H11682

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic Survey

Field No. N/A

Registry No. H11682

LOCALITY

State Alaska

General Locality Shumagin Islands

Sublocality Turner Island to Spectacle Island and Vicinity

2007

CHIEF OF PARTY

CDR Andrew L. Beaver, NOAA

LIBRARY & ARCHIVES

DATE

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

HYDROGRAPHIC TITLE SHEET

REGISTRY No

H11682

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:

State: Alaska

General Locality: Shumagin Islands

Sub-Locality: Turner Island to Spectacle Island and Vicinity

Scale: 1:20,000 Date of Survey: May 31 to August 14, 2007

Instructions dated: 5/3/2007 Project No.: OPR-P183-FA-07

Vessel: NOAA Ship Fairweather

Chief of party: CDR Andrew L. Beaver, NOAA

Surveyed by: LTJG Martin, CST Froelich, LT Dowling

Soundings by: Reson 8111ER

SAR by: M. Foss C ompilation by Kurt Brown

Soundings compiled in: Fathoms

REMARKS: All times are UTC. UTM Zone 4 North

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Revisions and end notes in red were generated during office processing. Page numbering may be interrupted or non sequential.

Descriptive Report to Accompany Hydrographic Survey H11682

Project OPR-P183-FA-07
Shumagin Islands, Alaska
Scale 1:20,000
May – August, 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 of Turner Island to Spectacle Island and vicinity. This survey corresponds to Sheet F in the sheet layout provided with the Letter Instructions. The survey area outlined in the Letter Instructions was not completed due to time and vessel constraints. The hydrographer recommends addressing areas not included in this submission during the 2008 Field Season. The completed survey area is shown in Figure 1 below. The survey area is bounded on the Southwest corner at 54°58’20”N, 160°08’30”W and the Northeast corner at 55°12’00”N, 159°35’00”W.[1] Data submitted with this Descriptive Report

Data acquisition was conducted from May 31 to August 14, 2007 (DN 151 to DN 226).

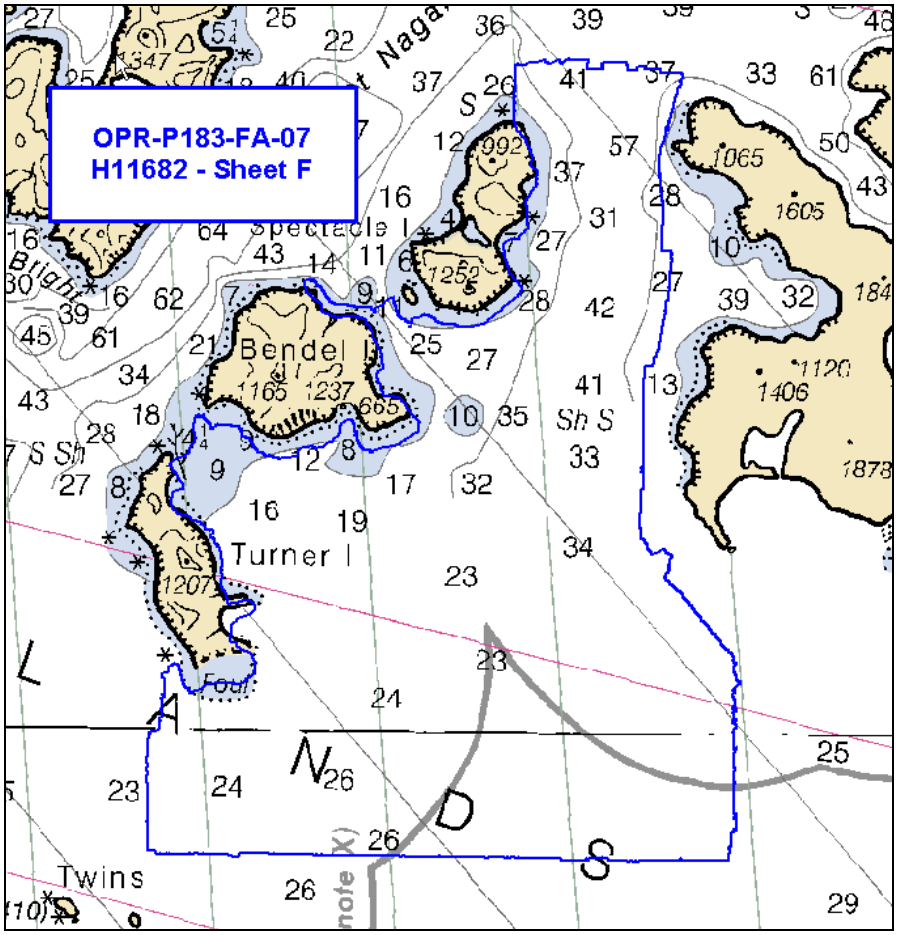

Figure 1: H11682 survey limits

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area offshore of the 8-meter depth curve and the Navigable Area Limit Line (NALL) which is defined as the furthest offshore of either the 4-meter depth contour or a distance of 64 meters (0.8 mm at the scale of the largest scale chart) from the Mean High Water line. When conditions allowed, multibeam echosounder (MBES) data was acquired parallel to contours and at a line spacing of no less than 25 meters at depths between four and eight meters. Additional coverage was obtained when determining least depths over features or shoals offshore of the NALL. Due consideration was given to the safety of operations and areas deemed unsafe to survey were avoided by order of the Chief of Party.

Shoreline data were acquired for H11682. These data were attributed as S-57 objects for submittal.

B. DATA ACQUISTION 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-07 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. This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P183-FA, dated May 3, 2007.

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	MonArk	Ambar 700
Hull Registration Number	S220	1010	1018	1706	2302
Builder	Aerojet-General Shipyard	The Boat Yard, Inc.	The Boat Yard, Inc.	MonArk	Marine Silverships, Inc
Length Overall	231 feet	28’ 10”	28’ 10”	17’	23’
Beam	42 feet	10’ 8”	10’ 8”	7’2”	9’ 4”
Draft, Maximum	15’ 6”	4’ 0” DWL	4’ 0” DWL	1’ 3”	1’ 4”
Cruising Speed	12.5 knots	24 knots	24 knots	20 knots	22 knots
Max Survey Speed	10 knots	10 knots	10 knots		
Primary Echosounder	RESON 8111 & RESON 8160	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	Shoreline, Bottom Samples

Table 1: Vessel Inventory

No vessel configurations used during data acquisition deviated from the *OPR-P183-FA-07 Data Acquisition and Processing Report (DAPR).*

B2. Quality Control

Internal consistency and integrity of data collected for survey H11682 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity of data collected for survey H11682 were found to be acceptable as per the requirements laid forth in the Letter Instructions and in accordance with procedures set forth in the *Field Procedures Manual*, *dated* March 2007 (FPM) and the *NOS Hydrographic Surveys Specifications and Deliverables (HSSD)*, dated April 2007.[3] Minor sound-velocity correction and roll errors were observed in areas of H11682 and are discussed further in the Data Quality Factors section of this report.

Crosslines

Shallow water multibeam crosslines for this survey totaled 49.39 linear nautical miles (lnm), comprising 6.05% of the 809.59 lnm of total MBES hydrography. Both main scheme and crossline mileage are summarized in Table 2.

MAIN SCHEME - Mileage	
Single Beam MS	0
Multibeam MS mileage	809.58977
SideScan MS	0
Total MS	809.58977
CROSSLINE - Mileage	
Single Beam XL	0
Multibeam XL	49.385975
Total XL	49.385975
OTHER	
Developments/AWOIS - Mileage	6.5114676
Shoreline/Nearshore Investigation - Mileage	41.17
Total # of Investigated Items	21
Total Bottom Samples	40
Total SNM	46.68
Specific Dates of Acquisition	May 31; June 1, 2, 18-21; July 27, 28, 30, 31; and August 12-14
Specific Dn#s of Acquisition	Dn 151 - 153, 169-172, 208, 209, 211-213, and 224-226

Table 2: H11682 Survey Statistics

The Hydrographer has determined, through manual examination of the data, that the crossline agreement with main scheme data meet the vertical accuracy requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSD)*, dated April 2007.[4]

Junctions

Survey H11682 junctions with H11676, Sheets E, of the same project. The area of overlap between survey H11682 and H11676 was approximately 400 meters wide. Data were reviewed in CARIS Subset Editor and depths were found to be consistent between each survey, meeting the requirements as stated in the *HSSD*.[5] The sheet limits and area of overlap for Sheets E and F are shown in Figure 2.

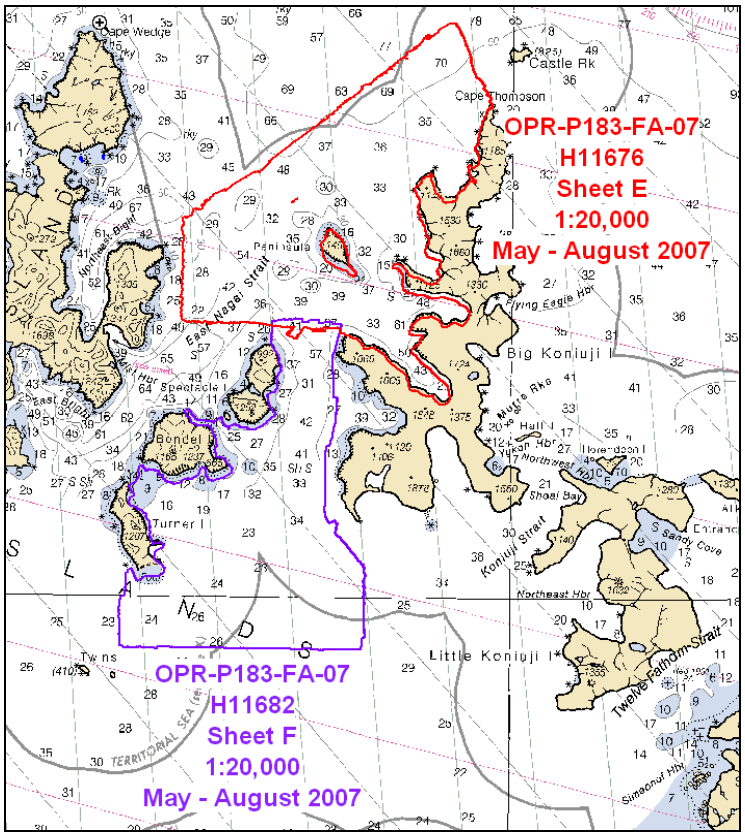

Figure 2: Junctions between H11682 and H11676

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 was determined using the base surface resolutions listed below in Table 3.

Fieldsheet Name	Surface Name	Depth Ranges (m)	Resolution (m)
	H11682_North_0to40_2m	0 - 40	2
H11682_North	H11682_North_30to70_5m	30 - 70	5
	H11682_North_50to120_10m	50 - 120	10
	H11682_Southeast_0to40_2m	0 - 40	2
H11682_Southeast	H11682_Southeast_30to70_5m	30 - 70	5
	H11682_Southeast_50to120_10m	50 - 120	10
	H11682_Southwest_0to40_2m	0 - 40	2
H11682_Southwest	H11682_Southwest_30to70_5m	30 - 70	5
	H11682_Southwest_50to120_10m	50 - 120	10

Table 3: Depth Ranges and Resolutions

At position 55°05’12.9.0”N, 159°45’12.9”W, a holiday of 30m x 15m exists. This is greater than 3 nodes of the 2m surface. Corresponding backscatter data has been reviewed and the Hydrographer believes the least depth for the area has been acquired.[6]

At position 55°00’53.4.0”N, 159°48’25.7”W, a holiday of 28m x 16m exists. This is greater than 3 nodes of the 2m surface. Corresponding backscatter data has been reviewed and the Hydrographer believes the least depth for the area has been acquired.[7]

Due to time and equipment constraints the holidays in survey H11682 were not able to be addressed.

The remainder of survey H11682 meets the coverage requirements stated in the Letter Instructions.[8]

DESIGNATED SOUNDINGS:
Designation of soundings followed procedures as outlined in the DAPR.

TRUE HEAVE:
Due to insurmountable errors true heave was not applied to any data acquired on launch 1010 on DN 171. Likewise, true heave was not applied to some data acquired on launch 1010 on DN 224.[9]

SOUND VELOCITY:
Sound velocity in the vicinity of the OPR-P183-FA-07 project area is known to be very dynamic. Sound velocity issues were present in some of the MBES data for H11682; refer to figure 3. In order to offset the issues extra data were gathered in some areas of survey H11682. Likewise, extra casts were taken during acquisition in order to compensate for any variability in sound speed; refer to figure 5. Upon review in CARIS subset mode it was determined that the discrepancies fell within the allotted *HSSD* error standards which correlate with the IHO error standards for the depth of water present; refer to figure 4.[10]

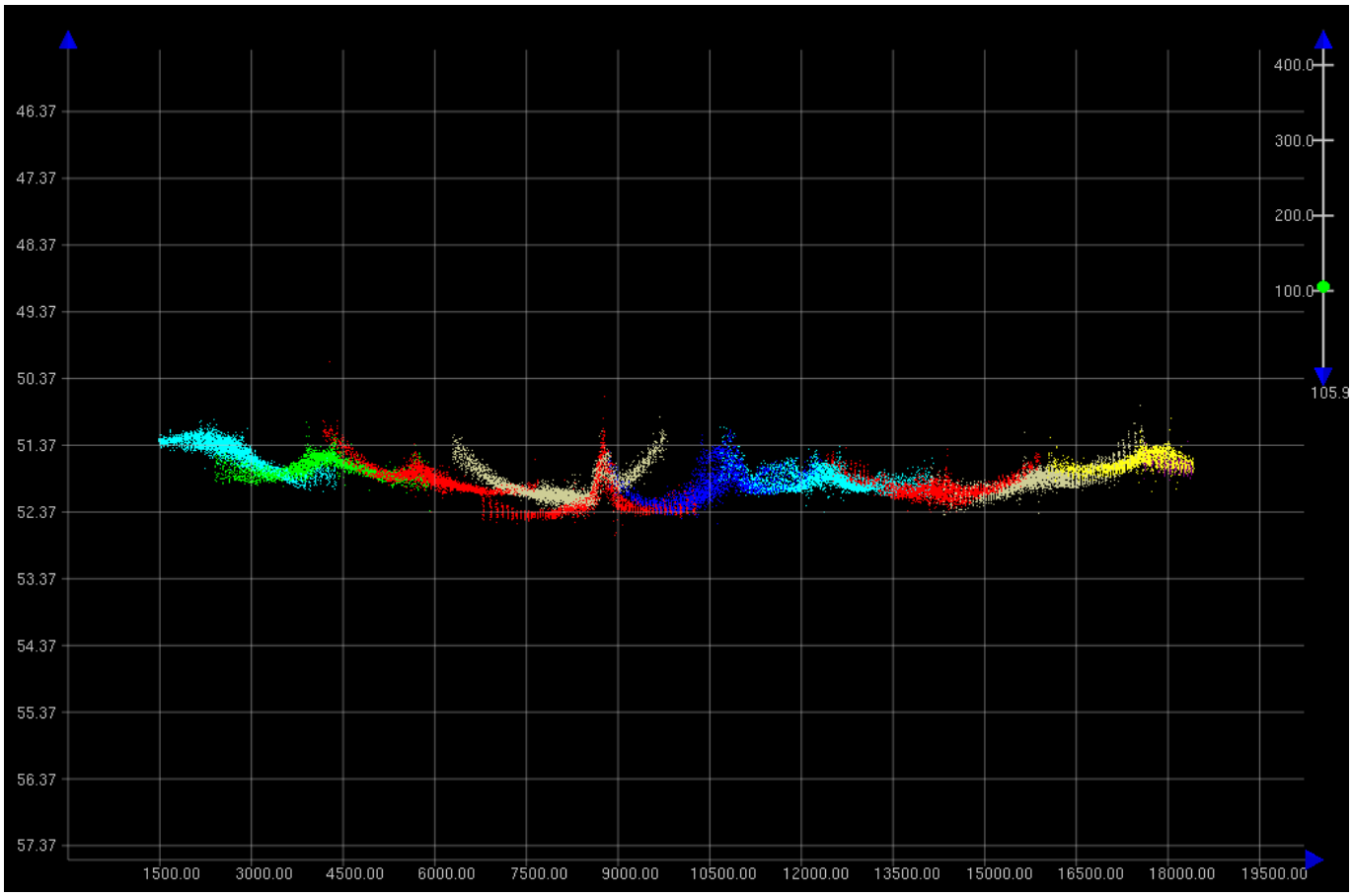

Figure 3: Example of H11682 sound velocity issues

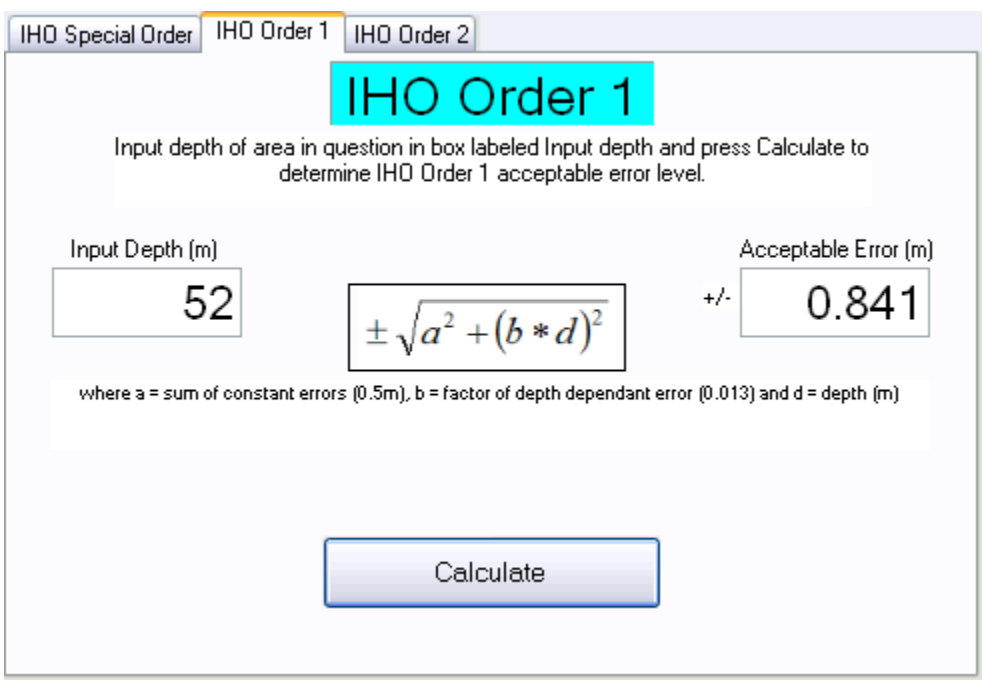

Figure 4: IHO Order 1 allowable error for 52m of water

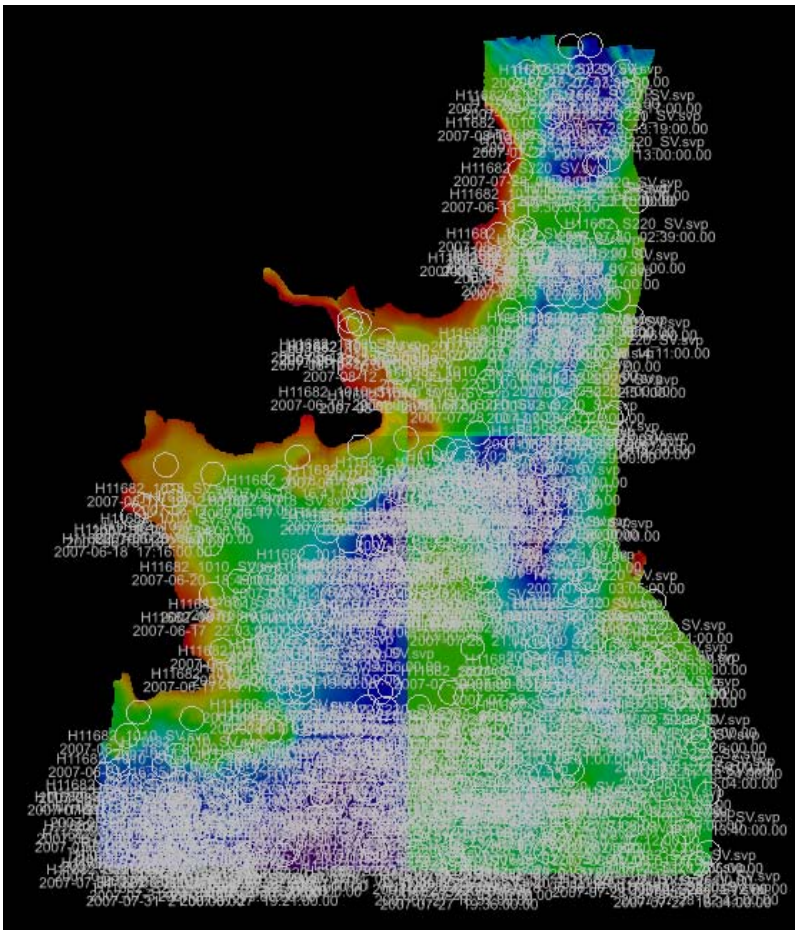

Figure 5: Sound velocity cast positions

Accuracy Standards

All data meet the data accuracy specifications as stated in the *HSSDM*.[11]

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11682 conform to those detailed in the DAPR.

B4. Data Processing

Data processing procedures for survey H11682 conform to those detailed in the DAPR. Due to the sound velocity issues discussed in the Data Quality Factors section above, all data collected by FAIRWEATHER (S220) were filtered 65° from nadir on both the port and starboard side. Filtering was done with the CARIS HIPS and SIPS 6.1 Swath / Sweep Filter.

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11682 can be found in the *OPR-O119-FA-07 Horizontal and Vertical Control Report*[12], submitted under separate cover. 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 H11682 during acquisition.

A request for delivery of final approved water level data for survey H11682 was forwarded to N/OPS1 on August 16, 2007 in accordance with the *Field Procedures Manual*, dated March 2007 (*FPM*). A copy of the request is included in Appendix V. FAIRWEATHER received the Tide Note for Hydrographic Survey H11682 on August 22, 2007.

The Tide Note for Hydrographic Survey H11682 states that preliminary zoning is accepted as the final zoning correctors. 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 H11682 is included in Appendix V.[13]

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

D. RESULTS AND RECOMMENDATIONS

D1. Chart Comparison

Chart comparison procedures were followed as outlined in the FPM.

Survey H11682 was compared with 16540 (12th Ed.; January 1, 2005, 1:300,000), and 16006 (134^{h} Ed.; May 1, 2006, 1:1,534,076) and 16556 (5th Ed.; April 1, 2006, 1:80,000).[14] All charts have been updated with the Notice to Mariners through August 25, 2007 (34/07).[15] There were no new changes within the survey area.

Sounding depths from survey H11682 generally agreed with depths on charts 16556, 16540 and 16006. However, an approximately 300 meters offset was present on each chart. This problem is very similar to the offset discussed in the Shoreline Verification and Processing section of this report.[16]

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.**[17]

Automated Wreck and Obstruction Information System (AWOIS) Investigations

There were no AWOIS items located within the limits of H11682.[18]

Dangers to Navigation

One danger to navigation was found and reported to the Mapping and Charting Division for final submission to the Seventeenth Coast Guard District on September 7, 2007. A copy of the preliminary Danger to Navigation Report is included in Appendix I.[19]

D2. 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. 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 folder and hard copies can be found with the *Separates to be Included with Deliverables.* 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 not generated as only one feature required reporting and it was submitted as a DTON. The DTON is further discussed above the Dangers to Navigation section of this report.

Shoreline deliverable .HOB files were compiled in Caris Notebook 3.0. Edits to existing source shoreline features were made in the H11682_Composite_Source.hob file, with GC and charted features modified 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 H11682_Pydro_Updates .HOB files.

Approved water levels were applied to tide correct all the DP features included in the Pydro PSS. In Notebook, tide-corrected depths acquired to verify source features were transferred from the H11682_Pydro_Updates $CSYMB feature to the source rock or feature that is being verified in the H11682_Composite_Source.hob file.

If a source feature was edited in Notebook, the SORIND and SORDAT attribute fields were modified to reflect the survey number (US,US,graph,H11682) 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 4.

Shoreline Source	SORIND	SORDAT
RSD	US,US,graph,survey H03807	19141130
RSD	US,US,graph,GC10647	19991000
RSD	US,US,graph,GC10647	19991001
Chart	US,US,graph,chart 16556	20021100
Survey	US,US,graph,H11682	20070814

Table 4: SORIND/SORDAT Shoreline Features

As per the correspondence titled *H03807 Data Issues.txt* in Section IV. Supplemental Survey Records and Correspondence of the H11682 Descriptive Report Appendices, features from survey H03807 were added to the H03807_Disprovals.hob after field investigation showed a dramatic (greater than 300 meter) offset in the data. This offset is likely due to the age of the survey and the use of NAD27 datum.[20]

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

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.[21]

Aids to Navigation

There were no Aids to Navigation found within the survey limits.[22]

Bottom Samples

Bottom samples were collected on August 14, 2007 (DN226) 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 H11682_Pydro_Updates.hob file.[23]

E. SUPPLEMENTAL REPORTS

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

Title	Date Sent	Office
Hydrographic Systems Readiness Review Memo 2007	April 23, 2007	N/CS34
OPR-P183-FA-07 Data Acquisition and Processing Report	TBD, 2007	N/CS34
OPR- P183-FA-07 Horizontal & Vertical Control Report Memo	August 22, 2007	N/CS34
OPR- P183-FA-07 Coast Pilot Report	TBD, 2007	N/CS26

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

October 5, 2007

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

FROM: CDR Andrew L. Beaver, NOAA
Commanding Officer

Andrew L. Beaver
I am approving this document
2007.10.05 17:24:53 - 08'00'

TITLE: Approval of Hydrographic Survey H11682, 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 H11682 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 Allison R. Martin
Survey Manager

LT Jennifer Dowling
Field Operations Officer

Grant Froelich
I have reviewed this document
2007.10.15 18:56:28 Z

CST Grant Froelich
Chief Survey Technician

Attachment

Revisions Compiled During Office Processing and Certification

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[1] The extents of the survey are 54°58’20”N, 159°52’20”W (southwest corner) and 55°08’50”N, 159°37’30”W (northeast corner).
[2] Filed with project records.
[3] Concur
[4] Concur
[5] Concur. H11682 and H11676 were compiled concurrently and the junction has been made between the surveys.
[6] Concur
[7] Concur
[8] Concur
[9] No heave errors are apparent in the data and the data is within spec.
[10] Concur
[11] Concur
[12] Filed with project records.
[13] See attached tide note dated August 20, 2007
[14] Survey H11676 falls within the area of a planned 1:80,000 scale chart. The HCell was therefore compiled to 1:80,000.
[15] Charts 16556 (1:80,000, 5th edition, 4/2006, corrected through NTM dated 6/26/2010), and 16540 (1:300,000, 12th edition, 1/2005, corrected through NTM dated 6/26/2010) were used for comparison during compilation.
[16] Concur
[17] Concur with clarification. Chart shoreline data according to HCell H11682.
[18] Concur
[19] The DTON has been applied to the chart. The compiler chose to chart a shoaler 7.5 fathom sounding located to the north on the same rocky feature. The DTON report is attached.
[20] No features from survey H03807 were compiled. The survey was only used as reference during compilation.
[21] Concur with clarification. Chart shoreline data according to HCell H11682.
[22] Concur
[23] All bottom samples were imported to the HCell.

H11682 Danger to Navigation Report

Registry Number: H11682

State: Alaska

Locality: Shumagin Islands

Sub-locality: Turner Island to Spectacle Island and Vicinity

Project Number: OPR-P183-FA-07

Survey Dates: May 31, 2007 - August 14, 2007

Charts Affected

Number	Version	Date	Scale
16540	12th Ed.	01/01/2005	1:300000
16011	36th Ed.	08/01/2004	1:1023188
16006	34th Ed.	05/01/2006	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

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Shoal	15.65 m	55° 02' 05.615" N	159° 39' 37.024" W	---

Generated by Pydro v7.3 (r2119) on Sun Aug 26 23:09:04 2007 [UTC]

1 - Danger To Navigation

1.1) 238/70

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 02' 05.615" N, 159° 39' 37.024" W

Least Depth: 15.65 m

Timestamp: 2007-225.17:19:49.132 (08/13/2007)

Survey Line: h11682 / fa_1010_reson8101 / 2007-225 / 225-1718

Profile/Beam: 238/70

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

Remarks:

Completely developed a submerged rock with least depth 15.65 meters in previously unsurveyed area (chart 16540).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11682/fa_1010_reson8101/2007-225/225-1718	238/70	0.00	000.0	Primary

Hydrographer Recommendations

The Hydrographer recommends adding the least depth to the chart.

Cartographically-Rounded Depth (Affected Charts):

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

15.6m (500_1, 50_1)

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : August 20, 2007

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P183-FA-2007
HYDROGRAPHIC SHEET: H11682

LOCALITY: Turner Island to Spectacle Island and Vicinity, AK
TIME PERIOD: May 31 - August 15, 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, H11682, during the time period between May 31 to August 15 , 2007.

Please use the zoning file "P183FA2007CORP_Rev" submitted with the project instructions for OPR-P183-FA-2007. Zones SWA204 and SWA193 are the applicable zones for H11682.

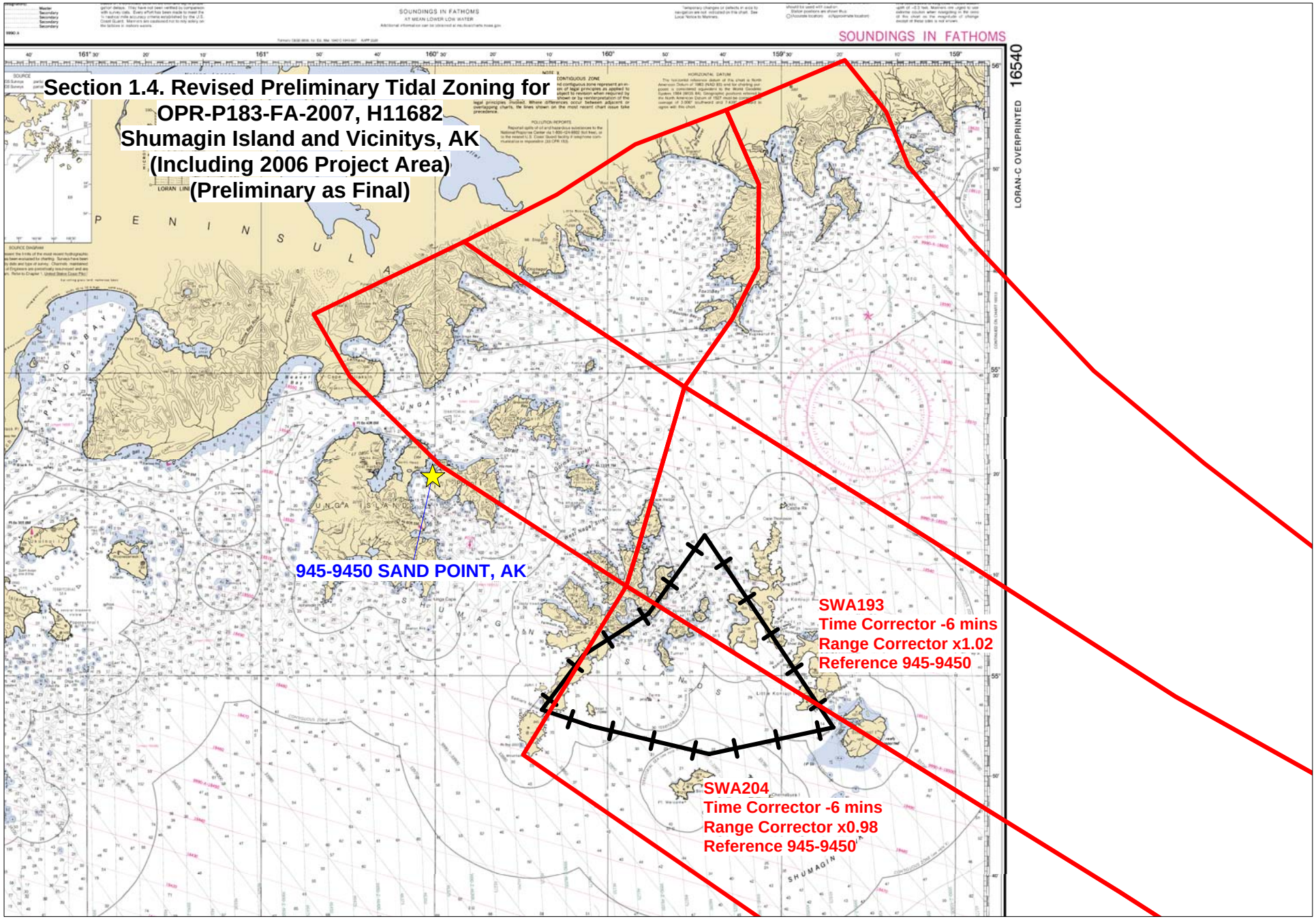
Refer to attachments for zoning information.

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).

Peter J. Stone

Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, o=NOAA/NOS/CO-OPS, ou=Oceanographic Division, email=peter.stone@noaa.gov, c=US
Date: 2010.08.03 19:18:35 -04'00'

CHIEF, PRODUCT AND SERVICES DIVISION


Section 1.4. Revised Preliminary Tidal Zoning for
OPR-P183-FA-2007, H11682
Shumagin Island and Vicinitys, AK
(Including 2006 Project Area)
(Preliminary as Final)
SOUNDINGS IN FATHOMS
16540
LORAN-C OVERPRINTED
945-9450 SAND POINT, AK
SWA193
Time Corrector -6 mins
Range Corrector x1.02
Reference 945-9450
SWA204
Time Corrector -6 mins
Range Corrector x0.98
Reference 945-9450

H11682 HCell Report

Kurt Brown, Physical Scientist
Pacific Hydrographic Branch

1. Specifications, Standards and Guidance Used in HCell Compilation

HCell compilation of survey H11682 used:

Office of Coast Survey HCell Specifications: Draft, Version: 4.0, 17 March, 2010.
HCell Reference Guide: Version 2.0, 22 February, 2010.

2. Compilation Scale

Depths and features for HCell H11682 were compiled to the largest scale raster chart shown below:

Chart	Scale	Edition	Edition Date	NTM Date
16556	1:80,000	5th	04/01/2006	06/26/2010

The following ENC was also used during compilation:

Chart	Scale
US4AK58M	1:80,000

The majority of survey H11682 is covered by the 1:300,000 scale chart 16540 (12th Ed., 01/01/2005, NTM date 06/26/2010), and ENC US3AK50M. However, in anticipation of a planned 1:80,000 scale Shumagin Islands chart joining 16553 and 16556 to the south, this area of H11682 was compiled at 1:80,000 instead of at 1:300,000.

3. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 10-meter Combined Surface in CARIS BASE Editor. A shoal-biased selection was made at 1:20,000 survey scale using a Radius Table file with values shown in the table, below.

Shoal Limit (m)	Deep Limit (m)	Radius (mm)
-4.7	10	3
10	20	4
20	50	4.5
50	200	5

In CARIS BASE Editor soundings were manually selected from the high density sounding layers (SS) and imported into a new layer (CS) created to accommodate chart density depths. Manual selection was used to accomplish a density and distribution that closely represents the seafloor morphology.

4. Depth Contours

Depth contours at the intervals used on chart 16540 are included in the *_SS HCell as this chart covers the majority of the survey whereas the larger scale chart 16556 only covers a small section in the north. The contours are included for MCD raster charting division to use for guidance in creating chart contours. The metric and fathom equivalent contour values are shown in the table below.

Chart Contour Intervals in Fathoms from Chart 16556	Metric Equivalent to Chart Fathoms, Arithmetically Rounded	Metric Equivalent of Chart Fathoms, with NOAA Rounding Applied	Fathoms with NOAA Rounding Applied	Fathoms with NOAA Rounding Removed for Display on H11676_SS.000
3	5.4864	5.715	3.125	3
5	9.144	9.3726	5.125	5
10	18.288	18.517	10.125	10
20	36.576	37.9476	20.75	20
30	54.864	56.236	30.750	30
40	74.5236	73.152	40.750	40
50	91.44	92.812	50.750	50

5. Meta Areas

The following Meta object area is included in HCell H11682:

M_QUAL

The Meta area object was constructed on the basis of the limits of the hydrography.

6. Features

Features addressed by the field units are delivered to PHB where they are deconflicted against the hydrography and the largest scale chart. These features, as well as features to be retained from the chart and features digitized from the Base Surface, are included in the HCell. The geometry of these features may be modified to emulate chart scale per the HCell Reference Guide on compiling features to the chart scale HCell.

7. S-57 Objects and Attributes

The *_CS HCell contains the following Objects:

$CSYMB	Blue Notes-Notes to the MCD chart Compiler
COALNE	GC coastline
M_QUAL	Data quality Meta object
OBSTRN	Obstruction area object
SBDARE	Bottom samples and Rocky Seabed Areas
SOUNDG	Soundings at the chart scale density
UWTROC	Rock features

The *_SS HCell contains the following Objects:

DEPCNT	Generalized contours at chart scale intervals
SOUNDG	Soundings at the survey scale density

8. Spatial Framework

8.1 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.

8.2 Horizontal and Vertical Units

DUNI, HUNI and PUNI are used to define units for depth, height and horizontal position in the chart units HCell, as shown below.

Chart Unit Base Cell Units:

Depth Units (DUNI):	Fathoms and feet
Height Units (HUNI):	Feet
Positional Units (PUNI):	Meters

During creation of the HCell in CARIS BASE Editor and CARIS S-57 Composer, all soundings and features are maintained in metric units with as high precision as possible. Depth units for soundings measured with sonar maintain millimeter precision. Depths on rocks above MLLW and heights on islets above MHW are typically measured with range finder, so precision is less. Units and precision are shown below.

BASE Editor and S-57 Composer Units:

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

See the HCell Reference Guide for details of conversion from metric to charting units, and application of NOAA rounding.

9. Data Processing Notes

There were no significant deviations from the standards and protocols given in the HCell Specification and HCell Reference Guide.

10. QA/QC and ENC Validation Checks

H11682 was subjected to QA checks in S-57 Composer prior to exporting to the metric HCell base cell (000) file. The millimeter precision metric S-57 HCell was converted to chart units and NOAA rounding applied. dKart Inspector was then used to further check the data set for conformity with the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and warnings and errors investigated and corrected unless they are MCD approved as inherent to and acceptable for HCells.

11. Products

11.1 HSD, MCD and CGTP Deliverables

H11682_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:80,000
H11682 _SS.000	Base Cell File, Chart Units, Soundings and Contours compiled to 1:20,000
H11682 _DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
H11682 _outline.gml	Survey outline
H11682 _outline.xsd	Survey outline

11.2 Software

CARIS BASE Editor Ver. 3.0	Creation of soundings and bathy-derived features, creation of the depth area, meta area objects, and Blue Notes; Survey evaluation and verification; Initial HCell assembly.
CARIS S-57 Composer Ver. 2.1	Final compilation of the HCell, correct geometry and build topology, apply final attributes, export the HCell, and QA.
CARIS GIS 4.4a	Setting the sounding rounding variable for conversion of the metric HCell to NOAA charting units with NOAA rounding.
CARIS HOM Ver. 3.3	Perform conversion of the metric HCell to NOAA charting units with NOAA rounding.
HydroService AS, dKart Inspector Ver. 5.1, SP 1	Validation of the base cell file.
Northport Systems, Inc., Fugawi View ENC Ver.1.0.0.3	Independent inspection of final HCells using a COTS viewer.

12. Contacts

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

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Physical Scientist
Pacific Hydrographic Branch
Seattle, WA
206-526-6839
kurt.brown@noaa.gov

APPROVAL SHEET
H11682

Initial Approvals:

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

Digitally signed by
Kurt Brown
Date: 2010.09.13
09:58:32 -07'00'

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.

Digitally signed by Pete
Holmberg
DN: cn=Pete Holmberg,
o=NOAA, ou=PHB,
email=peter.holmberg@noaa.go
v, c=US
Date: 2010.09.13 11:13:11 -07'00'

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.

Digitally signed by Gary C. Nelson
DN: cn=Gary C. Nelson, o=NOAA,
ou=Pacific Hydrographic Branch,
email=gary.nelson@noaa.gov,
c=US
Date: 2010.09.13 10:51:50 -07'00'

Lucy Hick
AWOIS & SURF
Check Complete
2010.09.16
15:41:03 -04'00'