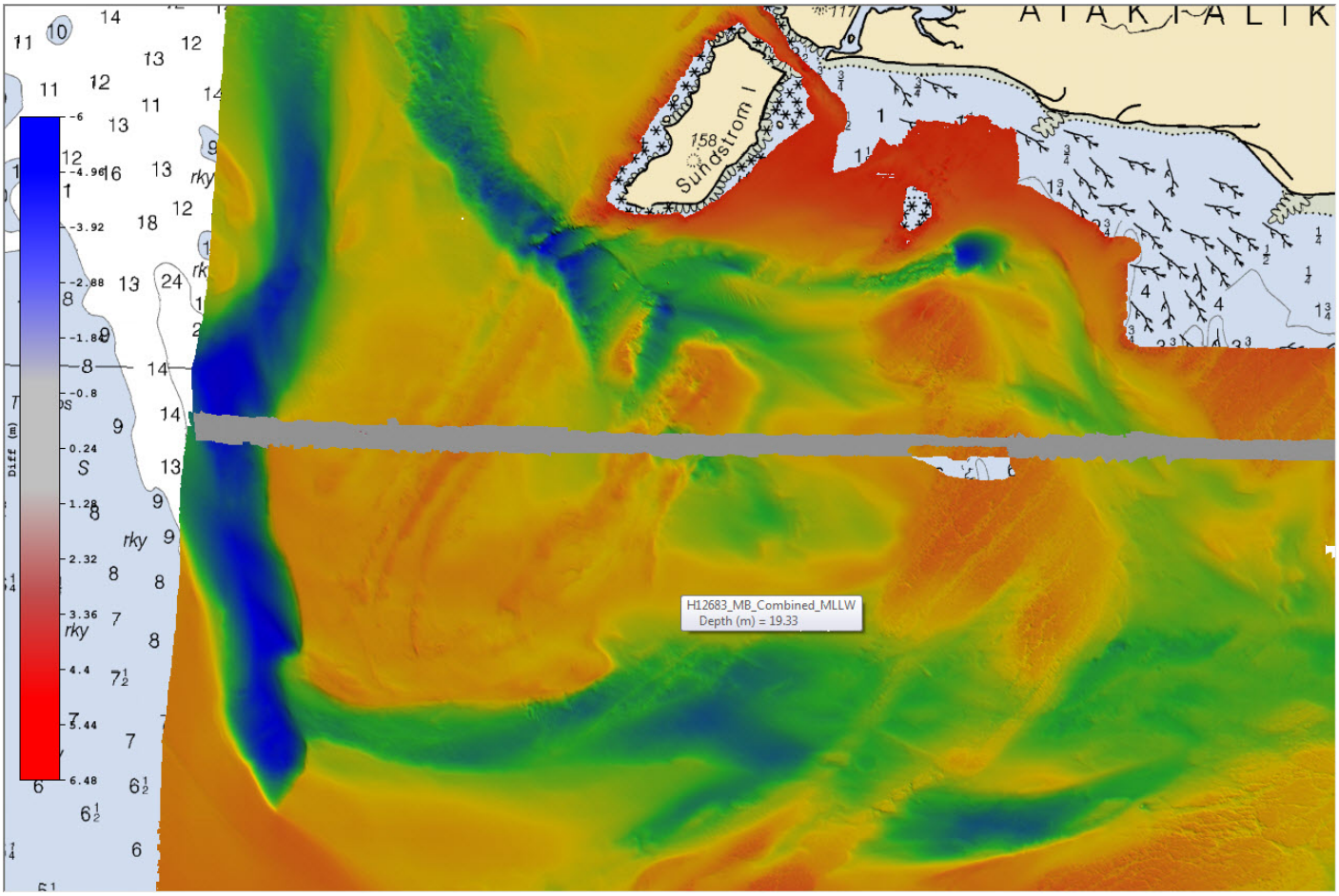


Figure 9: Graphical representation of the differences between junction H12681 and H12683.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12681	1:40000	2014	NOAA Ship FAIRWEATHER	N

Table 8: Junctioning Surveys

H12681

See above

The above junction table was produced in review to ensure all relevant data fields would be available for database usage.

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

Vegetation

During the cleaning and review process of sheet H12683, much of the area along the southern boundary of the survey was found with concentrated noise due to vegetation and kelp. Using CARIS Subset Editor, these soundings were removed in order for the CUBE Surface to more accurately represent the sea floor. Figure 10 shows an example of vegetation noise. Figure 11 shows an example of an area where vegetation was pulling the cube surface up and was subsequently removed.

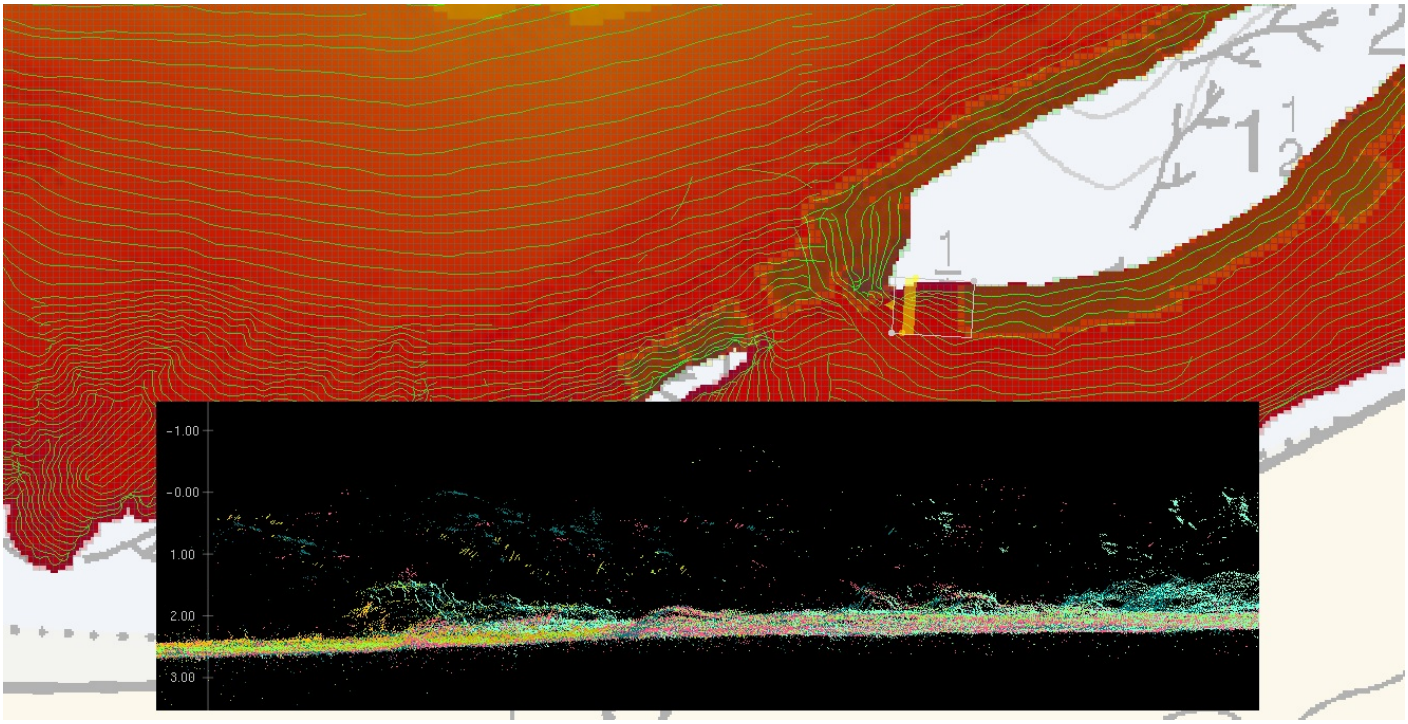


Figure 10: Floating vegetation resulting in noise .

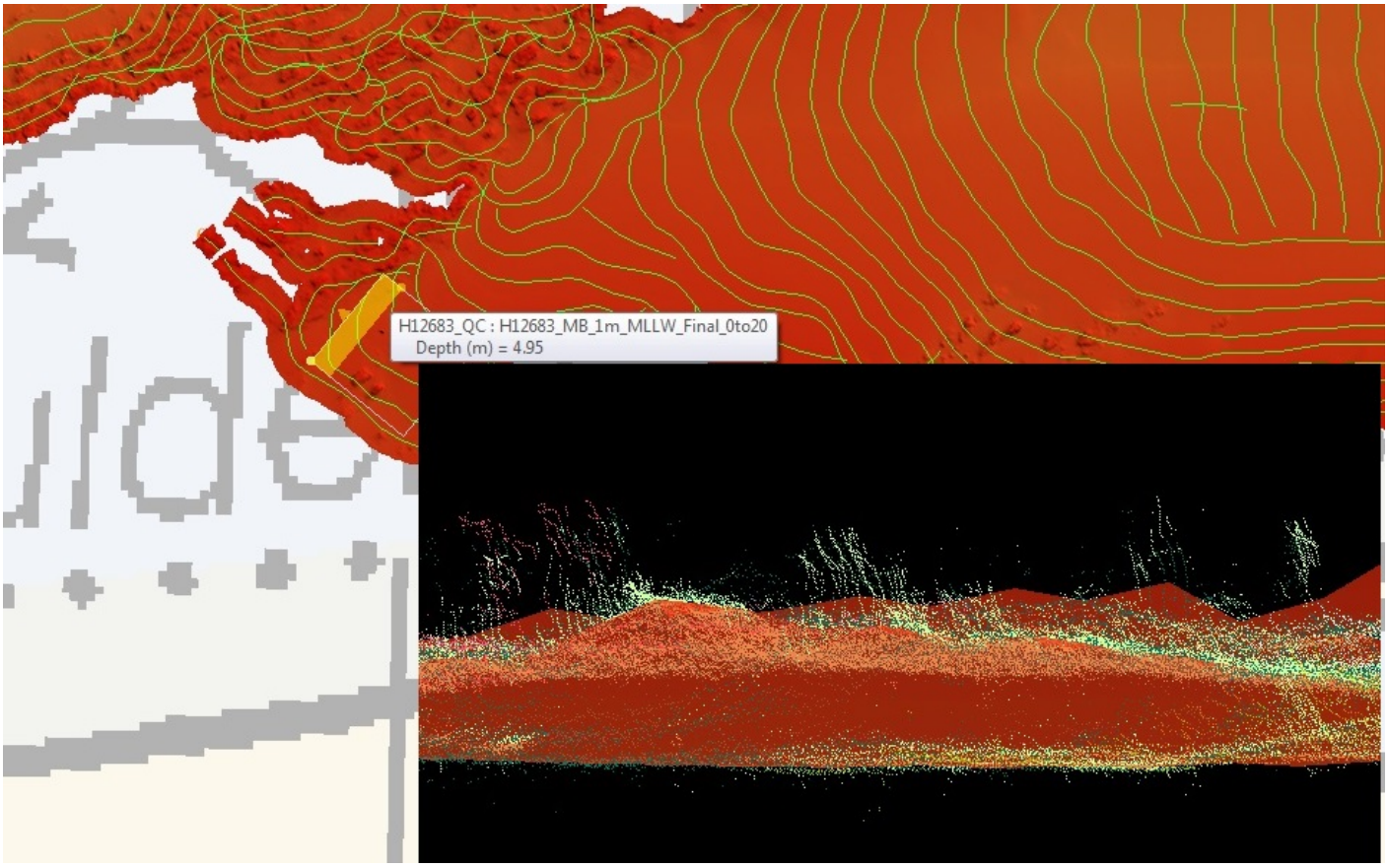


Figure 11: Kelp and vegetation on the sea floor near the southern sheet limits.

Surface Sound Speed Sensor

Several days of acquisition on survey H12683 occurred in foul weather which resulted in surface sound speed artifacts commonly referred to as "blow-outs". The sound speed profiles were examined in CARIS HIPS and SIPS and the fliers were interpolated to reduce the impact on the surface. An example of surface sound speed artifacts prior to interpolation can be seen in Figure 12.

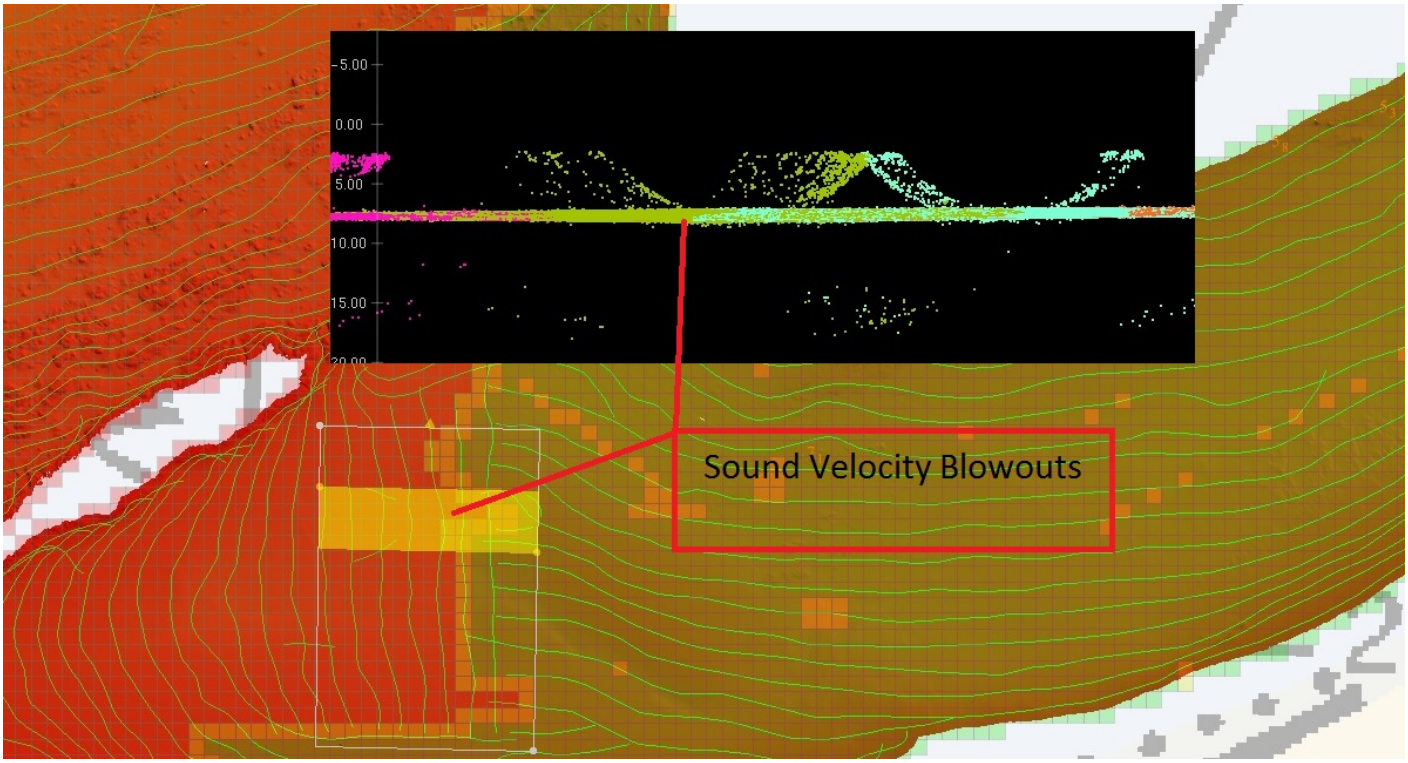


Figure 12: Surface Sound Speed "Blow-out"

Sound Velocity Offset

Offsets due to sound velocity exist in both the southeast and northeast sections of the survey sheet, as seen in Figures 13 and 14. The offsets did not result in the surface uncertainty being greater than the allowable total vertical uncertainty; i.e. the surface uncertainty remained within specifications. Soundings that did not accurately reflect the sea floor due to the sound velocity issue were cleaned out to better represent the true surface as seen in Figure 15.

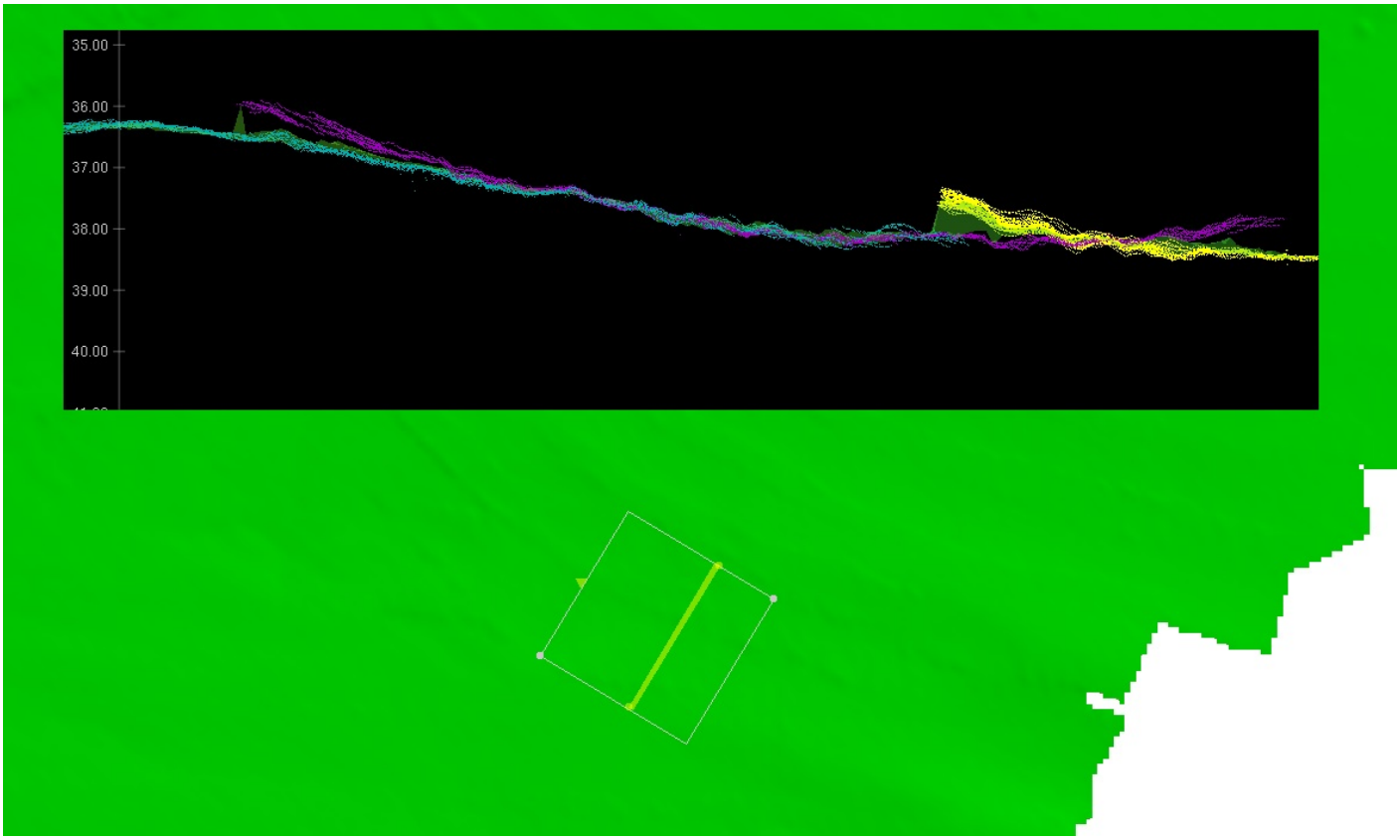


Figure 13: Sound Velocity Offset in the Northeast area

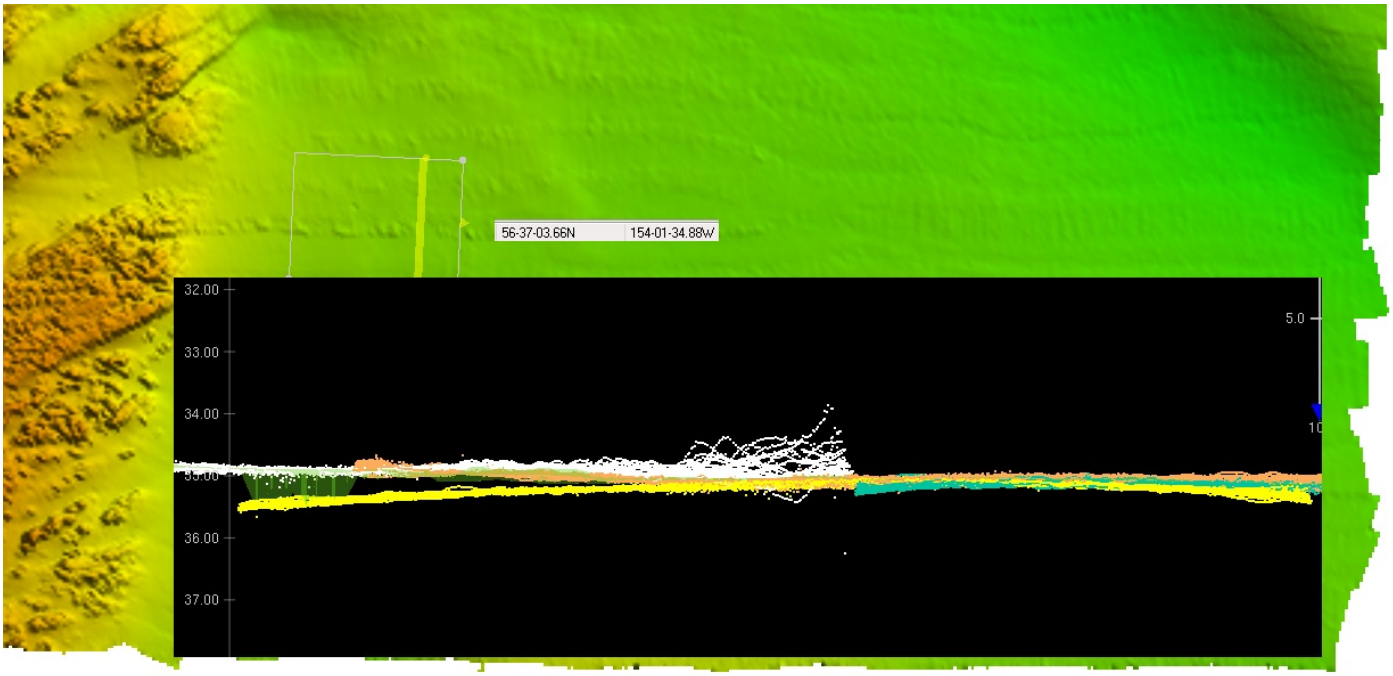


Figure 14: Sound Velocity Offset in the Southeast area

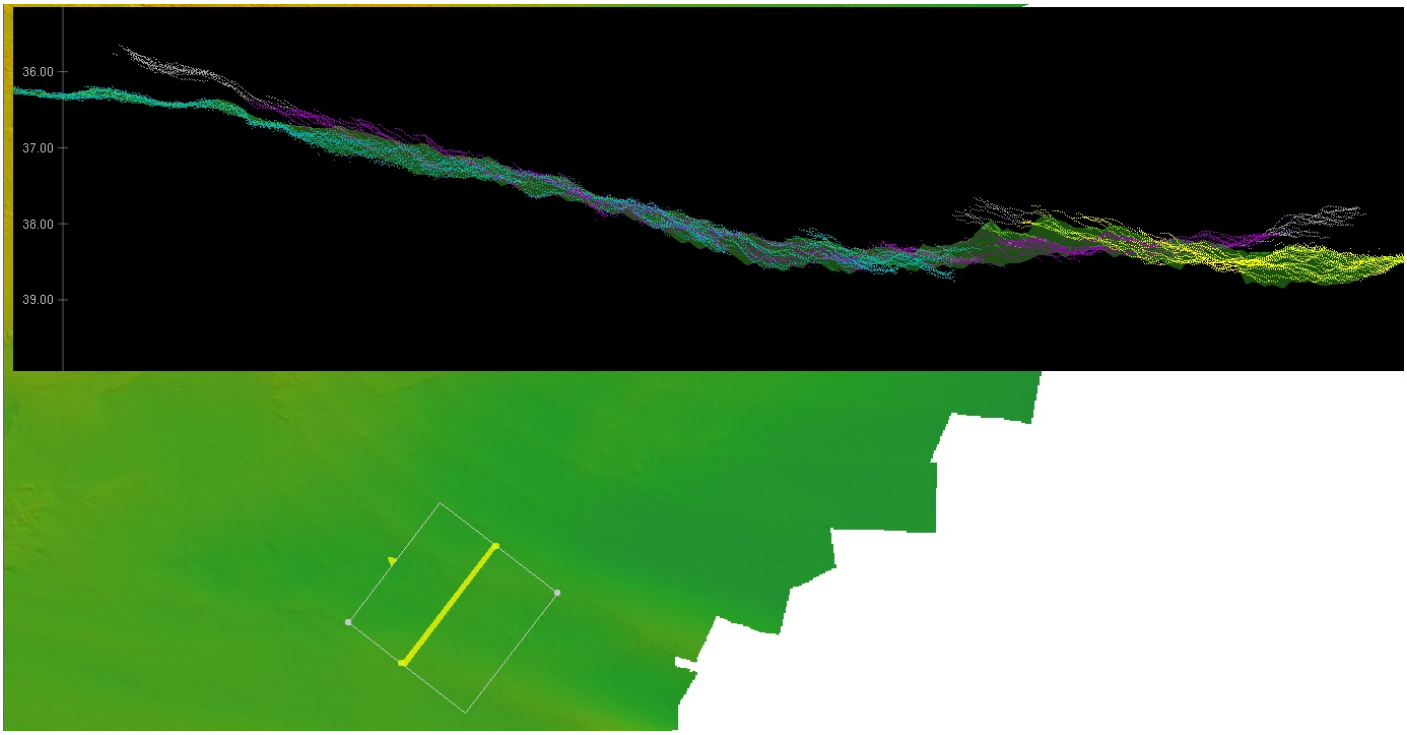


Figure 15: Corrected Sound Velocity Offset

Dynamic Draft Offset

Due to sea state, there were a number of areas within the survey that had noticeable dynamic draft offsets. However, all offsets were within the total allowable vertical uncertainty and thus within specification.

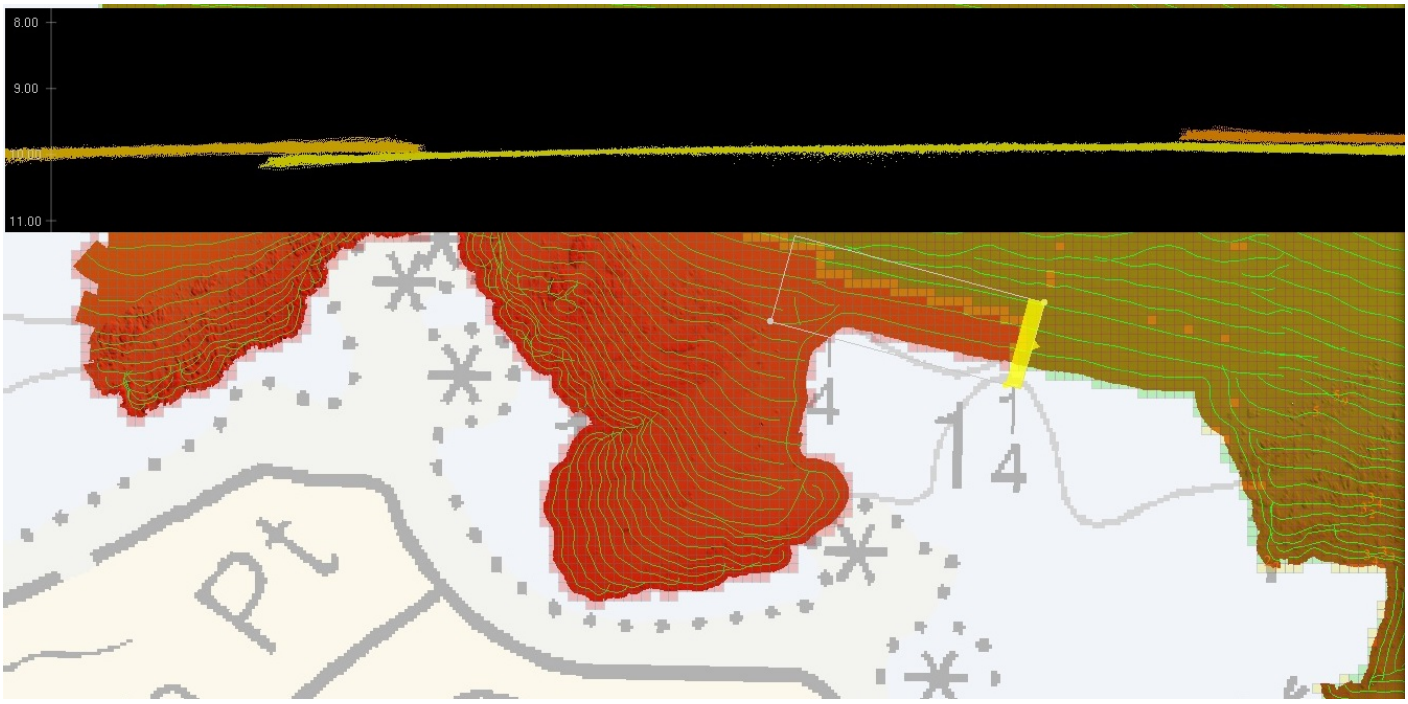


Figure 16: Dynamic Draft Offset

Do not concur that this is a Dynamic Draft Offset. The magnitude of vertical offset is 0.36m, much larger than the effects of settlement and squat for any speed in this vessel. A far more reasonable conclusion is that these offsets are the result of tide corrector error - either in the zoning or the observed tidal measurements.

Tidal Offset

An offset most likely due to tides was discovered where lines met from vessel 2805 on day number 180 and vessel 2806 on day number 178 as depicted in Figure 17. The average offset was approximately 0.3m. The offset occurred in a dynamic area where it is possible for water to build up due to current. It is also possible that the tide model was slightly off in this area.

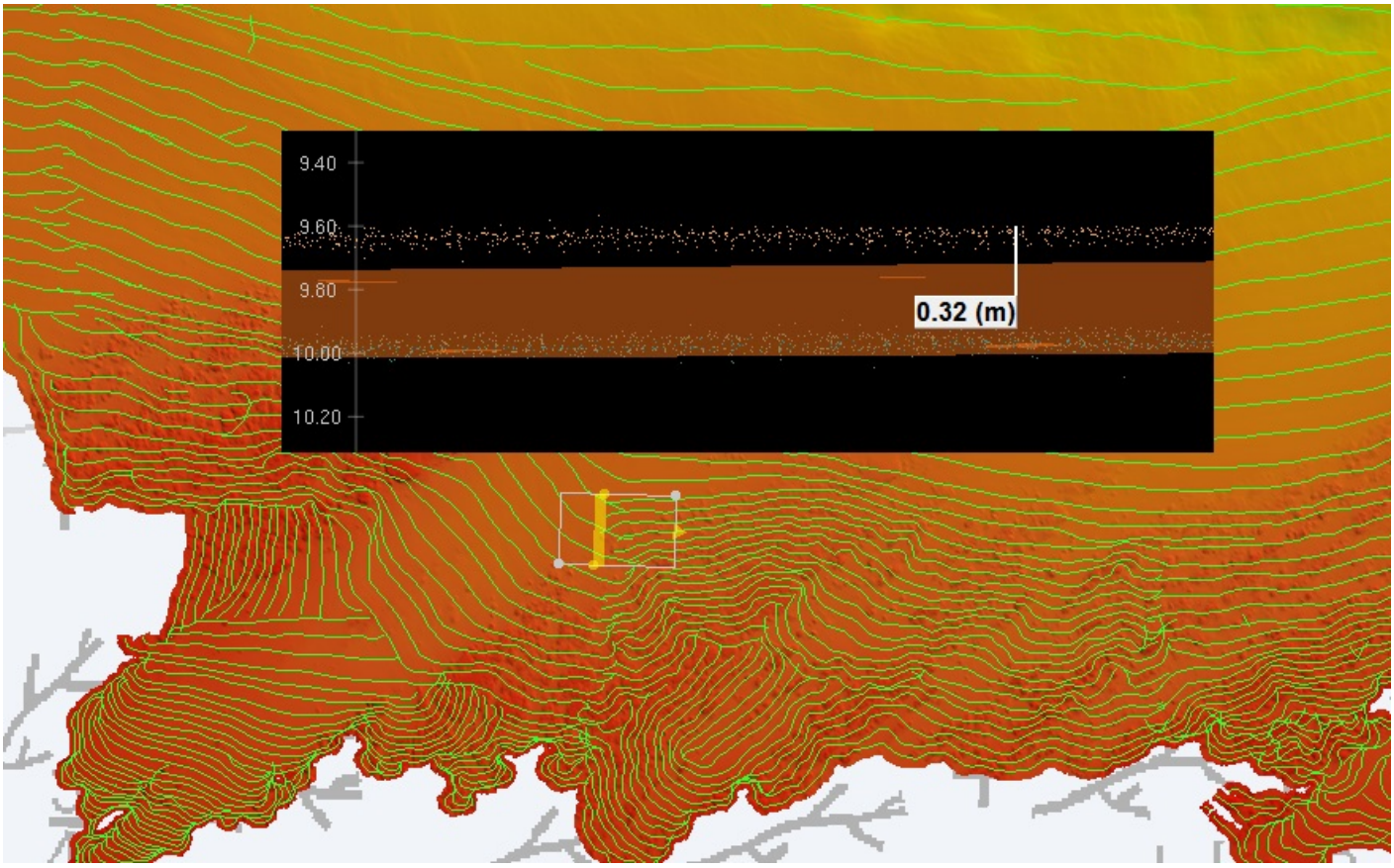


Figure 17: Tidal offset between day number 178 and 180.

The 0.3m tidal error described falls within the total tidal error budget of 0.1m to 0.45m. All surveyed soundings should be considered adequate to supersede charted soundings.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: CTD casts were conducted at least every four hours during launch acquisition. Casts were conducted more often in areas where the input of freshwater had an effect on the speed of sound in the water column and when there was a change in surface sound velocity greater than two meters per second.

B.2.8 Coverage Equipment and Methods

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

B.2.9 Holiday Assessment

For holidays larger than three surface grid nodes, the corresponding multibeam side-scan was examined and no navigationally significant items were found. The examples below represent the three types of holidays

encountered during acquisition. Figure 19 represents a holiday where the top of a rock was not covered by full coverage multibeam due to shadowing from other nearby rocks and sea conditions. There were 10 tops of rocks that were identified as being cut off in a rocky area northeast of Whirlpool Pt where the current was very strong and made acquisition extremely difficult. Holidays due to sea state and rolling were also discovered, as seen in Figure 23. Other holidays exist along the outer edges of the sheet limits. Many of the sheet limit holidays on the northern edge were covered by overlap from survey H12681, as seen in Figure 21. The top of a rock in the southwest area of the sheet limit was also cutoff in the outer beams of the sonar and is shown in Figure 22. Due to an early departure from the survey area because of mechanical failure, data was not acquired over the holidays present within the sheet limits.

The numerous holidays in survey H12683 were identified in a .hob file which has been added to Appendix II and is displayed as an image in Figure 24 below.

H12683 Holiday Assessment		
Cut-Off Rock Holidays	**Latitude**	**Longitude**
1	56/37/29.37 N	154/03/46.14 W
2	56/37/33.35 N	154/04/29.7 W
3	56/37/31.96 N	154/04/11.65 W
4	56/37/16.96 N	154/03/53.68 W
5	56/36/40.8 N	154/04/12.94 W
6	56/36/49.40 N	154/04/02.46 W
7	56/36/46.17 N	154/03/52.52 W
8	56/37/29.05 N	154/04/23.27 W
9	56/37/30.87 N	154/04/17.67 W
10	56/36/41.23 N	154/04/14.02 W
11	56/36/35.50 N	154/11/32.65 W
12	56/39/23.71 N	154/06/02.14 W
13	56/39/29.20 N	154/06/03.44 W

Figure 18: Positions of rocks with unknown least depths.

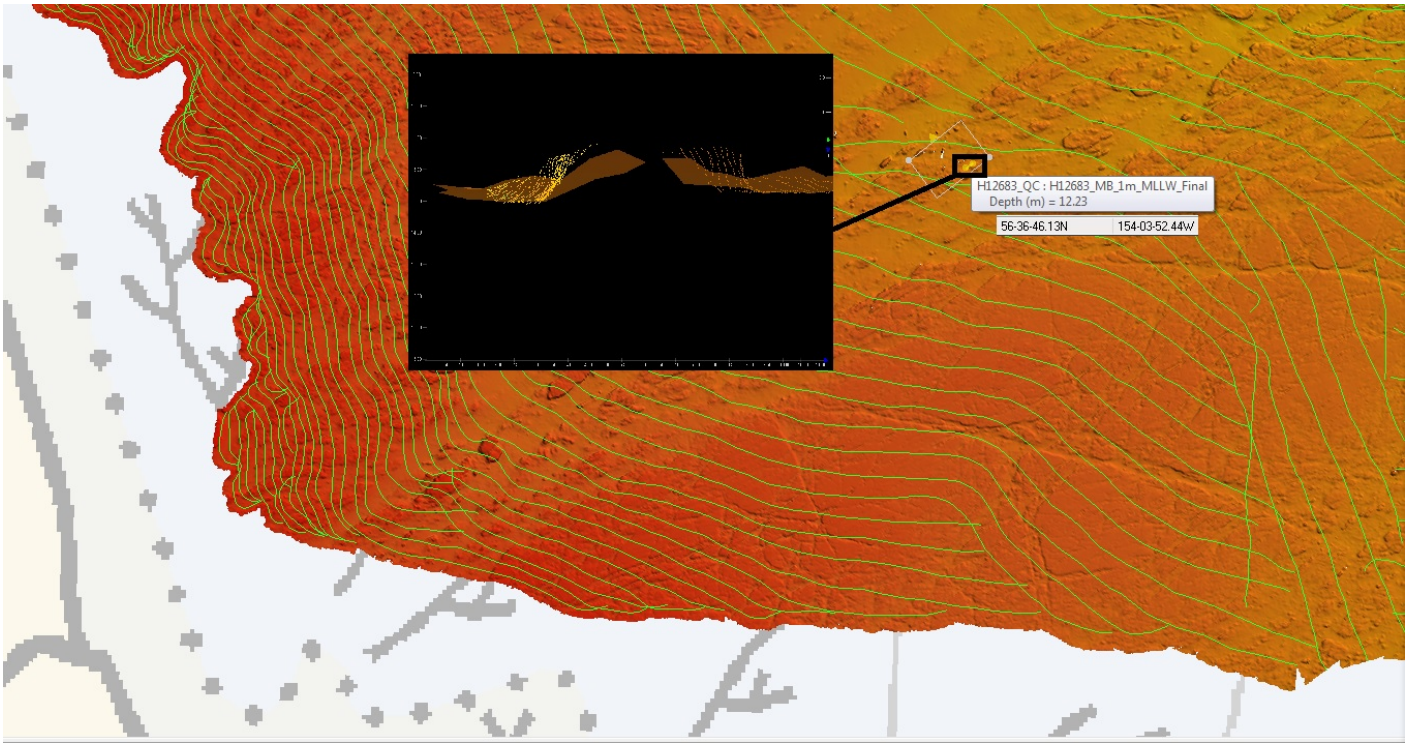


Figure 19: Example of the top of a rock that was not acquired.

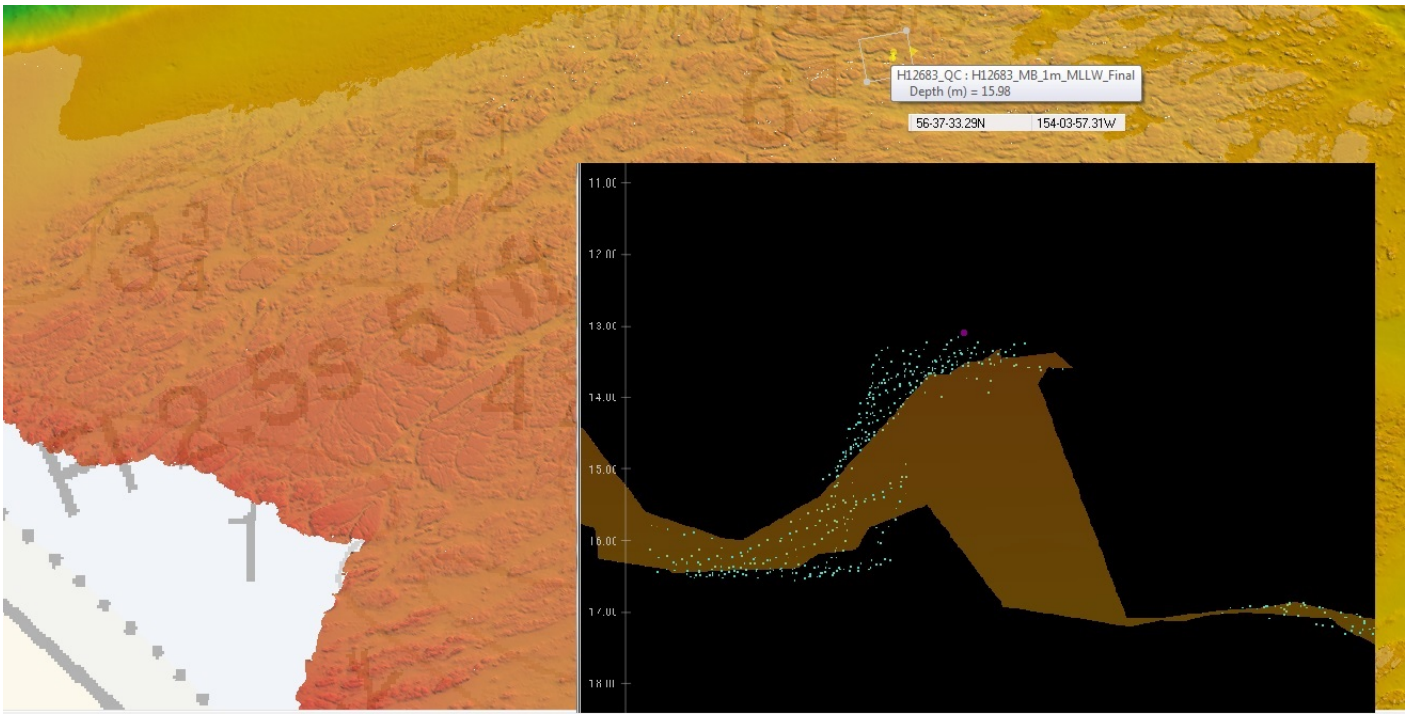


Figure 20: Example of a holiday due to shadowing on the side of a rock.

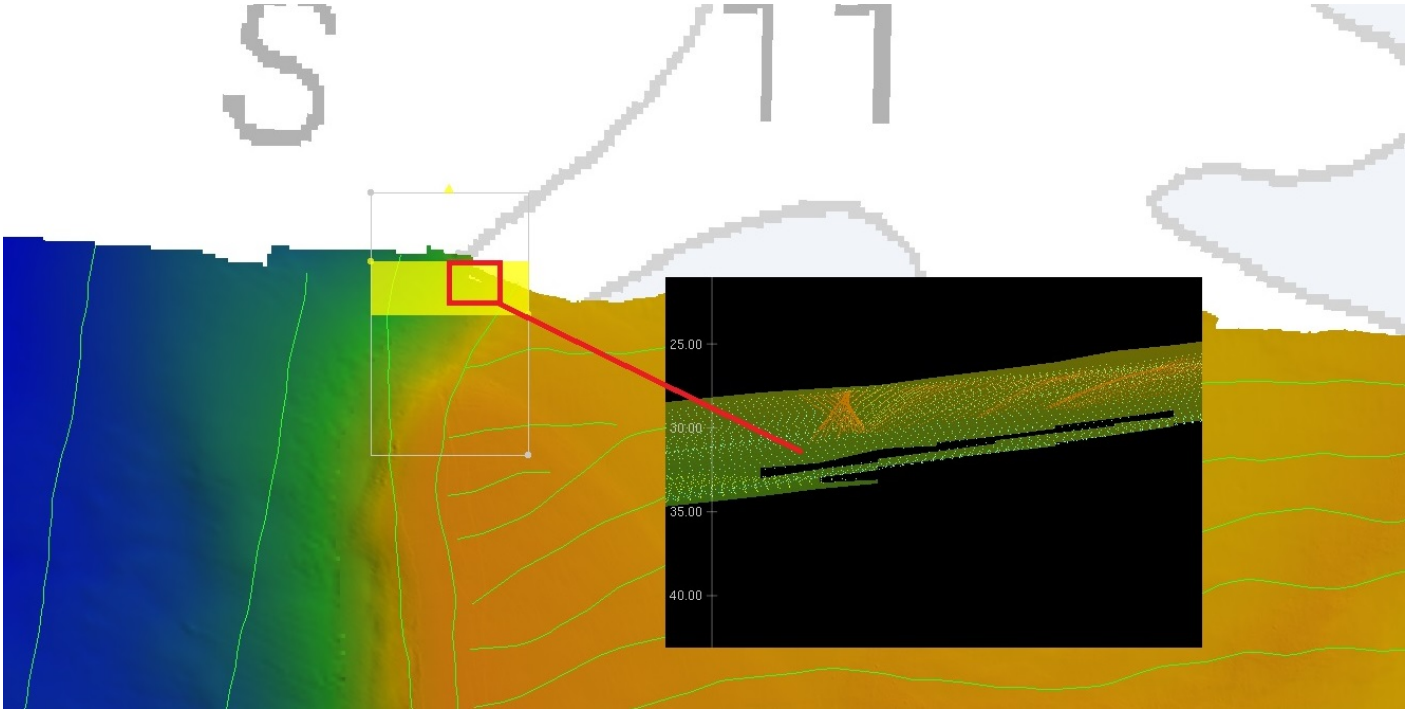


Figure 21: Sheet Limit Holiday

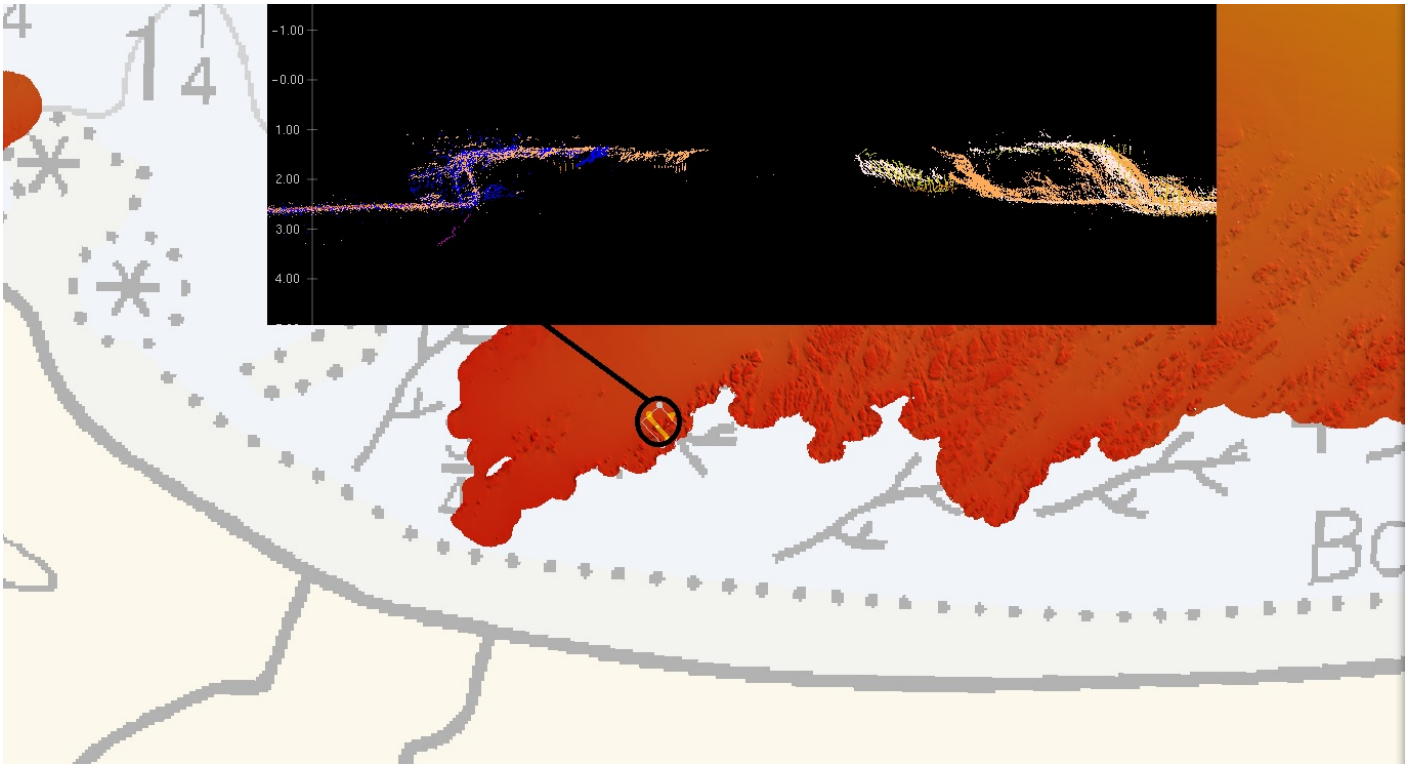


Figure 22: Rock in the southwest corner with no least depth.

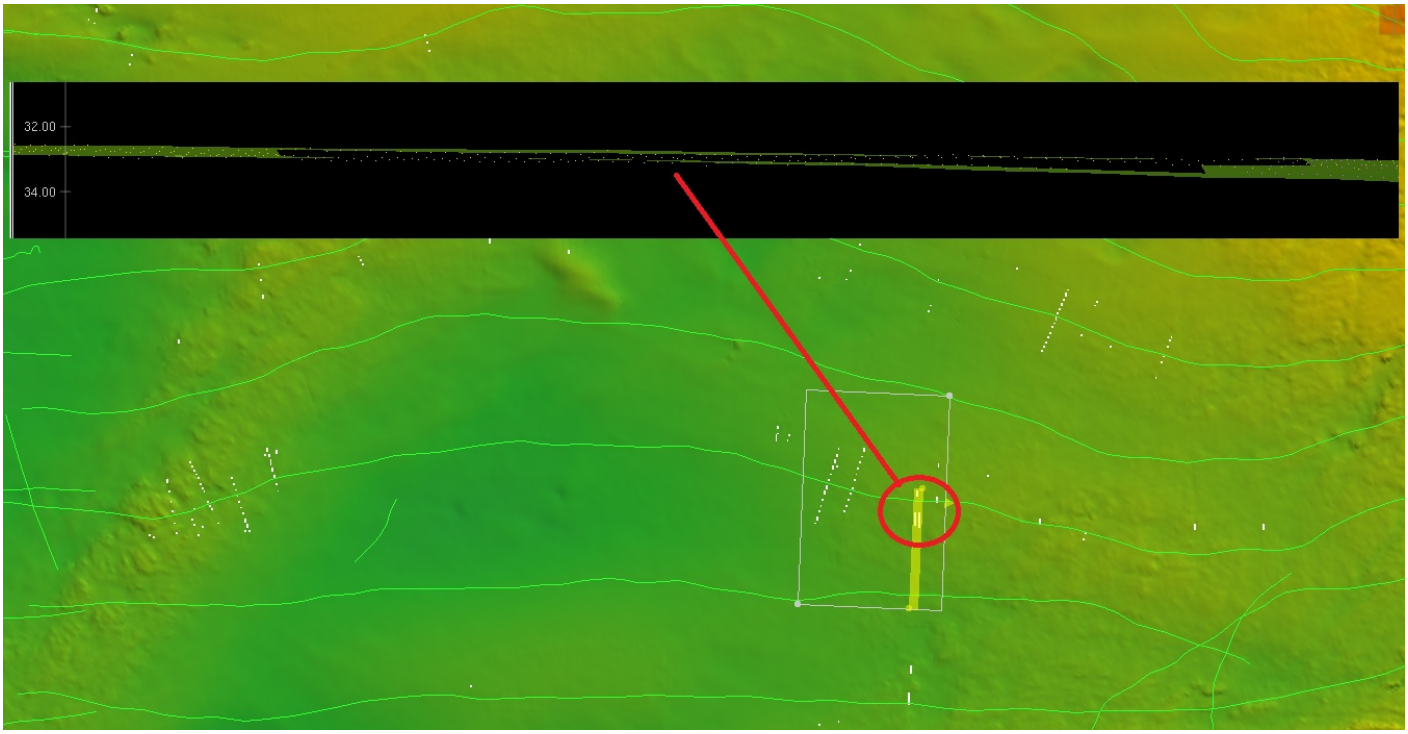


Figure 23: Density holiday due to sea state and dynamic vessel motion

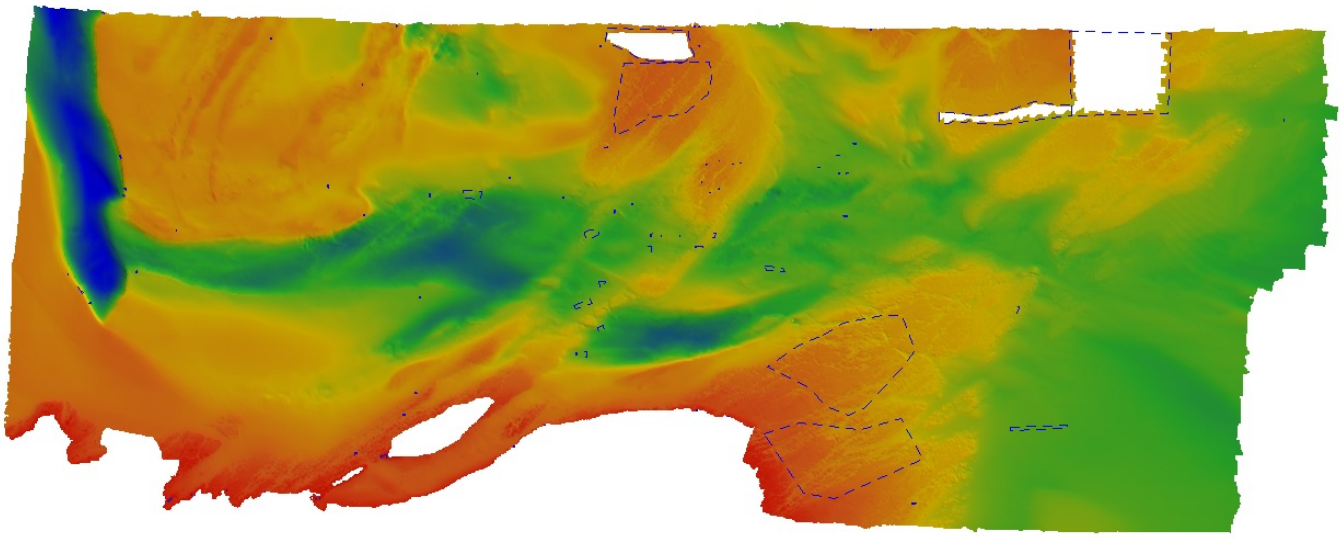


Figure 24: Holiday Assessment - Overview of the .hob file indicating holiday locations.

B.2.10 IHO Uncertainty

It was found that 100% of nodes meet or exceed IHO order 1 specifications as stated in the NOS Hydrographic Surveys Specifications and Deliverables April 2014 (HSSD) for all survey soundings in

H12683. See Standards Compliance Review in Appendix II. To assess vertical uncertainty, a child layer "IHO1" was created for each of the 1-meter, 2-meter, 4-meter, and 8-meter finalized surfaces using the equation as stated in section C.2.1 of the DAPR. The greatest depth in survey H12683 was 85.5 meters and so no IHO order 2 child layer was required for the 8-meter surface.

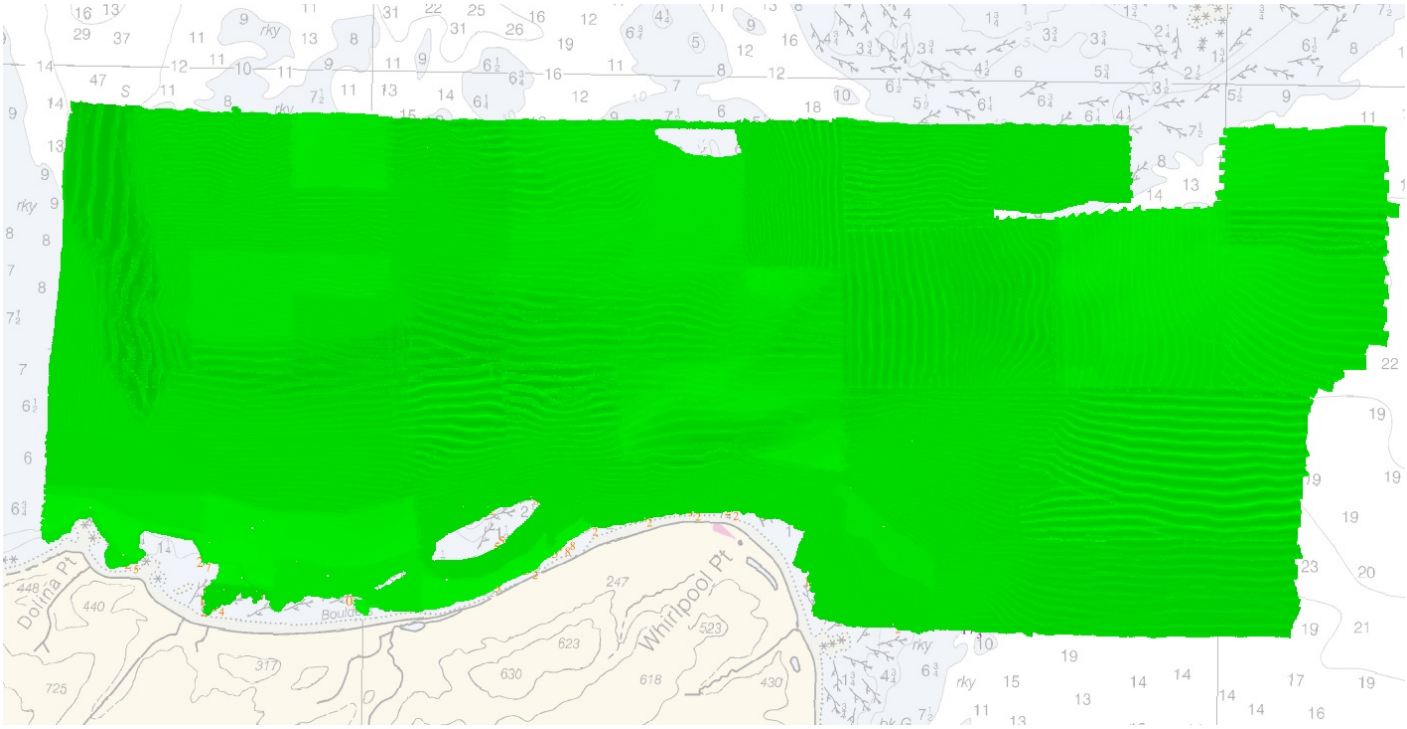


Figure 25: H12683 IHO Overview

B.2.11 Density

Density requirements for H12683 were achieved with at least 99.93% of finalized surface nodes containing five or more soundings. See Standards Compliance Review in Appendix II.

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

The following calibrations were conducted after the initial system calibration discussed in the DAPR:

Calibration Type	Date	Reason
Reference Surface	2014-08-27	Launch comparison following completion of the project
Reference Surface	2014-08-28	Launch comparison following completion of the project

Table 9: Calibrations not discussed in the DAPR.

A series of reference surfaces were conducted in Puget Sound, in the vicinity of Shilshole Bay following completion of this project. These reference surfaces were conducted to confirm all FA hydrographic survey launches, with both the 200kHz and 400kHz transducers, both produced consistent sounding depths and did not develop any systematic errors. This test was done explicitly to help validate the accuracy of data collected on this project, which has reduced crosslines. The comparison of all eight reference surfaces (two from each launch) were within +/- .08m or better at the 95% confidence level demonstrating no noticeable change from the results seen during HSRR. The reference surface comparison is located in Appendix II.

B.4 Backscatter

Raw backscatter was logged as a 7k files and has been sent to the Processing Branch for processing. One line of backscatter was processed by the field unit for each vessel and frequency used per day of acquisition.

B.5 Data Processing

B.5.1 Software Updates

The following software updates occurred after the submission of the DAPR:

Manufacturer	Name	Version	Service Pack	Hotfix	Installation Date	Use
Caris	HIPS/SIPS	8.1.7 (reversion)			10/09/2014	Processing
Caris	HIPS/SIPS	8.1.8			06/30/2014	Processing
Caris	HIPS/SIPS	8.1.10			10/24/2014	Processing

Table 10: Software Updates

The following Feature Object Catalog was used: NOAA Extended Attribute Files V5.3.2

Due to an error in CARIS HIPS version 8.1.8 that caused TPU to be computed incorrectly, HIPS was reverted to 8.1.7 for survey H12683. TPU and all surfaces were re-computed and the IHO uncertainty statistics were re-evaluated.

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
H12683_MB_1m_MLLW	CUBE	1 meters	-	NOAA_1m	Complete MBES
H12683_MB_2m_MLLW	CUBE	2 meters	-	NOAA_2m	Complete MBES
H12683_MB_4m__MLLW	CUBE	4 meters	-	NOAA_4m	Complete MBES
H12683_MB_8m_MLLW	CUBE	8 meters	-	NOAA_8m	Complete MBES
H12683_MB_1m_MLLW_Final	CUBE	1 meters	0 meters - 20 meters	NOAA_1m	Complete MBES
H12683_MB_2m_MLLW_Final	CUBE	2 meters	18 meters - 40 meters	NOAA_2m	Complete MBES
H12683_MB_4m__MLLW_Final	CUBE	4 meters	36 meters - 80 meters	NOAA_4m	Complete MBES
H12683_MB_8m_MLLW_Final	CUBE	8 meters	72 meters - 160 meters	NOAA_8m	Complete MBES
H12683_MB_8m_MLLW_Combined	CUBE	8 meters	-	NOAA_8m	Complete MBES

Table 11: Submitted Surfaces

The NOAA CUBE parameters mandated in the HSSD were used for the creation of all CUBE BASE surfaces in Survey H12683. 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 sea floor. 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 and the surface recomputed.

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.

Standard Vertical Control Methods Used:

Discrete Zoning

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

Station Name	Station ID
Alitak	9457804

Table 12: NWLON Tide Stations

The following subordinate water level stations were established for this survey:

Station Name	Station ID
Japanese Bay	9457634

Table 13: Subordinate Tide Stations

File Name	Status
9457292.tid	Final Approved
9457804.tid	Final Approved

Table 14: Water Level Files (.tid)

File Name	Status
H12683CORF.zdf	Final

Table 15: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 08/22/2014. The final tide note was received on 08/26/2014.

Preliminary zoning was accepted as final.

Tide note is appended to this report.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The projection used for this project is UTM zone 5 North.

The following PPK methods were used for horizontal control:

Single Base

Vessel Kinematic data was post processed using the Applanix POSPac processing software and the Single Base method was used as described in the DAPR. Smooth Best Estimate of Trajectory (SBET) and associated error (RMS) data were applied to all MBES data in CARIS HIPS.

The following CORS Stations were used for horizontal control:

HVCR Site ID	Base Station ID
AC45	Sitkinak Island

Table 16: CORS Base Stations

The following user installed stations were used for horizontal control:

HVCR Site ID	Base Station ID
9677	Aiaktalik Island

Table 17: User Installed Base Stations

Differential correctors from the US Coast Guard beacon at Kodiak (313kHz) were used during real time acquisition.

The following DGPS Stations were used for horizontal control:

DGPS Stations
Kodiak 313 kHz (100 BPS)

Table 18: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

A comparison was made between survey H12683 and charts 16590_1 and US4AKLM using CARIS soundings and contour layers derived from the 8 meter combined surface. The contours and soundings were overlaid on the chart to assess differences. All data from H12683 should supersede charted data.

D.1.1 Raster Charts

The following are the largest scale raster charts, which cover the survey area:

Chart	Scale	Edition	Edition Date	LNM Date	NM Date
16590	1:81529	11	09/2007	04/15/2014	04/05/2014

Table 19: Largest Scale Raster Charts

16590

Soundings from survey H12683 generally agreed within one to two fathoms with charted depths on chart 16590. Contours generated in CARIS HIPS closely approximated the charted 3, 5, 10, and 20 fathom contours. A few notable exceptions to this agreement are listed and shown in the figures below.

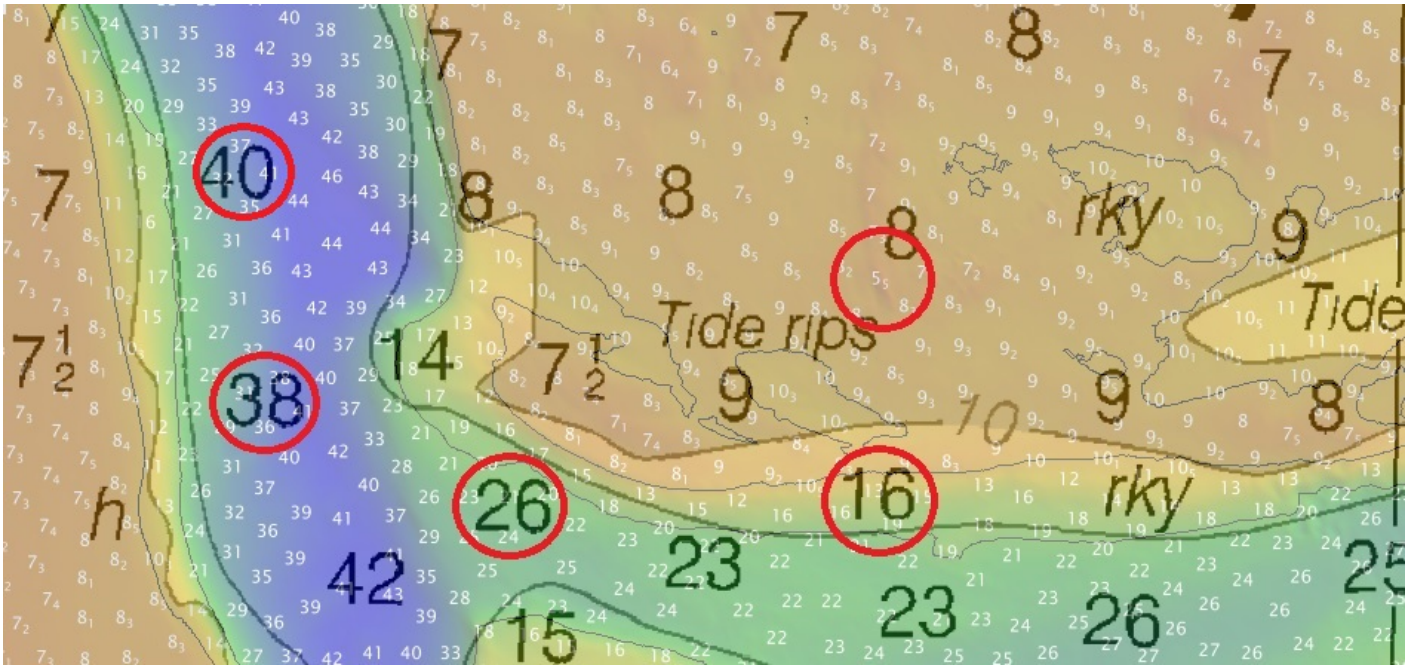


Figure 26: Sounding Discrepancies in the western edge of sheet H12683

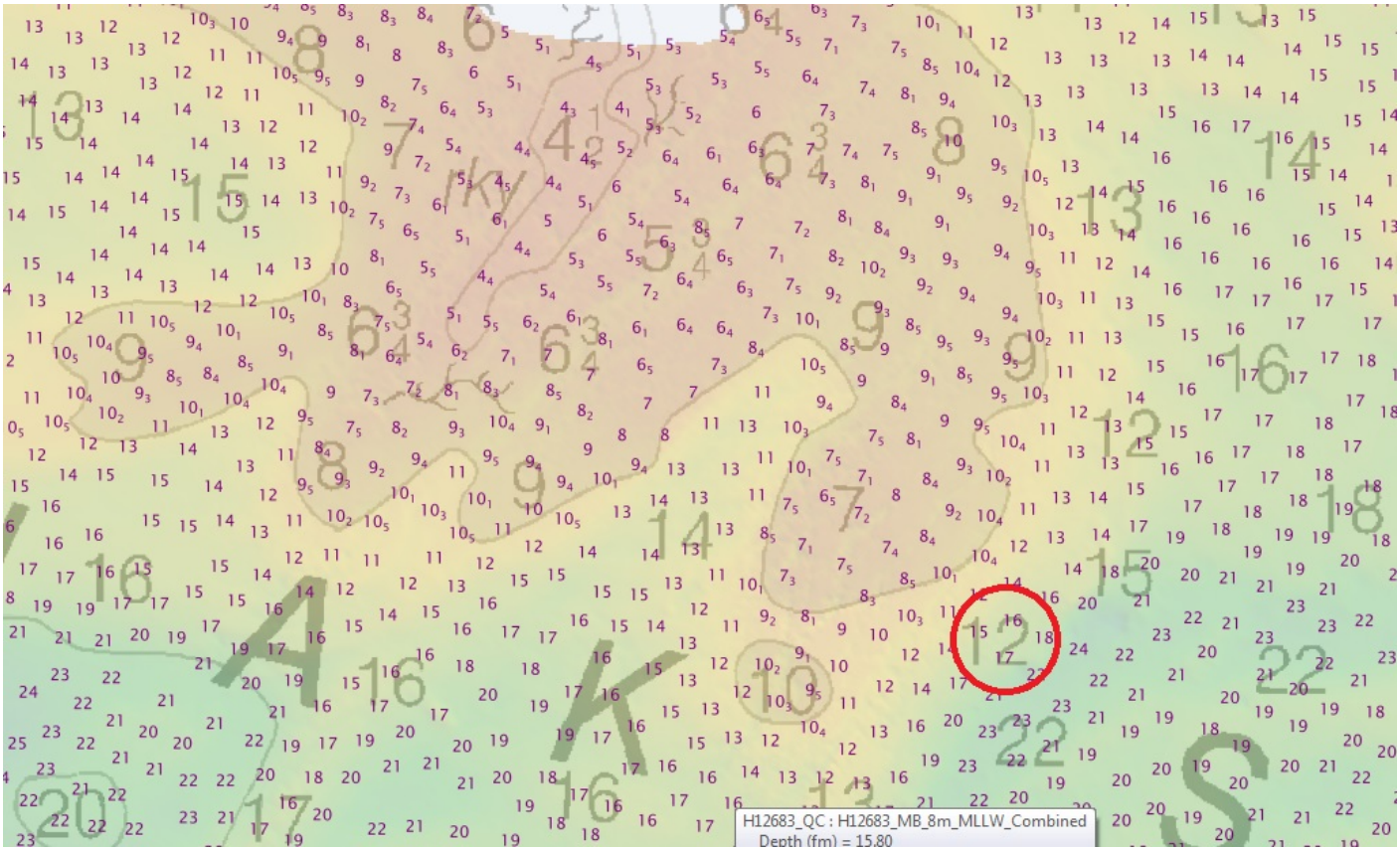


Figure 27: Sounding Discrepancy in the center of sheet H12683

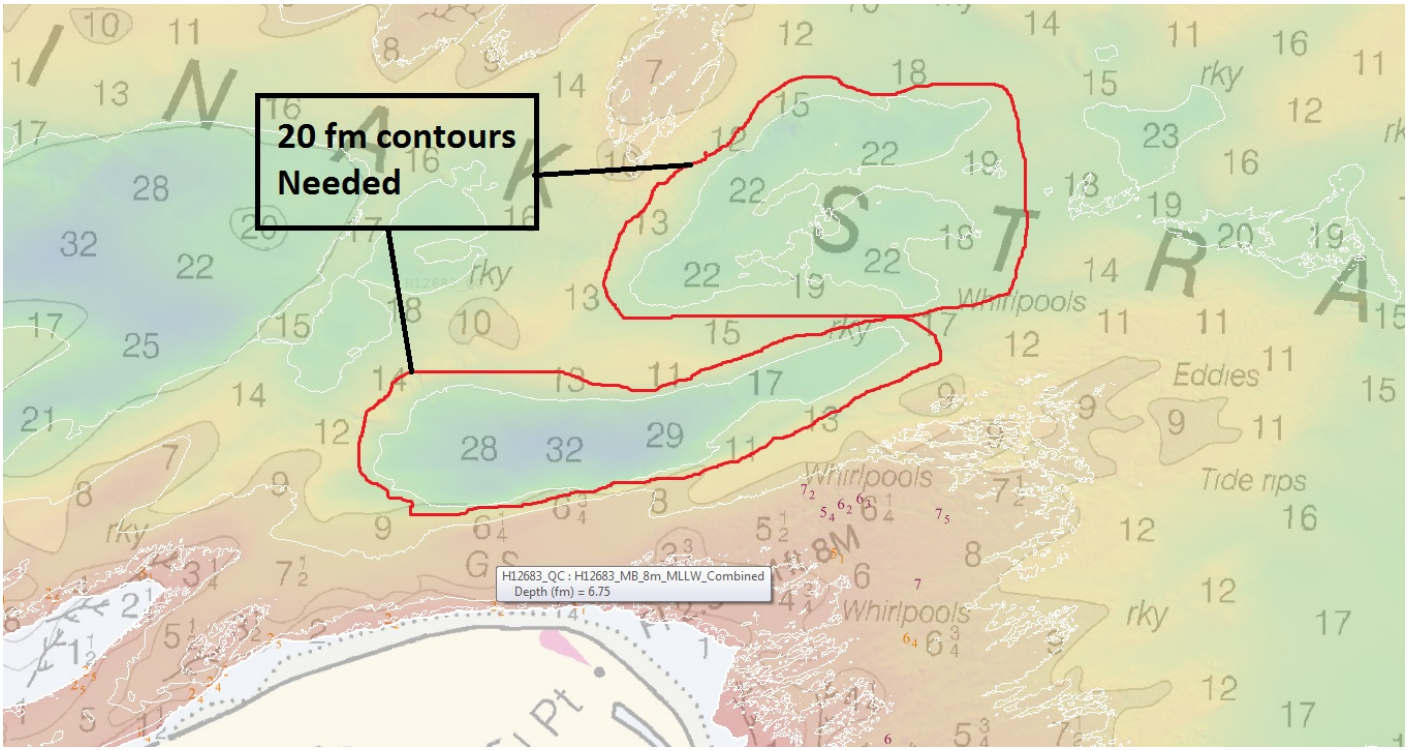


Figure 28: Contour Discrepancy 1 - 20 fathom contours are missing from chart 16590 north of Whirlpool Point.

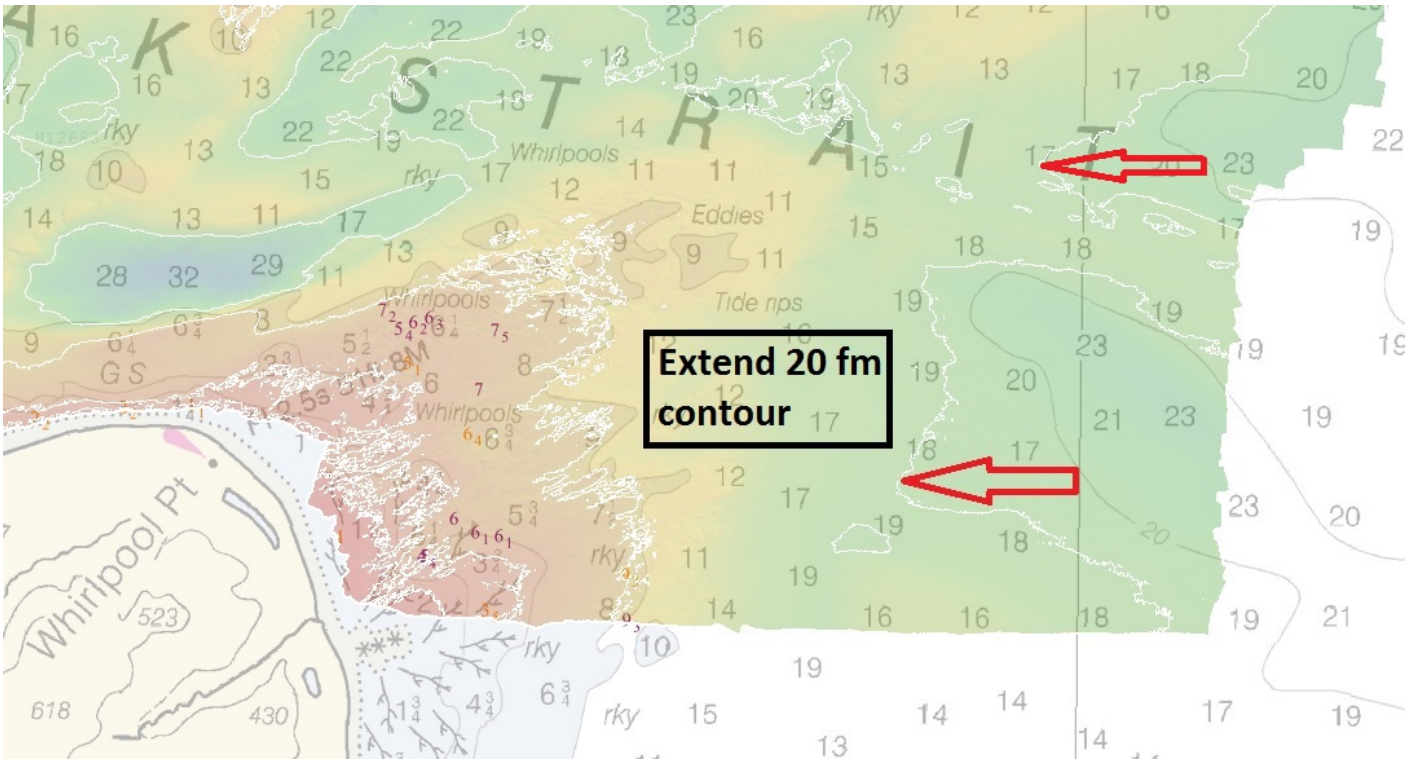


Figure 29: Contour Discrepancy 2 - The 20 fathom contour in the southeast corner of the survey should be extended on chart 16590.

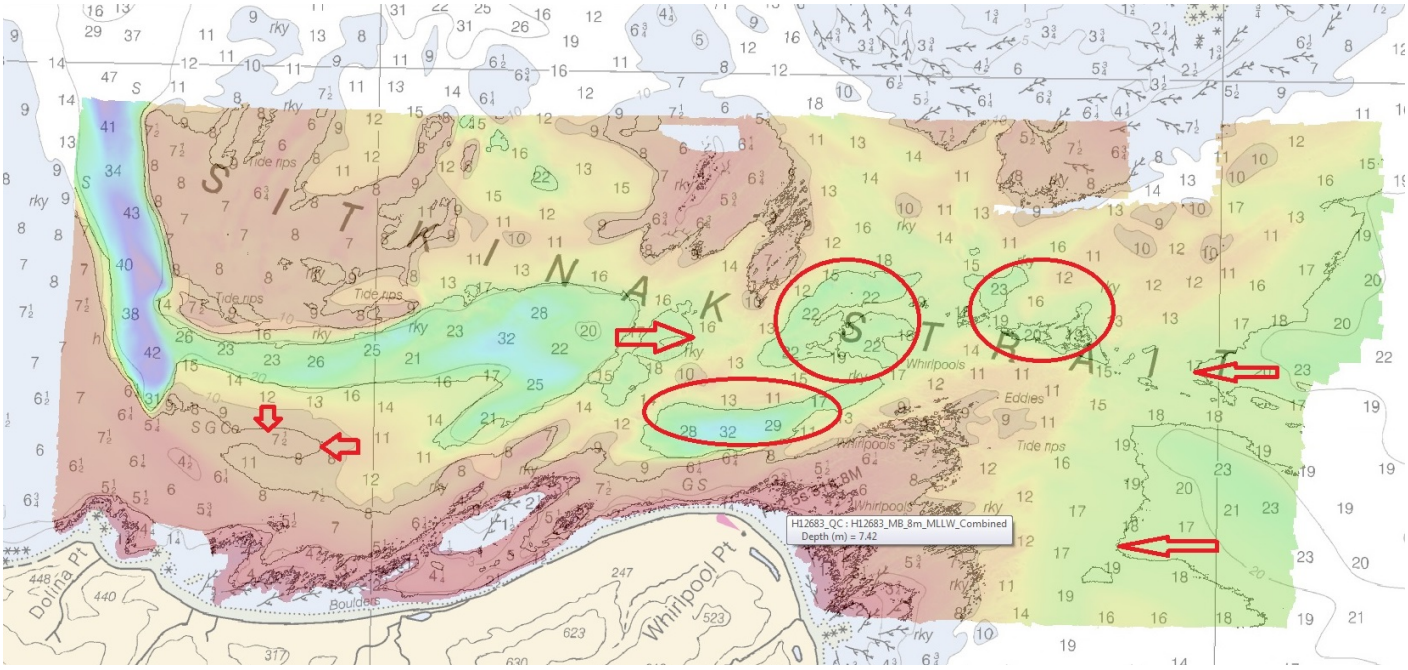


Figure 30: Overview of contour discrepancies

D.1.2 Electronic Navigational Charts

The following are the largest scale ENCs, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US4AK5LM	1:81529	7	10/12/2010	10/12/2010	NO

Table 20: Largest Scale ENCs

US4AK5LM

Soundings and contours from survey H12683 generally agree within 1 to 2 fathoms with chart US4AK5LM. See discussion from raster chart 16590 for more details

D.1.3 AWOIS Items

No AWOIS items were assigned for this survey.

D.1.4 Maritime Boundary Points

Maritime Boundary Points were not assigned for this survey.

D.1.5 Charted Features

Only two of the assigned features were investigated in survey H12683. The assigned land area as seen in the Figure below was determined to be submerged. One underwater rock was investigated with multibeam coverage and the least depth was determined to be 2.8m. The other five assigned underwater rocks were not investigated due to early departure from the survey area. All features are included in the H12683_Final_Feature_File.

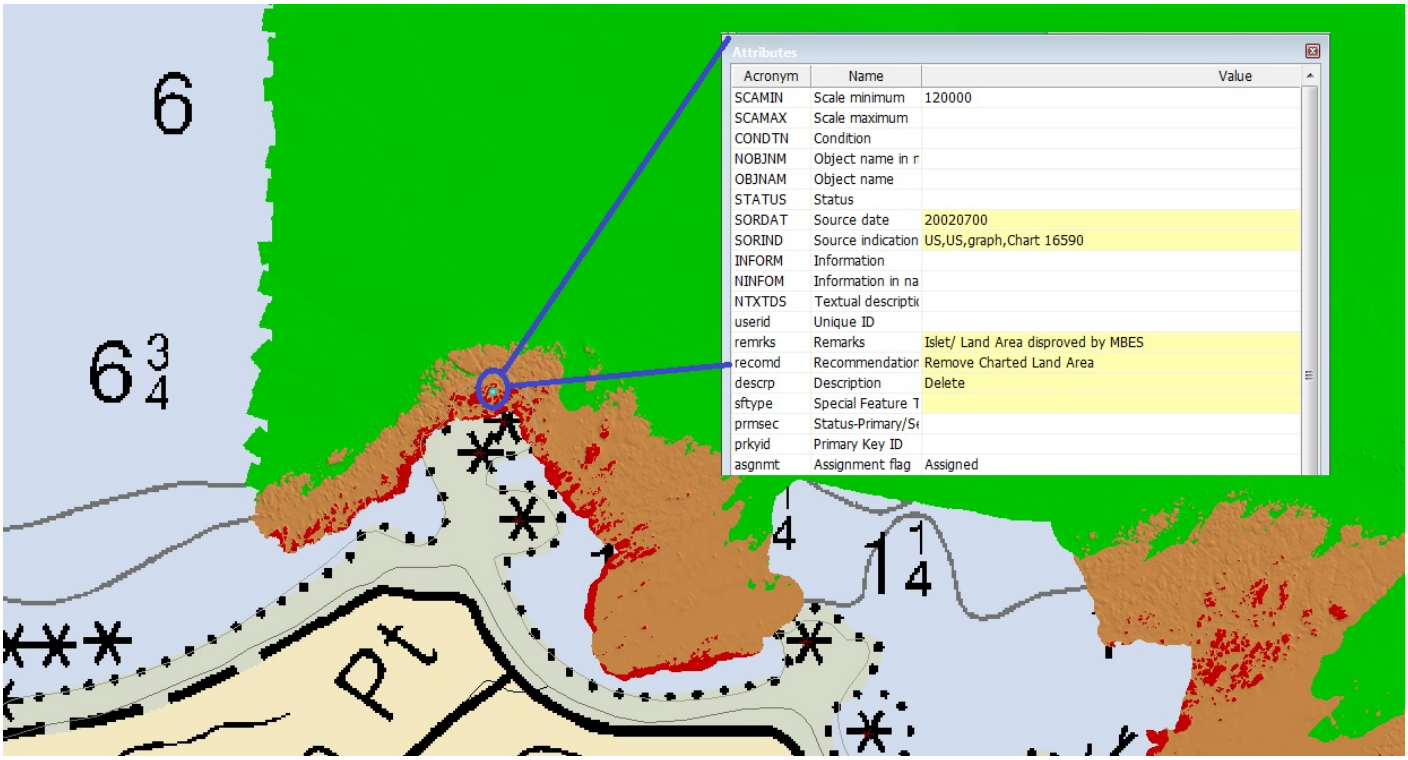


Figure 31: Land area disproved by multibeam acquisition

The other five assigned underwater rocks that were not investigated rocks were annotated as inshore of NALL and Not Addressed, in contradiction with the statement that early departure was the reason they had not been investigated.

D.1.6 Uncharted Features

During acquisition several areas were found to be foul with kelp and rocks. These areas have been added to the final feature file and can be seen in Figure 3.

The hydrographer had not submitted area objects defining the extent of kelp areas as stated above, and identified in Figure 4 of the DR, Section A1. These features have been added in review.

D.1.7 Dangers to Navigation

No Danger to Navigation Reports were submitted for this survey.

D.1.8 Shoal and Hazardous Features

No new significant changes to charted shoals on chart 16590 were discovered.

D.1.9 Channels

No channels exist for this survey. There are no designated anchorages, precautionary areas, safety fairways, traffic separation schemes, pilot boarding areas, or channel and range lines within the survey limits.

D.1.10 Bottom Samples

Bottom samples were assigned for this survey, but were not acquired due to early departure.

D.2 Additional Results

D.2.1 Shoreline

Shoreline was assigned in the Hydrographic Survey Project Instructions or Statement of Work, but was not investigated due to early departure.

D.2.2 Prior Surveys

Prior LIDAR survey comparisons do not exist for this survey.

D.2.3 Aids to Navigation

A charted navigation light and fixed aid to navigation were observed as charted on the north point of Whirlpool Point and was found to be on-station and serving its intended purpose as charted.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

No submarine features exist for this survey.

D.2.6 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.7 Platforms

No platforms exist for this survey.

D.2.8 Significant Features

There is a naturally occurring channel starting from the northwestern edge of survey H12683 and continuing through the middle of the survey sheet as seen in the figure below. Tide rips, eddies, and whirlpools were experienced in the Northwest and the Southeast areas of the survey sheet consistent with chart 16590.

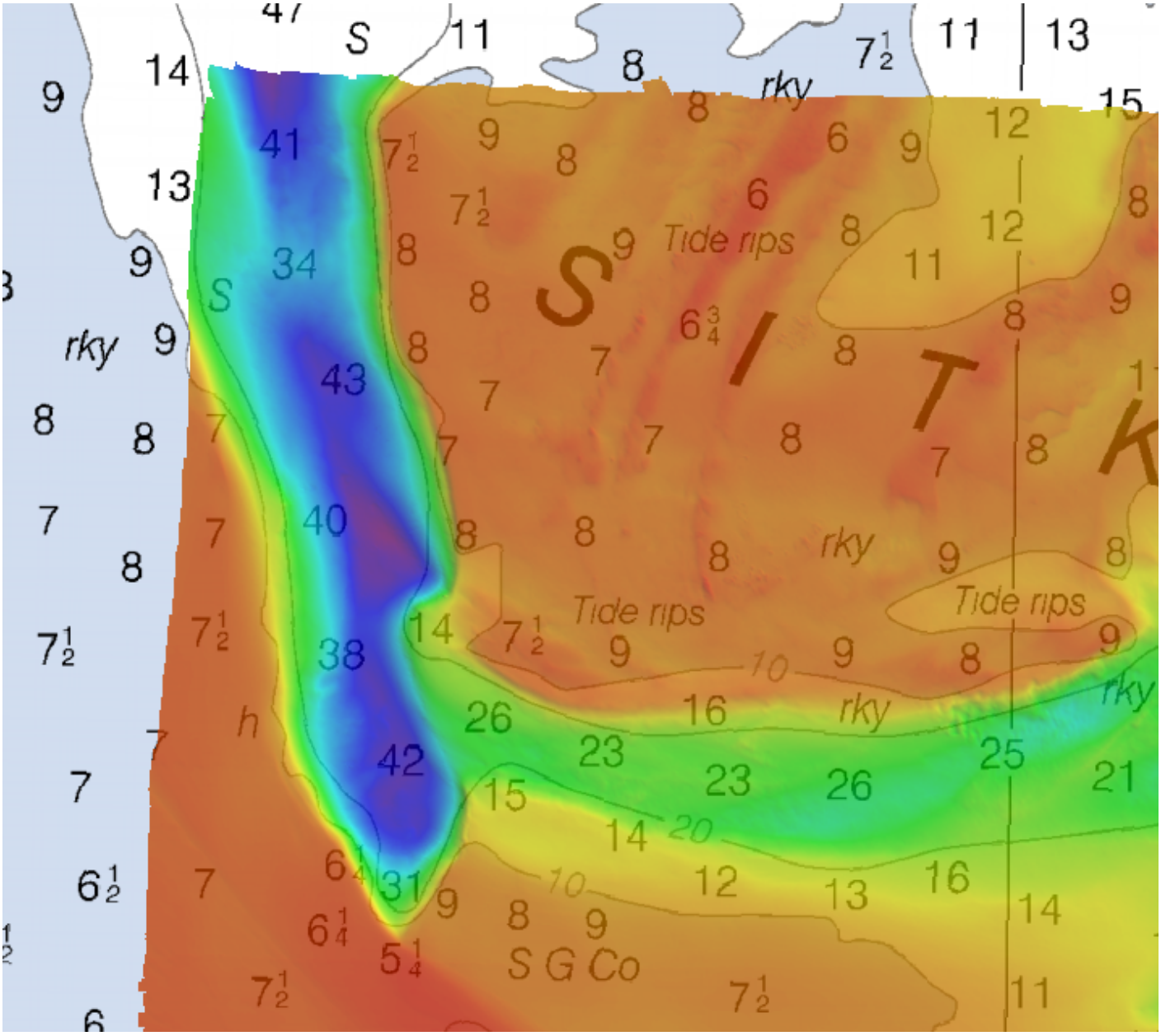


Figure 32: Natural channel in West end of H12683.

D.2.9 Construction and Dredging

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

D.2.10 New Survey Recommendation

Further investigation is recommended for all significant holidays. It is also recommended to return and complete all areas left unsurveyed.

D.2.11 Inset Recommendation

No new insets 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 and Specifications Deliverables Manual, 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.

Report Name	Report Date Sent
Data Acquisition and Processing Report	2014-10-03
Coast Pilot Report	2014-09-10
Tides and Water Levels Package	2014-08-26
Horizontal and Vertical Control Report	2014-10-03

Approver Name	Approver Title	Approval Date	Signature
CDR David J. Zezula, NOAA	Chief of Party	06/17/2015	David Zezula 2015.06.18 22:15:53 -08'00'
LT Ryan A. Wartick, NOAA	Field Operations Officer	06/17/2015	Digitally signed by Ryan Wartick DN: cn=Ryan Wartick, o=Fairweather, ou=OMAO, email=ryan.wartick@noaa.gov, c=US Date: 2015.06.18 09:18:08 -08'00'
LT Matthew M. Forney, NOAA	Field Operations Officer	06/17/2015	Matthew Forney 2015.06.18 07:57:35 -08'00'
HCST Douglas A. Bravo	Chief Survey Technician	06/17/2015	2015.06.17 19:10:21 -08'00'
ENS Jason Baillio, NOAA	Sheet Manager	06/17/2015	Digitally signed by Jason Baillio ENS/NOAA DN: cn=Jason Baillio ENS/NOAA, o=NOAA Corps, ou, email=jason.p.baillio@noaa.gov, c=US Date: 2015.06.18 13:52:17 -08'00'

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	Continually Operating Reference Staiton
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
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
HSSD	Hydrographic Survey Specifications and Deliverables

Acronym	Definition
HSTP	Hydrographic Systems Technology Programs
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	Local Notice to Mariners
LNM	Linear Nautical Miles
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NAIP	National Agriculture and Imagery Program
NALL	Navigable Area Limit Line
NM	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
PST	Physical Science Technician
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPE	Total Porpagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United Stated Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDA	Global Positiong System timing message
ZDF	Zone Definition File

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : August 25, 2014

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P335-FA-2014
HYDROGRAPHIC SHEET: H12683

LOCALITY: Sitkinak Strait, South Coast of Kodiak Island, AK
TIME PERIOD: June 26 - August 07, 2014

TIDE STATION USED: 945-7804 Alitak, AK
Lat. 56° 53.9'N Long. 154° 14.9' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.311 meters

ESTIMATED ZONING ERROR: 0.15 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SS82, SS87, SWA140 & SWA141.

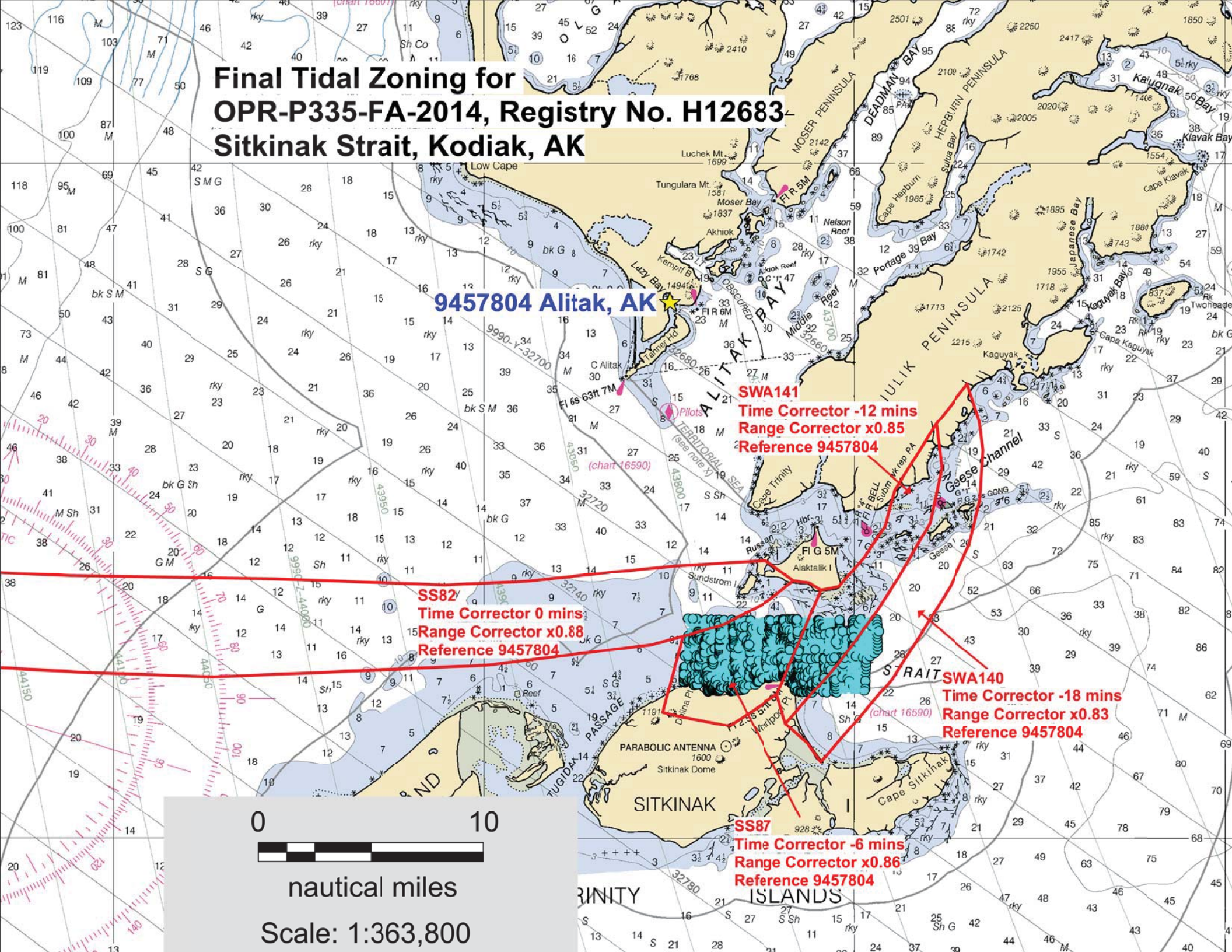
Refer to attachments for zoning information.

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: 2014.08.26 10:05:45 -04'00'

CHIEF, PRODUCTS AND SERVICES BRANCH


Final Tidal Zoning for
OPR-P335-FA-2014, Registry No. H12683
Sitkinak Strait, Kodiak, AK
9457804 Alitak, AK
SWA141
Time Corrector -12 mins
Range Corrector x0.85
Reference 9457804
SS82
Time Corrector 0 mins
Range Corrector x0.88
Reference 9457804
SWA140
Time Corrector -18 mins
Range Corrector x0.83
Reference 9457804
SS87
Time Corrector -6 mins
Range Corrector x0.86
Reference 9457804
0
10
nautical miles
Scale: 1:363,800

APPROVAL PAGE

H12683

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

- H12683_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12683_GeoImage.pdf

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

Approved: Digitally signed by RAYMOND.ANNEMIEKE.S.1365883048 Date: 2016.06.09 10:40:58 -07'00'

Annie Raymond
Physical Scientist, Pacific Hydrographic Branch

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

Approved: FROELICH.GRANT.DANIEL.1272192509 2016.06.09 10:42:59 -07'00'

Grant Froelich
Acting Chief, Pacific Hydrographic Branch