H12361

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: H12361

LOCALITY

State: Alaska

General Locality: Krenitzin Island

Sub-locality: Akutan Bay

2011

CHIEF OF PARTY

Dean Moyles, Fugro Pelagos, Inc.

LIBRARY & ARCHIVES

Date:

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET		**H12361**

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:	**Krenitzin Islands**
Sub-Locality:	**Akutan Bay**
Scale:	**1: 10,000**
Dates of Survey:	**07/24/2011 to 08/23/2011**
Instructions Dated:	**July 11, 2011**
Project Number:	**OPR-Q191-KR-11**
Field Unit:	**F/V Pacific Star, R/V R2 and R/V D2**
Chief of Party:	**Dean Moyles, Fugro Pelagos, Inc.**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	
Verification by:	**Pacific Hydrographic Branch**
Soundings Acquired in:	**meters at Mean Lower Low Water**
HCell Compilation Units:	***meters at Mean Lower Low Water***

Remarks:

Horizontal Coordinate System: UTM Zone 3. The purpose of this survey is to provide contemporary survey to update National Ocean Service (NOS) charts. All separates are filed with the hydrographic data. Revisions and 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/.

A. Area Surveyed

H12361 is located in Akutan Bay.

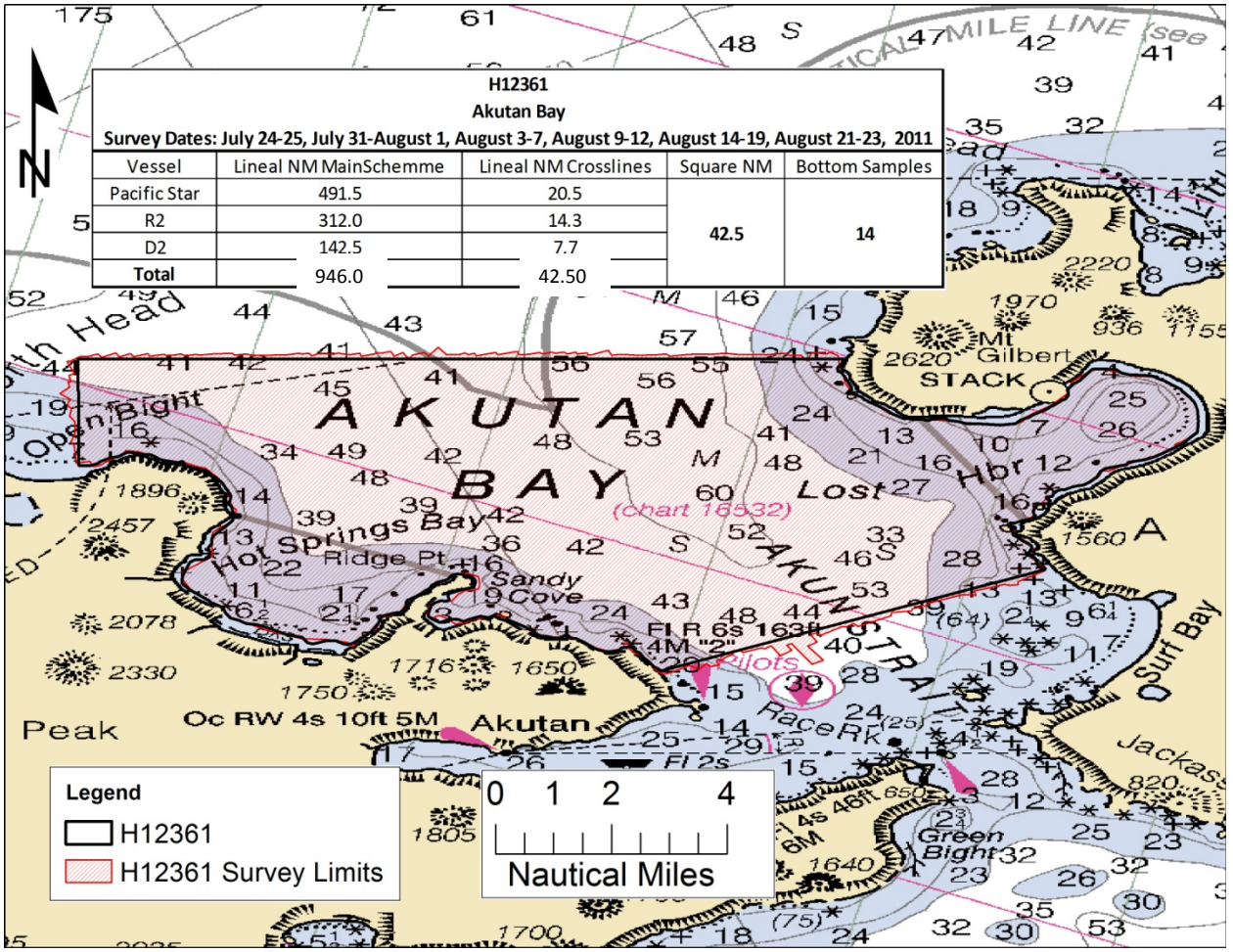


Figure 1 H12361 Area Surveyed

B. Data Acquisition and Processing

Refer to the OPR-Q191-KR-11 Data Acquisition and Processing Report for a detailed description of all equipment, survey vessels, processing procedures, and quality control features. Items specific to this survey and any deviations from the Data Acquisition and Processing Report are discussed in the following sections.

B.1 Equipment & Vessels

The F/V Pacific Star, the survey launch R/V R2, and the survey launch R/V D2 acquired all sounding data for H12361.

F/V Pacific Star, 162 feet in length with a draft of 16 feet, was equipped with a hull mounted Reson SeaBat 7125 dual-frequency multibeam echosounder system for the OPR-Q191-KR-11 project. The Reson 7125 operates at two user-selectable frequencies of 400 and 200 kHz. The 7125 forms 256 or 512 beams over 128° with a beam width of 0.5° (across-track) in the 400 kHz mode, and 256 beams over 128° with a beam width of 1° (across-track) in the 200 kHz mode. It allows the operator to select equi-angle or equi-distant beam spacing. For this project, both the 400 kHz and 200 kHz systems were configured for 256 equi-angle beams. The selection of these frequencies as well as range scale, gain, power levels, ping rates, etc. was a function of water depth and data quality and was noted on the survey line logs (see Separate 1). All 7125 multibeam data files were logged in the S7K format using WinFrog Multibeam v3.09.11. The vessel was equipped with two AML sound velocity and pressure sensors (SV&P) for sound velocity profiles. Vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessels (POS MV) 320 V4. WaterLOG H3611 (Radar Water Level Sensor) were installed on the port and starboard gunwales of F/V Pacific Star to obtain a more precise static draft measurement. Samples were taken over a 10 minute period and averaged to determine the vessel's draft. Traditional static draft measurement techniques were also employed as a substitute to the WaterLOG H3611 measurements when required.

R/V R2, a Pacific Star launch, is 29 feet in length with a draft of 3 feet. For this survey, R2 was equipped with a hull mounted Reson SeaBat 7101 multibeam echosounder. The Reson 7101 on R2 was fitted with a stick projector and operated at a frequency of 240 kHz. The system forms either 239 or 511 beams across a 150° swath width. All 7101 multibeam data files were logged in the S7K format using WinFrog Multibeam v3.09.11. R2 was equipped with two AML sound velocity and pressure sensors (SV&P) for sound velocity profiles, and vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessels (POS MV) 320 V4.

R/V D2, a Pacific Star launch, is 29 feet in length with a draft of 3 feet. For this survey, D2 was equipped with a hull mounted Reson SeaBat 7101 multibeam echosounder. The Reson 7101 on D2 was fitted with a stick projector and operated at a frequency of 240 kHz. The system forms either 239 or 511 beams across a 150° swath width. All 7101 multibeam data files were logged

in the S7K format using WinFrog Multibeam v3.09.11. R2 was equipped with two AML sound velocity and pressure sensors (SV&P) for sound velocity profiles, and vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessels (POS MV) 320 V4.

B.2 Quality Control

Crosslines

Crosslines were planned and well distributed throughout the survey to ensure adequate quality control. Total crossline length surveyed was 42.5 nautical miles or 4.5 percent of the total main scheme line length. Each crossline was compared to the entire main scheme line plan through 2m CUBE surface, using the CARIS HIPS QC report routine.

All of the QC Reports fall well within the required accuracy specifications with the exception of the crossline 3C08-TIE01, which had increased uncertainty levels due to the rocky topography of the seafloor. Good conformity was still seen between the main scheme lines and crosslines. Main scheme lines are shown in purple and crosslines in beige. Quality Control Results are located in Separate IV. [1]

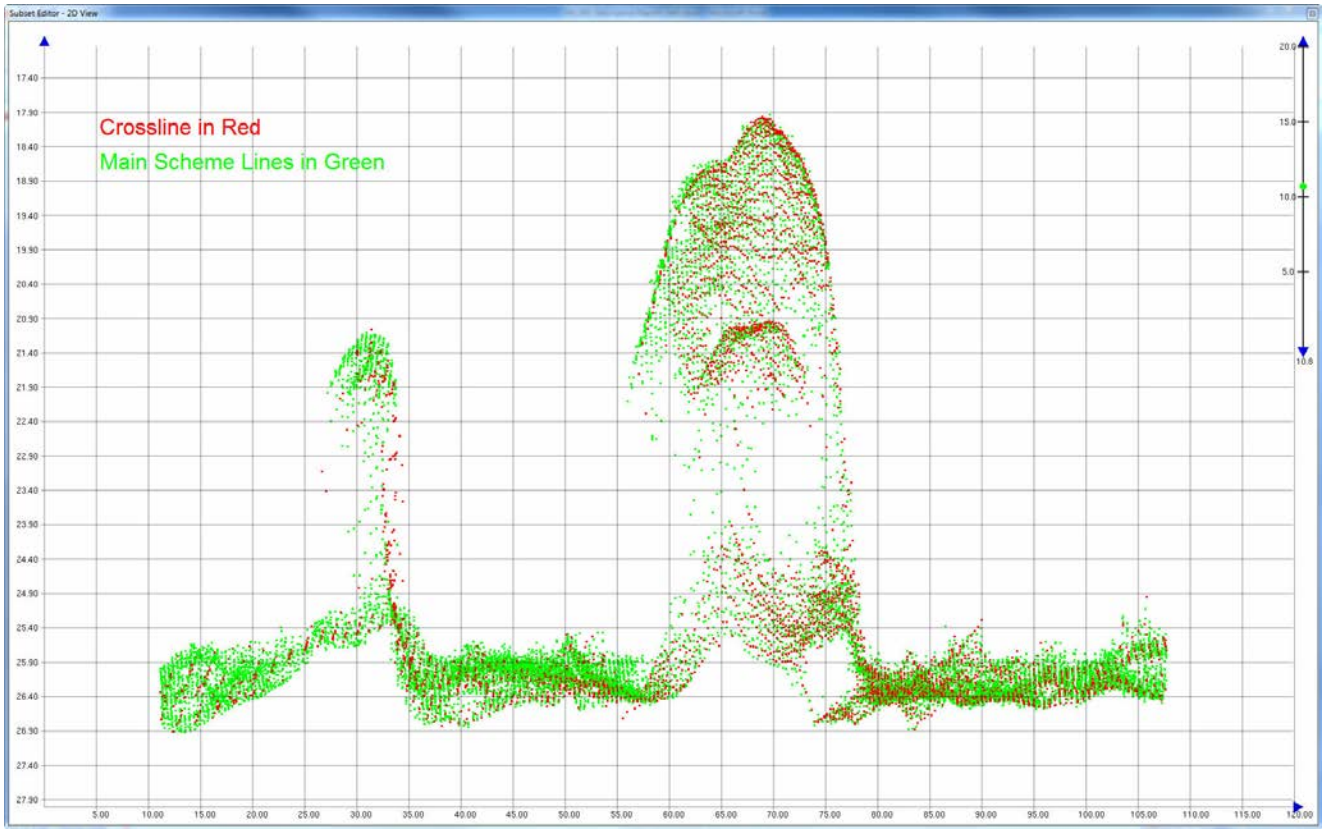


Figure 2 Profile of 3C08-TIE01

Note: The QC reports were generated based on the IHO Order 1a accuracy specification:

$$\pm\sqrt{a^2 + (b * d)^2}$$

Where, a=0.5 and b=0.013, d=depth

Uncertainty Values

The majority of H12361 had uncertainty values of 0.31m to 0.50m, which met project specifications (**Figure 3**).

As seen in the uncertainty surface graphic, uncertainty is generally lowest near the sonar nadir beams and increases toward the outside of each swath. Along-track uncertainty oscillations are due primarily to higher sound speed error in the outer beams, which varies proportionally to water depth. Additionally, outer beams also have higher uncertainty values due to bottom-detection algorithms within the sonar.

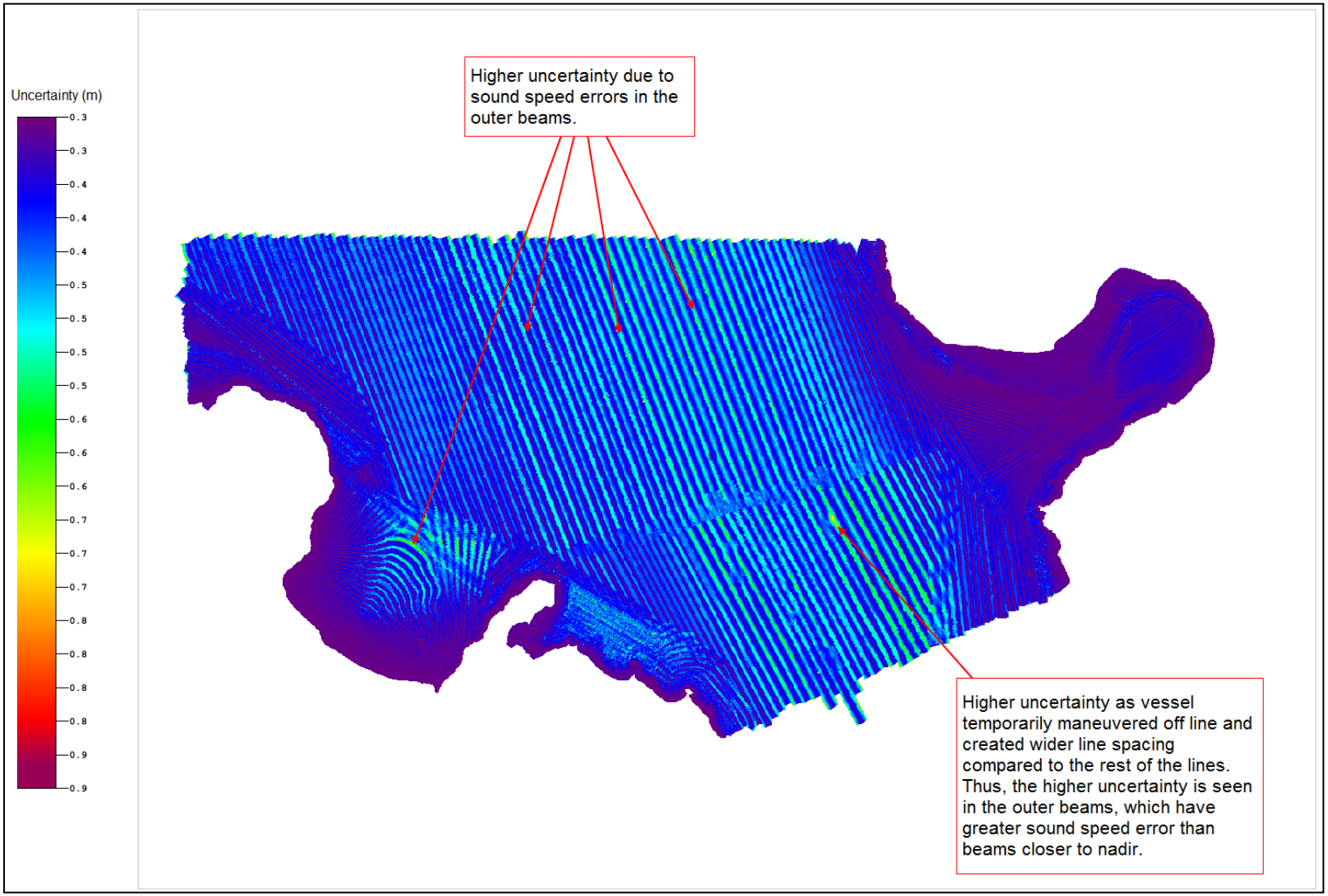


Figure 3 Uncertainty DTM

Data Density

The NOS Hydrographic Surveys Specifications and Deliverables, April 2011, required 95% of all nodes to be populated with at least five soundings. Survey H12361 met these project specifications. (**Figure 4**)

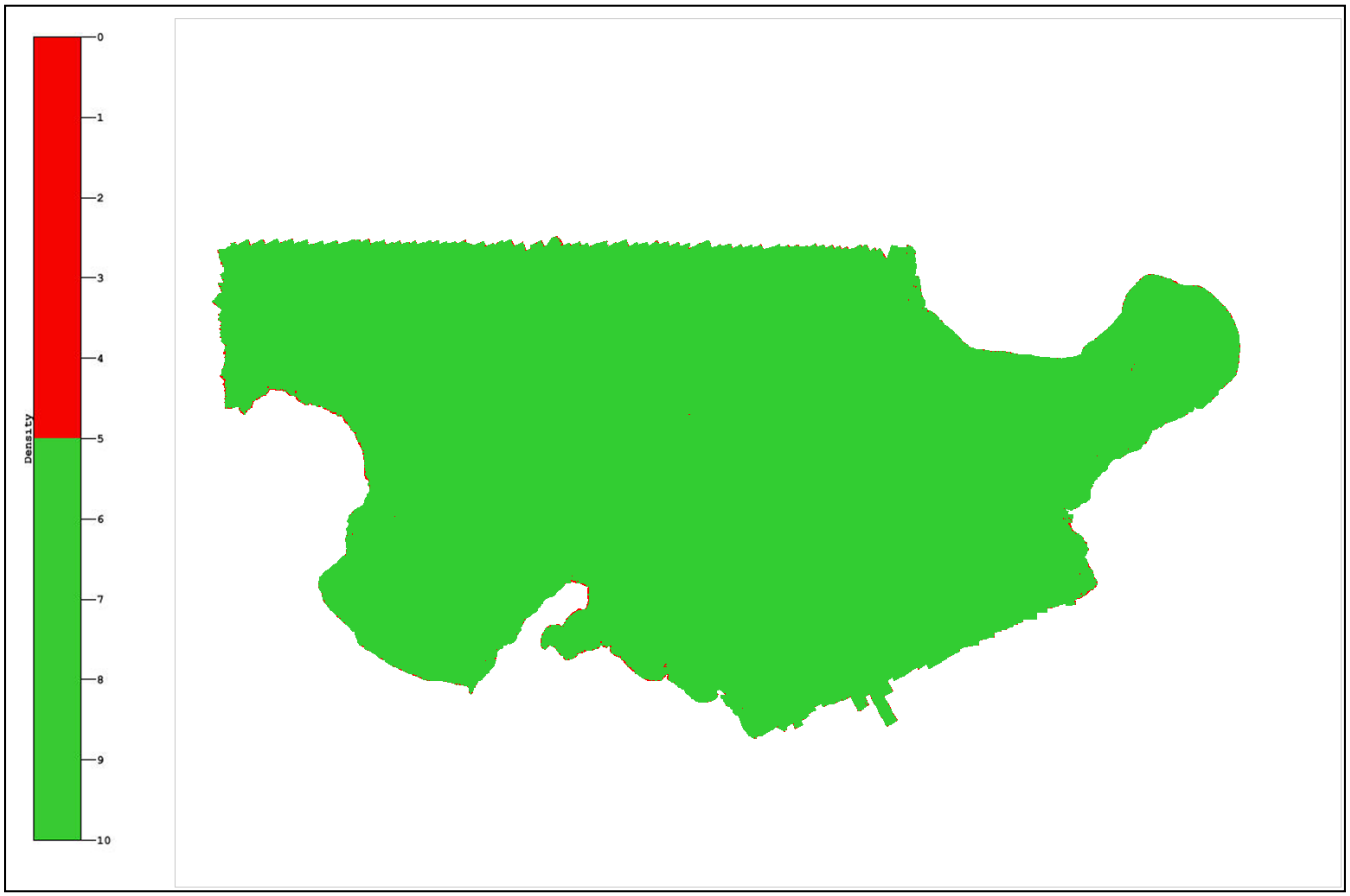


Figure 4 Density DTM

Detection requirements were met by minimizing vessel speed when necessary, using sonar range scales appropriate to the water depth to maximize ping rates, and maximizing swath overlap. These variables were adjusted in real-time by the online acquisition crew based on the WinFrog QC and coverage displays. The shipboard processing crew provided feedback after preliminary processing and coverage creation in CARIS HIPS. In-fills were run as necessary.

Survey Junctions
H12361 junctions with:

Registry #	Date	Junction Side
H12359	2011	North
H12360	2011	South
H12362	2011	North

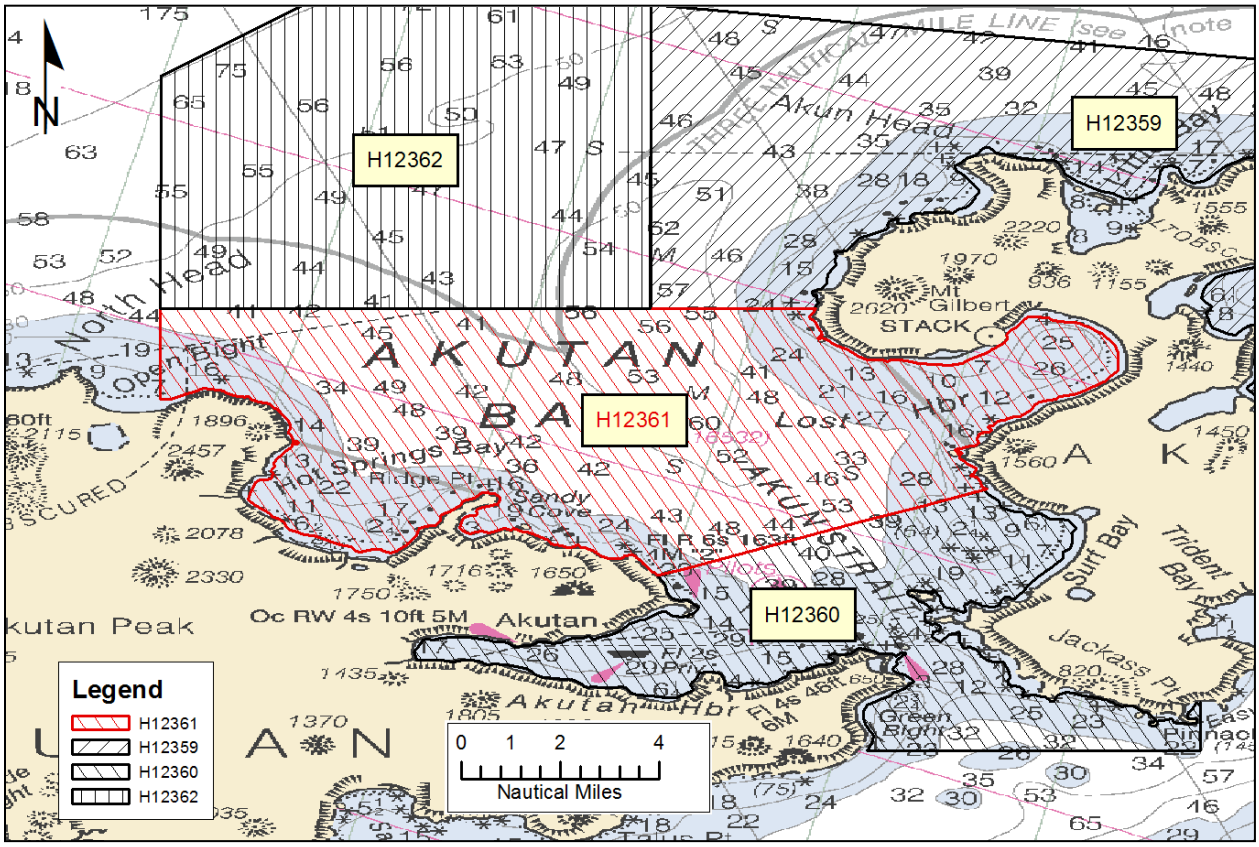


Figure 5 H12361 Survey Junctions

The surveys are in agreement along their common borders. The agreement with H12359, H12360 and H12362 was noted in the field using the CUBE surfaces during subset cleaning. The conformity is also apparent in the Finalized BASE Surfaces.[2]

Quality Control Checks

Positioning system confidence checks were conducted on a daily basis using the (POS MV) controller software. The controller software had numerous real-time displays that were monitored throughout the survey to ensure the positional accuracies specified in the NOS Hydrographic Surveys Specifications and Deliverables were achieved. These include, but are not limited to the following: GPS Status, Position Accuracy, Receiver Status (which included HDOP), and Satellite Status. During periods of high HDOP and/or low number of available satellites, survey operations were suspended.

Sonar system confidence checks were performed weekly by comparing post processed depth information collected by multiple vessels surveying over a common area. In addition, bar checks were performed to maintain a high confidence level. Sound Velocity Probe confidence checks were conducted weekly by producing comparable sound velocity data between all vessels. This was conducted by having all sound velocity profiling equipment perform a cast in close proximity to each other in a near simultaneous time period.

Data Quality

In general, the multibeam data quality for H12361 was good. One notable problem follows:

1. Small tide busts, up to 30cm, exist within the survey area. All data met IHO Order 1a specifications.

Refer to the OPR-Q191-KR-11 Data Acquisition and Processing Report for a detailed description of the survey equipment and methodology used over the course of this survey.

B.3 Corrections to Echo Soundings

Refer to the OPR-Q191-KR-11 Data Acquisition and Processing Report for a detailed description of all corrections to echo soundings. No deviations from the report occurred.

B.4 Data Processing

Refer to the OPR-Q191-KR-11 Data Acquisition and Processing Report for a detailed description of the processing flow.

The final fieldsheet for H12361 is called “H12361”, and it contains four BASE surfaces.[3] The following parameters were used:

0-20 meters: 1 m resolution, name “H12361_1m_Final”
18-40 meters: 2 m resolution, name “H12361_2m_Final”
36-80 meters: 4 m resolution, name “H12361_4m_Final”
72-160 meters: 8 m resolution, name “H12361_8m_Final”

Notes:

- Maximum depth was approximately 104m; therefore, resolutions coarser than 8m were not computed.

- Final CUBE BASE surfaces were created with CARIS v 7.1 in the CARIS Spatial Archive (CSAR) format. These surfaces are located under the “H12361\CARIS\Fieldsheets” directory.[4]

The final S57 file for this project is called “H12361_Field_Features.hob”. This file contains the object and metadata S57 objects as required in the Specifications and Deliverables.

C. Vertical and Horizontal Control

Refer to the OPR-Q191-KR-11 Horizontal and Vertical Control Report for a detailed description of the horizontal and vertical control used on this survey. No deviations from the report occurred. A summary of the project's horizontal and vertical control follows.

Horizontal Control

The horizontal control datum for this survey was the North American Datum of 1983 (NAD83).

For real-time DGPS corrections, a CSI MBX-3 unit was tuned to the Cold Bay, Alaska USCG DGPS site. The unit output differentially corrected positions at 1 Hz to the (POS MV) 320 V4 where it was integrated with inertial data and a position for the top-center of the IMU was generated. This position was logged concurrently with the bathymetry from WinFrog and the POS file with Fugro Pelagos PosMvLogger. It was later corrected for offsets to the multibeam echosounder (MBES) by CARIS HIPS in post processing.

Final positioning was done using post-processed kinematic (PPK) methods. Applanix POSPac v5.4 software was used in conjunction with the POS files and local 1Hz base station data to generate a higher accuracy position which was applied in processing, replacing the real-time position records.

See OPR-Q191-KR-11 Horizontal and Vertical Control Report for a more detailed description of PPK positioning methods used.

Vertical Control

All sounding data was reduced to MLLW initially using observed tidal data from three John Oswald and Associates (JOA) tide stations located in Akun Bay, Surf Bay and Trident Bay, AK, and one NOAA COOPS tide station located in Unalaska, AK. Tidal data for a twenty-four hour period UTC, (Alaska Daylight Time to UTC was +8 hours) was assembled by JOA and uploaded to their ftp site at the end of every Julian Day. A cumulative file for the gauges was updated each day by appending the new data. It should be noted that these unverified tides were used in the field for preliminary processing only. The NOAA supplied tidal zoning was modified by JOA, providing a more elaborate zoning scheme than those zones issued in the Statement of Work.

On November 14, 2011, JOA issued verified tidal data and final zoning for OPR-Q191-KR-11. All sounding data was then re-merged using CARIS HIPS and SIPS tide routine. Verified tidal data were used for all final Navigation BASE surfaces and S57 Feature files.

For additional information, refer to the OPR-Q191-KR-11 Horizontal and Vertical Control Report.

Table 1 Tide Gauges

Gauge	Model	Gauge Type	Location	Latitude	Longitude	Operational
946-2711	H350XL/355	Digital Bubbler	Surf Bay, AK	54º08’58”N	165º36’58” W	July - Sep
946-2719	H350XL/355	Digital Bubbler	Akun Cove, AK	54º14’20”N	165º32’28” W	July - Sep
946-2721	H350XL/355	Digital Bubbler	Trident Bay, AK	54º08’20”N	165º31’34” W	July – Sep
946-2620	NOAA CO-OPS Gauge	Aqua Trak	Unalaska, AK	53º52’48”N	165º32’12” W	July 1989 - Present

D. Results and Recommendations

D.1 Chart Comparison

H12361 survey was compared with charts shown in **Table 2**.

Table 2 Chart Comparisons

Chart Number	Type	Scale	Edition	Edition Date
16531	Raster	1:80,000	7	February-2002
16532	Raster	1:20,000	6	June-2000
US4AK6FM	ENC	n/a	8	October-2011

Comparison of Soundings

A comparison of soundings was accomplished by overlaying the latest edition of NOAA charts and ENCs onto the final BASE surfaces in CARIS HIPS & SIPS. The general agreement between the charted soundings and H12361 soundings is noted. A more detailed comparison was undertaken for any charted shoals or other dangerous features.

Agreement between the H12361 BASE surface depths and the charted soundings for all applicable ENC and Raster charts was within +/- 3 fathoms. Since the survey area was ensonified with 100% multibeam coverage, shoaler depths were discovered between the charted soundings. Additionally, contours in the area were adequate, but require revision from the high resolution data. In these areas, when necessary, the sounding was designated to ensure its inclusion in the finalized BASE surface. Exceptions follow:

1. Most charted contours were in general found to be adequate. Overall, the 100% multibeam coverage discovered discrepancies between charted and observed contours. Hydrographer recommends contours and soundings be modified to agree with the H12361 survey.

2. In the southwestern area of Hot Springs Bay, surveyed depths were found to be shoaler than charted depths at the top of a sloped bank.

3. In Akutan Bay, approximately 4 km east of Ridge Point, several underwater rocks had survey depths shoaler than the depths provided on the RNCs or ENC.

4. A rocky outcropping (approximately N54-11-09.61, W165-38-34.21), was not represented on the RNCs or ENC. The surveyed least depth of the outcropping is 11.8 fathoms.[5]

5. Shoreline features on charts listed in **Table 2** need to be updated to agree with this survey

and the Final Features File (FFF). The ENC has numerous erroneous and incorrectly positioned islets and rocks.[6]

The Hydrographer recommends that soundings within the survey limits of H12361 supersede all prior survey and charted depths.

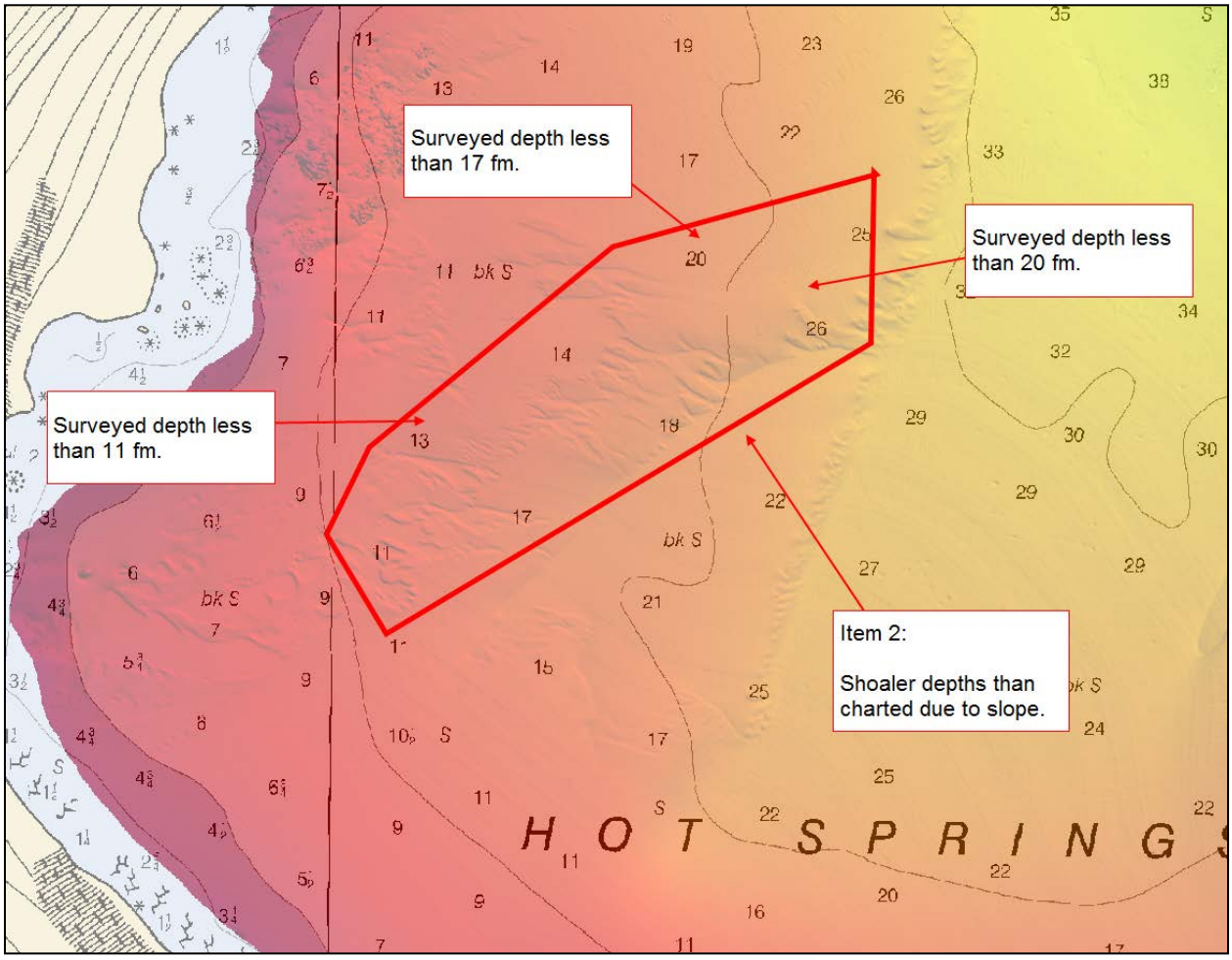


Figure 6 Bathymetry Overlaid on Chart 16532 – Sloped Bank

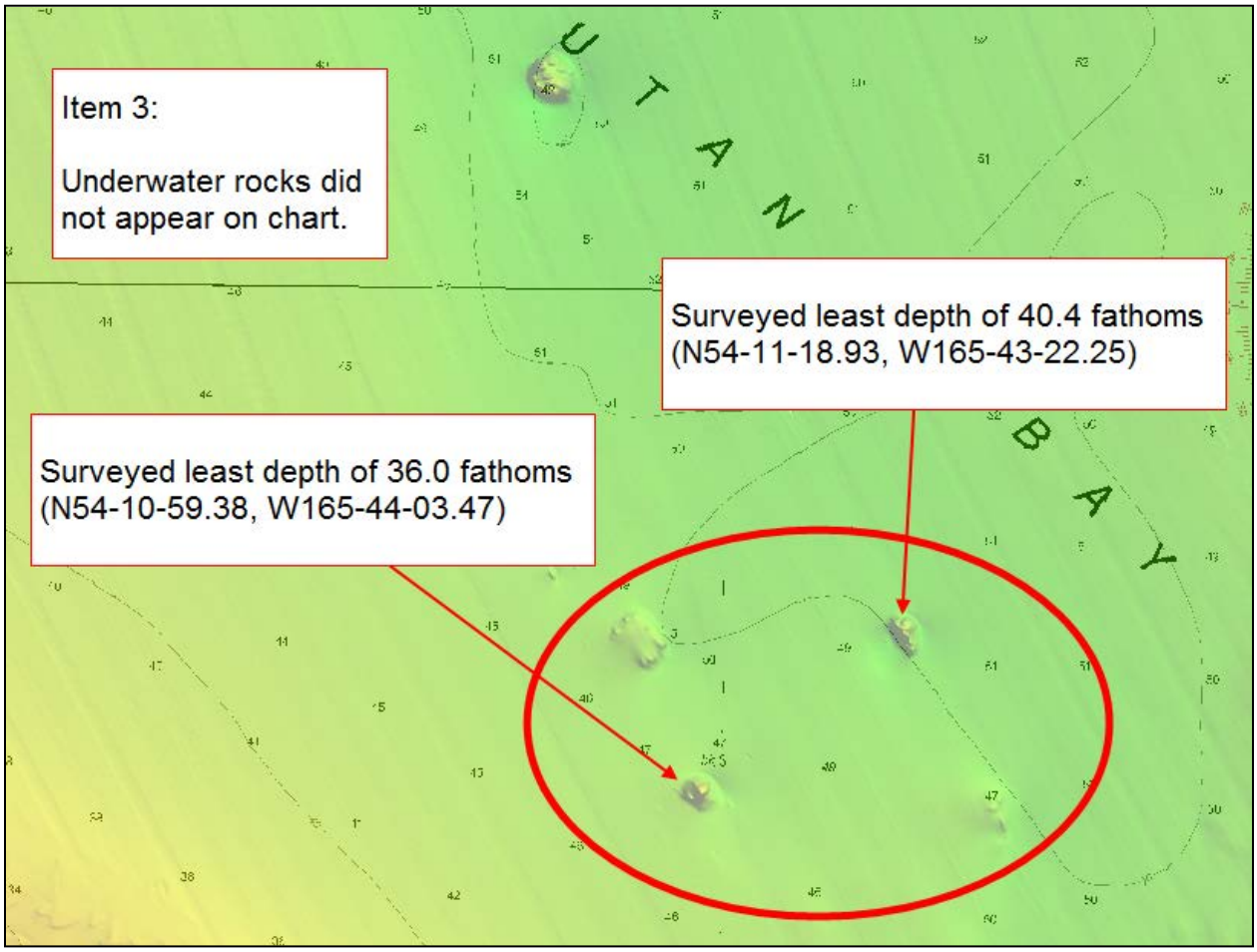


Figure 7 Bathymetry Overlaid on Chart 16532 – Underwater Rocks[7]

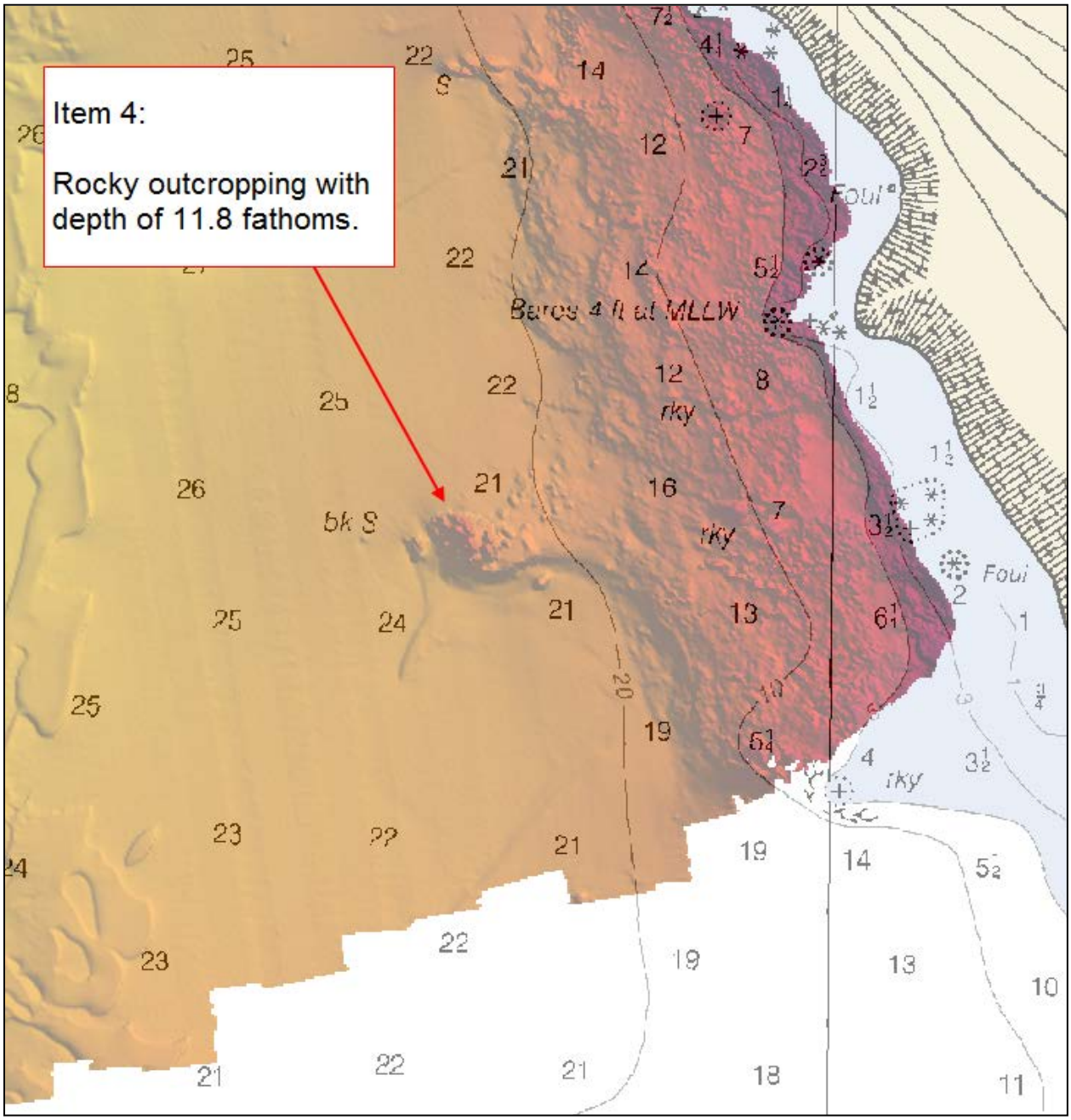


Figure 8 Bathymetry Overlaid on Chart 16532 – Rocky Outcropping[8]

Automated Wreck and Observation Information System (AWOIS)

One AWOIS item was assigned to H12361, refer to Appendix II for detailed descriptions.[9]

Charted Features [10]

There was one charted feature labeled ED, PD, or PA within the limits of H12361, which was an assigned AWOIS item.[11] Refer to Appendix II for detailed descriptions.

Dangers to Navigation

In addition to the chart comparison items noted in this report, seven dangers to navigation were found and reported during this survey. Refer to Appendix I (Danger to Navigation Reports) for details.[12]

Assigned Feature File

Charted features that fell inside the 4 fathom contour were not investigated and have been noted with a "Not Addressed" comment in the "descrp" attribute of the final features file. Features that fell within the survey limits were addressed and attributed appropriately. This file contains the object and meta data with extended attributes as required in the Specifications and Deliverables (April 2011).

All features, including ones from the NOAA assigned feature file, that were within the geographical bounds of H12361 are included in the "H12361_Field_Features.hob" file.

D.2 Additional Results

None to note.

Bottom Samples

The F/V Pacific Star was fitted to obtain bottom samples as specified in the Statement of Work. Fourteen bottom samples were obtained in survey H12361.[13]

Samples were taken with a Van Veen grab sampler and positions were recorded with WinFrog Multibeam v 3.09.11. Samples retrieved were analyzed and then encoded with the appropriate S57 attributes. Positions and descriptions of samples are found in the "OPR-Q191-KR-11_FFF.hob" feature file.

Aids to Navigation

There were no charted aids to navigation in the survey area. No uncharted aids to navigation were found in the survey area.

Shoreline Features

Traditional shoreline verification was not a requirement in this task order, but positions were collected on a number of shoreline features. FPI's effort should not be considered a complete feature verification (verify or disprove rocks, islets, shoreline, etc), our intent was only to identify holes within our MBES coverage and to provide feedback on charted features within the survey limits.

Refer to Appendix II for Features Report.[14]

E. Approval Sheet

Approval Sheet

For

H12361

Standard field surveying and processing procedures were followed in producing this survey in accordance with the following documents:

OPR-Q191-KR-11 Statement of Work
NOS Hydrographic Surveys Specifications and Deliverables, April 2011 Edition
Fugro Pelagos, Inc. Acquisition Procedures (2011-MBES_Acquisition_Procedures_R0)
Fugro Pelagos, Inc. Processing Procedures (2011-MBES_Processing_Procedures_R0)

The data were reviewed daily during acquisition and processing, and the survey is complete and adequate for its intended purpose.

This report has been reviewed and approved. All records are forwarded for final review and processing to the Chief, Pacific Hydrographic Branch.

Approved and forwarded,

Dean Moyles, (ACSM Cert. No. 226)
Senior Hydrographer
Fugro Pelagos, Inc.
March 5, 2012

Dean Moyles
Digitally signed by Dean Moyles
DN: cn=Dean Moyles, o=FPI, ou=Marine, email=dmoyles@fugro.com, c=US
Date: 2012.03.03 14:18:18 -08'00'

Revisions and Corrections performed during office processing and certification.

[1] Quality Control Results are located in Separate II\Digital Data\Crossline Comparisons
[2] The field-delivered fieldsheets did not open properly. During office processing new fieldsheets were generated at the same depth thresholds used by the field, and designated soundings applied before generating new finalized fieldsheets.
[3] See endnote 2.
[4] An 8-meter combined surface, H12361_8m_Combined.csar, was used as the basis for compilation.
[5] A new submerged rock (11.968 fms depth) was digitized to the chart update product from the high resolution BASE Surface.
[6] The 1:80,000 scale ENC does not compare well to the largest scale RNC or the new hydrography in terms of nearshore features. Nearshore ENC features, such as islands, islets and rocks, are poorly digitized renditions of the 1:20,000 scale RNC. However, the ENC's updated COALNE is a significantly improved rendition of the on-the-ground shoreline as compared to the largest scale RNC.
[7] The two rocky features in Figure 7 have been compiled to the chart update product as submerged rocks, and will be compiled to the charts as either rocks or soundings, as appropriate according to scale.
[8] See endnote 5.
[9] Appendix II, Features Report, is not attached. The survey located AWOIS Item 54009 ("Visible Wreck, PA") in Lost Harbor. The hydrographer recommended that the current position be modified to Lat. 54° 12' 32.45"N, Long. 165° 37' 05.21"W. In the chart update product, the charted wreck and associated "PA" designation were deleted, and the wreck compiled at the position recommended by the hydrographer. A PICREP (Pictorial representation) attribute was included with the WRECKS feature, with the image below.

[10] The 1:80,000 scale ENC does not compare well to the largest scale RNC or the new hydrography in terms of nearshore features. Nearshore ENC features, such as islands, islets and rocks, are poorly digitized renditions of the 1:20,000 scale RNC. However, the ENC's updated COALNE is a significantly improved rendition of the on-the-ground shoreline as compared to the largest scale RNC.

[11] Appendix II, Features Report, is not attached. The assigned AWOIS item, described in the Survey Features Report, is a wreck labeled "PA". See endnote 9 for details.

[12] No email record of DTON submission was included with the survey deliverables, however, all seven DTONs have been applied to the charts. See attached DTON Report.

[13] One of the 14 bottom samples was unsuccessful. It was included in the FFF sans attribution. It was not compiled to the chart update product.

[14] Appendix II, Survey Features Report, is not attached. In addressing charted features, the hydrographer recommended adjusting the position of numerous charted rocks that were covered with multibeam. These rocks are in rocky nearshore areas, and each is near a small gap in data coverage that is attributed to shoaling. In these cases the charted rock was deleted, and a Position Approximate rock digitized into the nearby data gap. For charted features, the hydrographer also recommended adjustements be made to the extents of charted rocky foul areas to agree with the bathymetry. During compilation of the chart update product, these adjustments were made, and in those cases in which the evidence of the survey and chart warranted it, the rocky foul areas were expanded, and sometimes extended beyond the survey limits all the way to shore. The hydrographer recommended charting new rock features at the edge of a number of small gaps in data coverage that occur in rocky nearshore areas. The data gaps are attributed to shoaling. In these cases the rocks digitized by the field were removed, and Position Approximate rocks digitized in the data gap.

AWOIS REPORT

There was one AWOIS items assigned to H12361.

1. AWOIS Item 54009 (“Visible Wreck PA”):

This item 54009 was located in Lost Harbor; the wreck is present; refer to **Figure 1** for a detailed view. The hydrographer recommends that the current position be modified to: 54° 12’ 32.45”N, 165° 37’ 05.21”W.

Figure 1 H12361 AWOIS 54009

Appendix II (Features Report)\AWOIS\OPR-Q191-KR-11 AWOIS_FPI_Updated.mdb

OFFICE NOTE: In the chart update product, deleted the charted wreck and associated "PA" designation, then compiled the wreck in the new surveyed position.

OFFICE NOTE: DTONS DATED AUGUST 8, 2011

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H12361

Survey Title: **State:** Alaska

Locality: Pacific Ocean/Bering Sea
Sub-locality: Akutan Bay

Project Number: OPR-Q191-KR-11

Survey Dates: July 24, 2011 – N/A

Survey Danger Acquisition Date and Time: See feature.

Features are reduced to Mean Lower Low Water with observed tidal data provided by John Oswald & Associates (JOA).

Affected Raster Charts:

Chart Number	Scale	Edition	Edition Date
16532	1:20,000	6	06/2000
16531	1:80,000	7	02/2002

Affected ENCs:

ENC Name	Scale	Edition	Issue Date
US4AK6FM	80000	4	06/15/2007

DANGER:

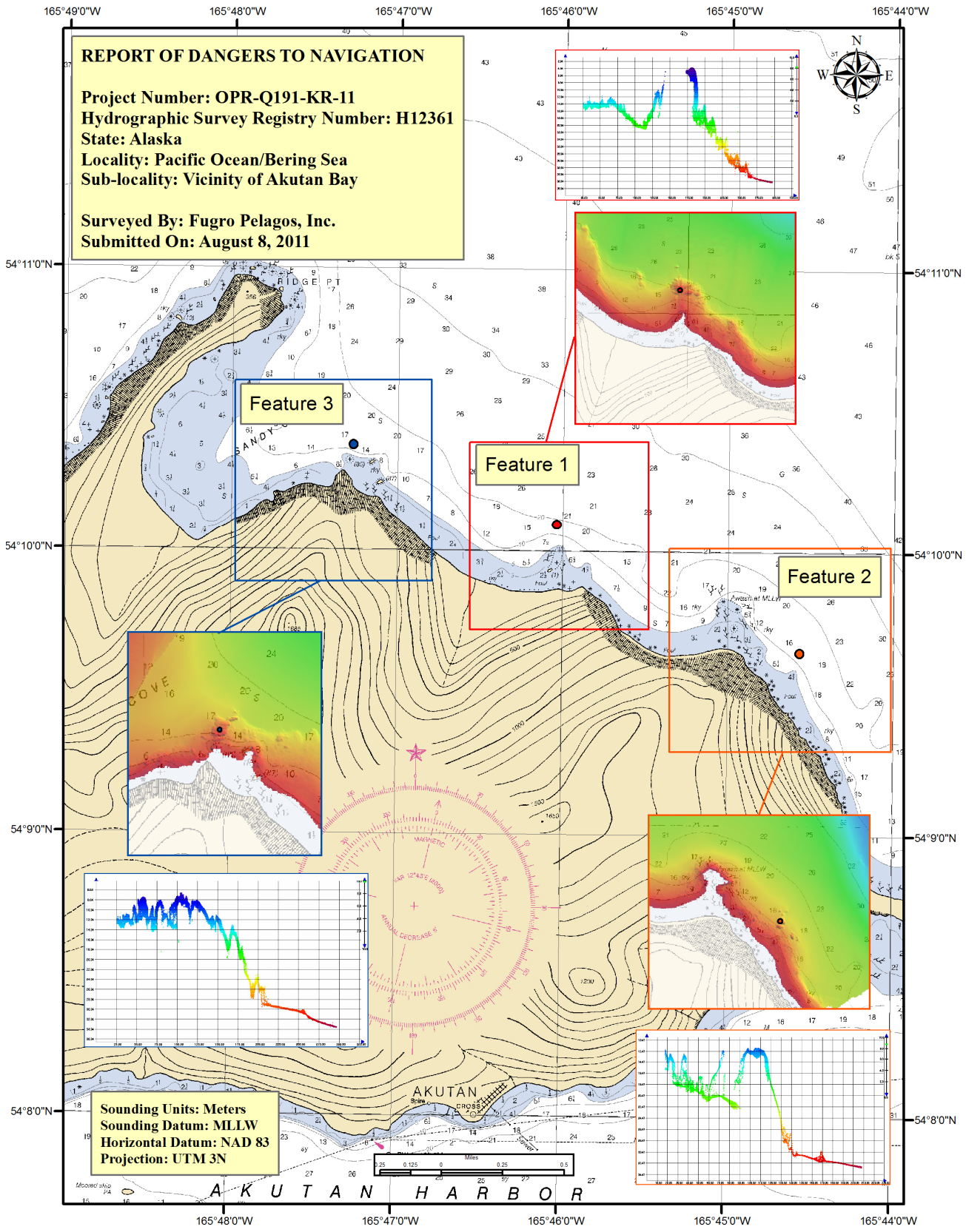
Feature	Depth	Latitude	Longitude	Time (UTC)
1. Rock *	2.5 fathoms	54-10-06.80N	165-46-02.09W	2011-07-31 19:22:44.220
2. Sounding	6.2 fathoms	54-09-38.17N	165-44-34.10W	2011-08-03 16:54:27.803
3. Sounding	6.7 fathoms	54-10-22.52N	165-47-15.28W	2011-07-31 21:56:31.275

*Least depth may not have been obtained, feature is a rock covered with kelp.

COMMENTS:

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch (N/CS34), at (206) 526-6835.

OFFICE NOTES FOR DTONS DATED AUGUST 8, 2011:
Danger # 1: Digitized a 'Position Approximate' rock to the chart update product in a data gap 40m SW of the reported DTON. Also added a kelp area surrounding the PA rock.
Danger # 2: Compiled a 5.883 fathom sounding to the chart update product.
Danger # 3: Compiled a 5.881 fathom sounding to the chart update product.



Compiled by Fugro Pelagos, Inc. (August 8, 2011)

OFFICE NOTE: DTONS DATED AUGUST 16, 2011

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H12361

Survey Title: **State:** Alaska

Locality: Pacific Ocean/Bering Sea
Sub-locality: Akutan Bay

Project Number: OPR-Q191-KR-11

Survey Dates: July 24, 2011 – N/A

Survey Danger Acquisition Date and Time: See feature.

Features are reduced to Mean Lower Low Water with observed tidal data provided by John Oswald & Associates (JOA).

Affected Raster Charts:

Chart Number	Scale	Edition	Edition Date
16532	1:20,000	6	06/2000
16531	1:80,000	7	02/2002

Affected ENCs:

ENC Name	Scale	Edition	Issue Date
US4AK6FM	80000	4	06/15/2007

DANGER:

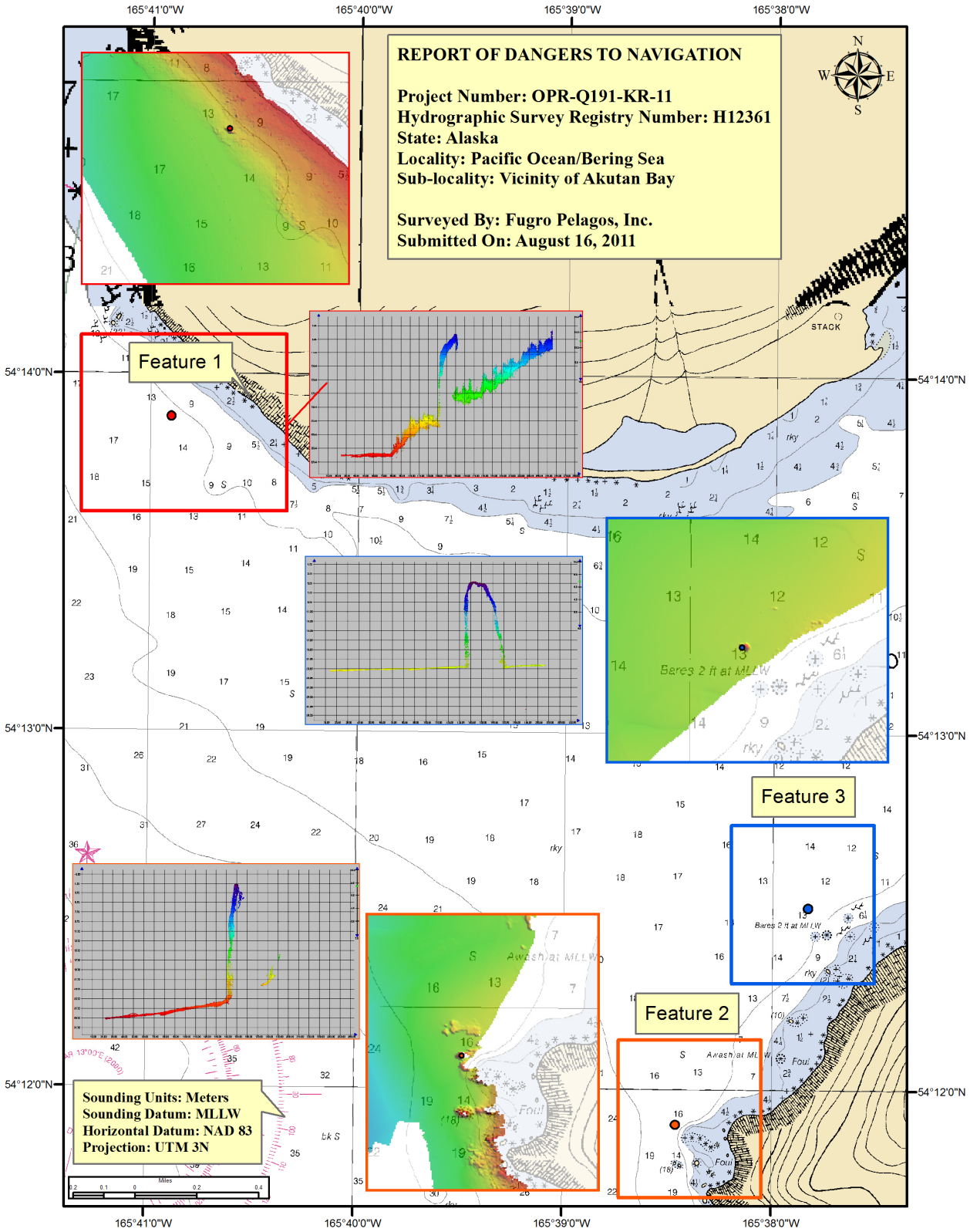
Feature	Depth	Latitude	Longitude	Time (UTC)
1. Sounding	4.7 fathoms	54-13-53.88N	165-40-54.49W	2011-08-15 17:13:35.282
2. Rock *	0.8 fathoms	54-11-54.40N	165-38-27.92W	2011-08-16 01:52:55.417
3. Rock	2.6 fathoms	54-12-30.54N	165-37-50.15W	2011-08-16 02:14:19.042
4. Sounding	4.6 fathoms	54-11-10.81N	165-38-08.64W	2011-08-16 00:09:24.119

*Least depth may not have been obtained, feature is a rock covered with kelp.

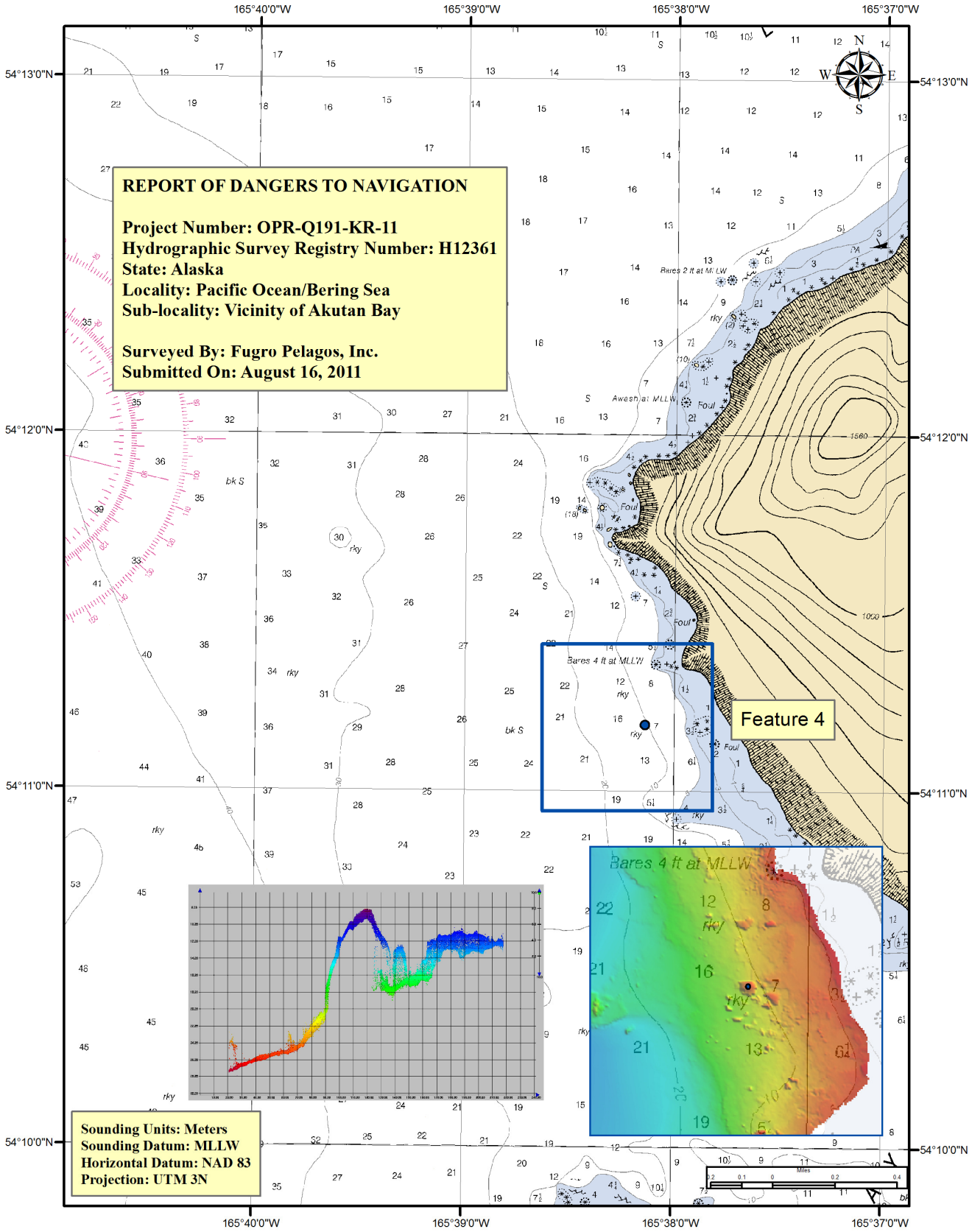
COMMENTS:

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch (N/CS34), at (206) 526-6835.

OFFICE NOTES FOR DTONS DATED AUGUST 16, 2011:
Danger # 1: Compiled a 4.710 fathom sounding to the chart update product.
Danger # 2: Digitized a 'Position Approximate' rock to the chart update product in a data gap for the location of the reported DTON. Also added a kelp area surrounding the PA rock.
Danger # 3: Compiled a 2.657 fathom submerged rock to the chart update product.
Danger # 4: Compiled a 4.599 fathom sounding to the chart update product.



Compiled by Fugro Pelagos, Inc. (August 16, 2011)



Compiled by Fugro Pelagos, Inc. (August 16, 2011)

APPROVAL PAGE

H12361

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

- H12361_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- H12361_GeoImage.pdf

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

Approved:_____

Digitally signed by Peter Holmberg Signing for Katie Reser
DN: cn=Peter Holmberg Signing for Katie Reser, o=NOAA, ou=Pacific Hydrographic Branch, email=Katie.Reser@noaa.gov, c=US
Date: 2013.04.09 11:04:01 -07'00'

Katie Reser
Physical Scientist, Pacific Hydrographic Branch

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

Approved:_____

Digitally signed by DAVIES.CHARLES.R.1365839782
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=DAVIES.CHARLES.R.1365839782
Date: 2013.04.09 11:08:27 -07'00'

Russ Davies
Cartographer, Pacific Hydrographic Branch