

H12319

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H12319

LOCALITY

State(s): Alaska

General Locality: Kodiak Island

Sub-locality: Eastern Portion of Marmot Bay

2012

CHIEF OF PARTY
CDR James M. Crocker, NOAA

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H12319

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: **Kodiak Island**

Sub-Locality: **Eastern Portion of Marmot Bay**

Scale: **40000**

Dates of Survey: **06/27/2012 to 09/27/2012**

Instructions Dated: **06/04/2012**

Project Number: **OPR-P136-FA-12**

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

Chief of Party: **CDR James M. Crocker, 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:

Horizontal Coordinate System: UTM Zone 5N. 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. Revisions and end notes in red were generated during office processing. The processing branch concurs with all information and recommendations in the DR unless otherwise noted. Page numbering may be interrupted or non sequential. All pertinent records for this survey, including the Descriptive Report, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via <http://www.ngdc.noaa.gov/>.

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Descriptive Report to Accompany Survey H12319

Project: OPR-P136-FA-12

Locality: Kodiak Island

Sublocality: Eastern Portion of Marmot Bay

Scale: 1:40000

June 2012 - September 2012

NOAA Ship *Fairweather*

Chief of Party: CDR James M. Crocker, NOAA

A. Area Surveyed

The survey area is located on the north coast of Kodiak Island, within the sub-locality of Marmot Bay.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
58° 4" 1.2' N 152° 2" 38.4' W	58° 0" 46.8' N 152° 11" 38.4' W

Table 1: Survey Limits

No shoreline features were present within the bounds of this survey.

A.2 Survey Purpose

The purpose of this survey is to provide contemporary data to update National Ocean Service (NOS) nautical charting products. This survey will cover approximately 42 square nautical miles of emerging critical and category one areas as identified in the 2011 NOAA Hydrographic Survey Priorities (NHSP).

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

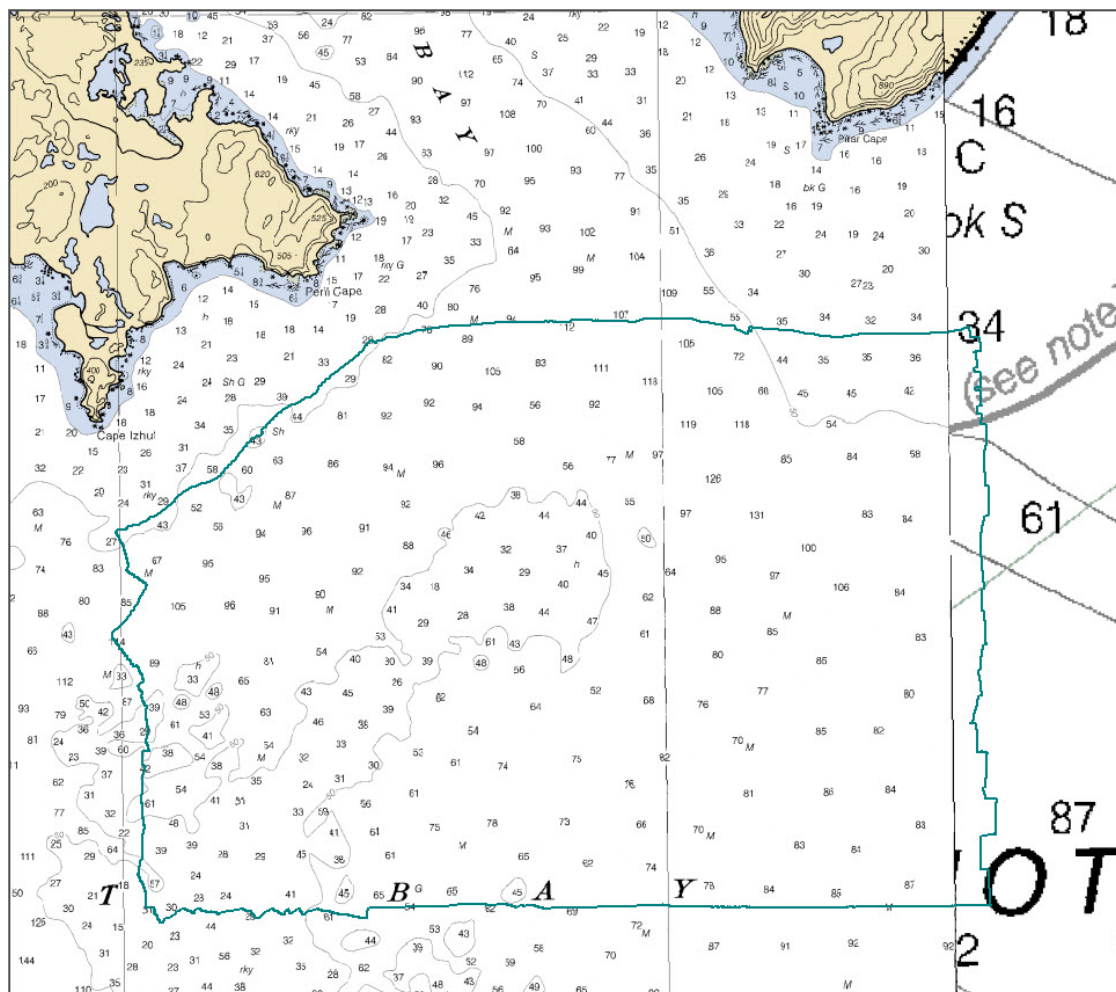


Figure 1: H12319 Survey Outline

Survey Coverage was in accordance with the requirements in the Project Instructions and the HSSD.

A.5 Survey Statistics

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

	HULL ID	<i>s220</i>	<i>Total</i>
LNM	SBES Mainscheme	0.00	0.00
	MBES Mainscheme	313.62	313.62
	Lidar Mainscheme	0.00	0.00
	SSS Mainscheme	0.00	0.00
	SBES/MBES Combo Mainscheme	0.00	0.00
	SBES/SSS Combo Mainscheme	0.00	0.00
	MBES/SSS Combo Mainscheme	0.00	0.00
	SBES/MBES Combo Crosslines	19.10	19.10
	Lidar Crosslines	0.00	0.00
Number of Bottom Samples			0
Number AWOIS Items Investigated			0
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Items Investigated by Dive Ops			0
Total Number of SNM			41.1

Table 2: Hydrographic Survey Statistics

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

Survey Dates	Julian Day Number
06/27/2012	179
06/28/2012	180
09/06/2012	250
09/13/2012	257
09/14/2012	258
09/18/2012	262
09/20/2012	264

Table 3: Dates of Hydrography

6.1% of crosslines were obtained.

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	S220
LOA	70.4 meters
Draft	4.7 meters

Table 4: Vessels Used

B.1.2 Equipment

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

Manufacturer	Model	Type
Reson	7111	MBES
Brooke Ocean	MVP 200	Sound Speed System
Reson	SVP 70	Sound Speed System
Applanix	POS/MV V4	Positioning and Attitude System
SeaBird	SBE 19plus	Conductivity, Temperature and Depth Sensor

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Crosslines, acquired for this survey, totalled 6.1% of mainscheme acquisition.

The surface differencing tool in CARIS HIPS was used to assess agreement with crosslines and mainscheme lines. Figure 2 depicts the difference surface between the 16-meter mainscheme surface and a 16-meter crossline only surface. This difference surface is submitted digitally in the Separates II folder. 95% of the soundings agree within +/- 0.82 meters. The greatest differences between the two surfaces are in areas when the sea floor is sloping.

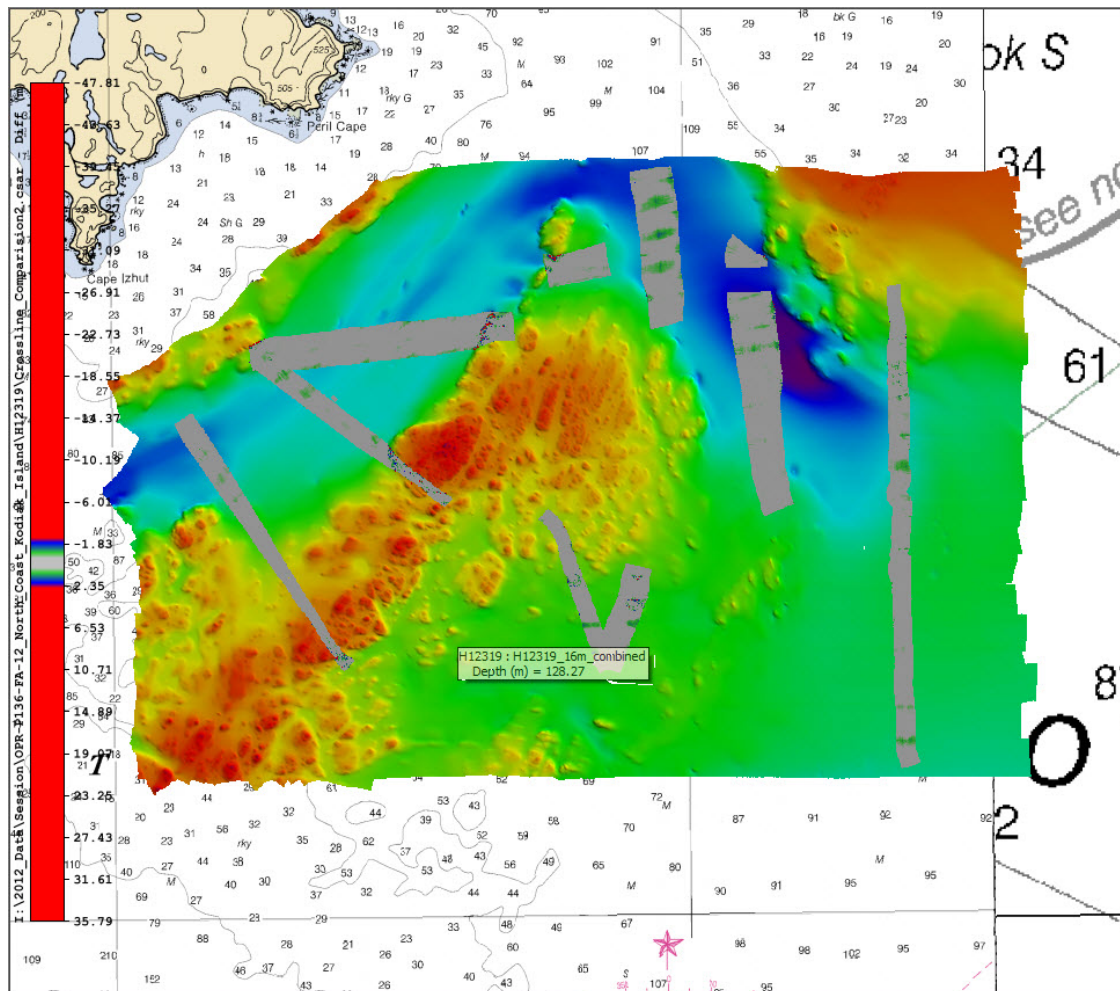


Figure 2: Grey indicates 0.5 m agreement, green indicates 0.5 m to 1.0 m agreement, blue indicates 1.00 m to 2.0 m agreement, red indicates greater than 2.0 m agreement.

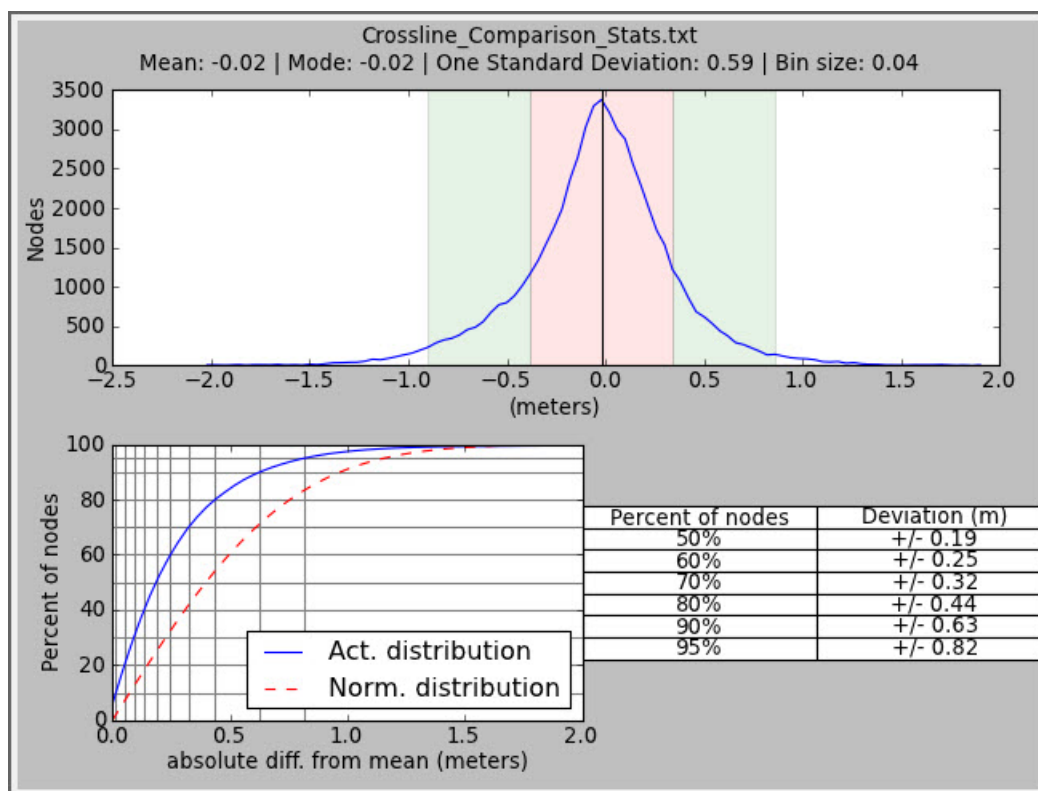


Figure 3: Mainscheme and crossline surface differencing statistics.

Data is adequate for charting.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning
0.01 meters	0.071 meters

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
S220	4 meters/second	1 meters/second	0.5 meters/second

Table 7: Survey Specific Sound Speed TPU Values

B.2.3 Junctions

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H12320	1:40000	2011	NOAA Ship FAIRWEATHER	S
H12318	1:40000	2012	NOAA Ship FAIRWEATHER	W

Table 8: Junctioning Surveys

H12320

The areas of overlap between H12318 and H12320 were reviewed in CARIS Subset Editor for discrepancies and by surface differencing 16 meter combined surfaces in CARIS HIPS. 95% of the data was found to be within +/- 1.86 meter.

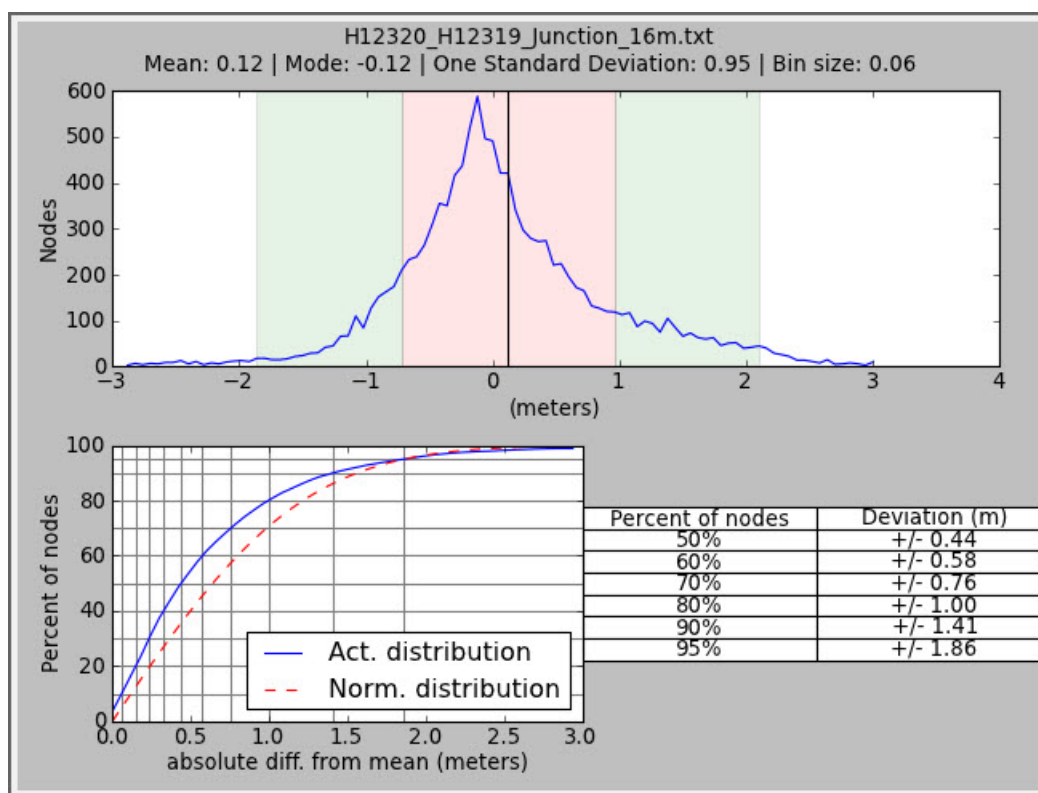


Figure 4: H12320 and H12319 surface differencing statistics.

H12318

The areas of overlap between H12318 and H12320 were reviewed in CARIS Subset Editor for discrepancies and by surface differencing 16 meter combined surfaces in CARIS HIPS. 95% of the data was found to be within ± 1.03 meters.

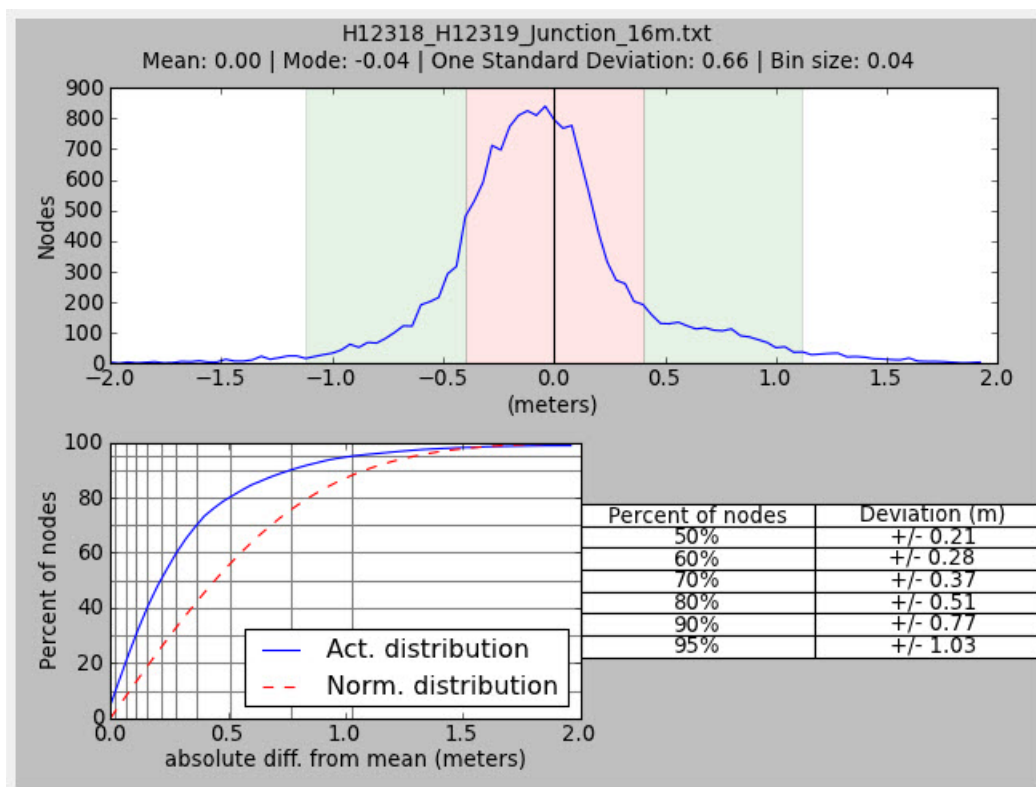


Figure 5: H12318 and H12319 surface differencing statistics.



Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

CTDs were used on DN 179, DN 250, DN 257, DN 258, DN 262, DN 264. MVP was used on DN 180. CTD casts were used due to a malfunction in the MVP.

Sound Speed

10

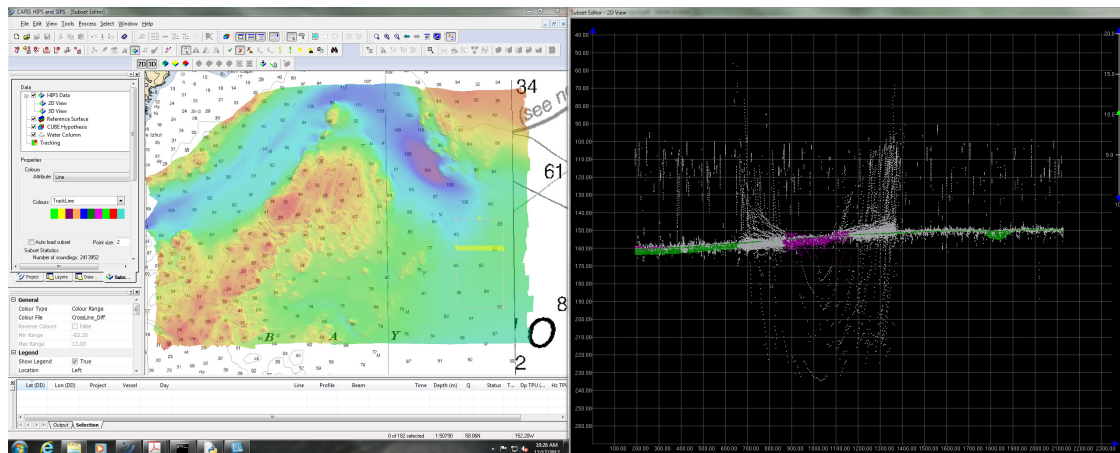


Figure 7: Sound Speed

Data is adequate for charting.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Sound speed measurement method and frequency varied through this survey. Sound speed measurements using a Seabird 19+ were conducted every 4 hours for DN 179 and DN 264, every 3 hours for DN 258 and DN 262, and every hour for DN 250 and DN 257. Sound speed measurements using the MVP were conducted every 30 minutes on DN 180.

B.2.8 Coverage Equipment and Methods

MBES was used to meet complete coverage requirements.

B.2.9 IHO Uncertainty

In depths of 100 meters or less the Reson 7111 system does not meet IHO order 1 data accuracy specifications as stated in the NOS Hydrographic Survey Specifications and Deliverables (HSSD) dated April 2012. The Reson 7111 system is still being investigated as to why the data is not meeting IHO order 1 specifications. All data does meet IHO Order 2 and is sufficient to supersede the chart. A child layer titled "IHO_2" was created for all surfaces using the equation as stated in section C. 2.1 of the DAPR. The resulting analysis is presented in Standards Compliance Review in Appendix V.

B.2.10 Density

Density requirements for H12319 were achieved for all finalized surfaces which contained five or more soundings per node, see Standards Compliance Review in Appendix V.

Email correspondence is appended to this report.

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

Backscatter was logged as a 7k file and submitted directly to NGDC to be archived and to PHB where the data will be processed.

B.5 Data Processing

B.5.1 Software Updates

There were no software configuration changes after the DAPR was submitted.

The following Feature Object Catalog was used: None

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
H12319_4m	CUBE	4 meters	-	NOAA_4m	Complete MBES
H12319_8m	CUBE	8 meters	-	NOAA_8m	Complete MBES
H12319_16m	CUBE	16 meters	-	NOAA_16m	Complete MBES
H12319_4m_Final_30to80	CUBE	4 meters	30 meters - 80 meters	NOAA_4m	Complete MBES

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H12319_8m_Final_72to160	CUBE	8 meters	72 meters - 160 meters	NOAA_8m	Complete MBES
H12319_16m_Final_144to320	CUBE	16 meters	144 meters - 320 meters	NOAA_16m	Complete MBES
H12319_16m_Combined	CUBE	16 meters	30 meters - 320 meters	NOAA_16m	Complete MBES

Table 9: Submitted Surfaces

All field sheet extents were adjusted using the Base 16 Calculator tool to ensure coincident nodes among all bathymetric surfaces regardless of the field sheet in which they are contained given the standard surface resolutions of four, eight, and sixteen meters. The NOAA CUBE parameters mandated in HSSD were used for the creation of all CUBE BASE surfaces in Survey H12319. The surfaces have been reviewed where noisy data, or ‘fliers’ are incorporated into the gridded solution 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 TPU at that depth, the noisy data have been rejected and the surface recomputed. All Reson 7111 data was filtered to 65 degrees off nadir on both port and starboard to remove poor quality data.

Due to one rock the four meter surface depths were extended from 36 meters to 30 meters, see correspondence in Appendix V.

B.5.3 Delta Draft

It was noted that delta draft was applied to some data lines but not others. The application of delta draft does not cause the data to be out of specifications. This is not a common practice and is still being investigated as to why this is happening.

During office processing all instances of the zero corrector file were removed, and re-processed the data to ensure the best possible correctors have been applied. In reviewing the data, there is no evidence that dynamic draft errors exist, and all surveyed depths are adequate to supersede charted depths.

C. Vertical and Horizontal Control

A HVCR was not submitted for survey H12319.

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
Kodiak Island	9457292

Table 10: NWLON Tide Stations

File Name	Status
9457292.tid	Final Approved

Table 11: Water Level Files (.tid)

File Name	Status
P926FA2012CORP.zdf	Final

Table 12: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 09/23/2012. The final tide note was received on 09/28/2012.

Preliminary zoning is accepted as the final zoning for project OPR-P136-FA-12.

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 5N.

Differential correctors from the U.S. Coast Guard beacon at Kodiak (313kHz) were used during real-time acquisition when not otherwise noted in the acquisition log. DGPS was the sole method of positioning for this survey as Smooth Best Estimate of Trajectory (SBET) files were not processed.

The following DGPS Stations were used for horizontal control:

DGPS Stations
Kodiak

Table 13: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

D.1.1 Raster Charts

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

Chart	Scale	Edition	Edition Date	LNLM Date	NM Date
16594	1:78900	13	04/1998	04/27/2010	05/08/2010
16580	1:350000	14	01/2008	08/21/2012	09/01/2012

Table 14: Largest Scale Raster Charts

16594

Generally the charted depths are shoaler than surveyed soundings by 2-7 fathoms. In a few locations the surveyed soundings were 20 fathoms shoaler than surrounding charted depths, see Figure 10. The largest discrepancy is a 57 fathom surveyed sounding in a charted 84 fathom depth. Of the discrepancies found, none are an immediate danger to navigation.

Contours generated in CARIS Bathymetry DataBase closely approximate the charted 50 fathom contour.

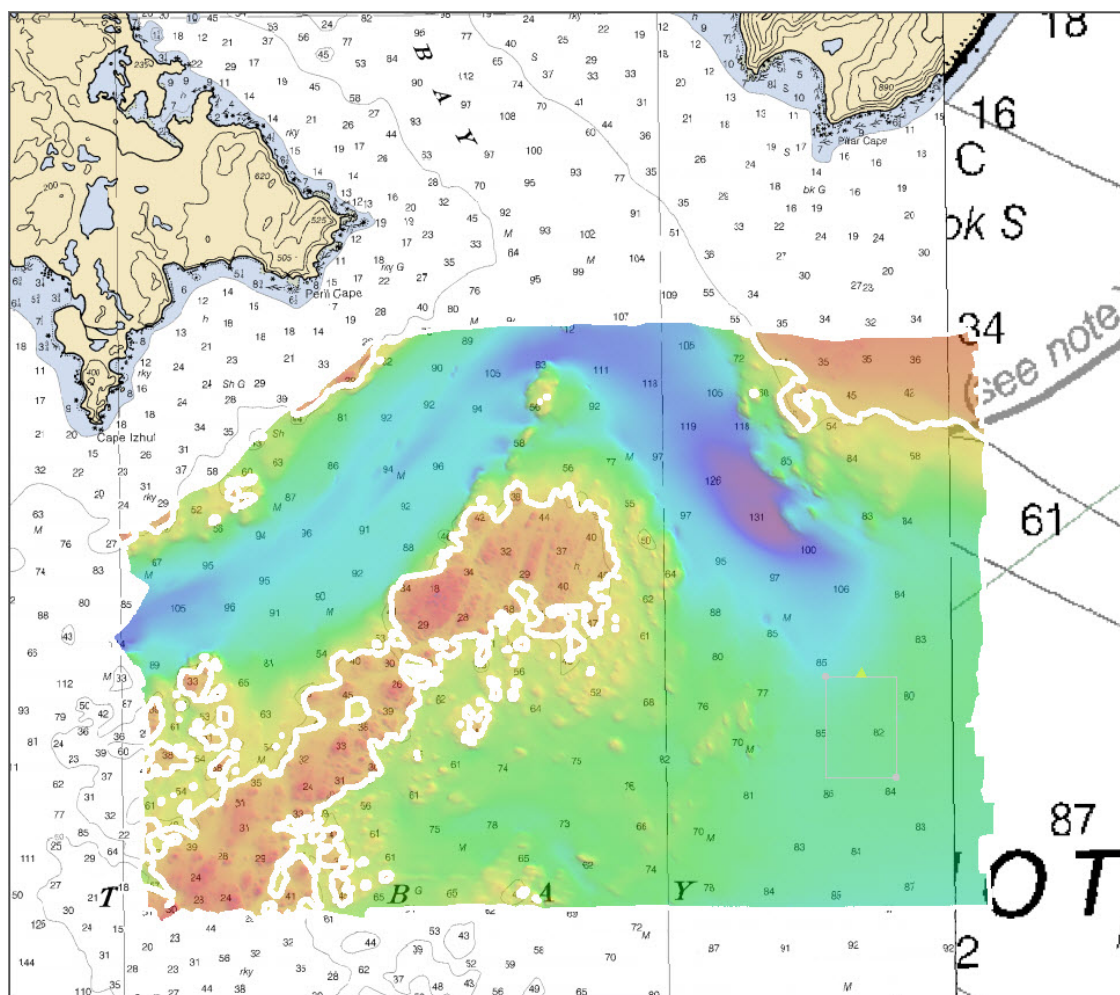


Figure 8: Contours general agreement between charted contours (16594)

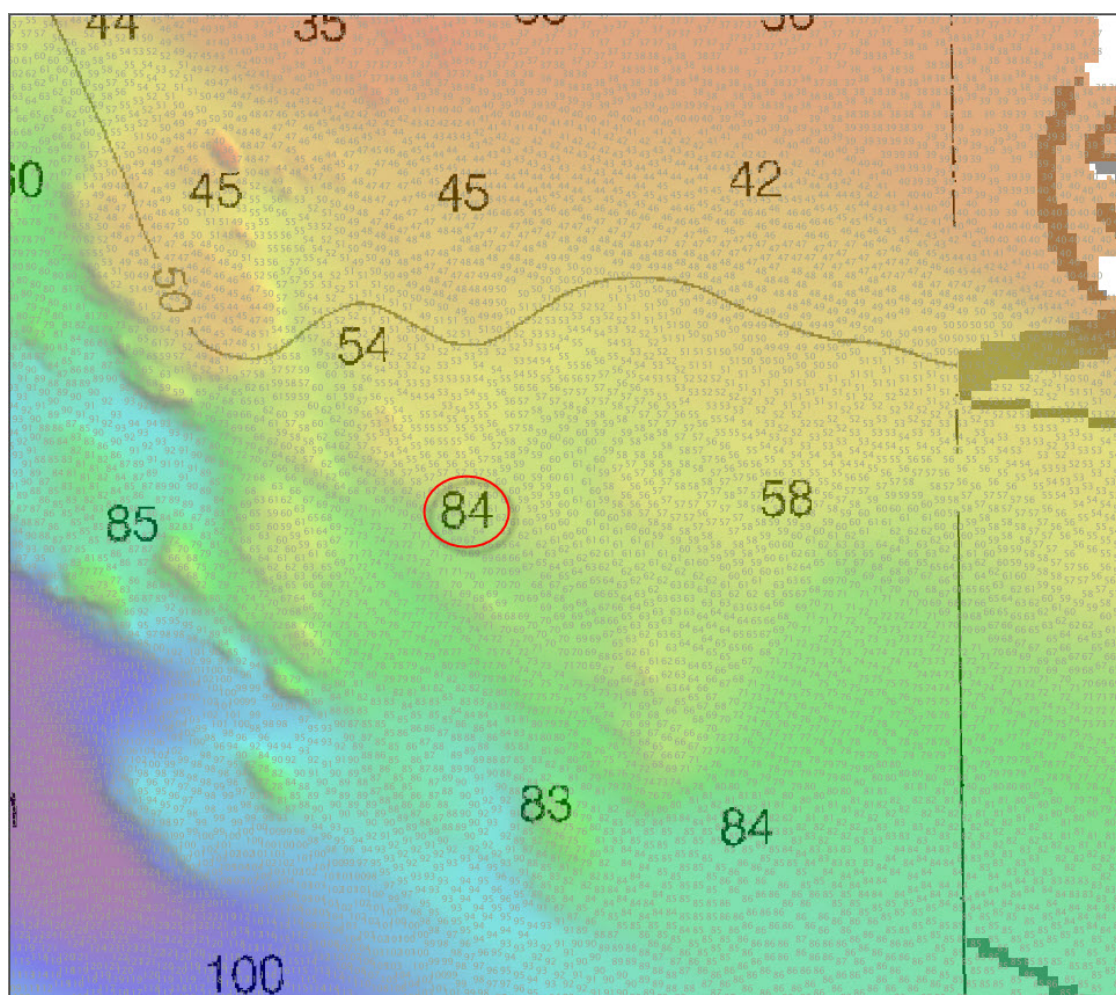


Figure 9: Disagreement between charted depths (16594) and surveyed soundings in the NE corner of sheet.

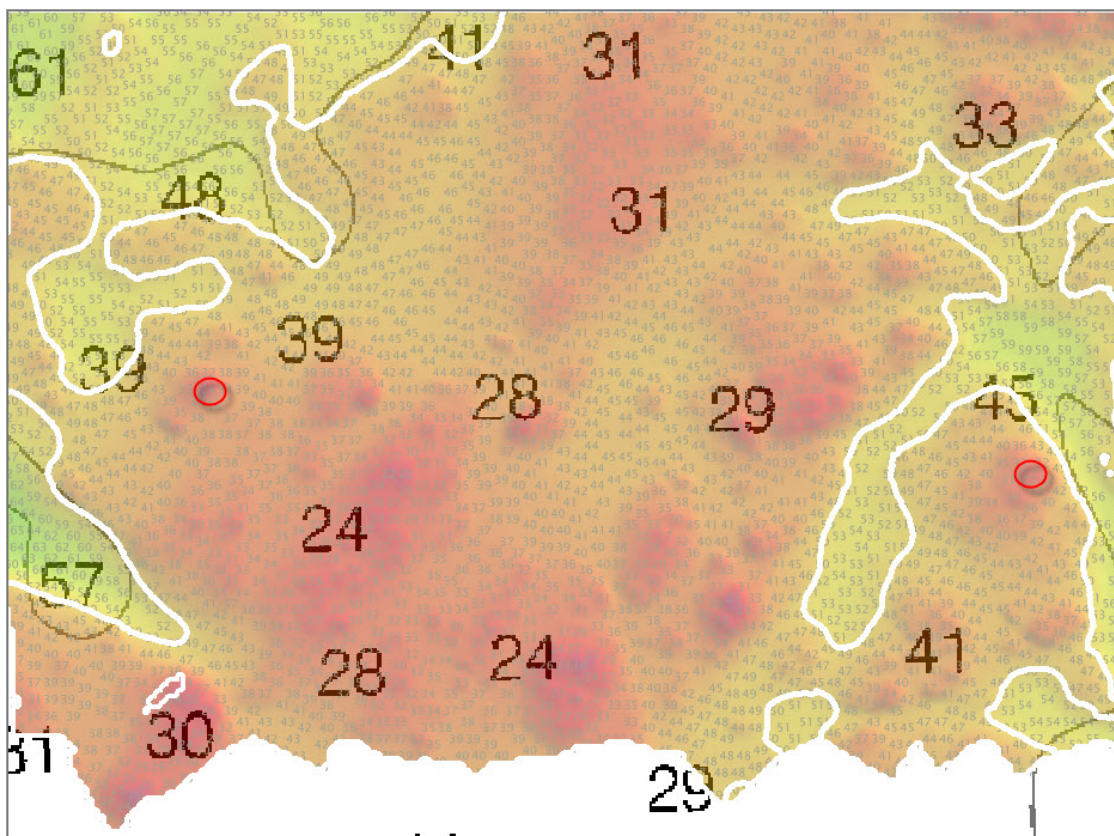


Figure 10: Shoals between charted depths (16594) in the SW corner of sheet.

16580

There are no sounding in the survey area that are on this chart, as a result only the contours were compared. The 50 fathom contour agrees.

D.1.2 Electronic Navigational Charts

The following are the largest scale ENC's, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US4AK5PM	1:78900	1	07/13/2011	06/07/2012	NO

Table 15: Largest Scale ENC's

US4AK5PM

See raster charts above.

D.1.3 AWOIS Items

No AWOIS items exist for this survey.

D.1.4 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.5 Charted Features

No charted features exist for this survey.

D.1.6 Uncharted Features

No uncharted features exist for this survey.

D.1.7 Dangers to Navigation

No Danger to Navigation Reports were submitted for this survey.

D.1.8 Shoal and Hazardous Features

No shoals or potentially hazardous features exist for this survey.

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.

Eight bottom characteristics were imported from the ENC to be retained.

D.2 Additional Results

D.2.1 Shoreline

No shoreline features were present within the bounds of this survey.

D.2.2 Prior Surveys

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

D.2.3 Aids to Navigation

Aids to navigation (ATONs) do not exist for this survey.

D.2.4 Overhead Features

Overhead features do not exist for this survey.

D.2.5 Submarine Features

Submarine features do not 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

No significant features exist for this survey.

D.2.9 Construction and Dredging

There is no present or planned construction or dredging within the survey limits.

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, Standing and 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
Coast Pilot Report	2012-12-14
Data Acquisition and Processing Report	2012-12-05

Approver Name	Approver Title	Approval Date	Signature
CDR James M. Crocker, NOAA	Chief of Party	01/16/2013	 <small>Digitally signed by CDR James M Crocker, NOAA DN: cn=CDR James M Crocker, NOAA, o=NOAA Ship Fairweather, ou=Commanding Officer, email=james.m.crocker@noaa.gov, c=US Date: 2013.01.23 14:01:08 -08'00'</small>
LT Caryn M. Zacharias, NOAA	Field Operations Officer	01/16/2013	 Caryn M. Zacharias 2013.01.22 20:37:29 -08'00'
HCST Tami Beduhn	Chief Survey Technician	01/16/2013	 Tami Beduhn 2013.01.22 22:53:33 -08'00'
ENS Theresa A. Madsen	Sheet Manager	01/16/2013	 Theresa A. Madsen 2013.01.22 20:40:13 -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 Station
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
TPU	Total Propagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDA	Global Positioning System timing message
ZDF	Zone Definition File

Extending 4 m surface



Inbox x



 **Theresa Madsen** theresa.a.madsen@noaa.gov
to _OMAO, ChiefST, Douglas ▾

10:09 AM (1 hour ago) ☆



OPS/CST,


Attached are the two images for extending my 4m surface to include the one rock that is 32 meters deep. i would like to extend my 4 meter surface to 30-80 meters.

...

2 attachments — [Download all attachments](#) [View all images](#)

 **32m deep.jpg**
130K [View](#) [Download](#)

 **4 m surface.jpg**
518K [View](#) [Download](#)

 **OPS Fairweather** ops.fairweather@noaa.gov
to crescent.moegl., Marc, CDR, chiefst, me, Douglas.A.Bravo ▾

10:48 AM (21 minutes ago) ☆



Crescent,

We have found an area on OPR-P136-FA-12 , H12319 (Kodiak, AK) that has a very small area that falls within the 2 meter surface resolution range. Please see the attachments and e-mail below. We would like permission to extend the 4 meter surface. This project would submit:

Depth Range, Resolution (m)

30-80, 4

72-160, 8

144-320, 166

Please let me know if you have any questions.

V/r,
Caryn

----- Original Message -----

Subject:Extending 4 m surface

Date:Fri, 12 Oct 2012 10:09:58 -0700

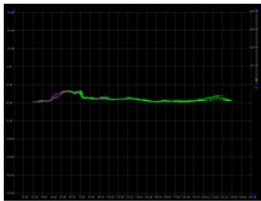
From:Theresa Madsen <theresa.a.madsen@noaa.gov>

To: _OMAO MOP OPS Fairweather <ops.fairweather@noaa.gov>, ChiefST
Fairweather <chiefst.fairweather@noaa.gov>

--

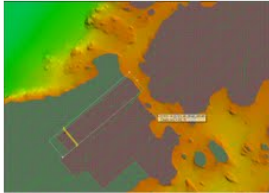
2 attachments — [Download all attachments](#) [View all images](#)

Peo







32m deep.jpg
130K [View](#) [Download](#)

cre:
Hyd



4 m surface.jpg
518K [View](#) [Download](#)

 **Crescent Moegling** Crescent.Moegling@... 10:53 AM (17 minutes ago) ☆  
to _OMAO, Marc, _OMAO, me, Douglas, _OMAO 

Hi Caryn,
Thanks for checking with me. That isn't a problem, just please be sure to provide details about this in the DR.

Crescent Moegling
Hydrographic Team Lead
Northwest Navigation Manager
Pacific Hydrographic Branch
206.526.6840



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : September 26, 2012

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P136-FA-2012
HYDROGRAPHIC SHEET: H12319

LOCALITY: Eastern Portion of Marmot Bay, Kodiak Island
TIME PERIOD: June 27 - September 20, 2012

TIDE STATION USED: 945-7292 Kodiak, AK
Lat. 57° 43.9' N Long. 152° 30.7' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.398 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project OPR-P136-FA-2012, H12319, during the time period between June 27 to September 20, 2012.

Please use the zoning file P136FA2012CORP submitted with the project instructions for OPR-P136-FA-2012. Zones SWA97 & SWA98A are the applicable zones for H12319.

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).

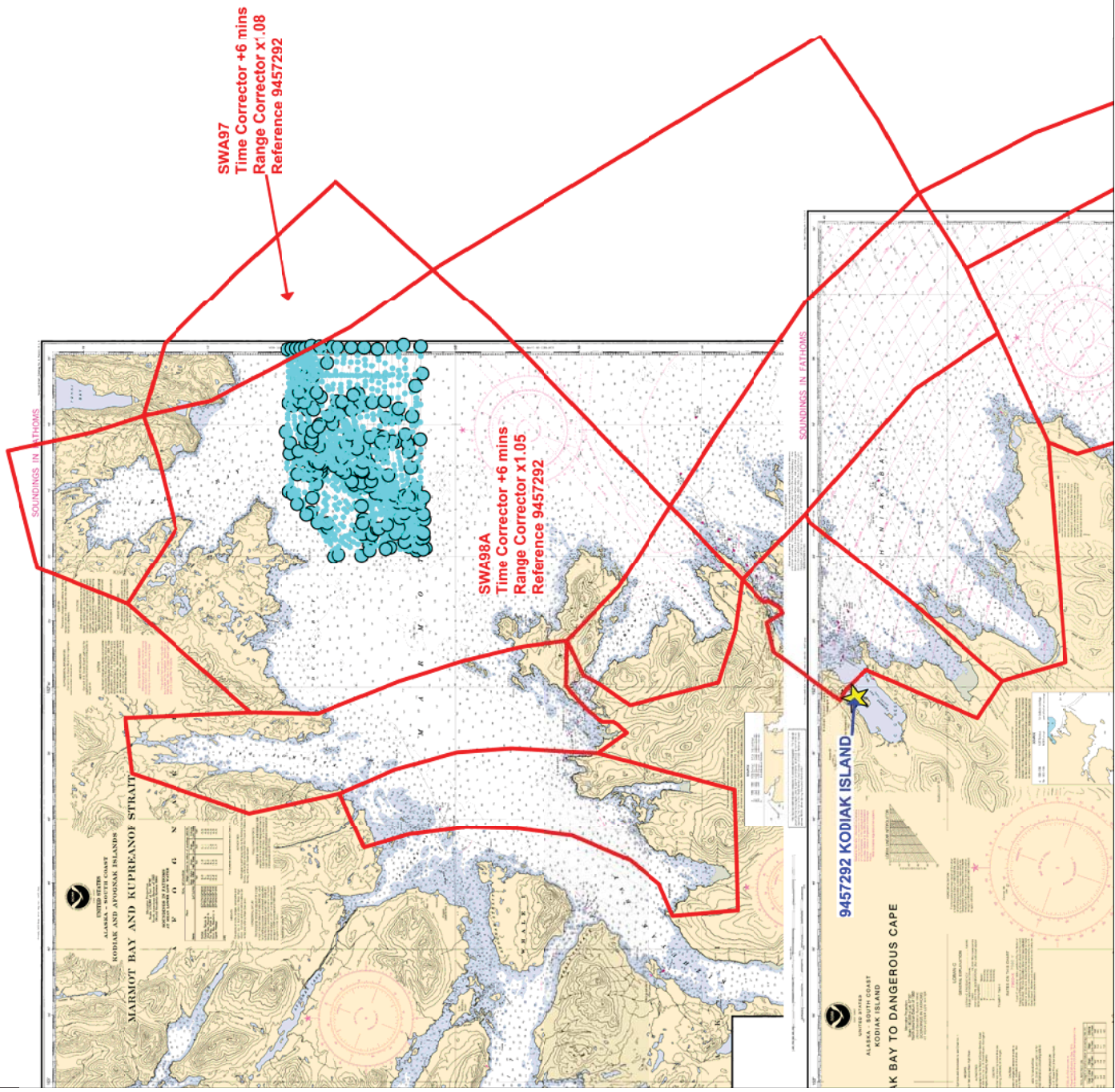
HOVIS.GERALD.
THOMAS.13658
60250

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HOVIS.GERALD.THOMAS.1365860250
DN: c=US, o=U.S. Government,
ou=DoD, ou=PKI, ou=OTHER,
cn=HOVIS.GERALD.THOMAS.136586
0250
Date: 2012.09.28 12:32:12 -04'00'

CHIEF, PRODUCTS AND SERVICES BRANCH



Preliminary as Final Tidal Zoning for OPR-P136-FA-2012, H12319
Eastern Portion of Marmot Bay, Kodiak Island



APPROVAL PAGE

H12319

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

- H12319_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12319_GeoImage.pdf

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

Approved: _____

Peter Holmberg

Cartographic Team Lead, Pacific Hydrographic Branch

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

Approved: _____

CDR David J. Zezula, NOAA

Chief, Pacific Hydrographic Branch