H12813

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: H12813

LOCALITY

State: Alaska

General Locality: Kotzebue Sound, AK

Sub-locality: Entrance to Good Hope Bay

2015

CHIEF OF PARTY
CDR David J Zezula

LIBRARY & ARCHIVES

Date:

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET		**H12813**

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:	**Kotzebue Sound, AK**
Sub-Locality:	**Entrance to Good Hope Bay**
Scale:	1: **40000**
Dates of Survey:	**06/25/2015 to 08/13/2015**
Instructions Dated:	**05/28/2015**
Project Number:	**OPR-S327-FA-15**
Field Unit:	**NOAA Ship *Fairweather***
Chief of Party:	**CDR David J Zezula**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	**Multibeam Echo Sounder Backscatter Side Scan Sonar**
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. 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 Envitronmental Information (NCEI) and can be retrieved via http://www.ncei.noaa.gov/.

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Descriptive Report to Accompany Survey H12813

Project: OPR-S327-FA-15

Locality: Kotzebue Sound, AK

Sublocality: Entrance to Good Hope Bay

Scale: 1:40000

June 2015 - August 2015

NOAA Ship *Fairweather*

Chief of Party: CDR David J Zezula

A. Area Surveyed

The survey area is located at the entrance of Good Hope Bay in Kotzebue Sound, Alaska approximately 3 nautical miles Southwest of Cape Espenberg.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
66° 33' 45.13" N 163° 33' 31.7" W	66° 17' 55.16" N 163° 1' 15.66" W

Table 1: Survey Limits

Survey limits were acquired in accordance with the requirements in the Project Instructions and the National Ocean Service Hydrographic Surveys Specifications and Deliverables (HSSD) dated approved May 2015.

The depth range and characteristics of the water column of the Kotzebue Sound represented a challenge to the MBES and SSS data acquisition efficiency. After assessing conditions of the survey area, on July 14th 2015 HSD Ops revised the coverage requirement to focus on a 2 NM corridor as the priority survey area within H12813. Sheet 2 was extended to partially cover sheet 3 and 4, following the 2 NM corridor (Figures 1 and 2).

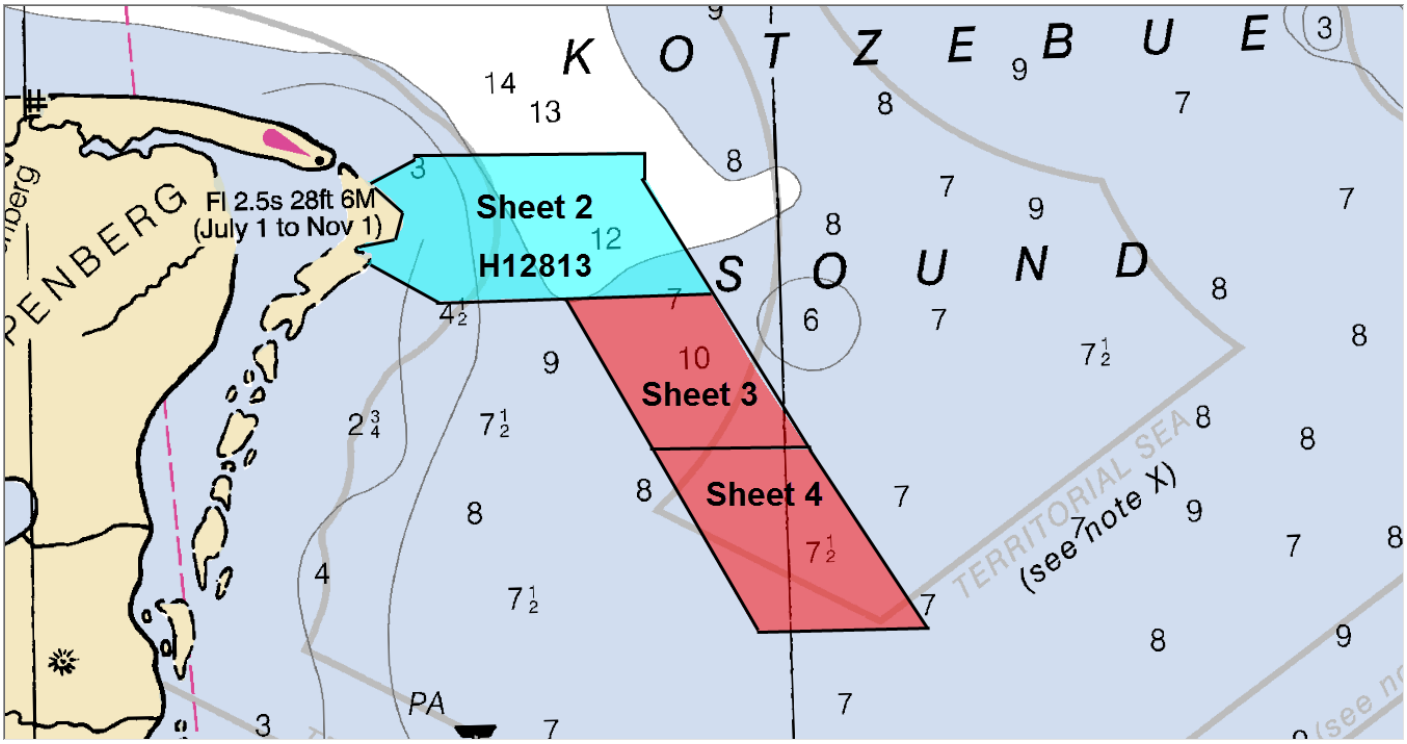


Figure 1: H12813 survey limits initially specified in the Project Instructions (Sheet 2)

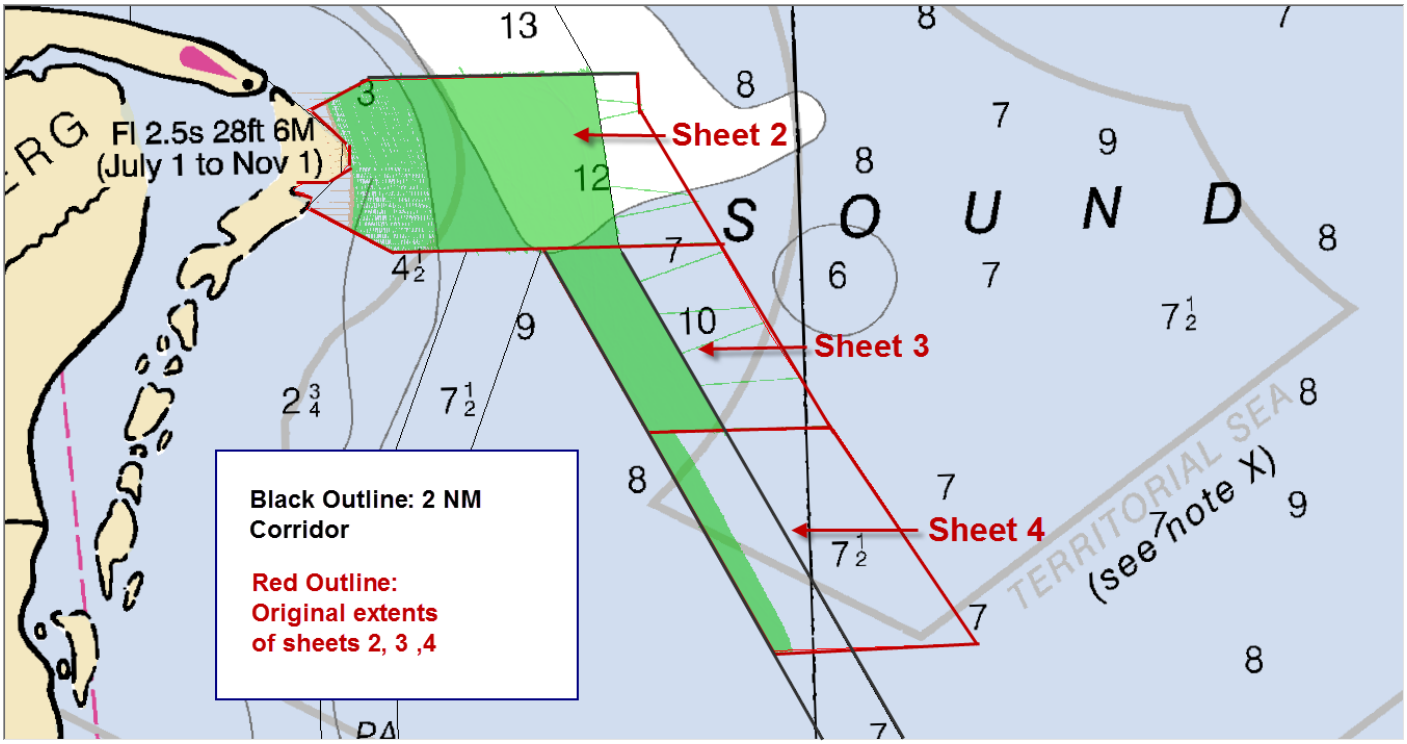


Figure 2: Data acquired on sheet H12813. The red polygon is the original extents of H12813 with the black outline showing the corridor polygon provided by HSD Ops on 14 JUL 2015

A.2 Survey Purpose

The purpose of this survey is to support safe navigation and to update nautical charts, the area is navigationally significant and a critical survey priority. In addition, soundings will support a new, larger scale navigation chart. Information for survey priorities was collected and compiled from a number of users/customers in the region: Alaska Marine Pilots, USCG D17 & the buoy tender Hickory, Crowley Tug & Barge, as well as field reports from USCG and NOAA personnel. Assigned survey area will address 50.14 square nautical miles all of which are Navigationally Significant in accordance with the National Hydrographic Survey Priorities Edition 2012. This survey will impact the surrounding area by providing data to be used in a future large scale chart as well as provide data for the high traffic corridor leading to Good Hope Bay.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

The following table lists the coverage requirements for this survey as assigned in the project instructions:

Water Depth	Coverage Required
Inshore limit to 8 meters water depth	300 meter spaced Set Line Spacing SBES or MBES with backscatter. Please ensure the following: 1) Indications of shoaling falling between set line spacing main scheme lines must be investigated 2) Set Line Spacing Line orientation should be approximately perpendicular to isobaths whenever possible.
8 meters to 20 meters water depth	Either 1) 100% SSS with concurrent set line spacing SBES or MBES with backscatteror 2) complete MBES with backscatter. Note: Complete MBES is sufficient for both determination of least depth identified with SSS and for disproving a feature - 100% SSS is insufficient to disprove a feature. Refer to Section 6.1.2 of the HSSD to confirm proper SSS acquisition parameters. Gaps in SSS coverage should be treated as gaps in MBES coverage and addressed accordingly.
Greater than 20 meters water depth	Complete MBES coverage with backscatter.

HSD OPS authorized the following changes to the coverage requirements :

1. Combine areas from the original sheet assignments (sheets 2, 3, and 4 in Figure 2) into a priority corridor creating a new sheet H12813
2. Allow 100% SSS with concurrent multibeam for depths greater than 20 meters where appropriate.
3. Change the coverage requirements to 300 meter set line spacing for areas outside the priority corridor. It was determined that the best use of time was to continue working on the priority corridor to the SW instead of moving to 300m set line spacing for sheet H12813.

For more information see Appendix II "OPRS327FA15 Kotzebue Sound Project Instruction Change Request"

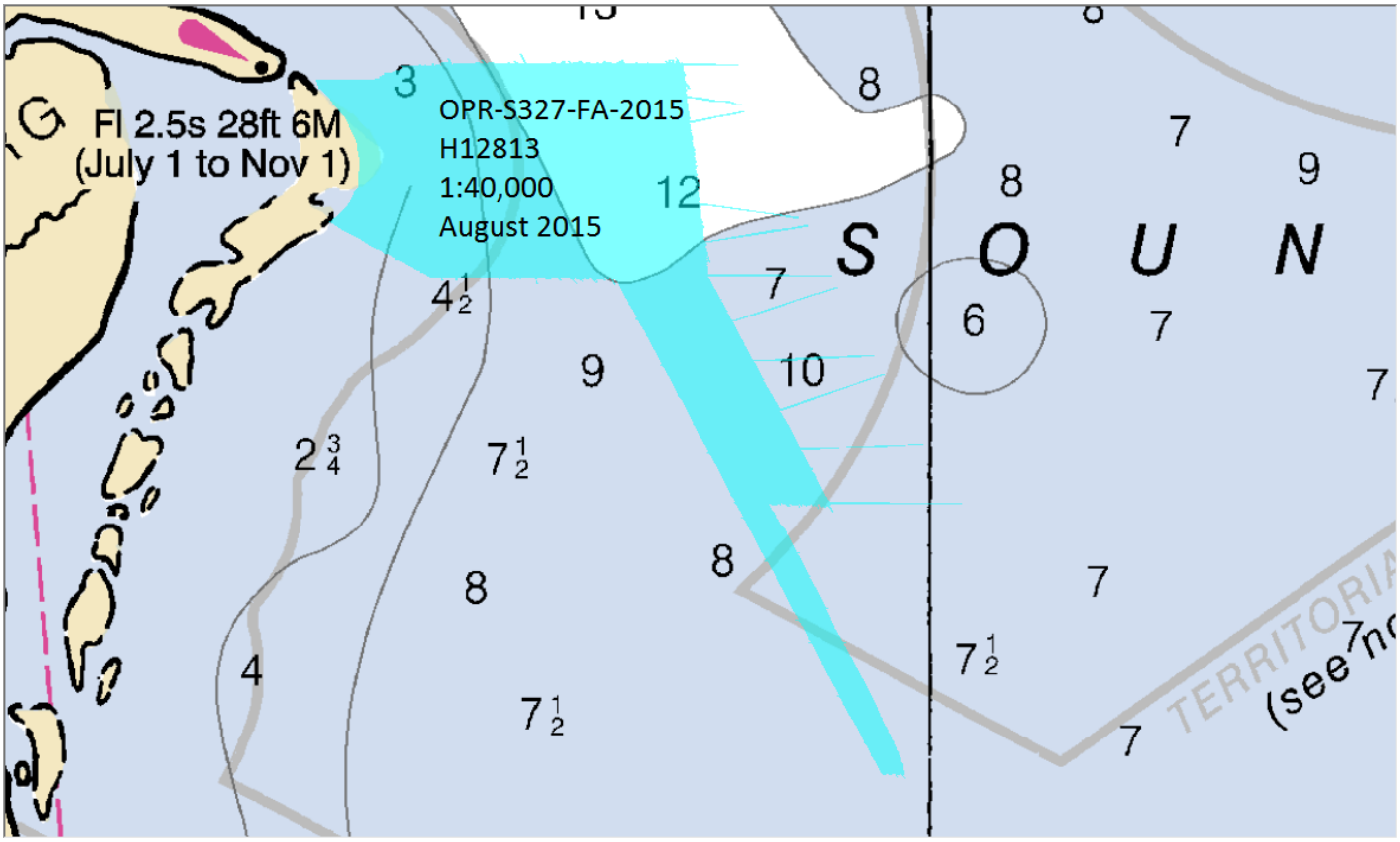


Figure 3: H12813 survey outline

A.5 Survey Statistics

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

	HULL ID	*2805*	*2806*	*2807*	*2808*	*S220*	*Total*
LNM	SBES Mainscheme	0	0	0	0	0	0
	MBES Mainscheme	43.42	116.16	256.69	128.26	1473.06	2017.59
	Lidar Mainscheme	0	0	0	0	0	0
	SSS Mainscheme	0	0	0	0	0	0
	SBES/SSS Mainscheme	0	0	0	0	0	0
	MBES/SSS Mainscheme	0	0	184.87	75.78	0	260.65
	SBES/MBES Crosslines	4.82	0	32.55	4.64	73.00	115.01
	Lidar Crosslines	0	0	0	0	0	0
Number of Bottom Samples							3
Number Maritime Boundary Points Investigated							0
Number of DPs							0
Number of Items Investigated by Dive Ops							0
Total SNM							50.14

Table 2: Hydrographic Survey Statistics

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

Survey Dates	Day of the Year
06/25/2015	176
06/26/2015	177

Survey Dates	Day of the Year
06/27/2015	178
06/28/2015	179
06/29/2015	180
06/30/2015	181
07/15/2015	196
07/16/2015	197
07/17/2015	198
07/18/2015	199
07/19/2015	200
07/29/2015	210
07/30/2015	211
07/31/2015	212
08/01/2015	213
08/02/2015	214
08/03/2015	215
08/04/2015	216
08/05/2015	217
08/12/2015	224
08/13/2015	225

Table 3: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

B.1.1 Vessels

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

Hull ID	*2808*	*2807*	*2806*	*2805*	*S-220*
LOA	8.64 meters	8.64 meters	8.64 meters	8.64 meters	70.41 meters
Draft	1.12 meters	1.12 meters	1.12 meters	1.12 meters	4.88 meters

Table 4: Vessels Used

B.1.2 Equipment

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

Manufacturer	Model	Type
Brooke Ocean Technology Ltd	MVP 200	Conductivity, Temperature, and Depth Sensor
Applanix	POS/MV V4	Positioning and Attitude System
Reson	SVP71	Sound Speed System
Reson	SVP70	Sound Speed System
Seabird	19plus	Conductivity, Temperature, and Depth Sensor
Kongsberg	EM710	MBES
Reson	7125	MBES

Table 5: Major Systems Used

SAR: As part of H12813, data were also acquired using a Klein System 5000 side scan sonar.

B.2 Quality Control

B.2.1 Crosslines

Crosslines acquired for this survey totaled 5.05% of mainscheme acquisition.

Crosslines were collected, processed and compared in accordance with section 5.2.4.3 of the HSSD. Surface differencing in CARIS HIPS and SIPS was used to assess crossline agreement with mainscheme lines in both the nearshore set line spacing area and the offshore MBES full coverage area. For the nearshore 300 meter set line spacing area (Figure 4) a 1 meter crossline and 1 meter mainscheme surface was created and differenced using Caris. For the offshore area (Figure 5) a 2 meter crossline and 2 meter mainscheme surface was created and differenced. The nearshore 1 meter set line spacing comparison found that 95% of nodes have a max deviation of +/- 0.13 m and an average difference of 0.1 m and a standard deviation of 0.07 m (Figure 7). The offshore 2m mainscheme crossline comparison found that 95% of nodes have a max deviation of +/- 0.31 m and an average difference of 0.05 m and a standard deviation of 0.17 m (Figure 8). These differences were influenced by tidal and weather differences during different days of acquisition. The surface difference is submitted digitally in the Separates\II Digital Data folder.

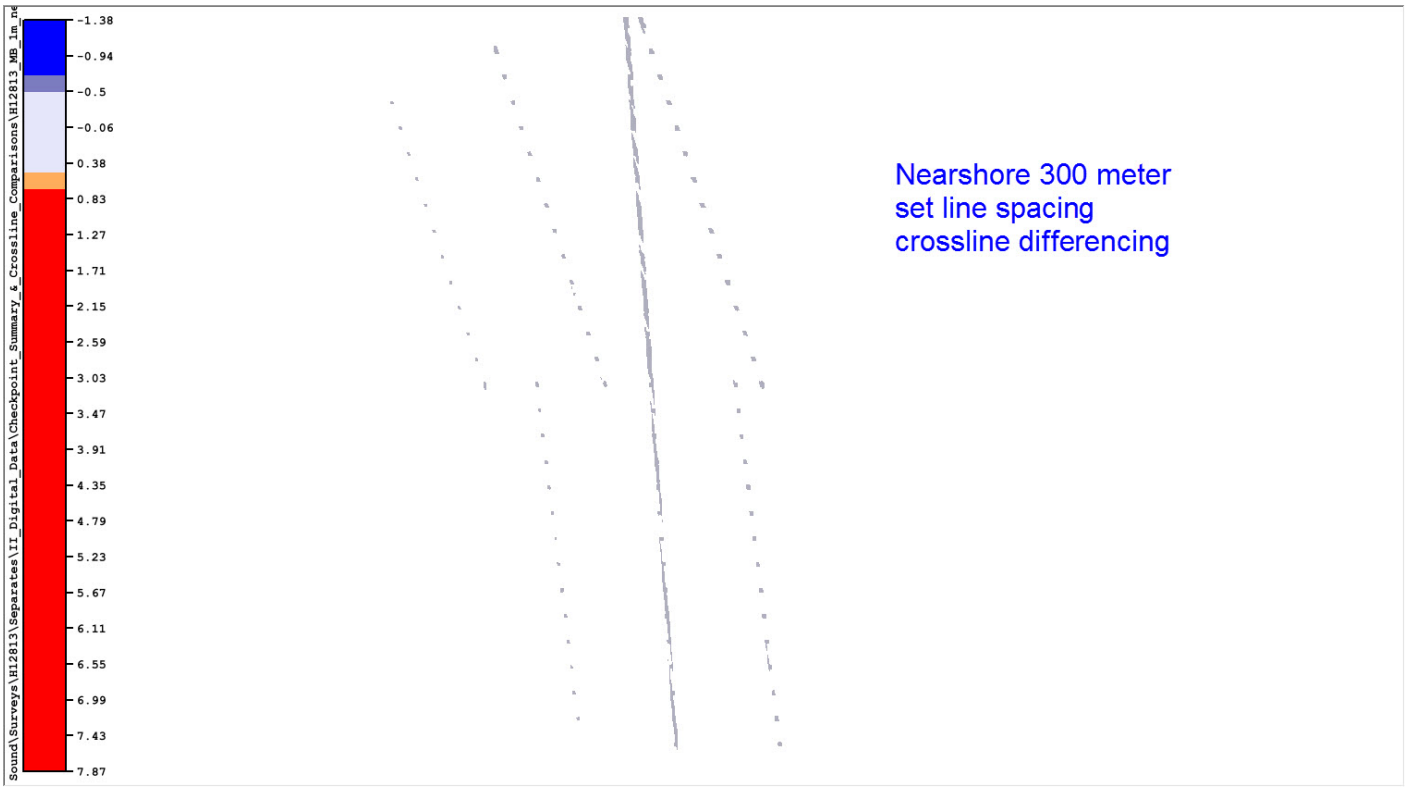


Figure 4: H12813 nearshore 300 meter set line spacing crossline differencing

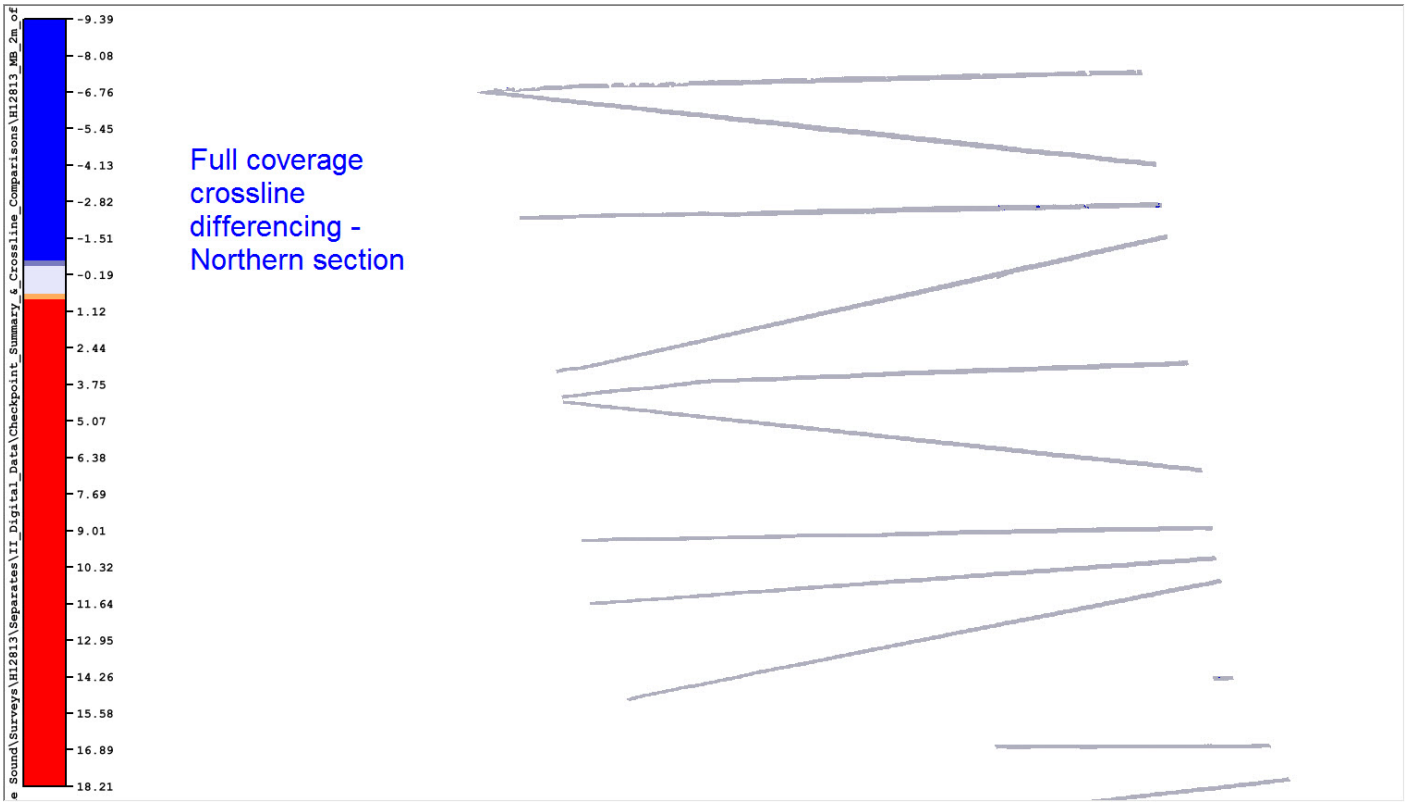
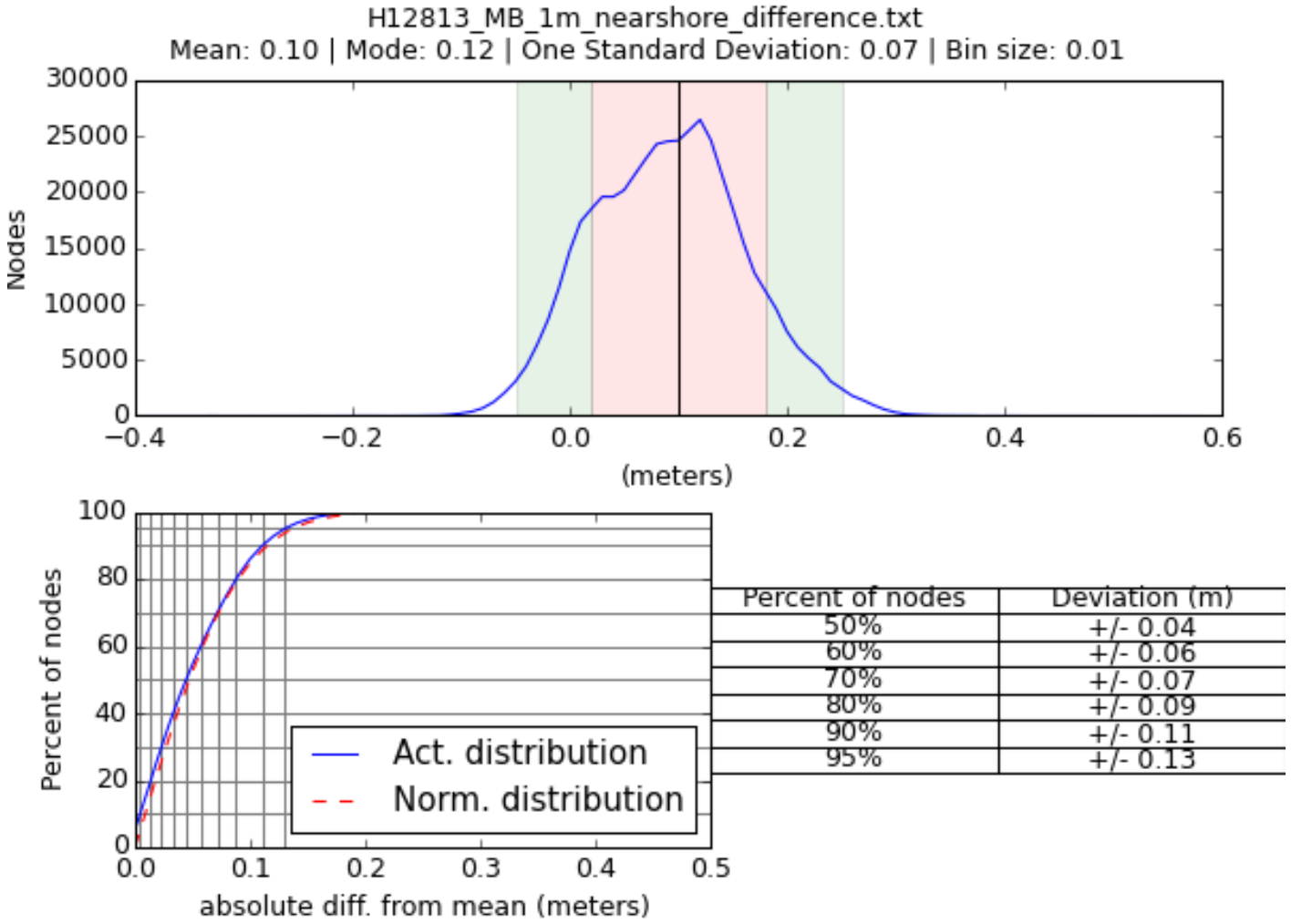


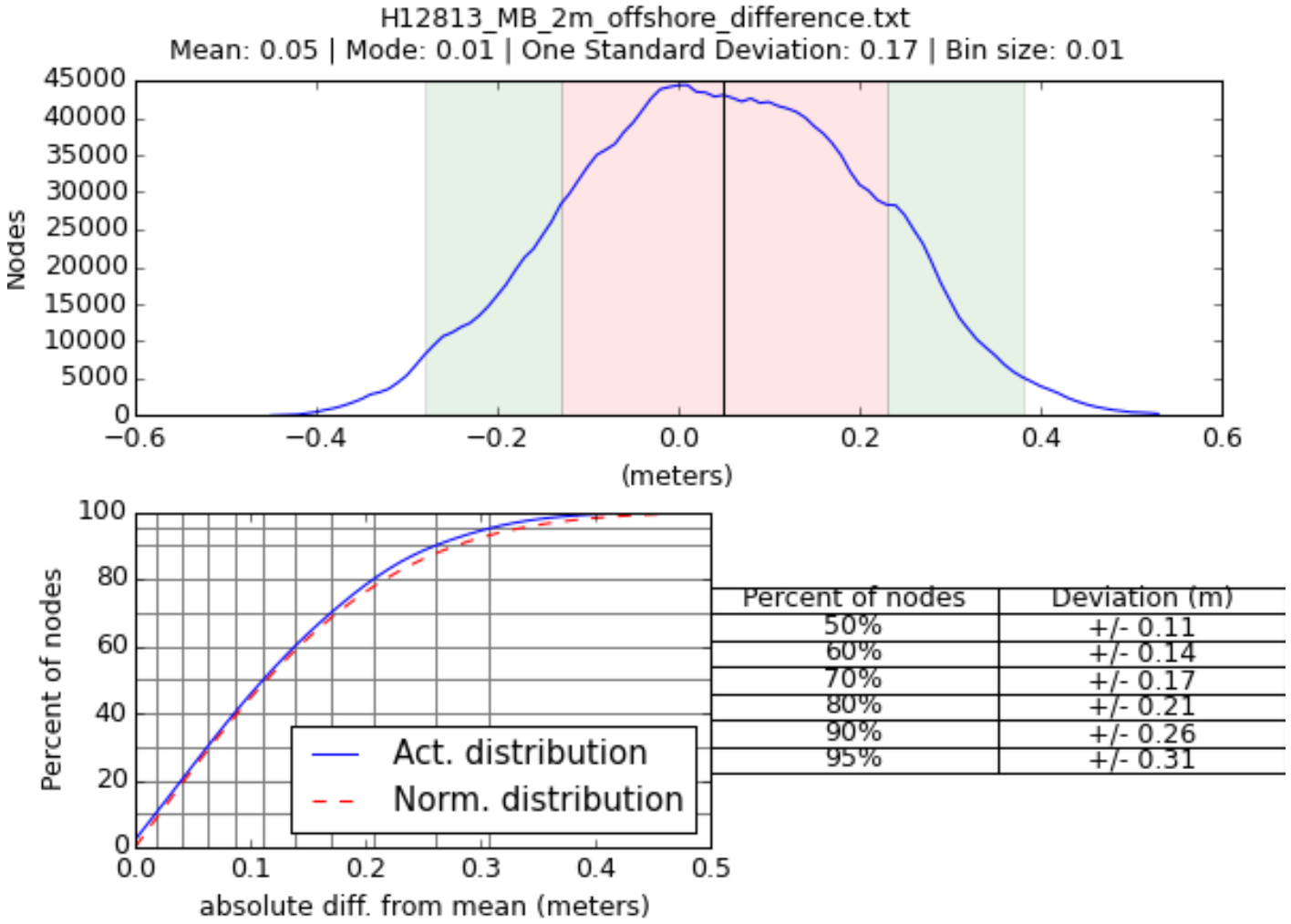
Figure 5: H12813 full coverage crossline differencing in the Northern section of the sheet

Figure 6: H12813 full coverage crossline differencing in the Southern section of the sheet



Percent of nodes	Deviation (m)
50%	+/- 0.04
60%	+/- 0.06
70%	+/- 0.07
80%	+/- 0.09
90%	+/- 0.11
95%	+/- 0.13

Figure 7: H12813 300m set line spacing statistical information for differences between mainscheme and crossline surfaces



Percent of nodes	Deviation (m)
50%	+/- 0.11
60%	+/- 0.14
70%	+/- 0.17
80%	+/- 0.21
90%	+/- 0.26
95%	+/- 0.31

Figure 8: H12813 Full coverage MBES statistical information for differences between mainscheme and crossline surfaces

B.2.2 Uncertainty

Hull ID	Measured - CTD	Measured - MVP	Surface
S220		1 meters/second	.5 meters/second
2808	2 meters/second		0.5 meters/second
2807	2 meters/second		0.5 meters/second
2806	2 meters/second		0.5 meters/second
2805	2 meters/second		0.5 meters/second

Table 6: Survey Specific Sound Speed TPU Values

B.2.3 Junctions

A junction analysis was conducted with survey H12812 which lies directly to the north of H12813. This survey was completed by NOAA Ship FAIRWEATHER in the summer of 2015 before acquisition began on H12813. A 2m combined surface was created for H12813 and compared with a combined 2m surface from survey H12812. Surface differencing between the two surfaces was run in Caris and the result was processed using Pydro to get the statistical differencing of areas of overlap between in the two surveys.

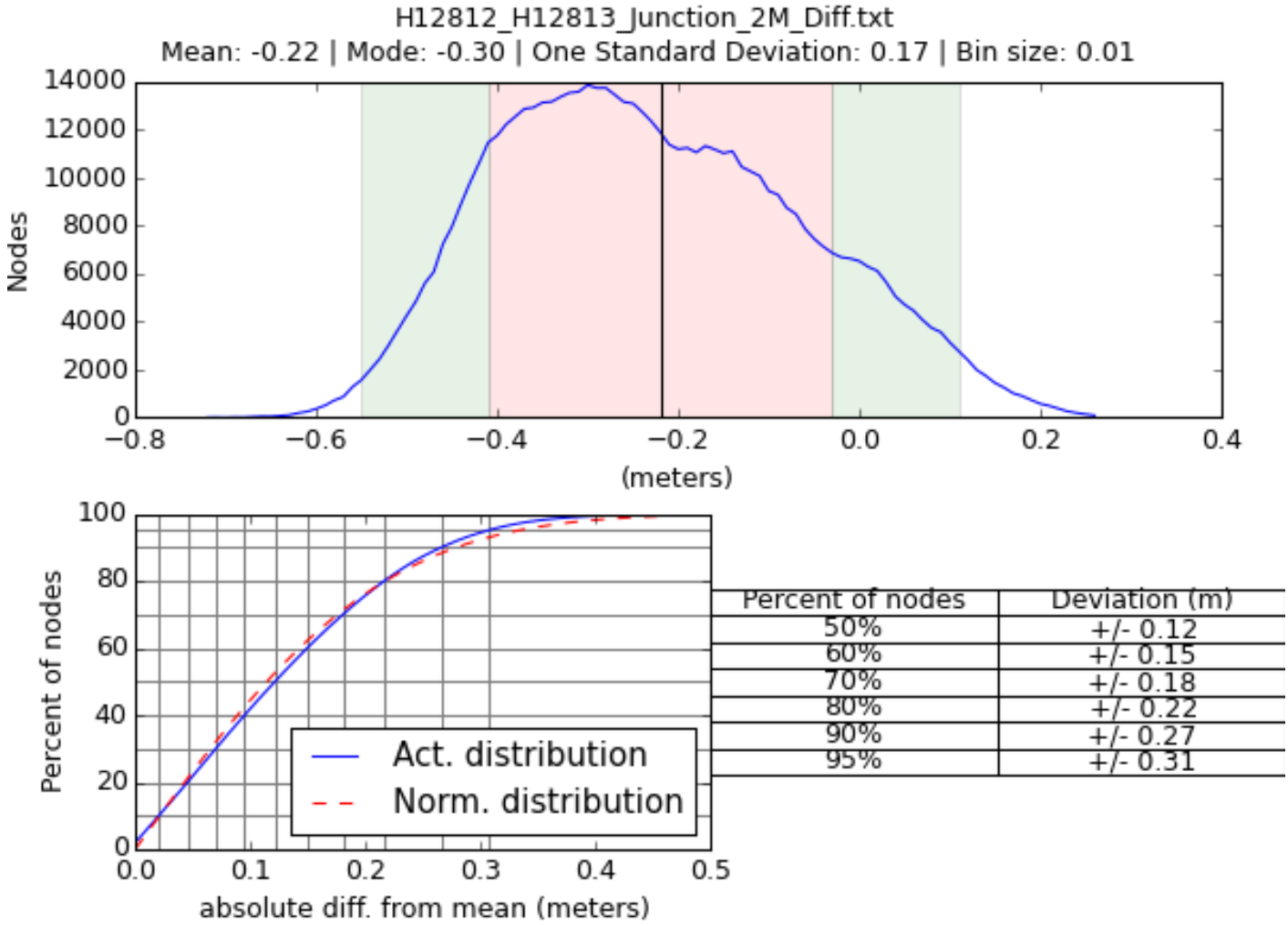
The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12812	1:40000	2015	NOAA Ship FAIRWEATHER	N

Table 7: Junctioning Surveys

H12812

Full data overlap between H12812 and H12813 surveys was achieved and the resulting statistical differencing can be seen in Figure 9. The soundings and surfaces agree within 1 meter and 95% of all nodes are within +/- 0.31 for junctions between H12813 and H12812 as shown in Figure 9. The excessive vertical uncertainty may be due to the use of ERZT (ellipsoidally referenced zoned tides) on sheet H12812 and TCARI (tidal constituent and residual interpolation) on sheet H12813. ERZT uses statistical averaging to supplement local tidal solutions while TCARI produces interpolated water levels for MLLW based using observed water level data from tide stations.



Percent of nodes	Deviation (m)
50%	+/- 0.12
60%	+/- 0.15
70%	+/- 0.18
80%	+/- 0.22
90%	+/- 0.27
95%	+/- 0.31

Figure 9: Statistical differencing of H12813 and H12812 nodes

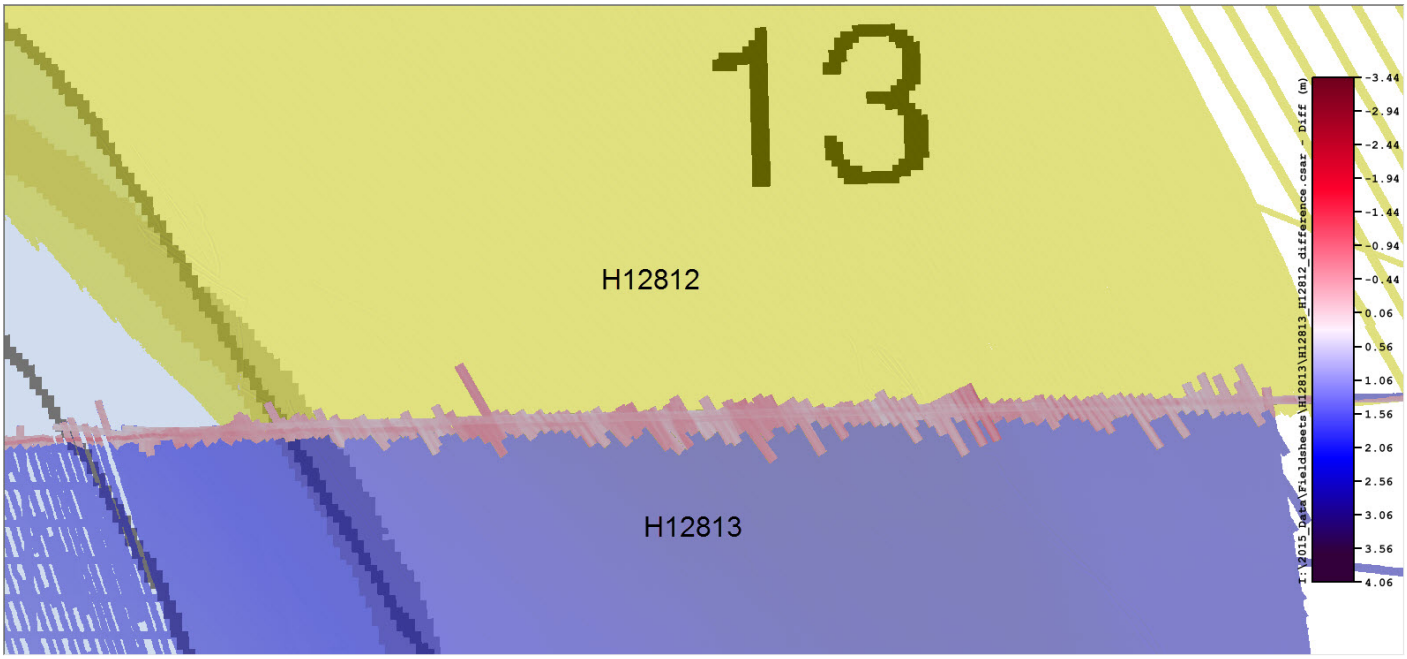


Figure 10: Graphical representation of junction differences between sheets H12813 and H12812

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

Rolls Royce MVP

As an operational safety feature, the Rolls Royce MVP is programmed to keep the freefall sensor towfish a minimum of 4 meters above the seafloor during casts. This prevents the possibility of the sensor snagging on obstructions near the seafloor. As the sound speed profile is traditionally consistent in the well mixed region near the seafloor, this procedure generally has negligible impacts on the sound speed accuracy within the survey area. For the project area however, there was a dynamic pycnocline throughout the survey area as a result of significant fresh water influx and ice melt. This pycnocline resulted in dynamic sound speed changes, primarily in the region adjacent to the seafloor as seen in Figures 11 and 12. Therefore, in H12813 the MVP was not able to provide complete sound speed profiles, resulting in sound speed errors throughout the survey, particularly in the outer beams of the swath (Figure 13). Where possible hand-deployed Seabird 19plus CTD data was used (which extended all the way to the seafloor). All casts were checked in Velocipy after acquisition to ensure no erroneous casts were applied and that the concatenated vessel file had all the correct casts inserted. As a result of the mitigation and quality control performed, the hydrographer is confident that the data remains sufficient to supersede charted data.

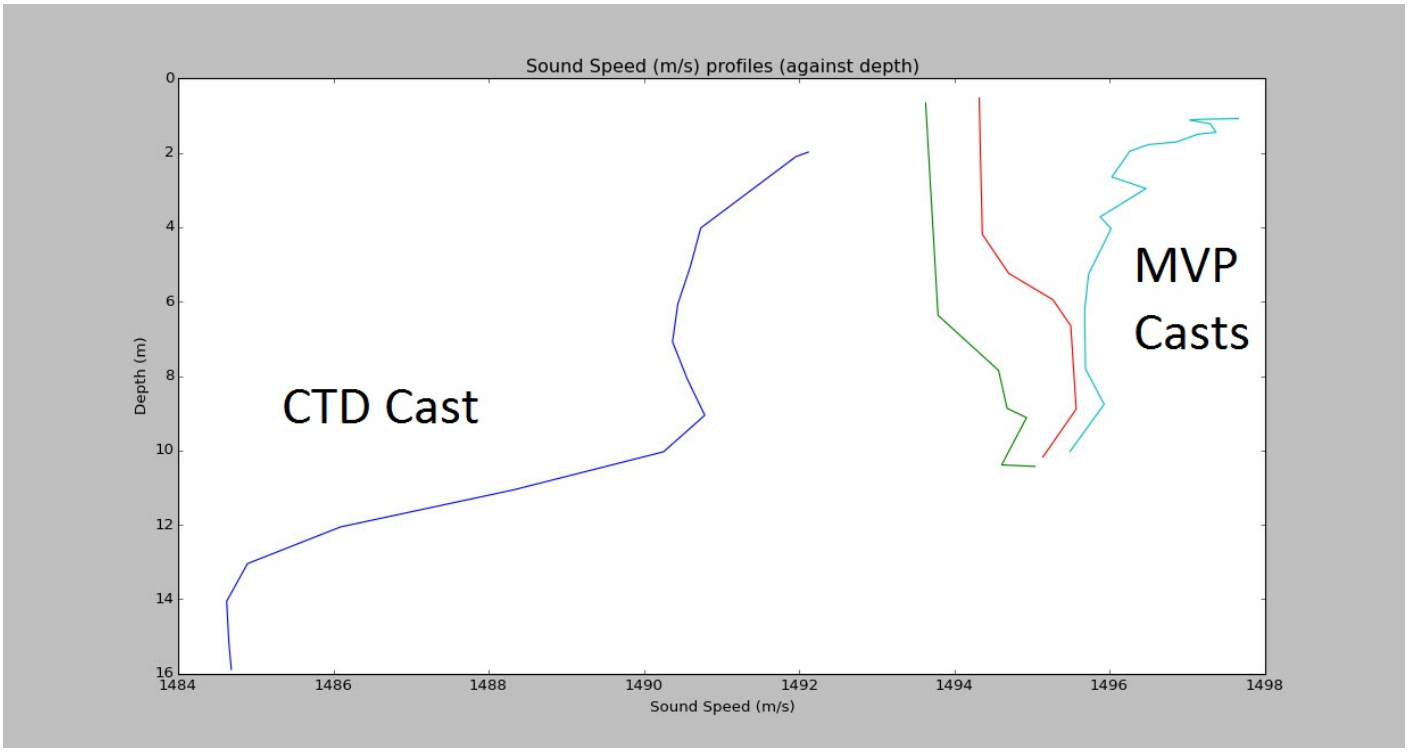


Figure 11: Difference in MVP and CTD casts in close proximity

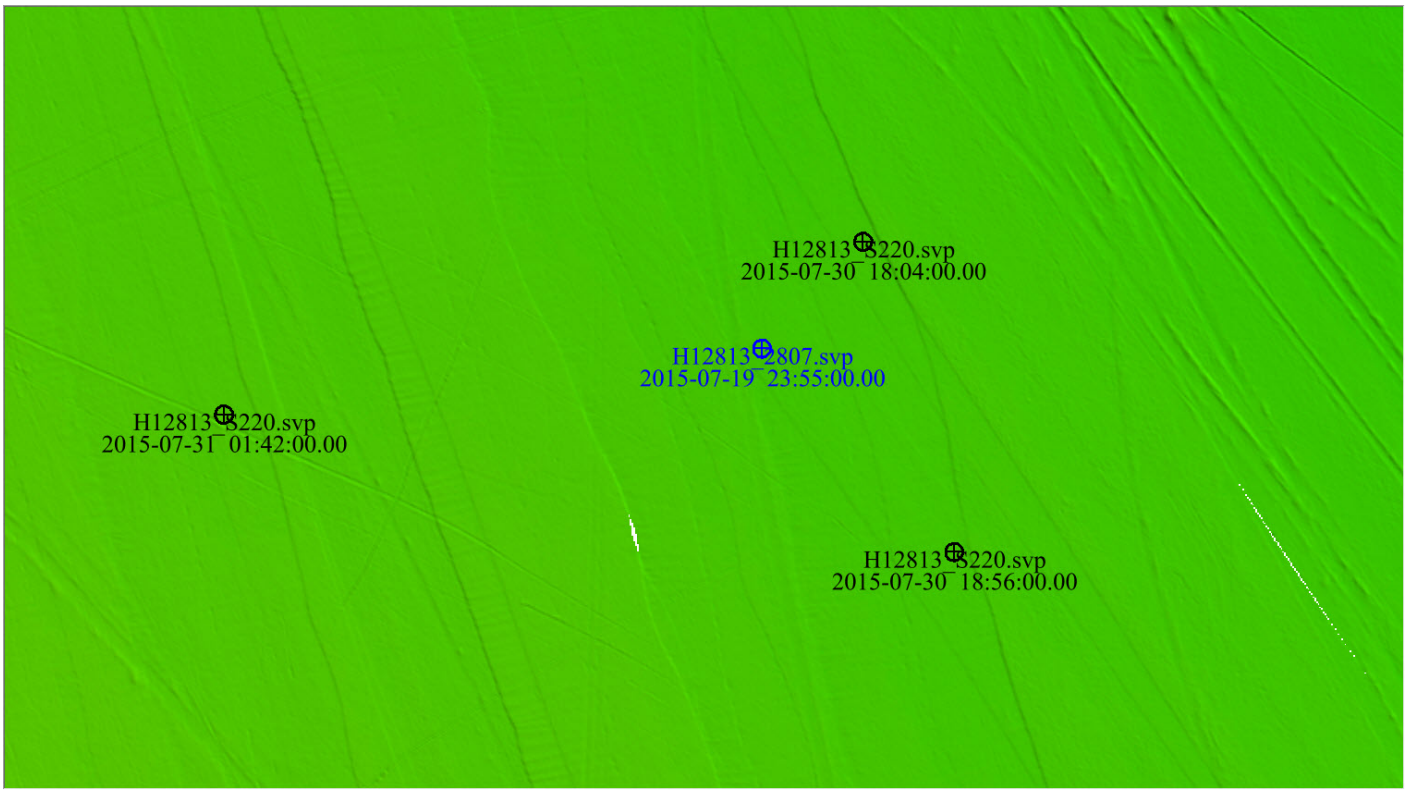


Figure 12: Launch CTD cast (in blue) and 3 MVP casts from the ship in close proximity

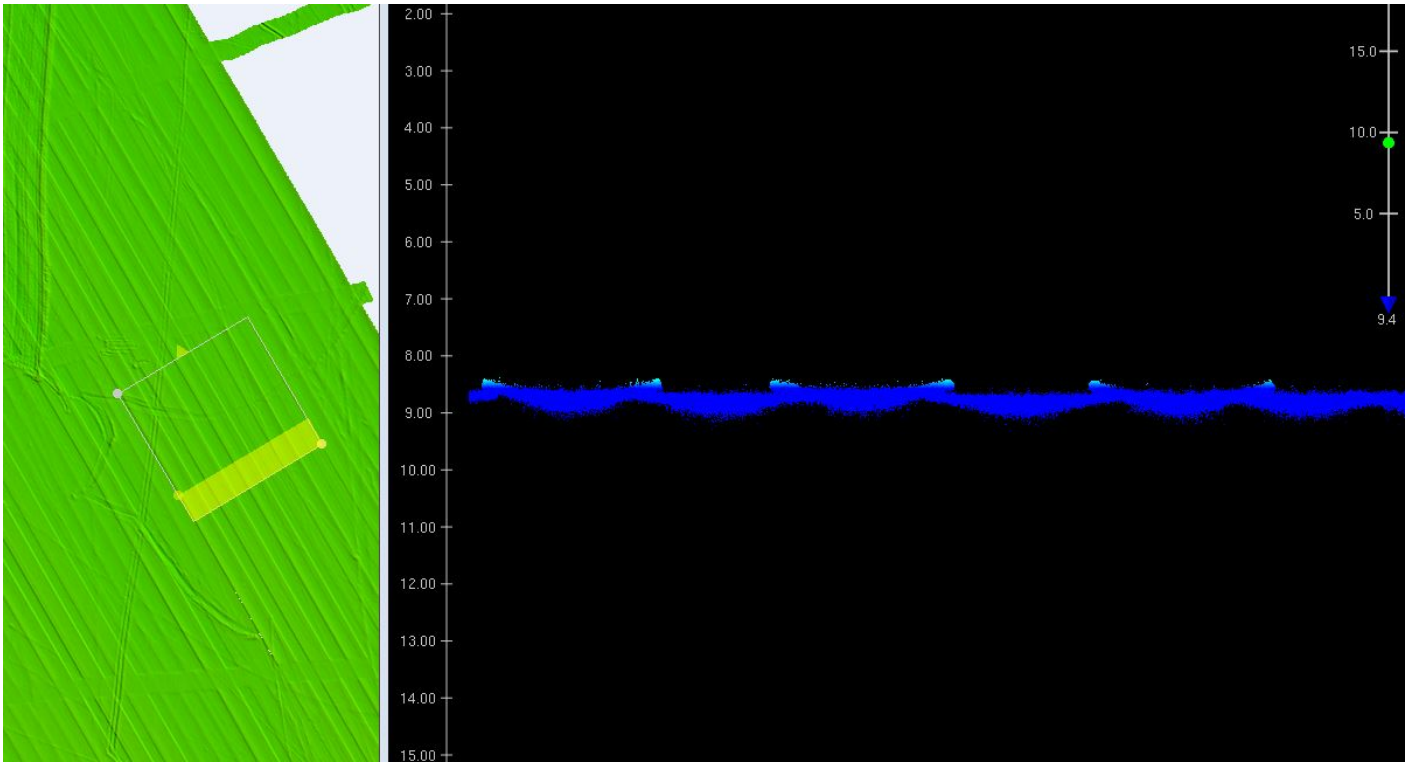


Figure 13: Outerbeam sound speed errors

B.2.6 Factors Affecting Soundings

Mounted SSS on 2807 and 2808 Interfering with MBES

The hull mounted Side Scan Sonars on FA 2807 and FA 2808 were mounted in such a way on the port side of the survey launch that the SSS physically interfered with the port beams of each vessel's MBES. This interference caused significant data degradation in the outer port beams of each vessel. A 51 degree filter was applied to the port beams MBES data from each vessel to account for the degraded data quality and to remove the data noise.

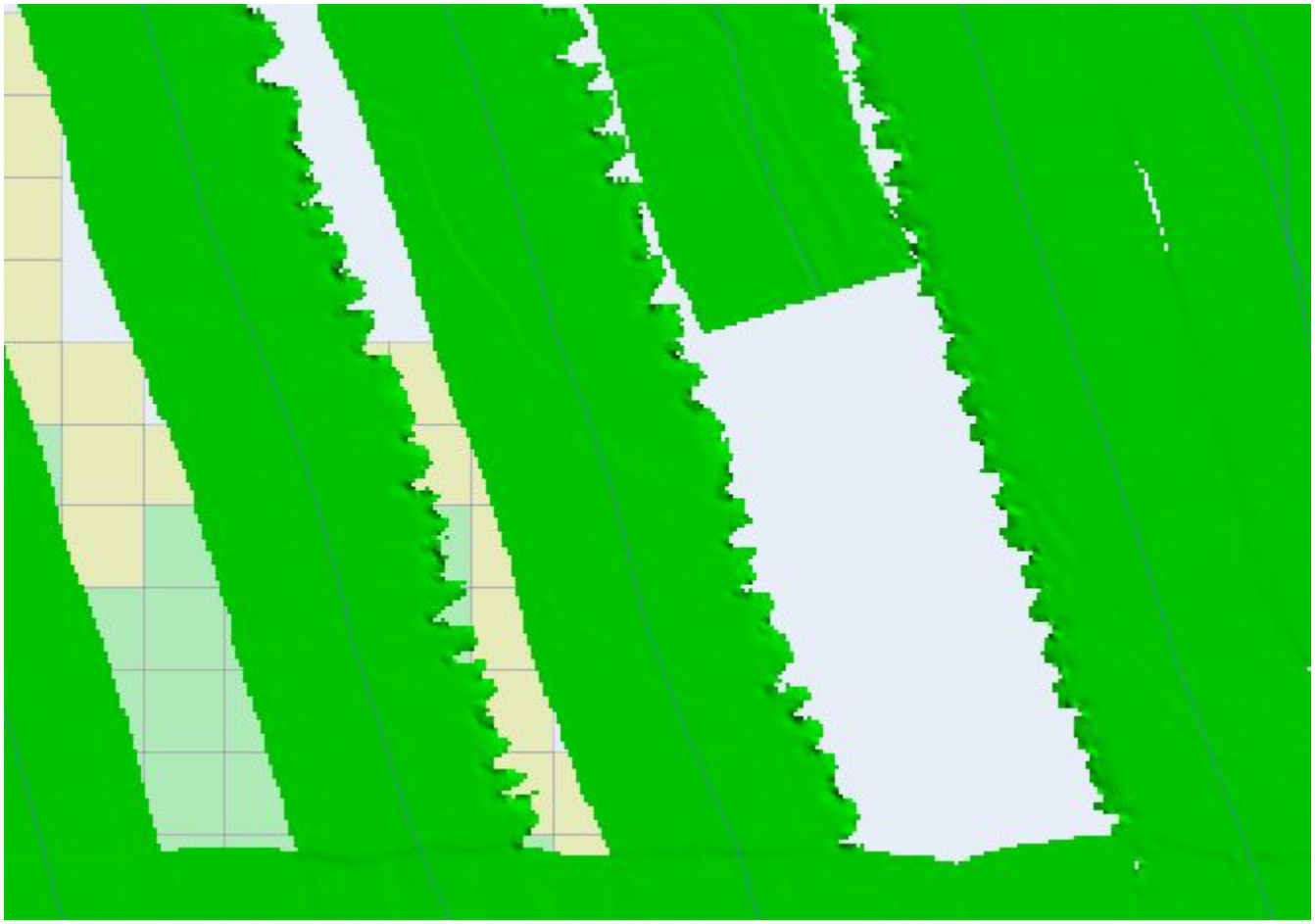


Figure 14: FA 2808 outerbeam data before the 51 degree filter was applied

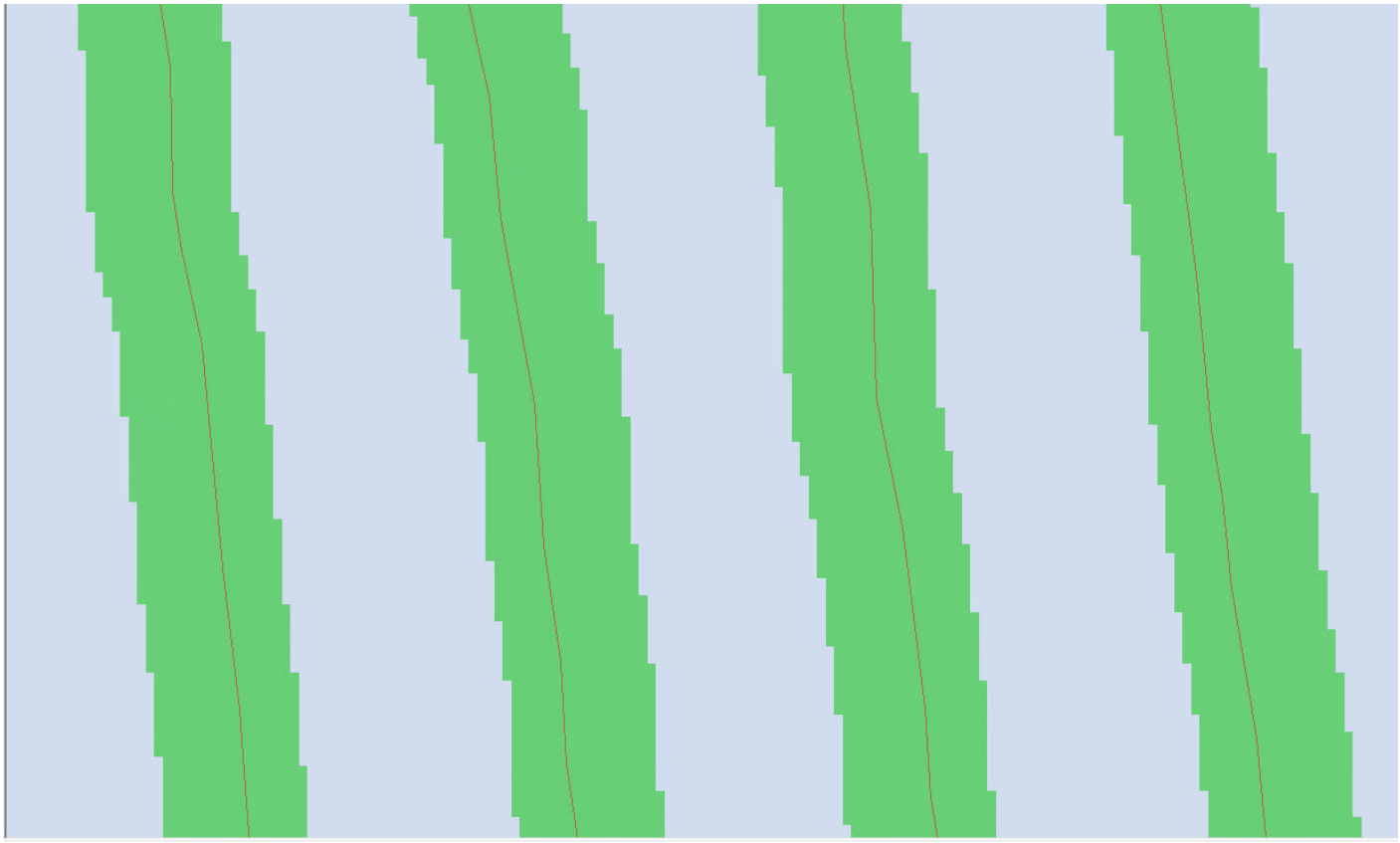


Figure 15: A selection of FA 2808 outerbeam data after the 51 degree filter was applied

Vertical Offset

A 0.10 meter vertical offset was observed during processing of H12813 in data between consecutive days collected by the ship on DN210 and DN211 as seen in Figures 16 and 17. This offset was investigated using subset editor in Caris where tidal factors were found to be the cause. When the data was referenced via tidal sources (TCARI), the 0.10 meter offset can be seen in Figure 18. That same data set referenced to the ellipse (thereby eliminating tides), shows no corresponding offset as seen in Figure 18. The tidal offset stayed within the allowable limits specified in the 2015 HSSD. The hydrographer is confident that the data is sufficient to supersede charted data.

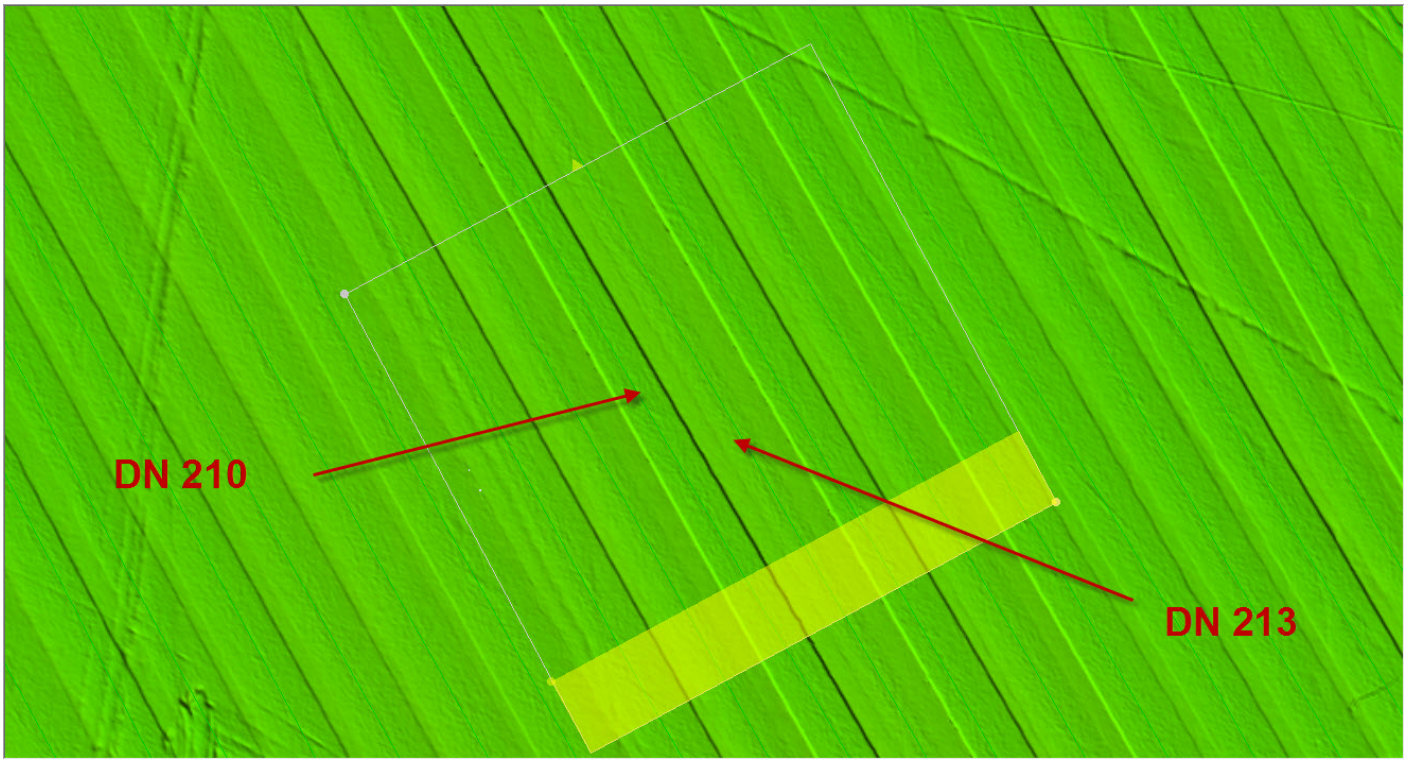


Figure 16: The vertical offset seen in the 1 meter ship data between DN 210 and DN 211

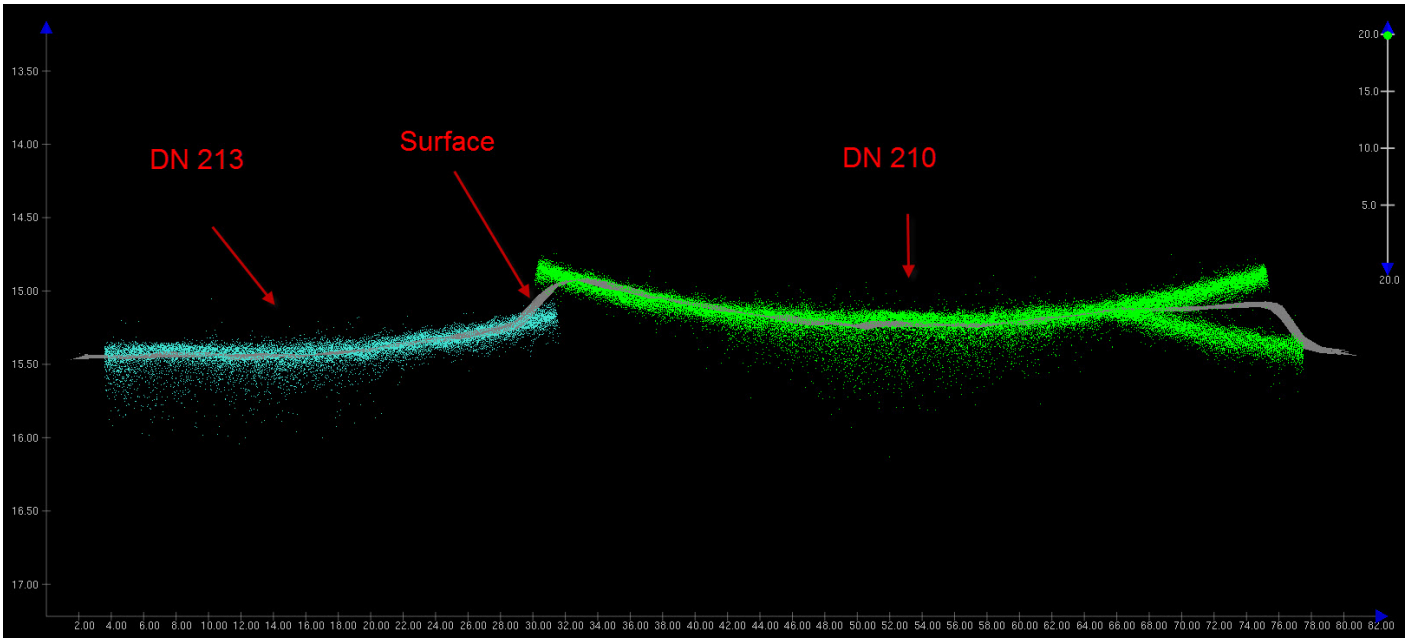


Figure 17: The data viewed in subset editor with exaggeration showing the offset between days with the resulting surface shown in grey

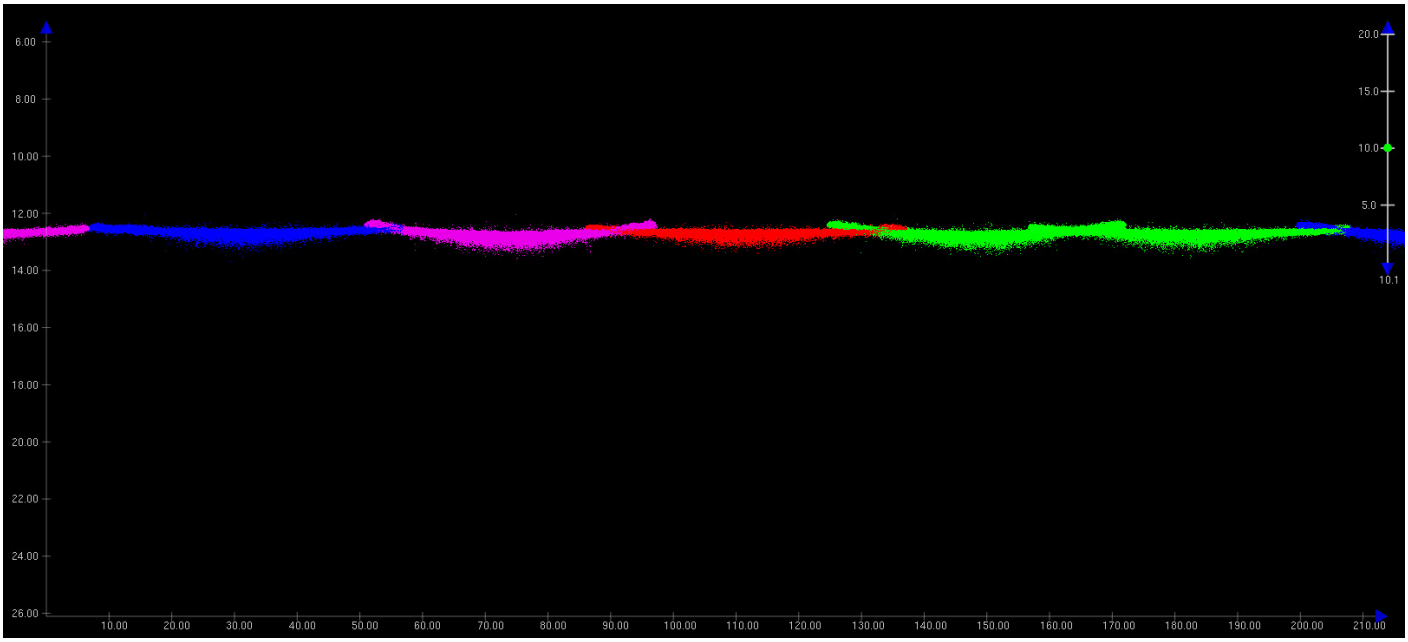


Figure 18: The data viewed in subset editor and colored by line after GPS tides were applied

Refraction

As discussed in B.2.5, Equipment Effectiveness; Rolls Royce MVP, a pycnocline was present from the bottom to 5-8 m of the bottom throughout the survey area. This layer creates a dynamic sound velocity environment, along with significant refraction both spatially and temporally across the project, and affected the efficiency of the MBES-SSS operations by reducing the effective swath width of the SSS system. Initial lines were run at a 100m range scale, then decreased to a 75m range scale, then later to a 50m range scale to account for refraction. Once the data was reviewed in Caris Side Scan Editor, refraction holidays were identified (Figure 19) and were re-run in subsequent days using SSS with concurrent MBES resulting in additional lines between the initial set line spacing lines. All refraction was identified at the end of each acquisition day and holiday line plans were created to ensure all refraction holidays were subsequently ran with MBES and SSS.

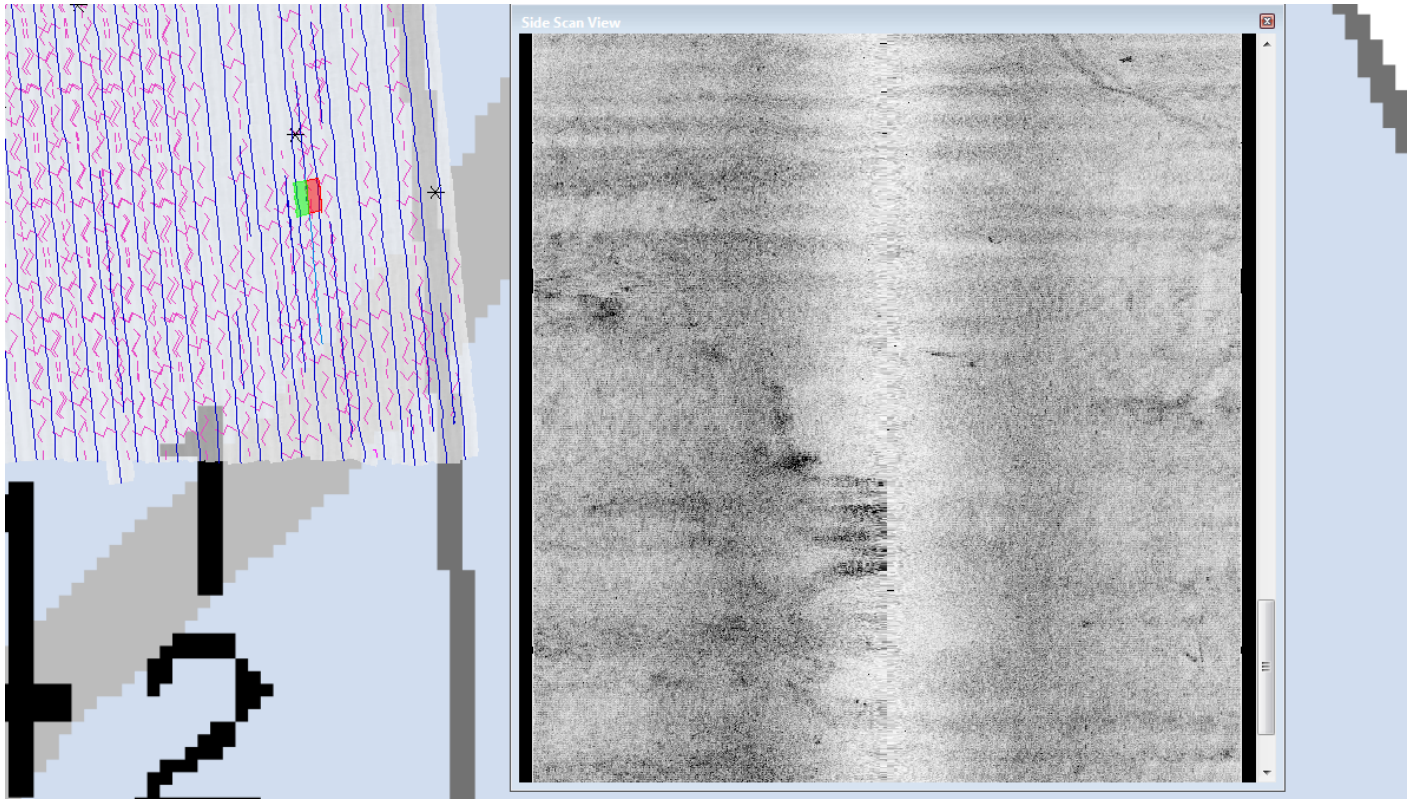


Figure 19: Refraction in the SE corner of the nearshore SSS set line spacing. The pink lines in the left side of the image were all the identified areas of refraction

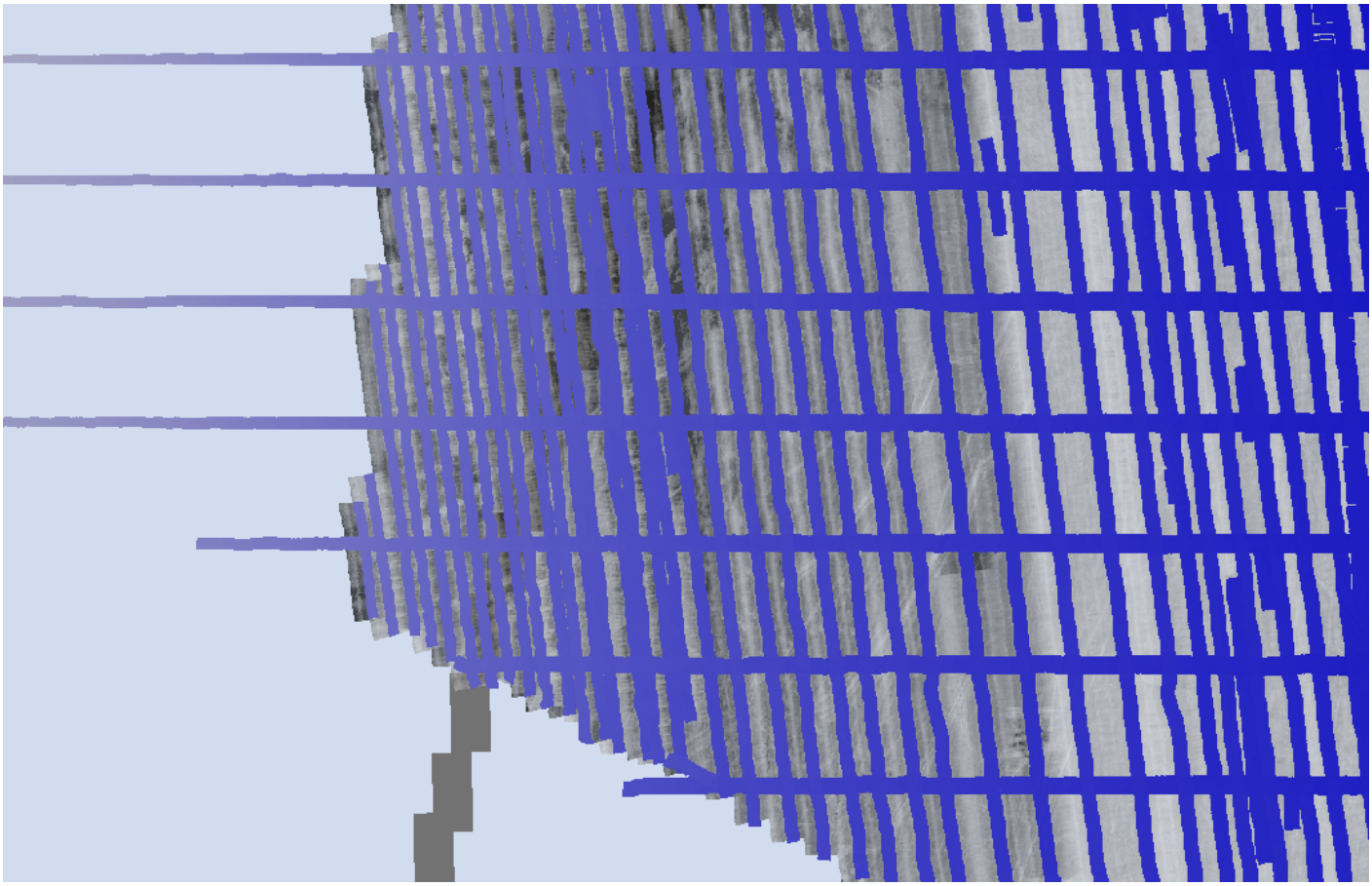


Figure 20: NW section of H12813 showing areas of MBES data (blue tint) and the concurrent SSS data (grey mosaic) illustrating the set line spacing for data collection as well as the subsequent refraction holiday lines.

Sea State

MBES blowouts were common during nearshore launch operations due to sea state and high winds. All near shore launch data was acquired with concurrent SSS in order to provide complete coverage of either MBES or SSS. All areas of MBES data gaps were checked with the corresponding SSS data to ensure that any potential contacts in the MBES data gaps could be developed in subsequent boat days.

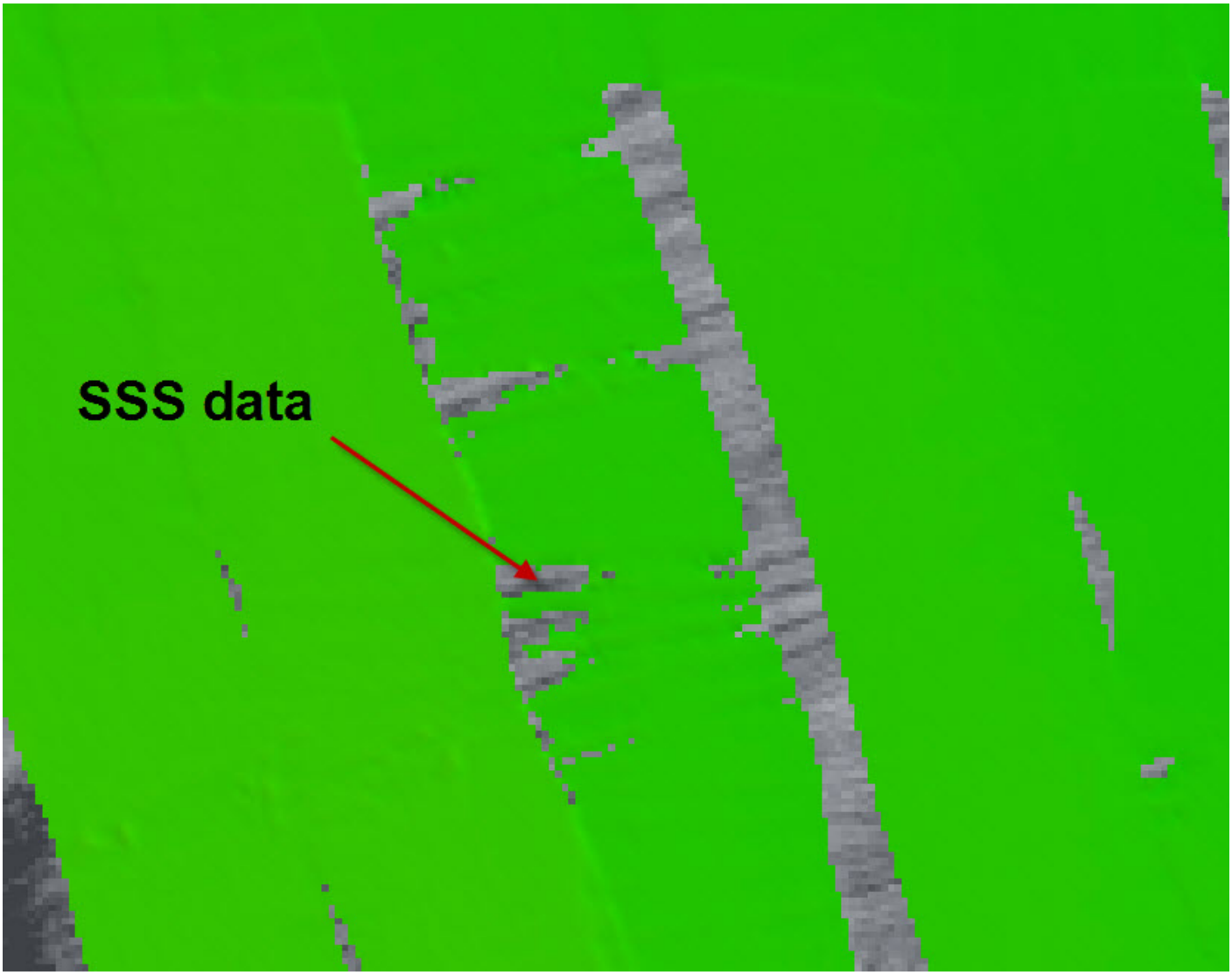


Figure 21: The MBES data blowout with concurrent SSS data

Figure 22: An example of a MBES data blowout in the nearshore set line spacing section of the sheet

Holiday Assessment

H12813 was analyzed for holidays as defined by the 2015 HSSD. Based on this analysis, two holidays were found within the survey. Both holidays were identified after the field unit had left the project area so they could not be reacquired. Both holidays occurred on DN 211 between the same two lines. The first holiday has a maximum data gap of 4 meters by 3 meters that occurs 2 times in the middle of the longer 200 m data gap (Figure 23). The second holiday (Figure 24) has 5 areas in the middle of the longer 200 m data gap where there are 3m x 3m holidays. All other areas of the longer data gap fall below the 3m x 3m threshold and do not meet the holiday requirements. As these holidays are relatively minor and no obstructions or contacts were found in any MBES data in adjacent areas the hydrographer is confident they do not negatively impact survey quality.

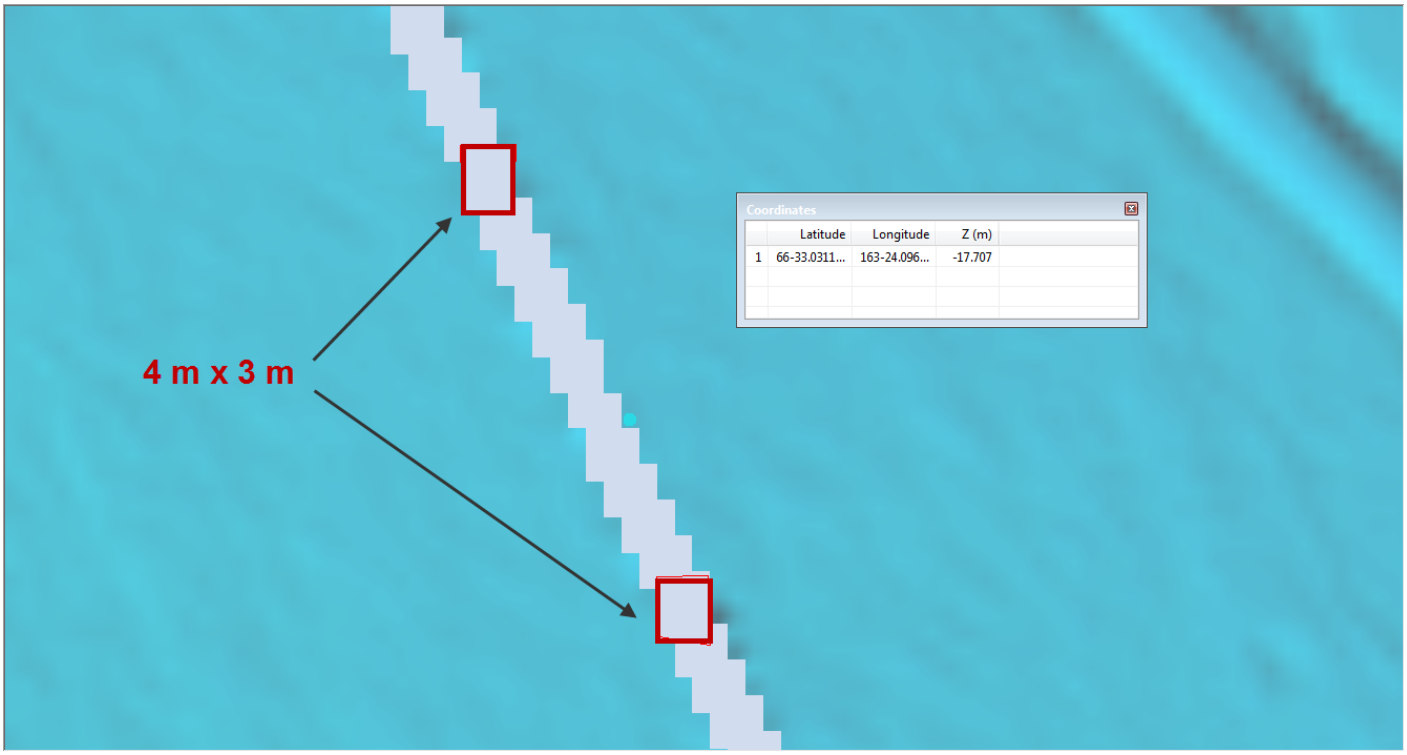


Figure 23: A data gap greater that extends approximately 200 meters. The maximum size of the data gap is in 2 sections where there are 4m x 3m holidays.

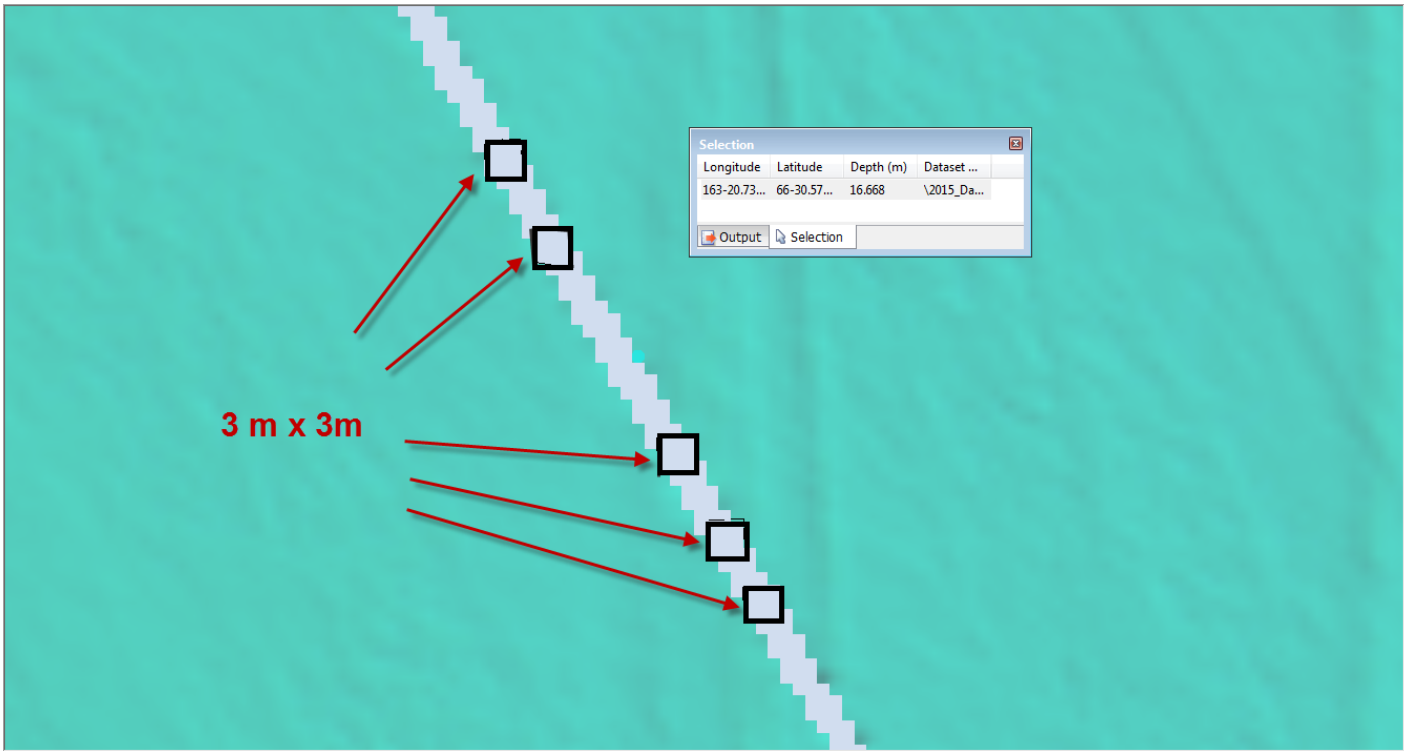


Figure 24: A data gap in the Northern section of the sheet that has a total data gap length of 213 m. The 5 largest data gaps within this area reach a maximum size of 3m x 3m while the rest of the gaps are smaller and stay within the coverage requirements.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: A Moving Vessel profiler was used for sound speed measurement. Casts were done at a frequency of 10-30 minutes for the majority of the survey based off the cast time from the Pydro Contribs software on the MVP acquisition station. Manual CTD casts were done approximately every two hours during launch acquisition. CTD casts on the launches can be done at a frequency of up to 4 hours but were done more frequently due to the dynamic nature of the water column in Kotzebue Sound and the observed differences in sound speed in the same area on different days. After acquisition, a total inventory of all casts was done so that any faulty casts could be excluded. Once the concatenated vessel files were checked and cleaned of errors, they were re-applied to all lines in Caris.

B.2.8 Coverage Equipment and Methods

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

A deviation from survey methods as listed in the DAPR occurred regarding the application of a 51 degree filter to the port beams of vessels 2807 and 2808. This deviation is described in section B.2.6 of the Descriptive Report.

B.2.9 IHO Assessment

Uncertainty values of the submitted finalized surfaces were calculated in CARIS using standard deviation (scaled to 95%). To quantify the extent to which accuracy requirements were met, descriptive statistics of the CARIS finalized surfaces were analyzed using Pydro's analysis tools. Overall, 100.0% of nodes for the 1m surface (Figure 25), and 100.0% of nodes for the 2m surface (Figure 26) of Survey H12813 meet the accuracy requirements stated in Section 5.1.3 of the HSSD.

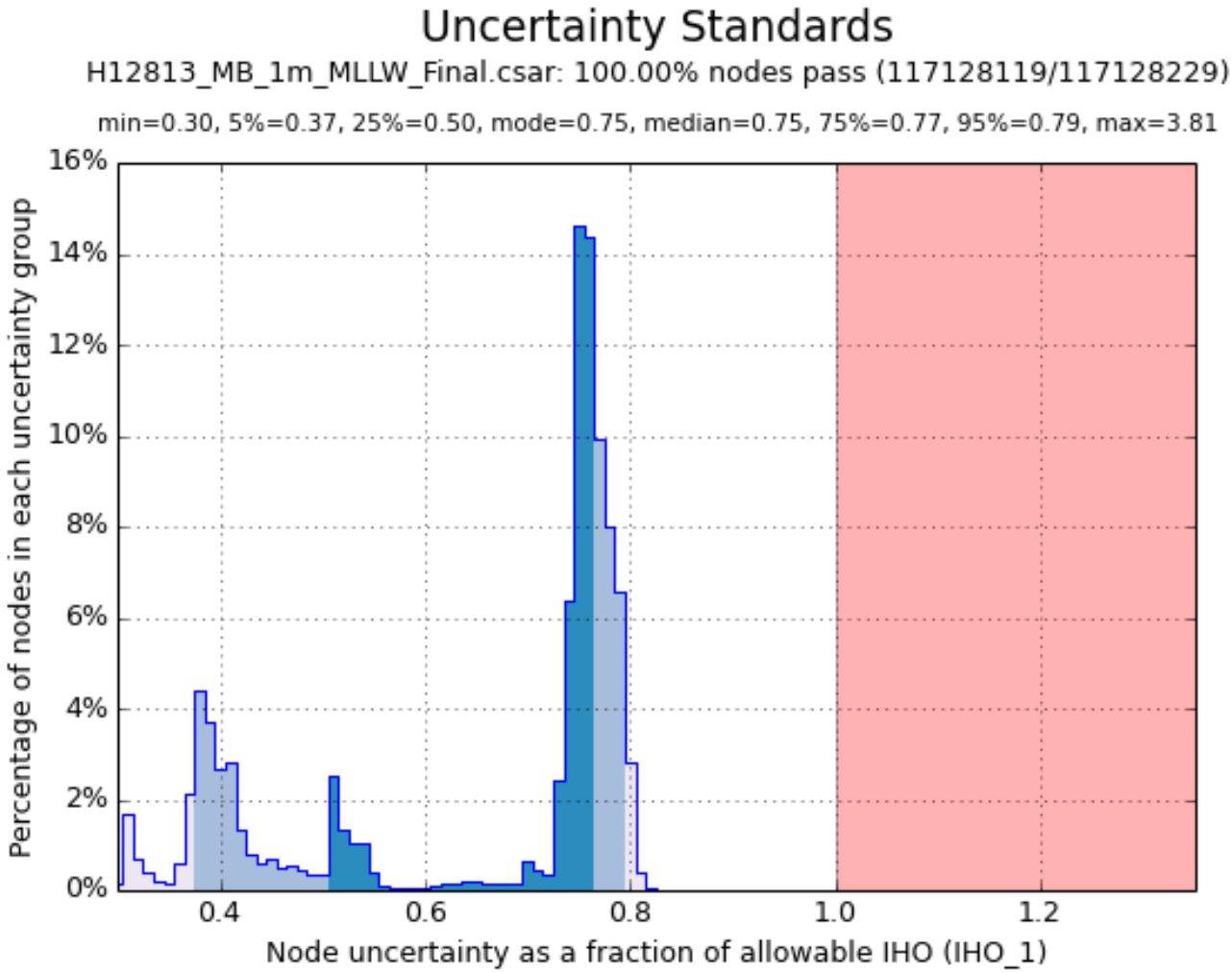


Figure 25: H12813 1m surface Uncertainty Standards

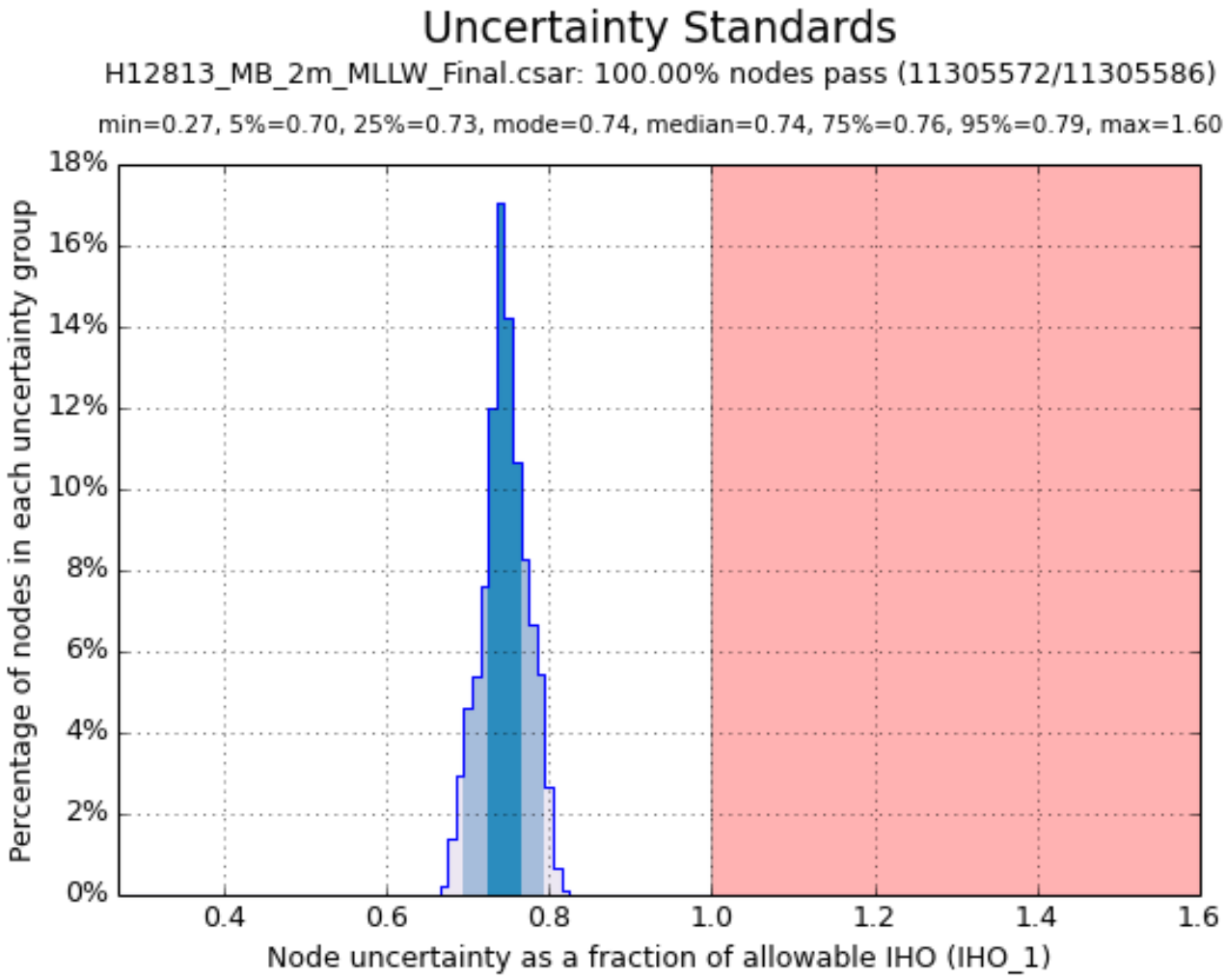


Figure 26: H12813 2m surface Uncertainty Standard

B.2.10 Density Compliance

Data acquired in H12813 exceeded MBES density requirements for complete MBES with backscatter. In order to extract descriptive statistics the CARIS finalized surfaces were analyzed using Pydro's analysis tools. Overall, the required data density was achieved in 99.8% of the nodes for the 1m surface (Figure 27), and 100.0% of the nodes for the 2m surface (Figure 28). This exceeds the requirement for 95% of nodes being populated with five soundings as per Section 5.2.2.2 of the HSSD.

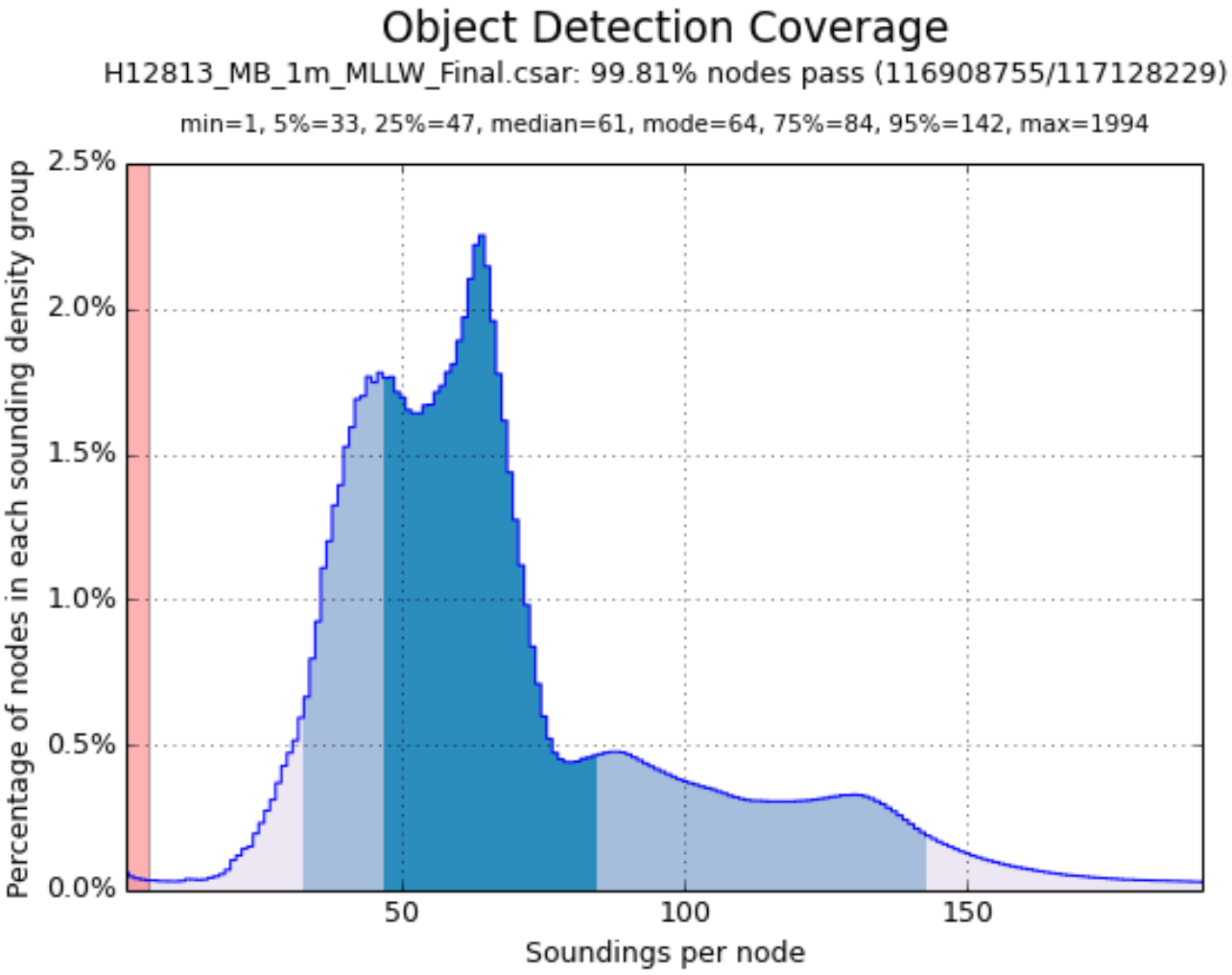


Figure 27: H12813 1m surface object detection coverage

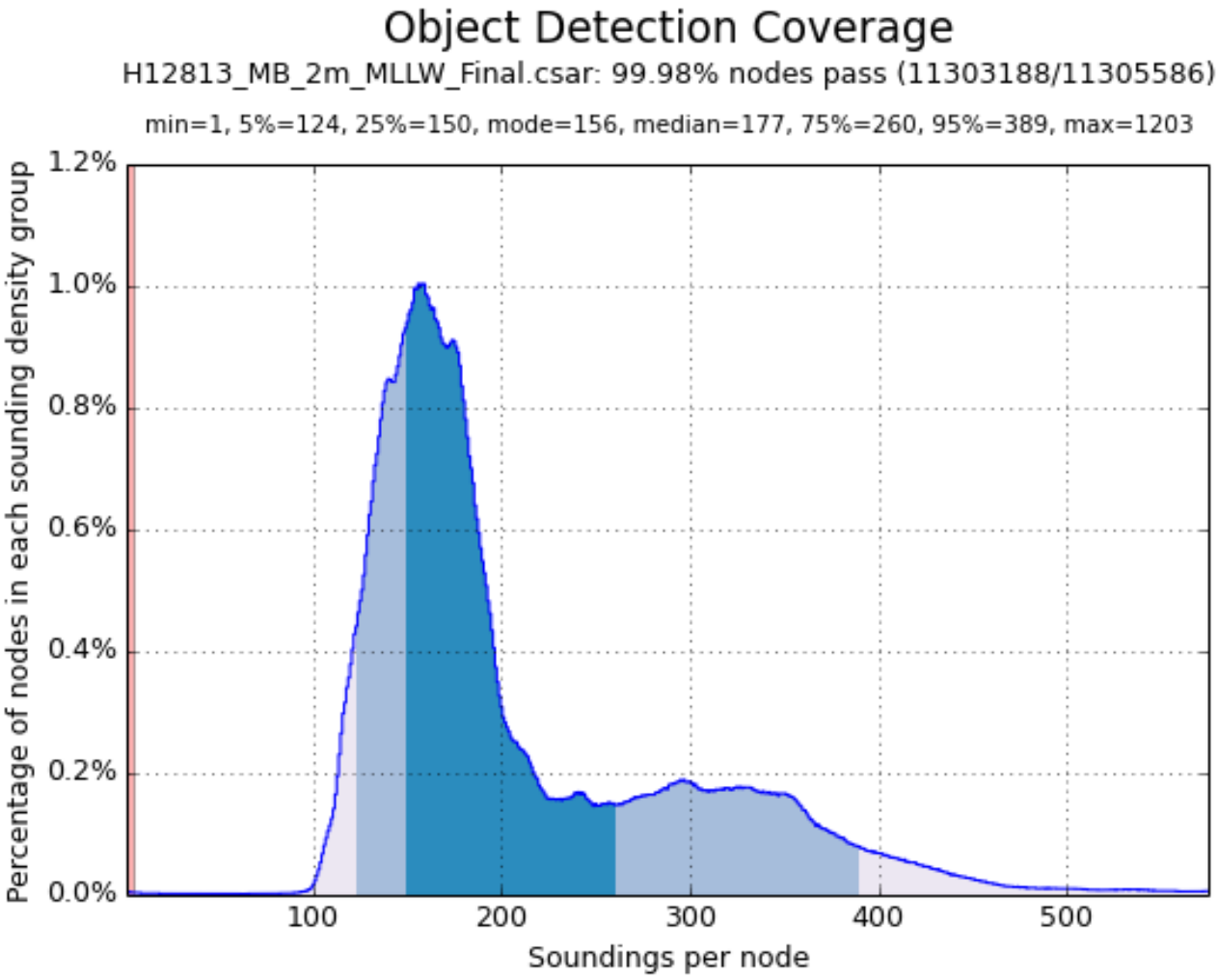


Figure 28: H12813 2m surface object detection coverage

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

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Raw Backscatter was logged as .7k file for Reson 7125 data. Kongsberg EM710 stores the backscatter data in the .all file. The data was submitted directly to NGDC to be archived, and to PHB where the data will be processed. One line per day of backscatter was processed in the field by the field unit. for quality control.

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following Feature Object Catalog was used: NOAA Profile V_5_3_3

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
H12813_MB_2m_MLLW_Final	CUBE	2 meters	18 meters - 40 meters	NOAA_2m	Complete MBES
H12813_MB_1m_MLLW_Final	CUBE	1 meters	0 meters - 20 meters	NOAA_1m	Complete MBES
H12813_MB_2m_Combined	CUBE	2 meters	0 meters -	NOAA_2m	Complete MBES
H12813_MB_2m_MLLW	CUBE	2 meters	0 meters -	NOAA_2m	Complete MBES
H12813_MB_1m_MLLW	CUBE	1 meters	0 meters -	NOAA_1m	Complete MBES

Table 8: Submitted Surfaces

Surfaces submitted as part of H12813 have the following depth ranges:H12813_MB_1m_MLLW -- 3.13 meters to 23.97 metersH12813_MB_2m_MLLW -- 3.13 meters to 23.94 metersH12813_MB_1m_MLLW_Final -- 3.13 meters to 20 metersH12813_MB_2m_MLLW_Final -- 18 meters to 23.94 metersH12813_MB_2m_Combined -- 3.13 meters to 23.94 meters

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:

TCARI

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

Station Name	Station ID
Nome	9468756
Red Dog Rock	9491094

Table 9: NWLON Tide Stations

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

Station Name	Station ID
Good Hope Bay, AK	9469833D
Central Kotzebue Sound, AK	9469993
Cape Espenberg, AK	9490096
South of Cape Krusenstern, AK	9490487
Kotzebue, AK	9490424

Table 10: Subordinate Tide Stations

There was no Water Level file associated with this survey.

File Name	Status
S327FARA2015_Final.tc	Final

Table 11: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 08/19/2015. The final tide note was received on 01/29/2016.

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 3 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. Smoothed Best Estimates of Trajectory (SBET) and associated error (RMS) data were applied to all MBES data in CARIS HIPS with the exception of the lines shown bellow due to poor quality of trajectories:

2806 Dn 200: M_28062015M_2010027
2807 Dn 181: All lines

For further details regarding the processing and quality control checks performed see the H112813 POSPAC processing logs spreadsheet located in the SBET folder with the GNSS data.

The following user installed stations were used for horizontal control:

HVCR Site ID	Base Station ID
9715	Turn Tower
9677	Cape Espenberg

Table 12: User Installed Base Stations

C.3 Additional Horizontal or Vertical Control Issues

3.3.1 WAAS Correctors

During acquisition, all launches and S220 received WAAS correctors similar to USCG DGPS stations.

3.3.2 Line M_28062015M_2010027 on DN 200

No delayed heave data was applied to line M_28062015M_2010027 from FA 2806 on DN 200. This was the last line of the day and the full 5 minutes of POSMV data was not logged after the acquisition of the line.

D. Results and Recommendations

D.1 Chart Comparison

A comparison was made between survey H12813 and chart 16005_1 using Caris soundings and contours derived from the 2 meter combined surface. The contours and soundings were overlaid on the chart to assess differences. All data from H12813 should supersede charted data due to the higher resolution of charted data and the sparsity of soundings from previous surveys of the area. A 1-2 fathom difference was found over the current sounding in the NE section of the sheet and a 3-4 fathom difference was found on the currently charted sounding in the NW section.

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
16005	1:700000	15	10/2014	03/10/2015	03/07/2015

Table 13: Largest Scale Raster Charts

16005

The soundings from H12813 generally agreed within 1 to 2 fathoms with the 2 charted depths on chart 16005 that fall within the survey limits of H12813. Figures 32 and 33 show the graphical overview of the soundings over the survey area. It is recommended that additional soundings be added to the chart due to sounding sparsity in the region.
Figure 29 shows a proposed 10 fathom best fit contour line based on the 10 fathom contour lines calculated by Caris. Figures 30 and 31 show the discrepancy between the currently charted 10 fathom contour line and what was calculated in Caris. This discrepancy reaches up to a 2100 meter offset from what is charted (Figure 31). It is recommended that the 10 fathom contour line be updated to better represent the 10 fathom best fit contour line seen in Figure 29.

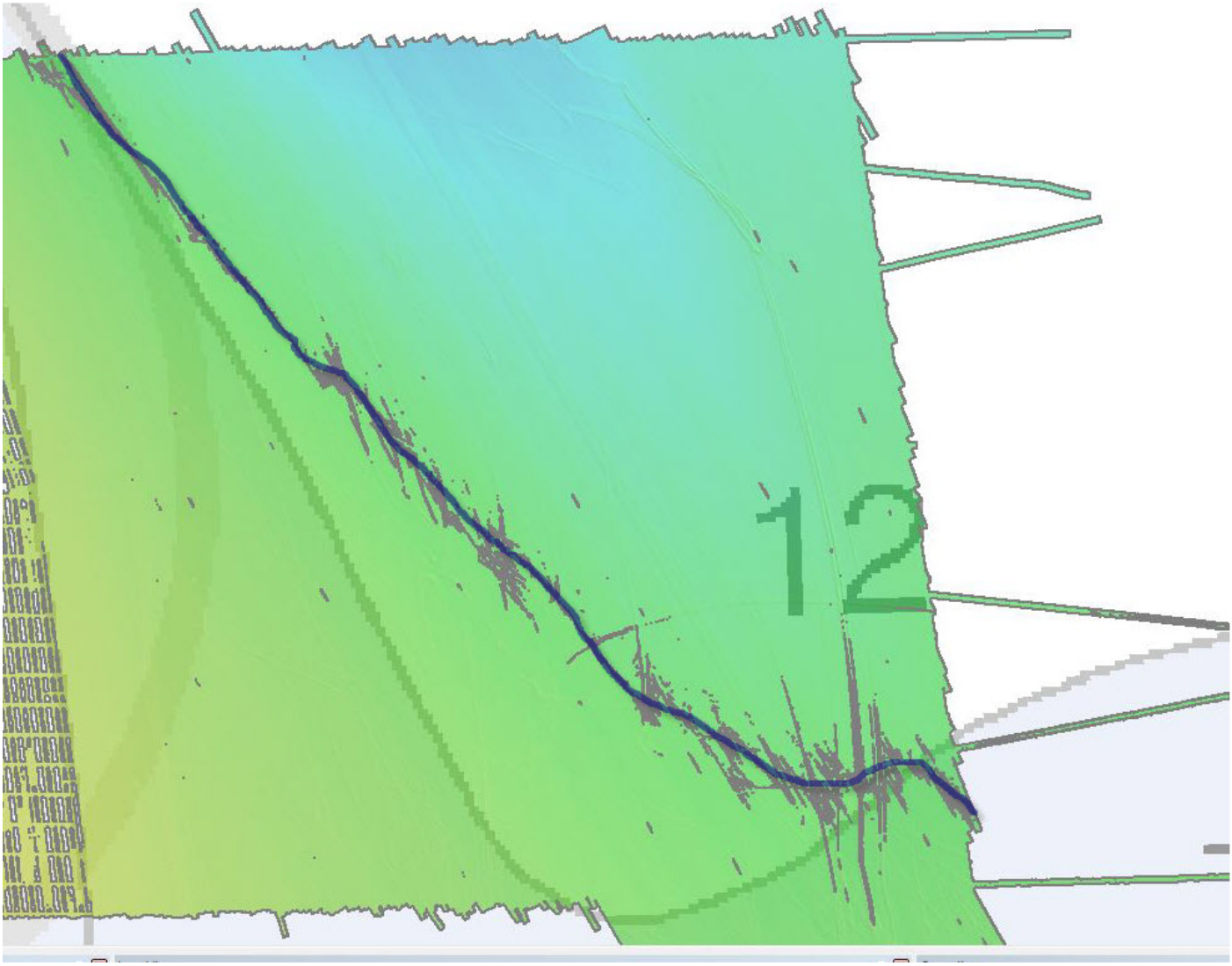


Figure 29: 10 fathom contour lines (grey lines) as calculated in Caris with a best fit line drawn over top of a recommended new 10 fathom contour (blue line)

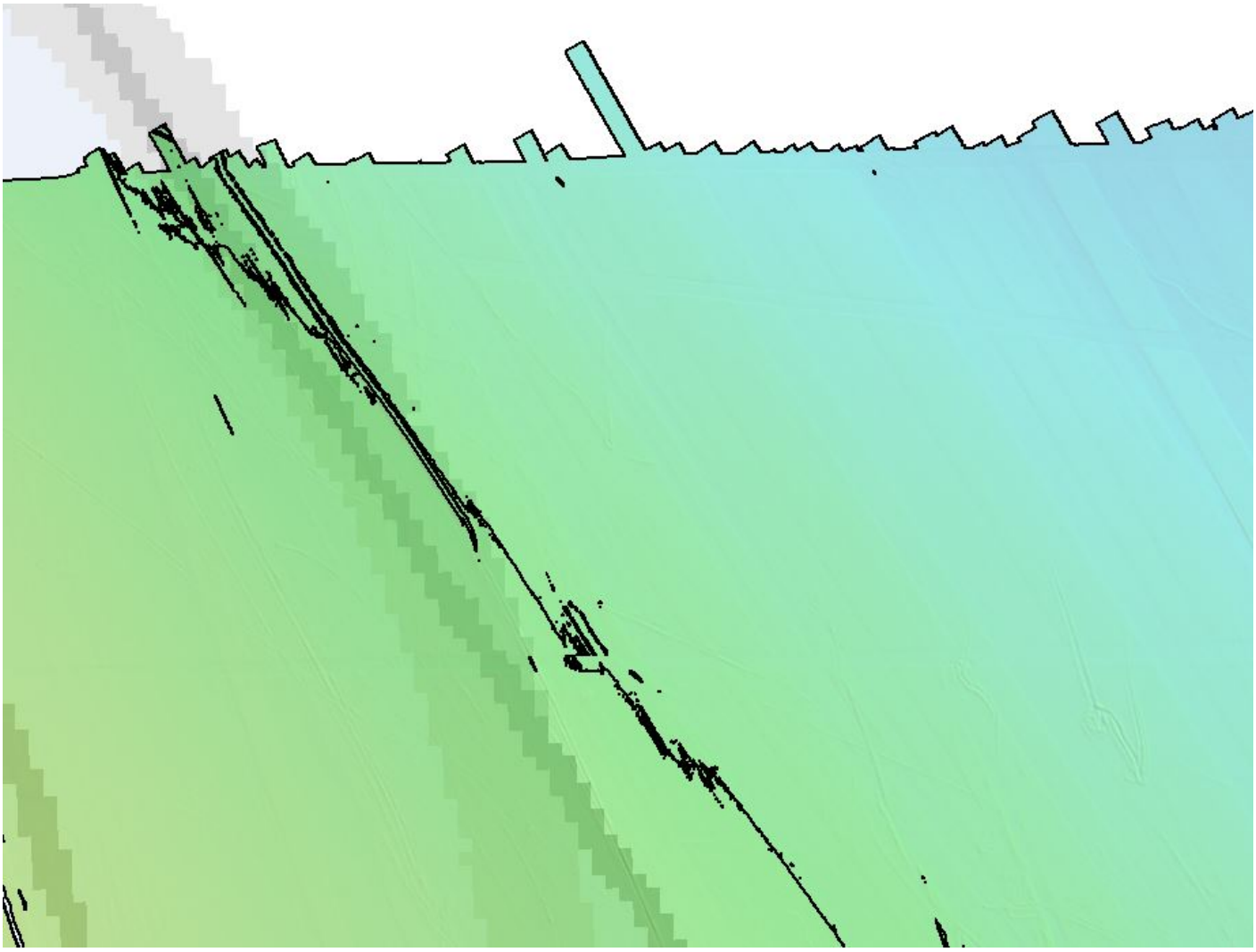


Figure 30: NW section 10 fathom contour differencing with the light grey line showing the current 10 fathom contour line on chart 16005

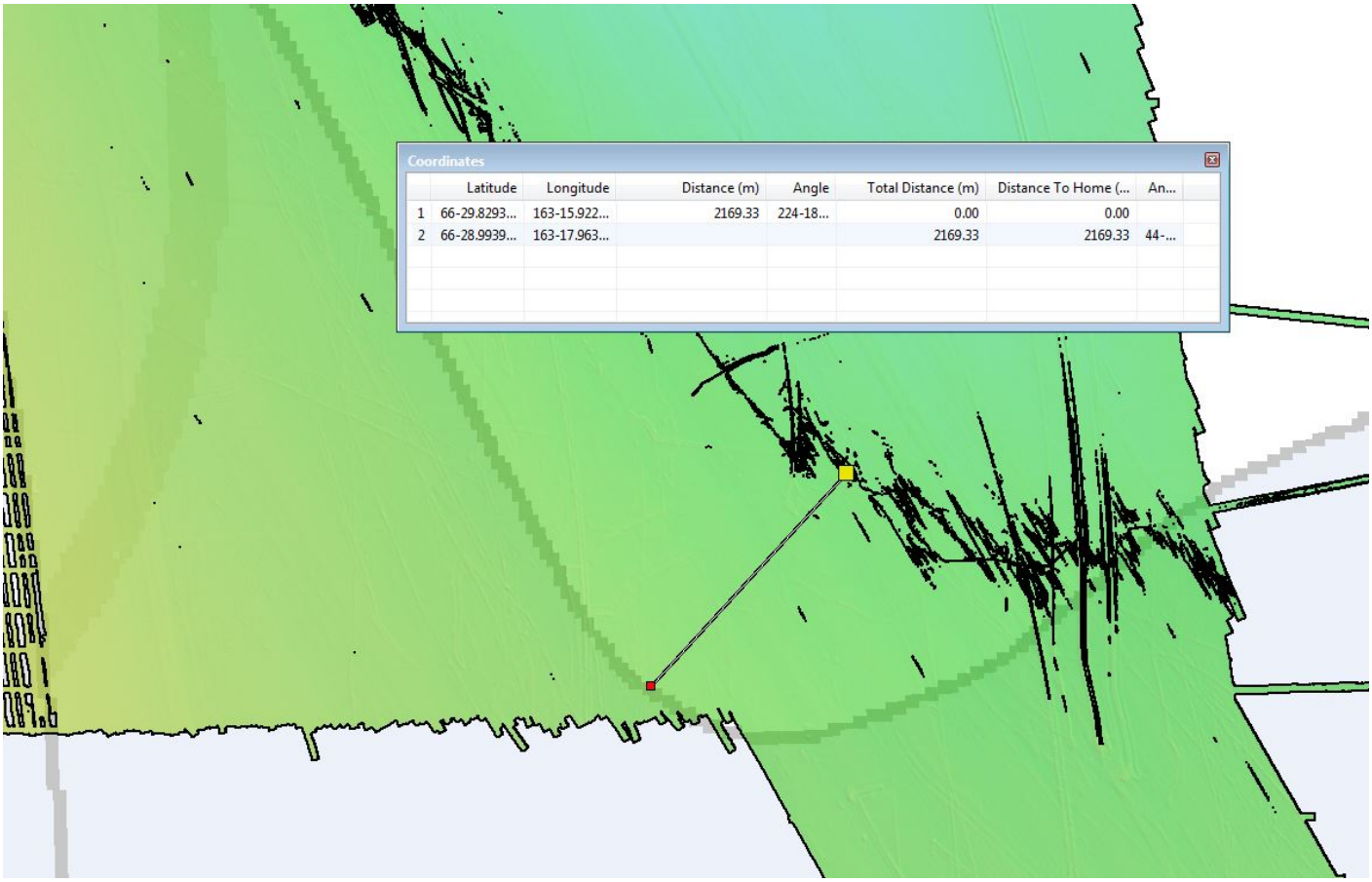


Figure 31: 10 fathom contour differencing with the maximum distance of 2169 meters from the current charted 10 fathom line to the measured 10 fathom line.

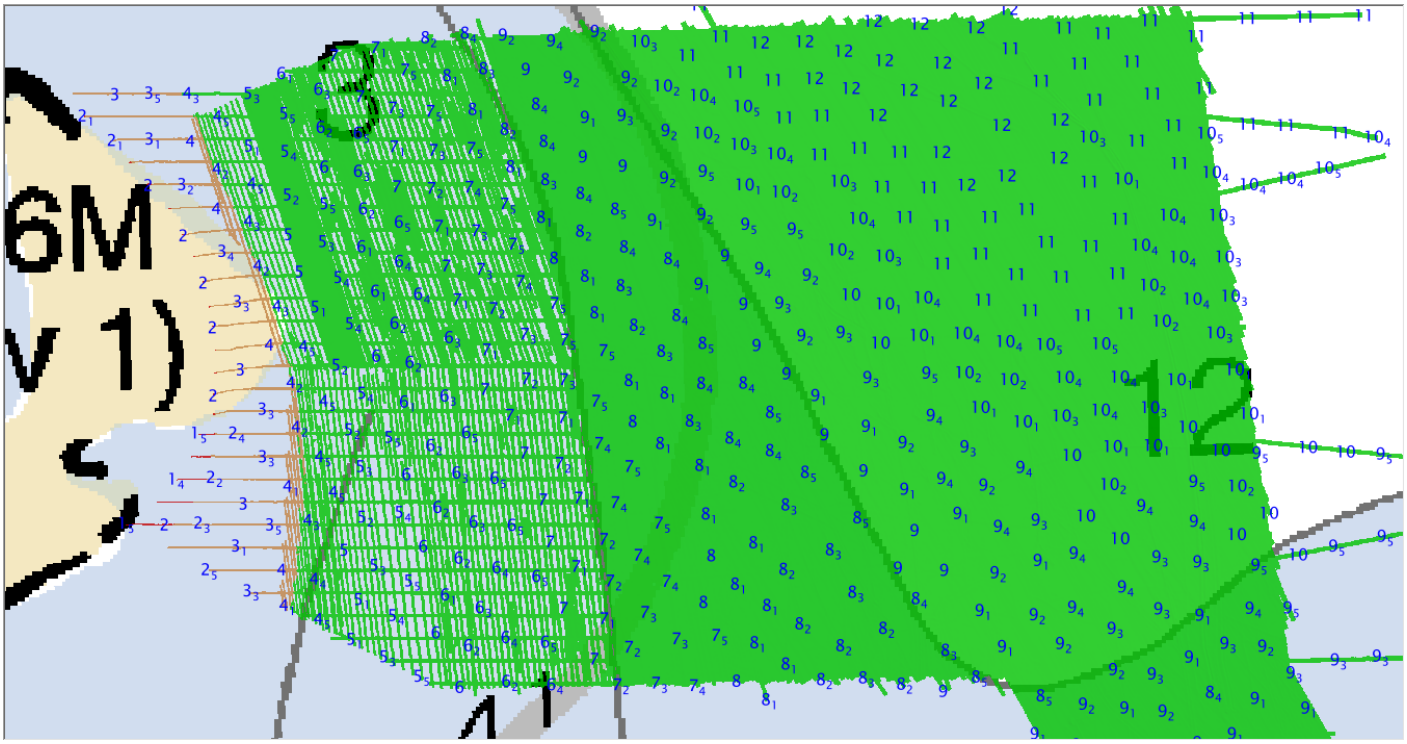


Figure 32: Overview of the Northern section of H12813 with soundings in fathoms overlaid on Chart 16005

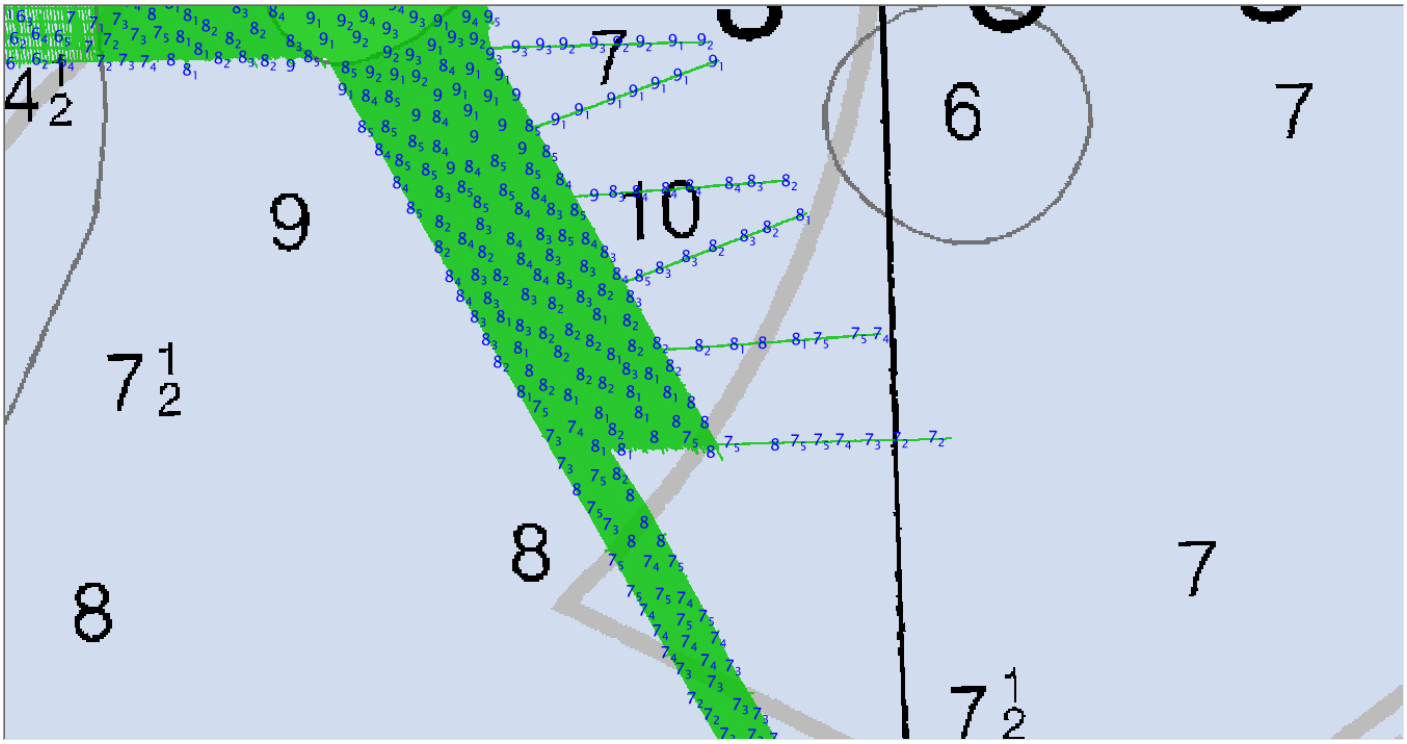


Figure 33: Overview of the Southern section of H12813 with soundings in fathoms overlaid on Chart 16005

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?
US2AK92M	1:700000	7	05/02/2011	11/13/2013	NO

Table 14: Largest Scale ENCs

US2AK92M

The ENC chart matches the raster chart 16005 for both soundings and contours within the sheet limits.

D.1.3 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.4 Charted Features

No charted features exist for this survey.

D.1.5 Uncharted Features

No uncharted features exist for this survey.

D.1.6 Dangers to Navigation

No Danger to Navigation Reports were submitted for this survey.

D.1.7 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey.

D.1.8 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.1.9 Bottom Samples

Three bottom samples were collected for H12813. Two bottom samples were collected in the area that was originally assigned to sheet 3 and an additional bottom sample was collected in the area that was previously assigned to sheet 4 in the SE area that became the priority corridor.

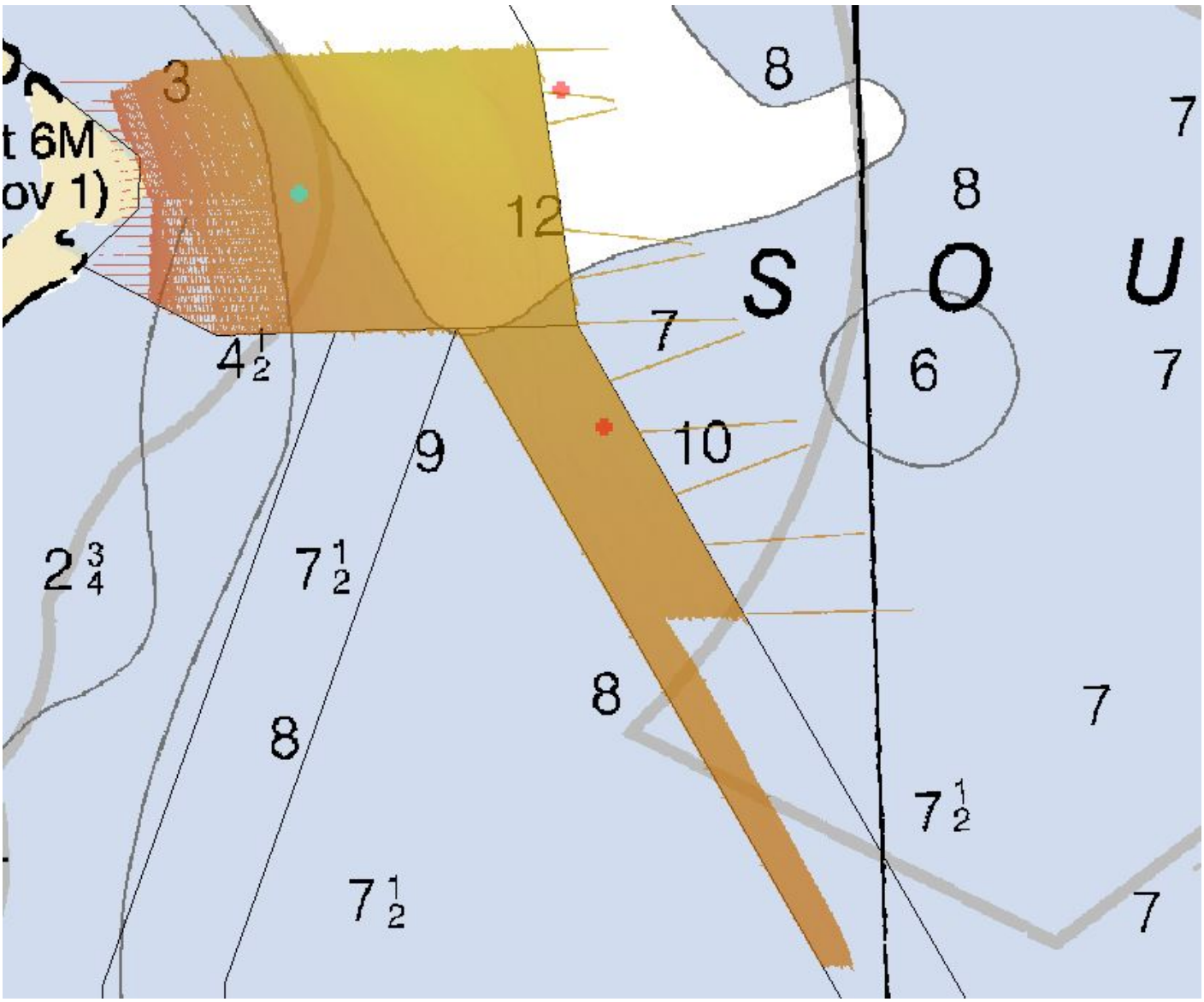


Figure 34: H12813 bottom sample locations

D.2 Additional Results

D.2.1 Shoreline

Shoreline was not assigned in the Hydrographic Survey Project Instructions or Statement of Work.

D.2.2 Prior Surveys

Prior survey comparisons exist for this survey, but were not investigated.

D.2.3 Aids to Navigation

No Aids to navigation (ATONs) exist for this survey.

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

Ice Scours exist throughout the survey area with the most prominent ice scour and banks in the NE section of the survey. These are created yearly when Kotzebue Sound freezes in the winter meaning that the ice scour locations can change based on that year's ice flow. The average distance between the surrounding depths and the center of the ice scour is less than 1 meter with a less than 0.5 meter lip of the ice scour where the soil was pushed upwards. Data fliers surrounding the ice scours may exist outside of the TPU but due to the transient nature and size of the scours the features pose no threat to mariners that operate in the area.

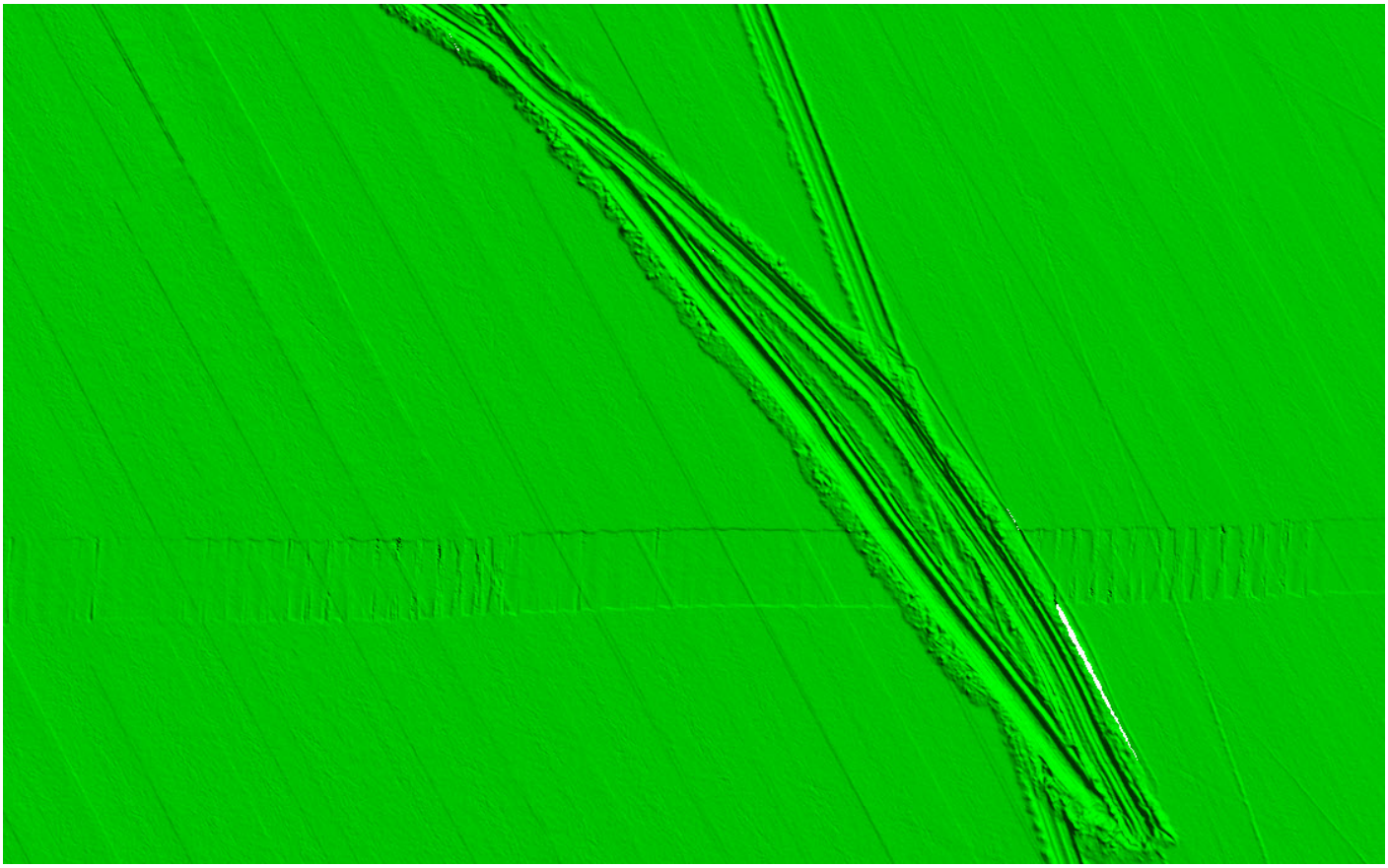


Figure 35: An example of an ice scour in the NE section of the sheet

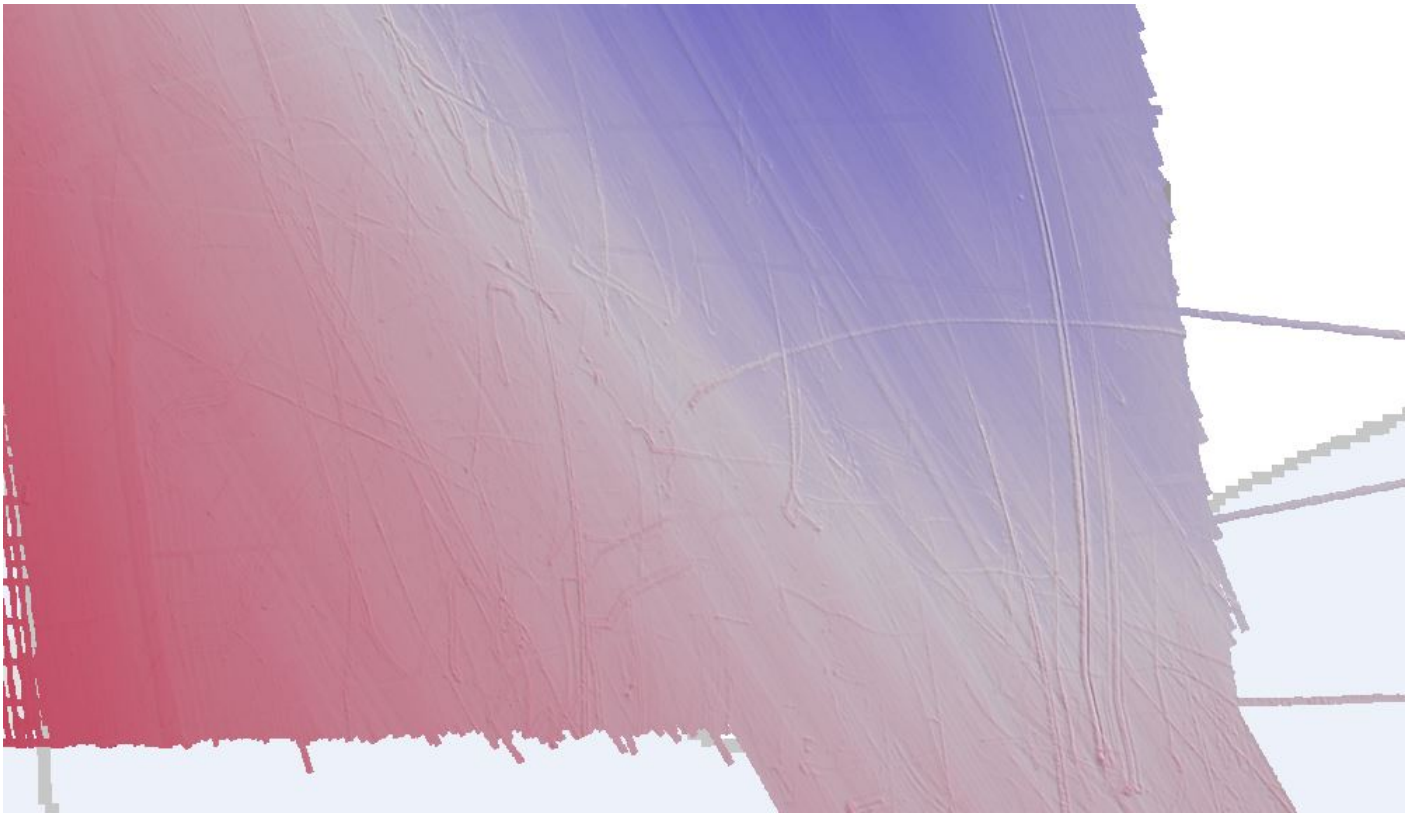


Figure 36: Ice scours in the Northern section of the sheet

Data fliers were rejected from H12813 in accordance with the 2015 HSSDM section 5.2.1.2 during review at the Pacific Hydrographic Branch. The depths of ice scour features are adequately represented in the bathymetry that was submitted as part of H12813. Uncertainty standards were met and are discussed in section B.2.9 of the Descriptive Report.

D.2.9 Construction and Dredging

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

D.2.10 New Survey Recommendation

No new surveys or further investigations are recommended for this area.

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	2016-04-21
Horizontal and Vertical Control Report	2016-04-14
Coast Pilot Report	2016-04-21
ERS Capability Memorandum	2016-04-20

Approver Name	Approver Title	Approval Date	Signature
CDR David J. Zezula	Chief of Party	04/07/2016	ZEZULA.DAVID.J.1097241836 2016.04.27 20:36:09 -07'00'
LT Matthew M. Forney	Field Operations Officer	04/07/2016	FORNEY.MATTHEW.MICHAEL.1365213409 2016.04.27 15:10:46 -07'00'
HCST Douglas A. Bravo	Chief Survey Technician	04/07/2016	2016.04.27 13:39:40 -07'00'
ENS Daniel R. Devereaux	Sheet Manager	04/07/2016	Daniel Devereaux 2016.04.27 11:29:12 -07'00'

Douglas Bravo - NOAA Federal <douglas.a.bravo@noaa.gov>

OPR-S327-RAFA-15 Updated Coverage Requirements

13 messages

Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov> Fri, Jul 10, 2015 at 2:52 PM
To: CO - Rainier <CO.Rainier@noaa.gov>, "CO - Fairweather (Zezula)" <CO.Fairweather@noaa.gov>
Cc: _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST RAINIER <ChiefST.Rainier@noaa.gov>, Michael Gonsalves - NOAA Federal <Michael.Gonsalves@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <OPS.Fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <ChiefST.Fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>

Fairweather and *Rainier*,

Based on preliminary data acquired by *Fairweather* and *Rainier*, we are altering the coverage requirements for Kotzebue Sound as follows (New requirement highlighted in red):

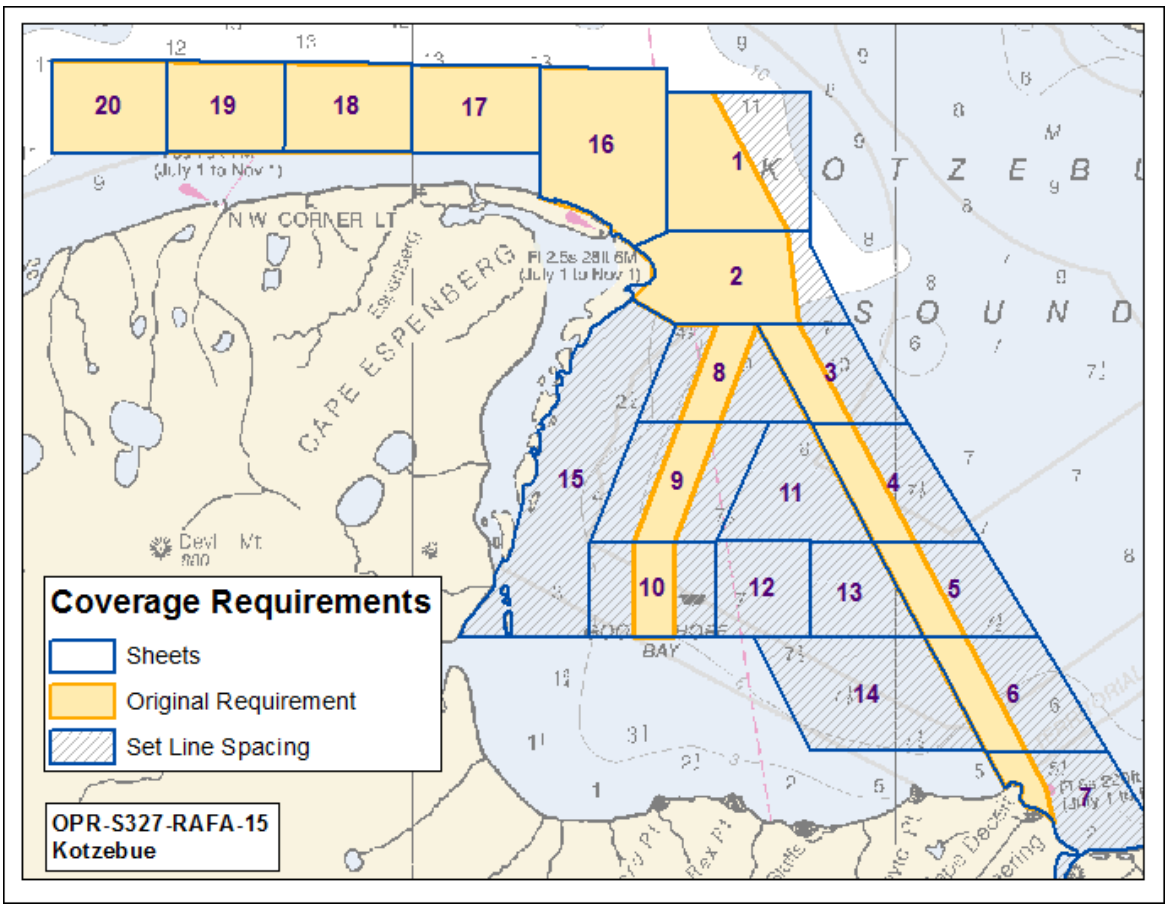
Greater than 20 meters water depth (outside of the designated set line spacing zone):
Complete MBES coverage with backscatter.

8 meters to 20 meters water depth (outside of the designated set line spacing zone):
Either 1) 100% SSS with concurrent set line spacing SBES or MBES with backscatter, or 2) complete MBES with backscatter. Note: Complete MBES is sufficient for both determination of least depth identified with SSS and for disproving a feature - 100% SSS is insufficient to disprove a feature. Refer to Section 6.1.2 of the HSSD to confirm proper SSS acquisition parameters. Gaps in SSS coverage should be treated as gaps in MBES coverage and addressed accordingly.

Inshore limit to 8 meters water depth OR in the designated set line spacing zone:
No greater than 300 meter Set Line Spacing SBES or MBES with backscatter. Please ensure the following: 1) Indications of shoaling falling between set line spacing main scheme lines must be investigated 2) Set Line Spacing Line orientation should be approximately perpendicular to isobaths whenever possible.

Attached is a shapefile designating the boundary for the set line spacing zone.

Thank you,
Starla Robinson



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Starla D. Robinson, Physical Scientist
NOS - OCS - HSD - Operations Branch
National Oceanic Atmospheric Administration
Office: 301-713-7202 x125
Cell: 360-689-1431

Corridor_Line_0710.zip
5K

Douglas Bravo - NOAA Federal <ChiefST.fairweather@noaa.gov> Fri, Jul 10, 2015 at 4:02 PM
To: Daniel Devereaux - NOAA Federal <Daniel.R.Devereaux@noaa.gov>, Steven Eykelhoff <steven.j.eykelhoff@noaa.gov>, John Doroba - NOAA Federal <John.Doroba@noaa.gov>
Cc: _OMAO MOP OPS Fairweather <ops.fairweather@noaa.gov>

Sheet Managers,

Please find the new corridor shape file at:

H:\2015_Data\OPR-S327-FA-15 Kotzebue Sound\Project_Files\GIS Files\Kotz

Read below for new coverage requirements and plan as required.

Let me know if you have any question,

--
Douglas Bravo
Chief Survey Technician
NOAA Ship Fairweather (S-220)

1010 Stedman St
Ketchikan, AK 99901
Ship Cell: 907-254-2842
Iridium: 808-659-0054
Cell: 360-4501622
ChiefST.Fairweather@noaa.gov
[Quoted text hidden]

David J. Zezula <co.fairweather@noaa.gov> Sat, Jul 11, 2015 at 1:26 PM
To: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>, CO - Rainier <CO.Rainier@noaa.gov>
Cc: _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST RAINIER <ChiefST.Rainier@noaa.gov>, Michael Gonsalves - NOAA Federal <Michael.Gonsalves@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <ops.fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <chiefst.fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>

Starla,

Thought we were doing a 2nm wide corridor on sheets 17-20 also? See Attached.

DZ
[Quoted text hidden]
--

David Zezula, CDR/NOAA

Commanding Officer
NOAA Ship Fairweather (S-220)
2002 SE Marine Science Dr.
Newport, OR 97365-5229

(907) 254-2842: Ships Cell
(907) 254-2836: CO Cell
(301) 713-7779: VOIP

www.moc.noaa.gov/fa

---

image.pdf
88K

CO - Rainier <CO.Rainier@noaa.gov> Sun, Jul 12, 2015 at 11:32 AM
To: "David J. Zezula" <CO.Fairweather@noaa.gov>, Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>
Cc: _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST RAINIER <ChiefST.Rainier@noaa.gov>, Michael Gonsalves - NOAA Federal <Michael.Gonsalves@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <OPS.Fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <ChiefST.Fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>

All,

Attached is RA's coverage on Sheet 16 after 72 hours of ship operations. It's not a considerable extra effort extending 100% MBES north to the sheet limits of 16-20, so I recommend we hold fast with the original requirements in waters deeper than 20m.

Requirements inshore of the 20m contour on sheets 16-20 may be worth further consideration. Completing

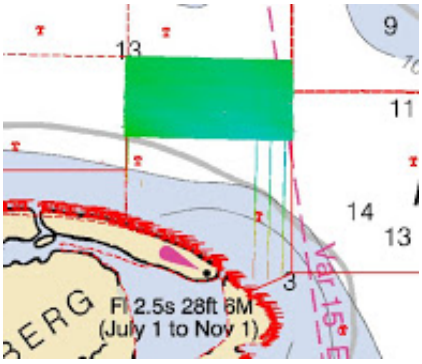
100% MBES or 100% SSS coverage in the 8-20m "ribbon" will be the most time consuming and least efficient part of these surveys. It is debatable how much value would be added to the surveys, and we have a high degree of confidence from survey results so far that we would not miss any significant shoals or features in this area by shifting to set line spacing inshore of 20m. Recommend that inshore of 20m (or perhaps 18, as that's the 10-fathom curve), coverage requirements are set line spacing no greater than 300m apart, with all shoals and features further developed. This would roughly coincide with the southern limit of FA's proposed corridor anyway.

Also, we've found to date that we can only get launches out about 50% of the time due to weather (Have yet to have launches in the water for a full day so far, out of 5 days on project this leg), so we want to be able to get the most bang for the buck when we can get boats out.

-EJ

--
CDR E.J. Van Den Ameele, NOAA
Commanding Officer, NOAA Ship Rainier
2002 SE Marine Science Drive
Newport, OR 97365
Land Line (541) 867-8770
Ship's Cell (206) 660-8747
At sea: (301) 713-7771

[Quoted text hidden]



H12827.JPG
54K

David J. Zezula <co.fairweather@noaa.gov> Sun, Jul 12, 2015 at 1:18 PM
To: CO - Rainier <CO.Rainier@noaa.gov>, Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>
Cc: _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST RAINIER <ChiefST.Rainier@noaa.gov>, Michael Gonsalves - NOAA Federal <Michael.Gonsalves@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <ops.fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <chiefst.fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>

My only concern it that AIS Data show's that coastal traffic is cutting the corner inside the 20m curve. If the intent of our survey is to provide marine traffic with a full bottom corridor it seems we should be doing that where they are already transiting. 8-20 m on sheet 2 and 16 is going to be a significant effort, but I don't see a way around it and still provide the mariner CATZOC A.

DZ
[Quoted text hidden]

Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov> Mon, Jul 13, 2015 at 9:11 AM
To: "David J. Zezula" <CO.Fairweather@noaa.gov>
Cc: CO - Rainier <CO.Rainier@noaa.gov>, _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST RAINIER <ChiefST.Rainier@noaa.gov>, Michael Gonsalves - NOAA Federal

<Michael.Gonsalves@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <OPS.Fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <ChiefST.Fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>

We are discussing our options, including your proposed corridor.
[Quoted text hidden]

Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov> Mon, Jul 13, 2015 at 1:05 PM
To: "David J. Zezula" <CO.Fairweather@noaa.gov>
Cc: CO - Rainier <CO.Rainier@noaa.gov>, _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST RAINIER <ChiefST.Rainier@noaa.gov>, Michael Gonsalves - NOAA Federal <Michael.Gonsalves@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <OPS.Fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <ChiefST.Fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>, Jacklyn James - NOAA Federal <Jacklyn.C.James@noaa.gov>

Hello Fairweather and Rainier,

We are planning to amend the coverage requirements to focus on complete coverage corridors, and drop the 300m line spacing outside of sheets 1, 2, and 16.

Sheets 1, 2, and 16 cover the point of Cape Espenberg. As an area of converging traffic we intend to retain the coverage requirements as stated in the previous email. Our primary objective after that is to acquire the corridors for the North, Deering, and Good Hope Bay.

The Fairweathers next leg (Clarence or Kotzebue) will be determined by how much we get done in Kotzebue this leg. Given the weather constraints it will be hard to predict the progress we can achieve on the launch sheets.

I will have another shapefile with a 2nm corridor for sheets 17 through 20, soon.

Thank you for your flexibility on this project,
Starla

On Sun, Jul 12, 2015 at 4:18 PM, David J. Zezula <co.fairweather@noaa.gov> wrote:
[Quoted text hidden]
[Quoted text hidden]

Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov> Tue, Jul 14, 2015 at 7:13 AM
To: "David J. Zezula" <CO.Fairweather@noaa.gov>
Cc: CO - Rainier <CO.Rainier@noaa.gov>, _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST RAINIER <ChiefST.Rainier@noaa.gov>, Michael Gonsalves - NOAA Federal <Michael.Gonsalves@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <OPS.Fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <ChiefST.Fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>, Jacklyn James - NOAA Federal <Jacklyn.C.James@noaa.gov>

CO's,

Based on present acquisition rates, and with consultation with the navigation manager we are refining the priorities on the Kotzebue Project. Specifically we wish to 1) develop transit corridors within sheets 17 -20, 3-7, and 8-10; 2) develop the shoal around Cape Espenberg in sheets 1, 2 and 16; and 3) forego the 300 meter line

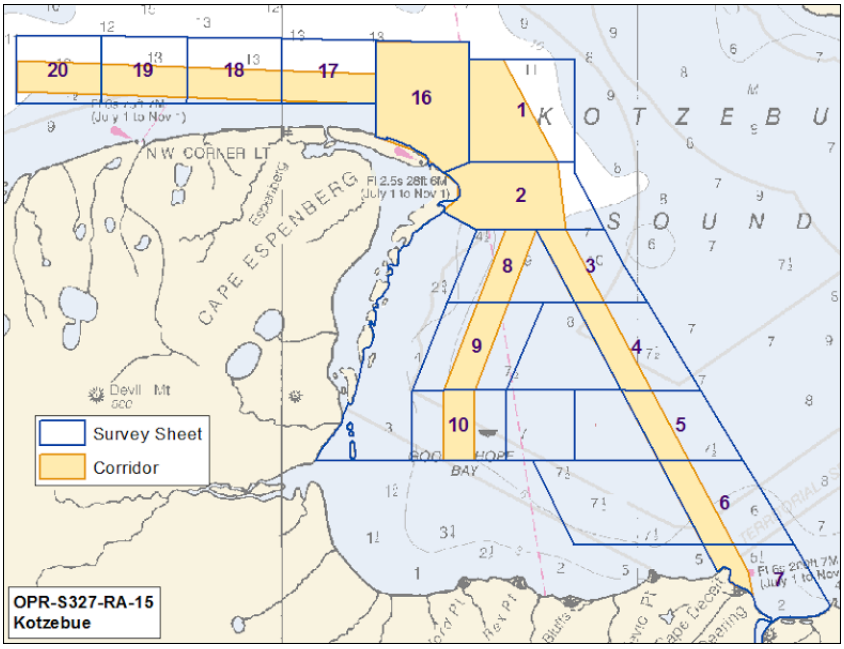
spacing zones outside the preceding areas.

When launch operations are untenable the ships may survey outside the corridors.

Sheets 19 and 20 are dependent on a tide gauge that will be removed 7/30. So while COOPS feel they can resolve vertical control without the gauge, they cannot speak towards the accuracy at this point in time. If possible we would like the Rainier to prioritize the corridor in sheets 19 and 20 for this leg.

These are our latest thoughts on the matter. Does this make sense from the field's perspective?

Thank you,
Starla



[Quoted text hidden]

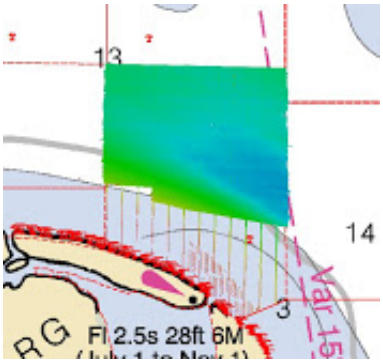
CO - Rainier <CO.Rainier@noaa.gov> Tue, Jul 14, 2015 at 7:42 AM
To: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>, "David J. Zezula" <CO.Fairweather@noaa.gov>
Cc: _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST RAINIER <ChiefST.Rainier@noaa.gov>, Michael Gonsalves - NOAA Federal <Michael.Gonsalves@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <OPS.Fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <ChiefST.Fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>, Jacklyn James - NOAA Federal <Jacklyn.C.James@noaa.gov>

Hi Starla,

What is the relationship between Sheet 16 and the gauge being removed 7/30? Is that gauge 94B-BBBB?

RA anticipated needing most of our time on project this leg (between now and our ~7/19 departure from the project area) to complete sheet 16. See attached for completion as of this morning. We have pretty much completed what we can with the ship; today we are deploying launches to start the 100% SSS requirement in the 8-20m zone, as well as continue mainscheme set line spacing in the 4-8m zone.

-EJ
[Quoted text hidden]



H12827_DN195.JPG
65K

Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov> Tue, Jul 14, 2015 at 8:17 AM
To: "David J. Zezula" <CO.Fairweather@noaa.gov>
Cc: CO - Rainier <CO.Rainier@noaa.gov>, _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST RAINIER <ChiefST.Rainier@noaa.gov>, Michael Gonsalves - NOAA Federal <Michael.Gonsalves@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <OPS.Fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <ChiefST.Fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>, Jacklyn James - NOAA Federal <Jacklyn.C.James@noaa.gov>

Attached is the corridor shapefile.

Thanks,
Starla
[Quoted text hidden]

Corridor_Poly_0714.zip
3K

Michael Gonsalves - NOAA Federal <Michael.Gonsalves@noaa.gov> Tue, Jul 14, 2015 at 8:37 AM
To: CO - Rainier <CO.Rainier@noaa.gov>
Cc: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>, "David J. Zezula" <CO.Fairweather@noaa.gov>, _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST RAINIER <ChiefST.Rainier@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <OPS.Fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <ChiefST.Fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>, Jacklyn James - NOAA Federal <Jacklyn.C.James@noaa.gov>

CDR Van Den Ameele,

Sheet 16 is also dependent on Gauge B, but not *as* dependent as 19 and 20. I understand your desire to complete 16. Please continue as you were until I can get clarification from CO-OPS.

Very respectfully,
~~ michael.gonsalves, LCDR/NOAA
HSD Operations Branch, Chief
[Quoted text hidden]

Michael Gonsalves - NOAA Federal <Michael.Gonsalves@noaa.gov> Tue, Jul 14, 2015 at 9:06 AM
To: CO - Rainier <CO.Rainier@noaa.gov>
Cc: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>, "David J. Zezula" <CO.Fairweather@noaa.gov>, _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST

RAINIER <ChiefST.Rainier@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <OPS.Fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <ChiefST.Fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>, Jacklyn James - NOAA Federal <Jacklyn.C.James@noaa.gov>

Hello again CDR Van Den Ameele,

Please continue with your plan to address Sheet 16.

Sheets 16-20 all benefit from water level data from Gauge B. The farther west we go, the greater the benefit. This is not to say it will be impossible to resolve water levels without that gauge.

Give us a shout when you're thinking of moving on from Sheets 8 or 16.

Very respectfully,
~~ michael.gonsalves, LCDR/NOAA
HSD Operations Branch, Chief.

[Quoted text hidden]

CO - Rainier <CO.Rainier@noaa.gov> Tue, Jul 14, 2015 at 9:39 AM
To: Michael Gonsalves - NOAA Federal <Michael.Gonsalves@noaa.gov>
Cc: Starla Robinson - NOAA Federal <Starla.Robinson@noaa.gov>, "David J. Zezula" <CO.Fairweather@noaa.gov>, _OMAO MOP OPS Rainier <OPS.Rainier@noaa.gov>, _OMAO MOP ChiefST RAINIER <ChiefST.Rainier@noaa.gov>, Kathryn Pridgen - NOAA Federal <Kathryn.Pridgen@noaa.gov>, Eric Berkowitz - NOAA Federal <Eric.W.Berkowitz@noaa.gov>, Megan Greenaway - NOAA Federal <Megan.Greenaway@noaa.gov>, Corey Allen - NOAA Federal <Corey.Allen@noaa.gov>, Katrina Wyllie - NOAA Federal <Katrina.Wyllie@noaa.gov>, _OMAO MOP OPS Fairweather <OPS.Fairweather@noaa.gov>, Douglas Bravo - NOAA Federal <ChiefST.Fairweather@noaa.gov>, Timothy Smith - NOAA Federal <Timothy.M.Smith@noaa.gov>, Jacklyn James - NOAA Federal <Jacklyn.C.James@noaa.gov>

Mike-

Roger that, thanks. Our current plan then is to try to wrap up sheet 16, then assess what we could complete with any days remaining, and touch base with HSD to decide if we move to 19 or continue working on 8.

Food for thought: after a few visits to NW Corner for our HorCon station, we feel it may be a viable site for a shore-based bubbler gauge. It gets deep enough just offshore for an orifice, the tide range is slight, and the shoreline is a little rocky at that location. Not sure exactly where Station B is located but it appears to be very close to NW Corner ("9 miles west of Espenberg River"). If so, we could potentially utilize the benchmarks already installed by JOA and possibly replace their BMP gauge with one of our bubbler gauges to maintain vertical control for sheets 16-20 past 7/30.

Landing there has been a challenge - I think we've had a 50% success ratio (3 out of 6 attempts), but we have had good days where landing has been easy.

Thanks
-EJ

--
CDR E.J. Van Den Ameele, NOAA
Commanding Officer, NOAA Ship Rainier
2002 SE Marine Science Drive
Newport, OR 97365
Land Line (541) 867-8770
Ship's Cell (206) 660-8747
At sea: (301) 713-7771

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : January 28, 2016

HYDROGRAPHIC BRANCH: Alaska
HYDROGRAPHIC PROJECT: OPR-S327-FA-2015
HYDROGRAPHIC SHEET: H12813

LOCALITY: Entrance to Goodhope Bay, Kotzebue Sound, AK
TIME PERIOD: June 25 - August 13, 2015

TIDE STATION USED: 9491094 Red Dog Dock, AK
Lat.67° 34.6' N Long. 164° 03.9' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.240 meters

TIDE STATION USED: 9490424 Kotzebue, AK
Lat. 66° 54.3' N Long. 162° 35.0' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.192 meters

TIDE STATION USED: 9490096 Cape Espenberg, AK
Lat. 66° 35.1' Long. 164° 15.06'
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.270 meters

TIDE STATION USED: 9469833 Goodhope Bay, AK
Lat. 66° 13.8' Long. 163° 54.3'
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.477 meters

REMARKS: RECOMMENDED Grid

Please use the TCARI grid "S327FARA2015_Final.tc" as the final grid for project OPR-S327-FA-2015, H12813, during the time period between June 25 and August 13, 2015.

Refer to attachments for grid 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: Tidal datums at Goodhope Bay and Cape Espenberg are provisional due to higher uncertainties resulting from either a lack of benchmarks or data processing that accounted for gauge slippage events.

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: 2016.01.28 13:08:56 -05'00'

CHIEF, PRODUCTS AND SERVICES BRANCH


Final TCARI Grid for OPR-S327-RA-2015, H12813
Entrance to Goodhope Bay, Kotzebue Sound, AK
2491094 RED DOG DOCK
9490424 KOTZEBUE
9490096 CAPE ESPENBERG
9469833 GOODHOPE BAY
bing
Image courtesy of NASA Earthstar Geographics SIO © 2016 Microsoft Corporation

APPROVAL PAGE

H12813

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

- H12813 _DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12813 _GeoImage.pdf

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

Digitally signed by HOLMBERG.PETER.SCOTT.1365886101
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=HOLMBERG.PETER.SCOTT.1365886101
Date: 2016.11.15 09:48:41 -08'00'

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.

FROELICH.GRANT.DANIEL.1272192509
2016.11.09 08:20:40 -08'00'

Approved:_____

Grant Froelich, NOAA
Physical Scientist, Pacific Hydrographic Branch

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 Propagated 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