NATION	U.S. DEPARTMENT OF COMMERCE JAL OCEANIC AND ATMOSPHERIC ADMINISTRATIC NATIONAL OCEAN SERVICE
DE	SCRIPTIVE REPOR
Type of Survey	HYDROGRAPHIC
Field No.	N/A
Registry No.	H11606
State	LOCALITY
VIIII	
State General Locality	Shumigan Islands
General Lo <u>cality</u> Sublocality	Shumigan Islands East Nagai Strait
General Lo <u>cality</u> Sublocality	Shumigan Islands East Nagai Strait 2006
General Lo <u>cality</u> Sublocality	Shumigan Islands East Nagai Strait 2006 CHIEF OF PARTY Commander Guy T. Noll, NOAA
General Lo <u>cality</u> Sublocality	Shumigan <u>Islands</u> East Nagai Strait 2006 CHIEF OF PARTY Commander Guy T. Noll, NOAA LIBRARY & ARCHIVES
General Lo <u>cality</u> Sublocality	Shumigan Islands East Nagai Strait 2006 CHIEF OF PARTY Commander Guy T. Noll, NOAA LIBRARY & ARCHIVES

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NOAA FORM 77-28U.S. DEPARTMENT OF COMMERCE REGISTER NO.(11-72)NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION				
	HYDROGRAPHIC TITLE	SHEET		
			H-11606	
NSTRUCTIONS	The hydrographic sheet should be ac	companied by this form,	FIELD NO.	
filled in as comp	bletely as possible, when the sheet is for	orwarded to the office.	N/A	
State	Alaska			
General Locality	Shumigan Islands			
Sublocality	East Nagai Strait			
Scale	_1:10,000	Date of Survey 8/2/2006 - 8/2	25/2006	
Instructions Date	e 6/16/2006	Project No. OPR-P183-R	A-06	
Vessel	RA5 (1006), RA6 (1015), RA4 (1	1016), RA3 (1021), RA2 (1103)	1	
Chief of Party	Commander Guy T. Noll, NOA	A		
Surveyed by	Rainier Personnel			
Soundings taken	by echo sounder, hand lead, pole	Reson 8101, Reson 8125		
	Seabeam/Elac 1180), Knudsen 320M		
Graphic record s	scaled by Rainier Personnel			
Graphic record c	checked by Rainier Personnel			
Evaluation by	K. Brown	Automated plot by <u>N/A</u>		
Verification by	K. Brown, P. Holmberg			
Soundings in	Fathoms and Feet	at MLLW		
REMARKS:	Time in UTC. Revisions and en	d notes in red		
	were generated during office pr	ocessing. All separates		
are filed with the hydrographic data. As a result, page				
numbering may be interrupted or non-sequential.				

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537 U.S. GOVERNMENT PRINTING OFFICE: 1986 - 652-007/41215

Descriptive Report to Accompany Hydrographic Survey H11606

Project OPR-P183-RA-06 Shumagin Islands, AK East Nagai Strait Scale 1:10,000 August 2006 **NOAA Ship RAINIER (s221)** Chief of Party: Commander Guy T. Noll, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P183-RA-06-Change 1 dated July 19, 2006, Standing Project Instructions dated May 2006, and NOS Hydrographic Specifications and Deliverables dated March 5, 2003, with the exception of deviations noted in this report. The survey area is located in the Shumagin Islands, AK at the Northeast Bight to East Bight sub locality of Nagai Island. This survey corresponds to sheet "N" in the sheet layout provided with the Letter Instructions. The purpose of OPR-P183-RA-06 is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts and reduce the Critical Areas backlog. Many charted features in this project area originate from observations made prior to 1913. The sparsely charted bathymetry dates from 1913-1954 sonar and lead-line hydrographic surveys.

One hundred percent multi-beam echosounder (MBES) coverage was obtained in the survey area.¹ The inshore limit of hydrography was defined by the farthest offshore of the following: (1) the 4-meter depth contour, (2) the line defined by the distance seaward from the MHW line which is equivalent to 0.8 millimeters at the scale of the largest scale nautical chart (64 meters for chart 16553 and chart 16556) or (3) areas in which the bathymetric data junctions well with LIDAR survey H11432. The inshore limit of 100% multi-beam coverage was the 8-meter curve where LIDAR junction is not available. Vertical-beam echosounder (VBES) and Shallow-Water Multibeam (SWMB) data were acquired to verify the least depth over the specific item flagged as an "investigation item" from LIDAR survey H11432 and tasked to the RAINIER. VBES was also used to define the Navigational Area Limit Line and to perform limited shoreline verification in areas without LIDAR coverage.

Data Acquisition Type	1103	1021	1016	1006	1015	Total
VBES (mainscheme) (nm)	-	-	-	-	-	-
MBES (mainscheme) (nm)	-	67.9	156.8	44.1	32.8	301.6
XL (MBES) (nm)	-	3.9	3.4	3.9	5.0	16.2
DEV (VBES+MBES) (nm)	3.5	2.6	1.9	-	-	8.0
Shoreline (nm)	23.5	-	-	-	-	23.5
Bottom Samples	9	5	-	-	-	14
Number of Items Investigated	45	-	-	-	-	45

Table 1:	Statistics	for surve	y H11606.
		/ /	

Data acquisition was conducted from August 2 to August 25, 2006 (DN 214 to DN237).



Figure 1: H11606 Survey Limits with junction surveys (Chart 16553).

B. DATA ACQUISTION AND PROCESSING

A complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods can be found in the *OPR-P183-RA-06 Data Acquisition and Processing Report* (DAPR)², submitted under separate cover. Items specific to this survey, and any deviations from the aforementioned report are discussed in the following sections.

Final Approved Water Levels have been applied to this survey.

See Section C. for additional information.

B1. Equipment and Vessels

Hull Number	Name	Acquisition Type
1103	RA-2	Vertical-Beam Echosounder
		Detached Positions
		Bottom Samples
1021	RA-3	Multi-Beam Echosounder
		Bottom Samples
1016	RA-4	Multi-Beam Echosounder
1006	RA-5	Multi-Beam Echosounder
1015	RA-6	Multi-Beam Echosounder

Data for this survey were acquired by the following vessels:

Table 2: Data Acquisition Vessels for H11606.

No unusual vessel configurations were used for data acquisition.

Sound speed profiles were measured with SEACAT SBE-19 and 19+ profilers in accordance with the Specifications and Deliverables.

B2. Quality Control

Crosslines

Vertical Beam Echo Sounder (VBES) crosslines were not run on survey H11606.

Shallow-Water Multibeam (SWMB) crosslines totaled 16.2 nautical miles, comprising 5.4% of SWMB mainscheme hydrography. The mainscheme bathymetry was manually compared to the crossline nadir beams in CARIS subset mode and agreed well with differences averaging 0.25 meters or less.

A statistical Quality Control Report has been conducted on representative data collected with each system used on this survey and is included in the *OPR-P183-RA-06 DAPR*.

Junctions

The following contemporary surveys junctions with H11606 (See Figure 1):

Registry #	Scale	Date	Junction side
H11432 (LIDAR)	1:10,000	2006	Northwest Shoreline
H11597	1:10,000	2006	North
H11607	1:10,000	2006	Southwest

LIDAR survey H11432 junctions with a limited area of survey H11606 overlapping 2.1nm in the Northwest corner of the sheet. Caris Field Sheets and BASE surfaces from LIDAR survey H11432 were provided by the Pacific Hydrographic Branch for junction comparison. Soundings from H11606 were compared to those from H11432 in Caris Hips subset editor. Survey H11432 junctions well with this survey, a detailed comparison indicates differences are generally less than 0.5 meters.³

Soundings from H11606 were compared to those from contemporary surveys H11597 and H11607 using Caris Hips subset editor. Survey H11606 junctioned well with these surveys⁴. A detailed comparison indicates differences from H11597 are generally less than 0.5 meters and differences from H11607 are generally less than 0.25 meters⁵.

Data Quality Factors

Elac True Heave

TrueHeave correctors were not applied to Elac data due to an offset between the time stamps on the TrueHeave data and the Elac data as converted in Caris Hips & Sips 6.0. Launch 1015 (RA-6) is the only vessel which acquired Elac data for this survey. Throughout the project, TrueHeave was recorded on launch 1015 but TrueHeave correctors were not applied to the HDCS data. No discernable heave artifacts were observed in the Elac data in survey H11606.

Reson True Heave

Heave artifacts, shown in figure 2, were found in data acquired from launch 1006 on day numbers 215 and 216 in lines 310_2223, 331_1951 and 337_1930. During the acquisition of these lines, True Heave stopped logging for short intervals of time creating visible heave artifacts in the base surface. The offsets observed by the lines creating the artifacts ranged up to approximately 0.8 meters in depths of 32 meters. To resolve this problem True Heave was not applied and real time heave was retained.



Figure 2: Artifacts in the base surface where True Heave temporarily stopped logging.

B3. Data Reduction

Data reduction procedures for survey H11606 conform to those detailed in the *OPR-P183-RA-06 DAPR* and meet the requirements of NOS Specifications and Deliverables.

B4. Data Representation

Many BASE surfaces were used in processing H11606. Final BASE surface resolutions and depth ranges were set in accordance with the Field Procedures Manual, with base surfaces smaller than 25×10^6 nodes. The submission Field Sheet and BASE Surface structure are shown in Figures 3, 4, 5 and 6.⁶



Figure 3: Field sheets and BASE surfaces submitted with H11606.



Figure 4: Layout of 5 meter and 2 meter resolution field sheets and BASE surfaces for H11606.



Figure 5: Layout of 1 meter resolution field sheets and BASE surfaces for H11606.



Figure 6: Layout of 0.50 meter resolution field sheets and BASE surfaces for H11606.

C. VERTICAL AND HORIZONTAL CONTROL

Project OPR-P183-RA-06 did not require static GPS observations or other horizontal control work, and all tide corrections were generated from CO-OPS maintained tide stations. No Horizontal and Vertical Control Report will be submitted.

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. The differential corrector beacons utilized for this survey are listed in Table 3.

Location	Frequency	Custodian	Distance	Priority
Cold Bay	289 kHz	USCG	100 nm	Primary
Kodiak	313 kHz	USCG	300 nm	Secondary

Table 3:	Differential	Corrector	Sources for	r H11606.
----------	--------------	-----------	-------------	-----------

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 Sand Point, AK (945-9450) served as control for datum determination and as the primary source for water level reducers for survey H11606.

No tertiary gauges were required.

All data were reduced to MLLW using **final approved water levels** from station Sand Point, AK (945-9450) using the tide file 9459450.tid and final time and height correctors using the zone corrector file P183RA2006CORP.zdf.

The request for Final Approved Water Levels for H11606 was submitted to CO-OPS on August 31, 2006 and received on September 8, 2006. This documentation is included in Appendix IV.⁷

D. RESULTS AND RECOMMENDATIONS

D.1. Chart Comparison

D.1.a. Survey Agreement with Chart

Survey H11606 was compared with the following charts:

Chart	Scale	Edition and Date	Latest Notice to Mariners Applied
16553	1:80,000	5 th Ed; Sep 2005	Cleared through 10/07/2006
16556	1:80,000	5 th Ed; Apr 2006	Cleared through 10/07/2006
16540	1:300,000	12 th Ed; Jan 2005	Cleared through 10/07/2006

Table 4: Charts compared with H11606



Figure 7: Chart 16553(left) and chart 16556(right) displayed side by side. All soundings from chart 16553 are contained on chart 16556.

Chart 16553 and 16556

Soundings from survey H11606 generally agreed within two fathoms in depths less than 40 fathoms. Variances of up to 6 fathoms shoaler than charted were observed in depths over 40 fathoms⁸.



Figure 8: Notable differences in chart 16556.

All charted depths agree well with four significant exceptions:

- A. A charted 26-fathom area was surveyed at 21 fathoms.
- B. A charted 27-fathom area was surveyed at 23 fathoms.
- C. A charted 29-fathom area was surveyed at 25 fathoms.
- D. A charted 32-fathom area surveyed at 27 fathoms. (Applies to chart 16556 only)

Chart 16540

Chart 16540 is a small scale chart intended for coastwise navigation and contains very little information in the survey area. The shoreline of this chart is skewed in some locations with the charted shoreline ranging up to 250m from the location of the actual shoreline. All soundings from survey H11606 generally agreed within three fathoms of depths on chart 16540.

Mist Harbor Inset of Chart 16540

The Mist Harbor inset of chart 16540 is at 1:15,000 scale. Soundings from survey H11606 generally agreed within two fathoms of depths on the Mist Harbor inset of chart 16540, with two significant exceptions:



Figure 9: Notable difference in chart 16540 Mist Harbor Inset.

- A. The charted (16540) islet does not exist and depths were surveyed at 28 fathoms at this position⁹.
- B. The charted (16540) rocks were disproved and depths were surveyed at 16 fathoms at this position¹⁰.

The MLLW line in Mist Harbor was verified using a kayak mounted GPS system which is discussed in greater detail in section D.2.h.

The Hydrographer has determined that data accuracy standards and bottom coverage requirements have been met and survey data are adequate to supersede charted data in their common areas.¹¹

D.1.b. Dangers to Navigation

No dangers to navigation (DTONs) were found in survey H11606.¹²

D.1.c. Other Features

<u>Automated Wreck and Obstruction Information System (AWOIS) Investigations</u> Seventeen (17) AWOIS items fall the within the survey limits of H11606. All were assigned for full investigation. Descriptions of each AWOIS item investigation are included in the Survey Feature Report in Appendix I.¹³

Additional Items

No additional charted items were investigated and no other features were located on survey H11606 other than those referenced in section D.2.b.

D.2. Additional Results

D.2.a. Prior Survey Comparison

Prior survey comparison with H11606 was not performed.

D.2.b. Shoreline Verification

Shoreline Source

Vector photogrammetric project AK0505 was supplied by N/CS31 in the form of cartographic feature file GC-10588 (CFF). RAINIER performed limited shoreline verification of the CFF throughout most of the sheet where LIDAR surveys were not available. In the area where LIDAR data was available, only features specified for investigation were addressed. The Pacific Hydrographic Branch provided RAINIER with a list of features from LIDAR survey H11432 that had been flagged for further investigation by performing either field verification or feature disproval. In this junction area, no other shoreline data was verified. In addition, features shown on the current editions of charts 16553 and 16556 that were not depicted on the shoreline source document were digitized in MapInfo by RAINIER personnel and displayed in Hypack for field verification.

Shoreline Verification

Limited shoreline verification was conducted near predicted low water in accordance with the Standing Project Instructions and FPM sections 6.1 and 6.2. In the area where LIDAR coverage was provided, only features specified for investigation were addressed. Detached positions (DPs) taken during shoreline verification were recorded in HYPACK, on DP forms, and processed in Pydro. These indicate revisions to features and features not found on the verified shoreline. In addition, annotations describing shoreline were recorded on hard copy plots of digital shoreline. DP forms are included in the *Separates to be Included with Survey Data*.¹⁴

All shoreline data is submitted in Caris Notebook .hob files. The session H11606_NTBK contains the following:

H11606_Original_Comp_Source.hob (original source data) H11606_Field_Verified_Source.hob (depicts the shoreline as surveyed) H11606_Field_Verified_SourceHOB.mrk (comments regarding field verified items) H11606_PYDRO_Updates.hob (DP's, GP's and bottom samples) H11606_PYDRO_Disprovals.hob (LIDAR, AWOIS and rock disproval's)

Source Shoreline Changes and New Features

Items for survey H11606 that require further discussion and are associated with a detached position, have been flagged "Report" in Pydro in H11606.pss. Investigation methods and recommendations are listed in the Remarks and Recommendation tabs. These features are included in the Survey Feature Report in Appendix I.¹⁵

Many areas along the shoreline contained heavy patches of kelp as well as rocky outcroppings. These areas, considered unsafe for navigation, were designated as foul. The extents of these foul areas were positioned by running a VBES buffer line around the area and digitizing the foul areas in Notebook.¹⁶ VBES star patterns were run to disprove LIDAR and AWOIS feature investigations. One hundred percent SWMB was also attained to verify or disprove features in areas where depths permitted.

Detached positions (DP) were obtained on new features found during limited shoreline verification. DP's were taken to record the height of correctly positioned source features. These DP's for height were labeled as cartographic symbols in the Pydro session and were not imported in the H11606_PYDRO_Updates.hob file. The heights of these features were updated in the Field_Verified_Source.hob layer since final approved water levels have been applied. In these instances the SORIND and SORDAT fields were changed to reflect the current project.¹⁷

Recommendations

The Hydrographer recommends that the shoreline as depicted on the Detached Position and Bottom Sample and final sounding Notebook digital file supersede and complement shoreline information compiled on the CFF and charts as noted. In addition, field notes made by the Hydrographer, including verification of source features and charted features are submitted in the applicable field verified source .hob file.¹⁸

D.2.c. Aids to Navigation

There are no Aids to Navigation within the limits of H11606.¹⁹

D.2.d. Overhead features

There are no overhead features in survey H11606.²⁰

D.2.e. Submarine Cables and Pipelines

There are no submarine cables or pipelines in survey H11606.²¹

D.2.f. Ferry Routes

There are no ferry routes on H11606.²²

D.2.g. Bottom Samples

A total of fourteen (14) bottom samples were acquired within the limits of survey H11606. The bottom samples were obtained at approximately 2,000 meter spacing as specified by HSSD. Of the fourteen bottom samples obtained in survey H11606, only two coincide with historical bottom sample locations. Of these two samples, one agreed with previous data on the chart and one did not. The bottom sample that disagreed with the historical sample was located in Northeast Bight in which a charted sandy bottom was found to be muddy.²³

D.2.h Miscellaneous

Mist Harbor is a small protected anchorage represented at 1:15,000 scale in the inset of chart 16540. During shoreline verification of Mist Harbor, the hydrographer visually verified the CFF MHW. A comparison of the CFF MHW with the chart noted that the charted MHW is offset by a range of up to 30m from the CFF MHW. The hydrographer recommends that the CFF MHW supersede the charted MHW for chart 16540.²⁴

CFF MLLW of Mist Harbor was not provided for this project. The MLLW contour of Mist Harbor was verified using a Trimble Pathfinder Pro XRS mounted on a kayak as shown in figures 10 and 11. On day number 234, the kayak surveyed between 17:00-19:00 with a tide range from -0.17m to +0.15m. The kayaker paddled at a distance of approximately 1 to 3 meters from the shoreline and mapped the extent of the MLLW contour. This data was logged as a line file, converted to a shape file and digitized into Notebook. The kayak data was then manually compared to the charted 16540 surveyed MLLW. A comparison of the kayak MLLW and the charted MLLW indicate differences are within 30m, which is approximately 2mm at chart scale. Both the charted MHW and MLLW are offset from the MHW and MLLW positioned by the CFF and this survey respectively. The hydrographer recommends the surveyed MLLW supersede the chart.²⁵



Figure 10: MLLW verification in Mist Harbor.



Figure 11: Kayak Configuration with Trimble Pro XRS.

E. ADDITIONAL DOCUMENTATION

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

<u>Title</u>	Date Sent	Office
Data Acquisition and Processing Report for OPR-P183-RA-06	Feb 2, 2007	N/CS34
Horizontal and Vertical Control Report for OPR- P183-RA-06	N/A ²⁶	N/CS34
Tides and Water Levels Package for OPR- P183-RA-06	Sep 8, 2006	N/OPS1
Coast Pilot Report for OPR- P183-RA-06	Mar 19, 2007	N/CS26



UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration Office of Marine and Aviation Operations NOAA Ship RAINIER (S221) 1801 Fairview Ave E, Seattle, WA 98102

November 14, 2006

MEMORANDUM FOR:

CDR Donald W. Haines, NOAA Chief, Pacific Hydrographic Branch

FROM:

CDR Guy T. Noll, NOAA Commanding Officer

SUBJECT:

Approval of Hydrographic Survey H11606

Field operations for hydrographic survey H11606 were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports. The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Standing and Letter Instructions, and HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required. All data and reports are respectfully submitted to N/CS34, Pacific Hydrographic Branch.

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

Survey Sheet Manager:

Nicholas J. Gianoutsos Hydrographic Survey Technician, NOAA Ship RAINIER

Chief Survey Technician:

James B. Jacobson

Chief Survey Technician, NOAA Ship RAINIER

Field Operations Officer:

MANI

Benjamin K. Evans Lieutenant, NOAA



¹ Do not concur. Small holidays exist in the vicinity of 55-09-58.7N 159-49-21.5W

- ² Filed with project records.
- ³ Concur.

⁴ Concur.

⁵ Concur.

⁶ H11606_5m_combined_final was used for HCell compilation.

⁷ Tide note attached.

⁸ Concur.

⁹ Concur.

¹⁰ Concur.

 $^{11}_{12}$ Concur.

 $^{12}_{13}$ Concur.

¹³ AWOIS report attached.

¹⁴ Filed with hydrographic records.

¹⁵ Filed with hydrographic records.

¹⁶ Concur, chart foul areas as delineated by survey.

¹⁷ Charted and added attribution to features per .HOB files.

¹⁸ Concur, new and updated information from the survey superseded charted information in the survey area.

¹⁹ Concur.

²⁰ Concur.

²¹ Concur.

²² Concur.

²³ All bottom samples have been applied to the chart. A blue note has been added to remove the disproved bottom type annotation at 55-10-01.6N, 159-52-35.5W.

²⁴ Concur with clarification. Use the latest RSD Shoreline.

²⁵ Do not concur. The method of data collection for MLLW is insufficient because actual depths were not recorded. The MLLW water line collected by H11606 does not match the CFF. The MLLW water line collected by H11606 for Mist Harbor will not be charted.

²⁶ Concur, as stated in section C, no horizontal and vertical control report was necessary for this survey.

H11606 AWOIS Report

Registry Number:	H11606
State:	AK
Locality:	Shumagin Islands
Sub-locality:	East Nagai Strait
Project Number:	OPR-P183-RA-06
Survey Date:	

Number	Version	Date	Scale
16553	5th Ed.	09/01/2005	1:80000
16556	4th Ed.	11/01/2002	1:80000
16540	12th Ed.	01/01/2005	1:300000
16011	36th Ed.	08/01/2004	1:1023188
16006	33rd Ed.	12/23/2000	1:1534076
500	8th Ed.	06/01/2003	1:3500000
530	31st Ed.	06/01/2005	1:4860700
50	6th Ed.	06/01/2003	1:10000000

Charts Affected

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	AWOIS	[no data]	[no data]	[no data]	
1.2	AWOIS	[no data]	[no data]	[no data]	
1.3	AWOIS	[no data]	[no data]	[no data]	
1.4	AWOIS	[no data]	[no data]	[no data]	
1.5	AWOIS	[no data]	[no data]	[no data]	
1.6	AWOIS	[no data]	[no data]	[no data]	
1.7	AWOIS	[no data]	[no data]	[no data]	
1.8	AWOIS	[no data]	[no data]	[no data]	
1.9	AWOIS	[no data]	[no data]	[no data]	
1.10	AWOIS	[no data]	[no data]	[no data]	
1.11	AWOIS	[no data]	[no data]	[no data]	

1.12	AWOIS	[no data]	[no data]	[no data]	
1.13	AWOIS	[no data]	[no data]	[no data]	
1.14	AWOIS	[no data]	[no data]	[no data]	
1.15	AWOIS	[no data]	[no data]	[no data]	
1.16	AWOIS	[no data]	[no data]	[no data]	
1.17	AWOIS	[no data]	[no data]	[no data]	

1 - DR_AWOIS

1.1) AWOIS #53463 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 09' 19.320" N, 159° 53' 48.920" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/09/19.32 N LONG. 159/53/48.92 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16553_1, 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53463 Disproved

Ran VBES star pattern and partial MBES to the 8m curve. A VBES buffer line was run during low water inshore of the AWOIS item and no awash rocks were seen seaward of this line.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53463	0.00	000.0	Primary

Hydrographer Recommendations

Remove chd(16556) rk.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Remove charted rock.

1.2) AWOIS #53464 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 10' 37.100" N, 159° 51' 28.470" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/10/37.1 N LONG. 159/51/28.47 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16553_1, 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53464 Disproved

Ran VBES star pattern and partial MBES to the 12m curve.

Item is in new foul area.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53464	0.00	000.0	Primary

Hydrographer Recommendations

Remove chd(16556) rk. Chart new foul area.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Remove charted rock, chart area as foul.

1.3) AWOIS #53465 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 10' 49.920" N, 159° 50' 08.050" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/10/49.92 N LONG. 159/50/08.05 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16553_1, 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53465 Disproved by 100% SWMB coverage.

CHD (16556) RK is CFF islet 75m WSW of CHD RK position. DP is for height not position.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53465	0.00	000.0	Primary
h11606/1103_nonechosounder_dp/2006-219/dp_1103_219	3/1	41.21	306.1	Secondary

Hydrographer Recommendations

Remove CHD (16556) RK. Chart CFF Islet, use height from DP #1103_219_503

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Remove charted rock, chart CFF islet with updated height.

1.4) AWOIS #53466 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 10' 46.210" N, 159° 48' 36.150" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/10/46.21 N LONG. 159/48/36.15 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53466 Not Addressed

AWOIS/CHD(16556) rk not addressed, inside foul area

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53466	0.00	000.0	Primary

Hydrographer Recommendations

Retain as charted

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Retain rock.

1.5) AWOIS #53467 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 10' 02.900" N, 159° 48' 13.170" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/10/02.90 N LONG.159/48/13.17 W (NAD83) of islet is offset from source position. Conduct search to verify or disprove charted islet. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS 53467 Verified

CHD(16556) islet verified, DP on SE extent of islet. Buffer run around islet.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53467	0.00	000.0	Primary
h11606/1103_nonechosounder_dp/2006-219/dp_1103_219	7/1	27.45	091.2	Secondary

Hydrographer Recommendations

Remove CHD (16556) Islet and Chart at this position.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Chart islet at surveyed position.

1.6) AWOIS #53468 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 08' 40.560" N, 159° 49' 04.800" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/08/40.56 N LONG. 159/49/04.8 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16553_1, 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS 53468 Verified

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53468	0.00	000.0	Primary
h11606/1103_nonechosounder_dp/2006-219/dp_1103_219	13/1	17.93	066.5	Secondary

Hydrographer Recommendations

Remove CHD (16556) RK. Chart RK at DP Position.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with field Recommendations. Chart rock in surveyed position (no height).

1.7) AWOIS #53478 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 10' 09.930" N, 159° 48' 24.840" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/10/09.93 N LONG. 159/48/24.84 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53478 Disproved

Ran VBES star pattern and covered by 100% MB.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53478	0.00	000.0	Primary

Hydrographer Recommendations

Remove CHD(16556) rk

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Remove charted rock.

1.8) AWOIS #53479 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 09' 25.010" N, 159° 53' 41.750" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT.55/09/25.01 N LONG. 159/53/41.75 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16553_1, 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53479 Disproved

Ran VBES star pattern and partial MB coverage to the 11m curve. A VBES buffer line was run during low water inshore of the AWOIS item and no awash rocks were seen seaward of this line.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53479	0.00	000.0	Primary

Hydrographer Recommendations

Remove chd(16556) rk.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Remove charted rock.

1.9) AWOIS #53480 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 09' 15.090" N, 159° 53' 53.840" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/09/15.09 N LONG. 159/53/53.84 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16553_1, 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53480 Disproved

Ran VBES star pattern and partial MB coverage to the 7m curve. A VBES buffer line was run during low water inshore of the AWOIS item and no awash rocks were seen seaward of this line.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53480	0.00	000.0	Primary

Hydrographer Recommendations

Remove chd(16556) rk. Chart new foul area.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Remove charted rock, chart area as foul.

1.10) AWOIS #53481 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 10' 32.630" N, 159° 48' 38.000" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/10/32.63 N LONG. 159/48/38.00 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53481 Noted

DP #1103_219_611 for height; CHD(16556) rk noted, Not positioned because the rk lies inside foul area.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53481	0.00	000.0	Primary
h11606/1103_nonechosounder_dp/2006-219/dp_1103_219	5/1	105.15	304.3	Secondary (grouped)

Hydrographer Recommendations

Retain Rk as charted, use height from DP #1103_219_611 . Chart new foul area.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Retain rock as charted.

1.11) AWOIS #53482 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 10' 22.950" N, 159° 48' 35.540" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/10/22.95 N LONG. 159/48/35.54 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53482 Not Addressed

AWOIS/CHD(16556) rk not addressed inside foul

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53482	0.00	000.0	Primary

Hydrographer Recommendations

Retain as charted.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Retain rock as charted.

1.12) AWOIS #53483 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 10' 17.270" N, 159° 48' 23.140" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/10/17.27 N LONG. 159/48/23.14 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 7/19/2006)

Survey Summary

Charts Affected: 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53483 Disproved

Disproved by VBES star pattern and 100% MB coverage.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53483	0.00	000.0	Primary

Hydrographer Recommendations

Remove CHD (16556) rk

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Remove charted rock.

1.13) AWOIS #53484 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 09' 49.230" N, 159° 49' 25.330" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/09/49.23 N LONG. 159/49/25.33 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16553_1, 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53484 Disproved

Disproved CHD (16556) RK with VBES star pattern. CHD position is inshore of new foul area.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53484	0.00	000.0	Primary

Hydrographer Recommendations

Remove chd(16556) rk. Chart new foul area.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Remove charted rock, chart area as foul.

1.14) AWOIS #53485 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 09' 49.290" N, 159° 49' 16.010" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/09/49.29 N LONG. 159/49/16.01 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16553_1, 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53485 Not Addressed

AWOIS/CHD(16556) rk not addressed, inside new foul area

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53485	0.00	000.0	Primary

Hydrographer Recommendations

Remove CHD (16556) Rk and chart new foul area.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Do not concur with recommendations. Retain rock as charted. Chart area as foul.

1.15) AWOIS #53486 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 09' 50.350" N, 159° 49' 06.380" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/09/50.35 N LONG. 159/49/06.38 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16553_1, 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53486 Not Addressed

AWOIS/CHD(16556) rk not addressed, inside foul area

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53486	0.00	000.0	Primary

Hydrographer Recommendations

Remove CHD (16556) Rk and chart new foul area.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Do not concur with recommendations. Retain rock as charted, chart area as foul.

1.16) AWOIS #53487 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 09' 32.460" N, 159° 48' 46.190" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey.

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/09/32.46 N LONG. 159/48/46.19 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16553_1, 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53487 Disproved

Disproved by 100% SWMB.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53487	0.00	000.0	Primary

Hydrographer Recommendations

Remove CHD (16556) RK.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Remove charted rock.

1.17) AWOIS #53488 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	55° 09' 25.420" N, 159° 48' 56.440" W
Historical Depth:	[None]
Search Radius:	60
Search Technique:	VS, VBES, MBES, S2
Technique Notes:	Conduct search within the limits of the survey

History Notes:

Probable source H03809, 1915; Charted position LAT. 55/09/25.42 N LONG. 159/48/56.44 W (NAD83) of rock awash is offset from source position. Conduct search to verify or disprove charted rock. (Entered by KRW, 07/19/2006)

Survey Summary

Charts Affected: 16553_1, 16556_1, 16540_1, 16011_1, 16006_1, 500_1, 530_1, 50_1

Remarks:

AWOIS #53488 Disproved

Disproved by 100% SWMB.

Feature Correlation

Address	Feature	Range	Azimuth	Status
OPR-P183-RA-06Additional	AWOIS # 53488	0.00	000.0	Primary

Hydrographer Recommendations

Remove CHD (16556) RK.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Office Notes

Concur with recommendations. Remove charted rock.



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : September 8, 2006

HYDROGRAPHIC BRANCH: Pacific HYDROGRAPHIC PROJECT: OPR-P183-RA-2006 HYDROGRAPHIC SHEET: H11606

LOCALITY: East Nagai Strait, Shumagin Islands, AK TIME PERIOD: August 2-25, 2006

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-RA-2006, H11606, during the time period between August 2 to August 25, 2006.

Please use the zoning file "P183RA2006CORP" submitted with the project instructions for Shumagin Islands, AK. Zones SWA193 & SWA204 are the applicable zones for H11606.

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).

CHIEF, PRODUCT AND SERVICES DIVISION





H-11606 HCell Report

Peter Holmberg, Physical Scientist Pacific Hydrographic Branch

Introduction

The primary purpose of the HCell is to directly update NOAA ENCs with new survey information in International Hydrographic Organization (IHO) format S-57. HCell compilation of survey H11606 utilized Office of Coast Survey H-Cell Specifications Version 2.0, April 2, 2007. HCell H11606 will be used to update charts 16553,1:80,000 (5h Ed.; September 05, NM 3/24/2007), 16556, 1:80,000 (5th Ed.; April 06, NM 3/24/2007), 16540, 1:300,000 and 1:15,000 inset (12th Ed.; Jan 05, NM 3/24/2007), and US4AK58M.

HCell H11606 contains a portion of a LIDAR survey H11432 (figure 1). Any part of H11432 that is overlapped by H11606 has not been included in the H11606 HCell.



Figure 1. H11432 and H11606 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, 16556, 1:80,000, and the inset of 16540 1:15,000 for the inset which is compiled in place. 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 H11606 and H11432, 1:10,000.





2. Soundings

2.1 Source Data

A 5 meter resolution Combined BASE surface, **H11606_5m_cmbd** was used as the basis for HCell production following Branch certification.

A survey-scale sounding (SOUNDG) feature object source layer was built from the **H11606_5m_cmbd** surface in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 survey scale using a radius table with values shown in **Table 1**. The same process was repeated at 1:1,200 for the inset area.

Upper limit (m)	Lower limit (m)	Radius (mm)	
0	10	3	
10	20	4	
20	50	4.5	
50	300	5	
Table 1			

For the portion of H11432 that is included in the survey Field Sheet AC was used as the basis for HCell production following Branch certification.

2.2 Sounding Feature Objects

In CARIS BASE Editor soundings were manually selected from the high density sounding layers from H11432 and H11606, and imported into a new layer created to accommodate chart density depths. 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, 16556, and 16540 than is possible using automated methods. See section 10.1, Data Processing Notes, for details about the use of manual sounding selection for H11606. The sounding feature object source layer was exported as **H11606_SNDGS_CS**, and imported into HOM.

3. Depth Areas

3.1 Source Data

Using a combination of digitized LIDAR data, the BASE surface **H11606_5m_cmbd** and areas delineated as foul or obstruction areas, two depth areas and one zero contour were generated. No other depth contours were delivered per OCS HCell Specifications ver.2.0.

3.2 Depth Area Feature Objects

One all-encompassing depth range, 0 meters to 300 meters, was used for all depth area objects below MLLW. Upon conversion to NOAA charting units, this depth range is 0 fathoms to 164 fathoms.

One separate depth area was created for the area from the LIDAR survey above MLLW ranging from -2.134 meters to 0 meters. Upon conversion to NOAA charting units, this depth range is -1 fathom and 1 foot to 0 fathoms and 0 feet.

4. Meta Areas

The following Meta object areas are included in HCell 11606:

M_QUAL	M_NSYS
M_COVR	M_CSCL

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. 2.0.

For the M_QUAL area covering the LIDAR portion of the survey from H11432 CATZOC B was assigned, meaning that: *"Full seafloor coverage not achieved; uncharted features, hazardous to surface navigation are not expected but may exist."*

5. Survey Features

All features for H11606 are fully documented with attribution and action taken during compilation in H11606_Features.xls. The following are brief descriptions of the tabs within the spreadsheet.

H11432_LIDAR_NEW_FEATURES

This tab contains 59 features digitized directly from a portion of LIDAR survey H11432 that junctions with H11606. With the exception of one delineated land area all the features; rocks, kelp, and point-land areas are point features. All features were applied to the HCell.

Shoreline Features

Shoreline features for H11606 were delivered in three different files. Despite the descriptive titles of each file the action taken during compilation did not always match the hydrographers recommendations based on which file each feature was delivered in.

- H11606_PYDRO_UPDATES (DP's, GP's and bottom samples)
- H11606_PYDRO_DISPROVALS (LIDAR, AWOIS and rock disprovals)
- H11606_FieldVerified_Source (comments regarding field verified items)

6. Shoreline / Tide Delineation

Depth areas (DEPARE) and Seabed areas (SBDARE) 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. 2.0.

8. Layout

8.1 CARIS HOM Layering Scheme

100	Chart scale soundings
101	Survey scale soundings (from H11606 only)
200	Group 1 objects (Skin of the Earth)
300	Point objects
500	Area objects
600-603	Meta layers
800	Items used for creation of Blue Notes

8.2 Blue Notes

Notes regarding data sources are in CARIS HOM as layer 800 as Shapefile sets, **H11606bluenotes_p** and **H11606_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: Spot Height Units: Meters rounded to the nearest millimeter Meters rounded to the nearest meter

<u>Chart Unit Base Cell Units</u> Depth Units (DUNI):

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

H11606 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

- H11606 Base Cell File, Chart Units, Soundings compiled to 1:80,000 (1:15,000 inset)
- H11606 Base Cell File, Chart Units, Soundings compiled to 1:10,000 (1:1,1,500 inset)
- H11606 Descriptive Report including end notes compiled during office processing and certification
- H11606 H-Cell Supplemental Report
- Blue Notes shape files
- BAG (Bathymetry Attributes Grid)
- 000 Features File

11.2 File Naming Conventions

HOM file set prefix: H11606_hc

MCD Chart units base cell file: US511606_CU.000

MCD Chart units base cell file, survey scale soundings: US511606_SS.000

BAG (for CGTP): H11606_5m.bag

Features File (for CGTP): H11606_Features.000

11.3 Software

HIPS 6.1:	Management and inspection of Combined BASE surfaces
BASE Editor 1.0:	Combination of Product Surfaces and initial creation of the
	S-57 bathymetry-derived features
BASE Editor 2.0:	Creation of BAG deliverable
CARIS Notebook 2.2:	Management and inspection of shoreline files
HOM 3.3:	Assembly of the H-Cell, S-57 products, QA
GIS 4.4a:	Setting the sounding rounding variable
Pydro v7.3 (r2014_TCfix)	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:

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APPROVAL SHEET H11606

Initial Approvals:

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

The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, S-57 classification and attribution of soundings and features, cartographic characterization, and verification or disproval 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 HCell, 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.