

H11270

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. RA-10-10-05

Registry No. H11270

LOCALITY

State Alaska

General Locality Approaches to Sitka

Sublocality North of Biorka Island

2005

CHIEF OF PARTY

CDR John W. Humphrey, NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11270

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 Approaches to Sitka

Sub-Locality North of Biorka Island

Scale 1:10,000 Date of Survey May 5 to June 5, 2005

Instructions dated 3/18/2005 Project No. OPR-O112-RA-05

Vessel RA5 (1006), RA6 (1015), RA3 (1021)

Chief of party CAPT John W. Humphrey, NOAA

Surveyed by RAINIER Personnel

Soundings by echo sounder, hand lead, pole Reson SeaBat 8101, Seabeam/Elac 1180

Graphic record scaled by N/A

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

Verification by Sarah Wolfskehl Evaluation by Laura Pagano

Soundings in Meters at MLLW

REMARKS: All times are UTC.

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 H11270

Project OPR-O112-RA-05

Approaches to Sitka, AK

North of Biorka Island

Scale 1:10,000

May-June 2005

NOAA Ship RAINIER

Chief of Party: Commander John W. Humphrey, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-O112-RA-05, dated April 18, 2005, National Ocean Service (NOS) Standing Instructions for Hydrographic Surveys dated March 2004, NOS Hydrographic Surveys Specifications and Deliverables Manual dated March 2003, and the preliminary version (1.1) of NOS Field Procedures Manual for Hydrographic Surveying dated March 2005¹. The survey area is North of Biorka Island, Alaska. This survey corresponds to sheet "Y" in the sheet layout provided with the Letter Instructions.

One hundred percent multi-beam echosounder (MBES) coverage was obtained in the survey area². An Elac 1180 system was utilized in waters greater than 100 meters deep, and Reson SeaBat 8101s in water depths less than 100 meters.

Data acquisition was conducted from May 5, 2005 to June 5, 2005 (DN 125 to 156).

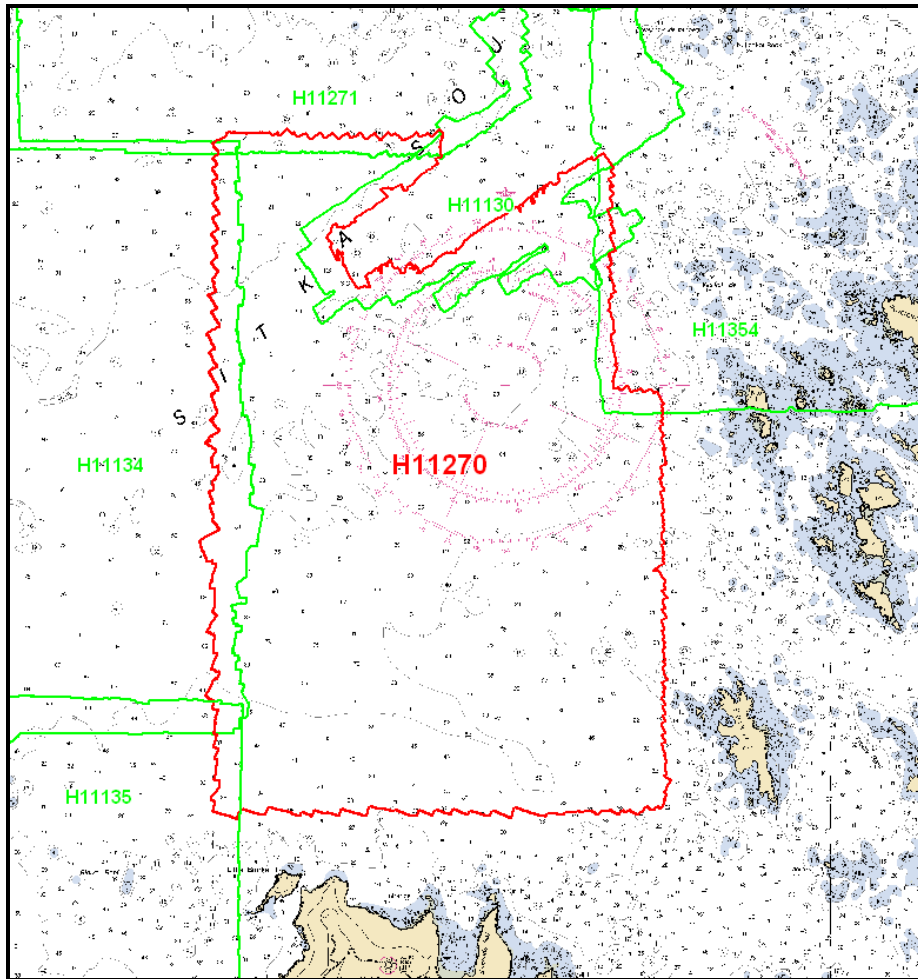


Figure 1. H11270 survey outline with junction surveys overlaid on chart 17326

B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods can be found in the *OPR-O112-RA-05 Data Acquisition and Processing Report (DAPR)*³, submitted under separate cover. Items specific to this survey, and any deviations from the aforementioned report are discussed in the following sections.

Final Approved Water Levels have been applied to this survey⁴. See section C. for additional information.

B1. Equipment and Vessels

Data were acquired by RAINIER survey launches 1021 (RA3), 1006 (RA5), and 1015 (RA6). Vessels 1021 (RA3), and 1006 (RA5) were used to acquire Reson SeaBat 8101 shallow-water multibeam (SWMB) soundings and sound velocity profiles. Vessel 1015 (RA6) was used to

acquire Elac 1180 soundings and sound velocity profiles. Vessel 1006 (RA5) was also used for bottom sample collection.

B2. Quality Control

Crosslines

Multi-beam echosounder crosslines totaled 21.65 nautical miles, comprising 7.19% of SWMB hydrography. The mainscheme bathymetry was visually compared to the crossline nadir beams in CARIS subset mode and agreed well with no discernable differences⁵.

Junctions

The following contemporary surveys junction with H11270:

<u>Registry #</u>	<u>Scale</u>	<u>Date</u>	<u>Junction side</u>
H11130	1:10,000	2004	Northeast
H11134	1:20,000	2003	West
H11354	1:10,000	2004	Northeast
H11271	1:10,000	2005	Northwest
H11135	1:20,000	2005	Southwest

CARIS Field Sheets and BASE surfaces for H11130, H11354, and H11134 were provided by Pacific Hydrographic Branch for junction comparison. H11270 BASE surfaces were compared to these junction surfaces in CARIS HIPS. Agreement was excellent with no discernable offsets in the common area⁶.

Junction comparisons of depths in survey H11270 with depths in surveys H11271 and H11135 were completed using preliminary smooth sheets in MapInfo. Depths agreed within one meter in the area of overlap for both surveys.

Data Quality Factors

Sound Speed Artifacts

Sound speed errors were noted for lines run by Vessel 1021 on DN 154 (June 3, 2005) in the SW corner of sheet. When viewed in Caris HIPS subset mode, line numbers 012_1813, 010_1847, 008_1902, 006_1922, and 003_1945 exhibit refraction errors of 1 to 2 meters in 50 to 80 meters of water (see figure 2, below). These lines were initially sound velocity corrected using the first sound velocity cast of that day, (05154205.svp). When the error was detected, the lines were re-corrected using the "closest in distance" option. This did not significantly change the pattern, so the original sound speed profile was re-applied to the data. Although the magnitude exceeds the specified limits for this survey, the hydrographer consider this error insignificant to navigation on a sloped seabed in this depth of water.

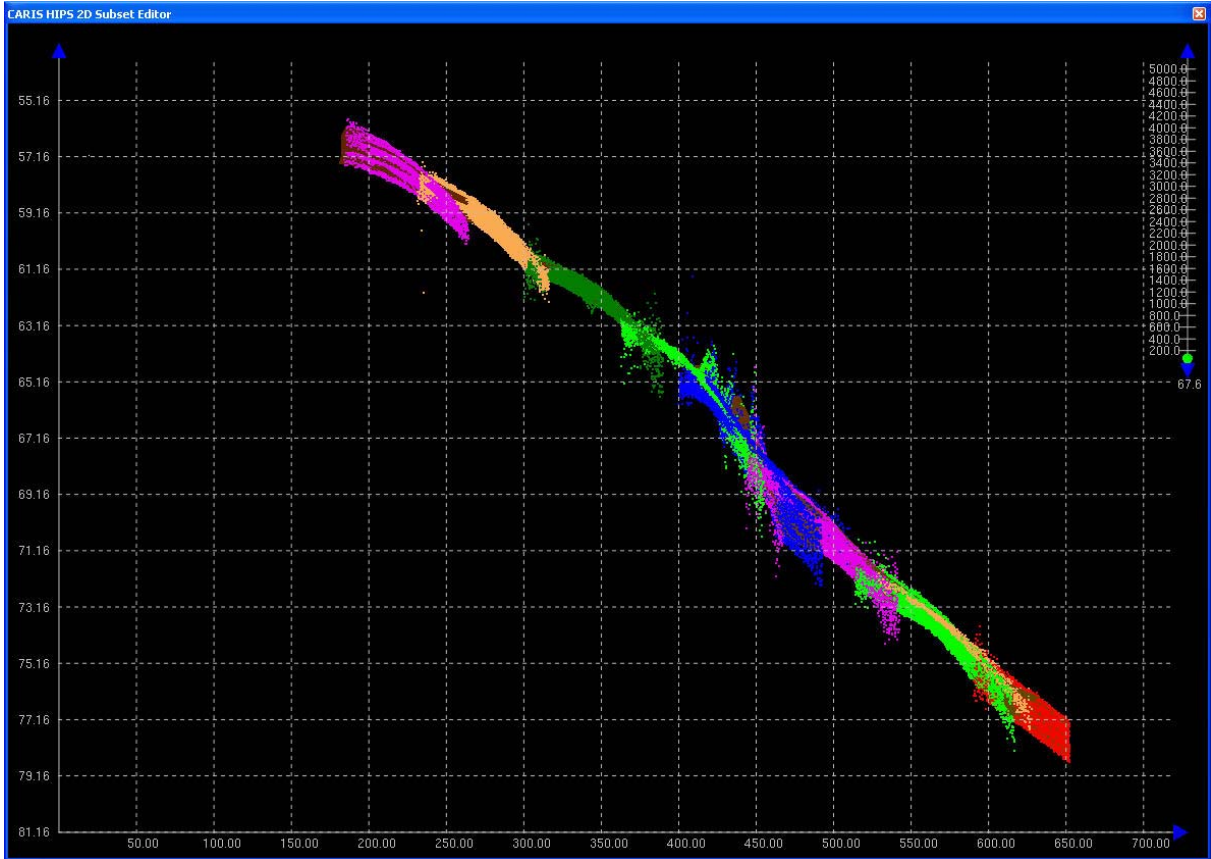


Figure 2. Cross section of the SW corner of Sheet H11270 in subset mode in Caris

B3. Data Reduction

Data reduction procedures for survey H11270 conform to those detailed in the *OPR-O112-RA-05 DAPR*.

B4. Data Representation

Many BASE surfaces were used in processing H11270. The final field sheet encompasses the entire H11270 survey area, and final BASE surface resolutions and depth ranges were set in accordance with the Field Procedures Manual. The submission Field Sheet and BASE Surface structure is shown in Figure 3.

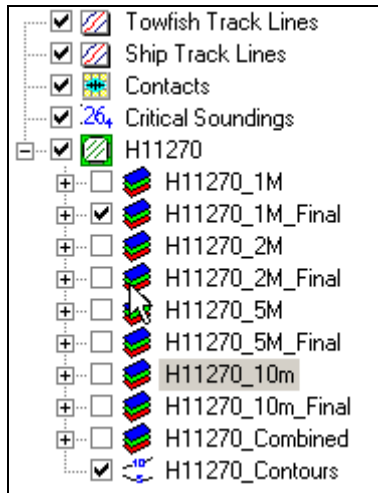


Figure 3. Field sheet and BASE surfaces submitted with H11270

C. VERTICAL AND HORIZONTAL CONTROL

Project OPR-O112-RA-05 did not require static GPS observations or other horizontal control work, and all tide corrections were generated from CO-OPS maintained tide stations. Thus, no Horizontal and Vertical Control Report will be submitted⁷. 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 from U.S. Coast Guard beacon at Biorka Island (305 kHz) were utilized exclusively during this survey. This beacon is approximately 5nm from the H11270 survey area.

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 H11270.

No subordinate gauges were required.

All data were reduced to MLLW using **Final Approved Water Levels** from station Sitka, AK (945-1600) using the tide file 9451600.tid and final time and height correctors using the zone corrector file H11271CORF_rev.zdf.

Final Approved Water Levels were requested from CO-OPS on June 19, 2005, and received on July 14, 2005. Documentation of the Approved Water Levels Request is included in Appendix IV⁸.

D. RESULTS AND RECOMMENDATIONS

D.1 Chart Comparison

Survey H11270 was compared with the following charts:

Chart	Scale	Edition and Date	Corrected for Notice to Mariners through:
17326	1:40,000	14 th Ed.; June/05	November 1, 2005
17320	1:80,000	16th Ed.; Nov/05	November 1, 2005

D.1.a. Survey Agreement with Chart

H11270 covers an area of extremely rugged, variable bathymetry. It is generally well charted, but many geological features are not represented accurately. None of these features pose a hazard to surface navigation. The hydrographer recommends that the full bottom coverage bathymetry of H11270 supersede all prior surveys and charted depths in the common area⁹.

Chart 17326

Soundings from survey H11270 generally agreed with charted depths within one fathom, but several areas of much larger discrepancies (up to 20 fathoms) were noted. All of these differences were located in water depths greater than 40 fathoms, and are thus not considered significant to navigation¹⁰.

Chart 17320

The depths portrayed on chart 17320 correspond with the shoalest soundings (within a 500 meter radius) that were acquired in survey H11270¹¹.

D.1.b. Dangers to Navigation

No Dangers to Navigation (DTONS) were located during survey H11270¹².

D.1.c. Other Features

Survey H11270 contained no AWOIS items, and no significant new features¹³.

D.2. Additional Results

D.2.a. Prior Survey Comparison

Survey H11270 was compared to survey H0665 (August 20, 1942). A shoal biased sounding set excessed at survey scale in Pydro was visually compared to the H00665 smooth sheet soundings in Mapinfo. The majority of soundings agreed within 1-4 fathoms, with shoaler soundings usually represented in the H11270 data. One section in the northern portion of the sheet (starting at 56° 58'37.8"N, 135°31'23.2"W and continuing approximately 500 meters SE of that point) showed differences of 6-8 fathoms, with H06655 soundings shoaler than H11270 soundings for the same area. The soundings are 20-50 fathoms and do not pose a

hazard to navigation. The hydrographer recommends that H11270 supersede all prior survey data in the common area¹⁴.

D.2.b. Shoreline Verification

There is no shoreline within the limits of H11270¹⁵.

D.2.c. Aids to Navigation

There are no aids to navigation within the limits of H11270¹⁶.

D.2.e. Overhead Features

No overhead features fall within the limits of H11270¹⁷.

D.2.f. Submarine Cables and Pipelines

No submarine cables or pipelines were located within the limits of H11270¹⁸.

D.2.g. Bottom Samples

Thirteen bottom samples were collected on DN 165. One sample was rejected by the hydrographer in the field. Six of the twelve bottom samples retained were noted to be different than the bottom type indicated on the chart. Bottom sample results are included in the H11270 PSS¹⁹.

D.2.h. Other Findings

None.

E. ADDITIONAL DOCUMENTATION

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>
Data Acquisition and Processing Report for OPR-O112-RA-05	21 July 2006	N/CS34
Coast Pilot Report for OPR-O112-RA-05	10 May 2006	N/CS26

Revisions Compiled During Office Processing and Certification

¹ Filed with Project Records

² Concur

³ Filed with Project Records

⁴ Concur

⁵ Concur

⁶ Concur

⁷ Concur

⁸ The Tide Note is appended to this report

⁹ Concur

¹⁰ Concur

¹¹ Concur

¹² Concur

¹³ Concur

¹⁴ Concur

¹⁵ Concur

¹⁶ Concur

¹⁷ Concur

¹⁸ Concur

¹⁹ New bottom samples were applied to the HCell, and charted bottom samples retained where applicable



**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

Office of Marine and Aviation Operations
NOAA Ship RAINIER (S221)
1801 Fairview Ave E, Seattle, WA 98102

July 21, 2006

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

FROM: CDR Guy T. Noll, NOAA
Commanding Officer

SUBJECT: Approval of Hydrographic Survey H11270

Field operations for hydrographic survey H11270 conducted under the direct supervision of the previous Commanding Officer, CDR John W. Humphrey, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports. The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Standing and Letter Instructions, and HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required. All data and reports are respectfully submitted to N/CS34, Pacific Hydrographic Branch.

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

Survey Sheet Manager:

Olivia A. Hauser
Ensign, NOAA

Chief Survey Technician:

James B. Jacobson
Chief Survey Technician, NOAA Ship RAINIER

Field Operations Officer:

Benjamin K. Evans
Lieutenant, NOAA



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : August 2, 2005

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-O112-RA-2005
HYDROGRAPHIC SHEET: H11270


LOCALITY: Approaches to Sika Sound, Sitka Sound, AK
TIME PERIOD: May 5 - June 14, 2005

TIDE STATION USED: 945-1600 Sitka, Alaska
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: SEA200 & PAC294B

Refer to attachments for zoning information.

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



CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Final tide zone node point locations for OPR-O112-RA-2005, H11270

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
Zone SEA200	945-1600	0	1.00
-135.560208 56.847672			
-135.542365 56.857201			
-135.513529 56.850654			
-135.50839 56.861868			
-135.472042 56.890618			
-135.413912 56.927046			
-135.37942 56.944575			
-135.345146 56.937479			
-135.148538 56.891767			
-135.096503 56.976245			
-135.219418 57.152377			
-135.294235 57.2785			
-135.435854 57.285735			
-135.536277 57.284567			
-135.677763 57.256337			
-135.665367 57.054404			
-135.816846 57.006056			
-135.678821 56.918667			
-135.578921 56.858887			
-135.560208 56.847672			
Zone PAC294B	945-1600	0	0.97
-135.472042 56.890618			
-135.50839 56.861868			
-135.513529 56.850654			
-135.461024 56.830071			
-135.38728 56.795499			
-135.342584 56.775688			
-135.283123 56.746649			
-135.197957 56.705822			
-135.133425 56.67655			
-134.930762 56.749145			
-134.978393 56.815666			
-135.043673 56.84955			

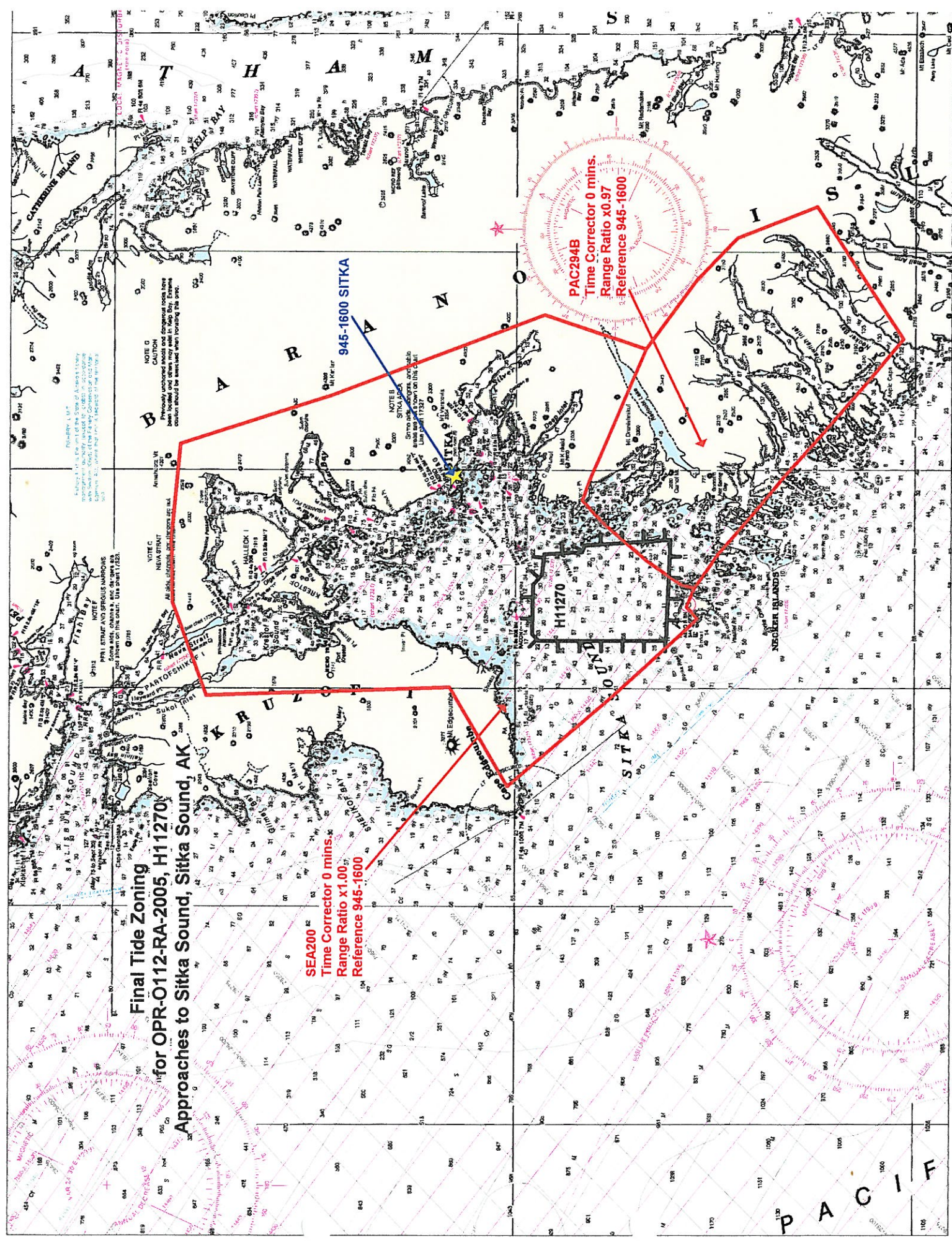
-135.148538 56.891767
-135.345146 56.937479
-135.37942 56.944575
-135.413912 56.927046
-135.472042 56.890618

**Final Tide Zoning
for OPR-O112-RA-2005, H11270
Approaches to Sitka Sound, Sitka Sound, AK**

SEA200
Time Corrector 0 mins.
Range Ratio x1.00
Reference 945-1600

945-1600 SITKA

PAC294B
Time Corrector 0 mins.
Range Ratio x0.97
Reference 945-1600



H11270 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 ENC and RNC in the region: NOAA ENC, US5AK3VM, and NOAA RNC, 17326.

HCell compilation of survey H11207 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

The density of soundings and features, surveyed at 1:10,000, are compiled as appropriate to emulate those of Chart 17326, 1:40,000.

2. 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 the 1:10,000 survey scale using a radius table file with values shown in the table, below. The resultant sounding layer contains 23,287 depths ranging from 0 to 234 meters.

Upper limit (m)	Lower limit (m)	Radius (mm)
0	10	3
10	20	4
20	50	4.5
50	345	5

Radius Table

In CARIS BASE Editor soundings were manually selected from the high density sounding layer and imported into a new layer created to accommodate chart density depths. 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 H11270_10m_combined.bag was used to auto generate a depth area. This depth area was cropped to junction with HCells that have been previously compiled, including H11130, H11135, and H11271.

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 (fm)
20	36.576	37.9476	20.75
50	91.44	92.8116	50.75

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, and SBDARE objects may exist. 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 H11270:

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

5.1 Generalization of Features to Chart Scale

Features gathered by field units are delivered to PHB and applied to the preliminary HCell without reduction in number or character. This preliminary HCell is used to perform evaluation and verification of survey soundings and features, features are deconflicted against hydrography, and geometry is corrected as needed. Linear and area features are also digitized against the BASE Surfaces, and features to be retained are imported from the chart. This features file is used as the basis for the final HCell compilation with features reduced to the largest scale RNC and ENC. In addition, the product of the survey scale features file, H11270_Features.000, is archived at PHB.

Pending further guidance from MCD, features generalization has been accomplished primarily through reduction in the number of features included in the HCell. Generalizing area features to point objects is entrusted to the RNC division. Where line and area objects are included in the HCell, complexity of the lines and edges comprising the features have been smoothed commensurate with chart scale.

5.2 Compilation of Features to the HCell

Features for H11270 were delivered from the field in a Pydro pss file. Twelve bottom samples were submitted and applied to the HCell in conjunction with rocky seabed areas digitized from the highest resolution surfaces. No shoreline exists for this survey.

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
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

In the northern area of the survey, where H11270 junctions with H11130, six shoal soundings were selected to replace soundings on junction survey H11130 and one sounding was selected as an additional sounding. Four of these sounding fall outside of the DEPARE for H11270.

10. QA/QC and ENC Validation Checks

H11270 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 a 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

- US511270_CS.000 Base Cell File, Chart Units, Soundings and features compiled to 1:40,000.
- US511270_SS.000 Base Cell File, Chart Units, Soundings compiled to 1:10,000.
- H11270_DR.doc Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items.
- H11270_outline.gml Survey outline to populate SURDEX.

11.3 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.
dKart Inspector Ver. 5.1	Validation of the base cell file.
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:

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

APPROVAL SHEET
H11270

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 disapproval 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.