

H11589

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. H11589

LOCALITY

State Alaska

General Locality Semidi Islands

Sublocality Vicinity of Semidi and Chirikof Islands

2006

CHIEF OF PARTY

Commander John E. Lowell Jr., NOAA

LIBRARY & ARCHIVES

DATE

<p style="text-align: center;">U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</p> <p style="text-align: center;">HYDROGRAPHIC TITLE SHEET</p>	<p>REGISTRY No</p> <p style="text-align: center;">H11589</p>
<p>INSTRUCTIONS – The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.</p>	<p>FIELD No: N/A</p>
<p>State <u>Alaska</u></p> <hr/> <p>General Locality <u>Semidi Islands</u></p> <hr/> <p>Sub-Locality <u>Vicinity of Semidi Islands and Chirikof Islands</u></p> <hr/> <p>Scale <u>1:135,000</u> Date of Survey <u>May 28 to July 13, 2006</u></p> <hr/> <p>Instructions dated <u>5/19/2006</u> Project No. <u>S-P909-FA-06</u></p> <hr/> <p>Vessel <u>NOAA Ship Fairweather (S220)</u></p> <hr/> <hr/> <p>Chief of party <u>CAPT John E. Lowell, Jr., NOAA</u></p> <hr/> <p>Surveyed by <u>CST Froelich, LT. Dowling</u></p> <hr/> <p>Soundings by <u>Reson 8111ER</u></p> <hr/> <p>SAR by <u>Martha Herzog</u> Compilation by <u>Kurt Brown</u></p> <hr/> <p>Soundings compiled in <u>Fathoms</u></p> <hr/>	
<p>REMARKS: <u>All times are UTC. UTM Projection Zone 5 North</u></p> <hr/> <p><u>The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS)</u></p> <hr/> <p><u>naautical charts. All separates are filed with the hydrographic data. Revisions and end notes in red were</u></p> <hr/> <p><u>generated during office processing. Page numbering may be interrupted or non sequential.</u></p> <hr/> <hr/> <hr/>	

Descriptive Report to Accompany Hydrographic Survey H11589

Project S-P909-FA-06

Semidi Islands, Alaska

Scale 1:135,000

May-July, 2006

NOAA Ship FAIRWEATHER

Chief of Party: Captain John E. Lowell, Jr., NOAA

A. AREA SURVEYED

The survey area was located in Semidi Islands, Alaska, within the sub-locality of Vicinity of Semidi and Chirikof Islands. This survey corresponds to D in the sheet layout provided with the Letter Instructions, as shown in Figure 1 below. The survey area is bounded on the Southwest corner at 55° 37' 00" N, 156° 13' 00" W and the Northeast corner at 56° 32' 00" N, 155° 08' 00" W.

Data acquisition was conducted from May 28, 2006 to July 13, 2006 (DN 148 to DN 194).

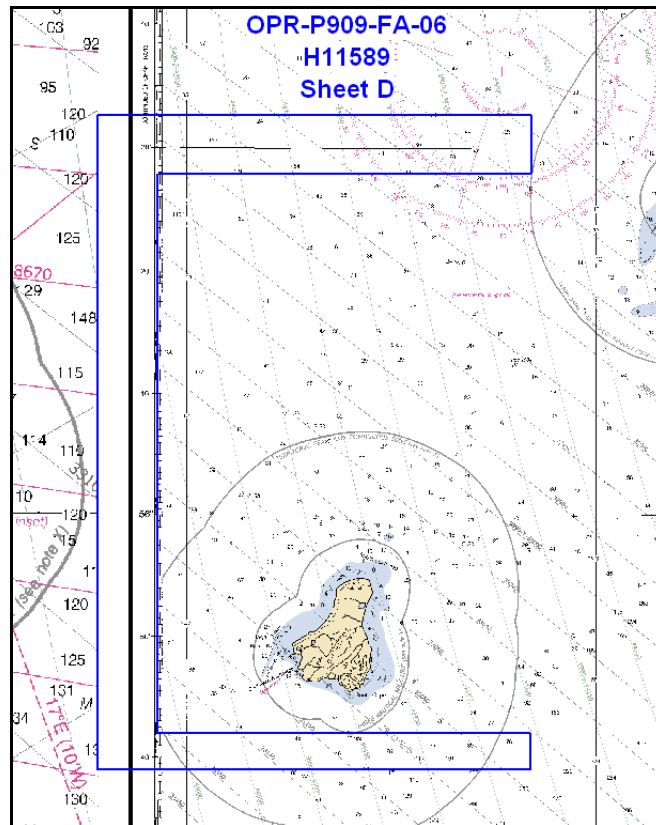


Figure 1: H11589

Multibeam echosounder (MBES) coverage was obtained on a “not to interfere with other projects” basis in the survey area at 1,000 meter line spacing while transiting to and from other projects as specified in the Letter Instructions.

MAIN SCHEME - Mileage	
Single Beam MS	0
Multibeam MS mileage	319.395119
SideScan MS	0
Total MS	319.395119
CROSSLINE - Mileage	
Single Beam XL	0
Multibeam XL	0
Total XL	0
OTHER	
Developments/AWOIS - Mileage	0
Shoreline/Nearshore Investigation - Mileage	0
Total # of Investigated Items	0
Total Bottom Samples	0
Total SNM	137.8
Specific Dates of Acquisition	28 May to 13 July 2006
Specific Dn#s of Acquisition	148 to 194

Table 1. Statistics for survey H11589

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 *S-P909-FA-06 Data Acquisition and Processing Report (DAPR)*¹, 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 S-P909-FA-06, dated May 19th, 2006.

B1. Equipment and Vessels

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

	FAIRWEATHER
Hull Registration Number	S220
Builder	Aerojet-General Shipyard
Length Overall	231 feet
Beam	42 feet
Draft, Maximum	15' 6"
Cruising Speed	12.5 knots
Max Survey Speed	10 knots
Primary Echosounder	RESON 8111
Sound Velocity Equipment	SBE 19plus & 45, MVP 200
Attitude & Positioning Equipment	POS MV V3
Type of operations	MBES

Table 1: Vessel Inventory

No vessel configurations used during data collection deviated from the DAPR.

B2. Quality Control

Internal consistency and integrity of data collected for survey H11589 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity of data collected for survey H11589 were found to be very good.²

Crosslines

Multibeam echosounder crosslines were not collected for survey H11589.³

Junctions

Comparison to contemporary surveys that junction survey H11589 was not required as stated in section 6.8 of the Letter Instructions.

Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section of the *S-P909-FA-06 Data Acquisition and Processing Report (DAPR)*.

Data Quality Factors

COVERAGE ASSESSMENT:

Coverage Assessment followed procedures as outlined in the DAPR.

DESIGNATED SOUNDINGS:

Designation of soundings followed procedures as outlined in the DAPR.

POSITIONING:

Data were collected with the POS MV in C/A mode. Horizontal accuracy parameters were monitored during acquisition of data and never exceeded 5.0 meters.

SOUND VELOCITY:

Due to the varied sound speed profiles encountered in the survey area some characteristic “smiles” and “frowns” indicating incorrect sound speed correctors were seen in the data as illustrated in Figure 2. The affected data were removed which led to data gaps. Due to the “not to interfere” nature of this survey, these data gaps were left as is.⁴

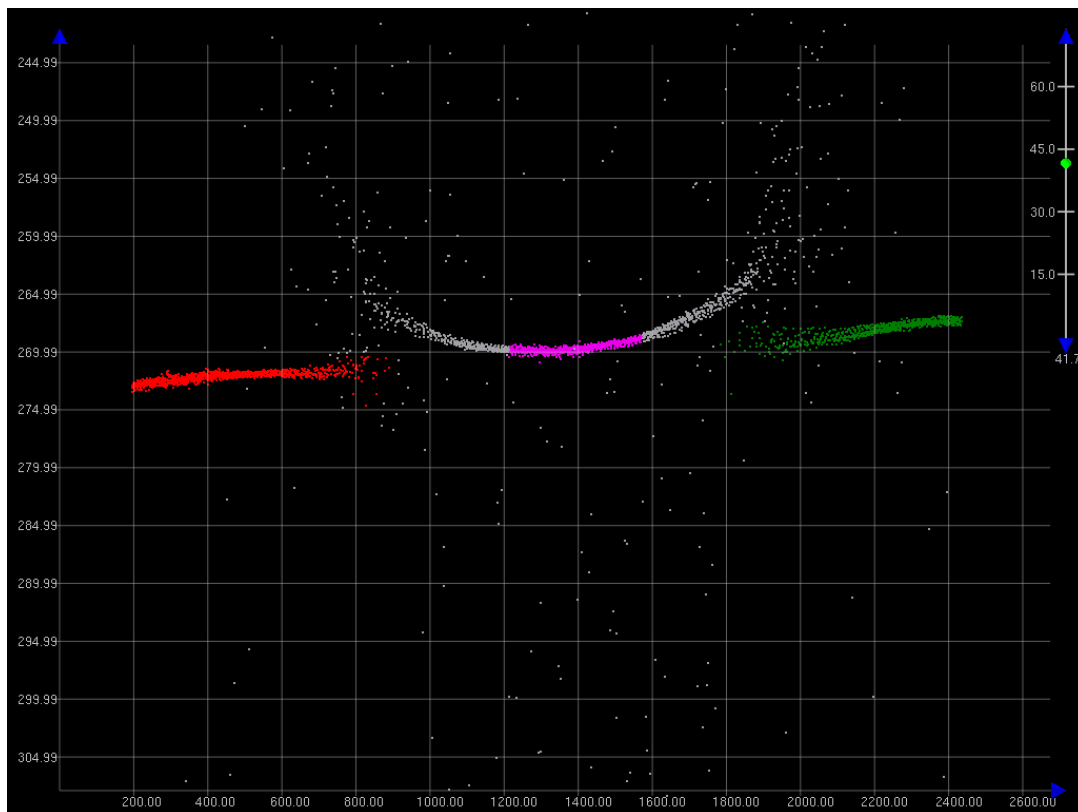


Figure 2. Incorrect sound speed correctors leading to "Smile"

Accuracy Standards

All data meet the data accuracy specifications as stated in Section 5.2 of *NOS Hydrographic Surveys Specifications and Deliverables*, dated June 2006.⁵

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11589 conform to those detailed in the of the *S-P909-FA-06 Data Acquisition and Processing Report*.

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11589 can be found in the *S-P909-FA-06 Horizontal and Vertical Control Report*,⁶ 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). Due to the remote location of the survey area, consistent USCG DGPS correctors were not available. Because consistent correctors were not available, data were collected with the POS MV in C/A mode.

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 H11589 during acquisition.

A request for delivery of final approved water level data (smooth tides) for survey H11589 was forwarded to N/OPS1 on September 24, 2006 in accordance with the *Field Procedures Manual v2.*, dated May 2006 (FPM). A copy of the request is included in Appendix V.

All data were reduced to MLLW using predicted water levels with preliminary zoning downloaded from the CO-OPS website for station Sand Point (945-9450) by applying tide file 9459450.tid and time and height correctors through the preliminary zone corrector file P183FA2005CORP.zdf.

The Pacific Hydrographic Branch will apply final approved water levels (smooth tides) to the survey data during final processing.⁷

D. RESULTS AND RECOMMENDATIONS

D.1 Chart Comparison

Chart comparison procedures were followed as outlined in the DAPR. Survey H11589 was compared with charts 16013 (29th Ed.; November 1, 2003, 1:969,761), and 16580 (13th Ed.; January 1, 2005, 1:350,000).⁸ All charts have been updated with the Notice to Mariners through July 15th, 2006 and the most recent Notice to Mariners was consulted. There were no new changes within the survey area.

Chart 16013

The charted soundings on the southern leg of the survey are about 10 fathoms shoaler than survey soundings in the area.⁹

The rest of the depths on chart 16013 generally agree with the depths from survey H11589.¹⁰

Chart 16580

The charted 46 fathom sounding on the southern leg of the survey is about 24 fathoms shoaler than survey soundings in the area.¹¹

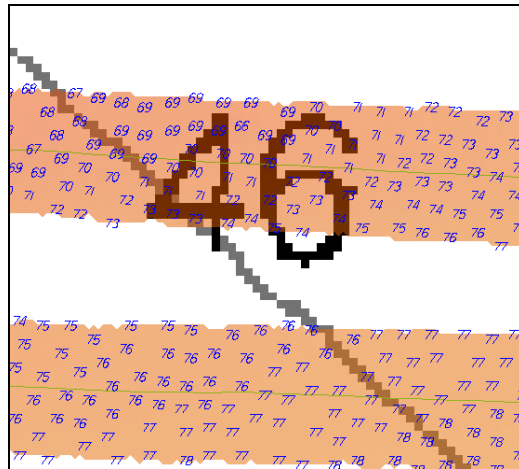


Figure 3. Charted (16580) 46 fathom sounding and surrounding H11589 soundings.

The charted 76 fathom sounding on the southern leg of the survey is about 7 fathoms shoaler than survey soundings in the area.¹²

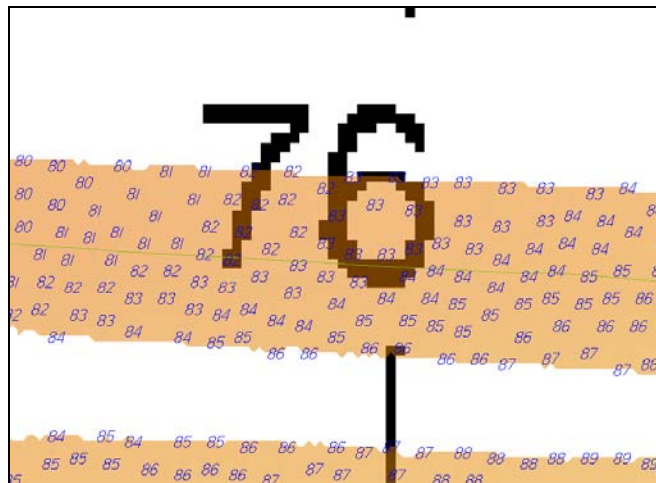


Figure 4. Charted (16580) 76 fathom sounding and surrounding H11589 soundings.

The charted 117 fathom sounding on the southern leg of the survey is about 10 fathoms deeper than survey soundings in the area.¹³

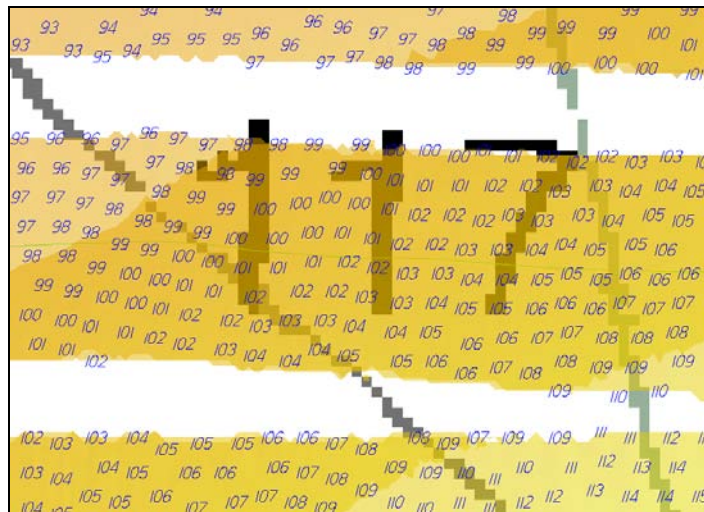


Figure 5. Charted (16580) 117 fathom sounding and surrounding H11589 soundings.

The charted 101 fathom sounding on the southern leg of the survey is about 30 fathoms shoaler than survey soundings in the area.¹⁴

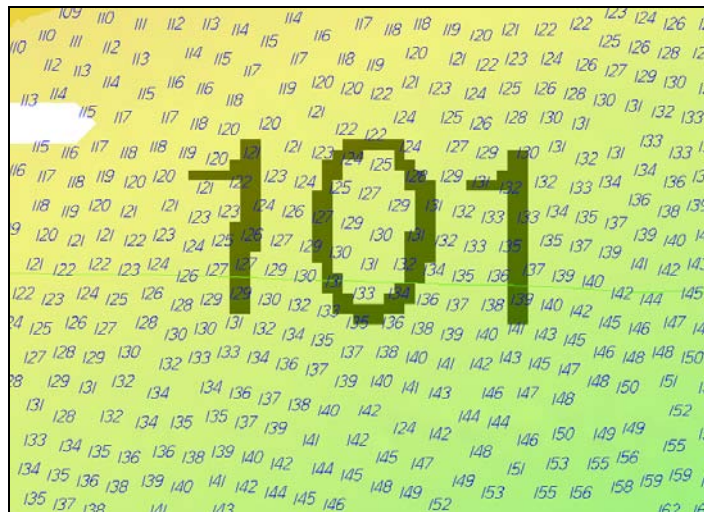


Figure 6. Charted (16580) 101 fathom sounding and surrounding H11589 soundings.

The rest of the depths on chart 16580 generally agree with the depths from survey H11589.¹⁵

Chart Comparison Recommendations

The Hydrographer has determined that bottom coverage requirements have been met and data accuracy meets requirements specified by the *NOS Hydrographic Surveys Specifications and Deliverables* dated June 2006. The BASE surfaces with the application of designated soundings are adequate to supersede

prior surveys in their common areas.¹⁶ Final chart comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides.

Automated Wreck and Obstruction Information System (AWOIS) Investigations

There were no AWOIS items located within the limits of H11589.¹⁷

Dangers to Navigation

There were no dangers to navigation found within the survey limits.¹⁸

D.2 Additional Results

Aids to Navigation

There were no aids to navigation within the survey limits.¹⁹

Bottom Samples

Bottom samples were not collected for survey H11589.²⁰

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 2006	06/02/2006	N/CS34
S-P909-FA-06 Data Acquisition and Processing Report	11/21/2006	N/CS34



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

March 28, 2007

MEMORANDUM FOR: CDR Don Haines, NOAA
Chief, Pacific Hydrographic Branch

FROM: CDR Andrew L. Beaver, NOAA
Commanding Officer, NOAA Ship FAIRWEATHER

TITLE: Approval of Hydrographic Survey H11589,
S-P909-FA-06

Andrew L. Beaver

Digitally signed by Andrew L. Beaver
DN: cn=Andrew L. Beaver, c=US, o=NOAA,
ou=NOAA Ship FAIRWEATHER, email=Andrew.
L.Beaver@noaa.gov
Date: 2007.03.28 23:37:56 Z

As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during acquisition and processing of hydrographic survey H11589 in accordance with the Hydrographic Manual, Fourth Edition; Hydrographic Survey Guidelines; Field Procedures Manual, May 2006 Version 2.1; and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for May, 2006. 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:

Digitally signed by Grant
Froelich
Date: 2007.03.28 22:16:46 Z

CST Grant D. Froelich
Survey Manager/Chief Survey Technician

Jennifer Dowling
I am approving this document
2007.03.28 14:59:20 -08'00'

LT Jennifer N. Dowling
Field Operations Officer

Attachment



Revisions Compiled During Office Processing and Certification

¹ Filed with project records

² Concur

³ Crosslines were not required for survey H11589.

⁴ The reviewer rejected more outer beam data during office processing. The gaps in the data are shown in the M_QUAL layer in the HCell.

⁵ Do not concur. There were significant roll-timing and sound speed errors affecting the data. The reviewer rejected outer beam data affected by these errors and brought the data within IHO specifications.

⁶ Filed with hydrographic records

⁷ Final approved water levels were applied at PHB during the survey acceptance review. See attached Tide Note dated October 25, 2006.

⁸ Chart 16587 (1:135,000, 1st ed. 9/2006, NTM 6/12/2010) which was not printed at the time of the survey, was used for comparison during compilation.

⁹ Do not concur. The data from the survey in this area fall in between or only partially cover the small scale charted soundings and do not allow for a useful comparison.

¹⁰ Concur

¹¹ Concur with clarification. Although coverage over the sounding on the largest scale chart was achieved, gaps in the data directly north and south of the sounding remain. Due to the large difference in the value of the charted sounding and depths from the survey, and the possibility that the source of the sounding is a seamount in the unsurveyed area, the compiler recommends retaining the charted sounding. The compiler recommends the sounding and surrounding area be fully surveyed on future transits.

¹² Full coverage over the sounding was not obtained. Compiler recommends retaining the 76 fathom sounding.

¹³ Concur. Chart per HCell H11589.

¹⁴ Concur. Chart per HCell H11589.

¹⁵ Concur

¹⁶ Concur with clarification. Note exceptions listed in comments 9, 11 and 12. Chart per HCell H11589.

¹⁷ Concur

¹⁸ Concur

¹⁹ Concur

²⁰ Retain all charted bottom types.



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : October 25, 2006

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: S-P909-FA-2006
HYDROGRAPHIC SHEET: H11589

LOCALITY: Vicinity of Semidi and Chirikof Islands, AK
TIME PERIOD: May 28 - July 13, 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

TIDE STATION USED: 945-7804 Alitak, AK
Lat. 56° 53.9' N Long. 154° 14.9' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.287 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: SS89, SS90, SS91, SS94, SS95, SS96, SS99,
SS100, SS101, SS104, SS105, SWA147, SWA148,
SWA149, SWA150, SWA151, SWA152, SWA153,
SWA154, SWA155, SWA170, & SWA171.

Refer to attachments for zoning information.

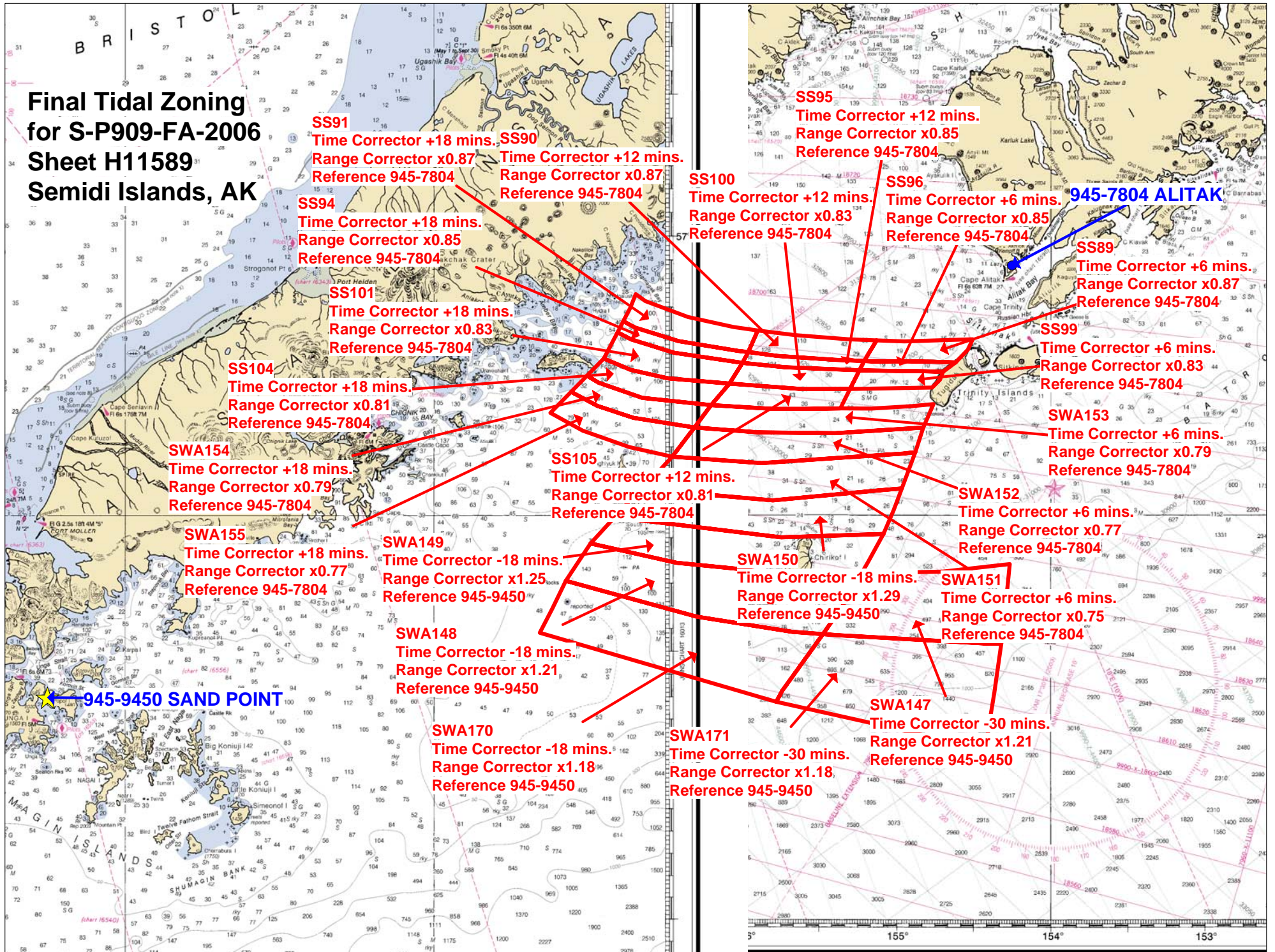
Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

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: 2010.08.17 13:46:27 -04'00'

CHIEF, PRODUCTS AND SERVICES DIVISION



Final Tidal Zoning for S-P909-FA-2006 Sheet H11589 Semidi Islands, AK



Final tide zone node point locations for S-P909-FA-2006, H11589

Format: Tide Station (in recommended order of use)
 Average Time Correction (in minutes)
 Range Correction
 Longitude in decimal degrees (negative value denotes Longitude West),
 Latitude in decimal degrees

	Tide Station Order	AVG Time Correction	Range Correction
SS89	945-7804	+6	x0.87
-154.945752 56.62678			
-155.127015 56.630303			
-155.206964 56.556557			
-155.156254 56.555169			
-154.924361 56.555593			
-154.755501 56.553944			
-154.613534 56.551484			
-154.533445 56.597479			
-154.50304 56.63441			
-154.50304 56.63441			
-154.759977 56.629798			
-154.945752 56.62678			
SS90	945-7804	+12	x0.87
-155.127015 56.630303			
-155.310924 56.634428			
-155.656319 56.649221			
-155.896845 56.665606			
-155.958501 56.588565			
-155.769734 56.57469			
-155.398084 56.560751			
-155.206964 56.556557			
-155.127015 56.630303			
SS91	945-7804	+18	x0.87
-155.896845 56.665606			
-156.053759 56.678119			
-156.349558 56.713681			
-156.625831 56.770567			
-156.688491 56.795451			
-156.724502 56.745546			
-156.768919 56.698906			
-156.693706 56.676334			
-156.411185 56.62761			
-156.024281 56.592796			
-155.958501 56.588565			

-155.896845 56.665606			
SS94	945-7804	+18	x0.85
-156.768919 56.698906			
-156.805961 56.659028			
-156.71866 56.63386			
-156.439676 56.585981			
-155.996183 56.55001			
-155.958501 56.588565			
-156.024281 56.592796			
-156.411185 56.62761			
-156.693706 56.676334			
-156.768919 56.698906			
SS95	945-7804	+12	x0.85
-155.769734 56.57469			
-155.958501 56.588565			
-155.996183 56.55001			
-155.719782 56.534137			
-155.237238 56.523194			
-155.206964 56.556557			
-155.398084 56.560751			
-155.769734 56.57469			
SS96	945-7804	+6	x0.85
-155.156254 56.555169			
-155.206964 56.556557			
-155.237238 56.523194			
-155.088735 56.521758			
-154.996108 56.521187			
-154.821248 56.520109			
-154.695724 56.517632			
-154.613534 56.551484			
-154.755501 56.553944			
-154.924361 56.555593			
-155.156254 56.555169			
SS99	945-7804	+6	x0.83
-155.237238 56.523194			
-155.298961 56.456224			
-155.025931 56.458655			
-154.927348 56.459764			
-154.76596 56.461421			
-154.715151 56.489537			
-154.695724 56.517632			
-154.821248 56.520109			
-154.996108 56.521187			
-155.088735 56.521758			
-155.237238 56.523194			

SS100	945-7804	+12	x0.83
-155.237238 56.523194			
-155.719782 56.534137			
-155.996183 56.55001			
-156.080347 56.475447			
-155.606241 56.455911			
-155.298961 56.456224			
-155.237238 56.523194			
SS101	945-7804	+18	x0.83
-155.996183 56.55001			
-156.439676 56.585981			
-156.71866 56.63386			
-156.805961 56.659028			
-156.895859 56.565337			
-156.72051 56.52476			
-156.478477 56.494118			
-156.080347 56.475447			
-155.996183 56.55001			
SS104	945-7804	+18	x0.81
-156.080347 56.475447			
-156.478477 56.494118			
-156.72051 56.52476			
-156.895859 56.565337			
-157.004841 56.503826			
-156.927793 56.478454			
-156.64511 56.424375			
-156.199466 56.398178			
-156.080347 56.475447			
SS105	945-7804	+12	x0.81
-155.59396 56.384607			
-155.800583 56.384674			
-156.199466 56.398178			
-156.080347 56.475447			
-155.606241 56.455911			
-155.298961 56.456224			
-155.361471 56.386283			
-155.59396 56.384607			
SWA147	945-9450	-30	x1.21
-154.317476 55.530207			
-154.305454 55.578021			
-154.262679 55.822091			
-154.699237 55.79456			
-155.223638 55.788806			
-155.356625 55.659933			
-155.474619 55.565371			
-155.362992 55.560726			

-154.41287 55.53065			
-154.317476 55.530207			
SWA148	945-9450	-18	x1.21
-155.223638 55.788806			
-155.65796 55.784023			
-156.425537 55.827042			
-156.981997 55.897305			
-157.142303 55.760791			
-156.292961 55.629358			
-155.671598 55.573477			
-155.474619 55.565371			
-155.356625 55.659933			
-155.223638 55.788806			
SWA149	945-9450	-18	x1.25
-155.081499 55.931725			
-155.744446 55.919675			
-156.82468 55.992969			
-156.981997 55.897305			
-156.425537 55.827042			
-155.65796 55.784023			
-155.223638 55.788796			
-155.181646 55.829499			
-155.081499 55.931725			
SWA150	945-9450	-18	x1.29
-154.962872 56.09745			
-155.133653 56.089296			
-155.798963 56.053871			
-156.648857 56.095583			
-156.744045 56.042004			
-156.82468 55.992969			
-155.744446 55.919675			
-155.081499 55.931725			
-155.015639 56.018436			
-154.962872 56.09745			
SWA151	945-7804	+6	x0.75
-154.875331 56.228534			
-154.962872 56.09745			
-155.133653 56.089296			
-155.798963 56.053871			
-156.648857 56.095583			
-156.594987 56.125905			
-156.451752 56.212443			
-155.871846 56.188861			
-155.33695 56.20937			
-154.956803 56.22315			
-154.875331 56.228534			

SWA152	945-7804	+6	x0.77
-154.82337 56.317191			
-155.395724 56.297146			
-155.892917 56.30017			
-156.307887 56.317676			
-156.451752 56.212443			
-155.871846 56.188861			
-155.33695 56.20937			
-154.956803 56.22315			
-154.875331 56.228534			
-154.82337 56.317191			
SWA153	945-7804	+6	x0.79
-154.757139 56.401913			
-154.898488 56.394421			
-155.159781 56.385702			
-155.361471 56.386283			
-155.59396 56.384607			
-155.800583 56.384674			
-156.199466 56.398178			
-156.307887 56.317676			
-155.892917 56.30017			
-155.395724 56.297146			
-154.82337 56.317191			
-154.757139 56.401913			
SWA154	945-7804	+18	x0.79
-156.199466 56.398178			
-156.64511 56.424375			
-156.927793 56.478454			
-157.004841 56.503826			
-157.107648 56.445969			
-156.937857 56.395634			
-156.704922 56.352554			
-156.307887 56.317676			
-156.199466 56.398178			
SWA155	945-7804	+18	x0.77
-157.107648 56.445969			
-157.241858 56.370111			
-157.032765 56.306289			
-156.730153 56.246814			
-156.451752 56.212443			
-156.307887 56.317676			
-156.704922 56.352554			
-156.937857 56.395634			
-157.107648 56.445969			

SWA170	945-9450	-18	x1.18
-155.474619 55.565371			
-155.671598 55.573477			
-156.292961 55.629358			
-157.142303 55.760791			
-157.229433 55.659196			
-157.310831 55.570259			
-155.777153 55.315755			
-155.737992 55.356934			
-155.540579 55.512545			
-155.474619 55.565371			
SWA171	945-9450	-30	x1.18
-154.422177 55.142795			
-154.362821 55.349861			
-154.317476 55.530207			
-154.419147 55.53068			
-155.362992 55.560726			
-155.474619 55.565371			
-155.737992 55.356934			
-155.777153 55.315755			
-154.422177 55.142795			

Final tide zone node point locations for S-P909-FA-2006, H11589

Format: Tide Station (in recommended order of use)
 Average Time Correction (in minutes)
 Range Correction
 Longitude in decimal degrees (negative value denotes Longitude West),
 Latitude in decimal degrees

Tide Order	Station	AVG Correction	Time	Range Correction
SS89	945-7804	+6	x0.87	
	-154.945752 56.62678			
	-155.127015 56.630303			
	-155.206964 56.556557			
	-155.156254 56.555169			
	-154.924361 56.555593			
	-154.755501 56.553944			
	-154.613534 56.551484			
	-154.533445 56.597479			
	-154.50304 56.63441			
	-154.50304 56.63441			
	-154.759977 56.629798			
	-154.945752 56.62678			
SS90	945-7804	+12	x0.87	
	-155.127015 56.630303			
	-155.310924 56.634428			
	-155.656319 56.649221			
	-155.896845 56.665606			
	-155.958501 56.588565			
	-155.769734 56.57469			
	-155.398084 56.560751			
	-155.206964 56.556557			
	-155.127015 56.630303			
SS91	945-7804	+18	x0.87	
	-155.896845 56.665606			
	-156.053759 56.678119			
	-156.349558 56.713681			
	-156.625831 56.770567			
	-156.688491 56.795451			
	-156.724502 56.745546			
	-156.768919 56.698906			
	-156.693706 56.676334			
	-156.411185 56.62761			
	-156.024281 56.592796			
	-155.958501 56.588565			

-155.896845 56.665606		
SS94 945-7804	+18	x0.85
-156.768919 56.698906		
-156.805961 56.659028		
-156.71866 56.63386		
-156.439676 56.585981		
-155.996183 56.55001		
-155.958501 56.588565		
-156.024281 56.592796		
-156.411185 56.62761		
-156.693706 56.676334		
-156.768919 56.698906		
SS95 945-7804	+12	x0.85
-155.769734 56.57469		
-155.958501 56.588565		
-155.996183 56.55001		
-155.719782 56.534137		
-155.237238 56.523194		
-155.206964 56.556557		
-155.398084 56.560751		
-155.769734 56.57469		
SS96 945-7804	+6	x0.85
-155.156254 56.555169		
-155.206964 56.556557		
-155.237238 56.523194		
-155.088735 56.521758		
-154.996108 56.521187		
-154.821248 56.520109		
-154.695724 56.517632		
-154.613534 56.551484		
-154.755501 56.553944		
-154.924361 56.555593		
-155.156254 56.555169		
SS99 945-7804	+6	x0.83
-155.237238 56.523194		
-155.298961 56.456224		
-155.025931 56.458655		
-154.927348 56.459764		
-154.76596 56.461421		
-154.715151 56.489537		
-154.695724 56.517632		
-154.821248 56.520109		
-154.996108 56.521187		
-155.088735 56.521758		
-155.237238 56.523194		

SS100	945-7804	+12	x0.83
	-155.237238 56.523194		
	-155.719782 56.534137		
	-155.996183 56.55001		
	-156.080347 56.475447		
	-155.606241 56.455911		
	-155.298961 56.456224		
	-155.237238 56.523194		
SS101	945-7804	+18	x0.83
	-155.996183 56.55001		
	-156.439676 56.585981		
	-156.71866 56.63386		
	-156.805961 56.659028		
	-156.895859 56.565337		
	-156.72051 56.52476		
	-156.478477 56.494118		
	-156.080347 56.475447		
	-155.996183 56.55001		
SS104	945-7804	+18	x0.81
	-156.080347 56.475447		
	-156.478477 56.494118		
	-156.72051 56.52476		
	-156.895859 56.565337		
	-157.004841 56.503826		
	-156.927793 56.478454		
	-156.64511 56.424375		
	-156.199466 56.398178		
	-156.080347 56.475447		
SS105	945-7804	+12	x0.81
	-155.59396 56.384607		
	-155.800583 56.384674		
	-156.199466 56.398178		
	-156.080347 56.475447		
	-155.606241 56.455911		
	-155.298961 56.456224		
	-155.361471 56.386283		
	-155.59396 56.384607		
SWA147	945-9450	-30	x1.21
	-154.317476 55.530207		
	-154.305454 55.578021		
	-154.262679 55.822091		
	-154.699237 55.79456		
	-155.223638 55.788806		
	-155.356625 55.659933		
	-155.474619 55.565371		
	-155.362992 55.560726		

-154.41287 55.53065		
-154.317476 55.530207		
SWA148 945-9450	-18	x1.21
-155.223638 55.788806		
-155.65796 55.784023		
-156.425537 55.827042		
-156.981997 55.897305		
-157.142303 55.760791		
-156.292961 55.629358		
-155.671598 55.573477		
-155.474619 55.565371		
-155.356625 55.659933		
-155.223638 55.788806		
SWA149 945-9450	-18	x1.25
-155.081499 55.931725		
-155.744446 55.919675		
-156.82468 55.992969		
-156.981997 55.897305		
-156.425537 55.827042		
-155.65796 55.784023		
-155.223638 55.788796		
-155.181646 55.829499		
-155.081499 55.931725		
SWA150 945-9450	-18	x1.29
-154.962872 56.09745		
-155.133653 56.089296		
-155.798963 56.053871		
-156.648857 56.095583		
-156.744045 56.042004		
-156.82468 55.992969		
-155.744446 55.919675		
-155.081499 55.931725		
-155.015639 56.018436		
-154.962872 56.09745		
SWA151 945-7804	+6	x0.75
-154.875331 56.228534		
-154.962872 56.09745		
-155.133653 56.089296		
-155.798963 56.053871		
-156.648857 56.095583		
-156.594987 56.125905		
-156.451752 56.212443		
-155.871846 56.188861		
-155.33695 56.20937		
-154.956803 56.22315		
-154.875331 56.228534		

SWA152	945-7804	+6	x0.77
-154.82337	56.317191		
-155.395724	56.297146		
-155.892917	56.30017		
-156.307887	56.317676		
-156.451752	56.212443		
-155.871846	56.188861		
-155.33695	56.20937		
-154.956803	56.22315		
-154.875331	56.228534		
-154.82337	56.317191		
SWA153	945-7804	+6	x0.79
-154.757139	56.401913		
-154.898488	56.394421		
-155.159781	56.385702		
-155.361471	56.386283		
-155.59396	56.384607		
-155.800583	56.384674		
-156.199466	56.398178		
-156.307887	56.317676		
-155.892917	56.30017		
-155.395724	56.297146		
-154.82337	56.317191		
-154.757139	56.401913		
SWA154	945-7804	+18	x0.79
-156.199466	56.398178		
-156.64511	56.424375		
-156.927793	56.478454		
-157.004841	56.503826		
-157.107648	56.445969		
-156.937857	56.395634		
-156.704922	56.352554		
-156.307887	56.317676		
-156.199466	56.398178		
SWA155	945-7804	+18	x0.77
-157.107648	56.445969		
-157.241858	56.370111		
-157.032765	56.306289		
-156.730153	56.246814		
-156.451752	56.212443		
-156.307887	56.317676		
-156.704922	56.352554		
-156.937857	56.395634		
-157.107648	56.445969		

SWA170	945-9450	-18	x1.18
-155.474619	55.565371		
-155.671598	55.573477		
-156.292961	55.629358		
-157.142303	55.760791		
-157.229433	55.659196		
-157.310831	55.570259		
-155.777153	55.315755		
-155.737992	55.356934		
-155.540579	55.512545		
-155.474619	55.565371		
SWA171	945-9450	-30	x1.18
-154.422177	55.142795		
-154.362821	55.349861		
-154.317476	55.530207		
-154.419147	55.53068		
-155.362992	55.560726		
-155.474619	55.565371		
-155.737992	55.356934		
-155.777153	55.315755		
-154.422177	55.142795		

H11589 HCell Report
Kurt Brown, Physical Scientist
Pacific Hydrographic Branch

1. Specifications, Standards and Guidance Used in HCell Compilation

HCell compilation of survey H11589 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 H11589 were compiled to the largest scale raster chart shown below:

Chart	Scale	Edition	Edition Date	NTM Date
16587	1:135,000	1st	09/01/2006	06/12/2010

The following ENC's were also used during compilation:

Chart	Scale
US3AK5KM	1:350,000
US1WC02M	1:2,100,000

3. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 12-meter Combined Surface in CARIS BASE Editor. A shoal-biased selection was made at 1: 50,000 survey scale using a single defined radius value of 5 meters.

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 on the largest scale chart are included in the *_SS HCell 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 16587	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 H11589_SS.000
50	91.44	92.812	50.750	50
100	182.88	184.252	100.750	100

5. Meta Areas

The following Meta object area is included in HCell H11589:

M_QUAL

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

6. Features

No features are included in the HCell.

7. S-57 Objects and Attributes

The *_CS HCell contains the following Objects:

\$CSYMB	Blue Notes-Notes to the MCD chart Compiler
M_QUAL	Data quality Meta object
SOUNDG	Soundings at the chart scale density

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

H11589 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

H11589_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:350,000
H11589_SS.000	Base Cell File, Chart Units, Soundings and Contours compiled to 1:50,000
H11589_DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
H11589_outline.gml	Survey outline
H11589_outline.xsd	Survey outline

11.2 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.3	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:

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

APPROVAL SHEET
H11589

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.

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 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 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.