

H11577

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. H11577

LOCALITY

State Alaska

General Locality West of Prince of Wales Island

Sublocality Gulf of Esquibel

2006

CHIEF OF PARTY

..... Commander John Lowell, NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11577

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 West of Prince of Wales Island

Sub-Locality Gulf of Esquibel

Scale 1:10,000 Date of Survey May 1 - 24, 2006

Instructions dated 3/29/2006 Project No. OPR-O190-FA

Vessel FAIRWEATHER

Chief of party CAPT John E. Lowell, Jr., NOAA

Surveyed by CST Lynette Morgan, LT Jennifer Dowling (FOO), ENS Allison R. Martin

Soundings by echo sounder, hand lead, pole Reson 8111ER

Graphic record scaled by N/A

Graphic record checked by N/A Automated Plot N/A

Verification by Kurt Brown Evaluation By Sarah Wolfskehl

Soundings in Meters at MLLW

REMARKS: All times are UTC.

The purpose of this survey was 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 H11577

Project OPR-O190-FA
West of Prince of Wales Island, Alaska
Scale 1:10,000
May 2006
NOAA Ship FAIRWEATHER
Chief of Party: Captain John E. Lowell, Jr., NOAA

A. AREA SURVEYED

The survey area is located in West of Prince of Wales Island, within the sub-locality of Gulf of Esquibel. This survey corresponds to Sheet 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°29'00"N, 133°41'00"W and the Northeast corner at 55°45'00"N, 133°19'00"W.

Data acquisition was conducted from May 1 to 24, 2006 (DN 121 to DN 144).

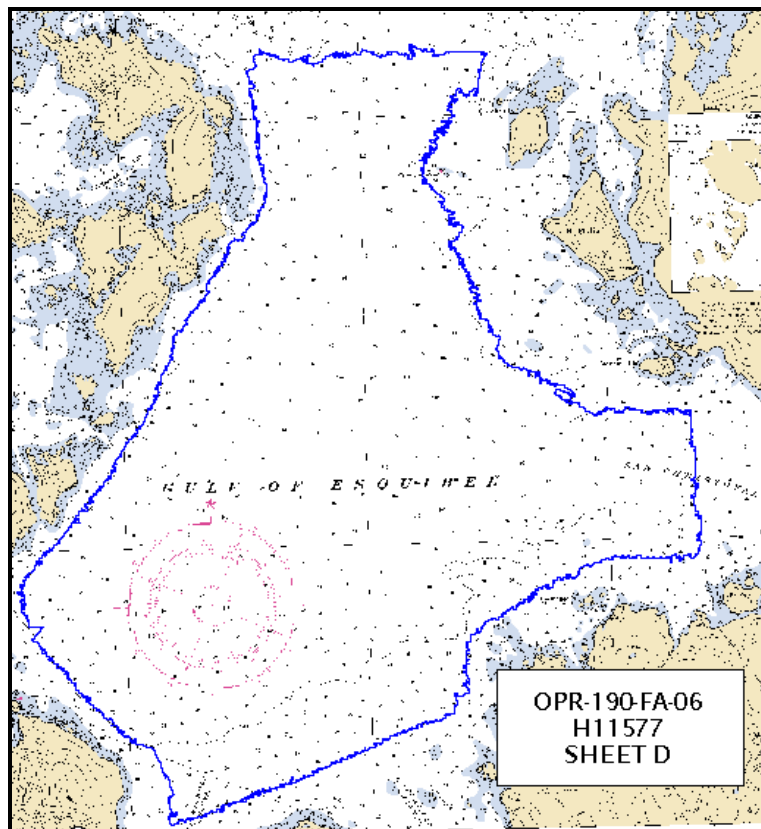


Figure 1: H11577 Survey Outline

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area. Additional coverage was obtained when determining least depths over features or shoals. Due to mechanical setbacks on both survey launches, no inshore MBES was conducted in the survey area. Shoreline verification was done, but will be retained onboard FAIRWEATHER until it can be used with inshore MBES¹. Bottom samples were also collected for the entire survey area, however only those bottom samples inside the survey outline have be included in this submission.

MAIN SCHEME - Mileage	
Single Beam MS	0
Multibeam MS mileage	196.742805
SideScan MS	0
Total MS	196.742805
CROSSLINE - Mileage	
Single Beam XL	0
Multibeam XL	13.696351
Total XL	13.696351
OTHER	
Developments/AWOIS - Mileage	0
Shoreline/Nearshore Investigation - Mileage	0
Total # of Investigated Items	0
Total Bottom Samples	8
Total SNM	36.32
Specific Dates of Acquisition	May 1 - 24, 2006
Specific Dn#s of Acquisition	DN 121 - DN 144

Table 1. Cumulative Data Information

B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition/processing systems and survey vessels along with quality control procedures and data processing methods are included and described in the *OPR-O190-FA-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. This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-O190-FA, dated March 29th, 2006 and Change No. 1, dated April 27th, 2006³.

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 & RESON 8160
Sound Velocity Equipment	SBE 19plus & 45, MVP 200
Attitude & Positioning Equipment	POS/MV V3
Type of operations	MBES

Table 2: Vessel Inventory

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

B2. Quality Control

Internal consistency and integrity of data collected for survey H11577 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity of data collected for survey H11577 were found to be very good⁴.

Crosslines

Shallow water multibeam crosslines for this survey totaled 13.7 linear nautical miles (lnm), comprising 14.4% of the 196.7 lnm of total MBES hydrography.

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*⁵.

Junctions

Junctions for survey H11577 were planned in the Hydrographic Survey Letter Instructions OPR-O190-FA, dated March 29th, 2006. Due to equipment constraints there are no contemporary junctioning surveys at this time. For more information refer to *Re_New Project Timeline.txt*⁶ in Section IV. Supplemental Survey Records and Correspondence of the H11577 Descriptive Report Appendices⁷.

Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section of the *OPR-O190-FA-06 Data Acquisition and Processing Report (DAPR)*.

Data Quality Factors

COVERAGE ASSESSMENT:

Coverage assessment was determined using the following base surface resolutions listed below in Table 2.

Depth Ranges (m)	Resolution (m)	Surface Name	Fieldsheet Name
0-40	2	H11577_0to40_North_2m	H11577_North_2m
		H11577_0to40_South_2m	H11577_South_2m
		H11577_0to40_Southwest_2m	H11577_Southwest_2m
		H11577_0to40_Southeast_2m	H11577_Southeast_2m
30-70	5	H11577_30to70_North_5m	H11577_North_5m
		H11577_30to70_South_5m	H11577_South_5m
		H11577_30to70_East_5m	H11577_East_5m
50-120	10	H11577_50to120_10m	H11577
100-200	20	H11577_100to200_20m	
180-350+	35	H11577_180to350_35m	

Table3: Depth Ranges and Resolutions

The shoal depicted on chart 17404 as having a least depth of 6.25 fathoms was located by the FAIRWEATHER at 55° 34'58.52'' N 133° 25' 29.82'' W. Lidar investigation of the area reported a 10 meter sounding on the feature. Due to equipment constraints, complete development and a confirmed least depth was not obtained. It is recommended that this shoal be included in a future survey for complete development⁸.

There are two small data gaps in survey H11577. One is at 55°38'49.09''N 133°30'05.41''W. The other is at 55°35'05.03''N 133°23'29.39''W. The corresponding multibeam backscatter for each data gap was examined and no navigationally significant items were found⁹. Least depths have been captured on the feature in the southeast corner of survey H11577.

DESIGNATED SOUNDINGS:

Designation of soundings followed procedures as outlined in the DAPR.

Accuracy Standards

All data meet the data accuracy specifications as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*, dated March 2003¹⁰.

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11577 conform to those detailed in *OPR-O190-FA-06 Data Acquisition and Processing Report*.

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11577 can be found in the *OPR-O190-FA-06 Horizontal and Vertical Control Report*¹¹, 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 beacons at Annette Island (323 kHz)

Distances from the U.S. Coast Guard beacons combined with local topography created weak signal to noise ratios for the DGPS corrections within the project area. Occasionally the corrector signal from the beacon was lost. This did not occur during MBES acquisition. Four generic positions were affected by this problem. They are noted in section D.2 of this report and in the PYDRO Preliminary Smooth Sheet.

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 Sitka, AK (945-1600) served as control for datum determination and as the primary source for water level reducers for survey H11577 during acquisition..

FAIRWEATHER personnel installed one Sutron 8210 “bubbler” tide gauge (Gauge #15 S/N 023512) at the tertiary station listed below. The gauge was installed in order to provide information to the Center for Operational Oceanographic Products and Services (CO-OPS N/OPS1) for the determination of time and height correctors, in accordance with the Project Instructions.

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Steamboat Bay, AK	945-0578	Tertiary 30 Day	April 28, 2006	May 25, 2006

Table 4. Tide Gauge Information

Using the predicted water levels with preliminary zoning included with the OPR-O190-FA-06 survey files, all data were reduced to MLLW by applying tide file 9451600.tid and time and height correctors through the preliminary zone corrector file O190FA2006CORP.zdf.

Final approved water level data were not applied by the FAIRWEATHER. The Pacific Hydrographic Branch will apply final approved water levels to the survey data during final processing. A request for delivery of final approved water level data for survey H11577 was forwarded to N/OPS1 on May 31, 2006 in accordance with the *Field Procedures Manual v2.1 Beta*, dated December, 2005 (FPM). A copy of the request is included in Appendix IV.

Due to power outages at the tertiary tide gauge on May 6 – 9 (DN 126 – 129) and May 22 – 24 (DN 142 – 144), 2006, no tide correctors were collected. CO-OPS was notified on May 9th and 24th, respectively. For more information refer to *Re_O190 Data Gaps.txt*¹² in Section IV. Supplemental Survey Records and Correspondence of the H11577 Descriptive Report Appendices.

D. RESULTS AND RECOMMENDATIONS

D.1 Chart Comparison

Chart comparison procedures were followed as outlined in section 4.9.4 Chart Comparisons of the Fairweather Survey Management SOP with is included in Appendix VIII Standard Operating Procedures of the OPR-O190-FA-06 Spring DAPR.

Survey H11577 was compared with charts 17400 (16th Ed.; June, 2001, 1:229,376), 17404 (12th Ed.; June, 2000, 1:40,000), 17405 (14th Ed.; June, 2000 1:40,000) and 17406 (7th Ed.; February, 2004 1:40,000)¹³. All charts have been updated with the Notice to Mariners through May 20, 2006 (20/06).

Chart 17400

Depths from survey H11577 generally agreed with the depths on chart 17400.

Chart 17404

Depths from survey H11577 generally agreed within three fathoms with depths on chart 17404. Depths around the 50 fathom curve on the chart tended, likely due to cartographic generalization, to shoal earlier than the curve suggests.

Chart 17405

Depths from survey H11577 generally agreed within three fathoms with depths on chart 17405. Soundings north of Point Santa Rosalia on San Fernando Island tend to be considerably shoaler than charted. Refer to Figure 2 below.

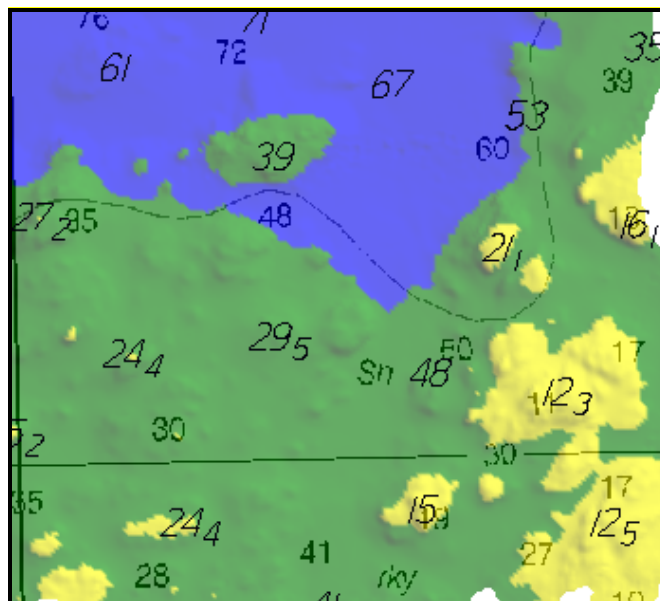


Figure 2. Charted (17405) area north of Point Santa Rosalia on San Fernando Island

Chart 17406

Depths from survey H11577 generally agreed within three fathoms with depths on chart 17406. Soundings northeast of Point Incarnation on Noyes Island tend to be considerably shoaler than charted. Refer to Figure 3 below.

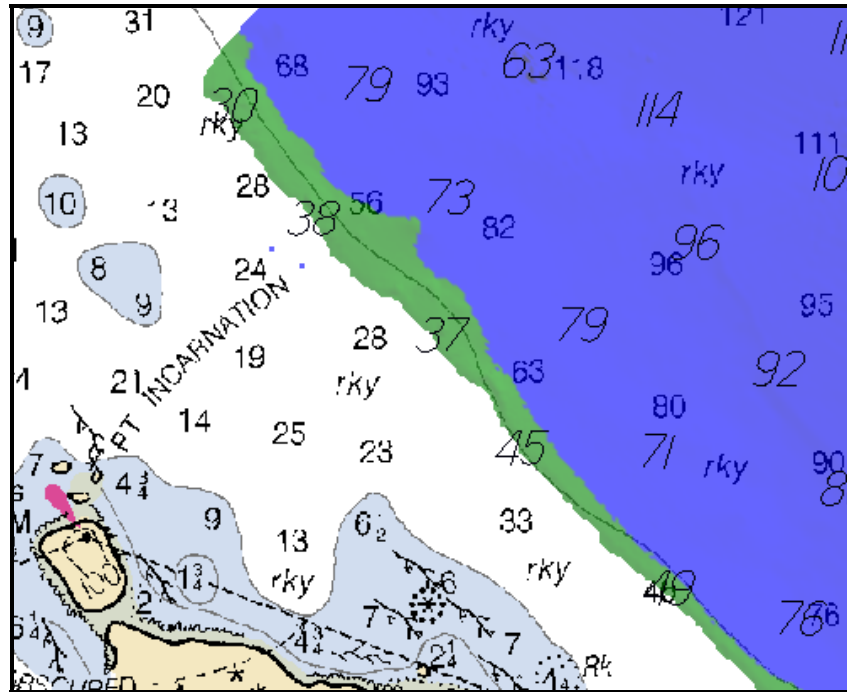


Figure 3. Charted (17406) area northeast of Point Incarnation on Noyes Island

Chart Comparison Recommendations

Final chart comparisons will be made at the Pacific Hydrographic Branch after the application of approved water level data. The BASE surfaces with the application of associated HDCS data is adequate to supersede prior surveys in common areas¹⁴. Following the application of verified water level data (smooth tides) by the Pacific Hydrographic Branch, final chart comparisons will be required¹⁵.

Automated Wreck and Obstruction Information System (AWOIS) Investigations

There were no AWOIS items located within the limits of H11577¹⁶.

Dangers to Navigation

There were no dangers to navigation found within the survey limits¹⁷.

D.2 Additional Results

Shoreline Verification

Shoreline data were acquired for survey H11577, but were not submitted. Shoreline data submission is pending inshore MBES. Survey H11577 shoreline data and inshore MBES will be submitted at a later date¹⁸. For more information refer to *Re_New Project Timeline.txt* in Section IV. Supplemental Survey Records and Correspondence of the H11577 Descriptive Report Appendices.

Aids to Navigation

There were no Aids to Navigation within the survey limits¹⁹.

Bottom Samples

Bottom samples were collected on May 10, 2006 (DN 130) and are included in the PYDRO Preliminary Smooth Sheet. The bottom sample positions were also imported to the Notebook H11577_Pydro_Updates.hob file²⁰.

Miscellaneous

Due to local topography differential GPS correction was not available for four bottom sample positions on survey H11577. Bottom sample generic positions without differential GPS correction are 213012, 213015, 213021, and 213022.

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	June 5, 2006	N/CS34
OPR-O190-FA-06 Data Acquisition and Processing Report	June 23, 2006	N/CS34
OPR-O190-FA-06 Horizontal & Vertical Control Report	June 5, 2006	N/CS34, N/OPS1

Revisions Compiled During Office Processing and Certification

¹ Shoreline is not included in this HCell. Junctioning surveys performed in 2007 and 2008 include the shoreline.

² Filed with Project Records

³ Filed with Project Records

⁴ Concur

⁵ Concur

⁶ Filed with the Hydrographic Records

⁷ See endnote 1

⁸ Concur. Chart a 5 fm 4ft sounding from H11208G as shown in the HCell.

⁹ Concur with clarification. The holidays are not navigationally significant and have not been included in the HCell.

¹⁰ Concur

¹¹ Filed with the Project Records

¹² Filed with the Hydrographic Records

¹³ Chart comparisons by the Branch were performed with RNC's 17404 (14th Ed Oct. 2008), 17405 (16th Ed. Oct. 2008), 17406 (7th Ed. Feb. 2004), 17400 (17th Ed. March 2007) and ENC's US5AK4CM (15th Ed. April 2009) and US5AK4AM (15th Ed. June 2009). General agreement was found between the field and office comparisons.

¹⁴ Concur

¹⁵ Final Approved Tides were applied by the Branch on 2/22/2007. The Tide Note is attached to this report.

¹⁶ Concur

¹⁷ Concur

¹⁸ See end note 1

¹⁹ Concur

²⁰ Bottom samples have been included in conjunction with office delineated rocky seabed areas.

Conflicting bottom samples were removed and charted bottom samples were retained where necessary.



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

December 4, 2006

MEMORANDUM FOR: CDR Donald W. Haines, NOAA
Chief, Pacific Hydrographic Branch

FROM: *for Andrew L. Brown*
CAPT John E. Lowell Jr., NOAA
Commanding Officer

TITLE: Approval of Hydrographic Survey H11577,
OPR-O190-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 H11577 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 June, 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 with the exception of final approved water levels which will need to be applied by the Pacific Hydrographic Branch during final processing. 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:

Allison R. Martin

ENS Allison R. Martin, Survey Manager

for Jennifer N. Dowling

LT Jennifer N. Dowling, Field Operations Officer

Grant D. Froelich

Grant D. Froelich, Chief Survey Technician

Attachment





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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : November 7, 2006

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-0190-FA-2006
HYDROGRAPHIC SHEET: H11577

LOCALITY: Gulf of Esquibel, AK
TIME PERIOD: May 5-24, 2006

TIDE STATION USED: 945-0578 Steamboat Bay, AK
Lat. 55°32.0' N Long. 133° 38.3' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.902 meters

TIDE STATION USED: Sitka, AK
Lat. 57° 03.1' N Long. 135° 20.5' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.791 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SA227

Refer to attachments for zoning information.

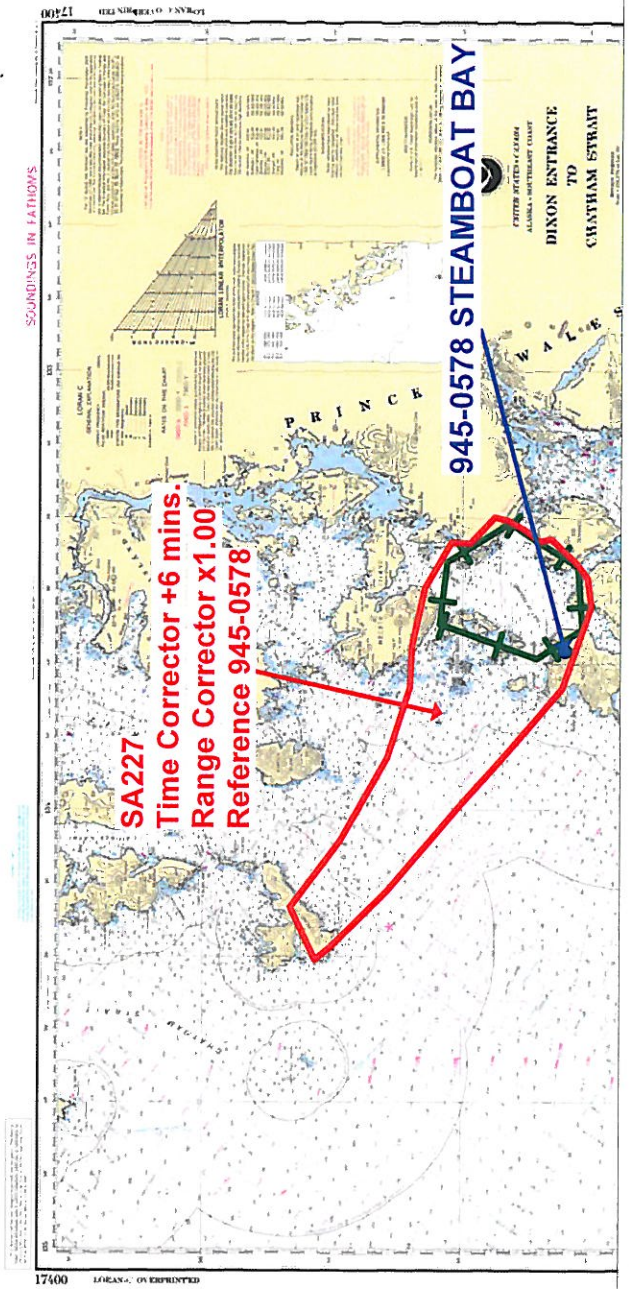
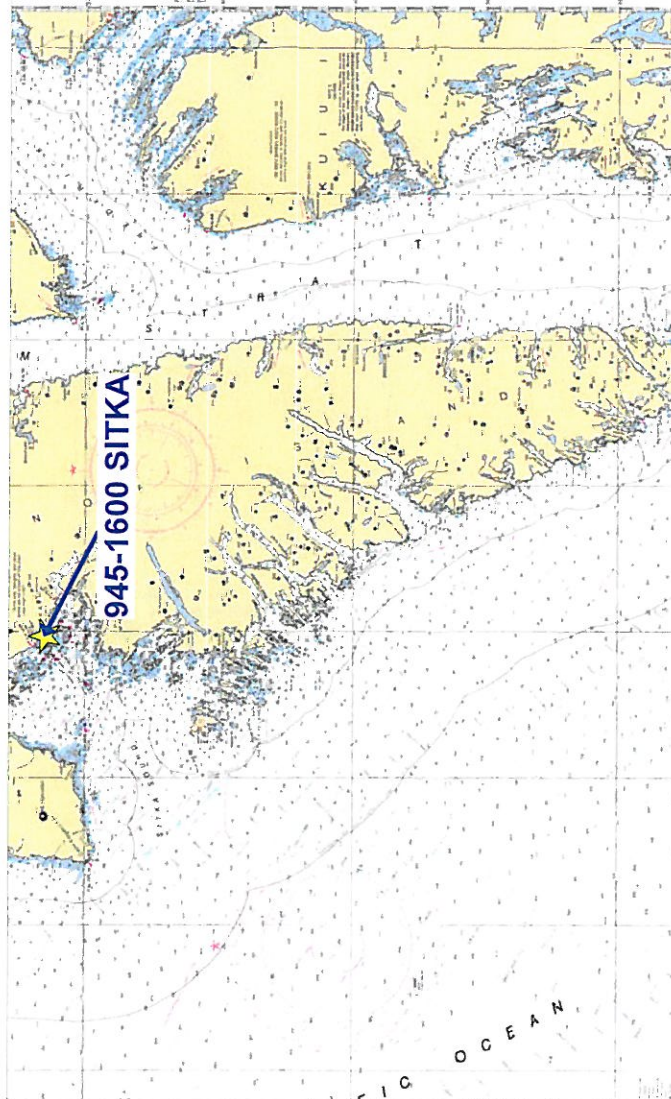
- Note 1:** Provided time series data are tabulated in metric units(meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).
- Note 2:** Use tide data from the appropriate station with applicable zoning correctors for each zone according to the order in which they are listed in the Tidezone corrector file (*.ZDF). For example, tide station one (TS1) would be the first choice for an applicable zone followed by TS2, etc. when data are not available.
- Note 3:** Due to water level gauge failure at the tertiary station Steamboat Bay, AK (945-0578) near the end of project OPR-0190-FA-2006, staff to gauge readings were incomplete. Staff to gauge measurements allow direct evidence and corresponding analysis of pressure sensor drift over the period of installation. This drift along with several other components, such as leveling error and comparison station selection, is accounted for when a tidal datum is computed. After statistical analysis of Steamboat Bay, AK water level data there appears no movement in orifice location and data is within normal NOS standards for use in reducing bathymetric soundings to chart datum (MLLW).

Fan 

CHIEF, PRODUCTS AND SERVICES DIVISION



**Final Tidal Zoning
for OPR-O190-FA-2006, H11577
West of Prince of Wales Island, AK**



ALASKA SOUTH-EAST COAST
ISLAND TO LISIANSKI STRAIT

ALASKA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOSPATIAL INFORMATION

SA227
Time Corrector +6 mins
Range Corrector x1.00
Reference 945-0578

945-0578 STEAMBOAT BAY

DIXON ENTRANCE TO CHATHAM STRAIT

17400

LOANS & OVERPRINTED

17400

LOANS & OVERPRINTED

SAUNDINGS IN FATHOMS

SAUNDINGS IN FATHOMS

SAUNDINGS IN FATHOMS

Final tide zone node point locations for OPR-O190-FA-2006, H11577

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
SA227	945-0578	+6	x1.00
	945-1600	-6	x1.06
-134.221058 55.886934			
-134.340174 55.854792			
-134.308032 55.832542			
-134.182589 55.761874			
-133.986584 55.667449			
-133.861141 55.603878			
-133.722631 55.53724			
-133.53479 55.499123			
-133.47009 55.50424			
-133.436746 55.518515			
-133.380726 55.55132			
-133.386897 55.567216			
-133.361067 55.584786			
-133.338467 55.607369			
-133.331531 55.624864			
-133.391526 55.656501			
-133.388738 55.680334			
-133.493275 55.714751			
-133.624251 55.7308			
-133.719365 55.733084			
-133.880478 55.762336			
-134.068642 55.822675			
-134.221058 55.886934			

H11577 HCell Report
Sarah Wolfskehl, Physical Scientist
Pacific Hydrographic Branch

Introduction

The primary purpose of the HCell is to provide new survey information in International Hydrographic Organization (IHO) format S-57 to update the largest scale ENC and RNC in the region:

ENC US5AK4AM
ENC US5AK4CM
RNC 17404
RNC 17405
RNC 17406

HCell compilation of survey H11577 utilized Office of Coast Survey HCell Specifications Version 3.1, with approved modifications to better align with PHB's HCell process and to meet MCD needs.

1. Compilation Scale

Depths for HCell H11577 were compiled to the largest scale charts in the region, 17404, 17405, 17406, at a scale of 1:40,000. Density and distribution of soundings and features emulate all three charts.

2. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 20-meter combined surface in CARIS BASE Editor. A shoal-biased sounding set was made at the survey scale, 1:10,000, using a Radius Table with values shown in the table, below. The resultant sounding layer contains 41,733 depths.

Upper limit (m)	Lower limit (m)	Radius (mm)
0	70	3.5
70	120	4
120	345	5.5

In CARIS BASE Editor chart scale soundings were manually selected from the survey scale high density sounding layers and imported into a new layer. Manual selection was used to accomplish a density and distribution that closely represents the seafloor morphology.

3. Depth Areas and Depth Contours

3.1 Depth Areas

The Base Surface H11577_combined_20m was used to auto generate a depth area. This depth area was used to generate the Meta layers.

3.2 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 generalized metric and fathom equivalent contour values are shown in the table below.

Chart Contours in Fathoms	Metric Equivalent of Chart Contours	Metric Equivalent of Chart Contours Generalized	Actual Value of Chart Contours
10	18.288	18.5166	10.125
50	91.44	92.8116	50.750

Contours delivered in the *_SS file have not been deconflicted against shoreline features, soundings and hydrography as all other features in the *_CS file and soundings in the *_SS have been. This results in conflicts between the *_SS file contours and HCell features at or near the survey limits. Conflicts with M_COVR, M_QUAL, DEPARE, COALNE and SBDARE objects, and with DEPCNT objects representing MLLW, should be expected. HCell features should be honored over *_SS.000 file contours in all cases where conflicts are found.

4. Meta Areas

The following Meta object areas are included in HCell H11577:

M_QUAL
M_COVR

Meta area objects were constructed on the basis of the limits of the hydrography. (See 3.1 *Depth Areas*.)

5. Features

Shoreline features for H11577, which consists solely of bottom samples, were delivered from the field in a .hob file described in the DR.

One submerged rock from LIDAR survey H11208G, position 55°34'56.91"N, 133°25'30.97"W, is to be charted.

The source of all features included in the H11577 HCell can be determined by the SORIND field.

6. S-57 Objects and Attributes

The *_CS HCell contains the following Objects:

\$CSYMB	Blue Notes
DEPARE	The all-encompassing depth area
M_COVR	Data coverage Meta object
M_QUAL	Data quality Meta object
UWTROC	Submerged LIDAR rock
SBDARE	Bottom samples and rocky seabed areas
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

All S-57 Feature Objects in the *_CS HCell have been attributed as fully as possible based on information provided by the Hydrographer and in accordance with current guidance and the OCS HCell Specifications.

7. Blue Notes

Notes to the RNC and ENC chart compilers are included in the HCell as \$CSYMB features with the Blue Note information located in the INFORM field. By agreement with MCD, the NINFOM field is populated with an abbreviated version of the Blue Note (30 characters or less), describing the chart disposition, to be used by MCD in generating their Chart History spreadsheet.

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

Conversion to charting units and application of NOAA rounding is completed in the same step, at the end of the HCell compilation process.

Conversion to fathoms and feet charting units with NOAA rounding ensures that:

- All depths deeper or equal to 11 fathoms display as whole fathoms.
- All depth units between 0 fathoms (MLLW) and 11 fathoms display as fathoms and whole feet.
- All depth units skyward of 0 fathoms (MLLW) to 2.0 feet above MHW display in feet for values that round to 5 feet or less, and in fathoms and feet skyward of that.
- All height units (HUNI) which have been converted to charting units, and that are 2.00 feet above MHW and greater, are shown in feet.

In an ENC viewer fathoms and feet depth units (DUNI) display in the format X.YZZZ, where X is fathoms, Y is feet, and ZZZ is decimals of the foot. In an ENC viewer, heights (HUNI) display as whole feet.

9. Data Processing Notes

9.1 Junction Surveys

H11577 junctions with six surveys from 2007 and 2008 that have yet to be compiled.

10. QA/QC and ENC Validation Checks

H11577 was subjected to QA checks in S-57 Composer prior to exporting to the 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

H11577_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:40,000.
H11577_SS.000	Base Cell File, Chart Units, Soundings compiled to 1:10,000.
H11577_DR.doc	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items.
H11577_outline.gml	Survey outline to populate SURDEX.

11.2 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.2`	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. 2.0	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	Validation of the base cell file.

12. Contacts

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

Sarah Wolfskehl
Physical Scientist, PHB
Seattle, WA
206-526-6859
Sarah.Wolfskehl@noaa.gov

APPROVAL SHEET
H11577

Initial Approvals:

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

The survey and associated records have been inspected with regard to survey coverage, 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 H-Cell, accompanying data, and reports. This survey and accompanying digital data meet or exceed OCS requirements and standards for products in support of nautical charting except where noted in the Descriptive Report.