

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. RA-10-08-05

Registry No. H11271

LOCALITY

State Alaska

General Locality Approaches to Sitka

Sublocality Vicinity of Vitskari Rocks

2004, 2005

CHIEF OF PARTY
CDR John W. Humphrey, NOAA

LIBRARY and ARCHIVES

DATE _____

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION HYDROGRAPHIC TITLE SHEET	REGISTRY No H11271
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 RA-10-08-05
State <u>Alaska</u> General Locality <u>Approaches to Sitka</u> Sub-Locality <u>Vicinity of Vitskari Rocks</u> Scale <u>1:10,000</u> Dates of Survey <u>6/5/2004, 5/4/2005 - 6/16/2005</u> Instructions dated <u>3/18/2005</u> Project No. <u>OPR-O112-RA-05</u> Vessel <u>RA5 (1006), RA6 (1015), RA3 (1021), RA2 (1103)</u> Chiefs of party <u>CDR John W. Humphrey, NOAA</u> Surveyed by <u>RAINIER Personnel</u> Soundings by echo sounder, hand lead, pole <u>Reson SeaBat 8101, Seabeam/Elac 1180, Reson SeaBat 8125, Knudsen 320M</u> Graphic record scaled by <u>N/A</u> Graphic record checked by <u>N/A</u> Automated Plot <u>N/A</u> Verification by <u>Katie Reser, Martha Herzog</u> Soundings in <u>Fathoms at MLLW</u>		
REMARKS: <u>All times are UTC. UTM Projection (zone #8).</u> <u>Revisions and annotations appearing as endnotes were generated during office processing. As a result, page numbering may be interrupted or non-sequential.</u> <u>All separates are filed with the hydrographic data.</u>		

Descriptive Report to Accompany Hydrographic Survey H11271

Project OPR-O112-RA-05
Approaches to Sitka, Alaska
Vicinity of Vitskari Rocks
Scale 1:10,000

May 2004, May-June, 2005

NOAA Ship RAINIER (s221)

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 March 18, 2005 and all other applicable direction¹, with the exception of deviations noted in this report. The survey area is in the Vicinity of Vitskari Rocks. This survey corresponds to sheet “Z” in the sheet layout provided with the Letter Instructions. OPR-O112-RA-05 responds to a request from the Seventeenth U.S. Coast Guard District and Southeast Alaska Pilots Association for contemporary hydrography in the approaches to Sitka, Alaska

One hundred percent multi-beam echosounder (MBES) coverage was obtained in the survey area in waters 8 meters and deeper.¹ In depths less than 8 meters additional MBES coverage was obtained to acquire least depths over significant features or shoals, as appropriate for this survey.² Except as noted below, vertical-beam echo sounder (VBES) data were acquired in depths from 4 to 20 meters to define the navigable area limit, aid in the planning of SWMB data acquisition, and provide inshore bathymetry in navigationally significant areas.³

Full VBES coverage at 25m line spacing was not accomplished in depths between 8 and 4 meters in the vicinity of Low Island and Vitskari Rocks, and many charted shoal depths were not fully investigated.⁴ The inshore regions of this survey area were found to be generally foul with kelp, rocks, and breakers, which precluded a full survey as specified in the Letter Instructions. The hydrographer does not recommend full supersession of charted depths and prior survey soundings in these areas. See Sections D.1 (Chart Comparison) and D.2.a (Prior Survey Comparison) for additional information.

Limited Shoreline Verification was performed for the survey area.⁵

Data acquisition was conducted on June 5, 2004 (DN 157) and May 4, 2005 to June 16, 2005 (DN 124 to 167).

¹ Standing Instructions for Hydrographic Surveys (March 2004), NOS Hydrographic Surveys Specifications and Deliverables (March 2004), OCS Field Procedures Manual for Hydrographic Surveying (March 2005), and all Hydrographic Surveys Technical Directives issued through June 2005.

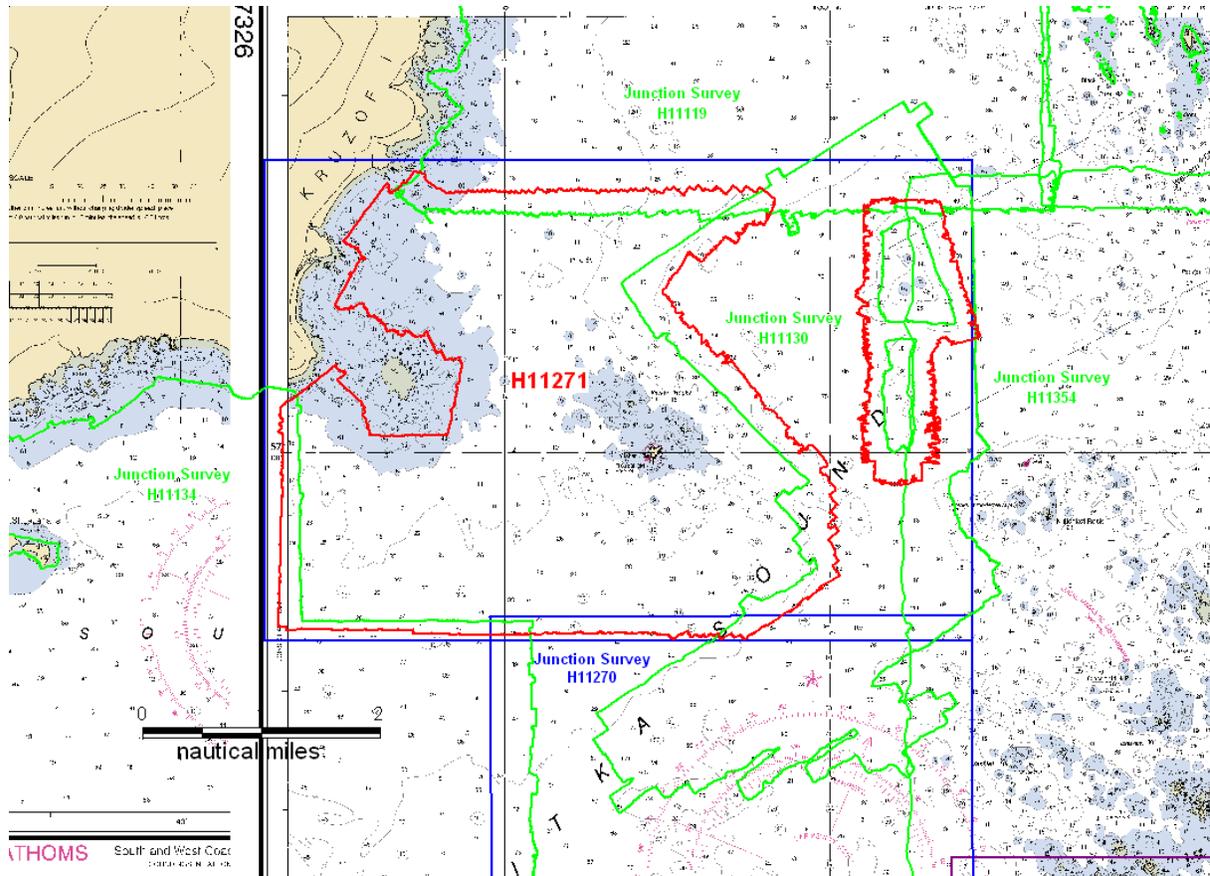


Figure 1. H11271 Survey Limits and Outline

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)*, submitted under separate cover.⁶ Items specific to this survey, and any deviations from the aforementioned report are discussed in the following sections.

One day of vertical beam echosounder data acquisition and shoreline verification was performed in 2004 (DN157, Vessel 1103). Data acquisition configuration for these soundings is described in the *OPR-O112-RA-04 Data Acquisition and Processing Report*, submitted under separate cover. All data from this day were re-processed in 2005 according to current procedures.

Final Approved Water Levels have been applied to this survey. See Section C. for additional information.

B1. Equipment and Vessels

Data for this survey were acquired by the following vessels:

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

Table 1. Data Acquisition Vessels for H11271.

No unusual vessel configurations were used for data acquisition.⁷

B2. Quality Control

Crosslines

Vertical Beam Echo Sounder (VBES) crosslines including buffer lines totaled 46.75 nautical miles, comprising 10.4% of mainscheme hydrography. Crossline and Main Scheme bathymetry were manually compared in CARIS HIPS Subset Mode. Crosslines generally agreed within 0.5 meters of mainscheme hydrography

Shallow-Water Multibeam (SWMB) crosslines totaled 27.23 nautical miles, comprising 5.85% of SWMB hydrography. The mainscheme bathymetry was manually compared to the crossline nadir beams in CARIS subset mode and agreed well with differences typically less than 0.2 meters.⁸

A statistical Quality Control Report has been conducted on data representative data collected with each system used on this survey and is included in the *OPR-O112-RA-05 DAPR*.

Junctions

The following contemporary surveys junction with H11271 (See Figure 1):

<u>Registry #</u>	<u>Scale</u>	<u>Date</u>	<u>Junction side</u>
H11119	1:10,000	2004	North
H11130	1:10,000	2004	East
H11354	1:10,000	2004	East
H11270	1:10,000	2005	South
H11134	1:20,000	2004	Southwest

No CARIS data were available for survey H11119. Smooth sheet density soundings for the junction survey and H11271 were compared manually in MapInfo. Agreement was excellent, with discrepancies less than 0.5m across the common area.⁹

CARIS Field Sheets and BASE surfaces for H11130, H11354, and H11134 were provided by Pacific Hydrographic Branch for junction comparison. Soundings from H11271 were compared to these surfaces in CARIS HIPS subset mode. Agreement was excellent with no discernable offsets in the common area.

Soundings from H11271 and H11270 were compared manually in CARIS HIPS subset mode. Agreement was excellent, with no discernable offset in the common area.¹⁰

Final comparisons will be made at the Pacific Hydrographic Branch (PHB).

Data Quality Factors

Sound Speed Artifacts

Very minor sound speed correction errors are present in the dataset. Although not visible in the BASE surface, examination of bathymetry in subset mode reveals the characteristic "frowns" indicative of inaccurate sound velocity corrections. The example in Figure 2 below is typical, with error of ~0.2m in 50m of water. The hydrographer considers these errors negligible and within the allowed error budget for this depth.¹¹

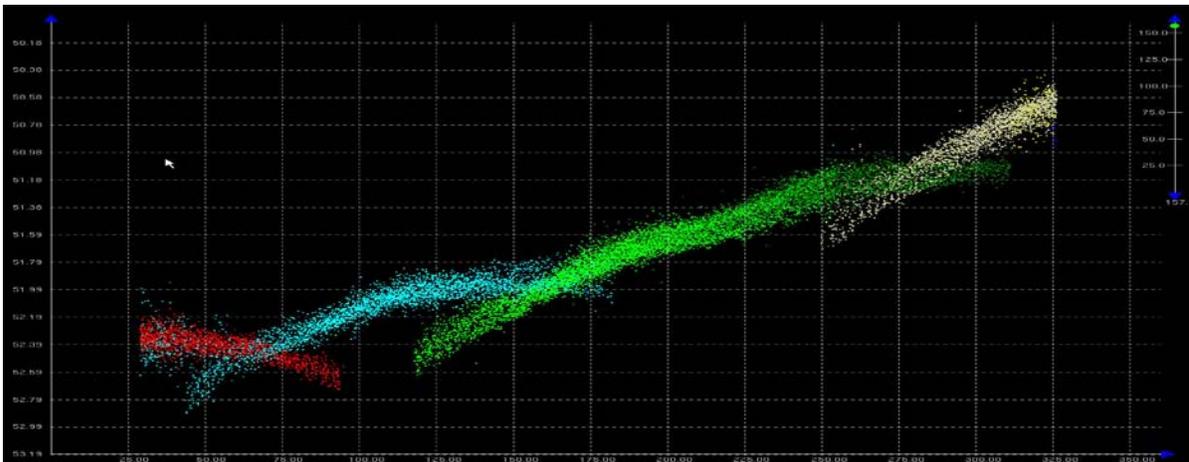


Figure 2. Inaccurate Sound Velocity Resulting in "Frowns" VN 1021 DN126

B3. Data Reduction

Data reduction procedures for survey H11271 conform to those detailed in the *OPR-O112-RA-05 DAPR*.

Final review and BASE Surface recomputation was completed in CARIS HIPS 6.0, SP2, HF13. BASE Surfaces were computed with uncertainty weighting, using the same parameters as described in the DAPR.

B4. Data Representation

Many BASE surfaces were used in processing of H11271. The final field sheet encompasses the entire H11271 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.

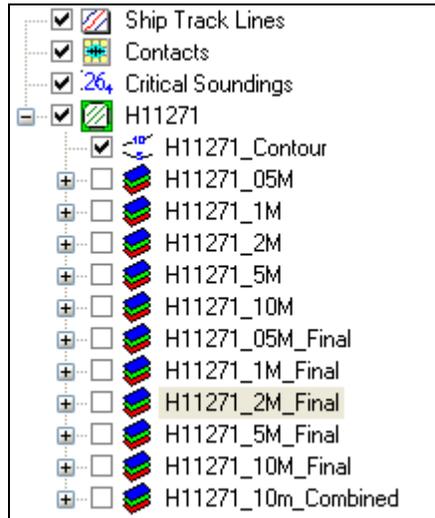


Figure 3: Field sheet and BASE surfaces submitted with H11271

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 submitted. 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 the U.S. Coast Guard beacon at Biorka Island (305 kHz) were utilized exclusively during this survey. This beacon is approximately 10nm from the H11271 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 H11271.

No tertiary 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.¹²

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 IV.¹³

D. RESULTS AND RECOMMENDATIONS

D.1. Chart Comparison

D.1.a. Survey Agreement with Chart

Survey H11271 was compared with the following charts:

Chart	Scale	Edition and Date	Latest Notice to Mariners Applied
17325	1:40,000	8 th Ed.; June 12, 2004	April 22 2006
17326	1:40,000	14 th Ed., June 1, 2005	June 10, 2006
17320	1:217,828	17 th Ed., November 11, 2005	June 10, 2006

Table 3: Charts compared with H11271

Charts 17325 and 17326

Soundings from survey H11271 generally agreed with depths portrayed on charts 17325 and 17326 within 1 fathom, although some areas of significantly greater discrepancy were noted. All major differences were located in waters deeper than 11 fathoms, or in areas already clearly charted with hazards, and are thus not considered navigationally significant. Soundings from H11271 tended to be shoaler than charted, with many instances of shoal soundings between charted depths.¹⁴ This can be attributed to the increased bottom coverage of SWMB in this area of variable bathymetry.

Chart 17320

Depths from survey H11271 agreed within 1 fathom with chart 17320 with no bias towards shoaling in either near shore or offshore areas.¹⁵ In many instances, this survey found shoaler soundings between charted soundings, especially in the near shore areas. This can be attributed to increased bottom coverage using SWMB.

The hydrographer recommends that data from survey H11271 supersede all charted depths in the area surveyed with 100% MBES coverage.¹⁶ The hydrographer does **not** recommend full supercession of charted depths in the inshore areas surveyed with incomplete VBES coverage.¹⁷ In these areas, the hydrographer recommends recompilation of the chart using all available reliable survey data (see Section D.1.b).¹⁸

Final chart comparisons will be made at the Pacific Hydrographic Branch.¹⁹

D.1.b. Dangers to Navigation

No dangers to navigation (DTONs) were located during survey H11271.²⁰

D.1.c. Other Features

Automated Wreck and Obstruction Information System (AWOIS) Investigations

No AWOIS items fall the within the survey limits of H11271.²¹

Additional Items

Additional features investigated within the limits of H11271 are described in the Survey Feature Report in Appendix I.²²

D.2. Additional Results

D.2.a. Prior Survey Comparison

Survey H11271 was compared with H06667 in the vicinity of Low Island and Vitskari Rocks in those areas where H11271 has only VBES coverage. Agreement between the two surveys was intermittent, with negligible differences in some areas, and discrepancies of up to 3 fathoms in others. Both surveys have relatively sparse coverage in this area, and the bathymetry is rocky and variable. The hydrographer suggests that these discrepancies may be the result of the different sounding line tracks and incomplete shoal investigation on both surveys. The hydrographer recommends that the bathymetry from these surveys be merged (shoal biased) into a single, higher density sounding set to support chart recompilation in this area.²³

D.2.b. Shoreline Verification

Shoreline Source

Vector photogrammetric projects AK-9073A was supplied by N/NGS3 in the form of cartographic feature file GC-10516 (CFF). RAINIER conducted limited shoreline verification of the CFF. In addition, features shown on the current editions of charts 17325 and 17326 that were not depicted on the shoreline source document were digitized in MapInfo by RAINIER personnel and displayed in Hypack for field verification.

Shoreline Verification

Limited shoreline verification was conducted near predicted low water in accordance with the Standing Project Instructions and FPM sections 6.1 and 6.2.²⁴ Detached positions (DPs) taken

during shoreline verification were recorded in HYPACK, on DP forms, and processed in Pydro. These indicate revisions to features and features not found on the verified shoreline. In addition, annotations describing shoreline were recorded on hard copy plots of digital shoreline. DP forms are included in the *Separates to be Included with Survey Data*.²⁵

A detailed Feature plot in MapInfo format is provided showing all detached positions and bottom samples with notes relating to each feature. Verified CFF shoreline that did not require revision is in MapInfo table H11271_Shoreline and shown in black. Charted shoreline, when used for reference purposes or when source data were not available, is depicted in the MapInfo table "H11271_Charted_Shoreline" and displayed in brown. New MHW features and changes to the MHW shoreline, CFF or charted, are displayed in red on the "H11271_Shoreline_Updates" MapInfo table. New features and changes to low water shoreline, CFF or charted, are displayed in pink in the "H11271_Shoreline_Updates" MapInfo table. CFF features are depicted in black and are found in the MapInfo table "H11271_CFF_Rocks." Charted features, when used for reference purposes or when source data were not available, are depicted in brown and are found in the MapInfo table "H11271_Charted_Rocks."²⁶

Source Shoreline Changes and New Features

The features found during this survey generally match those of the source shoreline. Several revisions and new features were found and are depicted on the final Detached Position and Bottom Sample plot. Charted rocks were often identified as high points or extents of new ledges and are annotated as such on the DP plot.

Features positioned with a DP that required further discussion are flagged as "Report" in Pydro. The Hydrographer's remarks, recommendations, survey methods and investigation summary were exported to a report for these features. The report, H11271_Shoreline_Report is included in the supplemental correspondence section of the Descriptive Report.²⁷

Items for survey H11271 that require further discussion and are associated with a detached position, have been flagged "Report" in Pydro in H11271.pss. Investigation methods and recommendations are listed in the Remarks and Recommendation tabs. These features are included in the Survey Feature Report in Appendix I.²⁸

Recommendations

The Hydrographer recommends that the shoreline as depicted on the Detached Position and Bottom Sample and final sounding Mapinfo digital file supersede and complement shoreline information compiled on the CFF and charts as noted.²⁹ In addition, field notes made by the Hydrographer, including verification of source features or charted features if no source shoreline was available are submitted in the digital MapInfo file "H11271_ShorelineNotes."

D.2.c. Aids to Navigation

Survey H11271 included one (1) aid to navigation (ATON), Vitskari Island Light. The ATON's position was visually checked in the field against the digital raster chart. The ATON was found to be on station and serving its intended purpose.³⁰ No detached positions or GPS static surveys on ATONs were conducted for survey H11271.

D.2.d. Overhead features

There are no overhead features in survey H11271.

D.2.e. Submarine Cables and Pipelines

There are no submarine cables, pipelines, or any associated crossing signs in survey H11271.

D.2.f. Ferry Routes

There are no ferry routes on this survey.

D.2.g. Bottom Samples

Charted bottom types were verified with new bottom samples. In general these samples agreed with the annotations on the chart.³¹ Refer to the H11271 Feature Plot and Pydro PSS file for additional information.³²

D.2.h Miscellaneous

N/A

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



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 H11271

Field operations for hydrographic survey H11271 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, except as noted in the Descriptive Report. 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:

for:

Matthew D. Foss

Hydrographic Survey Technician, NOAA Ship RAINIER

Chief Survey Technician:

James B. Jacobson

Chief Survey Technician, NOAA Ship RAINIER

Field Operations Officer:

Benjamin K. Evans

Lieutenant, NOAA



¹ Concur.

² Concur

³ Concur.

⁴ Concur.

⁵ Concur.

⁶ DAPR is filed with the project records.

⁷ Concur.

⁸ Concur.

⁹ Concur.

¹⁰ Concur.

¹¹ Concur. All correctors are adequate. All bathymetry submitted for H11271 is acceptable for charting and is adequate to supersede prior survey data within the common area.

¹² The tide note is appended to this report.

¹³ The Approved Water Levels Request is filed with the hydrographic records.

¹⁴ Concur.

¹⁵ Concur.

¹⁶ Concur.

¹⁷ Concur.

¹⁸ Concur.

¹⁹ Concur. PHB's chart comparison agrees with the findings in the DR.

²⁰ Concur.

²¹ Concur.

²² The Survey Feature Report is attached to this report.

²³ Concur.

²⁴ Concur.

²⁵ DP forms are filed with the hydrographic records.

²⁶ Two additional MapInfo tables were included with this survey: H11271_CHD_KELP and H11271_CHD_ATON.

²⁷ H11271 Shoreline Report only contains one feature, a rock "disproved" using VBES. A rock cannot be disproved using only sparse vertical beam data and therefore this will be retained.

²⁸ The Survey Feature Report is attached to this report.

²⁹ Concur.

³⁰ Concur. Recommend using the latest ATON information.

³¹ In addition to the bottom samples from H11271, a few were imported from ENC's US5AK3VM and US3AK3VM into the HCell.

³² Both are filed with the hydrographic data.

H11271 Feature Report

Registry Number: H11271
State: Alaska
Locality: Approaches to Sitka
Sub-locality: Vicinity of Vitskari Rocks
Project Number: OPR-O112-RA-04
Survey Date: 05/09/2005

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
17326	16th	11/01/2007	1:40,000 (17326_1)	USCG LNM: 02/24/2009 (02/24/2009) CHS NTM: None (02/27/2009) NGA NTM: 07/11/1998 (02/28/2009)
17325	9th	12/01/2006	1:40,000 (17325_1)	USCG LNM: 06/07/2005 (02/24/2009) CHS NTM: None (02/27/2009) NGA NTM: None (02/28/2009)
17320	18th	03/01/2008	1:217,828 (17320_1)	USCG LNM: 09/16/2008 (02/24/2009) CHS NTM: None (02/27/2009) NGA NTM: 09/27/2003 (02/28/2009)
16016	20th	11/01/2003	1:969,756 (16016_1)	[L]NTM: ?
531	22nd	03/01/2004	1:2,100,000 (531_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
530	30th	03/23/2002	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Shoal	10.02 m	57° 01' 36.7" N	135° 37' 11.9" W	---

1 - New Features

1.1) Profile/Beam - 10/38 from h11271 / 1021_reson8101_hvf / 2005-129 / 004_2157

Survey Summary

Survey Position: 57° 01' 36.7" N, 135° 37' 11.9" W
Least Depth: 10.02 m (= 32.88 ft = 5.480 fm = 5 fm 2.88 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2005-129.21:57:52.878 (05/09/2005)
Survey Line: h11271 / 1021_reson8101_hvf / 2005-129 / 004_2157
Profile/Beam: 10/38
Charts Affected: 17325_1, 17326_1, 17320_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Chd (17326) rk disproval

Investigation Summary: The rock was disproved with VBES. During the investigation a least depth was obtained, with final smooth tides applied.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11271/1021_reson8101_hvf/2005-129/004_2157	10/38	0.00	000.0	Primary

Hydrographer Recommendations

Hydrographer recommends removal of rock from chart (17326)

Cartographically-Rounded Depth (Affected Charts):

5 ½fm (17325_1, 17326_1, 17320_1, 16016_1, 530_1)

5fm 3ft (531_1)

10.0m (500_1, 50_1)

S-57 Data

[None]

Office Notes

Do not concur. There is not enough data to disprove Chd (17326) rock. Retain rock as charted.



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: H11271

LOCALITY: Vicinity of Vitskari Rocks, Sitka Sound, AK
TIME PERIOD: June 6 - June 16, 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

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).

Thomas V. Mero 12/6/05
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Final tide zone node point locations for OPR-O112-RA-2005, H11271

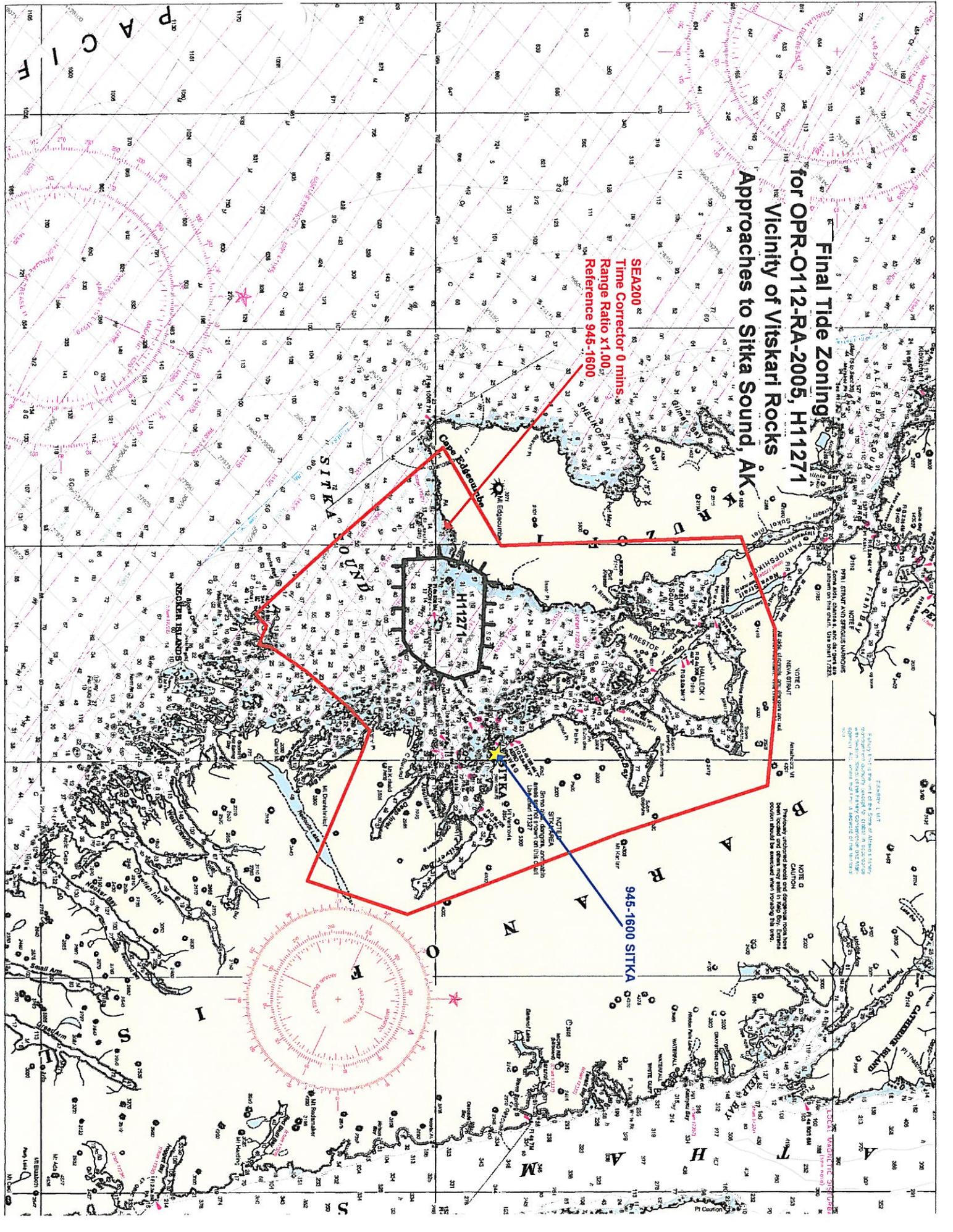
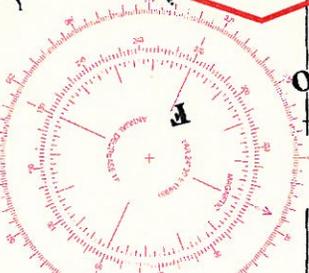
Format: Tide Station (in recommended order of use)
 Average Time Correction (in minutes)
 Range Correction
 Longitude in decimal degrees (negative value denotes Longitude West),
 Latitude in decimal degrees

	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			

Final Tide Zoning for OPR-0112-RA-2005, H11271 Vicinity of Vitskari Rocks, Approaches to Sitka Sound, AK

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

945-1600 SITKA



H11271 HCell Report
Martha Herzog, 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 ENCs, US3AK3BM and US3AK3VM, and NOAA RNCs, 17320, 17325, and 17326.

HCell compilation of survey H11271 utilized Office of Coast Survey HCell Specifications Version 3.0, with approved modifications to better meet MCD needs.

1. Compilation Scale

Depths for HCell H11271 were compiled to the largest scale charts in the region, 17325 and 17326, 1:40,000. Non-bathymetric features have not been generalized to chart scale; their position, characterization and density are as delivered from the field.

2. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 10-meter Combined Surface, **H11271_10m_Combined**, in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 survey scale using a Radius Table file with values shown in the table, below. The resultant sounding layer contains 1,9461 depths ranging from 0 to 207.0 meters.

Upper limit (m)	Lower limit (m)	Radius (mm)
0	10	3
10	20	4
20	50	4.5
50	225	5

In CARIS BASE Editor soundings were manually selected from the high density sounding layers 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 extents of the highest resolution BASE Surface together with the extents of the soundings layer were used to digitize the hydrographic extents, which were then used to create the single, all encompassing depth area (DEPARE). A single depth range, from 0

to 210 meters, was used for the depth area object. Upon conversion to NOAA charting units, this depth range is 0 to 115 fathoms.

3.2 Depth Contours

Depth contours at the intervals on the largest scale chart are included in the US511271_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
0	0	0.229	0
3	5.486	5.715	3.125
5	9.144	9.372	5.125
10	18.288	18.517	10.125
20	36.576	37.948	20.750
50	91.440	92.812	50.750
100	182.880	184.252	100.75

4. Meta Areas

The following Meta object areas are included in HCell 11271:

M_QUAL
M_COVR
M_CSCL

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

5. Features

Shoreline features for H11271 were delivered in six MapInfo tables and a Pydro PSS. There is some redundancy of features between the files. Shoreline point features in Pydro were given S-57 attribution and exported to an xml file. The xml file was imported into CARIS Notebook. The shoreline line/area features derived from the MapInfo tables were exported to dxf files and opened in CARIS Base Editor. The line/area features to be included in the HCell were digitized from the dxf files.

All submitted shoreline files were deconflicted against GC shoreline, the chart and hydrography during office processing. The source of all features included in the H11271 HCell can be determined by the SORIND field.

6. S-57 Objects and Attributes

The US511271_CS HCell contains the following Objects:

\$CSYMB	Blue notes
COALNE	Modified GC coastline
DEPARE	The all-encompassing depth area
DEPCNT	Modified GC MLLW
LNDARE	Shoreline from Chart
M_COVR	Data coverage Meta object
M_QUAL	Data quality Meta object
OBSTRN	Obstruction area object
SBDARE	Modified GC ledges and reefs, bottom samples
SOUNDG	Soundings at the chart scale density
UWTROC	Rock features

The US511271_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 US511271_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 with H11130

H11271 junctions with H11130, submitted in May 2006. H11271 should supersede H11130 in the common area.

9.2 Conflicts between Shoreline and Hydrography

There are numerous instances of GC shoreline and hydrography in conflict with ENC US3AK3BM at and north of Shoals Point near Kurzof Island. Conflicts were resolved by

including the GC shoreline and ledges (COALINE, DEPCNT,DEPARE, LNDARE, and SBDARE) into the HCell.

10. QA/QC and ENC Validation Checks

H11271 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

- H11271 Base Cell File, Chart Units, Soundings compiled to 1:10,000
- H11271 Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items

11.2 File Naming Conventions

- Chart units base cell file, chart scale soundings US511271_CS.000
- Chart units base cell file, survey scale soundings US511271_SS.000
- Descriptive Report H11271_DR.pdf

11.3 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.1	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 Notebook Ver. 3.1	Conversion of Pydro shoreline files
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.
Pydro Ver. 8.7 (r2586)	Creation of Feature reports

12. Contacts

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

Martha Herzog, Physical Scientist, PHB, Seattle, WA; 206-526-6730;
Martha.herzog@noaa.gov.

APPROVAL SHEET
H11271

Initial Approvals:

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

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