

H11581

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. OPR-P183-FA-07

Registry No. H11581

LOCALITY

State Alaska

General Locality Shumagin Islands

Sublocality Offshore - Cape Wedge to Karpa Island

2006 & 2007

CHIEF OF PARTY

..... Andrew L. Beaver, CDR/NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11581

INSTRUCTIONS The hydrographic sheet should be accompanied by this form,
filled in as completely as possible, when the sheet is forwarded to the office.FIELD NO.
Sheet DState ALASKAGeneral Locality Shumagin IslandsSublocality Offshore - Cape Wedge to Karpa IslandScale 1:40,000 Dates of Survey 06/24/2006 - 08/30/2006
06/02/2007 - 07/30/2007Instructions Date 3 May 2006 & 3 May 2007Project No. OPR-P183-FA-07Vessel NOAA Ship FAIRWEATHER S220Chief of Party CDR Andrew L. Beaver, NOAASurveyed by LTJG Matt Glazewski, CST Grant Froelich, LT Jennifer DowlingSoundings taken by echo sounders: Reson Seabat 8101 and 8111ERGraphic record scaled by N/AGraphic record checked by N/AEvaluation by B. Johnston Automated plot by N/AVerification by B. Johnston, K. ReserSoundings in Fathoms and Feet at MLLWREMARKS: Time in UTC. UTM Projection Zone 4

Revisions and annotations appearing as endnotes were
generated during office processing.

As a result, page numbering may be interrupted or non-sequential

All separates are filed with the hydrographic data.

Descriptive Report to Accompany Hydrographic Survey H11581

Project OPR-P183-FA-06, P183-FA-07

Shumagin Islands, Alaska

Scale 1:40,000

June – August 2006

May – July 2007

NOAA Ship FAIRWEATHER

Chief of Party: Commander Andrew L. Beaver, NOAA

A. AREA SURVEYED

The survey area was located in the Shumagin Islands, within the sub-locality ‘Offshore Cape Wedge to Karpa Island.’ This survey corresponds to Sheet D in the sheet layout provided with the Letter Instructions, as shown in *Figure 1* below. The survey area was augmented in 2007, encompassing the area by Scotland Point. The survey area is bounded on the Southwest corner at 55°11’20”N 160°11’30”W and the Northeast corner at 55°36’20” N, 159°33’00”W.

Data acquisition was conducted from June 24 to August 30, 2006 (DN 175 to DN 242) and from June 2 to July 30, 2007 (DN 153 to DN211).

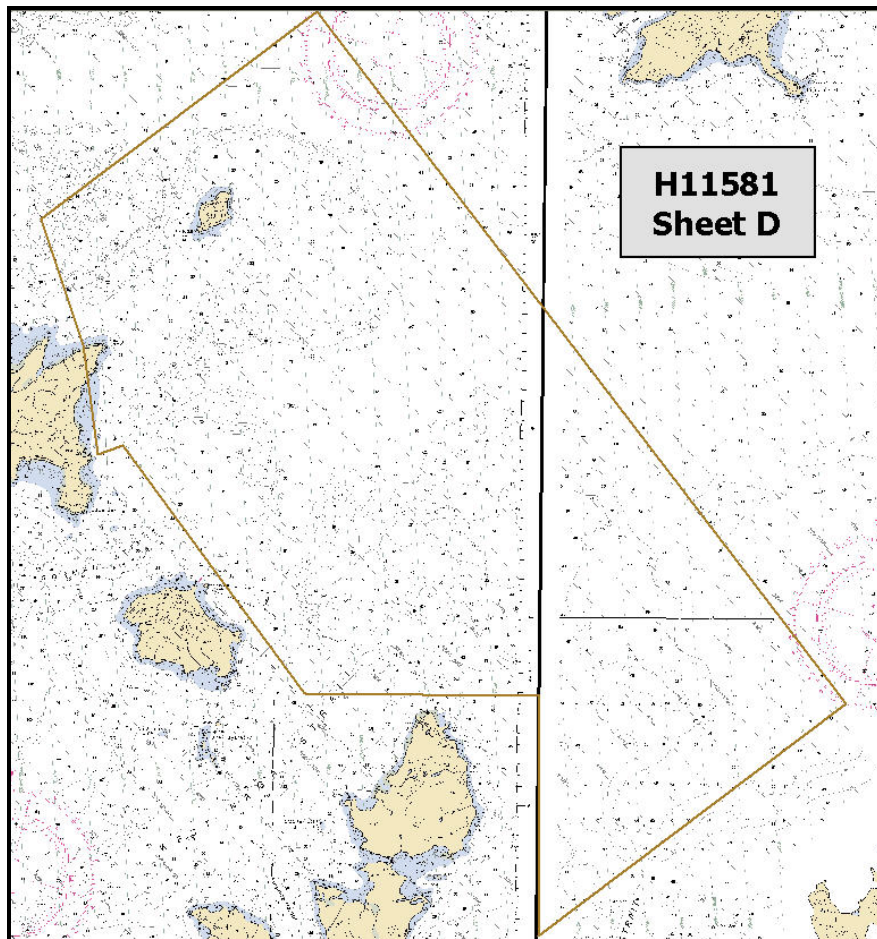


Figure 1: H11581

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area offshore of the 4-meter depth curve or the NALL where the Chief of Party determined that operations could be conducted safely.¹ Additional coverage was obtained when determining least depths over features or shoals offshore of the Navigable Area Limit Line (NALL), which is defined as the furthest offshore of either the 4-meter depth contour or a distance of 0.8 mm from the Mean High Water line at the scale of the largest scale chart. The largest scale chart for this survey was 1:80,000 (charts 16553 & 16556); thus, the NALL distance was 64m.²

Shoreline and bottom samples were acquired for H11581. These data were attributed as S-57 objects for submittal.

B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition/processing systems and survey vessels along with quality control procedures and data processing methods are included and described in the *OPR-P183-FA-06 and 07 Data Acquisition and Processing Reports (DAPRs)*³, submitted under separate cover. Items specific to this survey and any deviations from the aforementioned report are discussed in the following sections. This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P183-FA-07, dated May 3, 2007 for 2007 data, and the 2006 letter instructions, OPR-P183-FA-06, dated May 3, 2006 for 2006 data.

B1. Equipment and Vessels

Equipment and vessels used for data acquisition and survey operations during this survey are listed below in Table 1.

	FAIRWEATHER	Jensen Launch 1010	Jensen Launch 1018	Ambar 700
Hull Registration Number	S220	1010	1018	2302
Builder	Aerojet-General Shipyard	The Boat Yard, Inc.	The Boat Yard, Inc.	Marine Silverships, Inc
Length Overall	231 feet	28' 10"	28' 10"	23'
Beam	42 feet	10' 8"	10' 8"	9' 4"
Draft, Maximum	15' 6"	4' 0" DWL	4' 0" DWL	1' 4"
Cruising Speed	12.5 knots	24 knots	24 knots	22 knots
Max Survey Speed	10 knots	10 knots	10 knots	
Primary Echosounder	RESON 8111	RESON 8101	RESON 8101	
Sound Velocity Equipment	SBE 19plus & 45, MVP 200	SBE 19plus	SBE19plus	
Attitude & Positioning Equipment	POS/MV V4	POS/MV V4	POS/MV V4	
Type of operations	MBES	MBES	MBES	Shoreline, Bottom Samples

Table 1: Vessel Inventory

No vessel configurations used during data acquisition deviated from the *DAPR*.

B2. Quality Control

A surface difference was conducted by creating a surface using only main scheme data compared to a surface created from only cross line data. The surfaces used to compute the difference satisfy the requirement of the resolution defined in section 5.1.2.1 of the *Hydrographic Specifications and Deliverables Manual (HSSDM)*. The vertical accuracy requirement has been met and the table of analysis is included in Separate IV.

Crosslines

Shallow water multibeam crosslines for this survey totaled 143.88 linear nautical miles (lnm), comprising 9.56% of the 1504.74 lnm of total MBES hydrography. Both main scheme and cross-line mileage are summarized in Table 2.

MAIN SCHEME - Mileage	
Single Beam MS	0
Multibeam MS mileage	1504.74
SideScan MS	0
Total MS	1504.74
CROSSLINE - Mileage	
Single Beam XL	0
Multibeam XL	143.88
Total XL	143.88
OTHER	
Developments/AWOIS - Mileage	0
Shoreline/Nearshore Investigation - Mileage	6.16
Total # of Investigated Items	21
Total Bottom Samples	35
Total SNM	313.8
Specific Dates of Acquisition	2006: 6/24,7/11,7/12,8/28,8/29,8/30 2007: 6/2,6/3,6/4,6/5,6/14,6/15,6/22,6/23,6/24,6/25,6/26,7/25,7/29,7/30
Specific Dn#s of Acquisition	2006:175,192,193,240,241,242 2007:153,154,155,156,165,166,173,174,175,176,177,206,210,211

Table 2: H11581 Survey Statistics

Junctions

SAME PROJECT JUNCTION:

Survey junctions with H11676, which is Sheet E of the same project. The area of overlap between surveys are shown in *Table 3*. Data were reviewed in CARIS Subset Editor and depths were found to be consistent between the two surveys, meeting the requirements as stated in the *HSSDM*.⁴

OPR-P183-FA-06 JUNCTION:

Survey H11581 junctions with survey H11580; sheet B of project OPR-P183-FA-06. The area of overlap was reviewed in CARIS Subset Editor and depths were found to be consistent between the two surveys, meeting the requirements as stated in the *HSSDM*. The area of overlap between surveys are shown in *Table 3*.⁵

OPR-P183-RA-06 JUNCTIONS:

Survey H11581 junctions with surveys H11596, Sheet L, and H11597, sheet M, of project OPR-P183-RA-06. The areas of overlap were reviewed in CARIS Subset Editor and depths were found to be consistent between the three surveys, meeting the requirements as stated in the *HSSDM*. The area of overlap between surveys are shown in *Table 3*.⁶

H#	H11580	H11676	H11596	H11597
Project	OPR-P183-FA-06	OPR-P183-FA-07	OPR-P183-RA-06	OPR-P183-RA-06
Sheet	Sheet B	Sheet E	Sheet L	Sheet M
Avg. Overlap with H11581	400m	240m	300m	260m

Table 3: Junction Surveys with H11581

The area of overlap for H11581, H11580, H11676, H11596, and H11597 is shown in *Figure 2*.⁷

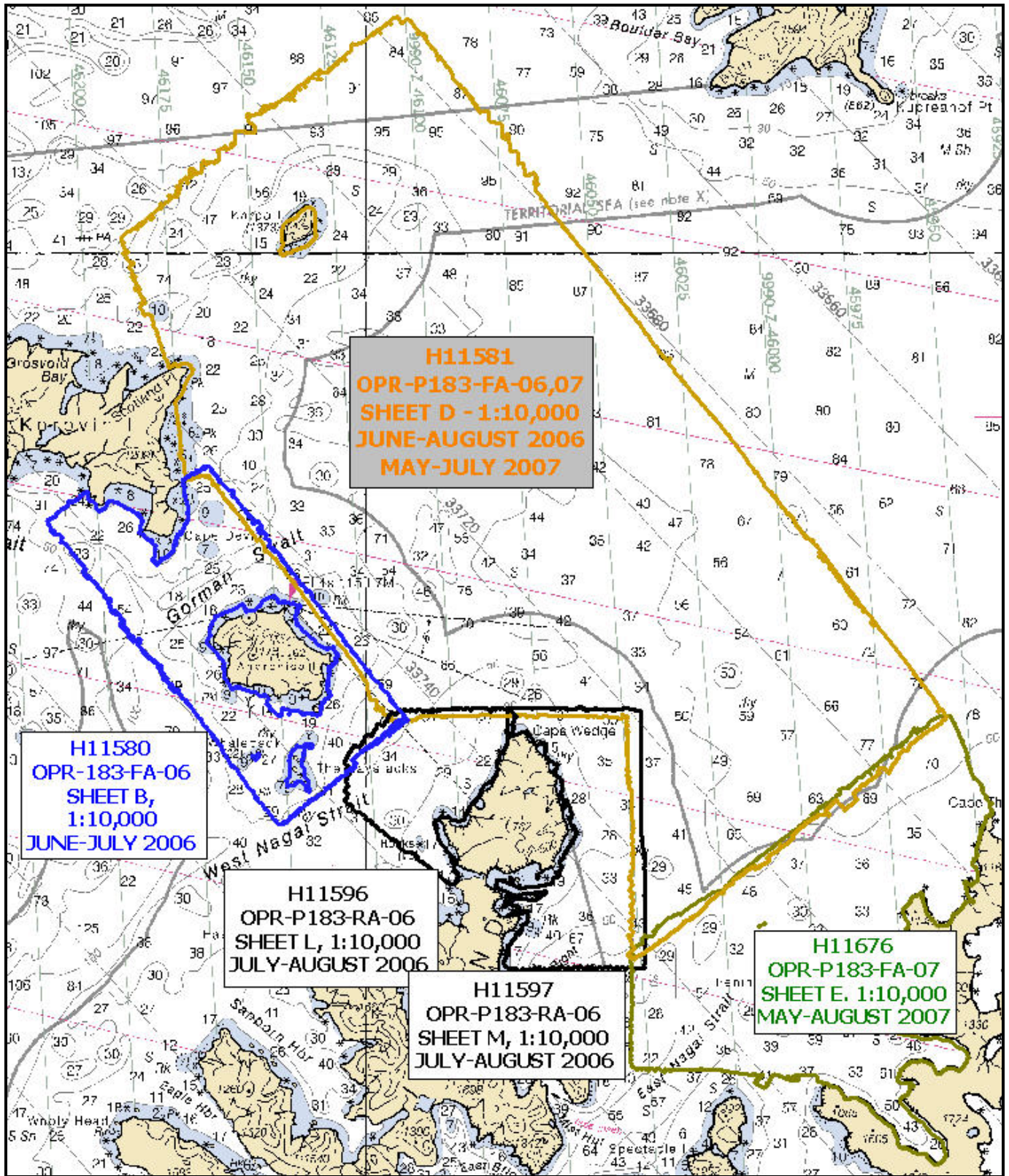


Figure 2: Junctions between H11581, H11580, H11676, H11596, and H11597.

Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section of the DAPR.

Data Quality Factors

COVERAGE ASSESSMENT:

Coverage Assessment followed procedures as outlined in the DAPR.

For holidays larger than 3 nodes across (for examples, see *Fig 3*), the corresponding multibeam backscatter side scan was examined and no navigationally significant items were found; additionally, the least depths were represented.

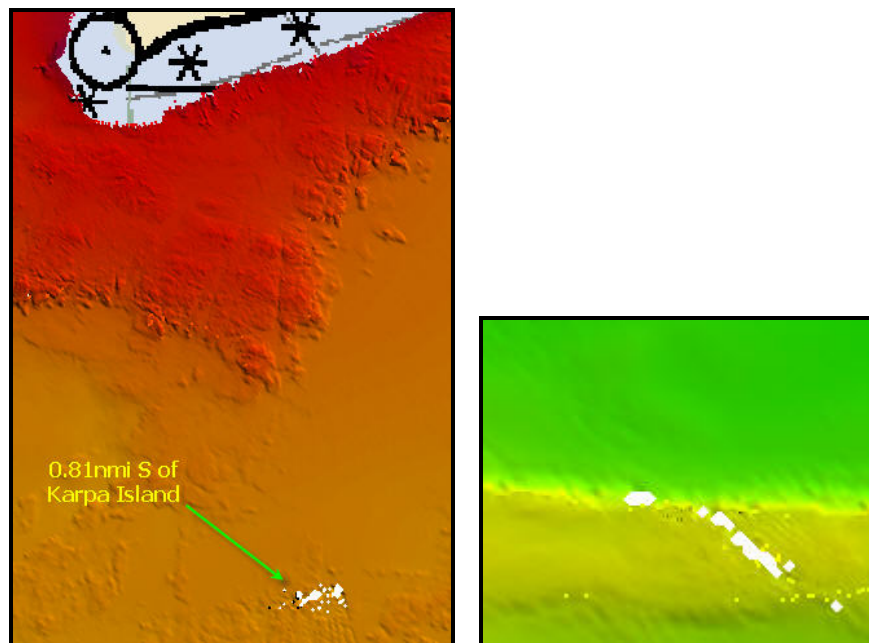


Figure 3: Small holidays 0.81nmi S of Karpa Island, and 3.8nmi E of Korovin I.

DESIGNATED SOUNDINGS:

Designation of soundings followed procedures as outlined in the DAPR.

TRUEHEAVE

Data collected with launch 1018 on DN 153, (2007) were affected due to inaccurate logging of Trueheave. The output logging rate for Trueheave collection, which should be set at 25 Hz, was set at 1Hz on the day listed above. The data collected on these days has a “bow-tie” effect (see *Fig.4*). The data, however, did not fail to meet the data accuracy specifications as stated in the *HSSDM*.⁸ Some outer beam locations differed by as much as 1 ½ meters, the IHO Order 1 error tolerance for the depth, but the CUBE surface is accurately representing the bottom.

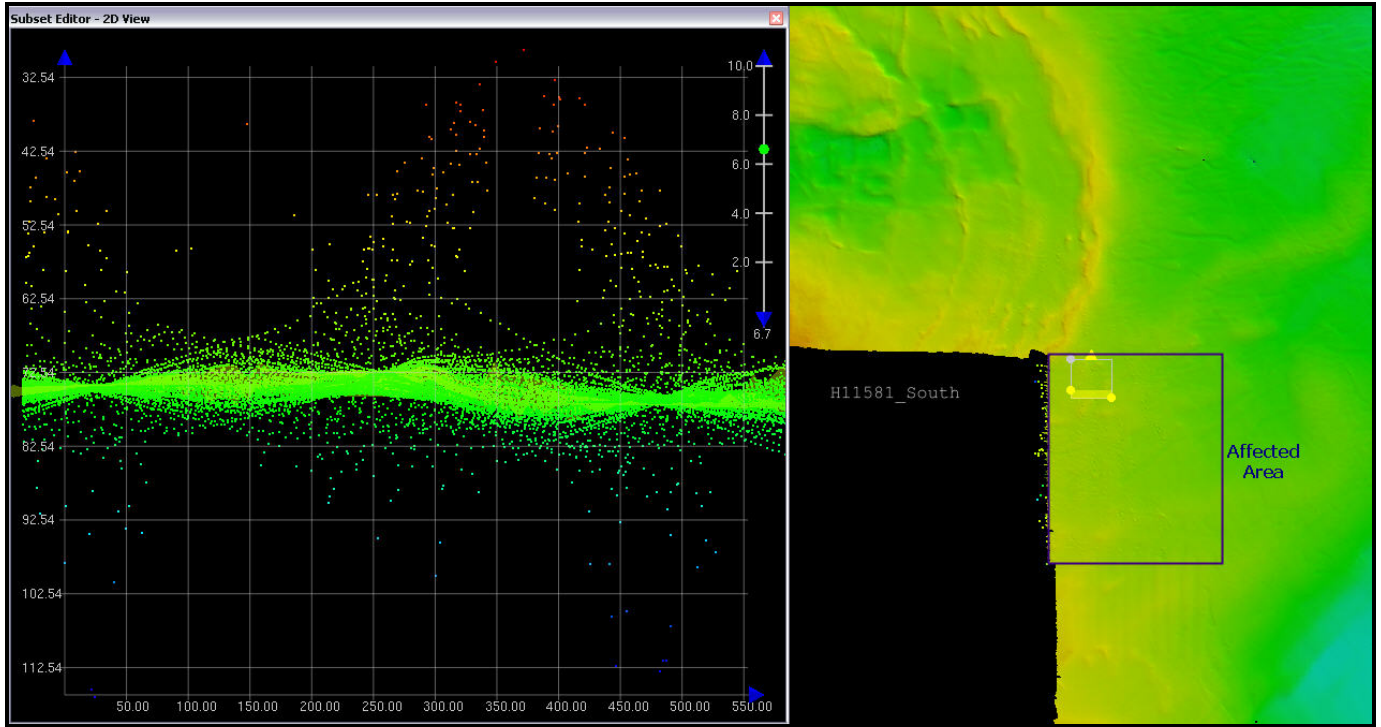


Figure 4: 'Bowtie' effect from Trueheave logging error

UNUSUAL CONDITIONS

There was a small vertical offset associated with a 2006 cross line over 2007 data. The offset however, was within the allowable IHO error for the depth.⁹ (See Fig. 5)

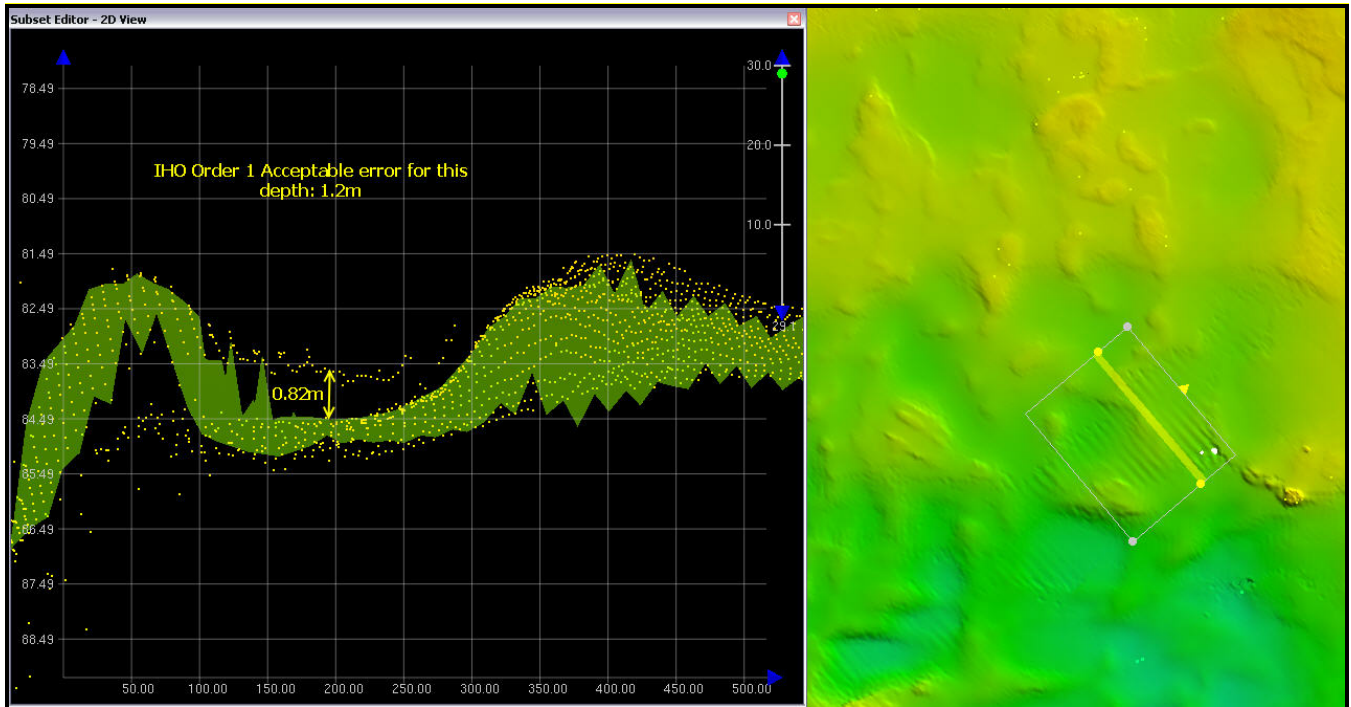


Figure 5: Vertical offset between 2006 XL and 2007 MS lines (within IHO order 1 error)

In some areas on H11581, there were some very steep features embedded in relatively flat featureless bottoms. Dropping over 30 meters in an almost vertical line, the location of the cliffs made it difficult to display full multibeam coverage at all relevant depth resolution levels in CARIS HIPS. At the FAIRWEATHER filtered resolution levels (see *Table 4*), noticeable apparent data gaps (<3 nodes across) were present in the data (see *Figure 6*). However, when a blanket coarse resolution such as the 20m is displayed, the gaps are not present (see *Figure 13* chart comparison image).

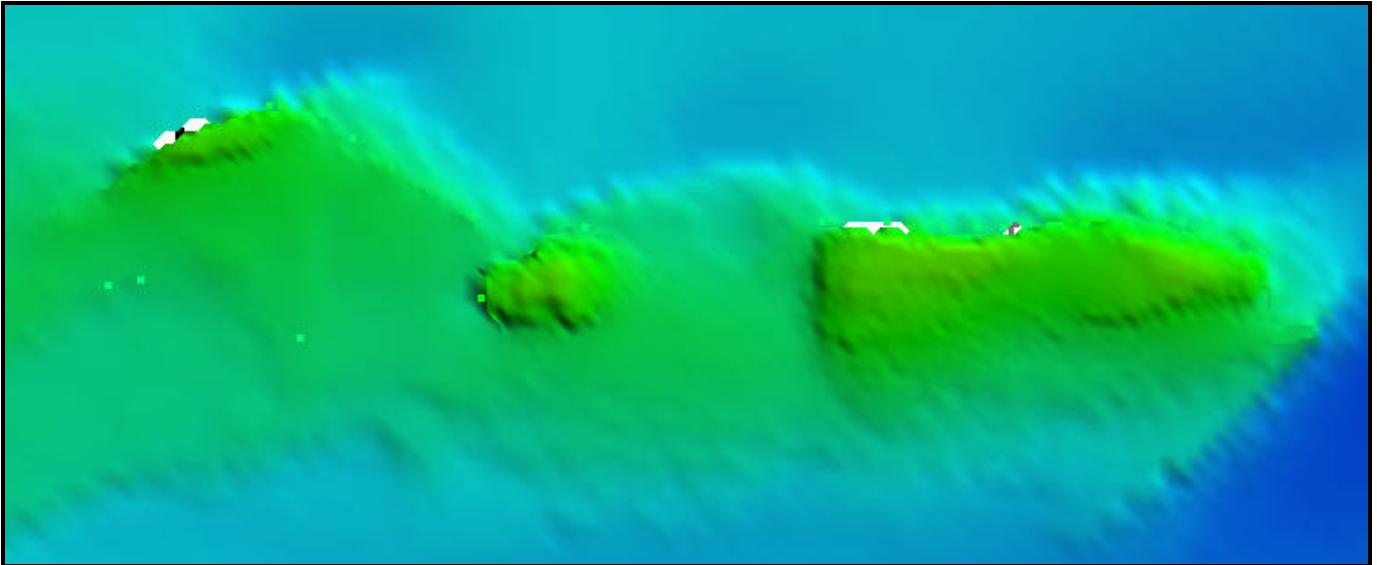


Figure 6: Feature cliff shown at FAIRWEATHER depth resolutions

Accuracy Standards

Areas that did not initially meet accuracy standards as outlined in the *HSSDM* were more completely investigated to ensure that least depths were adequately represented. In some areas, rejected data were re-accepted to ensure complete coverage. All finalized data meet the data accuracy specifications as stated in the *HSSDM*.¹⁰

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11581 conform to those detailed in the respective Data Acquisition and Processing Reports.

The time correction value was identified as needing adjustment mid-acquisition for the S220-8111 system during the 2006 portion of the survey. Additional patch testing and adjustments were required throughout the 2007 field season on both Launch 1010 and 1018 due to the instability of the roll arm mounts. The roll value for launch 1010 was adjusted on Dn151 prior to this survey and required additional roll adjustments on Dn172 and 176 during this survey. After tightening of the mount, launch 1010 was retested on Dn197, resulting in adjusted pitch, roll and yaw values. Launch 1018 did not have roll values updated prior to or during acquisition of this survey data.

B4. Data Processing

Data processing procedures for survey H11581 conform to those detailed in the DAPR.

There are six total fieldsheets fulfilling the various resolution requirements for survey H11581. H11581_North encompasses the Northern portion of the survey area to the five-, ten-, and twenty-meter resolutions. H11581_South encompasses the Southern portion of the survey area to the five-, ten-, and twenty-meter resolutions. Four additional fieldsheets (H11581_Karpa, H11581_Northwest, H11581_Andronica, and H11581_Korovin) cover the areas of the survey near coastline and shoals. These fieldsheets include surfaces of two meter resolution. The fieldsheet areas of coverage are displayed in *Figure 7* below.

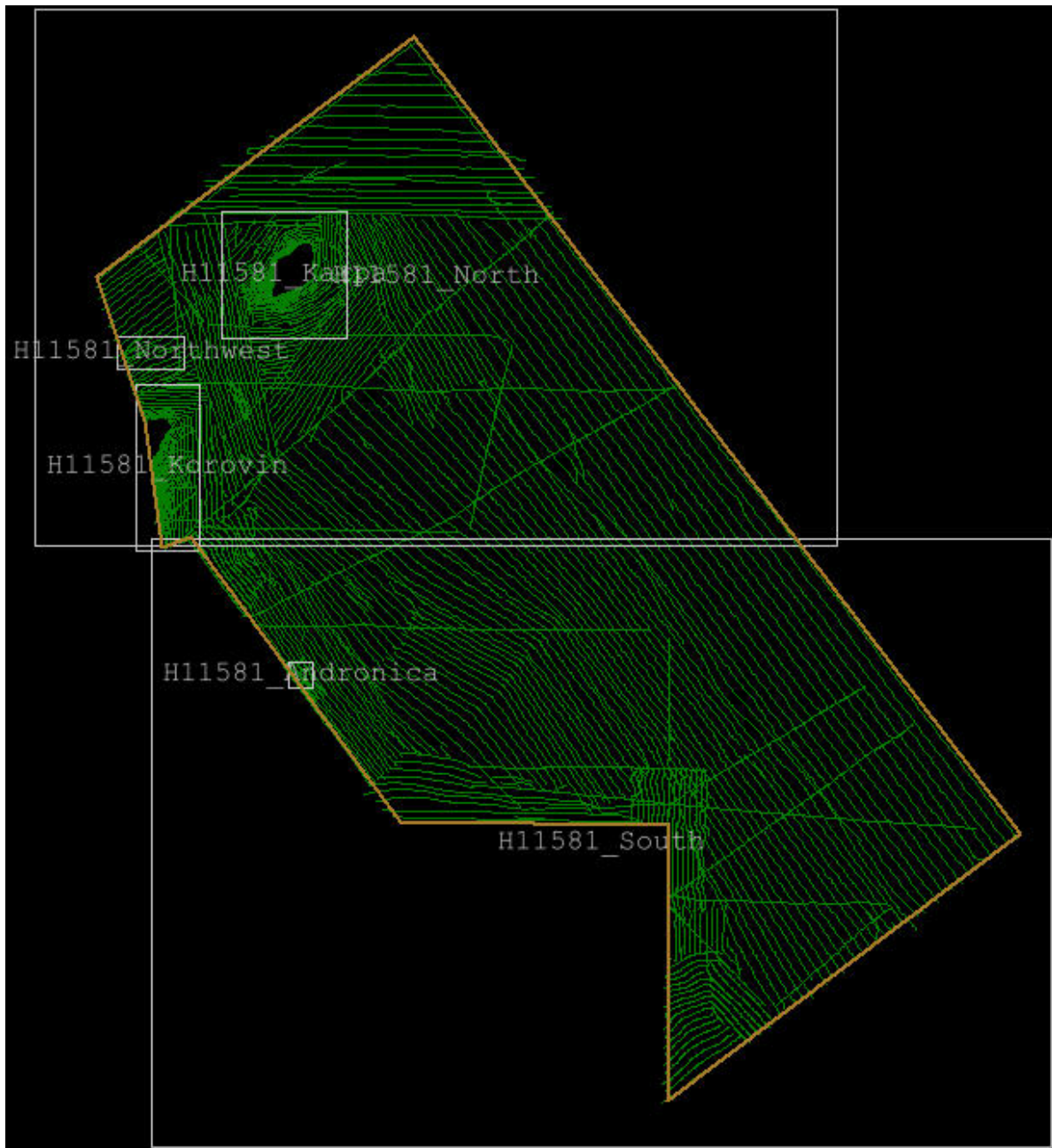


Figure 7: H11581 Fieldsheets

Two 10m finalized surfaces were created in the North and South fieldsheets. One set as part of FAIRWEATHER depth range/resolution (see *Table 4*), and the other from 50m to 200m for a higher resolution combined surface. (Instead of the coarsest resolution, 20m for coverage assessment, a 10m combined surface has been generated for submission.)¹¹

FAIRWEATHER			
Depth Ranges			Resolutions
Lo (m)	Hi (m)	Overlap (m)	Res. (m)
0	40		2
30	70	10	5
50	120	20	10
100	200	20	20

Table 4: H11581 Surface Resolutions by Depth Range

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11581 can be found in the *OPR-P183-FA-07 Horizontal and Vertical Control Report*, submitted under separate cover.¹² A summary of horizontal and vertical control for this survey follows.

Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections came from the U.S. Coast Guard beacon at Cold Bay (289 kHz).

Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary tide station at Sand Point (945-9450) served as control for datum determination and as the primary source for water level reducers for survey H11581 during acquisition. No tertiary tide station was required for this project.

A request for delivery of final approved water level data (smooth tides) for survey H11581 was forwarded to N/OPS1 on August 8, 2007 in accordance with the *Field Procedures Manual*, dated March 2007 (FPM). A copy of the request is included in Appendix V.¹³

FAIRWEATHER received the Tide Note for Hydrographic Survey H11581 on August 22, 2007. The Tide Note for Hydrographic Survey H11581 states that preliminary zoning is accepted as the final zoning correctors for the data from 2006 and 2007. Final approved water level data were received by the FAIRWEATHER on August 22, 2007 for NWLON primary tide station Sand Point (945-9450). The Tide Note for Hydrographic Survey H11581 and ancillary correspondence are included in Appendix V.¹⁴

As per the Letter Instructions, all data were reduced to MLLW using the final approved water levels (smooth tides) from station Sand Point (945-9450) by applying tide file 9459450.tid (for 2006 and 2007) and time and height correctors through the zone corrector files H11581CORF.zdf & P183FA2007CORP_rev.zdf., on August 30, 2007. It will not be necessary for the Pacific Hydrographic Branch to reapply the final approved water levels (smooth tides) to the survey data during final processing.

D. RESULTS AND RECOMMENDATIONS

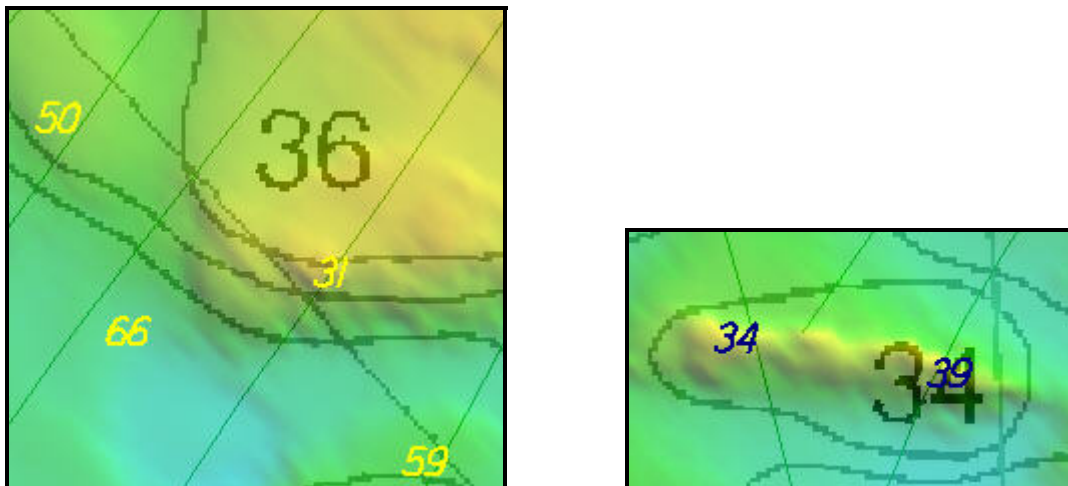
D.1 Chart Comparison

Chart comparison procedures were followed as outlined in the FPM. The H11581 CUBE surface and soundings layer were displayed in Caris HIPS and SIPS against the appropriate charts (highlights below.)

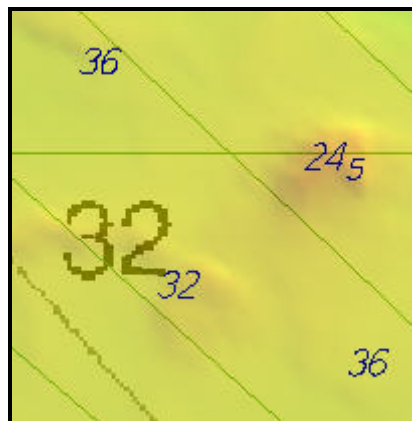
Survey H11581 was compared with charts 16553 (5th Ed.; September 01, 2005, 1:80,000), 16556 (4th Ed.; November 1, 2002, 1:80,000), and 16540 (12th Ed.; January 1, 2005, 1:300,000). All charts have been updated with the Notice to Mariners through August 25, 2007 (34/07). There were no new changes within the survey area.

Chart 16553

Chart 16553 is the largest scale representation for the western portion of H11581, which is the more dynamic area of the survey. There were no unrepresented significant shoals or hazards posing an immediate danger to navigation discovered during survey acquisition, but there were some areas of inaccurate representation, highlighted below.



*Figures 8&9: Areas to the Southwest of Karpa Island are more dynamic than the chart represents.*¹⁵



*Figure 10: An unrepresented shoal East of Korovin Island.*¹⁶

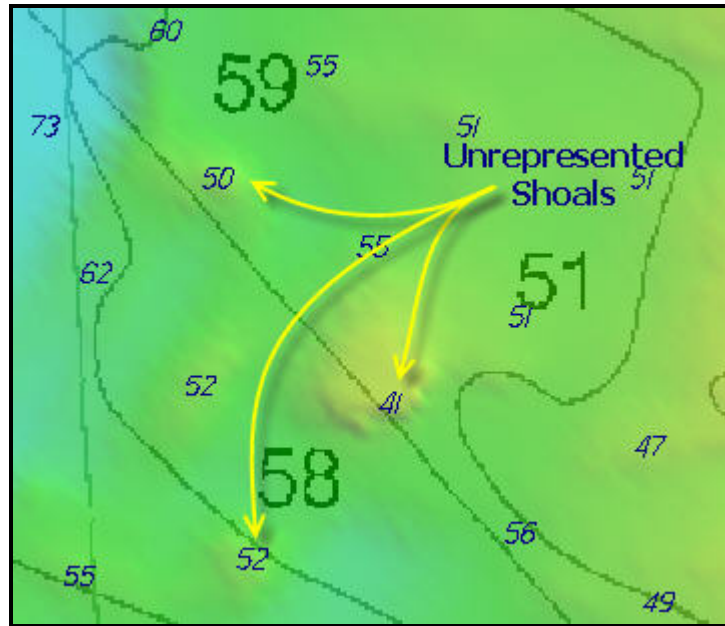


Figure 11: More unrepresented shoals in West Nagai Strait.¹⁷

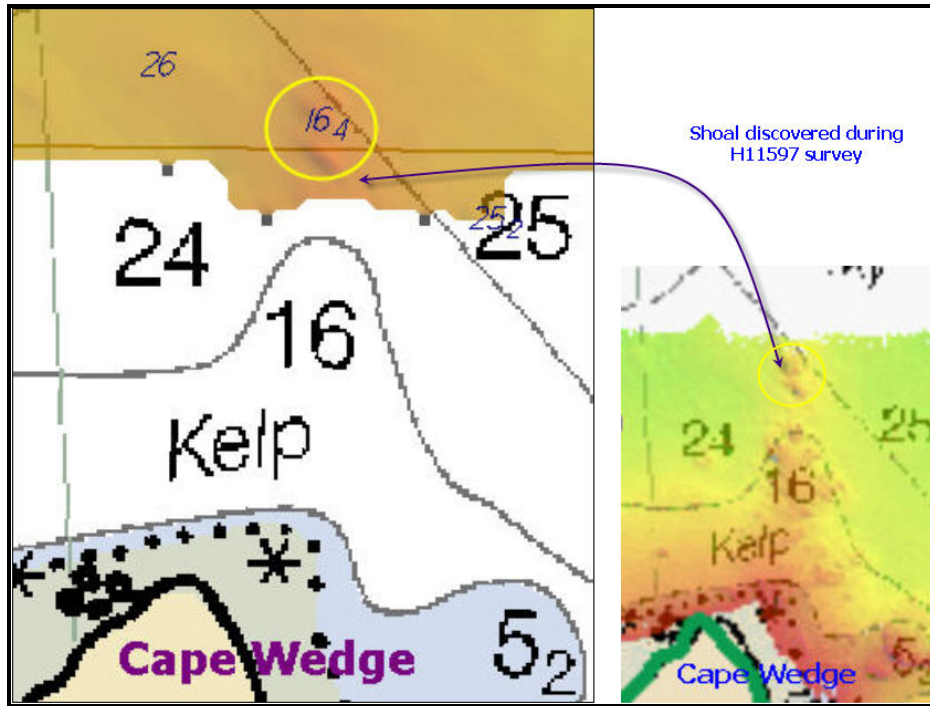
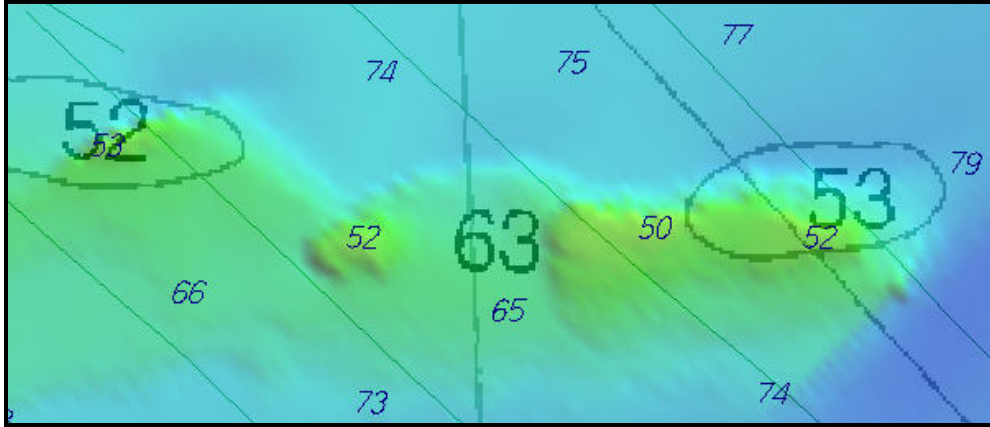


Figure 12: Shoal North of Cape Wedge discovered in OPR-P183-RA-06 H11597 survey.¹⁸

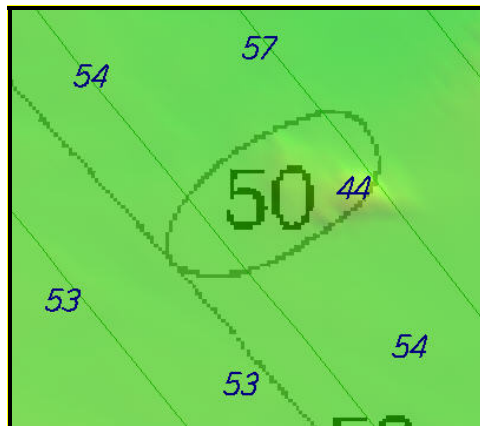
The rest of the depths on chart 16553 generally agree with the depths from survey H11581.¹⁹

Chart 16556

Chart 16556 is the smallest scale representation for the eastern portion of H11581, which is the less dynamic area of the survey.²⁰ Like Chart 16553, there were a few areas of inaccurate representation.



*Figure 13: An area Southeast of Karpa Island with a misrepresented elongated shoal.*²¹



*Figure 14: Misrepresented Shoal 8.8nmi SE of Karpa Island.*²²

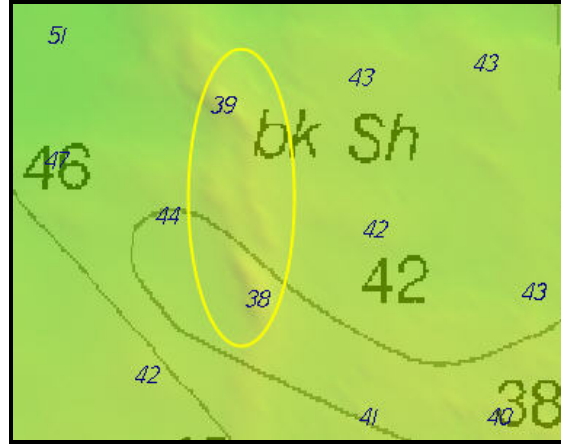


Figure 15: Unrepresented ridge 2.5nmi NE of Cape Wedge.²³

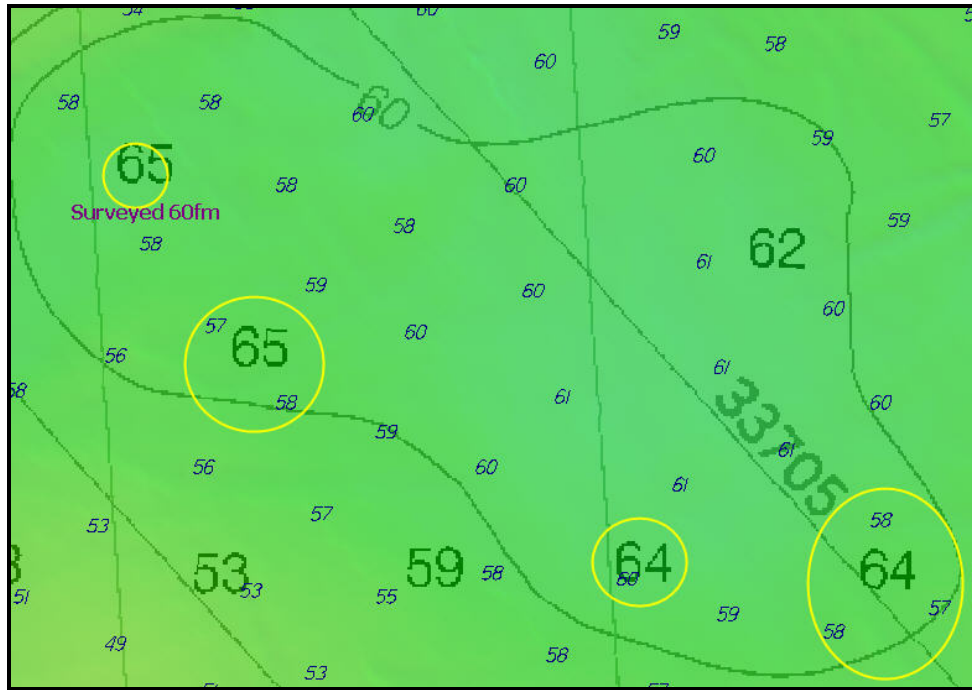


Figure 16: Sounding disagreement inside 60fm contour 6nmi East of Cape Wedge.²⁴

The rest of the depths on chart 16556 generally agree with the depths from survey H11581.²⁵

Chart 16540

Depths from survey H11581 generally agreed within one to two fathoms with depths on chart 16540. Exceptions are those noted in the 16553 and 16556 comparisons above. Some of the shoaler depths represented on the chart near the shoreline appear to have been pulled off shore for cartographic representation, but remain accurate within the scale of the chart.²⁶

Chart Comparison Recommendations

The Hydrographer has determined that bottom coverage requirements have been met and data accuracy meets requirements specified by the *HSSDM*. **The surveyed soundings are adequate to supersede prior surveys in their common areas.**²⁷ Verified water level data (smooth tides) were applied by FAIRWEATHER, so final chart comparisons are not required by the Pacific Hydrographic Branch.

Automated Wreck and Obstruction Information System (AWOIS) Investigations

There were 6 AWOIS items located within the limits of H11581. All AWOIS items are addressed in the H11581_Features.pdf in Appendix II.²⁸

Dangers to Navigation

There were no dangers to navigation found within the survey limits.²⁹

Charted Feature Removal Request

There were two charted features that were disproved with 100% MBES.³⁰ Both were charted rocks near the shore of Korovin Island. (See *Fig.15* below.)

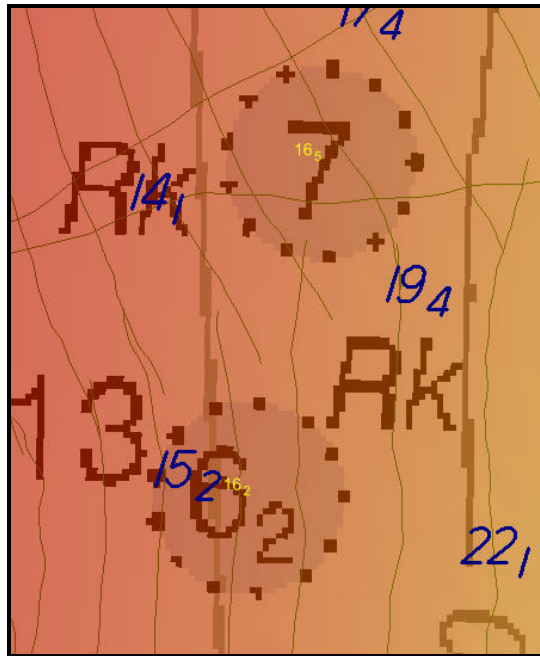


Figure 17: Disproved charted rock features East of Korovin Island

D.2 Additional Results

Shoreline Verification and Processing

FAIRWEATHER personnel conducted limited shoreline verification at times near predicted low water, in accordance with the Standing Project Instructions and HTD-2007-7. A composite source file from

HSD's Operations Branch was provided with the project instructions. A sole shoreline source was included in the composite source file: Geographic Cell (GC) Shoreline compiled by the Remote Sensing Division (RSD) from photogrammetric surveys. Navigationally significant charted (#16553) features located within the survey limits were also digitized into the composite source layer. All shoreline features from the composite source seaward of the Navigable Area Limit Line (NALL) were verified or disproved during shoreline operations.

Detached positions (DPs) and generic positions (GPs) acquired during shoreline verification were recorded in Trimble TerraSync 2.4.1 and on paper DP forms. Scanned copies of the DP forms are included in the digital separates.³¹ In addition, annotations describing shoreline were recorded on hard copy plots (boat sheets) of the digital shoreline.

DPs and GPs were inserted into Pydro where they were tide corrected, S57 attributed, and resolved according to Pydro flagging logic. A survey feature report for shoreline items was generated and included as H11581_Survey_Features.pdf in Appendix II.³² The report includes all significant shoreline items requiring specific attention that were flagged Report in Pydro. Investigation or survey methods for these items were included under the Remarks tab and, when appropriate, recommendations to the cartographer were included in the Recommendations tab.

Shoreline deliverable .HOB files were compiled in Caris Notebook 3.0. Edits to existing source shoreline features were made in the H11581_Composite_Source.hob file, with GC and charted features modified or deleted as necessary. Field notes accompanying verified source features were entered in the remarks attribute field. GPs and DPs were imported into Notebook from Pydro; these features are included in the H11581_Updates file.

If a source feature was edited in Notebook, the SORIND and SORDAT attribute fields were modified to reflect the survey number (US,US,surve,H11581) and final survey date. Unmodified source shoreline features were left with their original SORIND and SORDAT values. The SORIND/SORDAT information for shoreline features included in the final Notebook .HOB files is included in Table 5.

Shoreline Source	SORIND	SORDAT
RSD ³³	US,US,graph,GC10558	20010601
RNC	US,US,graph,Chart16553	20050901
Survey	US,US,graph,H11581	20070730

Table 5: SORIND/SORDAT Shoreline Features

Of note, three Pydro GP lines that are not in the "Updates" .hob file have been placed into the composite source.hob file. The lines were initially created through Pydro, but due to technical problems were later only available in Notebook. The shoreline data is complete as found in the .hob files, and this does not present an inconsistency.³⁴

For a more detailed description of shoreline verification and processing refer to the DAPR.³⁵

Shoreline Recommendations

The Hydrographer recommends that the shoreline depicted in the CARIS Notebook files and final sounding files supersede and complement shoreline information compiled on the NOAA charts.³⁶

Aids to Navigation

There were no Aids to Navigation within the survey limits.³⁷

Bottom Samples

Bottom samples were collected on June 15, 2007 (DN 166), July 27, 2007 (DN 208), and July 29, 2007 (DN 210) and are included as seabed classifications along with the other S57 features in the Pydro Preliminary Smooth Sheet. The bottom sample positions were also imported to the Notebook H11581_Updates.hob file.³⁸

E. Supplemental Reports

Listed below are supplemental reports submitted separately that contain additional information relevant to this survey:

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Hydrographic Systems Readiness Review Memo 2007	April 23, 2007	N/CS34
OPR-P183-FA-07 Data Acquisition and Processing Report	November 19, 2007	N/CS34
OPR-P183-FA-07 Horizontal & Vertical Control Report	August 22, 2007	N/CS34, N/OPS1
OPR-P183-FA-07 Coast Pilot Report	September 18, 2007	N/CS26
Hydrographic Systems Readiness Review Memo 2006	May 18, 2006	N/CS34
OPR-P183-FA-06 Data Acquisition and Processing Report	April 13, 2007	N/CS34
OPR-P183-FA-06 Horizontal & Vertical Control Report	October 31, 2006	N/CS34, N/OPS1



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
NOAA Marine and Aviation Operations
NOAA Ship FAIRWEATHER S-220
1010 Stedman Street
Ketchikan, AK 99901

28 March 2008

MEMORANDUM FOR: CDR David Neander, NOAA
Chief, Pacific Hydrographic Branch

FROM: CDR Andrew L. Beaver, NOAA
Commanding Officer

TITLE: Approval of Hydrographic Survey H11581,
OPR-P183-FA

As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during acquisition and processing of hydrographic survey H11581 in accordance with the Hydrographic Manual, Fourth Edition; Hydrographic Survey Guidelines; Field Procedures Manual, Mar 2007; and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for April 2007. Additional guidance was provided by applicable Hydrographic Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required. All data and reports are respectfully submitted to N/CS34, Pacific Hydrographic Branch.

I acknowledge that all of the information contained in this report is complete and accurate to the best of my knowledge.

In addition, the following individuals were responsible for oversight of acquisition and processing of this survey:

LTjg Matthew Glazewski
Survey Manager

LT Jennifer Dowling
Field Operations Officer

CST Grant Froelich
Chief Survey Technician

Attachment



¹ Concur with clarification. Full bottom coverage was obtained for the extents of survey H11581; however, no attempt was made to ensure adequate overlap with the 2005 LIDAR junction survey H11435. There is a large holiday 770 meters long by 244 meters wide at the southern extent of the LIDAR junction. There were also two holidays larger than three nodes across described in the Data Quality Factors section and, upon examination by the field unit, it was determined that no significant features exist within those holidays.

² Do not concur. As noted in the Survey Acceptance Review, the NALL is defined as the 4 meter depth curve **OR** 0.8 mm from the mean high water (MHW) line on the largest scale chart, in this case 64 meters. The MHW buffer should not exclusively be referred to as the NALL, especially when unnavigatable areas can extend offshore of that line, thus making the 4 meter curve a more reasonable definition. See Survey Acceptance Review for details, filed with hydrographic records.

³ Filed with project records for OPR-P183-FA-06 and OPR-P183-FA-07.

⁴ Concur.

⁵ Concur.

⁶ Concur.

⁷ Junction with LIDAR survey H11435 not addressed in this survey; however junction data from H11435 is compiled to the Hcell for survey H11581. All LIDAR data included in the Hcell was digitized directly from the smooth sheet. The only soundings digitized were intended for the chart-scale sounding set, however, after review, some of those soundings have been removed from the Hcell. All features in the LIDAR smooth sheet were manually digitized and imported into HOM. Any features that were de-conflicted with charted data are not included in the Hcell, specifically any LIDAR rocks that fell on the charted ledges. The 0 meter depth curve delineated by the LIDAR data was used to confirm the charted extents of MLLW.

⁸ Concur with clarification. Data exceeds error tolerance in many locations as found during the Survey Acceptance Review. The soundings selected from launch 1018 on DN 153 were selected as close to nadir as possible during compilation to ensure the soundings in the Hcell meet quality specifications. The data is bounded by the following coordinates: North to south 55-15-54.639N to 55-19-16.53N and East to West 159-46-01.47W to 159-49-12.16W. There are survey-scale soundings within the box that are shoaler than what has been selected for the Hcell, but they are attributed to the errors described above. See Survey Acceptance Review for details, filed with hydrographic records.

⁹ Concur.

¹⁰ Concur with clarification. According to the Survey Acceptance Review, all data appears to meet accuracy specifications with the exception of multibeam data acquired by launch 1018 on DN153. See endnote 7.

¹¹ H11581_North_Combined_10m_Office and H11581_South_Combined_10m_Office were used for HCell compilation.

¹² Do not concur. The HVCR memo filed with project records states that no HVCR report was submitted for this survey.

¹³ Attached to this report.

¹⁴ Tide note attached.

¹⁵ Do not concur with use of “dynamic” in the description. Differences in this area are due to improved survey technology, not an active seafloor. Shoals located at 55-27-57.4 N, 159-59-22.6 W and 55-26-45.3 N, 160-03-43.9 W, respectively. Depths are in fathoms.

¹⁶ Shoal located in the vicinity of 55-24-32.7 N, 160-02-42.6 W. Depths are in fathoms.

¹⁷ Shoal located approximately at 55-20-35.2 N, 159-54-15.7 W. Depths are in fathoms.

¹⁸ Shoal located at 55-17-56.5 N, 159-52-27.8 W. Depths are in fathoms.

¹⁹ Concur with clarification. According to a chart comparison conducted during the Survey Acceptance Review, on average, charted deep water soundings in the eastern portion of the northern fieldsheet are 1-2 fathoms shoaler than surveyed depths. The additional chart comparisons are attached.

²⁰ Do not concur with use of “dynamic” in the description. Differences in this area are due to improved survey technology, not an active seafloor.

²¹ Charted contours do not accurately represent the surveyed extents of a shoal located Southeast of Karpa Island at 55-25-21.3 N, 159-58-56 W. Depths are in fathoms. Recommend revising contours based on new survey data.

-
- ²² Shoal located at 55-24-21.57 N, 159-51-15.05 W with a least depth of 43.13 fathoms.
- ²³ Ridge located at 55-19-06 N, 159-49-21.4 W. Depths are in fathoms.
- ²⁴ Sounding disagreement with charted contour located at 55-18-14.2 N, 159-42-22.3 W. Depths are in fathoms.
- ²⁵ Concur with clarification. According to a chart comparison conducted during the Survey Acceptance Review, surveyed soundings were on average 5 to 10 fathoms shoaler than charted depths along the Southeastern extent of survey H11581.
- ²⁶ Concur.
- ²⁷ Concur.
- ²⁸ AWOIS report attached.
- ²⁹ Concur.
- ³⁰ Concur with clarification. The two disproved soundings were originally submitted as DTONs from the 2005 LIDAR junction survey H11435. They are located, from north to south, at 55-25-31.66N, 160-07-55.73W and 55-25-17.53N, 160-08-00.58W and were disproved by 100% multibeam coverage.
- ³¹ Filed with hydrographic records.
- ³² Filed with hydrographic records.
- ³³ Concur with clarification. The RSD source cited is located in the vicinity of Scotland Point on Korovin Island. There is also an RSD source with SORDAT **20000501** and SORIND US,US,graph,**GC10588** located in the vicinity of Karpa Island.
- ³⁴ Concur with clarification. Together, the “updates” file and the “composite source” file are a complete representation of the shoreline based on the limited field verification, although there is redundancy between the two.
- ³⁵ Concur with clarification. There was a “disprovals” file submitted that is not mentioned in the DR. It contains two soundings that were disproved by 100% multibeam coverage (see endnote 25) and one rock that was determined to be part of a new ledge that is represented in the “composite source” file.
- ³⁶ Concur with clarification. New and updated shoreline features should supersede charted information in the survey area.
- ³⁷ Concur.
- ³⁸ Bottom samples collected during the survey supersede and compliment existing bottom samples from ENCs US4AK57M and US4AK58M. Chart all bottom samples as compiled in the Hcell.

V. SUPPLEMENTAL OFFICE CHART COMPARISON

Chart 16553

A portion of the mean high water (MHW) line on the West coast of Karpa Island differed significantly from the Composite Source shoreline that was compiled from photogrammetric images. Where the chart depicts a small extension of the coastline, the Remote Sensing Division (RSD) digitized several islets and rocks that were “noted” by the field unit conducting survey H11581. The tip of the contested coastline was also covered with shallow water multi-beam data SWMB (Figure 4). It is recommended that the charted coastline be superseded by the Composite Source shoreline.

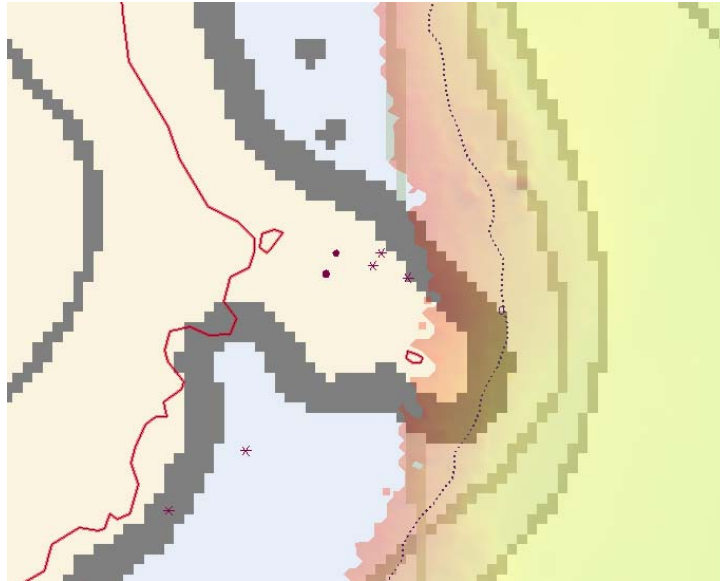


Figure 4. An image showing a portion of the MHW on the West coast of Karpa Island as charted on chart 16553. The HOB file H11581_Composite_Source is overlain over chart 16553 with features colored in red. A semi-transparent 5-meter CUBE Surface colored by depth is also overlain on the chart. The Composite Source rocks and islets were confirmed by the field and should replace the charted (16553) MHW line.

NORTH FIELDSHEET

On average charted deep water soundings in the eastern portion of the northern fieldsheet are 1-2 fathoms shallower than surveyed depths.

A charted 63-fm depth located at 55-26-48.09 N, 159-48-50.93 W was disproved by SWMB data and was surveyed as approximately 20 fathoms deeper than charted (~83 fm).

Surveyed depths over a charted 52-fm sounding located at 55-25-24.98 N, 159-49-14.16 W were approximately 14 fathoms deeper than charted.

A least depth of 43 fathoms (55-24-21.57 N, 159-51-15.05 W) was surveyed over a charted 50-fm depth.

A new shoal with a least depth of 33 fathoms was located in the vicinity of a charted 40-fm contour located at 55-27-57.4 N, 159-59-22.6 W. This shoal is also addressed with an image in the submitted DR.

The bounds of a 36-fm shoal were not correctly charted (Figure 5). The least depth of the shoal was surveyed as 29 fathoms located at 55-25-47.4 N, 160-02-52.3 W. The charted least depth and contour surrounding the shoal should be updated. The reviewer flagged the least depth as Outstanding.

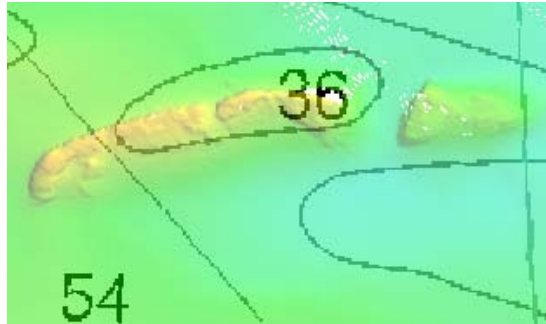


Figure 5. The 5-meter CUBE surface colored by depth was overlaid over chart 16553 in the image above to demonstrate the discrepancy between the charted and surveyed shoal.

A number of new shoals were found in the Northwest corner of the survey area where the bottom is very dynamic:

- 1) A new shoal with a least depth of 42.5 fathoms located at 52-29-04.2 N, 160-07-32.8 W was surveyed in proximity, approximately (~) 250 m to the SE, of charted 47-fm depth.
- 2) A new shoal with a least depth of 50.4 fathoms located at 52-29-06.9 N, 160-08-42.2 W was surveyed in the vicinity of a charted 59-fm depth (~140 m to the W).

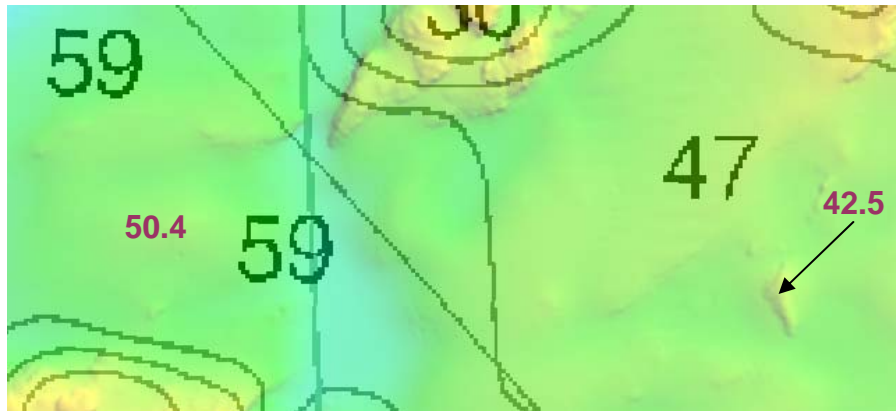


Figure 6. In this image, a 5-meter CUBE Surface colored by depth was overlaid on chart 16533 and the least depths of two new surveyed shoals are shown in red. Depths are in fathoms.

- 3) A 57-fm sounding was surveyed seaward of a charted 60-fm contour and 200 m SW of a charted 69-fm depth at 55-29-48.14 N, 160-08-40.32 W.
- 4) A 42-fm sounding was surveyed over a charted 50-fm contour located at 55-29-20.8 N, 160-09-56.5 W.

A new shoal with a least depth of 66.5 fathoms was surveyed 240 meters to the east of charted 73-fm depth and in the center of other charted depths of 74 and 76. The Reviewer flagged the least depth as Outstanding (Figure 7).



Figure 7. The least depth of 122 meters (66.5 fm) over a new shoal is shown in the center of a triangle of charted (16553) depths of 73, 74 and 76 fm. A 5-m CUBE Surface colored by depth is overlain on chart 16553.

Two submerged charted rocks were disproved with 100 percent SWMB (Figure 8). Charted rocks of 7 and 6.2 fathoms were located at 55-25-31.14 N, 160-07-54.92 W and 55-25-17.10 N, 160-07-59.81 W, respectively. Depths surveyed over the charted shoals ranged between 14 and 18 fathoms.

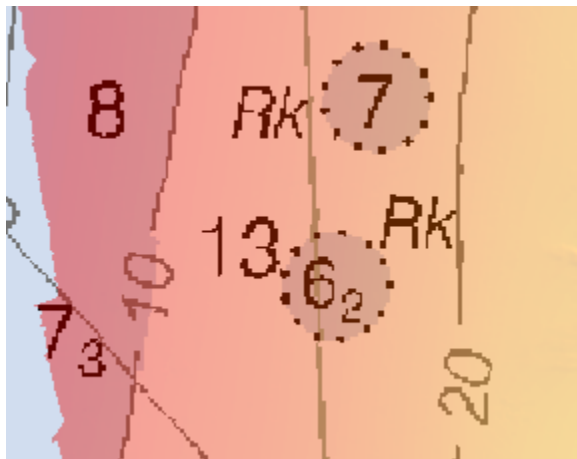


Figure 8. Two charted submerged rocks were disproved with 100% SWMB coverage. The charted (16553) depths of 7 and 6.2 fathoms were surveyed with depths ranging between 14 and 18 fathoms. In the image a 5-m CUBE Surface was made partially transparent and overlain on chart 16553.

SOUTH FIELDSHEET

A charted 40-fm depth located at 55-23-43.4 N, 159-59-56.5 W was disproved with 100% SWMB with surveyed depths ranging between 62 and 68 fathoms.

A new least depth of 43 fathoms located at 55-24-21.6 N, 159-51-15.05 W was surveyed over a charted shoal of 50 fathoms. Also, a new least depth of 41 fathoms located at 55-23-17.8 N, 159-57-23.7 W was surveyed over a charted shoal of 49 fathoms.

A large number of new shoals were surveyed in the southwestern portion of survey H11581.

- 1) A new shoal was surveyed to the Northeast of Andronica Island near the Southeast entrance to Gorman Strait (Figure 9). The least depth of the shoal was 16.5 fathoms located at 55-21-25.6 N, 160-02-52.6 W and was located approximately 100 meters Southwest of a 30-fm contour. The least depth was flagged as Outstanding by the Reviewer.

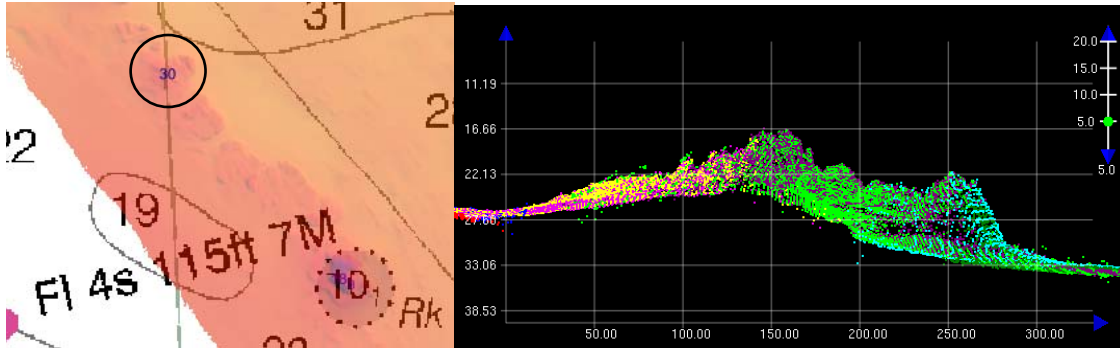


Figure 9. A new shoal with a least depth of 16.5 fm (30 m) was surveyed northeast of Andronica Island. The shoal is shown above in Caris HIPS (left) with a partially transparent 5-m CUBE Surface overlain on chart 16553. The right image was taken in Caris HIPS Subset Editor with soundings colored by survey line and depths in fathoms.

- 2) A 41-fm shoal was surveyed at 55-20-32.4 N, 159-54-12.8 W in the vicinity of a charted 58-fm depth.
- 3) A 61-fm shoal was surveyed at 55-20-45.3 N, 159-55-36.6 W between charted depths of 69 and 72 fathoms (Figure 10).

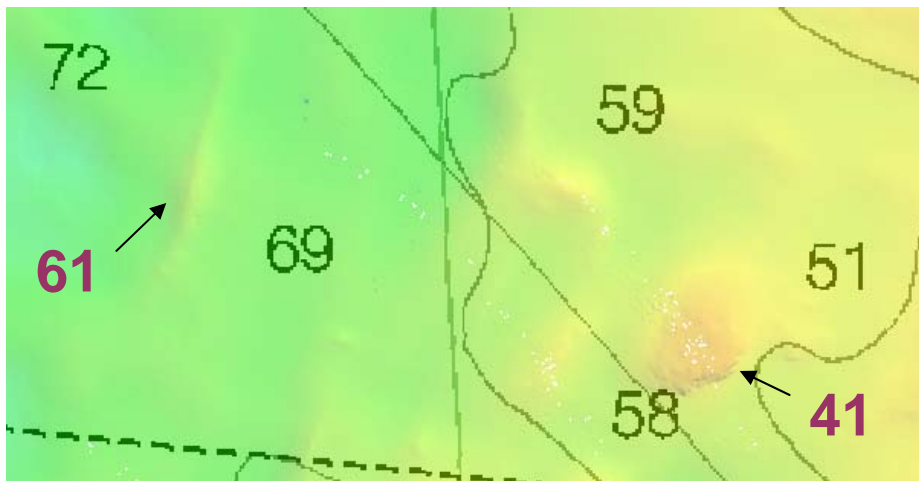


Figure 10. Two new shoals with least depths of 41 and 61 fathoms were surveyed in the Southwest section of survey H11581. A partially transparent 5-m CUBE Surface is overlain on chart 16553 and depths are shown in fathoms.

- 4) Two shoals with least depths of 38 and 49 fathoms located at 55-19-15 N, 159-54-18.6 W and 55-19-45.25 N, 159-53-37.2 W, respectively, were in the vicinity of charted depths ranging between 53, 56 and 57 fathoms (Figure 11).

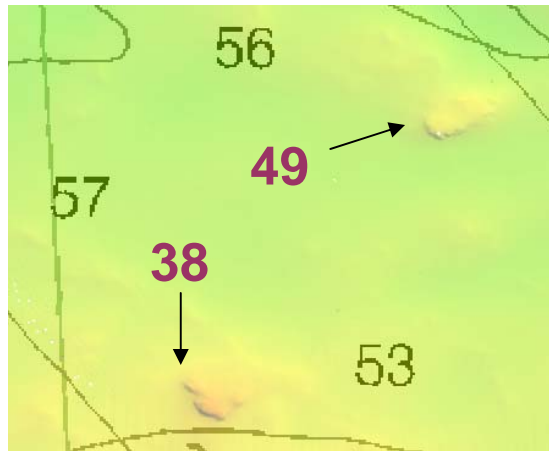


Figure 11. Two new shoals with least depths of 38 and 49 fathoms were surveyed in the Southwest section of survey H11581 in the center of three charted depths of 53, 56 and 57 fathoms. A partially transparent 5-m CUBE Surface is overlain on chart 16553 and depths are shown in fathoms.

- 5) A new shoal with a least depth of 53 fathoms was surveyed at 55-19-12.7 N, 159-56-14.1 W located 400 meters to the Southwest of a charted 66-fm depth.
- 6) A shoal with a least depth of 52.7 fathoms was surveyed at 55-18-15.2 N, 159-57-54.18 W over a charted depth of 70 fathoms. There is a small data gap over the top of the shoal and it appears that the true least depth was found. The least depth was flagged as Outstanding.
- 7) A new least depth of 14.85 fathoms was surveyed just north of Cape Wedge located at 55-17-56.5 N, 159-52-27.8 W. The shoal was offshore of a charted 20-fm contour and in the vicinity of charted 24 and 25 fathom depths.

Chart 16556

Surveyed soundings were on average 5 to 10 fathoms shoaler than charted depths along the Southeastern extent of survey H11581.

H11581 Features Report

Registry Number: H11581
State: Alaska
Locality: Shumagin Islands
Sub-locality: Offshore, Cape Wedge to Karpa Island
Project Number: OPR-P183-FA-07
Survey Dates: 07/11/2006 - 06/23/2007

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
16553	5th	09/01/2005	1:80,000 (16553_1)	[L]NTM: ?
16540	12th	01/01/2005	1:300,000 (16540_1)	[L]NTM: ?
16011	36th	08/01/2004	1:1,023,188 (16011_1)	[L]NTM: ?
16006	34th	05/01/2006	1:1,534,076 (16006_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
530	31st	06/01/2005	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

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

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	AWOIS	0.17 m	55° 30' 08.4" N	160° 03' 06.0" W	---
1.2	AWOIS	[no data]	[no data]	[no data]	---
1.3	AWOIS	[no data]	[no data]	[no data]	---
1.4	Sounding	0.16 m	55° 30' 04.4" N	160° 03' 24.0" W	53441
1.5	Sounding	-0.60 m	55° 30' 01.8" N	160° 04' 00.1" W	---
1.6	Sounding	-4.62 m	55° 30' 00.8" N	160° 03' 57.9" W	53440
1.7	Sounding	-1.07 m	55° 30' 17.0" N	160° 02' 42.1" W	53443
1.8	Sounding	30.90 m	55° 25' 31.7" N	160° 07' 55.7" W	---
1.9	Sounding	29.98 m	55° 25' 17.5" N	160° 08' 00.6" W	---

1 - Report

1.1) AWOIS #53442 - OBSTRUCTION

Primary Survey Feature is Profile/Beam - 3/1 from h11581 / fa_trimble_dpne_2 / 2006-192 / tr2_192_shtd.mdb

Search Position: 55° 30' 09.2" N, 160° 03' 09.4" W
Historical Depth: [None]
Search Radius: 60
Search Technique: VS, VBES, MBES, S2
Technique Notes: UPDATE POSITION AND HEIGHT IN SUPPORT OF MARITIME BOUNDARY CLAIM

History Notes:

H08046/56 -- RK FOUND DURING SURVEY IN POSITION 55/30/09.25N 160/03/09.39W (ENTERED 5/16/06, SME)■■■■AWOIS #53442 rock verified. DP taken for height and position.

Survey Summary

Survey Position: 55° 30' 08.4" N, 160° 03' 06.0" W
Least Depth: 0.17 m (= 0.55 ft = 0.092 fm = 0 fm 0.55 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2006-192.18:08:19.000 (07/11/2006)
DP Dataset: h11581 / fa_trimble_dpne_2 / 2006-192 / tr2_192_shtd.mdb
Profile/Beam: 3/1
Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53442, CFF RK VERIFIED, DP FOR HT AND POS'N

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11581/fa_trimble_dpne_2/2006-192/tr2_192_shtd.mdb	3/1	0.00	000.0	Primary
H11581_BoundaryAwois	AWOIS # 53442	64.17	115.4	Secondary (grouped)

Hydrographer Recommendations

The Hydrographer recommends the addition of a rock symbol to charts #16553 and 16540.

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)

Attributes: QUASOU - 1:depth known
RECDAT - 20060711
SORDAT - 20070730
SORIND - us,us,survey,h11581
VALSOU - 0.169 m
VERDAT - 12:Mean lower low water
WATLEV - 4:covers and uncovers

Office Notes

Concur.

Feature Images



Figure 1.1.1

1.2) AWOIS #53444 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position: 55° 26' 50.2" N, 160° 08' 05.5" W
Historical Depth: [None]
Search Radius: 60
Search Technique: VS, VBES, MBES, S2
Technique Notes: UPDATE POSITION AND HEIGHT IN SUPPORT OF MARITIME BOUNDARY CLAIM

History Notes:

H08046/56 -- RK FOUND DURING SURVEY IN POSITION 55/26/50.18N 160/08/05.47W (ENTERED 5/16/06, SME) ■■■AWOIS #53444 not able to be assessed due to area foul with kelp and rocks.

Survey Summary

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

Unable to assess AWOIS #53444 because of heavy kelp and ocean swell.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11581_BoundaryAwois	AWOIS # 53444	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

[None]

Office Notes

Retain as charted.

1.3) AWOIS #53445 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position: 55° 26' 59.3" N, 160° 08' 04.2" W
Historical Depth: [None]
Search Radius: 60
Search Technique: VS, VBES, MBES, S2
Technique Notes: UPDATE POSITION AND HEIGHT IN SUPPORT OF MARITIME BOUNDARY CLAIM

History Notes:

H03713/1914 -- RK FOUND DURING SURVEY IN POSITION 55/26/59.33N 160/08/04.24W (ENTERED 5/16/06, SME) ■■■AWOIS #53445 not able to be assessed due to area foul with kelp and rocks.

Survey Summary

Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

Unable to assess AWOIS #53445 because of heavy kelp and ocean swell.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11581_BoundaryAwois	AWOIS # 53445	0.00	000.0	Primary

Hydrographer Recommendations

[None]

S-57 Data

[None]

Office Notes

Retain as charted.

1.4) Profile/Beam - 4/1 from h11581 / fa_trimble_dpne_2 / 2006-192 / tr2_192_shtd.mdb

Primary Feature for AWOIS Item #53441

Search Position: 55° 30' 05.8" N, 160° 03' 25.3" W
Historical Depth: [None]
Search Radius: 60
Search Technique: VS, VBES, MBES, S2
Technique Notes: UPDATE POSITION AND HEIGHT IN SUPPORT OF MARITIME BOUNDARY CLAIM

History Notes:

H08046/56 -- RK FOUND DURING SURVEY IN POSITION 55/30/05.85N 160/03/25.32W (ENTERED 5/16/06, SME) ■■■AWOIS #53441 verified as CFF rock and submerged extent of a new ledge. DP taken for height and position.

Survey Summary

Survey Position: 55° 30' 04.4" N, 160° 03' 24.0" W
Least Depth: 0.16 m (= 0.53 ft = 0.089 fm = 0 fm 0.53 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2006-192.18:15:51.000 (07/11/2006)
DP Dataset: h11581 / fa_trimble_dpne_2 / 2006-192 / tr2_192_shtd.mdb
Profile/Beam: 4/1
Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53441, CFF RK VERIFIED, DP FOR HT AND POS'N, SUBM EXT NEW LEDGE

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11581/fa_trimble_dpne_2/2006-192/tr2_192_shtd.mdb	4/1	0.00	000.0	Primary
H11581_BoundaryAwois	AWOIS # 53441	51.29	153.0	Secondary

Hydrographer Recommendations

The Hydrographer recommends the addition of a rock symbol to chart #16553.

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)

Attributes: QUASOU - 1:depth known

RECDAT - 20060711

SORDAT - 20070730

SORIND - us,us,survey,h11581

VALSOU - 0.162 m

VERDAT - 12:Mean lower low water

WATLEV - 4:covers and uncovers

Office Notes

Concur.

1.5) Profile/Beam - 5/1 from h11581 / fa_trimble_dpne_2 / 2006-192 / tr2_192_shtd.mdb

Survey Summary

Survey Position: 55° 30' 01.8" N, 160° 04' 00.1" W
Least Depth: -0.60 m (= -1.98 ft = -0.330 fm = 0 fm 4.02 ft)
TPU (±1.96σ): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2006-192.18:33:30.000 (07/11/2006)
DP Dataset: h11581 / fa_trimble_dpne_2 / 2006-192 / tr2_192_shtd.mdb
Profile/Beam: 5/1
Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53440, NEW RK, DP FOR HT AND POS'N

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11581/fa_trimble_dpne_2/2006-192/tr2_192_shtd.mdb	5/1	0.00	000.0	Primary

Hydrographer Recommendations

An AWOIS investigation was conducted, and a new rock and LNDARE point were discovered as part of a larger foul area. The Hydrographer recommends the addition of an obstruction line as depicted in H11581_Composite_Source.hob to chart #16553.

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known
 RECDAT - 20060711
 SORDAT - 20070730
 SORIND - us,us,survy,h11581
 VALSOU - -0.604 m
 VERDAT - 12:Mean lower low water
 WATLEV - 4:covers and uncovers

Office Notes

Concur with clarification. The new rock is the confirmed AWOIS rock. The islet was verified from the original composite source and was included as a part of the AWOIS item by the field. Both the AWOIS rock and the islet are included in the Hcell along with the field deliniated obstruction line.

Feature Images



Figure 1.5.1

1.6) Profile/Beam - 6/1 from h11581 / fa_trimble_dpne_2 / 2006-192 / tr2_192_shtd.mdb

Primary Feature for AWOIS Item #53440

Search Position: 55° 29' 59.7" N, 160° 03' 58.3" W
Historical Depth: [None]
Search Radius: 60
Search Technique: VS, VBES, MBES, S2
Technique Notes: UPDATE POSITION AND HEIGHT IN SUPPORT OF MARITIME BOUNDARY CLAIM

History Notes:

H08046/56 -- RK FOUND DURING SURVEY IN POSITION 55/29/59.74N 160/03/58.26W (ENTERED 5/16/06, SME) ■■■AWOIS #53440 (rock awash) verified as CFF land area point, DP taken for height.

Survey Summary

Survey Position: 55° 30' 00.8" N, 160° 03' 57.9" W
Least Depth: -4.62 m (= -15.16 ft = -2.527 fm = -2 fm 3.16 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2006-192.18:38:36.000 (07/11/2006)
DP Dataset: h11581 / fa_trimble_dpne_2 / 2006-192 / tr2_192_shtd.mdb
Profile/Beam: 6/1
Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53440, CFF LNDARE PT VRD, DP FOR HT

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11581/fa_trimble_dpne_2/2006-192/tr2_192_shtd.mdb	6/1	0.00	000.0	Primary
H11581_BoundaryAwois	AWOIS # 53440	32.91	010.9	Secondary

Hydrographer Recommendations

An AWOIS investigation was conducted, and a new rock and LNDARE point were discovered as part of a larger foul area. The Hydrographer recommends the addition of an obstruction line as depicted in

H11581_Composite_Source.hob to chart #16553.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Attributes: SORDAT - 20070730

SORIND - us,us,survey,h11581

Office Notes

Concur with clarification. The new rock is the confirmed AWOIS rock. The islet was verified from the original composite source and was included as a part of the AWOIS item by the field. Both the AWOIS rock and the islet are included in the Hcell along with the field delineated obstruction line.

Feature Images



Figure 1.6.1

1.7) Profile/Beam - 1/1 from h11581 / fa_trimble_dpne_1 / 2007-174 / tr1_274.mdb

Primary Feature for AWOIS Item #53443

Search Position: 55° 30' 16.4" N, 160° 02' 41.5" W
Historical Depth: [None]
Search Radius: 60
Search Technique: VS, VBES, MBES, S2
Technique Notes: UPDATE POSITION AND HEIGHT IN SUPPORT OF MARITIME BOUNDARY CLAIM

History Notes:

H08046/56 -- RK FOUND DURING SURVEY IN POSITION 55/30/16.45N 160/02/41.50W (ENTERED 5/16/06, SME)■■■AWOIS #53443 rock verified. DP taken for position and height.

Survey Summary

Survey Position: 55° 30' 17.0" N, 160° 02' 42.1" W
Least Depth: -1.07 m (= -3.50 ft = -0.584 fm = 0 fm 2.50 ft)
TPU ($\pm 1.96\sigma$): THU (TPEh) [None] ; TVU (TPEv) [None]
Timestamp: 2007-174.17:40:15.000 (06/23/2007)
DP Dataset: h11581 / fa_trimble_dpne_1 / 2007-174 / tr1_274.mdb
Profile/Beam: 1/1
Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53443 VERIFIED, DP FOR POS'N AND HT

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11581/fa_trimble_dpne_1/2007-174/tr1_274.mdb	1/1	0.00	000.0	Primary
H11581_BoundaryAwois	AWOIS # 53443	20.37	328.1	Secondary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ½fm (16540_1, 16011_1, 16006_1, 530_1)

0fm 3ft (16553_1)

-1.1m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)

Attributes: QUASOU - 1:depth known
RECDAT - 20070623
SORDAT - 20070730
SORIND - us,us,survy,h11581
STATUS - 1:permanent
TECSOU - 5:found by lead-line
VALSOU - -1.068 m
VERDAT - 12:Mean lower low water
WATLEV - 4:covers and uncovers

Office Notes

Recommend addition of rock symbol to charts 16556 and 16540

1.8) Profile/Beam - 346/22 from h11581 / fa_1010_reson8101 / 2007-166 / 166-2309

Survey Summary

Survey Position: 55° 25' 31.7" N, 160° 07' 55.7" W
Least Depth: 30.90 m (= 101.38 ft = 16.896 fm = 16 fm 5.38 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 1.018 m ; **TVU (TPEv)** ± 0.286 m
Timestamp: 2007-166.23:10:28.313 (06/15/2007)
Survey Line: h11581 / fa_1010_reson8101 / 2007-166 / 166-2309
Profile/Beam: 346/22
Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

DISPROVAL Charted (#16553) Rk disproved with 100% MBES

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11581/fa_1010_reson8101/2007-166/166-2309	346/22	0.00	000.0	Primary

Hydrographer Recommendations

The Hydrographer recommends the removal of the charted (#16553) rock.

Cartographically-Rounded Depth (Affected Charts):

17fm (16540_1, 16011_1, 16006_1, 530_1)

17fm (16553_1)

31m (500_1, 50_1)

S-57 Data

[None]

Office Notes

Concur with clarification. Disproved with 100% multibeam coverage.

[Image file H:/2007_Data/OPR-P183-FA-07 Shumagins/Surveys/H11581/Survey_Files/Survey_Planning/Images to DR/Disprovals/Rk1 N.jpg does not exist.]

1.9) Profile/Beam - 2256/48 from h11581 / fa_1018_reson8101 / 2007-166 / 166-2109

Survey Summary

Survey Position: 55° 25' 17.5" N, 160° 08' 00.6" W
Least Depth: 29.98 m (= 98.36 ft = 16.394 fm = 16 fm 2.36 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 0.996 m ; **TVU (TPEv)** ± 0.252 m
Timestamp: 2007-166.21:16:14.294 (06/15/2007)
Survey Line: h11581 / fa_1018_reson8101 / 2007-166 / 166-2109
Profile/Beam: 2256/48
Charts Affected: 16553_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

DISPROVAL Charted (#16553) Rk disproved with 100% MBES

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11581/fa_1018_reson8101/2007-166/166-2109	2256/48	0.00	000.0	Primary

Hydrographer Recommendations

The Hydrographer recommends the removal of the charted (#16553) rock.

Cartographically-Rounded Depth (Affected Charts):

16fm (16540_1, 16011_1, 16006_1, 530_1)

16fm (16553_1)

30m (500_1, 50_1)

S-57 Data

[None]

Office Notes

Concur with clarification. Disproved with 100% multibeam coverage.

[Image file H:/2007_Data/OPR-P183-FA-07 Shumagins/Surveys/H11581/Survey_Files/Survey_Planning/Images to DR/Disprovals/Rk2 S.jpg does not exist.]



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Ship FAIRWEATHER (MOA-FA)
1010 Stedman St
Ketchikan, AK 99901

August 08, 2007

MEMORANDUM FOR: Chief, Requirements and Development Division, N/OPS1

FROM: CDR Andrew L. Beaver, NOAA, NOAA Ship FAIRWEATHER (MOA-FA)

SUBJECT: Request for Approved Tides/Water Levels

Please provide the following data:

1. Tide Note
2. Final zoning in MapInfo and .MIX format
3. Six Minute Water Level data (Co-ops web site)

Transmit data to the following:

Pacific Hydrographic Branch (N/CS34)
Bldg 3
7600 Sand Point Way NE
Seattle, WA 98115-6349
ATTN: Chief PHB

NOAA Ship FAIRWEATHER
1801 Fairview Ave E
Seattle, WA 98102
ATTN: Chief Survey Technician

These data are required for the processing of the following hydrographic survey:

Project No.: OPR-P183-FA-07
Registry No.: H11581
State: Alaska
Locality: Shumagin Islands
Sublocality: Offshore, Cape Wedge to Karpa Island

Attachments containing:

- 1) an Abstract of Times of Hydrography,
- 2) digital MID MIF files of the track lines from Pydro

cc: N/CS34



Year_DOY	Min Time	Max Time
2006_175	16:23:08	23:56:43
2006_176	00:04:09	00:05:19
2006_192	01:20:51	21:55:30
2006_241	17:26:22	21:39:57
2006_242	01:26:01	01:32:48
2007_153	17:04:41	23:55:00
2007_154	16:57:23	23:57:30
2007_155	00:11:19	23:55:10
2007_156	00:05:23	08:58:41
2007_165	07:48:22	23:56:37
2007_166	00:04:53	23:52:01
2007_173	18:51:02	23:59:47
2007_174	00:00:01	21:40:12
2007_175	16:43:30	23:57:52
2007_176	00:11:54	23:57:44
2007_177	00:00:00	10:00:44
2007_206	06:03:35	21:07:39
2007_208	17:11:05	23:07:43
2007_210	17:57:28	23:52:18
2007_211	00:22:01	00:24:28



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : August 14, 2007

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P183-FA-2007
HYDROGRAPHIC SHEET: H11581

LOCALITY: Offshore, Cape Wedge to Karpa Island, Shumagin Islands, AK
TIME PERIOD: June 24 - August 30, 2006
June 2 - July 30, 2007

TIDE STATION USED: 945-9450 Sand Point, AK
Lat. 55° 19.9'N Long. 160° 30.3' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.988 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project OPR-P183-FA-2007, H11581, during the time period between June 24, 2006 to July 30, 2007.

Please use the zoning file "P183FA2007CORP-Rev" submitted with the project instructions for OPR-P183-FA-2007, H11581. Zone SWA192, SWA192A, SWA193, SWA193A and SWA204 are the applicable zones for H11581.

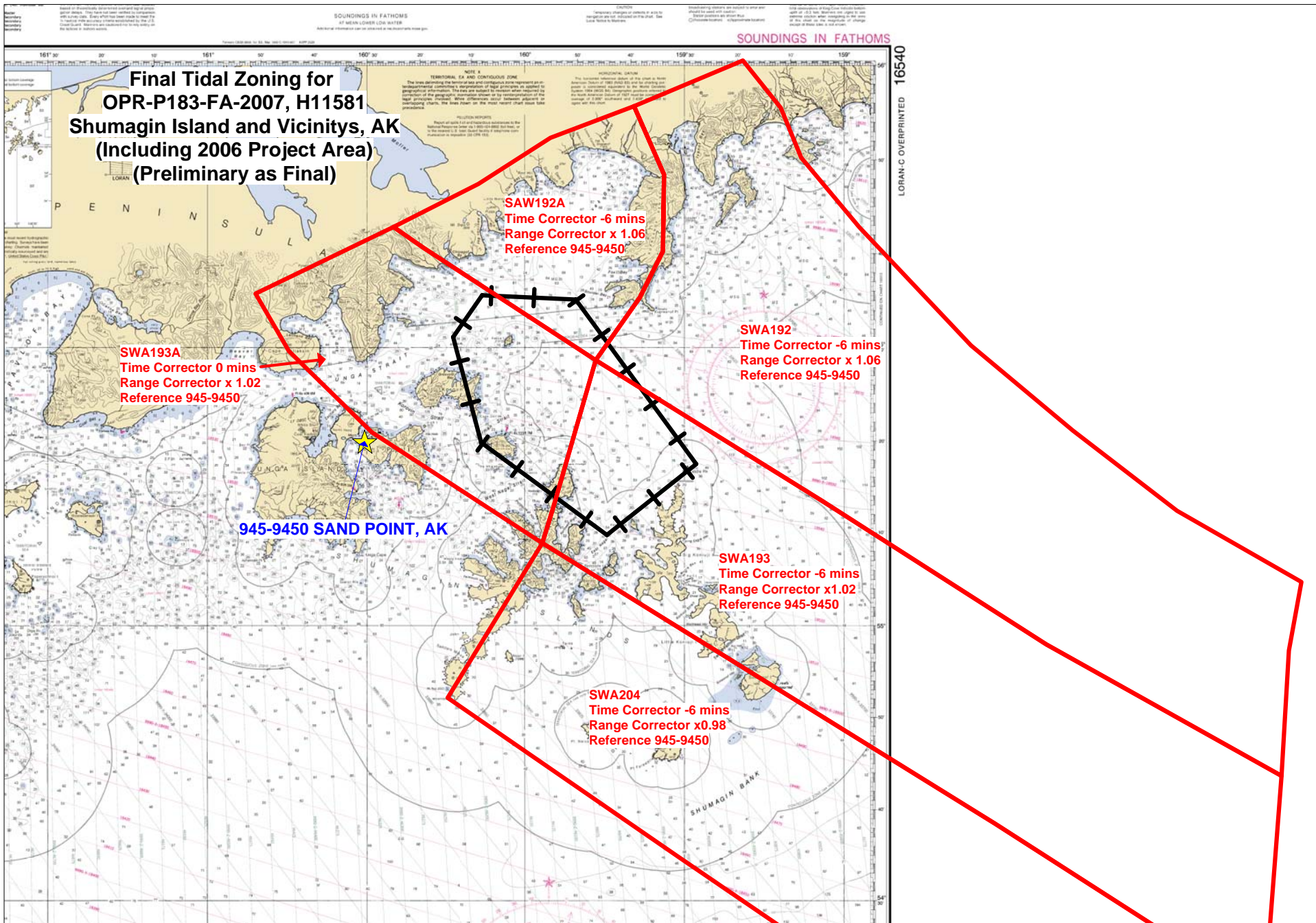
Refer to attachments for zoning information.

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).

Fan D. Skell

CHIEF, PRODUCTS AND SERVICES DIVISION





H11581 HCell Report
Katie Reser, Physical Scientist
Pacific Hydrographic Branch

Introduction

The primary purpose of the HCell is to directly update NOAA ENC's with new survey information in International Hydrographic Organization (IHO) format S-57. HCell compilation of survey H11581 utilized Office of Coast Survey H-Cell Specifications Version 3.0, May 2008 and Hcell User Guide Version 1.1, June 2008. HCell H11581 will be used to update charts 16553, 1:80,000 (5th Ed.; September 2005, NM 4/12/2008), 16556, 1:80,000 (5th Ed.; April 2006, NM 4/12/2008), 16540, 1:300,000 (12th Ed.; January 2005, NM 4/12/2008), 16006, 1:1,534,076 (34th Ed.; May 2006, NM 4/12/2008), US4AK57M and US4AK58M.

HCell H11581 contains a portion of a LIDAR survey H11435 (figure 1). Any part of H11435 that is overlapped by H11581 is not included in the H11581 HCell.

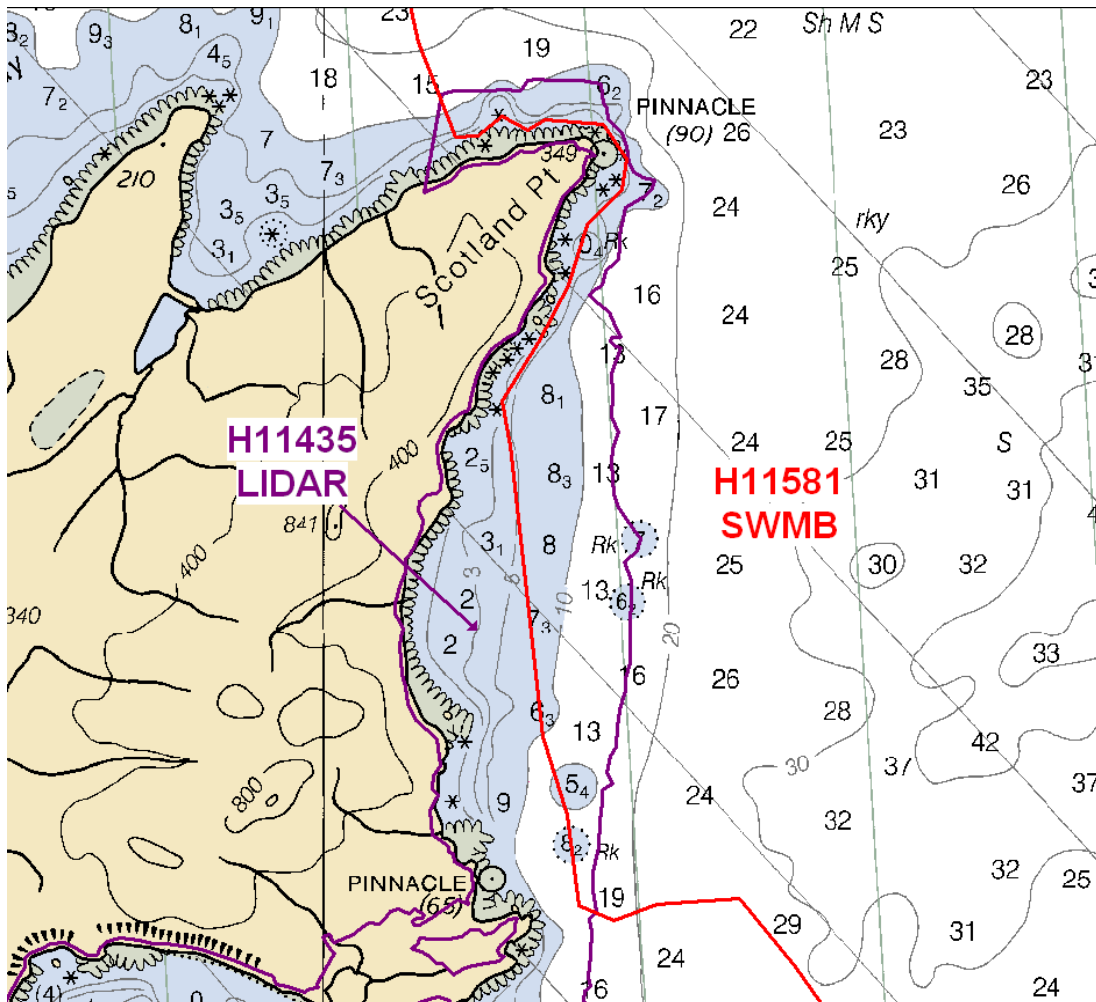


Figure 1. H11435 and H11581 survey coverage

1. Compilation Scale

The density of soundings in the HCell are compiled as appropriate to emulate those soundings of Charts 16553, 1:80,000 and 16556, 1:80,000. Figure 2 shows the survey boundaries on the largest scale charts. Position and density of non-bathymetric features included in the HCell have not been generalized from the scales of the hydrographic surveys H11581 and H11435, 1:40,000.

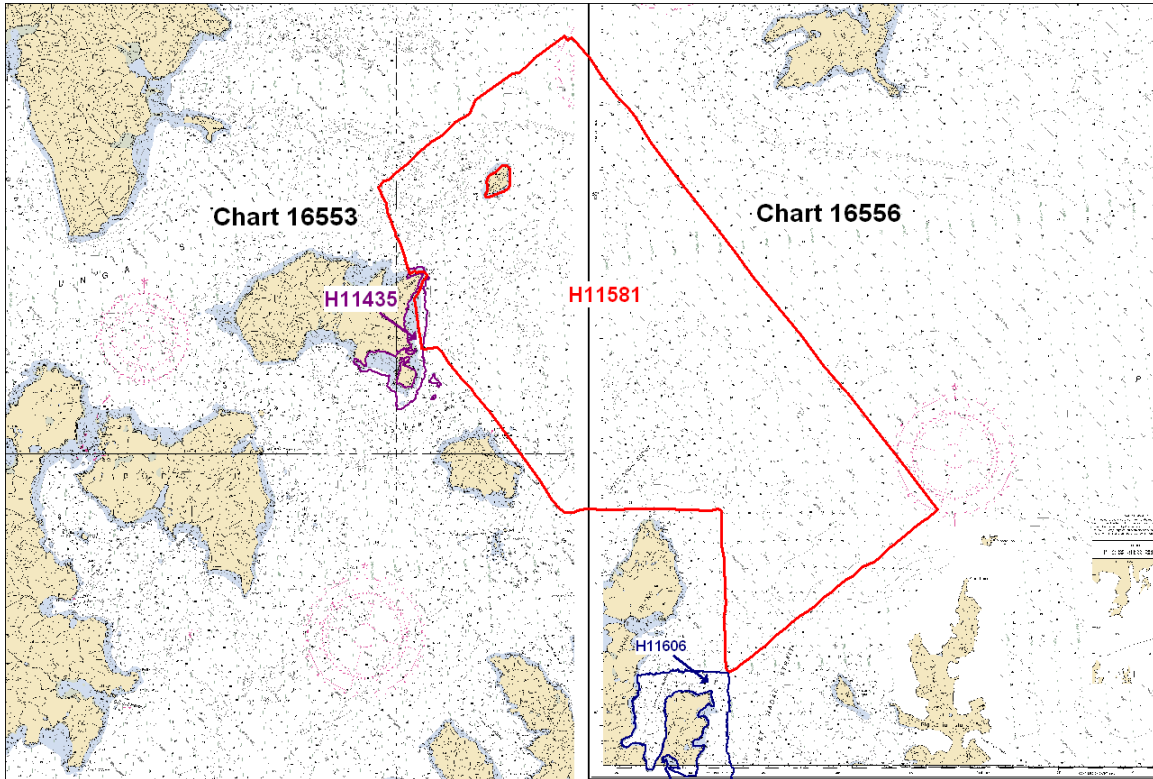


Figure 2. H11581 survey extents on largest scale raster charts (1:80,000). H11606 is a junction survey that has already been compiled.

2. Soundings

2.1 Source Data

Two 10 meter resolution Combined BASE surfaces, **H11581_North_Combined_10m_Office** and **H11581_South_Combined_10m_Office** were used as the basis for HCell production following Branch certification.

A survey-scale sounding (SOUNDG) feature object source layer was built from the **H11581_North_Combined_10m_Office** and **H11581_South_Combined_10m_Office** surfaces in CARIS BASE Editor. A shoal-biased selection was made at 1:20,000 survey scale using a radius table with values shown in **Table 1**.

Upper limit (m)	Lower limit (m)	Radius (mm)
0	10	3
10	20	4
20	40	4.5
40	200	5

Table 1

For the portion of H11435 that is included in the survey, the soundings included in the Hcell at chart scale density were manually digitized from the final smooth sheet and no separate survey-scale sounding feature object source layer was created.

2.2 Sounding Feature Objects

In CARIS BASE Editor soundings were manually selected from the high density sounding layers from H11581 and imported into a new layer created to accommodate chart density depths. For the LIDAR survey H11435, soundings were manually digitized from the smooth sheet and imported into a new layer. Manual selection was used to accomplish a density and distribution that more closely represents the seafloor morphology and that emulates density and distribution of soundings on charts 16553 and 16556 than is possible using automated methods. Since LIDAR data does not meet IHO Order 1 object detection requirements, shoaler charted soundings and features **were not** superseded by the LIDAR survey. See section 10.1, Data Processing Notes, for details about the use of manual sounding selection for H11581. The sounding feature object source layers were exported as **H11581_CS and H11435_CS**, and imported into HOM.

3. Depth Areas

3.1 Source Data

Using a combination of LIDAR data digitized from the smooth sheet, the BASE surfaces **11581_North_Combined_10m_Office and H11581_South_Combined_10m_Office** and areas delineated as foul or obstruction areas, two depth areas were generated. No other depth contours were delivered per OCS HCell Specifications ver.3.0 and Hcell User Guide ver. 1.1.

3.2 Depth Area Feature Objects

One depth range, -2 meters to 200 meters, were used for all depth area objects. Upon conversion to NOAA charting units, this depth range is -1 fathom to 109 fathoms.

4. Meta Areas

The following Meta object areas are included in HCell 11581:

M_QUAL
M_COVR

Meta area objects were constructed on the basis of perimeter lines delineating the surveyed limits, “islands of coverage” for point and features surveyed outside the hydrographic limits, and extents of data gaps inside the survey area. These perimeters were first used to create the Skin of The Earth (SOTE) layer, then were duplicated to the Meta object layers and attributed per the H-Cell Specifications, ver. 3.0 and Hcell User Guide ver. 1.1.

5. Survey Features

All features included in the H11581 Hcell are fully documented with attribution in H11581_Feature_List.xls. The source of each feature included in the H11581 Hcell can be determined by the SORIND field. For the rock/islet determination, the Tide Note value for MHW (-1.988 meters) was used. The following are brief descriptions of the tabs within the spreadsheet.

UWTROC

This tab contains a total of 29 rock features. Nine features are from the limited shoreline verification conducted by the field unit and 20 features were digitized directly from a portion of the smooth sheet from LIDAR survey H11435 that junctions with H11581. The one highlighted in blue is a disproval and is blue noted to be removed.

OBSTRN

This tab contains 8 obstruction areas delineated during the limited shoreline verification conducted by the field unit. The items highlighted in blue are redundant from the GC source and are blue noted to be removed.

SBDARE

This tab contains a total of 73 ledge and bottom sample features. Six features are ledges identified during limited shoreline verification by the field unit. Thirty-three features are bottom samples collected during the H11581 survey. Twenty-six features are bottom samples imported from ENC's US4AK57M and US4AK58M that are to be retained. Seven features are ledges imported from ENC US4AK57M that are to be retained.

LNDARE

This tab contains 12 islet and landmark features. One feature was verified and a height was taken during limited shoreline verification by the field unit. Six features are from the original composite source and were neither confirmed or denied by the H11581 limited shoreline verification or the junctioning LIDAR survey H11435. Five features were digitized directly from the smooth sheet from LIDAR survey H11435.

WEDKLP

This tab contains 45 kelp features digitized directly from a portion of the smooth sheet from LIDAR survey H11435 that junctions with H11581.

Shoreline Features

Shoreline features for H11581 were delivered in three different files. There is some redundancy of features between the files.

- H11581_Composite_Source.hob (DP's, GP's, verified AWOIS items, modifications to original composite source features, and original composite source features that were noted)
- H11581_Updates.hob (new rocks, verified AWOIS items, and bottom samples)
- H11581_Disprovals.hob (two sounding and one rock disapproval)

6. Shoreline / Tide Delineation

Depth areas (DEPARE) were created for all SOTE features.

7. Attribution

All S-57 Feature Objects have been attributed as fully as possible based on information provided by the Hydrographer and in accordance with OCS H-Cell Specifications, ver. 3.0 and Hcell User Guide ver. 1.1.

8. Layout

8.1 CARIS HOM Layering Scheme

100	Chart scale soundings from H11581
101	Survey scale soundings from H11581
102	Chart scale soundings from H11435
103	Survey scale soundings from H11435
200	Group 1 objects (Skin of the Earth)
300	Point objects from H11581
301	Point object from H11435
500	Area objects
600-601	Meta layers
800	Items used for creation of Blue Notes
900-902	Features imported from source files

8.2 Blue Notes

Notes regarding data sources are in CARIS HOM as layer 800 and as Shapefile sets **H11581_bluenotes_p** and **H11581_bluenotes_l** (with the appropriate extensions) for point and line figures, respectively.

9. Spatial Framework

9.1 Coordinate System

All spatial map and base cell file deliverables are in an LLDG geographic coordinate system, with WGS84 horizontal, MHW vertical, and MLLW (1983-2001 NTDE) sounding datums.

9.2 Horizontal and Vertical Units

During creation of sounding sets in CARIS BASE Editor, and creation of the H-Cell in CARIS HOM, units are maintained as metric with millimeter resolution. NOAA rounding is applied at the same time that conversion to chart units is made to the metric H-Cell base cell file, at the end of the H-Cell compilation process.

A CARIS environment variable, `uslXsounding_round`, controls the depth at which rounding occurs. Setting this variable to NOAA fathoms and feet displays all soundings from 0 to equal to or greater than 11 fathoms as whole units.

In an ENC viewer fathoms and feet display in the format X.YZZZ, where X is fathoms, Y is feet, and ZZZ is decimals of the foot. For fathoms and feet between 0 and 10 fathoms 4.5 feet (10.75 fms), soundings round to the deeper foot if the decimals of the foot are X.Y75000 or greater. For fathoms and feet deeper or equal to 11 fathoms, soundings round to the deeper fathom if feet and decimals of the foot are X.45000 (X.Y75000) or greater. Drying heights are in feet and are rounded using arithmetic methods. In an ENC viewer, heights greater than 6 feet will register in fathoms and feet using the above stated rules.

HOM Units

Sounding Units:	Meters rounded to the nearest millimeter
Spot Height Units:	Meters rounded to the nearest meter

Chart Unit Base Cell Units

Depth Units (DUNI):	Fathoms and feet
Height Units (HUNI):	Feet (or fathoms and feet above 6 feet)
Positional Units (PUNI):	Meters

10. QA/QC

10.1 Data Processing Notes

Manual chart scale sounding selections were made for this survey. Experience has shown that in areas where bathymetry is steep sided, as in the case of this extremely steep edged fjord, automated sounding selection is impractical. None of the default sounding suppression options offered in CARIS BASE Editor or HOM yields an acceptable density and distribution of depths, generally bunching soundings nearshore with too sparse coverage seaward. While the customized options are more practical for this type of terrain, an inordinate amount of time must be spent in experimentation with variations on the algebraic terms in order to devise the most suitable formula, and manual adjustments are still required to the resulting sounding set.

10.2 ENC Validation Checks

H11581 was subjected to QA and Validation checks in HOM prior to exporting to the HCell base cell (000) file. Full millimeter precision was retained in the export of the metric S-57 base cell data set. This data set was converted to a chart unit 000 file. dKart Inspector 5.0 (Service Pack 1) was then used to further check the data set for conformity using the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and errors investigated and corrected where necessary.

11. Products

11.1 HSD, MCD and CGTP Deliverables

- H11581 Base Cell File, Chart Units, Soundings compiled to 1:80,000
- H11581 Base Cell File, Chart Units, Soundings compiled to 1:20,000
- H11581 Descriptive Report including end notes compiled during office processing and certification
- H11581 H-Cell Supplemental Report
- Blue Notes shape files

11.2 File Naming Conventions

HOM file set prefix: *H11581_hc*

MCD Chart units base cell file: *US511581_CS.000*

MCD Chart units base cell file, survey scale soundings: *US511581_SS.000*

11.3 Software

HIPS 6.1:	Management and inspection of Combined BASE surfaces
BASE Editor 2.1:	Combination of Product Surfaces and initial creation of the S-57 bathymetry-derived features
CARIS Notebook 3.0:	Management and inspection of shoreline files
HOM 3.3:	Assembly of the HCell, S-57 products, QA
GIS 4.4a:	Setting the sounding rounding variable
Pydro v7.3 (r2252)	Creation of AWOIS and DTON reports
dKart Inspector 5.0:	Validation of the base cell file

12. Contacts

Inquiries regarding this HCell content or construction should be directed to:

Katie Reser, Physical Scientist, PHB, Seattle, WA; 206-526-6864;
Katie.Reser@noaa.gov.

APPROVAL SHEET
H-11581

Initial Approvals:

The survey evaluation and verification has been conducted according to branch processing procedures and the H-Cell compiled per the latest OCS H-Cell Specifications.

The survey and associated records have been inspected with regard to survey coverage, development of critical depths, S-57 classification and attribution of soundings and features, cartographic characterization, and verification or disproof of charted data within the survey limits. The survey records and digital data comply with OCS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.

I have reviewed the H-Cell, accompanying data, and reports. This survey and accompanying digital data meet or exceed OCS requirements and standards for products in support of nautical charting except where noted in the Descriptive Report.